TAMPA BAY WATER
Supplying Water To The Region

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General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

BOARD AGENDA

April 20, 2026 – 9:30 AM

BUDGET WORKSHOP AND REGULAR MEETING

OPEN TO THE PUBLIC

PUBLIC COMMENT
The Tampa Bay Water Board of Directors welcomes comments from the public about any issue of concern. Opinions provide valuable input to the board members. However, we request that public comments be directed to issues and not directed personally against any board member or staff member. This provides a mutual respect between the board members and the public.

Public comment may be provided in person, via teleconference during the public comment portion of the meeting, or by submitting written comments for the record and distribution to the Board. Anyone wishing to speak in person must submit a completed speaker card to the Agency Clerk prior to the beginning of the meeting. To submit written comment or to participate via teleconference, please contact Krista Simon at 727-791-2347 or ksimon@tampabaywater.org. by 4:00 p.m. on April 17, 2026. Each speaker shall have a maximum of three (3) minutes to address any matter on the agenda.

The next meeting will be a Budget Public Hearing and Regular Meeting on Monday, May 18, 2026 at 9:30 a.m.

ACCOMMODATIONS
Anyone requiring reasonable accommodations for this meeting as provided for in the Americans with Disabilities Act should contact the Records Department at 727-249-0146 at least three working days prior to the public meeting. If a person decides to appeal any decision made by the Board, with respect to any matter considered at this meeting, he/she will need a record of the proceedings, and for such purposes, he/she may need to ensure that a verbatim record of the proceedings is made, such record includes the testimony and evidence upon which the appeal is to be based.

Budget Workshop and Regular Meeting Agenda

MONDAY, APRIL 20, 2026 – 9:30 AM

9:30 AM - CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

BUDGET WORKSHOP

Proposed Fiscal Year 2027 Budget - *Presentation*

PUBLIC COMMENT - (3 Minutes per speaker)

AGENDA

A. CONSENT ITEMS

A.1 February 23, 2026 - Regular Meeting - Draft Agenda Minutes - *Approve*

A.2 Tampa Bay Water Performance Dashboard Update - *Receive Report*

A.3 Legislative and Grant Funding Program Update - *Receive Report*

A.4 Regional Water Supplies, Member Demands and Environmental Conditions - *Receive Report*

A.5 South Hillsborough County Program Update - *Receive Report*

A.6 Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report - *Receive Report*

A.7 Capital Improvement Program - Task Order Authorization - *Approve*

A.8 Capital Improvement Program - Projects Closeout - *Approve*

A.9 South Hillsborough Pipeline, Project Nos. 01610 and 01616 - Property Acquisition Status Report - *Receive Report*

A.10 Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report - *Receive Report*

A.11 Cypress Creek Wellfield Surface Water Improvements-Phase 3, Project No. 09108, Contract No. 2026-006 Task Authorization - *Approve*

A.12 Surplus Water Agreement with the City of Tampa - *Approve*

A.13 Sole Source Procurement No. 2026-509 for Ozone Generation Systems Service, Equipment, Replaceable Parts, and Consumable Supplies from Fin-Tek Corporation. - *Approve*

A.14 Emergency Generator Purchase through the Florida Sheriff's Association Contract #FSA23-EQU21.1 - *Approve*

A.15 First Amendment to Contract No. 2025001 with KELLER Pressure, Inc., formerly Keller

America, Inc. - *Approve*

REGULAR AGENDA

B. GENERAL MANAGER & GENERAL COUNSEL

B.1 General Manager's Report - *Receive Report*
B.2 Water Conservation Month Proclamation - *Approve*
B.3 Community Water Wise Award - 2025 Regional Winner - *Presentation*

C. ACTION ITEMS

C.1 Cooperative Funding Agreement No. 26CF0004970 between the Southwest Florida Water Management District and Tampa Bay Water and an Update on the Tampa Bay Water Wise Program - *Approve*
C.2 Water Quality Update and Recommendation to Implement Regional Water Quality Study Drinking Water Treatment Projects - *Approve*
C.3 Surface Water Treatment Plant Water Quality Pilot Study, Project No. 03511, Amendment 2026-19 for Design Services of Agreement No. 2000-028 with Veolia Water North America - South, LLC - *Approve*
C.4 Morris Bridge Wellfield Improvements, Project No. 50021 - Contract No. 2026-020 with Southeast Drilling Services, Inc. - *Approve*
C.5 Cross Bar Ranch Wellfield Transmission Main Utility Conflict, (Project No. 07153), Contract No. 2026-017 with JDS Inc., dba JDS Pipe Inc. - *Approve*

D. PRESENTATIONS & REPORTS

D.1 Member Government Report - City of St. Petersburg - *Presentation*

E. OTHER ADMINISTRATIVE MATTERS AND OLD BUSINESS

No items to report.

F. RECEIVE & FILE

F.1 Agency Division Activity Reports for February and March 2026 - *Receive Report*
F.2 Legal Services Activity Report for February and March 2026 - *Receive Report*
F.3 Legal Services Budget Report for February & March 2026 - *Receive Report*
F.4 Comprehensive Check List with Delegated Check Approval Items for February and March 2026 - *Receive Report*
F.5 Disposition of Fixed Assets for February and March 2026 - *Receive Report*
F.6 Financial Statements - February and March 2026 - *Receive Report*
F.7 Investment Schedules for February and March 2026 - *Receive Report*
F.8 True-Up of Fixed Costs between Member Governments through February and March 2026 - *Receive Report*
F.9 Vendor's Status Reports for February and March 2026 - *Receive Report*

G. ATTORNEY-CLIENT SESSION AND SETTLEMENT CONSIDERATION

G.1 Attorney-Client Session between the Board of Directors and legal counsel pursuant to Section 286.011(8), F.S., pertaining to Polk Regional Water Cooperative v. Southwest Florida Water Management District and Tampa Bay Water (Florida Division of Administrative Hearings Case No.: 25-005480) - *Discussion and Action*

ADJOURNMENT

TAMPA BAY WATER
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BUDGET WORKSHOP AGENDA ITEM

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Proposed Fiscal Year 2027 Budget - *Presentation*

SUMMARY

Following the budget development schedule for Fiscal Year 2027, a recommended proposed budget was prepared and will be presented. The proposed operating budget total is $223,809,140, with net revenue requirements from water sales of $206,588,228, to supply 212.84 million gallons a day for Fiscal Year 2027. The Uniform Rate for the proposed budget is $2.6593/1,000 gallons.

An overview of the Fiscal Year 2027 Capital Improvements Program Plan details will also be presented. The Capital Improvements Program proposed expenditures for Fiscal Year 2027 are $291,424,776.

SUGGESTED ACTION

Presentation and discussion.

COST/FUNDING SOURCE

Uniform Rate, interest income, grant income, year-end balance forward plus other funding sources.

DISCUSSION

Staff is pleased to present the proposed Tampa Bay Water annual budget for Fiscal Year 2027 (FY

2027) in accordance with Section 2.08 of the Amended and Restated Interlocal Agreement. This budget balances the Board's three overarching goals of maintaining a reliable water supply system, being good stewards of the environment, and maintaining cost-effective rates.

In addition, the proposed operating budget was prepared while taking into consideration the increase in the agency's annual debt service and the need to reduce costs elsewhere and use reserve funding to keep the uniform rate affordable.

Staff will present information to the Board on the contents of the FY 2027 Annual Operating Budget and provide the opportunity for discussion. The proposed operating budget document was shared with each of the six-member governments' staff in late March.

The proposed operating budget total is $223,809,140, with net revenue requirements from water sales of $206,588,228, to supply 212.84 million gallons a day (mgd) for FY 2027. The Uniform Rate for the Proposed Operating FY 2027 Budget is $2.6593/1,000 gallons, which is an increase of $0.0204 or 0.78% of the current uniform rate, with a variable rate of $0.6217/1,000 gallons, which is an increase of 1 cent over the current variable rate. The proposed budget includes the agency's cost of living adjustment (COLA) and merit program, based upon a COLA of 3% and up to a 3% merit. The proposed budget does not include funding the Renewal and Replacement Fund or the Capital Improvement Fund, but does include the using $4 million from the Rate Stabilization Account to minimize the increase in the Uniform Rate.

At the April 20, 2026 workshop, staff will discuss the agency's operations in the fiscal year 2027 and the detail the agency's spending plan in the upcoming fiscal year.

Tampa Bay Water's Capital Improvements Program (CIP) is a comprehensive plan and portfolio of previously approved and newly proposed capital projects. The CIP is updated annually to include newly requested capital projects and to update the scope, capital costs, and timing for previously identified projects. The updated plan includes 43 projects at various stages of the project life-cycle, including active construction, design, and bidding, planned capital projects, and feasibility studies to further assess potential projects that are ongoing or will start in FY 2027. The Capital Improvements Program proposed expenditures for FY 2027 are $291,424,776, with the Surface Water Treatment Plant expansion and the South Hillsborough Pipeline accounting for 67% of these expenditures.

The Board will be presented with final FY 2027 budget documents for approval at the May 18, 2026 Public Hearing before the regular Board meeting.

BACKGROUND

Tampa Bay Water is required by the Amended and Restated Interlocal Agreement to adopt its annual operating budget for the upcoming fiscal year prior to August 1st of each year. The budget development schedule for Fiscal Year 2027 depicts a Budget Workshop at the April meeting and final approval of the

budget is anticipated at Public Hearing in May prior to the regular Board meeting. Adoption of the budget in May allows the Board to remain in compliance with the August 1st deadline.

Attachments (2)

Proposed Operating Budget Fiscal Year 2027
Capital Improvements Program Fiscal Years 2027-2036
Budget Workshop - Proposed Fiscal Year 2027 Budget and Capital Improvements Program

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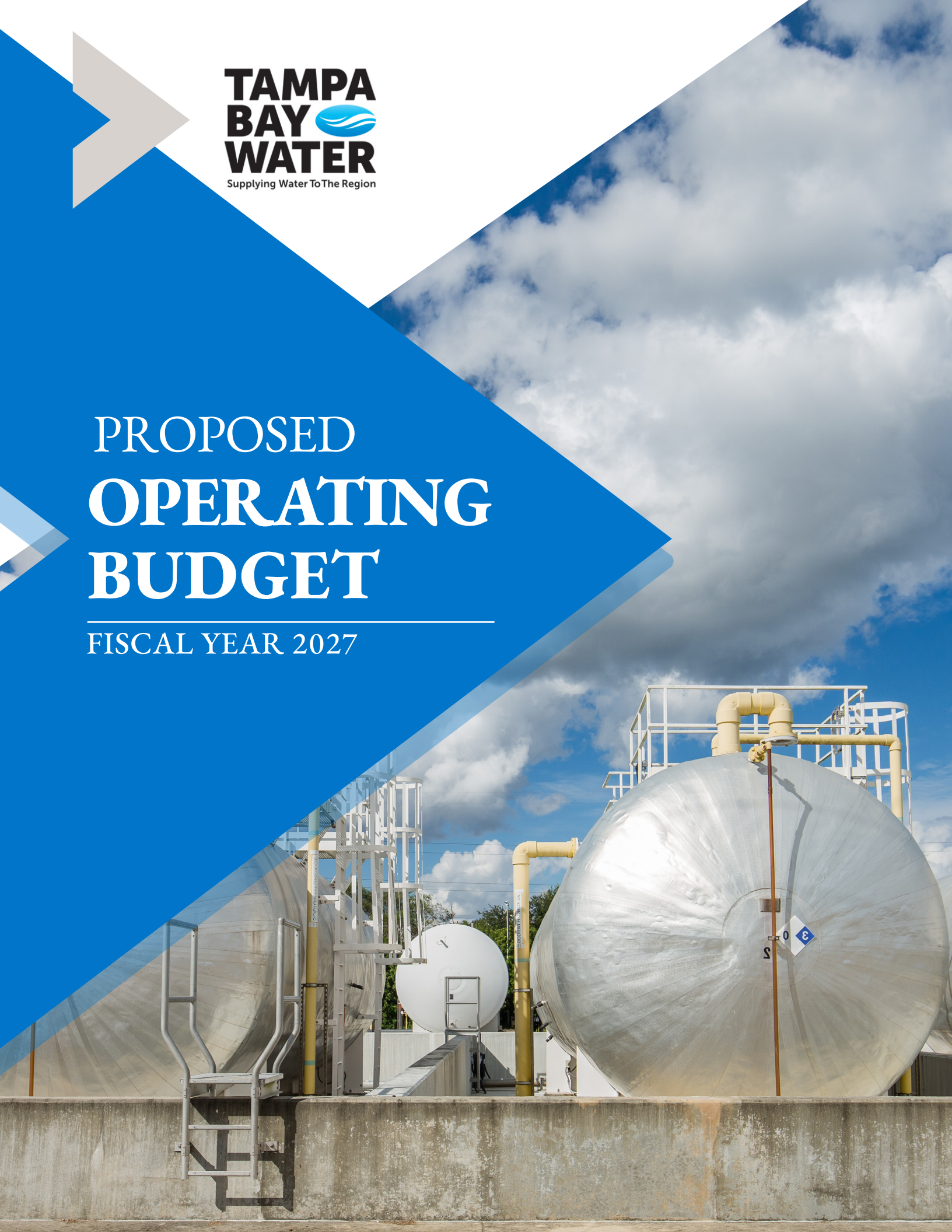
PROPOSED OPERATING BUDGET

FISCAL YEAR 2027





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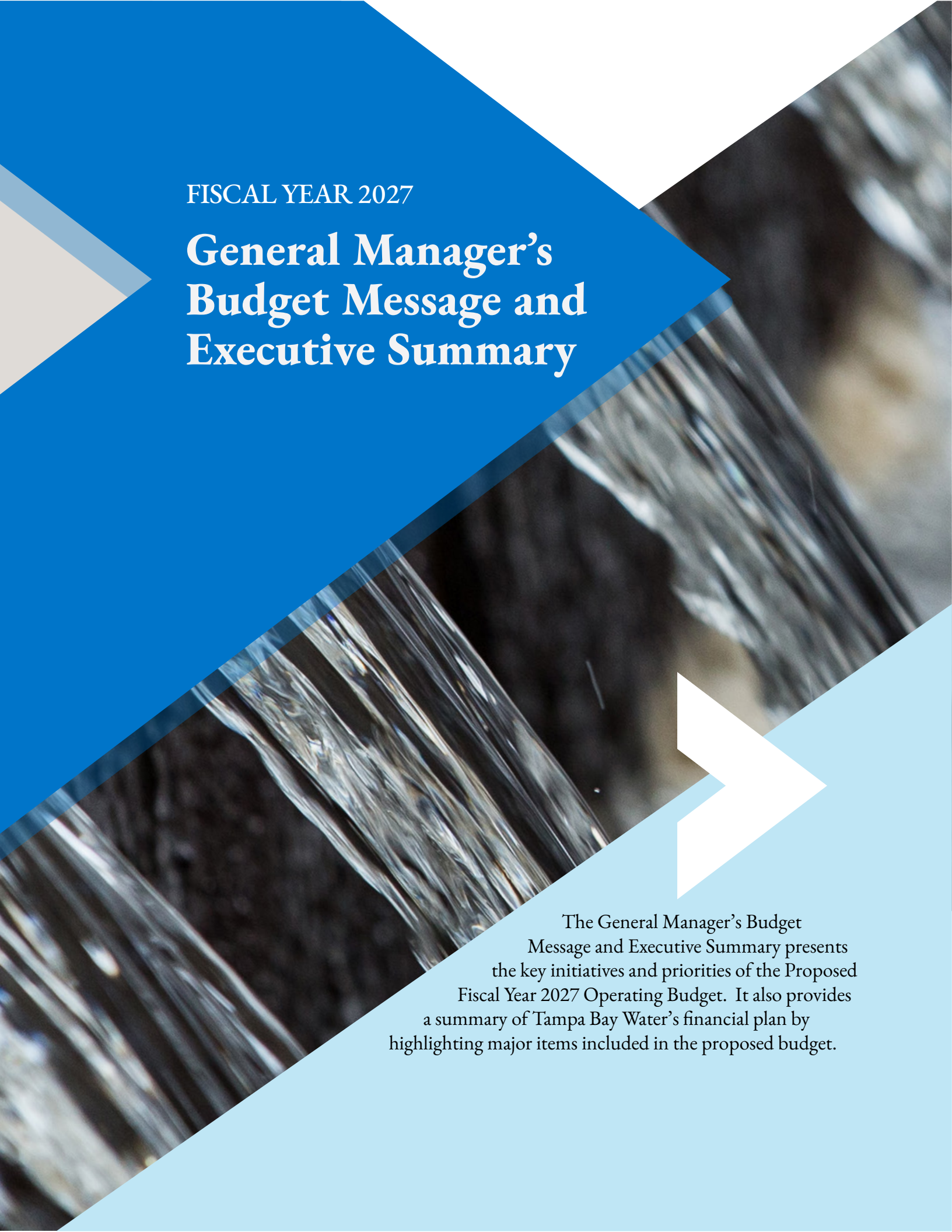
FISCAL YEAR 2027

General Manager's Budget Message and Executive Summary



The General Manager's Budget Message and Executive Summary presents the key initiatives and priorities of the Proposed Fiscal Year 2027 Operating Budget. It also provides a summary of Tampa Bay Water's financial plan by highlighting major items included in the proposed budget.

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Policy Goals Used in Fiscal Year 2027 Budget Development

The Fiscal Year 2027 budget was put together with important agency policy goals in mind. Those goals included:

- Meeting the performance requirements of the Master Water Supply Contract to provide high quality water to our six-member governments.
- Operating our water supply facilities to improve supply delivery while also maintaining full compliance with regulatory permits.
- Achieving the goals specified in the Agency's updated strategic plan.
    - Enhance System Reliability and Sustainability
    - Continuously Improve Agency Operations
    - Optimize Future Financial Stability
    - Enhance Our Relationships with Stakeholders
    - Ensure an Engaged, Skilled and Adaptable Workforce
    - Safeguard Agency Infrastructure
- Addressing recommendations from the 2025 Performance and Management Audit Report and allocating our staff and financial resources to meet the board's objectives for a sustainable and affordable water supply system.
- Continuing to balance and blend our multiple supplies of water sources to deliver high-quality, affordable water to our member governments.
- Continuing to work on the South Hillsborough Pipeline to meet the growing water needs of South Hillsborough County.
- Continuing to work on the Surface Water Treatment Plant Expansion Project to meet water demands by the year 2028.
- Performing the feasibility studies on the short-listed projects in the 2023 Long-Term Master Water Plan Update.
- Refining the models used to accurately predict the need for new water supplies in the future.
- Safeguarding the public's investment in the region's water supply and delivery system to ensure that both the water quality and water quantity meet the needs of the more than 2.6 million people in our region. Protecting that investment includes:
    - Focusing on the safety and security of our employees and our water supply facilities.
    - Renewing and replacing existing infrastructure to ensure the optimal operation of our facilities over time.
    - Continuing to engage with community, environmental and educational organizations on projects that promote the protection of our drinking water sources through the Water Conservation and Protection Mini-Grant Program.

- Managing the Agency's 2025 Succession Plan designed to proactively respond to shifts in staff attrition, address emerging recruitment challenges, and capitalize on development opportunities in a way that ensures business continuity and supports both immediate and long range agency priorities.
- Continuing to administer the agency's cost-of-living adjustment and performance-based merit programs.
- Addressing the safety and security of both physical assets and information technology systems.
- Expanding the agency's outreach and education program to underscore the importance of a reliable, sustainable water supply for economic and regional growth and development.
- Working with our member governments on the coordination and sharing of utility best management practices.
- Creating a framework and implementing a continuous improvement program throughout the agency.
- Working with our colleagues around the country on continuing research into changes in weather patterns and the impact of climate change upon the surface water systems serving our area.
- Maintaining a strong relationship with the Southwest Florida Water Management District, the Florida Department of Environmental Protection, and other regulatory agencies to ensure open and honest communication on regulatory, planning, and financial matters.

Key Factors Affecting the Fiscal Year 2027 Budget

Increase in Annual Water Sales

To account for regional expansion, the agency is projecting an increase in water sales to our member governments to 212.84 million gallons per day (mgd). This 3.14 mgd increase over the 2026 budgeted water sales is based on normal weather conditions and a steady, long-term upward trend in member government demand.

Personnel Services

Starting in fiscal year 2023 the agency's personnel services budget includes a cost-of-living adjustment alongside a performance-based merit program. The Fiscal Year 2027 budget contains a 3% cost-of living adjustment and a performance-based merit of up to 3%. The proposed budget also includes the request for four positions - an IT Network Engineer, a Mechanical Technician I, and two Mechanical Technician Trainees.

Annual Bond Debt Costs

In July 2025, the agency issued Utility System Refunding Revenue Bonds, Series 2025, which included $158.825 million of principal along with an issuance premium of $14.99 million. These proceeds less issuance costs were used to refund a portion of the outstanding Series 2015A Bonds.

The annual bond debt service for fiscal year 2027 of $81,160,446 reflects a savings of $2,437,119, resulting from the Utility System Refunding Revenue Bonds, Series 2024B/C and Series 2025. In late fiscal year 2026, the

agency will be seeking board approval on the next bond issuance, estimated at $292 million, that will be needed to fund the Capital Improvement Program contracts in fiscal years 2027 and 2028. The fiscal year 2027 annual debt service amount does not reflect an impact from the Series 2026 bonds as it is anticipated they will be issued with at least one year of capitalized interest.

Net Revenue Required from Water Sales

The primary source of revenue for the Agency is the net revenue required from water sales and is a key factor in calculating the Uniform Rate. The net revenue required from water sales, along with other funding sources, must cover the agency's total costs: debt service, variable costs, contracted costs, and other operating fixed costs. Management focused on improving operational efficiencies and minimizing increases in fixed costs, while maintaining our reliable water supply system, to minimize the impact on the net revenue required from water sales. In addition, the agency used reserve funds to minimize the increase in the net revenue required from water sales.

Uniform Rate Increase

Due to the above factors, the Fiscal Year 2027 budget includes an increase in the Uniform Rate for Tampa Bay Water's customers. The proposed rate of $2.6593 per 1,000 gallons is an increase of $0.0205 or 0.78% over the Fiscal Year 2026 uniform rate and is $0.0088 less than the Fiscal Year 2027 rate projected in the Fiscal Year 2026 budget.

Water Demand Used in the Fiscal Year 2027 Budget

The projected water sales to the six-member governments are based on a multi-step process that considers the total water demand for each member government and for the region reflected in the Agency's long-term water demand forecasting models. These models produce retail and wholesale water demands for each of the seven water demand planning areas served by our member governments based on annually updated projected socio-economic data and normal weather (rainfall and temperature conditions). The annual update of projected member government water demands is presented to the Board at the end of each year. These demand projections are also compared with each member government's annual report.

The Fiscal Year 2027 budget was developed to reflect demand with average annual rainfall. The City of Tampa, Pasco County and the City of New Port Richey supply some water through their own facilities to meet a portion of their total water needs. The total regional water demand is reduced by the amount of water these members supply to themselves, resulting in the aggregate expected water demand for budget and planning purposes. The projected annual delivery to the member governments is significantly affected by the amount of water purchased by the City of Tampa, an uncertainty that is directly related to the amount of rainfall that may be experienced. For budgeting purposes, the City of Tampa's demand is budgeted at 5.04 million gallons per day (mgd) for fiscal year 2027. This 5.04 mgd is included in the total amount of water expected for delivery to the member governments. This projected total value of 212.84 mgd forms the basis of the budgeted uniform rate for fiscal year 2027. This is an increase of 3.14 mgd in projected demand over the fiscal year 2026 projected demand of 209.7 mgd and accounts for regional growth expected in fiscal year 2027.

The Agency's budget is developed each year with a focus on the expected rainfall for the year. Scenarios for operating the system are developed to maximize the use of available river water and manage groundwater resources to achieve environmental recovery around our wellfields and meet permit requirements. Source selection for fiscal year 2027 includes use of the desalination facility at an annual average rate of 13.0 mgd.

The Agency maintains strong reserve balances to avoid mid-year rate increases due to unexpected changes in demand or increased costs. The Agency is proactive in funding reserve accounts for both the short and long term, allowing the Agency to maintain moderate rate increases year to year, implement the renewal and replacement program, implement a comprehensive asset management program, and retain excellent credit ratings on debt service.

Operational Highlights for Fiscal Year 2027

The amount of funding required to meet the Agency's proposed fiscal year 2027 expenditures is $223,809,140. The total expenditures include $48,297,346 for variable costs and $175,511,794 for fixed costs components such as debt, operations, and the operations and maintenance agreements associated with contracted water plant operations. Overall, this is a $4.4 million increase over the approved Fiscal Year 2026 Budget, with variable costs increasing by $1.4 million, debt service decreasing by $2.4 million, and other fixed costs increasing by $5.4 million.

Some of the key features of the Fiscal Year 2027 Budget include:

- Operation of the Tampa Bay Seawater Desalination Plant at an annual average of 13.0 mgd, production at the plant will fluctuate monthly to increase efficiency and decrease maintenance costs.
- Full use of the C.W. Bill Young Regional Reservoir, the region's water savings account.
- An annual average production of 79.00 mgd at the Regional Surface Water Treatment Plant, using flows from the Hillsborough and Alafia rivers and the Tampa Bypass Canal, as well as water stored in the regional reservoir. The Plant production is managed to maximize the seasonally available higher river flows during wet-weather months. Like production at the desalination facility, Surface Water Treatment Plant production may be increased proportionately when river flows are available, to maintain the agency's groundwater pumping permitted levels.
- Use of 86.34 mgd on an annual average basis from the consolidated permit wellfields, which is 3.66 mgd less than the permit limit of 90 mgd, in recognition that we may need to increase groundwater production if we have a drier than normal year. Plus, an additional 34.5 mgd will come from other groundwater sources that are not part of the consolidated water permit.

The total budget of $223.8 million, includes variable operating costs of $48.3 million and fixed operating costs of $175.5 million, 22% and 78% of the Agency's budget respectively. The $175.5 million includes $81.2 million for debt service, $10.3 million for acquisition and water quality credits to the Members, and $84.1 million in fixed operating costs, inclusive of $17.0 million in professional services for the operations and maintenance agreements associated with the contracted water plant operations.

The Fiscal Year 2027 budget includes the following $17.2 million in other funding sources that reduce the amount needed in net revenue from water sales.

- $6.1 million in unencumbered funds from FY 2026 to be carried over to FY 2027.
- $5.4 million in Investment Revenue.
- $1.1 million of revenue from surplus water sales at Tampa Bypass Canal.
- $75 thousand for an Operation & Maintenance contract agreement with Pasco County at the Lake Bridge Facility.
- $540 thousand of grant revenue from the Southwest Florida Water Management District
- $4.0 million of Rate Stabilization Funds

The total expenditures are adjusted by the other funding sources to provide the net revenue required from water sales. The net revenue required for the proposed Fiscal Year 2027 budget is $206,588,228 resulting in a uniform rate of $2.6593 per 1,000 gallons.

Fiscal Year 2027 Budget Timing

To provide our member governments and the public with a budget document for use as information and for planning, the budget schedule requires final approval of the budget prior to August 1st each year.

Prior to the April 15th requirement, the abbreviated proposed Fiscal Year 2027 budget will be distributed to the member governments for review. This will be followed with meetings between Tampa Bay Water staff and member governments for discussion of the proposed budget. The abbreviated proposed Fiscal Year 2027 budget will be reviewed by the Board at a budget workshop held on April 20, 2026.

A public hearing for the proposed Fiscal Year 2027 Operating Budget will be held on May 18, 2026. A notice of the Board's intended adoption of the proposed Fiscal Year 2027 Budget will be published in compliance with budget approval requirements in the Amended and Restated Interlocal Agreement. Following the public hearing, the Board will be asked to approve the Operating Budget and Capital Improvement Program for Fiscal Year 2027 via approval of Resolution 2026-003.

Budget Communication

An electronic version of Tampa Bay Water's Abbreviated Proposed Fiscal Year 2027 Operating Budget can be found on the Agency's website.

https://www.tampabaywater.org/agency/tampa-bay-water-budget-and-financial-information/

For other budget communications, type "budget" in the search field and Tampa Bay Water blogs, news releases and other site pages will be displayed.

Analysis of Costs in the Proposed Fiscal Year 2027 Budget

Enterprise Funds	Approved 2026	Proposed 2027	Variance +/-	Effect on Rate
Sources of Funds				
Water Sales	$ 201,977,824	$ 206,588,228	$ 4,610,404	0.0593
Additional Credits/ Surcharges	75,000	75,000	-	0.0000
TBC - Sale of Water	1,290,594	1,130,840	(159,754)	(0.0021)
Interest Income	5,075,001	5,415,737	340,736	0.0005
Litigation & Insurance Recoveries	-	-	-	0.0044
Subtotal	**$ 208,418,419**	**$ 213,209,805**	**$ 4,791,386**	**0.0621**
Transfers In from Rate Stabilization Account	4,000,000	4,000,000	-	0.0000
Transfer in from O&M Reserve Account	500,000	-	(500,000)	(0.0064)
Unencumbered Funds from Prior Year (Note 1)	6,010,721	6,059,335	48,614	0.0006
Total Sources	**$ 218,929,140**	**$ 223,269,140**	**$ 4,340,000**	**0.0563**
Uses of Funds				
Personnel Services	$ 27,964,100	$ 29,039,530	$ 1,075,430	0.0138
Materials & Supplies	3,063,969	2,999,448	(64,521)	(0.0008)
Professional Services	32,364,630	35,846,321	3,481,691	0.0448
Repairs & Other Services	9,433,385	9,632,758	199,373	0.0026
Rent & Insurance	4,018,272	4,191,733	173,461	0.0022
Legal Services	600,000	600,000	-	0.0000
Capital Expenditures	1,197,500	1,762,000	564,500	0.0073
Bond Debt Service (Note 2)	**83,597,565**	81,160,446	(2,437,119)	(0.0314)
Acquisition Credits to Members	10,231,558	10,231,558	-	0.0000
Water Quality Credit	48,000	48,000	-	0.0000
Power / Electricity - Variable Cost	20,071,653	18,886,619	(1,185,034)	(0.0153)
Water for Resale - Variable Cost	644,000	600,200	(43,800)	(0.0006)
Water Treatment Chemicals - Variable Cost	26,194,508	28,810,527	2,616,019	0.0337
Subtotal	**$ 219,429,140**	**$ 223,809,140**	**$ 4,380,000**	**0.0563**
Transfer to Utility Reserve	-	1,131,783	1,131,783	-
Total Uses	**$ 219,429,140**	**$ 223,809,140**	**$ 4,380,000**	**0.0563**
Projected Water Demand (mgd)	209.70	212.84	3.14	
Projected Uniform Water Rate ($/1000 gal.)	$ 2.6388	$ 2.6593	$ 0.0205	

Note 1 – Fiscal Year 2027 unencumbered funds from prior year, are estimated at 3% of the fiscal year 2026 revenue from water sales. Funds transfer through the rate stabilization account at year-end.

Note 2 – The projected Series 2026 bond issuance is estimated to have one year of capitalized interest and will not impact bond debt service for fiscal year 2027.

FISCAL YEAR 2027

Financial Plan



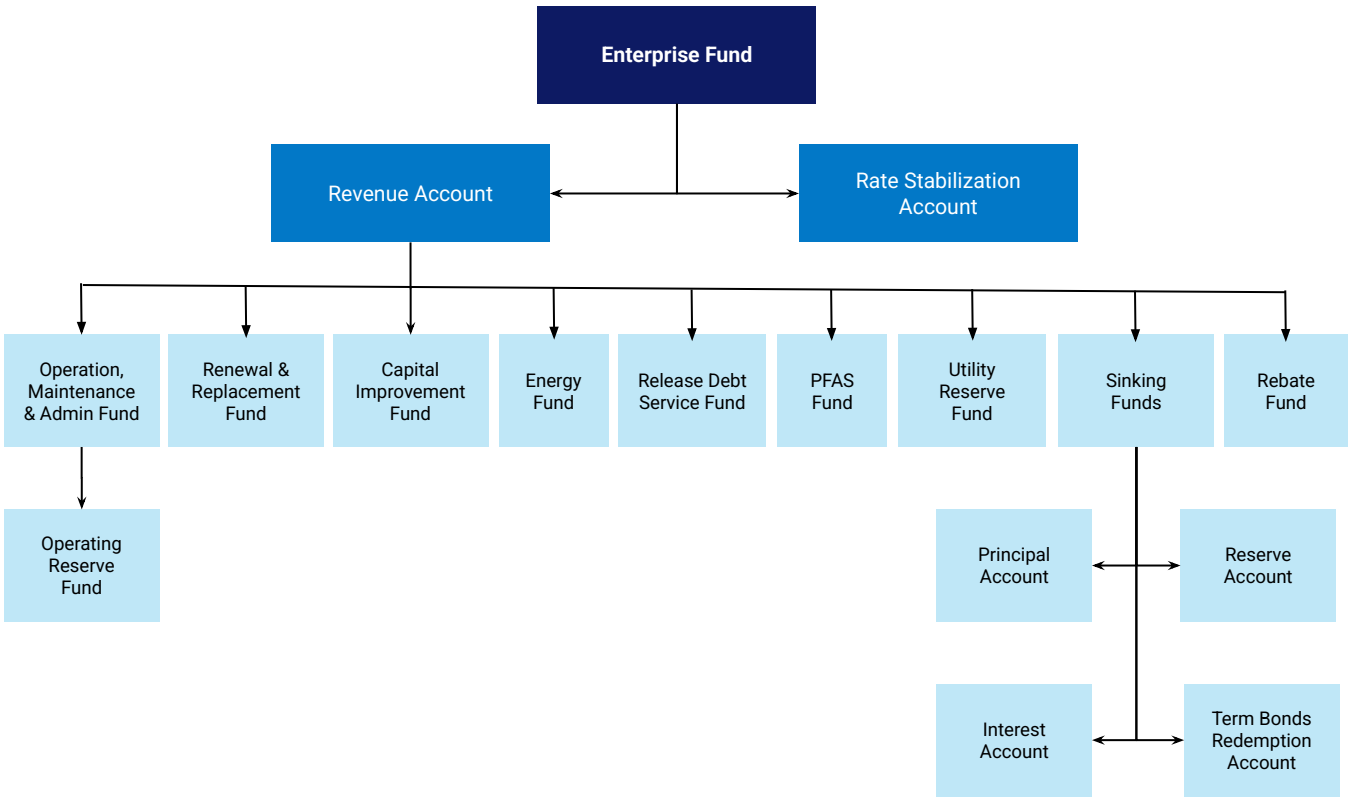
The Financial Plan section provides an overview of Tampa Bay Water's budgetary fund structure and information on revenue and expenditures, as well as capital spending for the budget year.

TAMPA BAY WATER

Supplying Water To The Region

Funds Structure Overview

Tampa Bay Water consists of one major Enterprise Fund, which is further broken down into additional funds and accounts for accounting purposes.



- The **Revenue Account** is the initial depository for all Agency revenue. Revenue is transferred to other funds as required.
- The **Rate Stabilization Account** is funded and used by the annual budget and/or Board approved transfers, including funding of the Revenue Account.
- The **Operation, Maintenance, and Administration Fund** is used to pay all operating and administrative costs of the Agency. The Operation, Maintenance and Administration Fund includes the ***Operating Reserve Fund***.
- The **Renewal and Replacement Fund** is used for repairs and replacement of the System as the need arises and as approved by the Board.
- The **Capital Improvement Fund** is used to pay costs of various capital projects as designated and approved by the Board.
- The **Energy Fund** is used for various energy projects as designated and approved by the Board.

- The **Released Debt Service Fund** is used to pay costs of various capital projects as designated and approved by the Board.
- The **PFAS Fund** shall be used to finance and support Board approved projects, programs, studies, remediation efforts, and other initiatives related to polyfluoroalkyl substances ("PFAS") chemicals. Expenditures from this fund are intended to address the identification, assessment, mitigation, treatment, monitoring, and management of PFAS related impacts, consistent with applicable regulatory requirements and Board directives.
- The **Utility Reserve Fund** is used for transfers of any unexpended funds remaining at the end of a fiscal year. The fund balance is maintained at a balance sufficient to meet bond coverage requirements and operating capital needs. The Utility Reserve may be used for any lawful purpose relating to the System, including funding of the Rate Stabilization Account.
- The **Sinking Funds** holds all Agency funds restricted to payment of Agency debt. The Sinking Funds consists of four (4) accounts: ***Interest Account, Principal Account, Reserve Account and Term Bonds Redemption Account.*** The Interest, Principal, and Redemption Accounts are funded annually from Revenues and are used annually to pay debt service. The Reserve Account is fully funded from bond proceeds and generally changes only when new debt is issued, or an outstanding bond issue is redeemed.
- The **Rebate Fund** is used for rebatable arbitrage to the IRS, whenever interest on tax-exempt bond construction funds exceeds allowable earnings under IRS arbitrage regulations.

Reserves and Restricted Funds

Tampa Bay Water maintains the following funds and accounts to comply with requirements of the financing documents and the Master Water Supply Contract.

Operating Reserve

Tampa Bay Water maintains Operating Reserve Funds. The amount of Operating Reserve Funds shall not exceed an amount equal to two times the monthly average Variable Costs as provided in Tampa Bay Water's annual budget. Investment earnings on the Operating Reserve remain in the account until the funding requirement is fully met and then may be used for any lawful purpose.

The Operating Reserve balance on October 1, 2026, is estimated to be $7,064,843. This is just under two months of the fiscal year 2027 estimated variable costs of $48,297,346.

Renewal and Replacement Fund

Tampa Bay Water is required to maintain an amount equal to five (5) percent of the prior fiscal year's Gross Revenues or such other amount as is certified by the Consulting Engineer. Five percent of the projected gross revenues for fiscal year 2026 is $10,971,457. These funds are available to be used for repair and/or replacement of the System as the need arises. Investment earnings in the Renewal and Replacement Fund remain in the fund

until the funding requirement is met. Investment earnings more than the funding requirement are deposited into the Revenue Fund and are available for any lawful purpose.

The Renewal and Replacement fund balance on October 1, 2026, is estimated at $17,285,909. Tampa Bay Water has developed a Renewal and Replacement Program that identifies all critical components of the water delivery system and assists in developing a schedule for replacing or improving components to maintain the reliability of the system. The current estimated expenditures scheduled during 2027 is $3,458,217, which is about 20% of the beginning fund balance.

Capital Improvement Fund

Capital Improvement charges collected, or other funds received which are designated by the Board as Capital Improvement Funds are deposited to this fund. Investment earnings are deposited into the Revenue Fund and are available for any lawful purpose. The Capital Improvement Fund balance on October 1, 2026, is estimated at $3,892,047. The current estimated expenditures scheduled during 2027 is $3,799,266, which is about 98% of the beginning fund balance.

Energy Fund

Funds generated from an agreement with Tampa Electric's (TECO) Commercial Demand Response Program Provider, Enel X, and reimbursement from Withlacoochee River Electric Cooperative (WREC) are used to fund projects which result in energy savings to Tampa Bay Water. Investment earnings are deposited into the Revenue Fund and are available for any lawful purpose. The Energy Fund balance on October 1, 2026, is estimated at $2,070,877. The current estimated expenditures scheduled during 2027 is $105,649, which is about 5% of the beginning fund balance.

Released Debt Service Fund

Upon the issuance of the Series 2022 Bonds, the maturity of the agency's total outstanding bonds was extended to Fiscal Year 2053. Therefore, the Debt Service Reserve account requirement changed from the Maximum Annual Debt Service for all outstanding bonds to 125% of the average Annual Debt Service for all outstanding bonds, reducing the required balance of the Debt Service Reserve Fund and releasing reserve funds for funding the Capital Improvement Program. The Released Debt Service Fund balance on October 1, 2026, is estimated at $6,825,265. The current estimated expenditures scheduled during 2027 is $3,473,585, which is about 51% of the beginning fund balance.

PFAS Fund

The PFAS Fund resulted from settlements reached with several defendants in the class action lawsuit against several manufacturers and sellers of polyfluoroalkyl substances or "PFAS" chemicals. The funds shall be used to finance and support Board approved projects, programs, studies, remediation efforts, and other initiatives related to polyfluoroalkyl substances. The PFAS Fund balance on October 1, 2026, is estimated at $13,184,591.

The current estimated expenditures scheduled during 2027 is $3,053,353, which is about 23% of the beginning fund balance.

Utility Reserve Fund

Tampa Bay Water is required to transfer any unexpended funds remaining at the end of each fiscal year to the Utility Reserve Fund. The fund balance must be sufficient to cover 10% of the yearly budgeted Gross Revenues and is maintained at balances sufficient to meet bond coverage requirements. The Utility Reserve Fund may be used for any lawful purpose relating to the System. Investment earnings more than the reserve requirement are deposited into the Revenue Fund and are available for any lawful purpose. The estimated account balance on October 1, 2026, is $31,580,709.

Sinking Fund – Interest and Principal Accounts

Funds collected to pay annual interest and principal on debt are deposited into the accounts and expended for debt service payments as they come due. Investment earnings more than the funding requirement are deposited into the Revenue Fund and are available for any lawful purpose. Funds in the account at the end of the fiscal year are used to pay debt due on October 1st of the new fiscal year. The estimated account balance on October 1, 2026, is $58,245,832.

Sinking Fund Debt Service Reserve Account

Tampa Bay Water is required to fund and maintain an amount equal to the lesser of maximum annual aggregate debt service coming due in any fiscal year or 125% of the average annual debt service over the life of the Bonds outstanding. These funds may be used only to satisfy an insufficiency in the Debt Service Reserve until such time as the Bonds are paid off. When the amount of cash in the Reserve Account, together with other amounts in the Debt Service Accounts are sufficient to fully pay all outstanding Bonds in accordance with their terms, the funds on deposit in the Reserve Account may be used for payment of the Bonds. Investment earnings that exceed the reserve requirement are deposited into the Revenue Fund and are available for any lawful purpose. Upon the issuance of the Series 2025 Bonds, the Reserve Account Requirement for the Outstanding Bonds, including the Series 2025 Bonds, under the Bond Resolution 2025-010, equals 125% of the average Annual Debt Service for all Outstanding Bonds, totaling $79,391,345. The Reserve account is currently funded with cash, investments and a Reserve Account Insurance Policy, issued by Assured Guaranty Inc., in the amount of $31,308,385.

Rebate Fund

Interest earned on Construction Funds which exceeds allowable earnings under IRS arbitrage regulations may result in a rebate liability to the IRS. When a liability for arbitrage rebate is incurred, funds owing to the IRS are placed in the Rebate Fund. These funds and interest earned remain in the fund until the liability to the IRS is satisfied.

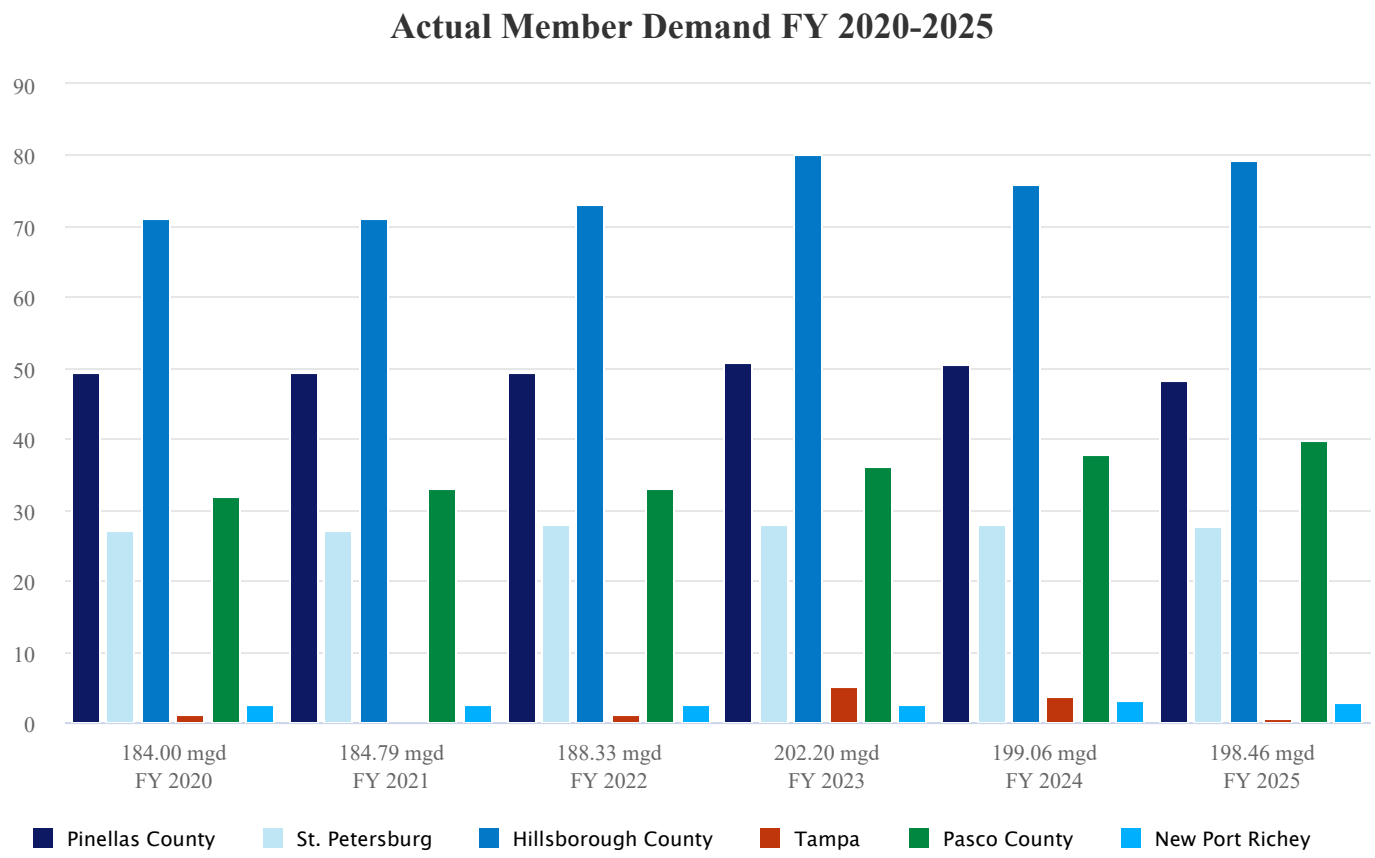
Rate Stabilization Account

The Rate Stabilization Account is funded from amounts established by the annual budget or approved by the Board. The fund is used to maintain changes in the Uniform Rate at more consistent levels. Investment earnings are deposited into the Revenue Fund and are available for any lawful purpose.

The Rate Stabilization account balance on October 1, 2026, is estimated at $42,819,976 and is available for reduction of current and future year rates to the extent that it has not been designated by the Board for specific purposes including unanticipated legal and mitigation costs. A withdrawal of $6,059,335, equal to the estimated amount of unexpended 2026 funds, will be withdrawn from the account and will carry-forward into fiscal year 2027. In addition, $4,000,000 is proposed to be transferred from the Rate Stabilization account into fiscal year 2027, as approved by the Board. The estimated fiscal year 2027 year-end unencumbered funds of $6,197,647 will be transferred into the Rate Stabilization fund to be carried forward into fiscal year 2028. Unexpended funds available for carryforward are deposited into the Rate Stabilization account at year-end and then withdrawn from the account the following fiscal year.

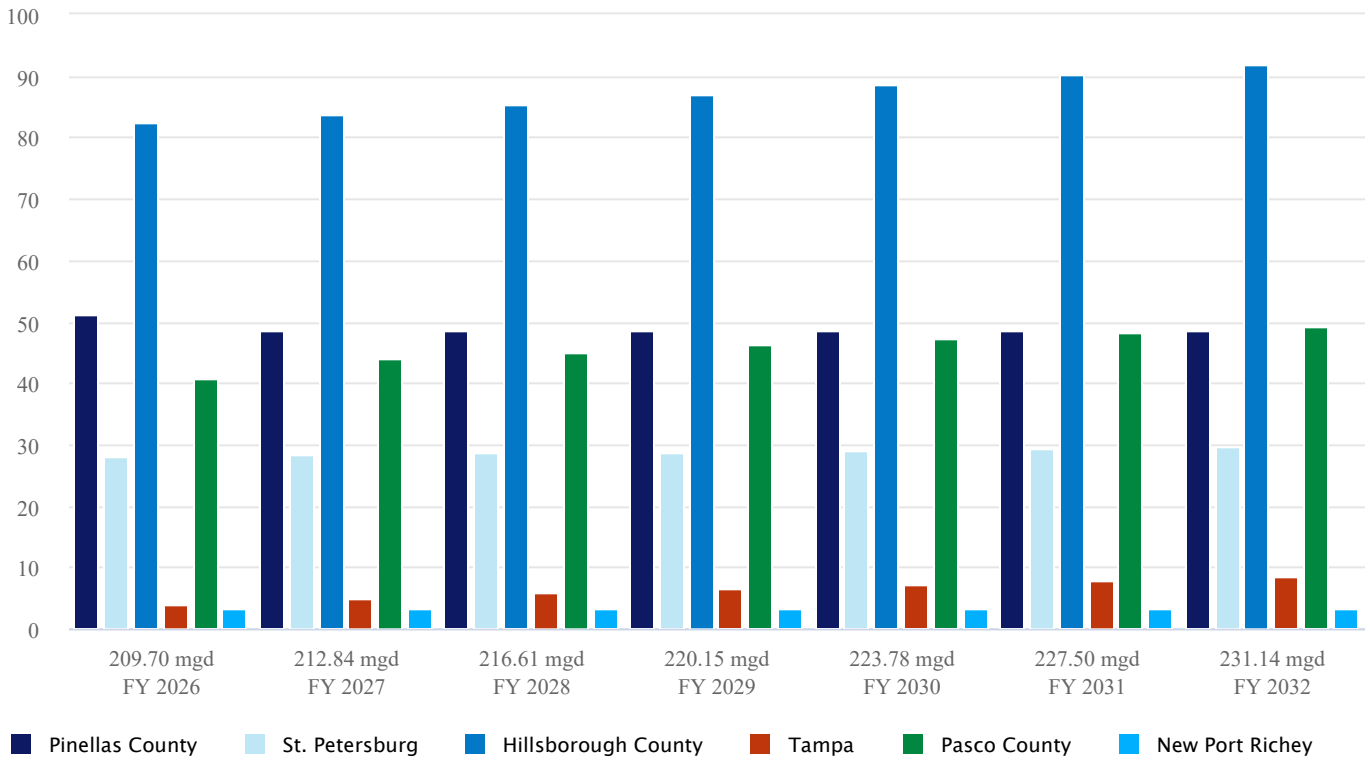
Financial Planning and Trends

The Master Water Supply Contract requires Agency Members to annually provide a five-year estimate of projected water service demand for their respective service areas. Additionally, the Agency utilizes various demand forecasting tools to provide five-year water service demand projections for its Members' service areas. These projections take into consideration relevant factors such as historical rainfall patterns, demographics, population growth, and conservation measures. This information is utilized by management in developing the annual budget and five-year budget projections.



The Tampa Bay Region began to see an upturn in growth starting in 2016, largely within Hillsborough and Pasco County's service areas. Pinellas County's demand decreased slightly when the county lost wholesale water customers. In the past five years, the City of Tampa purchased an average of 2.05 million gallons per day from Tampa Bay Water.

A Look Ahead...
Projected Member Demand FY 2026-2032



Tampa Bay Water provides regional water demand forecasts for its six-member governments to project the amount of water supply needed within Tampa Bay Water's service area. The agency's Long- term Demand Forecasting models are designed primarily for the purpose of long-term planning and forecasting over a 20-30-year horizon.

Member demand for fiscal year 2026 and future demand projections are based on average rainfall years. It is also projected that economic growth will be moderate resulting in gradual population growth and economic development for the Tampa Bay Region.

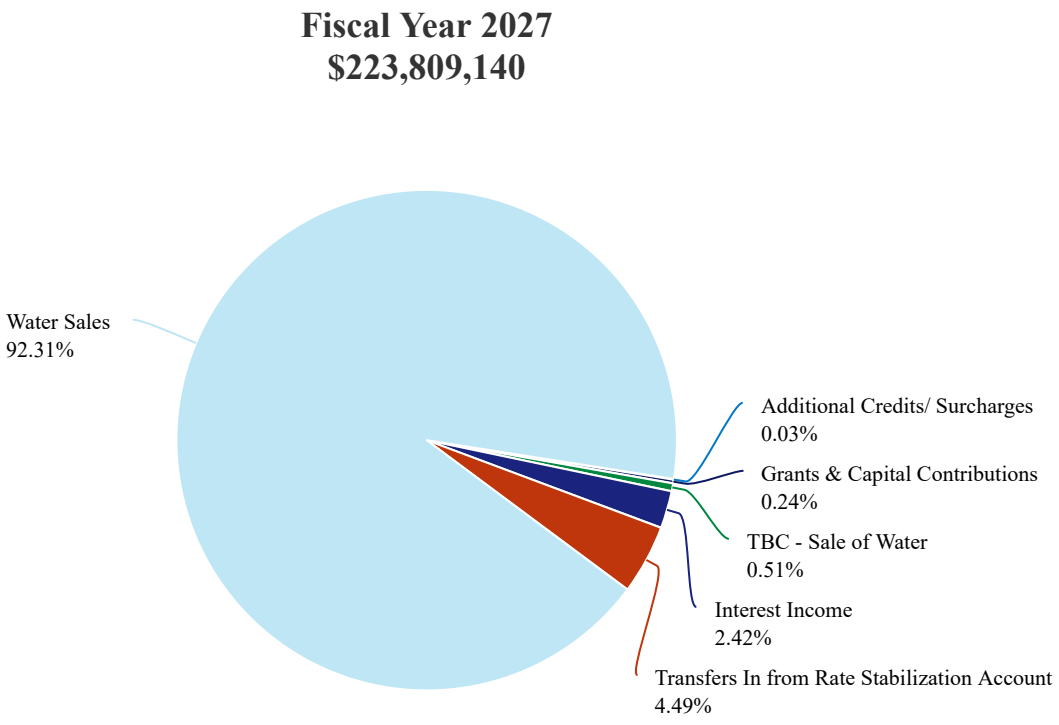
Below is the projected member government demands for fiscal year 2026 through fiscal year 2032 in million gallons per day (mgd) and in percentage of overall demand for the fiscal year.

	Hillsborough Co.	Tampa	Pasco Co.	New Port Richey	Pinellas Co.	St. Petersburg	Total
FY26-mgd	82.31	4.00	40.86	3.32	51.16	28.05	**209.70**
FY26-%	39.25%	1.91%	19.48%	1.58%	24.40%	13.38%	**100%**
FY27-mgd	83.68	5.04	43.98	3.33	48.42	28.39	**212.84**
FY27-%	39.32%	2.37%	20.66%	1.56%	22.75%	13.34%	**100%**
FY28-mgd	85.39	5.77	45.09	3.32	48.45	28.59	**216.61**
FY28-%	39.42%	2.66%	20.82%	1.53%	22.37%	13.20%	**100%**
FY29-mgd	87.05	6.45	46.10	3.31	48.47	28.77	**220.15**
FY29-%	39.54%	2.93%	20.94%	1.50%	22.02%	13.07%	**100%**
FY30-mgd	88.71	7.16	47.13	3.30	48.50	28.98	**223.78**
FY30-%	39.64%	3.20%	21.06%	1.47%	21.67%	12.95%	**100%**
FY31-mgd	90.34	7.90	48.18	3.29	48.57	29.22	**227.50**
FY31-%	39.71%	3.47%	21.18%	1.45%	21.35%	12.84%	**100%**
FY32-mgd	91.84	8.61	49.25	3.28	48.66	29.50	**231.14**
FY32-%	39.70%	3.70%	21.30%	1.40%	21.10%	12.80%	**100%**
FY26-FY32 Total mgd	609.32	44.93	320.59	23.15	342.23	201.50	**1,541.72**
FY26-FY32 Total %	39.50%	2.90%	20.80%	1.50%	22.20%	13.10%	**100%**

Revenues

The Agency's primary revenue source is sale of water to its six-member governments. The Master Water Supply Contract establishes a budget process through which the Agency establishes an annual Uniform Rate which is charged to the Members. A fixed cost component of the rate is established and billed monthly to recover the defined fixed costs of the Agency based on the Members' pro rata share of production. A variable cost component of the rate is established and billed monthly based on the current month's production to recover the defined variable operating costs: primarily power, chemicals, and purchased water. Contract terms require that rates collected be sufficient to pay the annual water system operating and maintenance costs, annual debt service, and purchase of operating equipment, net of other available revenue sources. Rates must also be sufficient to fund required reserves and to provide adequate levels of working capital through the Utility Reserve and Operating Reserve Funds.

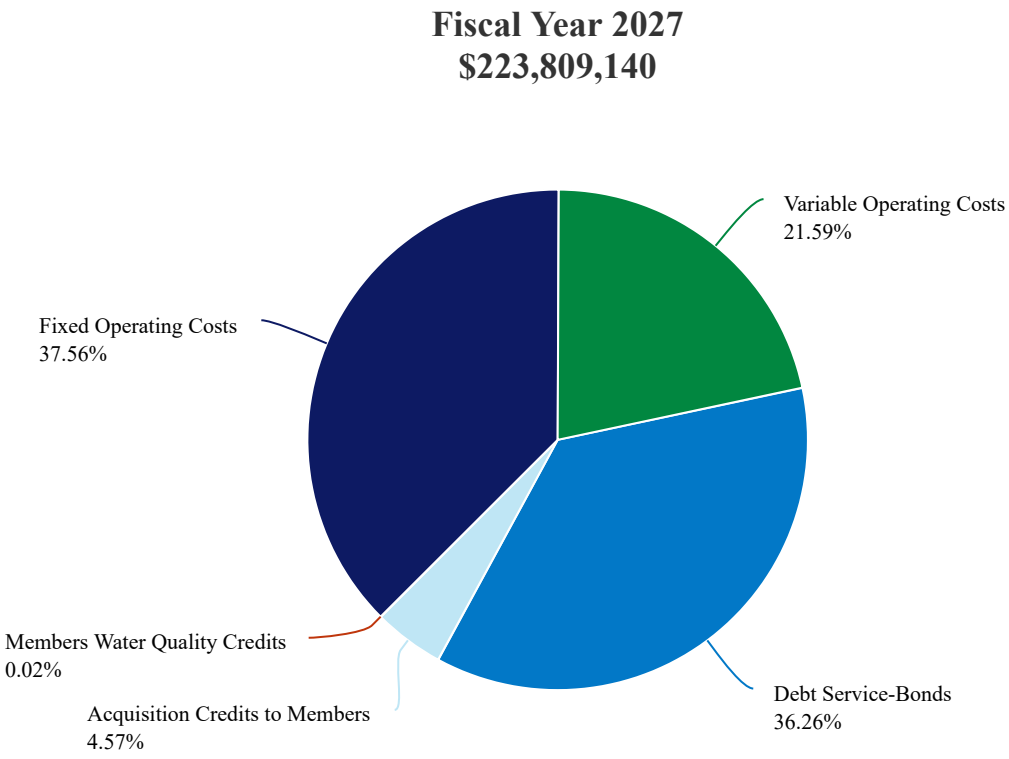
Where the Money Comes From ...



Expenditures

Expenditure levels are established annually for operating and maintenance costs based on projected water service demands, permit and compliance requirements, and equipment needs. Expenditures are also budgeted to make debt service payments, to satisfy bond covenant and reserve funding requirements, and to fund capital improvement costs not funded by borrowing or grants. Purchasing is conducted in accordance with the Agency's purchasing policies which prescribe procedures to obtain competitive pricing when appropriate.

Where the Money Goes ...



Balanced Budget

Tampa Bay Water's annual budget is balanced. Our projected revenue covers projected operating costs and other financial requirements for the ensuing fiscal year.

Sources and Uses of Funds - Actual 2025, Approved 2026 and Proposed 2027

Enterprise Funds	Actual FY 2025	Approved FY 2026	Proposed FY 2027
Agency			
Revenues			
Water Sales	197,922,264	201,977,824	206,588,228
Additional Credits/ Surcharges	171,548	75,000	75,000
TBC - Sale of Water	436,636	1,290,594	1,130,840
Interest Income	6,668,545	5,075,001	5,415,737
Litigation & Insurance Recoveries	136,429	-	-
Grants & Capital Contributions	259,319	500,000	540,000
Miscellaneous Income	318,832	-	-
Transfers In			
Transfers In from Rate Stabilization Account	14,198,200	4,000,000	4,000,000
Transfer in from O&M Reserve Account	-	500,000	-
Unencumbered Funds from Prior Year (Note 1)	6,408,085	6,010,721	6,059,335
Total Sources of Funds	**226,519,858**	**219,429,140**	**223,809,140**
Expenses			
Personnel Services	22,241,371	27,964,100	29,039,530
Materials & Supplies	2,615,128	3,063,969	2,999,448
Professional Services	32,260,456	32,364,630	35,846,321
Repairs & Other Services	9,237,512	9,433,385	9,632,758
Rent & Insurance	3,301,887	4,018,272	4,191,733
Legal Services	339,704	600,000	600,000
Capital Expenditures	1,099,986	1,197,500	1,762,000
Bond Debt Service (Note 2)	71,118,200	83,597,565	81,160,446
Acquisition Credits to Members	10,231,558	10,231,558	10,231,558
Water Quality Credit	48,000	48,000	48,000
Variable Operating Costs	41,027,381	46,910,161	48,297,346
Transfers			
Transfer out to Rate Stabilization Account	30,955,931	-	-
Transfer out to Utility Reserve	1,131,783	-	-
Transfer out to Operating Reserve	910,961	-	-
Total Transfers	**32,998,675**	**-**	**-**
Total Uses of Funds	**226,519,858**	**219,429,140**	**223,809,140**

Note 1: Unencumbered funds from prior year, are estimated at 3% of the prior fiscal year projected revenue from water sales. Funds transfer through the rate stabilization account at year-end.

Note 2: Series 2024 bond issuance had one year of capitalized interest and did not impact bond debt service for fiscal year 2025.

Sources and Uses of Funds – Budget Projections 2028 through 2032

Enterprise Funds	Budget Projections 2028	2029	2030	2031	2032
Sources of Funds					
Water Sales	$ 213,110,642	$ 219,956,487	$ 229,124,220	$ 238,196,635	$ 248,321,206
Additional Credits/ Surcharges	75,000	75,000	75,000	75,000	75,000
TBC - Sale of Water	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Interest Income	5,518,382	5,263,217	5,183,004	5,162,195	5,149,373
Grants & Capital Contributions	540,000	540,000	540,000	-	-
Subtotal	**$ 220,444,024**	**$ 227,034,704**	**$ 236,122,224**	**$ 244,633,830**	**$ 254,745,579**
Transfer In from Rate Stabilization Account	10,500,000	-	11,750,000	7,750,000	4,250,000
Transfer In from Operating Reserve	1,000,000	-	-	-	-
Unencumbered Funds from Prior Year (Note 1)	6,197,647	6,393,319	6,598,695	6,873,727	7,145,898
Total Sources	**$ 238,141,671**	**$ 233,428,023**	**$ 254,470,919**	**$ 259,257,557**	**$ 266,141,477**
Uses of Funds (Note 2)					
Personnel Services	$ 29,765,518	$ 30,509,656	$ 31,272,398	$ 32,054,208	$ 32,855,563
Materials & Supplies	3,074,434	3,151,295	3,230,077	3,310,829	3,393,600
Professional Services	36,742,479	37,661,041	38,602,567	39,567,631	40,556,822
Repairs & Other Services	9,873,577	10,120,416	10,373,427	10,632,762	10,898,582
Rent, Leases & Insurance	4,296,526	4,403,939	4,514,038	4,626,889	4,742,561
Legal Services	615,000	630,375	646,134	662,288	678,845
Capital Expenditures	1,806,050	1,851,201	1,897,481	1,944,918	1,993,541
Debt Service-Bonds (Note 3)	91,295,949	91,198,605	106,432,112	106,473,990	108,201,017
Debt Service-Members Acquisition Credits	10,231,558	-	-	-	-
Member's Water Quality Credits	48,000	48,000	48,000	48,000	48,000
Water Treatment Chemicals - Variable Cost	30,121,745	32,033,085	34,227,693	35,788,568	37,583,228
Power / Electricity - Variable Cost	19,655,629	21,189,823	22,580,641	23,484,965	24,510,648
Water for Resale - Variable Cost	615,206	630,587	646,351	662,509	679,070
Subtotal	**$ 238,141,671**	**$ 233,428,023**	**$ 254,470,919**	**$ 259,257,557**	**$ 266,141,477**
Transfer to Capital Improvement Fund	-	-	-	-	-
Transfer to Renewal & Replacement Fund	-	-	-	-	-
Transfer to Rate Stabilization Account	-	-	-	-	-
Total Uses	**$ 238,141,671**	**$ 233,428,023**	**$ 254,470,919**	**$ 259,257,557**	**$ 266,141,477**

Note 1: Unencumbered funds from prior year are estimated at 3.0% of prior year revenue from water sales. Funds transfer through the rate stabilization account at year end.

Note 2: An inflation rate range of 3.3% to 5.5% is used for future cost projections where staff believes this is appropriate. Cost projections are also modified to include first year and subsequent year operating costs of new facilities currently under construction. No operating cost provision is made for those projects which have not been selected by the Board for construction. Projections for Debt Service-Bonds includes anticipated future debt issuances when appropriate.

Explanation of Significant Operating Expenditures Variances

Budget Category	Approved 2026	Proposed 2027	Variance +/-	Explanation
Personnel Services	$ 27,964,100	$ 29,039,530	$ 1,075,430	Health Insurance & FRS increase, 4 new FTE, 3% COLA & up to 3% merit increase
Materials & Supplies	3,063,969	2,999,448	(64,521)	
Professional Services	32,364,630	35,846,321	3,481,691	Demand management program funding, permit compliance cost increases, O&M agreement increases & increased software maintenance
Repairs & Other Services	9,433,385	9,632,758	199,373	Communication costs increase & sludge removal increase
Rent & Insurance	4,018,272	4,191,733	173,461	Agency insurance increases
Legal Services	600,000	600,000	-	
Capital Expenditures	1,197,500	1,762,000	564,500	Clearwater office roof replacement
Debt Service-Bonds	83,597,565	81,160,446	(2,437,119)	Refunding & restructuring of debt service
Member's Acquisition Credits	10,231,558	10,231,558	-	
Member's Water Quality Credits	48,000	48,000	-	
Water Treatment Chemicals -Variable Cost	26,194,508	28,810,527	2,616,019	Price increases and increased demand
Power / Electricity – Variable Cost	20,071,653	18,886,619	(1,185,034)	Prices maintaining or decreasing
Water for Resale – Variable Cost	644,000	600,200	(43,800)	
Total Operating Expenses	**$ 219,429,140**	**$ 223,809,140**	**$ 4,380,000**	

The proposed budget for 2027 operating expenses increased $4,340,000 from the approved 2026 budget.

The proposed $1.1 million increase in Personnel Services is due to increases in health insurance and Florida Retirement System contributions, 3% cost-of-living adjustments (COLA), and performance-based merits of up to 3%, plus the request for four additional positions.

Professional Services increased by $3.5 million largely due to funding the demand management program, but also increased costs for permit compliance, operations and maintenance agreements and software maintenance.

Repairs and Other services increased by $0.2 million due to increased communication costs and sludge removal at the Desalination Facility.

Capital expenditures increased by $0.6 million largely due to the replacement of the roof at the Clearwater office. The capital purchases for fiscal year 2027 are detailed in the chart below.

Debt Service-Bonds decreased by $2.4 million due to the savings provided from the issuance of the Series 2025 Refunding Bonds and debt service restructuring from the Series 2024B and Series 2024C Refunding Bonds.

Water Treatment Chemicals increased by $2.6 million due to cost increases and increased demand.

Electricity decreased by $1.2 million due to utility prices maintaining or decreasing.

Capital Expenditures

It is Tampa Bay Water's policy to capitalize property and equipment having an original cost greater than $5,000 and an estimated useful life longer than one year. Property and equipment routinely capitalized includes land, buildings and their structural components, vehicles, machinery, electronic and communication equipment, tools, office equipment, and furniture.

The 2027 operating budget includes $1,762,000 for Capital Expenditures.

The following chart summarizes capital expenditures budgeted for fiscal year 2027 through the Uniform Rate.

FY 2027 Proposed Capital Expenditures - $1,762,000

Category	Amount
Analytical Equipment	100,000
Audio Visual Equipment	15,000
Building Improvements	486,000
Inductively Coupled Plasma-Optical Emission Spectroscopy	200,000
HVAC Capital Equipment	165,000
Land	40,000
Maintenance Equipment	25,000
Network Equipment	10,000
Source Water Quality Monitoring Field Equipment	25,000
Surveying Equipment	26,000
Vehicles and Accessories	670,000
Total	**1,762,000**



TAMPA BAY WATER

Supplying Water To The Region

FISCAL YEAR 2027

Annual Rate Setting & Member Costs



The Annual Rate Setting and Member Costs section provides summarized information and schedules including current and projected rates and Member costs. Charts and graphs are provided that depict the components of the budget and the rate impacts. Separate charts and schedules are provided for each Member Government to assist them in the planning and coordination of their budgets and financial obligations associated with Tampa Bay Water's contracts.



TAMPA BAY WATER

Supplying Water To The Region

This section presents a summary of the budgeted components which make up the proposed Uniform Rate and the way each Member will be invoiced for water purchased in 2027.

Overview

The "Uniform Rate" is the uniform dollars per 1,000 gallons wholesale rate charged to the Member Governments for the supply of water through a Fixed Cost and Variable Cost component. The Uniform Rate is based upon the annual estimate and the projected quantity of water expected to be delivered to customers. The only exception to the Uniform Rate for water supply is the rate charged to the City of Tampa for water supplied from the Tampa Bypass Canal. The annual True-up required by the Master Water Supply Contract provides for a year end adjustment in the Fixed Costs component of bills paid during the fiscal year. Each member's pro-rata share of the Annual Estimate of Fixed Costs in effect during the fiscal year is adjusted based on the actual quantity of Quality Water delivered. Any adjustments are payable within sixty days of determination.

The Amended and Restated Interlocal Agreement includes provisions for two credits which are currently being applied against charges to Member Governments for water service. The annual credit for the debt service amortization for Tampa Bay Water's purchase of the Members' water supply facilities is the most significant credit. This credit is applied to the Member Governments' water bills. The credit is reflected in the budget as an annual debt service cost and is also reflected as a credit against the member's cost to purchase water. The annual debt service/credit is computed on a 30-year amortization of the net purchase price, compounded semiannually at 4.865%. The aggregate annual debt service cost/credit is $10,231,558. Additional annual credits consist of a credit for the actual direct costs of water treatment. In the event water delivered to Member Governments does not meet specifications for quality water in relation to hydrogen sulfide removal, a credit for hydrogen sulfide treatment is applied. Hydrogen sulfide was and remains an issue for the existing groundwater system, but not for the new supply sources. The water quality credit for hydrogen sulfide treatment affects the City of New Port Richey, and Hillsborough County. The total annual Water Quality credit for hydrogen sulfide for fiscal year 2027 is $48,000.

The primary source of revenue to Tampa Bay Water is the sale of quality water to our members. The projected revenue requirements must cover operation and maintenance expenses, debt service payments, bond coverage, required deposits to reserves, and capital expenditures. Revenue from sale of water and unrestricted interest income fund the operating and maintenance costs of Tampa Bay Water. Water sales for fiscal year 2027 are budgeted at $206,588,228. Interest income available for operations is estimated to be $5,415,737. It is estimated that $6,059,335 of unencumbered monies from fiscal year 2026 will be transferred through the Rate Stabilization account for use in fiscal year 2027. The proposed budget does include the use of $4 million from the Rate Stabilization Account to minimize the increase to the uniform rate. The Tampa Bypass Canal sale of water represents the estimated billing to the City of Tampa for its water needs at the Tampa Bypass Canal facility at a rate of .3719 per 1,000 gallons for 2027.

Rate Setting

Pursuant to the Master Water Supply Contract, Tampa Bay Water establishes an Annual Estimate based on Tampa Bay Water's budget for the ensuing fiscal year, which sets forth the expected cost of providing water service to Member Governments. Tampa Bay Water is required to develop the Rate ($/1,000 gallons), based on the Annual Estimate and the projected quantity of Quality Water to be delivered to Member Governments during the ensuing fiscal year. In accordance with the provisions of the Interlocal Agreement, a separate rate, based on actual costs incurred and allocated overhead, is charged to the City of Tampa for water supplied from the Tampa Bypass Canal.

The Uniform Rate to be charged in a fiscal year to the Member Governments for water service may include the following components:

Operation, Maintenance and Administrative Costs – These costs are the costs of operating, maintaining, and administering the system in such a fiscal year.

Debt Service Charges – Debt Service Charges relating to any of Tampa Bay Water's Obligations are based on principle, redemption premium, if any, and interest coming due on debt in the fiscal year.

Renewal and Replacement Fund – Tampa Bay Water is required to maintain an amount equal to five (5) percent of the prior fiscal year's Gross Revenues or such other amount as is certified by the Consulting Engineer. These funds are available to be used for repair and replacement of the System.

Capital Improvement Charges – These charges are based on the amount identified for capital improvement charges in Tampa Bay Water's Annual Estimate for the fiscal year.

Operating Reserve Funds – These funds are provided in the annual budget to maintain a reserve balance equal to two times the monthly average variable costs as provided in the budget.

Rate Stabilization Fund – Operation, Maintenance and Administrative Costs may be utilized to fund a rate stabilization fund.

Uniform Rate Elements

The Uniform Rate consists of two components: a Fixed Cost component and a Variable Cost component. The Fixed Cost component is designed to recover annual costs and expenses associated with the operation, maintenance, management, security, development, and financing of the System, other than those included as part of the Variable Cost component. The Variable Cost component is designed to recover costs and expenses for the operation, maintenance and management of the System that change in direct proportion to changes in the volume of Quality Water produced by Tampa Bay Water. The Variable Cost component includes, but is not limited to, the costs of power, chemicals, and water purchases.

Fixed Costs

The Uniform Rate calculation is based on the total Net Annual Revenue Requirement for the fiscal year for which the rate is established and the projected amount of Quality Water, in millions of gallons per day, to be

delivered to Member Governments during such fiscal year. For the purposes of the Uniform Rate calculation, the Fixed Costs for the fiscal year selected are defined as:

Fixed Costs = Net Annual Revenue Required – Budgeted Variable Costs

The Net Annual Revenue Requirement for the fiscal year selected (also referred to as Annual Estimate for purposes of rate computation) is calculated by making the necessary adjustments to the annual budget requirement. Such adjustments include, but are not limited to, estimated interest income, budgeted transfers from various funds (i.e., Rate Stabilization Account, Operating Reserve Fund, etc.), capitalized interest available for debt service, potential funding assistance from SWFWMD/EPA, and estimated revenues from the sale of surface water to the City of Tampa.

Variable Costs

Pursuant to the Master Water Supply Agreement, Tampa Bay Water is required to establish a variable rate to cover costs associated primarily with power, chemicals, and water purchases. The variable rate ($/1,000 gallons) is defined as the ratio of the total budgeted Variable Costs to the total Net Annual Revenue Requirement, applied to the Uniform Rate.

Variable Rate = (Budgeted Variable Costs/Net Annual Revenue Required) x Uniform Rate

Rate for City of Tampa from Tampa Bypass Canal (TBC)

Pursuant to Section 3.08(D) of the Interlocal Agreement, the rate charged for water delivered to the City of Tampa from the Tampa Bypass Canal (TBC) facility should be equal to Tampa Bay Water's direct cost of operating the TBC and allocated overhead. As part of its annual budget development process, Tampa Bay Water prepares an estimate of direct cost and allocated overhead associated with the Tampa Bypass Canal facility using the projected quantity of water to be delivered to the City of Tampa from the facility during the ensuing fiscal year.

TBC Rate = (Allocated Overhead + Direct Costs) / Quantity of Surface Water (to be delivered)

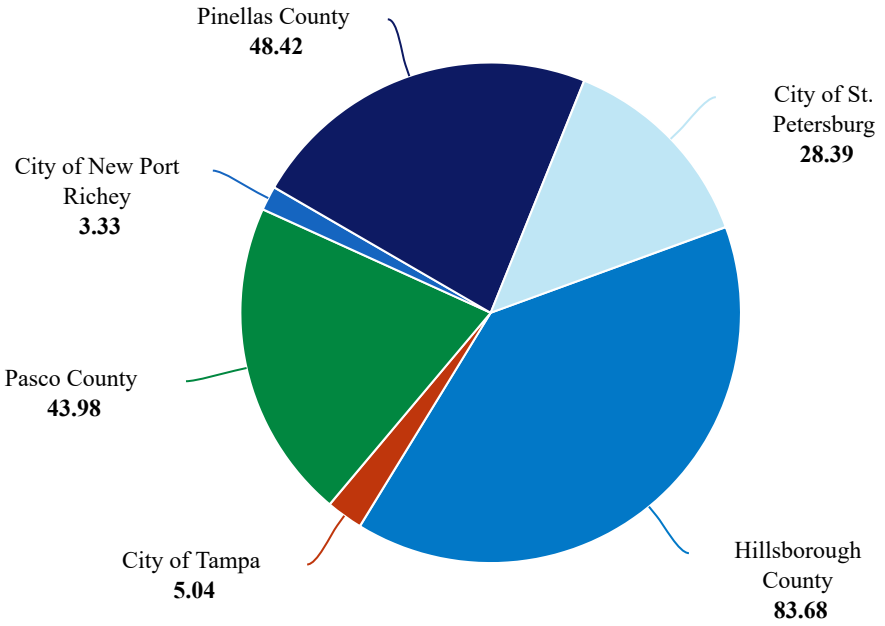
The unit rate for delivery of water to the City of Tampa from the Tampa Bypass Canal facility is presented to the Board for approval as part of the annual budget approval process for the ensuing fiscal year. The rate for 2027 is $.3719 ($/1,000 gallons).

$$\$0.3719 \text{ per } 1{,}000 \text{ gallons} = \frac{\text{Allocated Overhead}}{994{,}412} + \frac{\text{Direct Costs}}{136{,}428} = \frac{\text{Estimated MGD}}{8.33 \text{ mgd} \times 365 \times 1{,}000}$$

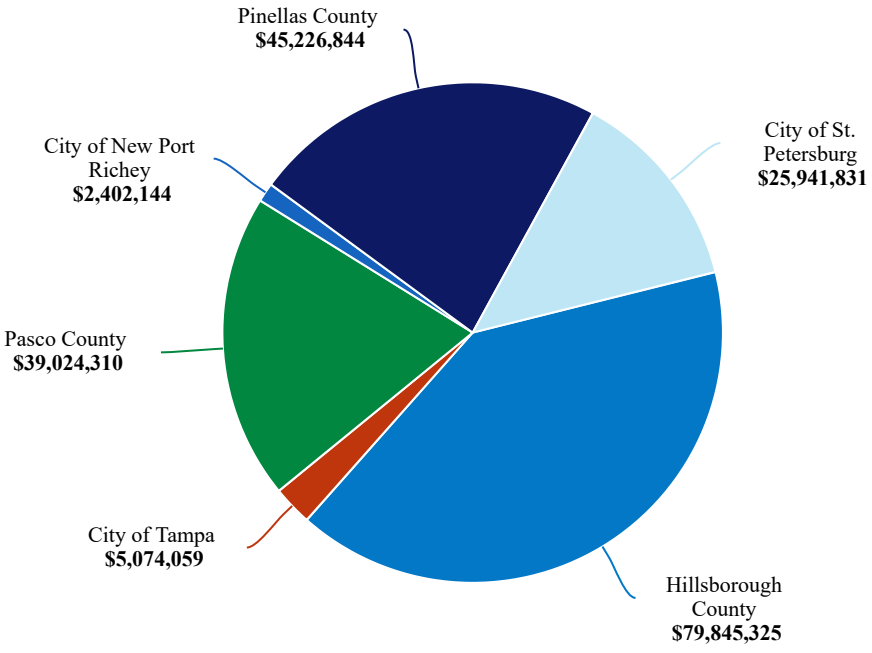
Other Budget Factors

- For fiscal year 2027, $5,415,737 has been estimated for interest income. Interest income will be applied to offset projected expenditures, to the extent permitted.
- Use of reserve funds are included in this budget to minimize the increase to the uniform rate, with $4 million from the Rate Stabilization Account being transferred into the fiscal year 2027 operating budget.
- The Uniform Rate is segregated into Fixed Costs (do not vary because of water production) and billed at 1/12 of total Fixed Costs monthly per Member. The Variable Costs (vary with water production); electricity, chemicals, and water for re-sale; are billed monthly based on actual production.
- Acquired Member facilities are included in this budget as Tampa Bay Water owned supply systems and are being paid for through debt issuance and facility acquisition credits back to Members.
- Water quality standards are established, and costs are budgeted to sustain the standards. Water Quality Credits related to hydrogen sulfide removal for fiscal year 2027 have been established and will be credited to Hillsborough County, and New Port Richey.

Projected Member Water Demand FY 2027
212.84 MGD



Estimated Net Member Costs FY 2027
$197,514,512



Uniform Rates

Please review the notes below the table for important parameters regarding the budget projection amounts.

Cost Category	Proposed 2027	Budget Projections 2028*	2029	2030	2031	2032*
Fixed Operating Costs	$ 84,071,790	$ 86,173,585	$ 88,327,924	$ 90,536,122	$ 92,799,526	$ 95,119,514
Variable Operating Costs	48,297,346	50,392,578	53,853,494	57,454,684	59,936,042	62,772,946
Debt Service - Bonds (Notes 1, 3)	81,160,446	76,695,949	76,598,605	76,782,112	76,823,990	76,738,517
Estimated Future Debt Service - Bonds (Notes 2, 3)	-	14,600,000	14,600,000	29,650,000	29,650,000	31,462,500
Debt Service - Acquisition Credits to Members	10,231,558	10,231,558	-	-	-	-
Water Quality Credits to Members	48,000	48,000	48,000	48,000	48,000	48,000
Total Costs	**$ 223,809,140**	**$ 238,141,670**	**$ 233,428,023**	**$ 254,470,918**	**$ 259,257,558**	**$ 266,141,477**
Adjustments						
Less: Unencumbered Funds from Prior Years (Note 4)	(6,059,335)	(6,197,647)	(6,393,319)	(6,598,695)	(6,873,727)	(7,145,899)
Less: Credits/ Surcharges	(75,000)	(75,000)	(75,000)	(75,000)	(75,000)	(75,000)
Less: Revenues from TBC	(1,130,840)	(1,200,000)	(1,200,000)	(1,200,000)	(1,200,000)	(1,200,000)
Less: Interest Earned	(5,415,737)	(5,518,382)	(5,263,217)	(5,183,004)	(5,162,195)	(5,149,373)
Less: Transfer In from Rate Stabilization Account (Note 5)	(4,000,000)	(10,500,000)	-	(11,750,000)	(7,750,000)	(4,250,000)
Less: Transfer In from O&M Reserve	-	(1,000,000)	-	-	-	-
Less: SWFWMD Grant	(540,000)	(540,000)	(540,000)	(540,000)	-	-
Plus: Transfer Out to R&R Fund	-	-	-	-	-	-
Subtotal	**(17,220,912)**	**(25,031,029)**	**(13,471,536)**	**(25,346,699)**	**(21,060,922)**	**(17,820,272)**
Total Net Revenues Required	**$ 206,588,228**	**$ 213,110,641**	**$ 219,956,487**	**$ 229,124,219**	**$ 238,196,636**	**$ 248,321,205**
Projected Water Demand (mgd) (Note 6)	212.84	216.61	220.15	223.78	227.50	231.14
Projected Uniform Water Rate ($/1000 gal.)	**$ 2.6593**	**$ 2.6881**	**$ 2.7373**	**$ 2.8052**	**$ 2.8685**	**$ 2.9353**
Projected Uniform Rate difference over prior fiscal year - $	$ 0.0205	$ 0.0288	$ 0.0492	$ 0.0678	$ 0.0634	$ 0.0668
Projected Uniform Rate difference over prior fiscal year - %	0.78%	1.08%	1.83%	2.48%	2.26%	2.33%
Projected Variable rate per 1,000 gallons	$ 0.6217	$ 0.6356	$ 0.6702	$ 0.7034	$ 0.7218	$ 0.7420
Percentage of uniform rate applied to variable costs	23.38%	23.65%	24.48%	25.08%	25.16%	25.28%

* - Leap Year - uniform rate calculated using 366 days

Note 1 - Debt service reflects the current annual payment structure and does not include refunding or restructuring debt options that may be utilized.

Note 2 - Based upon issuance of $292M in 2026, $301M in 2028, and $36.25M in 2030, with each issuance having 5% interest, one year of capitalized interest, followed by several years of interest only payments.

Note 3 - Staff and consultants continually look at options to reduce existing and future debt service impacts on the uniform rate.

Note 4 - The Unencumbered Funds from Prior Years are calculated at 3% of the prior year revenue from water sales and transfer through the rate stabilization account at year end.

Note 5 - Transfers in from the Rate Stabilization Account in fiscal years 2027-28, and 2030-32 are to minimize the impact of the estimated future debt service, amounts may change based upon changes in bond debt service.

Note 6 - Projected water demand is based on information obtained from the Member Governments and the Tampa Bay Water Demand Forecasting Model.

Estimated Net Member Costs Details – Fiscal Year 2027

Uniform Rate Budget	Hillsborough County	City of Tampa	Pasco County	City of New Port Richey	Pinellas County	City of St. Petersburg	Total
Uniform Water Rate ($/ 1000 gallons)	$ 2.6593	$ 2.6593	$ 2.6593	$ 2.6593	$ 2.6593	$ 2.6593	$ 2.6593
Member Water demand Projections (mgd) for FY 2027	83.68	5.04	43.98	3.33	48.42	28.39	212.84
Percentage of Total Water Sales	39.3159%	2.3680%	20.6634%	1.5646%	22.7495%	13.3387%	100.0000%
Member Water Purchase FY 2026	82.31	4.00	40.86	3.32	51.16	28.05	209.70
Percentage of FY 2026 Total Water Sales	39.2513%	1.9075%	19.4850%	1.5832%	24.3968%	13.3763%	100.0000%
Total Estimated Member Fixed Cost FY 2027	62,131,247.79	3,019,377.85	30,842,944.78	2,506,083.62	38,617,842.75	21,173,387.20	158,290,884.00
Total Estimated Member Variable Cost FY 2027	18,988,544.98	1,143,669.54	9,979,878.20	755,638.80	10,987,396.60	6,442,217.88	48,297,346.00
Total Estimated Member Cost FY 2027 (Before Credits/ Surcharges)	**$ 81,119,792.77**	**$ 4,163,047.39**	**$ 40,822,822.98**	**$ 3,261,722.42**	**$ 49,605,239.36**	**$ 27,615,605.08**	**$ 206,588,230.00**
Additional Credits/ Surcharges (Board Approved)	$ -	$ -	$ 75,000.00	$ -	$ -	$ -	$ 75,000.00
Sale of Surface Water (TBC)	-	1,130,840.00	-	-	-	-	1,130,840.00
Water Quality Credits to Member Governments for FY 2027	(36,000.00)	-	-	(12,000.00)	-	-	(48,000.00)
Acquisition Credits to Members Governments for FY 2027	(1,238,467.88)	(219,828.35)	(1,873,512.61)	(847,578.83)	(4,378,395.83)	(1,673,774.05)	(10,231,557.55)
Total Estimated Net Member Costs FY 2027	**$ 79,845,324.89**	**$ 5,074,059.04**	**$ 39,024,310.37**	**$ 2,402,143.59**	**$ 45,226,843.53**	**$ 25,941,831.03**	**$ 197,514,512.45**

Note 1 - Variable costs are allocated based upon the Member Government's projected annual water demand (mgd) for FY 2027.

Note 2 - Fixed costs are billed to Member Governments in FY 2027 based upon the actual FY 2026 purchase and at year-end a true-up to the actual FY 2027 is completed.

Hillsborough County		
Total Water Demand (mgd) through September 30, 2026		209.70
Hillsborough County Water Demand (mgd) through September 30, 2026		82.31
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		39.25%
Projected FY 2027 Water Demand (mgd)		83.68
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 62,131,247.79	$ 5,177,603.98
Variable Rate ($/ 1000 gallons) = $0.6217	18,988,544.98	1,582,378.75
Additional Credits/ Surcharges	-	-
Sale of Surface Water (TBC)	-	-
Water Quality Credits FY 2027	(36,000.00)	(3,000.00)
Annual Facilities Acquisition Credits	(1,238,467.88)	(103,205.66)
TOTAL	**$ 79,845,324.89**	**$ 6,653,777.07**

Pasco County		
Total Water Demand (mgd) through September 30, 2026		209.70
Pasco County Water Demand (mgd) through September 30, 2026		40.86
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		19.48%
Projected FY 2027 Water Demand (mgd)		43.98
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 30,842,944.78	$ 2,570,245.40
Variable Rate ($/ 1000 gallons) = $0.6217	9,979,878.20	831,656.52
Additional Credits/ Surcharges	75,000.00	6,250.00
Sale of Surface Water (TBC)	-	-
Water Quality Credits FY 2027	-	-
Annual Facilities Acquisition Credits	(1,873,512.61)	(156,126.05)
TOTAL	**$ 39,024,310.37**	**$ 3,252,025.86**

Pinellas County		
Total Water Demand (mgd) through September 30, 2026		209.70
Pinellas County Water Demand (mgd) through September 30, 2026		51.16
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		24.40%
Projected FY 2027 Water Demand (mgd)		48.42
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 38,617,842.75	$ 3,218,153.56
Variable Rate ($/ 1000 gallons) = $0.6217	10,987,396.60	915,616.38
Additional Credits/ Surcharges	-	-
Sale of Surface Water (TBC)	-	-
Water Quality Credits FY 2027	-	-
Annual Facilities Acquisition Credits	(4,378,395.83)	(364,866.32)
TOTAL	**$ 45,226,843.53**	**$ 3,768,903.63**

City of New Port Richey		
Total Water Demand (mgd) through September 30, 2026		209.70
City of New Port Richey Water Demand (mgd) through September 30, 2026		3.32
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		1.58%
Projected FY 2027 Water Demand (mgd)		3.33
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 2,506,083.62	$ 208,840.30
Variable Rate ($/ 1000 gallons) = $0.6217	755,638.80	62,969.90
Additional Credits/ Surcharges	-	-
Sale of Surface Water (TBC)	-	-
Water Quality Credits FY 2027	(12,000.00)	(1,000.00)
Annual Facilities Acquisition Credits	(847,578.83)	(70,631.57)
TOTAL	**$ 2,402,143.59**	**$ 200,178.63**

City of St. Petersburg		
Total Water Demand (mgd) through September 30, 2026		209.70
City of St. Petersburg Water Demand (mgd) through September 30, 2026		28.05
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		13.38%
Projected FY 2027 Water Demand (mgd)		28.39
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 21,173,387.20	$ 1,764,448.93
Variable Rate ($/ 1000 gallons) = $0.6217	6,442,217.88	536,851.49
Additional Credits/ Surcharges	-	-
Sale of Surface Water (TBC)	-	-
Water Quality Credits FY 2027	-	-
Annual Facilities Acquisition Credits	(1,673,774.05)	(139,481.17)
TOTAL	**$ 25,941,831.03**	**$ 2,161,819.25**

City of Tampa		
Total Water Demand (mgd) through September 30, 2026		209.70
City of Tampa Water Demand (mgd) through September 30, 2026		4.00
Percentage of FY 2026 Water Demand/ Total Water Demand (Applied to FY 2027 Fixed Costs)		1.91%
Projected FY 2027 Water Demand (mgd)		5.04
	Annual Billing	**Monthly Billing**
Fixed Cost Summary	$ 3,019,377.85	$ 251,614.82
Variable Rate ($/ 1000 gallons) = $0.6217	1,143,669.54	95,305.79
Additional Credits/ Surcharges	-	-
Sale of Surface Water (TBC) ($/ 1000 gallons) = $0.3719	1,130,840.00	94,236.67
Water Quality Credits FY 2027	-	-
Annual Facilities Acquisition Credits	(219,828.35)	(18,319.03)
TOTAL	**$ 5,074,059.04**	**$ 422,838.25**



TAMPA BAY WATER

Supplying Water To The Region

FISCAL YEAR 2027

Debt Service



The Debt Service section provides a listing of the outstanding debt of the Agency, the Agency's bond ratings, and the details of the debt requirements shown in the Financial Plan section. The section also provides information on debt coverage requirements and future Debt Service.



TAMPA BAY WATER

Supplying Water To The Region

Bonds

At the time of its reorganization in 1998, Tampa Bay Water issued the 1998A Bonds to refund all existing debt. In addition, the 1998B Bonds were issued to finance the cash component of the purchase of the members' wellfields. Of those proceeds, $71.8 million, $92.4 million, $31.7 million, and $3 million were paid to Pinellas County, City of St. Petersburg, City of Tampa and Pasco County, respectively. To address the increasing need to develop new water supplies, Tampa Bay Water and its member governments worked collectively to develop a Capital Improvement Program that would identify and develop new water sources capable of producing 111 million gallons per day (mgd) by December 31, 2007. With the development of the Capital Improvement Program came the necessity to incur debt as a means of financing the Board approved program. Accordingly, Tampa Bay Water adopted a long-term plan to accomplish the financing of the Capital Improvement Program. In furtherance of this plan, Tampa Bay Water has issued its revenue bonds Series 1999, 2001B, 2002, 2008, 2013, 2022 and 2024A. Additional funds for the Capital Improvement Program were obtained from the Series 2001A and 2005 bond issues. Series 2011A, 2015A, 2015B, 2016A, 2016B, 2016C, Master Bond: Tranche 1 (2020), Tranche 2 (2021) and Tranche 3 (2023), 2024B, 2024C and 2025 were only refunding bonds.

Tampa Bay Water's projected outstanding bonds at 9/30/27 will consist of the following.

Original Issue	Series	Projected Outstanding 9/30/27	All-In True Interest Cost	Final Maturity	Purpose
96,630,000	Refunding Revenue Bonds, Series 2016A	96,630,000	3.52%	10/1/38	Defeasance of 2008 Bonds
55,345,000	Refunding Revenue Bonds, Series 2016C	19,240,000	2.12%	10/1/27	Partial defeasance of 2010 Bonds
76,220,000	Refunding Revenue Master Bond Tranche 3-2022	72,482,000	2.36%	10/1/38	Advance refund remaining balance of the outstanding Refunding Revenue Bonds, Series 2013
122,075,000	Series 2022 Bonds	122,075,000	4.60%	10/1/52	Fund Capital Improvement Program
395,430,000	Series 2024A Bonds	395,430,000	4.38%	10/1/54	Fund Capital Improvement Program
94,405,000	Refunding Revenue Bonds, Series 2024B	94,405,000	3.71%	10/1/44	Advance refund remaining balance of the outstanding Refunding Revenue Bonds, Series 2015B and 2016B
56,050,000	Refunding Revenue Bonds, Series 2024C	56,050,000	4.08%	10/1/33	Advance refund remaining balance of the outstanding Utility System Refunding and Improvement Revenue Bonds, Series 2001A
158,825,000	Refunding Revenue Bonds, Series 2025	146,390,000	3.29%	10/1/36	Advance refund remaining balance of the outstanding Refunding Revenue Bonds, Series 2015A
		1,002,702,000			

Rate Covenant

The Bond Resolution requires Tampa Bay Water to take all actions to collect Net Revenues in each fiscal year so that, together with Fund Balance, they equal at least 125% of the Annual Debt Service coming due in such fiscal year. Such Net Revenues must also be adequate in each fiscal year to pay at least 100% of:

- The Annual Debt Service coming due in such fiscal year;
- Any amounts required by the terms of the Bond Resolution to be deposited in the Reserve Account or with any issuer of a Reserve Account Letter of Credit or Reserve Account Insurance Policy;
- Any amounts to be deposited in the Renewal and Replacement Fund in such fiscal year; and
- Any amounts to be repaid to the Capital Improvement Fund in such fiscal year.

For the purposes of the Rate Covenant compliance calculations, the Total Debt Service is calculated, in accordance with the Bond Resolution, net of any Capitalized Interest and release of Debt Service Reserve. The Finance and Administration Division is responsible for making sure that the Uniform Rate adopted for any fiscal year complies with the Rate Covenants.

For the purposes of calculating the Rate Coverage test, Debt Coverage test and the Renewal and Replacement Fund (R&R) coverage requirements, the Net Revenues are determined as shown below.

Net Revenues = Gross Revenues - Operating Expenses

Rate Coverage Test

The minimum requirement for the Rate Coverage Test is 125% (i.e., the sum of Net Revenues and the Utility Reserve Fund Balance, on the preceding September 30th, shall be greater than or equal to 125% of the total Debt Service due for the Fiscal Year).

Rate Coverage Test = Net Revenues + Utility Reserve Fund Balance/Total Debt Service

Debt Coverage Test

The minimum requirement for the Debt Coverage Test is 100% (i.e., the Net Revenues shall be equal to or greater than the sum of Total Debt Service + Required Annual Contribution to the Capital Improvement Fund + Required Annual Contribution to the Renewal and Replacement Fund for the fiscal year).

Debt Coverage Test = Net Revenues/Total Debt Service + Required Contribution to Capital Improvement Fund + Required Contribution to Renewal & Replacement Fund

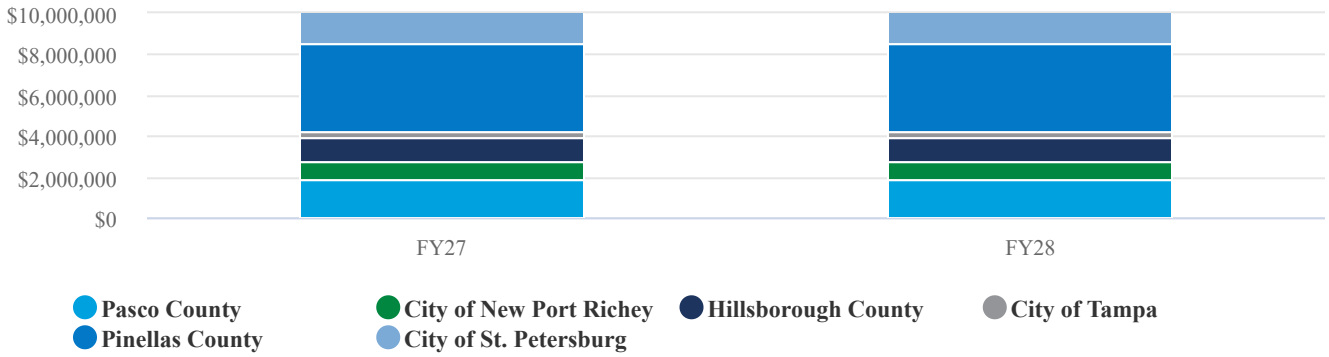
Facility Acquisition Credits

In 1998, pursuant to the Interlocal Agreement, the Member Governments sold certain wellfield and transmission facilities to Tampa Bay Water. A portion of the purchase price is being paid in the form of "Facility Acquisition Credits" payable over 30 years. The credits are applied to the Members' monthly bills.

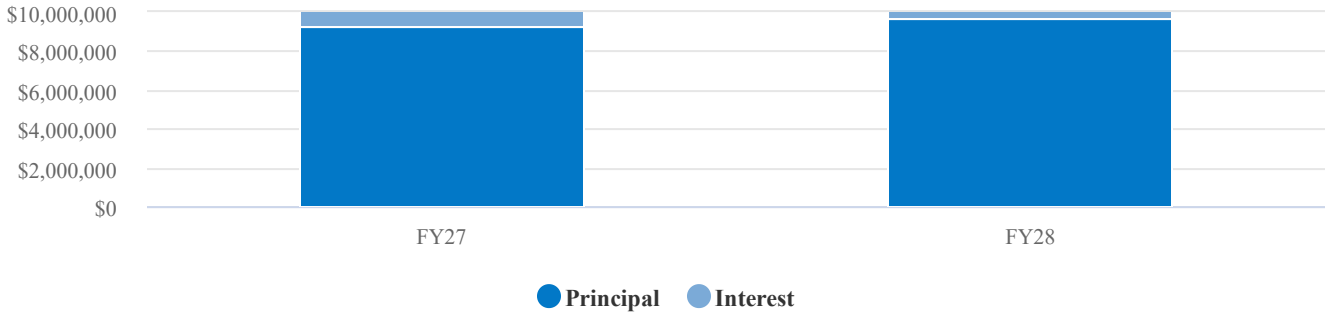
Member Government's Projected Outstanding Facility Acquisition Credit Balances

Member	Projected at 10/1/26	Projected at 9/30/27
Pasco County	$ 3,482,149	$ 1,783,788
City of New Port Richey	1,575,327	806,987
Hillsborough County	2,301,842	1,179,156
City of St. Petersburg	3,110,910	1,593,615
Pinellas County	8,137,775	4,168,710
City of Tampa	408,577	209,301
	$ 19,016,581	**$ 9,741,557**

The chart below shows Tampa Bay Water's annual acquisition credits by Member Government for the outstanding facility acquisition credits at 9/30/27.



The chart below shows the principal and interest breakdown of the annual acquisition credits for the outstanding facility acquisition credits at 9/30/27.



Summary of Fiscal Year 2027 Debt Service

Bonds	Principal	Interest	Total
Refunding Revenue Bond, Series 2016 A	-	4,356,688	$ 4,356,688
Refunding Revenue Bond, Series 2016 C	19,240,000	962,000	20,202,000
Refunding Revenue Master Bond Tranche 3-2020	1,212,000	1,674,334	2,886,334
Revenue Bond, Series 2022	-	6,169,500	6,169,500
Refunding Revenue Bond, Series 2024A	-	20,263,075	20,263,075
Refunding Revenue Bond, Series 2024B	-	4,720,250	4,720,250
Refunding Revenue Bond, Series 2024C	-	2,193,100	2,193,100
Refunding Revenue Bond, Series 2025	13,050,000	7,319,500	20,369,500
Debt Service - Bonds	**$ 33,502,000**	**$ 47,658,446**	**$ 81,160,446**

Facility Acquisition Credits	Principal	Interest	Total
Pasco County	$ 1,698,361	$ 175,152	$ 1,873,513
City of New Port Richey	768,340	79,239	847,579
Hillsborough County	1,122,685	115,783	1,238,468
City of St. Petersburg	1,517,295	156,479	1,673,774
Pinellas County	3,969,066	409,330	4,378,396
City of Tampa	199,277	20,551	219,828
Debt Service - Facility Acquisition Credits	**$ 9,275,024**	**$ 956,534**	**$ 10,231,558**
Total Debt Service FY 2027	**$ 42,777,024**	**$ 48,614,980**	**$ 91,392,004**

Rating Agency Analysis

Rating agencies provide an independent assessment of the relative credit worthiness of a municipal security. These agencies provide a letter grade that conveys their assessment of the ability of the borrower to repay the debt. These ratings are also a factor that is considered by the municipal bond market when determining the cost of borrowed funds (interest rate). The three nationally recognized rating agencies (Moody's Investor Services, Fitch Ratings, and Standard and Poor's) consider the following key factors when evaluating a debt offering:

- Economic environment - trend information/revenue to support debt
- Debt history - previous debt issued and current debt outstanding
- Debt management - debt planning and policies
- Administration - quality of Tampa Bay Water management and organizational structure
- Financial performance - Tampa Bay Water's current and historical operations

The rating agencies each utilize a different system to rate debt. Moody's uses modifiers 1 (higher end), 2 (mid-range) and 3 (lower end) to indicate ranking within each rating category. Both Fitch and Standard and Poor's use a plus (+) and minus (-) modifier to indicate status within rating category. The table below provides a comparison of their rating systems:

Description	Moody's	Fitch	Standard & Poor's
Highest Quality	Aaa	AAA	AAA
Very High Quality	Aa	AA	AA
High Quality	A	A	A
Medium Quality	Baa	BBB	BBB
Speculative Quality	Ba	BB	BB
Highly Speculative Quality	B	B	B
Substantial Risk	Caa	CCC	CCC
Very High Levels of Risk	Ca	CC	CC
Exceptionally High Levels of Risk	C	C	C
Default	N/A	D	D

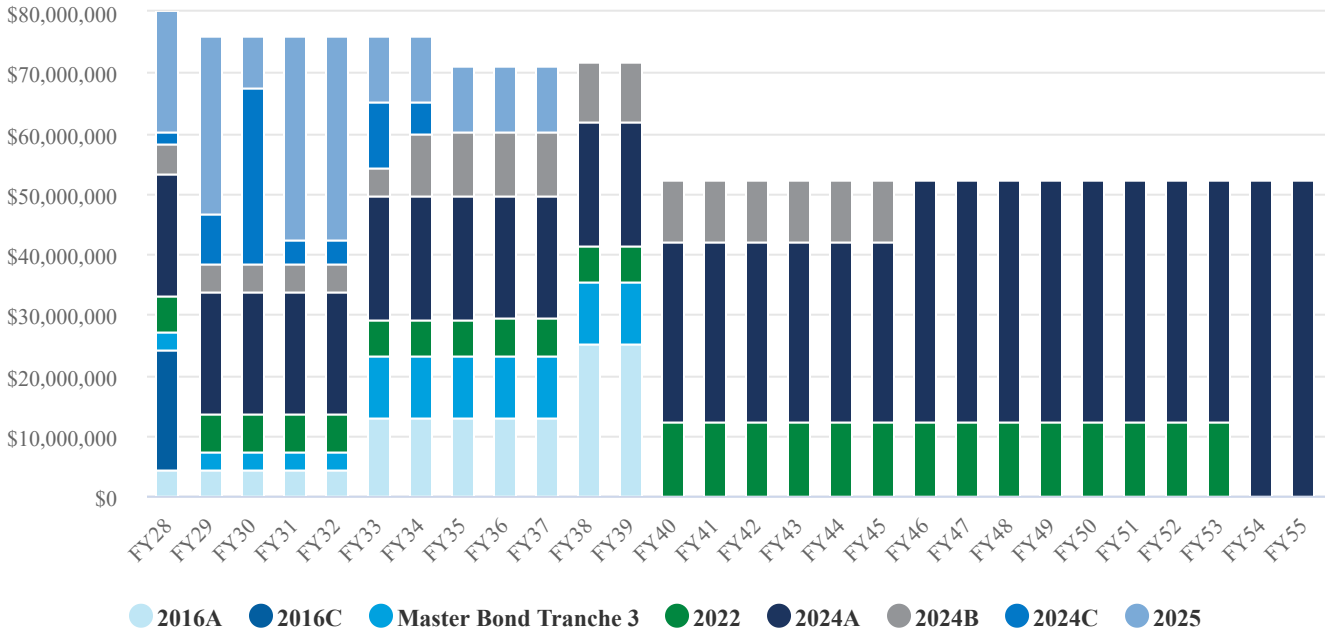
The following table summarizes the underlying ratings assigned to Tampa Bay Water's debt by the rating agencies at time of issuance based on the agency's credit. The agency will obtain a CUSIP number and credit rating for the Master Bond if requested by the lender. All outstanding bond issues are uninsured.

Outstanding Bond Issue	Moody's	Fitch	Standard & Poor's
2016A Bonds	Aa1	AA+	AA+
2016C Bonds	Aa1	AA+	AA+
Master Bond Tranche 3-2023	Not Yet Rated	Not Yet Rated	Not Yet Rated
Series 2022	Aa1	AA	AA+
2024A Bonds	Aa1	*	AA+
2024B Bonds	Aa1	*	AA+
2024C Bonds	Aa1	*	AA+
2025 Bonds	Aa1	*	AA+

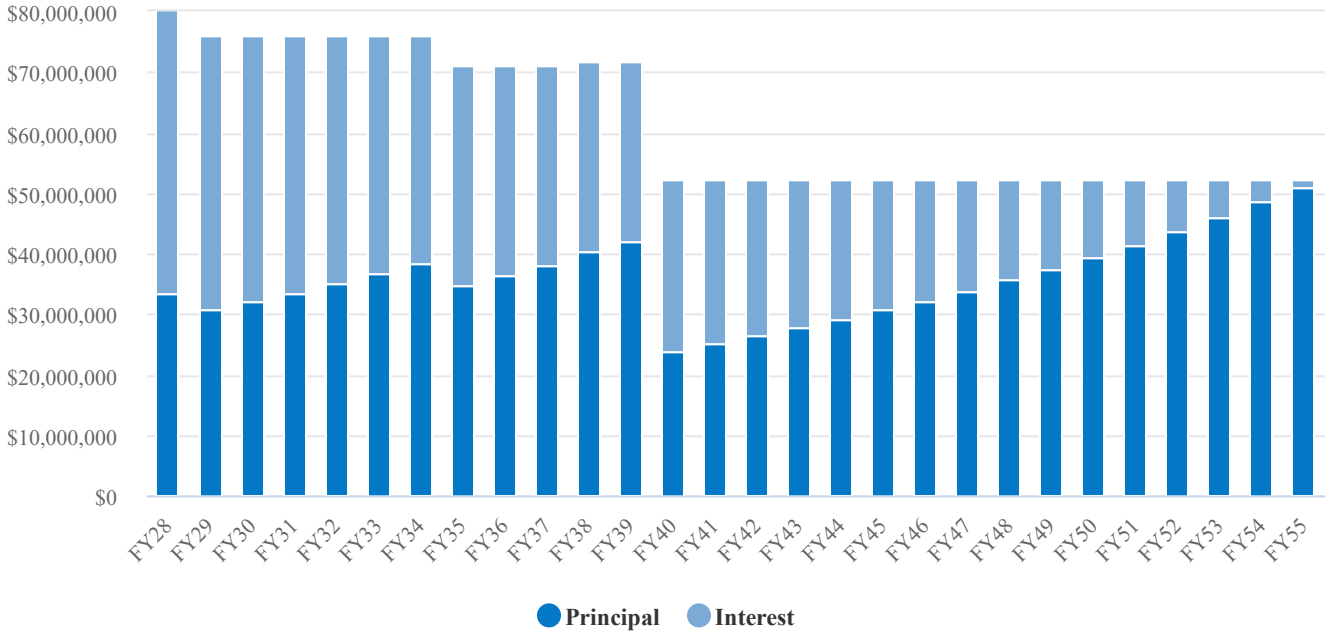
* The ratings for the Series 2024 A / B / C Bonds and Series 2025 were unsolicited by Tampa Bay Water and have not been actively pursued.

Outstanding Debt Service

The chart below shows Tampa Bay Water's annual debt service payments by Bond Series for the existing outstanding bonds at 9/30/27.



The chart below shows the principal and interest breakdown of Tampa Bay Water's annual debt service payments for the existing outstanding bonds at 9/30/27.

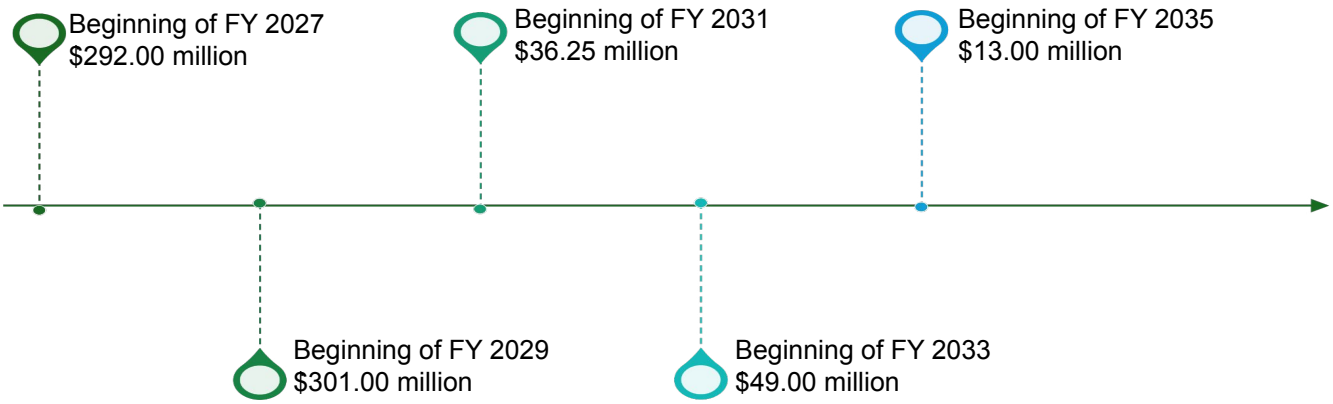


Future Borrowing

The Fiscal Year 2027 to Fiscal Year 2036 Capital Improvement Program includes 91 projects with an estimated $1.7 billion in total expenditures. This total includes four projects for per- and polyfluoroalkyl substances (PFAS) treatment that total $187.8 million, and two water quality improvement projects designed to reduce total organic carbon (TOC) to 2.0mg/L that total $51.2 million.

All 91 projects reflect a need for an estimated additional funding of $691.25 million by the end of 2034. The agency is anticipating issuing debt every couple of years to minimize the impact on the agency's annual debt service and uniform rate. An estimated $292 million by fiscal year 2027, will be largely needed for the South Hillsborough Wellfield, water quality treatment and wellfield improvements, and design phase of the PFAS treatment projects and TOC treatment projects. Additional funding needed for completing the PFAS and TOC (2.0 mg/L) treatment projects, maintaining the agency's infrastructure, providing reliability and level of service projects, and the long-term master water planning is estimated at $301 million by fiscal year 2029, $36.25 million by fiscal year 2031, $49 million by fiscal year 2033 and $13 million by 2035.

Estimated Timeline & Amounts of Future Borrowing



The Fiscal Year 2027 to Fiscal Year 2036 Capital Improvement Program does include the South Hillsborough Wellfield project which may push out the timing of when the next future water supply project is needed to meet the region's increased demands past 2033. The timing and amounts of the future funding needs will likely change based upon future Board decisions related to water quality projects and the need for future water supply projects; as the Board makes these decisions the Capital Improvement Program will be updated. Tampa Bay Water will continue to evaluate various funding strategies, such as bonds, loans, grants and other state and federal programs to address the future funding needs of the Agency.



TAMPA BAY WATER

Supplying Water To The Region

FISCAL YEAR 2027

Capital Improvement Program



The Capital Improvement Program section provides summary information about the Agency's current capital projects. This includes projects that are scheduled to be in the feasibility, design, and construction phases during fiscal year 2027.



TAMPA BAY WATER

Supplying Water To The Region

Capital Improvement Planning and Financing

Planning

New water supply projects are developed through the long-term water supply planning process, which is performed to ensure that (1) the public has sufficient water supplies to meet its needs in an environmentally sustainable and cost-effective manner, and (2) Tampa Bay Water is compliant with its obligations under the Amended and Restated Interlocal Agreement. It can take as long as 10 years to plan, permit, design, and build drinking water facilities. Tampa Bay Water develops its Master Water Supply Plans through this long-term planning effort. This process is a multi-step process including determination of need, identification of potential projects, feasibility studies, review, and selection by the Board of projects to be studied further through preliminary design, and final selection by the Board of projects to be constructed. Long-term water supply planning is conducted at least every five years. As part of the planning process, demand projections are updated annually to identify the need for and timing of the development of new water sources. It is the Agency's goal to bring new water supplies on-line in a timely manner based on need, but not so far in advance as to unnecessarily burden the cost of water by overbuilding supply capacity. Projects identified through the Long-term Master Water Supply Plan (LTMWP) and selected for implementation become part of the Agency's Capital Improvement Program Plan.

Financing

Tampa Bay Water primarily finances its capital improvements program through the issuance of tax-exempt and taxable bonds. Bond proceeds are placed in a restricted Construction Fund until disbursed for their intended purpose. The remainder of the capital improvements program is funded with pay-as-you-go type accounts, joint project agreements with member governments and grant funding. The pay-as-you-go type accounts include the Uniform Rate, the Capital Improvement Fund, the Renewal and Replacement Fund, the Energy Fund, the Released Debt Service Fund, and the PFAS Fund. The funds are retained in these accounts until disbursed for Board approved purposes. Some Member Government requested projects may be fully or partially funded by the requesting member government through a joint project agreement. These funds are retained in a Joint Project Agreement Fund and reconciled throughout the length of the project. The Agency also seeks and obtains available grant funding for its projects from SWFWMD, the State of Florida and the federal Environmental Protection Agency.

The Capital Improvement, the Released Debt Service, and the PFAS Funds may be used to fund any Board approved Capital Project. The Renewal and Replacement Fund can fund projects where major repairs or replacement of specific components are needed to maintain the service level of the system. The Energy Fund can fund projects which result in energy savings. The Uniform Rate generally funds projects that improve existing facilities.

Capital Improvement Program Definition

A capital project is defined as planned activities that result in

- a new capital asset or improvements to an existing asset.
- major renovations or expansions that extend an existing asset's useful life and/or result in a significant improvement in its functionality or capacity.

Capital projects are recorded in Tampa Bay Water's financial records in accordance with generally accepted accounting principles and applicable Florida State statutes.

Approved projects can include projects constructed for the benefit of member governments or other government agencies. If Tampa Bay Water does not retain ownership of the completed project, it is accounted for as a contribution to the respective entity.

Tampa Bay Water's Capital Improvement Program (CIP) is a comprehensive ten-year plan and portfolio of previously approved and new proposed capital projects. The CIP is updated annually as the scope, needs and timing for specific projects change. The following goals are used by agency staff to update the Capital Improvements Program Plan:

- Identify and prioritize capital projects through a coordinated departmental effort that integrates planning and development, engineering, construction, financing requirements, and future operating and maintenance costs.
- Develop a timeline and budget for each project.
- Develop a funding scenario for each project that identifies a funding source, a projected cash flow, and future operating and maintenance costs estimates.

The Fiscal Year 2027-2036 Capital Improvement Program Plan includes 43 active projects in fiscal year 2027, from planning to close-out. The total estimated expenditures for Fiscal Year 2027 are $291,424,776, with an estimated $20.1 million being reimbursed with district co-funding and grants. The Surface Water Treatment Plant expansion accounts for roughly 25% of the estimated fiscal year 2027 expenditures and around 42% is attributable to the South Hillsborough Pipeline.

Surface Water Treatment Plant Expansion
South Hillsborough Pipeline (Segment A)
South Hillsborough Pipeline (Segment B)
2028 Long-Term Master Water Plan Update
Brandon Urban Dispersed Wells-BUD 5 Water Quality Improvements
Brandon Urban Dispersed Wells-BUD 7 Water Quality Improvements
Cosme Collection Main - Utility Conflict
Cross Bar Ranch Wellfield Water Transmission Main - Utility Conflict
Cypress Creek Medium Voltage Generator Control System Upgrade
Cypress Creek Pump Station Repump Improvements
Cypress Creek Water Treatment Plant 72-inch Valve
Cypress Creek Wellfield Generators
Cypress Creek Wellfield Improvements
Cypress Creek Wellfield Surface Water Improvements-Phase3
Eldridge-Wilde Wellfield Water Quality Treatment Improvements
Feasibility Study New Groundwater Sources
Feasibility Study For Surface Water Sources
High Service Pump Station Ball Valve Replacement
High Service Pump Station Variable Frequency Drives
Hillsborough County-Lithia Water Treatment Plant Yard Piping
Integrated Program Manager Consultant Services
IT vGrid Infrastructure Modernization
Lake Bridge Water Treatment Plant-Pump No 4
Long-term Master Water Plan-Feasibility: Program Management

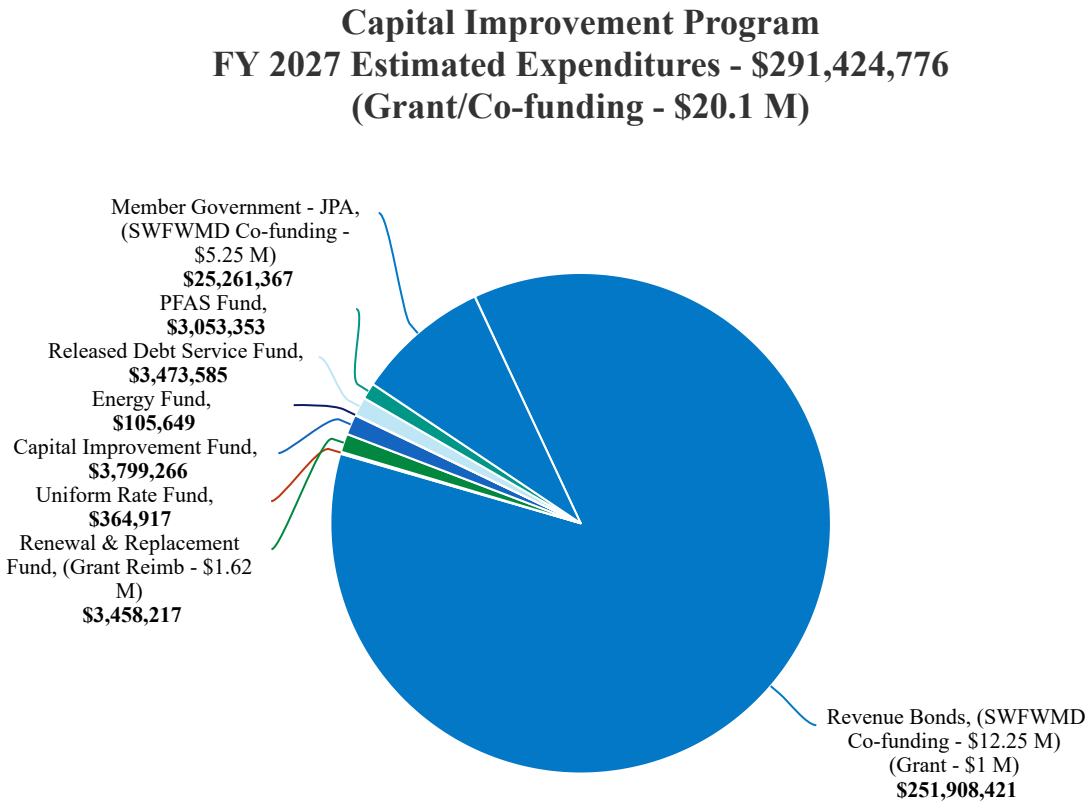
Morris Bridge Wellfield Improvements
Regional Facilities Site-Alkalinity Adjustment Facility
2028 SCADA Data Center Hardware Replacement
Source Water Quality and Business Case Evaluation
South Hillsborough Wellfield
South Operations and Maintenance Building
South Pasco Water Quality Treatment, Storage & Pumping Imp.
South Pasco Wellfield Underground Commercial Powerline
Surface Water Treatment Plant-Renewal & Replacement Prog.-Phase II
Surface Water Treatment Plant-Renewal & Replacement Prog.-Phase III
Surface Water Treatment Plant-Renewal & Replacement Prog.-Phase IV
Surface Water Treatment Plant-Renewal & Replacement Prog.-Phase V
Surface Water Treatment Plant SCADA System Upgrade
Surface Water Treatment Plant Water Quality Pilot Study
Surface Water Treatment Plant Water Quality Improvements
Tampa Bay Desalination Facility Pretreatment Basins Coating Repair
Tampa Bay Desalination Facility Reverse Osmosis Trains
Tampa Bay Desalination Facility Renewal & Replacement Program
Tampa Bypass Canal (MLK) Pumps

Please refer to the full FY 2027 – FY 2036 Capital Improvements Program document for more detailed information.

https://www.tampabaywater.org/wp-content/uploads/CIP-2026-2035.pdf

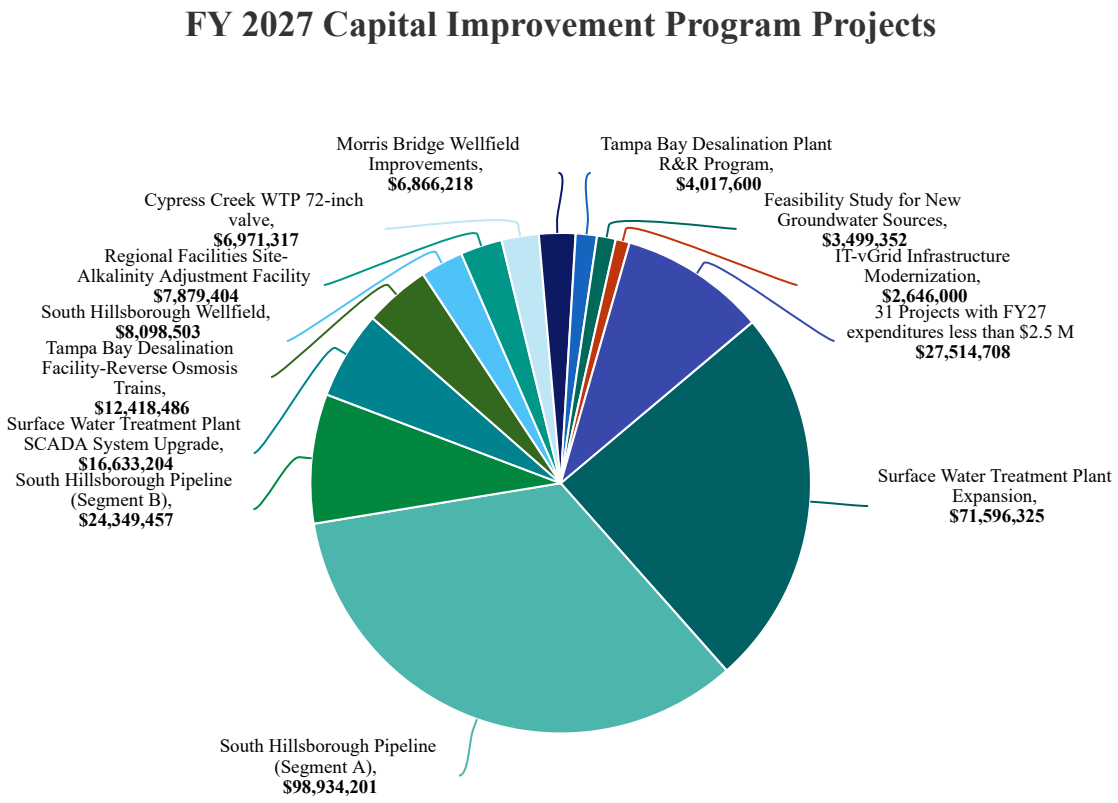
Capital Improvement Program Expenditures Fiscal Year 2027

The following chart summarizes the Capital Improvement Program estimated expenditures for fiscal year 2027 by funding source.



Capital Improvement Program Projects Fiscal Year 2027

The following chart summarizes the Capital Improvement Program estimated expenditures for fiscal year 2027 by project.



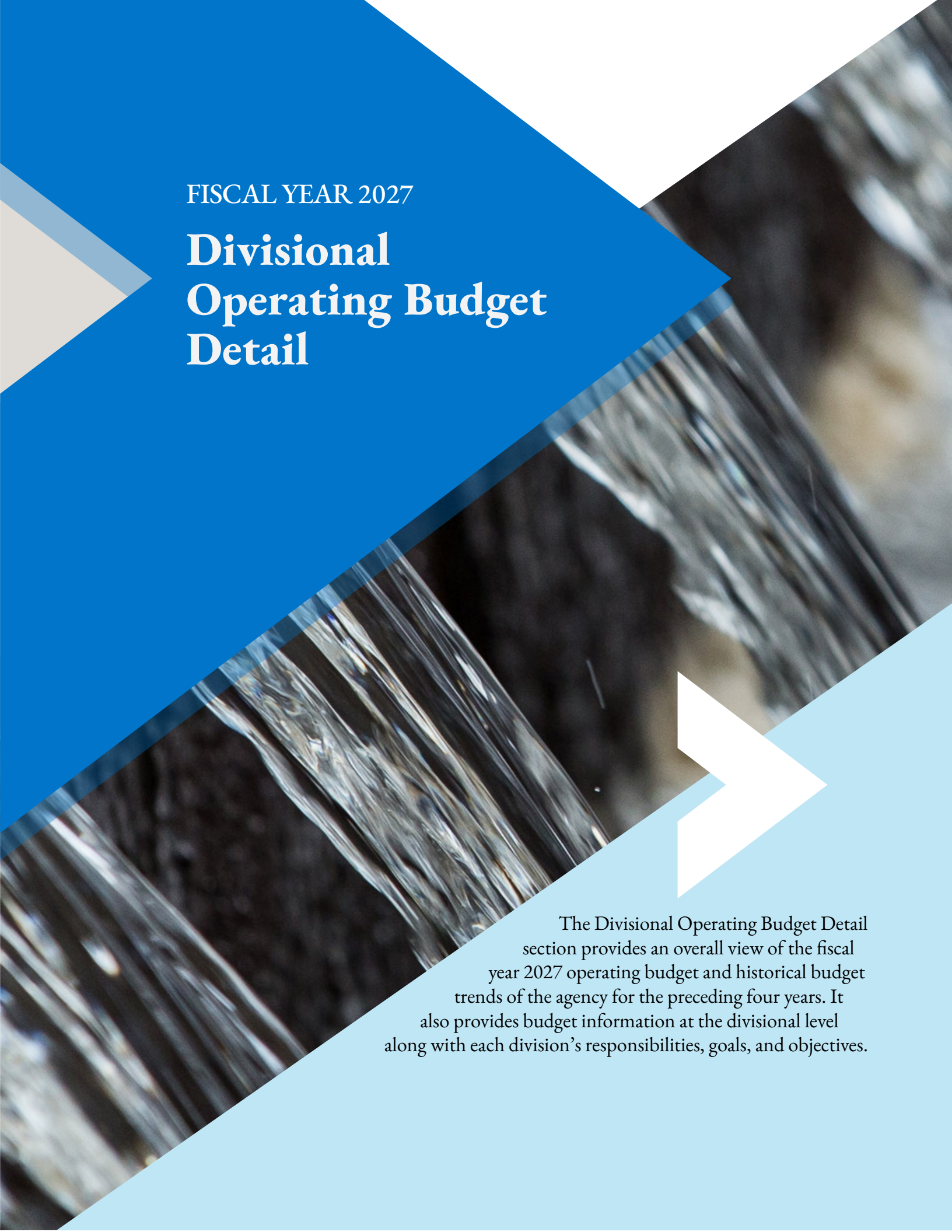


TAMPA BAY WATER

Supplying Water To The Region

FISCAL YEAR 2027

Divisional Operating Budget Detail



The Divisional Operating Budget Detail section provides an overall view of the fiscal year 2027 operating budget and historical budget trends of the agency for the preceding four years. It also provides budget information at the divisional level along with each division's responsibilities, goals, and objectives.



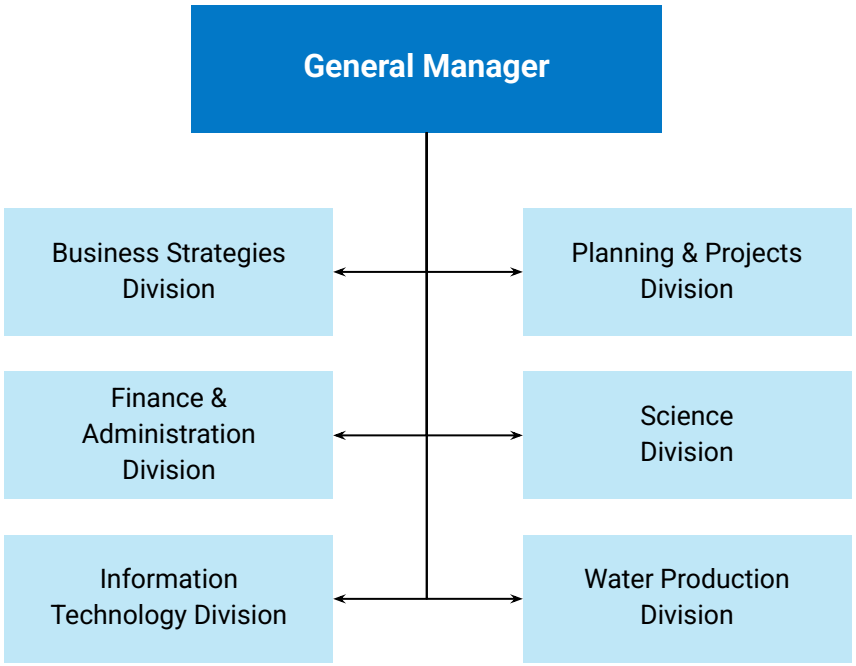
TAMPA BAY WATER

Supplying Water To The Region

Tampa Bay Water's Divisional Organization

This section provides summaries of Tampa Bay Water's divisional organizations, mission, and responsibilities, as well as historical budget trends.

As the Agency continues to focus on the efficient operation and timely maintenance of its robust and integrated regional supply system, it also concentrates on strategic business planning, plus the planning, design, and construction of new supplies and new delivery systems. The organizational design consists of six divisions: Business Strategies, Finance & Administration, Information Technology, Planning & Projects, Science and Water Production, which report directly to the General Manager. Each division focuses on the Agency's Mission, Vision and Value statements and better positions the agency to implement the Board's strategic Plan.



Staffing

Staffing - Historical

The table below shows the number of agency full-time employees by area for fiscal years 2022 through 2026.

Area - Division	Approved FY 2022	Approved FY 2023	Approved FY 2024	Approved FY 2025	Approved FY 2026
General Manager	2	2	2	2	2
General Counsel [1]	-	-	-	-	-
Business Strategies [2]	6	6	12	15	15
Finance & Administration	30	18	18	19	19
Information Technology [3]	-	13	13	13	13
Planning & Projects [4]	-	-	18	21	21
Science	41	40	34	31	31
Water Production	78	79	63	62	62
Full-time Employees	**157**	**158**	**160**	**163**	**163**

Note 1 – General Counsel has been outsourced since May 2012.

Note 2 – Business Strategies includes Public Affairs, Human Resources, Continuous Improvement & Safety Services starting in FY 2025

Note 3 – Information Technology was part of Finance & Administration in FY 2022.

Note 4 – Planning & Projects includes Engineering, Construction, Surveying, Real Estate, and Planning & Projects, in FY 2022 through FY 2023 these departments were part of the Science Division and the Water Production Division.

Staffing - Proposed

In fiscal year 2027, proposed personnel services equal $29,039,530 and are approximately 13% of the Operating Budget. Personnel Services includes the Agency's expenses for wages, payroll taxes, retirement contributions, employees' insurance, workers' compensation, unemployment compensation, other post-employee benefits, and the GASB Statement No. 68 retirement reporting requirements for the existing 163 full-time employees, 12 part-time co-op positions, plus 4 full-time equivalent positions requested in the Fiscal Year 2027 Proposed Budget.

Position Requests for Fiscal Year 2027

The Agency follows a formal succession strategy designed to proactively respond to shifts in its staff attrition, address emerging recruitment challenges, and capitalize on development opportunities in a way that ensures its business continuity and supports both immediate and long-range agency priorities.

As Tampa Bay Water faces retirements, promotions, and other staff turnovers, the Executive Team analyzes if any organizational changes may be needed to address succession planning and knowledge retention. This provides the Agency with an opportunity to better organize and continue to meet the agency's strategic planning and operational needs while maintaining the current number of budgeted full-time equivalent positions.

Four full-time equivalent positions are being requested in the Fiscal Year 2027 proposed budget to bring in-house some currently outsourced services, address increased activities, and improve overall department function.

The following four positions are being requested for fiscal year 2027.

Staffing

Information Technology Division - 1

Network Engineer: This position will bring outside consultant services in-house and provide the agency with multiple benefits, including cost savings. This position will design, implement, and maintain secure, reliable network infrastructure for both enterprise and SCADA environments. This includes planning and deploying modern network solutions, ensuring compliance with cybersecurity standards, and supporting strategic initiatives for network modernization. The role provides advanced troubleshooting and operational support to maintain 24/7 availability, monitors performance, and implements risk mitigation strategies such as redundancy and failover. Additional responsibilities include maintaining accurate documentation, collaborating with IT and SCADA teams, and ensuring resilience and security across all communications systems.

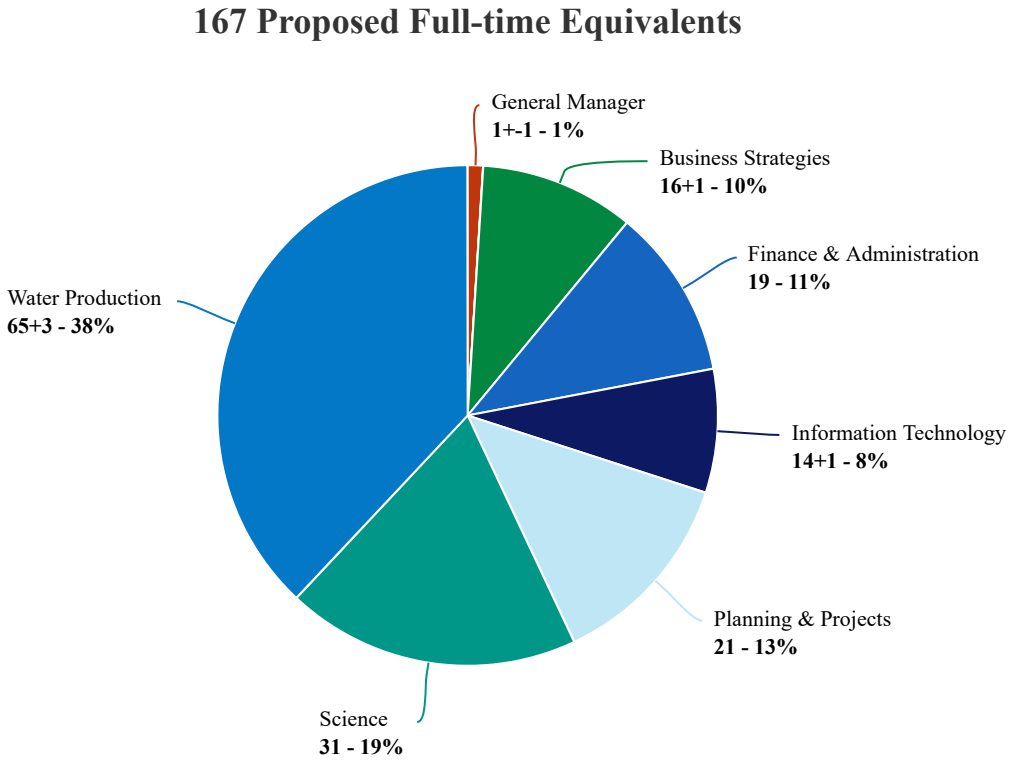
Water Production Division - 3

Mechanical Technician I: This position will help the maintenance department begin reducing reactive maintenance, improve schedule efficiency, and align labor deployment with industry standards. A utility maintenance department best management practice is to balance planned versus unplanned work activities at a ratio of 80% to 20%. Currently the agency is performing below the industry target, with much of the workload taking the form of corrective/emergency work or unplanned maintenance/project support activities. One of the main contributors, for performing below the industry target, is related to the amount of routine/planned work needed for a utility the size of the agency and the lean nature of staffing in the maintenance department.

Mechanical Technician Trainees (2): These positions will provide opportunities to further develop trainee programs for technical roles. With continued retirement of long-tenured employees on the horizon and difficulty hiring for many entry level technical positions, offering a trainee program will further support the agency's goal of "Ensure an Engaged, Skilled and Adaptable Workforce." Adding these two positions also aligns with Recommendation 5 from the 2025 Performance and Management Audit.

Staffing

Fiscal Year 2027 Staffing by Division



Agency Budget by Category

Agency Operations by Category - Fiscal Years 2023 through 2025 Actuals, 2026 Approved and 2027 Proposed

Operating Budget - Uniform Rate	Actual FY 2023	Actual FY 2024	Actual FY 2025	Approved FY 2026	Proposed FY 2027
Personnel Services					
41000 Regular Salaries and Wages	13,749,995	14,588,779	15,551,614	16,886,000	18,178,000
41300 Other Sal & Wages (FRS Exempt)	15,118	15,958	16,787	17,900	19,000
41310 Employee Awards (FRS Exempt)	1,100	1,000	1,310	1,500	1,750
41340 Auto Allowance	5,177	5,386	5,520	5,800	6,000
41410 Overtime	100,588	123,966	134,881	142,100	169,600
41420 Shift Differential	53,020	54,645	56,561	63,600	64,300
41430 On-Call Pay	84,755	101,551	105,910	115,100	122,400
42100 FICA	1,016,055	1,079,888	1,153,701	1,318,700	1,422,100
42200 FRS	5,182,445	2,559,880	1,518,970	4,939,300	4,122,700
42300 Life & Health Insurance	2,931,853	3,129,145	3,609,059	4,316,600	4,766,180
42305 Fsa Health Care Med. Excess	7,037	(6,602)	10,338	-	-
42400 Workers Compensation	96,259	81,906	99,175	115,000	125,000
42500 Unemployment Compensation	-	1,925	-	2,500	2,500
42600 Other Post Employment Benefits	6,237	96,711	(22,455)	40,000	40,000
Total Personnel Services	**23,249,638**	**21,834,136**	**22,241,371**	**27,964,100**	**29,039,530**
Materials & Supplies					
55100 Office Supplies	35,541	21,579	19,944	38,100	34,900
55200 Materials & Operating Supplies	947,381	2,062,682	2,096,890	2,495,334	2,426,668
55260 Computer Software Expense	1,499,471	3,498	10,341	-	400
55400 Books, Publs, Subsc & Mmbershp	474,238	379,433	363,198	399,685	407,100
55500 Training	94,299	111,769	124,679	130,850	130,380
59999 Pcard Suspense	(94)	2,833	75	-	-
Total Materials & Supplies	**3,050,836**	**2,581,794**	**2,615,128**	**3,063,969**	**2,999,448**
Professional Services					
63120 Engineering Services	4,297,260	3,213,423	3,608,231	2,109,000	1,865,000
63125 Engineering Owners Allowance	56,655	86,361	23,937	-	-
63130 Hydrological Services	951,987	833,965	578,197	319,500	561,000
63140 Ecological Services	2,163,213	2,368,235	2,122,195	2,211,616	2,764,477
63181 Mitigation	3,699	4,135	37,723	60,000	70,000
63182 Augmentation	33,098	45,006	27,661	49,000	52,000
63190 Other Prof Services	3,706,096	4,347,178	5,038,578	4,824,828	6,907,311
63200 Accounting & Auditing	127,000	126,400	135,300	146,000	161,400
63400 Other Services	4,591,127	5,069,831	5,346,218	6,028,680	6,432,354
63410 Operating & Maintenance Agrmnt	14,726,849	18,084,270	15,342,416	16,616,006	17,032,779
Total Professional Services	**30,656,984**	**34,178,804**	**32,260,456**	**32,364,630**	**35,846,321**

Agency Budget by Category

Operating Budget - Uniform Rate	Actual FY 2023	Actual FY 2024	Actual FY 2025	Approved FY 2026	Proposed FY 2027
Repairs & Other Services					
64000 Travel & Per Diem	67,860	71,694	71,650	86,650	82,900
64005 Mileage & Tolls	17,402	20,255	20,479	23,075	25,975
64100 Communication Services	1,147,522	1,137,168	1,153,801	1,214,200	1,302,000
64120 Freight & Postage Services	64,665	63,249	49,113	64,775	60,600
64320 Water, Sewer & Other Util	218,752	199,880	421,015	326,775	454,547
64600 Repair & Maint - Eq & Grounds	6,162,066	5,109,994	7,029,540	7,236,879	7,182,183
64700 Printing & Binding	33,591	24,802	23,593	33,400	26,700
64800 Promotional Activities	73,283	91,490	100,503	34,750	38,750
64810 Advertising	91,086	223,981	34,398	68,836	94,640
64990 Other Current Charges	261,910	225,861	265,066	253,405	264,413
64991 Permits	63,910	60,335	62,009	85,640	92,550
64995 P-Card Fees	2,806	-	-	-	-
64996 P-Card/Credit Card Fees	-	5,214	6,344	5,000	7,500
Total Repairs & Other Services	**8,204,853**	**7,233,923**	**9,237,512**	**9,433,385**	**9,632,758**
Rent & Insurance					
64400 Rentals & Leases	(371,102)	(351,269)	(377,939)	244,250	246,725
64410 Lease Amortization Expense	431,702	463,185	467,398	500,000	500,000
64411 Lease Interest Expense	53,768	43,155	29,410	-	-
64500 Insurance	2,395,562	2,871,950	3,183,018	3,274,022	3,445,008
Total Rent & Insurance	**2,509,931**	**3,027,022**	**3,301,887**	**4,018,272**	**4,191,733**
Legal Services					
63110 Legal Services	345,132	460,133	339,704	600,000	600,000
Total Legal Services	**345,132**	**460,133**	**339,704**	**600,000**	**600,000**
Capital Expenditures					
86100 Land Acq Cost-Purchase	-	-	-	15,000	15,000
86110 Land Acq Costs-Legal	-	-	-	5,000	5,000
86120 Land Acq Cost-Prop Stlmnt Atty	-	-	-	15,000	15,000
86190 Land Acq Cost-Other	(246)	-	-	5,000	5,000
86300 Capital Improvement Facility	202,932	419,907	444,453	165,000	651,000
86305 Capital Impr Owner Allowance	-	-	10,000	-	-
86400 Mach & Equipment Purchase	786,131	1,353,839	645,533	992,500	1,071,000
Total Capital Expenditures	**988,817**	**1,773,746**	**1,099,986**	**1,197,500**	**1,762,000**
Bond Debt Service					
77210 Interest Bonds	34,118,062	31,381,443	28,850,200	48,483,565	47,658,446
87116 Principal Payments 2005 Bonds	24,820,000	26,180,000	-	-	-
87144 Principal Payment 2015A Bonds	-	-	9,200,000	13,940,000	-
87145 Principal Payment 2015B Bonds	930,000	955,000	7,760,000	-	-
87147 Principal Payment 2016B Bonds	260,000	265,000	275,000	1,675,000	-
87148 Principal Payment 2016C Bonds	-	-	17,790,000	18,315,000	19,240,000
87150 Master Bond 2020 Princ Trch 1	149,000	153,000	6,086,000	-	-
87151 Master Bond 2020 Princ Trch 2	15,466,000	15,825,000	-	-	-
87152 Master Bond 2020 Princ Trch 3	266,000	1,131,000	1,157,000	1,184,000	1,212,000
87157 Principal Payment 2025 Bonds	-	-	-	-	13,050,000
Total Bond Debt Service	**76,009,062**	**75,890,443**	**71,118,200**	**83,597,565**	**81,160,446**

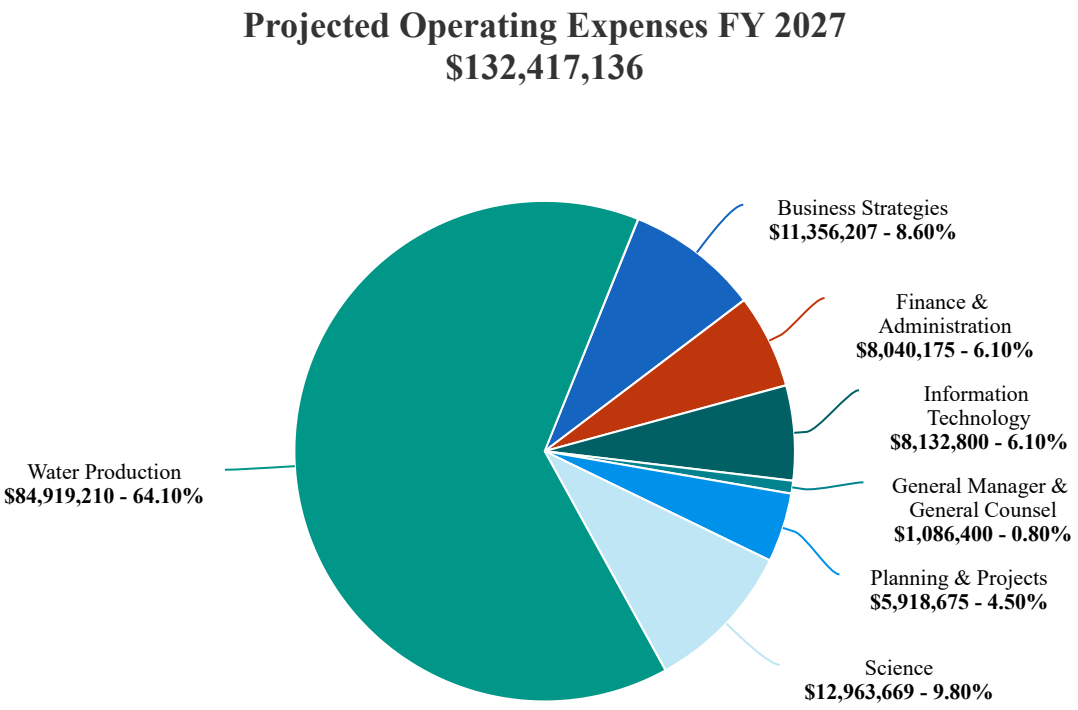
Agency Budget by Category

Operating Budget - Uniform Rate	Actual FY 2023	Actual FY 2024	Actual FY 2025	Approved FY 2026	Proposed FY 2027
Acquisition Credits to Members					
77250 Interest Facility Purchase	2,609,687	2,226,307	1,823,643	1,400,725	956,534
87125 Principal Pmt Facility Acq	7,621,870	8,005,250	8,407,914	8,830,833	9,275,024
Total Acquisition Credits to Members	**10,231,558**	**10,231,558**	**10,231,558**	**10,231,558**	**10,231,558**
Water Quality Credit					
55250 Water Quality Credit Expense	48,000	48,000	48,000	48,000	48,000
Total Water Quality Credit	**48,000**	**48,000**	**48,000**	**48,000**	**48,000**
Reserve Funding					
82810 O&M Reserve Funding	-	-	910,961	-	-
82830 Rate Stabilization Funding	23,348,989	35,074,809	30,955,931	-	-
82850 Utility Reserve Transfer	-	893,624	1,131,783	-	-
Total Reserve Funding	**23,348,989**	**35,968,433**	**32,998,675**	**-**	**-**
Variable Operating Costs					
55210 Water Treatment Chemicals	21,077,915	22,988,243	24,872,886	26,194,508	28,810,527
64310 Power and Light	14,259,095	13,881,718	15,587,818	20,071,653	18,886,619
64380 Water For Resale	566,350	569,819	566,678	644,000	600,200
Total Variable Operating Costs	**35,903,360**	**37,439,780**	**41,027,381**	**46,910,161**	**48,297,346**
TOTAL AGENCY	**214,547,160**	**230,667,772**	**226,519,858**	**219,429,140**	**223,809,140**

Agency Budget by Category

Fiscal Year 2027 Projected Operating Expenses by Division

The chart below shows each division's budgeted dollar amount and the percentage of the total projected operating expenses.



Note 1 - Projected Operating Expenses FY 2027 does not include bond debt service, member acquisition credits, or reserve funding

Agency Budget Category and Division

Fiscal Year 2027 Proposed Operating Expenses by Category and Division

Operating Budget	Offices of the General Manager and General Counsel	Business Strategies Division	Finance & Adminis-tration Division	Information Technology Division	Planning & Projects Division	Science Division	Water Production Division
Personnel Services							
41000 Regular Salaries and Wages	311,900	2,529,200	1,877,200	1,777,900	2,573,500	3,436,400	5,671,900
41300 Other Sal & Wages (FRS Exempt)	19,000	-	-	-	-	-	-
41310 Employee Awards (FRS Exempt)	-	1,750	-	-	-	-	-
41340 Auto Allowance	6,000	-	-	-	-	-	-
41410 Overtime	-	2,300	2,200	300	-	1,700	163,100
41420 Shift Differential	-	-	-	-	-	-	64,300
41430 On-Call Pay	-	-	-	27,700	-	-	94,700
42100 FICA	25,800	194,000	144,100	138,300	197,200	263,300	459,400
42200 FRS	78,500	433,600	1,333,000	322,000	426,200	573,900	955,500
42300 Life & Health Insurance	-	4,766,180	-	-	-	-	-
42400 Workers Compensation	-	125,000	-	-	-	-	-
42500 Unemployment Compensation	-	2,500	-	-	-	-	-
42600 Other Post Employment Benefits	-	40,000	-	-	-	-	-
Total Personnel Services	**441,200**	**8,094,530**	**3,356,500**	**2,266,200**	**3,196,900**	**4,275,300**	**7,408,900**
Materials & Supplies							
55100 Office Supplies	1,000	3,700	29,450	-	500	-	250
55200 Materials & Operating Supplies	-	117,911	473,750	193,000	25,500	298,257	1,318,250
55260 Computer Software Expense	-	-	-	-	400	-	-
55400 Books, Publs, Subsc & Mmbershp	35,400	51,118	8,375	11,400	20,297	263,465	17,045
55500 Training	1,000	43,600	26,150	7,500	15,250	17,850	19,030
Total Materials & Supplies	**37,400**	**216,329**	**537,725**	**211,900**	**61,947**	**579,572**	**1,354,575**
Professional Services							
63120 Engineering Services	-	-	-	-	1,130,000	325,000	410,000
63130 Hydrological Services	-	-	-	-	-	561,000	-
63140 Ecological Services	-	-	-	-	-	2,739,477	25,000
63181 Mitigation	-	-	-	-	-	70,000	-
63182 Augmentation	-	-	-	-	-	52,000	-
63190 Other Prof Services	-	998,100	215,000	1,107,500	633,000	3,753,711	200,000
63200 Accounting & Auditing	-	-	161,400	-	-	-	-
63400 Other Services	-	1,504,898	17,500	3,221,900	284,000	2,750	1,401,306
63410 Operating & Maintenance Agrmnt	-	-	-	-	-	-	17,032,779
Total Professional Services	**-**	**2,502,998**	**393,900**	**4,329,400**	**2,047,000**	**7,503,938**	**19,069,085**

Agency Budget Category and Division

Operating Budget	Offices of the General Manager and General Counsel	Business Strategies Division	Finance & Administration Division	Information Technology Division	Planning & Projects Division	Science Division	Water Production Division
Repairs & Other Services							
64000 Travel & Per Diem	2,000	11,750	26,250	9,500	6,500	22,150	4,750
64005 Mileage & Tolls	550	7,550	3,500	3,000	2,375	4,500	4,500
64100 Communication Services	-	-	-	1,302,000	-	-	-
64120 Freight & Postage Services	-	5,900	29,800	800	500	8,100	15,500
64320 Water, Sewer & Other Util	-	-	-	-	12,025	-	442,522
64600 Repair & Maint - Eq & Grounds	-	302,000	-	-	183,000	339,709	6,357,474
64700 Printing & Binding	-	16,200	10,500	-	-	-	-
64800 Promotional Activities	-	38,000	750	-	-	-	-
64810 Advertising	3,000	86,800	-	-	440	4,400	-
64990 Other Current Charges	2,250	50,400	9,250	-	200,513	-	2,000
64991 Permits	-	-	-	-	5,000	1,000	86,550
64996 P-Card/Credit Card Fees	-	-	7,500	-	-	-	-
Total Repairs & Other Services	**7,800**	**518,600**	**87,550**	**1,315,300**	**410,353**	**379,859**	**6,913,296**
Rent & Insurance							
64400 Rentals & Leases	-	8,750	44,500	-	136,475	-	57,000
64410 Lease Amortization Expense	-	-	500,000	-	-	-	-
64500 Insurance	-	-	3,120,000	-	-	-	325,008
Total Rent & Insurance	**-**	**8,750**	**3,664,500**	**-**	**136,475**	**-**	**382,008**
Legal Services							
63110 Legal Services	600,000	-	-	-	-	-	-
Total Legal Services	**600,000**	**-**	**-**	**-**	**-**	**-**	**-**
Capital Expenditures							
86100 Land Acq Cost-Purchase	-	-	-	-	15,000	-	-
86110 Land Acq Costs-Legal	-	-	-	-	5,000	-	-
86120 Land Acq Cost-Prop Stlmnt Atty	-	-	-	-	15,000	-	-
86190 Land Acq Cost-Other	-	-	-	-	5,000	-	-
86300 Capital Improvement Facility	-	-	-	-	-	-	651,000
86400 Mach & Equipment Purchase	-	15,000	-	10,000	26,000	225,000	795,000
Total Capital Expenditures	**-**	**15,000**	**-**	**10,000**	**66,000**	**225,000**	**1,446,000**
Water Quality Credit							
55250 Water Quality Credit Expense	-	-	-	-	-	-	48,000
Total Water Quality Credit	**-**	**-**	**-**	**-**	**-**	**-**	**48,000**

Agency Budget Category and Division

Operating Budget	Offices of the General Manager and General Counsel	Business Strategies Division	Finance & Administration Division	Information Technology Division	Planning & Projects Division	Science Division	Water Production Division
Variable Operating Costs							
55210 Water Treatment Chemicals	-	-	-	-	-	-	28,810,527
64310 Power and Light	-	-	-	-	-	-	18,886,619
64380 Water For Resale	-	-	-	-	-	-	600,200
Total Variable Operating Costs	**-**	**-**	**-**	**-**	**-**	**-**	**48,297,346**
TOTAL AGENCY	**1,086,400**	**11,356,207**	**8,040,175**	**8,132,800**	**5,918,675**	**12,963,669**	**84,919,210**

Note 1 – Finance & Admin. does not include bond debt service, member acquisition credits or reserve funding.


TAMPA
BAY
WATER

TAMPA BAY WATER
Supplying Water To The Region



Capital Improvements Program

Fiscal Years 2027-2036

April 1, 2026

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Tampa Bay Water's Board of Directors

April 2026

Tampa Bay Water is often cited as a model of regional cooperation, thanks to the spirit of regionalism that created the utility as well as the continuous regional efforts of our board of directors. Each elected official on our nine-member board represents an individual city or county that we serve, but at the dais, each also represents the Tampa Bay region. The policy decisions and directives of our board ensure our region has adequate and sustainable drinking water to support our economy, environment, and way of life.



Lisset Hanewicz
- Chairman
- Council Member, City of St. Petersburg



Seth Weightman
- Vice Chairman
- Commissioner, Pasco County



Harry Cohen
- Commissioner, Hillsborough County



Chopper Davis
- Mayor, City of New Port Richey



Dave Eggers
- Commissioner, Pinellas County



Charlie Miranda
- Council Member, City of Tampa



Ron Oakley
- Commissioner, Pasco County



Kathleen Peters
- Commissioner, Pinellas County



Joshua Wostal
- Commissioner, Hillsborough County

Tampa Bay Water's Executive Team

Charles H. Carden, General Manager

Kelly Fernandez, General Counsel, Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

Michelle L. Stom, MPA, APR, Chief of Staff/Chief Strategy Officer

Paul Stanek, Chief Operating Officer

Warren Hogg, P.G., Chief Science Officer

Christina Sackett, MBA, Chief Financial Officer

Casey LaLomia, Information Technology Director

Maribel Medina, P.E, PMP, Planning and Projects Director

Shane Johnson, Continuous Improvement Director

Tampa Bay Water's Mission and Vision

MISSION

Tampa Bay Water's mission is to reliably provide clean, safe water to the region now and for future generations.

VISION STATEMENT

Tampa Bay Water's vision is to be the leader in supplying sustainable, quality water.

Tampa Bay Water's Overview

Tampa Bay Water, A Regional Water Supply Authority (the Agency), formerly West Coast Regional Water Supply Authority, was created on October 25, 1974, by enabling state legislation under Florida Statute Sections 163.01, 373.1962, and 373.1963. Tampa Bay Water is comprised of six member governments including: Hillsborough, Pasco, and Pinellas counties and the cities of St. Petersburg, Tampa, and New Port Richey. A Governance Study was adopted by the Florida Legislature in 1997 (the 1997 Legislation) amending Section 373.1963, Florida Statutes.

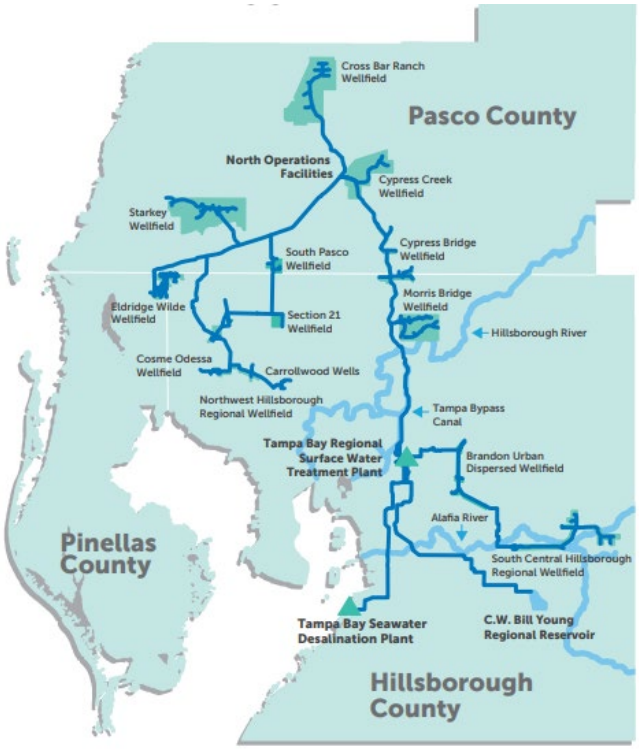

Figure 1: Tampa Bay Water Facilities

As part of the 1997 Legislation, the member governments entered into an Interlocal Agreement and a Master Water Supply Contract in 1998 for a term of 40 years creating Tampa Bay Water. Pursuant to the Amended and Restated Interlocal Agreement and Master Water Supply Contract, the Agency is required to meet the Quality Water needs of the member governments and to charge a uniform per-gallon wholesale rate to member governments for the wholesale supply of drinking water; with one exception for the City of Tampa. The Agency charges a separate rate to the City of Tampa for raw water delivered from the Tampa Bypass Canal to augment the City's reservoir.

Tampa Bay Water is governed by a nine-member board of directors from our six-member governments. The board includes two commissioners from each member county and the Mayor or a city-council representative from each member city.

The Agency provides quality drinking water to its six-member governments whose water service areas serve more than 2.6 million residents in the Tampa Bay region. Water sources include groundwater, surface water, and desalinated seawater.

Tampa Bay Water is regulated by the Florida Department of Environmental Protection and the United States Environmental Protection Agency for matters related to drinking water quality and the operation and construction of its facilities. In addition, the Southwest Florida Water Management District (SWFWMD) regulates consumptive uses of water.

Figure 1 shows the location of Tampa Bay Water's major Facilities and **Table 1** provides a list of Tampa Bay Water's major facilities, by water source.

Table 1: Tampa Bay Water's Major Facilities

Facility Type by Water Source	Facility Name
Surface Water	• Alafia River Pump Station • C.W. Bill Young Regional Reservoir • Brandon Booster Station • Reservoir Off Stream Pump Station • South-Central Hillsborough Intertie Transmission Main • South-Central Hillsborough Booster Pump Station • Tampa Bay Regional Surface Water Treatment Plant • Tampa Bypass Canal Pump Station
Desalination	• Tampa Bay Seawater Desalination Plant
Groundwater	• Brandon Urban Dispersed Wells and Water Treatment Plants • Carrollwood Wells • Cosme-Odessa Wellfield • Cross Bar Ranch Wellfield • Cypress Bridge Wellfield • Cypress Creek Wellfield and Water Treatment Plant • Eldridge-Wilde Wellfield and Hydrogen Sulfide Treatment Facility • Lake Bridge Water Treatment Plant • Morris Bridge Wellfield and Water Treatment Plant • Northwest Hillsborough Regional Wellfield • Section 21 Wellfield • South Pasco Wellfield and Water Treatment Plant • South-Central Hillsborough Regional Wellfield and Lithia Ozone Treatment Facility • Starkey Wellfield
Other Facilities	The water system also includes booster stations and approximately 100 miles of raw water collection mains and 150 miles of large-diameter potable water transmission mains.

CIP Planning Process

Purpose

Tampa Bay Water's Capital Improvements Program (CIP) is a comprehensive ten-year plan and portfolio of previously approved and newly proposed projects. The CIP is updated annually as the scope, needs and timing for specific projects change. Tampa Bay Water's Board of Directors annually accepts the CIP for implementation by agency staff.

The main objectives of the Capital Improvements Program Plan are:

- To improve Tampa Bay Water's financial stability by identifying capital improvements needs and estimating funding needs including future debt/bonds issuances.
- To maintain and improve Tampa Bay Water's infrastructure through the maintenance, repair, and replacement of existing assets; and
- To identify, evaluate and deliver short- and long-term infrastructure needs/projects to meet the region's future water demands.

Capital Project Definition

Capital projects are those activities that will result in:

1. A capital asset owned by Tampa Bay Water, and/or
2. Major repairs, improvements, renovations, or expansions that extend an existing asset's useful life, and/or
3. A significant change in a facility's functionality or capacity.

Capital assets owned by Tampa Bay Water are recorded in Tampa Bay Water's financial records in accordance with accepted accounting principles and applicable Florida State Statutes.

The Capital Improvements Program also includes capital projects that are:

1. Funded by Tampa Bay Water and/or others, for assets owned and operated by another entity.
2. Constructed by Tampa Bay Water for the benefit of member governments or other government agencies.

If Tampa Bay Water does not retain ownership of the completed project, the cost of the project is accounted as a contribution to the respective entity.

Identifying Projects

Projects in the Capital Improvements Program includes projects regardless of costs. Typical capital projects:

- Change the functionality and/or changes the capacity of an existing asset; and/or
- Are identified in the Agency's Mitigation Phase 1 or the Long-term Master Water Plan; and/or
- Require property acquisition, easements, license agreements, and/or fee purchase; and/or
- Require a Primary Environmental Permit or permit modification as defined in the Amended and Restated Interlocal Agreement such as:
    - National Pollutant Discharge Elimination System Permit (NPDES)
    - Environmental Resource Permit (ERP)
    - Water Use Permit (WUP)

Tampa Bay Water's Capital Improvements Program also includes non-capital projects that may lead to capital projects, including assessments, evaluations, feasibility studies and related program management efforts.

CIP Development

The Fiscal Years (FYs) 2027-2036 CIP Plan is an update to the FYs 2026-2035 CIP Plan accepted by the Board of Directors in May 2025.

Goals

The following goals are used by agency staff to update the Capital Improvements Program Plan:

- Identify and prioritize capital projects through a coordinated departmental effort that integrates planning, project management, engineering, construction delivery strategies, financing requirements, and future operating and maintenance costs.
- Develop a duration-based schedule and budget for each project.
- Develop a funding scenario for each project that identifies a funding source, projected planned expenditures cash flow, and future operating and maintenance costs estimates.

Update Schedule

The CIP Program Manager has the responsibility of managing the annual update of Tampa Bay Water's CIP Plan. The CIP update process runs from June through May as shown below.

Figure 2: CIP Update Timeline



Capital Projects Evaluation Criteria & Process Framework

Tampa Bay Water utilizes a Multi-Attribute Utility Analysis (MUA) to determine a benefit score for each capital project. The benefit scores allows Tampa Bay Water to prioritize projects, allocate funding sources, assign staff, and determine project schedules. The evaluation criteria themselves are evaluated every two to three years by staff and if needed, updated to reflect the Agency's current Strategic Goals. Projects are re-evaluated every year until they reach the bidding or construction phases. The key features of the Evaluation Process are:

- Each criterion is defined and assigned a weight in a scale from zero (0) to one hundred (100).
- Each criterion is assigned a set of performance measures to assess the contribution of a project to meeting the identified criterion.

- Each performance measure is defined and receives a score on a scale from zero (0) to ten (10).
- A Benefit Score using the evaluation criteria and performance measures is calculated for each project.

The following equation is used to calculate the Benefit Score of each capital project.

$$\textbf{\textit{Benefit Score}} = \frac{10}{Total\ CW} \times \sum [CW \times PM]$$

Where:

CW= Criterion Weights, **PM**= Performance Measure Score, **Total CW**= Total of Criterion Weights

The following sections and **Tables 2-8** provide criteria attributes and their Performance Measures.

Table 2: Evaluation Criteria Weights

Evaluation Criteria	Weight
Compliance	100
Level of Service	82
Health & Safety	82
Costs & Efficiencies	61
Environmental Enhancement	32

Compliance

Attributes of Compliance include regulatory compliance/permits and contractual obligations. Compliance obligations include permit or regulatory agency requirements (e.g., consent order, administrative order, etc.) Contractual obligations include legal settlements; property agreements; Memoranda of Understanding (MOU); Joint Project Agreement (JPA); and agency's governance documents (Master Water Supply Contract & Reinstated and Amended Interlocal Agreement).

Table 3: Compliance Performance Measures

Performance Measure	Score
Project does not contribute to compliance.	0
Project provides a minor level of support for compliance. *Will address obvious short-term or acute impacts.*	3
Project provides a moderate level of support for compliance. *Will reduce obvious short-term acute or chronic impacts.*	5
Project provides a significant level of support and improves compliance. *Will reduce short-term and addresses some chronic long-term impacts.*	7
Project is required for immediate known compliance issues. *Will reduce major factor(s) related to chronic long-term impacts.*	10

Level of Service

Attributes of Level of Service include water quantity, water pressure, and water quality enhancement, raw water vs. finished water system (system priority/criticality), time without service, number of complaints, and public image.

Table 4: Level of Service Performance Measures

Performance Measure	Score
Project does not address customer level of service.	0
Project maintains customer level of service on a small scale. *Addresses less than 10% of system demands. Meeting Demand less than 10 MGD.*	3
Project maintains customer level of service on a sub-regional scale. *Addresses 10 to 25% of system demands. Meeting Demand equal or greater than 10 MGD to less than 20 MGD.*	5
Project maintains customer level of service on a system-wide scale. *Addresses greater than approximately 25% of system demands. Meeting Demand equal or greater than 20 MGD to less than 40 MGD.*	7
Project improves or increases customer level of service on a system-wide scale. *Addresses greater than approximately 50% of system demands. Meeting Demand equal or greater than 40 MGD.*	10

Health & Safety

Attributes of Health & Safety include safety of the public and agency employees (OSHA equivalent) and physical and cyber security.

Table 5: Health & Safety Performance Measures

Performance Measure	Score
Project does not address safety.	0
Project provides a minor level of reduction in risks to public or employee safety.	3
Project provides a moderate reduction in risks to public or employee safety, including possible lost time accident potential.	5
Project provides a significant reduction in risks to public or employee safety, including lost time accident potential.	7
Project addresses an immediate known risk to public or employee safety for lost time potential.	10

Cost & Efficiencies

Attributes of Cost and Efficiencies include operations and maintenance (O&M) savings potential (staff time, money), O&M flexibility, and coordination with other internal projects.

Table 6: Cost & Efficiencies Performance Measures

Performance Measure	Score
Project causes an increase in net O&M costs.	0
Project has a neutral effect on net O&M costs.	3
Project provides a moderate reduction in net O&M costs OR creates opportunities for O&M efficiency/performance. *Reduction/Opportunity benefit less than 10%.*	5
Project provides a moderate reduction in net O&M costs AND creates opportunities for O&M efficiency/performance. *Reduction/Opportunity benefit less than 10%.*	7
Project provides a significant reduction in net O&M costs OR creates opportunities for O&M efficiency/performance. *Reduction/Opportunity benefit greater than 10%.*	10

Environmental Enhancement

Attributes of Environmental Enhancements include going above and beyond regulatory requirements, source water protection, minimizing carbon footprint, achieving energy efficiency, and includes a renewable energy component.

Table 7: Environmental Enhancement Performance Measures

Performance Measure	Score
Project does not provide environmental enhancement.	0
Project makes a minor contribution towards environmental enhancements.	3
Project makes a moderate contribution towards environmental enhancements.	5
Project makes a significant contribution towards environmental enhancements.	7
Project makes a significant contribution towards environmental enhancements beyond anticipated regulations.	10

Capital Projects Sources

Tampa Bay Water's CIP includes projects from various sources, including:

Tampa Bay Water

- Long-Term Master Water Supply Planning
- System Hydraulic and Emergency Scenario Analysis
- Energy Management Program
- Asset Master Plans
- Renewal and Replacement Program
- Property Redress
- Vulnerability Assessment
- Information Technology

Member Governments

- Joint Project Agreements
- Memoranda of Understanding

Regulatory/Compliance Requirements and other Commitments

- The Amended and Restated Interlocal Agreement
- The Master Water Supply Contract
- The Southwest Florida Water Management District (e.g., Phase 1 Mitigation)
- Florida Department of Environmental Protection
- Utility Acquisition(s)
- Utility Conflicts

Capital Projects Project Sources Highlights

Long-Term Master Water Supply Planning

The Amended and Restated Interlocal Agreement (referred to as the Interlocal Agreement) requires the Long-Term Master Water Plan be updated every five years. New water supply projects are developed through the long-term master water supply planning process, which is performed to ensure:

- The public has sufficient water supplies to meet its needs in an environmentally sustainable and cost-effective manner.
- Tampa Bay Water has sufficient water supply options in its Plan to meet the member governments' needs for at least 10 years; and
- Tampa Bay Water meets its unequivocal obligation to meet member governments' needs. It takes over 10 years to plan, permit, design, and build drinking water facilities.

Long-term water supply planning is conducted every five years, evaluating new water supply concepts as needed, and is the pool from which Long-Term Master Water Plan projects are drawn for further evaluation. As part of the planning process, demand projections are annually updated to facilitate new supplies are on-line in a timely manner, but not so far in advance as to unnecessarily burden the cost of water by overbuilding capacity.

The most recent Long-Term Master Water Plan update was approved by the Board in November 2023. Along with the Plan, the Board approved recommendations to pursue further feasibility evaluations on the top seven-ranked potential water supply capital projects including:

- Eastern Pasco Wellfield (with brackish and/or fresh groundwater)
- Consolidated Water Use Permit Increase
- North Pinellas Surface Water Treatment Plant and Reservoir

- Tampa Bay Seawater Desalination Expansion (with either seawater* or brackish groundwater)
- C.W. Bill Young Regional Reservoir Surface Water Treatment Plant
- New South Hillsborough Surface Water Treatment Plant and Reservoir
- South Hillsborough Wellfield *

* This concept was evaluated in 2021 and does not require additional study.

This CIP plan includes a Feasibility Program for the evaluation of new water supply concepts projects to meet water supply needs by 2033 or sooner and includes a Developmental Alternatives Program for the identifications and evaluation of new water supply options that may require sophisticated technologies or require more long-term study.

System Hydraulic and Emergency Scenarios

Tampa Bay Water completes a comprehensive evaluation of its Regional Water Transmission System every 10 years to proactively identify system capacity and reliability improvements needed over a 20-year planning horizon. The system is analyzed to determine the improvements needed for the water transmission system infrastructure (e.g., pipelines and pumping stations) to maintain a reliable water delivery capacity to each Member Government Point of Connection from the Tampa Bay Water system. The evaluation considers both normal operating conditions as well as resiliency of the water delivery system under "emergency" type conditions, such as a planned or unplanned outage of a pipeline or pump station facility. The Agency's first System Hydraulic and Emergency Scenario Analysis Report was completed in 2005 and considered future water demand projections through year 2025, hence known as the "2025 System Hydraulic and Emergency Scenario Analysis Report". The second update of the report was completed in 2015 and considered a 20-year planning horizon through year 2035. The third updated to the report "2045 System Hydraulic and Emergency Scenario Analysis Report" was completed in 2025 and considers a 20-year planning horizon through year 2045.

Energy Management Program

Tampa Bay Water developed an Energy Management Program roadmap with a programmatic approach to improve energy efficiency through the implementation of several individual energy-saving and renewable projects, emerging technologies, and operational changes.

Renewal and Replacement Program

Tampa Bay Water's Renewal and Replacement Program includes a prioritized long-term plan for the renewal, repair, or replacement of assets that will result in sustainable infrastructure. The Program identifies the required projects, and their timing based on a risk-based approach that considers criticality, remaining useful life, and risk.

Phase 1 Mitigation Projects

The Phase 1 Mitigation Plan is an on-going program required by Tampa Bay Water's Consolidated Water Use Permit. Its purpose is to provide long-term mitigation at wetland and lake sites that were impacted by historical groundwater pumpage at the central system wellfields and are predicted to not fully recover after the mandated groundwater pumpage cutback to 90 mgd. The Phase 1 Mitigation Plan currently includes a list of 21 mitigation projects.

Funding Overview

Tampa Bay Water capital projects are funded through one or more funding sources. Funding is determined based on the type of project and funds availability.

Revenue Bonds

Tampa Bay Water's current CIP is funded primarily through the issuance of Revenue Bonds for specific projects. Bond proceeds are placed in a restricted Construction Fund until disbursed for the intended purpose.

Capital Improvements Fund

The Capital Improvements Fund (CIF) is funded by charges collected or other funds received, such as proceeds from the sale of surplus property. The Capital Improvements Fund may be used to fund any Board-approved Capital Project.

Renewal and Replacement Fund

Tampa Bay Water is required to maintain a Renewal and Replacement Fund in an amount equal to five (5) percent of the prior fiscal year's Gross Revenue or such other amount as is certified by the Consulting Engineer in the Renewal and Replacement Fund. Funds used in the current year are collected the following year through the Uniform Rate. These funds are used to fund projects resulting from the Renewal and Replacement Program where major repairs or replacement of specific components are needed to maintain the service level of the water supply, treatment, and/or distribution system.

Energy Program Fund

The Energy Fund Program receives revenue generated from an agreement with Tampa Electric's (TECO) Commercial Demand Response Program provider Enel X. The Program helps manage peak demand to reduce seasonal electricity demand peaks. Tampa Bay Water earns revenue quarterly by agreeing to reduce electricity consumption when TECO calls for a demand response event, i.e., the reduction of energy usage to lower peak demand. Projects funded with this funding source include projects that result in energy savings.

Other Funding Sources

Tampa Bay Water also seeks and obtains available grant funding for its projects from the Southwest Water Management District (SWFWMD), the State of Florida, the U.S. Environmental Protection Agency, and other Federal grant programs, as well as Joint Project Agreements with member governments and other cooperative funding entities.

Uniform Rate Funds

Uniform Rate Funds generally are allocated to project evaluations, assessments, feasibility studies, program management services, and Phase 1 Mitigation projects. These funds are collected through the Uniform Rate.

Released Debt Service Fund

Upon the issuance of the Series 2022 Bonds, the maturity of the agency's total outstanding bonds was extended to Fiscal Year 2053. Therefore, the Debt Service Reserve account requirement changed from the Maximum Annual Debt Service for all outstanding bonds to 125% of the average Annual Debt Service for all outstanding bonds reducing the required balance of the Debt Service Reserve Fund and releasing these reserve funds for funding projects within the Capital Improvement Program.

Funding Overview, Continued

Tampa Bay Water capital projects are funded through one or more funding sources. Funding is determined based on the type of project and funds availability.

PFAS Settlement Fund

In fiscal year 2025, Tampa Bay Water started receiving settlement payments from defendants in the class action lawsuit against several manufacturers and sellers of polyfluoroalkyl substances or "PFAS" chemicals. If Tampa Bay Water is required to implement additional treatment systems to meet the U.S. Environmental Protection Agency's national standards for PFAS in drinking water, under the Safe Drinking Water Act, these funds will be used to fund the PFAS treatment projects in the Capital Improvement Program, or any Board-approved Capital Project.

Grant/Funded Projects

Table 8 identifies projects with current grants and co-funding agreements. The table identifies the grant/co-funding entity, the expected funds to be received, and funds received to date. Tampa Bay Water typically applies for State of Florida Grant Assistance through the General Appropriations Act and these grants received are managed by the Florida Department of Environmental Protection. Also, Tampa Bay Water applies for Federal funding initiatives, the Southwest Water Management District (SWFWMD) Cooperative Funding Initiative (CFI), and the Florida Department of Transportation (FDOT).

Table 8: Grant Funded Projects

Project No.	Project Name	Funding Entity	Grant Maximum Total [1]	Reimbursed through 12/31/2025
01610/01616	South Hillsborough Pipeline (Segments A & B)	SWFWMD[2]	$147,954,000.00	$3,536,729.76
01014	Surface Water Treatment Plant Expansion	State-FDEP	$1,650,000.00	$736,568.24
01014	Surface Water Treatment Plant Expansion	Federal-EPA	$1,016,667.00	$0
06912	Surface Water Treatment Plant SCADA System Upgrade	State-FDEP	$1,000,000	$0
07153	Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict	State-FDOT	$2,037,225	$0
50016	Eldridge-Wilde WF Pumps & Motors Replacement	State-FDEP	$750,000.00	$735,135.82
50021	Morris Bridge Wellfield Improvements	Federal-EPA	$1,000,000	$0
Totals			**$155,407,892.00**	**$5,008,433.82**

Notes:

1. Grant Maximum Total is the total funds awarded or requested to the funding entity. The total amount to be received could be less depending on the project's actual expenses for the awarded construction contract.
2. Includes Florida Department of Environmental Protection funding received by the SWFWMD.

Projected Capital Improvements Program Expenditures

The updated 10-year CIP includes a total of **89** projects at different phases with total projected future expenditures of **$1,534,394,194**. **Figure 3** summarizes the planned expenditures for each funding source by Fiscal Year. Future expenditures include planned expenditures for projects starting within the 10-year plan.

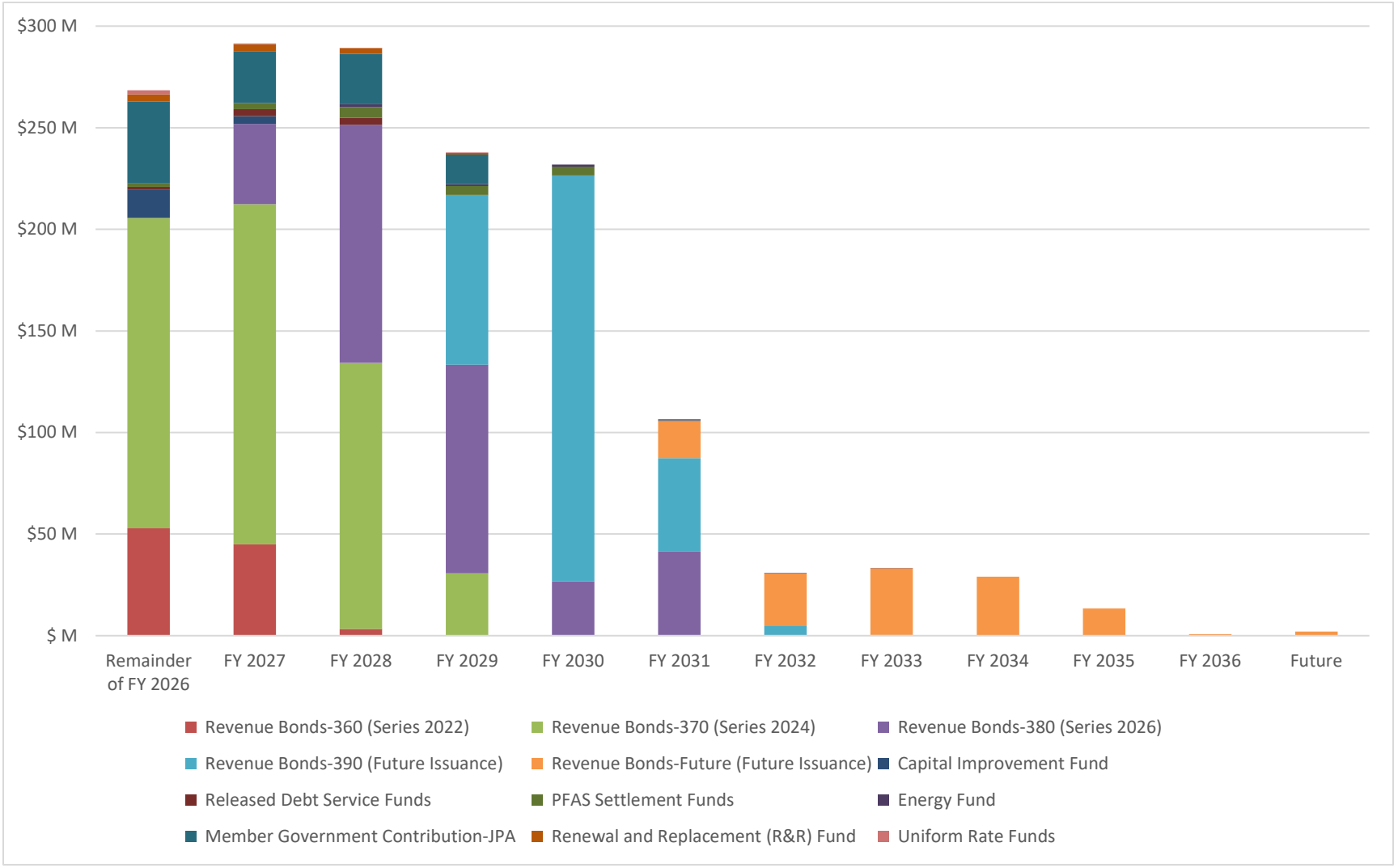

Figure 3: Planned Expenditures

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Table 9: Summary of Projected Funding Needs

	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FYs 2032-2036	Future	Total Funding
Fund Projected Starting Balance	$ 584,105,486.89	$ 683,265,471.75	$ 463,639,740.63	$ 230,314,163.34	$ 302,922,038.46	$ 92,535,347.93	$ 38,968,255.41	$ 21,019,859.93	***$ 584,105,486.89***
Projected Debt Issuance	$ 292,000,000.00	$ -	$ -	$ 301,000,000.00	$ -	$ 36,250,000.00	$ 62,000,000.00	$ -	***$ 691,250,000.00***
Projected Agency Funding	$ 904,000.00	$ 1,478,917.04	$ 1,165,114.00	$ 1,334,886.00	$ 621,000.00	$ 621,000.00	$ 2,172,000.00	$ 310,000.00	***$ 8,606,917.04***
Projected Funding-Hillsborough County (JPA)	$ 30,000,000.00	$ 30,000,000.00	$ 23,367,842.00	$ (23,895,036.07)	$ (5,250,000.00)	$ (5,250,000.00)	$ (15,586,200.00)	$ -	***$ 33,386,605.93***
Projected Reimbursement (Grants/ Co-funding Agreements)	$ 25,824,103.00	$ 20,121,355.00	$ 17,500,000.00	$ 17,500,000.00	$ 17,500,000.00	$ 17,500,000.00	$ 34,454,000.00	$ -	***$ 150,399,458.00***
Projected Interest Earned	$ 18,903,489.59	$ 20,198,772.65	$ 13,904,593.44	$ 14,465,910.92	$ 8,539,933.47	$ 3,751,174.48	$ 6,247,465.52	$ 586,571.06	***$ 86,597,911.13***
Projected Total Funds Expenditures	$ (268,471,607.73)	$ (291,424,775.82)	$ (289,263,126.73)	$ (237,797,885.72)	$ (231,797,624.00)	$ (106,439,267.00)	$ (107,235,661.00)	$ (1,964,246.00)	***$ (1,534,394,194.00)***
Projected Fund Ending Balance	$ 683,265,471.75	$ 463,639,740.63	$ 230,314,163.34	$ 302,922,038.46	$ 92,535,347.93	$ 38,968,255.41	$ 21,019,859.93	$ 19,952,184.99	***$ 19,952,184.99***

Table 10: Grants and Co-Funding

	Remainder of FY 2026	10-Yr Projections										Future	Total Funding
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036		
Fund Projected Starting Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Co-Funding SWFWMD *	$ -	$ -	$ -	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Grants (State/Federal)**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Total Funds Expenditures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Fund Ending Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
50016	Eldridge-Wilde WF Pumps and Motors Replacement	$ 735,136.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 735,136.00
	Totals	**$ 735,136.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 735,136.00**

Table 11: Revenue Bonds-350 (Series 2016)

	Remainder of FY 2026	10-Yr Projections										Future	Total Funding
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036		
Fund Projected Starting Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Co-Funding SWFWMD *	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Grants (State/Federal)**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Total Funds Expenditures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Fund Ending Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
01014	Surface Water Treatment Plant Expansion	$ 2,075,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,075,000.00
07005	South Pasco Water Quality Treatment, Storage and Pumping, Improvements	$ 81,063.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81,063.00
07131	Cosme Water Treatment Plant Yard Piping Improvements	$ 35,297.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,297.00
50016	Eldridge-Wilde WF Pumps and Motors Replacement	$ 3,069,172.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,069,172.00
50040	Eldridge Wilde WF Underground Powerline	$ 58,211.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 58,211.00
	Totals	**$ 5,318,743.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 5,318,743.00**

Table 12: Revenue Bonds-360 (Series 2022)

	Remainder of FY 2026	10-Yr Projections										Future	Total Funding
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036		
Fund Projected Starting Balance	$ 81,789,475.35	$ 47,034,087.58	$ 3,342,628.99	$ 87,281.29	$ 89,681.52	$ 92,147.77	$ 94,681.83	$ 97,285.58	$ 99,960.93	$ 102,709.86	$ 105,534.38	$ 108,436.57	$ 81,789,475.35
Projected Co-Funding SWFWMD*	$ 15,410,000.00	$ -		$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ 15,410,000.00
Projected Grants (State/Federal)	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ 2,672,985.57	$ 1,293,437.41	$ 91,922.30	$ 2,400.24	$ 2,466.24	$ 2,534.06	$ 2,603.75	$ 2,675.35	$ 2,748.93	$ 2,824.52	$ 2,902.20	$ 2,982.01	$ 4,082,482.57
Projected Total Funds Expenditures	$ (52,838,373.34)	$ (44,984,896.00)	$ (3,347,270.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (101,170,539.34)
Projected Fund Ending Balance	$ 47,034,087.58	$ 3,342,628.99	$ 87,281.29	$ 89,681.52	$ 92,147.77	$ 94,681.83	$ 97,285.58	$ 99,960.93	$ 102,709.86	$ 105,534.38	$ 108,436.57	$ 111,418.58	$ 111,418.58

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01014	Surface Water Treatment Plant Expansion	$ 12,722,203.71	$ 11,175,048.19	$ 10,655,911.00	$ 204,302.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,035,261.19	$ 34,757,464.90
01610	South Hillsborough Pipeline (Segment A)*	$ 25,921,606.15	$ 30,108,684.15	$ 13,629,337.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,738,021.15	$ 69,659,627.30
01622	Tampa Bay Desalination Facility-Reverse Osmosis Trains	$ -	$ 3,859,913.00	$ 12,418,486.00	$ 3,132,601.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,411,000.00	$ 19,411,000.00
07033	Tampa Bay Desalination Facility Intake Connection Improvements-Phase 2	$ 21,043,263.00	$ 313,569.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 313,569.00	$ 21,356,832.00
11020	Long-term Master Water Plan-Feasibility Program Management	$ 156,370.00	$ 799,354.00	$ 83,909.00	$ 10,367.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 893,630.00	$ 1,050,000.00
11022	Feasibility Study for New Groundwater Sources	$ 1,041,353.00	$ 1,746,296.00	$ 2,466,519.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,212,815.00	$ 5,254,168.00
50051	Cypress Creek Water Treatment Plant Chemical Piping Replacement	$ 4,494,638.17	$ 2,013,642.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,013,642.00	$ 6,508,280.17
50052	High Service Pump Station Ball Valve Replacement	$ 390,840.00	$ 1,369,567.00	$ 1,980,003.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,349,570.00	$ 3,740,410.00
50073	Cypress Creek Water Treatment Plant 72-Inch Valve	$ 789,911.00	$ 1,452,300.00	$ 3,750,731.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,203,031.00	$ 5,992,942.00
	Totals	**$ 66,560,185.03**	**$ 52,838,373.34**	**$ 44,984,896.00**	**$ 3,347,270.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 101,170,539.34**	**$ 167,730,724.37**

Table 13: Revenue Bonds-370 (Series 2024)

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 415,998,306.69	$ 278,522,748.33	$ 132,397,190.52	$ 17,644,851.53	$ 68,304.95	$ 70,183.34	$ 72,113.38	$ 74,096.50	$ 76,134.15	$ 78,227.84	$ 80,379.10	$ 82,589.53	$ 415,998,306.69
Projected Co-Funding SWFWMD*	$ 813,445.26	$ 12,250,000.00	$ 12,250,000.00	$ 12,250,000.00			$ -	$ -	$ -	$ -	$ -	$ -	$ 37,563,445.26
Projected Grants (State/Federal)**	$ 2,930,098.76	$ 1,000,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,930,098.76
Projected Interest	$ 11,542,900.89	$ 8,023,750.58	$ 3,977,797.74	$ 822,108.42	$ 1,878.39	$ 1,930.04	$ 1,983.12	$ 2,037.65	$ 2,093.69	$ 2,151.27	$ 2,210.43	$ 2,271.21	$ 24,383,113.42
Projected Total Funds Expenditures	$ (152,762,003.27)	$ (167,399,308.39)	$ (130,980,136.73)	$ (30,648,655.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (481,790,103.39)
Projected Fund Ending Balance	$ 278,522,748.33	$ 132,397,190.52	$ 17,644,851.53	$ 68,304.95	$ 70,183.34	$ 72,113.38	$ 74,096.50	$ 76,134.15	$ 78,227.84	$ 80,379.10	$ 82,589.53	$ 84,860.74	$ 84,860.74

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
NA	South-Central Hillsbough Wellfield (Hillsborough Water Capacity Permit Acquisition)	$ -	$ 1,261,968.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,261,968.00	$ 1,261,968.00
01014	Surface Water Treatment Plant Expansion**	$ 8,720,524.00	$ 42,149,615.74	$ 60,940,414.39	$ 33,176,055.73	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 136,266,085.86	$ 144,986,609.86
01602	Cypress Creek Wellfield Improvements	$ 381,692.00	$ 857,673.00	$ 493,452.00	$ 139,183.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,490,308.00	$ 1,872,000.00
01604	Eldridge-Wilde Wellfield Water Quality Treatment Improvements	$ -	$ 101,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 101,000.00	$ 101,000.00
01610	South Hillsborough Pipeline (Segment A)*	$ 14,700,594.83	$ 84,534,180.00	$ 85,304,864.00	$ 84,698,804.00	$ 29,644,514.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 284,182,362.00	$ 298,882,956.83
01612	South Hillsborough Wellfield	$ 1,743,587.00	$ 12,624,352.00	$ 4,206,303.00	$ 305,906.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,136,561.00	$ 18,880,148.00
01617	Regional Facilities Site-Alkalinity Adjustment Facility	$ -	$ 2,791,915.00	$ 7,879,404.00	$ 6,406,681.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,078,000.00	$ 17,078,000.00
06912	Surface Water Treatment Plant SCADA System Upgrade**	$ 1,004,106.54	$ 2,717,987.03	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,717,987.03	$ 3,722,093.57
11005	Integrated Program Manager Consultant Services	$ 12,168.50	$ 1,487,831.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,487,831.50	$ 1,500,000.00
11022	Feasibility Study for New Groundwater Sources	$ 751,567.00	$ 750,620.00	$ 1,032,833.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,783,453.00	$ 2,535,020.00
11025	Feasibility Study For Surface Water Sources	$ 145,751.00	$ 1,170,989.00	$ 1,313,958.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,484,947.00	$ 2,630,698.00
50021	Morris Bridge WF Improvements**	$ -	$ 2,313,872.00	$ 6,228,080.00	$ 6,253,507.00	$ 1,004,141.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,799,600.00	$ 15,799,600.00
	Totals	**$ 27,459,990.87**	**$ 152,762,003.27**	**$ 167,399,308.39**	**$ 130,980,136.73**	**$ 30,648,655.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 481,790,103.39**	**$ 509,250,094.26**

Table 14: Revenue Bonds-380 (Series 2026)

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 292,000,000.00	$ 293,338,333.33	$ 261,880,920.50	$ 151,989,299.81	$ 53,460,257.56	$ 40,235,010.14	$ 12,964.92	$ 13,321.46	$ 13,687.80	$ 14,064.21	$ 14,450.98	$ 14,848.38	$ 292,000,000.00
Projected Co-Funding SWFWMD *	$ -	$ -	$ -	$ -	$ 11,775,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,775,000.00
Projected Interest	$ 1,338,333.33	$ 8,066,804.17	$ 7,201,725.31	$ 4,179,705.74	$ 1,793,969.58	$ 1,106,462.78	$ 356.54	$ 366.34	$ 376.41	$ 386.77	$ 397.40	$ 408.33	$ 23,689,292.71
Projected Total Funds Expenditures	$ -	$ (39,524,217.00)	$ (117,093,346.00)	$ (102,708,748.00)	$ (26,794,217.00)	$ (41,328,508.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ (327,449,036.00)
Projected Fund Ending Balance	$ 293,338,333.33	$ 261,880,920.50	$ 151,989,299.81	$ 53,460,257.56	$ 40,235,010.14	$ 12,964.92	$ 13,321.46	$ 13,687.80	$ 14,064.21	$ 14,450.98	$ 14,848.38	$ 15,256.71	$ 15,256.71

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01602	Cypress Creek Wellfield Improvements	$ -	$ -	$ 127,842.00	$ 3,812,433.00	$ 5,024,317.00	$ 3,028,891.00	$ 943,752.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,937,235.00	$ 12,937,235.00
01604	Eldridge-Wilde Wellfield Water Quality Treatment Improvements	$ -	$ -	$ 1,950,031.00	$ 13,014,766.00	$ 21,553.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,986,350.00	$ 14,986,350.00
01605	Morris Bridge Underground Powerline	$ -	$ -	$ -	$ 151,706.00	$ 379,838.00	$ 59,948.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 591,492.00	$ 591,492.00
01612	South Hillsborough Wellfield	$ -	$ -	$ 3,892,200.00	$ 51,240,468.00	$ 54,244,078.00	$ 10,612,012.00	$ 40,168,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 160,156,758.00	$ 160,156,758.00
01617	Regional Facilities Site-Alkalinity Adjustment Facility	$ -	$ -	$ -	$ 1,503,745.00	$ 4,746,255.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,250,000.00	$ 6,250,000.00
01618	Crossbar Wellfield Stationary Generators	$ -	$ -	$ -	$ 348,674.00	$ 14,326.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 363,000.00	$ 363,000.00
01619	Cypress Creek Wellfield Generators	$ -	$ -	$ 293,895.00	$ 2,353,952.00	$ 2,458,309.00	$ 696,844.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,803,000.00	$ 5,803,000.00
01621	Tampa Bay Desalination Facility Building Improvements	$ -	$ -	$ -	$ 78,520.00	$ 110,480.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 189,000.00	$ 189,000.00
03508	Surface Water Treatment Plant Water Quality Improvements	$ -	$ -	$ 199,000.00	$ 7,858,296.00	$ 17,609,050.00	$ 7,421,704.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,088,050.00	$ 33,088,050.00
03512	Brandon Urban Dispersed Wells-BUD 5 Water Quality Improvements	$ -	$ -	$ -	$ 900,000.00	$ 900,000.00	$ 900,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,700,000.00	$ 2,700,000.00
03600	Tampa Bay Desalination Plant - R&R Program	$ -	$ -	$ 4,017,600.00	$ 4,017,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,035,200.00	$ 8,035,200.00
03700	Surface Water Treatment Plant - Renewal and Replacement Program - Phase II	$ -	$ -	$ 2,139,778.00	$ 1,023,222.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,163,000.00	$ 3,163,000.00
03701	Surface Water Treatment Plant - Renewal and Replacement Program - Phase III			$ 2,472,101.00	$ 2,420,899.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,893,000.00	$ 4,893,000.00
03702	Surface Water Treatment Plant - Renewal and Replacement Program - Phase IV	$ -	$ -	$ 527,095.00	$ 1,331,710.00	$ 13,194.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,871,999.00	$ 1,871,999.00

Table 14: Revenue Bonds-380 (Series 2026) (Continued)

Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	10-Yr Projected Fund Expenditures by Fiscal Year												Total Funds Needed	Total (Actuals + Needed)
			Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future		
03703	Surface Water Treatment Plant - Renewal and Replacement Program - Phase V	$ -	$ -	$ 119,125.00	$ 2,752,455.00	$ 1,028,421.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,900,001.00	$ 3,900,001.00
03704	Surface Water Treatment Plant - Renewal and Replacement Program - Phase VI	$ -	$ -	$ -	$ 1,364,111.00	$ 950,889.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,315,000.00	$ 2,315,000.00
06321	South Operations and Maintenance Building	$ -	$ -	$ 21,087.00	$ 2,031,809.00	$ 7,482,175.00	$ 2,006,130.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,541,201.00	$ 11,541,201.00
06912	Surface Water Treatment Plant SCADA System Upgrade	$ -	$ -	$ 16,633,204.00	$ 1,090,702.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,723,906.00	$ 17,723,906.00
07005	South Pasco Water Quality Treatment, Storage and Pumping, Improvements	$ -	$ -	$ 469,507.00	$ 2,087,341.00	$ 1,961,151.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,517,999.00	$ 4,517,999.00
07061	South Pasco Wellfield Underground Commercial Powerline	$ -	$ -	$ 192,590.00	$ 203,410.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,000.00	$ 396,000.00
07544	Cypress Creek Pump Station Repump Improvements	$ -	$ -	$ 1,143,349.00	$ 7,692,454.00	$ 772,002.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,607,805.00	$ 9,607,805.00
07545	2027 SCADA Field Communications Devices Replacement	$ -	$ -	$ -	$ 1,160,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,160,000.00	$ 1,160,000.00
07546	2028 SCADA Data Center Hardware Replacement	$ -	$ -	$ 1,762,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,762,000.00	$ 1,762,000.00
09021	2028 Long-Term Master Water Plan Update	$ -	$ -	$ 927,000.00	$ 927,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,854,000.00	$ 1,854,000.00
11005	Integrated Program Manager Consultant Services	$ -	$ -	$ 1,500,000.00	$ 1,500,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000,000.00	$ 3,000,000.00
50047	Morris Bridge Chemical Piping Replacement	$ -	$ -	$ -	$ 575,364.00	$ 784,192.00	$ 2,068,688.00	$ 216,756.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,645,000.00	$ 3,645,000.00
50070	High Service Pump Station Variable Frequency Drives	$ -	$ -	$ 27,669.00	$ 4,297,795.00	$ 4,208,518.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,533,982.00	$ 8,533,982.00
50073	Cypress Creek Water Treatment Plant 72-Inch Valve	$ -	$ -	$ 401,050.00	$ 320,008.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 721,058.00	$ 721,058.00
50085	Tampa Bay Desalination Facility Pretreatment Basins Coating Repair	$ -	$ -	$ 708,094.00	$ 1,034,906.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,743,000.00	$ 1,743,000.00
	Totals	**$ -**	**$ -**	**$ 39,524,217.00**	**$ 117,093,346.00**	**$ 102,708,748.00**	**$ 26,794,217.00**	**$ 41,328,508.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 327,449,036.00**	**$ 327,449,036.00**

Table 15: Revenue Bonds-390 (Future Issuance)

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ -	$ -	$ -	$ 301,000,000.00	$ 225,759,535.00	$ 32,819,323.71	$ 295,780.11	$ 437,344.07	$ 60,184.03	$ 61,839.09	$ 63,539.67	$ 65,287.01	$ 301,000,000.00
Projected Funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Co-Funding SWFWMD*	$ -	$ -	$ -	$ -	$ 475,000.00	$ 12,250,000.00	$ 4,750,000.00	$ -	$ -	$ -	$ -	$ -	$ 17,475,000.00
Projected Interest	$ -	$ -	$ -	$ 8,277,500.00	$ 6,221,449.71	$ 1,239,406.40	$ 138,758.95	$ 12,026.96	$ 1,655.06	$ 1,700.57	$ 1,747.34	$ 1,795.39	$ 15,896,040.40
Projected Total Funds Expenditures	$ -	$ -	$ -	$ (83,517,965.00)	$ (199,636,661.00)	$ (46,012,950.00)	$ (4,747,195.00)	$ (389,187.00)	$ -	$ -	$ -	$ -	$ (334,303,958.00)
Projected Fund Ending Balance	$ -	$ -	$ -	$ 225,759,535.00	$ 32,819,323.71	$ 295,780.11	$ 437,344.07	$ 60,184.03	$ 61,839.09	$ 63,539.67	$ 65,287.01	$ 67,082.40	$ 67,082.40

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
01602	Cypress Creek Wellfield Improvements	$ -	$ -	$ -	$ -	$ 2,317,832.00	$ 2,331,932.00	$ 156,790.00	$ 843,210.00	$ -	$ -	$ -	$ -	$ -	$ 5,649,764.00	$ 5,649,764.00
01603	Cypress Creek WTP Yard Piping Valves, Drainage Improvements, Roads, and Security	$ -	$ -	$ -	$ -	$ 184,220.00	$ 171,030.00	$ 8,750.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 364,000.00	$ 364,000.00
01604	Eldridge-Wilde Wellfield Water Quality Treatment Improvements	$ -	$ -	$ -	$ -	$ 47,035,623.00	$ 10,657,027.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57,692,650.00	$ 57,692,650.00
01605	Morris Bridge Underground Powerline	$ -	$ -	$ -	$ -	$ 4,253.00	$ 2,337,433.00	$ 4,968,823.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,310,509.00	$ 7,310,509.00
01606	Section 21 Wellfield Pumps and Motors	$ -	$ -	$ -	$ -	$ -	$ 1,606,100.00	$ 934,525.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,540,625.00	$ 2,540,625.00
01608	Tampa Bay Desalination Plant Concentrate Disposal	$ -	$ -	$ -	$ -	$ 51,000.00	$ 3,028,859.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,079,859.00	$ 3,079,859.00
01614	Alafia Pump Station Motors and VFDs	$ -	$ -	$ -	$ -	$ 248,753.00	$ 1,565,390.00	$ 1,969,857.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,784,000.00	$ 3,784,000.00
01618	Crossbar Wellfield Stationary Generators	$ -	$ -	$ -	$ -	$ 2,477,779.00	$ 2,915,241.00	$ 1,241,980.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,635,000.00	$ 6,635,000.00
01621	Tampa Bay Desalination Facility Building Improvements	$ -	$ -	$ -	$ -	$ 4,740,750.00	$ 1,967,250.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,708,000.00	$ 6,708,000.00
03508	Surface Water Treatment Plant Water Quality Improvements	$ -	$ -	$ -	$ -	$ -	$ 107,364,665.00	$ 25,731,285.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 133,095,950.00	$ 133,095,950.00
03600	Tampa Bay Desalination Plant - R&R Program	$ -	$ -	$ -	$ -	$ -	$ 4,017,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,017,600.00	$ 4,017,600.00
03800	Surface Water Treatment Plant Renewal and Replacement Program - Phase VII	$ -	$ -	$ -	$ -	$ 23,000.00	$ 3,273,000.00			$ -	$ -	$ -	$ -	$ -	$ 3,296,000.00	$ 3,296,000.00
07005	South Pasco Water Quality Treatment, Storage and Pumping, Improvements	$ -	$ -	$ -	$ -	$ 10,017,118.00	$ 32,389,882.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 42,407,000.00	$ 42,407,000.00
07007	Cypress Creek WTP Chemical System Upgrades	$ -	$ -	$ -	$ -	$ -	$ 47,583.00	$ 52,992.00	$ 3,425.00		$ -	$ -	$ -	$ -	$ 104,000.00	$ 104,000.00
07061	South Pasco Wellfield Underground Commercial Powerline	$ -	$ -	$ -	$ -	$ 5,806,808.00	$ 3,288,192.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,095,000.00	$ 9,095,000.00

Table 15: Revenue Bonds-390 (Future Issuance) (Continued)

			10-Yr Projected Fund Expenditures by Fiscal Year													
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
07064	Ground Storage Tanks Fall Protection	$ -	$ -	$ -	$ -	$ -	$ 52,288.00	$ 169,822.00	$ 106,890.00	$ -	$ -	$ -	$ -	$ -	$ 329,000.00	$ 329,000.00
07548	2030 SCADA Field Communications Devices Replacement	$ -	$ -	$ -	$ -	$ -	$ 1,090,533.00	$ 205,467.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,296,000.00	$ 1,296,000.00
07549	Alafia Pump Station Meter Improvements and Pump Repairs	$ -	$ -	$ -	$ -	$ 243,059.00	$ 1,664,425.00	$ 873,516.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,781,000.00	$ 2,781,000.00
07550	Cypress Creek Water Treatment Plant (WTP) Electrical Improvements	$ -	$ -	$ -	$ -	$ 179,783.00	$ 515,938.00	$ 1,056,662.00	$ 524,618.00	$ -	$ -	$ -	$ -	$ -	$ 2,277,001.00	$ 2,277,001.00
07603	SCADA-Software Features	$ -	$ -	$ -	$ -	$ 284,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 284,000.00	$ 284,000.00
11005	Integrated Program Manager Consultant Services	$ -	$ -	$ -	$ -	$ 1,500,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,500,000.00	$ 1,500,000.00
50022	Morris Bridge Booster Station Pumps 1 and 2 Replacement	$ -	$ -	$ -	$ -	$ 273,694.00	$ 417,828.00	$ 6,478.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 698,000.00	$ 698,000.00
50023	Starkey Wellfield Improvements	$ -	$ -	$ -	$ -	$ 630,075.00	$ 1,741,819.00	$ 3,175,867.00	$ 3,188,052.00	$ 389,187.00	$ -	$ -	$ -	$ -	$ 9,125,000.00	$ 9,125,000.00
50041	Northwest Hillsborough Wellfield Improvements	$ -	$ -	$ -	$ -	$ 495,305.00	$ 803,378.00	$ 126,317.00	$ 81,000.00	$ -	$ -	$ -	$ -	$ -	$ 1,506,000.00	$ 1,506,000.00
50042	Cosme-Odessa Wellfield Improvements	$ -	$ -	$ -	$ -	$ 469,841.00	$ 652,548.00	$ 399,611.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,522,000.00	$ 1,522,000.00
50057	Tampa Bay Desalination Plant Belt Filter Press Replacement	$ -	$ -	$ -	$ -	$ 2,085,515.00	$ 1,611,485.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,697,000.00	$ 3,697,000.00
50058	Tampa Bay Desalination Plant Piping Replacement	$ -	$ -	$ -	$ -	$ 1,059,066.00	$ 56,934.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,116,000.00	$ 1,116,000.00
50062	Tampa Bay Desalination Pipeline Reliability - Phase 2	$ -	$ -	$ -	$ -	$ 234,186.00	$ 3,640,814.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,875,000.00	$ 3,875,000.00
50063	Brandon Urban Dispersed Wellfield Pumps and Motors Replacement	$ -	$ -	$ -	$ -	$ 129,373.00	$ 995,671.00	$ 169,956.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,295,000.00	$ 1,295,000.00
50084	Repump Station Variable Frequency Drives					$ 2,530,932.00	$ 6,158,208.00	$ 3,108,860.00							$ 11,798,000.00	$ 11,798,000.00
52003	Lake Bridge Pumps and Motors	$ -	$ -	$ -	$ -	$ 496,000.00	$ 3,273,608.00	$ 1,655,392.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,425,000.00	$ 5,425,000.00
	Totals	**$ -**	**$ -**	**$ -**	**$ -**	**$ 83,517,965.00**	**$ 199,636,661.00**	**$ 46,012,950.00**	**$ 4,747,195.00**	**$ 389,187.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 334,303,958.00**	**$ 334,303,958.00**

* SWFWMD reimbursement from Project 01610-South Hilbsorough Pipeline

Table 16: Revenue Bonds-Future (Future Issuance)

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ -	$ -	$ -	$ -	$ -	$ 36,250,000.00	$ 19,036,194.00	$ 1,475,184.34	$ 31,152,499.40	$ 2,985,688.14	$ 3,044,914.56	$ 2,445,391.71	$ 36,250,000.00
Additional Bond Funding	$ -	$ -	$ -	$ -	$ -			$ 49,000,000.00	$ -	$ 13,000,000.00	$ -	$ -	$ 62,000,000.00
Projected Co-Funding SWFWMD **	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,500,000.00	$ 11,867,800.00	$ -	$ -	$ -	$ -	$ 19,367,800.00
Projected Interest	$ -	$ -	$ -	$ -	$ -	$ 996,875.00	$ 729,745.34	$ 1,714,432.07	$ 856,693.73	$ 439,606.42	$ 83,735.15	$ 67,248.27	$ 4,888,335.98
Projected Total Funds Expenditures	$ -	$ -	$ -	$ -	$ -	$ (18,210,681.00)	$ (25,790,755.00)	$ (32,904,917.00)	$ (29,023,505.00)	$ (13,380,380.00)	$ (683,258.00)	$ (1,964,246.00)	$ (121,957,742.00)
Projected Fund Ending Balance	$ -	$ -	$ -	$ -	$ -	$ 19,036,194.00	$ 1,475,184.34	$ 31,152,499.40	$ 2,985,688.14	$ 3,044,914.56	$ 2,445,391.71	$ 548,393.98	$ 548,393.98

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01603	Cypress Creek WTP Yard Piping Valves, Drainage Improvements, Roads, and Security	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,056,324.00	$ 1,294,557.00	$ 561,120.00	$ -	$ -	$ -	$ -	$ 2,912,001.00	$ 2,912,001.00
01608	Tampa Bay Desalination Plant Concentrate Disposal	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,572,976.00	$ 6,389,328.00	$ 22,687,591.00	$ 23,245,127.00	$ 7,523,119.00			$ 64,418,141.00	$ 64,418,141.00
03600	Tampa Bay Desalination Plant - R&R Program	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,017,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,017,600.00	$ 4,017,600.00
03800	Surface Water Treatment Plant Renewal and Replacement Program - Phase VII	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,079,984.00	$ 2,793,016.00	$ -	$ -	$ -	$ -	$ -	$ 6,873,000.00	$ 6,873,000.00
07007	Cypress Creek WTP Chemical System Upgrades	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 367,369.00	$ 370,631.00	$ -	$ -	$ -	$ -	$ 738,000.00	$ 738,000.00
50022	Morris Bridge Booster Station Pumps 1 and 2 Replacement	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,326,184.00	$ 7,802,816.00	$ -	$ -	$ -	$ -	$ -	$ 10,129,000.00	$ 10,129,000.00
50041	Northwest Hillsborough Wellfield Improvements	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,522,742.00	$ 4,731,988.00	$ 5,302,710.00	$ 657,560.00	$ -	$ -	$ -	$ 12,215,000.00	$ 12,215,000.00
50042	Cosme-Odessa Wellfield Improvements	$ -	$ -	$ -	$ -	$ -	$ -	$ 466,111.00	$ 2,078,632.00	$ 2,815,273.00	$ 2,804,431.00	$ 862,553.00	$ -	$ -	$ 9,027,000.00	$ 9,027,000.00
50043	Cypress Creek Wellfield Headwall Erosion Repair	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,783.00	$ 274,252.00	$ 1,107,925.00	$ 7,040.00	$ -	$ 1,540,000.00	$ 1,540,000.00
50056	South Pasco Transmission Main Pipe Repair	$ -	$ -	$ -	$ -	$ -	$ -	$ 168,760.00	$ 86,613.00	$ 162,823.00	$ 124,557.00	$ 3,787,737.00	$ 162,510.00	$ -	$ 4,493,000.00	$ 4,493,000.00
50059	Harney Pump Station Pumps and Motors	$ -	$ -	$ -	$ -	$ -	$ -		$ 246,436.00	$ 853,986.00	$ 1,917,578.00	$ -	$ -	$ -	$ 3,018,000.00	$ 3,018,000.00
52002	Carrollwood Pumps and Motors	$ -	$ -	$ -	$ -	$ -	$ -					$ 99,046.00	$ 513,708.00	$ 1,964,246.00	$ 2,577,000.00	$ 2,577,000.00
	Totals	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 18,210,681.00**	**$ 25,790,755.00**	**$ 32,904,917.00**	**$ 29,023,505.00**	**$ 13,380,380.00**	**$ 683,258.00**	**$ 1,964,246.00**	**$ 121,957,742.00**	**$ 121,957,742.00**

** SWFWMD Co-funding reimbursemenst associated to projects 01610 and 01616

Table 17: Uniform Rate Funds

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 2,100,631.97	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,100,631.97
Projected Funding	$ -	$ 364,917.04	$ 51,114.00	$ 220,886.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 636,917.04
Projected Interest	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Total Funds Expenditures	$ (2,100,631.97)	$ (364,917.04)	$ (51,114.00)	$ (220,886.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (2,737,549.01)
Projected Fund Ending Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01610	South Hillsborough Pipeline (Segment A)	$ 15,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000.00
07131	Cosme Water Treatment Plant Yard Piping Improvements	$ 900.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 900.00
09010	Tampa Bay Desalination Upgrade/Replace PLC/SCADA System Study	$ 90,158.00	$ -	$ -	$ 51,114.00	$ 220,886.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 272,000.00	$ 362,158.00
09108	Cypress Creek Wellfield Surface Water Improvements-Phase 3	$ 261,075.96	$ 439,138.97	$ 167,527.04	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 606,666.01	$ 867,741.97
11005	Integrated Program Manager Consultant Services	$ 4,464,397.40	$ 965,424.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 965,424.00	$ 5,429,821.40
11020	Long-term Master Water Plan-Feasibility Program Management	$ 400,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 400,000.00
11021	Developmental Alternatives Phase 1	$ 220,178.00	$ 226,162.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 226,162.00	$ 446,340.00
11022	Feasibility Study for New Groundwater Sources	$ 228,530.00	$ 16,160.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,160.00	$ 244,690.00
11023	2045 System Hydraulic and Emergency Scenario Analysis Report	$ 897,140.00	$ 111,960.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 111,960.00	$ 1,009,100.00
11026	Source Water Quality and Business Case Evaluation	$ -	$ 172,109.00	$ 197,390.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 369,499.00	$ 369,499.00
50016	Eldridge-Wilde WF Pumps and Motors Replacement	$ 7,007.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,007.00
50037	Cypress Creek Generators Study	$ 157,227.00	$ 169,678.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 169,678.00	$ 326,905.00
50040	Eldridge Wilde WF Underground Powerline	$ 23,778.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,778.00
	Totals	**$ 6,765,391.36**	**$ 2,100,631.97**	**$ 364,917.04**	**$ 51,114.00**	**$ 220,886.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,737,549.01**	**$ 9,502,940.37**

Table 18: Renewal and Replacement (R&R) Fund

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 19,707,313.36	$ 17,292,401.93	$ 15,975,668.25	$ 13,650,660.12	$ 13,254,949.28	$ 13,619,460.38	$ 13,993,995.54	$ 14,378,830.42	$ 14,774,248.26	$ 15,180,540.09	$ 15,598,004.94	$ 16,026,950.07	$ 19,707,313.36
Projected Funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Grants (State/Federal)**	$ 415,870.00	$ 1,621,355.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,037,225.00
Projected Interest	$ 553,387.54	$ 520,128.32	$ 439,330.88	$ 375,393.15	$ 364,511.11	$ 374,535.16	$ 384,834.88	$ 395,417.84	$ 406,291.83	$ 417,464.85	$ 428,945.14	$ 440,741.13	$ 5,100,981.81
Projected Total Funds Expenditures	$ (3,384,168.97)	$ (3,458,217.00)	$ (2,764,339.00)	$ (771,104.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (10,377,828.97)
Projected Fund Ending Balance	$ 17,292,401.93	$ 15,975,668.25	$ 13,650,660.12	$ 13,254,949.28	$ 13,619,460.38	$ 13,993,995.54	$ 14,378,830.42	$ 14,774,248.26	$ 15,180,540.09	$ 15,598,004.94	$ 16,026,950.07	$ 16,467,691.20	$ 16,467,691.20

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
06914	Cosme Collection Main - Utility Conflict	$ -	$ 67,561.00	$ 34,178.00	$ 2,087,261.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,189,000.00	$ 2,189,000.00
07153	Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict**	$ 164,689.00	$ 1,186,553.00	$ 2,190,766.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,377,319.00	$ 3,542,008.00
50016	Eldridge-Wilde WF Pumps and Motors Replacement	$ 2,844,332.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,844,332.00
50021	Morris Bridge WF Improvements	$ 1,535,854.00	$ 360,393.00	$ 638,138.00	$ 638,138.00	$ 198,044.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,834,713.00	$ 3,370,567.00
50023	Starkey Wellfield Improvements	$ 70,409.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,409.00
50040	Eldridge Wilde WF Underground Powerline	$ 3,473,591.00	$ 439,162.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 439,162.00	$ 3,912,753.00
50041	Northwest Hillsborough Wellfield Improvements	$ 1,856.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,856.00
50049	High Service Pump Station Chemical Piping Replacement	$ 1,418,693.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,418,693.00
50051	Cypress Creek Water Treatment Plant Chemical Piping Replacement	$ 707,071.03	$ 112,893.97	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 112,893.97	$ 819,965.00
50052	High Service Pump Station Ball Valve Replacement	$ 19,980.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,980.00
50055	Tampa Bay Desalination VFDs Replacement	$ 426,229.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 426,229.00
50059	Harney Pump Station Pumps and Motors	$ 68,268.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 68,268.00
50075	Surface Water Treatment Plant-Renewal and Replacement Program - Phase I	$ 5,160,683.00	$ 1,050,741.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,050,741.00	$ 6,211,424.00
50076	C.W. Bill Young Regional Reservoir-Dissolved Air Lines Replacement	$ -	$ -	$ -	$ 38,940.00	$ 573,060.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 612,000.00	$ 612,000.00
50082	Cypress Creek Medium Voltage Generator Control System Upgrade	$ -	$ 166,865.00	$ 595,135.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 762,000.00	$ 762,000.00
	Totals	**$ 15,891,655.03**	**$ 3,384,168.97**	**$ 3,458,217.00**	**$ 2,764,339.00**	**$ 771,104.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 10,377,828.97**	**$ 26,269,484.00**

Table 19: Capital Improvement Fund (CIF)

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 17,155,709.56	$ 3,924,538.64	$ 233,197.07	$ 239,609.98	$ 246,199.26	$ 210,969.74	$ 61,771.41	$ 63,470.12	$ 65,215.55	$ 67,008.98	$ 68,851.72	$ 70,745.15	$ 17,155,709.56
Projected Funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Funding Assurity*	$ 14,864.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,864.00
Projected Interest	$ 472,190.77	$ 107,924.81	$ 6,412.92	$ 6,589.27	$ 6,770.48	$ 5,801.67	$ 1,698.71	$ 1,745.43	$ 1,793.43	$ 1,842.75	$ 1,893.42	$ 1,945.49	$ 616,609.16
Projected Total Funds Expenditures	$ (13,718,225.69)	$ (3,799,266.39)	$ -	$ -	$ (42,000.00)	$ (155,000.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ (17,714,492.08)
Projected Fund Ending Balance	$ 3,924,538.64	$ 233,197.07	$ 239,609.98	$ 246,199.26	$ 210,969.74	$ 61,771.41	$ 63,470.12	$ 65,215.55	$ 67,008.98	$ 68,851.72	$ 70,745.15	$ 72,690.64	$ 72,690.64

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01610	South Hillsborough Pipeline (Segment A)	$ 6,532,405.31	$ 2,228,155.90	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,228,155.90	$ 8,760,561.21
07033	Tampa Bay Desalination Facility Intake Connection Improvements-Phase 2	$ 1,396,356.00	$ 8,750.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,750.00	$ 1,405,106.00
07065	Maytum Vault Confined Space Removal	$ -	$ -	$ -	$ -	$ -	$ 42,000.00	$ 155,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 197,000.00	$ 197,000.00
07131	Cosme Water Treatment Plant Yard Piping Improvements	$ 504,978.00	$ 425,657.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 425,657.00	$ 930,635.00
07542	Lake Bridge Water Treatment Plant-Pump No 4	$ 254,384.32	$ 940,397.79	$ 691,647.39	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,632,045.18	$ 1,886,429.50
07544	Cypress Creek Pump Station Repump Improvements	$ -	$ 333,116.00	$ 354,078.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 687,194.00	$ 687,194.00
07547	IT-vGrid Infrastructure Modernization	$ -	$ -	$ 2,646,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,646,000.00	$ 2,646,000.00
50016	Eldridge-Wilde WF Pumps and Motors Replacement*	$ 6,675,738.00	$ 7,861,947.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,861,947.00	$ 14,537,685.00
50049	High Service Pump Station Chemical Piping Replacement	$ 233,727.00	$ 6,385.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,385.00	$ 240,112.00
50070	High Service Pump Station Variable Frequency Drives	$ -	$ 324,478.00	$ 107,541.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 432,019.00	$ 432,019.00
50071	Cypress Creek Pump Station Variable Frequency Drives	$ 256,848.00	$ 1,589,339.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,589,339.00	$ 1,846,187.00
	Totals	**$ 15,854,436.63**	**$ 13,718,225.69**	**$ 3,799,266.39**	**$ -**	**$ -**	**$ 42,000.00**	**$ 155,000.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 17,714,492.08**	**$ 33,568,928.71**

Table 20: Energy Fund

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 1,915,452.00	$ 2,070,876.93	$ 2,340,702.05	$ 1,289,592.35	$ 807,914.14	$ 126,498.78	$ 11,069.50	$ 20,338.91	$ 332,519.23	$ 660,188.51	$ 996,868.69	$ 1,342,807.58	$ 1,915,452.00
Projected Funding	$ 100,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 310,000.00	$ 3,510,000.00
Projected Grants (State/Federal)**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ 55,424.93	$ 65,474.12	$ 72,894.31	$ 43,988.79	$ 30,742.64	$ 12,003.72	$ 8,829.41	$ 9,084.32	$ 17,669.28	$ 26,680.18	$ 35,938.89	$ 45,452.21	$ 424,182.79
Projected Total Funds Expenditures	$ -	$ (105,649.00)	$ (1,434,004.00)	$ (835,667.00)	$ (1,022,158.00)	$ (437,433.00)	$ (309,560.00)	$ (6,904.00)	$ -	$ -	$ -	$ -	$ (4,151,375.00)
Projected Fund Ending Balance	$ 2,070,876.93	$ 2,340,702.05	$ 1,289,592.35	$ 807,914.14	$ 126,498.78	$ 11,069.50	$ 20,338.91	$ 332,519.23	$ 660,188.51	$ 996,868.69	$ 1,342,807.58	$ 1,698,259.79	$ 1,698,259.79

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
01606	Section 21 Wellfield Pumps and Motors	$ -	$ -	$ -	$ 120,901.00	$ 159,983.00	$ 167,491.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 448,375.00	$ 448,375.00
07070	Tampa Bypass Canal (MLK) Pumps	$ -	$ -	$ 105,649.00	$ 585,988.00	$ 459,637.00	$ 622,829.00	$ 111,897.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,886,000.00	$ 1,886,000.00
50069	Repump Station Generator	$ -	$ -	$ -	$ 36,668.00	$ 156,202.00	$ 154,130.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 347,000.00	$ 347,000.00
50079	Clearwater Generator Replacement	$ -	$ -	$ -	$ -	$ 17,292.00	$ 77,708.00	$ 325,536.00	$ 309,560.00	$ 6,904.00	$ -	$ -	$ -	$ -	$ 737,000.00	$ 737,000.00
50084	Repump Station Variable Frequency Drives	$ -	$ -	$ -	$ 690,447.00	$ 42,553.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 733,000.00	$ 733,000.00
	Totals	**$ -**	**$ -**	**$ 105,649.00**	**$ 1,434,004.00**	**$ 835,667.00**	**$ 1,022,158.00**	**$ 437,433.00**	**$ 309,560.00**	**$ 6,904.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,151,375.00**	**$ 4,151,375.00**

Table 21: Released Debt Service Funds

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 8,165,715.52	$ 6,825,264.70	$ 3,539,374.48	$ 164,975.27	$ 61,007.09	$ 62,684.79	$ 64,408.62	$ 66,179.86	$ 67,999.80	$ 69,869.80	$ 71,791.22	$ 73,765.48	$ 8,165,715.52
Projected Co-Funding SWFWMD	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Grants (State/Federal)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ 224,557.18	$ 187,694.78	$ 97,332.80	$ 4,536.82	$ 1,677.70	$ 1,723.83	$ 1,771.24	$ 1,819.95	$ 1,869.99	$ 1,921.42	$ 1,974.26	$ 2,028.55	$ 528,908.51
Projected Total Funds Expenditures	$ (1,565,008.00)	$ (3,473,585.00)	$ (3,471,732.00)	$ (108,505.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (8,618,830.00)
Projected Fund Ending Balance	$ 6,825,264.70	$ 3,539,374.48	$ 164,975.27	$ 61,007.09	$ 62,684.79	$ 64,408.62	$ 66,179.86	$ 67,999.80	$ 69,869.80	$ 71,791.22	$ 73,765.48	$ 75,794.03	$ 75,794.03

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
06321	South Operations and Maintenance Building	$ -	$ -	$ 164,468.00	$ 456,827.00	$ 108,505.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 729,800.00	$ 729,800.00
11020	Long-term Master Water Plan-Feasibility Program Management	$ -	$ -	$ 489,581.00	$ 60,419.00	$ -									$ 550,000.00	$ 550,000.00
50055	Tampa Bay Desalination VFDs Replacement	$ 566,025.00	$ 1,499,031.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,499,031.00	$ 2,065,056.00
50073	Cypress Creek Water Treatment Plant 72-Inch Valve	$ -	$ 65,977.00	$ 2,819,536.00	$ 2,954,486.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,839,999.00	$ 5,839,999.00
	Totals	**$ 566,025.00**	**$ 1,565,008.00**	**$ 3,473,585.00**	**$ 3,471,732.00**	**$ 108,505.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 8,618,830.00**	**$ 9,184,855.00**

Table 22: PFAS Settlement Fund

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 13,660,860.00	$ 13,184,590.65	$ 11,319,923.89	$ 7,238,384.80	$ 3,924,186.38	$ 49,066.01	$ 75,272.82	$ 396,895.33	$ 727,362.45	$ 747,364.91	$ 767,917.45	$ 789,035.18	$ 13,660,860.00
Projected Funding	$ 804,000.00	$ 804,000.00	$ 804,000.00	$ 804,000.00	$ 311,000.00	$ 311,000.00	$ 311,000.00	$ 311,000.00					$ 4,460,000.00
Projected Grants (State/Federal)**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Projected Interest	$ 397,783.65	$ 384,686.24	$ 333,407.91	$ 221,165.58	$ 116,467.63	$ 9,901.82	$ 10,622.50	$ 19,467.12	$ 20,002.47	$ 20,552.54	$ 21,117.73	$ 21,698.47	$ 1,576,873.65
Projected Total Funds Expenditures	$ (1,678,053.00)	$ (3,053,353.00)	$ (5,218,947.00)	$ (4,339,364.00)	$ (4,302,588.00)	$ (294,695.00)	$ -	$ -	$ -	$ -	$ -	$ -	$ (18,887,000.00)
Projected Fund Ending Balance	$ 13,184,590.65	$ 11,319,923.89	$ 7,238,384.80	$ 3,924,186.38	$ 49,066.01	$ 75,272.82	$ 396,895.33	$ 727,362.45	$ 747,364.91	$ 767,917.45	$ 789,035.18	$ 810,733.65	$ 810,733.65

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	Project Name	Actuals Thru End of FY 26-Q1 (12/31/2025)	Remainder of FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funds Needed	Total (Actuals + Needed)
03505	Brandon Urban Dispersed Wells-BUD 7 Water Quality Treatment Improvements	$ -	$ -	$ 367,951.00	$ 1,688,773.00	$ 1,978,450.00	$ 1,964,566.00	$ 111,260.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,111,000.00	$ 6,111,000.00
03511	Surface Water Treatment Plant Water Quality Pilot Study	$ -	$ 1,678,053.00	$ 2,079,703.00	$ 1,648,244.00	$ -	$ -	$ -	$ -	$ -	$ -				$ 5,406,000.00	$ 5,406,000.00
03512	Brandon Urban Dispersed Wells-BUD 5 Water Quality Improvements	$ -	$ -	$ 605,699.00	$ 1,881,930.00	$ 2,360,914.00	$ 2,338,022.00	$ 183,435.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,370,000.00	$ 7,370,000.00
	Totals	**$ -**	**$ 1,678,053.00**	**$ 3,053,353.00**	**$ 5,218,947.00**	**$ 4,339,364.00**	**$ 4,302,588.00**	**$ 294,695.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 18,887,000.00**	**$ 18,887,000.00**

Table 23: Member Government Contribution - JPA

	Remainder of FY 2026	10-Yr Projections											
		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Future	Total Funding
Fund Projected Starting Balance	$ 23,612,019.44	$ 21,072,626.65	$ 32,610,131.88	$ 38,009,505.17	$ 5,250,000.28	$ 5,250,000.28	$ 5,250,000.28	$ 5,250,000.28	$ 5,086,200.28	$ -	$ -	$ -	$ 23,612,019.44
Projected Co-Funding SWFWMD *	$ 6,239,824.98	$ 5,250,000.00	$ 5,250,000.00	$ 5,250,000.00	$ 5,250,000.00	$ 5,250,000.00	$ 5,250,000.00	$ 5,250,000.00	$ 5,086,200.00	$ -	$ -	$ -	$ 42,826,024.98
Projected Hillsborough County Funding	$ 30,000,000.00	$ 30,000,000.00	$ 23,367,842.00		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 83,367,842.00
Projected Hillsborough County Funding Needed	$ -	$ -	$ -	$ (23,895,036.07)	$ (5,250,000.00)	$ (5,250,000.00)	$ (5,250,000.00)	$ (5,250,000.00)	$ (5,086,200.00)	$ -	$ -	$ -	$ (49,981,236.07)
Projected Interest	$ 1,645,925.72	$ 1,548,872.23	$ 1,683,769.28	$ 532,522.90	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,411,090.14
Projected Total Funds Expenditures	$ (40,425,143.49)	$ (25,261,367.00)	$ (24,902,238.00)	$ (14,646,991.72)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (105,235,740.21)
Projected Fund Ending Balance	$ 21,072,626.65	$ 32,610,131.88	$ 38,009,505.17	$ 5,250,000.28	$ 5,250,000.28	$ 5,250,000.28	$ 5,250,000.28	$ 5,086,200.28	$ -	$ -	$ -	$ -	$ -

			10-Yr Projected Fund Expenditures by Fiscal Year												
Project No.	**Project Name**	**Actuals Thru End of FY 26-Q1 (12/31/2025)**	**Remainder of FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**Future**	**Total Funds Needed**	**Total (Actuals + Needed)**
01616	South Hillsborough Pipeline (Segment B)*	$ 23,174,259.79	$ 39,659,833.49	$ 24,349,457.00	$ 24,349,458.00	$ 14,646,991.72	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,005,740.21	$ 126,180,000.00
08304	Hillsborough County- Lithia WTP Yard Piping	$ -	$ 765,310.00	$ 911,910.00	$ 552,780.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,230,000.00	$ 2,230,000.00
	Totals	**$ 23,174,259.79**	**$ 40,425,143.49**	**$ 25,261,367.00**	**$ 24,902,238.00**	**$ 14,646,991.72**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 105,235,740.21**	**$ 128,410,000.00**

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Project Details

A total of 89 projects are included in the updated Capital Improvements Program. This section provides a description of the projects included in the FYs 2027-2036 Capital Improvements Program and includes the projects' general information.

- Project Name and Number
- Project Manager and Construction Manager (if known, as of date of this update and subject to change)
- Project Description and General Location
- General Project Schedule (subject to change)
- Project Budget by Project Phase

Projects are grouped based on their project phase as of March 29, 2026.

- Close-Out: This phase includes projects that have reached substantial completion and are pending final payments or Board approved close-out.
- Execution Construction: This phase includes projects that are actively in construction.
- Execution Study: This phase includes projects that are actively in the study, assessment, or feasibility phase and program management services.
- Bidding: This phase includes projects with on-going procurement or bidding for construction or design-build services.
- Design: This phase includes projects with on-going design and/permitting activities.
- Professional Services Selection: This phase includes projects with on-going selection of engineering or other professional services, either through the available continuing services contracts or through Florida's Consultants Competitive Negotiation Act (CCNA.)
- Planning: This phase includes projects with on-going in-house or outsourced planning/feasibility activities.
- Not Yet Started: Projects that have not started or have been placed on-hold.

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Close-Out Phase Projects

Project No. **Project Name**

07033 : Tampa Bay Desalination Facility Intake Connection Improvements-Phase 2

07131 : Cosme Water Treatment Plant Yard Piping Improvements

07033: Tampa Bay Desalination Facility Intake Connection Improvements-Phase 2

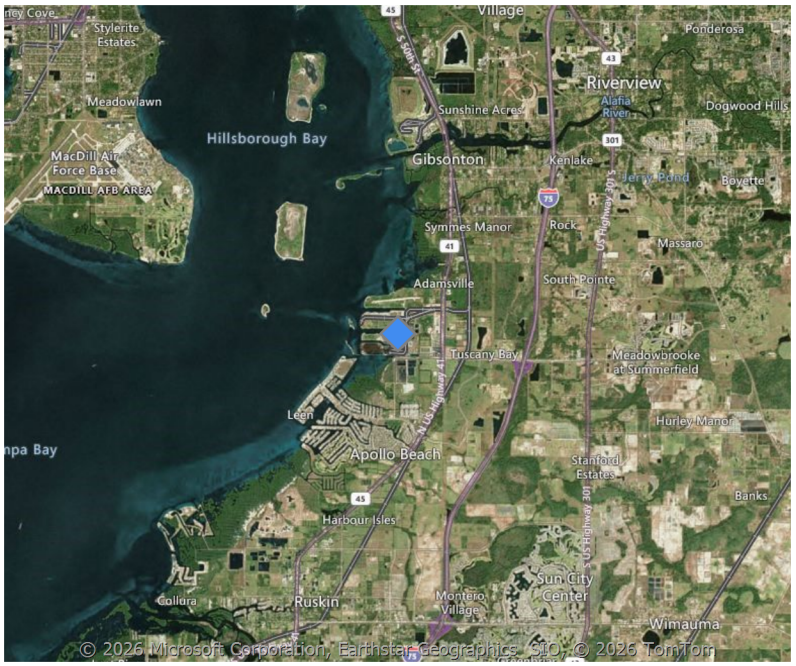
Project Manager	Danielle Keirsey
Construction Manager	Anthony Feria
Status	Close-Out

Project Description

This project is located at the Tampa Bay Seawater Desalination Water Treatment Plant (Desal Plant). This project includes the installation of a new pipeline and pump station at Tampa Electric Company's (TECO's) Big Bend power plant. The new pipeline will connect the Tunnel 1 intake pipeline connection and isolation valve, installed in Phase 1, to the existing Desal Intake Pump Facility.

Project Location

Hillsborough County



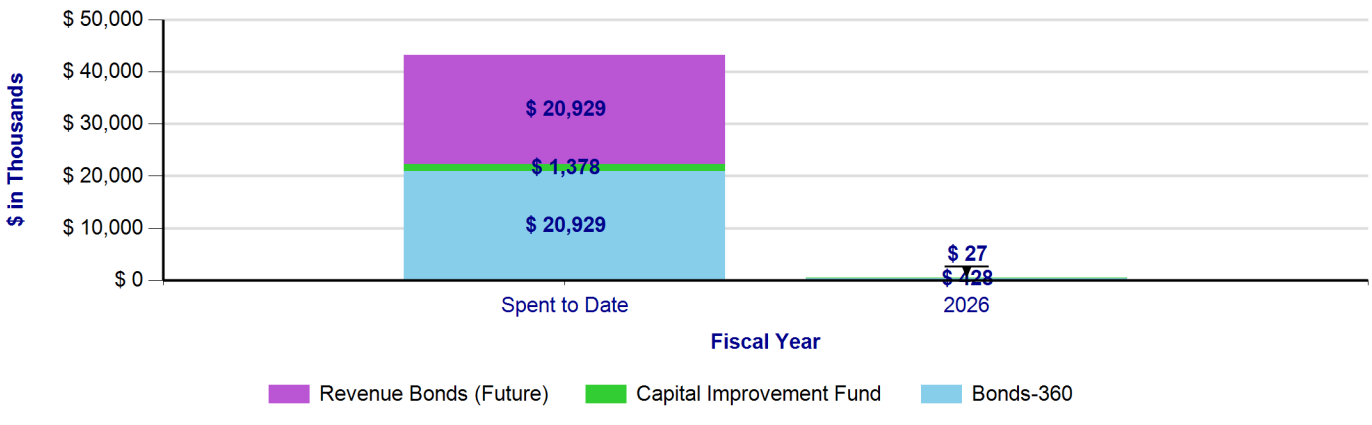
Project Schedule

Project Phase	Start Date	End Date
Planning	3/1/2021	9/20/2021
Professional Services Selection	9/20/2021	10/18/2021
Design	10/18/2021	6/1/2022
Bidding	6/2/2022	12/7/2022
Construction	12/8/2022	7/31/2025
Close-Out	8/1/2025	4/20/2026

Project Budget by Project Phase

Project Phase	Amount
Design	$392,924
Bidding	$24,003
Construction	$22,345,013
Total Budget	$22,761,940

Expenditure Plan by Fiscal Year and Funding Source



07131: Cosme Water Treatment Plant Yard Piping Improvements

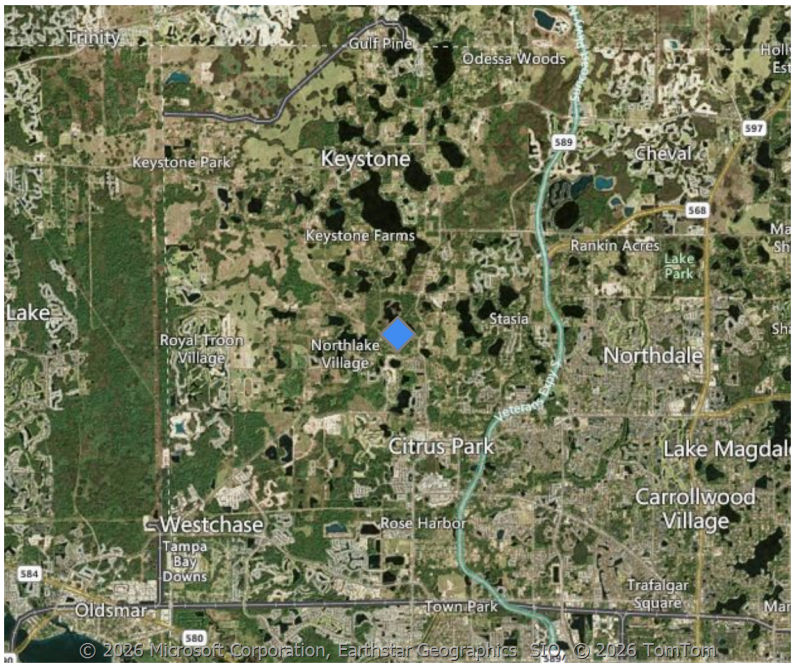
Project Manager	James Smith
Construction Manager	Anthony Feria
Status	Close-Out

Project Description

This project is located at the Cosme Water Treatment Plant (WTP) and includes new yard piping to permanently connect the South Pasco Transmission Main (TM) to the Northwest Hillsborough TM. The connection between the two transmission mains upstream of the Cosme WTP will allow the South Pasco TM to be kept fresh while the Cosme Bypass piping is being utilized. This project is being constructed by an as needed contractor.

Project Location

Hillsborough County



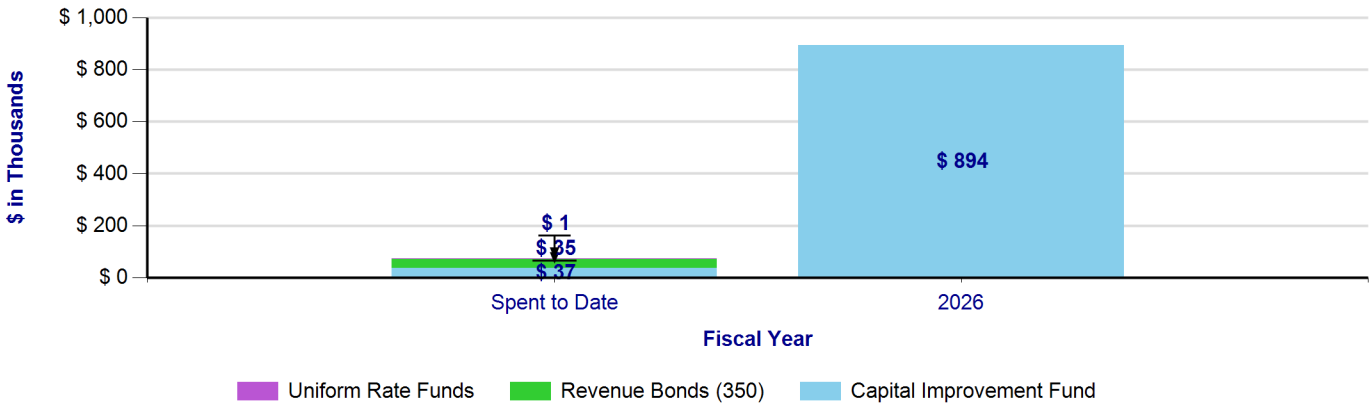
Project Schedule

Project Phase	Start Date	End Date
Planning	5/1/2007	8/21/2015
Design	7/23/2015	11/29/2018
Bidding	11/30/2018	3/21/2025
Construction	3/24/2025	7/20/2026

Project Budget by Project Phase

Project Phase	Amount
Planning	$900
Design	$72,172
Construction	$893,760
Total Budget	$966,832

Expenditure Plan by Fiscal Year and Funding Source



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Execution-Construction Phase Projects

Project No. **Project Name**

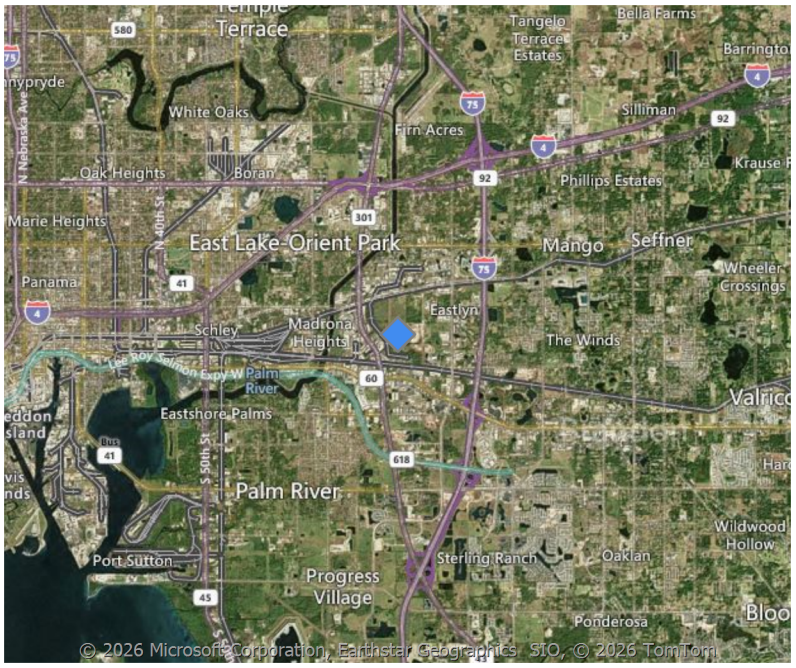
01014 : Surface Water Treatment Plant Expansion
01610 : South Hillsborough Pipeline (Segment A)
01616 : South Hillsborough Pipeline (Segment B)
07542 : Lake Bridge Water Treatment Plant-Pump No 4
50016 : Eldridge-Wilde WF Pumps and Motors Replacement
50040 : Eldridge Wilde WF Underground Powerline
50051 : Cypress Creek Water Treatment Plant Chemical Piping Replacement
50052 : High Service Pump Station Ball Valve Replacement
50055 : Tampa Bay Desalination VFDs Replacement
50071 : Cypress Creek Pump Station Variable Frequency Drives
50075 : Surface Water Treatment Plant-Renewal and Replacement Program - Phase I

01014: Surface Water Treatment Plant Expansion

Project Manager	Karim Molina-Oyola
Construction Manager	Lucas Parmer
Status	Construction

Project Location

Hillsborough County



Project Description

This project consists of an expansion to the Regional Surface Water Treatment Plant by adding a fifth treatment process train. The fifth treatment train will be identical to the existing Treatment Plant process trains which includes an actiflo ballasted-flocculation process, ozonation, biological Granular Activated Carbon filters, solids handling, chemical feed systems, finished water pumping, and control systems. Additionally, several improvement concepts were also assessed during the 2021 Surface Water Treatment Plant Expansion Feasibility Study to improve reliability and increase sustainability and will be included in the expansion effort.

This project will increase Tampa Bay Water's annual average yield of existing surface water supplies by 10 to 12.5 million gallons per day (mgd) with a 20 or 30 mgd rated treatment capacity train. A decision will be made on the total treatment capacity at preliminary design.

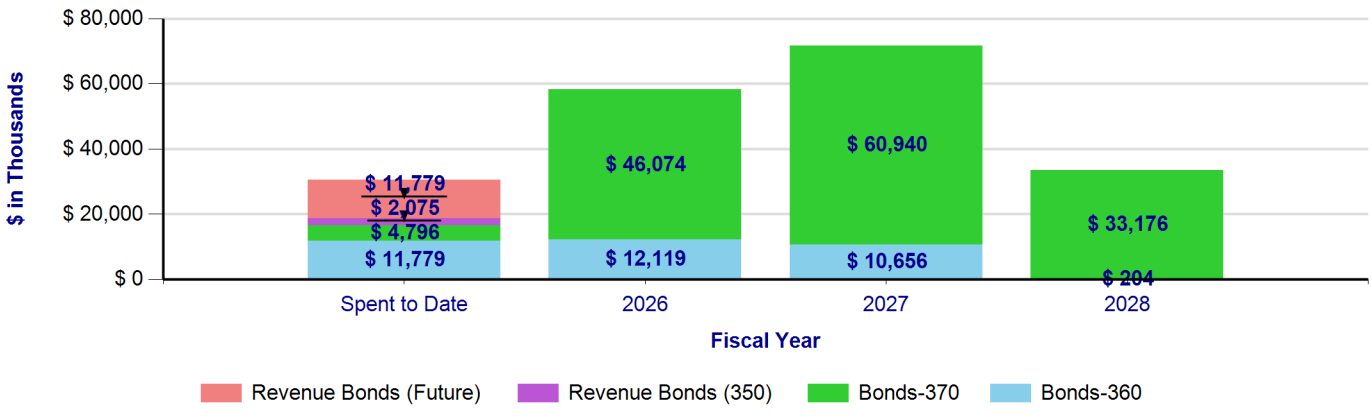
Project Schedule

Project Phase	Start Date	End Date
Publishing	8/1/2022	10/3/2022
Planning	10/4/2022	11/30/2022
Professional Services Selection	10/27/2022	6/1/2023
Design	6/2/2023	9/1/2025
Bidding	7/1/2024	3/17/2025
Construction or Execution	9/2/2025	4/14/2028
Close-Out	11/9/2027	10/16/2028

Project Budget by Project Phase

Project Phase	Amount
Professional Services Selection	$240,524
Design	$21,727,135
Bidding	$14,036,107
Construction or Execution	$145,815,409
Total Budget	$181,819,175

Expenditure Plan by Fiscal Year and Funding Source



01610: South Hillsborough Pipeline (Segment A)

Project Manager	Soli Rojas
Construction Manager	Soli Rojas
Status	Construction

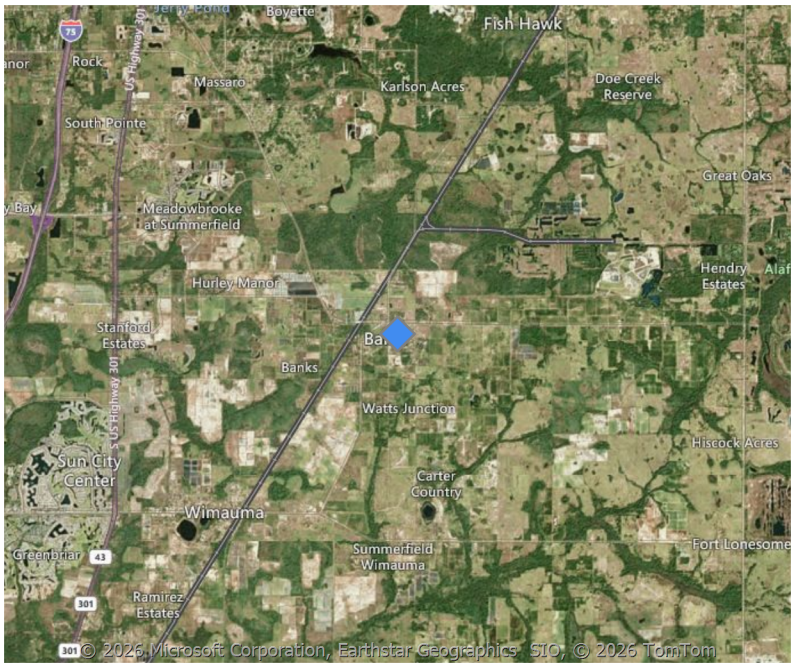
Project Description

This project includes the construction of a new transmission main “Segment A” of the South Hillsborough Pipeline. Segment A is anticipated to be mostly a 66-inch diameter, 18 -mile-long pipeline from the Tampa Bay Water’s Regional Facilities Site to the existing Lithia Point of Connection at Lithia Water Treatment Facility. The project when completed will be able to provide an additional 65 MGD of new supply to SE Hillsborough County.

Note:
This project is partially co-funded by the Southwest Florida Water Management District (District) through the District’s Cooperative Funding Initiative and additional funding the District receives from the Florida Department of Environmental Protection. Total funding commitment for both Segments (A and B) of the South Hillsborough Pipeline is $147,954,000. The amount to be applied to Segment A is $103,567,800 (70%) of the total agreement.

Project Location

Hillsborough County



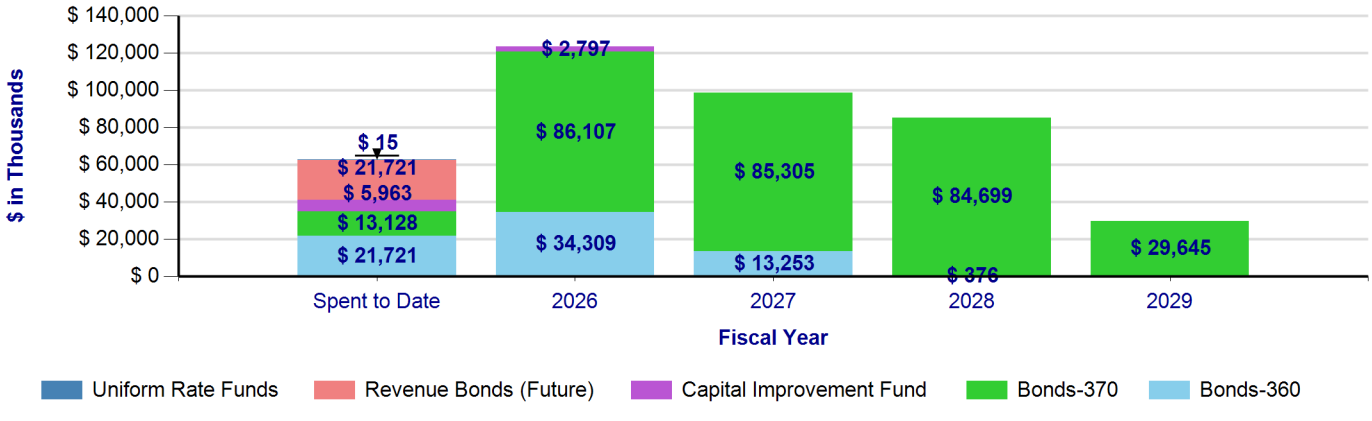
Project Schedule

Project Phase	Start Date	End Date
Planning	10/1/2018	1/4/2021
Professional Services Selection	1/4/2021	8/16/2021
Design	8/16/2021	2/23/2026
Bidding	6/10/2024	5/18/2026
Construction	10/22/2024	5/8/2029
Close-Out	5/9/2029	8/20/2029

Project Budget by Project Phase

Project Phase	Amount
Planning	$359,514
Design	$89,576,494
Construction	$286,198,177
Professional Services	$1,183,960
Total Budget	$377,318,145

Expenditure Plan by Fiscal Year and Funding Source



01616: South Hillsborough Pipeline (Segment B)

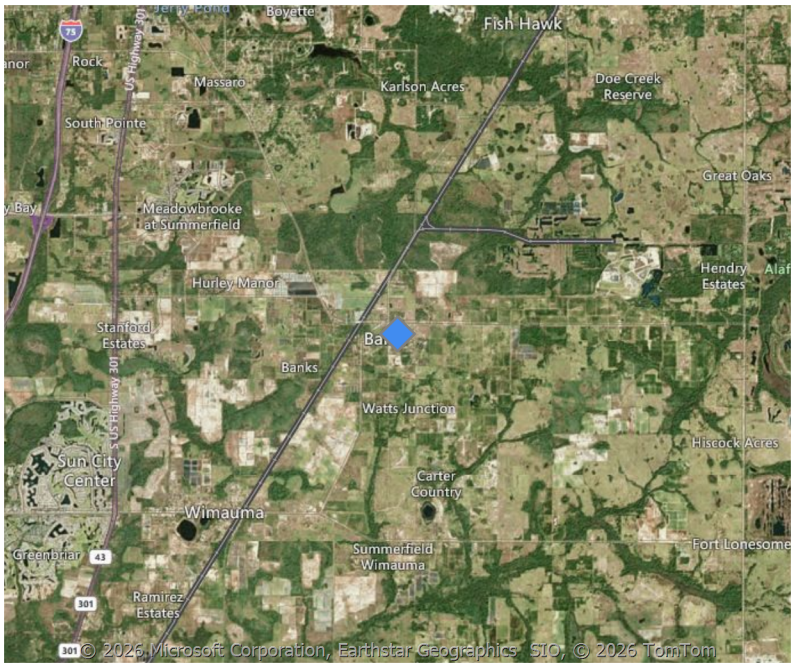
Project Manager	Soli Rojas
Construction Manager	Soli Rojas
Status	Construction

Project Description

This project includes the construction of a new transmission main “Segment B” of the South Hillsborough Pipeline. Segment B is anticipated to be mostly a 60-inch diameter, 8-mile-long pipeline from an interconnection point along Segment A or at Lithia Water Treatment Facilities site to a new Point of Connection to Hillsborough County at their South County Drinking Water Facility in the Balm-Riverview area. The project when completed will be able to provide an additional 60 MGD of new supply to SE Hillsborough County. Project is a result of the signed Memorandum of Understanding and a Joint Project Agreement with Hillsborough County in 2020. This project will receive co-funding from the SWFWMD's Cooperative Funding Initiative.

Project Location

Hillsborough County



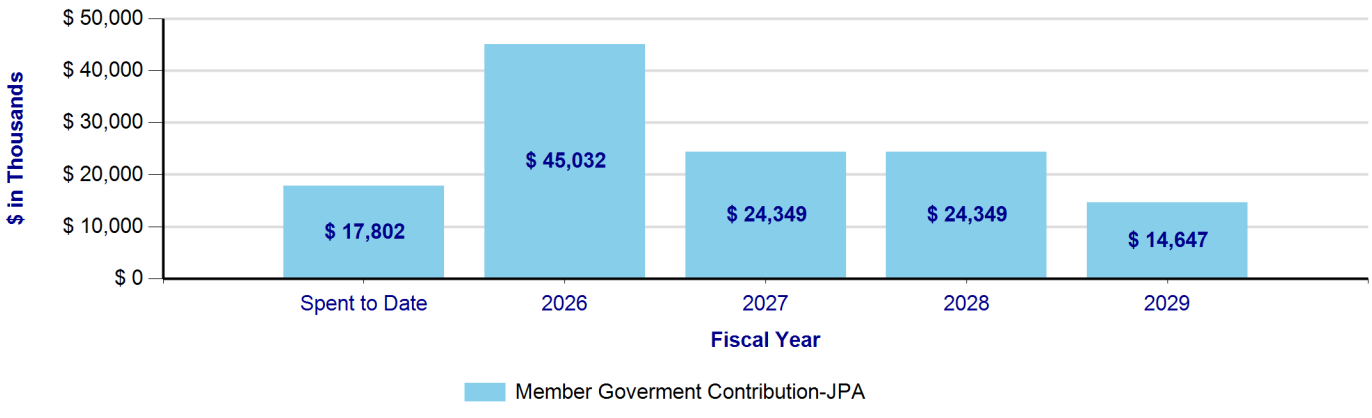
Project Schedule

Project Phase	Start Date	End Date
Planning	6/1/2020	1/4/2021
Professional Services Selection	1/4/2021	8/16/2021
Design	8/16/2021	2/23/2026
Bidding	6/10/2024	5/18/2026
Construction	10/22/2024	5/8/2029
Close-Out	5/9/2029	8/20/2029

Project Budget by Project Phase

Project Phase	Amount
	$263,272
Design	$43,984,221
Construction	$81,932,506
Total Budget	$126,179,999

Expenditure Plan by Fiscal Year and Funding Source



07542: Lake Bridge Water Treatment Plant-Pump No 4

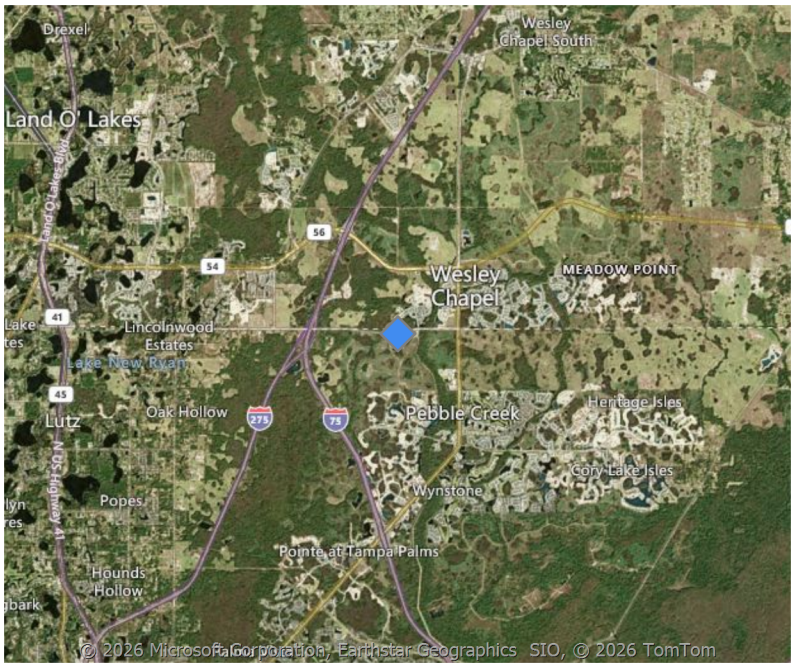
Project Manager	Karim Molina-Oyola
Construction Manager	Anthony Feria
Status	Construction

Project Description

The purpose of this project is to install an additional pump at the Lake Bridge Water Treatment Plant (WTP), in order to increase the capacity of the pump station and meet the demand needs at Pasco County's most Eastern Point of Connection (POC).

Project Location

Hillsborough County



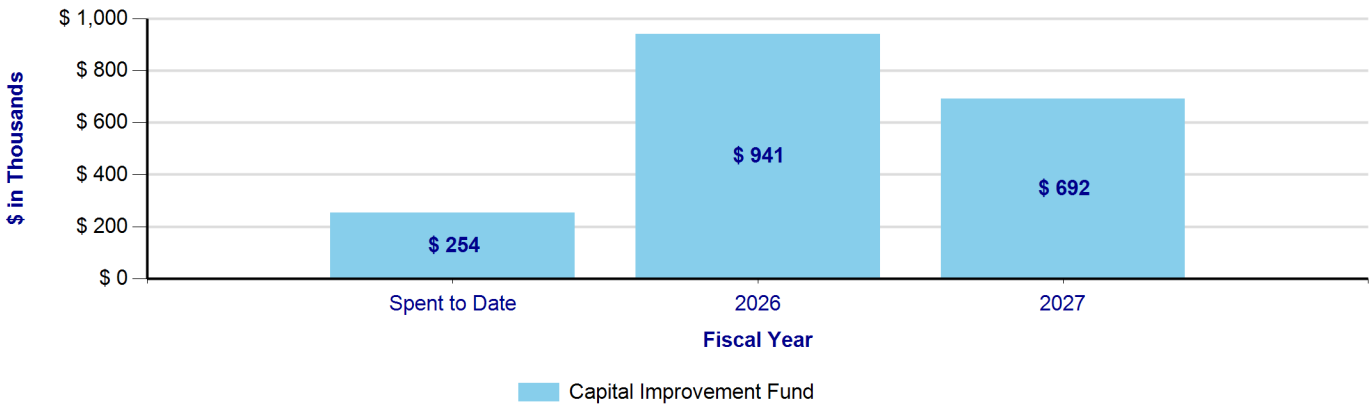
Project Schedule

Project Phase	Start Date	End Date
Publishing	1/8/2024	1/19/2024
Planning	1/22/2024	2/16/2024
Professional Services Selection	2/19/2024	4/15/2024
Design	4/16/2024	4/30/2025
Bidding	5/1/2025	10/20/2025
Construction or Execution	10/21/2025	3/11/2027
Close-Out	3/12/2027	5/20/2027

Project Budget by Project Phase

Project Phase	Amount
Design	$252,113
Bidding	$17,053
Construction or Execution	$1,617,264
Total Budget	$1,886,429

Expenditure Plan by Fiscal Year and Funding Source



50016: Eldridge-Wilde WF Pumps and Motors Replacement

Project Manager	Danielle Keirsey
Construction Manager	Lucas Parmer
Status	Construction

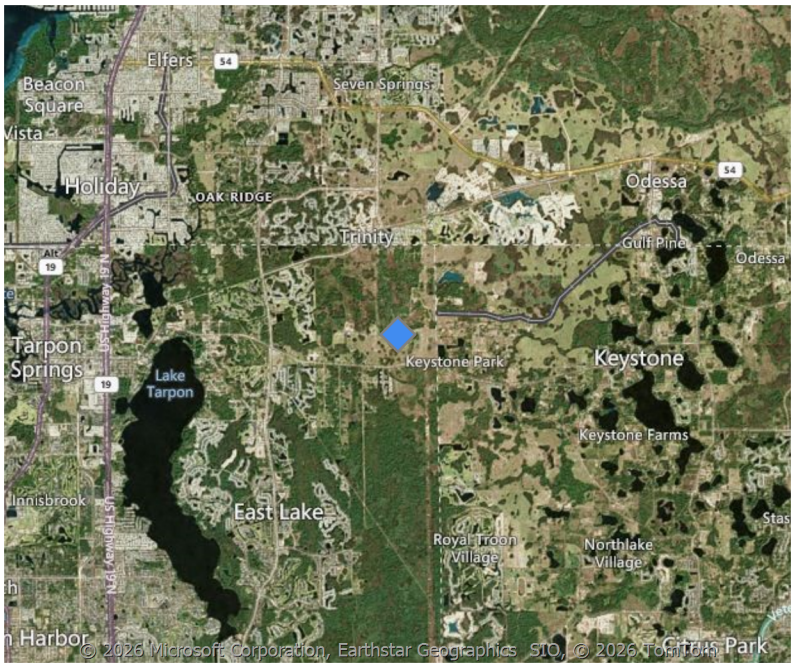
Project Description

This project is located at the Eldridge-Wilde Wellfield and includes: replacement of the pumps, motors, well houses, electrical service, flow measurement and isolation piping at 24 well sites. Access roads and drives will be repaired. 10 existing wells will not be upgraded and will be removed from service per the Wellfield Right-Sizing Analysis completed in September 2016. New pumps and motors will be sized to optimize efficiency for the varying specific capacity at each well. The project includes work in both Hillsborough and Pinellas Counties.

Note: This project will receive up to $750,000 of State funding from the 2019 Legislative Session. The Funding will be managed by the Florida Department of Environmental Protection

Project Location

Multiple



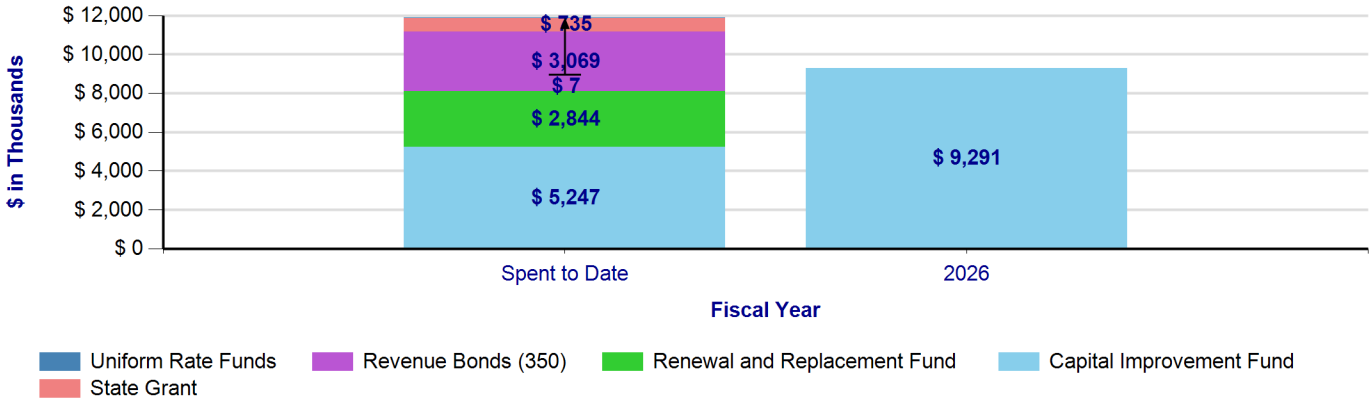
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	1/4/2016	8/15/2016
Design	8/16/2016	5/29/2020
Bidding	6/1/2020	1/1/2021
Construction	1/4/2021	9/21/2026

Project Budget by Project Phase

Project Phase	Amount
Design	$1,383,084
Bidding	$100,323
Construction	$19,709,924
Total Budget	$21,193,331

Expenditure Plan by Fiscal Year and Funding Source



50040: Eldridge Wilde WF Underground Powerline

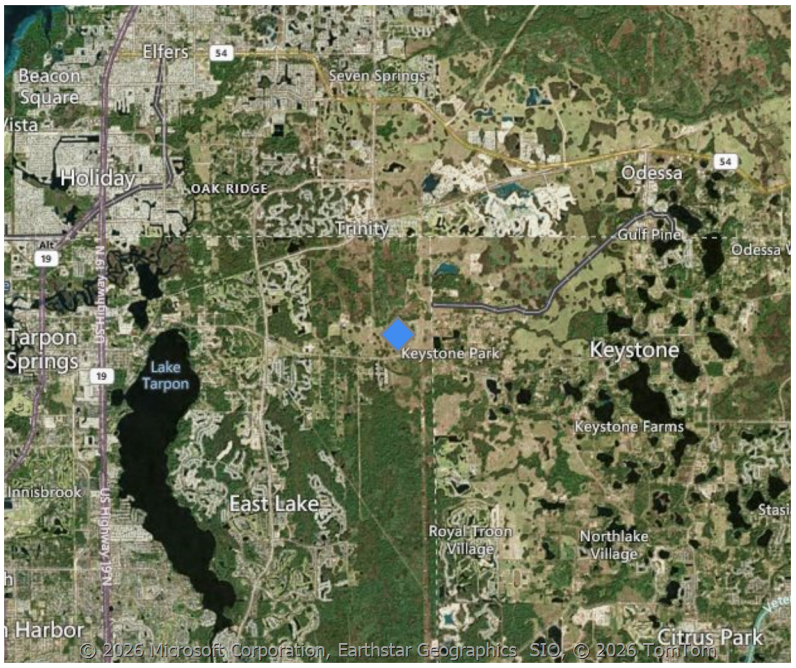
Project Manager	Danielle Keirsey
Construction Manager	Lucas Parmer
Status	Construction

Project Description

This project is located at the Eldridge Wilde Wellfield and includes the installation of approximately 55,000 Linear Feet (LF) of new underground power line in conduit, configured for radial (non-loop) feed; 55,000 LF of spare conduit parallel to the power line; and demolition of the existing overhead system which has reached the end of its useful life.

Project Location

Multiple



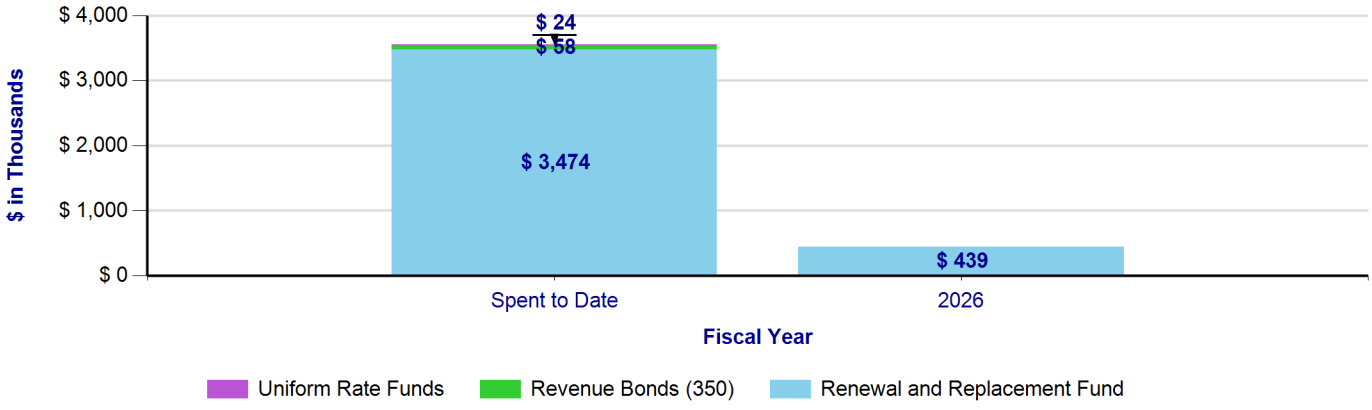
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	9/14/2015	8/15/2016
Design	8/16/2016	12/14/2020
Bidding	6/1/2020	8/17/2020
Construction	8/17/2020	9/21/2026

Project Budget by Project Phase

Project Phase	Amount
Design	$1,015,486
Construction	$2,979,255
Total Budget	$3,994,741

Expenditure Plan by Fiscal Year and Funding Source



50051: Cypress Creek Water Treatment Plant Chemical Piping Replacement

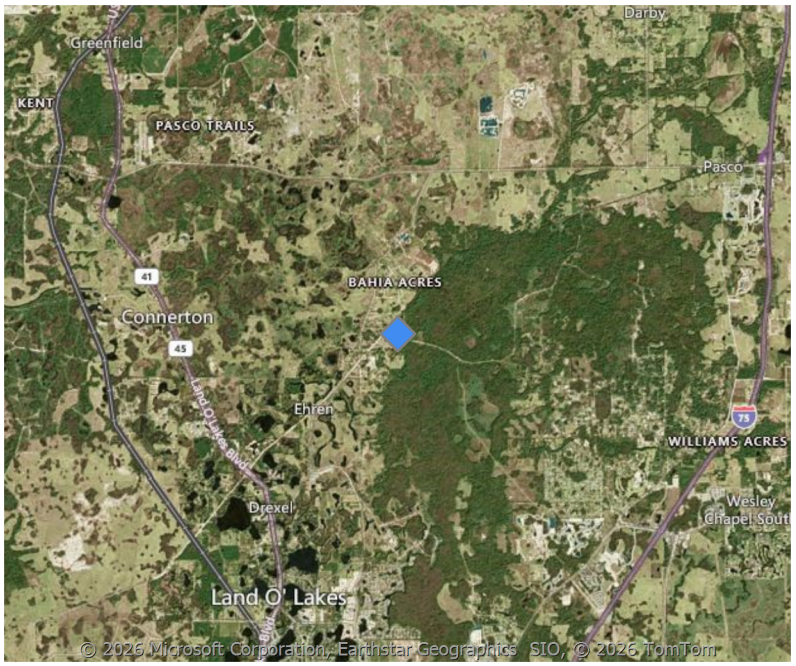
Project Manager	Karim Molina-Oyola
Construction Manager	James Smith
Status	Construction

Project Description

This project is located at the Cypress Creek Water Treatment Plant and includes the replacement of the existing chemical feed systems for (A) Sodium Hydroxide (NaOH), (B) Ammonium Hydroxide (NH3), and (C) Sodium Hypochlorite (NaOCl). The project includes the above and below ground chemical piping, chemical pumps, bulk chemical tanks, and in-pipe chemical injection points.

Project Location

Pasco County



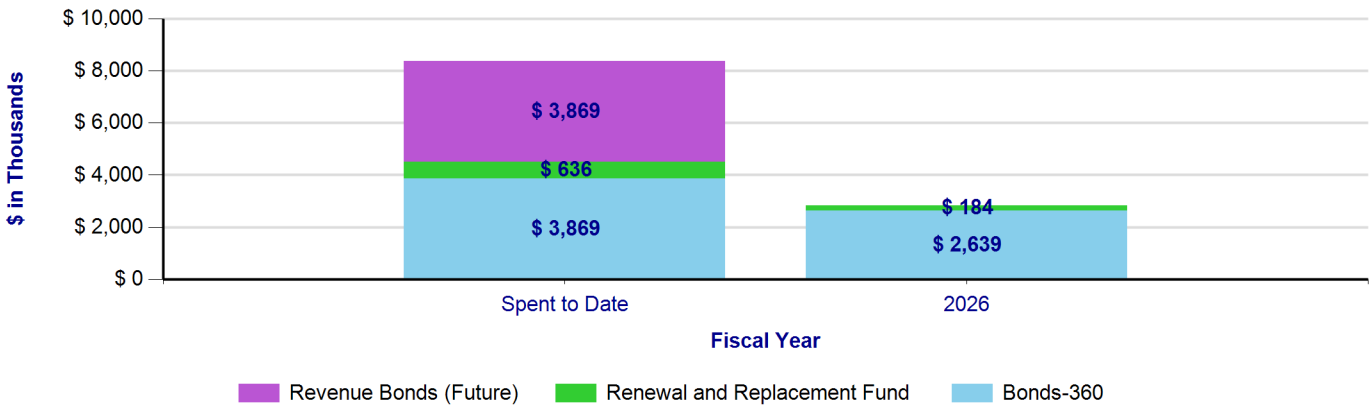
Project Schedule

Project Phase	Start Date	End Date
Design	1/10/2022	12/28/2023
Bidding	12/29/2023	6/3/2024
Construction	6/4/2024	6/19/2026
Close-Out	6/22/2026	8/17/2026

Project Budget by Project Phase

Project Phase	Amount
Design	$430,352
Bidding	$18,800
Construction	$6,864,593
Close-Out	$14,500
Total Budget	$7,328,245

Expenditure Plan by Fiscal Year and Funding Source



50052: High Service Pump Station Ball Valve Replacement

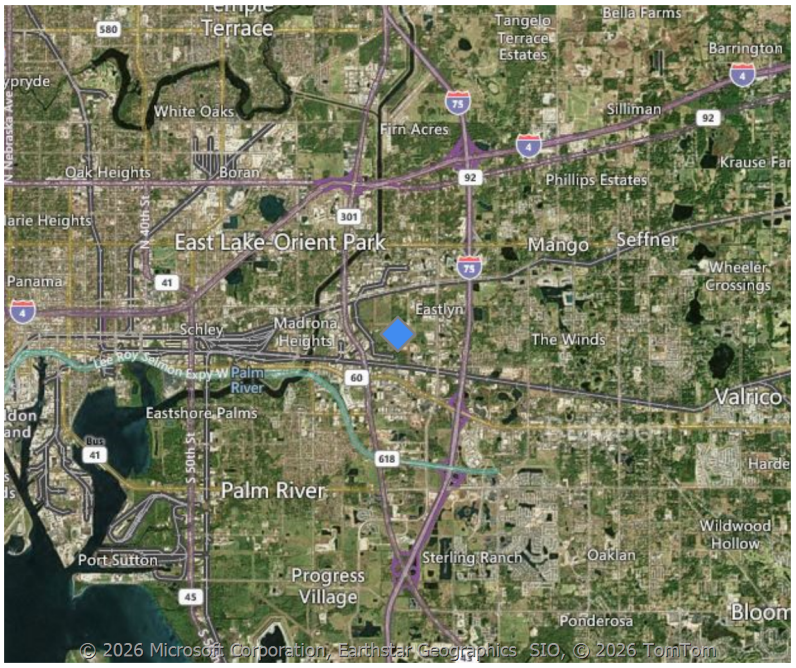
Project Manager	Karim Molina-Oyola
Construction Manager	Anthony Feria
Status	Construction

Project Description

This project is located at the High Service Pump Station and includes the replacement of ball valves for Pumps numbers 1 through 6 and replacement of the associated control piping for any irregularities which could impact reliability.

Project Location

Hillsborough County



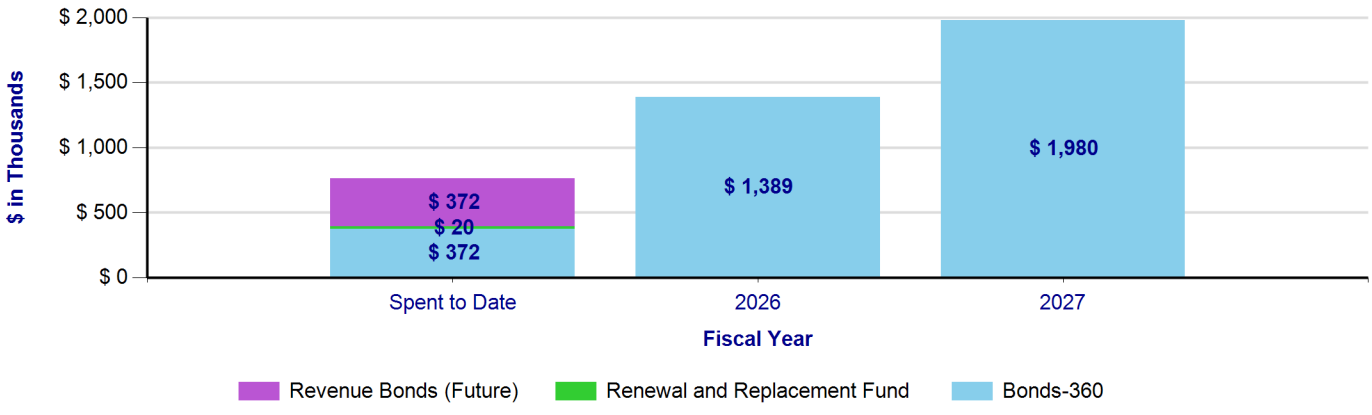
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	11/13/2023	2/26/2024
Planning	8/12/2016	11/10/2023
Design	3/1/2024	9/13/2024
Construction	2/27/2025	9/20/2027
Bidding	9/16/2024	2/26/2025

Project Budget by Project Phase

Project Phase	Amount
Planning	$19,980
Design	$161,630
Construction	$3,567,060
Bidding	$11,720
Total Budget	$3,760,390

Expenditure Plan by Fiscal Year and Funding Source



50055: Tampa Bay Desalination VFDs Replacement

Project Manager	Indigo Dunn
Construction Manager	Anthony Feria
Status	Construction

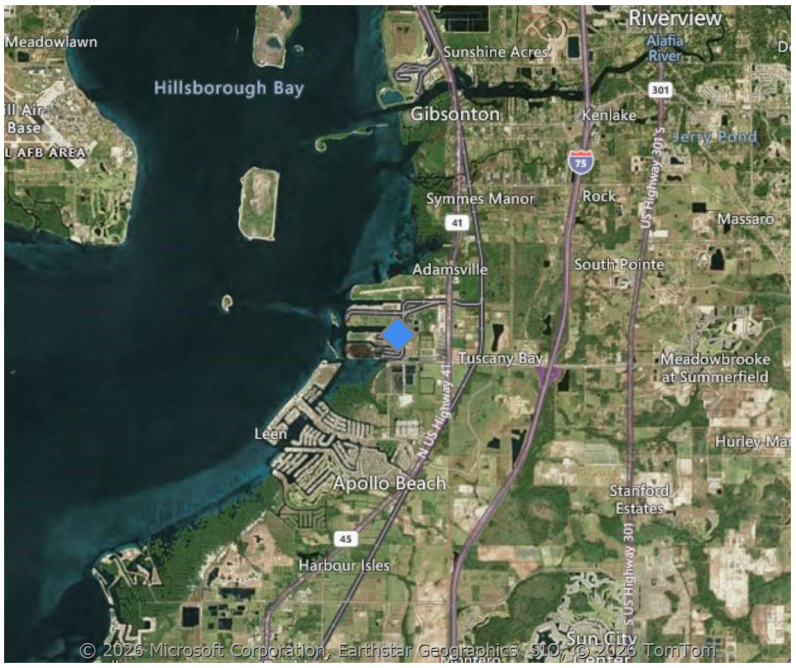
Project Description

This project is located at the Tampa Bay Desalination Facility and includes the replacement of the existing Medium and Low Voltage Variable Frequency Drives (VFD). There are a total of twenty one (21) VFDs and three Reduced Voltage Soft Starters (RVSS).

In addition, existing cabling may have to be replaced due to the existing cable lengths not being of sufficient lengths.
The Planning Phase included the repairs and/or replacement of five VFDs that failed. This phase is complete. The remainder of the VFDs included in this project will be replaced in future years as scheduled.

Project Location

Hillsborough County



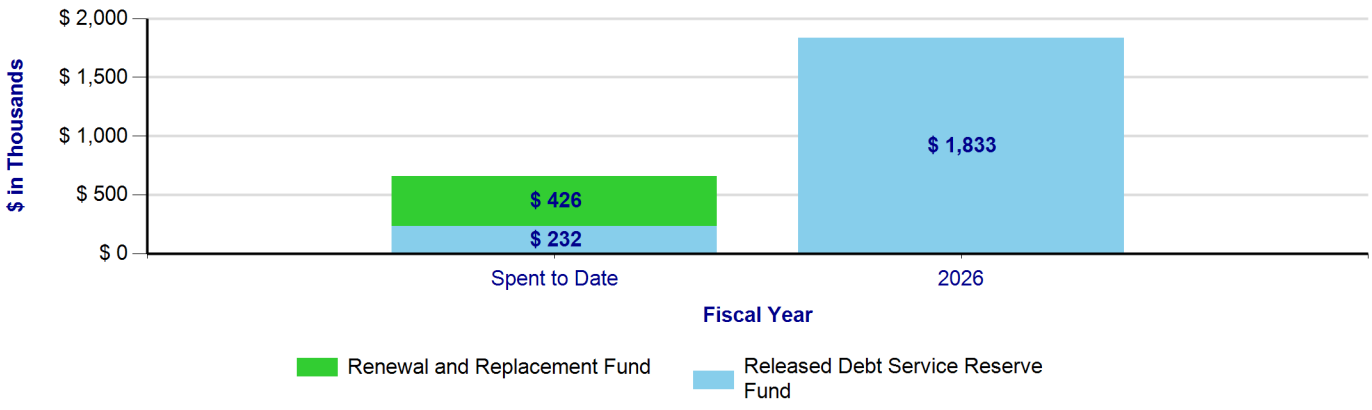
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	6/25/2024	6/25/2024
Design	6/18/2024	6/24/2024
Bidding	6/28/2024	8/19/2024
Construction	8/20/2024	5/29/2026
Close-Out	4/1/2026	8/17/2026
Planning	9/5/2017	6/27/2024

Project Budget by Project Phase

Project Phase	Amount
Construction	$2,065,056
Planning	$426,229
Total Budget	$2,491,285

Expenditure Plan by Fiscal Year and Funding Source



50071: Cypress Creek Pump Station Variable Frequency Drives

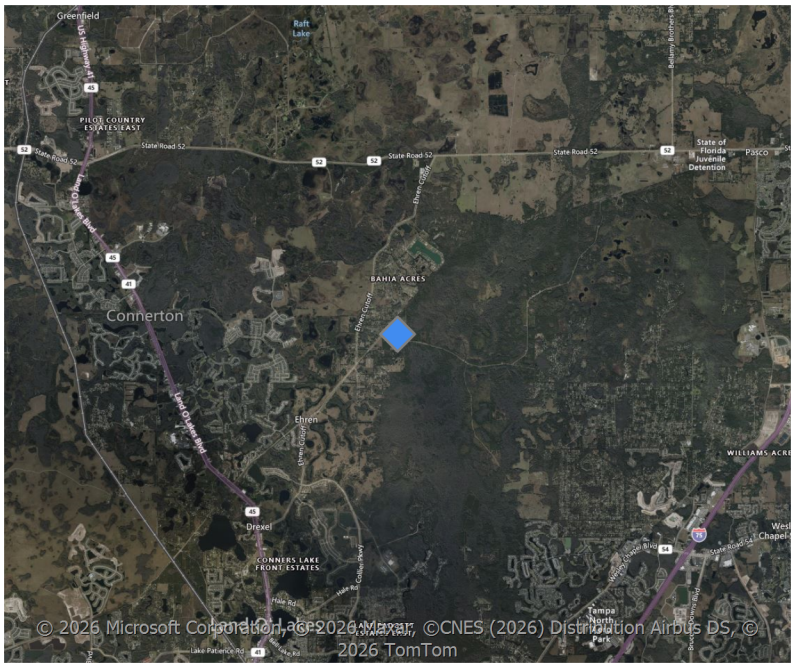
Project Manager	Mike Sakales
Construction Manager	Anthony Feria
Status	Construction

Project Description

This project is located at the Cypress Creek Pump Station in Pasco County and includes the replacement of Variable Frequency Drive (VFD) No. 1 and the control boards and power modules for VFDs No. 2 and No. 6. This project will maintain a level of service required on a system-wide scale while reducing operations and maintenance costs.

Project Location

Pasco County



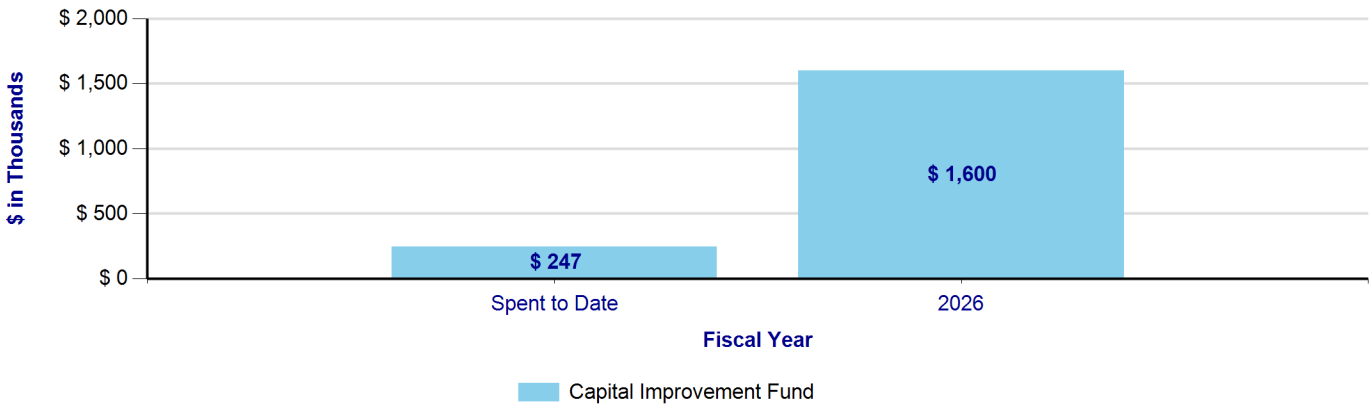
Project Schedule

Project Phase	Start Date	End Date
Planning	6/1/2022	8/2/2022
Professional Services Selection	8/3/2022	12/12/2022
Design	12/13/2022	8/2/2024
Bidding	8/5/2024	11/18/2024
Construction	11/19/2024	6/25/2026
Close-Out	6/26/2026	9/11/2026

Project Budget by Project Phase

Project Phase	Amount
Design	$63,501
Bidding	$3,616
Construction	$1,771,799
Close-Out	$7,271
Total Budget	$1,846,187

Expenditure Plan by Fiscal Year and Funding Source



50075: Surface Water Treatment Plant-Renewal and Replacement Program - Phase I

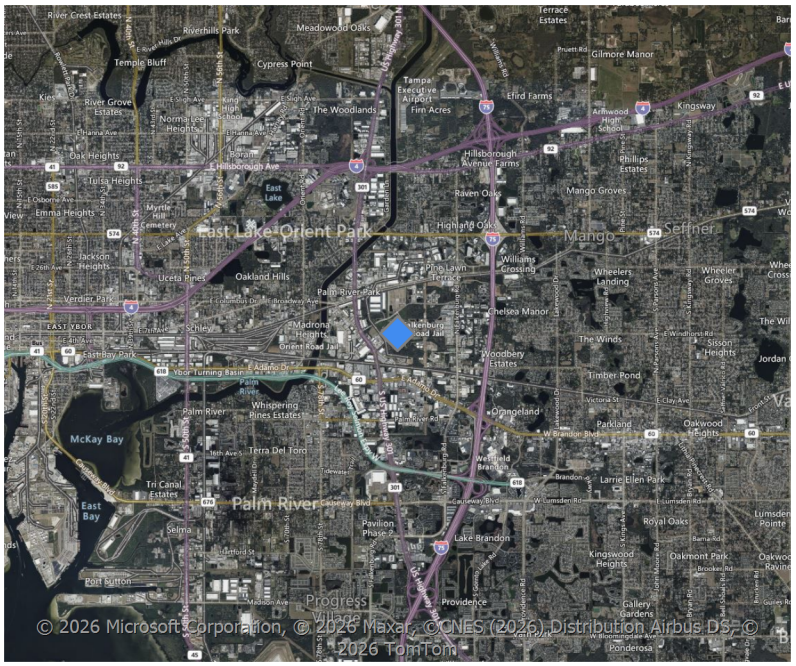
Project Manager	Karim Molina-Oyola
Construction Manager	Lucas Parmer
Status	Construction

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) program phase 1 includes the design and replacement of the HVAC and Ozone generators 1 and 2 in the North side of the facility.

Project Location

Hillsborough County



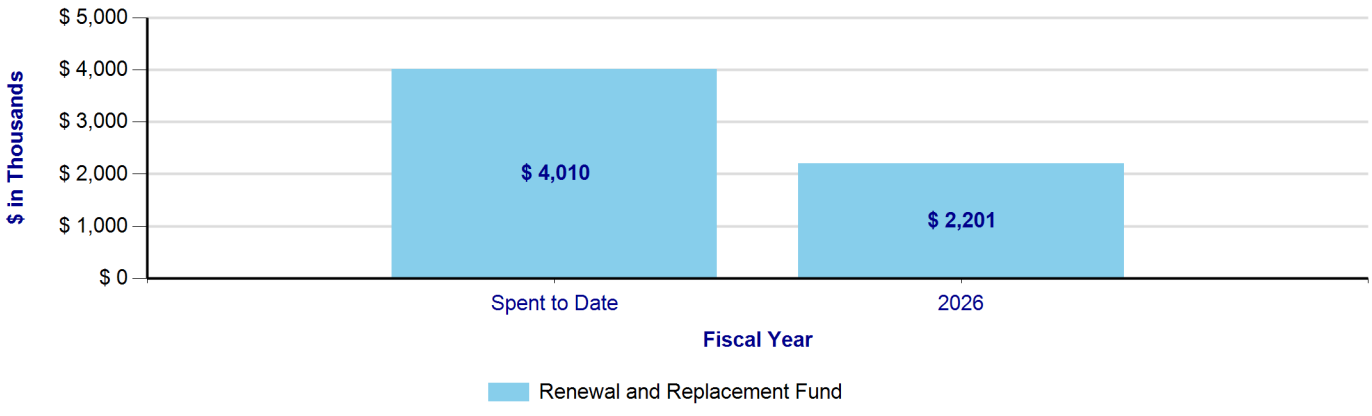
Project Schedule

Project Phase	Start Date	End Date
Planning	10/4/2021	4/20/2026

Project Budget by Project Phase

Project Phase	Amount
Planning	$6,211,424
Total Budget	$6,211,424

Expenditure Plan by Fiscal Year and Funding Source



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Execution-Studies and Program Management

Project No. **Project Name**

11005 : Integrated Program Manager Consultant Services

11020 : Long-term Master Water Plan-Feasibility: Program Management

11021 : Developmental Alternatives Phase 1

11022 : Feasibility Study for New Groundwater Sources

11023 : 2045 System Hydraulic and Emergency Scenario Analysis Report

11025 : Feasibility Study For Surface Water Sources

11026 : Source Water Quality and Business Case Evaluation

50037 : Cypress Creek Generators Study

11005: Integrated Program Manager Consultant Services

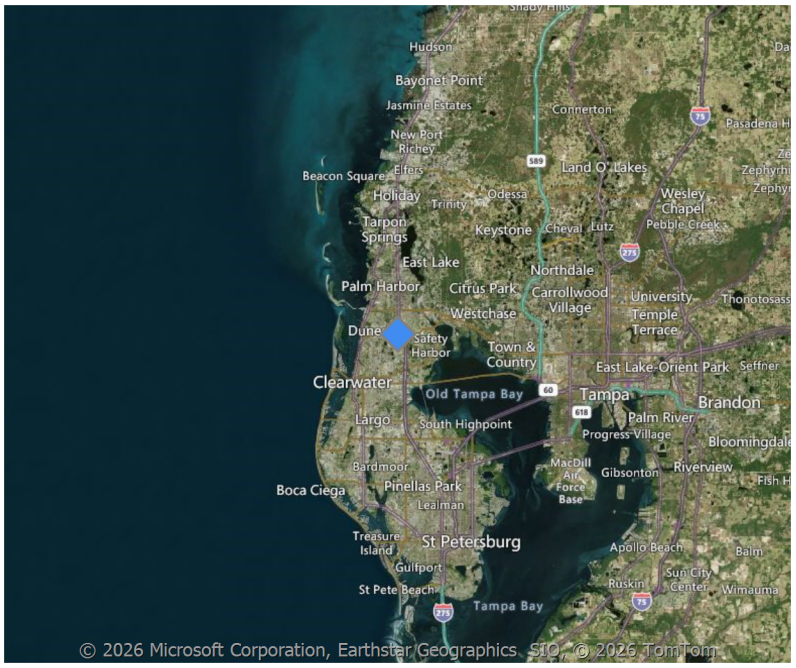
Project Manager	Maribel Medina
Construction Manager	Maribel Medina
Status	Construction

Project Description

The Integrated Program Management Consultant has been retained by Tampa Bay Water to assist in the management of the Capital Improvements Program. Services and expenses included under this project are for general services not associated with specific capital projects. Project-specific services and expenses are being tracked under individual capital projects.

Project Location

None



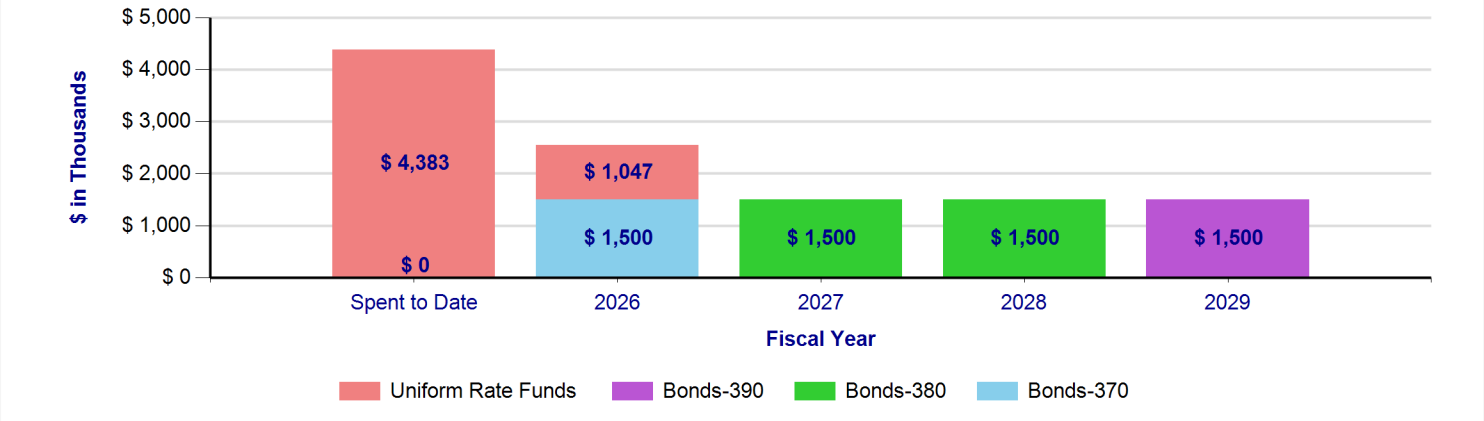
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	5/3/2021	9/20/2021
Planning	9/21/2021	9/30/2021
Construction or Execution	10/1/2021	10/16/2028
Close-Out	10/17/2028	12/17/2029

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$11,429,821
Total Budget	$11,429,821

Expenditure Plan by Fiscal Year and Funding Source



11020: Long-term Master Water Plan-Feasibility Program Management

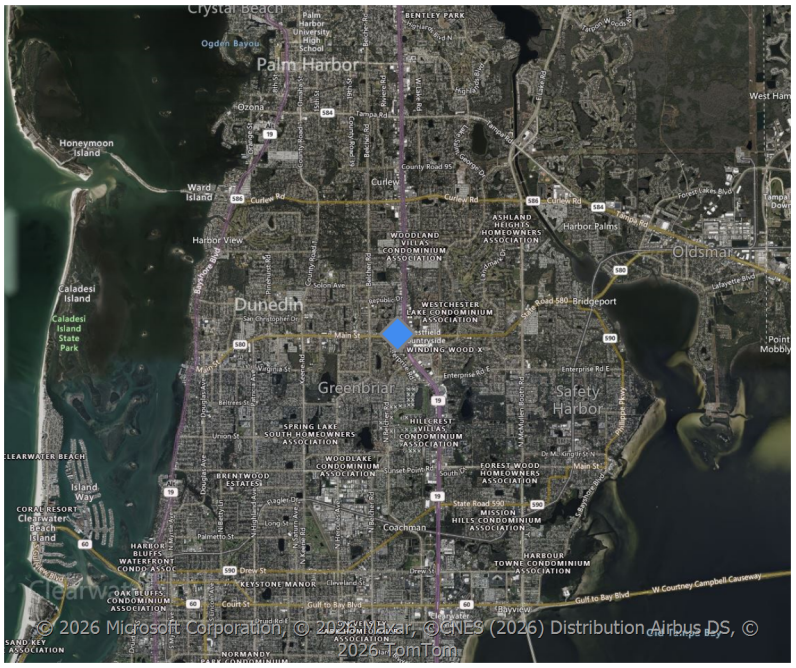
Project Manager	Adrienne Arceri
Construction Manager	Adrienne Arceri
Status	Construction

Project Description

This project consists of program management services for the Long-term Master Water Plan-Feasibility/Developmental Alternatives Studies and Configuration Selection Process through the Integrated Program Management Contract.

Project Location

Multiple



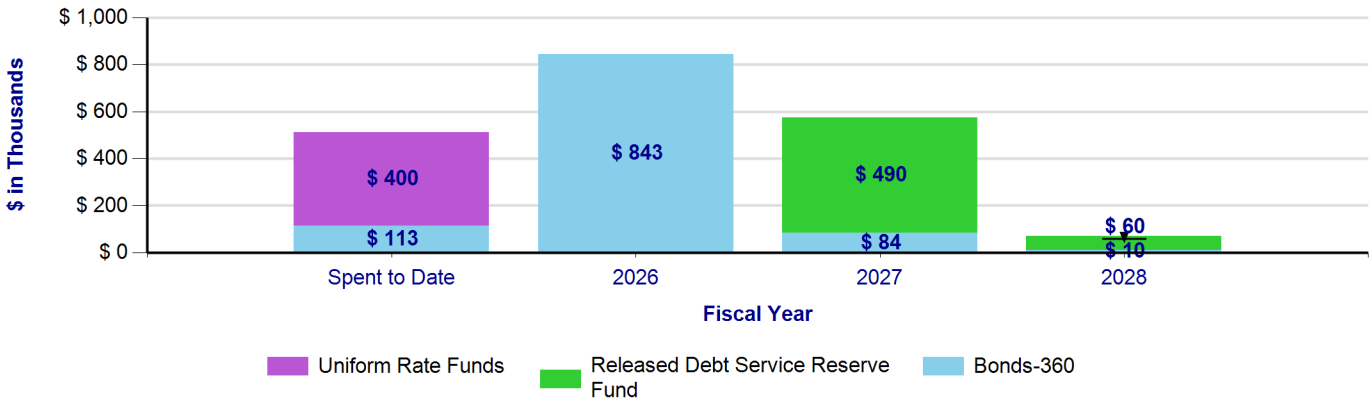
Project Schedule

Project Phase	Start Date	End Date
Publishing	9/14/2023	5/13/2024
Planning	9/14/2023	11/13/2023
Professional Services Selection	11/14/2023	1/29/2024
Construction or Execution	1/30/2024	11/15/2027
Close-Out	11/16/2027	2/21/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$2,000,000
Total Budget	$2,000,000

Expenditure Plan by Fiscal Year and Funding Source



11021: Developmental Alternatives Phase 1

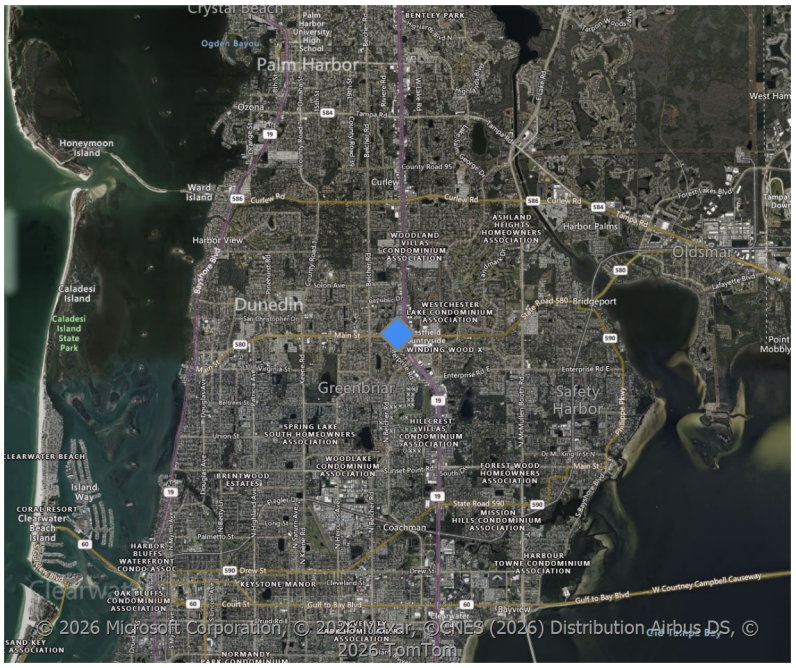
Project Manager	Maribel Medina
Construction Manager	Maribel Medina
Status	Construction

Project Description

This project includes Phase 1 of the evaluation of developmental alternatives such as indirect and direct potable reuse options as recommended in the 2023 Long-term Master Water Plan. Developmental alternatives are water supply sources or options that require more long-term analysis and study. The purpose of Phase 1 is to more comprehensively evaluate the potential role of reclaimed water for beneficial reuse in regional water resource management in parallel to Tampa Bay Water's established Long-term Master Water Plan process.

Project Location

Multiple



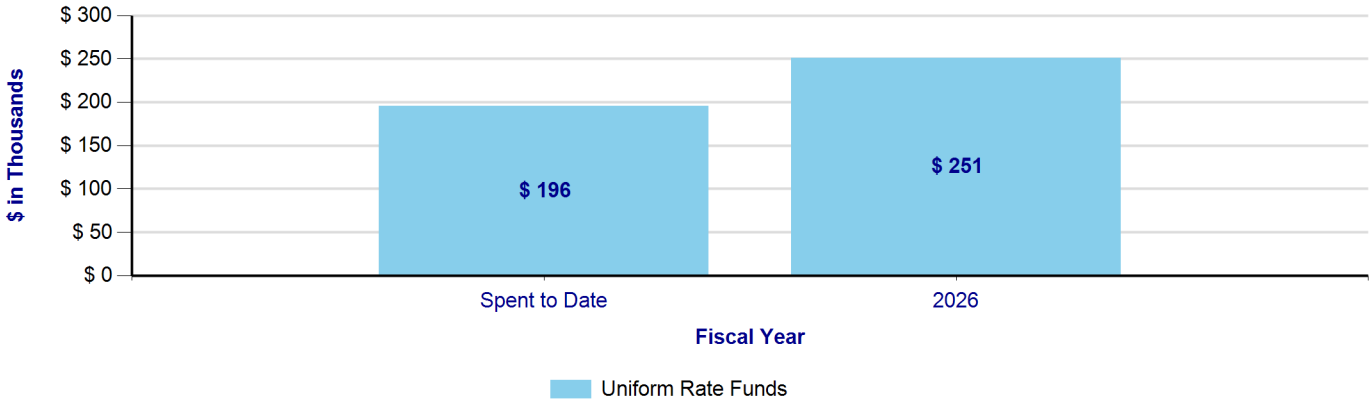
Project Schedule

Project Phase	Start Date	End Date
Publishing	9/13/2023	12/29/2023
Planning	9/13/2023	12/29/2023
Professional Services Selection	11/1/2023	1/22/2024
Construction or Execution	1/23/2024	7/2/2026
Close-Out	7/3/2026	10/19/2026

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$446,340
Total Budget	$446,340

Expenditure Plan by Fiscal Year and Funding Source



11022: Feasibility Study for New Groundwater Sources

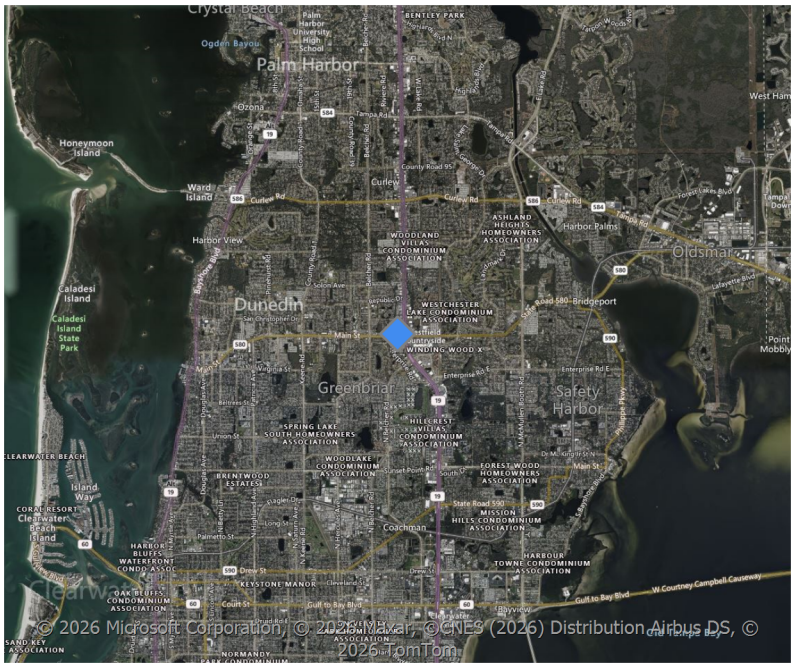
Project Manager	Danielle Keirsey
Construction Manager	Lucas Parmer
Status	Construction

Project Description

This feasibility study project includes the groundwater source short-listed concepts identified as a part of the 2023 Long-term Master Water Plan (LTMWP) top-ranked option for further study and consideration to meet the region's water needs by 2033. This feasibility study will provide a more detailed technical and economic analysis to determine the yield, water quality, and costs of the project. Additionally, it will also identify the potential roadblocks to determine the viability of the project.
This study will evaluate the following concepts:
-Consolidated Water Use Permit Increase
-Eastern Pasco Wellfield (with brackish and/or fresh groundwater)
-Desalination Plant Expansion (with brackish groundwater)

Project Location

Multiple



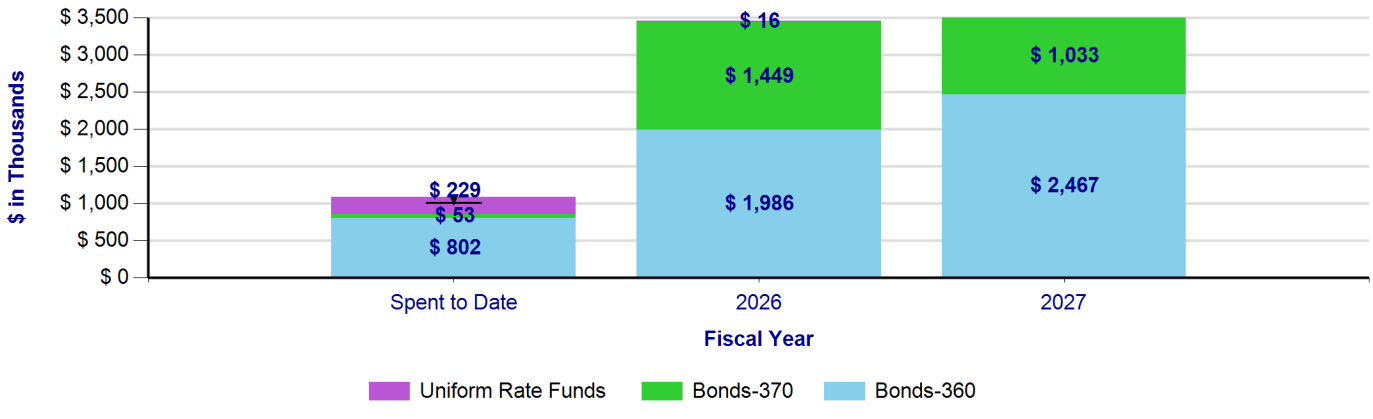
Project Schedule

Project Phase	Start Date	End Date
Publishing	9/13/2023	11/13/2023
Planning	11/13/2023	12/10/2023
Professional Services Selection	12/11/2023	7/25/2024
Construction or Execution	7/30/2024	9/17/2027
Close-Out	9/18/2027	1/24/2028

Project Budget by Project Phase

Project Phase	Amount
Professional Services Selection	$244,690
Construction or Execution	$7,789,187
Total Budget	$8,033,877

Expenditure Plan by Fiscal Year and Funding Source



11023: 2045 System Hydraulic and Emergency Scenario Analysis Report

Project Manager	Eliana Lara
Construction Manager	Eliana Lara
Status	Construction

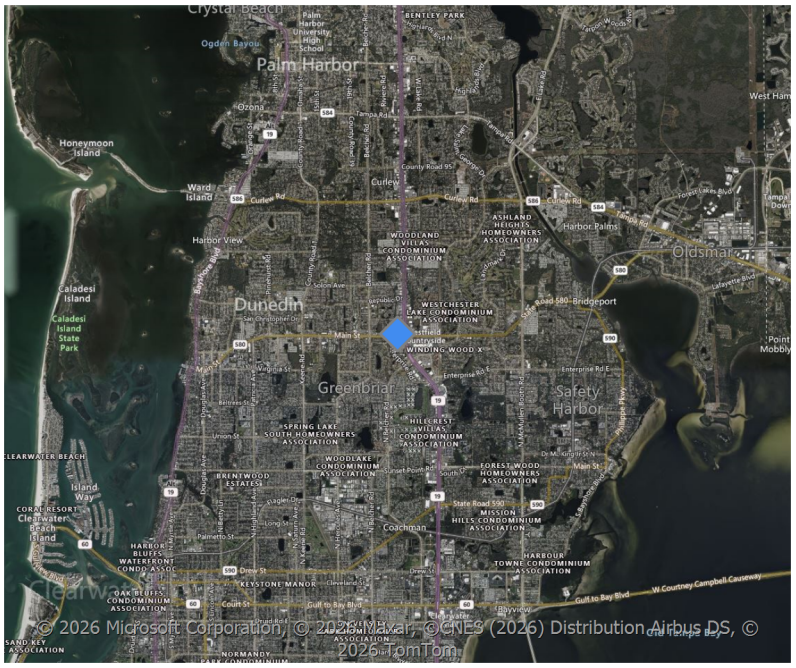
Project Description

Tampa Bay Water is a regional water supply authority that provides wholesale water for its six Member Governments: Hillsborough, Pasco and Pinellas counties, and the cities of New Port Richey, St. Petersburg and Tampa. Providing a reliable, cost effective and environmentally sustainable water supply requires planning for a range of future growth conditions.

An evaluation of Tampa Bay Water's system performance during a range of pipeline, power, supply, or other facility outage scenarios was performed in 2006 and 2015 (the 2025 and 2035 System Analysis documents) to help prepare for emergencies and determine where improvements can be completed to make the Tampa Bay Water system more reliable. Similar to the 2025 and 2035 analysis, the 2045 System Analysis will include: :
a. Projected Water Demands for Water Year 2045
b. Level of Service Requirements
c. Transmission System Hydraulic Analysis
d. Facility Reliability
e. Standby Power Capacity
f. Commercial Power Availability

Project Location

Multiple



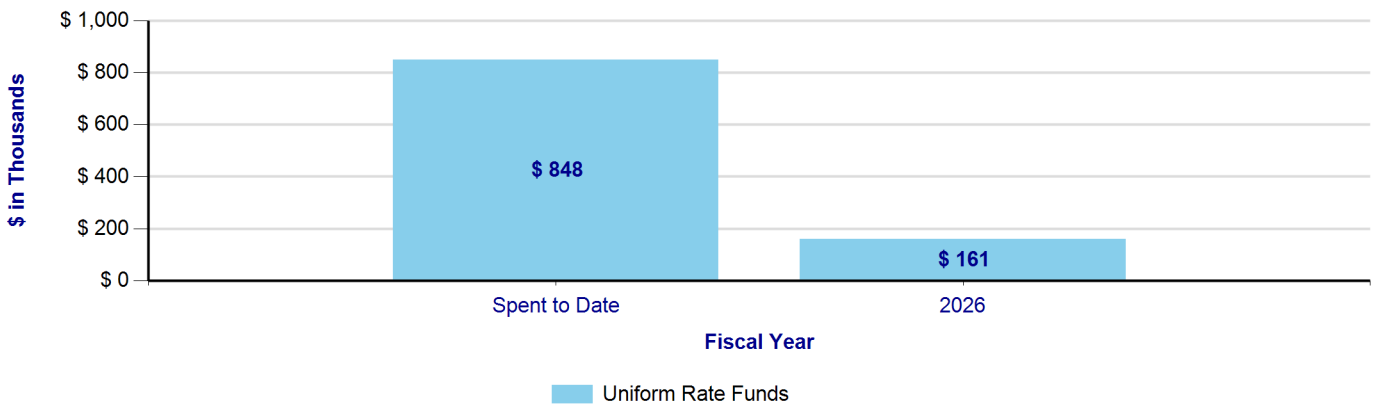
Project Schedule

Project Phase	Start Date	End Date
Publishing	1/3/2023	5/20/2024
Planning	8/3/2023	11/1/2024
Professional Services Selection	11/2/2023	2/26/2024
Construction or Execution	2/27/2024	2/28/2026
Close-Out	3/1/2026	4/20/2026

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,009,100
Total Budget	$1,009,100

Expenditure Plan by Fiscal Year and Funding Source

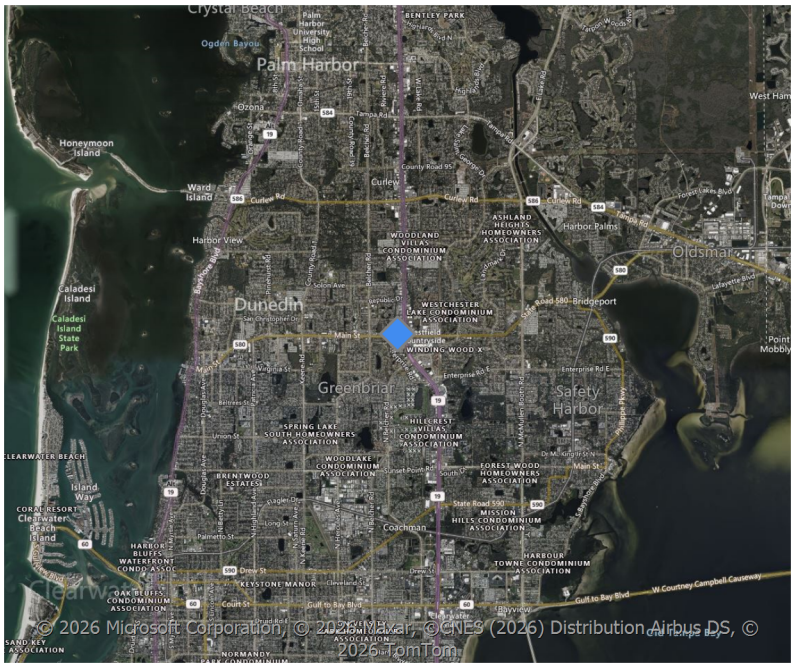


11025: Feasibility Study For Surface Water Sources

Project Manager	Adrienne Arceri
Construction Manager	Adrienne Arceri
Status	Construction

Project Location

Multiple



Project Description

This feasibility study project includes three of the seven short-listed concepts identified as a part of the 2023 Long-term Master Water Plan (LTMWP) top-ranked options for further study and consideration to meet the region's water needs by 2033. This study will provide a more detailed technical and economic analysis to determine the yield, water quality, and costs of the project. Additionally, it will also identify any potential roadblocks and determine the viability of the project concepts.

This study includes evaluating the following concepts:
-North Pinellas Surface Water Treatment Plant (SWTP) and Reservoir via excess surface water from the Lake Tarpon outfall canal.
-C.W. Bill Young Regional Reservoir Surface Water Treatment Plant via increased Alafia River withdrawals; and
-New South Hillsborough Surface Water Treatment Plant and Reservoir via new surface water sources such as Little Manatee River or Bullfrog Creek.

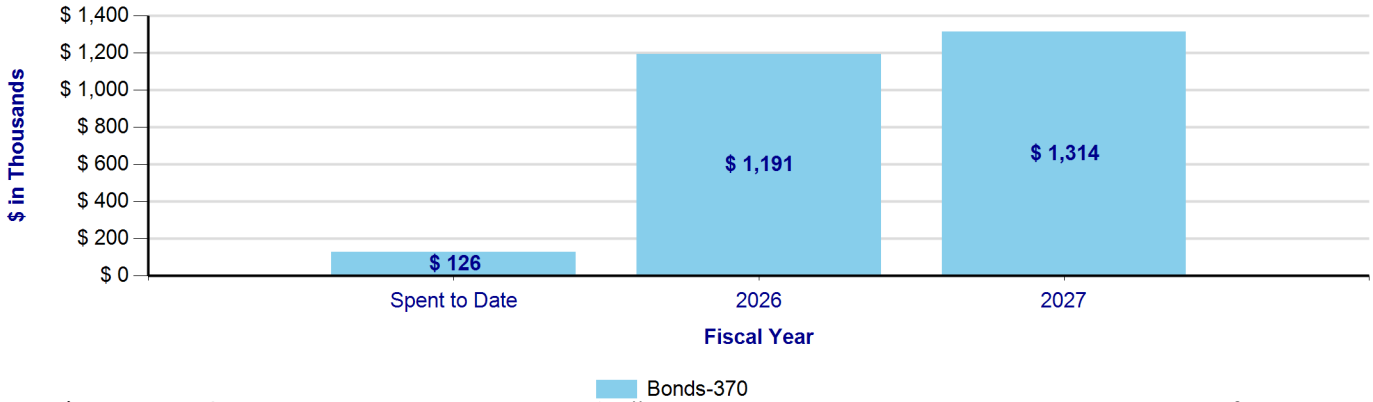
Project Schedule

Project Phase	Start Date	End Date
Publishing	9/13/2023	11/13/2023
Planning	11/14/2023	3/31/2024
Professional Services Selection	4/1/2024	10/21/2024
Design	10/22/2024	11/6/2024
Bidding	11/7/2024	11/8/2024
Construction or Execution	11/9/2024	6/30/2027
Close-Out	7/1/2027	8/16/2027

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$2,630,698
Total Budget	$2,630,698

Expenditure Plan by Fiscal Year and Funding Source



11026: Source Water Quality and Business Case Evaluation

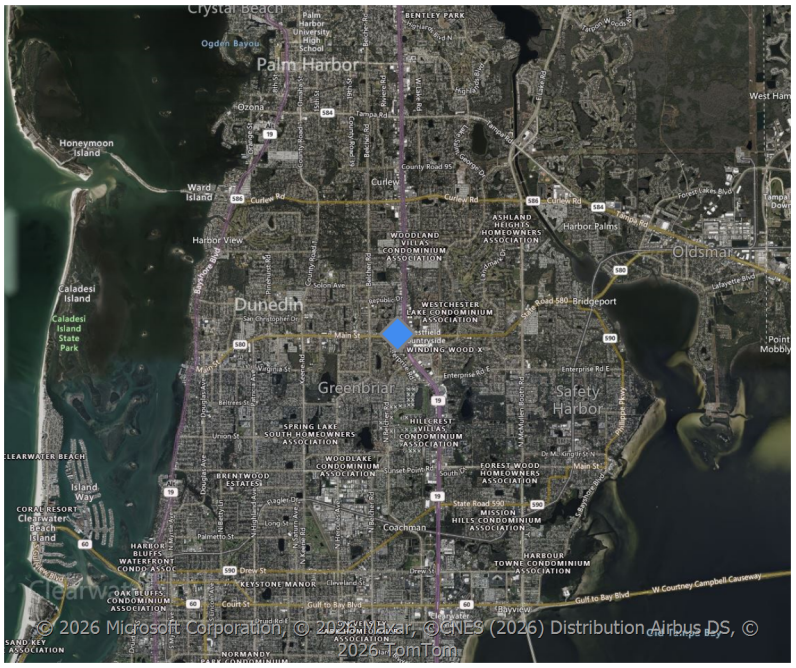
Project Manager	Nicole Thomas
Construction Manager	Nicole Thomas
Status	Construction

Project Description

This project includes a business case evaluation (BCE) for Enhanced Surface Water System (ESWS) source water treatment improvements to offset the need for additional treatment processes at the Regional Surface Water Treatment Plant to handle seasonal variations in algae and other water quality parameters.

Project Location

Hillsborough County



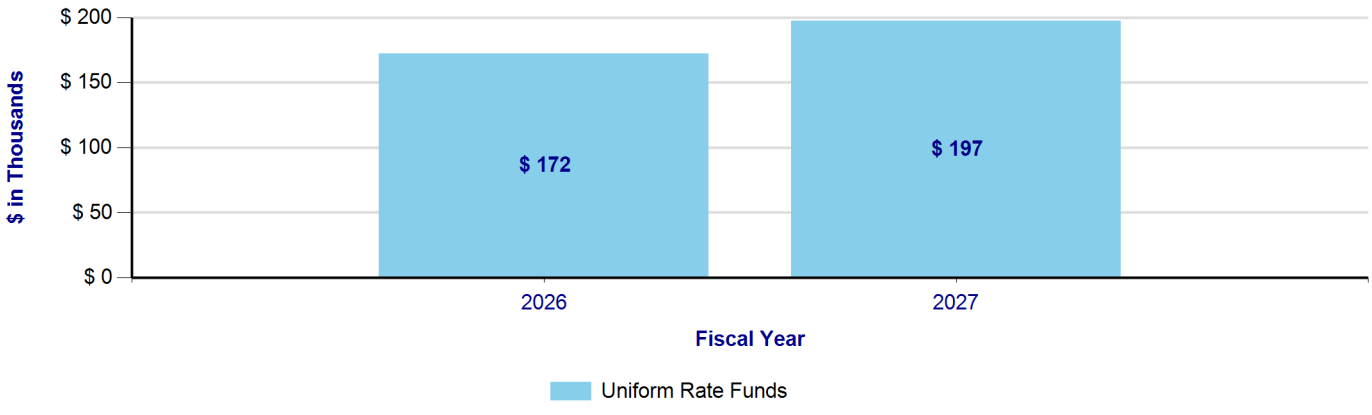
Project Schedule

Project Phase	Start Date	End Date
Publishing	8/1/2023	5/20/2024
Planning	5/20/2024	7/26/2024
Professional Services Selection	7/29/2024	8/18/2025
Construction or Execution	8/19/2025	7/14/2027
Close-Out	7/15/2027	10/18/2027

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$369,499
Total Budget	$369,499

Expenditure Plan by Fiscal Year and Funding Source



50037: Cypress Creek Generators Study

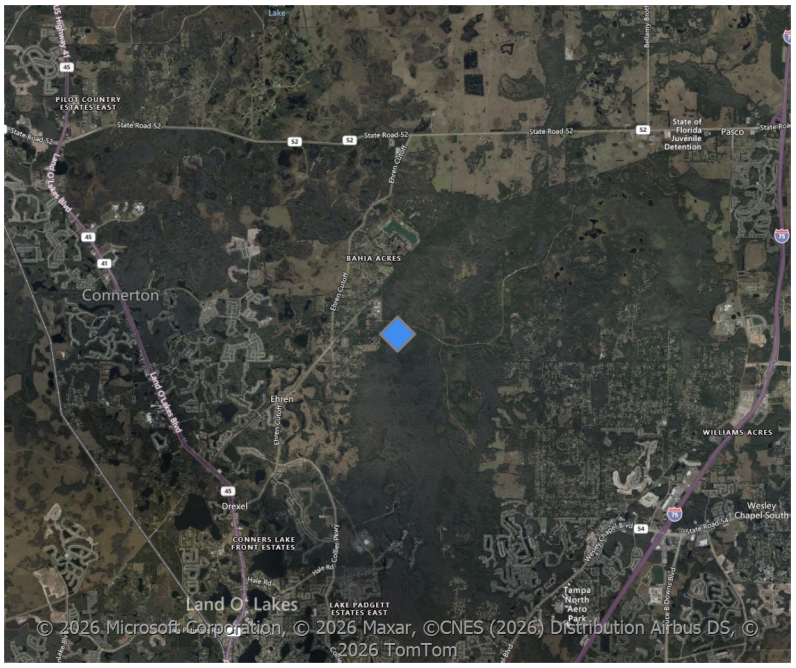
Project Manager	Mike Sakales
Construction Manager	Mike Sakales
Status	Construction

Project Description

This project will evaluate the existing generator system and associated structures at the Cypress Creek Pump Station, located in Land O'Lakes. The project will confirm appropriate sizing for the given loads and will recommend a generator replacement strategy.

Project Location

Pasco County



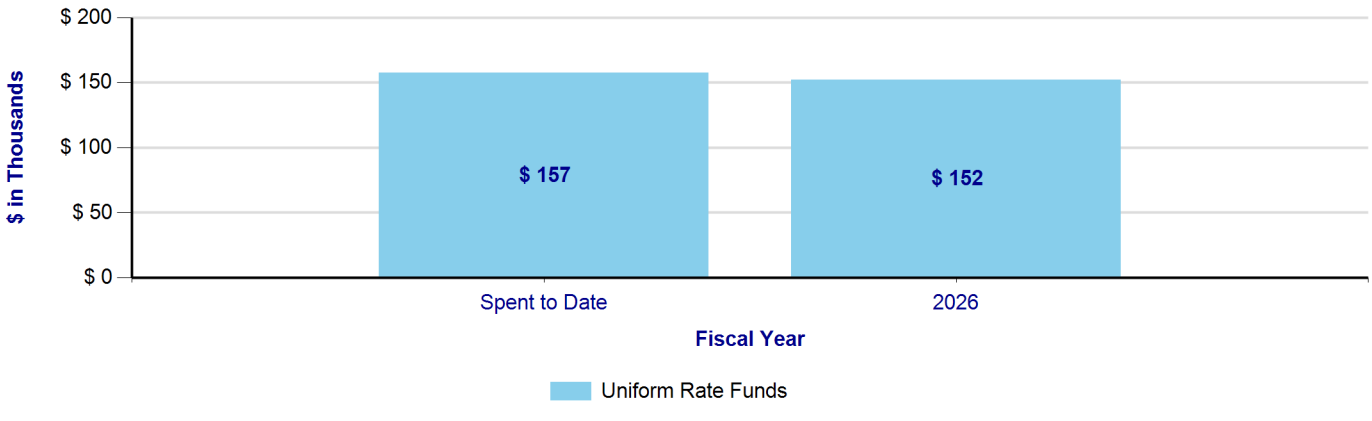
Project Schedule

Project Phase	Start Date	End Date
Publishing	4/1/2024	9/29/2025
Planning	10/2/2023	7/5/2024
Professional Services Selection	7/8/2024	11/4/2024
Construction or Execution	11/5/2024	2/27/2026
Close-Out	2/28/2026	4/20/2026

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$326,905
Total Budget	$326,905

Expenditure Plan by Fiscal Year and Funding Source



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Bidding Phase Projects

Project No. **Project Name**

07153 : Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict

09108 : Cypress Creek Wellfield Surface Water Improvements-Phase 3

50021 : Morris Bridge WF Improvements

50073 : Cypress Creek Water Treatment Plant 72-Inch Valve

07153: Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict

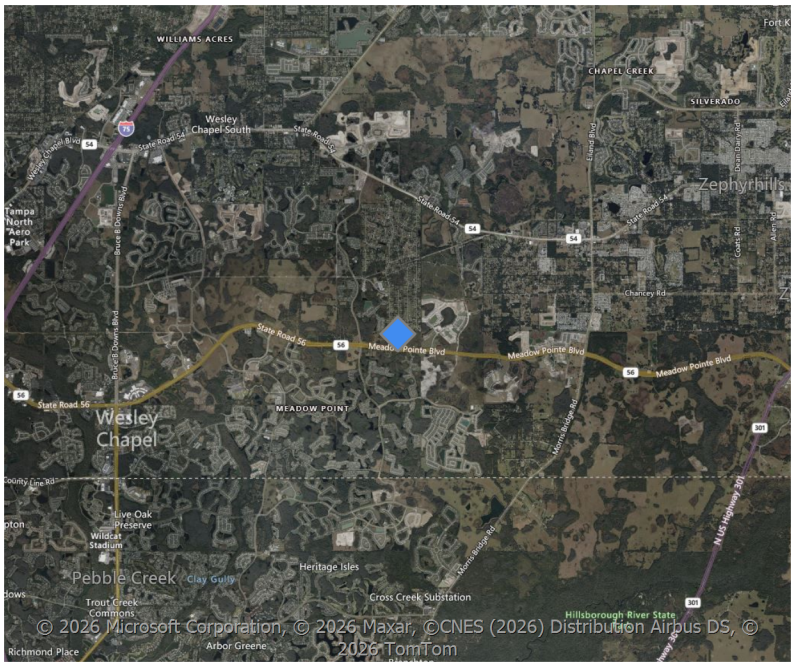
Project Manager	Danielle Keirsey
Construction Manager	Lucas Parmer
Status	Bidding

Project Description

Florida Department of Transportation (FDOT) has an expansion project for State Road (SR-52) that will cause a conflict with Tampa Bay Water's 60-inch Cross Bar Ranch Wellfield water main including valves. This project will relocate the portion of transmission main in conflict with the road expansion.

Project Location

Pasco County



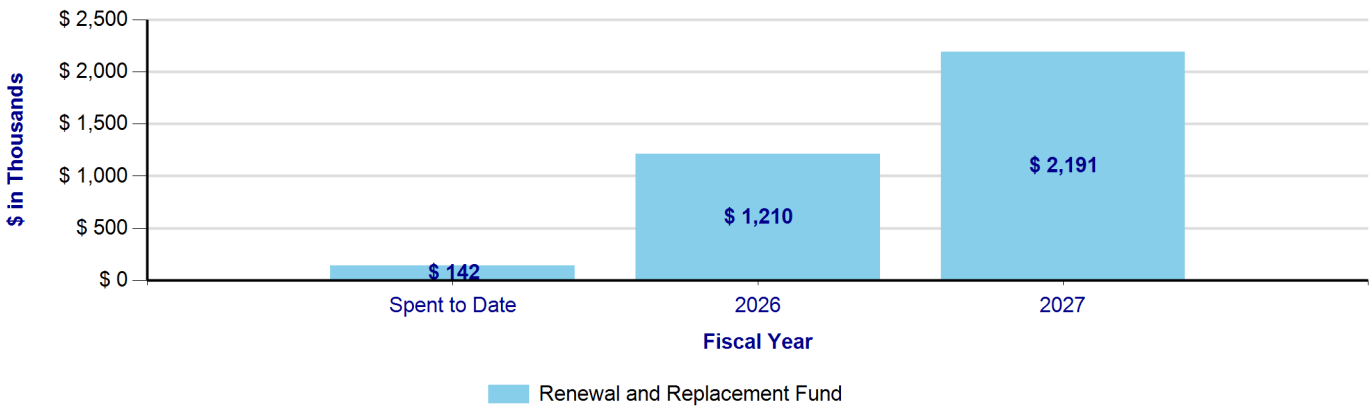
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/13/2023
Planning	4/3/2023	7/7/2023
Professional Services Selection	7/10/2023	8/21/2023
Design	8/22/2023	10/31/2025
Bidding	11/3/2025	4/20/2026
Construction or Execution	4/21/2026	5/26/2027
Close-Out	5/27/2027	9/20/2027

Project Budget by Project Phase

Project Phase	Amount
Design	$289,766
Construction or Execution	$3,252,242
Total Budget	$3,542,008

Expenditure Plan by Fiscal Year and Funding Source



09108: Cypress Creek Wellfield Surface Water Improvements-Phase 3

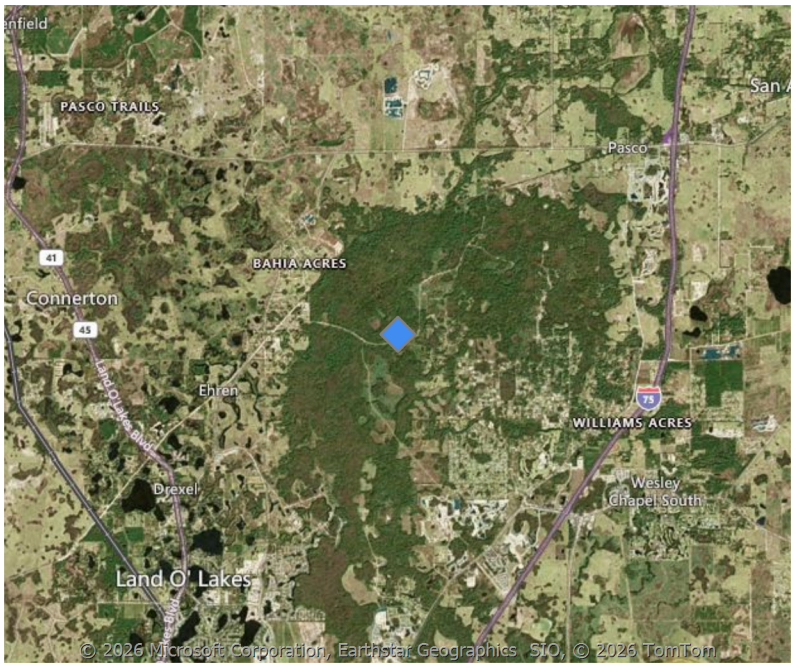
Project Manager	Indigo Dunn
Construction Manager	Anthony Feria
Status	Bidding

Project Description

Wetland enhancements were previously constructed within the Cypress Creek Wellfield in 2007 and 2015. The original project aimed to change surface water drainage patters on the CCWF to rehydrate wetlands which were affected by ground water withdrawal, and to help reduce nuisance flooding in two nearby residential developments. Additional improvements were made in 2015 to further enhance hydrology in several wetlands. Monitoring of wetlands has shown that these enhancements have been successful. In 2020, a feasibility was completed which evaluated and recommended several additional improvements to further enhance target wetlands. This project includes the design, permitting and post design services needed to finalize the design, obtain necessary permits, assist Tampa Bay Water with construction contractor selection, and provide additional assistance throughout the construction process.

Project Location

Pasco County



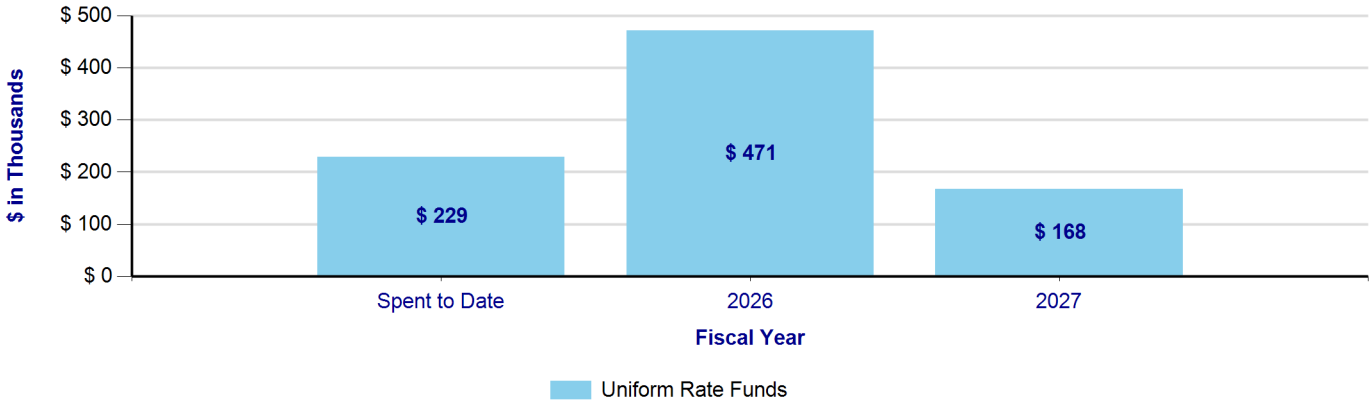
Project Schedule

Project Phase	Start Date	End Date
Planning	4/4/2022	5/6/2022
Professional Services Selection	5/9/2022	11/7/2022
Design	11/8/2022	5/23/2025
Bidding	5/24/2025	4/20/2026
Construction	4/20/2026	11/26/2026
Close-Out	11/27/2026	2/15/2027

Project Budget by Project Phase

Project Phase	Amount
Design	$265,828
Bidding	$17,411
Construction	$561,857
Close-Out	$22,646
Total Budget	$867,742

Expenditure Plan by Fiscal Year and Funding Source



50021: Morris Bridge WF Improvements

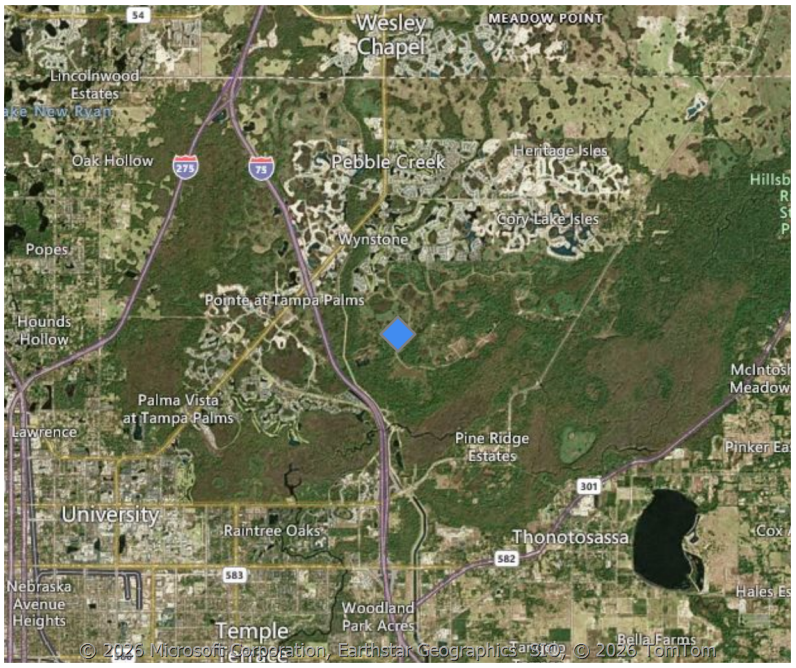
Project Manager	Nicole Thomas
Construction Manager	Anthony Feria
Status	Bidding

Project Description

This project is located at the Morris Bridge Wellfield and includes: replacing the pumps and motors, main disconnect switch; and ancillary power equipment and associated load panels for 15 of the Morris Bridge Wellfield Pumps and Motors. In addition, new over-current protection devices will be added to reduce the Arc Flash hazard.

Project Location

City of Tampa



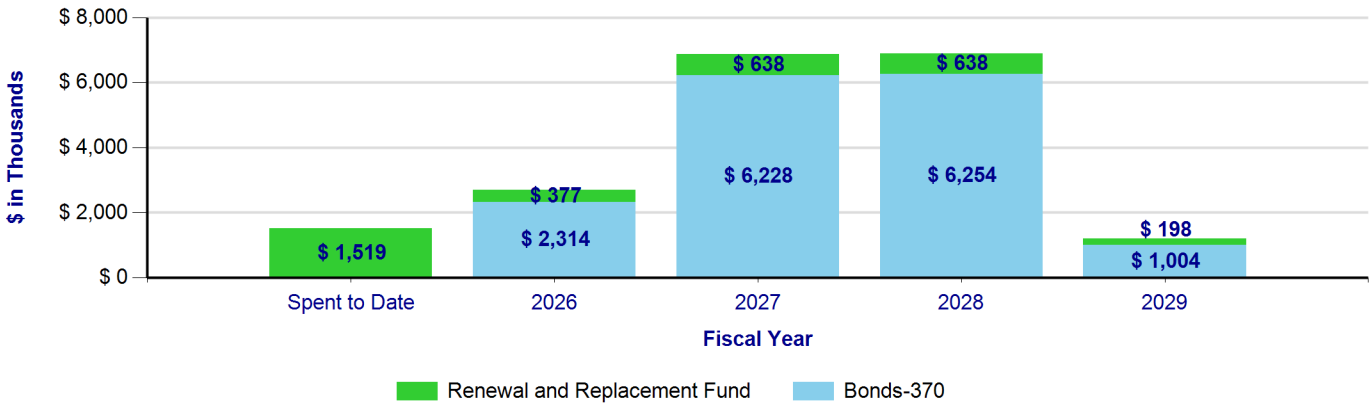
Project Schedule

Project Phase	Start Date	End Date
Planning	4/1/2014	9/30/2015
Professional Services Selection	1/13/2020	10/19/2020
Design	10/20/2020	10/31/2025
Bidding	10/31/2025	4/20/2026
Construction	4/21/2026	1/22/2029

Project Budget by Project Phase

Project Phase	Amount
Planning	$83,152
Design	$1,500,234
Bidding	$26,800
Construction	$17,559,981
Total Budget	$19,170,167

Expenditure Plan by Fiscal Year and Funding Source



50073: Cypress Creek Water Treatment Plant 72-Inch Valve

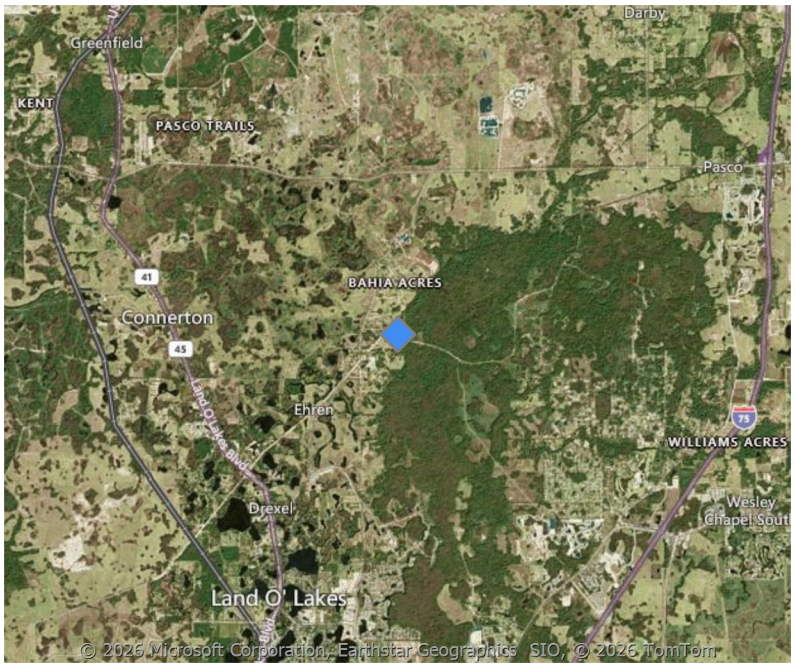
Project Manager	Danielle Keirsey
Construction Manager	Lucas Parmer
Status	Bidding

Project Description

This project is located at the north side of the Cypress Creek Water Treatment Plant (CCWTP) in Pasco County, Fl. The project includes the replacement of a 72-inch butterfly valve located in the 72-in steel transmission main on the post side of the CCWTP, the relocation of the chemical injection points and post node analyzer building. A temporary bypass will be required during the repairs.

Project Location

Pasco County



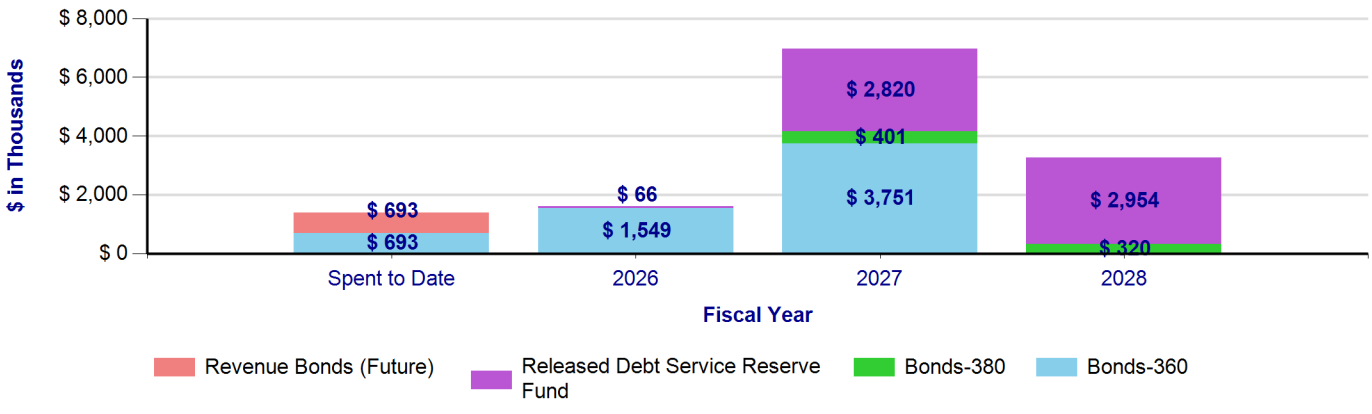
Project Schedule

Project Phase	Start Date	End Date
Planning	1/21/2022	6/16/2022
Professional Services Selection	6/17/2022	9/8/2023
Design	9/11/2023	3/31/2026
Bidding	12/1/2025	4/20/2026
Construction	4/21/2026	5/3/2028
Close-Out	5/3/2028	8/21/2028

Project Budget by Project Phase

Project Phase	Amount
Design	$984,306
Bidding	$9,694
Construction	$11,334,812
Close-Out	$225,188
Total Budget	$12,554,000

Expenditure Plan by Fiscal Year and Funding Source



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Design Phase Projects

Project No.	Project Name
01602 :	Cypress Creek Wellfield Improvements
01617 :	Regional Facilities Site-Alkalinity Adjustment Facility
06912 :	Surface Water Treatment Plant SCADA System Upgrade
06914 :	Cosme Collection Main - Utility Conflict
08304 :	Hillsborough County-Lithia WTP Yard Piping
50070 :	High Service Pump Station Variable Frequency Drives
50082 :	Cypress Creek Medium Voltage Generator Control System Upgrade

01602: Cypress Creek Wellfield Improvements

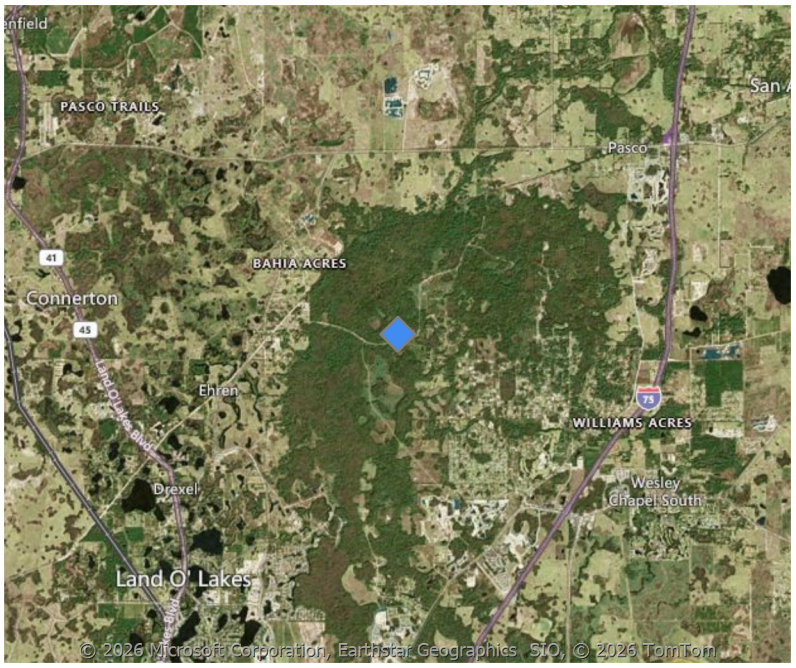
Project Manager	Indigo Dunn
Construction Manager	Lucas Parmer
Status	Design

Project Description

This project is located at the Cypress Creek Wellfield in Pasco County and includes the replacement of 13 pumps and motors and improving or replacing the well houses to meet the current electrical code requirements.

Project Location

Pasco County



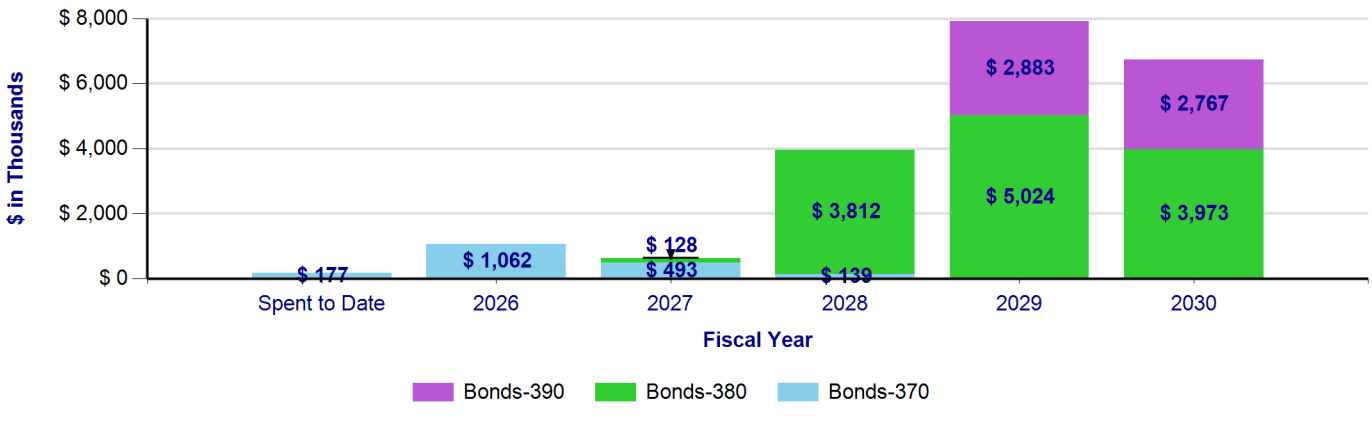
Project Schedule

Project Phase	Start Date	End Date
Planning	6/3/2024	9/6/2024
Professional Services Selection	9/9/2024	5/19/2025
Design	5/20/2025	12/25/2026
Bidding	12/28/2026	7/29/2027
Construction	7/21/2027	4/10/2030
Close-Out	4/11/2030	7/15/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$1,521,326
Bidding	$40,288
Construction	$18,352,386
Close-Out	$545,000
Total Budget	$20,459,000

Expenditure Plan by Fiscal Year and Funding Source



01617: Regional Facilities Site-Alkalinity Adjustment Facility

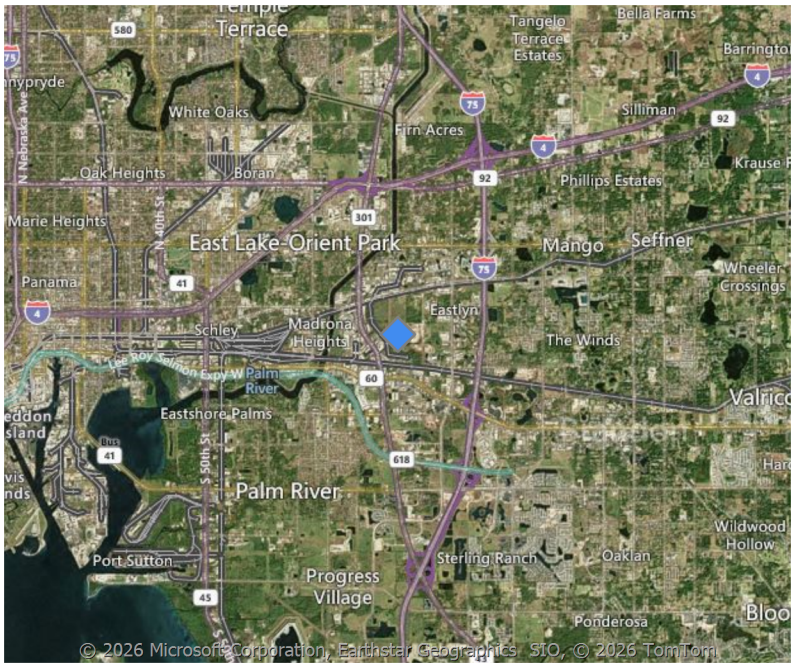
Project Manager	Soli Rojas
Construction Manager	Soli Rojas
Status	Design

Project Description

The project involves designing and constructing a new Alkalinity Adjustment Facility (AAF) at the Regional Facilities Site (RFS) to treat up to 65 million gallons per day (mgd) for water conveyed through the South Hillsborough County Pipeline (SHP). The scope includes installing caustic and carbon dioxide feed systems, upgrading the sodium hypochlorite system, and adding chemical injection points with bypass piping for the SHP. The design also incorporates electrical and control systems for chemical feed operations, a new generator, and an analyzer building to ensure reliability and monitoring.

Project Location

Hillsborough County



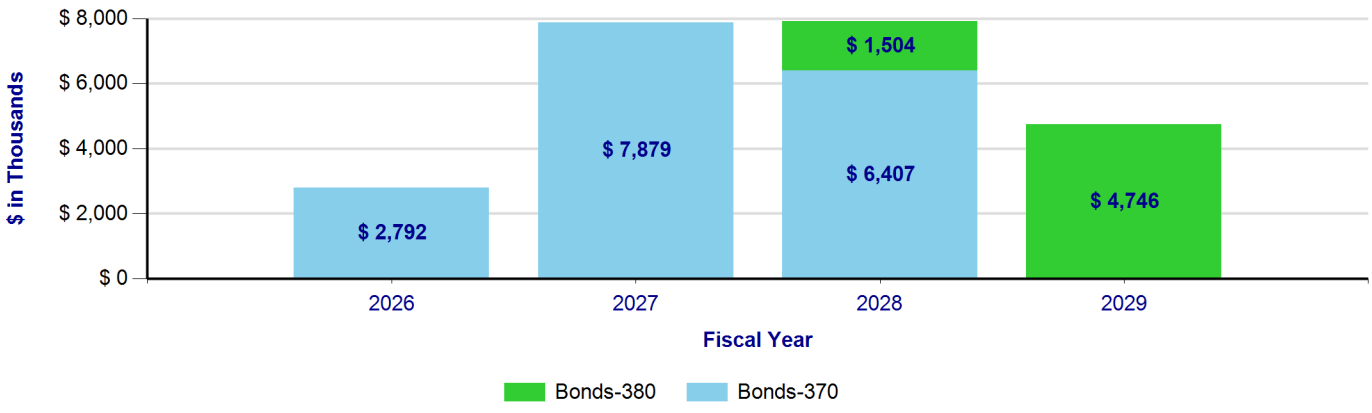
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2024	3/17/2025
Planning	12/2/2024	3/17/2025
Professional Services Selection	1/6/2025	7/21/2025
Design	7/22/2025	2/23/2026
Bidding	2/24/2026	5/18/2026
Construction or Execution	5/23/2026	5/8/2029
Close-Out	5/9/2029	8/20/2029

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$23,328,000
Total Budget	$23,328,000

Expenditure Plan by Fiscal Year and Funding Source



06912: Surface Water Treatment Plant SCADA System Upgrade

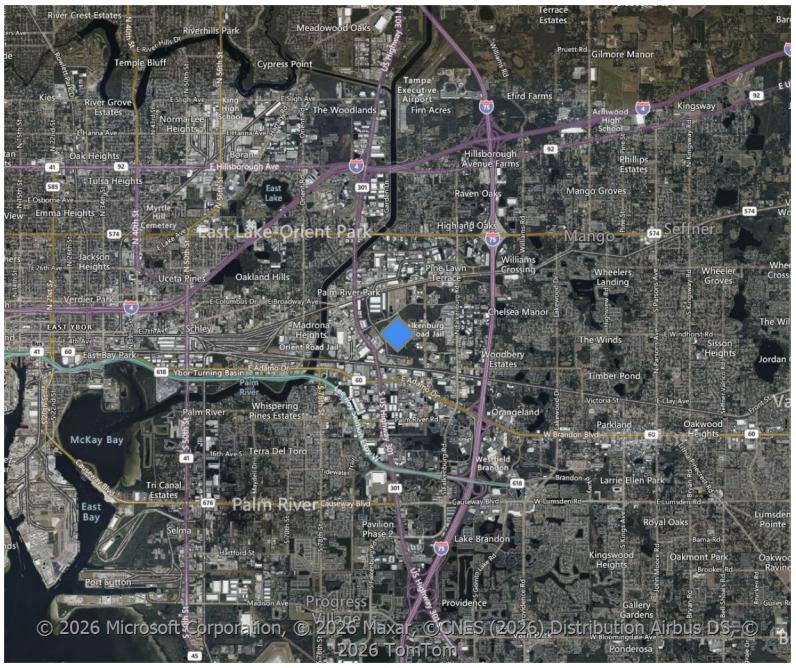
Project Manager	Karim Molina-Oyola
Construction Manager	Richard Menzies
Status	Design

Project Description

This project replaces the existing Supervisory Control and Data Acquisition (SCADA) system hardware and software at the Regional Surface Water Treatment Plant (SWTP). The SCADA upgrade will include the replacement of Programmable Logic Controllers (PLCs) in use throughout the facility and replacement and upgrade of the SCADA servers and other equipment and instrumentation. The project will also update the human-machine interface (HMI) project to a current version of AVEVA System Platform.

Project Location

Hillsborough County



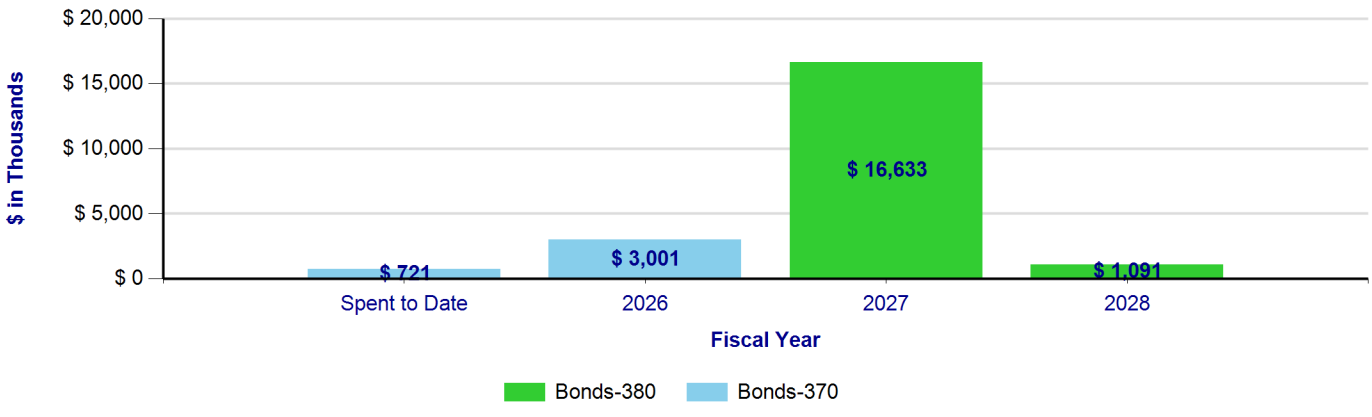
Project Schedule

Project Phase	Start Date	End Date
Publishing	8/1/2023	5/20/2024
Planning	5/20/2024	6/3/2024
Professional Services Selection	6/4/2024	2/24/2025
Design	2/25/2025	6/9/2026
Bidding	11/25/2025	7/20/2026
Construction or Execution	7/21/2026	10/21/2027
Close-Out	10/22/2027	5/22/2028

Project Budget by Project Phase

Project Phase	Amount
Design	$1,722,094
Construction or Execution	$19,723,906
Total Budget	$21,446,000

Expenditure Plan by Fiscal Year and Funding Source



06914: Cosme Collection Main - Utility Conflict

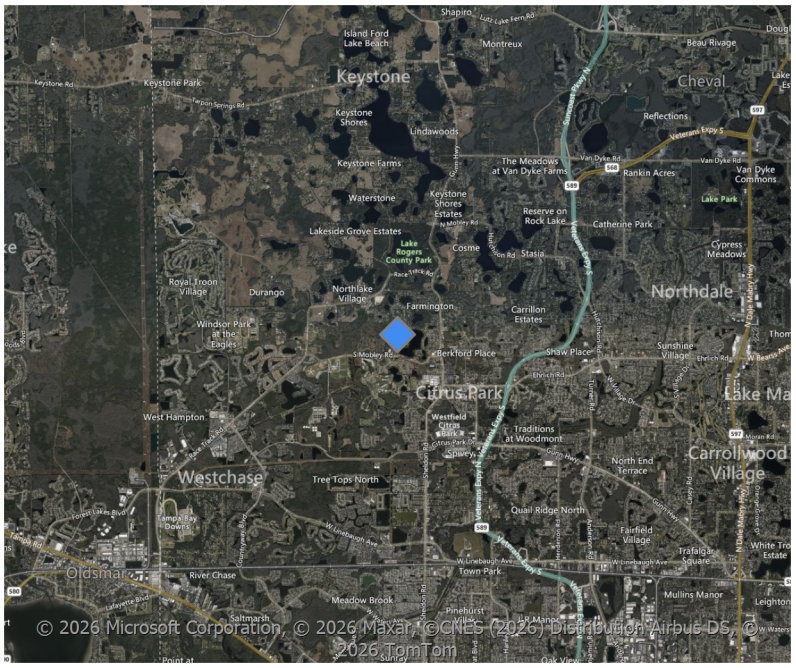
Project Manager	Indigo Dunn
Construction Manager	Lucas Parmer
Status	Design

Project Description

The Cosme 24-inch Collection Main and the fiber optic line, between Wells 8 and 10, are in conflict with a project area on North Mobley Road in Hillsborough County that is identified in a pedestrian safety and mobility enhancement project for the county. Roughly 300 feet of collection main and fiber optic line are currently located in an area where the existing roadway is to be expanded. This project will re-route a section of the Cosme wellfield collection main and fiber optic line to alleviate any conflict during construction for the pedestrian safety and mobility enhancement project to be completed by the county. This will eliminate the current conflict.

Project Location

Hillsborough County



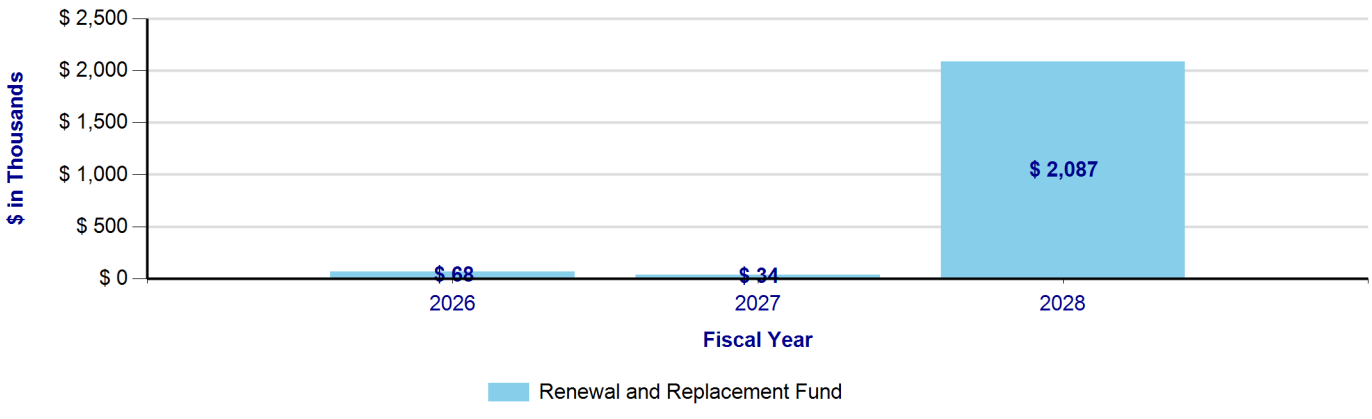
Project Schedule

Project Phase	Start Date	End Date
Publishing	8/16/2023	5/20/2024
Planning	11/1/2024	10/6/2025
Professional Services Selection	10/7/2025	12/1/2025
Design	12/2/2025	2/1/2027
Bidding	2/2/2027	10/18/2027
Construction or Execution	10/27/2027	4/24/2028
Close-Out	4/25/2028	8/21/2028

Project Budget by Project Phase

Project Phase	Amount
Design	$101,739
Construction or Execution	$2,087,261
Total Budget	$2,189,000

Expenditure Plan by Fiscal Year and Funding Source



08304: Hillsborough County-Lithia WTP Yard Piping

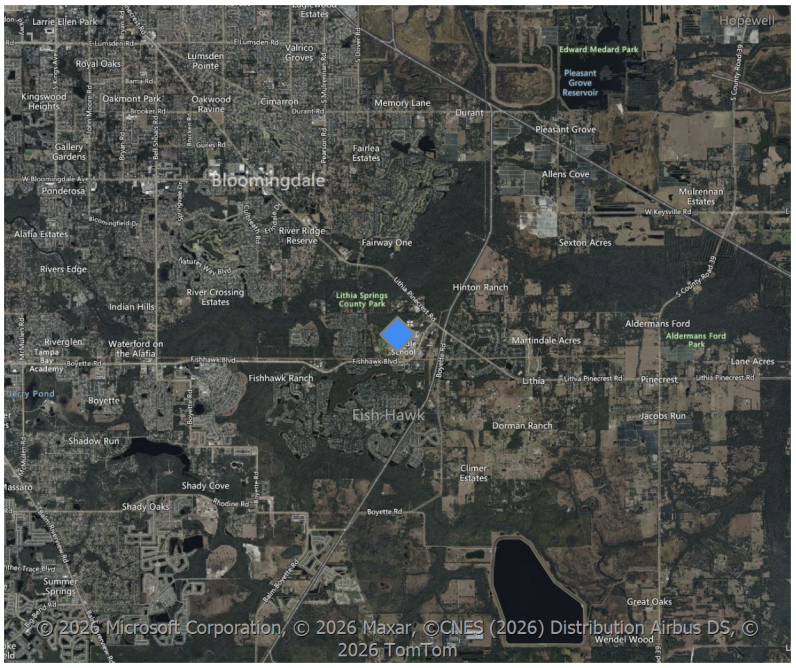
Project Manager	Soli Rojas
Construction Manager	Soli Rojas
Status	Design

Project Description

This project is the result of the Amended and Restated Joint Project Agreement between Hillsborough County and Tampa Bay Water executed in February 2025. Tampa Bay Water will manage the design and construction of county requested infrastructure including a tee connection along Segment A of the South Hillsborough Pipeline (Project No. 01616) and yard piping improvements at the Hillsborough County Lithia Water Treatment Plant.

Project Location

Hillsborough County



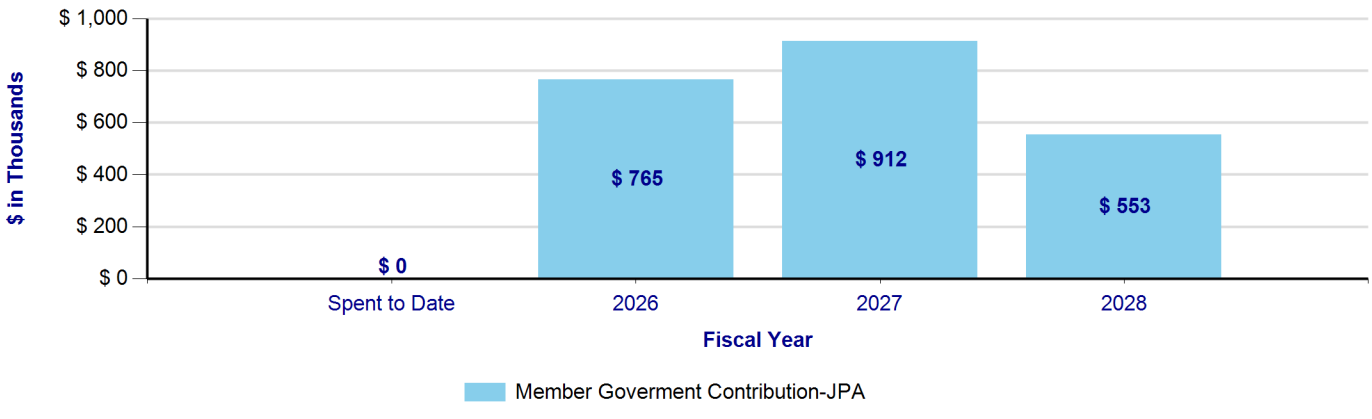
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2024	3/17/2025
Planning	12/2/2024	3/17/2025
Professional Services Selection	1/6/2025	7/21/2025
Design	7/22/2025	2/23/2026
Bidding	2/24/2026	5/18/2026
Construction or Execution	5/19/2026	5/8/2028
Close-Out	5/9/2029	8/20/2029

Project Budget by Project Phase

Project Phase	Amount
Design	$423,784
Construction or Execution	$1,806,216
Total Budget	$2,230,000

Expenditure Plan by Fiscal Year and Funding Source



50070: High Service Pump Station Variable Frequency Drives

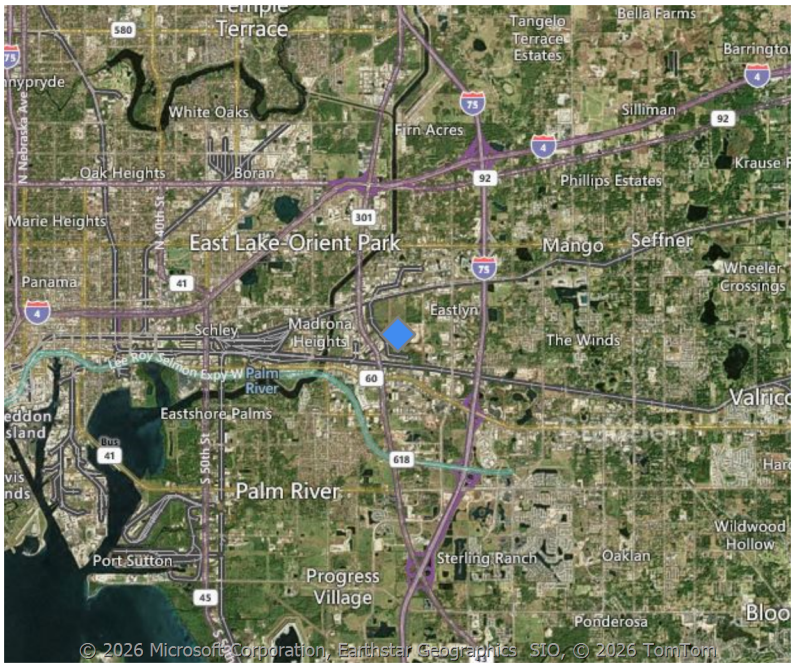
Project Manager	Eliana Lara
Construction Manager	
Status	Design

Project Description

The purpose of this project is to replace four Variable Frequency Drives (VFDs) and refurbishment of two VFDs at the High Service Pump Station (HSPS) located in Hillsborough County. This project also includes replacement of Remote Terminal Unit (RTU) Programable Logic Controllers (PLC) at the HSPS, and Repump Station.

Project Location

Hillsborough County



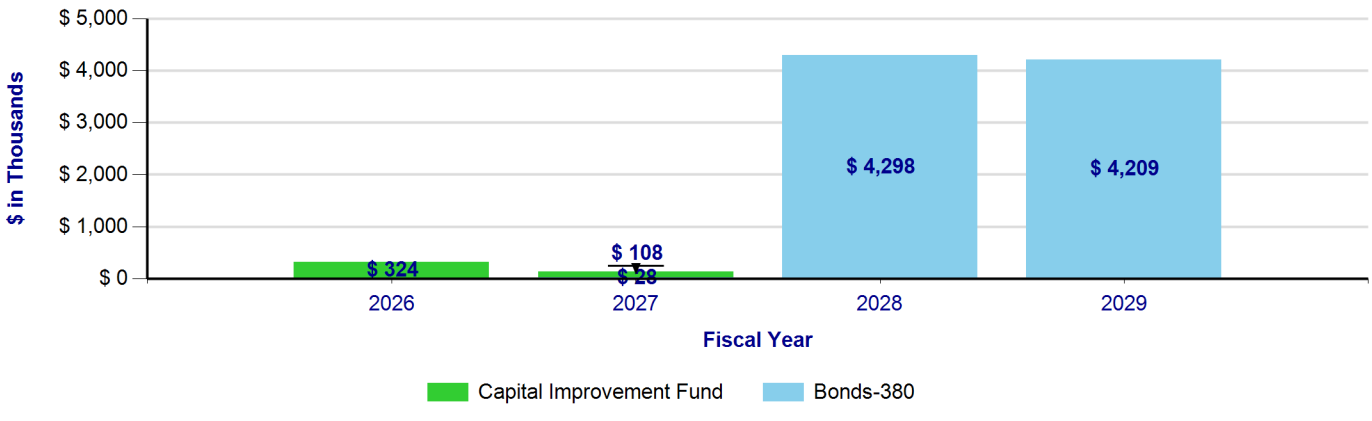
Project Schedule

Project Phase	Start Date	End Date
Planning	11/5/2024	2/10/2025
Professional Services Selection	2/11/2025	10/20/2025
Design	10/21/2025	12/21/2026
Bidding	12/22/2026	8/16/2027
Construction	8/17/2027	8/25/2029
Close-Out	8/26/2029	11/23/2029

Project Budget by Project Phase

Project Phase	Amount
Design	$432,019
Construction	$8,658,981
Total Budget	$9,091,000

Expenditure Plan by Fiscal Year and Funding Source



50082: Cypress Creek Medium Voltage Generator Control System Upgrade

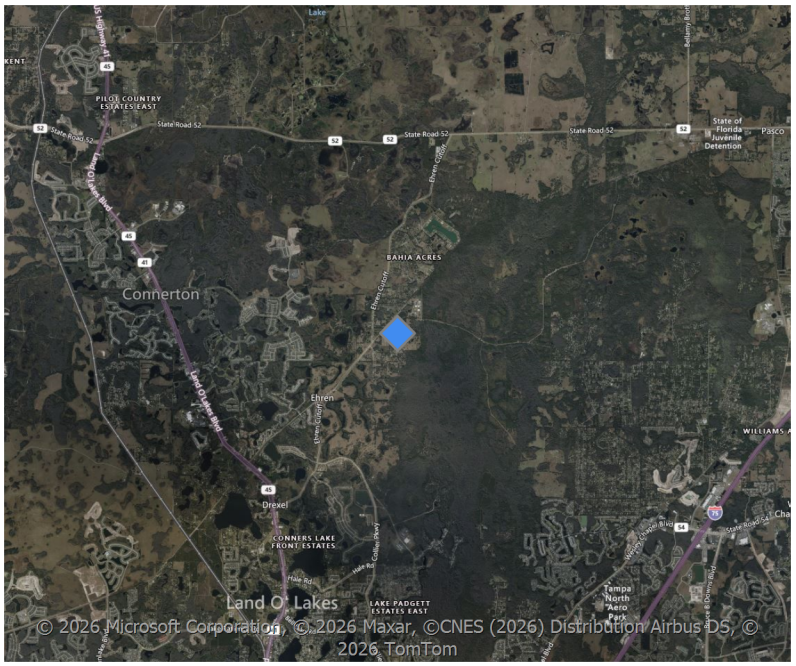
Project Manager	Mike Sakales
Construction Manager	
Status	Design

Project Description

This project is located at the Cypress Creek Pump Station and includes the replacement of antiquated generator controllers for two (2) medium voltage, 2.4 kV, 1825 kW/2281 kVA generators that provide standby power to the 2.4 kV distribution system.

Project Location

Pasco County



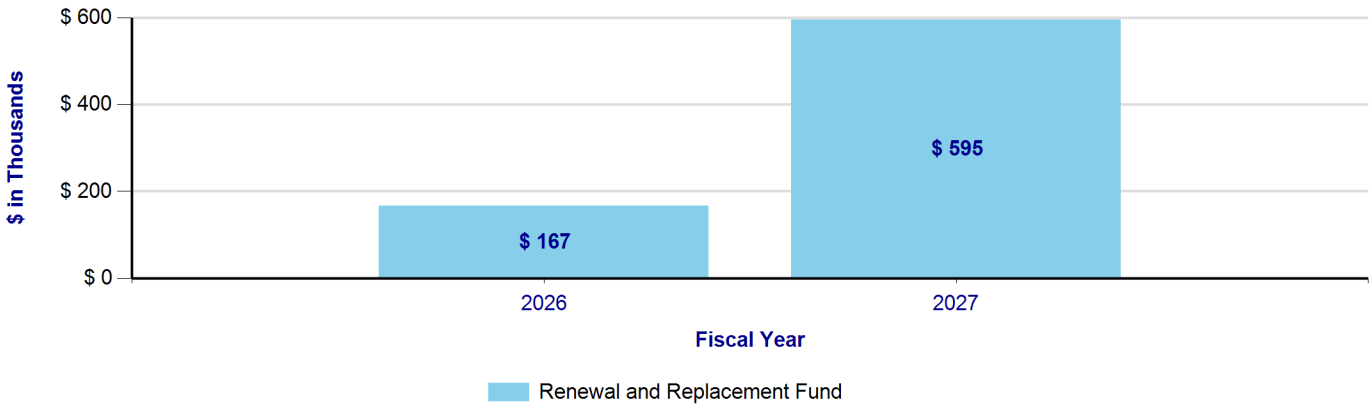
Project Schedule

Project Phase	Start Date	End Date
Publishing	8/1/2023	2/16/2025
Planning	2/17/2025	4/25/2025
Professional Services Selection	4/28/2025	9/9/2025
Design	9/9/2025	6/24/2026
Bidding	6/25/2026	8/31/2026
Construction or Execution	9/1/2026	5/11/2027
Close-Out	5/12/2027	8/16/2027

Project Budget by Project Phase

Project Phase	Amount
Design	$87,000
Bidding	$9,000
Construction or Execution	$626,000
Close-Out	$40,000
Total Budget	$762,000

Expenditure Plan by Fiscal Year and Funding Source



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Professional Services Selection Phase Projects

Project No. **Project Name**

01612 : South Hillsborough Wellfield

01622 : Tampa Bay Desalination Facility-Reverse Osmosis Trains

03505 : Brandon Urban Dispersed Wells-BUD 7 Water Quality Treatment Improvements

03511 : Surface Water Treatment Plant Water Quality Pilot Study

03512 : Brandon Urban Dispersed Wells-BUD 5 Water Quality Improvements

01612: South Hillsborough Wellfield

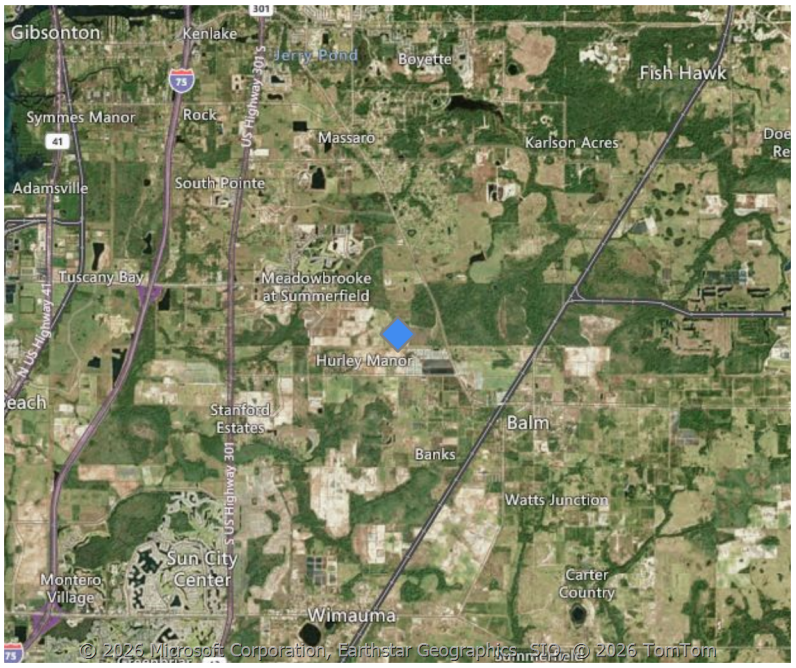
Project Manager	Danielle Keirsey
Construction Manager	Anthony Feria
Status	Professional Services Selection

Project Description

The South Hillsborough Wellfield project involves designing and constructing a new fresh groundwater wellfield and associated treatment facilities in southern Hillsborough County. The supply would be treated at a new groundwater treatment plant that will include an ozone treatment process.

Project Location

Hillsborough County



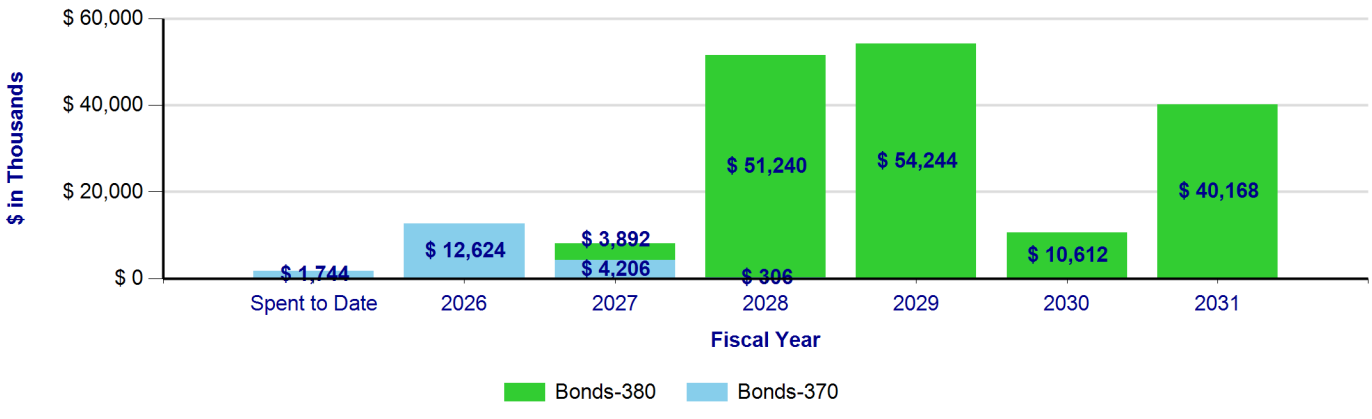
Project Schedule

Project Phase	Start Date	End Date
Publishing	10/1/2023	5/20/2024
Planning	12/4/2023	7/21/2025
Professional Services Selection	6/26/2025	8/17/2026
Design	8/18/2026	4/17/2028
Bidding	8/18/2027	4/17/2028
Construction or Execution	4/18/2028	11/13/2029
Close-Out	11/14/2029	4/22/2030

Project Budget by Project Phase

Project Phase	Amount
Planning	$5,871,242
Professional Services Selection	$13,008,906
Design	$44,083,758
Bidding	$257,000
Construction or Execution	$111,743,000
Close-Out	$4,073,000
Total Budget	$179,036,906

Expenditure Plan by Fiscal Year and Funding Source



01622: Tampa Bay Desalination Facility-Reverse Osmosis Trains

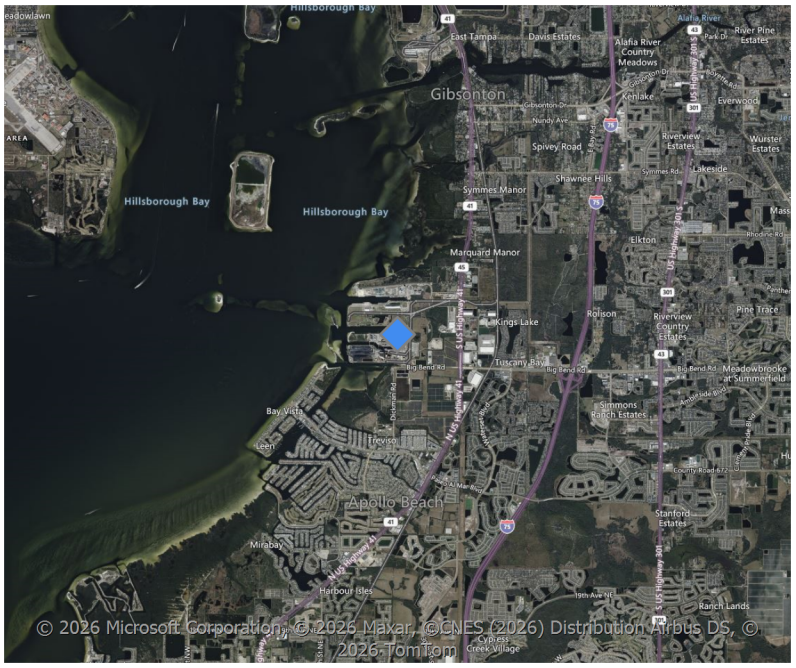
Project Manager	Indigo Dunn
Construction Manager	Lucas Parmer
Status	Professional Services Selection

Project Description

This project is located at the Tampa Bay Seawater Desalination Water Treatment Plant (Desal WTP) and includes the fabrication and installation of up to two additional Reverse Osmosis (RO) Trains along with associated pumps and variable frequency drives (VFD).

Project Location

Hillsborough County



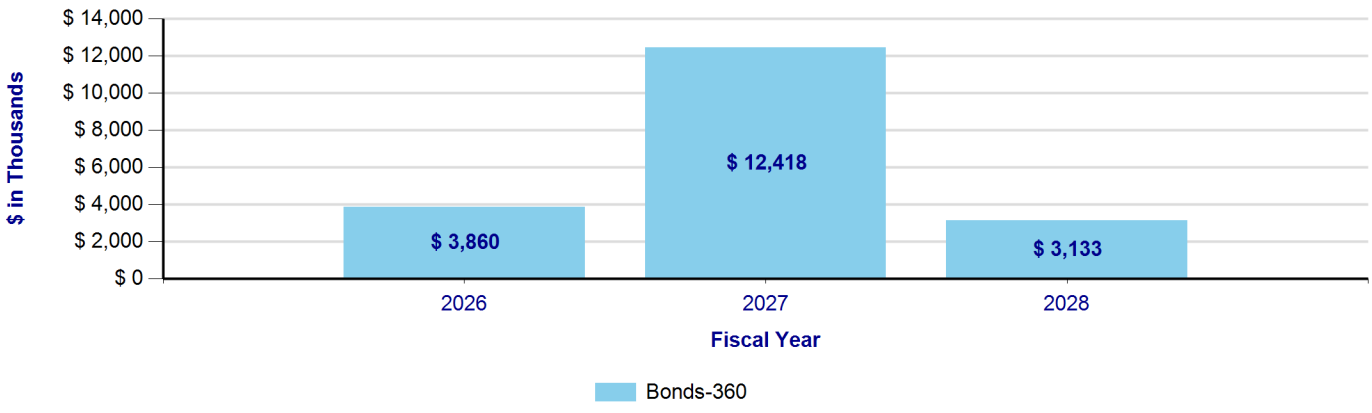
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	12/31/2025
Planning	1/1/2026	1/5/2026
Professional Services Selection	1/6/2026	4/20/2026
Design	4/21/2026	7/30/2026
Bidding	4/21/2026	4/21/2026
Construction or Execution	4/21/2026	12/29/2027
Close-Out	12/30/2027	4/17/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$19,411,000
Total Budget	$19,411,000

Expenditure Plan by Fiscal Year and Funding Source



03505: Brandon Urban Dispersed Wells-BUD 7 Water Quality Treatment Improvements

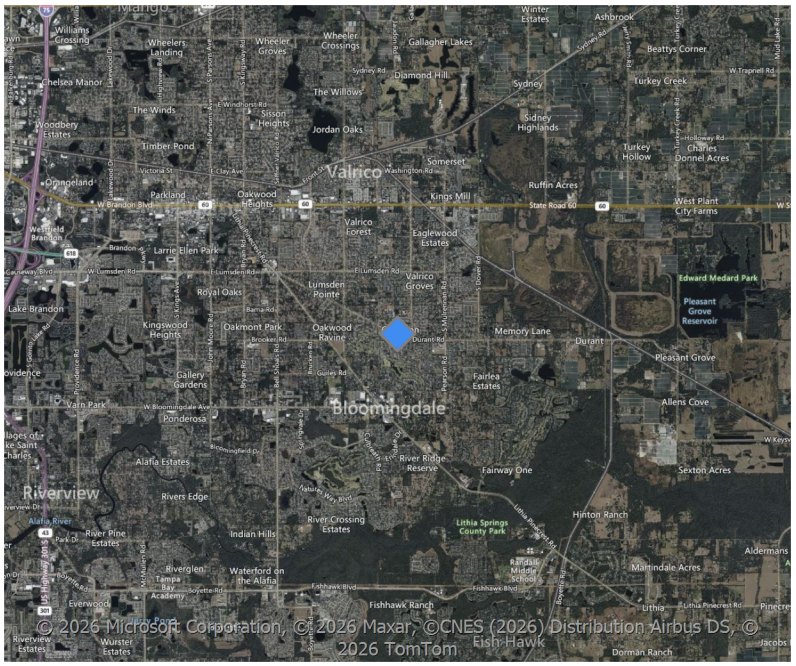
Project Manager	Adrienne Arceri
Construction Manager	Anthony Feria
Status	Professional Services Selection

Project Description

This project includes implementation of an ion exchange water treatment facility at the Brandon Urban Dispersed Wellfield BUD 7 facility in Hillsborough County. This technology will improve quality of the facility's groundwater by reducing Per- and Polyfluoroalkyl Substances (PFAS.)

Project Location

Hillsborough County



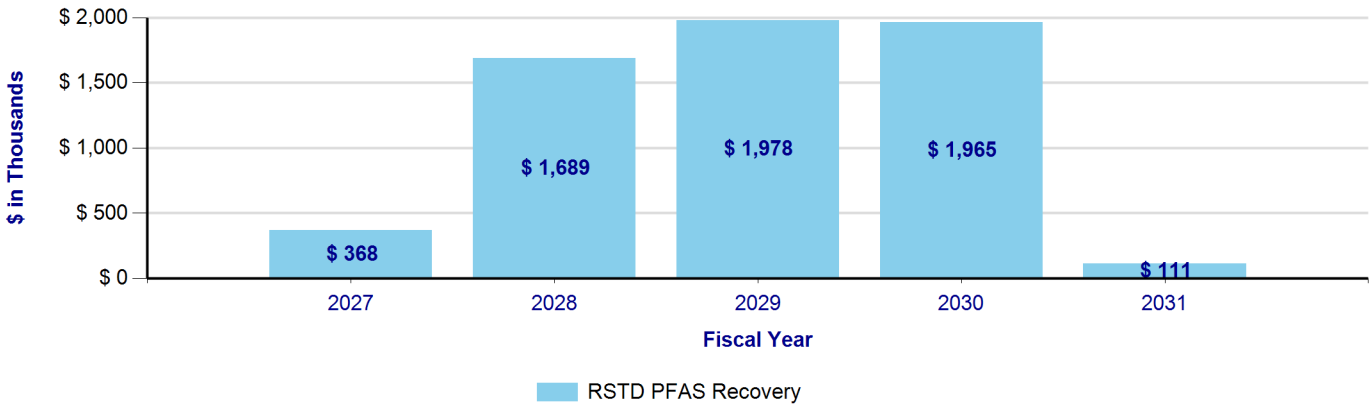
Project Schedule

Project Phase	Start Date	End Date
Planning	12/5/2025	1/26/2026
Professional Services Selection	1/27/2026	1/25/2027
Design	10/20/2026	7/17/2028
Bidding	9/30/2027	5/29/2028
Construction or Execution	2/1/2028	9/26/2030
Close-Out	9/27/2030	1/27/2031
Publishing	12/2/2022	5/13/2023

Project Budget by Project Phase

Project Phase	Amount
Design	$769,000
Bidding	$86,000
Construction or Execution	$5,256,000
Total Budget	$6,111,000

Expenditure Plan by Fiscal Year and Funding Source

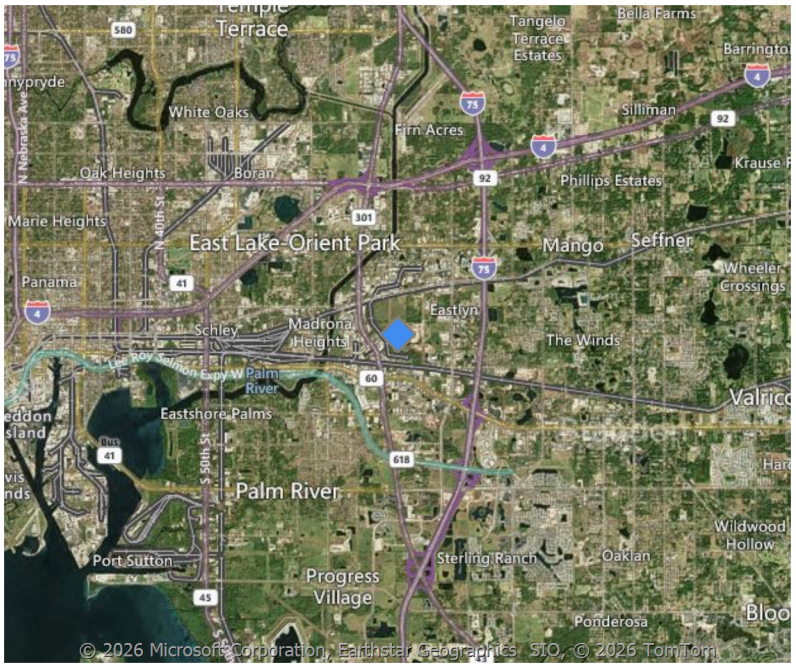


03511: Surface Water Treatment Plant Water Quality Pilot Study

Project Manager	Karim Molina-Oyola
Construction Manager	
Status	Professional Services Selection

Project Location

Other



Project Description

The project is located at the Surface Water Treatment Plant (SWTP) (Identified as criticality level 1) and involves the design of a new pilot plant and the immediate need to evaluate additional technologies for per- and polyfluoroalkyl (PFAS) compliance. Technologies that could reduce Total Organic Carbon (TOC) in the supply sources, or potential optimize performance of PFAS removal technologies may be studied as a secondary benefit. The technologies identified for this study include Ion Exchange (IX) and Granular Activated Carbon (GAC) for PFAS reduction downstream of the biological filters and the potential of Suspended Ion Exchange (SIX) for Total Organic Carbon (TOC) reduction at the headworks of the treatment processes.

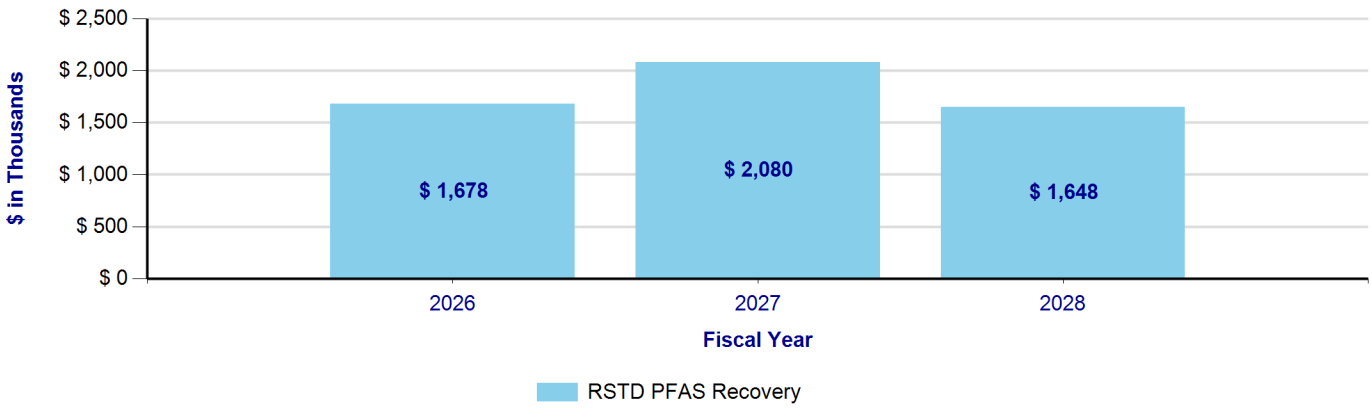
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	5/5/2025	10/27/2025
Professional Services Selection	10/28/2025	4/20/2026
Design	6/23/2026	4/19/2027
Bidding	6/17/2026	11/16/2026
Construction or Execution	9/30/2026	5/22/2029
Close-Out	5/23/2029	8/20/2029

Project Budget by Project Phase

Project Phase	Amount
Design	$1,827,688
Construction or Execution	$3,578,312
Total Budget	$5,406,000

Expenditure Plan by Fiscal Year and Funding Source



03512: Brandon Urban Dispersed Wells-BUD 5 Water Quality Improvements

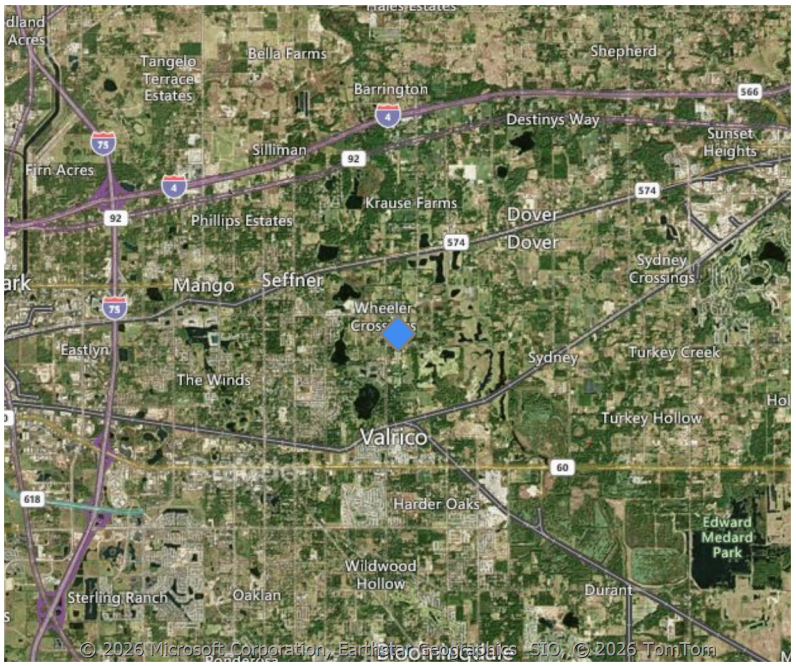
Project Manager	Adrienne Arceri
Construction Manager	Anthony Feria
Status	Professional Services Selection

Project Description

This project includes implementation of an ion exchange water treatment facility at the Brandon Urban Dispersed Wellfield BUD 5 facility in Hillsborough County. This technology will improve quality of the facility's groundwater by reducing Per- and Polyfluoroalkyl Substances (PFAS.)

Project Location

Hillsborough County



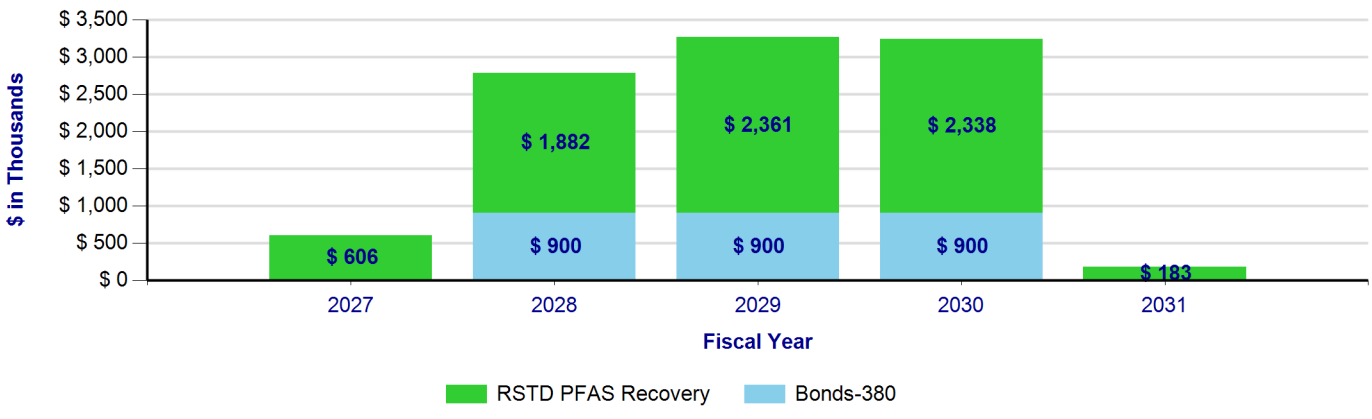
Project Schedule

Project Phase	Start Date	End Date
Publishing	1/1/2025	5/19/2025
Planning	12/5/2025	1/26/2026
Professional Services Selection	1/27/2026	1/25/2027
Design	10/20/2026	7/17/2028
Bidding	9/30/2027	5/29/2028
Construction or Execution	2/1/2028	9/26/2030
Close-Out	9/27/2030	1/27/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$1,266,000
Bidding	$141,000
Construction or Execution	$8,663,000
Total Budget	$10,070,000

Expenditure Plan by Fiscal Year and Funding Source



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Planning Phase Projects

Project No. **Project Name**

01604 : Eldridge-Wilde Wellfield Water Quality Treatment Improvements

06321 : South Operations and Maintenance Building

07070 : Tampa Bypass Canal (MLK) Pumps

07544 : Cypress Creek Pump Station Repump Improvements

01604: Eldridge-Wilde Wellfield Water Quality Treatment Improvements

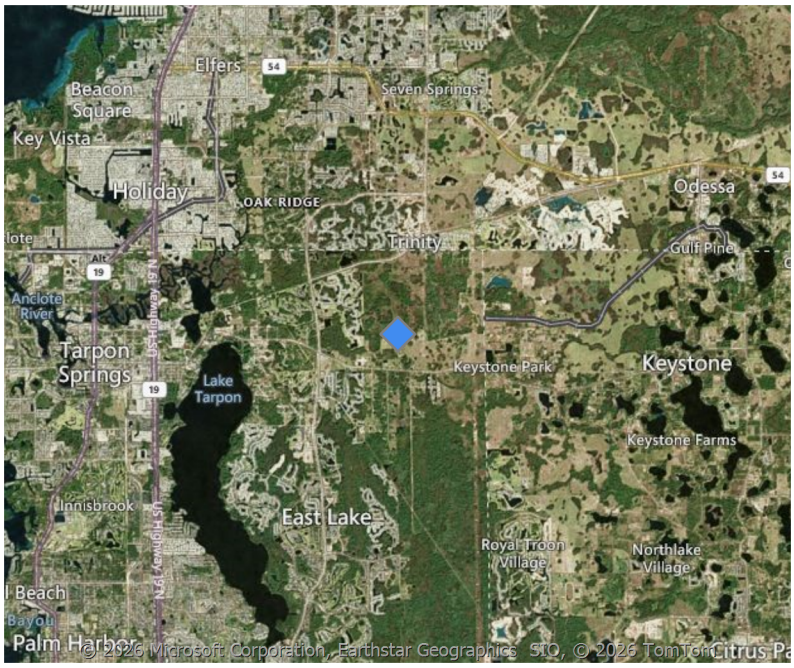
Project Manager	Adrienne Arceri
Construction Manager	Lucas Parmer
Status	Planning

Project Description

This project will replace the existing Eldridge□Wilde Hydrogen Sulfide Removal Facility with new treatment technologies for groundwater from the Eldridge□Wilde Wellfield. Improvements include ozone treatment for hydrogen sulfide removal and the addition of Granular Activated Carbon (GAC) pressure filters to reduce Total Organic Carbon (TOC) concentrations in the wellfield supply, pending Board approval.

Project Location

Pinellas County



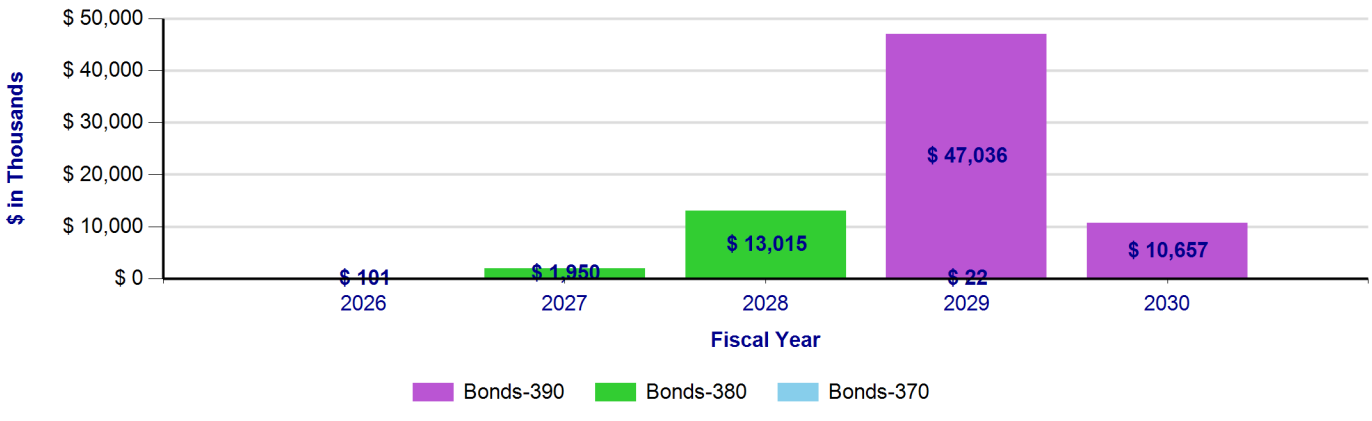
Project Schedule

Project Phase	Start Date	End Date
Planning	3/27/2026	6/1/2026
Professional Services Selection	6/2/2026	4/19/2027
Design	1/19/2027	10/16/2028
Bidding	1/13/2028	9/4/2028
Construction	5/2/2028	2/21/2030
Close-Out	2/22/2030	5/20/2030

Project Budget by Project Phase

Project Phase	Amount
Planning	$101,000
Design	$6,854,000
Bidding	$8,132,350
Construction	$57,490,650
Close-Out	$202,000
Total Budget	$72,780,000

Expenditure Plan by Fiscal Year and Funding Source



06321: South Operations and Maintenance Building

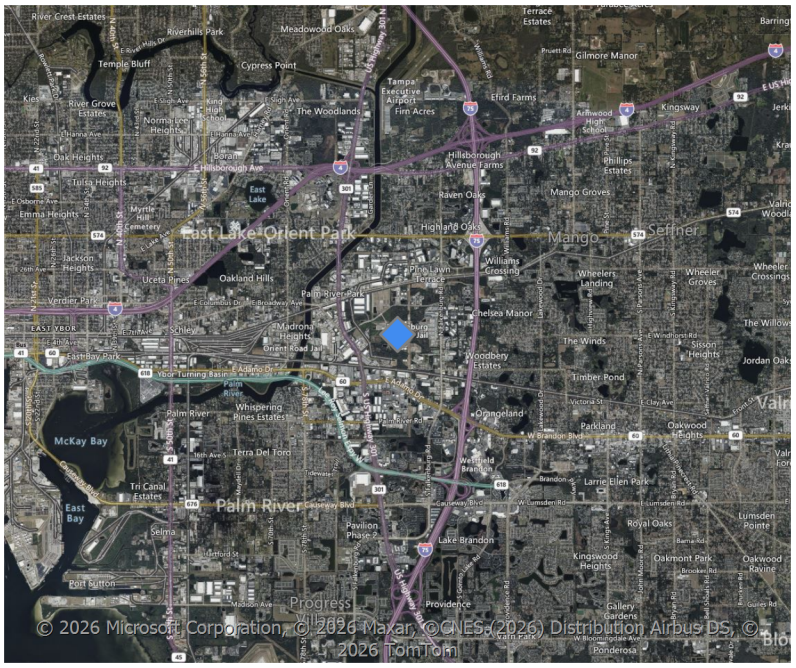
Project Manager	Karim Molina-Oyola
Construction Manager	Lucas Parmer
Status	Planning

Project Description

This project is located at the Regional Facilities Site and includes: (1) construction of a new 3,000 square feet maintenance shop/office space; and (2) construction of a new 4,000 square feet warehouse facility. The project concept is to have a pre-engineered office building with a connected metal warehouse building (large enough to operate a forklift). The proposed office building footprint is intended to accommodate approximately 20 workspaces, entrance, and restrooms.

Project Location

Hillsborough County



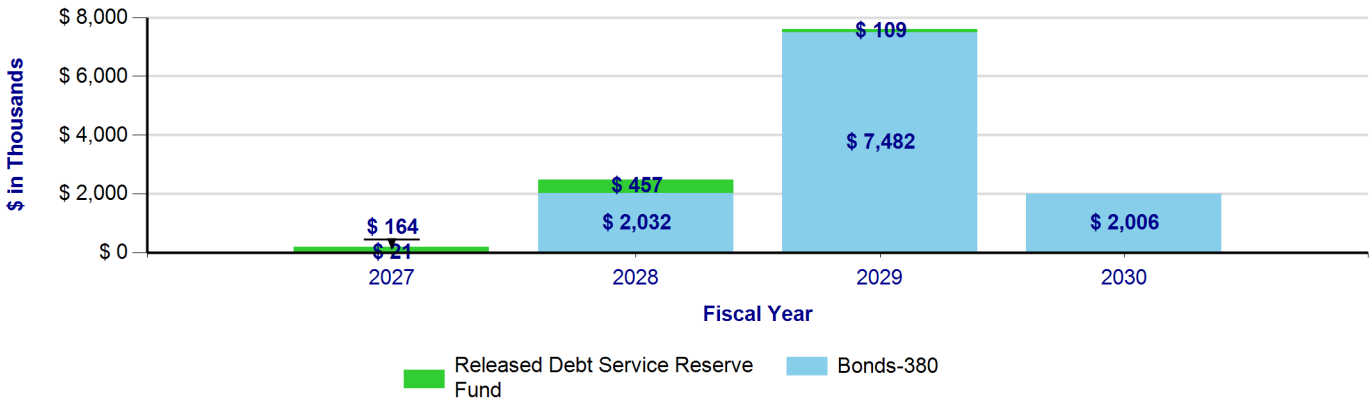
Project Schedule

Project Phase	Start Date	End Date
Planning	6/16/2025	4/19/2027
Design	4/20/2027	11/21/2028
Bidding	2/3/2028	5/22/2028
Construction	5/23/2028	1/4/2030
Close-Out	1/7/2030	5/20/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$890,000
Construction	$11,381,000
Total Budget	$12,271,000

Expenditure Plan by Fiscal Year and Funding Source



07070: Tampa Bypass Canal (MLK) Pumps

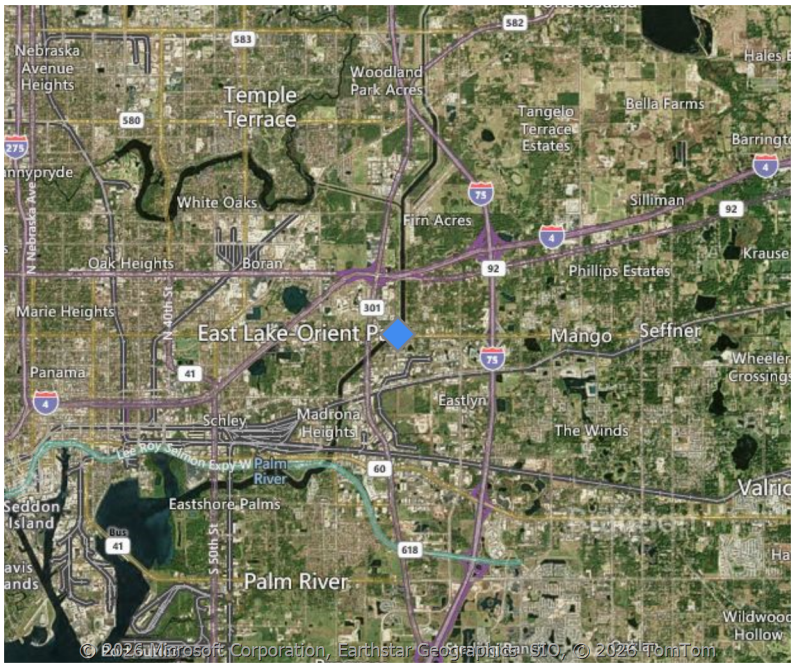
Project Manager	Indigo Dunn
Construction Manager	Lucas Parmer
Status	Planning

Project Description

This project is located at the Tampa Bypass Canal Martin Luther King Pump Station and entails removing, inspecting and reconditioning of both the pump and motor of eight 800 HP Fairbanks vertical turbine raw water pumps.

Project Location

Hillsborough County



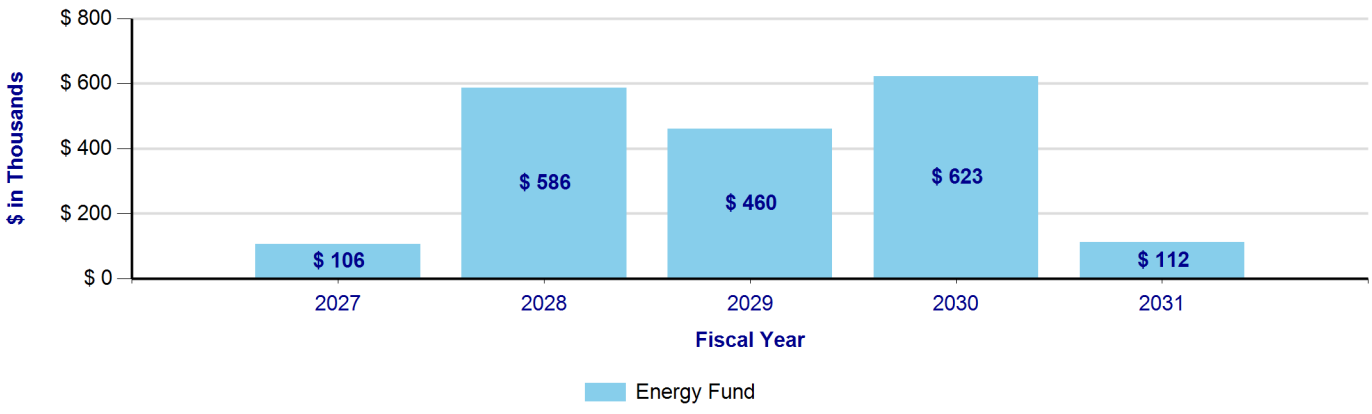
Project Schedule

Project Phase	Start Date	End Date
Planning	1/6/2026	7/6/2026
Professional Services Selection	7/7/2026	10/19/2026
Design	10/19/2026	10/19/2026
Bidding	10/19/2026	10/19/2026
Construction	10/20/2026	12/17/2029
Close-Out	12/18/2029	2/25/2030

Project Budget by Project Phase

Project Phase	Amount
Construction	$1,886,000
Total Budget	$1,886,000

Expenditure Plan by Fiscal Year and Funding Source



07544: Cypress Creek Pump Station Repump Improvements

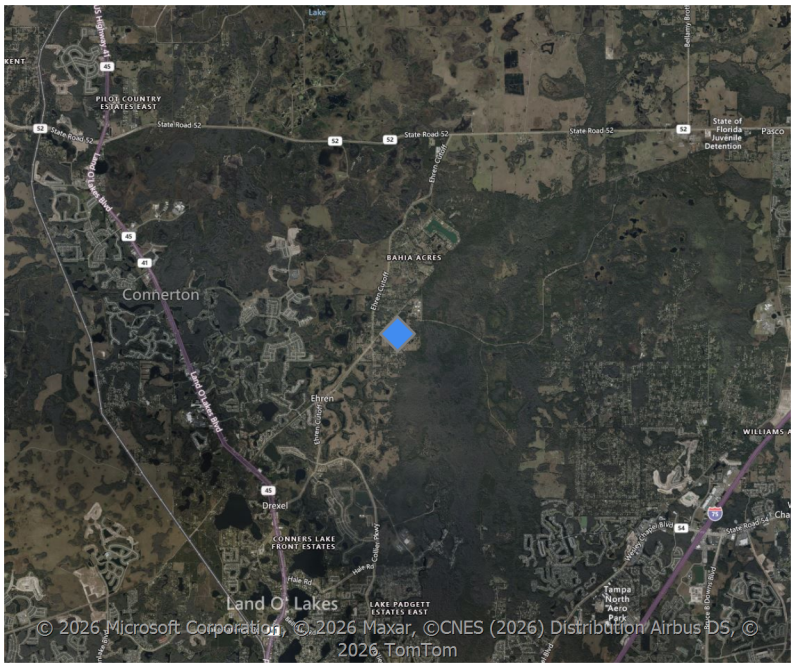
Project Manager	Danielle Keirsey
Construction Manager	
Status	Planning

Project Description

This project is located at the Cypress Creek Water Treatment Plant (WTP) and involves the addition of a control valve for pressure reduction in the North Central Hillsborough Intertie (NCHI) Transmission Main. This effort will also include changes to the NCHI line and above grade area to incorporate the new valve.

Project Location

Pasco County



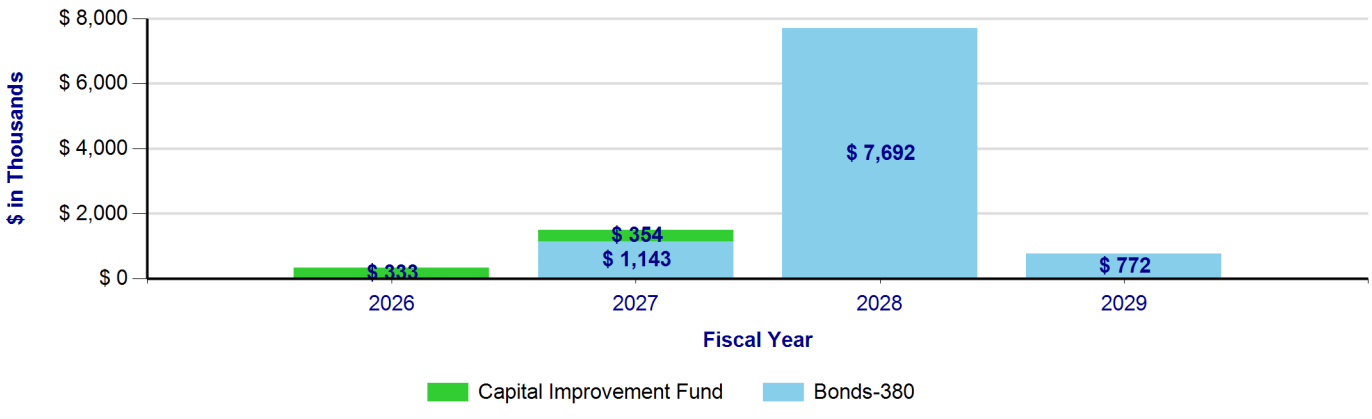
Project Schedule

Project Phase	Start Date	End Date
Publishing	9/18/2024	5/19/2025
Planning	11/4/2025	1/26/2026
Professional Services Selection	1/27/2026	5/18/2026
Design	5/19/2026	1/27/2027
Bidding	1/28/2027	7/19/2027
Construction or Execution	7/20/2027	11/3/2028
Close-Out	11/4/2028	2/26/2029

Project Budget by Project Phase

Project Phase	Amount
Planning	$149,000
Design	$742,000
Bidding	$75,000
Construction or Execution	$9,329,000
Total Budget	$10,295,000

Expenditure Plan by Fiscal Year and Funding Source



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Not Yet Started/Future Projects

Project No.	Project Name
01603 :	Cypress Creek WTP Yard Piping Valves, Drainage Improvements, Roads, and Security
01605 :	Morris Bridge Underground Powerline
01606 :	Section 21 Wellfield Pumps and Motors
01608 :	Tampa Bay Desalination Plant Concentrate Disposal
01614 :	Alafia Pump Station Motors and VFDs
01618 :	Crossbar Wellfield Stationary Generators
01619 :	Cypress Creek Wellfield Generators
01621 :	Tampa Bay Desalination Facility Building Improvements
03508 :	Surface Water Treatment Plant Water Quality Improvements
03600 :	Tampa Bay Desalination Plant - R&R Program
03700 :	Surface Water Treatment Plant - Renewal and Replacement Program - Phase II
03701 :	Surface Water Treatment Plant - Renewal and Replacement Program - Phase III
03702 :	Surface Water Treatment Plant - Renewal and Replacement Program - Phase IV
03703 :	Surface Water Treatment Plant - Renewal and Replacement Program - Phase V
03704 :	Surface Water Treatment Plant - Renewal and Replacement Program - Phase VI
03800 :	Surface Water Treatment Plant Renewal and Replacement Program - Phase VII
07005 :	South Pasco Water Quality Treatment, Storage and Pumping, Improvements
07007 :	Cypress Creek WTP Chemical System Upgrades
07061 :	South Pasco Wellfield Underground Commercial Powerline
07064 :	Ground Storage Tanks Fall Protection
07065 :	Maytum Vault Confined Space Removal
07545 :	2027 SCADA Field Communications Devices Replacement
07546 :	2028 SCADA Data Center Hardware Replacement
07547 :	IT-vGrid Infrastructure Modernization
07548 :	2030 SCADA Field Communications Devices Replacement
07549 :	Alafia Pump Station Meter Improvements and Pump Repairs
07550 :	Cypress Creek Water Treatment Plant (WTP) Electrical Improvements
07603 :	SCADA-Software Features

Project No.	Project Name
09021 :	2028 Long-Term Master Water Plan Update
50022 :	Morris Bridge Booster Station Pumps 1 and 2 Replacement
50023 :	Starkey Wellfield Improvements
50041 :	Northwest Hillsborough Wellfield Improvements
50042 :	Cosme-Odessa Wellfield Improvements
50043 :	Cypress Creek Wellfield Headwall Erosion Repair
50047 :	Morris Bridge Chemical Piping Replacement
50056 :	South Pasco Transmission Main Pipe Repair
50057 :	Tampa Bay Desalination Plant Belt Filter Press Replacement
50058 :	Tampa Bay Desalination Plant Piping Replacement
50059 :	Harney Pump Station Pumps and Motors
50062 :	Tampa Bay Desalination Pipeline Reliability - Phase 2
50063 :	Brandon Urban Dispersed Wellfield Pumps and Motors Replacement
50069 :	Repump Station Generator
50076 :	C.W. Bill Young Regional Reservoir-Dissolved Air Lines Replacement
50079 :	Clearwater Generator Replacement
50084 :	Repump Station Variable Frequency Drives
50085 :	Tampa Bay Desalination Facility Pretreatment Basins Coating Repair
52002 :	Carrollwood Pumps and Motors
52003 :	Lake Bridge Pumps and Motors

01603: Cypress Creek WTP Yard Piping Valves, Drainage Improvements, Roads, and Security

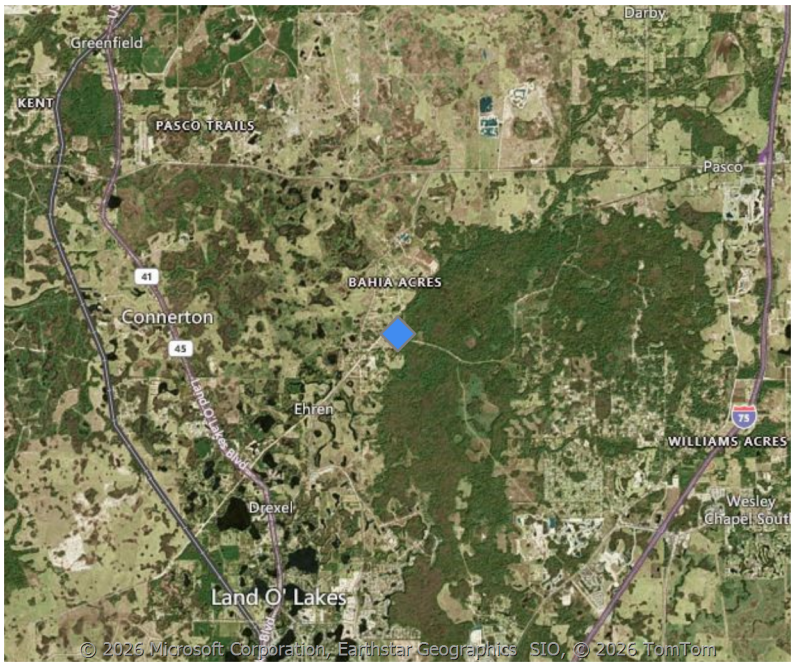
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Cypress Creek Water Treatment Plant and includes the design and replacement of three 42-inch butterfly valves and design and construction of site drainage improvements, roads, and security upgrades.

Project Location

Pasco County



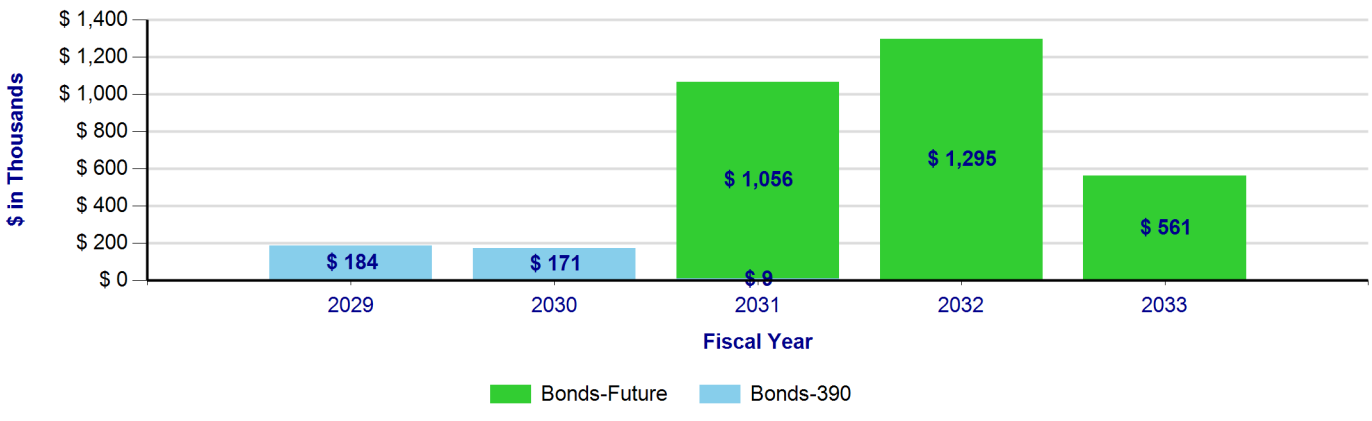
Project Schedule

Project Phase	Start Date	End Date
Planning	4/3/2028	7/7/2028
Professional Services Selection	7/10/2028	10/16/2028
Design	10/17/2028	3/15/2030
Bidding	3/18/2030	10/21/2030
Construction	10/22/2030	12/13/2032
Close-Out	12/14/2032	4/18/2033

Project Budget by Project Phase

Project Phase	Amount
Design	$273,000
Bidding	$91,000
Construction	$2,756,000
Close-Out	$156,000
Total Budget	$3,276,000

Expenditure Plan by Fiscal Year and Funding Source



01605: Morris Bridge Underground Powerline

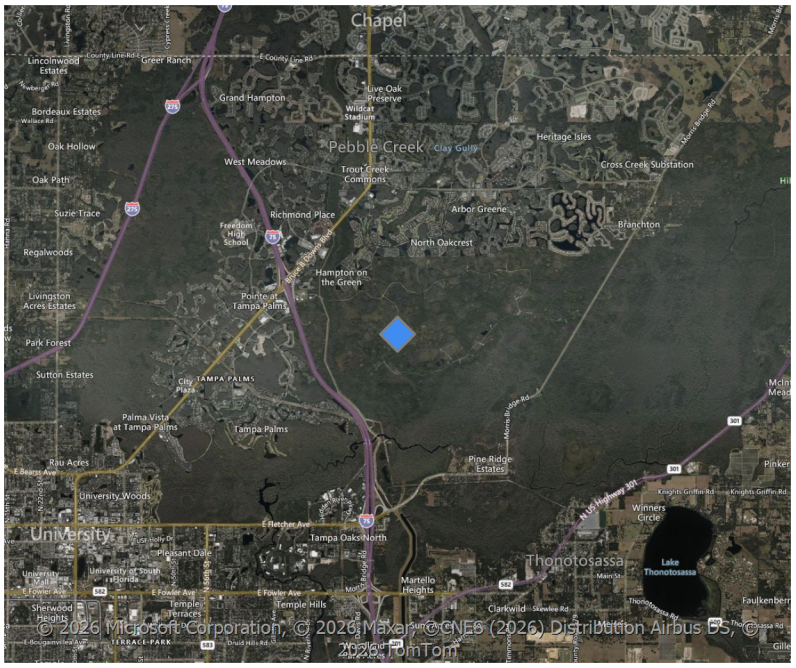
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project will replace approximately 15,000 linear feet of damage distribution cabling at the Morris Bridge Wellfield. The project will also replace the switchgear, SCADA, and medium voltage switch.

Project Location

Hillsborough County



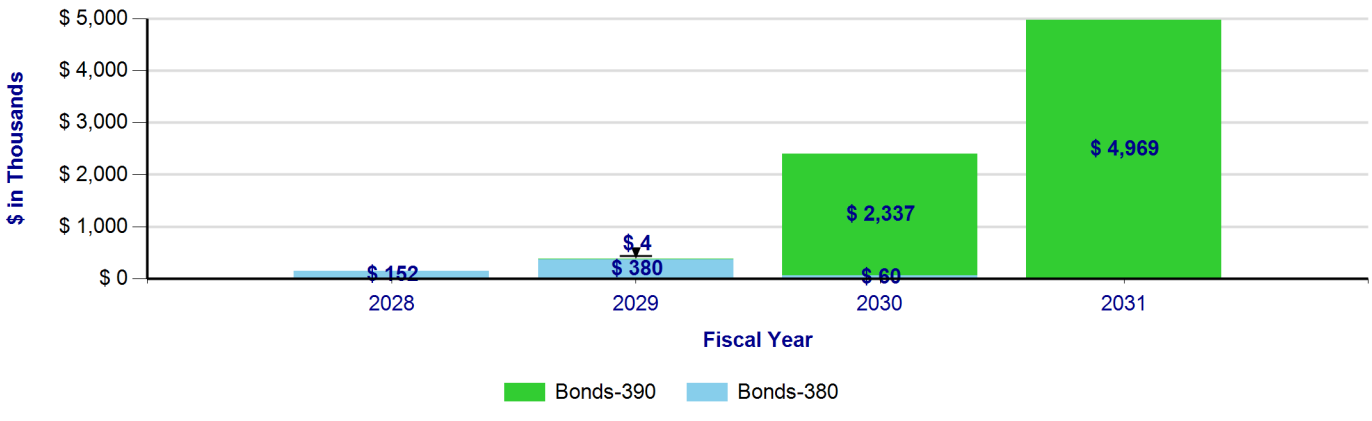
Project Schedule

Project Phase	Start Date	End Date
Planning	8/2/2027	11/5/2027
Professional Services Selection	11/8/2027	5/29/2028
Design	5/29/2028	7/19/2029
Bidding	7/20/2029	3/4/2030
Construction	3/5/2030	5/13/2031
Close-Out	5/14/2031	9/15/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$504,000
Bidding	$101,000
Construction	$6,138,000
Close-Out	$1,159,000
Total Budget	$7,902,000

Expenditure Plan by Fiscal Year and Funding Source

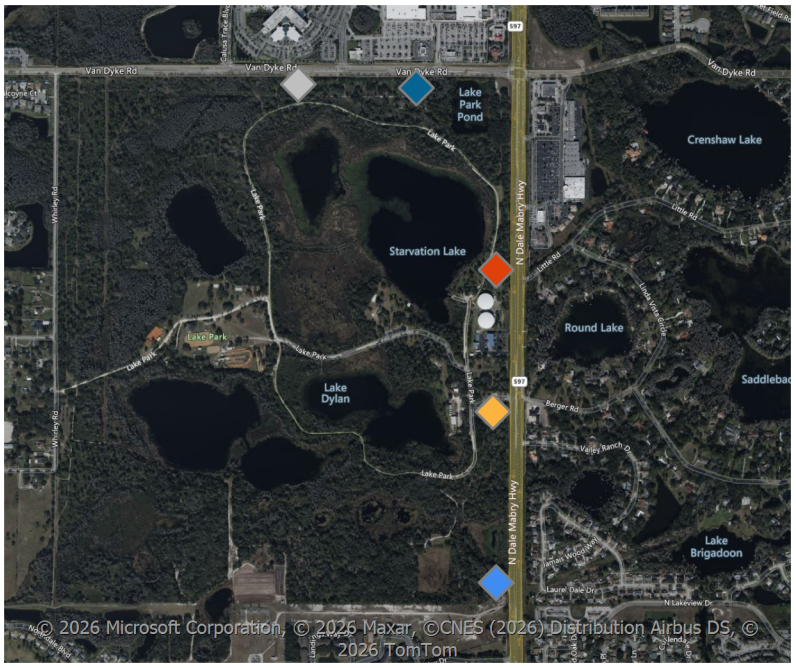


01606: Section 21 Wellfield Pumps and Motors

Project Manager	
Construction Manager	
Status	Not Yet Started

Project Location

Hillsborough County



Project Description

This project will replace pumps and motors of five wells within the Section 21 wellfield, in Lake Park. The pumps were originally built to pump to the Cosme Water Treatment Plant, but now pump to Lake Park. This reduces the required discharge head on the pumps, so motors will be downsized to account for these new operating conditions. The improvements will strengthen system reliability while reducing energy consumption and maintenance.

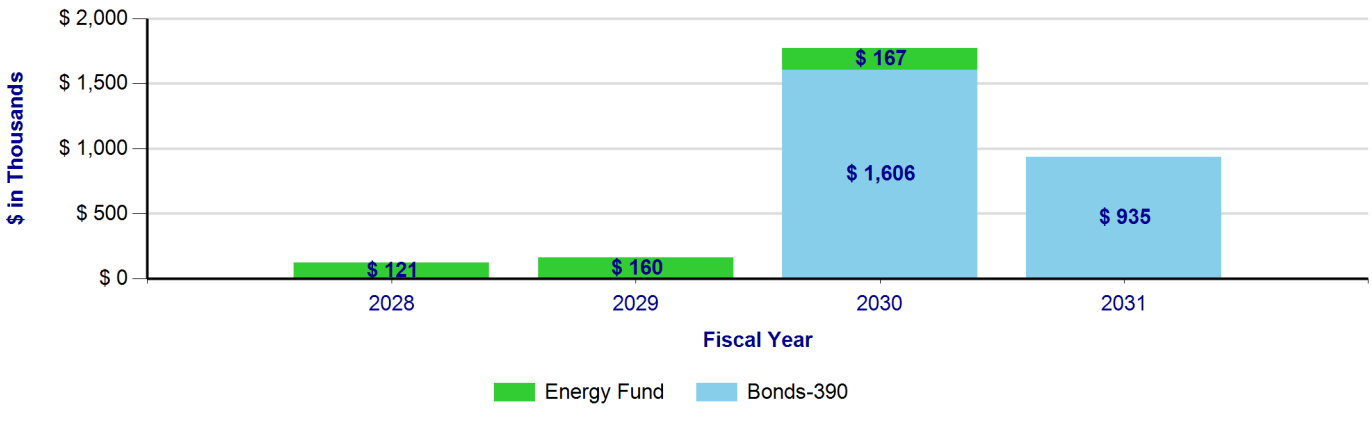
Project Schedule

Project Phase	Start Date	End Date
Planning	8/2/2027	11/5/2027
Professional Services Selection	11/8/2027	3/6/2028
Design	3/6/2028	4/17/2029
Bidding	4/18/2029	11/20/2029
Construction	11/21/2029	3/12/2031
Close-Out	3/13/2031	7/21/2031

Project Budget by Project Phase

Project Phase	Amount
Bidding	$34,000
Construction	$2,700,000
Engineering Services	$255,000
Total Budget	$2,989,000

Expenditure Plan by Fiscal Year and Funding Source



01608: Tampa Bay Desalination Plant Concentrate Disposal

Project Manager	
Construction Manager	
Status	Not Yet Started

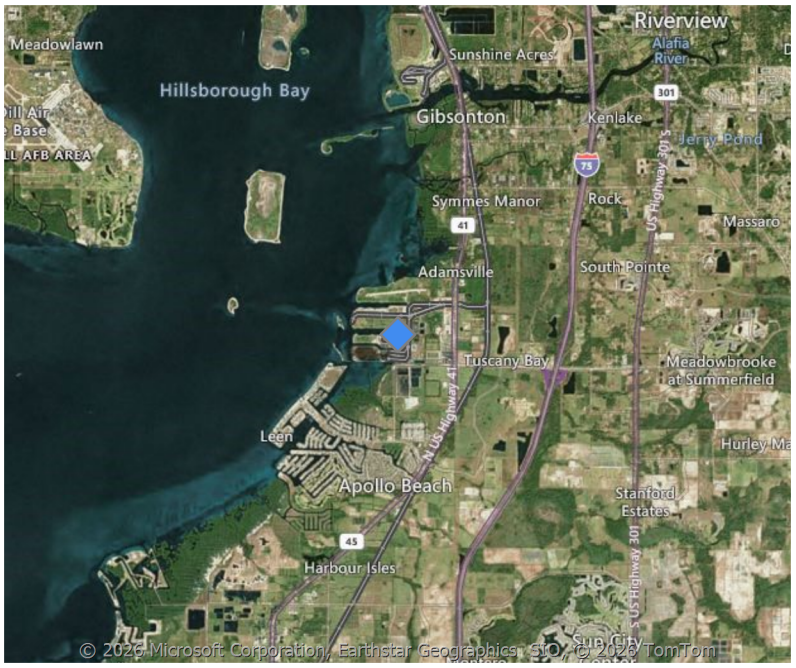
Project Description

The project is located at Tampa Bay Seawater Desalination Plant located approximately 500 yds north of the Tampa Electric Company (TECO) Big Bend Power Station and involves construction of an alternative or supplemental reverse osmosis (RO) concentrate disposal system, including consideration of a Deep Injection Well (DIW) system or the addition of a new concentrate discharge pipeline and outlet into the bay (Ocean Outfall Diffuser/Bay Discharge System).

Note: This project is a placeholder.

Project Location

Hillsborough County



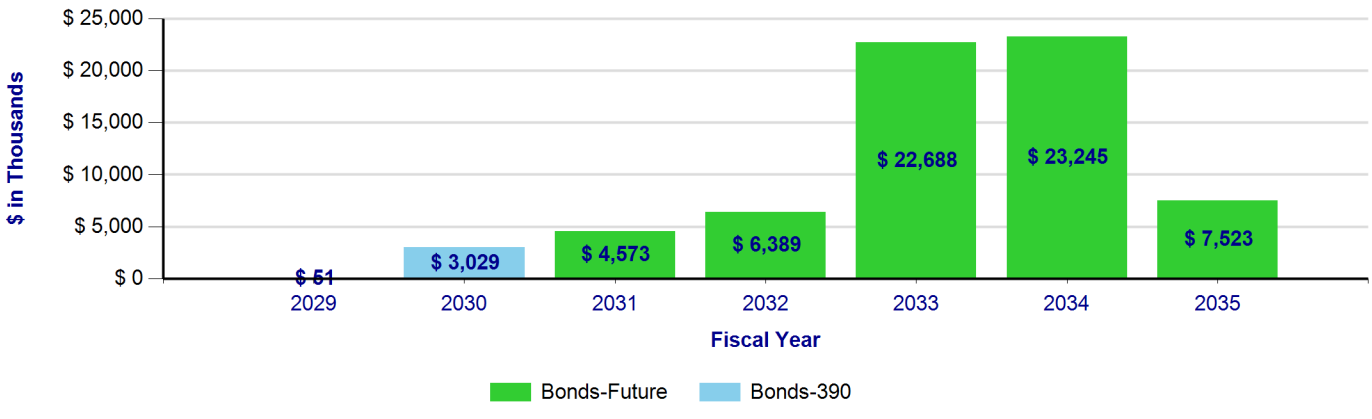
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	1/24/2029	4/10/2029
Professional Services Selection	4/11/2029	12/31/2029
Design	1/1/2030	10/3/2031
Bidding	10/4/2031	4/20/2032
Construction or Execution	4/21/2032	12/13/2034
Close-Out	12/14/2034	4/16/2035

Project Budget by Project Phase

Project Phase	Amount
Planning	$51,000
Design	$7,655,000
Bidding	$507,000
Construction or Execution	$56,517,000
Close-Out	$2,768,000
Total Budget	$67,498,000

Expenditure Plan by Fiscal Year and Funding Source



01614: Alafia Pump Station Motors and VFDs

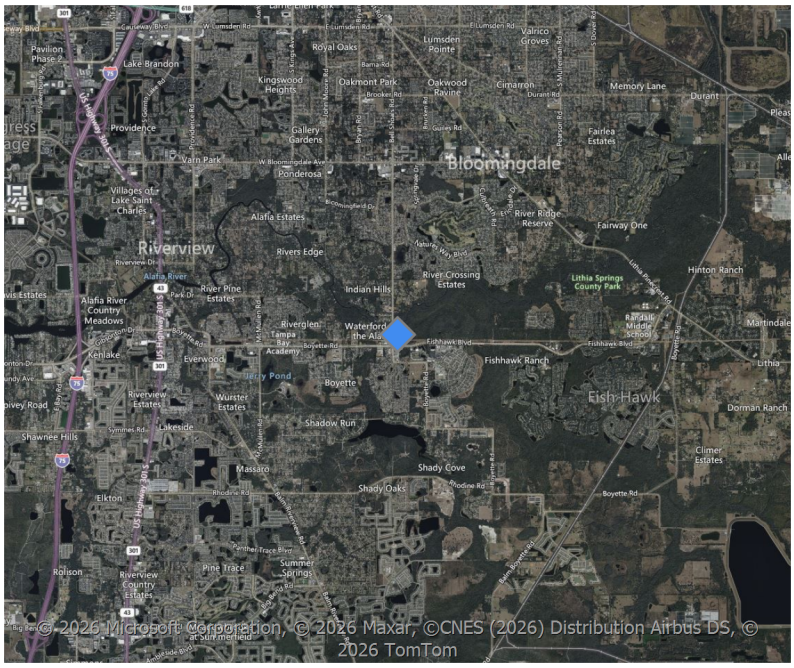
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Alafia River Pump Station in Hillsborough County and includes the replacement of four 800 HP motors and variable frequency drives.

Project Location

Hillsborough County



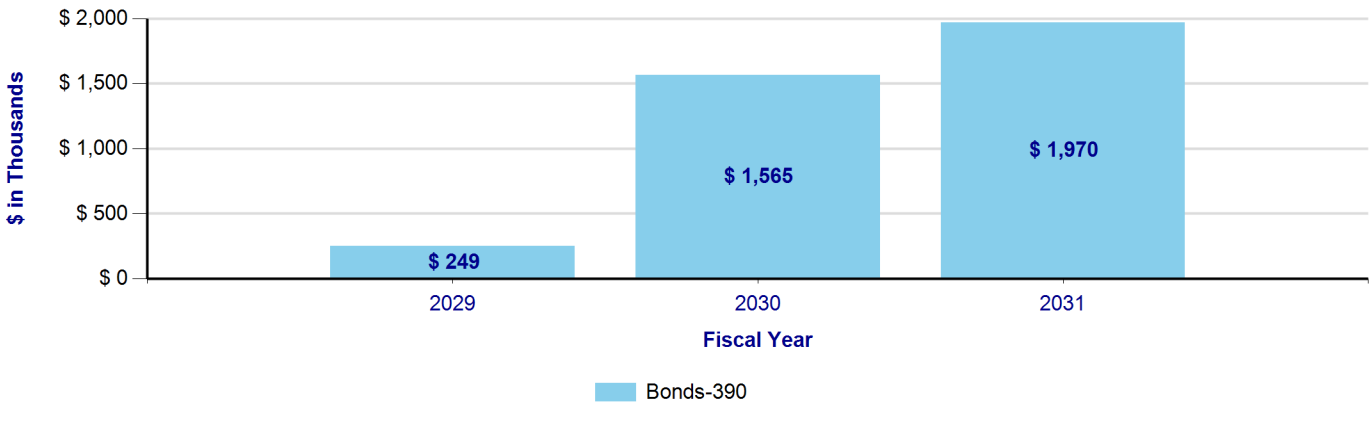
Project Schedule

Project Phase	Start Date	End Date
Planning	6/1/2028	9/6/2028
Professional Services Selection	9/7/2028	12/4/2028
Design	12/4/2028	8/28/2029
Bidding	8/29/2029	4/1/2030
Construction	3/20/2030	3/19/2031
Close-Out	3/20/2031	5/28/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$238,000
Bidding	$72,000
Construction	$3,474,000
Total Budget	$3,784,000

Expenditure Plan by Fiscal Year and Funding Source



01618: Crossbar Wellfield Stationary Generators

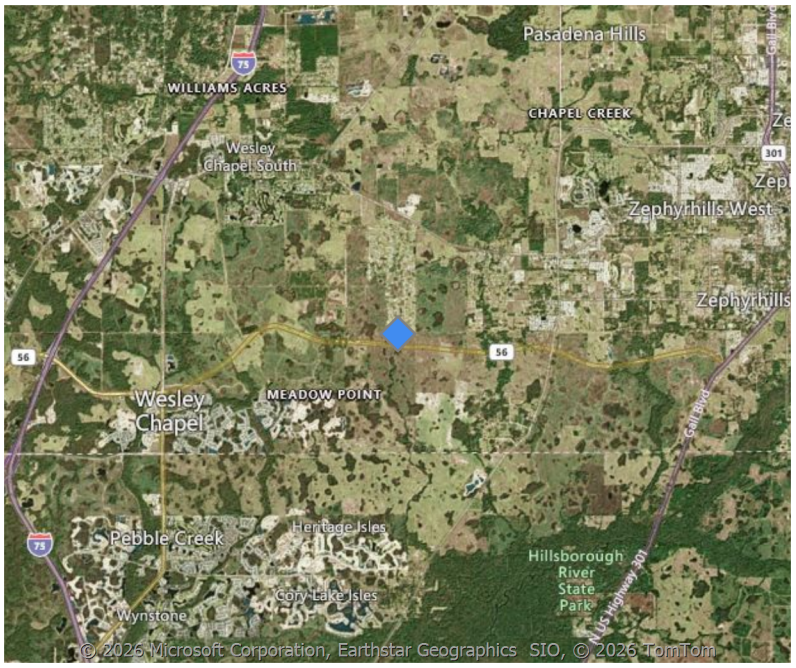
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Crossbar Wellfield and includes the installation of stationary diesel generators with skid mounted fuel tanks at Wells 1, 4, 5, 8, 9, 10, 12, 13, 14, & 15. In, addition, generator docking stations will be installed at the remaining Wells 2, 3, 6, 7, 11, 16 & 17 to facilitate portable generators connections.

Project Location

Pasco County



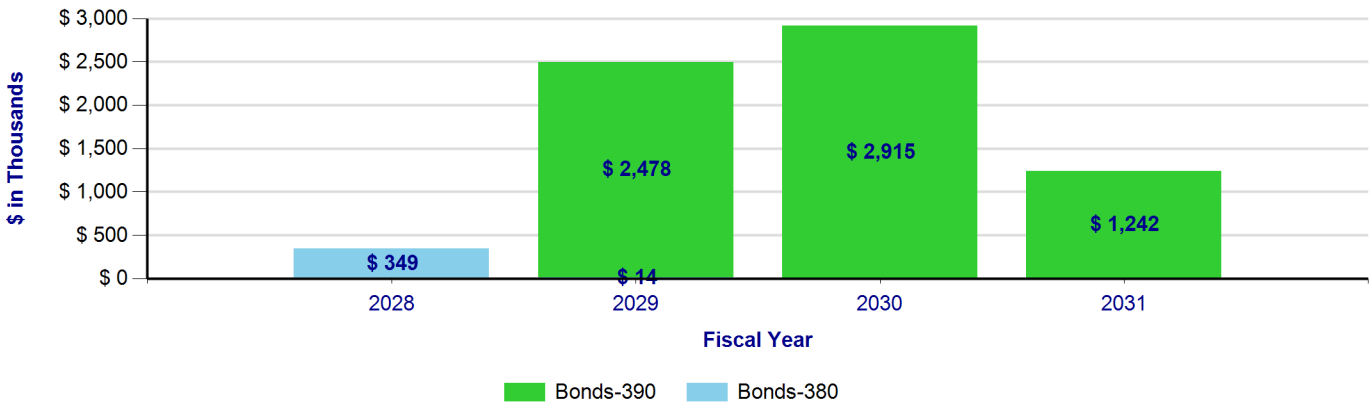
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	5/10/2027	6/21/2027
Professional Services Selection	6/22/2027	10/18/2027
Design	10/19/2027	8/23/2028
Bidding	8/24/2028	11/20/2028
Construction or Execution	11/21/2028	1/30/2031
Close-Out	1/31/2031	4/21/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$338,000
Bidding	$25,000
Construction or Execution	$6,399,000
Close-Out	$236,000
Total Budget	$6,998,000

Expenditure Plan by Fiscal Year and Funding Source



01619: Cypress Creek Wellfield Generators

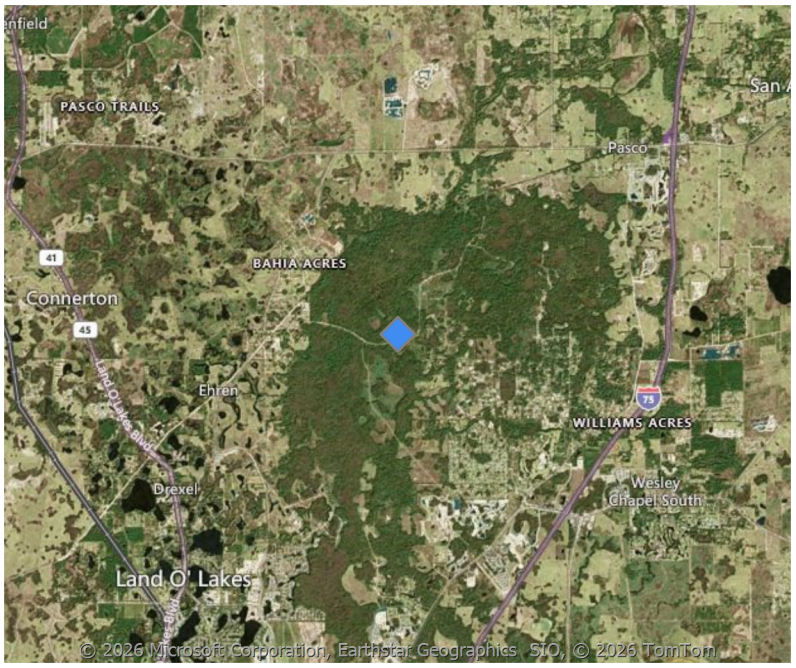
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located a the Cypress Creek Wellfield and includes the installation of stationary diesel generators at Wells 1 through 10, and generator docking stations at wells 11 through 13.

Project Location

Pasco County



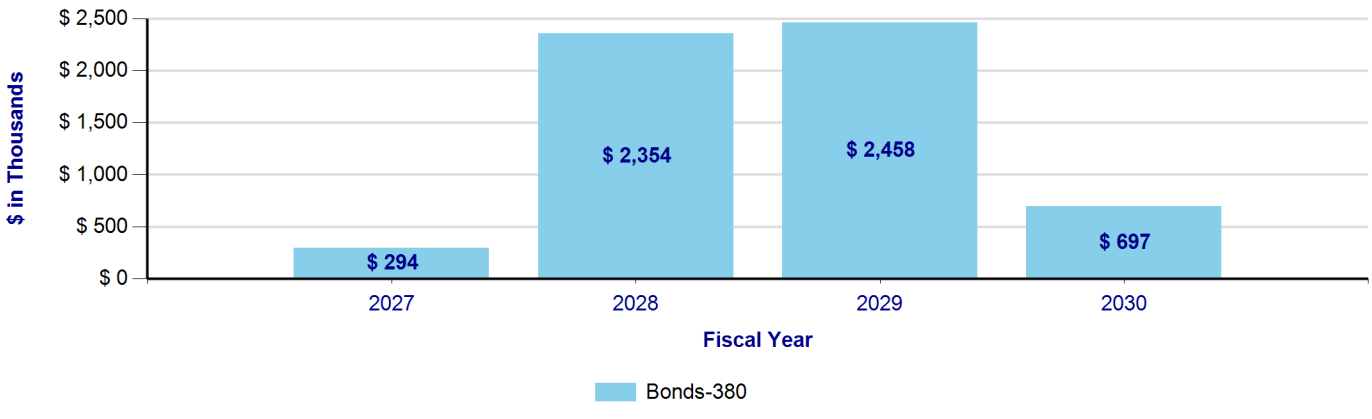
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	8/3/2026	8/11/2026
Professional Services Selection	8/11/2026	10/19/2026
Design	10/20/2026	5/7/2027
Bidding	5/10/2027	10/18/2027
Construction or Execution	10/19/2027	1/10/2030
Close-Out	1/11/2030	4/15/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$276,000
Bidding	$20,000
Construction or Execution	$5,507,000
Total Budget	$5,803,000

Expenditure Plan by Fiscal Year and Funding Source



01621: Tampa Bay Desalination Facility Building Improvements

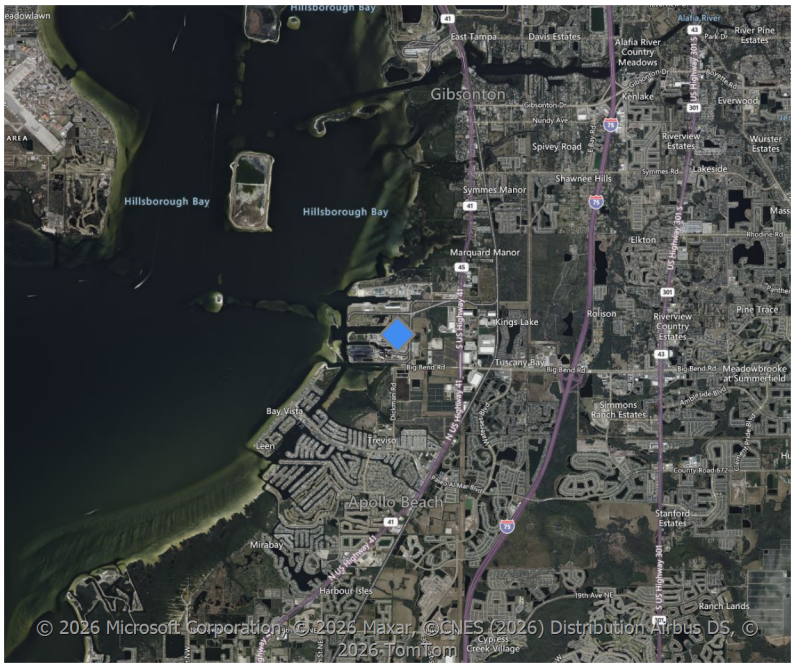
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Tampa Bay Seawater Desalination Water Treatment Plant (Desal WTP) and includes reconditioning of the Reverse Osmosis (RO) building.

Project Location

Hillsborough County



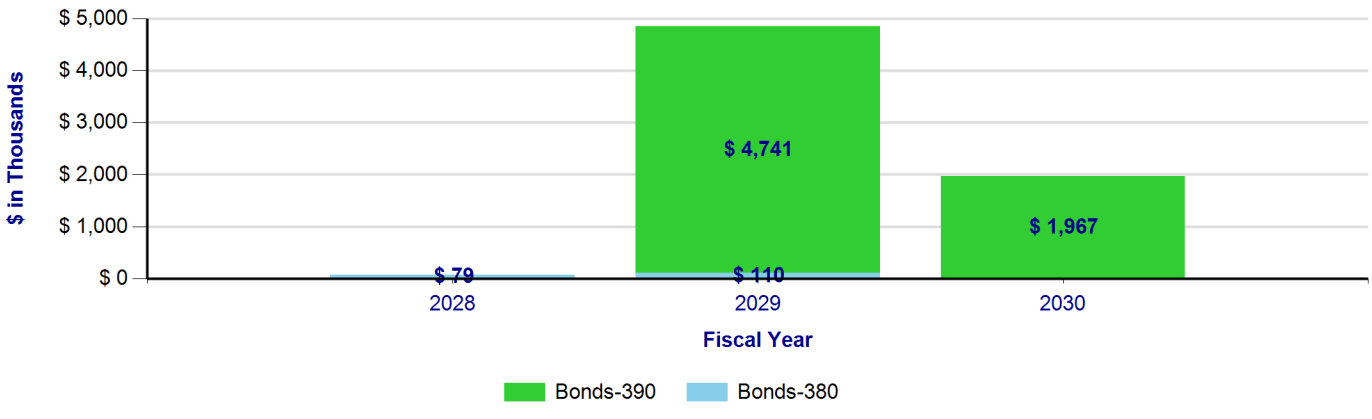
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	9/6/2027	10/25/2027
Professional Services Selection	10/26/2027	5/15/2028
Design	5/16/2028	2/23/2029
Bidding	11/23/2028	6/4/2029
Construction or Execution	3/6/2029	12/24/2029
Close-Out	12/25/2029	4/15/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$162,000
Bidding	$27,000
Construction or Execution	$6,708,000
Total Budget	$6,897,000

Expenditure Plan by Fiscal Year and Funding Source



03508: Surface Water Treatment Plant Water Quality Improvements

Project Manager	
Construction Manager	
Status	Not Yet Started

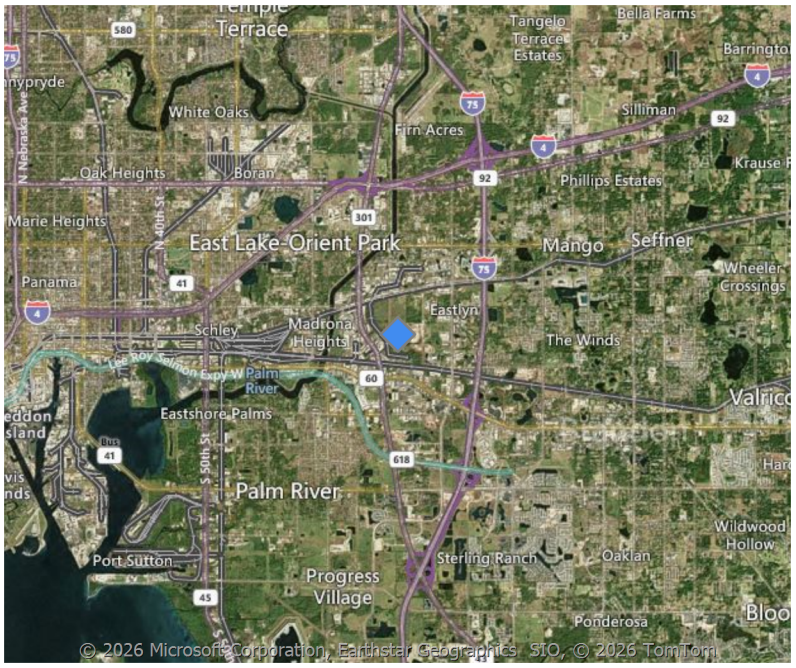
Project Description

This project includes design, permitting and construction of new technology to treat the raw water supply at the Surface Water Treatment Plant (SWTP) and includes improving the water quality for PFAS and TOC reduction.

Note: This is a Placeholder project. Treatment technology will be determined upon completion of project 03511- Surface Water Treatment Plant Water Quality Pilot Study.

Project Location

Hillsborough County



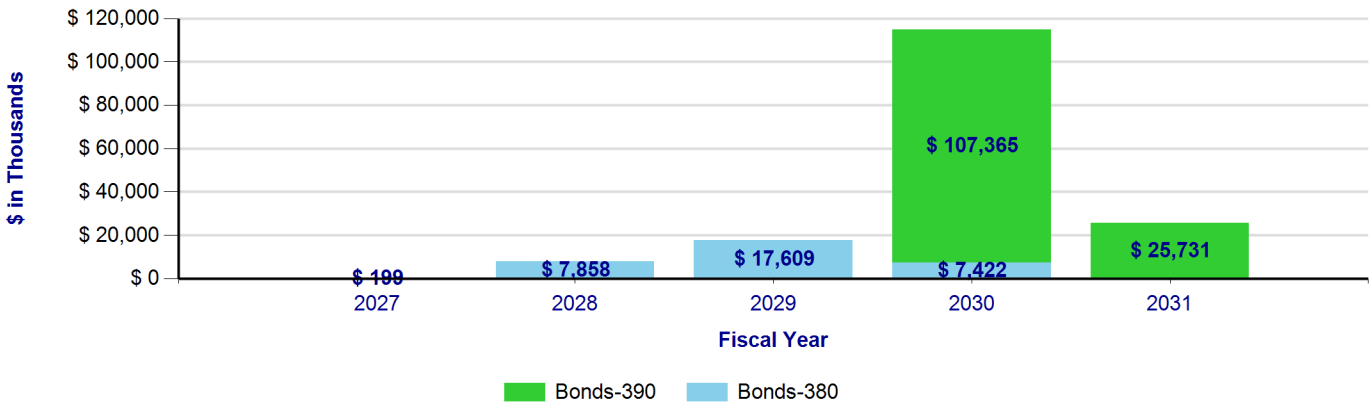
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	4/5/2027	6/22/2027
Professional Services Selection	6/23/2027	1/24/2028
Design	1/25/2028	7/25/2029
Bidding	7/26/2029	1/25/2030
Construction or Execution	11/2/2029	12/16/2030
Close-Out	12/17/2030	4/21/2031

Project Budget by Project Phase

Project Phase	Amount
Planning	$199,000
Design	$32,889,050
Construction or Execution	$132,599,950
Close-Out	$496,000
Total Budget	$166,184,000

Expenditure Plan by Fiscal Year and Funding Source



03600: Tampa Bay Desalination Plant - R&R Program

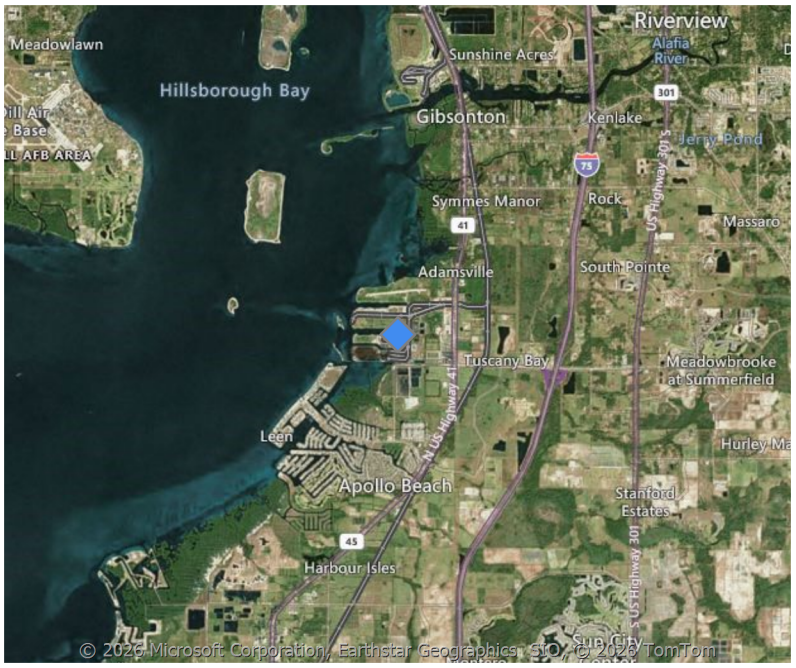
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Tampa Bay Desalination (Desal) Plant – Renewal and Replacement (R&R) program will consist of multiple projects that are required to maintain the sustainable operating capacity of the Desal Plant. This program will include the replacement or renewal of several systems including but not limited to, the Sand Filters, Diatomaceous Earth (DE) Filters and Pump Station Pumps and Energy Recovery Turbines (ERTs).

Project Location

Hillsborough County



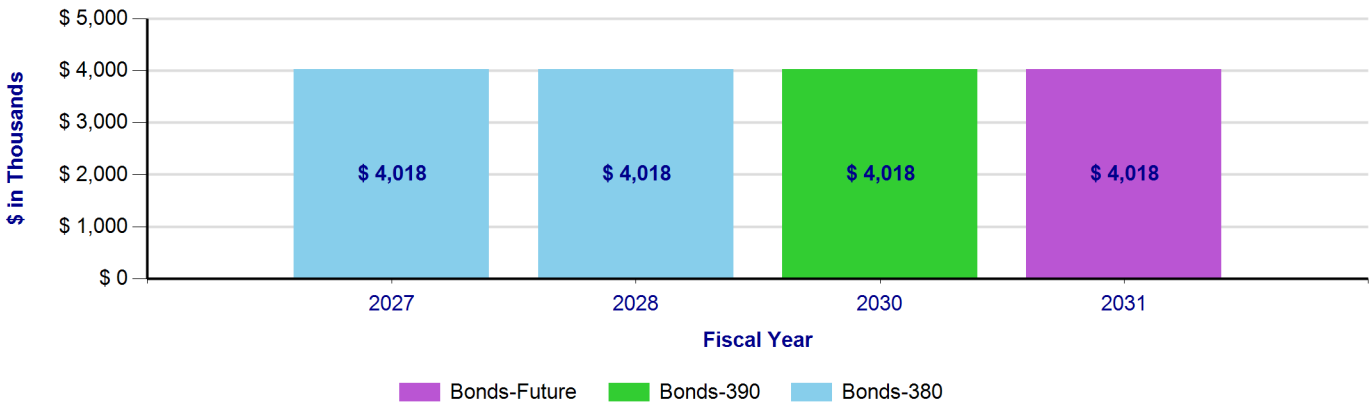
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	10/1/2026	9/30/2027
Professional Services Selection	10/1/2027	9/30/2028
Design	10/1/2028	9/30/2029
Bidding	10/1/2029	9/30/2030
Close-Out	10/1/2030	9/30/2031

Project Budget by Project Phase

Project Phase	Amount
Planning	$4,017,600
Professional Services Selection	$4,017,600
Bidding	$4,017,600
Close-Out	$4,017,600
Total Budget	$16,070,400

Expenditure Plan by Fiscal Year and Funding Source



03700: Surface Water Treatment Plant - Renewal and Replacement Program - Phase II

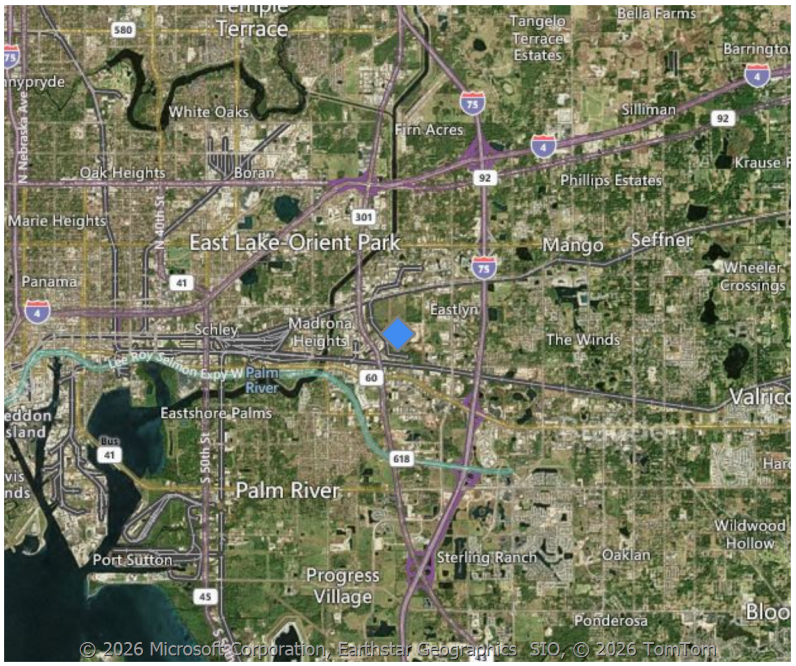
Project Manager	Indigo Dunn
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program Phase II is needed to maintain the reliability and sustainability of the SWTP. Phase II of the R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. The assets to be improved under this phase include pumps, lift stations, Variable Frequency Drives (VFDs), and clarifier gates.

Project Location

Other



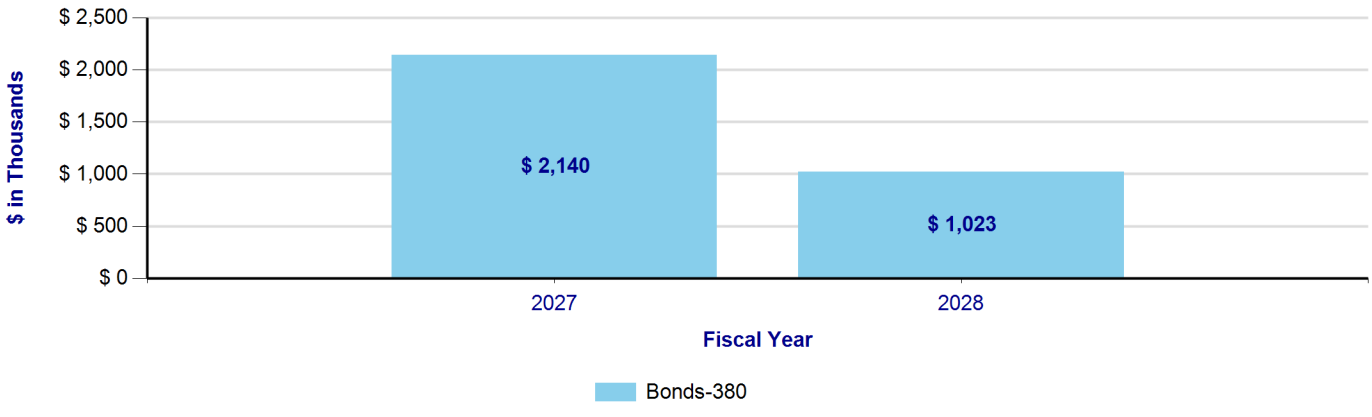
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	5/4/2026	6/22/2026
Professional Services Selection	6/16/2026	10/19/2026
Design	10/20/2026	10/20/2026
Bidding	10/20/2026	10/20/2026
Construction or Execution	10/20/2026	12/22/2027
Close-Out	12/23/2027	4/17/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$3,163,000
Total Budget	$3,163,000

Expenditure Plan by Fiscal Year and Funding Source



03701: Surface Water Treatment Plant - Renewal and Replacement Program - Phase III

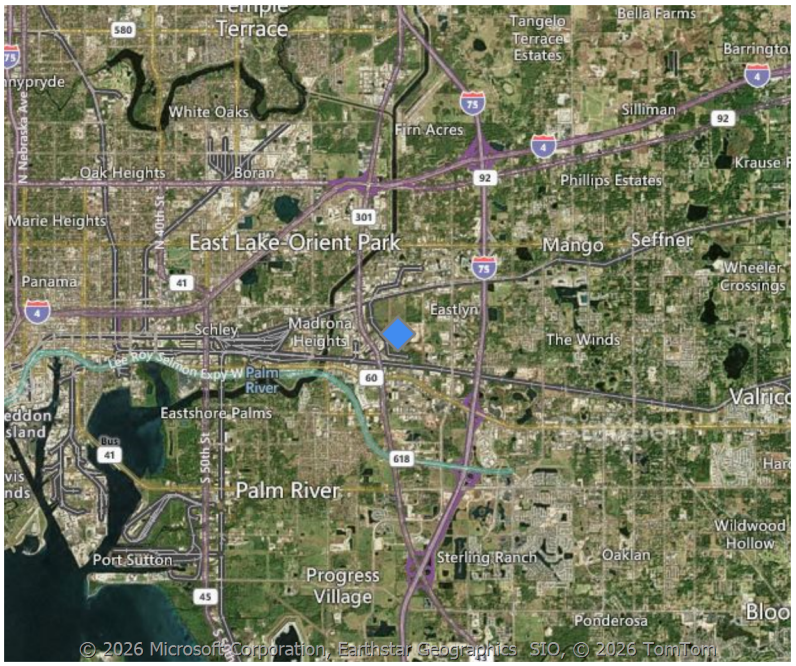
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program is needed to maintain the operating capacity of SWTP. The R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. Phase III of the Renewal and Replacement Program involves the replacement of two lamellas, sand pipe, Chlorine Contact Chamber gates, three ozone chillers, and one ozone mixer.

Project Location

Hillsborough County



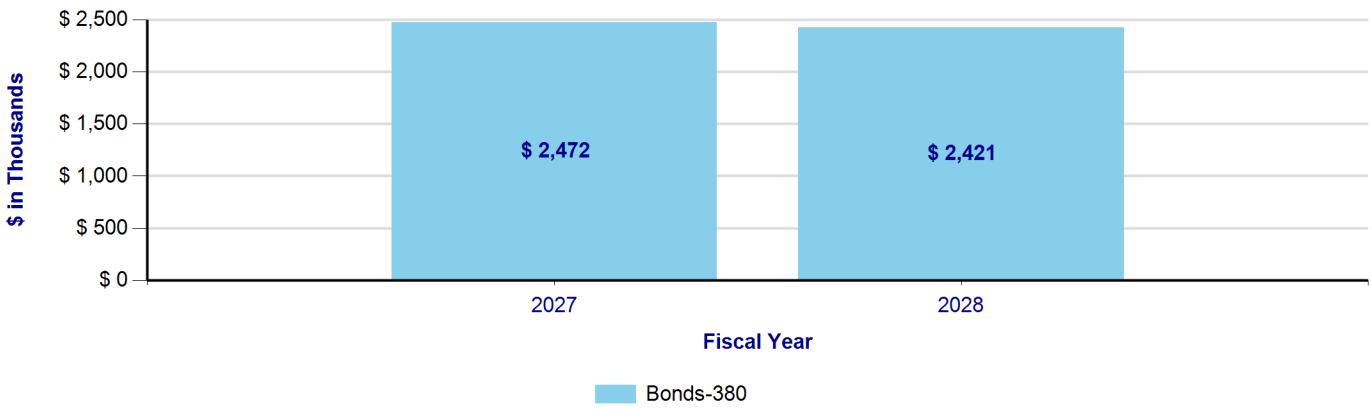
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	9/1/2026	10/20/2026
Professional Services Selection	10/21/2026	1/25/2027
Design	1/26/2027	2/9/2027
Bidding	2/10/2027	2/23/2027
Construction or Execution	2/24/2027	4/26/2028
Close-Out	4/27/2028	7/17/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$4,893,000
Total Budget	$4,893,000

Expenditure Plan by Fiscal Year and Funding Source



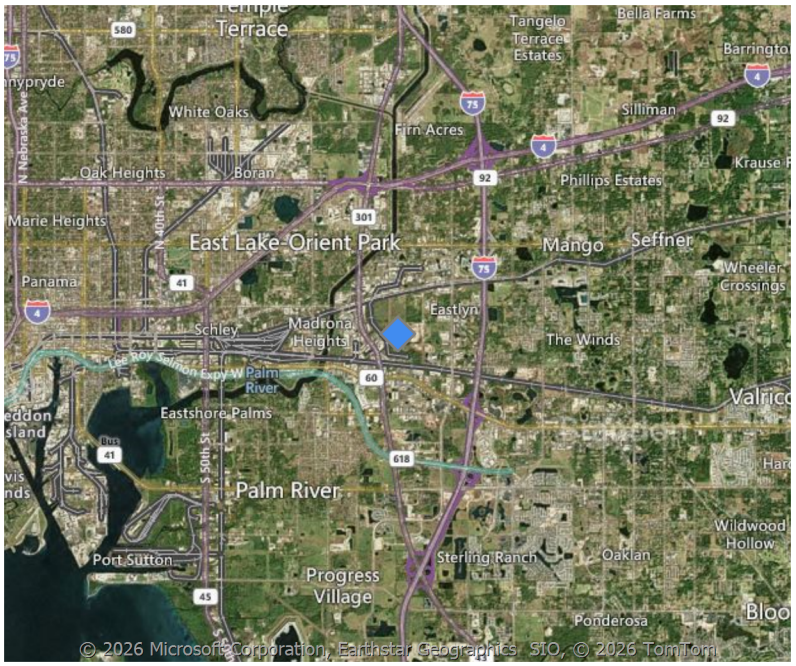
03702: Surface Water Treatment Plant - Renewal and Replacement Program - Phase IV

Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program is needed to maintain the operating capacity of SWTP. The R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. Phase IV of the Renewal and Replacement Program involves the replacement of facility fire alarms, roofing, generator access panels, and exterior lighting.

Project Location



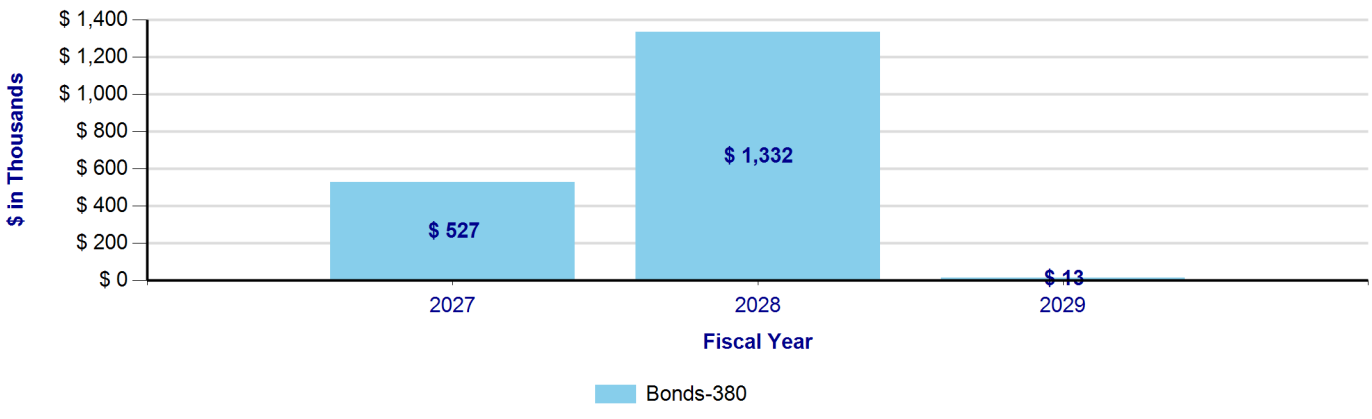
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	1/4/2027	2/1/2027
Professional Services Selection	2/2/2027	4/19/2027
Design	4/20/2027	7/14/2027
Bidding	7/15/2027	7/28/2027
Construction or Execution	7/29/2027	8/24/2028
Close-Out	8/25/2028	10/16/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,872,000
Total Budget	$1,872,000

Expenditure Plan by Fiscal Year and Funding Source



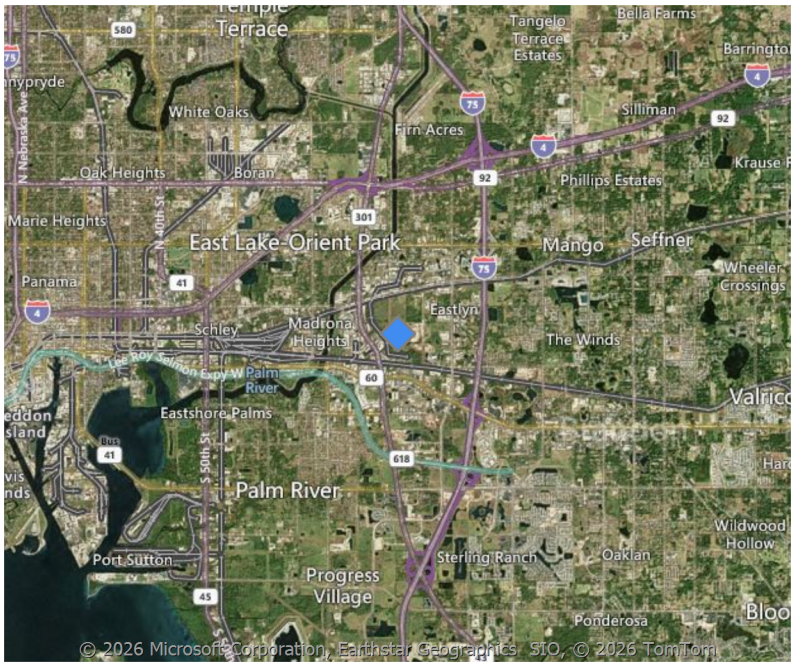
03703: Surface Water Treatment Plant - Renewal and Replacement Program - Phase V

Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program is needed to maintain the operating capacity of SWTP. The R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. Phase III of the Renewal and Replacement Program involves the replacement of two caustic tanks, two lamellas, eight sand recirculation pumps, sand pipe, and one backwash pump.

Project Location



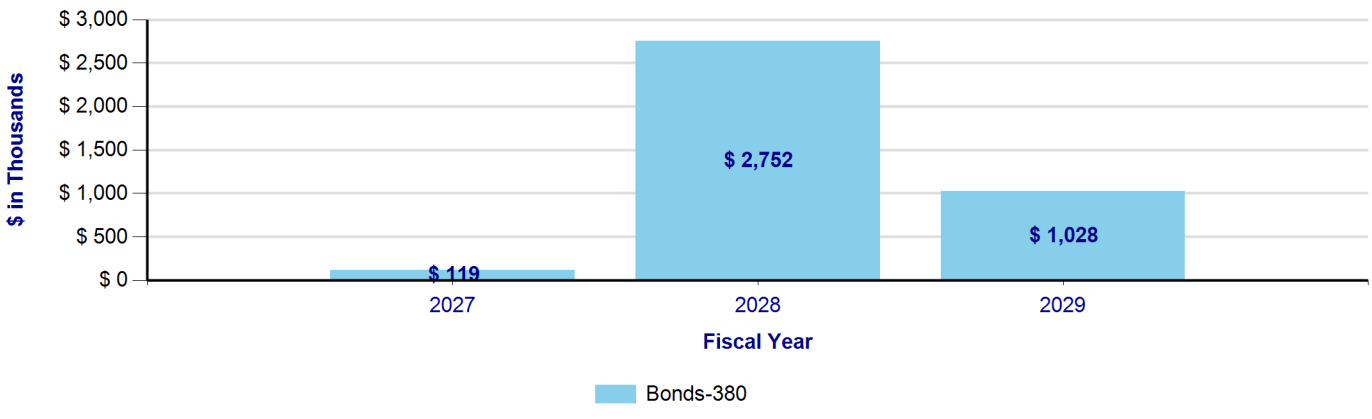
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	4/6/2027	5/24/2027
Professional Services Selection	5/18/2027	8/16/2027
Design	8/17/2027	8/31/2027
Bidding	9/1/2027	9/14/2027
Construction or Execution	9/15/2027	2/14/2029
Close-Out	2/15/2029	4/16/2029

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$3,900,000
Total Budget	$3,900,000

Expenditure Plan by Fiscal Year and Funding Source



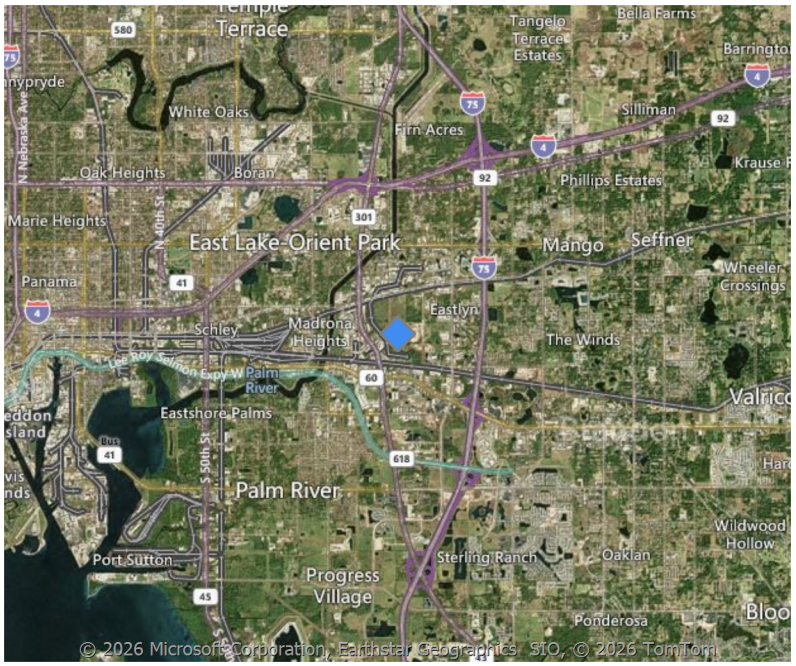
03704: Surface Water Treatment Plant - Renewal and Replacement Program - Phase VI

Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program is needed to maintain the operating capacity of SWTP. The R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. Phase III of the Renewal and Replacement Program involves the replacement of two Variable Frequency Drives, one ozone mixer, and two gearboxes. The project also includes filter canopy painting.

Project Location



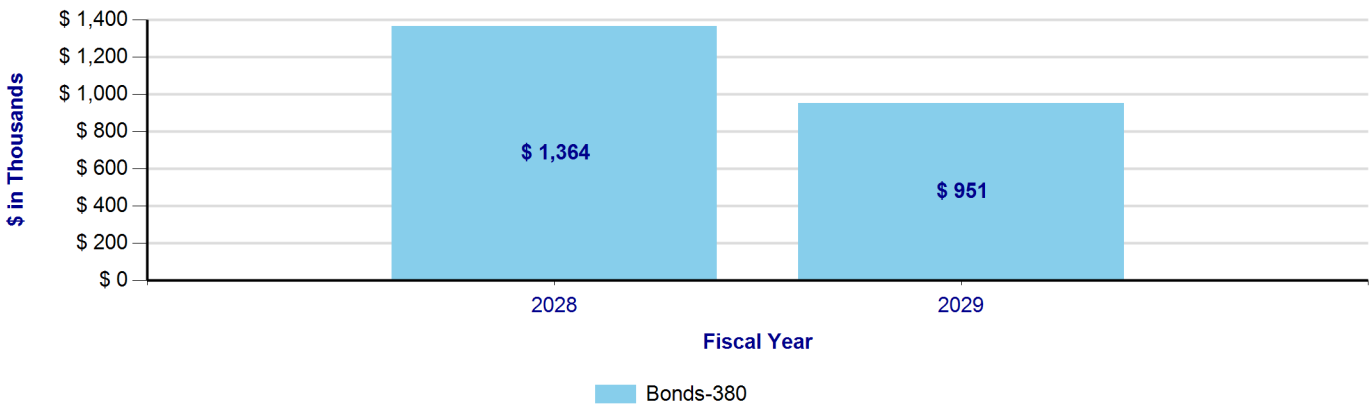
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	8/23/2027	9/20/2027
Professional Services Selection	9/14/2027	1/24/2028
Design	1/25/2028	2/8/2028
Bidding	2/9/2028	2/22/2028
Construction or Execution	2/23/2028	2/28/2029
Close-Out	3/1/2029	5/21/2029

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$2,315,000
Total Budget	$2,315,000

Expenditure Plan by Fiscal Year and Funding Source



03800: Surface Water Treatment Plant Renewal and Replacement Program - Phase VII

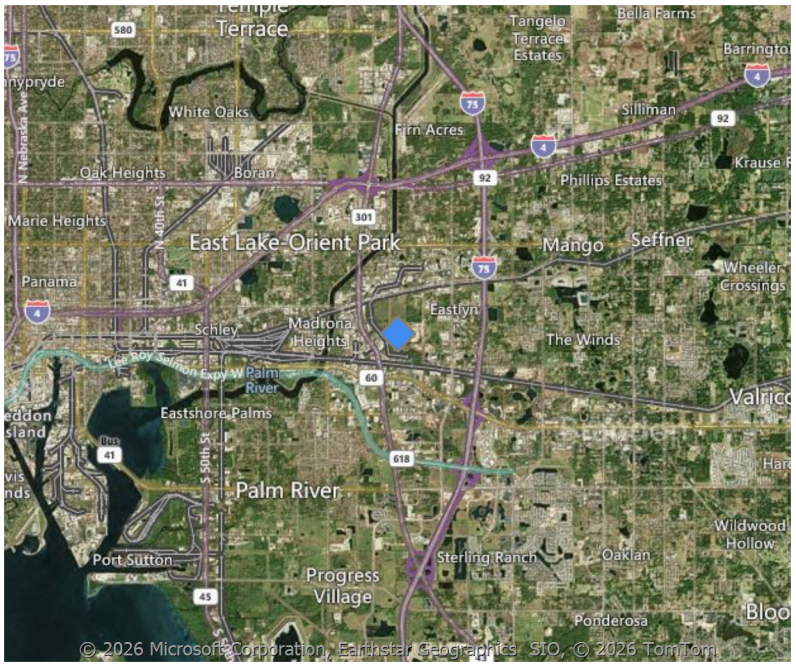
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The Surface Water Treatment Plant (SWTP) - Renewal and Replacement (R&R) Program Phase III is needed to maintain the operating capacity of SWTP. The R&R program consists of a list of assets that are nearing the end of useful life and need repair or replacement. This project will replace Ozone generators No. 3 and 4.

Project Location

Hillsborough County



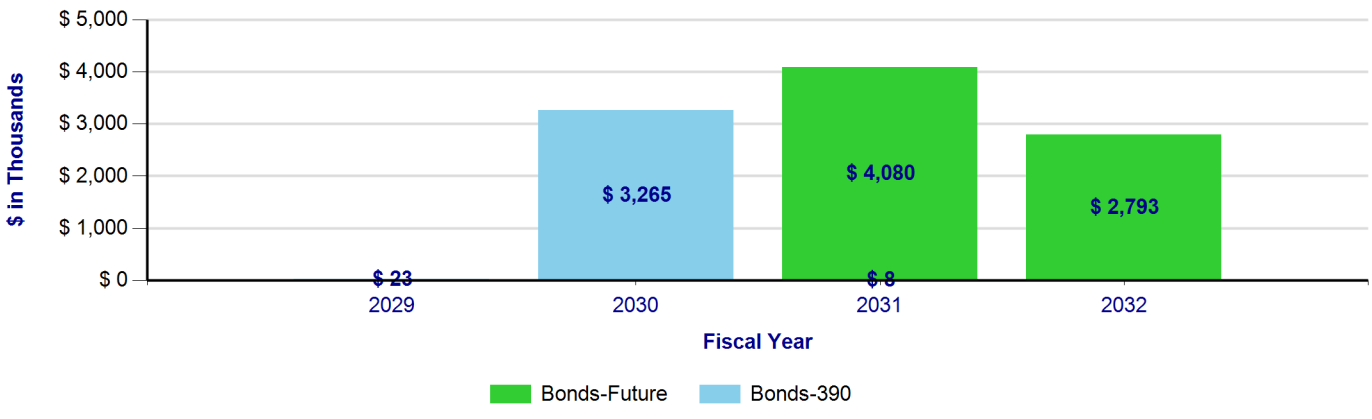
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	5/21/2029	7/5/2029
Professional Services Selection	7/6/2029	10/15/2029
Design	10/16/2029	8/20/2030
Bidding	6/25/2030	11/18/2030
Construction or Execution	11/19/2030	4/19/2032
Close-Out	4/20/2032	8/16/2032

Project Budget by Project Phase

Project Phase	Amount
Planning	$23,000
Design	$3,250,000
Bidding	$23,000
Construction or Execution	$6,678,000
Close-Out	$195,000
Total Budget	$10,169,000

Expenditure Plan by Fiscal Year and Funding Source



07005: South Pasco Water Quality Treatment, Storage and Pumping, Improvements

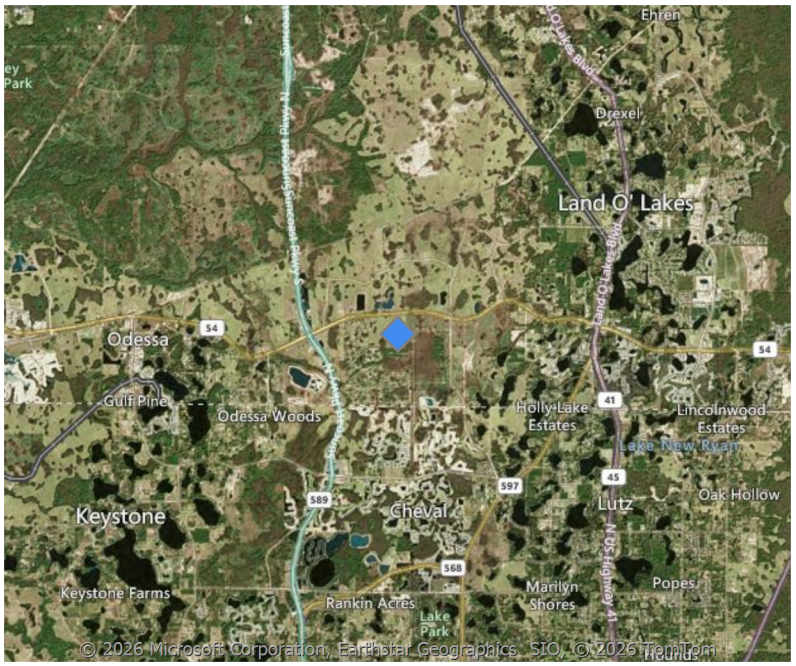
Project Manager	Karim Molina-Oyola
Construction Manager	Lucas Parmer
Status	Not Yet Started

Project Description

This project at the South Pasco Wellfield and Water Treatment Plant includes the design, permitting, and construction of facility upgrades. Improvements include Renewal and Replacement (R&R) of wellfield pumps, motors, chemical storage and feed systems, piping, and instrumentation, as well as enhancements to existing treatment processes. Process upgrades include a new finished water storage tank with blending capability, new high□service pumps for normal and emergency operations, and an energy recovery device. The project also proposes Fixed Bed Ion Exchange (FBIX) pressure filters and supporting systems to reduce Total Organic Carbon (TOC) levels, pending Board approval.

Project Location

Pasco County



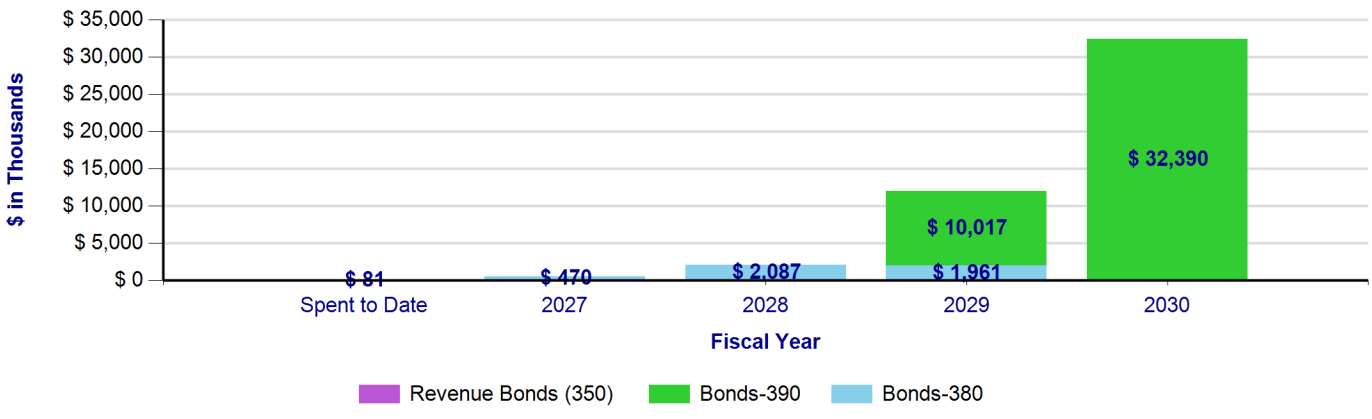
Project Schedule

Project Phase	Start Date	End Date
Publishing	1/1/2017	5/15/2023
Planning	10/5/2026	11/23/2026
Professional Services Selection	11/24/2026	1/24/2028
Design	7/20/2027	8/13/2029
Bidding	8/10/2028	4/30/2029
Construction or Execution	7/6/2029	6/7/2030
Close-Out	6/10/2030	8/19/2030

Project Budget by Project Phase

Project Phase	Amount
Publishing	$81,063
Planning	$110,000
Design	$4,192,000
Bidding	$271,000
Construction or Execution	$40,959,000
Close-Out	$1,448,000
Total Budget	$47,061,063

Expenditure Plan by Fiscal Year and Funding Source



07007: Cypress Creek WTP Chemical System Upgrades

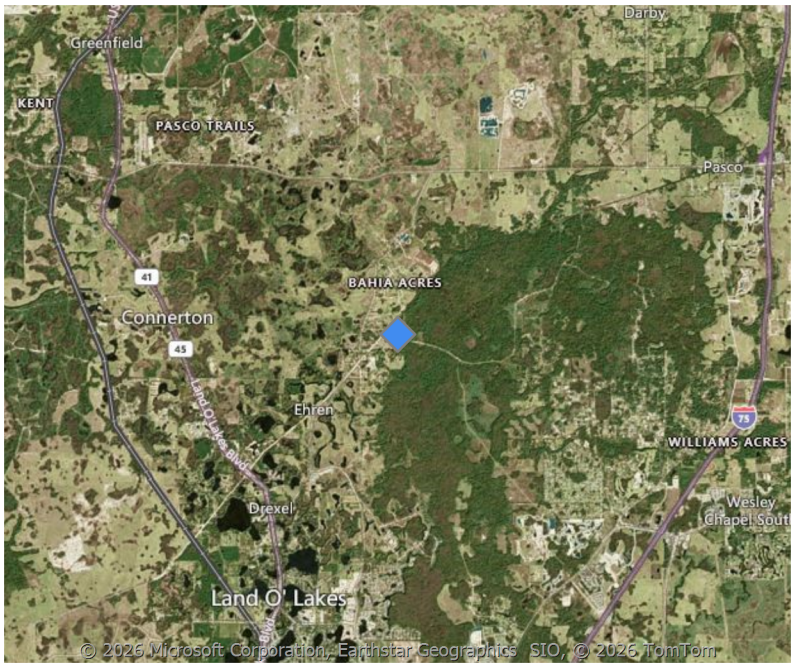
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Cypress Creek Pump Station in Pasco County and includes: (1) Design and construction of an aqueous ammonia open building including: Roof or canopy; Spill containment wall capable of holding 110% of the tank volume; and Electrical and Instrumentation & Control; (2) Design and installation of a transfer pump, a redundant pump, and associated piping to transfer aqueous ammonia from the bulk storage tank to the two aqueous ammonia day tanks located inside the chemical building; and (3) Design and installation of a bulk aqueous ammonia tank capable of holding a total of 6,000 to 8,000 gallons of aqueous ammonia.

Project Location

Pasco County



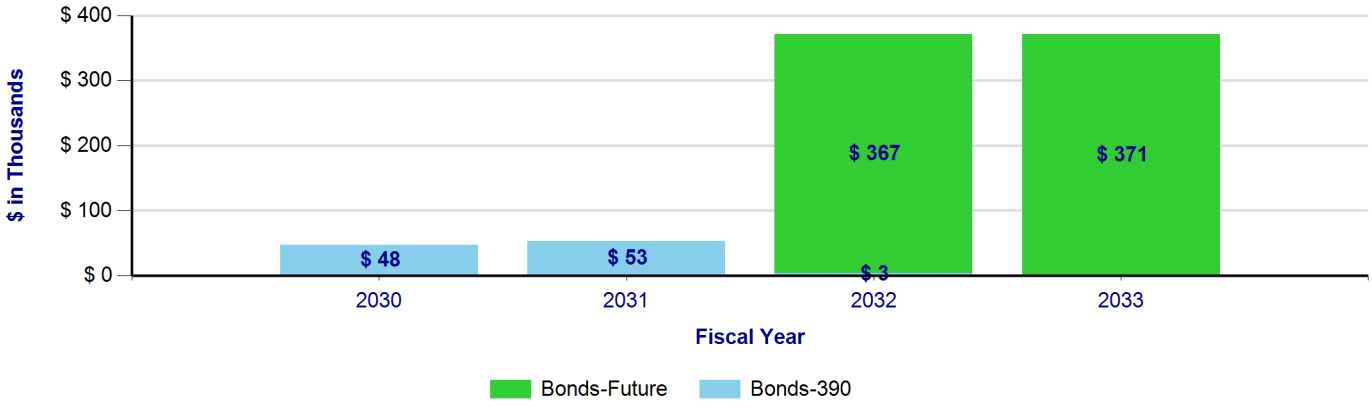
Project Schedule

Project Phase	Start Date	End Date
Professional Services Selection	11/7/2029	1/28/2030
Design	1/29/2030	5/6/2031
Bidding	5/7/2031	11/17/2031
Construction	11/18/2031	7/18/2033

Project Budget by Project Phase

Project Phase	Amount
Design	$90,000
Bidding	$14,000
Construction	$738,000
Total Budget	$842,000

Expenditure Plan by Fiscal Year and Funding Source



07061: South Pasco Wellfield Underground Commercial Powerline

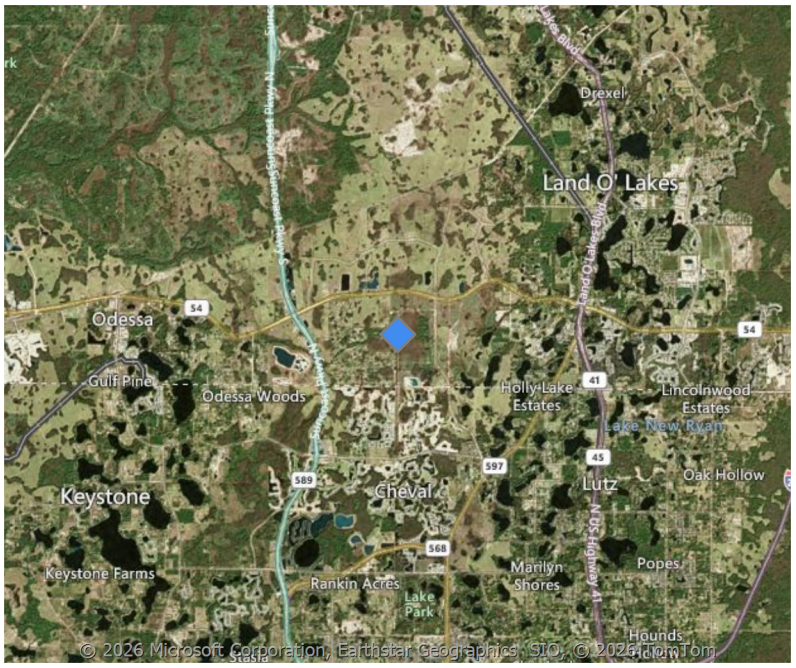
Project Manager	Karim Molina-Oyola
Construction Manager	
Status	Not Yet Started

Project Description

The project is located at the South Pasco Wellfield and includes the replacement of the existing overhead commercial power lines with looped underground power lines that will feed the eight wells.

Project Location

Hillsborough County



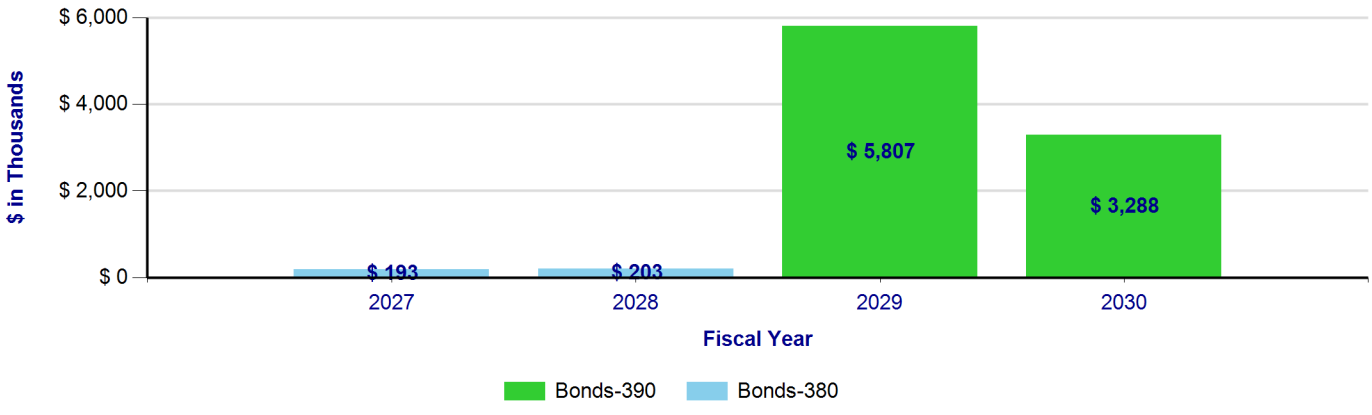
Project Schedule

Project Phase	Start Date	End Date
Planning	12/8/2025	10/12/2026
Professional Services Selection	10/13/2026	1/25/2027
Design	1/26/2027	6/20/2028
Bidding	6/21/2028	10/16/2028
Construction	10/17/2028	4/15/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$396,000
Construction	$9,095,000
Total Budget	$9,491,000

Expenditure Plan by Fiscal Year and Funding Source



07064: Ground Storage Tanks Fall Protection

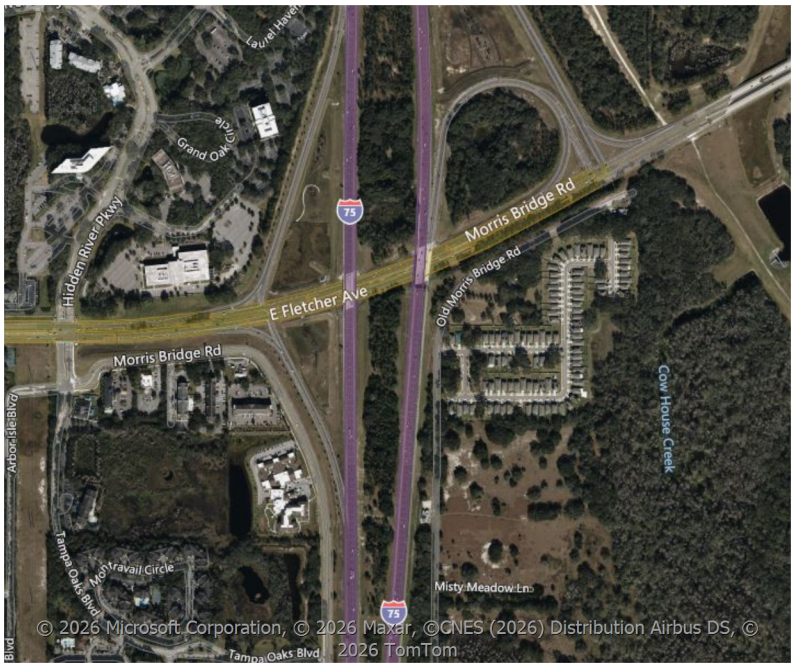
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at both the South Central Hillsborough Intertie Booster Pump Station and the Cypress Creek Water Treatment Plant. The project entails adding roof access safety measures (i.e. ladder cages) and fall protection equipment including rails and tie-off anchors at two groundwater storage tanks at the above-referenced facilities.

Project Location

Multiple



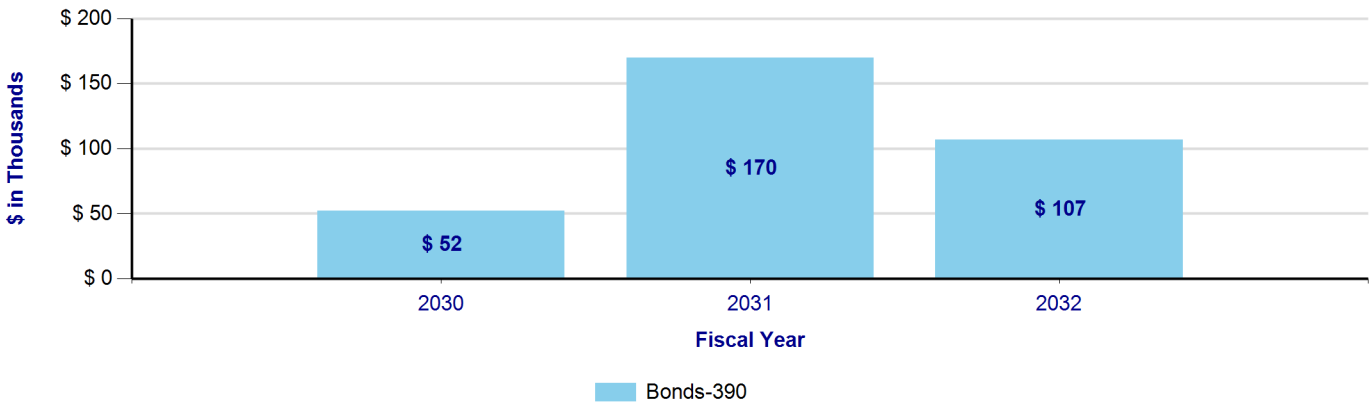
Project Schedule

Project Phase	Start Date	End Date
Planning	11/5/2029	1/15/2030
Professional Services Selection	1/16/2030	4/29/2030
Design	4/29/2030	7/2/2030
Bidding	7/3/2030	1/13/2031
Construction or Execution	12/17/2030	12/9/2031
Close-Out	12/10/2031	3/15/2032

Project Budget by Project Phase

Project Phase	Amount
Design	$44,000
Bidding	$18,000
Construction	$214,000
Close-Out	$53,000
Total Budget	$329,000

Expenditure Plan by Fiscal Year and Funding Source



07065: Maytum Vault Confined Space Removal

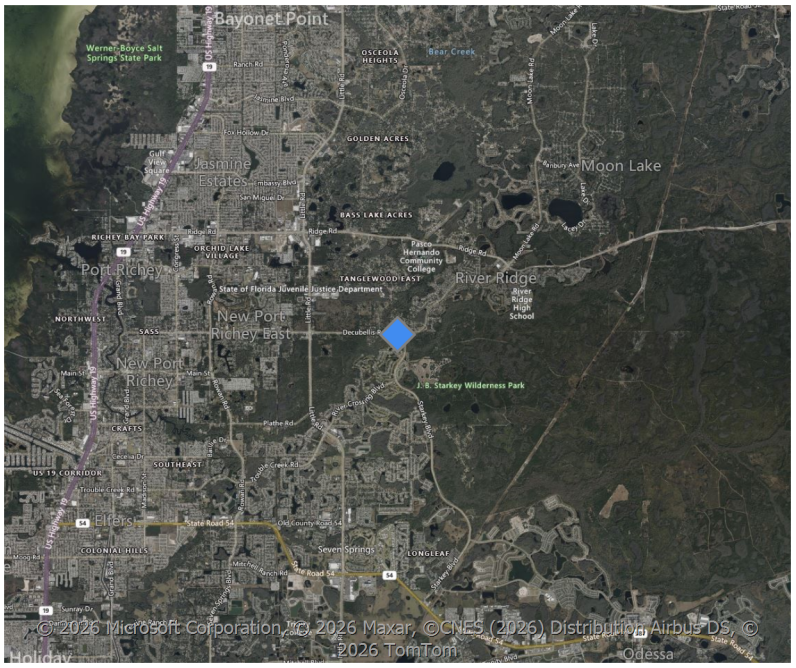
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project will address a potential confined space safety hazard to Tampa Bay Water Staff. This project will reduce maintenance labor costs by eliminating a confined space entry and addresses safety of agency personnel by removing a confined space entry.

Project Location

Pasco County



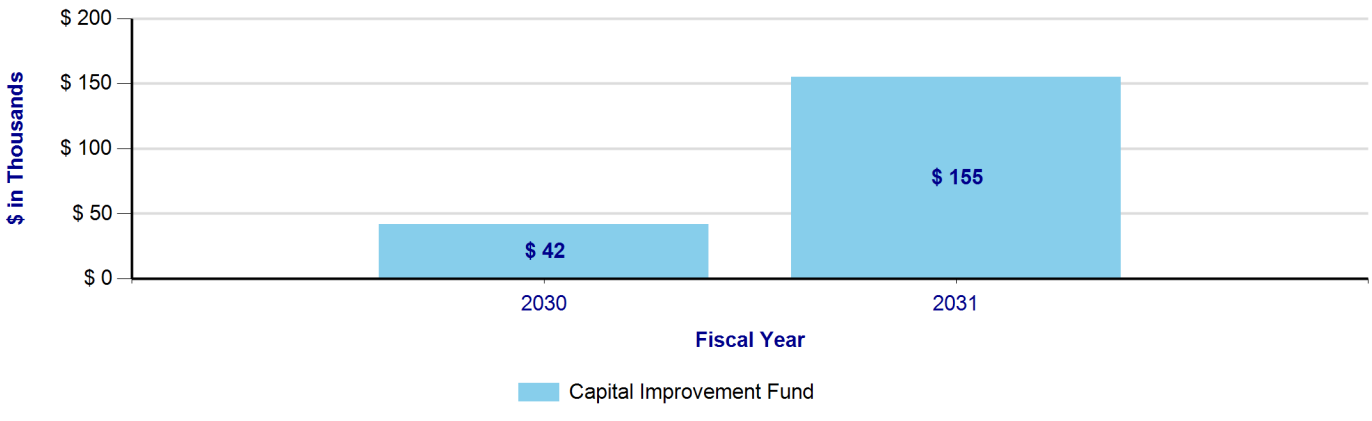
Project Schedule

Project Phase	Start Date	End Date
Planning	6/4/2029	9/7/2029
Professional Services Selection	9/10/2029	12/31/2029
Design	12/31/2029	5/13/2030
Bidding	5/14/2030	9/2/2030
Construction	9/2/2030	3/17/2031
Close-Out	3/18/2031	6/16/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$32,000
Bidding	$10,000
Construction	$122,000
Close-Out	$33,000
Total Budget	$197,000

Expenditure Plan by Fiscal Year and Funding Source



07545: 2027 SCADA Field Communications Devices Replacement

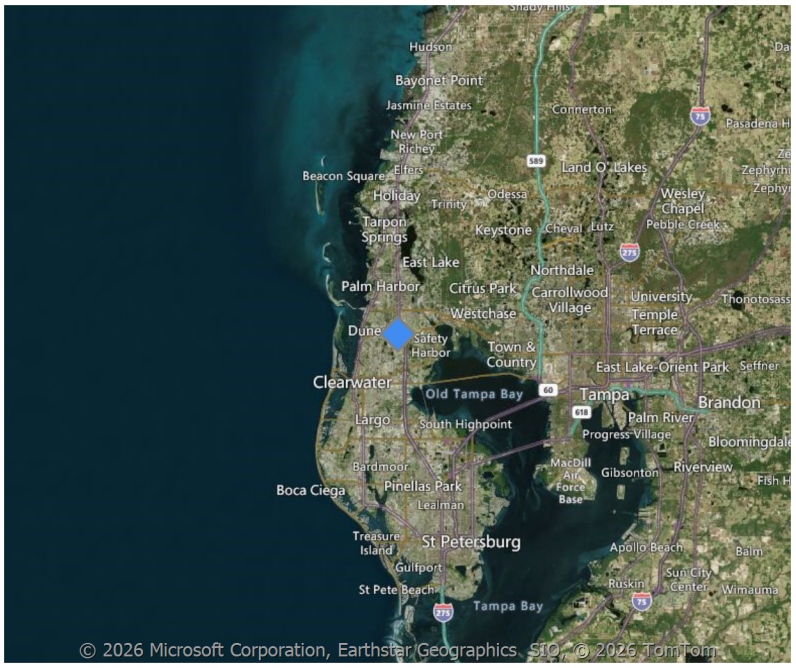
Project Manager	Danielle Keirsey
Construction Manager	Abdel Hussein
Status	Not Yet Started

Project Description

This project includes the replacement of SCADA field and central firewalls, and cellular units at Tampa Bay Water's remote sites including water treatment plants, pump stations, booster stations, wells, and more.

Project Location

Multiple



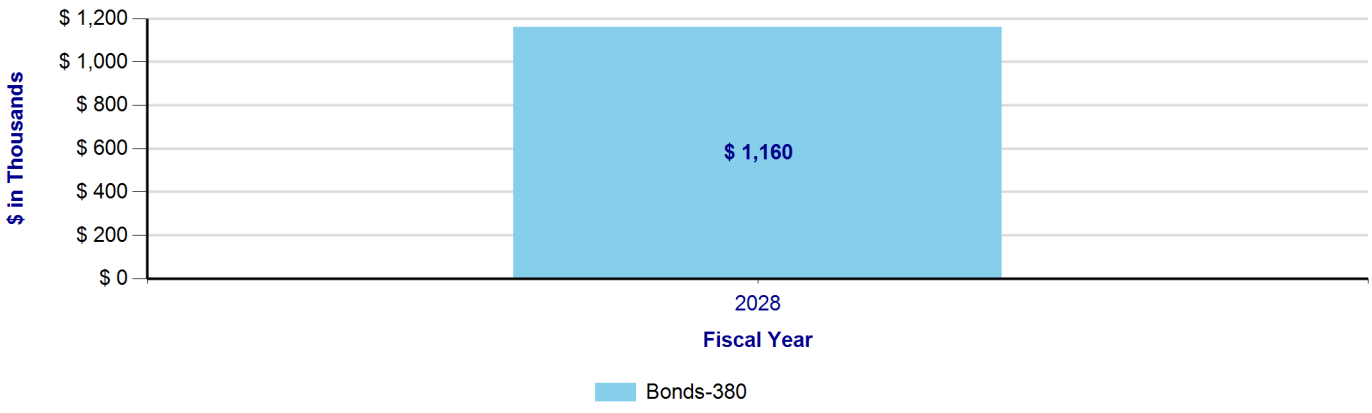
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	1/4/2027	1/22/2027
Professional Services Selection	1/25/2027	2/2/2027
Design	2/3/2027	4/5/2027
Bidding	4/6/2027	8/17/2027
Construction or Execution	8/17/2027	6/26/2028
Close-Out	6/26/2028	9/18/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,160,000
Total Budget	$1,160,000

Expenditure Plan by Fiscal Year and Funding Source



07546: 2028 SCADA Data Center Hardware Replacement

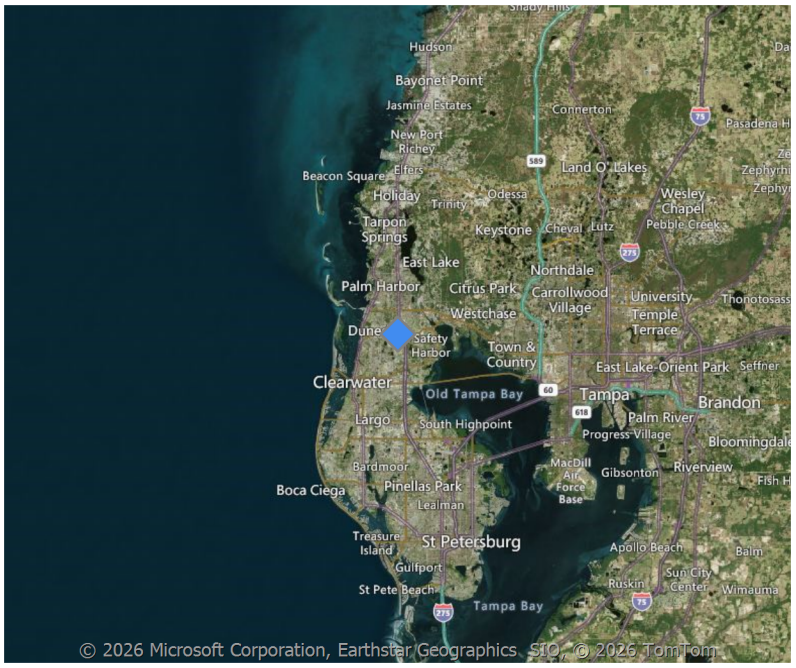
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project includes the replacement of SCADA data center hardware, and the provision of associated software licenses and support at the Cypress Creek Pump Station and Regional High Service Pump Station.

Project Location

Hillsborough County,Pasco County



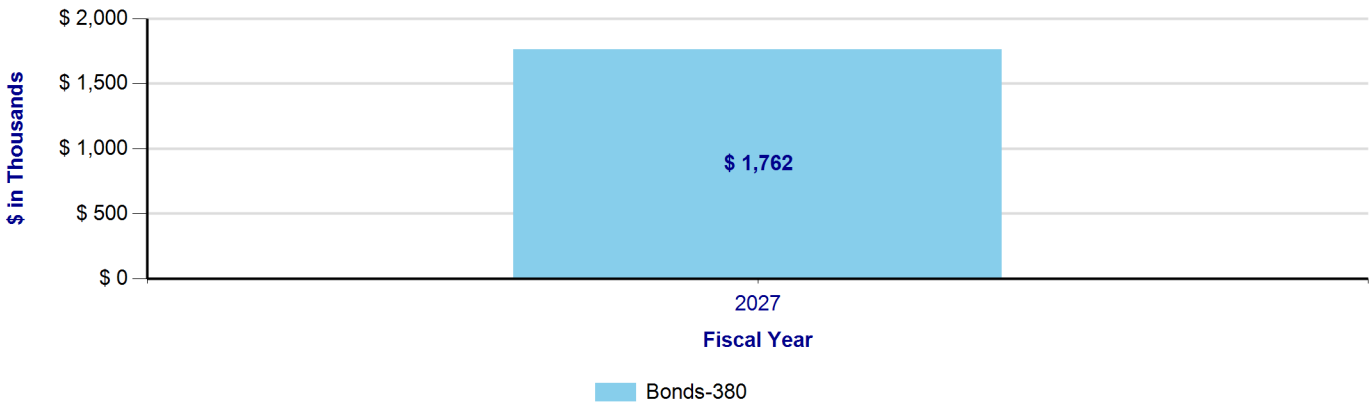
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	5/19/2026	5/19/2026
Professional Services Selection	5/19/2026	5/19/2026
Design	5/20/2026	12/10/2026
Bidding	12/11/2026	2/15/2027
Construction or Execution	2/16/2027	3/31/2028
Close-Out	4/3/2028	7/17/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,762,000
Total Budget	$1,762,000

Expenditure Plan by Fiscal Year and Funding Source



07547: IT-vGrid Infrastructure Modernization

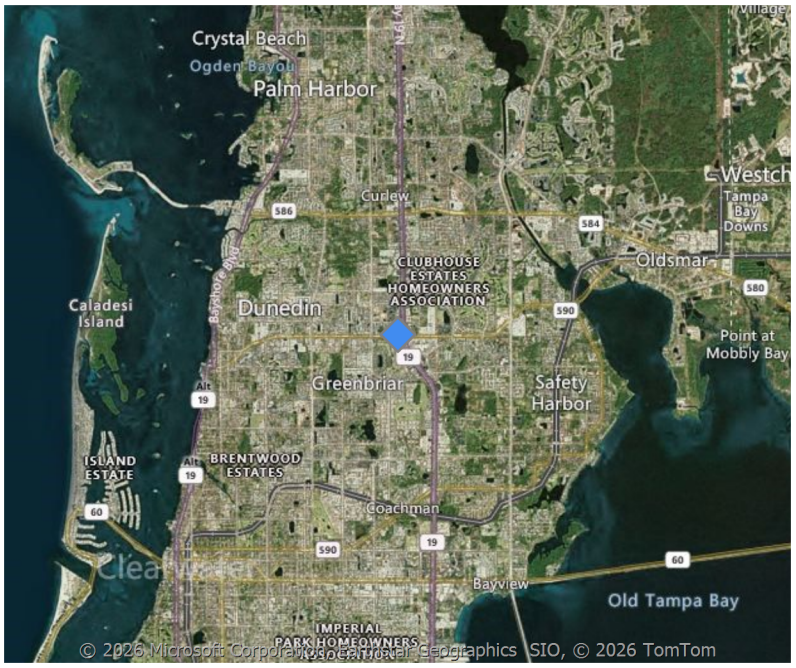
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project will replace the aging vGrid infrastructure with a modern compute and storage platform. The new solution will be designed to support the Agency's evolving analytical and planning needs while aligning with current IT standards and lifecycle management practices.

Project Location

Pasco County



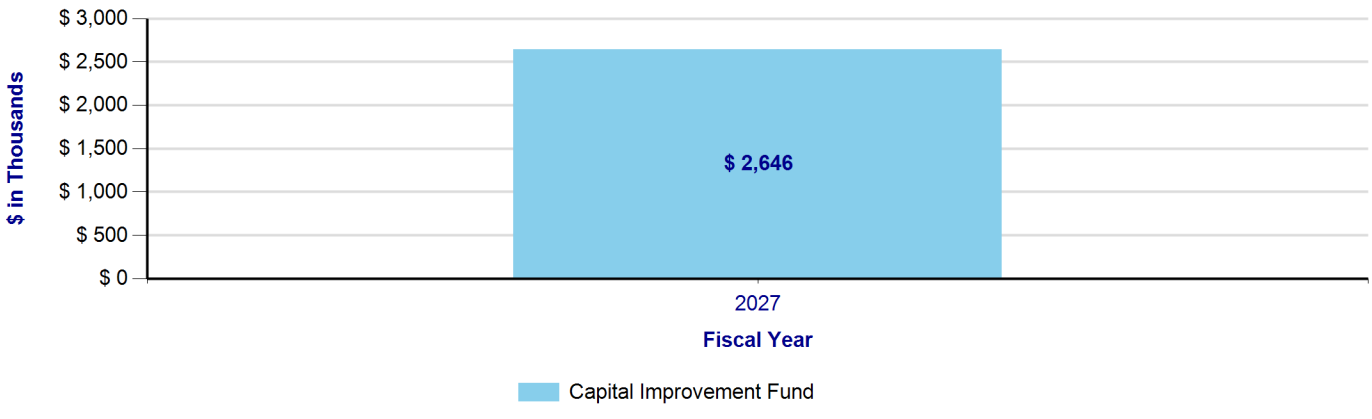
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	2/16/2026	3/23/2026
Professional Services Selection	3/23/2026	3/23/2026
Design	3/24/2026	12/2/2026
Bidding	12/3/2026	1/25/2027
Construction or Execution	1/26/2027	11/4/2027
Close-Out	11/5/2027	1/24/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$2,646,000
Total Budget	$2,646,000

Expenditure Plan by Fiscal Year and Funding Source



07548: 2030 SCADA Field Communications Devices Replacement

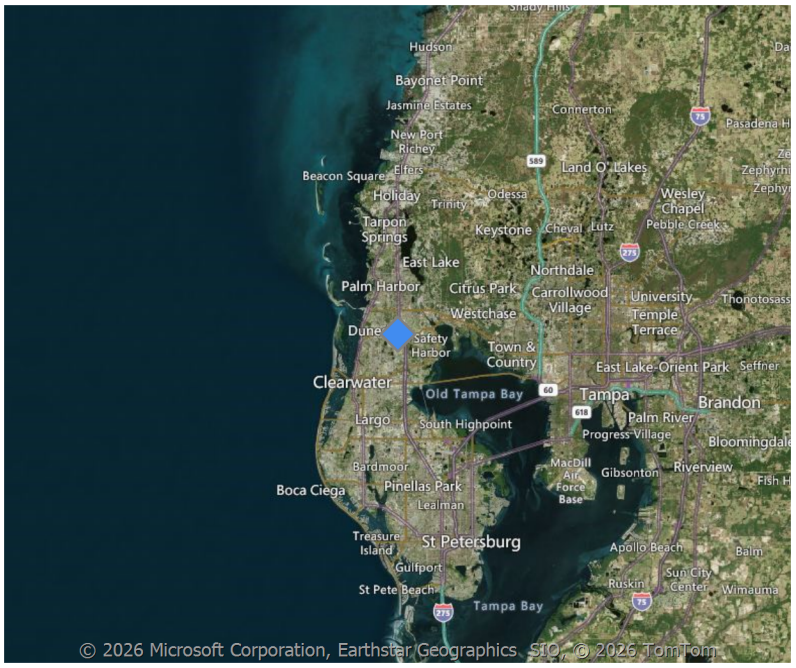
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project includes the replacement of SCADA field and central firewalls, and cellular units at Tampa Bay Water's remote sites including water treatment plants, pump stations, booster stations, wells, and more.

Project Location

Multiple



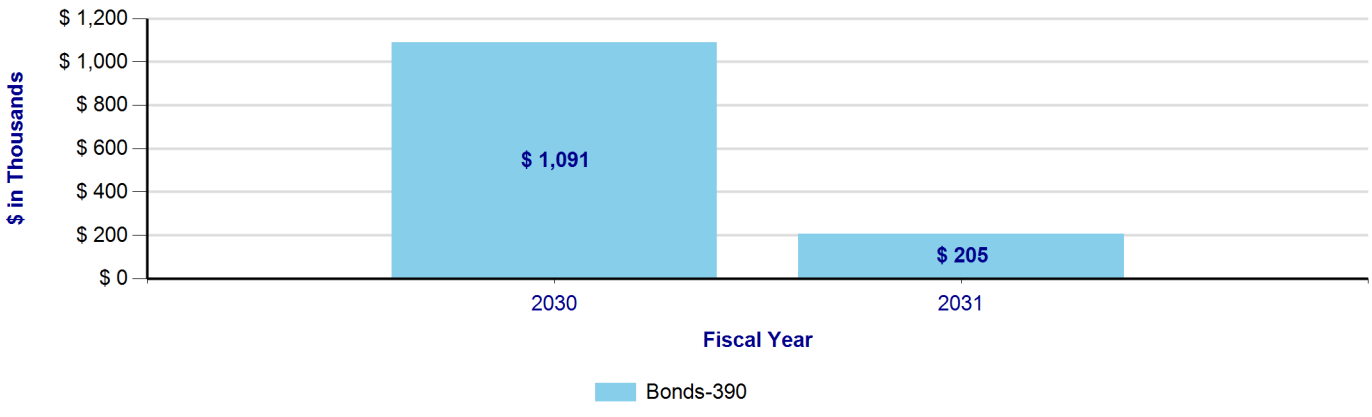
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	11/12/2029	2/6/2030
Professional Services Selection	2/7/2030	2/15/2030
Design	2/18/2030	4/18/2030
Bidding	4/19/2030	7/15/2030
Construction or Execution	7/16/2030	5/23/2031
Close-Out	5/27/2031	8/18/2031

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,296,000
Total Budget	$1,296,000

Expenditure Plan by Fiscal Year and Funding Source



07549: Alafia Pump Station Meter Improvements and Pump Repairs

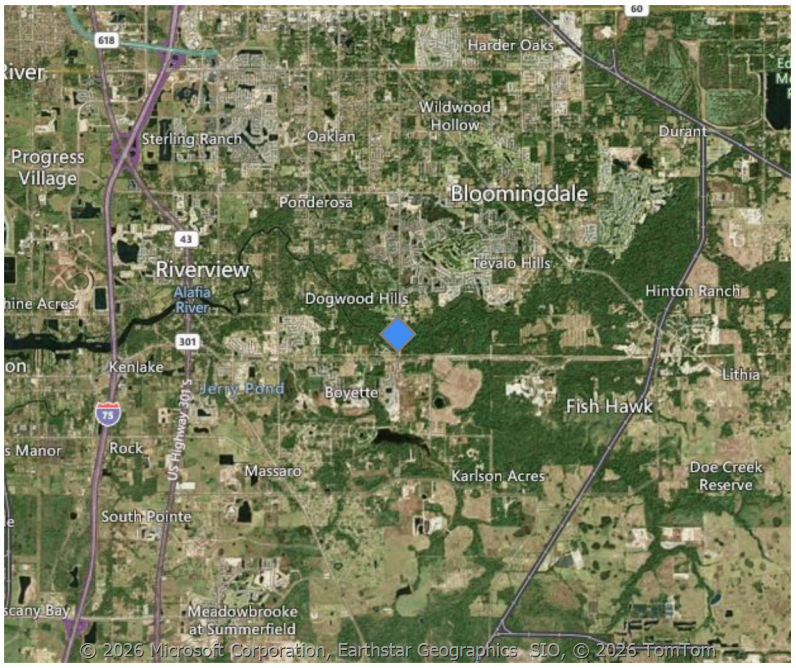
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project includes upsizing the existing 48-inch underground venturi meter at the Alafia River Intake and Pump Station (APS). The project also includes bringing the venturi meter and appurtenances above ground.

Project Location

Hillsborough County



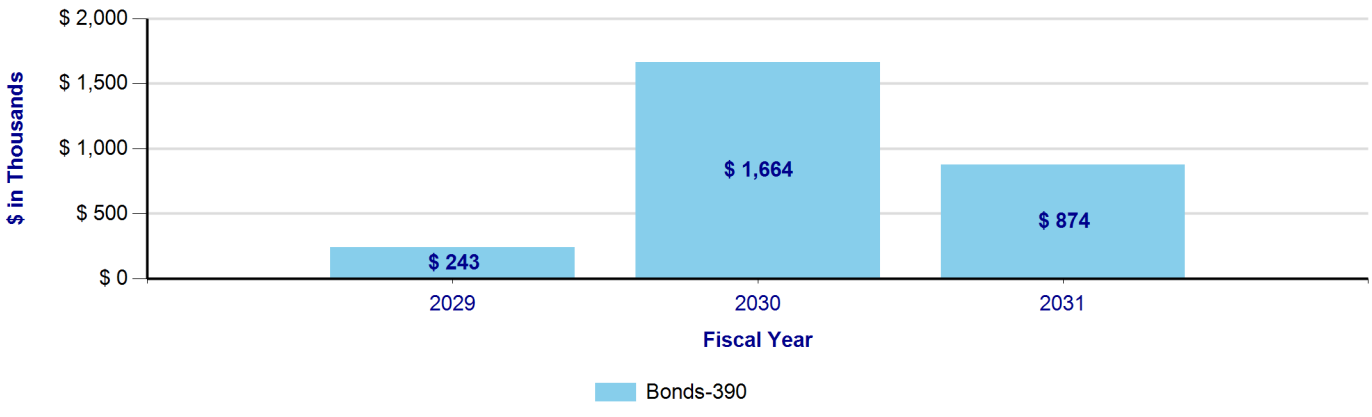
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	6/1/2028	7/20/2028
Professional Services Selection	7/21/2028	10/16/2028
Design	10/17/2028	9/4/2029
Bidding	9/5/2029	1/28/2030
Construction or Execution	1/29/2030	12/25/2030
Close-Out	12/26/2030	4/21/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$236,000
Bidding	$40,000
Construction or Execution	$2,505,000
Total Budget	$2,781,000

Expenditure Plan by Fiscal Year and Funding Source



07550: Cypress Creek Water Treatment Plant (WTP) Electrical Improvements

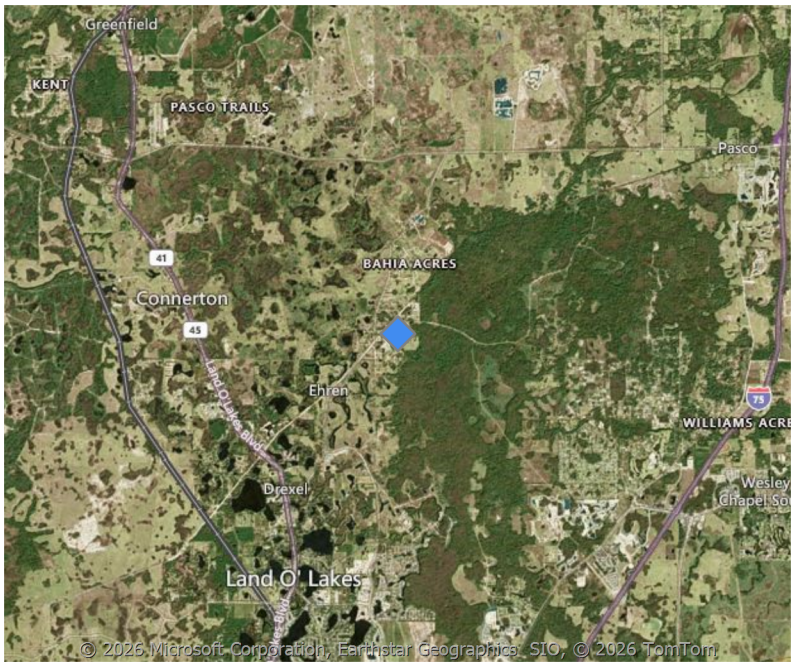
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Cypress Creek Pump Station and Water Treatment Plant and includes replacement of the main (IEM) building generator, demolishment of the existing Pump Station lighting generator to be replaced with a new generator docking station, and provide electrical distribution modifications from the WTP to the Warehouses A and B, Maintenance Shop, Covered Storage, Hydro Building, and the Fuel Island.

Project Location

Pasco County



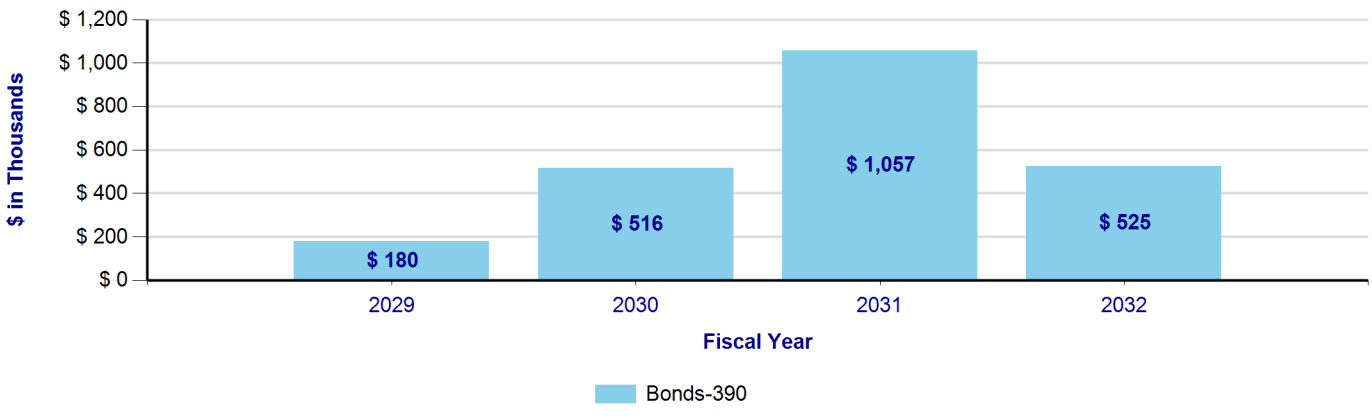
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	4/3/2028	5/23/2028
Professional Services Selection	5/24/2028	8/21/2028
Design	8/22/2028	9/18/2029
Bidding	9/19/2029	1/28/2030
Construction or Execution	1/29/2030	3/11/2032
Close-Out	3/12/2032	7/19/2032

Project Budget by Project Phase

Project Phase	Amount
Design	$179,000
Bidding	$9,000
Construction or Execution	$2,089,000
Total Budget	$2,277,000

Expenditure Plan by Fiscal Year and Funding Source



07603: SCADA-Software Features

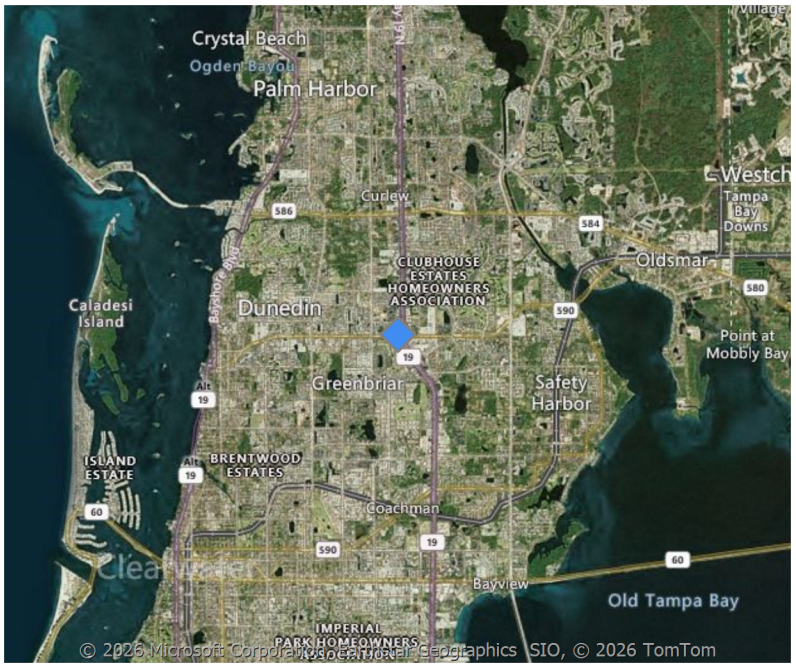
Project Manager	
Construction Manager	Abdel Hussein
Status	Not Yet Started

Project Description

This project will add software features from the existing SCADA vendor to enhance security including Project Development System (PDS), DNP3 protocol, and Archiver Reporting Tool (ARA)

Project Location

Multiple



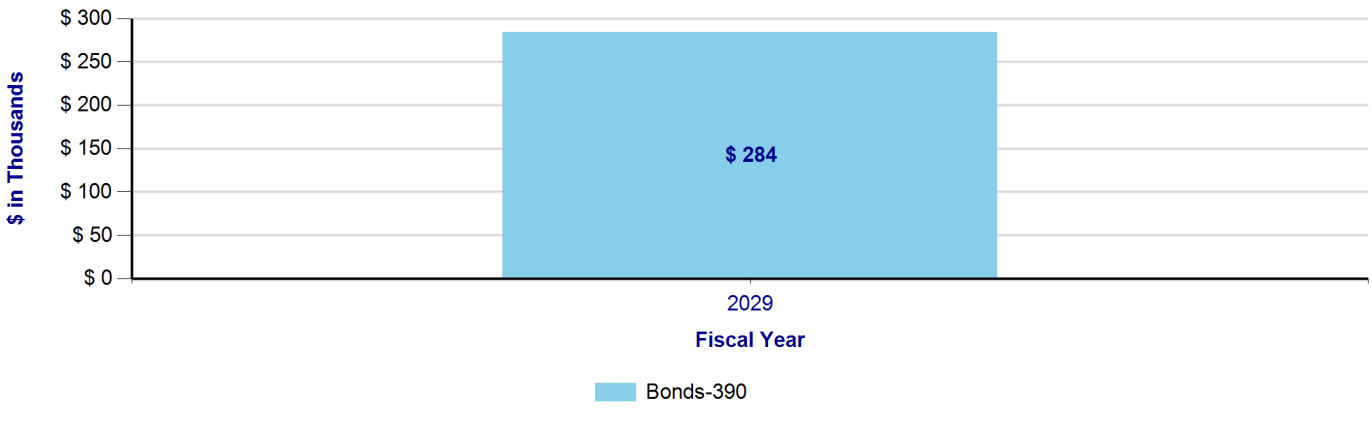
Project Schedule

Project Phase	Start Date	End Date
Planning	9/1/2028	10/27/2028
Professional Services Selection	10/23/2028	10/27/2028
Design	10/27/2028	3/2/2029
Bidding	3/5/2029	5/21/2029
Construction	5/22/2029	1/30/2030
Close-Out	1/31/2030	4/15/2030

Project Budget by Project Phase

Project Phase	Amount
Bidding	$284,000
Total Budget	$284,000

Expenditure Plan by Fiscal Year and Funding Source



09021: 2028 Long-Term Master Water Plan Update

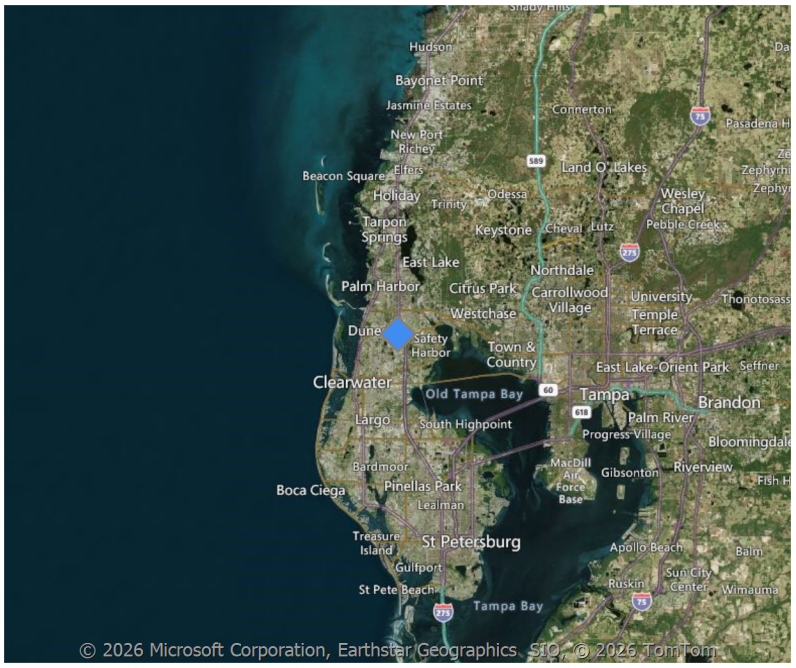
Project Manager	Adrienne Arceri
Construction Manager	
Status	Not Yet Started

Project Description

This project includes the update of the Agency's long-term Master Water Plan in accordance with Section 2.09 of the Amended and Restated Interlocal Agreement which requires Tampa Bay Water to update its Long-Term Master Water Plan (Plan) every five years.

Project Location

Multiple



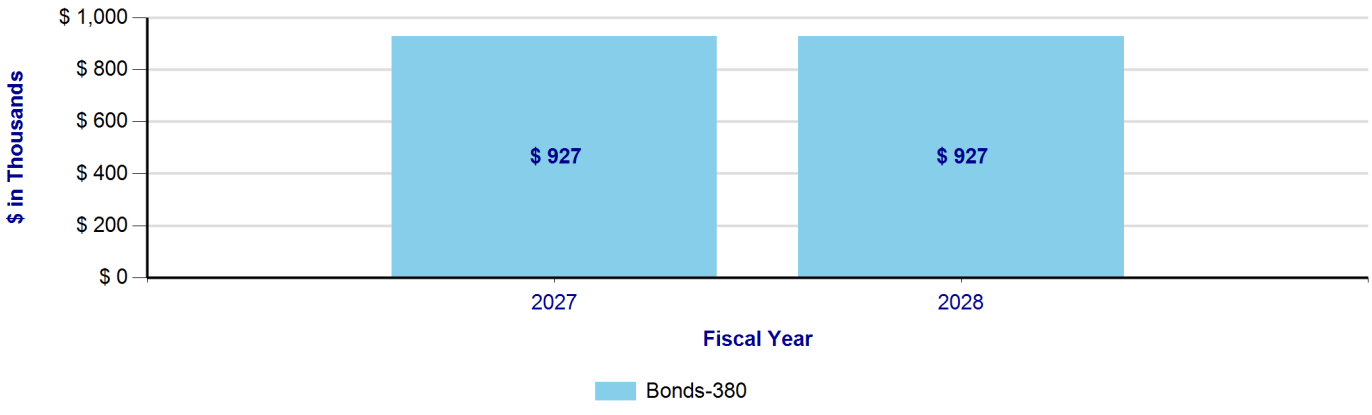
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	5/19/2026	9/3/2026
Professional Services Selection	9/4/2026	10/19/2026
Construction or Execution	10/20/2026	11/20/2028
Close-Out	11/21/2028	2/19/2029

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,854,000
Total Budget	$1,854,000

Expenditure Plan by Fiscal Year and Funding Source



50022: Morris Bridge Booster Station Pumps 1 and 2 Replacement

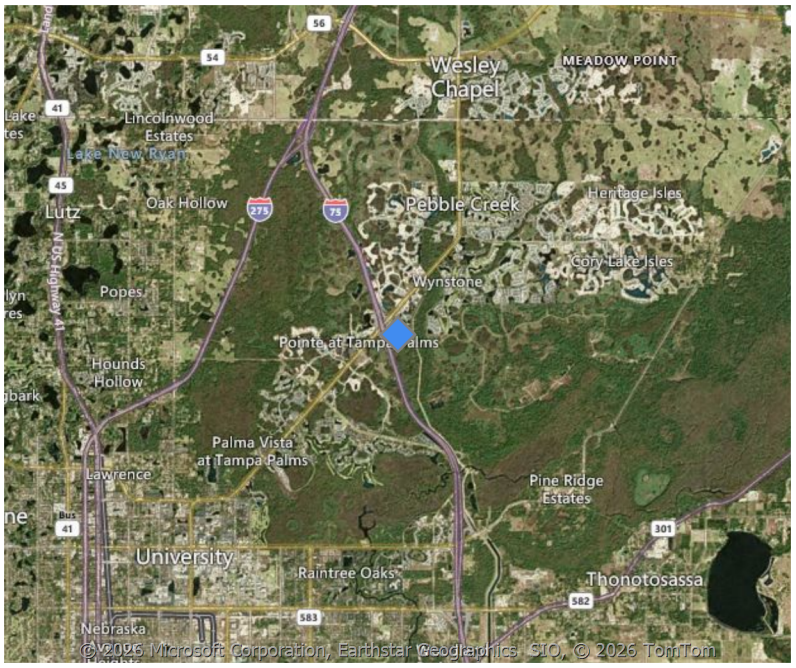
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Morris Bridge Booster Station in Tampa, and includes replacement of pumps and motors 2 and 3 with larger pumps and replacement of the Variable Frequency Drives.

Project Location

City of Tampa



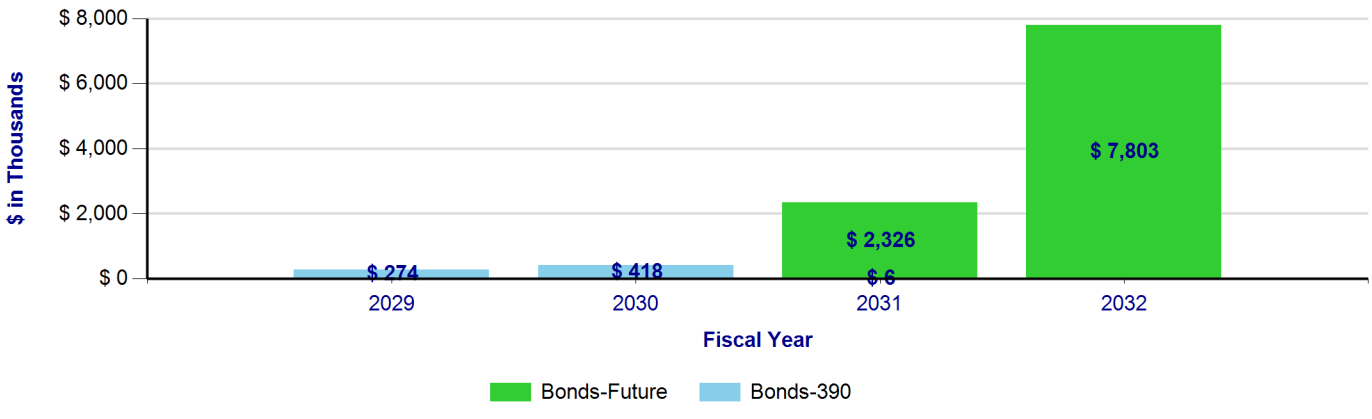
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	3/6/2028	6/9/2028
Professional Services Selection	6/12/2028	1/1/2029
Design	1/1/2029	10/4/2030
Bidding	10/7/2030	5/8/2031
Construction or Execution	5/9/2031	9/8/2032
Close-Out	9/9/2032	12/20/2032

Project Budget by Project Phase

Project Phase	Amount
Design	$698,000
Bidding	$140,000
Construction or Execution	$9,989,000
Total Budget	$10,827,000

Expenditure Plan by Fiscal Year and Funding Source



50023: Starkey Wellfield Improvements

Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Starkey Wellfield in Pasco County, FL. The project includes the demolition and replacement of 3 existing well houses, abandonment of 6 production wells, replacement of pumps and motors and modifications to process, electrical and Instrumentation & Control equipment, including Arc Flash upgrades.

Project Location

Pasco County



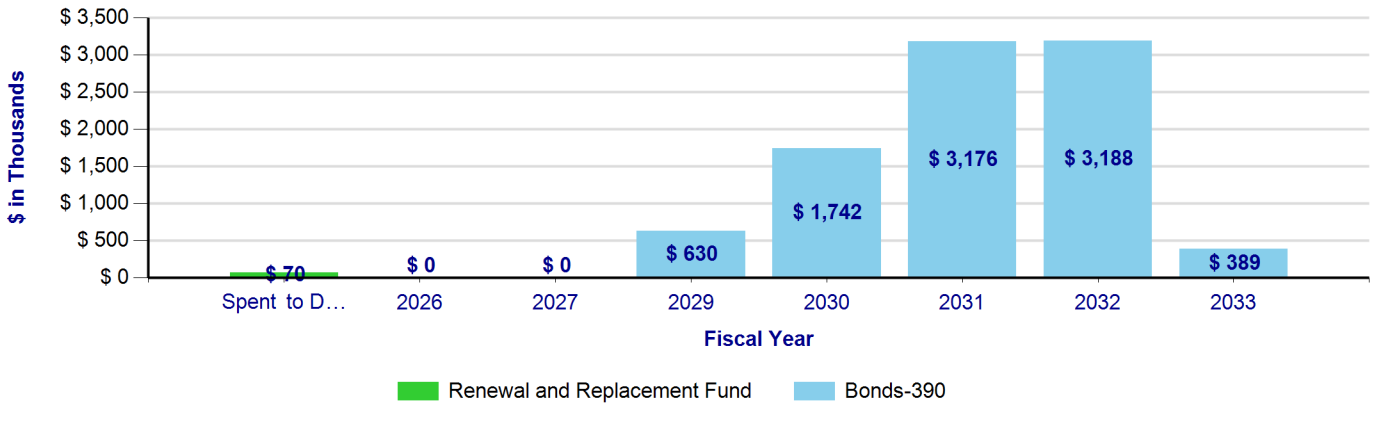
Project Schedule

Project Phase	Start Date	End Date
Planning	8/1/2014	10/16/2028
Design	10/17/2028	7/3/2030
Bidding	7/4/2030	10/21/2030
Construction	10/22/2030	8/15/2033

Project Budget by Project Phase

Project Phase	Amount
Planning	$70,409
Design	$646,000
Bidding	$108,000
Construction	$8,371,000
Total Budget	$9,195,409

Expenditure Plan by Fiscal Year and Funding Source



50041: Northwest Hillsborough Wellfield Improvements

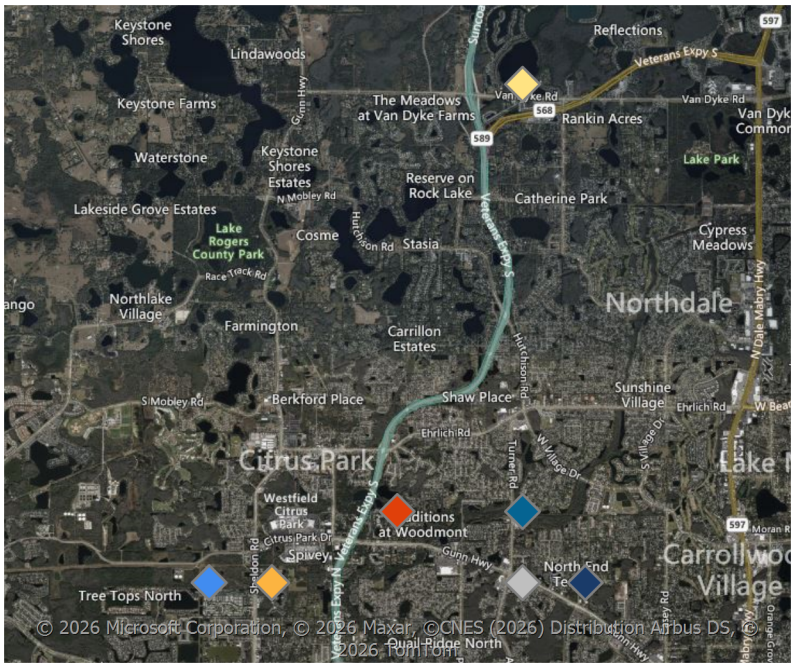
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Northwest Hillsborough Wellfield (Hillsborough County) and includes replacement of the existing Vertical Turbine Pumps and motors, replacement and addition of electrical Overcurrent Protection Devices (OPD), and replacement of six wellhouses.

Project Location

Hillsborough County



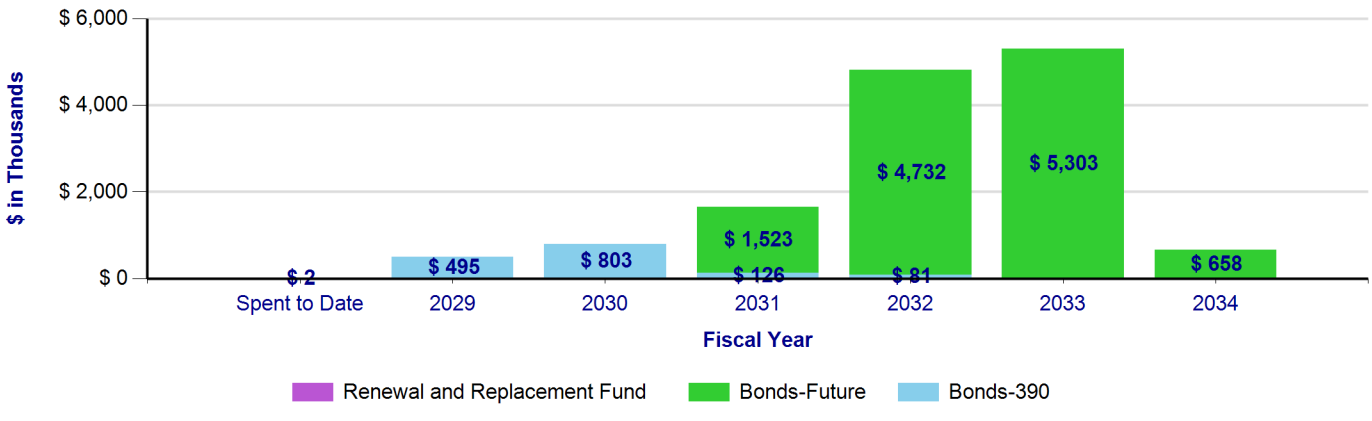
Project Schedule

Project Phase	Start Date	End Date
Planning	4/3/2028	6/12/2028
Professional Services Selection	6/13/2028	1/22/2029
Design	1/23/2029	1/1/2031
Bidding	1/2/2031	4/21/2031
Construction	4/22/2031	10/20/2033
Close-Out	10/21/2033	1/23/2034

Project Budget by Project Phase

Project Phase	Amount
Planning	$1,856
Design	$1,425,000
Bidding	$81,000
Construction	$11,848,000
Close-Out	$367,000
Total Budget	$13,722,856

Expenditure Plan by Fiscal Year and Funding Source



50042: Cosme-Odessa Wellfield Improvements

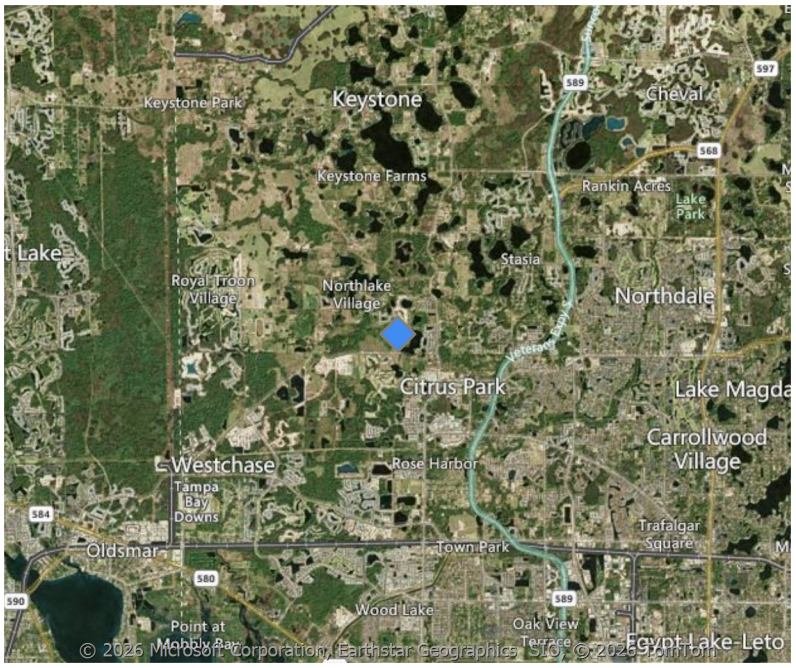
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The project is located at the Cosme-Odessa Wellfield and includes: (1) the removal of existing Tampa Bay Water owned overhead power lines and replacement with commercial power lines at Wells 1, 3, 5-10, 12, 16, 18, 20, 21, 24, 25, 30, 31, 32, and 34; (2) Installation of new motor starters at Wells 1, 3, 5-10, 12, 16, 18, 20, 21, 24, 25, 30, 31, 32, and 34; and (3) Replacement of the existing fiber optic cable.

Project Location

Hillsborough County



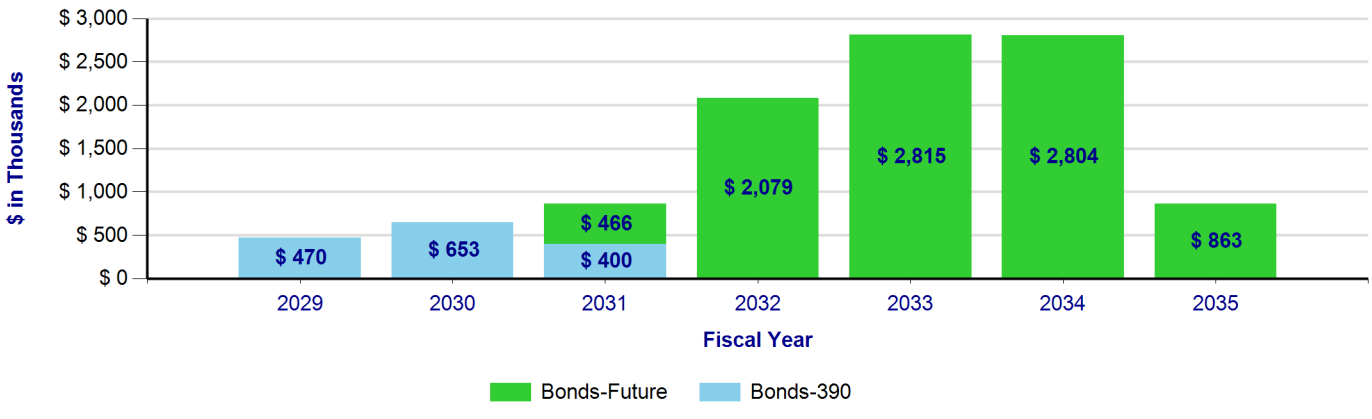
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/20/2024
Planning	1/31/2028	3/20/2028
Professional Services Selection	3/21/2028	11/20/2028
Design	11/21/2028	4/15/2031
Bidding	4/16/2031	7/21/2031
Construction or Execution	7/22/2031	12/14/2034
Close-Out	12/15/2034	4/16/2035

Project Budget by Project Phase

Project Phase	Amount
Design	$1,522,000
Bidding	$61,000
Construction or Execution	$8,688,000
Close-Out	$278,000
Total Budget	$10,549,000

Expenditure Plan by Fiscal Year and Funding Source



50043: Cypress Creek Wellfield Headwall Erosion Repair

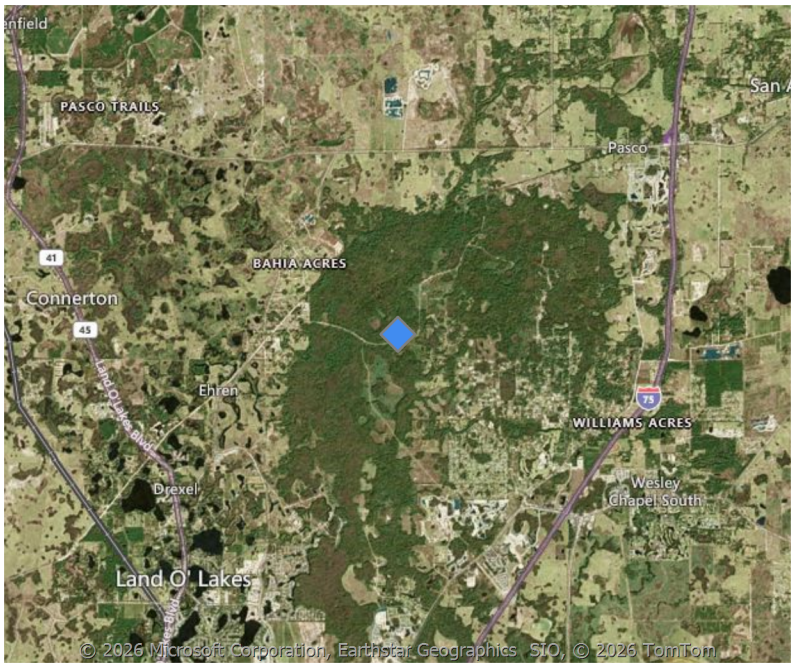
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The project is located in the Cypress Creek Wellfield and includes repair of damage caused by erosion to the service road (Pump Station Road) culvert crossing of Cypress Creek.

Project Location

Pasco County



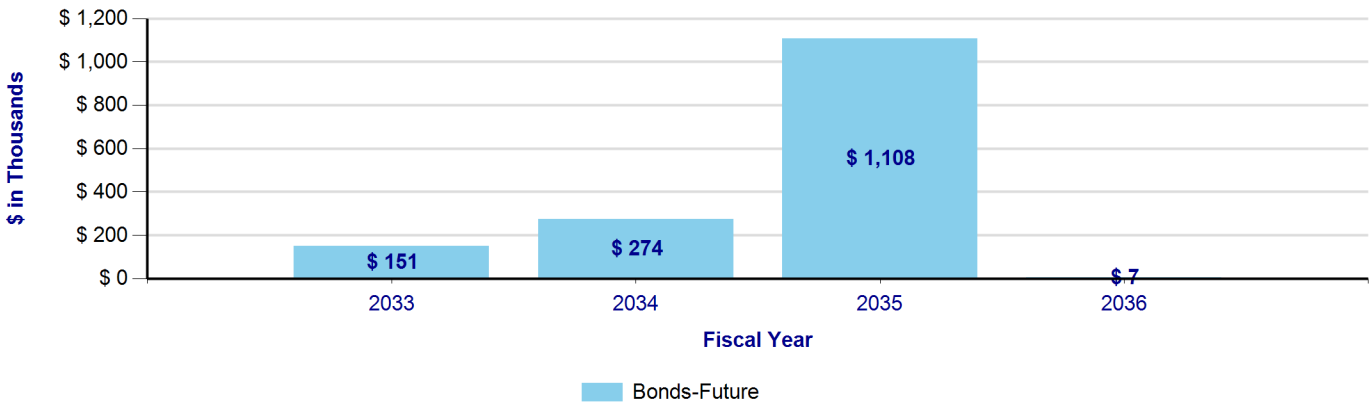
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	4/2/2032	7/8/2032
Professional Services Selection	7/9/2032	11/1/2032
Design	11/1/2032	11/1/2033
Bidding	11/2/2033	6/5/2034
Construction or Execution	5/7/2034	8/29/2035
Close-Out	8/30/2035	1/21/2036

Project Budget by Project Phase

Project Phase	Amount
Design	$166,000
Bidding	$17,000
Construction or Execution	$1,348,000
Close-Out	$9,000
Total Budget	$1,540,000

Expenditure Plan by Fiscal Year and Funding Source



50047: Morris Bridge Chemical Piping Replacement

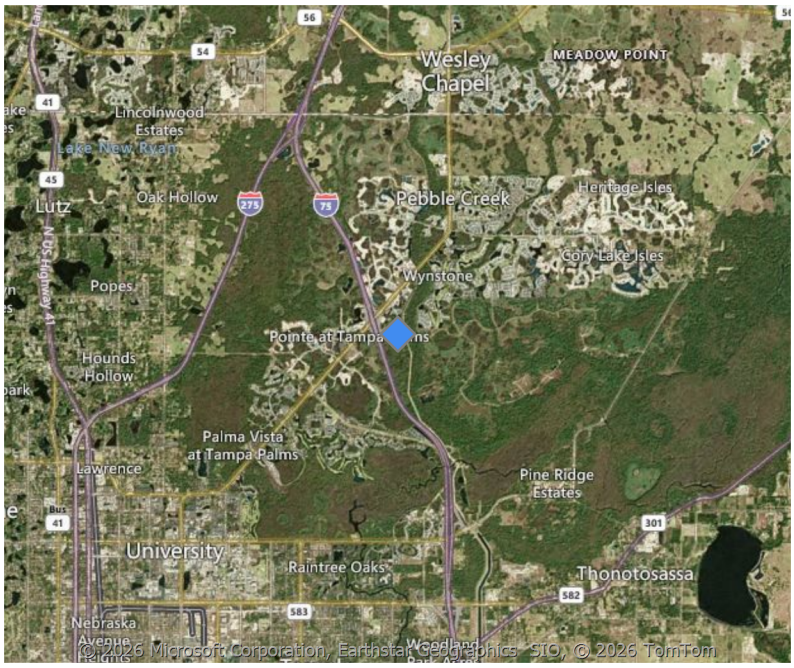
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Morris Bridge Booster Station and involves inspecting and replacing existing chemical feed systems.

Project Location

Hillsborough County



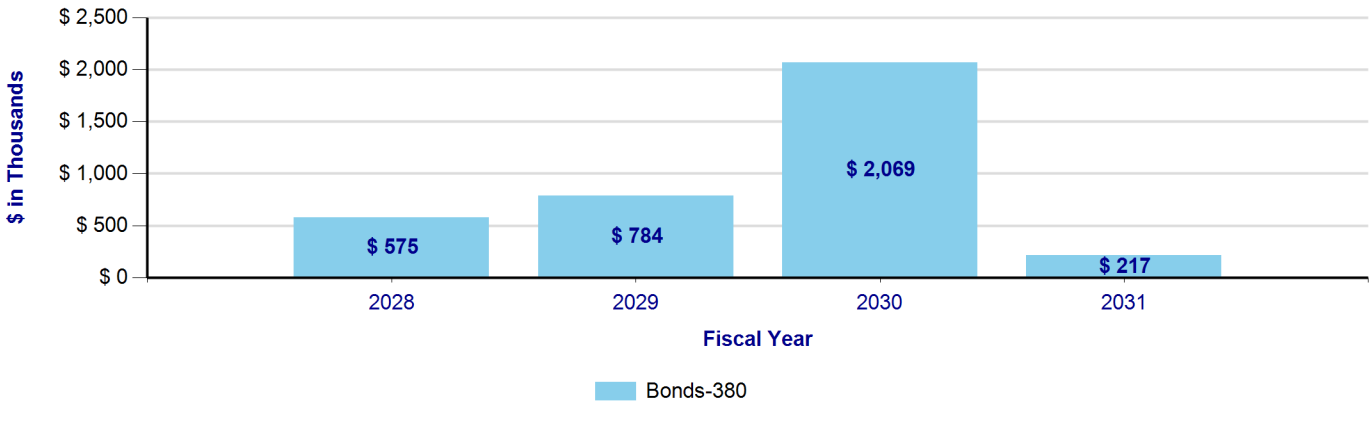
Project Schedule

Project Phase	Start Date	End Date
Design	5/3/2027	8/22/2028
Bidding	8/23/2028	3/26/2029
Construction	3/21/2029	10/16/2030
Close-Out	10/17/2030	1/20/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$569,000
Bidding	$35,000
Construction	$2,921,000
Close-Out	$120,000
Total Budget	$3,645,000

Expenditure Plan by Fiscal Year and Funding Source



50056: South Pasco Transmission Main Pipe Repair

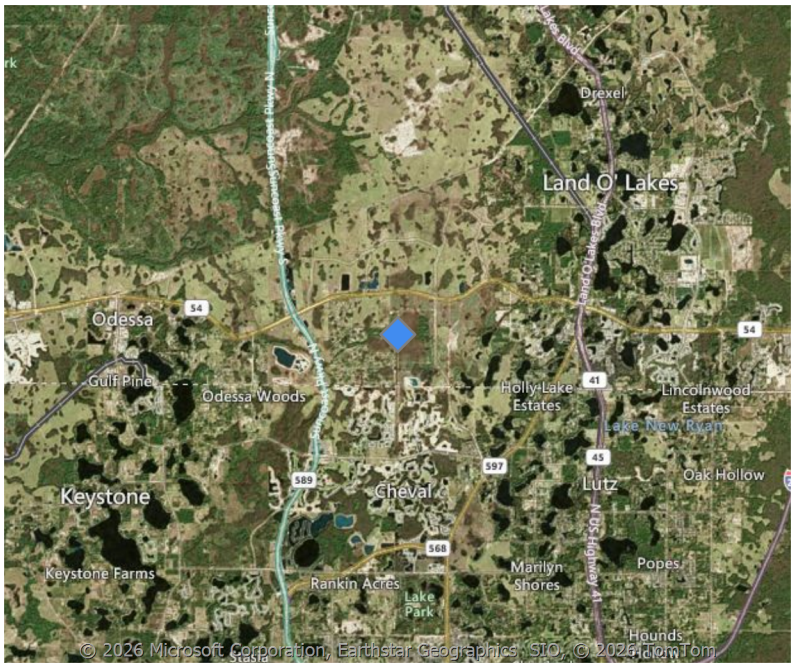
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project includes the repair, rehabilitation, or replacement of pipe segments along the South Pasco Transmission Main (TM) that were identified as being in low or moderate levels of distress based on Pure Technologies U.S. Inc (Pure) leak detection and electromagnetic inspection completed in 2015.

Project Location

Pasco County



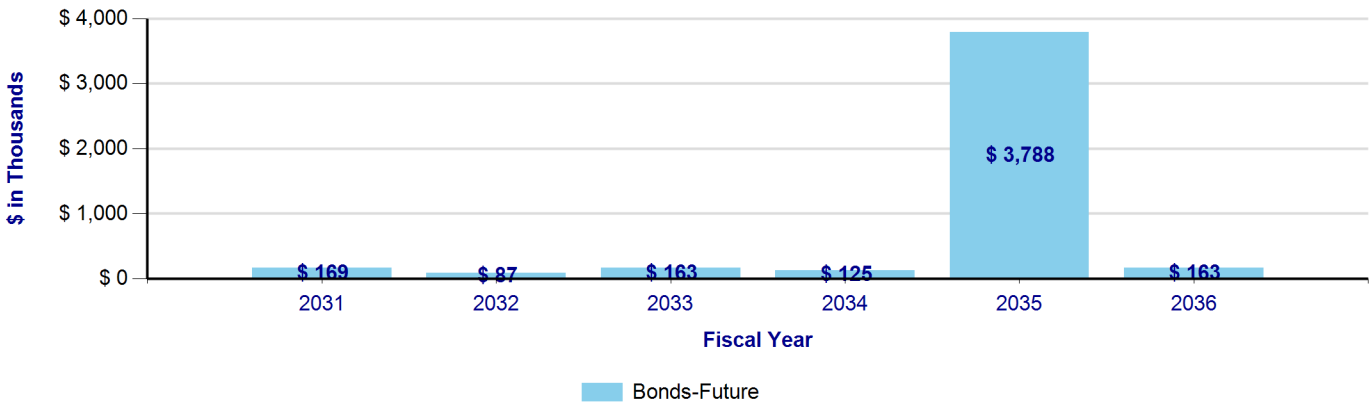
Project Schedule

Project Phase	Start Date	End Date
Planning	6/2/2031	9/5/2031
Professional Services Selection	9/8/2031	10/18/2032
Design	10/18/2032	3/3/2034
Bidding	3/6/2034	10/5/2034
Construction	9/20/2034	10/10/2035
Close-Out	10/11/2035	1/21/2036

Project Budget by Project Phase

Project Phase	Amount
Planning	$140,000
Design	$356,000
Bidding	$48,000
Construction	$3,925,000
Close-Out	$24,000
Total Budget	$4,493,000

Expenditure Plan by Fiscal Year and Funding Source



50057: Tampa Bay Desalination Plant Belt Filter Press Replacement

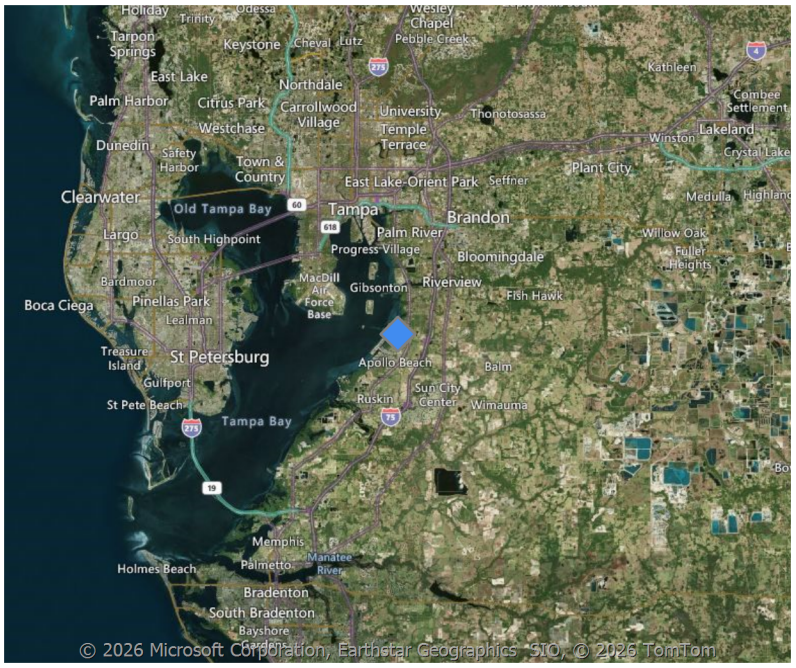
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Tampa Bay Desalination Plant and includes the replacement in kind of the two (2) belt filter press assemblies, including the belter filter press, sludge conveyor, gravity belt filter, conical mixer, and programmable logic controller (PLC) power and control panel.

Project Location

Hillsborough County



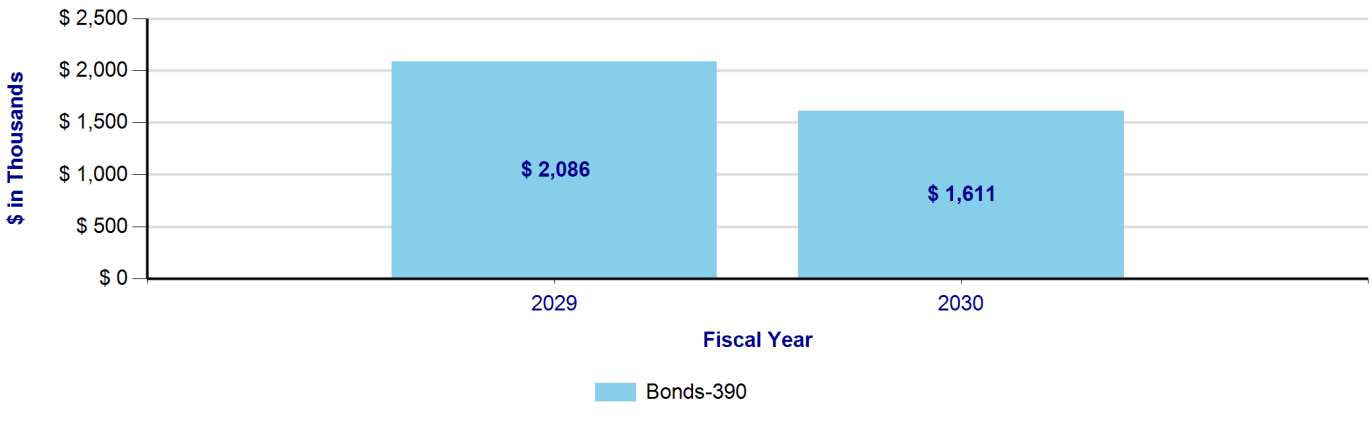
Project Schedule

Project Phase	Start Date	End Date
Planning	10/2/2028	1/5/2029
Professional Services Selection	1/8/2029	1/8/2029
Design	1/9/2029	4/2/2029
Bidding	4/3/2029	8/20/2029
Construction	8/21/2029	12/9/2030
Close-Out	12/10/2030	3/17/2031

Project Budget by Project Phase

Project Phase	Amount
Bidding	$28,000
Construction	$3,471,000
Close-Out	$198,000
Total Budget	$3,697,000

Expenditure Plan by Fiscal Year and Funding Source



50058: Tampa Bay Desalination Plant Piping Replacement

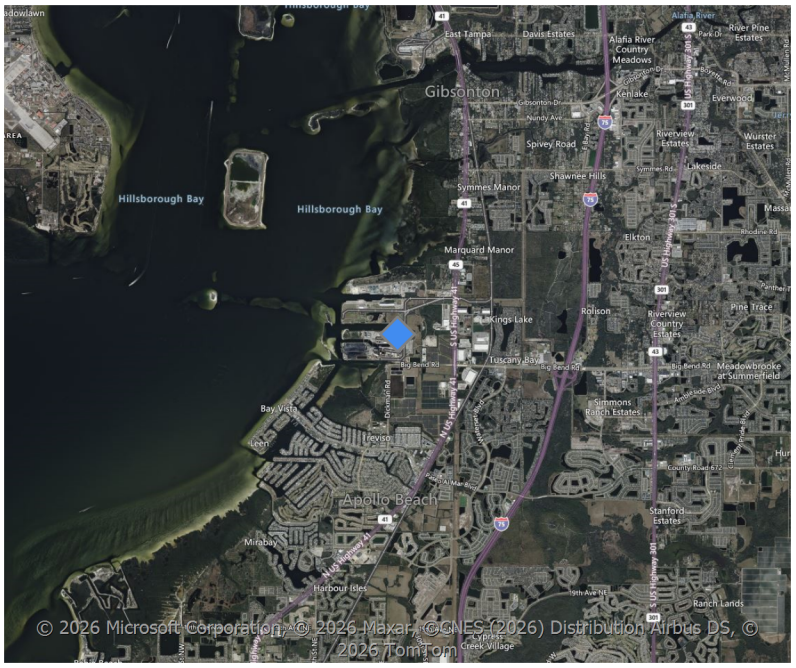
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The purpose of this project is to install three new water line headers throughout the Desalination plant. Various small piping within the plant is constructed of high-density polyethylene (HDPE) and has leaked on numerous occasions.

Project Location

Hillsborough County



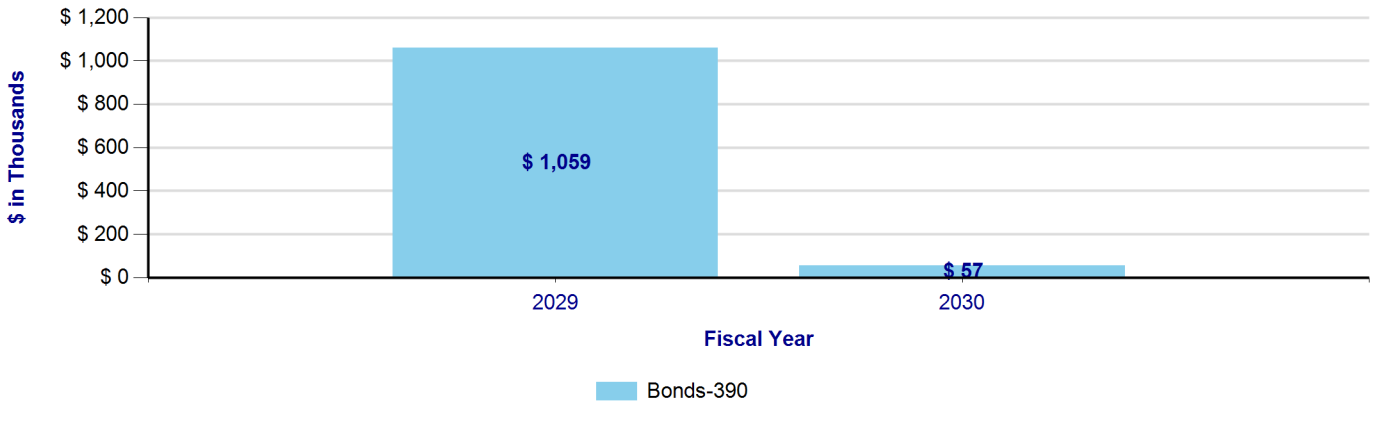
Project Schedule

Project Phase	Start Date	End Date
Planning	1/24/2028	4/28/2028
Design	5/2/2028	7/24/2028
Bidding	7/25/2028	12/4/2028
Construction	12/4/2028	9/24/2029
Close-Out	9/25/2029	12/17/2029

Project Budget by Project Phase

Project Phase	Amount
Bidding	$17,000
Construction	$1,038,000
Close-Out	$61,000
Total Budget	$1,116,000

Expenditure Plan by Fiscal Year and Funding Source



50059: Harney Pump Station Pumps and Motors

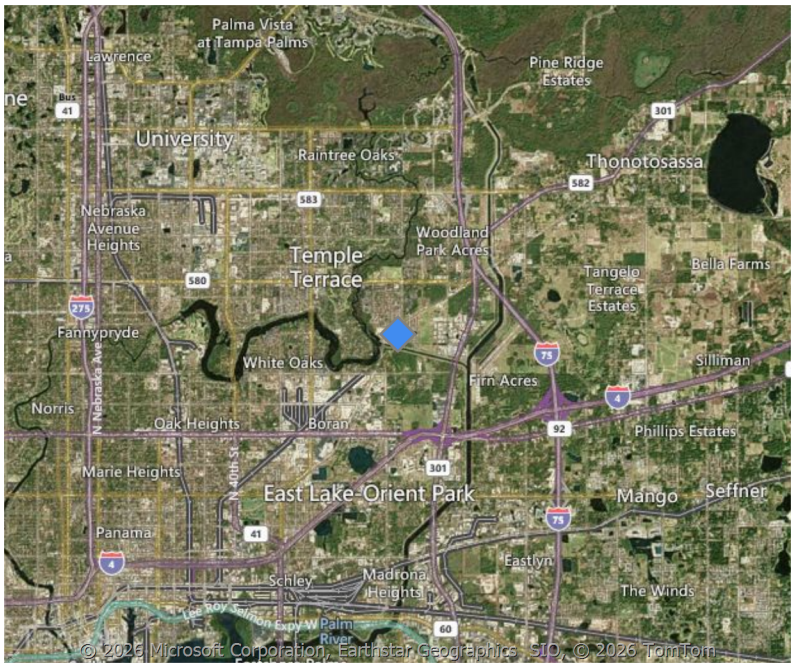
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project will replace existing pumps and motors at the Tampa Bypass Canal Harney Pump Station which have reached the end of their useful life. The project includes refurbishing or replacing associated equipment such as soft starters and motor control panels.

Project Location

Hillsborough County



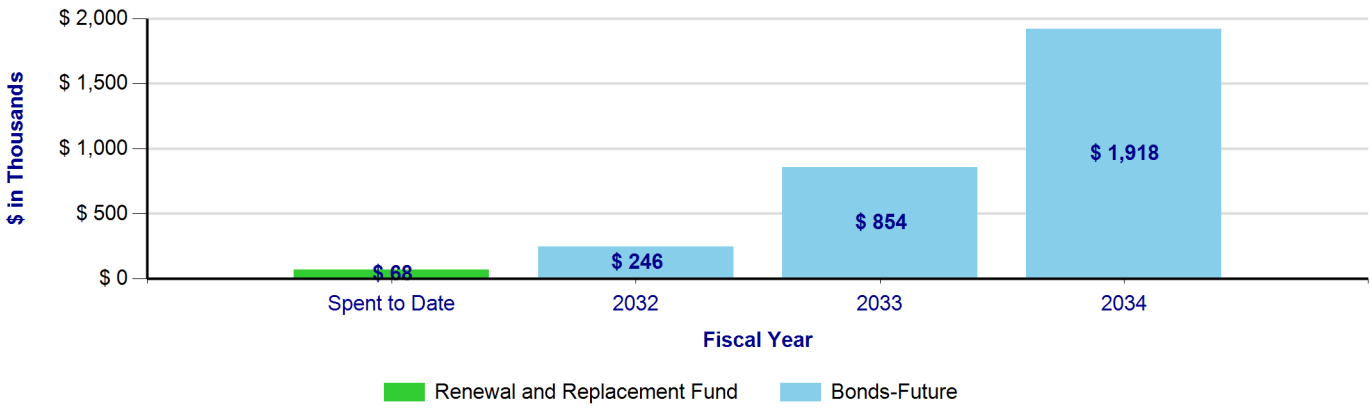
Project Schedule

Project Phase	Start Date	End Date
Publishing	3/1/2018	5/15/2023
Planning	1/6/2031	4/11/2031
Professional Services Selection	4/14/2031	11/3/2031
Design	11/3/2031	10/6/2032
Bidding	10/7/2032	5/10/2033
Construction or Execution	4/20/2033	5/24/2034
Close-Out	5/25/2034	9/18/2034

Project Budget by Project Phase

Project Phase	Amount
Publishing	$68,268
Design	$251,000
Bidding	$84,000
Construction or Execution	$2,632,000
Close-Out	$51,000
Total Budget	$3,086,268

Expenditure Plan by Fiscal Year and Funding Source



50062: Tampa Bay Desalination Pipeline Reliability - Phase 2

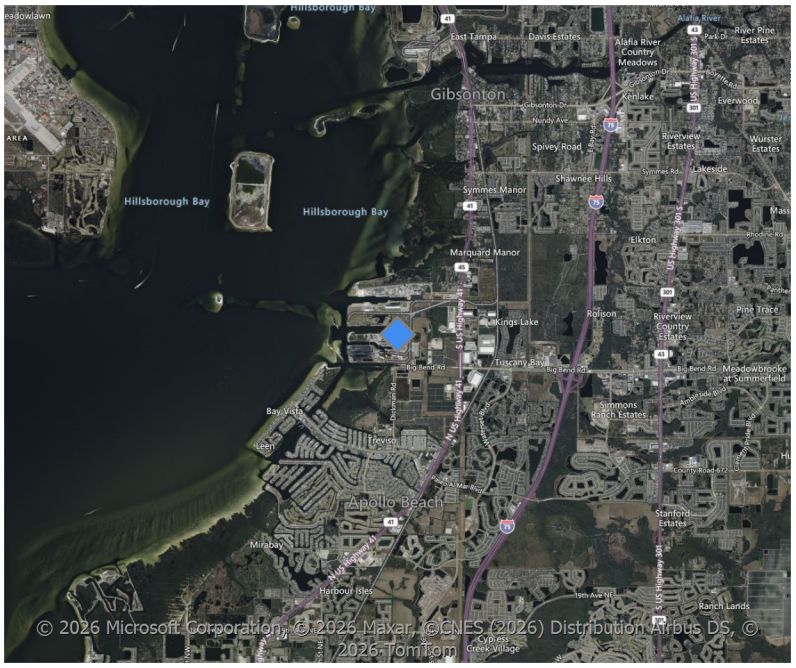
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Tampa Bay Desalination Plant and includes repairing erosion, removing vegetation, re-coating (painting), and replacing bolts and appurtenances that have corrosion on Tampa Bay Water's above-grade piping located on the TECO Big Bend Power Plant site. Additionally, the double contained chlorine dioxide chemical piping will be replaced. The 36-inch above grade fiberglass reinforced pipe (FRP) will be cleaned and inspected. Manways will also be added to the buried 48-inch concentrate and 54-inch seawater supply HDPE piping, these will be accessed, cleaned and inspected.

Project Location

Hillsborough County



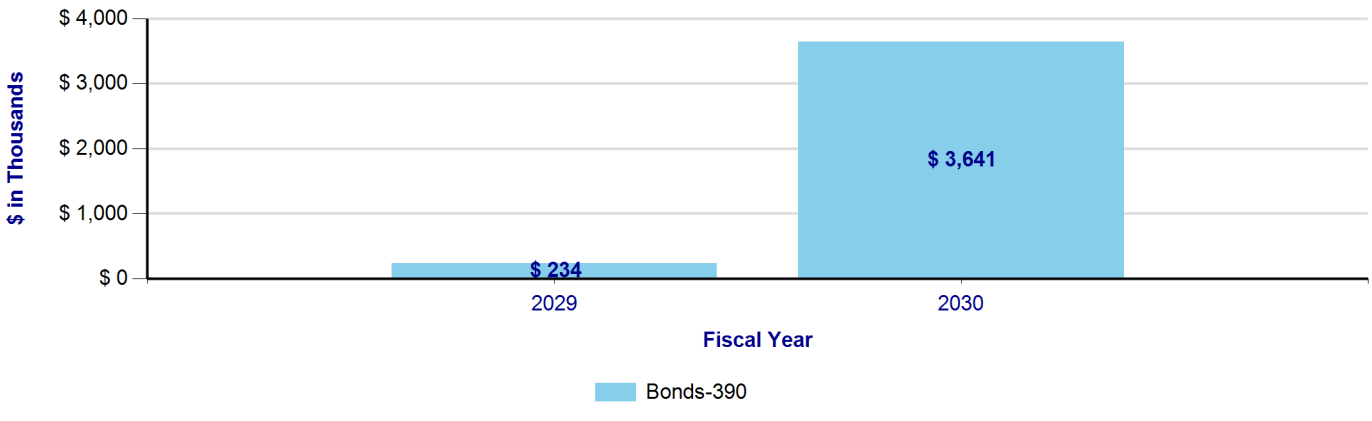
Project Schedule

Project Phase	Start Date	End Date
Planning	1/24/2028	6/16/2028
Professional Services Selection	4/10/2028	7/3/2028
Design	6/19/2028	4/20/2029
Bidding	2/26/2029	6/4/2029
Construction	6/5/2029	4/9/2030
Close-Out	4/10/2030	7/15/2030

Project Budget by Project Phase

Project Phase	Amount
Bidding	$38,000
Construction	$3,837,000
Total Budget	$3,875,000

Expenditure Plan by Fiscal Year and Funding Source



50063: Brandon Urban Dispersed Wellfield Pumps and Motors Replacement

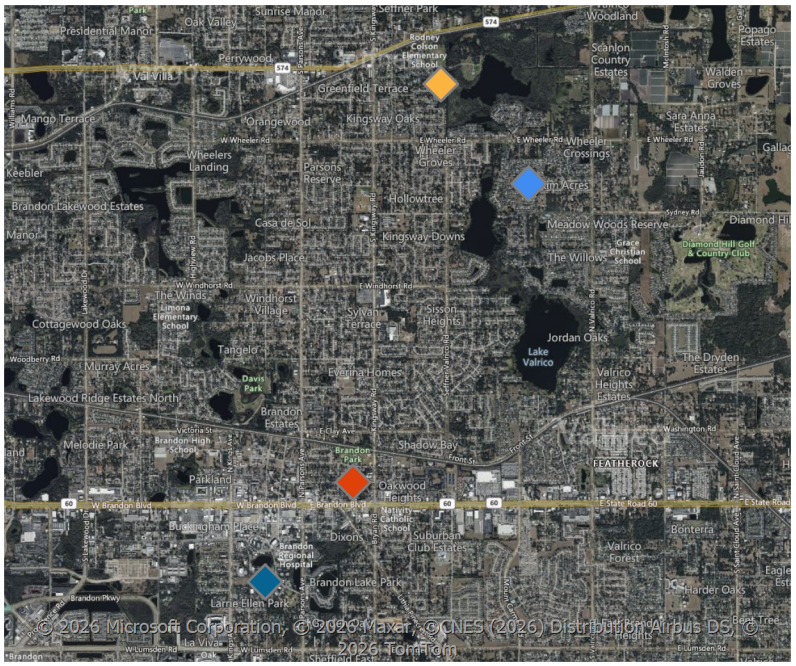
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Brandon Urban Dispersed (BUD) Wells in Hillsborough County. This project entails the replacement of three wells and motors. This project is required to maintain the Brandon Urban Dispersed (BUD) Wellfield, which currently serves the growing South Hillsborough County region.

Project Location

Hillsborough County



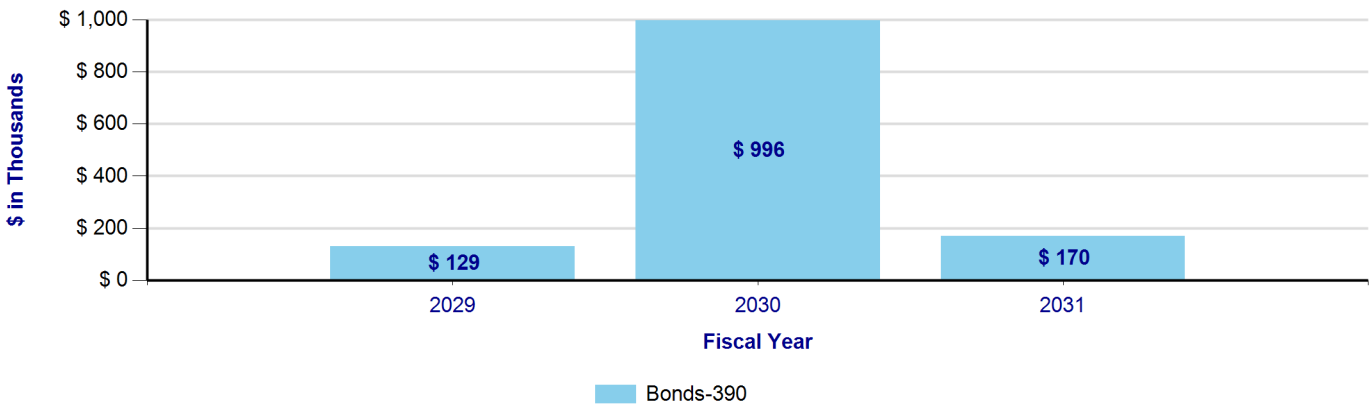
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/15/2023
Planning	4/3/2028	7/7/2028
Professional Services Selection	7/10/2028	10/30/2028
Design	10/30/2028	3/6/2029
Bidding	3/7/2029	10/8/2029
Construction or Execution	9/19/2029	11/20/2030
Close-Out	11/21/2030	2/17/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$114,000
Bidding	$16,000
Construction or Execution	$1,165,000
Total Budget	$1,295,000

Expenditure Plan by Fiscal Year and Funding Source



50069: Repump Station Generator

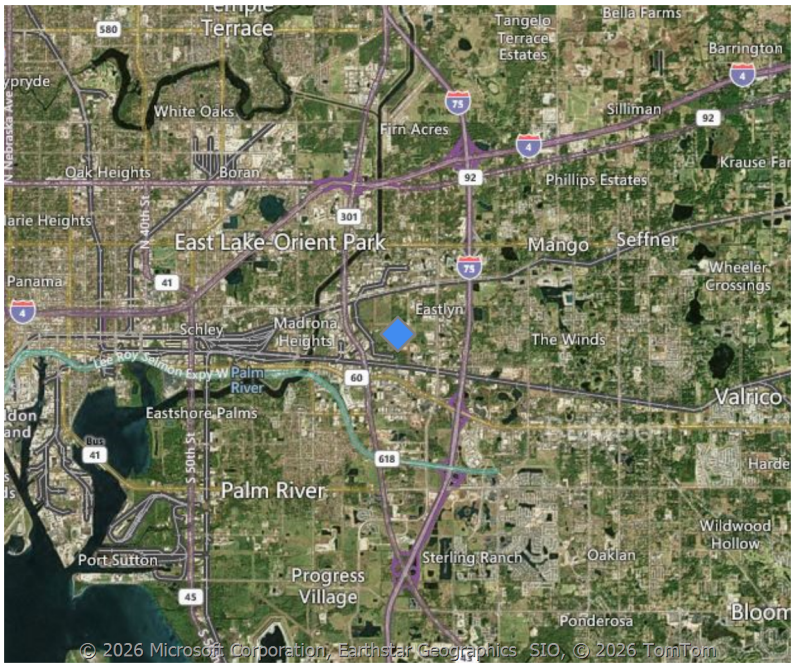
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Repump Station facility in Hillsborough County and includes replacement of the 300 kW generator and fuel tank. The generator will reach its end of useful life in 2029.

Project Location

Hillsborough County



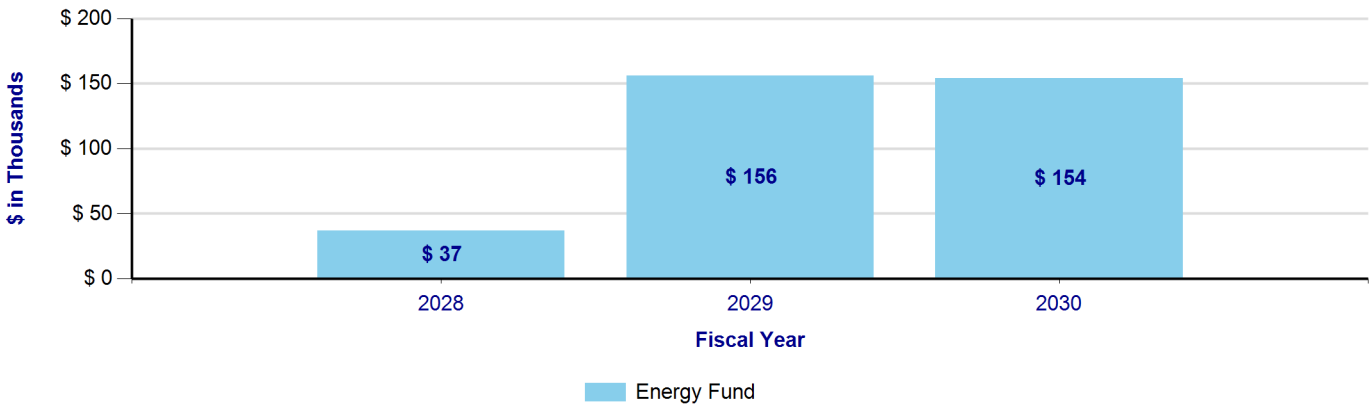
Project Schedule

Project Phase	Start Date	End Date
Planning	6/7/2027	9/10/2027
Professional Services Selection	9/13/2027	1/3/2028
Design	1/3/2028	10/16/2028
Bidding	10/17/2028	5/17/2029
Construction	10/3/2028	12/25/2029
Close-Out	12/26/2029	4/15/2030

Project Budget by Project Phase

Project Phase	Amount
Design	$39,000
Bidding	$8,000
Construction	$285,000
Close-Out	$15,000
Total Budget	$347,000

Expenditure Plan by Fiscal Year and Funding Source



50076: C.W. Bill Young Regional Reservoir-Dissolved Air Lines Replacement

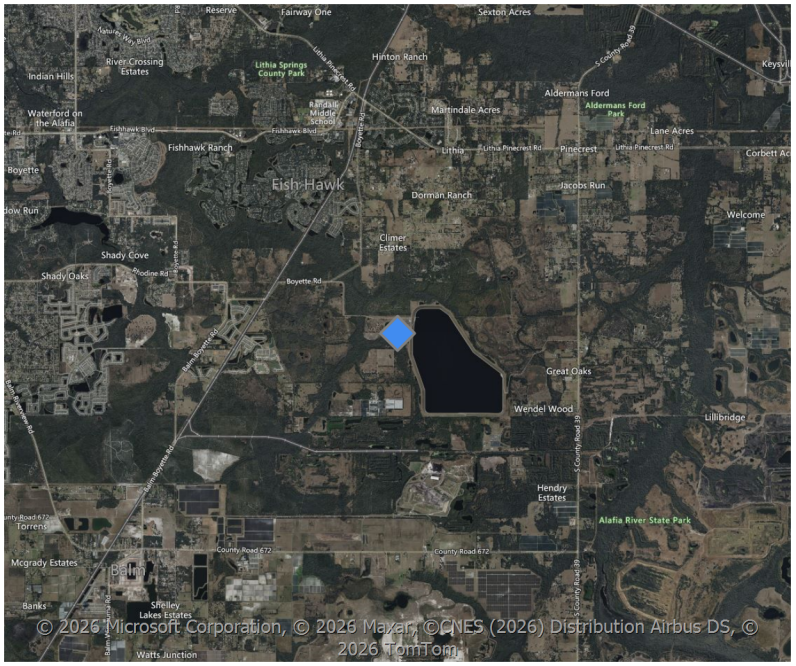
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project will replace the porous hose portion of the dissolved air lines in the north end of the C.W. Bill Young Regional Reservoir in Hillsborough County.

Project Location

Hillsborough County



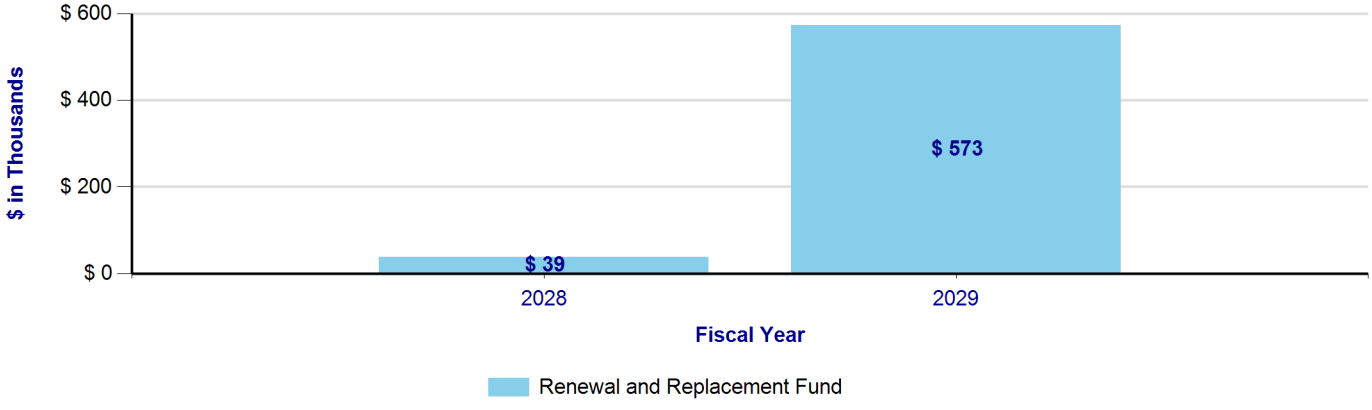
Project Schedule

Project Phase	Start Date	End Date
Planning	4/1/2028	5/2/2028
Professional Services Selection	5/2/2028	7/18/2028
Design	6/29/2028	12/9/2028
Bidding	12/12/2028	3/20/2029
Construction	3/1/2029	3/5/2029
Close-Out	3/6/2029	4/16/2029

Project Budget by Project Phase

Project Phase	Amount
Design	$68,000
Bidding	$17,000
Construction	$523,000
Close-Out	$4,000
Total Budget	$612,000

Expenditure Plan by Fiscal Year and Funding Source



50079: Clearwater Generator Replacement

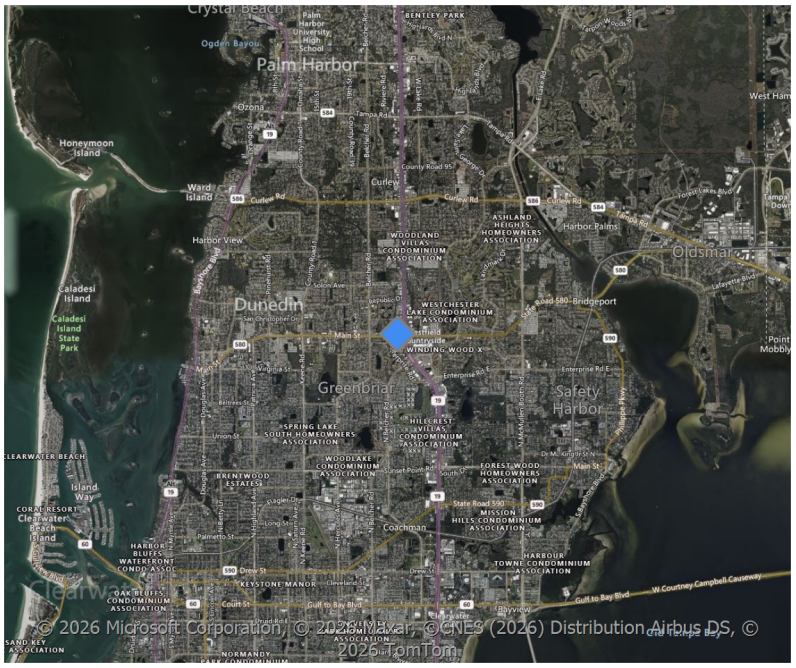
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project includes the design, permitting and installation of a new generator at Tampa Bay Water's Administration Building in Clearwater. The project includes replacement of the 230 kW generator and 400 Amp generator receptacle (installed and tested for backup to the 230 kW generator) that was installed in 2004.

Project Location

Pinellas County



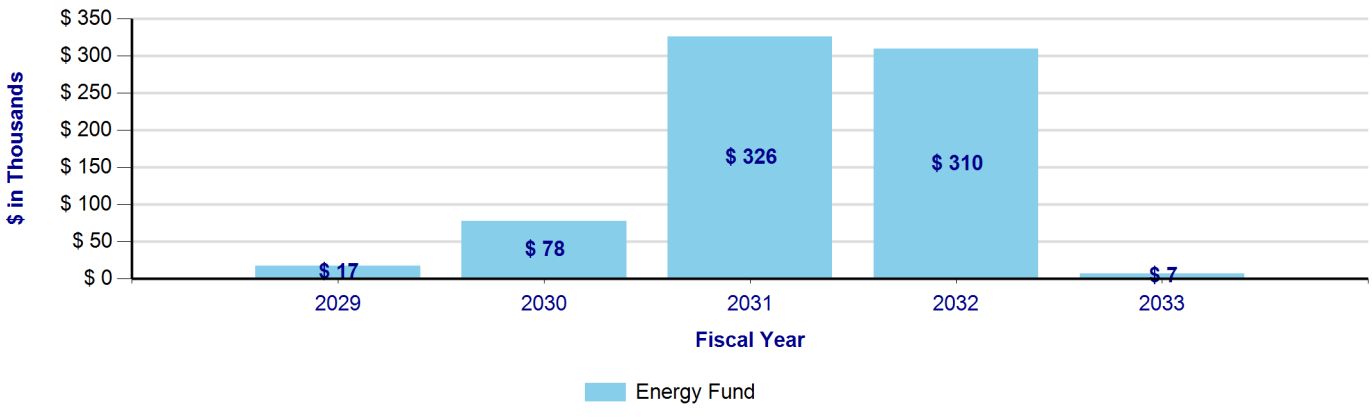
Project Schedule

Project Phase	Start Date	End Date
Publishing	12/2/2022	5/13/2023
Planning	1/3/2029	4/10/2029
Professional Services Selection	4/11/2029	7/30/2029
Design	7/30/2029	1/15/2030
Bidding	1/16/2030	8/20/2030
Construction or Execution	8/21/2030	7/7/2032
Close-Out	7/8/2032	10/18/2032

Project Budget by Project Phase

Project Phase	Amount
Design	$74,000
Bidding	$21,000
Construction or Execution	$600,000
Close-Out	$42,000
Total Budget	$737,000

Expenditure Plan by Fiscal Year and Funding Source



50084: Repump Station Variable Frequency Drives

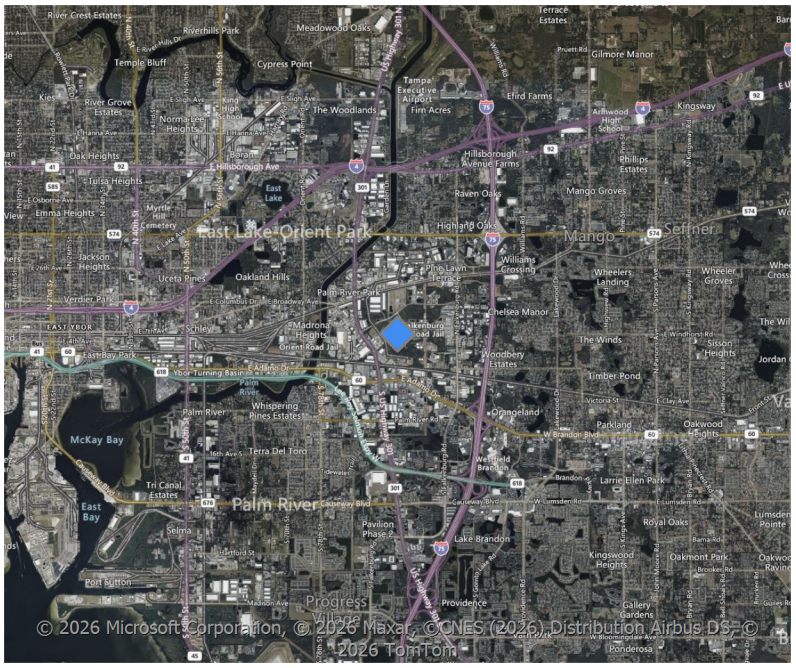
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

The purpose of this project is to replace six medium voltage Variable Frequency Drives (VFDs), and an Arc Flash, Coordination, and Load Flow Power System Study at the Repump Station located in Hillsborough County.

Project Location

Hillsborough County



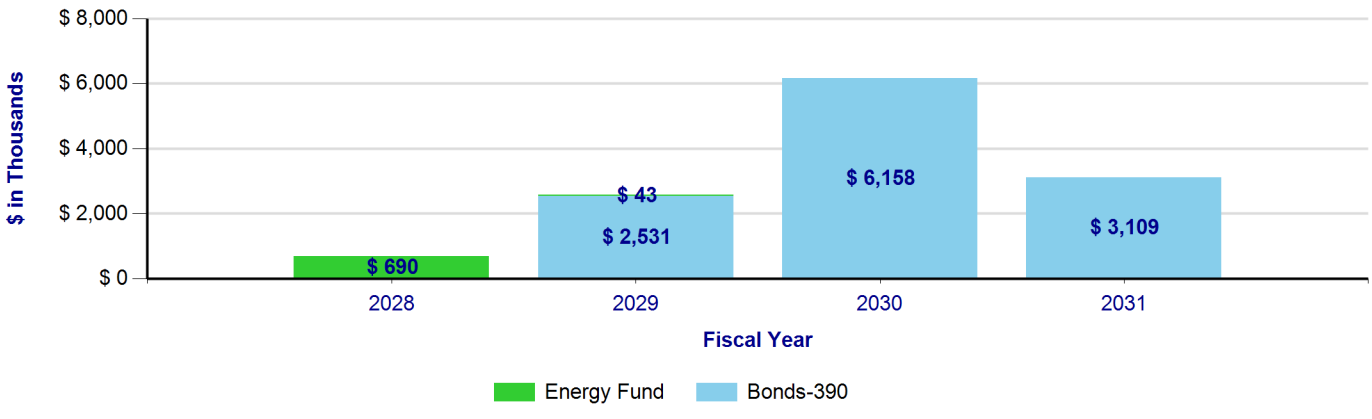
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	4/26/2027	8/3/2027
Professional Services Selection	8/4/2027	10/18/2027
Design	10/19/2027	9/8/2028
Bidding	9/11/2028	2/19/2029
Construction or Execution	2/20/2029	4/2/2031
Close-Out	4/3/2031	8/18/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$684,000
Bidding	$49,000
Construction or Execution	$11,798,000
Total Budget	$12,531,000

Expenditure Plan by Fiscal Year and Funding Source



50085: Tampa Bay Desalination Facility Pretreatment Basins Coating Repair

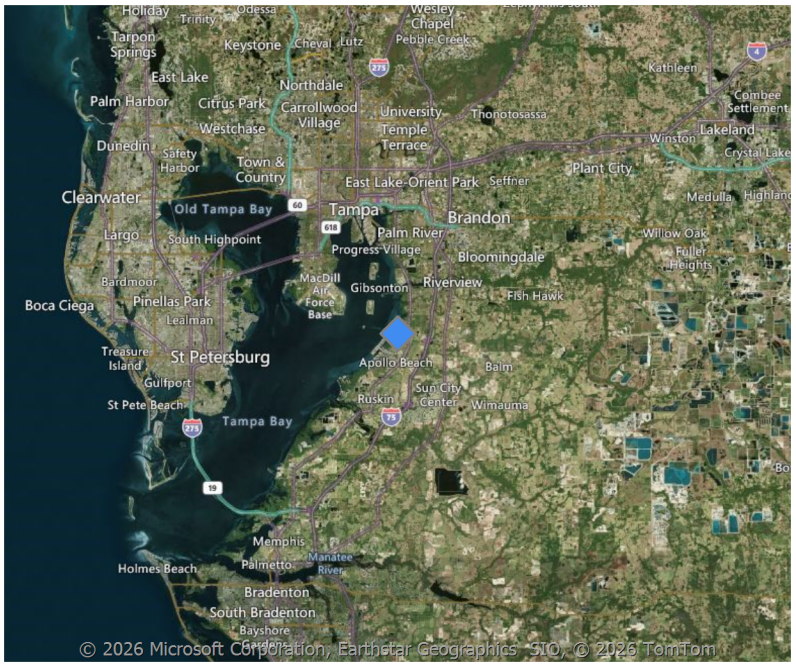
Project Manager	
Construction Manager	
Status	

Project Description

This project is located at the Tampa Bay Seawater Desalination Facility (Desal) and includes removal of existing coating and recoating the pretreatment basins.

Project Location

Hillsborough County



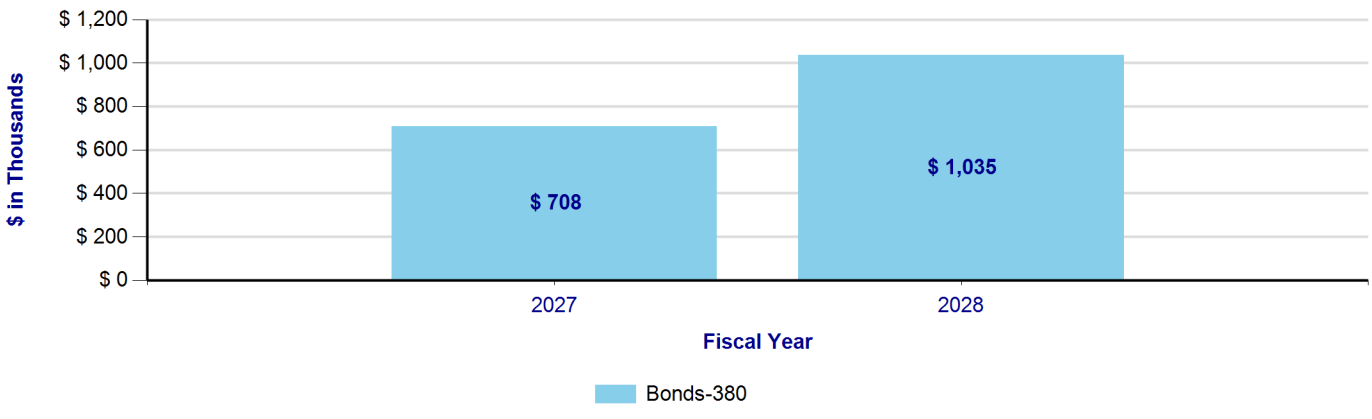
Project Schedule

Project Phase	Start Date	End Date
Publishing	6/2/2025	5/18/2026
Planning	1/11/2027	3/5/2027
Professional Services Selection	3/8/2027	7/19/2027
Design	7/20/2027	7/20/2027
Bidding	7/20/2027	7/20/2027
Construction or Execution	7/20/2027	1/18/2028
Close-Out	1/19/2028	4/17/2028

Project Budget by Project Phase

Project Phase	Amount
Construction or Execution	$1,743,000
Total Budget	$1,743,000

Expenditure Plan by Fiscal Year and Funding Source



52002: Carrollwood Pumps and Motors

Project Manager	
Construction Manager	
Status	Not Yet Started

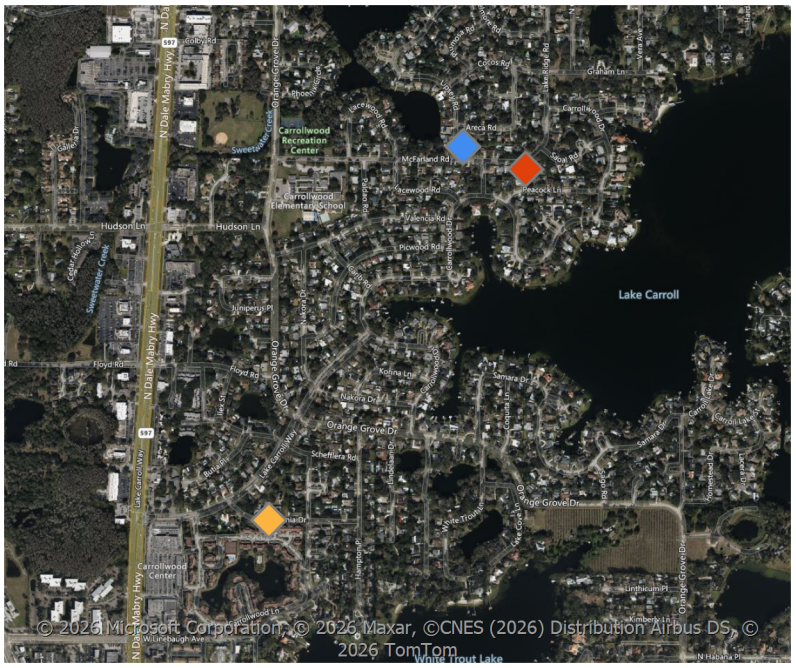
Project Description

The purpose of this project is to refurbish 3 vertical turbine pumps and motors within the Carrollwood wellfield. Refurbishment will increase the operational efficiency and reduce maintenance on the existing well pumps.

Note: This project is a placeholder.

Project Location

Hillsborough County



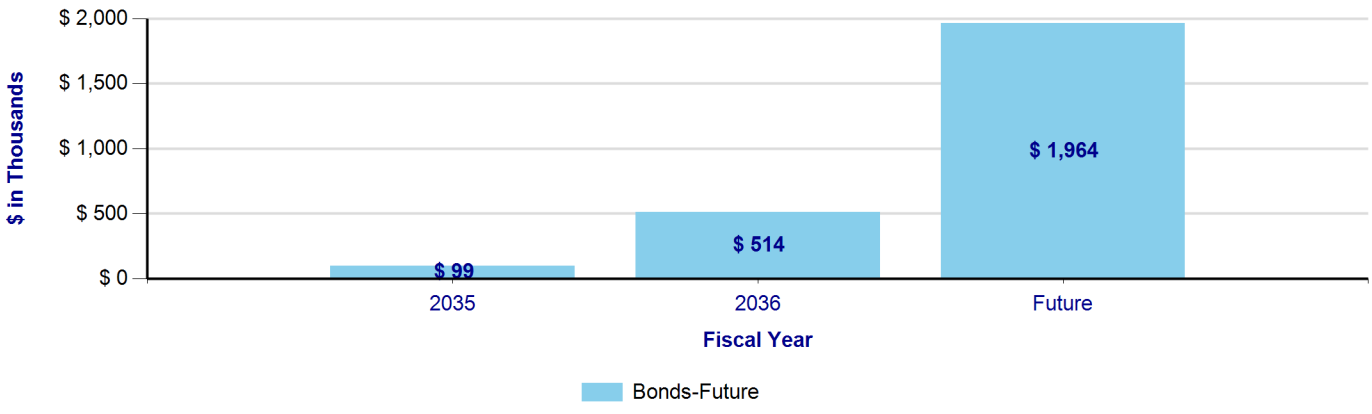
Project Schedule

Project Phase	Start Date	End Date
Planning	10/9/2034	12/18/2034
Professional Services Selection	12/12/2034	4/16/2035
Design	4/17/2035	7/17/2036
Bidding	4/16/2036	7/21/2036
Construction	7/22/2036	12/24/2037
Close-Out	12/25/2037	4/19/2038

Project Budget by Project Phase

Project Phase	Amount
Design	$273,000
Bidding	$41,000
Construction	$2,185,000
Close-Out	$78,000
Total Budget	$2,577,000

Expenditure Plan by Fiscal Year and Funding Source



52003: Lake Bridge Pumps and Motors

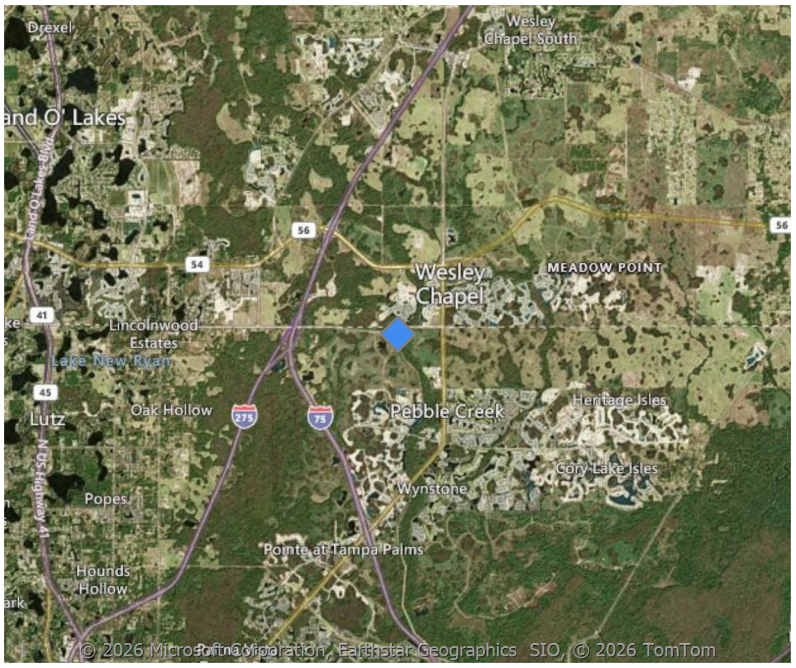
Project Manager	
Construction Manager	
Status	Not Yet Started

Project Description

This project is located at the Lake Bridge WTP in Hillsborough County and entails reconditioning the pump and motor of two 250 HP axial split case centrifugal pumps. The VFDs will also be evaluated for refurbishment or replacement if needed. Services to include retrofitting the pumps packing seals to mechanical seals. One pump will be refurbished per year and preferably during the rainy season.

Project Location

Hillsborough County



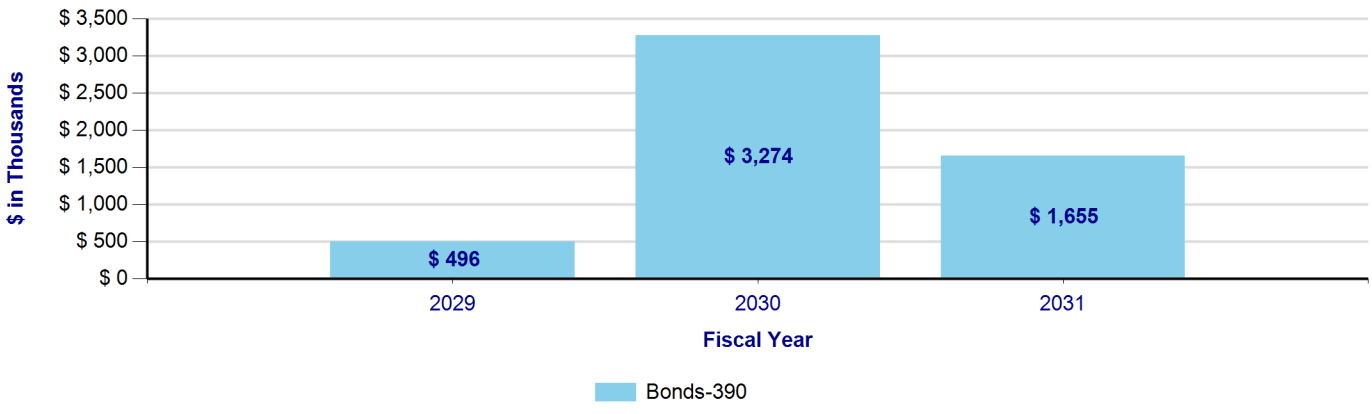
Project Schedule

Project Phase	Start Date	End Date
Planning	6/1/2028	5/19/2031
Professional Services Selection	9/7/2028	1/1/2029
Design	1/2/2029	6/19/2029
Bidding	4/11/2029	11/12/2029
Construction	10/17/2029	3/5/2031
Close-Out	3/6/2031	5/19/2031

Project Budget by Project Phase

Project Phase	Amount
Design	$496,000
Construction	$4,929,000
Total Budget	$5,425,000

Expenditure Plan by Fiscal Year and Funding Source



Proposed Fiscal Year 2027 Operating Budget and Capital Improvements Program

Budget Workshop
April 20, 2026

Christina Sackett, MBA
Chief Financial Officer
Tampa Bay Water

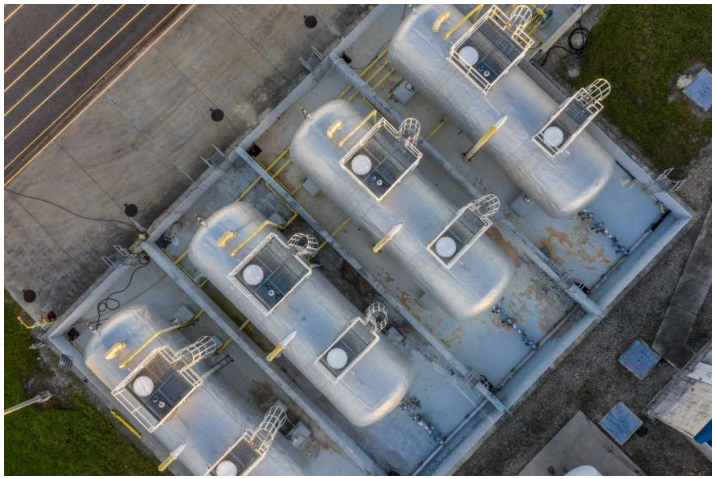
Overarching Responsibilities

- Reliable water supply
- Environmental stewardship
- Uniform rate



Uniform Rate Process

- Fixed Costs
  - Previous fiscal year percent of delivered water
  - 1/12 billed monthly
- Variable Costs
  - Prior month consumption
  - Variable rate
    - Piece of the Uniform Rate
- Annual True-Up
  - End of fiscal year



Budget Key Factors

- Forecasted water demand
- Agency Strategic Plan
- Inflation impact on costs
- Reserve funds



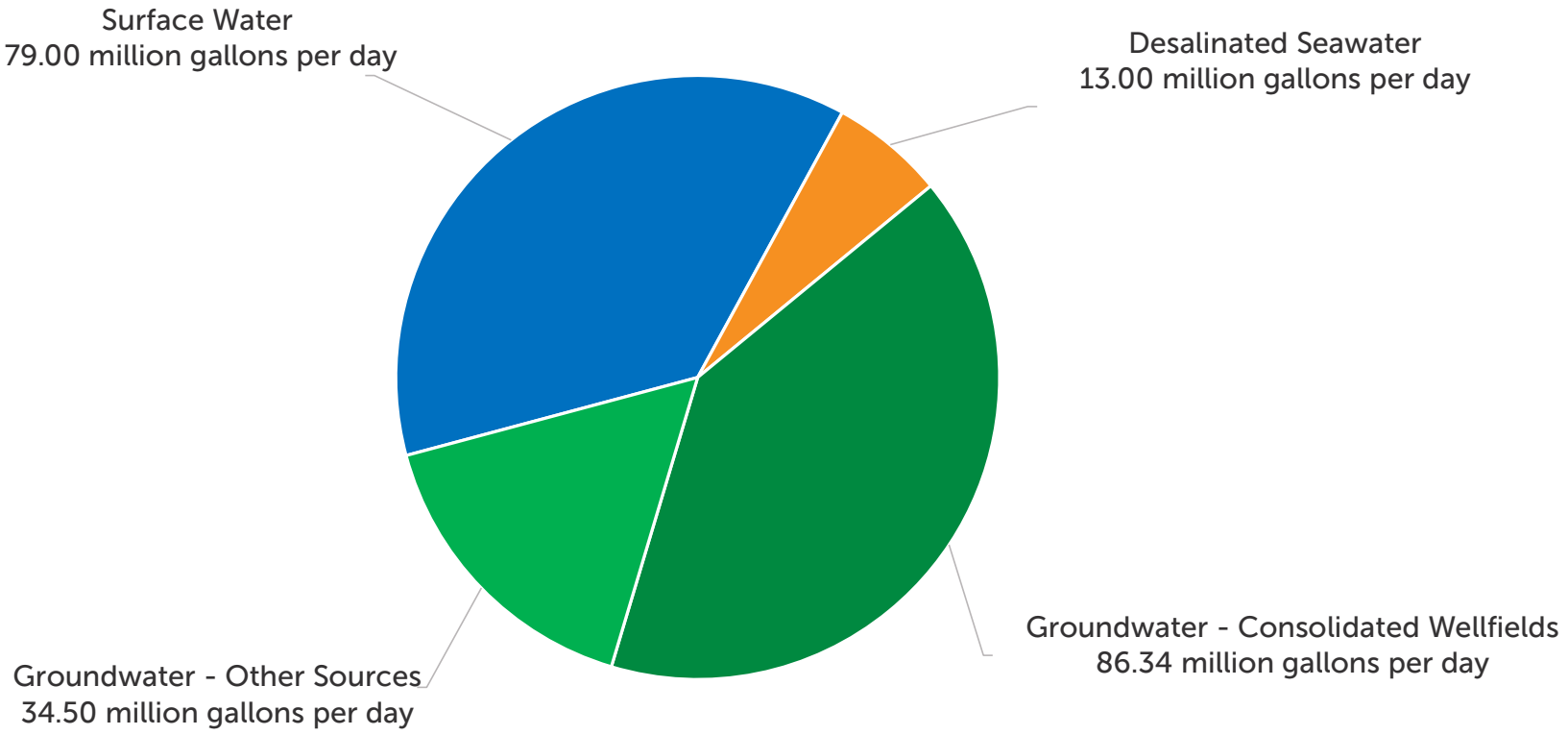
- Large capital projects
- Future funding needs
- Net revenue required impact
- Future budgets

Proposed Uniform Rate

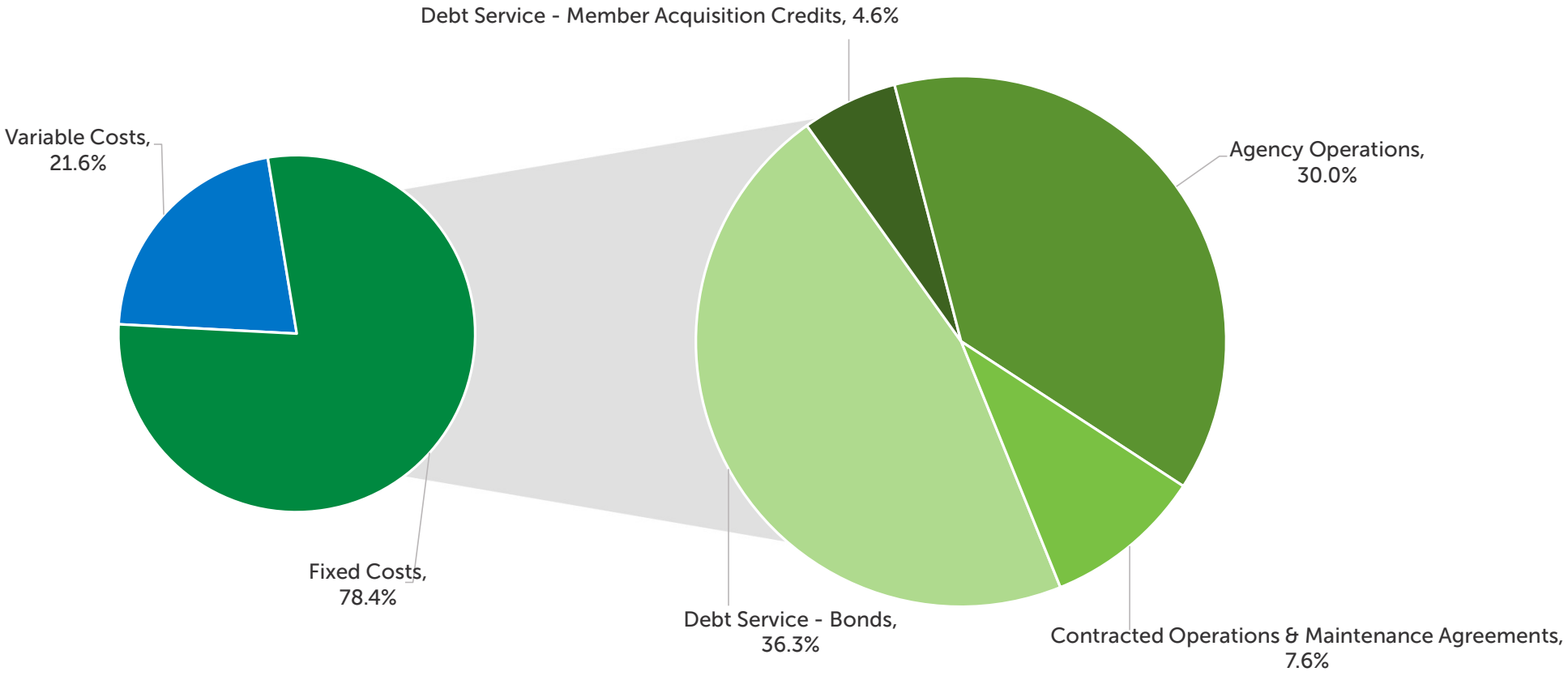
- Uniform Rate - $2.6593/1,000 gallons
  - Up $0.0205 (0.78%)
  - Variable Rate - $0.6217/1,000 gallons
    - $0.0088 increase
- Use of Reserves
  - Rate Stabilization - $4 million
  - Lowered uniform rate increase by $0.05
- Funding Pay-as-you-go Funds



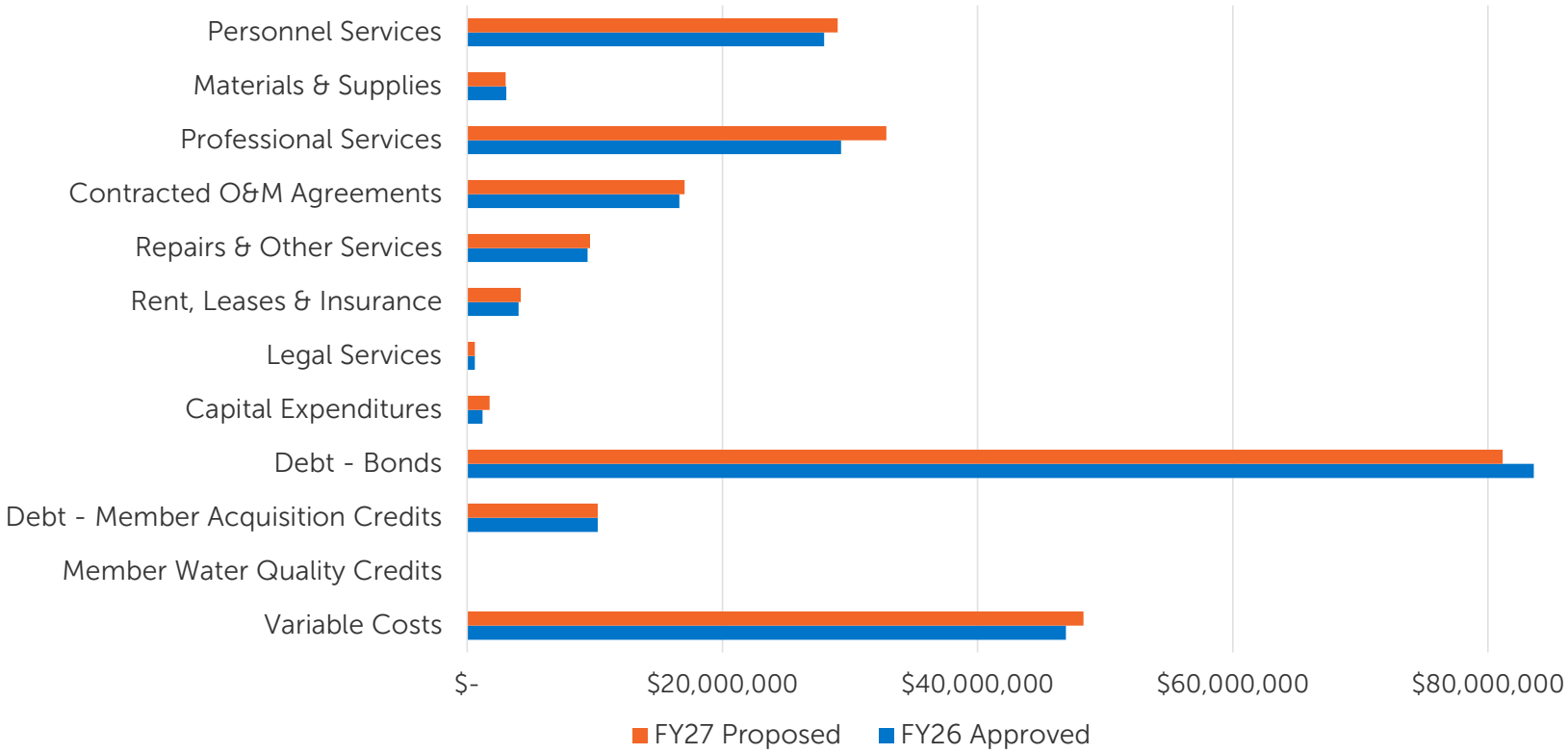
Budgeted Supplies – 212.84 million gallons per day



Total Costs Components



Fiscal Year 2027 Total Costs - $223.8 Million



Category Variances

Variable Costs — $1.4 million ↑

- Demand
- Water treatment chemicals

Fixed Costs Variances

- Personnel Services — $1.1 million ↑
  - Employee Insurance
  - Cost of Living Adjustment – 3%
  - Performance-based Merit – up to 3%
  - Overlapping employment strategy
  - 4 new positions
    - 1 IT Network Engineer
    - 1 Mechanical Technician I
    - 2 Mechanical Technician Trainees

Category Variances

Fixed Costs Variances

– Professional Services	$3.1 million
– Capital Expenditures	$565 thousand
– Operations & Maintenance Agreements	$417 thousand
– Repairs & Other Services	$199 thousand
– Rent, Leases & Insurance	$173 thousand
– Legal Services	No change
– Materials & Supplies	$65 thousand



Annual Bonds Debt Service – Decreased

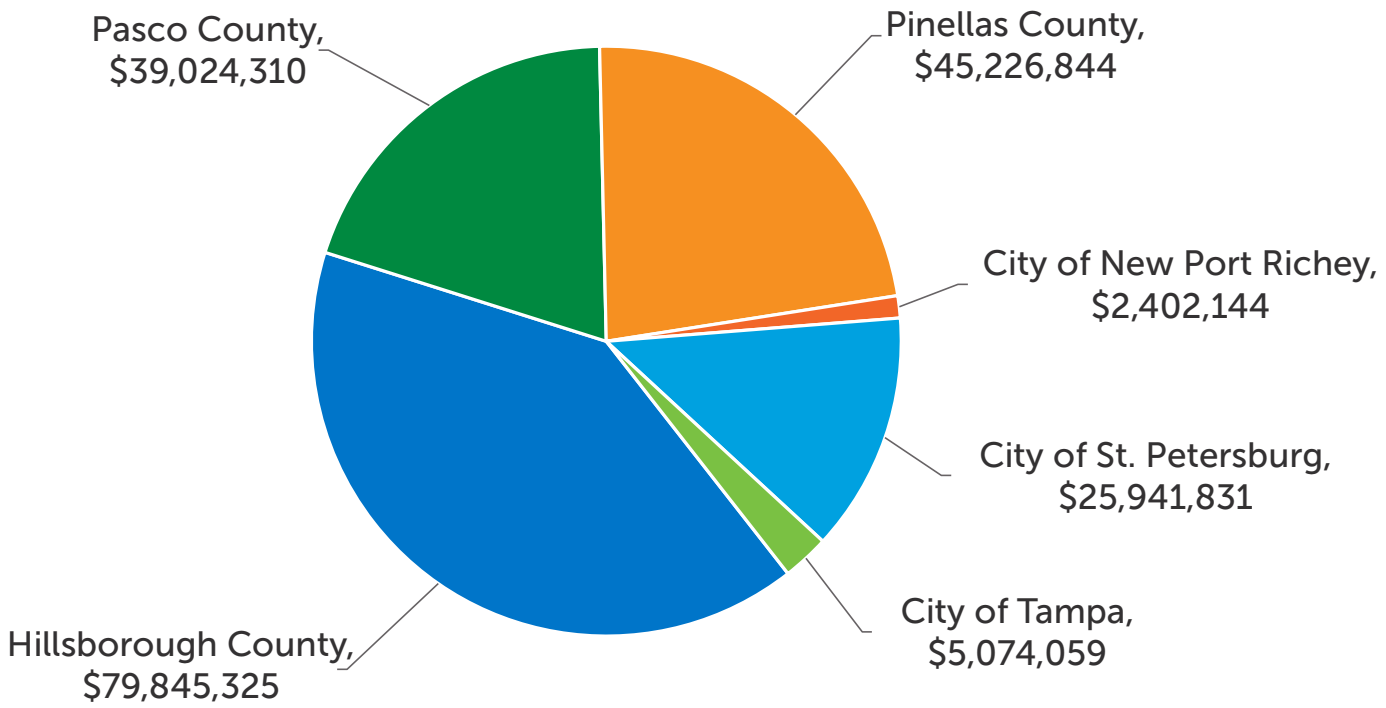
Debt Service Refundings

- Series 2024B/C Refunding Bonds
- Series 2025 Refunding Bonds
  - Annual debt service savings
  - Reduced volatility
  - Financial stability

Total Costs to Water Sales

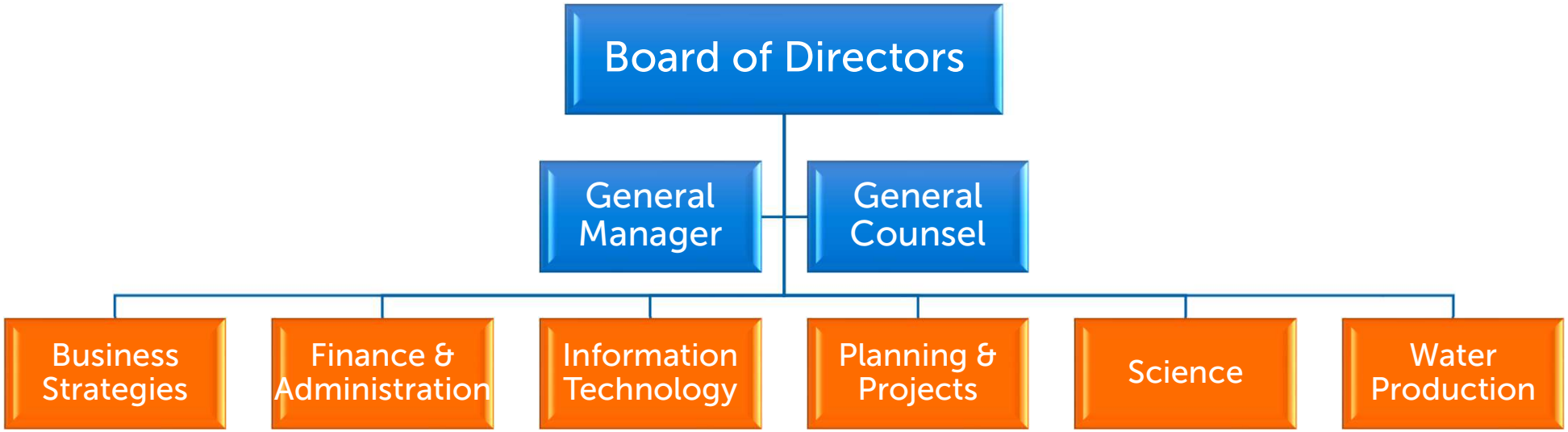
Total Costs	$223,809,140
Adjustments	
Estimated Unencumbered Funds From Prior Year	($6,059,335)
Interest Income	(5,415,737)
Revenues From Tampa Bypass Canal	(1,130,840)
Surcharges	($75,000)
Grant Revenue	($540,000)
Total Adjustments	($13,220,912)
Use of Reserves	
Rate Stabilization Account Transfer	($4,000,000)
Net Revenue Required (Water Sales)	$206,588,228

Estimated Net Member Costs - $197,514,512

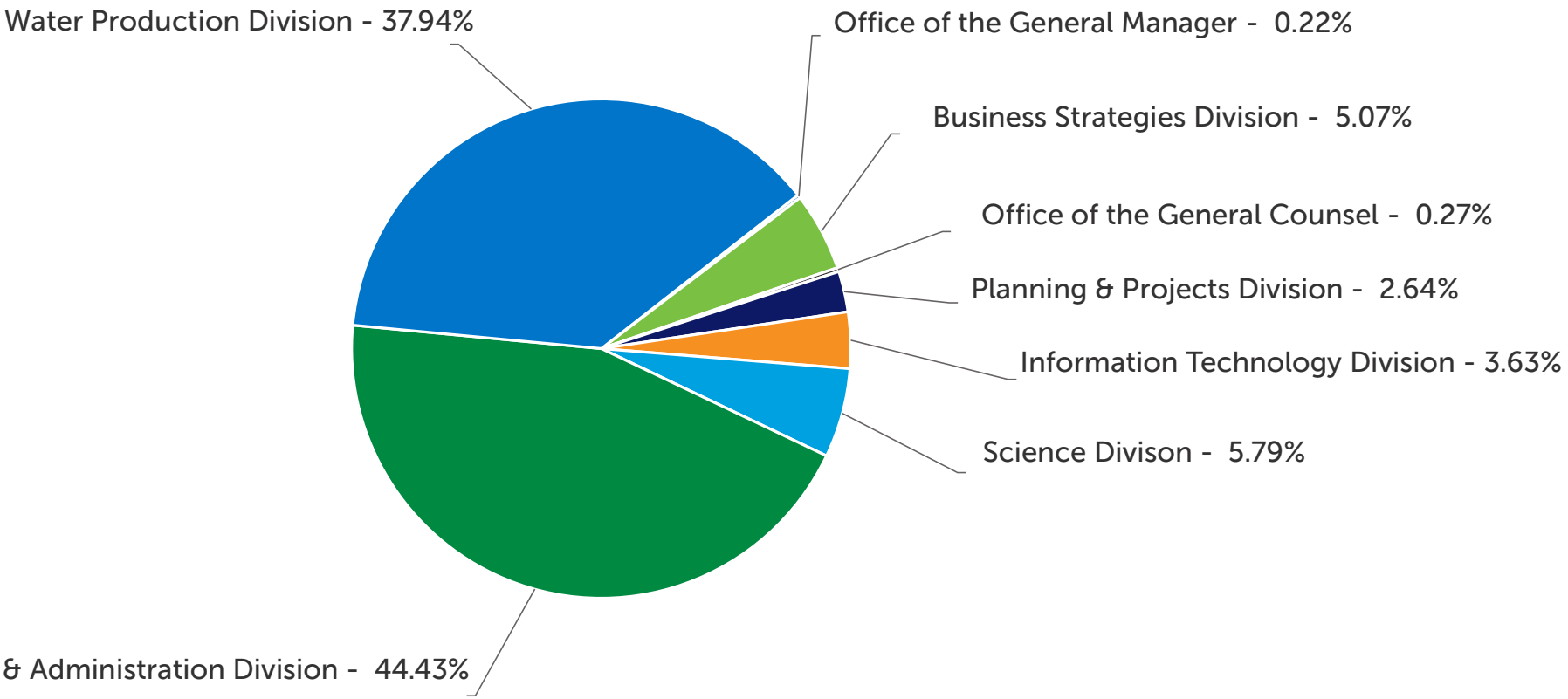


Divisional Information

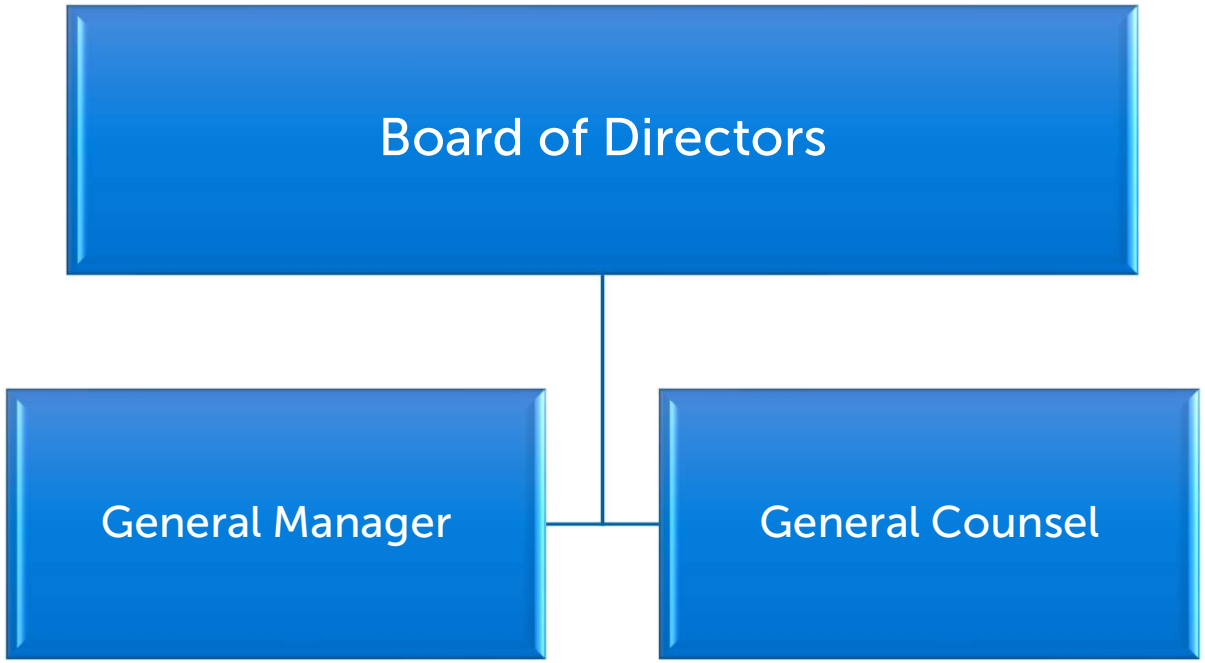
Agency Organizational Chart



Divisional Budgets



General Manager and General Counsel



General Manager and General Counsel

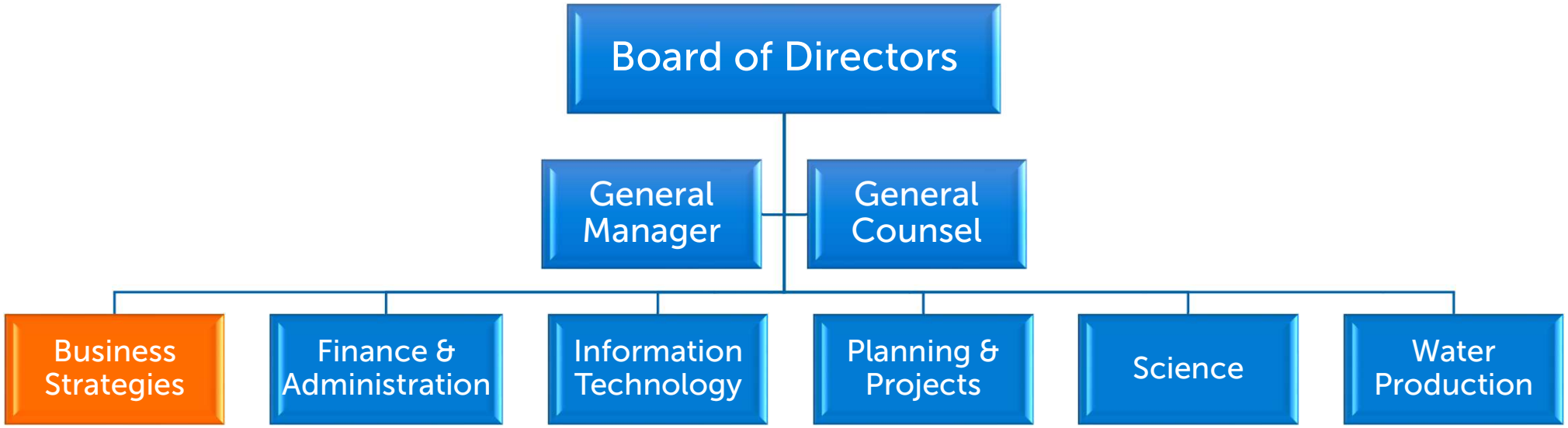
General Manager

- One employee
- Budget - $486,400

General Counsel

- Contracted services
- Budget - $600,000

Business Strategies Division



Business Strategies Division

- Chief of Staff/Chief Strategy Officer
  - Continuous Improvement
  - Government Affairs
  - Human Resources
  - Public Communications
  - Safety Services

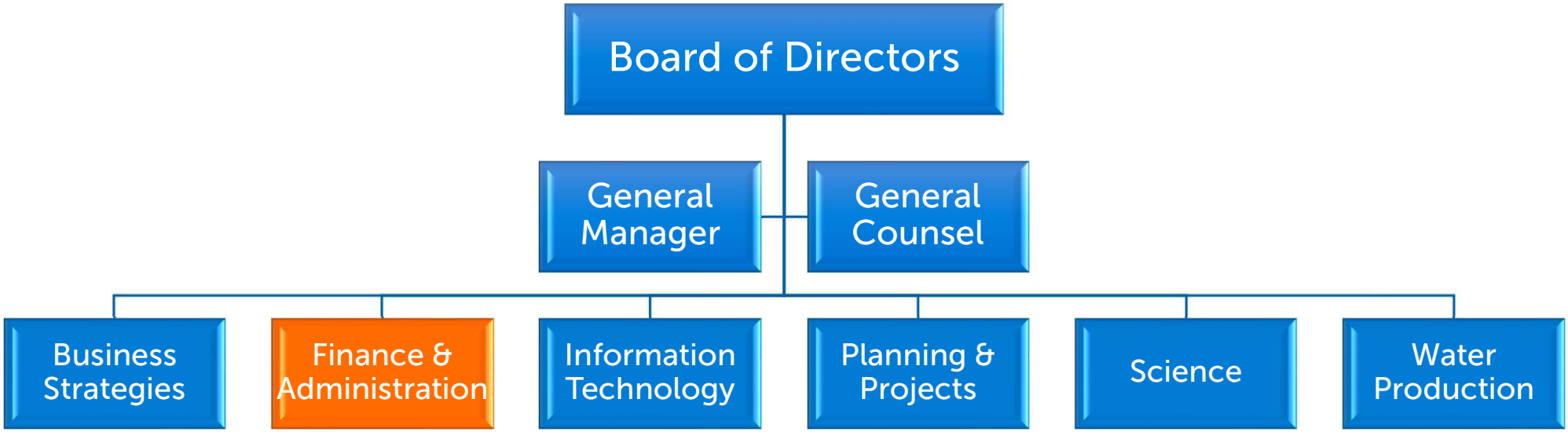
- 17 employees

Business Strategies Division Budget

Division Budget - $11,356,207

- Employee benefits
- Community, Media and Digital Outreach and Engagment
- Knowledge to Implementation (K2i)
- Facility security & Emergency management
- Agencywide staff training
- Legislative and Grant funding

Finance & Administration Division



Finance & Administration Division

- Chief Financial Officer
  - Finance
  - Purchasing/Warehouse
  - Administrative Services/Records

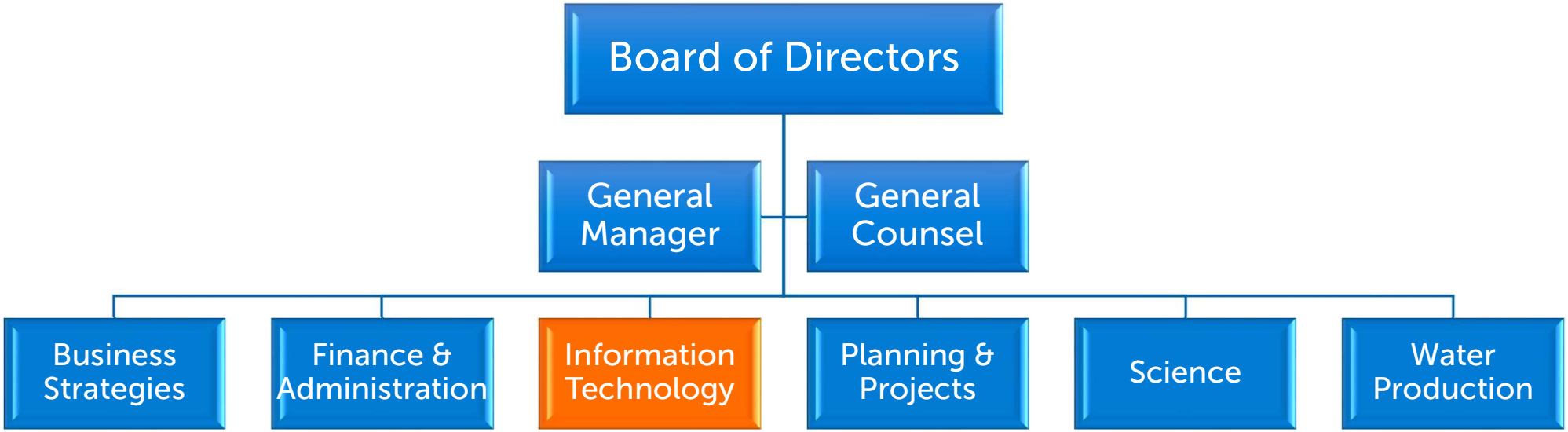
- 19 employees

Finance & Administration Division Budget

Division Budget - $99,432,179

- Debt service
- Investments
- Budget
- Financial reporting & compliance
- Strategic procurement
- Inventory
- Public records

Information Technology Division



Information Technology Division

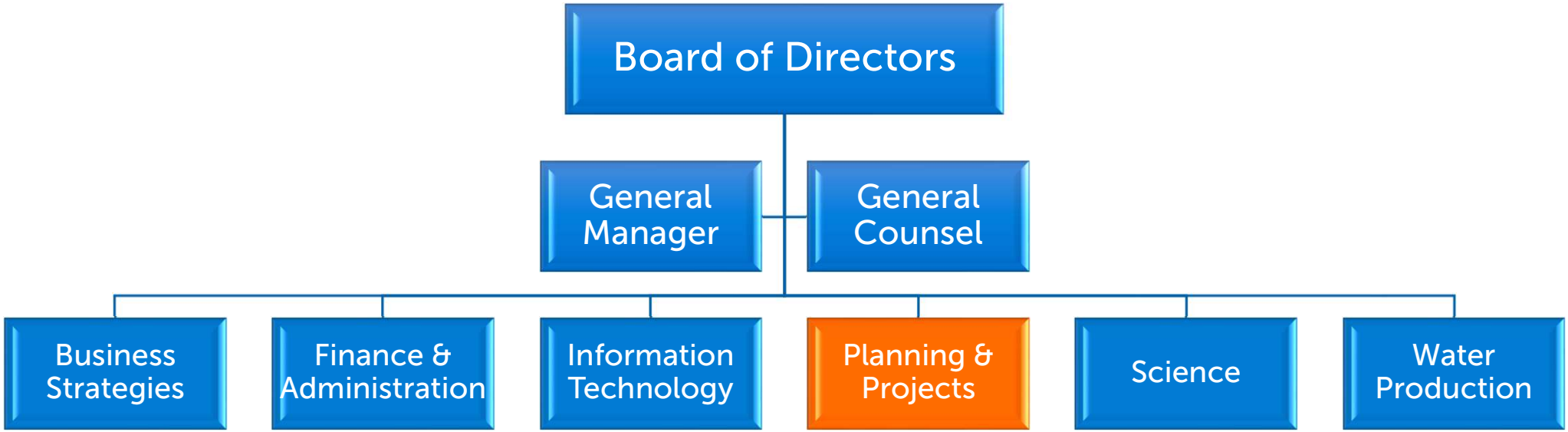
- Information Technology Director
  - Applications
  - Infrastructure & Security
    - Cybersecurity
  - SCADA
- 13 employees
- 1 requested employee
  - IT Network Engineer

Information Technology Division Budget

Division Budget - $8,132,800

- Applications support
- Technology infrastructure
- Data & voice communications
- Data management strategy
- Agency's cybersecurity program

Planning & Projects Division



Planning & Projects Division

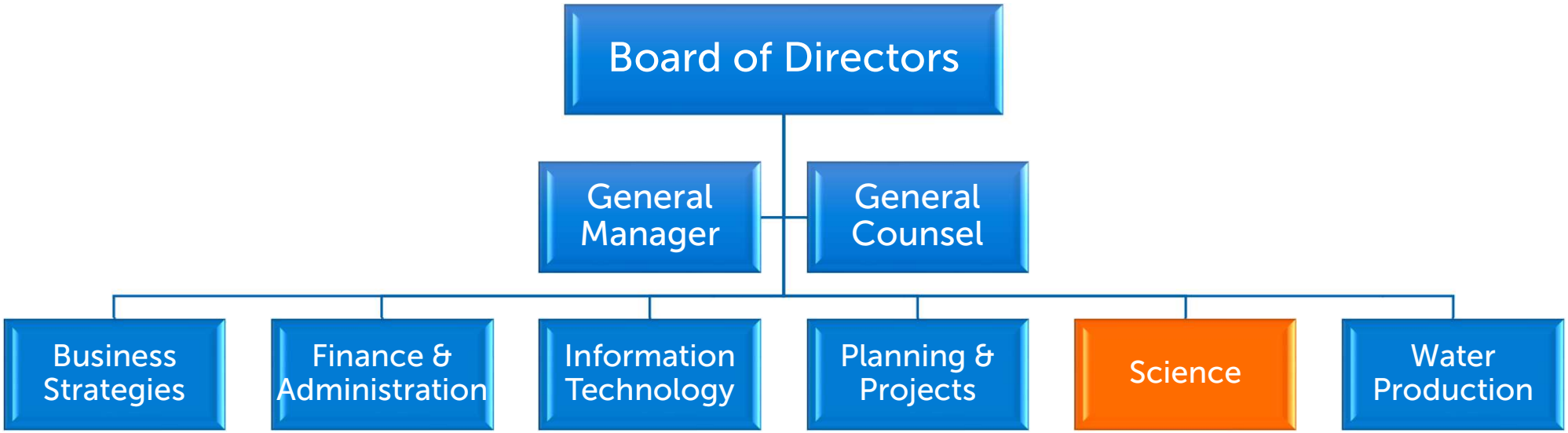
- Planning & Projects Director
  - Engineering
  - Surveying
  - Real Property
  - Construction
  - Project Management
- 21 employees

Planning & Projects Division Budget

Division Budget - $5,918,675

- Utility Conflict Program
- Cathodic Protection Program
- Electrical Safety Plans and Evaluations
- Surveying and CAD Record Drawing Services
- Capital Projects Delivery

Science Division



Science Division

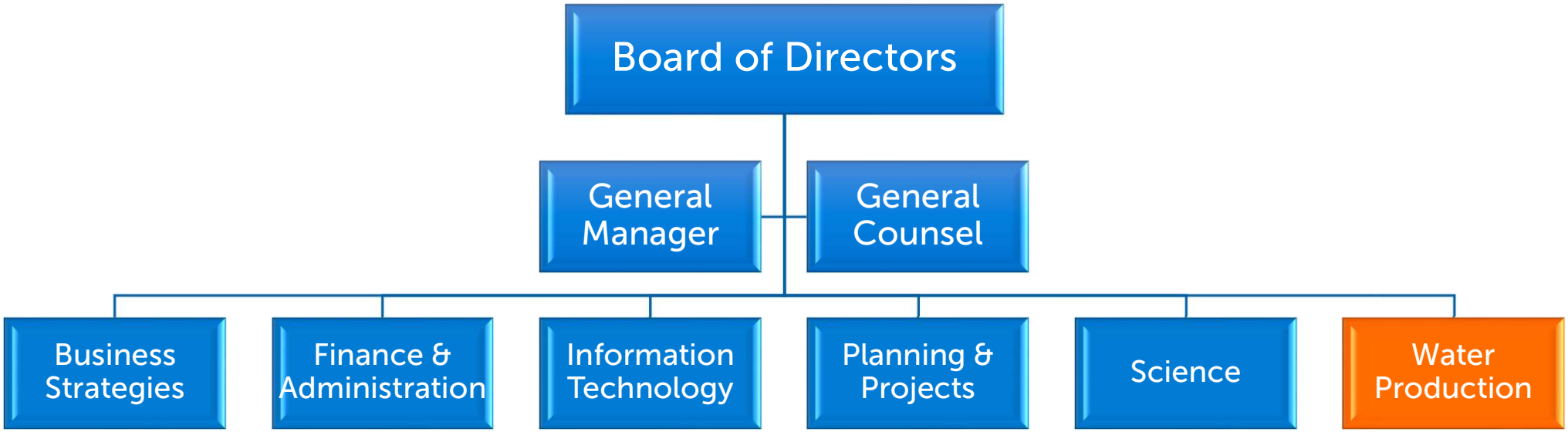
- Chief Science Officer
  - Water Use Permitting
  - System Decision Support
  - Water Quality
  - Source Water Assessment
  - Environmental Monitoring
  - Laboratory
- 31 employees

Science Division Budget

Division Budget - $12,963,669

- Tampa Bay Water Wise Program
- Long-term Master Water Plan Modeling Support
- Regional water quality treatment design support
- Permit compliance
- Water quality monitoring and testing

Water Production Division



Water Production Division

- Chief Operating Officer
  - Operations
  - Maintenance
  - Maintenance Planning & Reliability
  - Reservoir Compliance
  - Building, Grounds & Fleet
- 62 employees
- 3 requested employees
  - Mechanical Technician I
  - Mechanical Technician Trainee (2)

Water Production Division Budget

Division Budget - $84,919,210

- Regional System operation
- Water treatment chemicals & power
- Contracted operations & maintenance
- Asset management system
- Maintenance
- Reservoir

FY27-FY36 Capital Improvement Program

FY27-FY36 Capital Improvement Program Synopsis

- Comprehensive ten-year plan
  - On-going and planned projects
  - Strategic Plan
  - Long-term Master Water Plan
- Annual update
  - Schedules
  - Costs
  - Funding
  - Expenditures
- Total Projects – 91
- Total Costs - $1.697 billion

FY27-FY36 Capital Improvement Program Funding

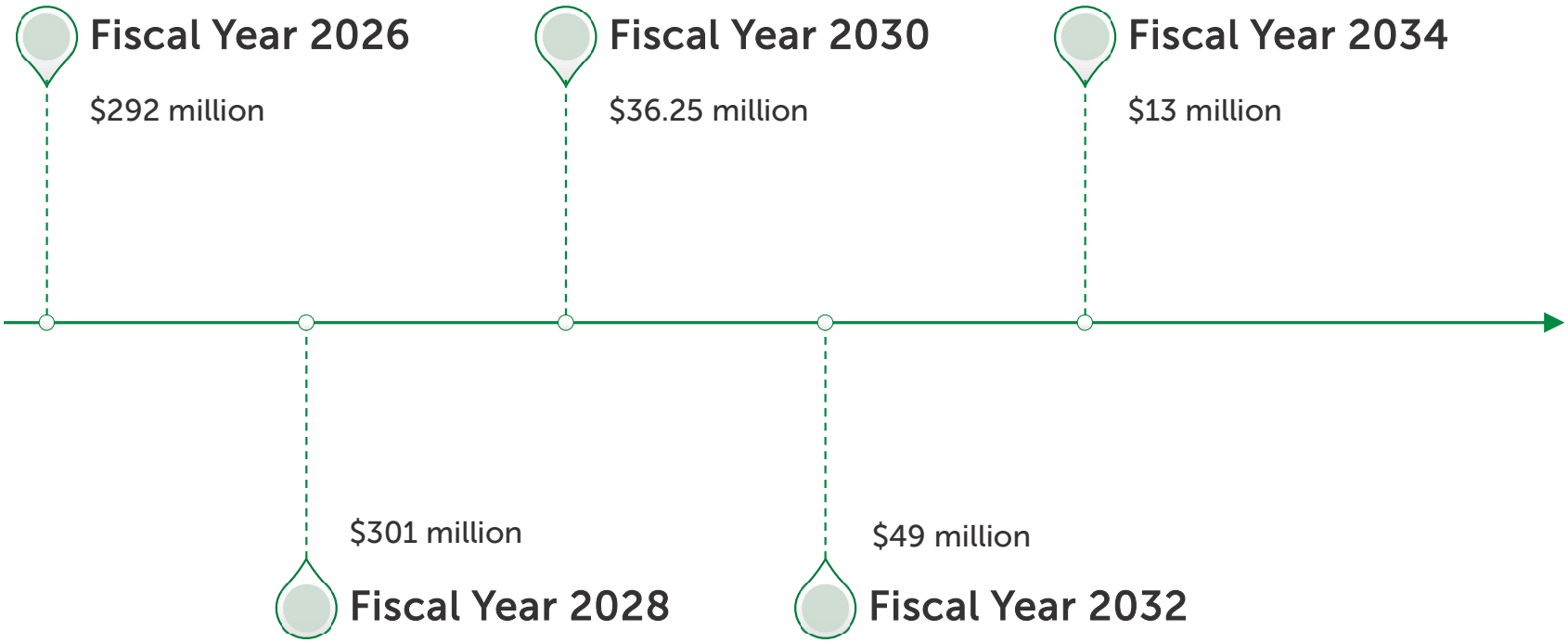
Total Project Costs	$	1.697	Billion
Costs already paid		(162.2)	Million
Projects total balance	$	1.534	Billion
Funding Sources			
District co-funding	$	144.4	Million
Member government funding		6.0	Million
Grant funding		57.0	Million
PFAS settlement fund		18.1	Million
Uniform rate		2.7	Million
Renewal & Replacement fund		3.2	Million
Capital Improvement fund		17.2	Million
Energy fund		5.4	Million
Released Debt Service fund		8.2	Million
Existing Revenue bond funds		506.0	Million
Future debt issuance		691.3	Million

Capital Improvement Program – Funding/Contracts

- Funding Needs
  - Project key stages (contracts) – Board approval
    - Funds on-hand
    - Future debt issuance

- New Debt Issuance
  - Annual debt service
  - Uniform rate
  - Timing

Estimated Future Funding

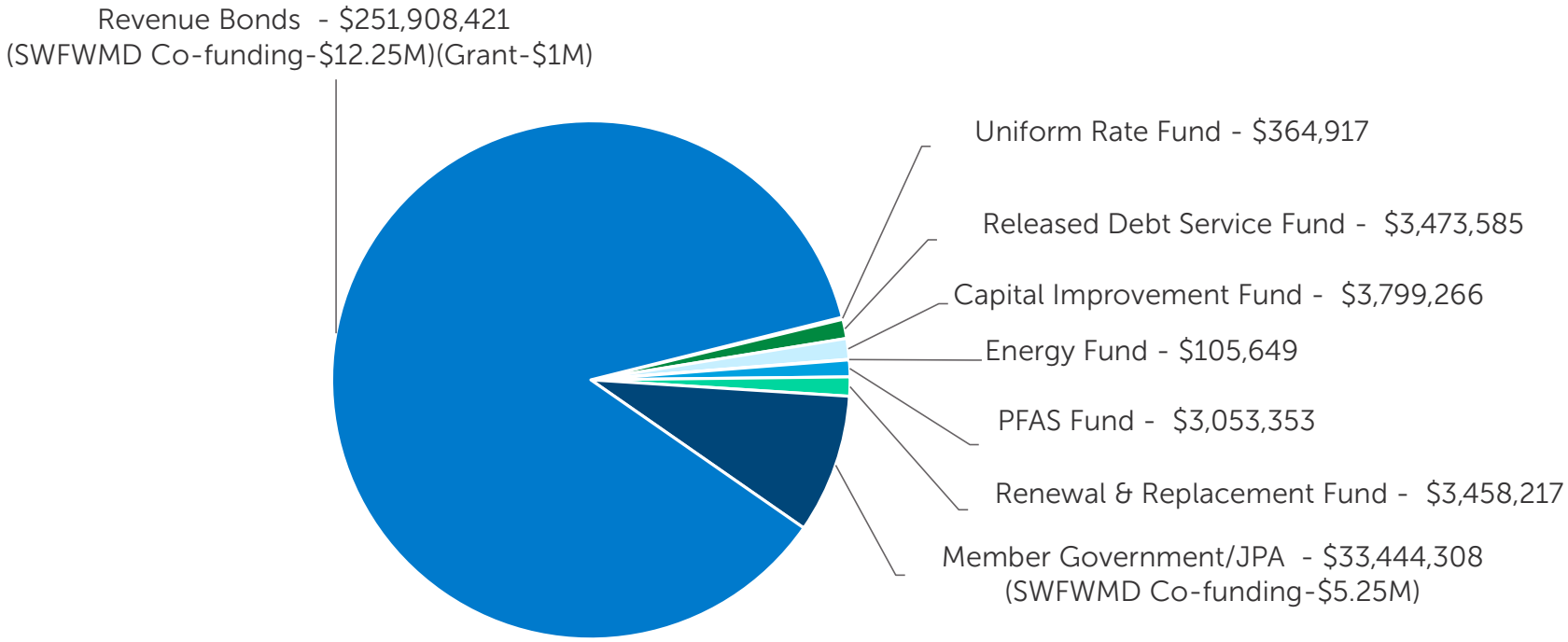


Upcoming Bond Issuance

- Debt issuance - $292 million
- Series 2016A Bond refunding
- Underwriting Team
  - Financing strategies
- Financial Team
  - Consulting Engineers Report
  - Preliminary Official Statement
  - Rating Agencies
  - Investor Outreach

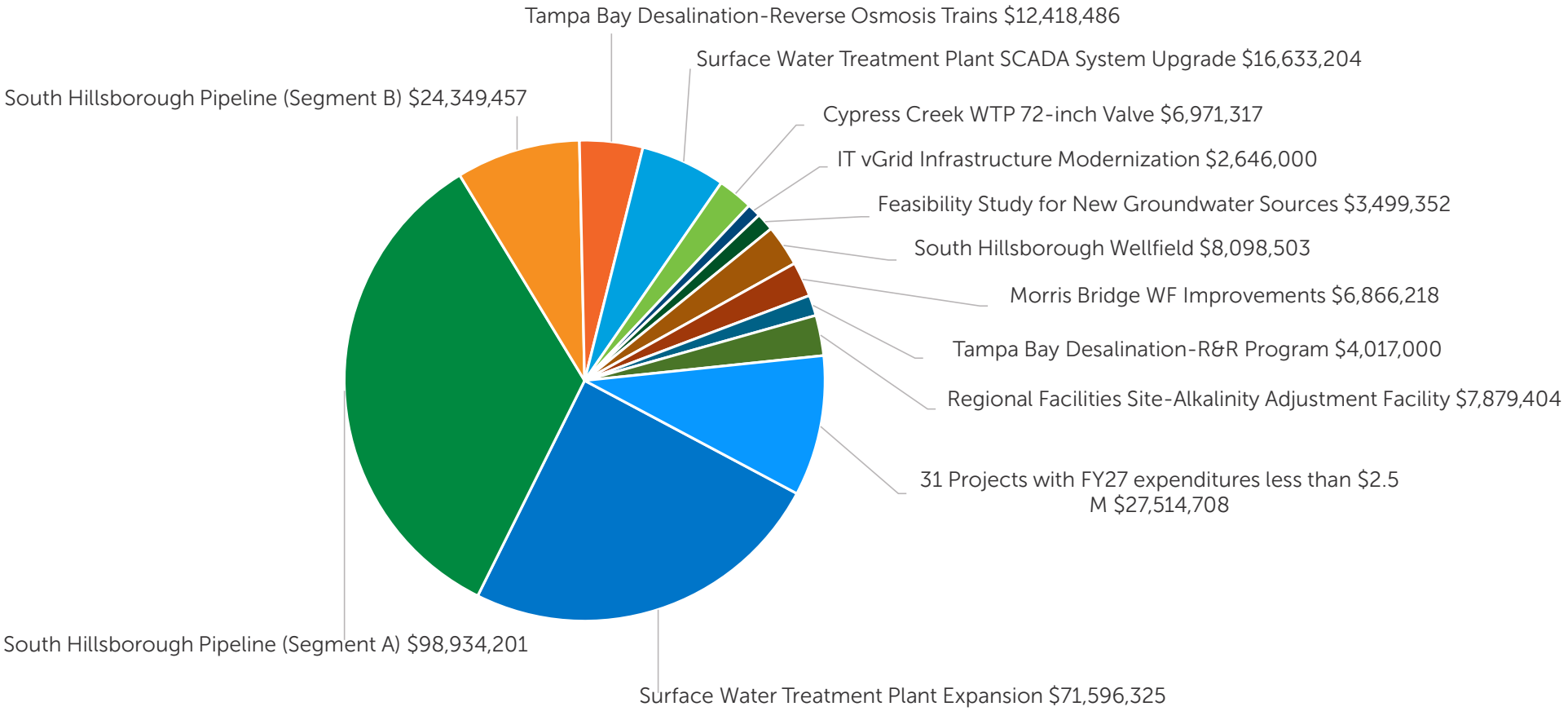
Capital Improvement Program
Fiscal Year 2027 Expenditures

Fiscal Year 2027 Capital Improvement Program Expenditures

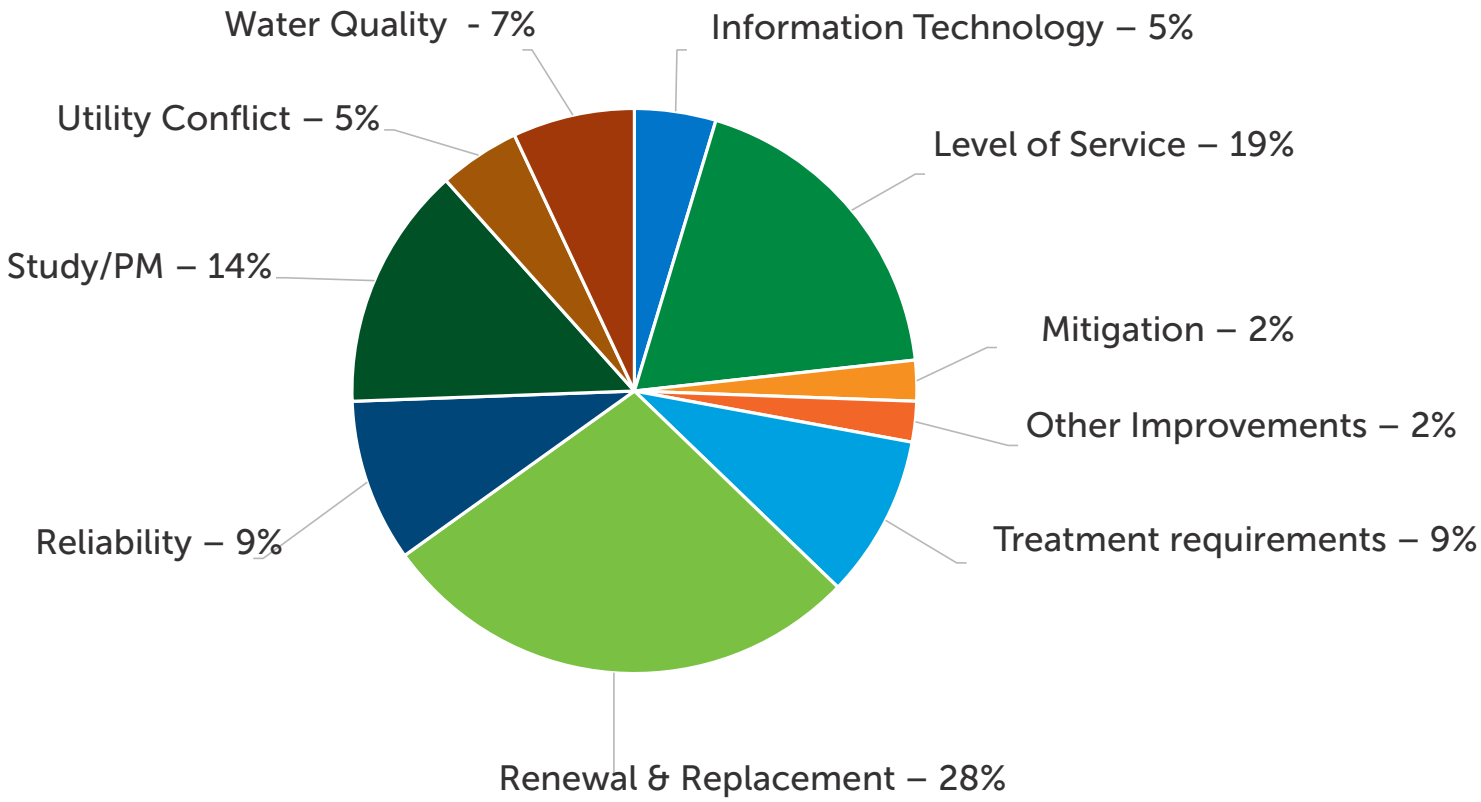


Total Fiscal Year 2027 - $291,424,776
(Grant/Co-funding - $20.1 Million)

Fiscal Year 2027 Active CIP Projects



Fiscal Year 2027 CIP Active Project Types



Fiscal Year 2027 Highlights

Uniform Rate per 1,000 gallons	**$2.6593**
Variable Rate per 1,000 gallons	$0.6217
Anticipated Demand	212.84 million gallons per day
Staffing	163 + 4 = 167
Budget Total Costs	$223.8 million
Rate Stabilization Use	$4 million
Water Sales – Net Revenue Required	$206.6 million
Capital Improvement Program Expenditures	**$291.4 million**

Budget Next Steps

May 18th Budget Public Hearing Requesting

- Approval of the Fiscal Year 2027 Operating Budget
- Approval of the Fiscal Year 2027 Capital Improvements Program Estimated Expenditures

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.1

DATE: April 6, 2026

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: February 23, 2026 - Regular Meeting - Draft Agenda Minutes - *Approve*

SUMMARY

On February 23, 2026, Tampa Bay Water's Board of Directors held its Regular Board Meeting. A quorum of the Board of Directors of Tampa Bay Water met in person at the Clearwater Administrative Offices.

SUGGESTED ACTION

Approve Minutes.

COST/FUNDING SOURCE

N/A

DISCUSSION

Draft minutes are attached for the Board's review and approval.

Attachment (1)

February 2026 Board Minutes DRAFT

Tampa Bay Water

Regular Meeting

February 23, 2026, Minutes

9:30 AM - CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

Present: Chairman – Commissioner Harry Cohen, Hillsborough County
Vice Chair – Council Member Lisset Hanewicz, City of St. Petersburg
Mayor Chopper Davis, City of New Port Richey
Commissioner Dave Eggers, Pinellas County
Commissioner Ron Oakley, Pasco County
Commissioner Kathleen Peters, Pinellas County
Commissioner Seth Weightman, Pasco County
Commissioner Joshua Wostal, Hillsborough County

Absent: Councilman Charlie Miranda, City of Tampa

Staff: Chuck Carden, General Manager

General Counsel: David Jackson, Deputy General Counsel

Presenters: Chuck Carden, General Manager
David Jackson, Deputy General Counsel
Brant Bartlett, Government Affairs Program Manager
Pete Dunbar, Jones Walker (via Zoom)
Matthew Blair, Corcoran Partners (via Zoom)
Mary Beth Nassif, Jones Walker (via Zoom)
Caitlin Humrickhouse, Baker Tilly Advisory Group
Isaac Bales, Baker Tilly Advisory Group (via Zoom)
Lisa Rhea, Director of Water Resources, Hillsborough County
Garret Marlowe, Mauldin & Jenkins
Steve Fleischacker, Water Quality Services Senior Manager
Warren Hogg, Chief Science Officer

DRAFT

Chairman Cohen called the meeting to order at 9:30 a.m. The meeting was properly noticed in the Florida Administrative Register and a quorum was present.

PUBLIC COMMENT - (3 Minutes per speaker)

Chairman Cohen opened the Regular Board meeting to public comment. The following speaker made public comment to the Board of Directors:

David Ballard Geddis, Jr

Public comment was duly recorded and is filed in the permanent records of Tampa Bay Water.

AGENDA

A) CONSENT ITEMS

A.1 January 26, 2026 - Regular Meeting - Draft Agenda Minutes
Approve Minutes.

A.2 Tampa Bay Water Performance Dashboard Update
Receive Report.

A.3 Regional Water Supplies, Member Demands and Environmental Conditions
Receive Report.

A.4 Tampa Bay Water Wise Program Update
Receive Status Report.

A.5 South Hillsborough County Program Update
Receive Status Report.

A.6 Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report
Receive Status Report.

A.7 Capital Improvements Program Executive Quarterly Report
Receive Fiscal Year 2026 First Quarter Capital Improvements Program Executive Report.

A.8 Capital Improvement Program - Task Order Authorization
Approve Task Orders.

A.9 Capital Improvement Program - Projects Closeout
Approve Project Closeout.

A.10 Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report
Receive Status Report.

A.11 South Hillsborough Pipeline, Projects 01610 and 01616 - Property Acquisition Status Report

Receive Status Report.

A.12 Land Exchange Agreement with Hillsborough County for property located along Regional Water Lane and Easements on the South Hillsborough Pipeline-Segment A, Project No. 01610
(1) Declare surplus a 2.6 acre vacant parcel located south of Columbus Drive and west of Regional Water Lane; (2) Approve the Land Exchange Agreement with Hillsborough County for a parcel located south of Columbus Drive and west of Regional Water Lane and nine (9) easements on the South Hillsborough Pipeline project; (3) Delegate authority to the General Manager to execute all parcels exchange to complete the transaction and actions required to comply with the terms of said agreements; and (4) allocate up to $20,000 toward due diligence, transaction and closing costs.

A.13 Real Property Donation Agreement with Pinellas County and Transfer of Augmentation Water Use Permit No. 20000345.006 from Pinellas County
Approve the Donation Agreement and delegate authority to the General Manager to execute any other documents needed to close this and related transactions, including acceptance of the Water Use Permit transfer which will occur after the closing of the parcel donation transaction.

A.14 Lease for Multi-Functional Copying and Printing Equipment
Approve 60-month lease with Ricoh USA, Inc.

A.15 Third Amendment to Contract No. 2022-008 for As-Needed Hydrogeological Services with Wise Consulting Group, LLC
Approve the Third Amendment to Contract No. 2022-008 with Wise Consulting Group, LLC to increase the not-to-exceed contract amount by $50,000.

A.16 As Needed Tree Trimming and Fence Line Maintenance Services, Award Contract Nos. 2026026, 2026027, 2026028, and 2026029 to the lowest, responsive, responsible bidders
Approve Contracts to the lowest responsive, responsible bidders, Paff Services LLC (2026026), Rick Richards, Inc (2026027), Wright Tree Service, Inc. (2026028), and Tucker Enterprise Services, Inc. (2026029), in an amount not to exceed annually budgeted funds.

A.17 Second Amendment to Liquid Oxygen Supply Services, Contract No. 2025-017 with Matheson Tri-Gas, Inc.
Approve Second Amendment to Contract No. 2025-017 with Matheson Tri-Gas, Inc. to increase the unit price.

A.18 Second Amendment to Contract No. 2022-029 for As-Needed Ecological Services with Verdantas LLC, formerly Flatwoods Consulting Group, Inc.
Approve the Second Amendment to Contract No. 2022-029 with Verdantas LLC to reflect a change in corporate ownership and exercise the second and final one-year contract renewal option.

A.19 Third Amendment to As-Needed Land Management Services Contract No. 2022-043 with Quest Ecology, Inc.

Approve the Third Amendment to Contract No. 2022-043 with Quest Ecology, Inc. to incorporate a revised rate schedule for the final contract year.

A.20 Local Road Resurfacing Contract No. 2026703 with Ajax Paving Industries of Florida, LLC
Approve Contract No. 2026703 with Ajax Paving Industries of Florida, LLC in a not to exceed value of $800,000.

A.21 Fence and Gate Installation and Repair Services Contract No. 2026038 with Cardinal Fence LLC
Approve Contract No. 2026038 to the lowest responsive, responsible bidder, Cardinal Fence LLC, in an amount not to exceed annually budgeted funds.

A.22 Contract Renewals
Approve contract renewals.

A.23 Fiscal Year 2025 Year-end Reporting of Encumbered and Unencumbered Funds Transfers
Receive Report.

A.24 Fiscal Year 2026 Summary Category Level Budget Transfer
Approve summary category level budget transfer.

A.25 Approval of Board Policies for Domestic Well Mitigation and the Ranch Operators Assistance Program
Approve Policies.

Motion: Mayor Davis moved to Approve Consent Items. Vice Chair Hanewicz seconded the motion.

Vote: The motion CARRIED by a vote of 8 - 0.

REGULAR AGENDA

B) GENERAL MANAGER & GENERAL COUNSEL

B.1 General Manager's Report
Receive Report.

Chuck Carden, General Manager, provided an update on monthly water supply, regional drought conditions, the Surface Water Treatment Plant Expansion groundbreaking and the 3-year pay and class study. He also presented information on upcoming public events including industry open houses and local outreach and education efforts with community partners and member governments.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

B.2 Legislative and Grant Funding Program Update
Receive Report.

Brant Bartlett, Government Affairs Program Manager, presented this item. Members of the agency legislative team including Pete Dunbar, legislative counsel from Jones Walker, Matthew Blair, state and grant funding consultant from Corcoran Partners, and Mary Beth Nassif, federal consultant from Jones Walker, provided updates on the current Florida and federal legislative sessions, legislation with implications to the agency, and 2026 appropriation requests.

The team fielded questions from board members regarding legislation on municipalities offering services outside their boundaries and property tax reform.

No Board action was required on this item.

B.3 2025 Performance Audit and Management Study Final Report
Receive Report.

Caitlin Humrickhouse and Isaac Bales from Baker Tilly Advisory Group presented an overview of the 2025 Performance Audit and Management Study Final Report and discussed future recommendations for the agency, including the areas of continuity and succession planning, shared service agreements, asset management and technology integration.

The consultants fielded questions from board members regarding technology, cost-savings, artificial intelligence, and knowledge retention. Board members also requested information on next steps and implementation and reporting on progress of the recommendations. The general manager responded that he was pleased with the report and that several of the recommendations were already in progress, and others would be included in the next strategic plan. Agency staff will make a presentation on a timeline for implementing the recommendations at a future board meeting.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

B.4 Request for an Attorney-Client Sessions between the Board of Directors and legal counsel pursuant to Section 286.011(8), F.S., pertaining to Polk Regional Water Cooperative v. Southwest Florida Water Management District and Tampa Bay Water (Florida Division of Administrative Hearings Case No.: 25-005480)
Approve request for Attorney-Client Sessions to be held on February 23, 2026, and April 20, 2026.

David Jackson, Deputy General Counsel, explained the reason for the two Attorney-Client sessions was to discuss settlement negotiations and/or strategy related to the litigation.

Motion: Commissioner Peters moved to Approve the request for Attorney-Client Sessions. Vice Chair Hanewicz seconded the motion.

Vote: The motion CARRIED by a vote of 8 - 0.

C) ACTION ITEMS

No items to report.

D) PRESENTATIONS & REPORTS

D.1 Member Government Report - Hillsborough County
Receive Presentation.

Lisa Rhea, Director of Water Resources for Hillsborough County, presented an overview on the county's water system, population and water demand growth in south Hillsborough, and community engagement and outreach conducted by department staff.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

D.2 Reports of Certified Public Accountants Regarding Financial Statements for the Year Ended September 30, 2025
Receive Report.

Garrett Marlowe, Senior Manager from Mauldin & Jenkins, provided a presentation on the annual audit of financial statements for the fiscal year ended September 30, 2025, and reported no adverse audit findings or current year recommendations. He fielded questions and comments regarding the uniform rate and the debt to capital asset ratio.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

D.3 Water Quality Update
Receive Presentation.

Steve Fleischaker, Water Quality Services Senior Manager, presented a review of the updated Regional Water Quality Study recommendations for Total Organic Carbon (TOC) and per- and polyfluoroalkyl substances (PFAS) reduction treatment and introduced cost estimates associated with implementation and compliance with evolving Environmental Protection Agency (EPA) limits.

The Board commented and asked questions regarding the vendors for TOC reduction, the cost of the projects and phases, and previous regulatory limits.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

D.4 Annual Demand Forecast Update and Evaluation
Receive Report.

Warren Hogg, Chief Science Officer, presented information on the annual demand forecast and its impacts on annual budget preparation, changes to the uniform rate, and long-range planning in the Master Water Plan. Population and demand continue to increase, particularly in new service areas in south Hillsborough County and east Pasco County. In response to a Board question, Mr. Hogg confirmed that the completion of the Surface Water Treatment Plant Expansion project is scheduled for 2028 and that the agency seeks to use existing resources to increase supply through new efficiencies and partnerships.

A full copy of the report can be found in the agency's Records Department.

No Board action was required on this item.

E) OTHER ADMINISTRATIVE MATTERS AND OLD BUSINESS

E.1 Election of Officers - Board Organizational Action
Elect a Chairman and Vice-Chairman to serve for a one-year term of office.

Chairman Cohen opened the nominations for the position of Chair of the Tampa Bay Water Board of Directors. Commissioner Oakley nominated Vice Chair Hanewicz as Chair. Cohen opened the nominations for Vice Chairman of Tampa Bay Water Board of Directors. Commissioner Oakley nominated Commissioner Weightman as Vice Chairman.

Following clarification on the traditional rotation of board leadership and length of services, the board voted.

Vote: Vice Chair Hanewicz was elected Chair by a vote of 8 - 0.

Vote: Commissioner Weightman was elected Vice Chairman by a vote of 8 - 0.

F) RECEIVE & FILE

F.1 Agency Division Activity Reports for January 2026
Receive and File.

F.2 Legal Services Activity Report for January 2026
Receive and File.

F.3 Legal Services Budget Report for January 2026
Receive and File.

F.4 Comprehensive Check List with Delegated Check Approval Items for January 2026
Receive and File.

F.5 Disposition of Fixed Assets for January 2026

Receive and File.

F.6 Financial Statements - January 2026
Receive and File.

F.7 Investment Schedules for January 2026
Receive and File.

F.8 True-Up of Fixed Costs between Member Governments through January 2026
Receive and File.

F.9 Vendor's Status Report for January 2026
Receive and File.

Motion: Commissioner Wostal moved to Approve Receive and File. Vice Chair Hanewicz seconded the motion.

Vote: The motion CARRIED by a vote of 8 - 0.

G) ATTORNEY-CLIENT SESSION

G.1 Attorney-Client Session between the Board of Directors and legal counsel pursuant to Section 286.011(8), F.S., pertaining to Polk Regional Water Cooperative v. Southwest Florida Water Management District and Tampa Bay Water (Florida Division of Administrative Hearings Case No.: 25-005480)
Action arising out of the briefing session may be taken by the Board upon reconvening the regular Board meeting.

The Board adjourned for the closed-door meeting at 11:36 a.m. and reconvened at 12:21 p.m. taking no further action.

ADJOURNMENT

The meeting was adjourned at 12:23 p.m.

Attest: _____
Charles H. Carden, General Manager/Secretary

Date: _____

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.2

DATE: April 8, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Shane Johnson, Continuous Improvement Director

SUBJECT: Tampa Bay Water Performance Dashboard Update - *Receive Report*

SUMMARY

Tampa Bay Water's performance dashboard measures key performance indicators against Tampa Bay Water's internal benchmarks and policies and the American Water Works Association's water utility industry benchmarks. The attached performance dashboard provides a snapshot of overall agency performance to the Board of Directors.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Tampa Bay Water staff updated the Board Performance Dashboard to measure key performance indicators identified in the strategic plan and established by agency staff. Regular reports on performance are provided to the Board of Directors with the agenda package. The Board Performance Dashboard has been updated to include metrics aligned with the updated strategic plan, and the most recent benchmarks from the 2024 American Water Works Association Utility Benchmarking Study. These metrics are intended to provide the Board of Directors with a snapshot of the Agency's current

performance.

BACKGROUND

Tampa Bay Water strives to continually improve and become more efficient in operating and maintaining the water supply system and planning for the region's future drinking water needs. In 2023, the Agency's Board of Directors approved the current strategic plan. The Agency assigned key performance indicators to the strategic plan goals for measuring against Tampa Bay Water's internal benchmarks and policies, and the American Water Works Association's water utility industry benchmarks using a performance dashboard. The dashboard uses key performance indicators created as part of the update to the strategic plan and established by agency staff.

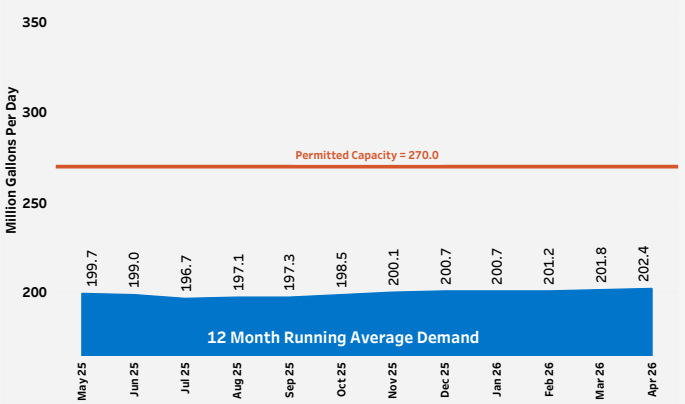
Attachment (1)

Tampa Bay Water Overall Performance Dashboard April, 2026

Tampa Bay Water Overall Performance Dashboard

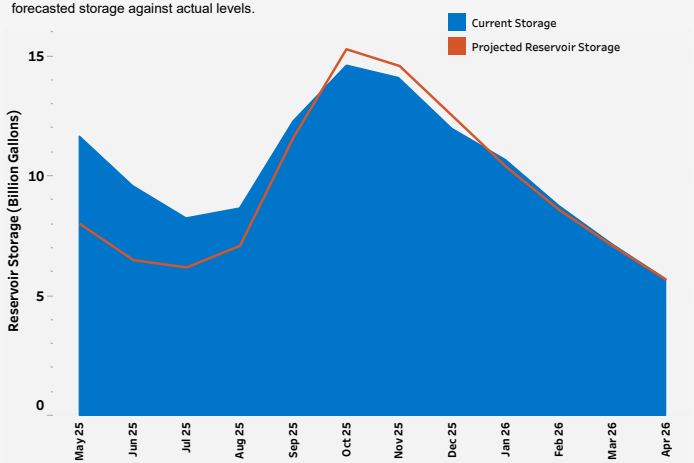
Available Capacity

This indicator shows how much water the utility is permitted to use and the 12 month running average demand. Average demand should not exceed permitted capacity.



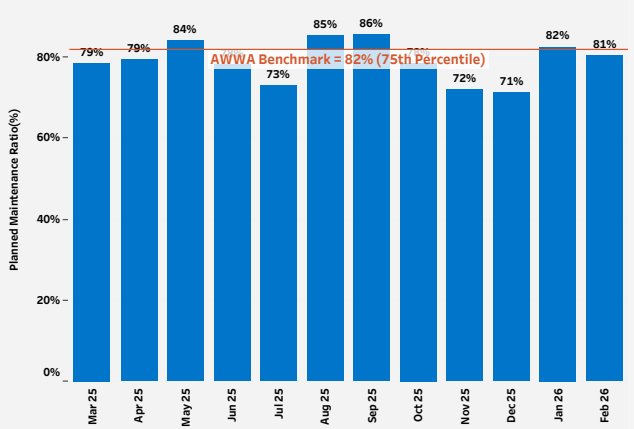
Meeting Projected Reservoir Storage Volume

This indicator provides a measure of the reliability of the utility's forecasted reservoir use by comparing forecasted storage against actual levels.



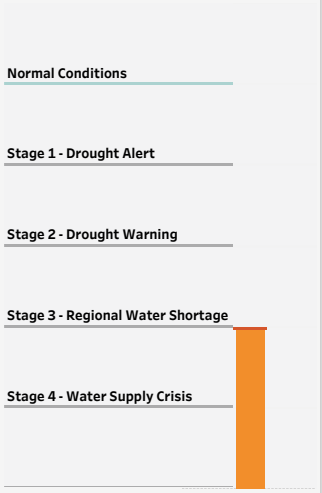
Planned Maintenance Time

This indicator provides a measure of the time spent on planned maintenance shown as a percent of total maintenance time. Utilities should strive to be above the AWWA 2024 benchmark.



Water Shortage Mitigation

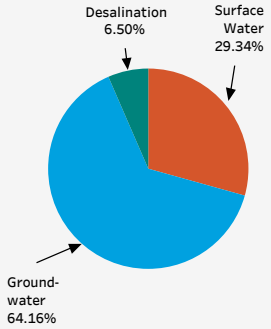
This chart highlights the current stage of Water Shortage Mitigation Plan of Tampa Bay Water.



Water Sources / Water Use Permits / Water Quality

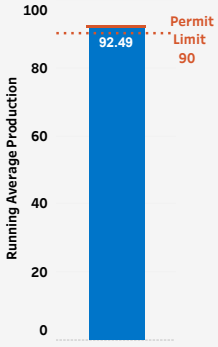
Total Production by Sources Fiscal Year To Date

This chart provides the percentage distribution of sources used to supply water.



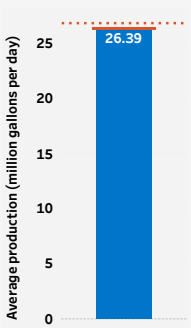
Consolidated Water Use Permit

This indicator provides the 12-month running average for groundwater pumping rate from 10 wellfields and corresponding permit limit.



South-Central Hillsborough Wellfield Permit

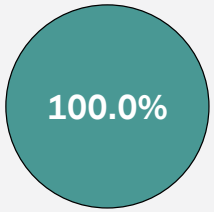
This indicator provides the 12-month running average for groundwater pumping rate from the South-Central Hillsborough Wellfield against its approved pumping limit.



Safe Drinking Water Act Compliance

This indicator quantifies the percentage of time each year that the utility meets all standards in the Safe Drinking Water Act National Primary Drinking Water Regulations averaged over the previous 12 months.

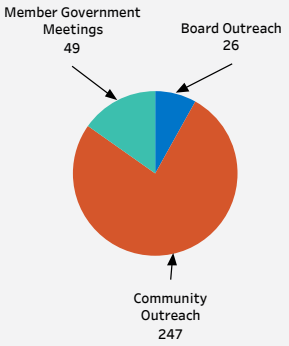
AWWA Benchmark: **100%**



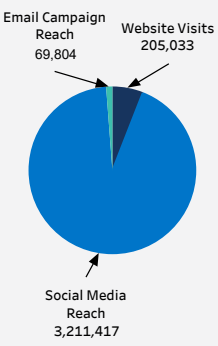
Stakeholder Outreach Fiscal Year To Date

These charts show stakeholder outreach activities of the agency by digital means and through other engagements.

Engagement and Outreach



Digital Reach

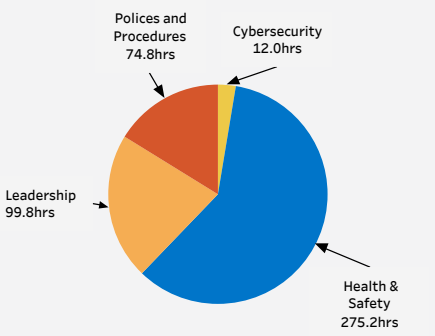


American Water Works Association (AWWA) benchmarks are based on results from participating utilities in the 2024 Utility Benchmarking Study. Participating utilities include retail entities with factors not relevant to wholesale utilities like Tampa Bay Water.

Tampa Bay Water Overall Performance Dashboard

Employee Training Fiscal Year To Date

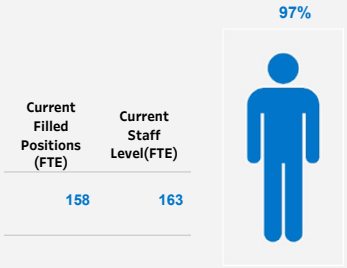
This chart shows the categories of training provided to Tampa Bay Water employees and the total number of hours of training for each category to date in Fiscal Year. (Source: NeoGov).



Optimized Staffing Levels

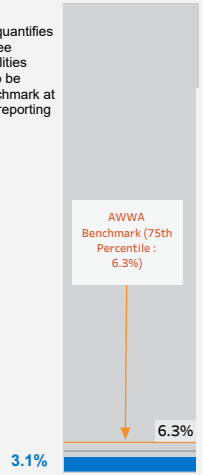
Current Filled Positions

This indicator provides a measure of filled, full-time positions shown as a percentage of total positions for the fiscal year to date.



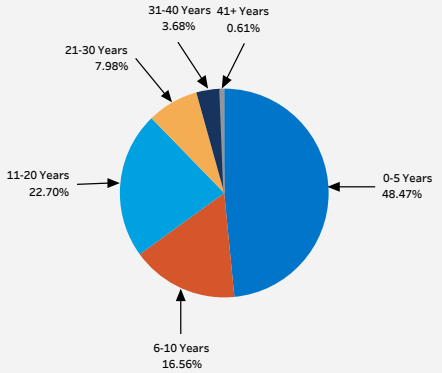
Employee Turnover For The Fiscal Year

This indicator quantifies rate of employee departures. Utilities should strive to be below the benchmark at the end of the reporting period.



Employee Experience Distribution

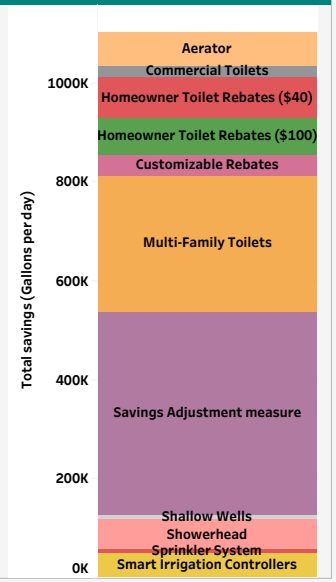
This chart shows relative distribution (percentage) of number of employees based on their total years of experience across all departments for fiscal year to date (Source: Munis).



Tampa Bay Water Wise Program Savings

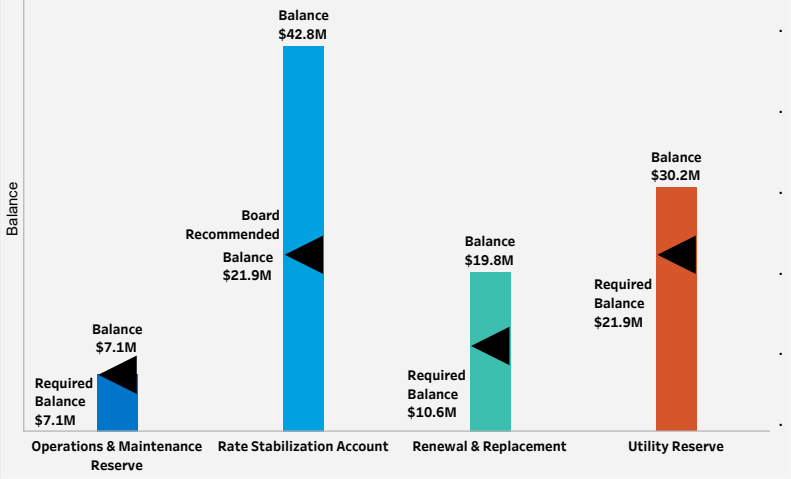
This chart shows the rebate program savings (gallons per day) for all programs since its inception on March 30, 2020.

(Source: Tampa Bay Water Wise Dashboard)



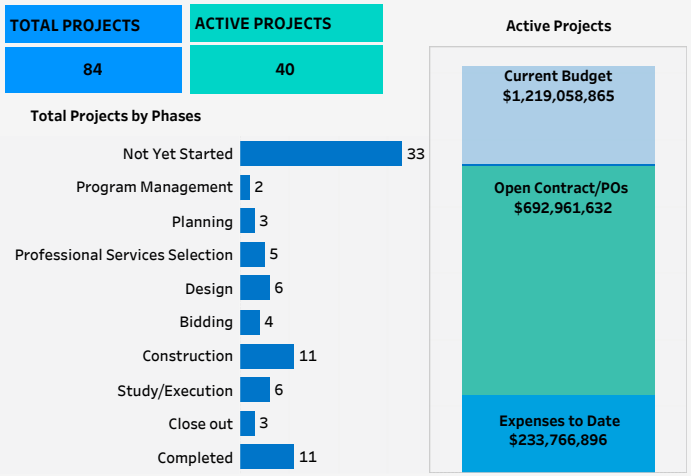
Reserve Funds Balance

This chart tracks the utility's total reserve fund balance across all types against its total contractual or policy based minimums (data is current as of March 2026).



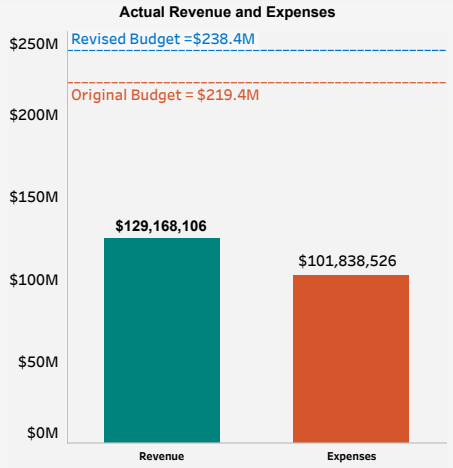
Capital Improvement Program

This chart shows the project details by phases for the current fiscal year and also presents current budget, open contracts, and actual expenses for the active projects (Source: Masterworks/Munis).



Operating Within Budgets As Forecasted

This indicator provides a measure of the utility's ability to operate within budget forecasts for Fiscal Year (data current as of March 2026).



American Water Works Association (AWWA) benchmarks are based on results from participating utilities in the 2024 Utility Benchmarking Study. Participating utilities include retail entities with factors not relevant to wholesale utilities like Tampa Bay Water.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.3

DATE: April 8, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Michelle Stom, Chief of Staff/Chief Strategy Officer

SUBJECT: Legislative and Grant Funding Program Update - *Receive Report*

SUMMARY

The Board approves legislative goals and priorities each year to guide the work of the agency's grant funding and legislative team. The team is operating under the 2026 Legislative Program Goals and Priorities approved by the Board at its October 2025 meeting. This item provides an update on state and federal legislation and state and federal appropriations requests.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Federal and state legislation can significantly impact the cost of water production and regulatory compliance. As Tampa Bay Water continues to prioritize efficient and cost-effective operations, providing input on potential legislation and regulations remains essential.

State Update

The legislative team continues to advance Tampa Bay Water's legislative and grant funding priorities through proactive engagement and coordination. The 2026 Legislative Session concluded on March 13, 2026. Lawmakers did not reach agreement on a final budget and concluded the 60-day session with a "sine die" adjournment, making special sessions necessary to resolve the stalemate. As the chambers continue negotiating overall spending levels, lawmakers are expected to return to Tallahassee in April to complete the budget, although a specific date for the budget session has not yet been announced. Tampa Bay Water's appropriations requests remain viable, with funding for SCADA improvements included in the House budget proposal and the Surface Water Treatment Plant expansion retained in the Senate budget proposal. The legislative team will continue advocating for these requests as budget negotiations resume.

Below are the projects submitted to the State Legislature for appropriation requests. Our sponsors in the House are Rep. Danny Alvarez and Rep. Randy Maggard, respectively. In the Senate, Sen. Danny Burgess is sponsoring both appropriation requests.

- **Regional Surface Water Resilience and Expansion Initiative**
  Requested amount: $2 million
  Project description: This project expands the Regional Surface Water Treatment Plant with a fifth treatment process train, identical to existing units, including advanced ozonation and granular activated carbon filtration. The expansion will increase the system's annual average yield by 10–12.5 million gallons per day, ensuring reliable supply for more than 2.6 million residents.
- **SCADA SecureOps: Modernizing & Securing Critical Technology Infrastructure**
  Requested amount: $1 million
  Project description: This project strengthens the resilience and security of the Supervisory Control and Data Acquisition (SCADA) system at the Regional Surface Water Treatment Plant by replacing its aging infrastructure. The modernization effort will replace outdated hardware and software with more robust, secure, and reliable technology to protect against cyber and operational threats.

These selections align with both the agency's strategic goals and previously secured funding commitments to ensure continued system reliability, operational efficiency, and capacity growth.

Federal Update

At the federal level, the team advanced Tampa Bay Water's goals and priorities, specifically tracking developments related to the Water Resources Development Act and federal community project funding requests. Tampa Bay Water, in conjunction with our consultants at Jones Walker LLP, submitted language under the Environmental Infrastructure section of the Water Resources Development Act to position the agency for additional project funding. The proposed language has been submitted as a request to members of the Tampa Bay Congressional Delegation to be included in the House and Senate Water Resources and Development Act (WRDA) 2026 bill.

In addition to the WRDA authorization, Tampa Bay Water has submitted federal Community Project Funding requests to support key regional water supply initiatives. Specifically, the agency is seeking $5 million for the Surface Water Treatment Plant Expansion to help advance additional treatment capacity and system resiliency improvements, and $5 million for the South Hillsborough Wellfield project to support development of new groundwater supply infrastructure and associated transmission components.

Regional Surface Water Resilience and Expansion Initiative
Requested amount: $5 million

Project description: This project expands the Regional Surface Water Treatment Plant with a fifth treatment process train, identical to existing units, including advanced ozonation and granular activated carbon filtration. The expansion will increase the system's annual average yield by 10–12.5 million gallons per day, ensuring reliable supply for more than 2.6 million residents.

South Hillsborough Water Initiative: Securing Reliable Supply for Growing Communities
Requested amount: $5 million

Project Description: This project will bring a new, reliable freshwater source to southern Hillsborough County by designing and constructing a modern groundwater wellfield and treatment plant. The project uses a sustainable approach through the South Hillsborough Aquifer Recharge Program (SHARP), that allow us to responsibly withdraw freshwater while protecting the aquifer.

These selections align with both the agency's strategic goals and previously secured funding commitments to ensure continued system reliability, operational efficiency, and capacity growth.

The legislative team has continued to make strong progress on its federal Community Project Funding requests. To date, the agency has successfully secured three congressional project sponsorships, reflecting continued positive momentum and strong delegation support for our priorities:

- Rep. Laurel Lee -$2.5 million for the Surface Water Treatment Plant Expansion
- Rep. Kathy Castor -$3 million for the South Hillsborough Wellfield
- Rep. Vern Buchanan -$3 million for the South Hillsborough Wellfield

While these requests must still advance through the congressional appropriations committee process, the current level of support is an encouraging step forward and we will continue working closely with congressional offices and stakeholders to help move these requests successfully through the remaining federal process.

BACKGROUND

The Tampa Bay Water Board created a unique water system that includes three diverse water sources. Tampa Bay Water's story is a model for other regional water systems. The agency continues to reach out to stakeholders such as the Florida Legislature and the Federal Congressional Delegation to provide

knowledge and assistance on water policy. Staff also provides input and assistance to state and regional officials and regulatory agencies by providing expertise on water supply policies, water management history and needs, and technical topics.

Attachments (3)

Jones Walker Session Final Report 3.13.26
Jones Walker Federal Report April 2026
2026 Corcoran Final Session Report

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Marc W. Dunbar
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MEMORANDUM

TO: Chuck Carden, Michelle Stom, Brant Bartlett, Kelly Fernandez, and David Jackson
Tampa Bay Water

FROM: Pete Dunbar, French Brown, Andres Malave and Marc Dunbar

DATE: March 13, 2026

RE: Initial 2026 Post Session Report

The initial post session report and the status of the legislation follows below. The report summarizes the measures that we have been tracking for Tampa Bay Water that have passed the Legislature. The report concludes with items of interest that did not pass in 2026.

The Governor has now taken final action on all measures, and the appropriate Session Law number follows the summary of the bill and it appears in **bold type**. The full texts of each enrolled bill, as well as applicable legislative staff reports, are available on the legislative web sites (www.flsenate.gov; www.myfloridahouse.com; and www.leg.state.fl.us.). A summary of each measure that passed appears below by category in numerical bill order.

cc: Marybeth Nassif
Paul Cambon
Matthew Blair

Initial 2026 POST SESSION REPORT

NUMERICAL INDEX SUMMARY OF 2026 LEGISLATIVE ISSUES

Pete Dunbar, Andres Malave and Marc Dunbar
Legislative Counsel

Water Related Legislation

PFAS Substances: CS/CS/HB 1019 by Representative Conerly will provide for the prohibition of the sale and distribution of aqueous film forming foam; require the submission of aqueous film forming foam inventories to DEP; and prohibit the use of aqueous film forming beginning on a specified date. **CS/CS/HB 1019 has passed the Legislature and is pending action by the Governor. (Chapter 2026-____, *Laws of Florida*.)**

Utility Services: CS/HB 1451 by Representative Busatta will require public meetings as a condition precedent to agreements where a municipality proposed to provide services to other municipalities or unincorporated areas. The legislation also limits the use of utility revenues for general governmental functions and requires annual reporting to the Public Service Commission. **CS/HB 1451 has passed the Legislature and is pending action by the Governor. (Chapter 2026-____, *Laws of Florida*.)**

Appropriation Requests

Resilience and Expansion Initiative: The $2 million appropriations request to expand the capacity of the TBW Surface Water Treatment Plant was timely filed by Representative Alvarez in the House and Senator Burgess in the Senate. The request remains pending in the appropriation process in both Houses.

SCADA Upgrade: The $1 million appropriations request for the upgrade and strengthening the resilience and security of the Supervisory Control and Data Acquisition system was timely filed by Representative Maggard in the House and Senator Burgess in the Senate. The request remains pending in the appropriation process in both Houses.

Other Legislation of Interest

Sovereign Immunity: HB 145 by Representative McFarland will raise the level of the waiver of sovereign immunity for governmental entities from 200,000 to $350,000 effective as of October 1, 2026. The legislation also provides that insurance policies maintained by a governmental entity may not be conditioned by the enactment of a claims bill. **HB 145 has passed the Legislature and is pending action by the Governor. (Chapter 2026-____, *Laws of Florida*.)**

Special District Funding: CS/HB 273 by Representative Johnson will limit how downtown development district boundaries can be modified; and it will provide a funding option for an independent special district that provides water and wastewater service with a rural area of opportunity as defined in s. 288.0656 (2) of the Florida Statutes. **CS/HB 273 has passed the Legislature and is pending action by the Governor. (Chapter 2026-____, *Laws of Florida*.)**

Approval of Data Center Facilities: CS/CS/SB 484 by Senator Avila will require information disclosures for applications for data centers, will place certain restrictions on pending applications, will prohibit WMDs from issuing permits for the consumptive use of water under certain circumstances, and will require the Department of Environmental Protection to adopt implementing rules. **CS/CS/SB 484 has passed the Legislature and is pending action by the Governor. (Chapter 2026-____, *Laws of Florida*.)**

Public/Private Meetings: CS/CS/HB 655 by Representative Duggan will permit the boards and commissions of a public agency to meet in private with counsel during a 90-day notice period specified in s. 70.001 (4) to discuss claims submitted by a property owner against the public agency. **CS/CS/HB 655 has passed the Legislature and is pending action by the Governor. (Chapter 2026-___, *Laws of Florida*.)**

Local Government Cybersecurity: CS/CS/HB 1085 by the Representative Miller will create the Local Government Cybersecurity Protection Program to assist eligible local governments in mitigating and defending against cybersecurity threats, including, but not limited to, ransomware incidents. **CS/CS/HB 1085 has passed the Legislature and is pending action by the Governor. (Chapter 2026-___, *Laws of Florida*.)**

OGSR/Cybersecurity and Technology Information: SB 7024 by the Senate Governmental Oversight and Accountability Committee will provide an exemption from public records requirements for cybersecurity, information technology, and operational technology information in the possession of an agency. **SB 7024 has passed the Legislature and is pending action by the Governor. (Chapter 2026-___, *Laws of Florida*.)**

Initiatives of Interest that Failed

Special Districts: HB 123 by Representative Overdorf is a comprehensive bill dealing with independent special districts. Among its provisions, the legislation provides a definition of "district lands or water areas"; limits liability when public access is provided by the district; and extends purchasing privileges to special districts under state purchasing contracts. HB 123 received 3 committee referrals. The bill has not been heard in committee and died when the Session concluded.

Employee Protections: CS/CS/SB 92 by Senator Gaetz and CS/HB 139 by Representative Maney are similar measures that prohibit certain actions against public employees for disclosing certain information to the Commission on Ethics. The legislation also requires specific conditions on the disclosures; it prohibits an agency from taking action against the employee disclosing information; and it provides protections for employees who submit the information. CS/SB 92

has been amended and passed by its committees of reference and is pending on the Senate Calendar. This measure died on the House Calendar when the Session concluded.

Special Districts: HB 123 by Representative Overdorf is a comprehensive bill dealing with independent special districts. Among its provisions, the legislation provides a definition of "district lands or water areas"; limits liability when public access is provided by the district; and extends purchasing privileges to special districts under state purchasing contracts. HB 123 received 3 committee referrals. The bill was not heard in committee and died when the Session concluded.

Utility Rates: HB 225 by Representative F. Robinson and SB 940 by Senator McClain are similar measures that will require a municipality to impose the same rates and charges on customers within its boundaries and boundaries of a recipient municipality and prohibit surcharging customers within a recipient municipality unless certain conditions have been met. HB 225 received 3 committee referrals. SB 940 received 3 committee referrals. Neither bill was heard in committee and this issue died when the Session concluded.

Carrying Weapons and Firearms: HB 321 by Representative Hunschofsky and SB 406 by Senator Polsky are companion measures that restrict a person's right to carry a weapon or firearm in specified locations, including at a meeting of the governing body of a special district. HB 321 received 2 committee referrals by the Speaker. SB 406 received 3 committee referrals by the President. Neither bill has been heard in committee and this issue died when the Session concluded.

Display of Flags by Governmental Entities: HB 347 by Representative Borrero and SB 426 by Senator Yarborough are companion measures that will prohibit governmental entities from erecting or displaying flags that represent a political viewpoint, including, but not limited to, a politically partisan, racial, sexual orientation or gender, or politically ideology viewpoint. It will also require a governmental entity that displays the United States flag to display that flag in a prominent position that is superior to any other flag that is also being displayed. HB 347 received 2 committee referrals by the Speaker. SB 426 received 3 committee referrals by the President. Neither bill has been heard in committee and this issue died when the Session concluded.

Special District Performance Measures: SB 378 by Senator Truenow and HB 6005 by Representative Greco are companion measures that will repeal s. 189.0694 that requires performance measures and standards by special districts. SB 378 received 3 committee references. HB 6005 received 2 committee references. Neither bill was in committee and this issue died when the Session concluded.

Legal Notices: CS/CS/SB 380 by Senator Trumbull and CS/CS/HB 1009 by Representative Griffitts are similar measures that will require the publication of certain legal notices and will authorize a governmental agency to use its own website or the website of the county to publish the required notices. CS/CS/SB 380 received 3 committee referrals and has been amended and passed by the first 2 committees of reference. CS/CS/HB 1009 was amended and passed

its committees of reference and was pending passage on the House Special Order Calendar. This measure died on the Calendar when the Session concluded.

Land and Water Management: CS/HB 479 by Representative Maggard and SB 718 by Senator McClain are related bills that will prohibit counties and municipalities from adopting laws and regulations relating to water quality or quantity, pollution control, discharge prevention or wetlands delineation; and it preempts such regulation exclusively to the state. CS/HB 479 received 3 committee referrals and has been amended and passed by its first committee of reference. SB 718 received 3 committee referrals but did not receive a hearing. This measure died when the Session concluded.

PFAS Substances: HB 855 by Representative Long and SB 1058 by Senator Berman are companion measures that will provide for the ratification of rules for the cleanup target levels for PFAS compounds and authorizes DEP to update statewide cleanup target levels. HB 855 received 4 committee referrals. SB 1058 received 3 committee referrals. Neither bill was heard in committee and this issue died when the Session concluded.

Advanced Wastewater Treatment: HB 1167 by Representative Cross and SB 1468 by Senator Berman are companion measures that will impose new reporting requirements on sewage disposal facility with a permitted capacity of 1 million gallons per day or more with the objective to eliminate the discharge of inadequately treated wastewater and aging sewage. SB 1468 received 3 committee referrals and has passed by its first committee of reference. HB 1167 received 3 committee referrals but did not receive a hearing. This measure died when the Session concluded.

****

JONES WALKER

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MEMORANDUM

TO: Chuck Carden, Michelle Stom, Brant Bartlett, Kelly Fernandez & David Jackson
Tampa Bay Water

FROM: Paul Cambon and Marybeth Nassif

DATE: April 7, 2026

RE: Updated Federal Governmental Affairs Reporting

Attached is the monthly report on legislation and related Federal governmental activities. The summary and tracking items include activities through the close of business on **April 4, 2026**.

Future reports will update the progress of pending activities, identified legislative measures, and will include new relevant matters and legislative filings. Changes and additions from the prior report under the "Federal Bills of Importance" will appear in **bold type**.

TAMPA BAY WATER FEDERAL STATUS REPORT

The matters involving Tampa Bay Water appear first in the summary, and the other legislative matters of interest follow.

Appropriations

The Department of Homeland Security (DHS) is currently facing a shutdown, which has impacted its operations and workforce. While essential services have continued with funding from the "One Big Beautiful Bill," many employees, including Transportation Security Administration (TSA) agents, have gone weeks without pay, resulting in significant disruptions at airport security checkpoints and prompting approximately 500 TSA agents to resign. The President through executive action restored pay for TSA workers and many have received back pay. However, discussions among lawmakers continue regarding full year funding for DHS. Congress has focused on the possibility of resolving the funding impasse through a reconciliation bill, which would allow lawmakers to approve necessary appropriations with a simple majority vote, bypassing the threat of filibuster. If adopted, this approach could quickly restore full funding to DHS and stabilize operations.

FY 2027 President's Budgets

On Friday, April 4, President Trump released the FY 2027 President's Budget Request for all federal agencies. These budgets outline the Administration's FY 2027 plan.

The FY 2027 President's Budget Request proposes an increase over current spending levels driven primarily by a significant expansion in defense and national security funding, while reducing base non-defense discretionary spending by roughly 10 percent ($73 billion). The request emphasizes discretionary funding and supplemental mandatory funding through reconciliation, rather than a full long-term fiscal framework. The most significant increases are concentrated in national defense, which rises to $1.5 trillion (a 42–44 percent increase over FY 2026); law enforcement and public safety, including a 13 percent increase for the Department of Justice; and transportation and infrastructure, with the Department of Transportation receiving a 6 percent increase, including targeted investments in aviation safety and infrastructure modernization.

The request includes deep reductions to the Clean Water and Drinking Water State Revolving Funds (SRFs), the primary federal tools supporting wastewater, drinking water, and stormwater infrastructure, proposing a combined SRF total of roughly $305 million, well below prior-year enacted levels. The Administration justifies these reductions by arguing that states should assume greater responsibility for funding water infrastructure and that prior investments under the Infrastructure Investment and Jobs Act reduced the need for ongoing federal support. While EPA's core drinking water regulatory and emergency response functions receive modest protection, including $122 million for drinking water programs, most capital-oriented assistance that directly supports local utility plant upgrades faces sharp proposed cuts.

Impact on local water utilities

- Substantial loss of federal capitalization grants for wastewater and drinking water projects, increasing pressure on ratepayers and municipal debt financing.

- Reduced flexibility for utilities to address Clean Water Act compliance, nutrient removal, PFAS treatment, and aging infrastructure needs.
- Heightened reliance on congressional appropriations outcomes, as Congress has historically rejected similar proposed cuts and restored SRF funding.

Department of the Interior (DOI)
The FY 2027 budget requests $15.9 billion for the Department of the Interior, a 12.9 percent decrease from FY 2026 enacted levels, with funding largely refocused on core resource management and energy priorities rather than new water grant programs. Within Interior, the Bureau of Reclamation, a critical federal partner for western municipal and regional water suppliers, would receive approximately $1.3 billion, including $1.1 billion for Water and Related Resources to support operations, maintenance, and selected infrastructure projects tied to existing federal water systems.

FY 2027 Community Project Funding and Congressionally Directed Spending:
In March, we submitted Community Project Funding (CPF) requests for the Surface Water Treatment Plant Expansion and South Hillsborough Wellfield, $5 million each, to Representatives Castor, Luna, Lee, Bilirakis, and Buchanan. Each Congressman/woman may put forward 20 CPFs. To date, we have heard back from Representatives Buchanan, Castor, and Lee. Representative Buchanan has agreed to submit a CPF for the South Hillsborough Wellfield project for $3 million and Representative Laura Lee has agreed to put forward a CPF for the Surface Well Expansion, and Representative Castor has put forward a $3 million CPF for the South Hillsborough Wellfield project. More details will be available in the upcoming months and we are waiting to hear back from the other offices.

Committee markups are earlier than expected beginning as early as April 17. The Interior bill that includes the CPFs won't be marked up until June 4. This is the anticipated date for the subcommittee markup, and dates often slip.

Florida Senators Rick Scott and Ashley Moody are not accepting FY 2027 congressionally directed spending requests.

WRDA – We submitted the Tampa Bay Water WRDA request for $100 million to the following Representatives: Castor, Luna, Lee, Bilirakis, and Buchanan. On the Senate side, the request went to Senators Rick Scott and Ashley Moody. We are waiting to see when the House and Senate will mark up the bill. The status remains the same: we have no real update. We continue to check in with Hill staff for any updates on the process, and we will continue to report to you all on any progress the Committee has made on this bill.

Recent Hearing or Items of Importance:

EPA eyes tracking microplastics, medicines in tap water. EPA has taken an initial, procedural step toward potentially regulating microplastics and pharmaceuticals in drinking water by adding them to a new draft Contaminant Candidate List under the Safe Drinking Water Act. The action, promoted by the Trump administration as aligned with the "Make America Healthy Again" agenda, does not impose

monitoring or treatment requirements on water utilities but signals future research and possible regulation. The draft list also includes certain PFAS, disinfectant byproducts, microbes, and various drugs (e.g., antidepressants, hormones, antibiotics). EPA officials emphasized the move is preliminary and intended to advance health risk research, following political pressure from MAHA activists and prior requests by Democratic governors for microplastics monitoring. For water suppliers, the immediate impact is limited, but the listing indicates growing federal scrutiny and a potential longer-term path toward standards affecting monitoring, treatment, and compliance costs.

Presidential Executive Order - March 13, 2026 / *Removing Regulatory Barriers to Affordable Home Construction*

The executive order directs federal agencies to reduce and streamline environmental, water, energy, and permitting regulations that affect housing construction, with the goal of lowering housing costs and accelerating residential development. It specifically targets stormwater, wetlands, water-quality, and infrastructure permitting requirements, while encouraging states and localities to limit fees, mandates, and reviews that could slow or increase the cost of new housing.

Stormwater and Water Quality Regulation

Relevant EO Section: **Section 2(a)**

The EO directs EPA and the Army Corps to reduce or streamline stormwater, wetlands, and water-quality rules tied to housing development. This could mean looser federal requirements for construction runoff, MS4 permits, and TMDLs, which may increase pollution entering local systems and shift more water-quality responsibility to utilities and states.

Permitting and Infrastructure Approvals

Relevant EO Sections: **Section 3(a) and Section 3(b)**

The EO pushes federal agencies to speed up environmental and historic reviews for infrastructure that supports housing, including water and sewer projects. Tampa Bay Water may be able to build or expand facilities faster, but with fewer federal reviews, they may face higher legal or community challenges if impacts are disputed.

Water Use and Conservation Standards

Relevant EO Section: **Section 2(c)**

The EO calls for reviewing and potentially eliminating federal water-efficiency requirements in housing. If efficiency standards are weakened, Tampa Bay Water could see higher water demand per household, requiring larger systems, higher operating costs, and updates to long-term supply and capacity planning.

Growth, Fees, and Cost Recovery

Relevant EO Sections: **Section 4(a) and Section 4(b)**

The EO encourages states and local governments to reduce fees, mandates, and permitting delays that increase housing costs. This could put pressure on Tampa Bay Water's connection fees, impact fees, and conditions placed on new development, making it harder for utilities to fully recover the cost of new infrastructure needed to serve growth.

Accelerated and Dispersed Development
Relevant EO Sections: **Section 4(a)(iv) and Section 5**

By promoting suburban and exurban housing and incentivizing construction in Opportunity Zones, the EO may drive faster and more spread-out development. Tampa Bay Water may need to extend water, sewer, and stormwater systems over larger areas, increasing capital and maintenance costs while facing tighter limits on regulatory controls.

Senate Energy and Natural Resources Subcommittee on Water and Power
March 17, 2026

Bipartisan leaders emphasized that reliable, affordable drinking water is a core economic and public-health necessity, with Western drought, low snowpack, and aging infrastructure driving urgency for federal action. Opening statements and agency testimony highlighted strong support for accelerating federal investment in regional and rural water supply systems, expanded recycling, reuse, conveyance, and conservation programs, and greater use of programmatic authorizations to shorten timelines and reduce administrative barriers for local and regional water suppliers.

The Bureau of Reclamation underscored WaterSMART, large-scale recycling, agricultural efficiency, and navigator programs as key tools to help communities access funding and build drought-resilient supplies, while multiple senators stressed protecting local utilities from unfunded mandates and shifting costly infrastructure responsibilities to the federal government. Hydropower permitting reform and watershed-scale, results-based funding were framed as complementary efforts to reduce costs and improve reliability, though PFAS was not directly addressed.

Overall, the hearing signals continued momentum toward faster approvals, expanded federal cost-sharing, and long-term resilience investments that directly benefit municipal, rural, and regional water providers.

Federal Bills of Importance:

Clean Water Standards for PFAS Act: HR 6668 and S 3457 was reintroduced on April 7, 2026 by Rep. Chris Pappas and Sen. Kirsten Gillibrand as part of a broader clean water agenda to establish effluent limitations guidelines and standards and water quality criteria for perfluoroalkyl and polyfluoroalkyl substances under the Federal Water Pollution Control Act, and for other purposes.

Drought Relief Obtained Using Government Help Today (DROUGHT) Act: HR 7845 was introduced on March 5, 2026, by Scott Peters with eight co-sponsors all from California. The DROUGHT Act expands federal support to help drought-stricken communities build and finance essential water infrastructure, improving access to safe, reliable water now and for the future. Introduced to help Western communities respond to severe drought, particularly impacts on the Colorado River system. The bill focuses on strengthening local water infrastructure and improving access to federal financing for drought-impacted and underserved areas by allowing qualifying projects to receive up to 90% federal assistance (up from 80%) while remaining eligible for low-interest WIFIA loans. This bill applies to projects in extreme drought areas, projects of regional or national significance, and those serving historically disadvantaged communities. It will not affect or change the loan repayment obligations, timelines, or interest rates. Currently, federal funding caps delay or limit critical water projects. This bill aims to speed construction of resilient, equitable water systems as climate change worsens drought conditions.

Data Center Transparency Act: HR 6984 – HR 6984 was introduced on January 8, 2026, by Rob Menendez (NJ-08). The bill requires the Environmental Protection Agency and the Energy Information Administration to regularly report on data center impacts, including water usage, water quality effects, greenhouse gas emissions, and electricity consumption by state.

Determination of NEPA Adequacy Streamlining Act: H.R. 6163 – HR 6163 was introduced on December 18, 2025 by David Valadao (CA-22). This bipartisan bill streamlines the approval process to advance essential water, transportation, energy, infrastructure, forest management, and flood-control projects by allowing federal agencies to use previously conducted Environmental Assessments or Environmental Impact Statements under the National Environmental Policy Act (NEPA) for the approval of projects with similar impacts. A portion of Congressman Valadao 's Determination of NEPA Adequacy Streamlining Act (H.R. 6163) was included in the SPEED Act.

NEPA is a procedural statute that establishes parameters for assessing and disclosing the environmental impact of all major federal actions. Originally intended to ensure an appropriate balance between protecting the environment and economic development, the NEPA process has become increasingly complex, resulting in massive NEPA documents approaching thousands of pages, drawn-out project timelines, and excessive litigation.

Special Districts: H.R. 2766 - Special District Fairness and Accessibility Act (2025) was introduced on April 9, 2025 by Pat Fallon (R-TX) and Brittany Pettersen (D-CO). The bill has 21 co-sponsors. The bill seeks to establish a first-ever formal definition of “special district” in federal law. The bill would direct the White House Office of Management and Budget to issue guidance to federal agencies requiring special districts to be recognized as local governments for purposes of ensuring that districts have access to all appropriate forms of federal financial assistance. The bill is identical to legislation that was overwhelmingly approved by the House of Representatives in the 118th congress. **ACTION: March 18, 2026, Ordered to be Reported (Amended) by the Yeas and Nays: 32-8.**

Special Districts: S.2014 - Special District Fairness and Accessibility Act (2025) was introduced on June 10, 2025 by John Cornyn (R-TX). The bill has three cosponsors.

PERMIT Act: HR 3898 – Promoting Efficient Review for Modern Infrastructure Today Act or the PERMIT Act was introduced by Mike Collins (R-GA) with others on June 11, 2025. HR 3989 was placed on the Rules calendar for **December 9, 2025, and passed on a roll call vote 221-205 and sent to the Senate. Seven amendments passed and H. Amdt.128 codifies the dredge and fill permitting programs administered by the States of Florida, Michigan, and New Jersey and clarifies the law so that other states may successfully navigate the process to assume this authority.** The bill limits the scope of the Clean Water Act by redefining *navigable waters* to exclude (1) waste treatment systems, (2) ephemeral features that flow only in direct response to precipitation, (3) prior converted cropland, (4) groundwater, or (5) any other features determined to be excluded by the U.S. Army Corps of Engineers.

Clean Water and Threat Preparedness: HR 2344 – Water ISAC Threat Protection Act was introduced March 25, 2025 by Janice Schakowsky (D-IL). The bill establishes a program / grant funding to help drinking water and wastewater systems (utilities) improve threat preparedness and resilience (including cyber / physical threats) for water infrastructure. There has been no further action since the bill was introduced.

The Futureproofing Local Operations for Water Systems (FLOWS) Act of 2026: S.3967 This Act establishes a new EPA-administered grant program to help small, rural drinking water and wastewater systems modernize through digital infrastructure technologies, including real-time monitoring, leak detection, SCADA, AI-enabled optimization, digital modeling, and cybersecurity tools. The bill prioritizes community-owned systems serving fewer than 3,300 people and allows grant funds to cover both acquisition and ongoing maintenance of software, as well as workforce training and cyber risk mitigation. Authorized at $50 million annually for FY 2027–2031, the program is designed to reduce water loss, improve operational efficiency and resilience, lower long-term project costs, and support affordability in rural communities, while preserving all existing federal and state regulatory requirements.

Water Project Navigators Act: S. 3792 This Bill would establish a new Water Project Navigators Program within the Department of the Interior (Bureau of Reclamation) to help States, Tribes, water suppliers, local governments, and nonprofits—particularly those serving disadvantaged, rural, and Tribal communities—develop and implement multi-benefit water projects. The bill authorizes grants and cooperative agreements to fund dedicated “navigator” positions that provide hands-on capacity support such as grant writing, project management, technical and engineering assistance, and early environmental review, with the goal of accelerating projects that improve water supply reliability, drought and climate resilience, water quality, ecosystem health, and community economic outcomes. Awards would generally cover up to 75% of costs (with waiver authority for hardship communities), run for up to three years with possible extensions, prohibit funding for existing compliance obligations, and require coordination with other federal programs. The legislation authorizes $15 million annually for FY2027–FY2032 and directs Interior to report to Congress on program outcomes, including reductions in water supply–demand imbalances and benefits delivered to underserved communities.

The More Water Act: S.3738 This Act amends the Infrastructure Investment and Jobs Act to significantly expand federal support for water supply reliability in Reclamation States by reauthorizing and scaling large-scale water recycling and reuse programs, establishing a new Water Conveyance Improvement

Program, and increasing funding for environmental restoration. The bill authorizes $450 million (FY2028–2032) for large-scale recycling and reuse projects, $500 million for water conveyance improvements, and $550 million for additional recycling and reuse projects, with enhanced federal cost-share flexibility (up to 50%) and strong emphasis on multi-benefit projects that deliver safe drinking water to low-income communities and measurable environmental benefits. It prioritizes infrastructure that improves operational flexibility, drought resilience, and water delivery efficiency, while expanding eligibility for states, Tribes, municipalities, and water districts. The legislation also updates cost caps, funds habitat and endangered species restoration linked to Reclamation operations and creates a structured process to deauthorize long-inactive Reclamation projects to offset new spending—collectively positioning the bill as a major Western water infrastructure and resilience package.

Weather Research and Forecasting Innovation Reauthorization Act of 2026: S.3923 – Senator Ted Cruz introduced S. 3923 on February 25, 2026 to improve the weather research of the National Oceanic and Atmospheric Administration, support improvements in weather forecasting and prediction, and expand commercial opportunities for the provision of weather data. Of note is Section 402 hazardous weather or water event risk communication which addresses identifying, eliminating, or modifying unnecessary, redundant, or confusing terms for hazardous weather and water event communications and add new terminology, as appropriate.

PFAS: S.4153 - Forever Chemical Regulation and Accountability Act of 2026. On March 19, 2026, Rep. Betty McCollum and Sen. Dick Durbin reintroduced the Forever Chemical Regulation and Accountability Act (H.R. 8016 / S. 4153), a comprehensive PFAS bill aimed at eliminating non-essential PFAS uses across the U.S. supply chain. The legislation would launch a National Academies (NASEM) study to assess PFAS risks and define "essential vs. non-essential" uses, require all PFAS manufacturers and users to disclose PFAS use and submit 10-year phase-out plans, and direct EPA to prohibit releases of PFAS and phase out non-essential production within a decade. It sets product-specific deadlines (e.g., rugs, furniture, children's products), establishes regional PFAS rapid-response hubs, funds EPA oversight through fees, and strengthens accountability by limiting bankruptcy shields for PFAS claims. The bill also amends CERCLA to toll state statutes of limitations for newly designated hazardous substances like PFAS. Companion versions were previously introduced in April 2024.

PFAS: H.R. 6686 - Clean Water Standards for PFAS Act of 2025 was introduced by Rep. Pappas (D-NH) along with Brian Fitzpatric (R-PA) on December 12, 2025 and was referred to the Committee on Transportation and Infrastructure. The bill establishes effluent limitations guidelines and standards and water quality criteria for perfluoroalkyl and polyfluoroalkyl substances under the Federal Water Pollution Control Act, and for other purposes. Note that the requirement is no later than three years after enactment of the Act.

PFAS: H.R. 6626 - PFAS Accountability Act of 2025 was introduced by Rep. Madeleine Dean (E- PA) along with co-sponsors: Reps. Dingell, Nadler and Tlaib) on December 11, 2025. The bill is to amend the Toxic Substances Control Act to codify a Federal cause of action and a type of remedy available for individuals significantly exposed to per- and polyfluoroalkyl substances, to encourage research and

accountability for irresponsible discharge of those substances, and for other purposes. The bill was referred to the Committee on Energy and commerce and the committee on Judiciary.

PFAS: H.R. 1267 - Water Systems PFAS Liability Protection Act (2025) was introduced by Marie Gluesnkamp Perez (D- WA) but with heavy Republican co-sponsorship (including Rep. Celeste Maloy, Rep. Darin LaHood, Rep. Neal Dunn, Rep. Brian Fitzpatrick, among others) on February 12, 2023. The bill seeks to limit CERCLA (Superfund) liability for certain water entities handling PFAS (important for utilities managing PFAS pass-through) to shield community water systems from CERCLA liability for contamination caused by upstream sources. There has been no further action since the bill was introduced.

PFAS National Drinking Water: H.R. 4168 - PFAS National Drinking Water Standard Act of 2025 was introduced by Brian Fitzpatick (R-PA) on June 26, 2025, with eight co-sponsors. The bill codifies national PFAS drinking-water standards in statute, potentially locking key elements of the rule and timelines. There has been no further action since the bill was introduced.

PFAS and SDWA: H.R. 4880 - Primacy Certainty Act of 2025 was introduced by Dan Crenshaw (R-TX) on August 5, 2025. The bill amends the Safe Drinking Water Act (SDWA) to impose strict timelines on EPA for deciding whether to approve or deny a state Underground Injection Control (UIC) program for Class VI wells (CO_2 sequestration). While not PFAS-specific, it directly amends SDWA and affects how underground injection, which can impact groundwater and drinking water sources, is regulated. It is a key Republican water-infrastructure / SDWA bill in this Congress, often discussed alongside broader "permitting reform" debates that also affect water projects. The bill was referred to the House Committee on Energy and Commerce.

PFAS and SDWA: S. 2505 - Primacy Certainty Act of 2025 was introduced Dan Sullivan (R-AK) on July 29, 2025 and is the companion bill of HR 4880. The bill was read twice and referred to the Committee on Environment and Public Works.

Clean Water SRF: H.R. 3902 - Clean Water State Revolving Fund (SRF) Parity Act of 2025 was introduced by Jimmy Patrons (R-FL) on June 13, 2025. The bill proposes additional CWA permitting changes. There has been no further action since the bill was introduced.

Clean Water SRF:H.R 3862 - Clean Water SRF Parity Act of 2025 was introduced by Mike Bost (R-IL) on June 10, 2025. The bill aims to change how the federal government and states share responsibility under the Federal Water Pollution Control Act (often called the Clean Water Act), particularly Section 404 (which deals with permits for dredge or fill activities in waters). It shifts more permitting responsibility toward states and aims to make it faster and less burdensome for states to get approval to run their Section 404 programs. The bill has been referred to the House Committee on Transportation & Infrastructure and its Subcommittee on Water Resources & Environment.

Cybersecurity: H.R. 5079 - Widespread Information Management for the Welfare of Infrastructure and Government Act was introduced by Mike Garbarino (R-NY) on September 3, 2025. The bill reauthorizes the 2015 Cybersecurity Information Sharing Act for 10 years, keeps liability protections for private entities

sharing threat intel with the federal government, adds oversight/AI language, and requires the Department of Homeland Security outreach to small/rural critical infrastructure owners (which includes water utilities). The bill was referred to the House Committees on Homeland Security, Oversight & Government Reform, Intelligence (Permanent Select), Energy & Commerce, Armed Services, and Judiciary.

Cybersecurity: H.R. 2594 - Water Risk and Resilience Organization was introduced by Eric Crawford (R-AR) on April 2, 2025. The bill aims to set up a new organization and regulatory framework focused on boosting the cybersecurity and resilience of large water systems. A key element is that the bill creates a Water Risk and Resilience Organization to develop cybersecurity risk and resilience requirements for those covered water systems. The bill was referred to the House Committee on Transportation & Infrastructure and also to the Committee on Energy & Commerce.

In addition to the above we are tracking updates to the Water Resources and Development Act, Clean Water Act, and Safe Drinking Water Act.

2026 Florida Legislative

SESSION REPORT



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EXECUTIVE SUMMARY

On January 13, the legislature gaveled in for the 60-day legislative session, with each house moving quickly out of the gate to pass some of their top priorities. The Senate President's Rural Renaissance package and a bill to repair the troubled school voucher system were sent to the House in the first week. At the same time, the House sent the Senate measures to lower the age limit to buy a gun from 21 to 18 and expand wrongful death actions to include unborn children. By session midpoint, however, neither chamber had moved the other's priority bills.

This stalemate left key policy issues -- including property tax reform -- in limbo as the session moved into the final stretch. After the Governor announced in January that a special session would be held on April 20-24 to address Congressional Redistricting, he suggested that another special session could be needed on property taxes if the legislature did not address the issue during the regular session. While the House had been developing its proposals since it formed a Select Committee last year to study the issue, no concrete plan emerged from the Senate or Governor as the session drew to a close.

The stasis deepened as it became apparent that the budget would be delayed over a standoff between the chambers. It began with the question of who would release its budget first. The House, which "hosted" the budget this year, eventually put forward its bill at the end of Week 5, leading to the immediate release of the Senate budget and each chamber's approval of their respective proposals at the end of the following week. Along with the House budget, the lower chamber sent the Senate a bill proposing a constitutional amendment to gradually eliminate the non-school portion of homestead property taxes over 10 years.

As a result of ongoing concerns about out-year spending that had reached record highs in the aftermath of the COVID-19 pandemic, legislators reigned in discretionary spending for a second consecutive year to avoid a budget shortfall over the next two-to-three years. The House proposed a $113.6 billion budget while the Senate passed a $115 billion spending plan, a $1.4 billion difference. Both budgets were below the $115.1 billion lawmakers allotted for the current fiscal year and lower than the $117.35 billion the Governor had called for in his proposed budget for FY 2026-27.

By the end of Week 8, however, lawmakers had yet to begin formal budget conference negotiations. House leadership acknowledged a fundamental disagreement about overall spending, with the House pushing for a smaller budget and the Senate supporting higher funding levels. While negotiations over how much to allocate to each budget silo continued, the budget impasse made it inevitable that the budget would not be completed on time.

On the eve of the final day of session, chamber leaders announced that the legislature would adjourn the regular session on March 13 and return to Tallahassee in mid-April for a Special Session to finish negotiations on the spending plan, although no date for the budget special session has yet been announced. In addition to the budget, Senate leadership announced that property tax relief will also be addressed during the budget special session.

EXECUTIVE SUMMARY (CONTINUED)

Entering the final week, only 53 bills had passed both chambers. A flurry of legislation passed in the final days of the session, with the legislature ultimately clearing 237 measures of 1,926 filed (32 bills fewer than the 269 bills passed last session and almost 100 bills shy of the 325 bills passed in 2024) before adjourning in the afternoon of March 13.

Major legislation that did not make it across the finish line included bills proposing to: lower the gun-buying age; overhaul the school voucher system; expand the use of the E-Verify employee verification system to all businesses regardless of size; eliminate Florida's no-fault motor vehicle insurance law; allow parents to file wrongful death lawsuits over the loss of an unborn child and assert a conscience-based objection to school vaccination requirements; establish a bill of rights for human interactions with artificial intelligence; and provide a "rural renaissance" through funding and support to rural communities. Some of these issues may be revived during the budget special session.

The following provides an overview of the budget and tax package as they stood at the end of the regular session on March 13, as well as some of the major bills passed by both chambers during this legislative session.

MAJOR BILLS

FY 2026-2027 BUDGET

HB 5001 – General Appropriations Act
SB 2500 – Appropriations

The House and Senate General Appropriations Act (GAA) and related implementing and conforming bills remained unresolved by the end of the regular session on March 13. With the chambers continuing to negotiate top-line spending levels, lawmakers are expected to return to Tallahassee in April to finalize the budget. Major differences between the two chambers in the education silo include whether $4.5 billion in private school scholarship costs should be included in the public-school funding formula, and whether to accept the Senate's plan include a 3% across-the-board raise for state employees with additional increases for law enforcement and other public safety workers or the House's more targeted pay raises and changes to the state employee health plan to address a projected $362 million shortfall. On the environment, the Senate has proposed $35 million for the Florida Forever land conservation initiative, while the House provides no funding and instead allocates $300 million to the Rural and Family Lands Protection Program. The House and Senate also differ on funding for disaster preparedness and immigration enforcement, with the Senate proposing $250 million and the House $100 million with tighter oversight. Similarly, the Senate has allocated more than $510 million for affordable housing programs, including funding for the Hometown Heroes Housing Program and the State Housing Initiatives Partnership Program, while the House proposes significantly less. In addition, the Senate includes $50 million for the Florida Job Growth Grant Fund which the House does not fund, and the Senate proposes $204.5 million to support the citrus industry compared with just $4 million in the House plan.

APPROPRIATIONS BREAKDOWN

HOUSE BREAKDOWN

	Count	% of Projects Reaching Stage		Funds	% of Funds Reaching Stage
# of Projects Requested	2,846		Funds Requested	$6,363,110,267	
# of Projects In HB 5001	1565	54.99%	Funds Requested In HB5001	$1,422,815,275	22.36%
# of Indeterminate Projects	24	0.84%	Indeterminate Projects (Requested Funds)	$43,585,667	0.68%
# of Projects In Conference Report	0	0.00%	Funds Requested In Conference Report	$0	0.00%
# of Projects Vetoed	0	0.00%	Total $ Requested Vetoed	$0	0.00%

SENATE BREAKDOWN

	Count	% of Projects Reaching Stage		Funds	% of Funds Reaching Stage
# of Projects Requested	2,807		$ Requested	$6,142,308,435	
# of Projects In SB 2500	1199	42.71%	$ Requested In SB 2500	$1,522,021,615	24.78%
# of Indeterminate Projects	25	0.89%	Indeterminate Projects (Requested Funds)	$72,654,858	1.18%
# of Projects In Conference Report	0	0.00%	$ Requested In Conference Report	$0	0.00%
# of Projects Vetoed	0	0.00%	$ Requested Vetoed	$0	0.00%

TAXATION

HB 7031 – Taxation

While the tax package will need to be considered and passed during the upcoming special session on the budget, when it became clear that no deal would be reached between the House and Senate on budget allocations, the legislature passed a tax compliance bill that updates the state's corporate income tax statute to align with federal law, but rejects two corporate tax cuts in the Big Beautiful Bill Congress passed last summer. The bill "decouples" Florida law from federal law regarding two federal provisions -- Internal Revenue Code §168(n) and §174A -- maintaining the state's current posture on special accelerated depreciation for certain domestic production facilities and a new deduction relating to domestic research and experimental expenditures research and experimental (R&E) expenses, respectively. The change is estimated to save the state an estimated $3.5 billion in lost corporate tax revenues. Subject to the governor's veto powers, the bill is effective upon becoming law and applies retroactively to January 1, 2026.

AFFORDABLE HOUSING

CS/CS/HB 1389 - Affordable Housing

The legislature revamped the Live Local Act for a third time to incentivize affordable housing development. The bill expands Florida's affordable housing preemptions on local governments by requiring counties and cities to allow multifamily and mixed-use developments in areas zoned for commercial, industrial or mixed use if at least 40% of the units are offered at affordable rates for 30 years minimum. The bill also expressly permits affordable housing development on property owned by a religious institution that is more than 3 acres in size and has contained a house of public worship for at least 10 years. In addition, the bill adjusts property-tax rules for affordable housing projects, waives sovereign immunity for housing discrimination lawsuits, and requires a state analysis of using tiny homes to increase housing supply. A provision requiring local governments to streamline approval of accessory dwelling units (known as "granny flats") was removed from the bill. The bill is effective July 1, 2026, if approved by the Governor.

AGRICULTURE

CS/CS/CS/SB 290 – Department of Agriculture and Consumer Services

This wide-ranging agriculture and consumer protection package expands legal protections for farmers while preempting certain local regulations and updating multiple statutes administered by the Department of Agriculture and Consumer Services. The bill extends Florida's agricultural disparagement law beyond just perishable foods, allowing food producers to sue individuals or the media for making false, non-scientific claims that any agricultural products or practices are unsafe. Supporters say this will protect producers from harmful misinformation while critics warn it could chill public debate. The bill also preempts local government from restricting gas-powered equipment such as leaf blowers and farm equipment, allows homeowners to prohibit commercial (not political or religious) door-to-door solicitation through posted signage, and updates licensing, enforcement authority, and consumer protection programs. If signed by the Governor, the bill takes effect July 1, 2026.

ANIMAL WELFARE

CS/HB 559 – Animal Welfare
CS/SB 1004 – Domestic Animals

CS/HB 559 creates a third-degree felony offense for adults who cause or entice a minor to commit, or commit in the presence of a minor, aggravated animal cruelty, fighting/baiting an animal, or engaging in sexual activities involving animals. A juvenile court must order a minor who commits an animal cruelty offense to undergo a psychological evaluation and, if recommended, receive counseling or treatment. A minor's parent or guardian can be held in contempt if they willfully refuse to follow the recommended treatment for the minor. CS/SB 1004 expands animal cruelty offender reporting, strengthens consumer protections in pet sales, and establishes voluntary best management practices for dog breeders. Among other provisions, the bill requires the Florida Department of Law Enforcement to create a website listing the personal identifying information of convicted animal abusers, provides a three-day waiting period for financed pet purchases, and requires pet dealers to provide an animal's medical records and written notice to the consumer before purchase that an animal can be returned for a refund, exchange or reimbursement for veterinary expenses. Pet dealers who violate these requirements can be sued for deceptive practices. The bill also requires the Department of Business and Professional Regulation to develop a list of best management practices that dog breeders may voluntarily adopt, including minimum standards of care, facility operations, and breeding practices to protect animal welfare. CS/HB 559 takes effect on October 1, 2026, and CS/SB 1004 takes effect July 1, 2026, if approved by the Governor.

ATHLETICS

CS/CS/SB 178 – Athletics in Public K-12 Schools
CS/CS/CS/SB 538 – Extracurricular Activities

CS/CS/SB 178 allows head coaches to use personal funds for items such as food, transportation, or recovery services to a student they coach, provided the assistance is given in good faith, the student's parent provides written consent, and the coach reports the expenditure to the association. The bill establishes a presumption that such support is not an impermissible athletic benefit, unless it is unreported, determined by the FHSAA to be in bad faith, or used for recruiting purposes. The legislation also caps the amount a head coach may spend at $15,000 per athletic team per year and limits the practice to one head coach per team. CS/CS/CS/SB 538 establishes that students across educational settings -- including public, charter, private, home education, and virtual school -- can participate in extracurricular activities at schools other than the one they attend, provided their current school does not offer the activity. It also allows schools to charge participation fees (generally capped at $400 per activity) and makes parents responsible for student transportation to activities when participating at another school. If signed by the Governor, both bills go into effect July 1, 2026.

CIVIL JUSTICE

HB 145 – Suits Against the Government

HB 145 increases the caps on the recovery of civil damages against a state or local governments from $200,000 to $350,000 for a single person injured by a government entity

and from $300,000 to $500,000 for multiple claims or judgments arising out of the same incident. A subdivision of the state is allowed to settle a claim or judgment above the caps without requiring the subdivision to seek further action by the Legislature. The bill also revises certain statutes of limitation and presuit procedures for certain types of claims against government entities and allows claims arising from sexual battery involving a victim who was younger than 16 years of age at the time of the act to be brought at any time. If signed by the Governor, the bill takes effect October 1, 2026.

CRIMINAL LAW

CS/CS/HB 1471 – Systems of Law and Terrorist Organizations
HB 1471- Systems of Law and Terrorist Organizations

CS/CS/HB 1471 creates a new state framework addressing the use of foreign or religious law in Florida courts and expands Florida's criminal and administrative laws related to terrorist organizations. Courts are prohibited from applying foreign or religious law if doing so would violate rights guaranteed by the U.S. or Florida Constitutions. The State's Chief of Domestic Security is authorized to designate and publish a list of domestic or foreign terrorist organizations, subject to review by the Governor and Cabinet. The bill criminalizes membership in, knowingly providing material support to, or receiving military-type training from such groups with intent to harm others. The State is also authorized to administratively dissolve corporations tied to designated terrorist organizations. Public entities -- including school districts and public colleges and universities -- are prohibited from funding or contracting with designated groups, while students who promote the organizations are subject to expulsion and loss of financial aid. CS/CS/HB 1473 exempts from disclosure certain sensitive information relating to the designation of terrorist organizations to protect state and national security. The bills take effect July 1, 2026, if approved by the Governor.

DOMESTIC VIOLENCE

CS/CS/HB 277 – Domestic Violence and Protective Injunctions
CS/SB 296 – Victims of Domestic Violence and Dating Violence
CS/CS/HB 397 – Violations of Pretrial Release Conditions for Violent Crimes

CS/CS/HB 277 increases penalties for repeat domestic violence offenders, boosts the victim-relocation allowance from $1,500 to $2,500, allows threats and cruelty to pets and service animals to be included in protective injunctions, and creates a pilot program in Pinellas County allowing courts to require electronic monitoring for certain offenders on probation. CS/SB 296 defines "dating violence" and allows a victim of dating violence to apply to participate in the Attorney General's address confidentiality program. The bill also requires a feasibility study on a specialized web-based 911 alert system designed to provide faster and more discreet access to law enforcement. CS/CS/HB 397 creates a new criminal offense for willfully violating an order of no contact imposed by a court as a condition of pretrial release after a person was arrested for committing specified violent offenses, including domestic violence. If approved by the Governor, CS/CS/HB 397 takes effect October 1, 2026, with the remaining two bills effective July 1, 2026.

EDUCATION

CS/CS/HB 757 - School Safety
CS/CS/HB 1279 – Education
CS/HB 1115 – Grants for Genetic Counseling Education
CS/SB 1246 – Linking Industry to Nursing Education Fund
CS/CS/CS/SB 1690 – Child Care and Early Learning Services

CS/CS/HB 757 allows public colleges and universities to appoint trained faculty and employees to carry firearms for protection purposes and requires sheriff's offices to help institutions that choose to participate in setting up "guardian" programs and provide safety training. CS/CS/HB 1279 makes changes across K-12, career education, and higher education. The bill revises rules for vocational rehabilitation services, updates dual enrollment and virtual instruction requirements, changes standards affecting Florida College System institutions, state universities, and career centers, and authorizes students to carry FDA-approved epinephrine delivery devices rather than only auto-injectors. CS/HB 1115 establishes a new Genetic Counseling Education Enhancement Grant Program within the State University System, while CS/SB 1246 expands Florida's Linking Industry to Nursing Education (LINE) Fund to create new opportunities for collaboration between nursing education programs and health care partners to increase the number of nurses entering the workforce. CS/CS/CS/SB 1690 updates licensing standards, definitions, and minimum safety requirements for early childhood education and child care, including applying baseline standards to certain previously exempt providers. If signed by the Governor, CS/CS/HB 757 is effective upon becoming law, and the remaining bills would go into effect July 1, 2026.

ELECTIONS

CS/HB 91 – Candidate Qualification
CS/CS/HB 991 – Elections

CS/HB 91 requires candidates to maintain a consistent party affiliation or no affiliation, and refrain from name changes (other than for marriage, divorce or adoption) for 365 days before qualifying. CS/CS/HB 991—which is effective after the upcoming elections--expands citizenship verification for voter registration, tightens candidate qualification rules and revises what forms of identification voters may present at the polls. Acceptable documents for voter registration include a passport, birth certificate, naturalization records, or other specified federal or state identification. DHSMV must include a person's legal citizenship status on Florida driver licenses and identification cards beginning January 1, 2027. Florida's online voter registration system would compare applicants' IDs against DHSMV records and record the applicant's citizenship status in the statewide voter registration system. If proof of citizenship is not on file, the application is forwarded to the county Supervisor of Elections to verify citizenship status using available state and federal records and document the type of evidence used to confirm eligibility. Beyond voter registration, the legislation revises the types of identification voters may present at polling places. Current Florida law allows voters to use student identification cards and retirement facility identification cards as photo ID. The bill removes both from the list of acceptable identification. CS/HB 91 is effective upon the Governor's approval, while CS/CS/HB 991 is effective January 1, 2027, if approved by the Governor.

EMPLOYMENT

CS/CS/SB 1296 – Public Employees Relations Commission

CS/CS/SB 1296 increases regulatory oversight of public employee unions and updates the framework governing collective bargaining and union certification for public employees. Under the revised framework, unions must submit detailed membership data and may be required to seek recertification through a new election. For most bargaining units (except for many public-safety units), the election requires at least 50% of all employees in the bargaining unit to participate in the election, and the union must receive a majority of the votes cast to remain certified. If turnout falls below 50%, the union is not recertified, even if it wins a majority of the votes actually cast. The legislation establishes procedures for recertification elections, requires unions to maintain records of membership authorizations and revocations, and restricts public employer involvement in collecting union dues except in certain public safety bargaining units. The bill also expands the PERC's authority to conduct investigations, issue subpoenas, and manage certification and dispute proceedings. The bill is effective July 1, 2026, if approved by the Governor.

ENVIRONMENT

CS/CS/SB 302 – Coastal Resiliency
CS/CS/HB 1019 – Perfluoroalkyl and Polyfluoroalkyl Substances
CS/CS/HB 1245 – Biosolids Management
CS/HB 1217 – Prohibited Governmental Policies Regulating Greenhouse Gas Emissions

CS/CS/SB 302 expands nature-based coastal protection while strengthening safeguards for sensitive aquatic preserves. The bill directs the Florida Department of Environmental Protection to develop clearer statewide standards by 2027 for nature-based coastal protection methods and includes protections for the Terra Ceia Aquatic Preserve in Manatee County and the Biscayne Bay Aquatic Preserve in Miami. CS/CS/HB 1019 bans the use of firefighting foam containing "forever chemicals," including perfluoroalkyl and polyfluoroalkyl (PFAS) chemicals linked to cancer and other health risks, except for airports and military applications or emergency firefighting situations where alternatives do not exist. CS/CS/HB 1245 limits how certain waste-derived fertilizers can be distributed and applied, restricting the land application of bulk Class AA biosolids to appropriate agronomic rates. CS/HB 1217 prohibits state and local governments from adopting or enforcing "net-zero" or greenhouse gas reduction policies, marking a significant shift in how climate-related initiatives can be pursued at the local level. If signed by the Governor, CS/CS/HB 1245 would be effective November 1, 2026, and the remaining three bills would go into effect July 1, 2026.

FOREIGN INFLUENCE

CS/CS/CS/HB 905 – Foreign Influence

The legislation expands ethics restrictions and transparency requirements aimed at preventing foreign governments of concern, or their proxies, from influencing Florida officials and institutions. The bill targets governments classified in Florida law as "foreign countries of concern," including China, Russia, Iran, North Korea, Cuba, Venezuela under the Nicolás

Maduro regime and Syria. The bill restricts government participation in sister-city relationships with foreign countries of concern, and repeals the Florida-China Institute, a state linkage program connecting Florida universities with Chinese institutions. It also authorizes tax collectors and local governments to revoke or refuse to renew business tax receipts for companies doing business with Cuba in violation of federal law. In addition, the bill as amended bans preplanned adoption agreements or gestational surrogacy contracts if the surrogate or parents are citizens or residents of a foreign country of concern. The bill is effective July 1, 2026, if approved by the Governor.

HEALTH CARE

CS/HB 355 – Health Care Patient Protection
CS/HB 697 – Drug Prices and Coverage
CS/HB 809 – Temporary Certificates for Practice in Areas of Critical Need

CS/HB 355 requires AHCA to work with the Florida Emergency Medical Services for Children program to establish minimum standards for pediatric emergency care and collect and publish hospital pediatric readiness scores to increase transparency and accountability in emergency care for children. It also requires hospitals to adopt evidence-based policies and procedures for pediatric emergency care, including standards for triage, vital signs, weight measurement in kilograms, medication dosing, and the use of pediatric equipment. Hospitals must also conduct annual training and emergency simulation drills for staff and designate a pediatric emergency care coordinator responsible for implementing and overseeing these policies.

CS/HB 697 bars Pharmacy Benefit Managers (PBMs) from reimbursing affiliated pharmacies more than non-affiliated pharmacies for the same services and prohibits PBMs from forcing pharmacies to dispense medication if reimbursement is below the drug's acquisition cost. A controversial provision to establish a most-favored-nation upper payment limit for prescription drugs based on an international market index was removed from the bill. The bill also provides bridge funding to DHS for the AIDS Drug Assistance Program (ADAP) through June 30, 2026. CS/HB 809 authorizes allopathic physicians and physician assistants (Chapter 458), osteopathic physician and physician assistants (Chapter 459), and advanced practice registered nurses (Chapter 464) to continue to provide services to existing primary care patients if an area of critical need loses its designation, allowing continuity of care for primary care patients in these areas. If approved by the Governor, CS/HB 355 and CS/CS/697 are effective July 1, 2026, and CS/HB 809 is effective upon becoming law.

LAND USE DEVELOPMENT

CS/CS/CS/HB 399 – Land Use and Development Regulations
CS/CS/HB 803 – Building Permits and Inspections
CS/CS/CS/HB 927 – Local Land Planning & Development

CS/CS/CS/HB 399 makes broad changes to Florida's land use and development laws, with lawmakers targeting local permitting, housing siting, and development review standards. The bill requires application fees for development permits and orders to be tied to review costs, directs local governments to administratively approve certain minor special exceptions and

variances for qualifying large destination resorts, and requires local land development regulations to be reasonable and uniformly enforced. The measure also expands housing-related provisions by preventing residential manufactured buildings from being denied permits on certain lots, requiring some off-site constructed homes to be allowed as of right in certain zoning districts, and adding compatibility standards for certain residential uses.

CS/CS/HB 803 overhauls Florida's building permit and inspection process to speed up approvals and standardize requirements across local governments. The bill revises timelines for issuing permits, requires more uniform application forms, and expands the use of private providers to conduct building inspections. The measure also limits when local governments can require permits, including prohibiting permits for certain minor structures, and prevents associations from requiring permits as a condition of architectural review. It further directs the Florida Building Commission to create statewide standardized permit applications for residential and commercial projects. CS/HB 927 requires counties with a population of 75,000 or more and municipalities with a population of 10,000 or more to establish a qualified contractor registry by January 1, 2027, to conform to an expedited pre-application review process of plans, permits, or plats submitted as part of compliance with a local government's land development regulations. If signed by the Governor, CS/CS/CS/HB 399 goes into effect upon becoming law, and CS/CS/HB 803 and CS/CS/CS/HB 927are effective on July 1, 2027.

LOCAL GOVERNMENT

CS/HB 967 – Electronic Payments Made to Units of Local Governments
CS/CS/HB 1103 – Local Administration of Vessel Restrictions
CS/CS/SB 1134 – Official Actions of Local Governments

CS/HB 967 requires local governments to accept credit cards, debit cards and other electronic funds transfers for obligations such as taxes, license fees, fines, civil penalties and court-ordered payments and add a processing surcharge. CS/CS/HB 1103 allows local government to issue citations for non-criminal infractions related to derelict vessels and long-term anchoring permits, and allows cities and counties to regulate vessel speed and operation within 300 feet of a confluence of water bodies presenting a blind corner, up to a distance of 1,000 feet, if the extended area is necessary to ensure safe navigation and visibility for approaching vessels. CS/CS/SB 1134 prohibits counties and municipalities from funding or implementing diversity, equity, and inclusion (DEI) programs and creates enforcement provisions allowing legal action against noncompliant local governments. If approved by the Governor, CS/HB 967 and CS/CS/SB 1134 would go into effect on January 1, 2027, and HB 1103 would be effective July 1, 2026.

NON-PROFIT GOVERNANCE

CS/CS/HB 797 – Nonprofit Corporations

The bill revises Florida statutes governing nonprofit corporations to conform to the Model Nonprofit Corporation Act and align with related provisions of the Florida Business Corporation Act. The update is largely technical but designed to clarify governance standards and provide

nonprofits with more modern operating tools. The bill provides structural changes affecting nonprofit boards and membership organizations, including clearer fiduciary duties for officers and directors, updated liability protections for nonprofit leadership, revised rules governing board vacancies and meetings, and modernized provisions allowing remote participation in board meetings. It also clarifies voting procedures, proxy rules, and record-inspection rights for members and directors. In addition, the bill establishes that the Department of Legal Affairs may bring an action to prevent a foreign nonprofit corporation from illegally conducting business in the state. The bill is effective July 1, 2026, if approved by the Governor.

PERSONS WITH DISABILITIES

SB 418 – Law Enforcement Officer Interactions with Individuals with Autism Spectrum Disorder
CS/HB 915 – Medical Assistance Eligibility for Working Individuals with Disabilities
HB 1405 – Statewide Project for Missing Persons with Special Needs

SB 418 Creates a blue envelope and blue card program or individuals with autism spectrum disorder to facilitate improved communication with law enforcement during traffic stops or any law enforcement interaction. The envelope holds identification and vehicle documents and includes guidance for officers, while the blue card is a portable digital or wallet-sized option that contains the same information as the envelope. The bill also requires law enforcement training on how to recognize autism and safely interact with people on the spectrum. CS/HB 915 codifies the Working People with Disabilities Program (Program) created by the 2019-2020 General Appropriations Act to allow working individuals with disabilities to maintain Medicaid benefits while earning additional income. HB 1405 bill revives and expands a statewide program that expired in 2019— the Missing Persons with Special Needs Statewide Project, known as Project Leo -to provide personal search-and-rescue devices to help locate persons with special needs if they wander from care. If approved by the Governor, SB 418 and HB 1405 are effective July 1, 2026, and CS/HB 915 is effective upon becoming law.

TRANSPORTATION

SB 488 – Transportation

SB 488 streamlines licensing for motor carriers, revises fuel tax requirements, updates definitions affecting vehicles and drivers, and modernizes regulations for e-mail notifications, crash reporting, license plate frames, and franchise agreements. Specifically, the bill requires motor carriers to obtain licenses rather than simple registrations, replaces identifying devices with fuel tax decals, and requires tax filings, decal renewals, and other reporting to be submitted electronically through a state system beginning in 2026. SB 488 also revises reporting periods for fuel-use tax returns, establishes penalties for counterfeiting or altering fuel tax licenses or decals, and updates enforcement provisions related to motor carriers operating without proper authorization.

The bill also makes numerous vehicle and transportation policy changes. These include increasing the property-damage threshold requiring drivers to report crashes to law

enforcement from $500 to $2,000, clarifying that license plate frames are allowed if they do not obscure plate numbers or registration stickers, allowing certain driver license and vehicle registration notices to be sent by email, and updating several vehicle dealer franchise rules and vehicle registration procedures. It also limits certain local government requirements affecting communications infrastructure placed in rights-of-way and updates various definitions and administrative procedures throughout Florida transportation statutes. If approved by the Governor, SB 488 is effective October 1, 2026.

UTILITIES

SB 288 – Rural Electric Cooperatives
CS/CS/SB 484 – Data Centers
CS/CS/HB 1451 – Utility Services

SB 288 prevents rural electric cooperatives that sell electricity at retail from imposing financial or regulatory barriers that limit consumer choice regarding energy sources or appliances permitted under state law. CS/CS/SB 484 creates regulatory guardrails to manage the energy, water, and infrastructure impacts of data centers while protecting other utility customers and preserving local land-use authority. The bill seeks to ensure that residents do not pay more for utilities because these data centers - which house computers that store and process large amounts of data - use a large amount of these resources. Before passing the bill, lawmakers eliminated a provision that would have restricted nondisclosure agreements between governments and data center companies. CS/CS/HB 1451 requires more transparency and public input for utility services provided outside municipal boundaries and limits rate differential to 25% above in-city rates for out-of-city customers, with any existing surcharges phased out by 2029 or upon satisfaction of associated debt. If signed by the Governor, SB 288 and CS/CS/SB 484 are effective July 1, 2026, and CS/CS/HB 1451 is effective July 1, 2027.



2026 Florida Legislative Session

FAST FACTS

CORCORAN PARTNERS

2026

FAST FACTS

Session Lasted 60 Days

January 13, 2026 - March 13, 2026

State Budget on Hold

The state budget has not yet been approved by both chambers. Legislators will meet for a special session in the coming months.

1,926 Bills were Filed

237 Bills Passed

237 bills passed both chambers during the 2026 legislative session.

CORCORAN | PARTNERS



2026 Florida Legislative Session
STATISTICS REPORT

CORCORAN PARTNERS

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
STATISTICS REPORT

SENATE BILLS	FILED	PASSED SENATE	PASSED BOTH CHAMBERS
CONCURRENT RESOLUTIONS	4	1	1
RESOLUTIONS(ONE CHAMBER)	31	25	0
GENERAL BILLS	883	150	85
LOCAL BILLS	8	1	1
JOINT RESOLUTIONS	12	0	0
MEMORIALS	3	1	0
TOTALS	941	178	87 *

HOUSE BILLS	FILED	PASSED HOUSE	PASSED BOTH CHAMBERS
CONCURRENT RESOLUTIONS	2	0	0
RESOLUTIONS(ONE CHAMBER)	66	65	0
GENERAL BILLS	808	205	107
LOCAL BILLS	59	45	43
JOINT RESOLUTIONS	18	2	0
MEMORIALS	2	0	0
TOTALS	955	317	150 *

SENATE AND HOUSE BILLS	FILED	PASSED FIRST CHAMBER	PASSED BOTH CHAMBERS
CONCURRENT RESOLUTIONS	6	1	1
RESOLUTIONS(ONE CHAMBER)	97	90	0
GENERAL BILLS	1691	355	192
LOCAL BILLS	67	46	44
JOINT RESOLUTIONS	30	2	0
MEMORIALS	5	1	0
TOTALS	1896	495	237 *

*ONE CHAMBER RESOLUTIONS NOT INCLUDED

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
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	SENATE BILLS	HOUSE BILLS	TOTAL
FILED, NOT INTRODUCED	6	0	6
PENDING IN GOVERNOR'S OFFICE	3	6	9
GOVERNOR HAS NOT RECEIVED	82	143	225
BILLS TO CONFERENCE COMMITTEES	0	4	4
BILLS PASSED AS AMENDED	49	55	104
COMMITTEES			
COMMITTEE SUBSTITUTE (CS)	262	312	574
CS/CS	103	119	222
CS/CS/CS	19	20	39
CS/CS/CS/CS	0	2	2
FAVORABLE SENATE COMMITTEE REPORT	324	3	327
FAVORABLE WITH AMENDMENT(S) - SENATE COMMITTEE REPORT	0	8	8
FAVORABLE HOUSE COMMITTEE REPORT	1	337	338
FAVORABLE WITH AMENDMENT(S) - HOUSE COMMITTEE REPORT	0	0	0
FAVORABLE WITH CS AMENDMENT(S) - HOUSE COMMITTEE REPORT	0	0	0
UNFAVORABLE SENATE COMMITTEE REPORT	2	0	2
UNFAVORABLE HOUSE COMMITTEE REPORT	0	0	0
GOVERNOR			
APPROVED	1	1	2
BECAME LAW WITHOUT SIGNATURE	0	0	0
VETOED	0	0	0
LINE-ITEM VETOED	0	0	0
FILED WITH SECRETARY OF STATE (JT. RES., CONC. RES., MEM.)	1	0	1
RESOLUTIONS ADOPTED	25	65	90
FAILED TO PASS SENATE	0	0	0
FAILED TO PASS HOUSE	0	0	0
LAID ON TABLE	113	90	203
WITHDRAWN PRIOR TO INTRODUCTION	7	26	33
W/D FROM FURTHER CONSIDERATION	4	0	4
IN SENATE COMMITTEE	565	1	566
IN SENATE MESSAGES	0	1	1
IN SENATE RETURNING MESSAGES	2	0	2
ON SENATE CALENDAR, ON SECOND READING	14	1	15
ON SENATE SPECIAL ORDER CALENDAR	3	0	3
DIED, REFERENCE DEFERRED	0	1	1
DIED IN HOUSE COMMITTEES	1	503	504
DIED IN HOUSE MESSAGES	59	0	59
DIED IN HOUSE RETURNING MESSAGES	4	5	9
DIED IN CONFERENCE COMMITTEES	0	4	4
DIED ON HOUSE CALENDAR	0	18	18

FLORIDA LEGISLATURE
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SENATE BILLS

CONCURRENT RESOLUTIONS

S 82 S 338 S 704 S 1466

CONCURRENT RESOLUTIONS - PASSED FIRST CHAMBER

S 1466

RESOLUTIONS(ONE CHAMBER)

S 724 S 1214 S 1244 S 1402 S 1578 S 1764 S 1766 S 1768 S 1770 S 1772 S 1774 S 1776 S 1778 S 1780 S 1782
S 1784 S 1786 S 1788 S 1790 S 1794 S 1796 S 1798 S 1800 S 1802 S 1804 S 1806 S 1808 S 1810 S 1812 S 1814
S 1816

GENERAL BILLS

S 2 S 4 S 6 S 10 S 20 S 22 S 26 S 30 S 32 S 34 S 36 S 38 S 40 S 42 S 44
S 46 S 48 S 50 S 52 S 54 S 56 S 58 S 60 S 62 S 64 S 66 S 68 S 70 S 72 S 74
S 76 S 78 S 80 S 84 S 86 S 88 S 90 S 92 S 94 S 96 S 98 S 100 S 102 S 104 S 106
S 108 S 110 S 112 S 114 S 116 S 118 S 120 S 122 S 124 S 126 S 128 S 130 S 132 S 134 S 136
S 138 S 140 S 142 S 144 S 146 S 148 S 150 S 152 S 154 S 156 S 158 S 160 S 162 S 164 S 166
S 168 S 170 S 172 S 174 S 176 S 178 S 180 S 182 S 184 S 186 S 188 S 190 S 192 S 194 S 196
S 198 S 200 S 202 S 204 S 206 S 208 S 210 S 212 S 214 S 216 S 218 S 220 S 222 S 224 S 226
S 228 S 230 S 232 S 234 S 236 S 238 S 240 S 242 S 244 S 246 S 248 S 250 S 252 S 254 S 256
S 258 S 260 S 262 S 264 S 266 S 268 S 272 S 276 S 280 S 284 S 286 S 288 S 290 S 292 S 294
S 296 S 298 S 300 S 302 S 304 S 306 S 308 S 310 S 312 S 314 S 316 S 318 S 320 S 322 S 324
S 326 S 328 S 330 S 332 S 334 S 336 S 340 S 342 S 344 S 346 S 348 S 350 S 352 S 354 S 356
S 358 S 360 S 362 S 364 S 366 S 368 S 370 S 372 S 374 S 376 S 378 S 380 S 382 S 384 S 386
S 388 S 390 S 392 S 394 S 396 S 398 S 400 S 402 S 404 S 406 S 408 S 410 S 412 S 414 S 416
S 418 S 420 S 422 S 424 S 426 S 428 S 430 S 432 S 434 S 436 S 438 S 440 S 442 S 444 S 446
S 448 S 450 S 452 S 454 S 456 S 458 S 460 S 462 S 464 S 466 S 468 S 470 S 472 S 474 S 476
S 478 S 480 S 482 S 484 S 486 S 488 S 490 S 492 S 494 S 496 S 498 S 500 S 502 S 504 S 506
S 508 S 510 S 512 S 514 S 516 S 518 S 520 S 522 S 524 S 526 S 528 S 530 S 532 S 534 S 536
S 538 S 540 S 542 S 544 S 546 S 548 S 552 S 554 S 556 S 558 S 560 S 562 S 564 S 566 S 568
S 570 S 572 S 574 S 576 S 578 S 580 S 582 S 584 S 586 S 588 S 590 S 592 S 594 S 596 S 598
S 600 S 602 S 604 S 606 S 608 S 610 S 612 S 614 S 616 S 618 S 620 S 622 S 624 S 626 S 628
S 630 S 632 S 634 S 636 S 638 S 640 S 642 S 644 S 646 S 648 S 650 S 652 S 654 S 656 S 658
S 660 S 662 S 664 S 666 S 668 S 670 S 672 S 674 S 676 S 678 S 680 S 682 S 684 S 686 S 688
S 690 S 692 S 694 S 696 S 698 S 700 S 702 S 706 S 708 S 710 S 712 S 716 S 718 S 720 S 722
S 726 S 730 S 732 S 734 S 736 S 738 S 740 S 742 S 744 S 748 S 750 S 752 S 754 S 756 S 758
S 760 S 762 S 764 S 766 S 768 S 770 S 772 S 774 S 776 S 778 S 780 S 782 S 784 S 786 S 788
S 790 S 792 S 794 S 796 S 798 S 800 S 802 S 804 S 806 S 808 S 810 S 812 S 814 S 816 S 818
S 820 S 822 S 824 S 826 S 828 S 830 S 832 S 834 S 836 S 838 S 840 S 842 S 844 S 846 S 848
S 850 S 852 S 854 S 856 S 858 S 860 S 862 S 864 S 866 S 868 S 870 S 872 S 874 S 876 S 878
S 880 S 882 S 884 S 886 S 888 S 890 S 892 S 894 S 896 S 898 S 900 S 902 S 904 S 906 S 908
S 910 S 912 S 914 S 916 S 918 S 920 S 922 S 924 S 926 S 928 S 930 S 932 S 934 S 936 S 938
S 940 S 942 S 944 S 946 S 948 S 950 S 952 S 954 S 956 S 958 S 960 S 962 S 964 S 966 S 968
S 970 S 972 S 974 S 976 S 978 S 980 S 982 S 984 S 986 S 988 S 990 S 992 S 994 S 996 S 998
S 1000 S 1002 S 1004 S 1006 S 1008 S 1010 S 1012 S 1014 S 1016 S 1018 S 1020 S 1022 S 1024 S 1026 S 1028
S 1030 S 1032 S 1034 S 1036 S 1038 S 1040 S 1042 S 1044 S 1046 S 1048 S 1050 S 1052 S 1054 S 1056 S 1058
S 1060 S 1062 S 1064 S 1066 S 1068 S 1070 S 1072 S 1074 S 1076 S 1078 S 1080 S 1082 S 1084 S 1086 S 1088
S 1090 S 1092 S 1096 S 1098 S 1100 S 1102 S 1106 S 1108 S 1110 S 1112 S 1114 S 1116 S 1118 S 1120 S 1122
S 1124 S 1126 S 1128 S 1130 S 1132 S 1134 S 1136 S 1138 S 1140 S 1142 S 1144 S 1146 S 1148 S 1150 S 1152
S 1154 S 1156 S 1158 S 1160 S 1162 S 1164 S 1166 S 1168 S 1170 S 1172 S 1174 S 1176 S 1178 S 1180 S 1182
S 1184 S 1188 S 1190 S 1192 S 1194 S 1196 S 1198 S 1200 S 1202 S 1204 S 1206 S 1208 S 1212 S 1216 S 1218
S 1220 S 1222 S 1224 S 1226 S 1228 S 1230 S 1232 S 1234 S 1236 S 1238 S 1240 S 1242 S 1246 S 1248 S 1250
S 1252 S 1254 S 1256 S 1258 S 1260 S 1262 S 1264 S 1266 S 1268 S 1270 S 1272 S 1274 S 1276 S 1278 S 1280
S 1282 S 1284 S 1286 S 1288 S 1290 S 1292 S 1294 S 1296 S 1298 S 1300 S 1302 S 1304 S 1306 S 1308 S 1310
S 1312 S 1314 S 1316 S 1318 S 1320 S 1322 S 1324 S 1326 S 1328 S 1330 S 1332 S 1334 S 1336 S 1338 S 1340
S 1342 S 1344 S 1346 S 1348 S 1350 S 1352 S 1354 S 1356 S 1358 S 1360 S 1362 S 1366 S 1368 S 1370 S 1372
S 1374 S 1376 S 1378 S 1380 S 1382 S 1384 S 1386 S 1388 S 1390 S 1392 S 1394 S 1396 S 1398 S 1400 S 1404
S 1408 S 1410 S 1412 S 1414 S 1416 S 1418 S 1420 S 1422 S 1424 S 1426 S 1428 S 1430 S 1432 S 1434 S 1436
S 1438 S 1440 S 1442 S 1444 S 1446 S 1448 S 1450 S 1452 S 1454 S 1456 S 1458 S 1460 S 1462 S 1464 S 1468
S 1470 S 1472 S 1474 S 1476 S 1478 S 1480 S 1482 S 1484 S 1486 S 1488 S 1490 S 1492 S 1494 S 1496 S 1498
S 1500 S 1502 S 1504 S 1506 S 1508 S 1510 S 1512 S 1514 S 1516 S 1518 S 1520 S 1522 S 1524 S 1526 S 1528
S 1530 S 1532 S 1534 S 1536 S 1538 S 1540 S 1542 S 1544 S 1546 S 1548 S 1550 S 1552 S 1554 S 1556 S 1558
S 1560 S 1562 S 1564 S 1566 S 1568 S 1570 S 1572 S 1574 S 1576 S 1580 S 1582 S 1586 S 1588 S 1590 S 1592
S 1594 S 1596 S 1598 S 1600 S 1602 S 1604 S 1606 S 1608 S 1612 S 1614 S 1616 S 1618 S 1620 S 1622 S 1624
S 1626 S 1628 S 1630 S 1632 S 1634 S 1636 S 1638 S 1640 S 1642 S 1644 S 1646 S 1648 S 1650 S 1652 S 1654
S 1656 S 1658 S 1660 S 1662 S 1664 S 1666 S 1668 S 1670 S 1672 S 1674 S 1676 S 1678 S 1680 S 1682 S 1684
S 1686 S 1688 S 1690 S 1692 S 1694 S 1696 S 1698 S 1700 S 1702 S 1704 S 1706 S 1708 S 1710 S 1712 S 1716
S 1718 S 1720 S 1722 S 1724 S 1726 S 1728 S 1730 S 1732 S 1734 S 1736 S 1738 S 1740 S 1742 S 1744 S 1746
S 1748 S 1750 S 1752 S 1754 S 1756 S 1758 S 1760 S 1762 S 1792 S 2500 S 2502 S 2504 S 2506 S 2508 S 2510
S 2512 S 2514 S 2516 S 2518 S 7000 S 7002 S 7004 S 7006 S 7008 S 7010 S 7012 S 7014 S 7016 S 7018 S 7020
S 7022 S 7024 S 7026 S 7028 S 7030 S 7032 S 7034 S 7036 S 7038 S 7040 S 7044 S 7046 S 7048

GENERAL BILLS-PASSED FIRST CHAMBER

S 32 S 48 S 52 S 54 S 86 S 100 S 102 S 104 S 110 S 118 S 124 S 156 S 168 S 176 S 178

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SENATE BILLS

GENERAL BILLS-PASSED FIRST CHAMBER

S 182 S 192 S 210 S 212 S 218 S 246 S 250 S 288 S 290 S 292 S 296 S 298 S 302 S 308 S 318
S 320 S 330 S 340 S 364 S 382 S 386 S 394 S 418 S 420 S 422 S 428 S 432 S 434 S 436 S 474
S 482 S 484 S 488 S 490 S 504 S 506 S 524 S 530 S 538 S 540 S 560 S 572 S 578 S 584 S 590
S 594 S 598 S 600 S 620 S 628 S 656 S 658 S 686 S 688 S 694 S 748 S 772 S 774 S 800 S 806
S 816 S 820 S 824 S 830 S 834 S 838 S 840 S 844 S 848 S 856 S 936 S 962 S 984 S 1002 S 1004
S 1014 S 1022 S 1028 S 1030 S 1062 S 1072 S 1074 S 1092 S 1110 S 1112 S 1120 S 1134 S 1180 S 1216 S 1220
S 1246 S 1296 S 1318 S 1332 S 1340 S 1404 S 1434 S 1440 S 1442 S 1452 S 1536 S 1568 S 1574 S 1580 S 1594
S 1602 S 1604 S 1614 S 1622 S 1668 S 1690 S 1706 S 1756 S 1758 S 2506 S 2508 S 2512 S 2514 S 2516 S 2518
S 7000 S 7002 S 7004 S 7006 S 7008 S 7010 S 7012 S 7014 S 7016 S 7018 S 7022 S 7024 S 7026 S 7030 S 7040

LOCAL BILLS

S 8 S 12 S 14 S 16 S 18 S 24 S 28 S 1094

LOCAL BILLS-PASSED FIRST CHAMBER

S 14

JOINT RESOLUTIONS

S 270 S 274 S 278 S 282 S 550 S 728 S 1104 S 1210 S 1364 S 1406 S 1584 S 1610

MEMORIALS

S 746 S 1186 S 1714

MEMORIALS-PASSED FIRST CHAMBER

S 1186

FILED, NOT INTRODUCED

S 1578 S 1768 S 1776 S 1794 S 1804 S 1806

PENDING IN GOVERNOR'S OFFICE

S 290 S 386 S 844

GOVERNOR HAS NOT RECEIVED

S 14 S 52 S 100 S 102 S 104 S 110 S 118 S 124 S 156 S 168 S 178 S 182 S 192 S 212 S 246
S 288 S 296 S 298 S 340 S 382 S 394 S 418 S 422 S 428 S 432 S 436 S 474 S 484 S 488 S 490
S 504 S 506 S 538 S 572 S 578 S 584 S 590 S 594 S 598 S 628 S 656 S 686 S 688 S 772 S 800
S 816 S 820 S 824 S 848 S 962 S 984 S 1004 S 1022 S 1028 S 1030 S 1074 S 1092 S 1134 S 1180 S 1246
S 1296 S 1332 S 1404 S 1434 S 1452 S 1568 S 1602 S 1614 S 1668 S 1690 S 7000 S 7002 S 7004 S 7006 S 7008
S 7012 S 7014 S 7016 S 7022 S 7024 S 7026 S 7040

BILLS PASSED AS AMENDED

S 118 S 178 S 182 S 212 S 246 S 250 S 288 S 290 S 302 S 308 S 318 S 382 S 418 S 428 S 432
S 474 S 482 S 484 S 488 S 524 S 538 S 572 S 600 S 620 S 628 S 658 S 824 S 838 S 848 S 962
S 984 S 1004 S 1028 S 1030 S 1062 S 1072 S 1134 S 1220 S 1246 S 1296 S 1404 S 1440 S 1452 S 1568 S 1602
S 1668 S 1690 S 7024 S 7040

COMMITTEE SUBSTITUTE

S 18 S 32 S 36 S 42 S 48 S 50 S 52 S 54 S 60 S 62 S 68 S 78 S 86 S 92 S 96
S 110 S 118 S 126 S 132 S 156 S 158 S 162 S 176 S 178 S 182 S 186 S 196 S 198 S 204 S 206
S 208 S 212 S 214 S 218 S 240 S 246 S 254 S 260 S 268 S 290 S 296 S 298 S 302 S 314 S 318
S 326 S 330 S 332 S 340 S 350 S 354 S 364 S 380 S 382 S 398 S 410 S 420 S 422 S 432 S 436
S 442 S 450 S 474 S 480 S 482 S 484 S 500 S 502 S 504 S 514 S 524 S 526 S 530 S 532 S 536
S 538 S 540 S 544 S 546 S 548 S 554 S 556 S 558 S 560 S 564 S 570 S 572 S 576 S 578 S 590
S 598 S 600 S 606 S 618 S 620 S 636 S 644 S 646 S 654 S 656 S 658 S 676 S 678 S 680 S 682
S 684 S 686 S 688 S 692 S 694 S 696 S 698 S 706 S 758 S 760 S 762 S 772 S 774 S 786 S 794
S 796 S 800 S 806 S 810 S 812 S 820 S 822 S 824 S 828 S 834 S 838 S 844 S 848 S 856 S 862
S 864 S 890 S 896 S 902 S 912 S 914 S 928 S 934 S 948 S 980 S 984 S 1002 S 1004 S 1010 S 1012
S 1014 S 1016 S 1028 S 1030 S 1032 S 1036 S 1038 S 1040 S 1054 S 1062 S 1066 S 1074 S 1078 S 1080 S 1082
S 1092 S 1096 S 1102 S 1106 S 1110 S 1118 S 1128 S 1134 S 1136 S 1138 S 1168 S 1170 S 1178 S 1180 S 1182
S 1192 S 1196 S 1220 S 1224 S 1230 S 1234 S 1246 S 1260 S 1266 S 1274 S 1288 S 1294 S 1296 S 1298 S 1310
S 1326 S 1332 S 1334 S 1338 S 1342 S 1356 S 1362 S 1366 S 1376 S 1396 S 1404 S 1414 S 1422 S 1434 S 1440
S 1452 S 1462 S 1474 S 1480 S 1498 S 1500 S 1504 S 1510 S 1562 S 1566 S 1568 S 1580 S 1582 S 1588 S 1600
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H 4065 H 4067 H 4069 H 4071 H 4073 H 4075 H 4077 H 4079 H 4081 H 4083 H 4085 H 4087 H 4089 H 4091 H 4093
H 4095 H 4097 H 4099 H 4101 H 4103 H 4105 H 6513 H 6515 H 6517 H 6519 H 6521 H 6525 H 6527 H 6531

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H 4041 H 4043 H 4045 H 4047 H 4049 H 4051 H 4053 H 4055 H 4057 H 4059 H 4061 H 4063 H 4065 H 4067 H 4071
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H 625 H 657 H 697 H 733 H 741 H 755 H 757 H 803 H 833 H 895 H 905 H 925 H 927 H 981 H 991
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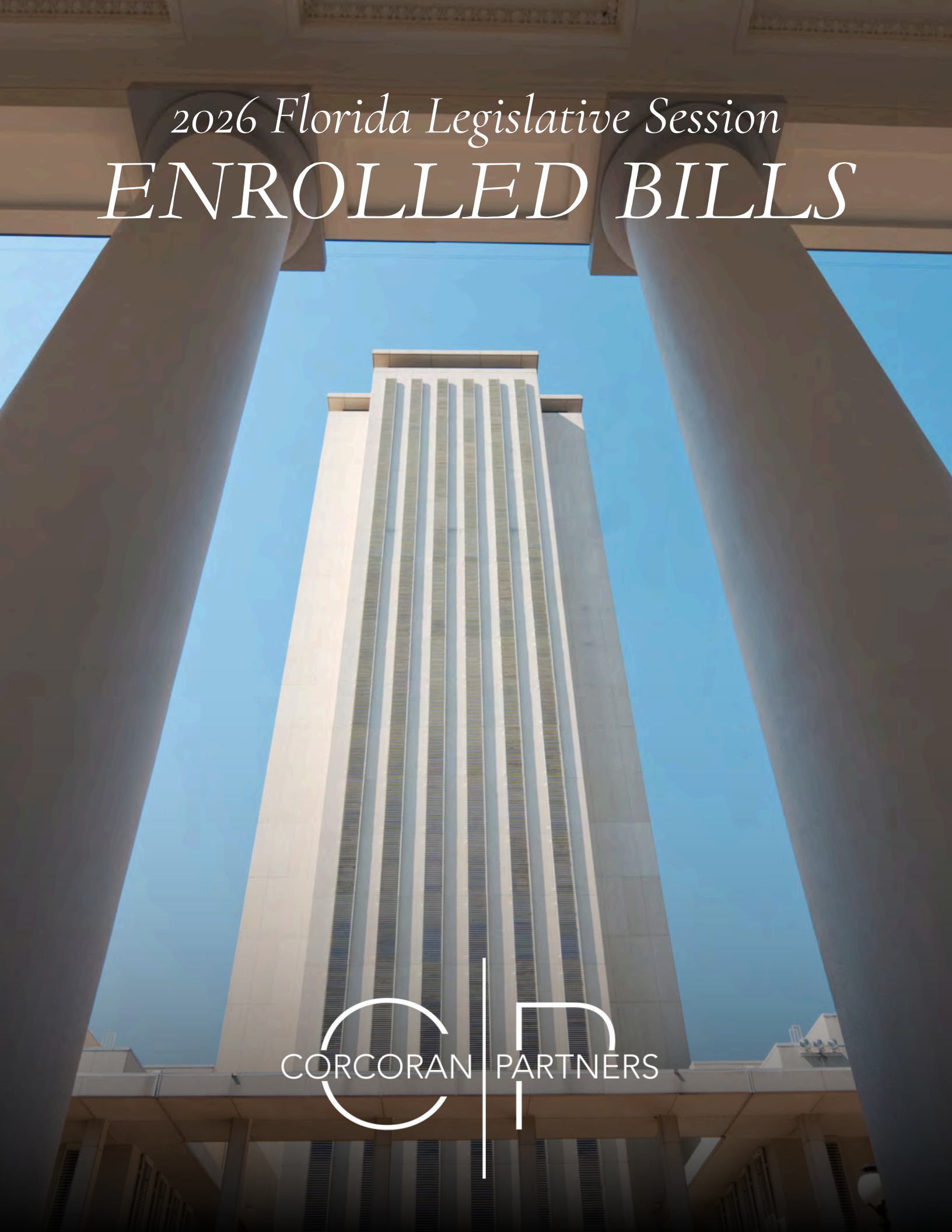

2026 Florida Legislative Session

ENROLLED BILLS

CORCORAN PARTNERS

2026 ENROLLED BILLS
Ordered by Bill Number

SB 0014	**Relief of Jose Correa by Miami-Dade County** by Rodriguez
	Relief of Jose Correa by Miami-Dade County; Providing for the relief of Jose Correa by Miami-Dade County; providing an appropriation to compensate Mr. Correa for injuries sustained as a result of the negligence of an employee of Miami-Dade County; providing a limitation on the payment of compensation and certain fees, etc. CLAIM: $4,100,000 Effective Date: Upon becoming a law
HB 0033	**Transportation Facility Designations** by Porras
	Transportation Facility Designations: Provides honorary designations of certain transportation facilities in specified counties; directs DOT to erect suitable markers. Effective Date: July 1, 2026
HB 0035	**Habitual Traffic Offender Designation** by Barnaby
	Habitual Traffic Offender Designation: Revises definition of term "habitual traffic offender." Effective Date: July 1, 2026
HB 0047	**Specific Medical Diagnoses in Child Protective Investigations** by Bartleman
	Specific Medical Diagnoses in Child Protective Investigations : Providing an exception to the requirement that the Department of Children and Families immediately forward certain allegations to a law enforcement agency; requiring such allegations to be immediately forwarded to a law enforcement agency upon completion of the department's investigation; requiring a child protective investigator to inform the subject of an investigation of a certain duty; requiring Child Protection Teams to consult with a licensed physician or advanced practice registered nurse with certain experience when evaluating certain reports; requiring the physician or advanced practice registered nurse who performed certain medical examinations to submit a written report to the department and certain persons within a specified timeframe, etc. Effective Date: July 1, 2026
SB 0052	**Security Services at Places of Worship** by Gaetz
	Security Services at Places of Worship; Providing an exemption from licensure requirements for certain volunteers who provide armed security services for places of worship, etc. Effective Date: 7/1/2026
HB 0089	**Veterinary Prescription Disclosure** by Brackett
	Veterinary Prescription Disclosure: Requires veterinarian to inform client of right to receive written prescription or option to have prescription filled at veterinary establishment; specifies certain transmission methods for "written prescriptions"; requires disclosure to include acknowledgement signed by client; requires acknowledgement to include certain information; prohibits certain statements, notifications, warnings, or assumptions; requires posting of certain information; provides requirements therefor; provides exceptions. Effective Date: July 1, 2026
HB 0091	**Candidate Qualification** by Tant
	Candidate Qualification: Specifying that a person seeking to qualify for office as a candidate must be a registered member of a political party, or registered without any party affiliation, for 365 consecutive days preceding the beginning of qualifying for an election; specifying that such person may not have legally changed his or her name through a specified petition during such 365-day period; providing that compliance with specified requirements is mandatory; providing construction; authorizing qualified candidates or certain political parties to challenge compliance with specified provisions by filing suit in a specified circuit court; prohibiting a person from being qualified as a candidate for nomination or election and appearing on the ballot under specified circumstances. Effective Date: upon becoming a law

SB 0100	**Florida Statutes** by Passidomo

Florida Statutes; Adopting the Florida Statutes 2026 and designating the portions thereof that are to constitute the official law of the state; providing that the Florida Statutes 2026 shall be effective immediately upon publication; providing that general laws enacted during the 2025 regular session and prior thereto and not included in the Florida Statutes 2026 are repealed; providing that general laws enacted after the 2025 regular session are not repealed by this adoption act, etc. Effective Date: On the 60th day after adjournment sine die of the session of the Legislature in which enacted

SB 0102	**Florida Statutes** by Passidomo

Florida Statutes; Deleting provisions which have become inoperative by noncurrent repeal or expiration and, pursuant to s. 11.242(5)(b) and (i), F.S., may be omitted from the 2026 Florida Statutes only through a reviser's bill duly enacted by the Legislature, etc. Effective Date: On the 60th day after adjournment sine die of the session of the Legislature in which enacted

SB 0104	**Florida Statutes** by Passidomo

Florida Statutes; Deleting provisions that have expired, have become obsolete, have had their effect, have served their purpose, or have been impliedly repealed or superseded; replacing incorrect cross-references and citations; correcting grammatical, typographical, and like errors; removing inconsistencies, redundancies, and unnecessary repetition in the statutes; and improving the clarity of the statutes and facilitating their correct interpretation, etc. Effective Date: On the 60th day after adjournment sine die of the session of the Legislature in which enacted

SB 0110	**Homestead Exemptions** by Arrington

Homestead Exemptions; Revising the circumstances under which a person may be deemed to have legal or beneficial and equitable title to certain property for homestead exemption purposes, etc. Effective Date: Upon becoming a law

SB 0118	**Assessments Levied on Recreational Vehicle Parks** by Truenow

Assessments Levied on Recreational Vehicle Parks; Providing that certain special assessments on recreational vehicle parks levied by counties, municipalities, and special districts, respectively, may not be levied against a certain portion of a recreational vehicle parking space or campsite; requiring counties, municipalities, and special districts, respectively, to consider a recreational vehicle park's occupancy rates for a certain purpose, etc. Effective Date: Upon becoming a law

SB 0124	**Florida Virtual School** by Rodriguez

Florida Virtual School; Deleting provisions relating to the Florida Virtual School giving priority to certain students; providing that the board of trustees may use supplemental funding sources to develop a state-of-the-art technology-based education delivery system; authorizing the Florida Virtual School to accrue supplemental revenue from direct-support organizations; revising which entities review and approve expenditures, etc. Effective Date: 7/1/2026

HB 0131	**Curators of Estates** by Maggard

Curators of Estates: Revises requirements for court to appoint curator of estates; revising bond requirements for curators; clarifies who may subject a curator to removal & surcharge; requires curator to file periodic reports with court in specified circumstances; requires that certain details be included in such reports; requires court to review such reports; authorizes court to require more frequent reporting or additional documents. Effective Date: July 1, 2026

HB 0145	**Claims Against the Government** by McFarland

Claims Against the Government: Increasing the statutory limits on the liability of the state and its agencies and subdivisions for tort claims; revising exceptions relating to instituting actions on tort claims against the state or one of its agencies or subdivisions; revising the period after which the failure of certain entities to make a final disposition of a claim shall be deemed a final denial of the claim for certain purposes; revising the statute of limitations for tort claims against the state or one of its agencies or subdivisions and exceptions thereto, etc. Effective Date: October 1, 2026

SB 0156 **Criminal Offenses Against Law Enforcement Officers and Other Personnel** by Leek

Criminal Offenses Against Law Enforcement Officers and Other Personnel; Citing this act as the "Officer Jason Raynor Act"; revising a prohibition on the use or threatened use of force to resist arrest or detention; providing for enhanced punishment for manslaughter when committed against specified officers; revising provisions concerning assault or battery upon specified officers and other personnel; revising a provision concerning resisting, obstructing, or opposing specified officers or legally authorized persons, etc. Effective Date: Upon becoming a law

HB 0167 **Former Phosphate Mining Lands** by McClure

Former Phosphate Mining Lands: Provides conditions for cause of action against certain former phosphate mine sites; authorizes landowners to record certain notice of former phosphate mines; specifies requirements for such notice; requires DOH to conduct gamma radiation surveys of former phosphate land parcels upon petition; requires that specified documentation of radiation levels be submitted in certain civil actions related to phosphate mining. Effective Date: July 1, 2026

SB 0168 **Public Nuisances** by Truenow

Public Nuisances; Revising the list of places that may be declared a public nuisance to include the site of a gambling house; revising provisions relating to the assessment and collection of fines for public nuisances; deleting a limit on the total amount of fines that may be imposed on a public nuisance, etc. Effective Date: 7/1/2026

HB 0175 **Payment Stablecoin** by Barnaby

Payment Stablecoin: Revises Florida Control of Money Laundering in Money Services Business Act to include payment stablecoins; requires certain payment stablecoin issuers to comply with certain regulations; prohibits persons from engaging in activity of qualified payment stablecoin issuer without being licensed or exempted from licensure; requires out-of-state state-qualified payment stablecoin issuers to provide specified written notice to OFR; specifies that certain transactions are not regulated under certain provisions; specifies that certain payment stablecoin is not security & not subject to certain provisions; specifies that office remains solely responsible for supervising qualified payment stablecoin issuers or is jointly responsible with Office of Comptroller of Currency for such supervision; prohibits trust company from engaging in activity of qualified payment stablecoin issuer unless trust company obtains certificate of approval or is exempted from such certificate. Effective Date: upon becoming a law

HB 0177 **Offices of Criminal Conflict and Civil Regional Counsel** by Maney

Offices of Criminal Conflict and Civil Regional Counsel: Requires offices of criminal conflict & civil regional counsel to provide notice to court in certain circumstances; authorizes courts to appoint office of criminal conflict & civil regional counsel from another region to represent defendant if certain requirements are met; requires court to appoint private counsel; requires JAC to pay appointed office of criminal conflict & civil regional counsel for due process costs & services, subject to legislative appropriation; requires appointed counsel to provide certain documentation to JAC in order to receive payment or reimbursement. Effective Date: July 1, 2026

SB 0178 **Athletics in Public K-12 Schools** by Jones

Athletics in Public K-12 Schools; Requiring the Florida High School Athletic Association to adopt bylaws authorizing a head coach to support the welfare of a student by using personal funds to provide certain effects to the student; requiring the head coach to report such use of personal funds to the association; providing that such use of personal funds is presumed not to be an impermissible benefit, etc. Effective Date: 7/1/2026

SB 0182 **School Teacher Training and Mentoring Program** by Jones

School Teacher Training and Mentoring Program; Establishing the School Teacher Training and Mentoring Program within the Department of Education; providing the purpose of the program; authorizing school districts and charter schools to place certain classroom teachers as teacher mentors in specified schools for specified purposes; providing requirements for teacher mentors and mentees; authorizing teacher mentors to receive a stipend, etc. Effective Date: 7/1/2026

SB 0192 **Patient Funds Held in Trust by Chiropractic Physicians** by Martin

Patient Funds Held in Trust by Chiropractic Physicians; Deleting the limitation on the amount of patient funds a chiropractic physician may hold in trust for specified purposes, etc. Effective Date: 7/1/2026

HB 0199 **Veterans Affairs** by Maney

Veterans Affairs: Revises admissions process for veterans treatment court programs; authorizes court, in consultation with multidisciplinary team, to determine eligibility for veterans treatment court programs; requires court to consider recommendation of state attorney when making eligibility determination; authorizes sentencing courts to divert defendants to veterans treatment court programs; requires certain notice be provided to defendants; provides for disposition of probation or community control violations by program participants. Effective Date: July 1, 2026

SB 0212 **Sexual Offenders and Sexual Predators** by McClain

Sexual Offenders and Sexual Predators; Revising residency restrictions for persons convicted of certain sexual offenses occurring on or after a specified date; revising the prohibition of specified offenders from coming within a specified distance of a place where children congregate; requiring a person who has been convicted of specified offenses to provide notice to a school or child care facility under certain circumstances; authorizing the warrantless arrest of a person if a law enforcement officer has probable cause to believe the person committed specified offenses, etc. Effective Date: 7/1/2026

HB 0245 **Child Pornography Terminology** by Baker

Child Pornography Terminology: Replaces the term "child pornography" with the term "child sexual abuse material"; provides legislative intent and applicability, etc. Effective Date: July 1, 2026

SB 0246 **Specialty License Plates** by Gruters

Specialty License Plates; Requiring certain organizations that have an approved specialty license plate to submit within a specified timeframe certain financial information to the Department of Highway Safety and Motor Vehicles; prohibiting specialty license plate annual use fees or interest earned from such fees from being distributed to certain entities; requiring the department to develop an Endless Summer motorcycle specialty license plate; revising provisions relating to the issuance and fee distribution for Fraternal Order of Police license plates; directing the department to develop specified specialty license plates, etc. Effective Date: 10/1/2026

HB 0249 **Designation of Official State Flagship** by Gonzalez Pittman

Designation of Official State Flagship: Redesignates official state flagship as S.S. American Victory. Effective Date: July 1, 2026

HB 0253 **Veterans Dental Care Grant Program** by Edmonds

Veterans Dental Care Grant Program: Revises purpose of Veterans Dental Care Grant Program. Effective Date: July 1, 2026

HB 0271 **Foreign and Alien Bail Bond Insurers** by Valdés

Foreign and Alien Bail Bond Insurers: Provides duties of certain foreign & alien bail bond insurers relating to reporting bail bond premiums to OIR, keeping records of considerations paid for bail bonds written by insurers, & disclosing certain information in financial statements filed with office. Effective Date: July 1, 2026

HB 0273 **Special District Funding** by Johnson

Special District Funding: Revising agency agreements that provide state financial assistance to recipients or subrecipients to include specified special districts as an entity to which such agency may provide for the payment of invoices under specified circumstances; providing construction; requiring state agencies to expedite payment requests from certain counties, municipalities, and special districts for a specified purpose, etc. Effective Date: July 1, 2026

HB 0277 **Domestic Violence and Protective Injunctions** by Tendrich

Domestic Violence and Protective Injunctions: Reclassifying penalties for committing a domestic

violence offense if a person has a prior conviction for domestic violence; providing that sentencing and incentive gain-time eligibility determinations are made without regard to a penalty enhancement; establishing an electronic monitoring pilot program in a specified county; requiring the sheriff, in consultation with certain persons, to design and implement the pilot program; providing requirements for the pilot program; requiring the Department of Corrections to complete an evaluation and provide specified reports to the Legislature; requiring the Department of Law Enforcement to enter injunctions against dating violence and sexual violence into a statewide verification system, etc. Effective Date: July 1, 2026

SB 0288 **Rural Electric Cooperatives** by Rodriguez

Rural Electric Cooperatives; Prohibiting a cooperative that sells electricity at retail from adopting, enacting, or enforcing a fee meeting specified criteria, etc. Effective Date: 7/1/2026

SB 0290 **Department of Agriculture and Consumer Services** by Truenow

Department of Agriculture and Consumer Services; Prohibiting counties from enacting or enforcing any law that restricts or prohibits the use of gasoline-powered farm equipment or gasoline-powered landscape equipment or that distinguishes such equipment from any other equipment under certain circumstances; prohibiting an application for a development on an ecologically significant parcel in a low-density municipality from being administratively approved without an attestation provided by the developer; establishing the Florida Food Animal Veterinary Medicine Loan Repayment Program; revising the Florida Forest Service’s powers, authority, and duties, etc. Effective Date: 7/1/2026

SB 0296 **Victims of Domestic Violence and Dating Violence** by Berman

Victims of Domestic Violence and Dating Violence; Creating the “Helping Abuse Victims Escape Now (HAVEN) Act”; creating the HAVEN Coordinating Council within the Department of Law Enforcement; authorizing counties to create county-level HAVEN councils; authorizing county-level HAVEN councils to take certain actions; defining the term “dating violence”; providing that victims of dating violence may apply to participate in the Attorney General’s address confidentiality program, etc. Effective Date: 7/1 /2026

SB 0298 **Public Records/Victims of Domestic and Dating Violence** by Berman

Public Records/Victims of Domestic and Dating Violence; Providing that certain identifying information of victims of dating violence who participate in the Address Confidentiality Program for Victims of Domestic and Dating Violence which are held by the Office of the Attorney General or contained in voter registration or voting records held by the supervisor of elections or the Department of State are exempt from public records requirements; providing for retroactive application; providing for future legislative review and repeal; providing statements of public necessity, etc. Effective Date: On the same date that SB 296 or similar legislation takes effect, if such legislation is adopted in the same legislative session or an extension thereof and becomes a law

SB 0302 **Coastal Resiliency** by García

Coastal Resiliency; Prohibiting the Board of Trustees of the Internal Improvement Trust Fund from approving the dredging or filling of the submerged lands of the Terra Ceia Aquatic Preserve unless such dredging and filling occurs for certain reasons; authorizing certain dredging and filling of submerged lands and placement of certain shorelines and seawalls within the Biscayne Bay Aquatic Preserve; authorizing the erection of certain structures within aquatic preserves; requiring the Department of Environmental Protection, by a specified date, to develop guidelines and standards for nature-based methods to address coastal resiliency and to adopt rules, subject to legislative ratification, for a statewide permitting process for such coastal resiliency, etc. Effective Date: 7/1/2026

HB 0325 **Education and Workforce Development for Inmates** by Kendall

Education and Workforce Development for Inmates: Authorizes DOT to expend certain funds for all workforce development programs, rather than only construction workforce development programs; authorizes department to provide grants to private educational providers to use for certain certification & training opportunities; requires certification & training opportunities to include training for specified commercial driver licenses to certain inmates; provides eligibility; authorizes department to use workforce development funds for certain certification & training opportunities; requires Correctional Education Program under DOC to annually submit report to Secretary of Corrections with specified

information; authorizes Correctional Education Program to implement career & technical education program in which certain inmates can earn specified commercial driver licenses; provides eligibility; authorizes inmate to be transported in or to operate state-owned vehicle; requires certified correctional officer to be present during such transport or operation. Effective Date: July 1, 2026

HB 0327 **Uterine Fibroid Research Database** by Dunkley

Uterine Fibroid Research Database: Amending provisions and deleting a prohibition on the inclusion of personal identifying information in the uterine fibroid research database. Effective Date: on the same date that HB 1515 or similar legislation takes effect

SB 0340 **Human Trafficking Education for Nurse Licensure** by Harrell

Human Trafficking Education for Nurse Licensure; Revising requirements for initial licensure as a registered nurse or licensed practical nurse, beginning on a specified date, to include completion of a certain course on human trafficking, etc. Effective Date: 7/1/2026

HB 0355 **Health Care Patient Protection** by Oliver

Health Care Patient Protection: Requires hospital emergency departments to develop & implement policies & procedures, conduct training, record weights in certain manner, designate pediatric emergency care coordinator, & conduct specified assessments; authorizes hospital with emergency department to conduct National Pediatric Readiness Project's Open Assessment under certain conditions; requires agency to adopt certain rules for comprehensive emergency management plans, and, in consultation with Florida Emergency Medical Services for Children State Partnership Program, establish minimum standards for pediatric patient care in hospital emergency departments; requires agency to collect & publish results of specified assessments submitted by hospitals by specified dates; provides requirements for collection & publication of such assessment scores. Effective Date: July 1, 2026

HB 0359 **Search Warrants** by Anderson

Search Warrants: Authorizes search warrant to be issued to recover deceased body; revises time within which certain search warrants must be returned to court; specifies time period within which search warrant issued for certain devices is considered timely executed; specifies that law enforcement agency may review data or information contained in certain devices after specified periods if devices were timely seized; provides that judge may authorize law enforcement officer applying for search warrant to appear remotely; provides that judge may authorize law enforcement officer applying for search warrant or court order to appear remotely; defines "audio-video communication technology"; authorizes law enforcement agency to obtain search warrant to use drone to conduct search in certain circumstances. Effective Date: July 1, 2026

SB 0382 **Micromobility Device** by Truenow

Micromobility Device; Providing requirements for the operation of electric bicycles; prohibiting the operation of an electric bicycle above a certain speed under certain circumstances; creating the Micromobility Device Safety Task Force adjunct to the Department of Highway Safety and Motor Vehicles; requiring the Florida Highway Patrol and each police department and sheriff’s office to maintain a certain list, beginning on a certain date, etc. Effective Date: Except as otherwise expressly provided in this act, this act shall take effect upon becoming a law

SB 0386 **Farm Equipment** by Trumbull

Farm Equipment; Authorizing a consumer to report farm equipment that is defective and does not conform to specified warranties to the manufacturer or its authorized service agent during a specified timeframe to allow the manufacturer or its authorized agent to conform such farm equipment to such warranty; requiring the manufacturer or its authorized agent to make such repairs to conform the farm equipment to the warranty upon receipt of such report, etc. Effective Date: 7/1/2026

SB 0394 **Reinsurance Intermediary Managers** by Leek

Reinsurance Intermediary Managers; Defining the term “controlling”; revising the definition of the term “reinsurance intermediary manager” to exclude certain underwriting managers, etc. Effective Date: 7/1/2026

HB 0397 **Violations of Pretrial Release Conditions for Violent Crimes** by Daley

Violations of Pretrial Release Conditions for Violent Crimes: Provides that person who is on pretrial release for specified violent crime commits separate criminal offense if such person willfully violates certain conditions of pretrial release; provides penalty for second or subsequent violation; requires person who is arrested for committing specified violations to be held in custody until his or her first appearance hearing; requires court to consider certain factors in determining whether to order pretrial detention or grant pretrial release; provides that law enforcement officer is not liable in civil action for arrest of person based on probable cause to believe that person has violated condition of pretrial release in specified circumstances; authorizes law enforcement officer to arrest person without warrant if there is probable cause to believe that person has willfully violated certain conditions of pretrial release. Effective Date: October 1, 2026

HB 0399 **Land Use and Development Regulations** by Borrero

Land Use and Development Regulations: Requires amount of application fees associated with development permits or orders to reasonably relate to certain costs; requires public schools interlocal agreements to address reasonable access to certain public easements & public rights-of-way; requires local governments to administratively approve applications for minor special exceptions or variances submitted by large destination resorts that meet certain requirements ; requires local government comprehensive plans & land development regulations to include factors for assessing compatibility of certain residential uses; requires land development regulations to incorporate measures for mitigating or minimizing potential incompatibility; prohibits residential manufactured buildings from being denied a building permit for placement on certain lots; requires housing units located on a mobile home lot to be taxed in a specified manner and be subject to payments to a specified fund; requires off-site constructed residential dwellings to be permitted as of right in certain zoning districts; requires local government regulations to be reasonable and uniformly enforced. Effective Date: upon becoming a law

SB 0418 **Law Enforcement Officer Interactions with Individuals with Autism Spectrum Disorder** by Jones

Law Enforcement Officer Interactions with Individuals with Autism Spectrum Disorder; Requiring the Department of Highway Safety and Motor Vehicles to establish a program to improve communication between individuals with autism spectrum disorder and law enforcement officers under certain circumstances; requiring the department to develop and make available to individuals with autism spectrum disorder a certain envelope and card by a specified date; defining the terms “agency” and “autism spectrum disorder”; requiring the Criminal Justice Standards and Training Commission within the Department of Law Enforcement to establish an employment training component relating to individuals with autism spectrum disorder, etc. Effective Date: 7/1/2026

SB 0422 **Automatic Dependent Surveillance-broadcasts** by Wright

Automatic Dependent Surveillance-broadcasts; Prohibiting airports from using information broadcast or collected by automatic dependent surveillance-broadcast systems for specified purposes under certain circumstances, etc. Effective Date: 7/1/2026

HB 0425 **Historic Cemeteries Program** by Aristide

Historic Cemeteries Program: Requires local governments to approve applications from historic African-American cemeteries to change land use category & zoning district of excess vacant land under certain conditions to allow development consistent & compatible with adjacent land uses. Effective Date: July 1, 2026

SB 0428 **Drowning Prevention** by Yarborough

Drowning Prevention; Revising the purpose of the Swimming Lesson Voucher Program; revising the age requirements for children receiving a voucher through the program; requiring the Department of Health to develop educational materials on drowning prevention safety measures and safe bathing practices for specified purposes; requiring hospitals, birth centers, and home birth providers to provide the educational materials to new parents and caregivers as part of their postpartum education and care, etc. Effective Date: 7/1/2026

HB 0429 **Criteria for Determining Criminal Gang Membership** by Baker

Criteria for Determining Criminal Gang Membership: Revises definition of term "criminal gang member";

defines "gang-related language." Effective Date: October 1, 2026

SB 0432 **Intoxicating Substances** by Yarborough

Intoxicating Substances; Creating “Meg’s Law”; prohibiting tobacco or nicotine dealers, or their agents or employees, from possessing, selling, possessing with intent to sell, delivering, or giving, directly or indirectly, nitrous oxide on or from the dealer’s licensed premises; excepting from the list of Schedule I controlled substances certain xylazine animal drug products approved by the United States Food and Drug Administration and used for certain purposes; creating the offense of trafficking in xylazine, etc. Effective Date: Except as otherwise expressly provided in this act and except for this section, which shall take effect upon this act becoming a law, this act shall take effect October 1, 2026

SB 0436 **Felony Battery** by Leek

Felony Battery; Revising the definition of “prison releasee reoffender” to include a defendant who commits or attempts to commit battery on a law enforcement officer which results in bodily injury; providing enhanced criminal penalties for persons who commit a second or subsequent battery after having a prior conviction for resisting an officer with violence, etc. Effective Date: July 1, 2026

HB 0441 **Conservation Lands** by Kendall

Conservation Lands: Requires Division of State Lands to publish certain information on its website before Acquisition & Restoration Council or Board of Trustees of Internal Improvement Trust Fund meets to review proposed sale of conservation lands; requires that certain parcels proposed for exchange be appraised in accordance with certain criteria; removes provisions requiring division to submit certain requests to Acquisition & Restoration Council for review; removes provisions requiring division to provide certain recommendations to board of trustees; requires division to publish certain information on its website before council or board of trustees meets to review proposed land exchange; requires division to submit certain requests to council for review & requiring council to provide recommendations to division in certain circumstances; requires division to provide certain recommendations to board of trustees in certain circumstances; requires governing board of water management district to publish certain information on its website before meeting to review proposed sale or exchange of certain lands. Effective Date: July 1, 2026

HB 0445 **Dangerous Crimes** by Greco

Dangerous Crimes: Requires court to remand person who pleads guilty or nolo contendere to, or is found guilty of, dangerous crime to custody immediately; requires such person to remain in custody pending sentencing without possibility of release on bond; revising definition of "dangerous crime." Effective Date: July 1, 2026

HB 0453 **Requirements for a Standard High School Diploma** by Gossett-Seidman

Requirements for a Standard High School Diploma: Provides that completion of 2 years of marching band satisfies both physical education & performing arts requirements for standard high school diploma & that students with disabilities may participate in Special Olympics to meet physical education requirement for standard high school diploma. Effective Date: July 1, 2026

HB 0461 **Volunteering at Polling Locations** by Michael

Volunteering at Polling Locations: Provides that specified high school students who volunteer to assist poll workers are not subject to provisions prohibiting certain agencies and state & local officials from soliciting, accepting, or otherwise using private funds or certain personal services for election-related expenses. Effective Date: July 1, 2026

SB 0474 **Military Affairs** by Wright

Military Affairs; Revising the authorization to be granted a leave of absence for military service to include the Coast Guard; revising the authorization to be granted a leave of absence for reserve or guard training to include members of the Florida State Guard; specifying that an authorization for a leave of absence for all employees of the state and the counties, municipalities, and political subdivisions of the state to perform active military service for a specified timeframe is based on a single order; revising the list of military positions required to participate in the Senior Management Service Class of the Florida Retirement System, etc. Effective Date: 7/1/2026

HB 0477	**Drug Paraphernalia** by Salzman

Drug Paraphernalia: Revises definition of "drug paraphernalia" to exclude certain narcotic-drug-testing products. Effective Date: July 1, 2026

SB 0484	**Data Centers** by Ávila

Data Centers; Specifying that local governments maintain authority to exercise power and responsibility over comprehensive planning and land development regulations relating to large load customers; requiring public utilities to provide certain minimum tariff and service requirements for large load customers; prohibiting the governing board of a water management district or the Department of Environmental Protection from issuing a permit for the consumptive use of water to a large-scale data center under certain circumstances; requiring the Office of Program Policy Analysis and Government Accountability to contract for a study relating to the construction and operation of large-scale data centers, etc. Effective Date: Except as otherwise expressly provided in this act and except for this section, which shall take effect upon becoming a law, this act shall take effect July 1, 2026

SB 0488	**Transportation** by Massullo, Jr.

Transportation; Requiring licensing, rather than registration, of motor carriers; revising reporting periods and due dates for motor fuel use tax returns; revising the apparent amount of property damage that requires the driver of a vehicle involved in a crash to notify law enforcement of the crash; defining the term “REAL ID driver license or identification card”; providing that the use of a license plate frame or decorative border device is not prohibited under specified conditions, etc. Effective Date: 10/1/2026

SB 0490	**Public Records/E-mail Addresses collected by the Department of Highway Safety for Providing Renewal Notices** by Massullo, Jr.

Public Records/E-mail Addresses collected by the Department of Highway Safety for Providing Renewal Notices ; Expanding an exemption from public records requirements for e-mail addresses collected by the Department of Highway Safety and Motor Vehicles for providing renewal notices to include e-mail addresses collected for use as a method of notification generally and not only for the purpose of providing renewal notices; expanding the exemption to include e-mail addresses collected for use as a method of notification related to vessel registrations; providing retroactive applicability; providing for future legislative review and repeal of the exemption; providing a statement of public necessity, etc. Effective Date: On the same date that SB 488 or similar legislation takes effect, if such legislation is adopted in the same legislative session or an extension thereof and becomes a law

HB 0491	**Faith-based Content in Batterers' Intervention Programs** by Blanco

Faith-based Content in Batterers' Intervention Programs: Specifies that batterers' intervention programs may include faith-based activities, but may not require participation in such activities. Effective Date: July 1, 2026

SB 0504	**Code Inspector Body Cameras** by Burgess

Code Inspector Body Cameras; Requiring a governmental entity that permits its code inspectors to wear body cameras to establish certain policies and procedures; requiring such governmental entity to ensure that certain training occurs, to retain certain data in accordance with public records laws, and to perform a periodic review of actual body camera practices; providing that certain provisions relating to the interception of wire, electronic, and oral communications do not apply to body camera recordings made by code inspectors, etc. Effective Date: July 1, 2026

HB 0505	**Virtual Currency Kiosks** by Owen

Virtual Currency Kiosks: Revising the requirements for certain rules adopted by the Financial Services Commission; revising the actions by money services businesses, authorized vendors, or affiliated parties which constitute grounds for disciplinary action; prohibiting persons from engaging in certain business unless they are registered or exempt from registration; prohibiting a virtual currency kiosk business from operating in this state without registering or renewing its registration; requiring the Office of Financial Regulation to give a specified notice to applicants; specifying that certain money transmitters are exempt from registration as a virtual currency kiosk business but are subject to certain provisions; requiring applicants to submit certain information to the office to be registered as a virtual currency kiosk business; requiring a virtual currency kiosk business to ensure that its virtual currency

kiosk requires certain attestations from the customer and displays a certain disclosure; requiring a virtual currency kiosk business to provide a customer with a specified physical or electronic receipt upon completion of a virtual currency transaction; requiring a virtual currency kiosk business to issue a full refund under certain circumstances, etc. Effective Date: July 1, 2026

SB 0506 **Public Records/Body Camera Recordings Recorded by a Code Inspector** by Burgess

Public Records/Body Camera Recordings Recorded by a Code Inspector; Providing an exemption from public records requirements for body camera recordings recorded by a code inspector under certain circumstances; providing exceptions; requiring a local government to retain body camera recordings for a specified timeframe; providing for future legislative review and repeal of the exemption; providing a statement of public necessity, etc. Effective Date: On the same date that SB 504 or similar legislation takes effect, if such legislation is adopted in the same legislative session or an extension thereof and becomes a law

SB 0538 **Extracurricular Activities** by Simon

Extracurricular Activities; Authorizing district school boards to adopt policies for the use of certain funds to provide funding to athletic coaches or activity sponsors of extracurricular activities; revising eligibility requirements for a student to participate in an interscholastic or intrascholastic extracurricular activity; deleting requirements for the Florida High School Athletic Association (FHSAA) to facilitate a program for private school students to participate in an interscholastic or intrascholastic sport; authorizing a public school to assess an activity fee for certain students, etc. Effective Date: 7/1/2026

HB 0559 **Animal Welfare** by Chaney

Animal Welfare: Creates offense of causing or enticing minor to commit, or in presence of minor committing, animal cruelty; requires court order minor who commits specified acts of animal cruelty to undergo psychological evaluation & receive counseling & treatment; requires parent, guardian, or state to pay for evaluation, counseling, & treatment; authorizes court to hold parent or guardian in contempt; requires FDLE to post on website information relating to individuals convicted of specified animal cruelty offenses; specifies time periods for posting information; requires department develop procedure for person to petition for removal of his or her information; requires department remove specified information; specifies time period within which information must be removed; authorizes department to adopt rules; requires clerks of court & county detention facilities to provide FDLE with specified information, data, & images; creates offense of causing or enticing minor to commit, or in presence of minor committing, fighting or baiting animals; creates offense of causing or enticing minor to commit, or in presence of minor committing, sexual activities involving animals; increases maximum civil penalty for specified violations of animal control or cruelty ordinances; increases level on offense severity ranking chart for fighting or baiting animals; ranks offenses on offense severity ranking chart. Effective Date: October 1, 2026

HB 0561 **Educator Preparation and Certification** by Gerwig

Educator Preparation and Certification: Revises provisions relating to educator preparation institutes, award of temporary educator certifications, & reinstatement & renewal of professional educator certificates; & revises requirements for Florida Center for Teaching Excellence. Effective Date: July 1, 2026

HB 0565 **Agency for Persons with Disabilities** by Tant

Agency for Persons with Disabilities : Revises definition of term "developmental disability"; defines "Tatton-Brown-Rahman syndrome"; requires level 2 employment screening for all employees of residential facilities & adult day training programs; requires agency to contract with state university to develop & administer certain surveys; provides requirements for such surveys; requires state university to submit certain report to agency by specified date; requires agency to conduct public hearings on specified information; conduct or contract for gap analysis for specified purposes; identify core competencies & performance metrics & make recommendations for standardizing assessments; & submit certain report to Governor & Legislature by specified date. Effective Date: July 1, 2026

HB 0569 **Forensic Client Services** by Chaney

Forensic Client Services: Revises definition of "forensic client" to include person committed to involuntary residential services in a secure facility of the Agency for Persons with Disabilities,

republishing s. 916.303, F.S., relating to determination of incompetency. Effective Date: July 1, 2026

SB 0572	**Ethics for Public Officers and Employees** by Harrell

Ethics for Public Officers and Employees; Revising the definition of the term “relative” to include foster parents and foster children; providing that specified provisions do not prohibit a board, council, commission, or collegial body from appointing, employing, promoting, or advancing elected public officials who are related to a leadership position on the same board, council, commission, or collegial body, etc. Effective Date: Upon becoming a law

SB 0578	**Alzheimer’s Disease Awareness Initiative** by Simon

Alzheimer’s Disease Awareness Initiative; Requiring the Department of Elderly Affairs to contract for the development and implementation of the Alzheimer’s Disease Awareness Initiative; providing requirements for the initiative; providing requirements for the entity with which the department contracts to develop and implement the initiative, etc. Effective Date: 7/1/2026

SB 0584	**Commercial Driving Schools** by Ávila

Commercial Driving Schools; Authorizing the Department of Highway Safety and Motor Vehicles to enter into interagency agreements with tax collectors for a specified purpose; specifying that such an interagency agreement is a delegation of authority of the department to the tax collector; providing that such an interagency agreement may include, but need not be limited to, certain grants of authority, etc. Effective Date: July 1, 2026



2026 Florida Legislative Session
MONEY REPORT

CORCORAN | PARTNERS

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
SENATE APPROPRIATION AND CLAIM BILLS - INTRODUCED

BILL NO.	MONEY TYPE	BILL TYPE	MONEY AMOUNT	MINI-TITLE
S 00002	A/C	Claims/General	$1,750,000	Relief of the Estate of Danielle Maudsley by the Department of Highway Safety and Motor Vehicles
S 00004	A/C	Claims/General	$20,000,000	Relief of C.C. by the Department of Children and Families
S 00006	A/C	Claims/General	$3,800,000	Relief of L.E. by the Department of Children and Families
S 00008	C	Claims/Local Bill	$626,770	Relief of Patricia Ermini by the Lee County Sheriff’s Office
S 00010	A/C	Claims/General	$5,000,000	Relief of Maury Hernandez by the Department of Corrections
S 00012	C	Claims/Local Bill	Indeterminate	Relief of Maximus Giannikos by the City of Clearwater
*S 00014	C	Claims/Local Bill	$4,100,000	Relief of Jose Correa by Miami-Dade County
S 00016	C	Claims/Local Bill	$2,300,000	Relief of Heriberto A. Sanchez-Mayen by the City of St. Petersburg
S 00018	C	Claims/Local Bill/CS	$2,588,259	Relief of the Estate of M.N. by the Broward County Sheriff’s Office
S 00020	A/C	Claims/General	$14,926,640	Relief of H.H. by the Department of Children and Families
S 00022	A/C	Claims/General	$28,000,000	Relief of L.P. by the Department of Children and Families
S 00024	C	Claims/Local Bill	$500,000	Relief of Lourdes Latour and Edward Latour by Miami-Dade County
S 00026	A/C	Claims/General	$2,200,000	Relief of the Estate of Mark LaGatta by the Department of Transportation
S 00028	C	Claims/Local Bill	$312,500	Relief of Reginald Jackson by the City of Lakeland
S 00060	A	General Bill/CS	$950,000	Criminal Conflict and Civil Regional Counsel Membership in the Senior Management Service Class
S 00108	A	General Bill	$1,000,000	Resolution of Disputed Property Insurance Claims
S 00250	A	General Bill	$144,813,977	Rural Communities
S 00348	A	General Bill	$1,174,816	Statewide Health Care Coverage
S 00416	A	General Bill	Indeterminate	Property Damage Caused by Limestone Mining Operations
S 00522	A	General Bill	$83,651	Motor Vehicle Insurance
S 00616	A	General Bill	$2,000,000	Florida Highway Patrol Body Camera Use
S 00694	A	General Bill/CS	$4,000,000	Compensation of the Descendants of Charles Greenlee, Walter Irvin, Samuel Shepherd, and Ernest Thomas
S 00702	A	General Bill	$500,000	Mental Health Programs for Gun Violence Prevention
S 00850	A	General Bill	$250,000	Fortification of Enriched Grain Products with Folic Acid
S 00994	A	General Bill	$3,711,749	Florida Kratom Consumer Protection Act
S 01062	A	General Bill/CS	$2,400,000	Speech and Debate Education
S 01094	C	Claims/Local Bill	Indeterminate	Relief of Sean Hurley by the Orange County Sheriff’s Office
S 01160	A	General Bill	$250,000	Office of the Corrections Ombudsman
S 01220	A	General Bill/CS	$300,000	Transportation
S 01270	A	General Bill	$2,000,000	Food and Hemp Products
S 01274	A	General Bill/CS	Indeterminate	Transportation
S 01456	A	General Bill	$7,500,000	Doula Workforce Development

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
SENATE APPROPRIATION AND CLAIM BILLS - INTRODUCED

BILL NO.	MONEY TYPE	BILL TYPE	MONEY AMOUNT	MINI-TITLE
S 01570	A	General Bill	$1,000,000	Statewide Project for Missing Persons with Special Needs
S 01710	A	General Bill	$1,500,000	Office of the Department of Corrections Ombudsperson
S 02500	A	General Bill	$115,025,780,033	Appropriations

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
HOUSE APPROPRIATION AND CLAIM BILLS - INTRODUCED

BILL NO.	MONEY TYPE	BILL TYPE	MONEY AMOUNT	MINI-TITLE
H 00115	A	General Bill	Indeterminate	Property Damage Caused by Limestone Mining Operations
H 00155	A	General Bill	$500,000	Mental Health Programs for Gun Violence Prevention
H 00341	A	General Bill	$1,000,000	Resolution of Disputed Property Insurance Claims
H 00595	A	General Bill	$1,226,804	Criminal Conflict and Civil Regional Counsel Membership in the Senior Management Service Class
H 00685	A	General Bill	$250,000	Fortification of Enriched Grain Products with Folic Acid
*H 00697	A	General Bill/CS	$30,901,933	Drug Prices and Coverage
H 00723	A	General Bill	Indeterminate	Rural Counties
H 00769	A	General Bill	$83,651	Motor Vehicle Insurance
H 00889	A	General Bill	$250,000	Office of the Corrections Ombudsman
H 01043	A	General Bill	$7,500,000	Doula Workforce Development
*H 01405	A	General Bill	$1,000,000	Statewide Project for Missing Persons with Special Needs
H 05001	A	General Bill	$113,575,226,021	General Appropriations Act
H 05403	A	General Bill	Indeterminate	Correctional Facilities Financing and Capital Improvements
H 06501	A/C	Claims/General Bill	$1,750,000	Relief/Estate of Danielle Maudsley/Department of Highway Safety and Motor Vehicles
H 06503	A/C	Claims/General Bill	$28,000,000	Relief/L.P./Department of Children and Families
H 06505	A/C	Claims/General Bill	$14,926,640	Relief/H.H./Department of Children and Families
*H 06507	A	Claims/General Bill	$3,800,000	Relief/L.E./Department of Children and Families
*H 06509	A/C	Claims/General Bill/CS	$1,200,000	Relief/Estate of Mark LaGatta/Department of Transportation
H 06511	A/C	Claims/General Bill	$5,000,000	Relief/Maury Hernandez/Department of Corrections
H 06513	C	Claims/Local Bill	Indeterminate	Relief/Max Giannikos/City of Clearwater
*H 06515	C	Claims/Local Bill	$500,000	Relief/Lourdes Latour and Edward Latour/Miami-Dade County
*H 06517	C	Claims/Local Bill	$2,300,000	Relief/Heriberto A. Sanchez-Mayen/City of St. Petersburg
H 06519	C	Claims/Local Bill	Indeterminate	Relief/Sean Hurley/Orange County Sheriff's Office
H 06521	C	Claims/Local Bill	$4,100,000	Relief/Jose Correa/Miami-Dade County
H 06523	A/C	General Bill	Indeterminate	Descendants and Estates of Charles Greenlee, Walter Irvin, Samuel Shepherd, and Ernest Thomas
H 06525	A/C	Claims/Local Bill	$312,500	Relief/Reginald Jackson/City of Lakeland
H 06527	C	Claims/Local Bill	$626,769	Relief/Patricia Ermini/Lee County Sheriff's Office
H 06529	A	Claims/General Bill	$20,000,000	Relief/C.C./Department of Children and Families
H 06531	C	Claims/Local Bill/CS	$2,588,259	Relief/Estate of M.N./Broward County Sheriff's Office



2026 Florida Legislative Session
SUBJECT INDEX

CORCORAN PARTNERS

FLORIDA LEGISLATURE
2026 - REGULAR SESSION
SUBJECT INDEX

(Boldfaced bill numbers, followed by a chapter number or "vetoed" notation, and bills preceded by an asterisk (*) all passed both chambers—Some entries may not be in final version. Adopted one-chamber resolutions also boldfaced)

A

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TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.4

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Regional Water Supplies, Member Demands and Environmental Conditions - *Receive Report*

SUMMARY

This item provides the status of Tampa Bay Water's water demand and water supply conditions including hydrologic conditions, climate, surface water and reservoir management, and source rotation. Water Shortage Mitigation Plan status and an outlook for the spring and summer seasons are also included. Tampa Bay Water continues to work with Hillsborough County to implement supply and demand management measures in the South Hillsborough County service area. Extended drought conditions triggered a Stage III Regional Supply Shortage on March 1, based on Tampa Bay Water's approved Water Shortage Mitigation Plan. The Southwest Florida Water Management District implemented a modified Phase III Extreme Water Shortage condition for their 16-county region, including the Tampa Bay area, on March 24, 2026, limiting outdoor irrigation to one-day-per-week along with other restrictions through July 1, 2026. Staff will closely monitor the drought conditions in our region and manage the potential constraints on our supply sources as we move through the annual dry season.

SUGGESTED ACTION

Receive report.

COST/FUNDING SOURCE

N/A

DISCUSSION

A summary of our current water supply conditions is presented in the following sections. Staff are closely monitoring the drought conditions that currently exist as our region continues through the annual dry season. These drought conditions triggered a Stage III Regional Supply Shortage on March 1, based on Tampa Bay Water's approved Water Shortage Mitigation Plan. The Southwest Florida Water Management District (District) declared a Modified Phase III "Extreme" Water Shortage with outdoor water use restrictions beginning April 3, 2026, through July 1, 2026. Regular updates on our water supplies and member demands will be provided to the Board and member governments in the coming months.

Summary Highlights

Since the beginning of this fiscal year through March 31, 2026, the Agency delivered an average of 203.11 million gallons per day (mgd) to meet the member government demands. This is 7.94 mgd (4.1%) more water delivered than for the same period last year. The service area received an average of 1.36 inches and 2.18 inches of rainfall in February 2026 and March 2026, respectively. Monthly average flow in the Hillsborough River was at the low end of the normal range, at the 35th percentile and 46th percentile in February 2026 and March 2026, respectively. Monthly average flow in the Alafia River was below normal for the past two months, at the 11th percentile and 23rd percentile for February 2026 and March 2026, respectively. A summary of demand and hydrologic conditions are highlighted below:

- The region received an average of 1.36 inches of rainfall in February 2026, approximately 1.4 inches below the long-term average for February.
- The region received an average of 2.18 inches of rainfall in March 2026, approximately 1.3 inches below the long-term average for March.
- The Regional Reservoir storage volume was 5.77 billion gallons as of March 31, 2026 (about 37% full).
- The Tampa Bay Seawater Desalination Facility average production was 12.17 mgd and 15.12 mgd in February and March 2026, respectively.
- The 12-month running average pumping rate for the Consolidated Permit Wellfields was 92.49 mgd at the end of March 2026.
- The 12-month running average pumping rate for the South-Central Hillsborough Regional Wellfield was 26.39 mgd at the end of March 2025, which is below the new permit limit of 26.82 mgd.

Climate Outlook

The climate outlook issued by the National Oceanic and Atmospheric Administration (NOAA) on March 30, 2026, was a La Niña Advisory. La Niña climate conditions are now present and a transition from La Niña to a neutral condition is expected from May through early to mid-summer. This summer, an El Niño climate condition is predictd to emerge and persist through at least the end of 2026. An El Niño climate condition typically brings cooler and wetter conditions to the southeast United States in

the winter months. The 90-day climate outlook issued by NOAA on March 1, 2026, predicts average precipitation and above-normal temperatures in Florida for the period of April 2026 to June 2026.

Hydrologic Conditions

The Tampa Bay region received an average of 1.36 inches of rainfall in February 2026, approximately 1.4 inches below the long-term average for February. The region received an average of 2.18 inches of rainfall in March 2026, approximately 1.3 inches below the long-term average for March, based on average rainfall from all gauges throughout the service area (Figure 1). Below-average rainfall in consecutive months (September through November 2025) and in January through March 2026 led to substantial decreases in flow in both the Alafia River and Hillsborough River (Figure 2). Compared to March streamflow in historical years, river flows were at approximately the 46th percentile (normal) and the 23rd percentile (below normal) for the Hillsborough River and Alafia River, respectively.

- Average monthly flow in the Alafia River was 40 mgd and 46 mgd for February and March 2026, respectively.
- Average monthly flow in the Hillsborough River was 53 mgd and 51 mgd for February and March 2026, respectively.

Water Demand and Supply Summary

The Water Year 2026 budgeted annual delivery to Tampa Bay Water's member governments is 209.7 mgd. The budgeted water delivery is based on the Agency's long-term demand forecasting models and a planned annual average delivery of 4.0 mgd to the City of Tampa during the Water Year. Since the beginning of this fiscal year through March 31, 2026, the Agency delivered an average of 203.11 million gallons per day (mgd) to meet the member government demands (Figure 3). This is 7.94 mgd (4.1%) more water delivered than for the same period last year. Treated surface water primarily sourced from the Reservoir averaged 59.52 mgd and 49.68 mgd in February 2026 and March 2026, respectively. Surface water withdrawals and supply conditions for February and March 2026 were as follows:

- Average regional water withdrawal from the Alafia River was 1.74 mgd and 3.78 mgd in February 2026 and March 2026, respectively.
- No withdrawal from the Tampa Bypass Canal for regional supply occurred in February 2026 and March 2026.
- Average water diversion from the Regional Reservoir to support Regional Surface Water Treatment Plant production (net change in reservoir water storage) was 57.60 mgd and 45.90 mgd in February 2026 and March 2026, respectively.
- The City of Tampa's Hillsborough River Reservoir was at an elevation of 21.0 ft. at the end of March 2026.
- Average Harney Canal augmentation was 23.68 mgd and 23.09 mgd for February and March 2026, respectively.
- Average delivery of finished water to the City of Tampa at the Morris Bridge Point of Connection was 6.28 mgd and 8.92 mgd in February 2026 and March 2026, respectively.
- The Tampa Bay Seawater Desalination Facility average production was 12.17 mgd and 15.12 mgd in February 2026 and March 2026, respectively.

- The Regional Reservoir stored volume was 5.77 billion gallons at the end of March 2026 (about 37% full).
- Aggregate groundwater production from the 13 Tampa Bay Water wellfields averaged 129.25 mgd and 139.46 mgd in February 2026 and March 2026, respectively.
- Production from the Consolidated Permit Wellfields averaged 94.96 mgd and 106.93 mgd in February 2026 and March 2026, respectively.
- The 12-month running average withdrawal rate from the Consolidated Permit Wellfields was 92.49 mgd through March 31, 2026 (Figure 4).
- The 12-month running average water production rate from the South-Central Hillsborough Regional Wellfield was 26.39 mgd through March 31, 2026 (Figure 5). This is below the new permit limit of 26.82 mgd.

Comparison of total water production from different supply sources through the end of March between Water Year 2025 and Water Year 2026 is shown in Figure 6. Tampa Bay Water continues to work with Hillsborough County to implement supply and demand management measures in the South Hillsborough County service area. Additional regional water supply delivery to the Lithia Point of Connection through the Brandon Booster Station continues based on regional water availability. The South-Central Hillsborough Regional Wellfield Water Use Permit limit was increased in November 2025 to an annual average quantity of 26.82 mgd through a net-benefit transfer of groundwater credits acquired from two nearby donor water use permits. The 12-month running average pumping rate from the South-Central Hillsborough Regional wellfield is expected to approach the new permit limit late in the fiscal year due to the continued growth in water demand in the service area.

Environmental Conditions

Tampa Bay Water closely monitors the environmental conditions around Agency wellfields and this data is used to guide production and wellfield management decisions. Water levels in area lakes and wetlands have a strong relation to rainfall conditions and are currently lower than expected for this time of year due to the below-average rainfall and record-high temperatures in the spring and summer months of 2025 and the drought conditions that began in September 2025. General water level changes are summarized as follows:

- Groundwater levels generally decreased by about 1.1 feet during February 2026.
- Groundwater levels generally increased by about 0.6 foot during March 2026.
- Groundwater levels in February 2026 were generally 4.7 feet lower than in February 2025.
- Groundwater levels in March 2026 were generally 3.6 feet lower than in March 2025.
- Average water levels in the 10 indicator lakes and wetlands located on and near Consolidated Permit Wellfields decreased by about 5.7 inches through February 2026 (based on data collected throughout the month, not necessarily end-of-month).
- Average water levels in the 10 indicator lakes and wetlands located on and near Consolidated Permit Wellfields decreased by about 2.5 inches through March 2026 (based on data collected throughout the month, not necessarily end-of-month).
- Average water levels in the 10 indicator lakes and wetlands in February 2026 were about 35.1 inches lower than water levels in February 2025.

- Average water levels in the 10 indicator lakes and wetlands in March 2026 were about 28.4 inches lower than water levels in March 2025.

Water Shortage Mitigation Plan

The Board approved the updated Water Shortage Mitigation Plan (WSMP) in April 2017. The WSMP uses rainfall, stream flow, and reservoir storage as indicators of the health of the region's water supplies. Figure 7 shows the surplus/deficit for regional rainfall and Hillsborough River flow for the past year.

- The Tampa Bay Water service area is currently under a Stage III Regional Supply Shortage beginning March 1, 2026, based on deficit rainfall in the region, river flow deficit in the Hillsborough River, and forecast reservoir elevation at the end of May.
- Cumulative rainfall in the region was at an 11.0-inch deficit through March 2026.
- Stream flow was at a 25.0-mgd deficit through March 2026.
- The storage volume in the Regional Reservoir was 5.77 billion gallons (about 37% of full storage) on March 31, 2026.
- To exit the Stage III Regional Supply Shortage, the 12-month river flow deficit must be relieved to 5 mgd or less OR both current and forecasted reservoir levels must be above the Stage III exit levels. The region would then be in a Stage II Drought Warning condition.

Staff continue to work with the members in collecting watering restriction and conservation information, discussing and exploring various short-term and long-term demand management alternatives, implementing a consistent public awareness campaign throughout the region, and identifying additional opportunities to optimize existing water resources.

BACKGROUND

Data collection, analysis, and interpretation as well as decision-making are ongoing for a multitude of factors that influence and constrain Agency operations. These include hydrologic and environmental conditions, supply and demand conditions, treatment plant parameters, water quality constituents, along with equipment/machinery and infrastructure variables. A summary of monthly information is compiled and provided to the Board in each Agenda Packet and is supplemented as necessary. A summary of highlights is presented annually.

Attachment (1)

Demand, Supply and Environmental Conditions through March 2026

Figure 1: Water Year 2026
Monthly Rainfall vs. Average Monthly Rainfall

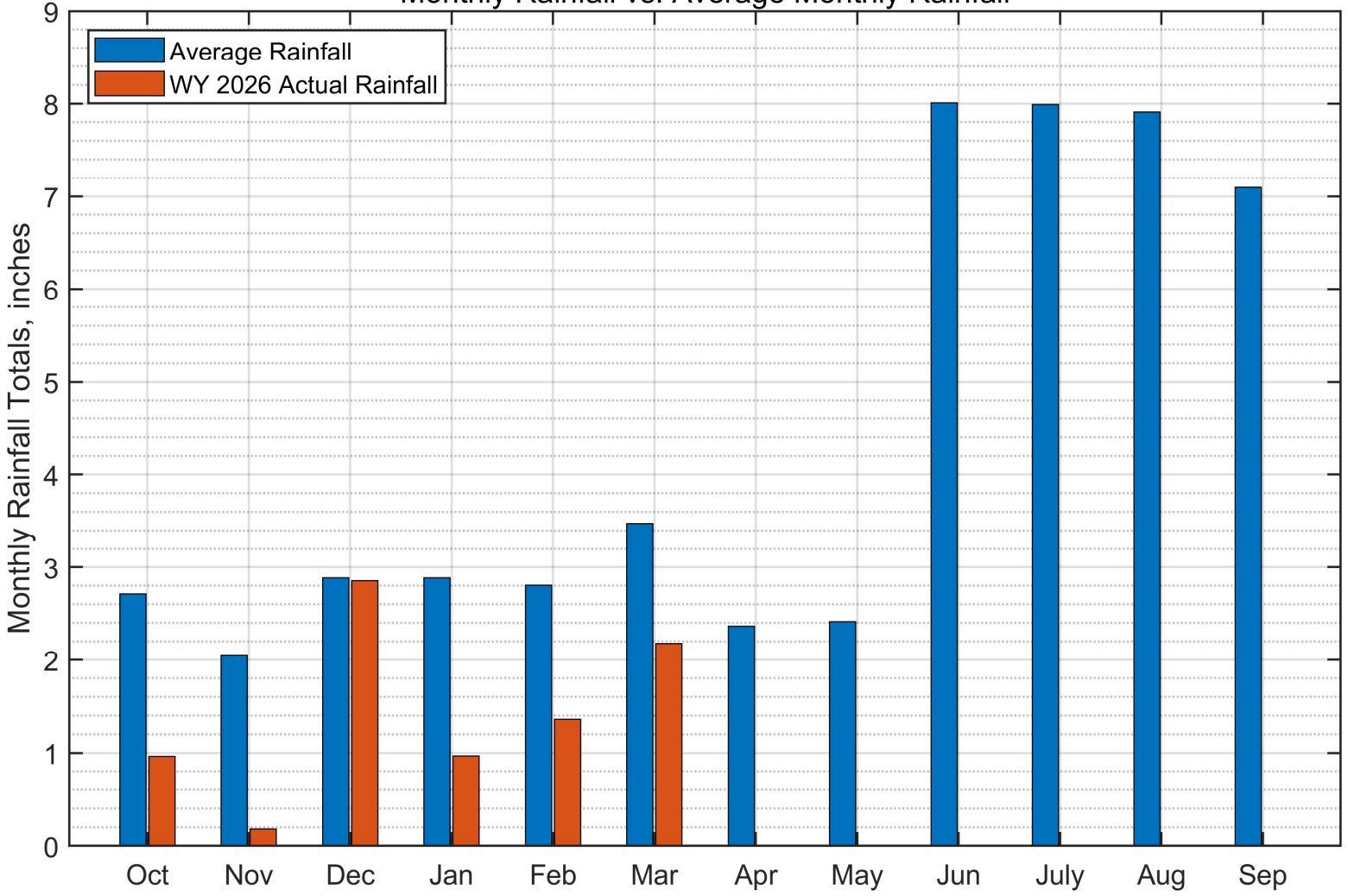


Figure 2: Streamflow Conditions at Alafia and Hillsborough Rivers Through Mar 31 2026

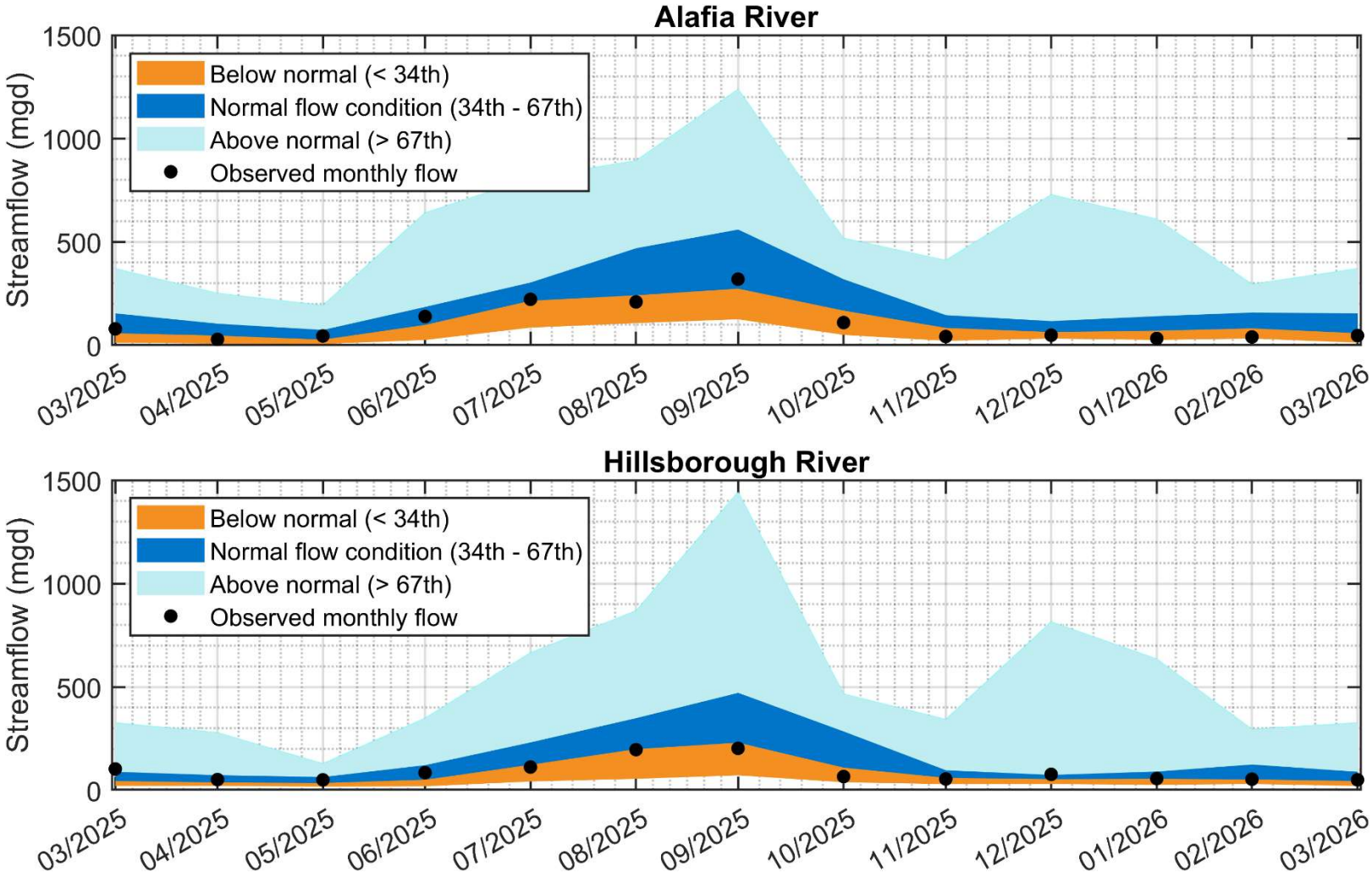


Figure 3: Tampa Bay Water Delivery Through Mar 31
Water Year 2026 Compared To Water Year 2025

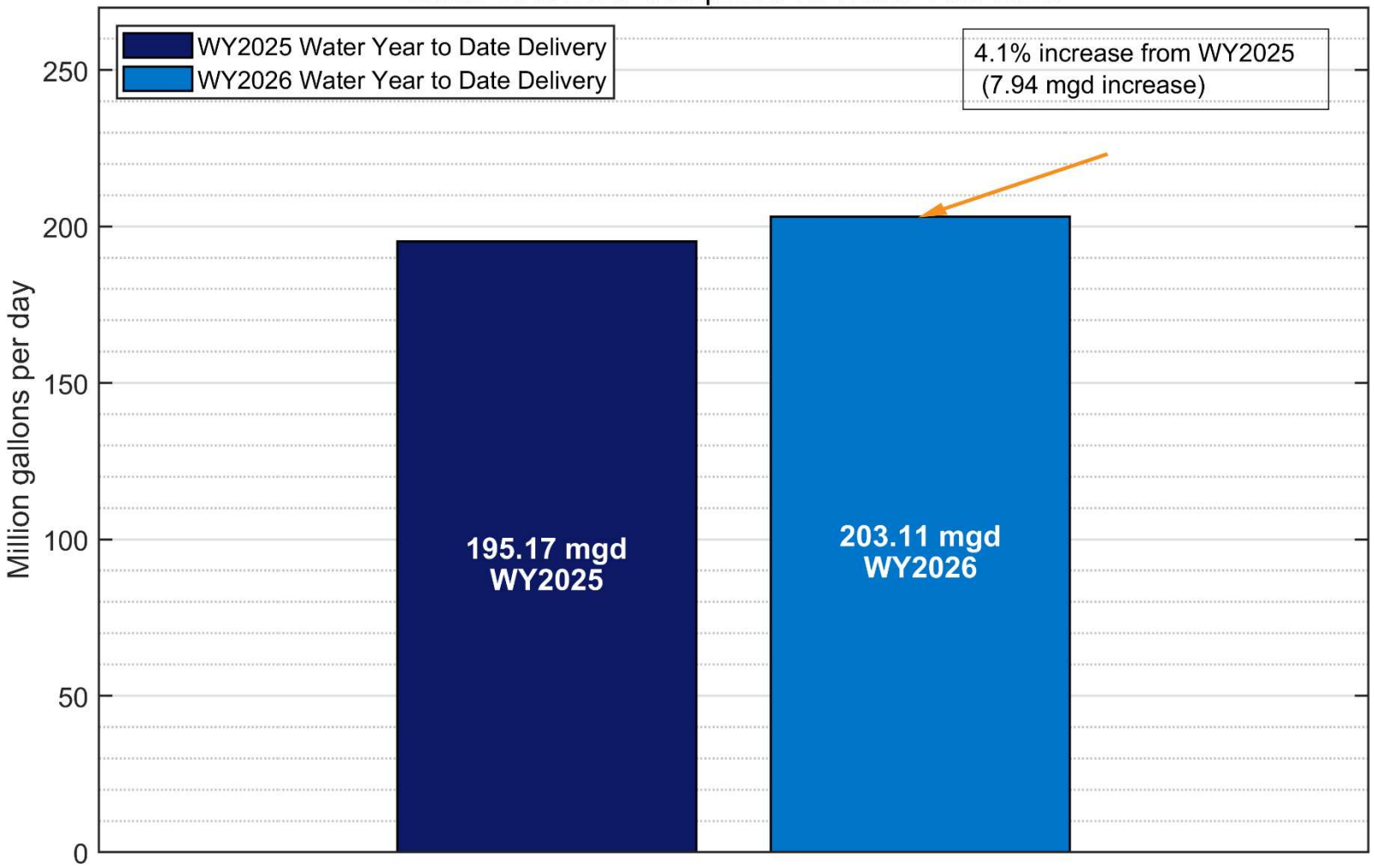


Figure 4: Consolidated Wellfield Production

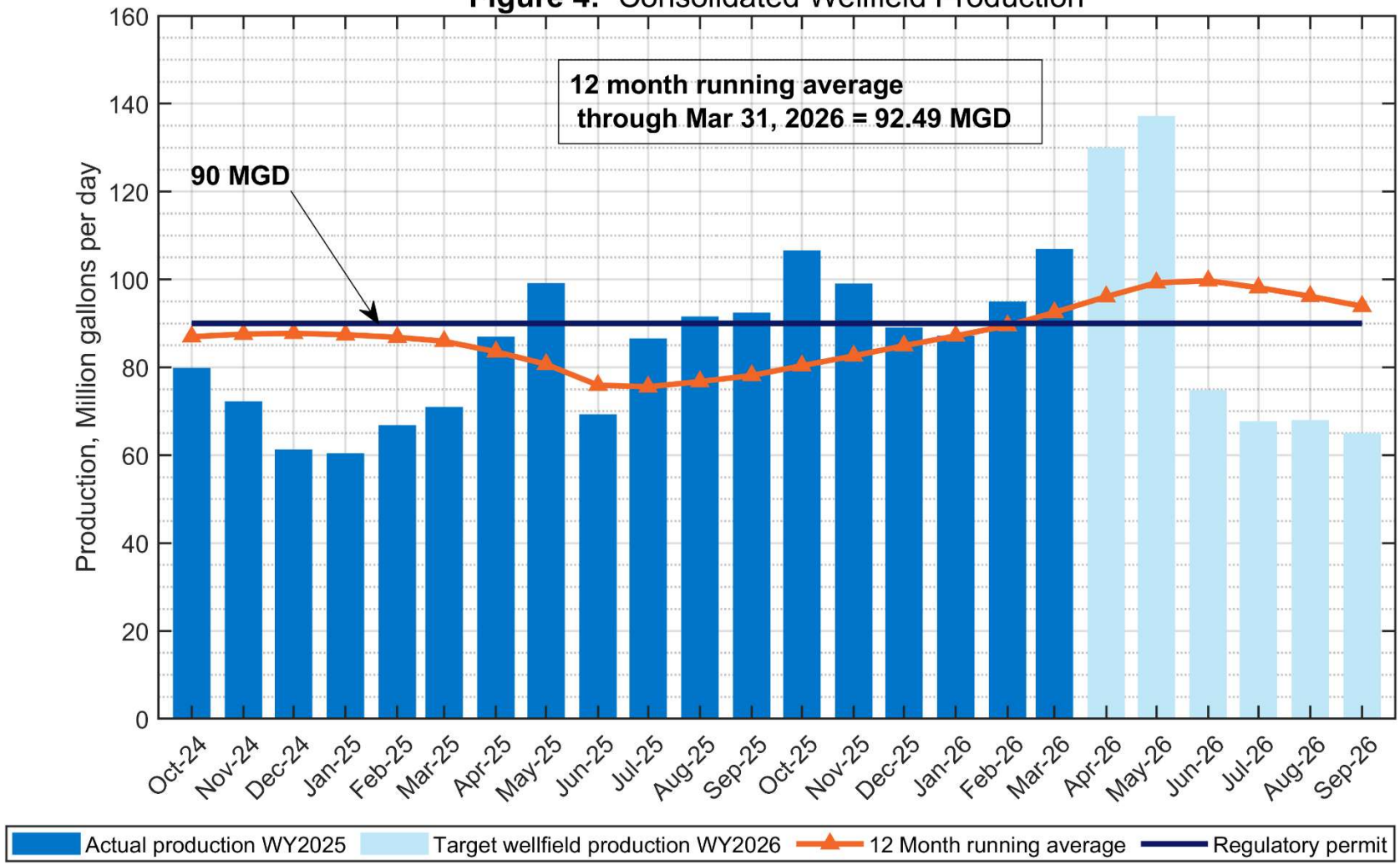


Figure 5: South-Central Hillsborough Regional Wellfield

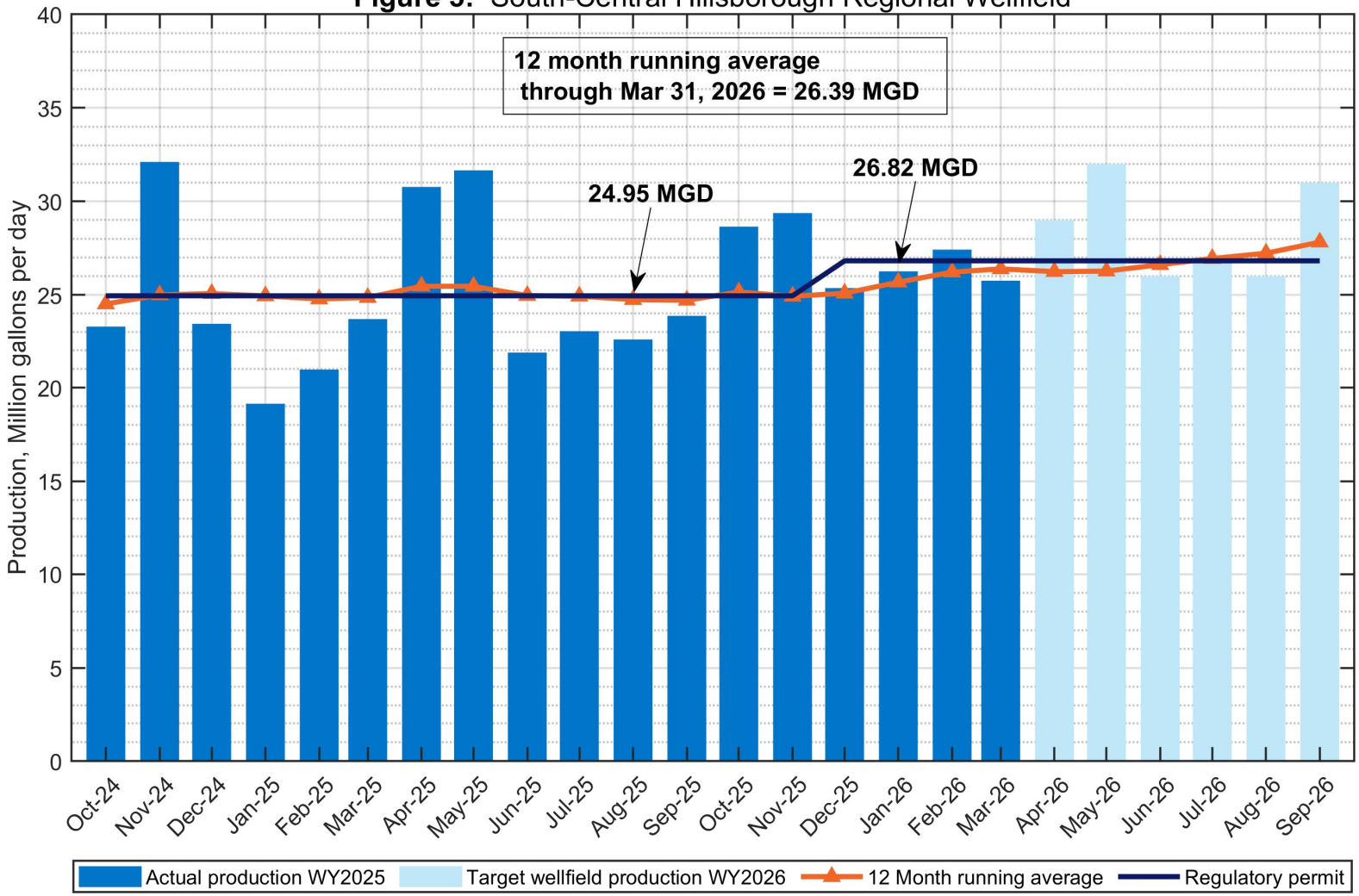


Figure 6: Tampa Bay Water Supply Sources Through Mar 31
Water Year 2025 Compared To Water Year 2026

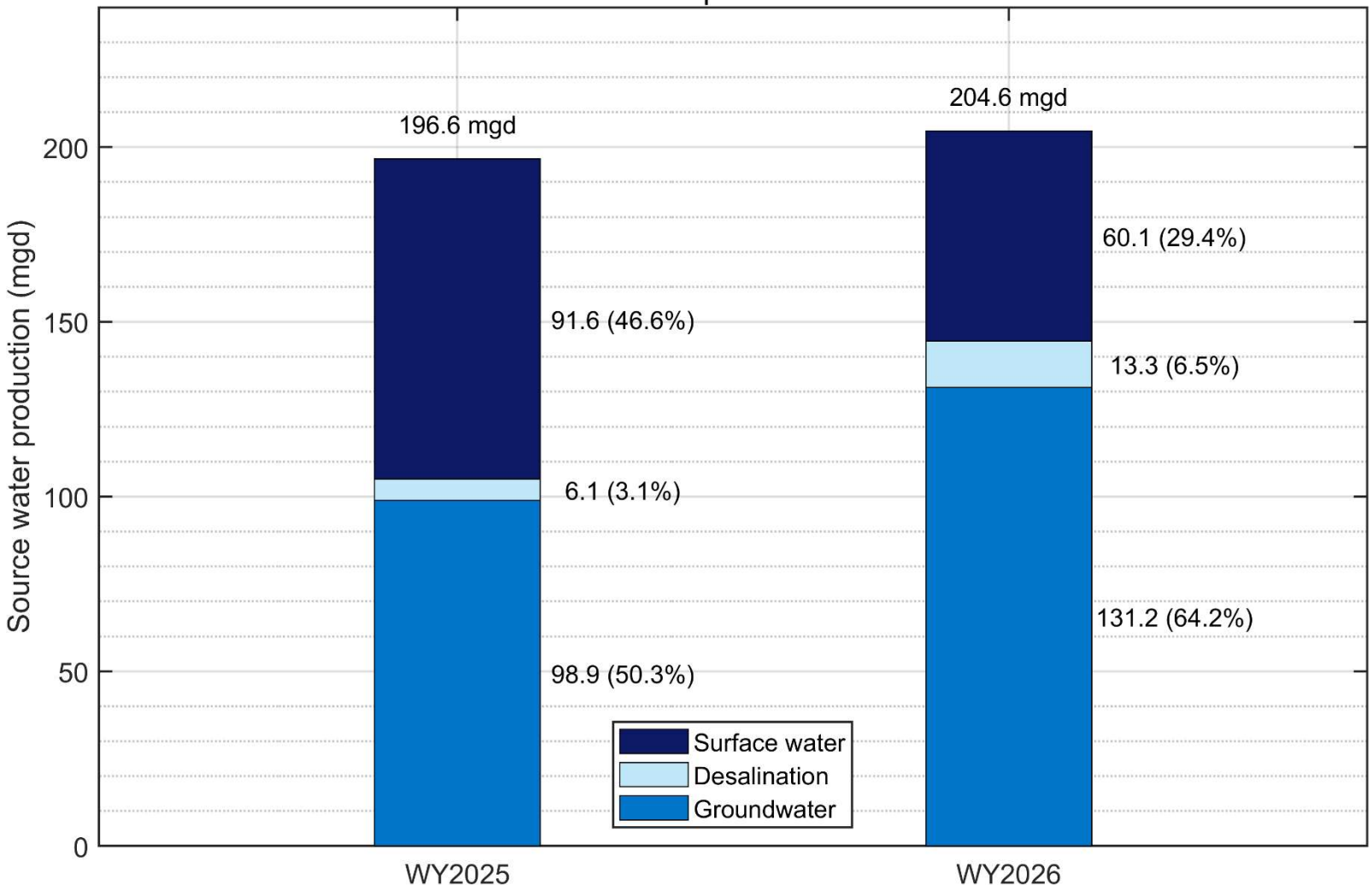
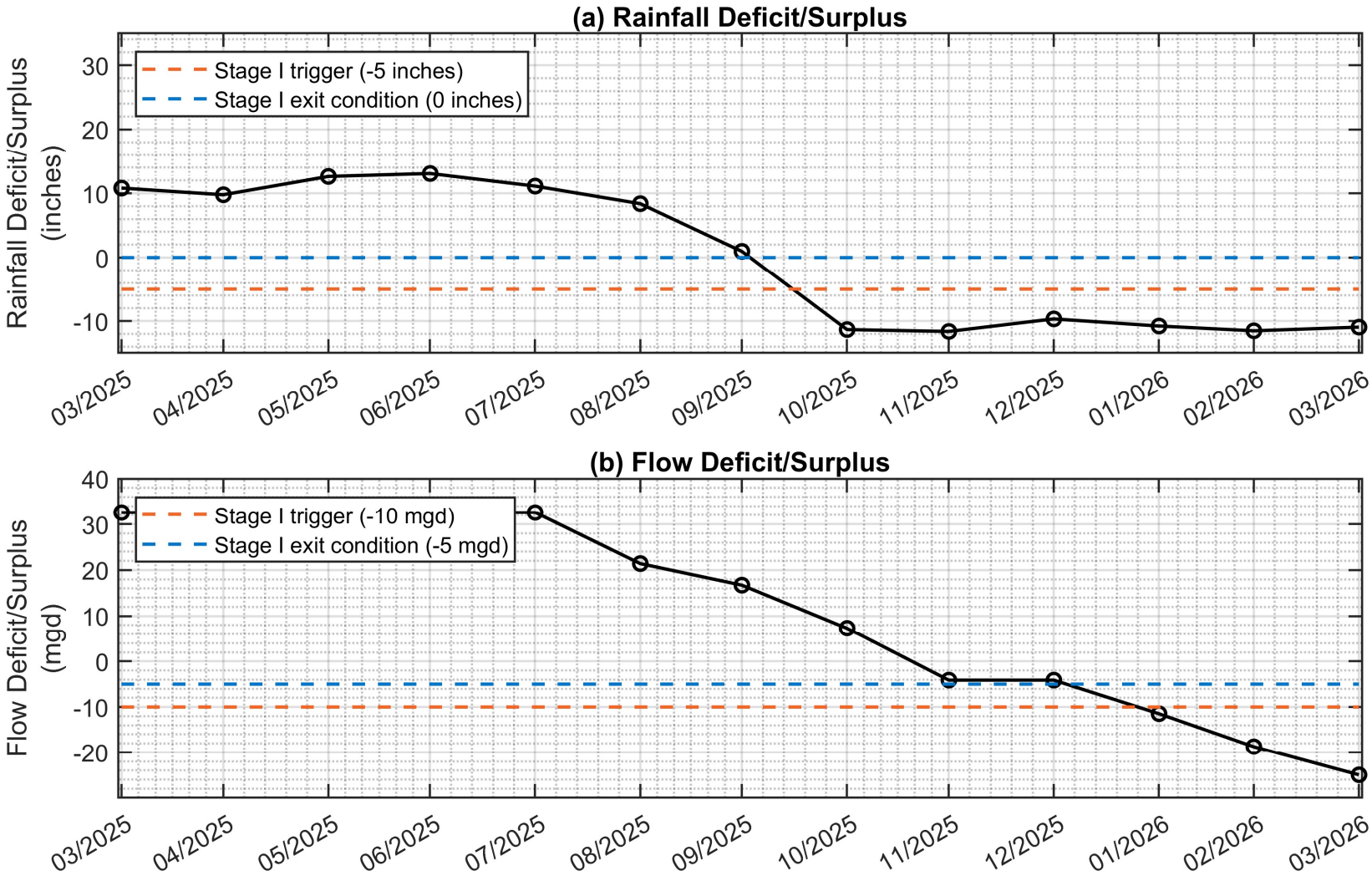


Figure 7: Regional Water Shortage Indicators
Through Mar 31 2026



TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.5

DATE: April 6, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough County Program Update - *Receive Report*

SUMMARY

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission (pipeline) capacity to increase supply to rapidly growing South Hillsborough County through the August 2020 Memorandum of Understanding. A status report is provided at each regular meeting of the Tampa Bay Water Board of Directors until the projects are operational.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Tampa Bay Water continues to meet with Hillsborough County staff to coordinate activities to increase wholesale system capacity to serve South Hillsborough County. Wholesale facilities under development or completed include: Brandon Booster Station - a new booster pump station on the existing Brandon Transmission Main to increase its capacity by at least 5 million gallons per day (mgd) (now fully operational). South Hillsborough Pipeline - a new pipeline system to deliver up to an additional 65 mgd of water supply. Acquisition of permitted quantities for transfer to existing and future Tampa Bay

Water wellfields. South Hillsborough Wellfield - a new freshwater wellfield located in the Balm area to deliver new water supplies to south Hillsborough County. The attached status report summarizes the status of the infrastructure projects, water supply projects and the current South-Central Hillsborough Regional Wellfield pumping rate.

BACKGROUND

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission capacity to increase supply to rapidly growing South Hillsborough County. The August 2020 Memorandum of Understanding provides for a status report at each regular meeting of the Tampa Bay Water Board of Directors until the projects are operational.

In the 1980's, the West Coast Regional Water Supply Authority (the predecessor agency to Tampa Bay Water) constructed temporary supply, treatment and pumping facilities to maintain pressure on behalf of the County and constructed the South-Central Hillsborough Regional Wellfield, the Lithia Treatment Plant, the 42, 36 and 24-inch diameter south county transmission mains and Brandon Transmission mains. The agency retained the wellfield but turned over the treatment, pumping, and transmission facilities to the County.

Again, in the early 2000's, some of the facilities built in the 1980's were nearing capacity, and Tampa Bay Water constructed temporary pumping and treatment facilities under a joint project agreement for the County's use while the County completed construction of its Central Water Treatment and Pumping Facility.

Attachments (1)

April 2026-South Hillsborough County Program Update

South Hillsborough County Program Status Report

April 2026

Completed Projects:

- High Service Pump Station Expansion: 10 to 12 million gallons per day (mgd) average pumping capacity
- Lithia Control Valve Replacement: 1 mgd
- Brandon Booster Station: 5 to 7 mgd

Ongoing Projects:

South Hillsborough Pipeline (Project Nos. 01610/01616)

This project includes the design and construction of a new regional transmission main to serve the South Hillsborough County area. Upon completion, the pipeline will be capable of delivering up to an additional 65 mgd of new supply to South Hillsborough County.

The project is being cooperatively funded by the Southwest Florida Water Management District's (District) Cooperative Funding Initiative, with up to $147,954,000 allocated for eligible project costs.

Hillsborough County and Tampa Bay Water entered into a Joint Project Agreement (JPA) in October 2021 to fund Segment B. A Restated and Amended Joint Project Agreement was approved by Hillsborough County Board of County Commissioners (BOCC) and Tampa Bay Water Board in February 2025.

Completed and Ongoing Activities

Design and Project Management

- Pre-Issued for Construction (IFC) design documents for 2026 for Guaranteed Maximum Price (GMP) No. 3 were approved in January 2026. A final IFC design package is anticipated to be issued in March–April 2026.
- Construction costs and the project schedule will be updated upon issuance of the final IFC design documents and GMP No. 4, which includes all the points of connection for the pipeline.
- Risk Management efforts are ongoing, with the Risk Register updated I conjunction with GMP No.4.
- The 90% design submittal for the Regional Facilities Site-Alkalinity Adjustment Facility (Project No. 01617) was received on January 9, 2026, and review comments were provided to the consultant in February 2026. Due to significant electrical design changes, the design

was reverted to 75% level to incorporate the revised electrical scope. Final design submittal is anticipated in May 2026.

Construction

- Construction activities are currently underway at four (4) of the 17 PLANNED trenchless crossings.
- GMP No. 4, which covers work at the points of connection at the Regional Facilities Site-Alkalinity Adjustment Facility (Project No. 01617), the Lithia Water Treatment Plant, and the new Balm site is scheduled to be presented to the Board for approval in July 2026.

Permitting

- The following permits have been obtained:
    - Florida Department of Environmental Protection (FDEP) Environmental Resource Program (ERP)
    - U.S. Army Corps of Engineers (USACE)
    - Environmental Protection Commission (EPC)
    - Natural Resources (partial approval)
    - Right of Way
- Pending permits include:
    - FDEP Environmental Resource Program (ERP) for the Regional Facilities Site-Alkalinity Adjustment Facility (Project No. 01617), anticipated to be submitted to the Board in May 2026.
    - Florida Fish and Wildlife Conservation Commission permits

Public Information

Now that construction has started, outreach efforts have increased as the outreach team continues to keep the public, businesses along the route, the media and local officials apprised of construction activities and traffing impacts. Following are efforts for February and March 2026.

February 2026

- **Public engagement:** Created and sent six email blasts (five regarding construction and schedule, one encouraging residents to shop local) and emailed Hillsborough County Public Schools (HCPS), HART, Hillsborough County Fire Rescue and the local schools in the vicinity of the construction each time an alert regarding traffic changes was issued; hand-delivered mobilization start letter to 115 homes on the north side of the Alafia River and placed construction signs in the area; took photos and video of the Fishhawk HDD pullback and Kings/Bloomingdale microtunnel launch, created and posted a video reel on social media for the HDD pullback; created and distributed an article for homeowners' associations near tunnel sites to use in their member communications; communicated with

HCPS about refining our notification process for them; conducted a student sidewalk count in the vicinity of sidewalk closure on Fishhawk Boulevard and met twice with HCPS Transportation and Safety departments regarding the closure; placed signs and door hangers in the vicinity of the Lumsden crossing, created a leave-behind flyer for nearby businesses and conducted 15 in-person visits in advance of this lane closure detour; contacted HCA Brandon Hospital in advance of the closure; updated the Spanish version of the project fact sheet and posted it on the website; conducted a personal visit with one resident adjacent to Alafia construction; conducted a personal visit with the owners of the Mobil station on South Kings; in addition to in-person meetings, the team fielded 33 incoming stakeholder calls and emails, plus two complaints, for a total of 59 interactions.

- **Business Outreach:** Developed a leave-behind informational flyer and conducted in-person outreach to 15 businesses located near the upcoming Lumsden microtunnel construction area to provide advance notice of the work, explain traffic pattern changes, and detour routes to ensure businesses clearly understood how customers could continue to access their locations. Continued periodic check-ins with these businesses throughout to monitor any concerns and ensure they remain informed and supported during the project. Drafted promotional materials for the Mobil Station located at South Kings Avenue to help reinforce customer access during nearby construction activity. Created an informational flyer outlining the upcoming access road construction on Limona Road to support business awareness and provide clear communication regarding anticipated impacts and access routes.
- **Media Outreach:** Media outreach was conducted in advance of each construction milestone, including proactive coordination with traffic reporters to ensure accurate and timely public information. These efforts resulted in seven earned media stories, generating 58,175 impressions and nearly $6,000 in advertising value equivalency. Importantly, coverage extended beyond local outlets. *Underground Construction*, a national trade publication, featured the launch of tunneling operations for the South Hillsborough Pipeline, elevating the project's profile within the infrastructure and engineering community. Coverage helped reinforce transparency, highlight the project's technical complexity, and position Tampa Bay Water as a responsible steward of regional water infrastructure.

March 2026

- **Public Outreach:** Created and sent nine email blasts and emailed Hillsborough County Public Schools (HCPS), HART, Hillsborough County Fire Rescue and the local schools in the vicinity of the construction each time an alert regarding traffic changes was issued; emailed Hillsborough County Communications each time an alert was issued regarding a major traffic change; placed four image posts in Nextdoor and Facebook; delivered 16 door hangers regarding temporary parking and 28 door hangers regarding open-trench construction starting on South Kings Avenue, and placed 13 yard signs along South Kings

Avenue from Greenbriar to Alafia Boulevard; placed three yard signs in the Buckhorn Creek neighborhood; sent sidewalk closure copy regarding Fishhawk sidewalk closure to Newsome High School, Randall Middle, Barrington Middle and Bevis Elementary for distribution to parents/guardians; created and distributed an article for homeowners' associations in the Fishhawk area regarding the sidewalk closure; created and posted a video reel on social media on the benefits if tunneling under major roadways and waterways; conducted a personal visit with one resident adjacent to Alafia construction; conducted a personal visit with the owner of Bacon Egg & Cheese food truck; fielded 63 incoming stakeholder calls and emails, plus six complaints, for a total of 109 interactions. Additionally, members of the project team attended training on the one.network system to support Hillsborough County Transportation with detour information.

- **Business outreach:** Created an access road flyer for Limona Road/CSX tunnel location and distributed to two adjacent businesses ahead of the access road installation; spoke to both business owners; placed three 3-foot by 4-foot business signs, three additional feather flags, and five yard signs near the Limona Road/CSX tunnel location at the request and placed two additional yard signs at the request of the businesses. Created construction notice flyers using the Tampa Bay Water alert for Phase 1 of the South Kings Avenue closure and distributed to the businesses located in the lot south of the Mobil Station (area is home to three food trucks & one market) and Pediatric Dentistry of Brandon. Assisted in coordinating additional parking for Pediatric Dentistry of Brandon. Created updated construction notice flyers using the Tampa Bay Water alert and returned to the businesses affected by South Kings Avenue Phase 1 closure to update and inform them of the new start date and detours for the work. Created a construction notice flyer using the Tampa Bay Water alert for the median work that occurred along Boyette Road and informed 21 businesses near the construction site. Coordinated communications with a business on the route regarding a power line relocation and temporary power outage.
- **Media outreach:** In March, media outreach focused on proactive coordination with traffic reporters to clearly communicate lane closures and minimize commuter disruption, ensuring accurate, real-time information reached the public. At the same time, broader storytelling highlighted the project's critical role in meeting the region's growing water demand, including a feature package from Tampa Bay 28. Additional coverage reflected feedback from local businesses impacted by construction near the South Kings and Bloomingdale construction site. These combined efforts resulted in 50 total stories, generating a potential reach of 14,765,908 and an advertising value equivalency of $419,140.

Property Acquisition

- All parcels, except those owned by Hillsborough County and State agencies, have been turned over to legal counsel for negotiation and filing. A litigation schedule has been

prepared in alignment with the construction schedule. A detailed property acquisition status report is provided as a separate item in this agenda packet.

- Tampa Bay Water acquired nine (9) easements through an exchange of Lot 9 of Eastshore Commerce Park.
- Closed on three (3) Hillsborough County Water Resource Department easements.
- The Florida Communities Trust (FCT) application for easements co-funded with Hillsborough County Environmental Lands Acquisition and Protection Program (ELAPP) has been submitted. Additional supporting documentation was provided, and the application remains under FCT review.
- Final compensation values were negotiated with Hillsborough County ELAPP for acquisition of temporary and permanent easements. The Purchase and Sale Agreement and easements are under review by engineering and general counsel.

Joint Project Agreement

- The Amended and Restated Joint Project Agreement (JPA) was approved by the County's Board of County Commissioners on February 19, 2025, and by Tampa Bay Water's Board on February 24, 2025.
- A Second Amendment to the Amended and Restated JPA is anticipated to be presented for Board approval at the July 2026 Board meeting to update cost estimates based on final GMPs No. 3 and No. 4.

Southwest Florida Water Management District (District) Cooperative Funding Agreement

- Board approval of the Second Amendment to the District Cooperative Funding Agreement was obtained at the May 2025 Board meeting.
- Submitted the FY 2027 Cooperative Funding Initiative application.
- Reimbursements received to date: $11,456,102.90

South Hillsborough Wellfield (Project No. 01612)

In October 2025, the Board approved the South Hillsborough Wellfield for implementation as a new water supply by 2033. The project includes the design and construction of a fresh groundwater wellfield and associated treatment facilities, including ozone treatment for hydrogen sulfide removal. The wellfield could deliver between 3 and 12 million gallons per day (mgd) to southern Hillsborough County.

Below is a list of completed and ongoing activities:

Professional Services Selection

- Developed and advertised professional services request for proposals for design and construction administration services.

- Developing request for proposals for a Construction Manager at Risk (CMAR) for pre-construction/design phase services.

Water Use Permit Quantity Acquisition

A Water Use Permit can be obtained for up to 6 mgd, contingent on demonstrating a net benefit to the aquifer through Hillsborough County's long-term operation of their aquifer recharge system located west of the proposed wellfield.

Additional water supply capacity of approximately 3.1 mgd of additional water supply capacity is being obtained by acquisition of permitted quantities from private landowners. These permitted quantities are anticipated to be transferred to Tampa Bay Water by early/mid-2026 and the final transfer quantities will be determined by the District during permitting.

- The Board approved an agreement with Suburban Land Reserve, Inc. in February 2024 to acquire 590,100 gallons per day of permitted groundwater quantities in southern Hillsborough County. The acquired permitted capacity was transferred to Tampa Bay Water's Balm Farm Water Use Permit on the AgMart property and resulted in an additional 550,000 gallons per day (gpd) of permit quantity; the Balm Farm permit has been increased to an annual average quantity of 775,000 gpd. This quantity can be used to supplement the permit quantities that can be obtained through the long-term aquifer recharge credits from Hillsborough County.
- A subsequent agreement with Land Reserve, Inc. (formerly Suburban Land Reserve, Inc.) and their sister entity, Farmland Reserve, Inc., was approved by the Board in January 2025 to acquire between 3,121,803 gpd and 5,109,300 gpd of permitted quantities. A permit application to modify the Balm Farm Water Use Permit was approved by the Board in January 2025 and was filed with the District in June 2025. Staff are currently responding to District questions on our permit application. This permit modification is expected to be issued by the District by summer 2026. The Balm Farm Water Use Permit annual average quantity depends on the final quantity approved by the District for the pending transfer of permitted quantities.

Property

<u>Cone Ranch/Lower Green Swamp Preserve Exchange:</u>

- Finalize and obtain Board approval of an Interlocal Agreement with the Environmental Lands Acquisition and Protection Program (ELAPP) to exchange water rights from Cone Ranch/Lower Green Swamp Preserve for permanent and temporary easements. These easements will support four production well sites and associated infrastructure on the Stacy R. White Nature Preserve (formerly Ag-Mart property).
- This agreement was last presented at the June 2021 Board Meeting (Agenda Item D.2) and summarized at the October 20, 2025, Board Meeting.
- Scheduled for Board approval in July 2026.

Ag-Mart Balm Water Campus Property:

- Acquire property from Hillsborough County, including access agreements, permanent and temporary easements and/or in fee for three production wells, monitoring wells, wellfield collection main, water treatment facilities and wellfield Point of Connection.

Long-term Agreement for the operation of Hillsborough County's Aquifer Recharge Program

- A long-term agreement with Hillsborough County is being pursued to secure aquifer recharge credits through the County's South Hillsborough Aquifer Recharge Program (SHARP). This agreement could generate up to **6 mgd** of groundwater credits to be incorporated into the South Hillsborough Wellfield Water Use Permit.
- Staff have drafted a term sheet, which is currently under review by County staff.

Demand Management

Tampa Bay Water and Hillsborough County staff continue to coordinate activities for demand management in the South Hillsborough County area. Agency and County staff resumed monthly meetings in October 2023 to address high demands and drought conditions in this service area. The main objective of these meetings is to coordinate work for the variety of activities undertaken by the County, Agency and Florida Friendly Landscaping TM agents, and to explore opportunities for collaboration. Agency staff continue to promote the Tampa Bay Water Wise Program and work with multi-family residential communities on rebate programs. The County continues to promote outdoor water conservation practices and the Tampa Bay Water Wise rebate program directly to Hillsborough County customers. Staff of both agencies are exploring additional public information strategies to promote water conservation in this service area.

South-Central Hillsborough Regional Wellfield Supply

Tampa Bay Water continues to work with Hillsborough County to sustain the increase in the quantity of water the County is taking through the existing Central Point of Connection within this service area. Since late June 2023, the County has taken an average of 12.7 mgd through the Central Point of Connection, an increase of about 3 mgd. This increased flow has allowed an equal reduction in the pumping rate of the South-Central Hillsborough Regional Wellfield.

The South-Central Hillsborough Regional Wellfield Water Use Permit was modified to increase the annual average permit limit from 24.1 to 24.95 mgd on July 26, 2022. The increase in the annual average quantity will revert back to 24.1 mgd when the new regional transmission main is placed in service as specified in the current Water Use Permit. The Board approved an agreement with the Tampa Electric Company (TECO) at the November 2024 meeting to acquire 590,500 gpd of permitted quantity no longer used on their property located east of the South-Central Hillsborough Regional Wellfield. The Board also approved an agreement with Hillsborough County at the January meeting to acquire 344,800 gpd of unused quantities from property owned by the County south of the wellfield. The Board approved the application to increase the annual

average quantity of the South-Central Hillsborough Regional Wellfield Water Use Permit to receive the quantities acquired from TECO and Hillsborough County at the January 2025 meeting. The modified permit was issued by the District on November 18, 2025, with a new annual average quantity of 26.821 mgd. The 12-month running average pumping rate from the wellfield was 26.41 mgd at the end of March 2026.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.6

DATE: March 30, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Long-term Master Water Plan Feasibility Program and Developmental Alternatives Study Status Report - *Receive Report*

SUMMARY

The 2023 Long-term Master Water Plan was approved by the Board of Directors in November 2023. This item provides an update on the on-going feasibility studies and the Developmental Alternatives Study.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

In November 2023 the Board of Directors (Board) approved the 2023 Long-term Master Water Plan (2023 Plan). The 2023 Plan included several recommendations including further study of seven top-ranked water supply projects to meet the region's future water supply needs and the initiation of the Developmental Alternatives study. The seven projects that will be further studied (if needed) include:

- **Eastern Pasco Wellfield:** This project will evaluate a new fresh groundwater wellfield located in northeast Pasco County with an estimated yield of 4 million gallons per day (mgd).
- **Consolidated Water Use Permit Increase:** This project consists of increasing the permitted capacity of the existing Consolidated Water Use Permit by an estimated 10 mgd.
- **Tampa Bay Seawater Desalination Expansion:** The expansion of the existing Desalination Plant has an estimated yield of 11 mgd and considers expansion with either seawater or brackish groundwater. The study will evaluate the expansion with brackish groundwater only as the seawater expansion was evaluated in 2021.
- **North Pinellas Surface Water Treatment Plant and Reservoir:** This concept has an estimated yield of 4 mgd and includes a new surface water treatment plant and reservoir withdrawing water from the outfall canal downstream of Lake Tarpon.
- **Surface Water Treatment Plant at the C.W. Bill Young Regional Reservoir:** This project has an estimated yield of 6 mgd and consists of a new surface water treatment plant at the existing C.W. Bill Young Regional Reservoir using increased withdrawals from the Alafia River.
- **South Hillsborough Surface Water Treatment Plant and Reservoir:** This project has an estimated yield of 4 mgd and consists of a new surface water treatment plant and reservoir withdrawing water from the Little Manatee River and Bull Frog Creek.
- **South Hillsborough Wellfield:** This project consists of a new wellfield in Southern Hillsborough County via aquifer recharge with an estimated yield of 6 mgd. This concept does not require additional study as it was evaluated in 2021. This project was selected in October 2025 for implementation by the Board.

The projects requiring studies have been grouped into two projects due to scope similarities. Below is a summary of each project, work completed to date, and future activities.

Feasibility Study for New Groundwater Sources (Project No. 11022):

This feasibility study project includes three groundwater source short-listed projects including:

- Eastern Pasco Wellfield
- Consolidated Water Use Permit Increase
- Tampa Bay Seawater Desalination Expansion with Brackish water

Eastern Pasco Wellfield

Work Completed to Date:

- Completed construction of one surficial and one Upper Floridan Aquifer monitor wells.
- Finalized Citrus Springs Aquifer Performance Test Data Analysis Report

Work in Progress:

- Core hole and drilling activities are underway.
- Drilling of Upper Floridan Aquifer test production well is underway.

- Modeling activities are on-going.

Upcoming Work:

- Continue public outreach.

Consolidated Water Use Permit Increase

Work Completed to Date:

- Completed GIS Mapping/Interpretation of Recovery Assessment and Xeric metric.
- Completed exploratory data analysis on recovery by wetland type.

Work in Progress:

- Developing stakeholder database.
- INTB/SWRE modeling scenarios are on-going.
- Monte Carlo INTB modeling efforts are underway.
- Develop Recovery Assessment Results Interpretation Report
- Develop draft report for the Reevaluation of the Xeric-associated Metric.

Upcoming Work:

- Continue public outreach.

Tampa Bay Desalination Plant Expansion with Brackish Water:

Work Completed to Date:

- Finalized technical memorandum recommending the project scope be reduced.

Work in Progress:

- Updating public outreach fact sheets.

Upcoming Work:

- N/A

Feasibility Study for Surface Water Sources (Project No. 11025):

This feasibility study project includes three surface water source short-listed projects including:

- North Pinellas Surface Water Treatment Plant and Reservoir
- Surface Water Treatment Plant at the C.W. Bill Young Regional Reservoir
- South Hillsborough Surface Water Treatment Plant and Reservoir

Work Completed to Date:

- Water quality sampling has been ongoing, with five months of samples taken.
- All initial Integrated Northern Tampa Bay (INTB) and System-Wide Reliability Evaluation (SWRE) data has been processed.

Work in Progress:

- Continue to collect and analyze surface water samples.
- Yield evaluations for INTB and SWRE data are underway for the North Pinellas SWTP and Reservoir project.
- Continue updates to PowerBI dashboard with water quality sampling results and complimentary, public facing data (Hillsborough County, United States Geological Survey) .

Upcoming Work:

- Continue surface water sampling.
- Finalize yield evaluation for North Pinellas SWTP and Reservoir project.
- Conduct yield evaluations for SWTP at the C.W. Bill Young Regional Reservoir project and the South Hillsborough SWTP and Reservoir project.
- Complete reference SWRD modeling.

Overall Feasibility Program and Water Selection Schedule

- Complete Feasibility Studies: *September 2024 through April 2027*
- Initiate the Water Supply Selection Process: *June 2026 through October 2027*
- Select the next water supply configuration: *November 2027*

Developmental Alternatives-Phase 1 (Project No. 11021)

Developmental Alternatives are water supply options that may require sophisticated technologies, which do not have a current regulatory framework for permitting, or that require more long-term analysis and study. As technology advances and processes develop, these alternatives may become more cost-effective or permitting uncertainties may be resolved. This first phase includes defining the goals and objectives of the study, identifying potential water supply concepts, engaging member governments to confirm availability of reclaimed water as potential water supply option, and workshops with the members.

Work Completed to Date:

- Kickoff and engagement meetings with Member Governments.
- Collected reclaimed water availability data.
- Conducted brainstorming sessions with technical staff and utilities.
- Finalized summary of workshop results developed and shared with Member Governments.
- Received draft of conceptual alternatives.

- Held virtual and in-person workshops with Member Governments to define conceptual alternatives on January 12 and January 26, 2026, respectively.

Upcoming Work:

- Status presentation to the Board-*Summer* 2026

BACKGROUND

Tampa Bay Water is the sole and exclusive wholesale water provider to its six Member Governments and has the unequivocal obligation to meet the Quality Water needs of all Member Governments. Tampa Bay Water's 2023 Long-term Master Water Plan, approved at the November 2023 Board meeting, documents how Tampa Bay Water meets its unequivocal obligation to provide Quality Water to meet all Member Government demands through the 2043 planning horizon.

The 2023 Plan identifies when new supplies will need to be built by considering demand forecasts, water shortage mitigation strategies and demand management and what to build by identifying and evaluating new water supply projects, optimization of existing assets, where to deliver and how, and public input.

The 2023 Plan made several recommendations including further study of seven top-ranked water supply projects to meet the region's future water supply needs and to initiate the Developmental Alternatives Study. Once the seven project feasibility studies are completed these projects will be evaluated using Board approved criteria to develop a recommendation for the selection and construction timing of one or more projects. The Developmental Alternatives Study recommended projects concepts may be added to future Long-term Master Water Plans for further evaluation.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.7

DATE: April 3, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Capital Improvement Program - Task Order Authorization - *Approve*

SUMMARY

The Tampa Bay Water Board of Directors (Board) accepted the Fiscal Years 2026-2035 Capital Improvements Program (CIP) in May 2025. Subsequent Board approval of individual project activity is required during the project's life cycle. This monthly report lists proposed task assignments and dollar amounts recommended by staff for Board approval. There is no task assignment scheduled for approval this month.

SUGGESTED ACTION

Approve Task Orders.

COST/FUNDING SOURCE

N/A

DISCUSSION

As identified to the Board on May 4, 2017, Board acceptance of the annual Capital Improvements Program document is an acceptance of the capital projects roadmap. Subsequent Board approvals of individual capital project activity is sought for planning, design and/or construction contracts and/or

task authorizations under existing contracts for project fees and assigned funding source. There are no task authorizations scheduled for this period of April 2026 through May 2026.

BACKGROUND

Tampa Bay Water's CIP Plan is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.8

DATE: April 3, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Capital Improvement Program - Projects Closeout - *Approve*

SUMMARY

In May 2025, the Board accepted the Fiscal Years 2026–2035 Capital Improvements Program (CIP). In accordance with the Agency's Project Management Methodology, a final Board item is required to formally close out capital projects. This item provides closeout documentation for one recently completed capital project.

SUGGESTED ACTION

Approve Project Closeout.

COST/FUNDING SOURCE

N/A

DISCUSSION

This item provides individual reports for completed capital projects. Each report includes the final project schedule, projects description, funding sources and spent amounts, unspent budget, list of purchase orders/contracts and actual expenditures, and a final closeout summary. Staff recommends the

Board approve closeout of the following capital project:

- 07131 - Cosme Water Treatment Plant Yard Piping Improvements

BACKGROUND

Tampa Bay Water's Capital Improvements Program Plan is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as the Board approves individual projects.

Attachment (1)

Project 07131 Project Close-Out Report

Project Closeout Report - February 2026

Project Number	07131
Project Name	Cosme Water Treatment Plant Yard Piping Improvements
JPA Participant	None
Project Manager	James Smith
Construction Manager	Anthony Feria

Final Schedule		
Phase	**Start Date**	**End Date**
Planning	5/1/2007	8/21/2015
Design	7/23/2015	11/29/2018
Bidding	11/30/2018	3/21/2025
Construction	3/24/2025	4/20/2026

Project Description

This project is located at the Cosme Water Treatment Plant (WTP) and includes new yard piping to permanently connect the South Pasco Transmission Main (TM) to the Northwest Hillsborough TM. The connection between the two transmission mains upstream of the Cosme WTP will allow the South Pasco TM to be kept fresh while the Cosme Bypass piping is being utilized. This project is being constructed by an as needed contractor.

Final Funding Summary*	
Funding Source	**Total**
Capital Improvement Fund	$504,978.17
Revenue Bonds	$35,296.78
Uniform Rate Funds	$900.00
Totals	**$541,174.95**

Financial Summary	
Highest Approved Budget	**$1,609,681.00**
Total Expenses	**$541,174.95**
Total Unspent Funds*	**$1,068,506.05**

Purchase Orders/Other Encumbrances and Expenses

Purchase Order	Contract Number	Service Type	Vendor	Actual Expenses
20090910	2009-031	Engineering Services	GREELEY AND HANSEN LLC	$36,875.00
Permit Fees		Permit Fees		$900.00
JPA-Design	AGR 2015-007	JPA-Design	City of St. Petersburg	$35,296.78
20250482	2021046	Construction	AMICI ENGINEERING CONTRACTORS, LLC	$468,103.17
			Totals	**$541,174.95**

*Funding Sources have been adjusted to match expenses. Unspent funds have been returned to applicable funding source. All Purchase Orders have been closed.

Project Closeout Report - February 2026

Closeout Summary
The project's goal and objectives were achieved within the approved budget and schedule. The project is located at the Cosme Water Treatment Plant (WTP) and included installation of new yard piping to permanently connect the South Pasco Transmission Main (TM) to the Northwest Hillsborough TM. This upstream connection provides operational flexibility by allowing the South Pasco TM to remain fresh while the Cosme Bypass piping is in service. Construction was completed by an as-needed contractor. The scope of work included demolition of existing high-density polyethylene (HDPE) piping, modifications to existing above-grade piping, removal of the 48-inch check valve flapper, and pipeline disinfection. In addition, new stairs were installed to maintain access beyond the newly installed piping. All construction activities and punch list items have been completed. Final invoices have been processed and paid, and the purchase order has been closed.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.9

DATE: March 31, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: South Hillsborough Pipeline, Project Nos. 01610 and 01616 - Property Acquisition Status Report - *Receive Report*

SUMMARY

This item provides an update to the Board of Directors on property acquisition activities through the end of March 2026 per policy ADM-BD-0009 for property acquisition for the South Hillsborough Pipeline, Projects 01610 and 01616. A total of twenty-one (21) parcels were closed in February/March 2026.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

$751,518.25/Revenue Bonds and $264,995.45/Hillsborough County

DISCUSSION

Tampa Bay Water is currently engaged in property acquisition activities with property owners along the approved South Hillsborough Pipeline route. Property Acquisition Policy ADM-BD-009 for the South Hillsborough Pipeline, Project Nos. 01610 and 01616, approved by the Board at the May 2024 Board meeting and updated by the Board at the November 2025 Board meeting authorizes the General Manager:

- To acquire property rights valued in an amount not to exceed $400,000 per parcel.
- To execute and sign agreements and other required documents to complete transactions for projects previously approved by the Board.
- To secure fee simple title, easements, licenses, leases, mutual use agreements, and rights of entry; and
- To update existing licenses, grant licenses, sign permit applications, sign variance requests.

The Policy requires that:

- Documents associated with these transactions are reviewed and approval by the General Counsel or the General Counsel's designee prior to execution by the General Manager.
- Any purchase of property rights valued up to and including $100,000 may be based on an Opinion of Value.
- Any purchase of property rights valued over $100,000 requires a certified real estate appraisal report prepared by a M.A.I. designated appraiser in accordance with current Uniform Standards of Professional Appraisal Practice.
- The General Manager, or the General Manager's designee, will provide a list of completed transactions approved pursuant to this Policy at the next Board meeting.
- The purchase of property rights valued above $400,000 requires Board approval.

The attached report includes the following:

- Table No. 1: Number of Parcels Needed, Parcels with executed Purchase and Sale Agreements (PSA), Stipulated Order of Takings (OT), or Closed, and Pending Parcels through end of reporting month(s).
- Table No. 2: Costs associated with Parcels closed through end of reporting months, twenty-one (21) parcels were closed in February/March.
- Table No. 3: Overall property acquisition budget, actuals to date, and remaining budget.

The General Manager has executed necessary documents to complete the transactions listed on the attached Table No.2. Title insurance, survey and opinions of value were ordered as part of the due diligence process prior to closing.

BACKGROUND

Tampa Bay Water and Hillsborough County staff continue to develop additional pumping and transmission (pipeline) capacity to increase supply to rapidly growing South Hillsborough County. A new pipeline system is needed to provide the increased capacity required. The new system will expand delivery of water supplies to both the County's existing Lithia Point of Connection and a new Point of Connection farther south. The South Hillsborough Pipeline will be constructed in two segments. It requires the acquisition of approximately 215 parcels, a reduction from the originally anticipated 234 parcels, including permanent and temporary construction easements. Approximately 80 percent of the necessary parcels are in Segment A and approximately 20 percent of the necessary parcels are in Segment B. Segment A will convey alternative water supplies from the existing High Service Pump

Station to Hillsborough County's Lithia Water Treatment facility. Pipeline Segment B will connect to Pipeline Segment A and provide alternate water supplies to the new Hillsborough County Point of Connection south of Hillsborough County's Lithia Water Treatment facility as approved by the Hillsborough County Board of County Commissioners in June 2021 and by the Tampa Bay Water Board of Directors in July 2021. Both segments will be planned, designed, and constructed by Tampa Bay Water and partially funded by the Southwest Florida Water Management District for eligible capital costs. The parties agreed through a Joint Project Agreement that Tampa Bay Water is responsible for the remaining share of capital costs for Segment A and Hillsborough County is responsible for the remaining share of capital costs for Segment B.

Attachments (1)

Feb - March 2026 South Hillsborough Pipeline Project Property Acquisition Report

South Hillsborough Pipeline Property Acquisition Status Report

February/March 2026

Table 1-Parcels Needed

Segment	Total Parcels Needed (1)	Parcels with Executed PSAs, Stipulated OTs, or Closed	Parcels Remaining in Eminent Domain Resolutions	Pending (2)
A	171	128	39	4
B	44	24	17	3
Total	**215**	**152**	**56**	**7**

Notes:
1-Includes Properties in Fee, Temporary Construction Easements (TCEs), Permanent Utility Easements, and Leases
2- Includes parcels in negotiation, pending appraisal, or pending final sketch & legal.

Table 2-Parcels Closed - February/March 2026

21 Easements Closed	Estimated Valuation/Certified Appraisal(1)	Actual(2) Total Costs
Total	**$630,650.00**	**$1,016,513.70**

Notes:
1-Certified Appraisal required only for parcels with costs greater than $100,000
2-Actual Costs include property rights costs, recording fees, and/or taxes

Table 3-Summary of Actual Costs vs Budget

Segment	Total Property Budget	Actual Costs(1) through January 2026	Actual Costs Previous Month(2) - February/March 2026	Remaining Total Property Budget
A	$ 13,375,000.00	$4,198,262.57	$ 751,518.25	$ 8,425,219.18
B	$ 9,000,000.00	$3,398,821.68	$ 264,995.45	$ 5,336,182.87
Total	**$ 22,375,000.00**	**$7,597,084.25**	**$ 1,016,513.70**	**$ 13,761,402.05**

Notes:
1-Includes parcels reported per Policy ADM-BD-0009 and individual Board approved parcels
2-Details in Table 2

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.10

DATE: March 31, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Surface Water Treatment Plant Expansion, Project No. 01014, Project Status Report - *Receive Report*

SUMMARY

The Surface Water Treatment Plant Expansion, Project No. 01014, was approved by the Board of Directors as the next water supply project to meet the region's needs by 2028. A monthly status report is provided to keep the Board informed of progress.

SUGGESTED ACTION

Receive Status Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

In August 2022, the Tampa Bay Water Board of Directors selected the Surface Water Treatment Plant Expansion, Project No. 01014, as the next water supply configuration for implementation by 2028.

The project is being delivered through an amendment to Veolia Water North America Operating Services, LLC's Design, Construction, and Operation Agreement (Contract No. 2000-028) and is currently under construction. This report summarizes completed work since the last reporting period, ongoing tasks, and upcoming milestones.

Current Work Activities

- Ground stabilization work has been completed in the filter area and near the Dry Chemical Building #3. The sub-contractor has demobilized in accordance with the plan and is scheduled to return in April to complete similar work in the Train 5 area.
- Temporary filter equipment has arrived and is scheduled to be installed and energized by the end of March.
- Most of the large-diameter piping required for the current phase of construction is now on site and staged in the designated laydown area.
- Site grading and preparation activities are underway to support installation of platforms over the completed ground stabilization areas.
- The project team continues to identify existing underground utilities in the Train 5 area to support safe relocation in advance of construction activities.

Upcoming Work Activities

- Continued installation of monitoring instrumentation, including equipment used to measure ground pressure and detect cracking.
- Veolia will operate the temporary filter units. Pending stable operation with no identified issues, formal operator training will be completed.
- Upon completion of training, Veolia will initiate removal of the existing filter presses.

Overall Schedule (Remaining Activities)

- Complete Construction & Commissioning: **Spring 2028**

BACKGROUND

At the August 2022 Board Meeting, the Board of Directors selected the Surface Water Treatment Plant Expansion, Project No. 01014, as the next water supply project to support the region's future water needs. This project will increase Tampa Bay Water's annual average yield from existing surface water sources by 10 to 12.5 million gallons of water per day and is included in the agency's Capital Improvements Program.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.11

DATE: March 30, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Cypress Creek Wellfield Surface Water Improvements-Phase 3, Project No. 09108, Contract No. 2026-006 Task Authorization - *Approve*

SUMMARY

A scope of work has been negotiated with Moreno Industrial Services, Inc., retained under an On-Call General Civil Contractor Services Contract No. 2026-007, to construct the Cypress Creek Wellfield Surface Water Improvements-Phase 3, Project No. 09108.

SUGGESTED ACTION

Approve negotiated task assignment with Moreno Industrial Services, Inc. under Contract No. 2026-006.

COST/FUNDING SOURCE

$594,129.24/FY 2026 Uniform Rate Funds

DISCUSSION

Tampa Bay Water staff evaluated the On-Call General Civil & Large Pipeline Contractors approved by the Board of Directors at its August 18, 2025, meeting for construction services for the Cypress Creek Wellfield Improvements-Phase 3, Project No. 09108. Based on this evaluation, staff determined that the project's construction scope can be effectively delivered through Tampa Bay Water's On-Call General

Civil & Large Pipeline Contract with Moreno Industrial Services, Inc., Contract No. 2026-006.

The scope of work includes construction of the completed design for the third phase of surface water and drainage improvements throughout the Cypress Creek Wellfield. A task assignment has been negotiated in the amount of $594,129.24, which includes an owner's allowance of $77,495.

Staff recommends Board approval of the negotiated task assignment with Moreno Industrial Services, Inc. under Contract No. 2026-006.

BACKGROUND

Tampa Bay Water's Capital Improvements Program Plan (CIP) is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board. The Cypress Creek Wellfield Surface Water Improvements-Phase 3, Project No. 09108, is identified in the CIP. This project includes the third phase of improvements aimed to change surface water drainage patters in the Cypress Creek Wellfield to rehydrate wetlands which were affected by ground water withdrawal, and to help reduce nuisance flooding in two nearby residential developments.

Attachment (1)

Moreno Quote-Cypress Creek Wellfield Surface Water Improvements-Phase 3 Project No. 09108

MORENO INDUSTRIAL SERVICES, INC
PO BOX 306
MULBERRY, FL
33860

Estimate

Date	Estimate #
12/22/2025	139

Name / Address
TAMPA BAY WATER CYPRESS CREEK WATER PLANT

Project
CYPRESS CREEK ...

Description	Qty	Cost	Total
FOREMAN HOURS	400	70.00	28,000.00T
LABORER HOURS	1,600	45.00	72,000.00T
OPERATOR HOURS	800	65.00	52,000.00T
TRUCK DRIVER	320	45.00	14,400.00T
FOREMAN P/U WITH HAND TOOLS	320	25.00	8,000.00
TRACK HOE	320	100.00	32,000.00T
WHEEL LOADER	320	75.00	24,000.00T
DUMP TRUCK	320	60.00	19,200.00T
FILL DIRT PER CY	180	45.00	8,100.00
SOD PER SY	4,000	12.00	48,000.00
SEDIMENT BARRIER PER LF	5,000	5.00	25,000.00
CONCRETE PER CY	40	400.00	16,000.00
RIP RAP SAND PER CY	40	18.00	720.00
RIP RAP RUBBLE PER TON	70	163.00	11,410.00
BEDDING STONE PER TON	20	1.55	31.00
PLYWOOD PER SHEET	48	44.00	2,112.00
2X4	32	4.57	146.24
REBAR PER STICK	50	19.00	950.00
DUPLEX NAILS PER BOX	1	30.00	30.00
80LB CONCRETE PER BAG	670	8.50	5,695.00
WATER TRAILER PER MONTH	2	1,500.00	3,000.00T
PIPES/VALVES	1	80,000.00	80,000.00
LAND SURVEYORS	1	42,780.00	42,780.00
TRACTOR & TRAILER	24	50.00	1,200.00
THIMBLE PLATE	1	7,860.00	7,860.00
PROJCT MANAGMENT HOURS	100	100.00	10,000.00T
DENSITY TESTING AND PROCTOR PER DAY	4	1,000.00	4,000.00
ALLOWANCE 15%	1	77,495.00	77,495.00T
Out-of-state sale, exempt from sales tax		0.00%	0.00

WE APPRECIATE THE OPPORTUNITY OF THIS QUOTE

Total $594,129.24

Customer Signature _____

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.12

DATE: April 8, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Surplus Water Agreement with the City of Tampa - *Approve*

SUMMARY

Tampa Bay Water can receive supply from the City of Tampa at the Tampa/Hillsborough interconnection and US 301 interconnection locations. This new agreement will replace the 2012 Surplus Water Agreement (and amendments) to purchase water from the City of Tampa at designated interconnections, if needed.

SUGGESTED ACTION

Approve the Surplus Water Agreement with the City of Tampa.

COST/FUNDING SOURCE

N/A

DISCUSSION

Tampa Bay Water can receive supply from the City of Tampa at the Tampa/Hillsborough interconnection and US 301 interconnection locations. The current Third Amendment to the Surplus Water Agreement (2012) between Tampa Bay Water and the City of Tampa expired September 30, 2025. This agreement may be terminated by either party for any reason by providing ninety (90) days' written notice to the other party, or on any other date mutually agreeable to the parties. The agreement

does not obligate Tampa Bay Water to purchase any water, only provides the framework for the purchase if necessary.

The Agreement has been reviewed by Tampa Bay Water's General Counsel.

Staff recommends approval of the proposed Surplus Water Agreement with the City of Tampa.

BACKGROUND

Tampa Bay Water has purchased treated surplus water from the City of Tampa since 1997 when the Tampa/Hillsborough Interconnect was first placed into service. The first five-year agreement expired in 2002. A second Surplus Water Agreement was executed on July 2, 2002, and amended on April 7, 2003. A third agreement was executed in September 2012 and subsequently amended three times.

Historically, this interconnection provided a constant supply of approximately 1.2 million gallons per day (MGD) to Hillsborough County's Northwest service area; however, flow can be increased to 10 MGD if appropriate piping modifications are made at the Tampa/Hillsborough Interconnect. Currently the interconnect is not in use and has been air gapped since 2018. The City of Tampa can also provide supply to Tampa Bay Water via the 301 interconnection at the Regional Facilities Site when available.

Attachment (1)

Surplus Water Agreement with the City of Tampa (2026)

SURPLUS WATER AGREEMENT

BETWEEN

CITY OF TAMPA AND TAMPA BAY WATER

THIS SURPLUS WATER AGREEMENT (the "2026 AGREEMENT") is entered into this _____ day of _____, 2026, by and between TAMPA BAY WATER, a Regional Water Supply Authority, a special district of the State of Florida ("TAMPA BAY WATER"), acting by and through its Board of Directors, and the CITY OF TAMPA, a municipal corporation of the State of Florida ("TAMPA"), acting by and through its Mayor and City Council.

WITNESSETH:

WHEREAS, TAMPA BAY WATER was created to develop, recover, store and supply water at wholesale to its Member Governments which include the Counties of Hillsborough, Pinellas, and Pasco and the Cities of Tampa, St. Petersburg, and New Port Richey; and

WHEREAS, TAMPA BAY WATER desires to enhance its ability to supply water to its Member Governments through the installation of interconnects and the purchase of Surplus Water; and

WHEREAS, TAMPA BAY WATER and TAMPA entered into a Surplus Water Agreement (the "2002 AGREEMENT") on July 2, 2002, which was subsequently amended on April 7, 2003, by the First Amendment to Tampa Surplus Water Agreement and in June 2012 by the Second Amendment to Tampa Surplus Water Agreement; and

WHEREAS, the 2002 AGREEMENT terminated on September 30, 2012; and

WHEREAS, TAMPA BAY WATER and TAMPA entered into another Surplus Water Agreement (the "2012 AGREEMENT") on July 9, 2012, which was subsequently amended on October 17, 2022, by the First Amendment to Surplus Water Agreement, on August 21, 2023, by the Second Amendment to Surplus Water Agreement, and on February 10, 2025, by the Third Amendment to Surplus Water Agreement; and

WHEREAS, the 2012 AGREEMENT terminated on September 30, 2025; and

WHEREAS, TAMPA and TAMPA BAY WATER desire to enter into a new Surplus Water Agreement,

NOW, THEREFORE, in consideration of the foregoing premises, which shall be deemed an integral part of this 2026 AGREEMENT, TAMPA BAY WATER and TAMPA, intending to be legal bound hereby, agree as follows:

1. DEFINITIONS. Unless the context clearly requires otherwise, all capitalized words and terms not otherwise defined herein shall have the meanings set forth in the Amended and Restated Interlocal Agreement and the Master Water Supply Contract. The following terms used in this 2026 AGREEMENT are defined as follows:
    a. SURPLUS WATER. Water that is delivered to TAMPA BAY WATER not needed to meet TAMPA's own demand or environmental requirements for water. Surplus Water shall be available for purchase by TAMPA BAY WATER in such quantities as are determined by TAMPA.
    b. EXCHANGED WATER (to TAMPA BAY WATER). Water that is delivered from TAMPA to TAMPA BAY WATER that is offset by water that has been delivered from TAMPA BAY WATER to TAMPA in the same billing month.

c. EXCHANGED WATER (to TAMPA). Water that is delivered from TAMPA BAY WATER to TAMPA that is offset by water that has been delivered from TAMPA to TAMPA BAY WATER in the same billing month.

d. NET WATER. The Quality Water TAMPA purchases from TAMPA BAY WATER at the Points of Connection.

2. DESCRIPTION OF INTERCONNECTS. TAMPA will provide Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) at a delivery point(s) acceptable to TAMPA and TAMPA BAY WATER, and as generally identified in Exhibit A.

3. TERM AND TERMINATION. The term of this 2026 AGREEMENT shall begin upon the full execution of this 2026 AGREEMENT by both parties, and shall remain in effect until terminated as provided for herein. This 2026 AGREEMENT may be terminated by either party for any reason by providing ninety (90) days' written notice to the other party, or on any other date mutually agreeable to the parties.

4. WATER DELIVERY. TAMPA shall use its best efforts to deliver Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) at the delivery point(s), when Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) is available and requested by TAMPA BAY WATER. For purposes of this 2026 AGREEMENT, the parties agree that the quantity of Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) to be delivered shall be determined by TAMPA, and that TAMPA BAY WATER shall use its best efforts to purchase Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) when available.

5. WATER QUALITY. TAMPA agrees to use its best efforts to deliver water meeting the quality parameters identified in Exhibit B. TAMPA and TAMPA BAY WATER

agree that water not meeting Exhibit B parameters can be refused by TAMPA BAY WATER.

6. PAYMENT OF WATER CHARGES.

   a. Monthly Billing. TAMPA will be charged for Exchanged Water (to TAMPA) and Net Water shall be credited for Exchanged Water (to TAMPA BAY WATER) at a rate equal to the portion of the Uniform Rate that is comprised of Variable Costs. Surplus Water shall be credited to TAMPA at a rate of either eighty-five (85) percent of TAMPA's All Other Customer Classes – Outside City rate as set forth and adopted by TAMPA from time to time by Resolution, or the current TAMPA BAY WATER Uniform Rate, whichever is greater. The quantities of Exchanged Water (to TAMPA) and Exchanged Water (to TAMPA BAY WATER) shall be equal.

   b. Annual True-Up. In the determination of the annual true-up provided in Section 13(E) of the Master Water Supply Contract, the calculation of TAMPA's pro rata share of the Fixed Costs shall not include the quantity of Exchanged Water (to TAMPA).

7. ACCOUNTING, AUDIT AND RECORDS. TAMPA BY WATER shall maintain accounts and records for a period of three (3) years following the expiration of this 2026 AGREEMENT for all funds received and disbursed by it with respect to costs incurred by TAMPA under this 2026 AGREEMENT. TAMPA, at its sole discretion and cost, may complete an audit of these accounts and determine any overpayments or underpayments by TAMPA, and shall adjust or credit TAMPA BAY WATER based on this audit. TAMPA's audit shall be provided to TAMPA BAY WATER for review and comment prior to any such adjustment or credit.

8. ENVIRONMENTAL PERMITS. TAMPA shall apply for, and obtain, all Environmental Permits necessary for the sale of Surplus Water and/or Exchanged Water (to TAMPA BAY WATER). TAMPA BAY WATER shall cooperate and assist TAMPA in obtaining any and all Environmental Permits necessary for provision of Surplus Water and/or Exchanged Water (to TAMPA BAY WATER).

9. WATER MEASUREMENT. TAMPA BAY WATER shall measure all Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) delivered at the delivery point(s) with measuring devices and equipment acceptable to TAMPA, and shall maintain complete and accurate records of its water measurements for inspection by TAMPA. The measuring devices, equipment, and records installed and maintained by TAMPA BAY WATER shall be available for inspection by TAMPA upon reasonable notice.

10. LIMITATION OF SERVICE. The delivery of Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) under the terms of this 2026 AGREEMENT shall in every case be subject to the paramount right and obligation of TAMPA to discontinue delivery, in whole or in part, when required to satisfy its own demand for water and its duty to provide water to its residents and water customers and of TAMPA BAY WATER to determine whether it has a need to purchase Surplus Water and/or Exchanged Water (to TAMPA BAY WATER) from TAMPA.

11. EXHIBITS. Exhibits "A" and "B" attached hereto are incorporated and made by reference an integral part of this 2026 AGREEMENT.

12. FILING. A copy of this 2026 AGREEMENT shall be recorded in the public records of Hillsborough and Pinellas Counties by TAMPA BAY WATER.

13. NOTICES. Any notices or other writings permitted or required to be delivered pursuant to this 2026 AGREEMENT shall be delivered to TAMPA BAY WATER at its General Manager's office, and to TAMPA at its Water Department Director's office.

14. COUNTERPARTS. This Agreement may be executed in counterparts, all of which together shall constitute one and the same instrument.

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IN WITNESS WHEREOF, TAMPA BAY WATER and TAMPA have executed this 2026 AGREEMENT on the day indicated below.

ATTEST:

TAMPA BAY WATER, A Regional Water Supply Authority

_____
Charles H. Carden, General Manager

By: _____

Its: _____

Date: _____

(SEAL)

APPROVED AS TO FORM:

_____
General Counsel

State of Florida
County of Pinellas

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 2026, by _____, as _____ of Tampa Bay Water, He/she is personally known to me **OR** has produced _____ as identification and did not take an oath.

_____
Notary Public Signature

_____
Notary Public Printed Name

My Commission Expires: _____ (AFFIX NOTARY SEAL)

City of Tampa

_____

By: Jane Castor

Title: Mayor

Date: _____

ATTEST:

_____

(Seal) CITY CLERK/ DEPUTY CITY CLERK

APPROVED AS TO
LEGAL SUFFICIENCY:

_____

McLane Evans

Assistant City Attorney II



TAMPA BAY WATER
Supplying Water To The Region

Surplus Water Agreement Between City of Tampa and Tampa Bay Water

Exhibit A
April 3, 2026

Surplus Water Agreement Between the City of Tampa and Tampa Bay Water - Exhibit B

ANALYTICAL PARAMETER	UNIT	TYPE OF STANDARD	LOCATION OF SAMPLE	CITY OF TAMPA
Conductivity	mhos/cm	max-avg	HRWTP	850*
pH	stnd PH units	min-avg	HRWTP	7.0*
Finished Water Lanlier Stability Index	LSI	min-avg	HRWTP	0.2
Finished Water Calcium Carbonate Precipitation Potential	mg/L as $CaCO_3$	min-avg	HRWTP	4
Total Alkalinity	mg/L as $CaCO_3$	min-avg	HRWTP	100*
Total Hardness	mg/L as $CaCO_3$	max-avg	HRWTP	300*
Calcium Hardness (not to be lower than)	mg/L as $CaCO_3$	min-avg	HRWTP	50*
Calcium Hardness (not to exceed)	mg/L as $CaCO_3$	max-avg	HRWTP	250*
TOC (not to exceed)	mg/L	max	HRWTP	6.5*
TOC (not to exceed 4 month running average)	mg/L	max-avg	HRWTP	4.6*
Iron	mg/L	max-avg	HRWTP	0.3*
Color	CU	max	HRWTP	15*
Ortho Phosphorus	mg/L as P	max-avg	HRWTP	1*
Nitrite	mg/L as N	max-avg	HRWTP	1*
Nitrate	mg/L as N	max-avg	HRWTP	10*
Ammonia	mg/L as N	max-avg	HRWTP	1*
TDS	mg/L	max-avg	HRWTP	500*
Total Coliform	CFU/100 ml	weekly	POC	< 1 cfu/100ml
Total Trihalomethanes (TTHM)	ug/l	monthly	HRWTP	64 ug/L
Haloacetic Acids (HAA5)	ug/l	monthly	HRWTP	48 ug/L
Methylisoborneal (MIB)	ng/l	weekly March-Sept	HRWTP	5**
Geosmin	ng/l	weekly March-Sept	HRWTP	5**

* as per Exhibit D of the Tampa Bay Water Master Water Supply Contract

** as per the Regional Surface Water Treatment Plant Contract with Veolia

In addition to the above parameters and levels, HRWTP Effluent meets all requirements of applicable federal, state, and local Drinking Water rules.

Date: April 3, 2026

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.13

DATE: April 3, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Sole Source Procurement No. 2026-509 for Ozone Generation Systems Service, Equipment, Replaceable Parts, and Consumable Supplies from Fin-Tek Corporation. - *Approve*

SUMMARY

Tampa Bay Water utilizes Mitsubishi ozone generation equipment at the Lithia Hydrogen Sulfide Removal Facility. Fin-Tek is the exclusive service provider for Mitsubishi equipment and parts. The Agency's Purchasing Policy was followed to receive approval of Sole Source Posting 2026-509 for Fin-Tek purchases during FY's 2026 and 2027. The total purchase amount requires Board approval.

SUGGESTED ACTION

Approve Sole Source Procurement No. 2026-509 for Ozone Generation Systems Service, Equipment, Replaceable Parts, and Consumable Supplies from Fin-Tek Corporation

COST/FUNDING SOURCE

$500,000.00 not to exceed Fiscal Year 2026 and 2027 budgeted funds.

DISCUSSION

A Sole Source for Ozone Generation Systems Service, Equipment, Replaceable Parts, and Consumable Supplies was advertised on February 4, 2026, on Tampa Bay Water's e-procurement platform, Euna Procurement (Euna), and the Tampa Bay Water website. No objections or protests were received.

Tampa Bay Water posted its Declaration of Sole Source Purchase on February 26, 2026.

The sole source has been reviewed and approved by Tampa Bay Water General Counsel's Office.

BACKGROUND

Fin-Tek Ozone is the exclusive service provider authorized by Mitsubishi Electric Company to supply factory parts and service for the United States market. Mitsubishi Electric Ozone Generation Equipment is highly technical and requires an advanced level of training to maintain. Fin-Tek is the only maintenance provider with technicians specifically trained by the manufacturer to perform the required maintenance. By using Fin-Tek for the proposed maintenance services, the Agency will ensure the equipment is properly maintained and extend the expected useful life. It is best industry practice to use the manufacturer authorized agent on equipment like this to perform regular maintenance. Fin-Tek is also the only supplier for main components, replacement parts, and consumable supplies of the Lithia ozone generation system.

Attachments (2)

2026509 Fin-Tek Notice of Intent
Fin-Tek Sole Source Request

TAMPA BAY WATER
Supplying Water To The Region

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Charlie Miranda
Ron Oakley
Kathleen Peters
Seth Weightman
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

NOTICE OF INTENT TO SOLE SOURCE PURCHASE

Date: February 4, 2026
Subject: Sole Source No. 2026509- Fin-Tek Corporation – Ozone Generation Systems Service, Equipment, Replacement Parts and Consumable Supplies.

Tampa Bay Water, A Regional Water Supply Authority, gives notice of its intent to procure Ozone Generation Systems Service, Equipment, Replacement Parts and Consumable Supplies from Fin-Tek Corporation through a Sole Source method.

Prospective Vendors able to provide Ozone Generation Systems Service, Equipment, Replacement Parts and Consumable Supplies are requested to provide information by February 25, 2026. Information should be forwarded to Lynn Lozano at Tampa Bay Water, 2575 Enterprise Road, Clearwater, Florida 33763-1103 or by email at llozano@tampabaywater.org.

Thank you,

Lynn Lozano, NIGP-PPA, PACE
Purchasing Specialist I

2575 Enterprise Road, Clearwater, FL 33763-1102
Phone: 727.796.2355 / Fax: 727.791.2388
www.tampabaywater.org

Memorandum

TO: Paul Stanek, Chief Operating Officer

FROM: Laila Martin, Regional Operations and Maintenance Senior Manager

DATE: January 29, 2026

SUBJECT: Sole Source Request #2026509
Fin-Tek – Ozone Generation Systems Service, Equipment, Replacement Parts and Consumable Supplies

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As per Section 2.4.2.1 of Tampa Bay Water's Purchasing Procedures Manual, approved by the Board of Directors on April 21, 2014, the South Maintenance Department is requesting "sole source" designation for the vendor Fin-Tek Ozone for the purchase of parts and service for following reason:

REASON:

☐ The commodity or service is wanted for experimental trials, pilots, and/or testing.

☐ Additional unanticipated commodities or services are needed to complete an ongoing task.

☐ The commodity is identical to existing equipment installed at other agency locations for the same purpose.

☒ The commodity is a component, repair, or replacement part of existing equipment for which no commercially available substitute exists, and the purchase can only be made from the manufacturer or sole distributor.

☐ Exigent circumstances exist that dictate delivery is a critical factor and only one vendor is able to meet the time constraints.

☐ Manufacturer's warranty requires any maintenance, parts and/or support performed on or provided for instruments/equipment be provided by factory trained and authorized representative only.

☐ Other reasons not listed above. Requestor must explain below in Due Diligence.

DUE DILIGENCE:

Fin-Tek Ozone is the exclusive service provider authorized by Mitsubishi Electric Company to supply factory parts and service for the United States market. Mitsubishi Electric Ozone Generation Equipment is highly technical and requires an advanced level of training to maintain. Fin-Tek is the only maintenance provider with technicians specifically trained by the manufacturer to perform the required maintenance. By using Fin-Tek for the proposed maintenance services, the Agency will ensure the equipment is properly maintained and extend the expected useful life. It is best industry practice to use the manufacturer authorized agent to perform regular maintenance on specialty equipment. Fin-Tek is also the only supplier for Mitsubishi Electric Company ozone generation

equipment components, replacement parts and consumable supplies for the Lithia ozone generation system.

ESTIMATED COST: $500,000

Please indicate your approval for the sole source designation for Fin-Tek Ozone by signing below:

Stacy Gundry (Jan 30, 2026 09:34:27 EST) — Jan 30, 2026

Purchasing & Warehouse Manager — Date

Laila Martin (Jan 30, 2026 09:54:50 EST) — Jan 30, 2026

Department Head — Date

Paul Stanek — Jan 30, 2026

Chief Operating Officer — Date

Note: If estimated amount is over $100,000.00 legal counsel signature is also required.

Roy David Jacks Jr — Feb 2, 2026

General Counsel — Date

Fin-Tek Ozone

Putting Ozone to Work

January 28, 2026

Tampa Bay Water
Clearwater, FL:

Fin-Tek is an Ozone Engineering Service company which provides aftermarket service, parts, equipment, and design-build engineering services to water and wastewater processing facilities using ozone as a disinfectant. We engineer, design, install and service equipment by others as well as the systems we provide across the globe.

To this date there is no other company which provides these services for all makes, models, and manufacture of Ozone generating, application, and distribution equipment. Fin-Tek is the exclusive service provider for several manufacturers. Fin-Tek has developed robust predictive maintenance programs designed to reduce the incidence of equipment failure and breakdown. Fin-Tek uses customers inventory for proprietary parts sourcing to reduce cost and the time between equipment failure and restored operation.

As of this date there is no other professional services company which provides hands on Engineering services for this market relative to their Ozone dosing equipment*. Fin-Tek also is the only company which has procedures for Generator cleaning which comply with the Compressed Gas Association standard- Oxygen Clean per CGA-4.1 (Clean for Oxygen = Clean for Ozone), along with proper passivation for Stainless for use in an oxygen environment. Fin-Tek has created Smart Boost* (Patent Pending) which provides significant operational savings over existing nitrogen boost systems.

OEM's of some of this equipment provide parts and start-up services but only a few on a continuous supportive basis. OEM's will respond to upset conditions as they occur but do not work with the plant on a regular basis to understand the process. Most OEM's provide skilled labor that will only provide support on the equipment they sell. Fin-Tek is the only company which employs degreed engineers with 5+ years of experience in ozone equipment maintenance and engineering and dispatches those engineers to customer job sites. No other company provides the comprehensive services Fin-Tek provides.

For this reason, Fin-Tek is a sole source for all ozone related equipment and service in drinking and wastewater treatment plants.

Sincerely,



Mary Finnegan
Business Development
Fin-Tek Corporation

*is inclusive of Ozone generators, Nitrogen boost systems, eductors, diffusers, contact tanks, degas systems, Ozone destruct systems, Control monitors, Power supplies, PLC's, PSU's, and Ozone health and safety monitors
*Power boost is exclusive design upgrade for N2 Boost systems by Fin-Tek Corporation.

6 Leo Place, Wayne, NJ 07470
Phone: 973-628-2988 · Fax: 973-628-2989
www.fin-tek.com

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.14

DATE: April 8, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Paul Stanek, Chief Operating Officer

SUBJECT: Emergency Generator Purchase through the Florida Sheriff's Association Contract #FSA23-EQU21.1 - *Approve*

SUMMARY

Staff identified the need for additional emergency generators after the 2024 storm season and budgeted for the purchase of portable generators. Staff will purchase those units via the Florida Sheriff's Association (FSA) contract, utilizing funds allocated in the Board approved Fiscal Year 2026 budget.

SUGGESTED ACTION

Approve purchase of two – 200kW Generators with funds allocated within the existing Board approved FY 2026 Budget.

COST/FUNDING SOURCE

Not to exceed $350,000.00 - Approved FY 2026 Uniform Rate

DISCUSSION

During the 2024 hurricane season and in lessons learned meetings, staff identified a need for portable emergency generators to move to locations in the system that experience power failures. The Board approved funding in the fiscal year 2026 budget to purchase additional generators. Staff researched vendors available through the Florida Sheriffs Association Equipment Contract and found units that

meet the agency's needs and cost parameters. Staff requests Board approval to purchase two-200kW portable Trailer Mounted Generators utilizing the Florida Sheriff's Association Contract #FSA23-EQU21.1.

This purchase is a Competitive Bidding Exception per Tampa Bay Water Purchasing Procedures Manual, Revision Five 2025, (Resolution 2025-012, Board Approval August 18, 2025, Item C1.), using an existing State Contract in lieu of conducting a competitive procurement, pursuant to Section 287.056, Florida Statutes.

BACKGROUND

After reviewing the lessons learned during the 2024 storm season, staff budgeted for additional portable emergency generators. These generators will increase generation capacity and agency resiliency.

Attachments (1)

Tradewinds Quote: (2) 200kW Portable Trailer Mounted Generators

TRADEWINDS®
POWER CORP Est. 1978
5820 NW 84th Avenue • Miami, Florida 33166
Ph. 305-592-9745 • 800-223-3289
www.tradewindspower.com

Engines
Pump Sets
Power Units
Transfer Switches
Parts and Service
Generator Systems

TO: Tampa Bay Water
C/O Ed Davis
2575 Enterprise Rd
Clearwater Fl. 33763
Ph# 8139294568
Email edavis@tampabaywater.org

Quotation

CM021826PH-1

Thursday, March 26, 2026

We are pleased to offer this Quotation as detailed below

Amount	Description	Each	Extended
2	**Model TP150 Base Awarded Tradewinds Mobile Generator Set under FSA contract No. FSA23-EQU21.0, Spec #162.**	162,283	324,566
2	**T200-M-FS Upgrade -** Upgrade to a 200kW mobile generator package, current emission compliant 1800 rpm diesel engine; Aluminum sound insulated weather enclosure, powder coated; 120/240 1 ph., 120/240-120/208-277/480 3 ph., 3 position, single output changeover switch, single camlocks connection box; 800 A main breaker; 300 gal double wall in base fuel tank street legal trailer with hydraulic brakes, lunette. Unit non-proprietary.	4,402	8,804
	200 KW (250 KVA) Standby, 181 KW (226 KVA) Prime Power 120/208 Volts, 60 Hz, Three Phase, 0.8 P.F. Amp Load Capacity: 693 Load Bank tested. 277/480 Volts, 60 Hz, Three Phase, 0.8 P.F. Amp Load Capacity: 300 Load Bank tested. 120/240 Volts, 60 Hz, Three Phase, 0.8 P.F. Amp Load Capacity: 601 Load Bank tested. 120/240 Volts, 60 Hz, Single Phase, 1.0 P.F. Amp Load Capacity: 620 Load Bank tested.		
•	Perkins Diesel engine, Model 1206F-E70TTAG4TIER 4 Final @ 1800 RPM, 4 cylinder, water cooled, 12 VDC.		
•	AC alternator, 4 Pole, brushless exciter, Single Bearing, insulation Class 'H' UL1446.		
•	Permanent Magnet (PMG) Excitation providing 300% short circuit support for ten seconds to support non-linear loads and start motors with minimal voltage dip. DR2400 voltage regulator. 0.25 % voltage regulation, (EMI) and RFI filtering. CAN Bus communication		
2	**TUPALT-FS** - Net Cost Adder - Upsized alternator.	1,740	3,480
•	Tradewinds Digital Control panel 2020 series, microprocessor-based controller, manual or remote start capability. Emergency stop push button. 0-60 min. timers for internal and external service lights. NEMA box customer interface panel for remote annunciator panel and shunt trip. Readings for low coolant and oil, fuel level indication and leak detection; Volts, Amps, Hz, Watts, VA, PF. Oil pressure, coolant temperature, RPM, DC volts, hourmeter. Generator set emergency protection shutdowns. Programmable for pre-alarms and alarms. Automatic transfer switch control (mains failure). USB port; ECU communication via SAE J1939. BESTCOMSPlus, MODBUS communication via RS485 port, UL6200.		
	Optional Equipment included in above pricing:		
•	800A 3P 600V 250Vdc UL 489 circuit breaker, 80 percent rated. Installed shunt trip for remote controlled tripping. Cu/AL lugs rated up to 600V AWG wire range 14-1/0. The wire is EPDM insulated, 600V 150 degrees Celsius. A neutral to bonding conductor mounted on a standoff insulator.		
•	Three position voltage change over switch mounted in the generator can, wired to the mainline circuit breaker. Breaker leads are connected to the rear of the generator to separate female camlock connectors, clearly identifying L1, L2, L3, N, G.		
•	Distribution panel to include Two (2) 20A GFI duplex receptacles, Two (2) 20A NGFI duplex receptacles, Three (3) 50amp, 240vac receptacle, all with breaker protection. 120V 20A DC input for battery charger. Two Thumb screws are provided for remote start stop contacts of Transfer Switch. Two Thumb screws are provided for remote alarm indication.		
•	The rear side docking station has a lockable lifting gate with snap acting disconnect protection, and LED service light.		
•	Weather protective marine grade aluminum enclosure sound insulated; white powder extra coat, electrostatically applied; 175 mph wind load certified in compliance to ASCE 7-08 Florida Building Code. Control panel door access with locks. Designed with removable doors to ease the generator maintenance; All doors are hinged and keyed alike. Weather protective seals around all doors. Rear removable plate for the maintenance of the AC alternator.External drain ports for coolant and oil with brass ball shut-off valves and SS bulkhead plugs. All stainless-steel hardware. Estimated noise reduction : 72 dBA @ 21 ft.		
•	Exhaust compartment enhanced with noise reduction and heat dissipation insulation. Installed SS Exhaust Flex with ceramic wrap, 25dBA exhaust muffler and cast aluminum rain cap.		
2	**T-SOLAR-FS** Net Cost Adder - Solar panel 140W 12V.	1,759	3,518
2	**BEACON-FS Net Cost Adder -** Amber beacon LED lights, flush mounted on the enclosure perimeter	2,061	4,122
•	12000lb dual axle street legal, **trailer with electric brakes**, round lunette hitch, chains, lights, heavy duty fenders, one (1) front jack, collapsible two bar to reduce overall foot print and will have a corrosive resistive finish to cover the steel frame. 330 gallon in base fuel tank with a mechanical fuel level gauge and standard fuel signal that will be read in control panel. Unit will alarm with low fuel and shut down up critically low fuel. Tank will have lockable fuel cap, drain, and necessary fittings.		
2	**T-TBX3-FS** Net Cost Adder - Tool box 19.5 cu.ft.(12 extensions of 50ft L) in diamond plated aluminum, reinforced beveled edge. B and C trailers.	7,370	14,740
•	12Vdc 31PMH series starting batteries installed on metal support, secured with ¡ bolts and hold downs.		
•	Battery Charger 6 Amp, 12 VDC, 90-265A AC 50/60Hz 115 VAC, compact type, UL Listed.		
•	Two (2) 120V receptacles, one GFI and one NGFI with clear cover, for battery charger and coolant block heater.		
•	Coolant block heater, 1500W 120V 1Ph. 100F degrees ON - 120F degrees OFF. IP41 protection rating to IEC 529. Shut-off valves for easy maintenance.		
•	Low coolant level signal alarm switch, antifreeze, and radiator overflow bottle. Freezing protection to –34 degrees Fahrenheit (-37 degrees Celsius) and boiling protection to 256 degrees Fahrenheit (129 degrees Celsius).		
2	**TPRI-STBY-C-FS** Net Cost Deduction - Change to Emergency Standby application, 150-200kw.	-49,420	-98,840
2	**T-ACCESSORIES-M-150-200-FS** Net cost Adder - Accessories kit for Emergency Standby Use only 150-200kw	25,409	50,818
	NON-SCHEDULE OPTION TO MEET CUSTOMER SITE REQUIREMENTS		
2	**Net Cost adder** to upgrade 300gal trailer to a 14K lb. 500gal trailer.	5,520	11,040
2	**Net cost adder** to add remote monitoring device. Data service not included.	2,650	5,300
2	**TW4001-9-50L-FS**: Net Cost Adder- For 800A service - nine 400A rated, 50 ft length multistrand industrial grade cable, with pure soft-drawn electrolytic copper. Rope stranding for flexibility in varying temperatures, double insulation for greater durability and safety. Provided with one male and one female camlock connector installed.	9,924	19,848
2	**TW4001-9-6L-FS**: Net Cost Adder- For 800A service - nine 400A rated, 6 ft length multistrand industrial grade cable, with pure soft-drawn electrolytic copper. Rope stranding for flexibility in varying temperatures, double insulation for greater durability and safety. One male camlock connector installed and bare end.	2,048	4,096
•	Factory tested at max. Amp rated load, transient load, block load, load rejection; voltage, frequency fluctuation; under/over frequency; safety shutdowns for high coolant temperature and low oil pressure.		
•	Two (2) years or 1500 hours standard warranty.		
•	Onsite Start-up and adjustments, fuel not included.		
	State & Local Tax as Applicable		
	Estimated Shipping date from receipt of order: 18-22 Weeks		
2	**First Time Customer Discount**	**-5,500**	**-11,000**
	DAP, Florida		**340,492**

Prepared by Dale Hieff

* Quote valid for 15 days from the date of issuance. 50% Deposit required, 25% Cancellation Fee. 3.95% Credit Card processing fee.
* Pricing is subject to change based on current tariffs and trade regulations in effect at the time the purchase order (PO) issuance.
* Acceptance of Partial Shipments is required; $100 daily storage fee will apply after 10 days of completion notification
* Make checks payable to Tradewinds Power Corp.
* Wire Transfers to Tradewinds Power Corp, Division of Southeast Power Group, South State Bank N.A. ABA 063114030 Account 8010002336606

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM A.15

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: First Amendment to Contract No. 2025001 with KELLER Pressure, Inc., formerly Keller America, Inc. - *Approve*

SUMMARY

Contract No. 2025001 was issued to Keller America, Inc. on August 19, 2024 for the purchase of environmental monitoring equipment. Keller America, Inc. changed its corporate name to KELLER Pressure, Inc., effective January 1, 2026. This First Amendment to Contract 2025001 is required for the continued purchase of necessary environmental monitoring equipment.

SUGGESTED ACTION

Approve the First Amendment to Contract No. 2025001 with KELLER Pressure, Inc. to reflect a change in their corporate name.

COST/FUNDING SOURCE

N/A

DISCUSSION

Contract No. 2025001 for the purchase of environmental monitoring equipment (pressure transducers) was competitively procured and awarded to Keller America, Inc. at the August 19, 2024 Board

Meeting. Contract No. 2025001 was issued for a three-year term with a not to exceed total of $226,224.60. Tampa Bay Water received notification on December 15, 2025 that Keller America, Inc. would officially change its legal name to KELLER Pressure, Inc., effective January 1, 2026, and that all existing contracts, previously entered under the name Keller America, Inc., would remain in effect under their new corporate name.

This First Amendment to Contract 2025001 is necessary to recognize the new corporate name and allow for the continued purchase of environmental monitoring equipment necessary for permit compliance. Staff recommend approval of the First Amendment to Contract No. 2025001 with KELLER Pressure, Inc. The attached contract amendment has been approved as to form by Tampa Bay Water's General Counsel.

BACKGROUND

The Agency monitors aquifer, lake, and wetland water levels for permit compliance and to assess the health of the environment surrounding our water supply facilities. Pressure transducers provide a water level accuracy of 0.05% and serve as a reliable means to obtain vital environmental water level data. Currently, there are 345 of these sensors deployed throughout the area we serve. The overall longevity of these sensors is three to five years. Data generated from these sensors is collected by data logging equipment, transferred wirelessly to the Tampa Bay Water database and ultimately used to determine and maintain overall environmental health and guide the operation of agency water supply facilities as required by multiple Water Use Permits.

Attachment (1)

2025001 Keller Pressure Amendment One

FIRST AMENDMENT TO CONTRACT NO. 2025001

This First Amendment is made and entered into this __ day of_____, 202__, by and between **Tampa Bay Water, A Regional Water Supply Authority**, an interlocal governmental agency created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes, acting by and through its Board of Directors, the governing board thereof ("Tampa Bay Water"), and KELLER Pressure, Inc., formerly known as Keller America, Inc., a corporation in the State of Virginia and authorized to conduct business in the State of Florida, ("Contractor").

WHEREAS, Tampa Bay Water retained Contractor for Pressure Transducer goods and/or services under Contract No. 2025001, hereinafter "the Contract"; and

WHEREAS, Tampa Bay Water and Contractor, entered into a contract for Pressure Transducer goods and/or services and it was approved by the Board of Directors on August 19, 2024; and

WHEREAS, Contractor changed its name and now operates under KELLER Pressure, Inc. as shown in Exhibit A; and

WHEREAS, Tampa Bay Water desires to continue to utilize Contractor for additional services based upon the terms and conditions set forth in the Contract, as hereby amended.

NOW, THEREFORE, in consideration of the foregoing premises, which shall be deemed an integral part of this First Amendment to the Contract, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, Tampa Bay Water and Contractor, intending to be legally bound, agree as follows:

1. Contract No. 2025001 is hereby amended to reflect that Keller America, Inc. changed its name and now operates under the name of KELLER Pressure, Inc., as described in the letter from KELLER Pressure, Inc., attached hereto as Exhibit A.

2. This First Amendment is hereby made a part of, and incorporated in its entirety, into the Contract.

3. In all other respects, the Contract, is hereby reaffirmed by the parties and remains in full force and effect.

THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their duly qualified representatives.

WITNESSES:

Signature

Meagan Murray
Print Name

Signature

Jacob Lewellen
Print Name

KELLER Pressure, Inc.

By: _____

Its: DIRECTOR OF SALES

Date: FEB. 24, 2026

(CORPORATE SEAL)

ATTEST:

_____
Charles H. Carden, General Manager

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: _____

Date: _____

APPROVED AS TO FORM:

(SEAL)

_____
General Counsel

TAMPA BAY WATER
CONTRACTOR AFFIDAVIT

STATE OF VIRGINIA
~~COUNTY~~ CITY OF NEWPORT NEWS

BEFORE ME, the undersigned authority, appeared CHRIS LILLY, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the DIRECTOR of SALES (the "Contractor").
4. I am authorized by KELLER PRESSURE, INC. to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, Consultants/Contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Consultant's/Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor nor any subcontractor of Contractor has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor or any subcontractor of Contractor has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as

a Contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

Signature of Affiant
on behalf of Contractor

By: CHRIS LILLY
As its: DIRECTOR OF SALES
Dated: FEB. 24, 2026

Sworn to (or affirmed) and subscribed before me by means of ☒ physical presence or ☐ online notarization, this 24 day of February, 2026, by Chris Lilly, on behalf of Keller Pressure Inc, who is personally known to me or who has produced _____ as identification.

Candee Ramsey

Print Name: Candee Ramsey
Notary Public of the State of ~~Florida~~ Virginia

My Commission Expires:
February 28, 2027

CANDEE RAMSEY
Notary Public
Commonwealth of Virginia
Registration No. 7819435
My Commission Expires Feb 28, 2027

EXHIBIT A

KELLER Pressure, Inc.
351 Bell King Road
Newport News, VA 23606
December 15, 2025

Subject: Official Notice of Corporate Name Change

Dear Customer,

We are pleased to inform you that our company will officially change its legal name from **Keller America, Inc.** to **KELLER Pressure, Inc.**, effective **January 1, 2026.**

Please update your records to reflect our new legal name.

What Remains the Same:

- Corporate structure / Ownership
- Fed Tax Identification number [EIN: 54-1373866]
- Virginia Tax Identification number: 02880094
- Banking details
- Business address

All existing contracts, obligations, licenses, assurances, and agreements previously entered under Keller America, Inc. shall remain in effect under KELLER Pressure, Inc.

If you have any questions or need additional documentation, please feel free to contact us.

We sincerely appreciate your continued support during this transition.

Sincerely,

David Marsell

Dave Marsell
General Manager
KELLER Pressure, Inc.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 1/7/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Ryan Byrne	
Bankers Insurance LLC 753 Thimble Shoals Blvd Newport News VA 23606	PHONE (A/C, No. Ext): 828-350-3117	FAX (A/C, No):
	E-MAIL ADDRESS: rbyrne@bearinginsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Zurich American Insurance Company	16535
INSURED KELLAME-01 Keller Pressure Inc 351 Bell King Rd Newport News VA 23606	INSURER B : Travelers Casualty Insurance of America	19046
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER: 2143014777** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			GLO3793133-17	1/1/2026	1/1/2027	EACH OCCURRENCE	$ 3,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
	X 11,000						MED EXP (Any one person)	$ 5,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PERSONAL & ADV INJURY	$ 3,000,000
	X POLICY PRO-JECT LOC						GENERAL AGGREGATE	$ 3,000,000
	OTHER:						PRODUCTS - COMP/OP AGG	$ 3,000,000
								$
B	AUTOMOBILE LIABILITY			BA2L856632	1/1/2026	1/1/2027	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DED RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) N/A						E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

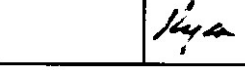
CERTIFICATE HOLDER

For Informational Purposes Only
351 Bell King Road
Newport News VA 23606

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



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KELLER

February 24, 2026

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763-1102

Subject: KELLER pressure, Inc. Corporate Seal

To Whom It May Concern,

This letter is intended to serve as information that KELLER Pressure, Inc. does not maintain a corporate seal.

Regards,



Chris Lilly
Director of Sales

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.1

DATE: April 6, 2026

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: General Manager's Report - *Receive Report*

SUMMARY

The General Manager will provide an update on agency programs and activities.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Regional System Update

- From the beginning of this fiscal year through March 31, 2026, the Agency delivered an average of 203.11 million gallons per day (mgd) to meet the member government demands. This is 7.94 mgd (4.1%) more water delivered than for the same period last year.
- The region received 2.18 inches of rainfall in March 2026 which is approximately 1.3 inches below the long-term average for March.
- Very low rainfall in September 2025 through March 2026 triggered a Stage III Regional Supply Shortage under the Water Shortage Mitigation Plan on March 1, 2026. The 12-month rainfall is at

a deficit of 11.0 inches and the 12-month median flow in the Hillsborough River is at a deficit of 25.0 mgd at the end of March 2026.

- The regional reservoir storage volume was 5.77 billion gallons as of March 31, 2026 (37% full).
- The 12-month running average pumping rate for the Consolidated Permit Wellfields was 92.49 mgd at the end of March 2026.
- The 12-month running average pumping rate for the South-Central Hillsborough Regional Wellfield was 26.39 mgd at the end of March 2026. The new annual average pumping limit for this wellfield was increased to 26.82 mgd at the end of November 2025.

	March 2026 Actual	**March 2026 Projected**	**Fiscal Year 2026 Actual**	**Fiscal Year 2026 Projected**
Total System Demand	203.16 mgd	218.2 mgd	203.11 mgd	202.48 mgd
City of Tampa Purchased Water	8.92 mgd	10.0 mgd	5.92 mgd	5.54 mgd
Consolidated Water Use Permit	106.93 mgd	103.0 mgd	97.31 mgd	82.70 mgd
South-Central Hillsborough Wellfield	25.77 mgd	32.40 mgd	27.15 mgd	26.58 mgd
Surface Water Treatment Plant	49.68 mgd	60.0 mgd	60.06 mgd	74.52 mgd
Seawater Desalination	15.12 mgd	16.0 mgd	13.28 mgd	13.72 mgd
Regional Reservoir	5.77 billion gallons	5.7 billion gallons	N/A	N/A
Rainfall	2.18 inch	3.5 inches	8.55 inch	16.80 inches
Note: March 2026 Projected and Fiscal Year 2026 Projected based on October 2025 forecast for Fiscal Year 2026.				

Drought Conditions and Public Outreach

The Tampa Bay area is currently in an extreme drought condition with two months remaining in the annual dry season. A 12-month rainfall deficit of 11 inches and a 12-month median flow deficit of 25 mgd in the Hillsborough River at the end of March 2026, along with a low Regional Reservoir storage volume projected for the end of May 2026 triggered a Stage III Regional Supply Shortage under the agency's Water Shortage Mitigation Plan on March 1, 2026 . The Southwest Florida Water Management District issued a Modified Phase III Water Shortage for its 16-county area effective April 3 through July 1 of this year. Landscape irrigation is allowed once per week with restricted irrigation hours during this period to conserve regional water supplies along with other outdoor water use limitations. Staff continue to actively balance production between our water supply sources and use of water from the Regional Reservoir to continue to meet the daily member demands and minimize the extent and duration of wellfield production above our withdrawal permit limits.

In an effort to promote conservation and lower water demands, Tampa Bay Water communications staff

have been increasing outreach efforts across the Tampa Bay region. In addition to increasing our paid outdoor and digital advertising we have earned a significant amount of news media coverage across all local broadcast and print media, including a guest appearance on Denis Phillips Live, and national coverage on the Weather Channel, Fox Weather and Newsweek. Efforts with news media have resulted in 255 stories.

Legislative Update

The 2026 Legislative Session concluded on March 13, 2026. Lawmakers did not reach agreement on a final budget prior to adjournment and have not yet scheduled a special session to address the budget. Although a specific date has not yet been announced, Tampa Bay Water's appropriations requests remain viable, with funding for SCADA improvements ($1 million) included in the House budget and the Surface Water Treatment Plant expansion ($2 million) retained in the Senate proposal. No action has occurred on the Federal funding requests, and our legislative team continues to monitor.

Performance and Management Audit Implementation Action Plan

At the February Board Meeting, consultants from Baker Tilly presented a report on the results of the Five-Year Performance and Management Audit. Later in March, they provided the agency with their recommended Implementation Action Plan. Staff will provide a presentation at the May Board Meeting with implementation steps, timelines and the reporting plan.

Tampa Bay Seawater Desalination Facility Reverse Osmosis Trains Project

Two years ago, five of the seven reverse osmosis racks at the Tampa Bay Seawater Desalination Water Treatment Plant were repaired and replaced. At the May Board Meeting, staff will request approval of a change order to the U.S. Water-Acciona Seawater Desalination Partners, LLC, contract to complete the design and re-construction of the final two racks. The project includes the fabrication and installation of Reverse Osmosis Racks 6 and 7, as well as the reconditioning or replacement of associated equipment. This project will increase the facility's redundancy and provide an additional 8 million gallons per day (mgd) of capacity.

2026 Top 100 Workplace

We're proud to share that Tampa Bay Water has been named a 2026 Top Workplace by the *Tampa Bay Times.* This is the second year in a row the agency has received this award which is meaningful because it's based entirely on confidential feedback gathered through an independent survey of our employees.

Next Meeting May 18, 2026

General Manager's Report

Agenda Item B.1
April 20, 2026

Charles H. Carden
General Manager
Tampa Bay Water

Current Drought Condition

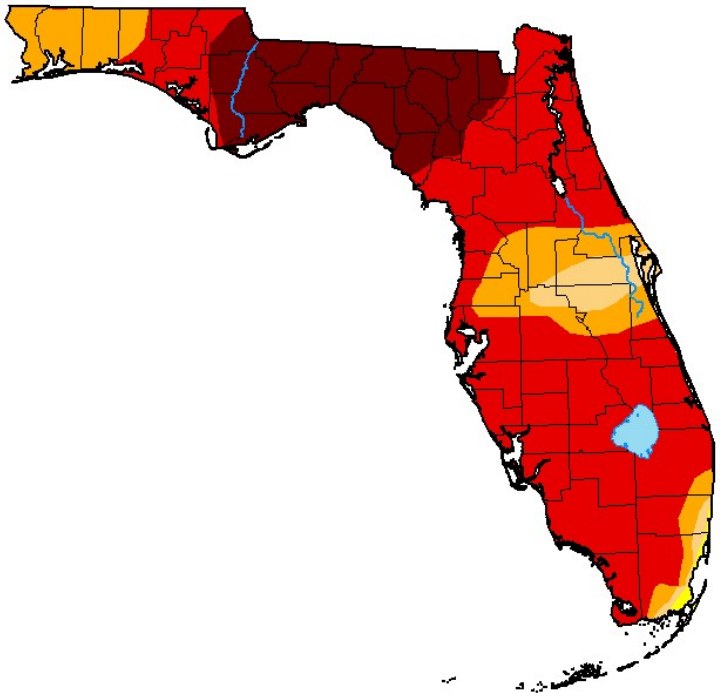
U.S. Drought Monitor

Florida

April 7, 2026

(Released Thursday, Apr. 9, 2026)

Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

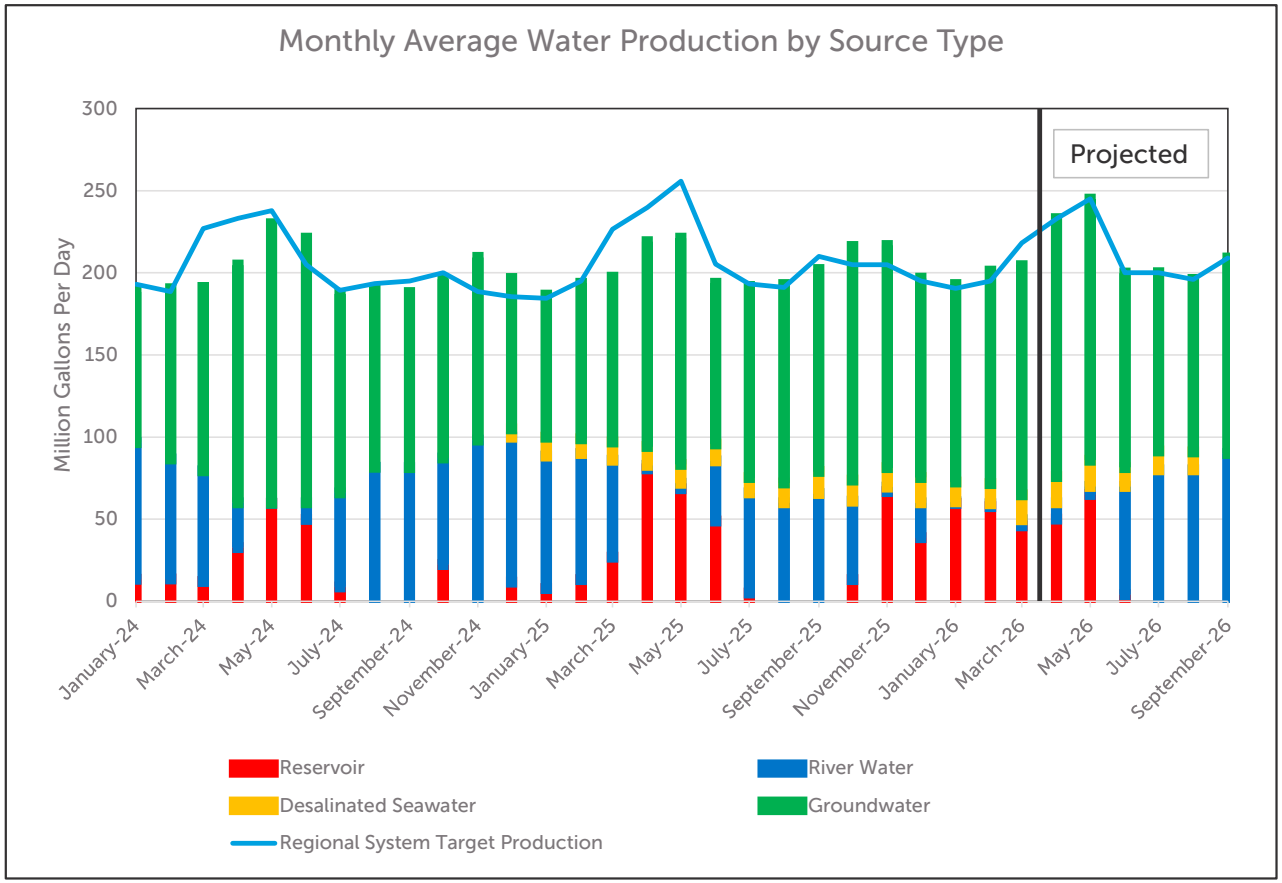
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

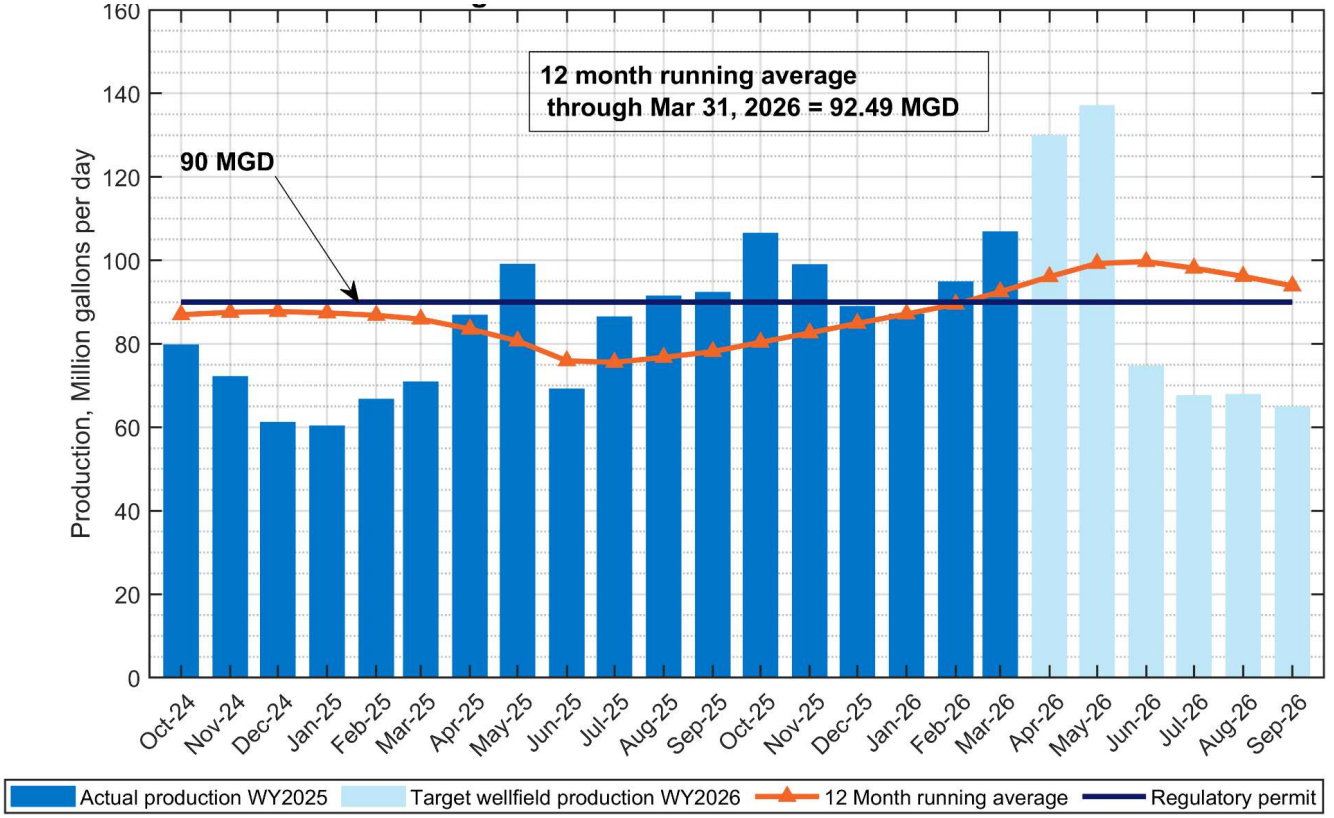
David Simeral
Western Regional Climate Center

droughtmonitor.unl.edu

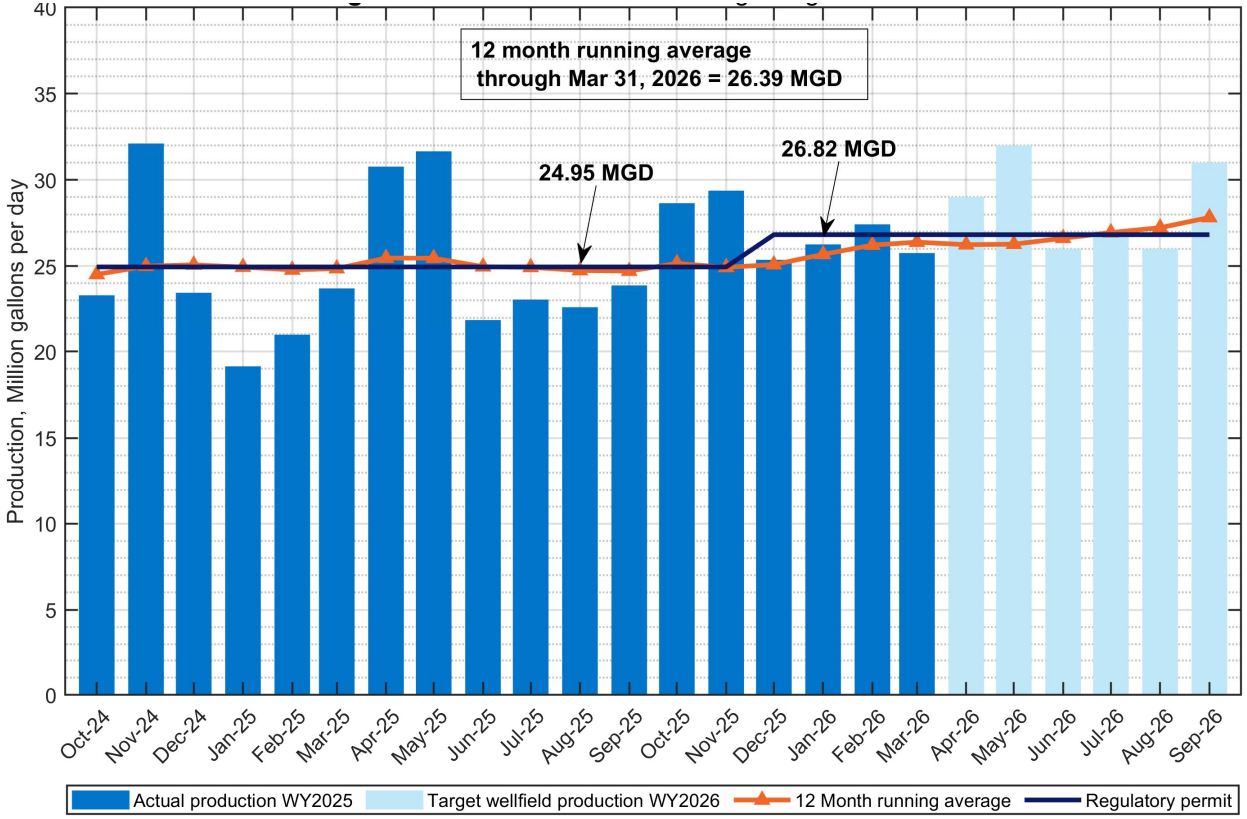
Tampa Bay Water Monthly Water Delivery



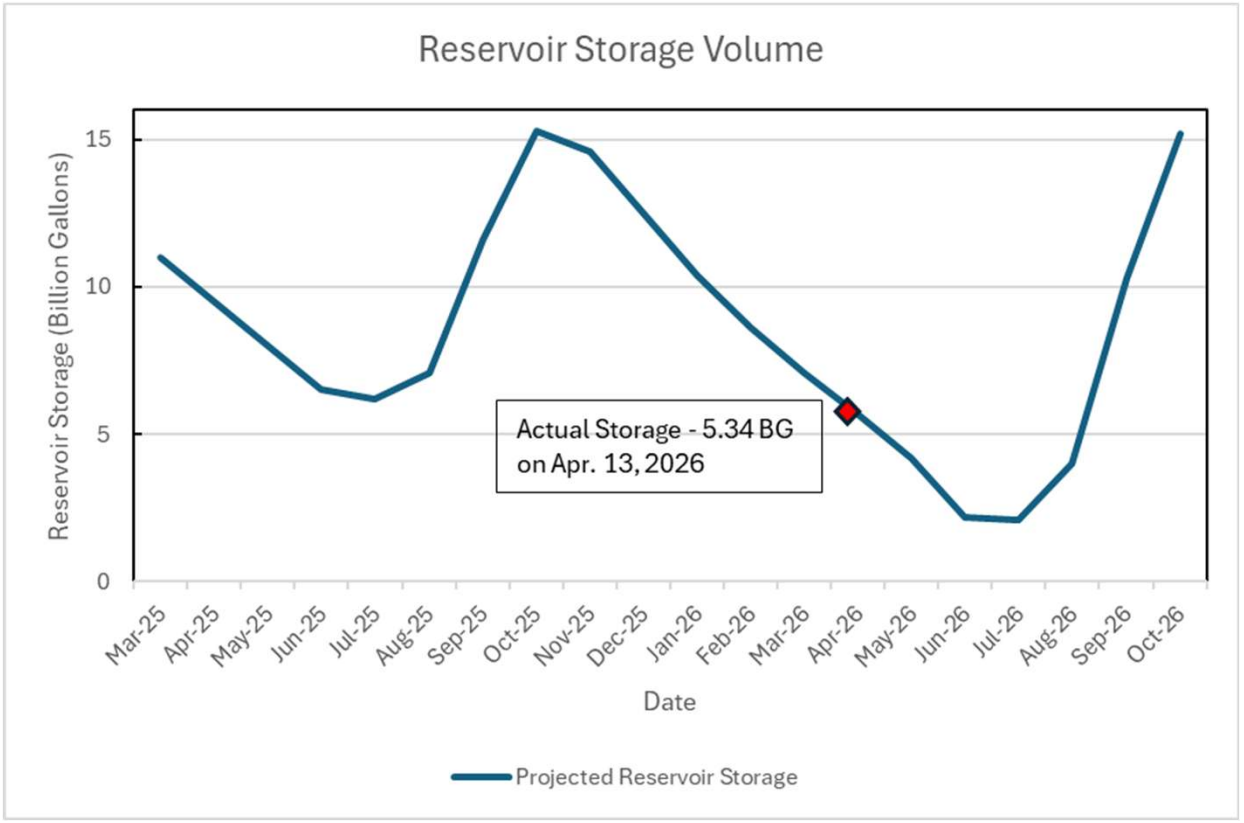
Consolidated Water Use Permit



South-Central Hillsborough Regional Wellfield Permit



C.W. Bill Young Regional Reservoir Storage



Agency Updates

- Legislative Update
- Performance and Management Audit Implementation Action Plan
- Tampa Bay Seawater Desalination Facility Reverse Osmosis Trains Project
- 2026 Top Workplace
- Media & Public Outreach

Stage 3 Extreme Water Supply Shortage











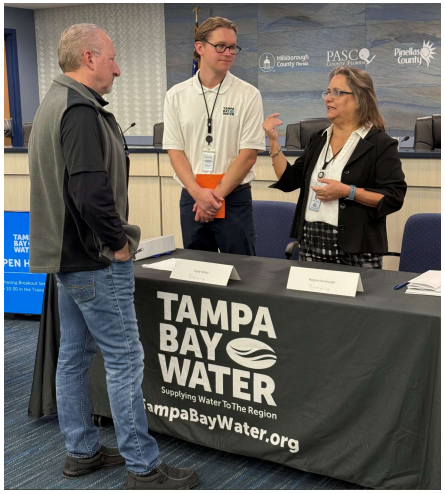
Fix a Leak Week





Engineering & Construction Open Houses



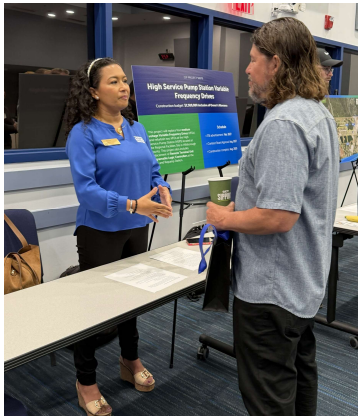














Surface Water Treatment Plant Expansion Groundbreaking



Girl Scouts Water Wise Earth Day Celebration

Placeholder for pix

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.2

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Water Conservation Month Proclamation - *Approve*

SUMMARY

The State of Florida annually proclaims April as Water Conservation Month. The Florida Section of the American Water Works Association coordinates this effort to highlight the need for statewide conservation efforts during the driest months of the year. Tampa Bay Water is coordinating with members on the adoption of this proclamation and is presenting this proclamation for Board approval.

SUGGESTED ACTION

Approve Proclamation.

COST/FUNDING SOURCE

N/A

DISCUSSION

The month of April has been declared "Water Conservation Month" throughout Florida for the past 28 years to generate awareness of the need for water conservation in the driest months of the year. This effort is coordinated by the Florida Section of the American Water Works Association (FSAWWA), Florida's water management districts, and the Florida Department of Environmental Protection. The

Water Use Efficiency Division of FSAWWA works to have the Governor and Cabinet officially proclaim April as Water Conservation Month in late March or early April. The theme of this year's proclamation is "Rain Shutoff Devices" which are a necessary and required device for conserving water use outdoors.

Tampa Bay Water has adopted this proclamation many times in the past, and we do so alongside our member governments to promote awareness of water use and the role that water conservation should play during the peak of Florida's dry season in April and May. Tampa Bay Water has supported water conservation programming since the agency's inception and continues to do so through implementation of the Tampa Bay Water Wise program, coordination with members' conservation staff, and through the agency's support of the Florida Friendly Landscaping programs.

Staff recommends approval of the attached Proclamation that April is Water Conservation Month. The Proclamation has been reviewed and approved as to form by Tampa Bay Water's General Counsel.

BACKGROUND

Beginning in 1998, the Florida Water Wise Council worked with local governments and the State Department of Agriculture to adopt April as Water Conservation Month. In 2003, the Council became a part of the Florida Section of the American Water Works Association and was changed to the Florida Water Wise Committee. In 2004, thirty-eight municipalities, in addition to the Governor's Cabinet, adopted a resolution proclaiming April as Water Conservation Month. In 2005, the newly formed Water Use Efficiency Division was able to coordinate Water Conservation Month adoption by 75 entities, including both public and private entities (double the 2004 effort). Currently, well over 200 entities adopt the proclamation including Tampa Bay Water and its Member Governments.

The Water Use Efficiency Division is responsible for coordinating the Water Conservation Month proclamation effort statewide. Since Tampa Bay Water coordinates and promotes conservation efforts with its Member Governments, adoption of this resolution and promotion through its annual conservation awareness program will highlight the region's efforts to effectively conserve water.

Attachment (1)

Water Conservation Proclamation_2026
B.2 Water Conservation Month Proclamation

PROCLAMATION

Tampa Bay Water
Clearwater, Florida

WHEREAS, water is a basic and essential need of every living creature; and

WHEREAS, the State of Florida, Water Management Districts, Tampa Bay Water and its Member Governments and other parties are working together to increase awareness about the importance of water conservation; and

WHEREAS, Tampa Bay Water, its Member Governments, and the State of Florida have designated April, typically a dry month when potable water demands increase, as Florida's Water Conservation Month, to educate citizens about how they can help save Florida's precious water resources; and

WHEREAS, Tampa Bay Water has always encouraged and supported water conservation, through various planning and coordination of educational programs and special events; and

WHEREAS, every business, industry, school, and citizen can make a difference when it comes to conserving water; and

WHEREAS, each business, industry, school, and citizen can help save water by following Member Government Water Restriction ordinances and participate in conservation programs.

NOW, THEREFORE, be it resolved by the Tampa Bay Water Board of Directors that:

1. The month of April 2026 is hereby proclaimed "WATER CONSERVATION MONTH".

2. Tampa Bay Water and its Member Governments shall continue to highlight the need to help protect this precious resource by promoting the use of water efficient technologies and practices and increasing awareness of the need to save water.

ATTEST:

_____
Secretary

TAMPA BAY WATER, A Regional Water Supply Authority

By: _____

Its: Chairman

Date: _____

(Seal)

APPROVED AS TO FORM:

_____
Office of the General Counsel

Water Conservation Month Proclamation

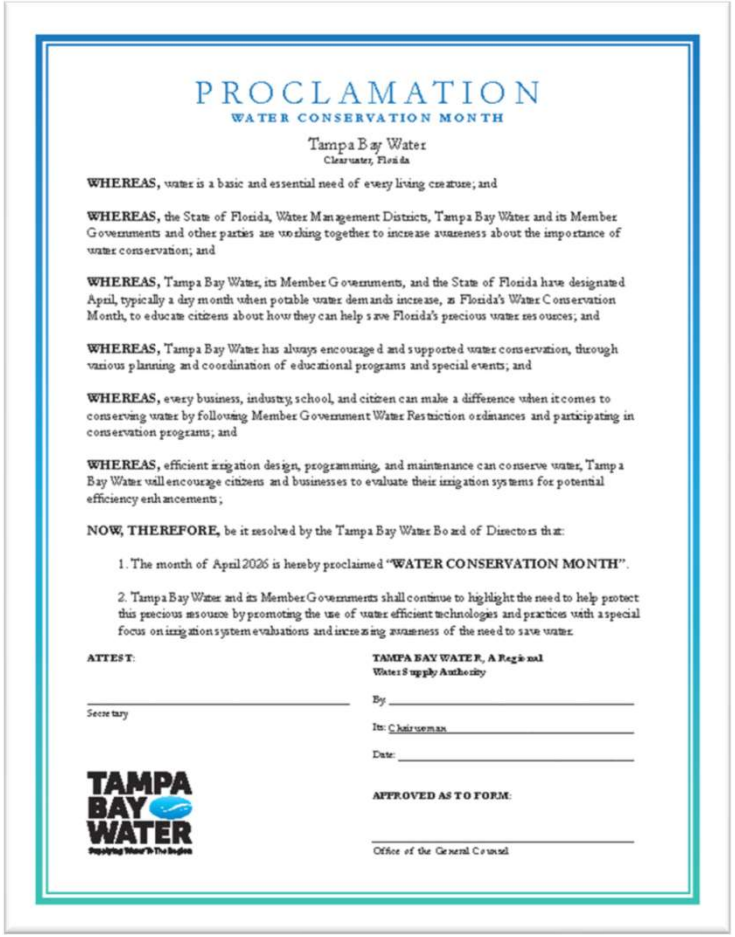
Agenda Item B.2

April 20, 2026

Amelia Brown
Demand Management Program Manager
Tampa Bay Water

Water Conservation Month

- 28th year since April was established as Water Conservation Month in Florida
- Coordinated by the Florida Section of the American Water Works Association, water management districts and the Florida Department of Environmental Protection
- Generates public awareness during the dry season
- Adopt proclamation alongside member governments



PROCLAMATION

WATER CONSERVATION MONTH

Tampa Bay Water

Clearwater, Florida

WHEREAS, water is a basic and essential need of every living creature; and

WHEREAS, the State of Florida, Water Management Districts, Tampa Bay Water and its Member Governments and other parties are working together to increase awareness about the importance of water conservation; and

WHEREAS, Tampa Bay Water, its Member Governments, and the State of Florida have designated April, typically a dry month when potable water demands increase, as Florida's Water Conservation Month, to educate citizens about how they can help save Florida's precious water resources; and

WHEREAS, Tampa Bay Water has always encouraged and supported water conservation, through various planning and coordination of educational programs and special events; and

WHEREAS, every business, industry, school, and citizen can make a difference when it comes to conserving water by following Member Government Water Restriction ordinances and participating in conservation programs; and

WHEREAS, efficient irrigation design, programming, and maintenance can conserve water, Tampa Bay Water will encourage citizens and businesses to evaluate their irrigation systems for potential efficiency enhancements;

NOW, THEREFORE, be it resolved by the Tampa Bay Water Board of Directors that:

1. The month of April 2026 is hereby proclaimed "**WATER CONSERVATION MONTH**".

2. Tampa Bay Water and its Member Governments shall continue to highlight the need to help protect this precious resource by promoting the use of water efficient technologies and practices with a special focus on irrigation system evaluations and increasing awareness of the need to save water.

ATTEST:

Secretary

TAMPA BAY WATER, A Regional Water Supply Authority

By

Its: Chairperson

Date:

APPROVED AS TO FORM:

Office of the General Counsel

Recommendation

- Staff recommends adoption of the Proclamation that April is Water Conservation Month.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM B.3

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Community Water Wise Award - 2025 Regional Winner - *Presentation*

SUMMARY

The Community Water Wise Award is a regional program that recognizes homeowners and businesses who design and maintain landscapes that save water while remaining attractive and functional. Each year, the Best of the Region Award is presented to the best landscape among all Tampa Bay Community Water Wise Award winners for the year. The 2025 Regional Community Water Wise Award will be presented to Michele Burt and David Kulp of Pinellas County.

SUGGESTED ACTION

Present the 2025 Regional Community Water Wise Award.

COST/FUNDING SOURCE

N/A

DISCUSSION

The Community Water Wise Award is a regional program that recognizes homeowners and businesses for landscapes that save water while remaining attractive and functional. The program, offered in partnership with the University of Florida's Institute of Food and Agricultural Sciences Extension (UF/IFAS) and Florida Friendly Landscaping Program, recognizes excellence in water-wise landscapes in Hillsborough, Pasco and Pinellas Counties.

The annual awards celebrate landscapes that use efficient irrigation, Florida Friendly plants, and thoughtful design to reduce water use and protect the environment—without sacrificing curb appeal. Landscapes are evaluated by UF/IFAS County Extension staff and experts from local utilities. Winners are selected based on performance in the following categories:

- Retention of existing trees and vegetation
- Landscape design and plant selection
- Stormwater runoff prevention
- Efficient irrigation
- Aesthetic appeal

The 2025 Awards featured these three award categories:

- The Conservation Commendation: Recognizes landscapes that excel in one or more categories.
- The Tampa Bay Community Water Wise Award: Recognizes the best landscapes in a County or City that feature the right plants in the right place, minimize stormwater runoff, use water efficiently and offer aesthetic appeal.
- The Best of the Region Award: Recognizes the best landscape among all Tampa Bay Community Water Wise Award winners throughout the Hillsborough, Pasco and Pinellas County area.

The 2025 Best of the Region award goes to Michele Burt and David Kulp's landscape in Pinellas County. Their landscape was selected among all the winners for its overall design, selection of native and edible plants and trees, and its aesthetic appeal.

BACKGROUND

The Community Water Wise Award program has been coordinated by Tampa Bay Water for over a decade, in partnership with the University of Florida's Institute of Food and Agricultural Sciences Extension (UF/IFAS) and Florida Friendly Landscaping Program and with the local member governments. It is a regional program that recognizes homeowners and businesses for landscapes that save water while remaining attractive and functional.

Water-wise landscapes benefit homeowners and the environment by:

- Improving Drought Resistance: Florida-friendly plants suited to Florida's natural environment require less water than other plants. Native and Florida-friendly plants thrive in the local environment and can be drought tolerant.
- Reducing Water and Maintenance: Water-wise landscapes typically have less turf grass and feature plants that require less upkeep. When the right plants are planted in the right places and become established, the landscape requires less maintenance compared with turf.
- Protecting the Environment: By using plants suited to the location, water-wise landscapes minimize the need for fertilizers and pesticides that can be harmful to the environment and drinking water sources.

Award recipients receive a custom mosaic steppingstone created by a local artist and are recognized at local City Council or County Commission meetings. The Best of the Region Award is presented at a Tampa Bay Water Board meeting.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.1

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Cooperative Funding Agreement No. 26CF0004970 between the Southwest Florida Water Management District and Tampa Bay Water and an Update on the Tampa Bay Water Wise Program - *Approve*

SUMMARY

The Southwest Florida Water Management District has supported Tampa Bay Water's demand management program, Tampa Bay Water Wise, with cooperative funding since the program began in 2020. A new cooperative funding agreement (No. 26CF0004970) will continue to support rebates and related activities throughout calendar year 2026. This agenda item also provides a monthly status report of the Tampa Bay Water Wise program.

SUGGESTED ACTION

Approve Cooperative Funding Agreement No. 26CF0004970 which supports continued implementation of the Tampa Bay Water Wise program. Receive status update on the Tampa Bay Water Wise program.

COST/FUNDING SOURCE

N/A

DISCUSSION

Cooperative Funding Agreement with District

The Southwest Florida Water Management District has supported Tampa Bay Water's demand management program, Tampa Bay Water Wise, with cooperative funding since the program began in 2020. This year's Cooperative Funding Agreement No. 26CF0004970 will support rebate payments to customers and activities throughout calendar year 2026. The agency was awarded up to $528,000 in cooperative reimbursement for issuance of water-saving rebates to customers and for program administration and inspection costs. The agency will be providing an equal or greater amount in project funding as included in the approved FY 2026 agency budget.

Staff recommends Board approval of the attached Cooperative Funding Agreement No. 26CF0004970 with the District to support continued demand management implementation through the Tampa Bay Water Wise program. This agreement has been approved as to form by Tampa Bay Water's General Counsel.

Tampa Bay Water Wise Update

The following is a status report on the Tampa Bay Water Wise program and other demand management activities in the region.

Rebates and Water Savings

The Tampa Bay Water Wise program has saved 1,102,651 gallons per day cumulatively from March 2020 through March 20, 2026. The majority of water savings come from multi-family retrofits of bathroom fixtures, and the remainder comes from indoor and outdoor measures implemented by homeowners and commercial properties.

The regional dashboard, attached to this item, shows total water saved across the region as well as savings by member. The dashboard is also available at the following link:
https://tbw.conservationrebates.com/dashboard/public/regional_dashboard/regional_dashboard.pdf

Program Updates

Agency staff manage the program, and EGIA is the third-party rebate administrator who also manages the program marketing. Member government staff actively participate in the program by approving any rebate changes, promoting rebates to their customers, and by participating in the monthly Working Group meetings.

To achieve the high savings target for FY 2026, the program has enhanced the rebate offerings over the past few months. The enhanced toilet rebates adopted temporarily in 2025 appear to have successfully driven more participation in the program in the multi-family sector. The impact of homeowner response to this rebate increase is still under review; however, the impact is not nearly as pronounced as in the

multi-family sector. In addition, the program recently enhanced the commercial irrigation rebate offering to cover up to 50% of efficiency improvement projects. Lastly, the working group is reviewing changes to the residential Sprinkler System rebate to enhance water saving opportunities for customers and contractors.

Additional Regional Demand Management Activities

The collective and coordinated efforts of the member governments and the Florida Friendly Landscaping programs have an impact on regional water demand. These activities have been coordinated by the Agency for years and play a key role in educating residents about the best ways to save water. These efforts are complementary to the Tampa Bay Water Wise rebate program. The individual activities of member governments are summarized in the attached monthly conservation report.

Florida Friendly Landscaping agents educate residents and businesses about best landscaping management practices. The agents also help with the Tampa Bay Water Wise program by conducting site visits and promoting rebate opportunities to their contacts.

Once per month, staff from member governments, the Florida Friendly Landscaping program, Tampa Bay Water, the District, and other conservation professionals from the greater area meet to provide information about upcoming activities, current efforts, and conservation messaging. This group, called the Conservation Coordination Consortium (CCC), also coordinates and implements the Community Water Wise awards program. This is an annual awards program that aims to inspire outdoor water conservation by highlighting landscapes that are Florida Friendly and water wise. This year, two new award categories have been added: a Conservation Commendation award to acknowledge landscapes that achieve excellence in at least one judging category, as well as a Best of the Region award to highlight the best landscape among all the winners across the three counties, which will be presented at the April 20, 2026 Tampa Bay Water board meeting.

BACKGROUND

Tampa Bay Water Wise is a regional water conservation rebate program which aims to save up to 3.8 million gallons of water per day (mgd) by 2030 through 12 rebate components. This program is intended to cost-effectively defer the need for new water supplies through improved water-use efficiency which will save the Member Governments and their customers money. The program is managed by Tampa Bay Water and guided by the Member Governments through a Working Group made up of Member Government and District staff which meet monthly. The program is administered by a third-party contractor, Electric and Gas Industries Association (EGIA).

In August 2018, Agency staff developed a list of potential demand management best practices that could save up to 11 mgd by 2030 at about one-fifth of the cost of developing new water supplies. This approach optimizes the use of existing water resources and could defer the need to develop new supplies to a later date, all within a cost-effective strategy. The plan was approved by the Board in

December 2018 as part of the Long-term Master Water Plan update. On August 20, 2018, the Board approved funding of demand management actions through the annual budget process and applying for matching cooperative funding from the District.

The Tampa Bay Water Wise program was officially launched and open to the public via tampabaywaterwise.org on March 30, 2020. The Working Group that was established at the outset of this program currently meets on a monthly basis and is comprised of representatives from each Member Government, Tampa Bay Water, and the District. The water saving goal was revised in 2023, aiming to save 3.8 million gallons per day by 2030.

Attachments (3)

TBWW_regional_dashboard_3.20.26
Member Govt Conservation Report_Jan _Feb_2026
AGR2026006 SWFWMD COOP FUNDING PHASE 6
C.1. Cooperative Funding Agreement & TBWW Update

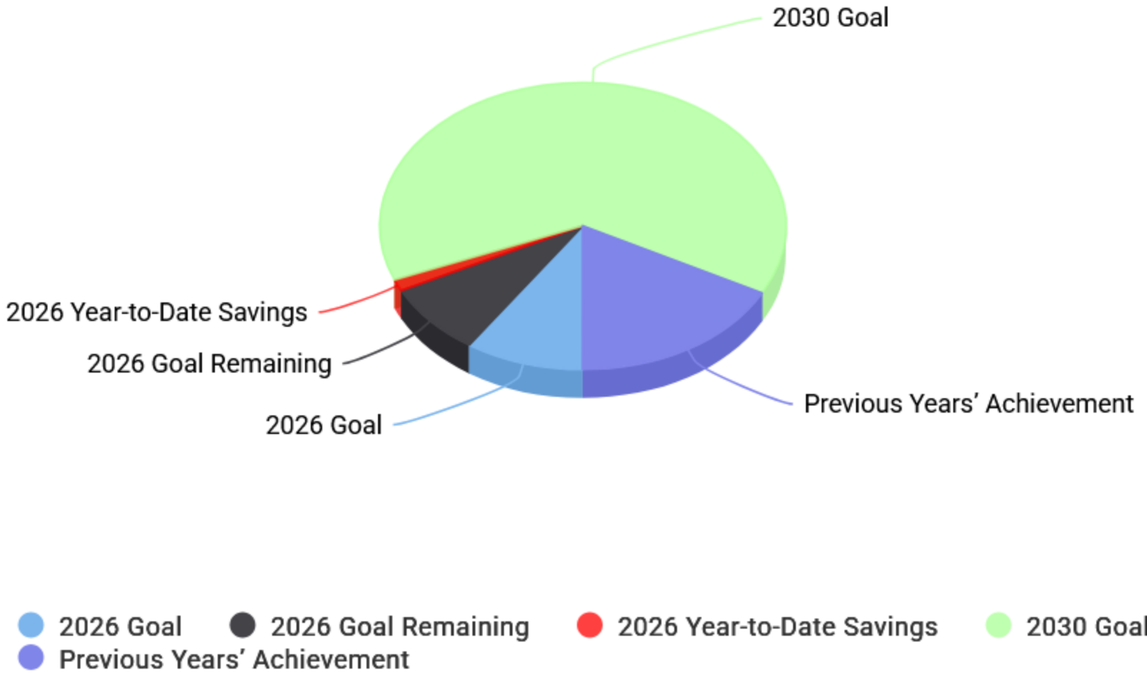
Created on: 03/20/2026
Data date range: 04/05/2020 - 03/20/2026

Dashboard Reports

Print Report

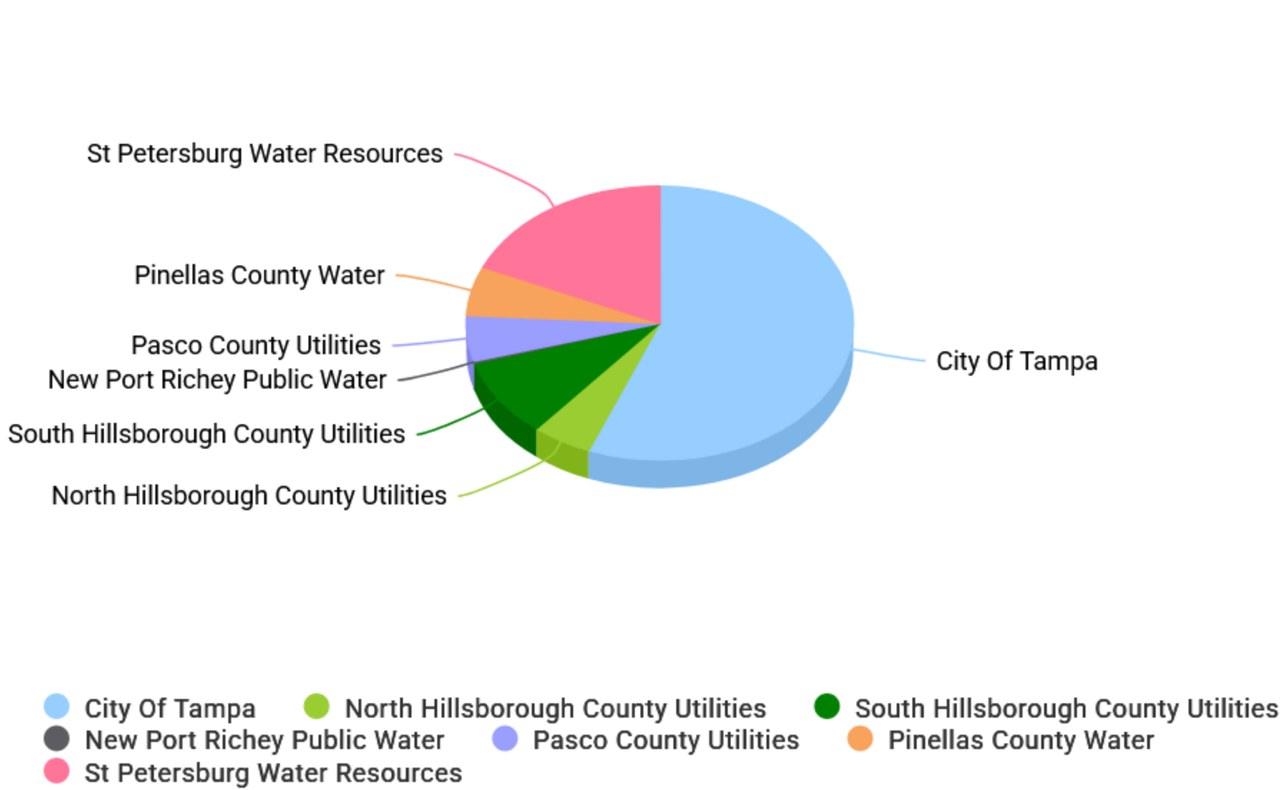
Regional Total Water Savings (GPD) and 2030 Goal

REGIONAL WATER SAVED	
Gallons per Day	
2026 Goal	560,420
2026 Goal Remaining	483,406
2026 Year-to-Date Savings	77,013
2030 Goal	3,800,000
Previous Years' Achievement	1,025,637



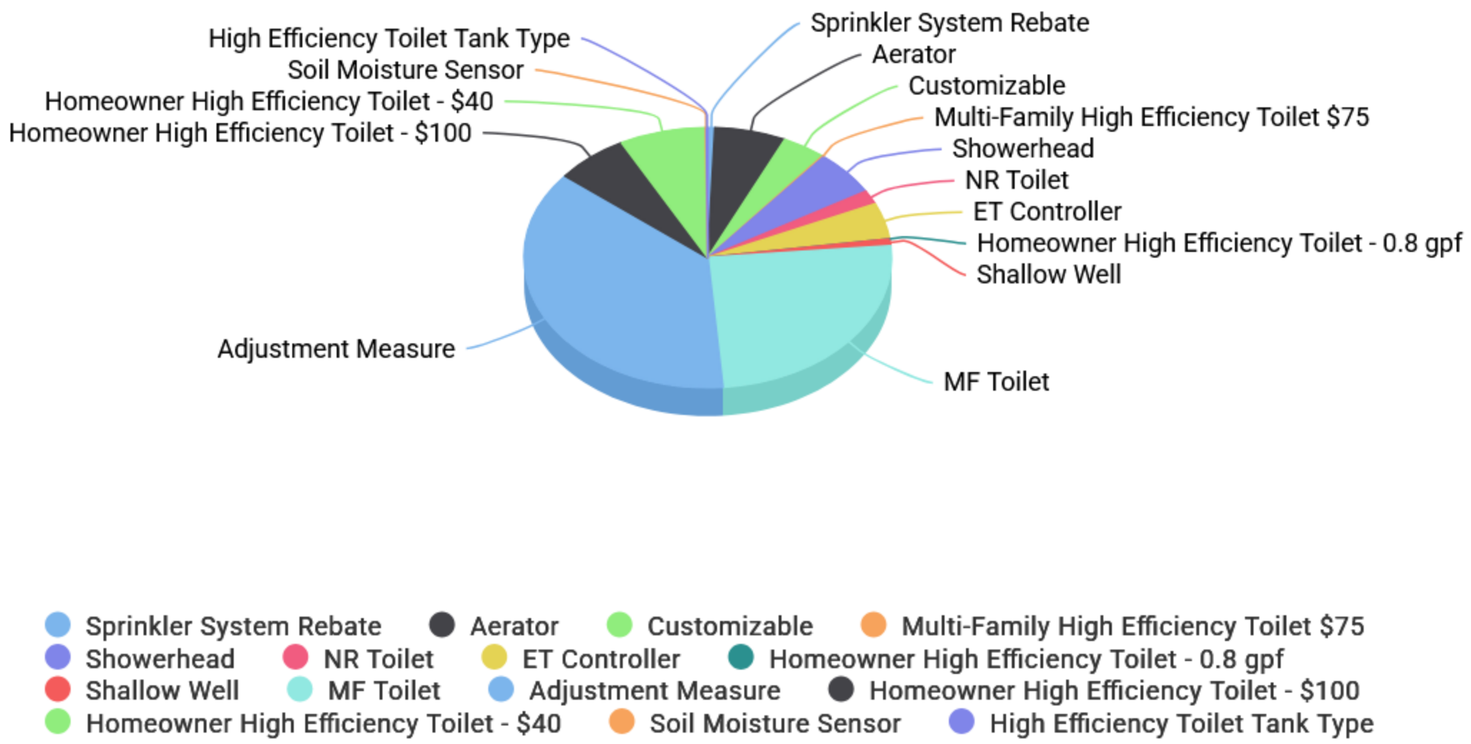
Regional Total Water Savings (GPD) by Water Demand Planning Area (WDPA)

REGIONAL WATER SAVED BY WDPA	
Gallons per Day	
Regional Savings	1,102,651
City Of Tampa	617,479
North Hillsborough County Utilities	55,062
South Hillsborough County Utilities	102,723
New Port Richey Public Water	2,338
Pasco County Utilities	59,629
Pinellas County Water	63,888
St Petersburg Water Resources	201,530



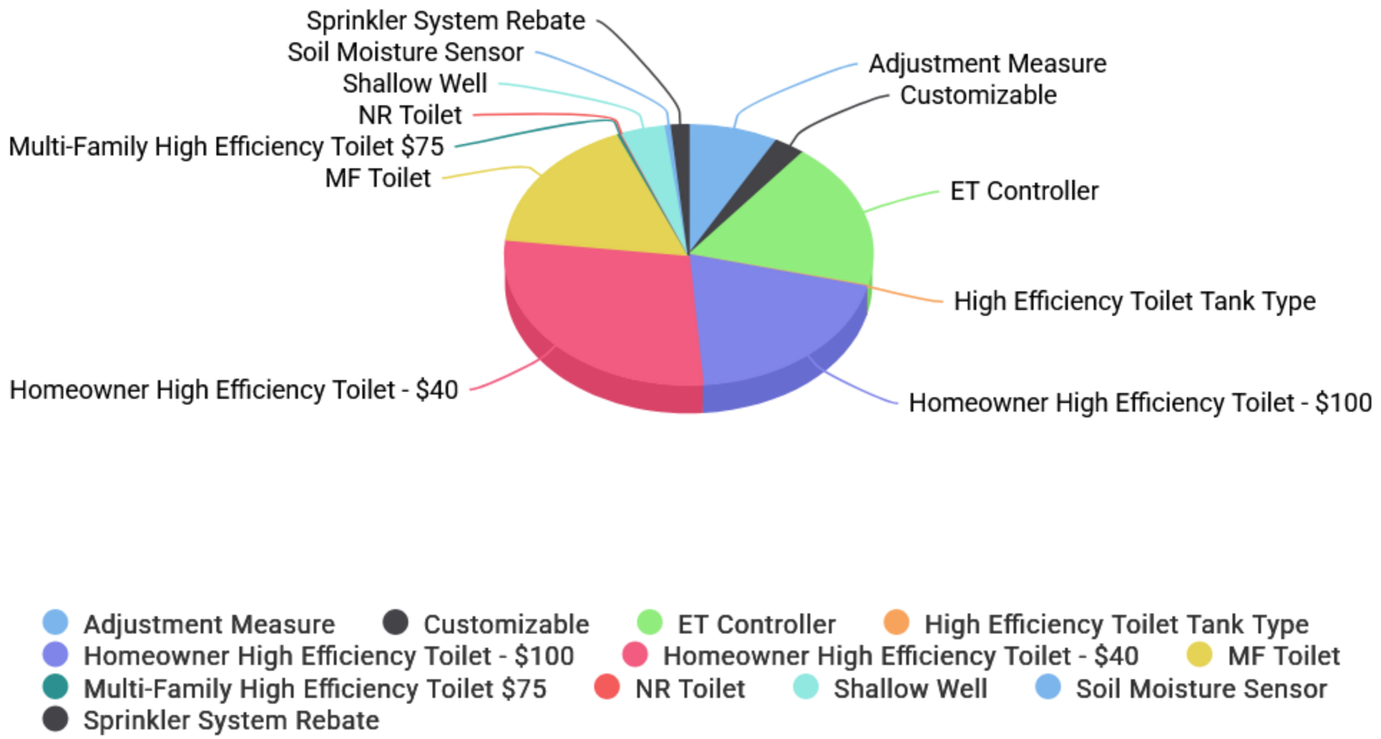
Regional Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	1,102,651	41,930
Sprinkler System Rebate	6,801	1,013
Aerator	68,925	14,276
Customizable	42,687	1,541
Multi-Family High Efficiency Toilet $75	1,377	51
Showerhead	61,797	6,898
NR Toilet	19,269	713
ET Controller	49,755	321
Homeowner High Efficiency Toilet - 0.8 gpf	20	1
Shallow Well	9,030	35
MF Toilet	277,362	10,460
Adjustment Measure	409,135	37
Homeowner High Efficiency Toilet - $100	70,810	2,425
Homeowner High Efficiency Toilet - $40	83,575	4,117
Soil Moisture Sensor	775	5
High Efficiency Toilet Tank Type	1,332	37



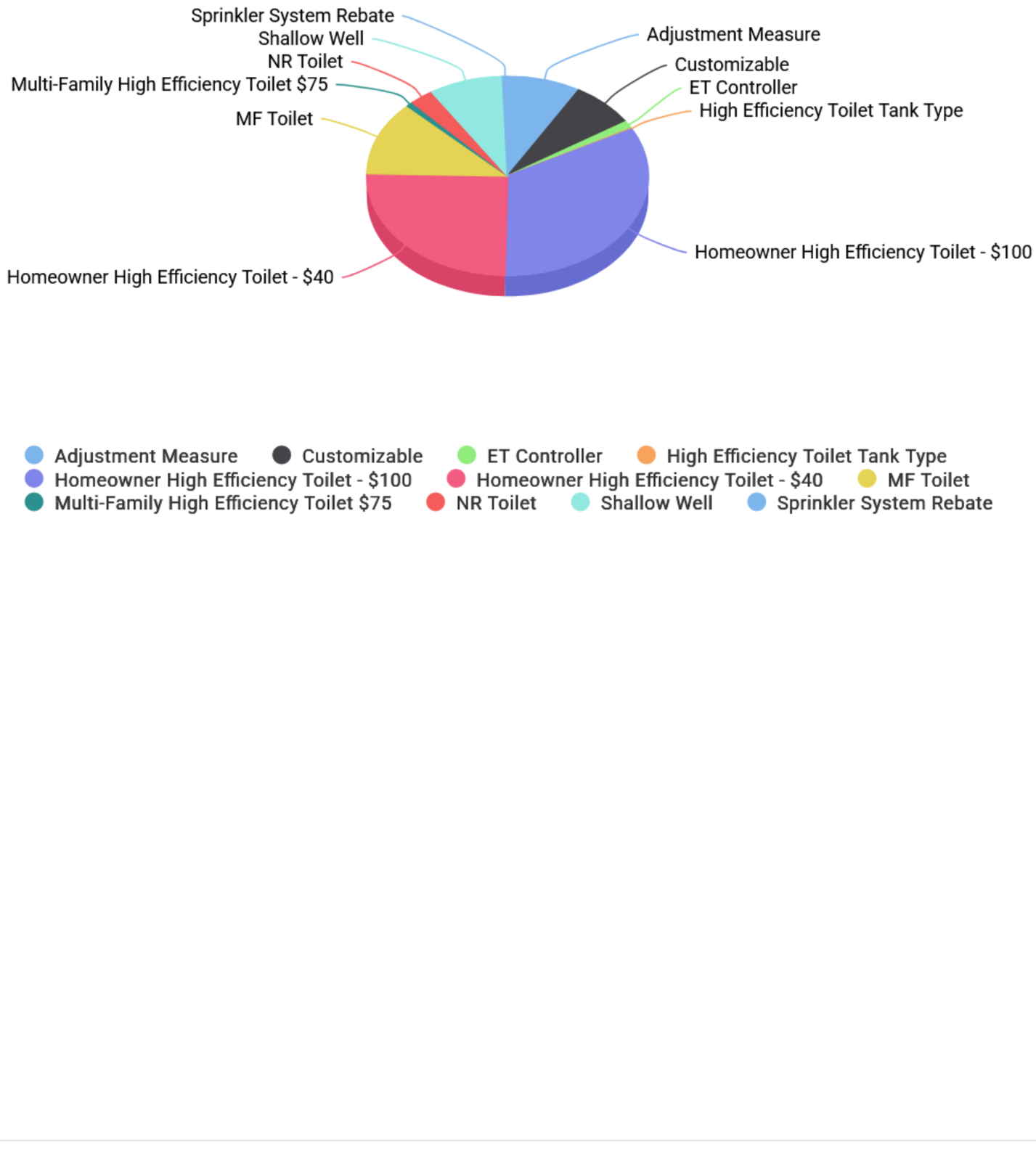
Pasco County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	59,629	1,934
Adjustment Measure	4,726	1
Customizable	1,610	92
ET Controller	10,850	70
High Efficiency Toilet Tank Type	72	2
Homeowner High Efficiency Toilet - $100	11,826	405
Homeowner High Efficiency Toilet - $40	16,747	825
MF Toilet	10,071	373
Multi-Family High Efficiency Toilet $75	162	6
NR Toilet	54	2
Shallow Well	2,322	9
Soil Moisture Sensor	310	2
Sprinkler System Rebate	878	147



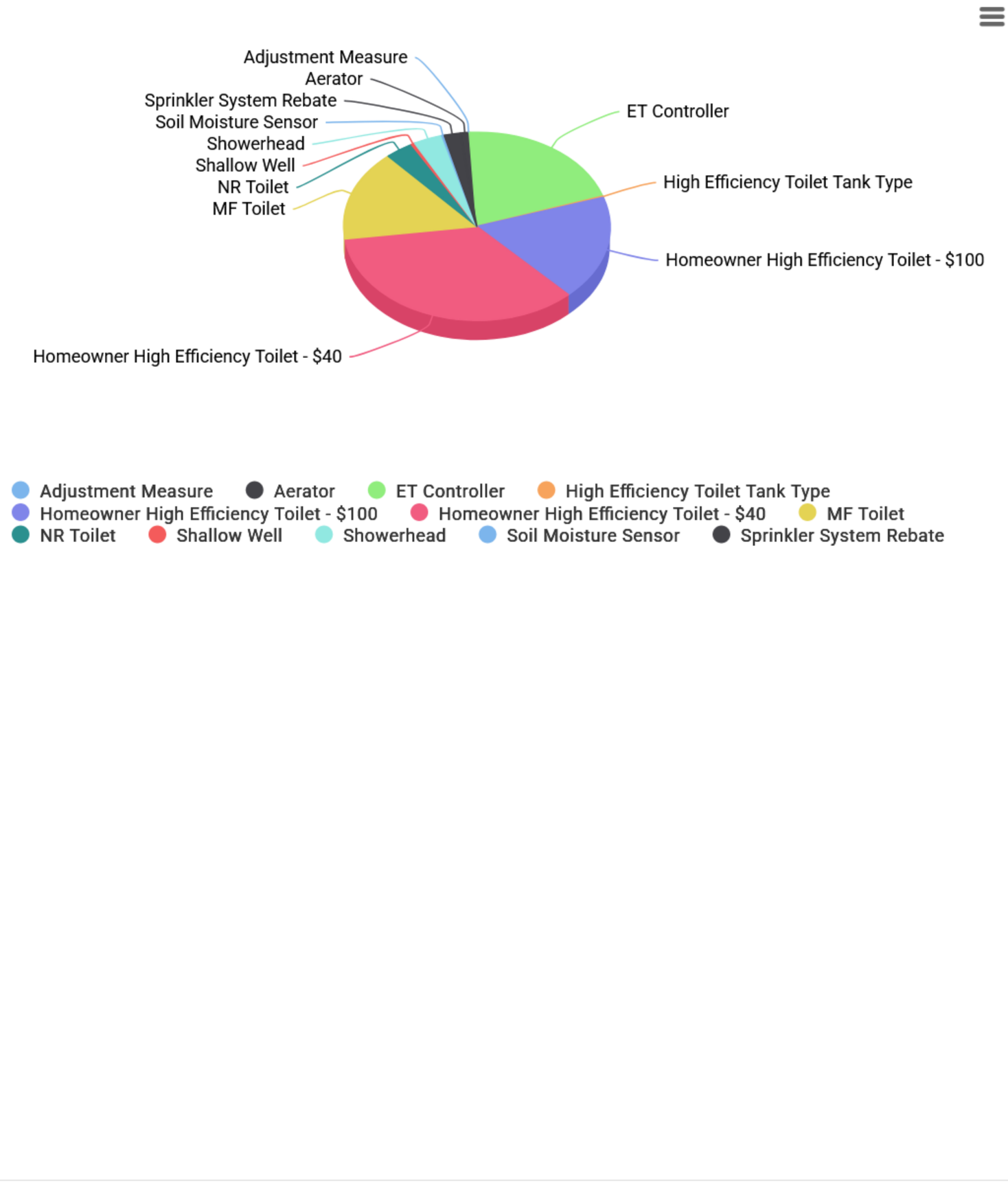
Pinellas County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	63,888	2,086
Adjustment Measure	5,379	2
Customizable	4,728	126
ET Controller	775	5
High Efficiency Toilet Tank Type	108	3
Homeowner High Efficiency Toilet - $100	21,140	724
Homeowner High Efficiency Toilet - $40	16,016	789
MF Toilet	7,695	285
Multi-Family High Efficiency Toilet $75	486	18
NR Toilet	1,773	65
Shallow Well	5,418	21
Sprinkler System Rebate	368	48



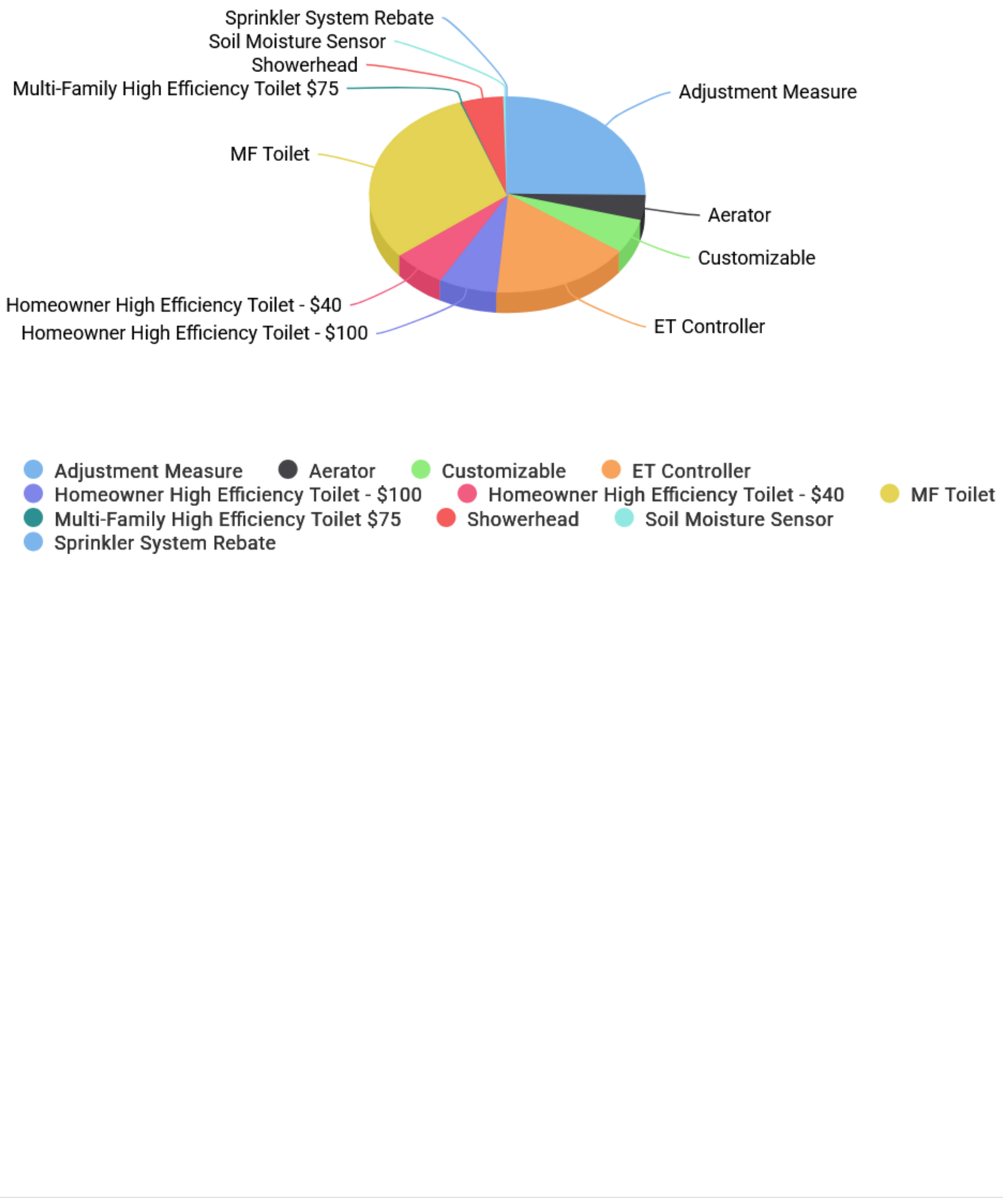
Northwest Hillsborough County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	55,062	2,254
Adjustment Measure	-1,110	4
Aerator	600	120
ET Controller	11,625	75
High Efficiency Toilet Tank Type	108	3
Homeowner High Efficiency Toilet - $100	10,074	345
Homeowner High Efficiency Toilet - $40	19,630	967
MF Toilet	8,721	323
NR Toilet	1,917	71
Shallow Well	258	1
Showerhead	1,970	197
Soil Moisture Sensor	155	1
Sprinkler System Rebate	1,114	147



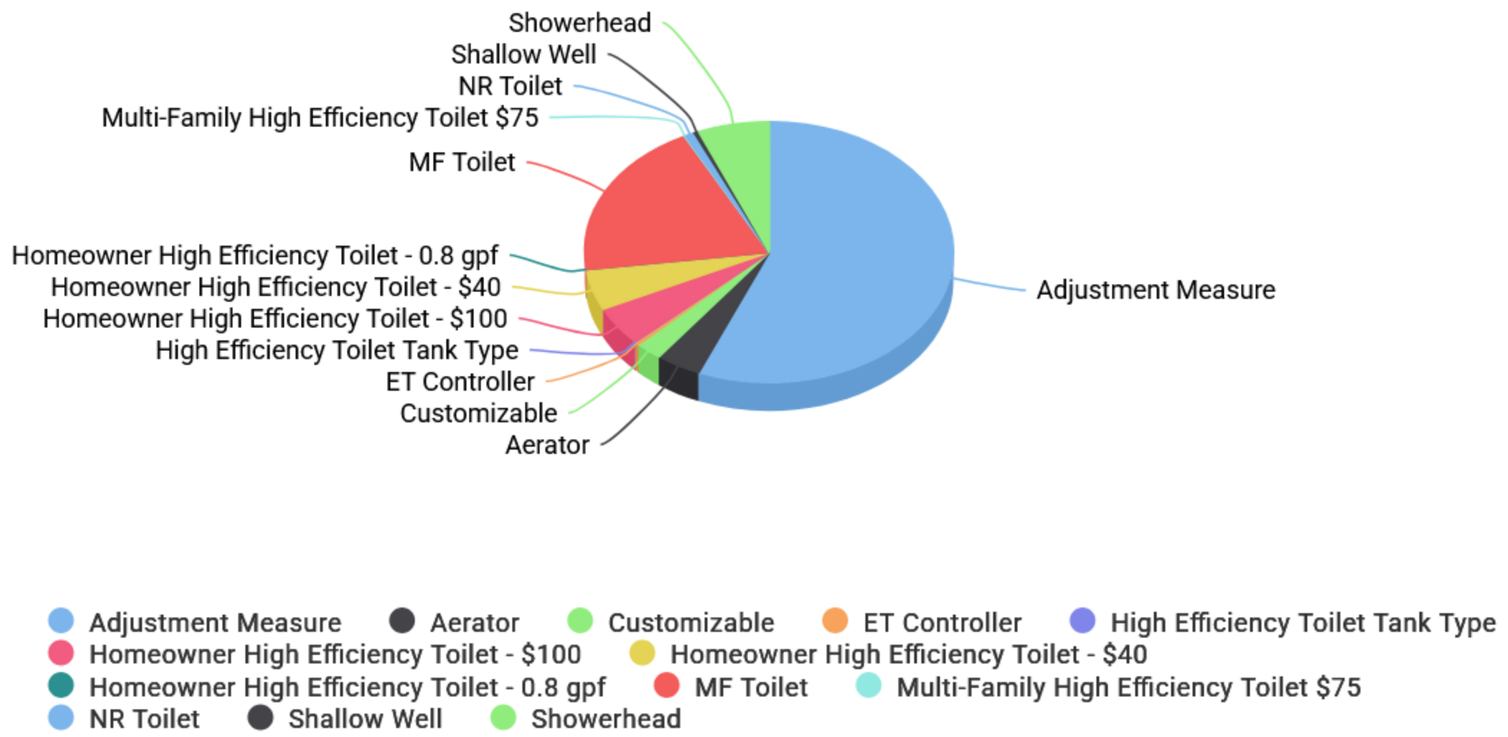
South Central Hillsborough County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	102,723	3,382
Adjustment Measure	25,932	2
Aerator	4,210	842
Customizable	5,805	215
ET Controller	16,740	108
Homeowner High Efficiency Toilet - $100	7,037	241
Homeowner High Efficiency Toilet - $40	6,394	315
MF Toilet	30,996	1,148
Multi-Family High Efficiency Toilet $75	189	7
Showerhead	5,010	501
Soil Moisture Sensor	310	2
Sprinkler System Rebate	100	1



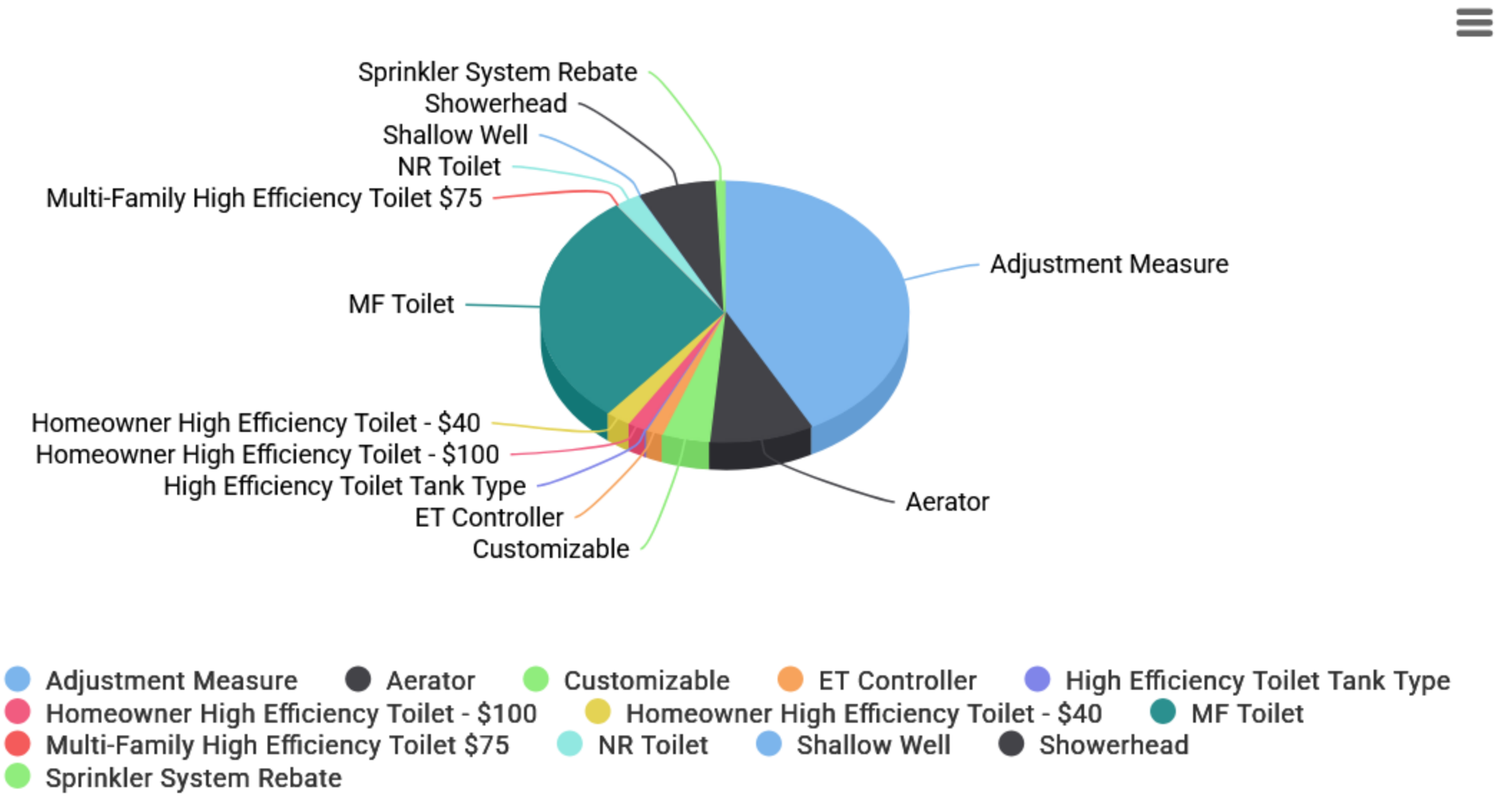
ST Pete County Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	201,530	5,714
Adjustment Measure	113,369	3
Aerator	7,920	1,969
Customizable	4,760	105
ET Controller	775	5
High Efficiency Toilet Tank Type	72	2
Homeowner High Efficiency Toilet - $100	9,752	334
Homeowner High Efficiency Toilet - $40	10,231	504
Homeowner High Efficiency Toilet - 0.8 gpf	20	1
MF Toilet	39,312	1,456
Multi-Family High Efficiency Toilet $75	189	7
NR Toilet	1,755	65
Shallow Well	774	3
Showerhead	12,600	1,260



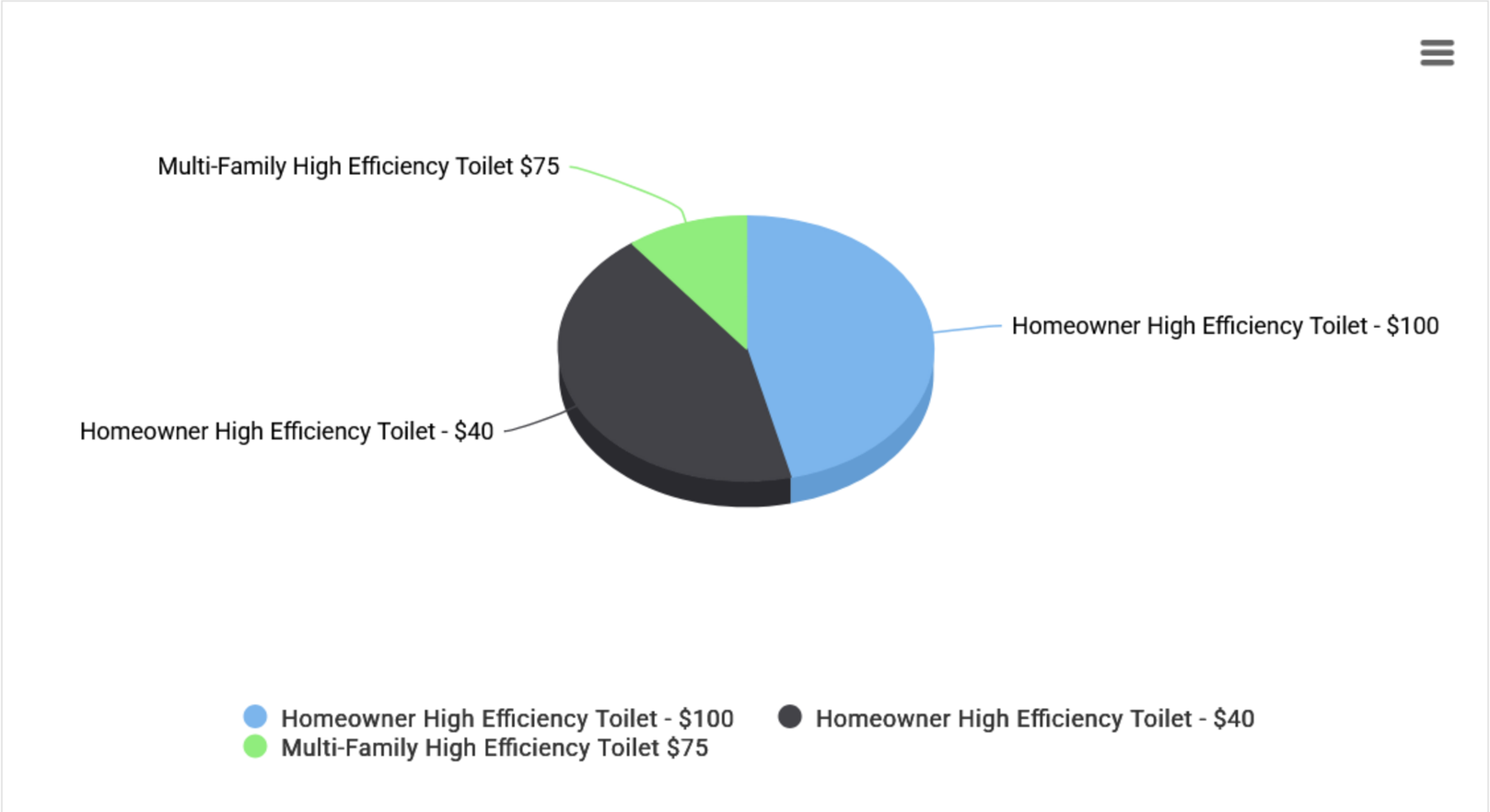
Tampa Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	617,479	26,464
Adjustment Measure	260,839	25
Aerator	56,195	11,345
Customizable	25,784	1,003
ET Controller	8,990	58
High Efficiency Toilet Tank Type	972	27
Homeowner High Efficiency Toilet - $100	9,898	339
Homeowner High Efficiency Toilet - $40	13,540	667
MF Toilet	180,567	6,875
Multi-Family High Efficiency Toilet $75	108	4
NR Toilet	13,770	510
Shallow Well	258	1
Showerhead	42,217	4,940
Sprinkler System Rebate	4,339	670



New Port Richey Total Water Savings (GPD) by Rebate Type

REBATE TYPE	Sum of GPD Savings	Sum of Quantity
Grand Total	2,338	96
Homeowner High Efficiency Toilet - $100	1,080	37
Homeowner High Efficiency Toilet - $40	1,015	50
Multi-Family High Efficiency Toilet $75	243	9



Member Government Water Conservation Activities
January 2026

Conservation Activities	Pinellas County	City of St. Petersburg	Hillsborough County	City of Tampa	Pasco County	City of New Port Richey
Programs & Devices						
Retrofit Kits Distributed				28		4
Hose Nozzles		3	0	10		
Irrigation Evaluations		10	9	6	7	
Rain/Soil Moisture Sensor Rebates		10		7		
Indoor Audit					3	
Education & Engagement						
Speaking Engagements - # events, #attendees		1/12	25 / 462	3/59	1_67	
Expos/Fairs/Events		1		1		
Tours				0		
Paper/E-bill conservation message - #recipients		1/93,000			157,000	
Hotline Calls/Email Inquiries		91/78 (3 SCF issues)	294 / 344	16	1,403	
Media						
Conservation Website Users - # visits		2,538	1,497	2,453	2640	
E- Newsletter Opens		1,950	0			
Twitter Engagements			0		609	
Facebook Engagements			3,458		27,467	
LinkedIn Engagements			1,941/ 120/ 1,767			
NextDoor Engagements			427 / 422		7,193	
Television Shows/Radio Interviews			0 / 0 / 0			
News Releases		1	9 / 51,500			
Infrastructure Related						
Meter Tests/Changeouts - proactive measure		1,645			2979	9
Reclaimed Water (net new connections)					160	
Enforcement						
Water Restriction Warnings	10	0	219	0	174	0
Water Restriction Citations	0	0	33	61		0
Water Restriction Enforcement Hours	240	2		652		
Water Restriction Enforcement Mileage	468	14		5987		
Tampa Bay Water Wise Activities						
Facebook Posts (#)						
Facebook Engagements						
NextDoor Posts (#)						
NextDoor Engagements						
Twitter posts (#)						
Twitter Engagement Rate						
Newsletter/Email - # of recipients		4,619				
- open rate		43%				
- click rate		2				
Utility Bill Insert - Name rebate type						
Utility Bill Insert - # of recipients						
Other TBWW Activities (Brief description)		Conservation webpages; slides in presentations				

Member Government Water Conservation Activities
February 2026

Conservation Activities	Pinellas County	City of St. Petersburg	Hillsborough County	City of Tampa	Pasco County	City of New Port Richey
Programs & Devices						
Retrofit Kits Distributed				33		21
Hose Nozzles			22	46		
Irrigation Evaluations		10	13	15	4	
Rain/Soil Moisture Sensor Rebates		10		32		
Indoor Audit						
Education & Engagement						
Speaking Engagements - # events, #attendees			31 / 676	5/699	2_109	
Expos/Fairs/Events		2		0	2	
Tours				0		
Paper/E-bill conservation message - #recipients		1 / 93,000			157,000	
Hotline Calls/Email Inquiries		31 / 52	107 / 487	18	1,327	
Media						
Conservation Website Users - # visits		7,138	2,823	6,074		
E- Newsletter Opens		2,009	0			
Twitter Engagements			0			
Facebook Engagements			3,676			
LinkedIn Engagements			3,824/ 86/ 2,701			
NextDoor Engagements			2,800 / 11,994			
Television Shows/Radio Interviews			0 / 0 / 1			
News Releases		1	11 /291,500	3		
Infrastructure Related						
Meter Tests/Changeouts - proactive measure		1,177			2,100	17
Reclaimed Water (net new connections)					161	
Enforcement						
Water Restriction Warnings	4		476		163	2
Water Restriction Citations	0		8	47	0	0
Water Restriction Enforcement Hours	103	4		524		
Water Restriction Enforcement Mileage	952	17		4382		
Tampa Bay Water Wise Activities						
Facebook Posts (#)						
Facebook Engagements						
NextDoor Posts (#)						
NextDoor Engagements						
Twitter posts (#)						
Twitter Engagement Rate						
Newsletter/Email - # of recipients		1 / 4,598				
- open rate		44%				
- click rate		3%				
Utility Bill Insert - Name rebate type						
Utility Bill Insert - # of recipients						
Other TBWW Activities (Brief description)		Conservation webpages; slides in presentations; e-newsletters images and stories.	FLIP program and Rebates have been heavily promoted on multiple news channels both February as well as March	7 desktop analyses for TBWW		

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
WaterMatters.org

An Equal Opportunity Employer

Bartow Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Office
78 Sarasota Center Boulevard
Sarasota, Florida 34240-9770
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Office
7601 U.S. 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

John R. Mitten
Chair, Hernando, Marion
Jack Bispham
Vice Chair, Manatee
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Secretary, Polk
John E. Hall
Treasurer, Polk
Kelly S. Rice
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Michelle Williamson
Former Chair, Hillsborough
Brian Aungst Jr.
Pinellas
Josh Gamblin
DeSoto, Hardee, Highlands
James Holton
Pinellas
Dustin Rowland
Pasco
Robert Stern
Hillsborough
Jim Turner
Charlotte, Sarasota
Nancy Watkins
Hillsborough, Pinellas

Brian J. Armstrong, P.G.
Executive Director

RECEIVED

FEB 06 2026

TAMPA BAY WATER
RECORDS DEPT

Doc. No. 000547
Primary AGR
Secondary 026
Tertiary 006
CB: Brown (w/enc.)

February 5, 2026

Amelia Brown
Tampa Bay Water
2575 Enterprise Rd.
Clearwater, FL 33763-1102

Subject: TBW Demand Management Plan Implementation-Phase 6
Project No. Q414
Agreement No. 26CF0004970

Dear Amelia:

Enclosed are two originals of the agreement between the Southwest Florida Water Management District (District) and Tampa Bay Water for the subject project. Please have all originals signed and dated, then return them to the following address:

Southwest Florida Water Management District
Attn: Meagan Finneran
2379 Broad Street
Brooksville, FL 34604

One fully executed originals will be sent to you for your files after the District's executive director or designee has signed the agreements.

Please contact the procurement section if you are unable to have the referenced agreement signed and returned to the District within 90 calendar days from the date on this letter. Delayed execution of this agreement may affect the ranking of future cooperative funding requests.

If you have any questions or want to make any changes to the agreement, please contact me directly at Meagan.Finneran@watermatters.org, or (352) 415-1138.

Sincerely,

Meagan Finneran
Contract Specialist

Enclosures (2)
cc: Contract Manager Name
S. Tarokh, PAB
Records (Contract File)

Southwest Florida Water Management District
Cooperative Funding Initiative (CFI)
Project Agreement (Type 1-3)

This Agreement, including any exhibits referenced, attached, or incorporated herein (Agreement) is entered into by and between the Southwest Florida Water Management District (District) and the Cooperator named below:

Project Information

Cooperator Name:	Tampa Bay Water
Cooperator Address:	2575 Enterprise Road
	Clearwater, Florida 33763
Project Number:	Q414
Project Name:	TBW Demand Management Plan Implementation-Phase 6
Project Description:	The project consists of water conservation incentives and services (Project).
Electronic Signature:	Yes

Funding/Agreement Information

*expiration dates subject to change

Risk Level:	Type 1		
Effective Date:	10/01/2025	*Expiration Date:	12/31/2028
Initial Board-Approved Project Amount:	$1,056,000	*O&M Expiration Date:	
Updated Construction Cost Estimate:	N/A	Multi-Year Funded Project:	No
District State Funds:	$/N	CSFA #: / Title:	
Federal Funds:	$/N	CFDA #: / Title:	
Cooperator State Funds:	$/N	CSFA #: / Title:	
Federal Funds:	$/N	CFDA #: / Title:	
District's Maximum Funding Share:	$528,000	Approved funds: $ 528,000 Through FY:	2025
Cooperator's Funding Match:	$528,000	Eligible Land Acquisition Cost	No
Maximum Design Match:	No	Conservation Easement:	No

Party Contacts

District Contract Manager

Name:	Josh Madden
Address:	2379 Broad Street
	Brooksville, FL 34604
Phone:	352-269-5568
Email:	Josh.madden@swfwmd.state.fl.us

Cooperator Project Manager

Name:	Amelia Brown
Address:	2575 Enterprise Road
	Clearwater, FL 33763-1102
Phone:	727-791-2367
Email:	Abrown@tampabaywater.org

The Parties agree to comply with the terms and conditions set forth in the exhibits below, which are incorporated herein by reference:

X	Exhibit A - CFI Standard Terms and Conditions (Type 1-3, Public Cooperator)
	Exhibit A - CFI Standard Terms and Conditions (Type 1-3, Private Cooperator)
	Exhibit B - CFI Special Terms and Conditions – Construction, Restoration, or Conservation with Construction
	Exhibit B - CFI Special Terms and Conditions – Construction (Water Quality/Flood Protection)
	Exhibit B - CFI Special Terms and Conditions – Construction (Reclaimed Water)
	Exhibit B - CFI Special Terms and Conditions – Construction (ASR and Recharge)
X	Exhibit B - CFI Special Terms and Conditions – Non-Construction (Feasibility Study, Conservation, Watershed Management Plan)
X	Exhibit C - Project Plan
	Exhibit D - FDEP Grant Agreement Terms and Conditions (State Funding Requirements)
	Exhibit E - Federal Funding Requirements
	Exhibit F - Special Audit Requirements
	Exhibit G - Miscellaneous
	Attachment 1 - Sample Conservation Easement Form
	Attachment 2 - Anticipated Owner's Allowance Contingency Funds Justification Form
	Attachment 3 - Unanticipated Contingency Funds Justification Form (Construction)
	Attachment 4 - FDEP Engineer's Certification of Payment Request Form (Construction)
	Attachment 5 - Progress Report Form
X	Attachment 6 – Cooperative Funding Agreement Checklist

IN WITNESS WHEREOF, the parties hereto, or their lawful representatives, have executed this Agreement on the day and year set forth next to their signatures below.

Southwest Florida Water Management District

By:_____

Name: _____ Date: _____

Title: _____

Tampa Bay Water

By:_____

Name: _____ Date: _____

Title: _____

Exhibit A
Southwest Florida Water Management District
Standard Terms and Conditions
Public Cooperator

1. Project Contacts and Notices.
The individuals identified in the CFI Project Agreement are the prime contacts for matters relating to this Agreement. Each party shall provide notice to the other party of any changes to the prime contact information. All notices under this Agreement shall be in writing to the other party's prime contact and shall be sent by email or overnight mail, except for cure and default notices which shall be sent by certified mail. Unless otherwise indicated in this Agreement, reports may be provided by email. Notices and reports are effective upon receipt. Any notice or report delivered by email shall request a receipt thereof confirmed by email or in writing by the recipient and the effective date shall be the date of receipt, provided such receipt has been confirmed by the recipient.
2. Contact Authority.
The Cooperator's Project Manager is authorized to affirm the invoice certification required by this Agreement. The District's Contract Manager is authorized to approve requests to extend a Project task deadline or to adjust a line item amount of the Project Budget. The District's Contract Manager is not authorized to approve any time extension that will extend a Project task beyond the expiration date of this Agreement, or which will result in a change to the total project cost or the parties' funding shares as identified in the CFI Project Agreement. Changes authorized by this Paragraph do not require a formal written amendment but must be in writing and signed in accordance with each party's signature authority.
3. Agreement Term.
The effective date of this Agreement is identified in the CFI Project Agreement. The expiration date is the date identified in the CFI Project Agreement, or upon the satisfactory completion of the Project and subsequent final reimbursement to the Cooperator, whichever occurs first. If Exhibit B requires the Cooperator to operate and maintain the Project after its completion, the operation and maintenance obligation shall survive the above-referenced expiration date for the duration of the O&M Period, beginning on the date provided in Exhibit B. The Cooperator is not eligible for reimbursement for any Project work conducted or costs incurred prior to the effective date of this Agreement.
4. Scope of Work.
The Cooperator shall perform the services necessary to complete the Project in accordance with Exhibit C, the Project Plan. The Cooperator shall commence and complete Project tasks in accordance with the Project Schedule, including any properly authorized extensions of time. Time is of the essence in the performance of each obligation under this Agreement. The Cooperator shall promptly advise the District of issues that arise that may impact the successful and timely completion of the Project. The Cooperator shall be solely responsible for managing and controlling the Project and its operation and maintenance, including the engagement and supervision of any consultants or contractors.
5. Funding.
   5.1. The anticipated total cost of the Project (Initial Board-Approved Project Amount) is identified in the CFI Project Agreement. The District's maximum funding share is identified in the CFI Project Agreement, subject to Paragraph 6 below. The Cooperator's funding match is identified in the CFI Project Agreement and cannot include state or federal appropriations, or grant monies, as provided in Subparagraph 5.2. The Cooperator agrees to provide all remaining funds necessary for the satisfactory completion of the Project.
   5.2. The Cooperator's funding match is based on the Initial Board-Approved Project Amount and cannot include state or federal appropriations, or grant monies. The District will not fund any

Project cost increases. State or federal appropriations, or grant monies, may be used to cover Project cost increases. Should those state or federal appropriations, or grant monies, exceed Project cost increases, the remaining funds will be used to equally reduce the District funding amount and the Cooperator's Board-approved match. If Project costs are equal to or less than the Initial Board-Approved Project Amount, state or federal appropriations, or grant monies, will equally reduce the District's funding amount and the Cooperator's Board-approved match. The Cooperator shall provide written notice to the District if a) it intends to use state or federal appropriations, or grant monies to fund Project costs, indicating the amount and funding source, and b) Project costs are expected to increase, indicating the increased amount and the funding source to cover the cost increase. If the District provides funding for the Project in excess of the amount required by this Agreement, after all state or federal appropriations, or grants monies have been applied, the Cooperator will promptly refund such overpaid amounts to the District. This Subparagraph shall survive the expiration or termination of this Agreement.

5.3. Reimbursement for expenditures of contingency funds is contingent upon the District's approval and determination, in its sole discretion, that the expenditures were necessary to achieve the resource benefit of the Project and were not in excess of what was reasonably necessary to complete the Project. The term "contingency funds" shall include funds that are allocated for unanticipated or extra work needed to the complete the Project. Items not considered for reimbursement include those unrelated to the resource benefit or resulting from design errors and defects in the work. The Cooperator may submit up to 5% of the Initial Board-Approved Project Amount for contingency reimbursement. The District's total reimbursement obligation of contingency expenses is limited to its funding percentage of the Initial Board-Approved Project Amount. If an invoice includes expenditures of contingency funds, the Cooperator shall complete and submit the Unanticipated Contingency Funds Justification Form attachment to explain the basis of each line item expenditure.

5.4. Costs associated with in-kind services provided by the Cooperator are not reimbursable by the District and may not be included in the Cooperator's share of Project funding.

6. Funding Contingency.

The District's performance and payment pursuant to this Agreement are contingent upon the District's Governing Board appropriating funds in its approved budget for the Project in each fiscal year of this Agreement. Accordingly, the District's funding amount is subject to change due to subsequent Governing Board approvals. However, once funds are appropriated for the Project in a given fiscal year and the Cooperator has expended allowable Project costs, the appropriated amount will not be reduced. If the District does not approve additional funds needed for the Project in a future fiscal year, the District is obligated to reimburse its share of Cooperator expenses incurred in the amount of funds the District appropriated as of the date of the District's non-appropriation. In this event, the District and the Cooperator, by mutual agreement, may reduce the Project scope. The Cooperator's performance and payment pursuant to this Agreement are contingent on the Cooperator's governing body or the Florida Legislature, as applicable, lawfully appropriating legally available funds.

7. Invoice and Payment.

7.1. The District shall reimburse the Cooperator for its share of allowable Project costs in accordance with the Project Budget, subject to its right to withhold funds as provided in this Agreement; however, at no point in time will the District's expenditure amounts under this Agreement exceed the District's funding percentage of the Initial Board-Approved Project Amount identified in the CFI Project Agreement.

7.2. Each invoice must include the following certification:

> "I certify that the costs requested for reimbursement and the Cooperator's matching funds are directly related to the performance under the Agreement between the Southwest Florida Water Management District and the Cooperator (Agreement No.

26CF0004970) are allowable, allocable, properly documented, and are in accordance with the approved Project Budget. This invoice includes $__ of contingency funds expenditures.

The Cooperator expects the total Project cost to be $1,056,000. The Cooperator received a total of $__in federal or state appropriations, or grant monies for the Project not passing through the District, at the time of this invoice. Written notice on how that funding has been allocated for the Project is included as a reference in accordance with subparagraph 2 of the Funding Paragraph: The Cooperator shall provide written notice to the District if a) it intends to use state or federal appropriations, or grant monies, to fund Project costs, indicating the amount and funding source, and b) Project costs are expected to increase, indicating the increased amount and the funding source to cover the cost increase."

7.3. With the exception of the payment of contingency funds, the District shall reimburse the Cooperator within 45 days of receipt of an invoice with adequate supporting documentation to satisfy auditing purposes and submitted in the manner prescribed by this Agreement. The District shall reimburse the Cooperator for expenditures of contingency funds within a reasonable time to accommodate the process provided for in Subparagraph 5.3. The Cooperator shall submit original invoices to the District every 3 months electronically at invoices@WaterMatters.org. If the Cooperator does not have the capability to submit invoices electronically, the invoices may be mailed to the Accounts Payable Section, Southwest Florida Water Management District, Post Office Box 15436, Brooksville, Florida 34604-5436. Copies of invoices may also be submitted to the District's Contract Manager to expedite the review process.

7.4. Any travel expenses authorized under this Agreement will be reimbursed in accordance with Section 112.061, Florida Statutes, as may be amended from time to time.

7.5. Surcharges added to third party invoices are not considered an allowable cost under this Agreement.

7.6. The Cooperator shall comply with applicable procurement laws when procuring consultants and contractors to accomplish the Project. The District shall only be obligated to reimburse the Cooperator for costs incurred under contracts for Project work that is included in the Project Plan and is necessary to achieve the resource benefits of the Project, to be determined by the District in its sole discretion. Additionally, the District shall only be obligated to reimburse the Cooperator for costs that are reasonable, to be determined by the District in its sole discretion. In order for the District to make the above determinations, the Cooperator shall provide all solicitations to the District prior to posting, and contracts prior to execution, unless the solicitation has been posted or contract has been executed before the parties' execution of this Agreement, in which case, the documents must be provided within 30 days of execution of this Agreement. The District shall provide a response to the Cooperator within 21 days of receipt of the solicitation or contract. Upon written District approval, the budget amounts for the Project work set forth in a contract will refine the Project Budget and be incorporated herein by reference. The District shall not reimburse the Cooperator for costs incurred under consultant and contractor contracts until the requirements of this Subparagraph are satisfied.

8. Dispute Resolution.

If an issue or dispute arises during the course of the Project, including whether expenses are reimbursable under this Agreement, the Cooperator shall continue to perform the Project work in accordance with the Project Plan. The Cooperator shall seek clarification and resolution of any issue or dispute by providing the details and basis of the issue or dispute to the District's Contract Manager no later than 10 days after the issue or dispute arises. If not resolved by the District's Contract Manager, in consultation with his or her Bureau Chief, within 10 days of receipt of notice,

the dispute will be forwarded to the District's Assistant Executive Director. The District's Assistant Executive Director in consultation with the District's Office of General Counsel will issue the District's final determination. The Cooperator's continuation of the Project work as required under this Paragraph will not constitute a waiver of any legal remedy available to the Cooperator concerning the dispute.

9. Force Majeure.

In the event of hurricanes, tornados, floods, acts of God, acts of war, or other such catastrophes, or other man-made emergencies such as labor strikes or riots which are beyond the control of the party obligated to perform the work, the party's obligation to meet the timeframes provided in this Agreement shall be suspended for the period of time the condition continues to exist. When the party is able to resume performance of its obligations under this Agreement, in whole or in part, it shall immediately give the other party written notice to that effect and shall resume performance no later than 2 days after the notice is delivered. The suspension of the party's obligations provided for in this Paragraph shall be the party's sole remedy for the delays set forth herein.

10. Project Records and Audit.

The Cooperator, upon request, shall permit the District to examine or audit all Project related records and documents during or following Project completion at no cost to the District. These records shall be available at all reasonable times for inspection, review, or audit. "Reasonable" shall be construed according to circumstances, but ordinarily shall mean normal business hours of 8:00 a.m. to 5:00 p.m., local time, Monday through Friday. The Cooperator shall similarly require its consultants and contractors to maintain and allow access to such records for inspection, review, or audit purposes. Payments made to the Cooperator under this Agreement shall be reduced for amounts found to be not allowable under this Agreement by an audit. If an audit is undertaken by the District, all required records shall be maintained until the audit has been completed and all questions arising from it are resolved. The Cooperator shall maintain all such records and documents for at least 5 years following completion of the Project. If an audit has been initiated and audit findings have not been resolved at the end of the 5 years, the records shall be retained until resolution of the audit findings, which would include an audit follow-up by the inspector general if the findings result from an external auditor, or any litigation. The Cooperator understands and will comply with its duty, pursuant to Section 20.055(5), Florida Statutes, to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing. The Cooperator shall similarly require its consultants and contractors to comply with their duty, pursuant to Section 20.055(5), Florida Statutes to cooperate with the inspector general in any investigation, audit, inspection, review or hearing. This Paragraph shall survive the expiration or termination of this Agreement.

11. Reports.

11.1. The Cooperator shall provide the District with a quarterly report describing the progress of the Project tasks, adherence to the Project Schedule and any developments affecting the Project. Quarterly means the calendar quarters ending March 31, June 30, September 30 and December 31. The Cooperator shall submit quarterly reports to the District's Contract Manager no later than 30 days following the completion of the applicable quarter.

11.2. Upon request by the District, the Cooperator shall provide the District with copies of data, reports, models, studies, maps and other documents resulting from the Project. This Subparagraph shall survive the expiration or termination of this Agreement.

11.3. If required in the Project Plan, the Cooperator shall submit all water resource data collected under this Agreement to the District for upload to District databases, and to the Florida Department of Environmental Protection's (FDEP) database for water quality data in accordance with Rule 62-40.540, Florida Administrative Code. This Subparagraph shall survive the expiration or termination of this Agreement.

11.4. The Cooperator shall provide the documents referenced in this Paragraph at no cost to the District.

12. Risk, Liability, and Indemnity.

12.1. To the extent permitted by Florida law, the Cooperator assumes all risks relating to the Project and shall be solely liable for, and to indemnify and hold the District harmless from all claims, loss, damage and other expenses, including attorneys' fees and costs and attorneys' fees and costs on appeal, arising from the design, construction, operation, maintenance or implementation of the Project; provided, however, that the Cooperator shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of the District's officers, employees, contractors and agents. The acceptance of the District's funding by the Cooperator does not in any way constitute an agency relationship between the District and the Cooperator.

12.2. The Cooperator shall indemnify and hold the District harmless, to the extent allowed under Section 768.28, Florida Statutes, from all claims, loss, damage and other expenses, including attorneys' fees and costs and attorneys' fees and costs on appeal, arising from the negligent acts or omissions of the Cooperator's officers, employees, contractors and agents related to its performance under this Agreement.

12.3. This Paragraph, including all subparagraphs, shall not be construed as a waiver of the Cooperator's sovereign immunity or an extension of the Cooperator's liability beyond the limits established in Section 768.28, Florida Statute. Additionally, this Paragraph, including all subparagraphs, will not be construed to impose contractual liability on the Cooperator for underlying tort claims as described above beyond the limits specified in Section 768.28, Florida Statutes, nor be construed as consent by the Cooperator to be sued by third parties in any manner arising out of this Agreement.

12.4. Nothing in this Agreement shall be interpreted as a waiver of the District's sovereign immunity or an extension of its liability beyond the limits established in Section 768.28, Florida Statutes, nor be construed as consent by the District to be sued by third parties in any manner arising out of this Agreement.

12.5. This Paragraph, including all subparagraphs, shall survive the expiration or termination of this Agreement.

13. Default.

A party may terminate this Agreement upon another party's failure to comply with any term or condition of this Agreement, provided the terminating party is not in default of this Agreement at the time of termination. The terminating party shall provide the defaulting party with a written notice stating its intent to terminate and describing all terms and conditions with which the defaulting party has failed to comply (Notice of Termination). If the defaulting party has not remedied its default within 30 days after receiving the Notice of Termination, this Agreement shall automatically terminate. If a default cannot reasonably be cured within 30 days, then the cure time may be extended at the terminating party's discretion if the defaulting party is pursuing a cure of the default with reasonable diligence. The rights and remedies in this Paragraph are in addition to any other rights and remedies provided by law or this Agreement.

14. Release of Information.

The parties will not initiate any oral or written media interviews or issue press releases on or about the Project without providing notices or copies to the other party no later than 3 business days prior to the interview or press release. This Paragraph shall not be construed as preventing the parties from complying with the public records disclosure laws set forth in Chapter 119, Florida Statutes.

15. District Recognition.

The Cooperator shall recognize District funding in any reports, models, studies, maps or other documents resulting from this Agreement, and the form of said recognition shall be subject to District approval.

16. Permits and Real Property Rights.

The Cooperator shall obtain all permits, local government approvals and all real property rights necessary to complete and operate the Project prior to commencing any construction of the Project. The District shall not reimburse the Cooperator for allowable costs under this Agreement until the

Cooperator has obtained all permits, approvals, and property rights necessary to complete the Project. This Paragraph shall survive the expiration or termination of this Agreement.

17. Law Compliance.
The Cooperator shall comply with all applicable federal, state and local laws, rules, regulations and guidelines related to performance under this Agreement.

18. Assignment.
No party may assign any of its rights or obligations under this Agreement, including any operation or maintenance obligations, without the prior written consent of the other party. Any attempted assignment in violation of this Paragraph is void. This Paragraph shall survive the expiration or termination of this Agreement.

19. Miscellaneous.
Nothing in this Agreement shall be construed or implied to create any relationship between the District and any consultant or contractor of the Cooperator. Nothing in this Agreement shall be construed to benefit any person or entity not a party to this Agreement. This Agreement is governed by Florida law and venue for resolving disputes under this Agreement shall be exclusively in Hillsborough County, Florida. Unless otherwise stated in this Agreement, if a court of competent jurisdiction deems any term or condition of this Agreement to be invalid, illegal, or unenforceable, the remaining terms and conditions are severable and shall remain in full force and effect. This Paragraph shall survive the expiration or termination of this Agreement.

20. Lobbying Prohibition.
Pursuant to Section 216.347, Florida Statutes, the Cooperator is prohibited from using funds provided by this Agreement for the purpose of lobbying the Legislature, the judicial branch or a state agency.

21. Counterparts and Authority to Sign.
The signatures of all parties need not appear on the same counterpart. Unless otherwise indicated in the CFI Project Agreement, in accordance with the Electronic Signature Act of 1996, electronic signatures, including facsimile transmissions, may be used and shall have the same force and effect as a written signature. Each person signing this Agreement, or any amendment, warrants that he or she is duly authorized to do so and to bind the respective party to this Agreement.

22. Entire Agreement.
This Agreement, including the attached, referenced, and incorporated exhibit(s) and attachments, constitutes the entire agreement between the parties and, unless otherwise provided herein, may only be amended through a formal amendment, signed by all parties to this Agreement. In the event of a conflict of contract terminology, priority shall be given first to the CFI Project Agreement; the exhibits, in the order presented in the CFI Project Agreement, except that Exhibit B shall take precedence over Exhibit A, and then the attachments in the order presented in the CFI Project Agreement.

Exhibit B
Southwest Florida Water Management District
Special Terms and Conditions
Non-Construction
Study, Conservation, Watershed Management Plan

1. Project Funding.
   The District Governing Board approved the funding of this Project based upon the expectation that the Measurable Benefit as provided in the Project Plan would be achieved. The Cooperator is solely responsible for implementing the Project in such a manner that the Measurable Benefit is achieved. If at any point during the progression of the Project, the District determines that it is likely that the Measurable Benefit will not be achieved, the District shall provide the Cooperator with 15 days advance written notice that the District will withhold payments to the Cooperator until such time as the Cooperator demonstrates that the Project will achieve the Measurable Benefit.
2. Repayment.
   2.1. The Cooperator shall repay the District all funds the District paid to the Cooperator under this Agreement if: a) the Cooperator fails to complete the Project in accordance with the terms and conditions of this Agreement; b) the District determines, in its sole discretion, that the Cooperator has failed to maintain scheduled progress of the Project thereby endangering the timely completion of the Project; c) if the Cooperator is a public entity, the Cooperator fails to appropriate sufficient funds to meet the Project task deadlines; d) the District determines, in its sole discretion, that a permit, approval, or property right legal challenge has caused an unreasonable delay or cancellation of the Project; or e) any contractual requirement or expectation of the resource benefits resulting from the Project, including any requirement applicable to reclaimed water projects, is held to be invalid, illegal or unenforceable during the term of this Agreement, including any O&M Period. Should any of the above conditions exist that require the Cooperator to repay the District, this Agreement shall terminate in accordance with the procedure set forth in the Default Paragraph.
   2.2. Notwithstanding the above, if the Project fails to achieve the Measurable Benefit, the Cooperator may request the District Governing Board waive the repayment obligation, in whole or in part.
   2.3. If the Cooperator is obligated to repay the District under any Paragraph of this Agreement, the Cooperator shall repay the District within a reasonable time, as determined by the District in its sole discretion.
   2.4. The Cooperator shall pay attorneys' fees and costs incurred by the District, including appeals, resulting from the Cooperator's failure to repay the District as required by this Agreement.
   2.5. This Paragraph, including all subparagraphs, shall survive the expiration or termination of this Agreement.
3. Compensatory Treatment Mitigation.
   If the Project progresses into the construction phase, the project shall not be used by the Cooperator or any other entity as compensatory water quality treatment or wetland mitigation, or any other required mitigation due to impacts for any projects. The project shall not be used for water use permitting withdrawal credits. The project can be used for self-mitigation due to impacts specifically associated with the construction of the project. This Paragraph shall survive the expiration or termination of this Agreement.

4. Additional Clauses. *Checked paragraphs apply.*

☐ Feasibility Study Alternatives.

The parties acknowledge that the Project is a feasibility study. If, during the course of the Project, an alternative is determined not to be feasible due to cost, water quality, permitability, supply availability, or other pertinent considerations, the Cooperator shall notify the District and cease work on the infeasible alternative. The Cooperator may request reallocating funds to another alternative in accordance with this Agreement. The approval of such request for reallocation of funds shall be in the District's sole discretion.

☒ Ownership of Documents and Other Materials.

All documents and goods or products, including the associated intellectual property rights, developed in connection with this Agreement shall be the property of the District and the Cooperator, jointly. Notwithstanding the above, all Project infrastructure shall be the sole property of the Cooperator. This Paragraph shall survive the expiration or termination of this Agreement.

☐ Project Deliverables.

The Cooperator shall provide the District with each deliverable set forth under the Deliverables for District Comments section in the Project Plan, including any supporting documentation. The District shall provide a written response to the Cooperator within:

- ☐ 15 days of receipt.
- ☐ 30 days of receipt.

The Cooperator shall provide a written response to the District's questions and concerns within:

- ☐ 10 days of receipt.
- ☐ 20 days of receipt.

☐ Florida Single Audit Act.

Funding for this Agreement includes state financial assistance and is therefore subject to the Florida Single Audit Act (FSAA), Section 215.97, Florida Statutes. The Cooperator is a subrecipient of state financial assistance under this Agreement and therefore may be subject to audits and monitoring as described in the Special Audit Requirements exhibit. The Cooperator must also use the attached Florida Single Audit Act Checklist for Non-State Organizations – Recipient/Subrecipient vs. Vendor Determination to evaluate the applicability of the FSAA to non-state organizations to which the Cooperator provides State resources to assist in carrying out activities related to this Agreement. If the Cooperator has a question related to the grant or subgrant of State funding, contact the individual identified below:

Grants Compliance Accountant
Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604
Phone: (352) 796-7211
GrantsAccounting@swfwmd.state.fl.us

The Cooperator shall provide the District with its grant contact information within 30 days of execution of this Agreement.

☐Federal Single Audit.

Funding for this Agreement includes federal financial assistance and is therefore subject to the Uniform Grant Guidance, 2 C.F.R. Part 200, (UGG) subpart F. The Cooperator is a subrecipient of federal financial assistance under this Agreement and therefore may be subject to audits and monitoring. If the Cooperator has a question related to the grant or subgrant of State funding, contact the individual identified below:

Grants Compliance Accountant
Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604
Phone: (352) 796-7211
GrantsAccounting@swfwmd.state.fl.us

The Cooperator shall provide the District with its grant contact information within 30 days of execution of this Agreement.

☐ Grant Funding.

District funding for the Project includes grant funds identified in the CFI Project Agreement. The District's reimbursement obligation is contingent upon the District's receipt of the grant funds.

The parties acknowledge that pursuant to the FDEP Grant Agreement, authorization for continuation and completion of work and any associated payments may be rescinded, with proper notice, at the discretion of the FDEP if the Legislature reduces or eliminates appropriations. Extending the contract end date carries the risk that funds for this Project may become unavailable in the future. The Cooperator agrees to comply with the FDEP Grant Agreement Terms and Conditions exhibit.

☐ Reports. (Replaces Subparagraph 11.1 in Exhibit A)

As required by the FDEP Grant Agreement, the Cooperator shall submit quarterly progress reports utilizing the Progress Report Form attached as an exhibit, describing the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, and proposed work for the next reporting period, and attesting that site visits have been conducted, contractors and subcontractors have been paid, and that work continues to occur in accordance with this Agreement. Quarterly status reports are due no later than 14 days following the completion of the quarterly reporting period. For the purposes of this reporting requirement, the quarterly reporting periods end on March 31, June 30, September 30 and December 31.

☐ Retainage.

The District shall withhold a retainage of 10% of its funding amount from each invoice. Retainage will be released after all submittals and deliverables required by this Agreement have been provided and the District's Contract Manager verifies their compliance with this Agreement.

Exhibit C
Southwest Florida Water Management District
Project Plan

PROJECT DESCRIPTION

The Project is a water conservation incentive program that will make available cost effective conservation activities including but not limited to: high-efficiency plumbing fixtures, cooling tower optimization equipment, Florida Water Star (FWS) rebates, soil moisture sensors, evapotranspiration (ET) irrigation controllers, and other irrigation efficiency improvements. Also included are the program administrative costs to ensure the successful implementation of the program. Tampa Bay Water (TBW) member governments are collaborating with TBW to implement and oversee the Project.

The Project will conserve an estimated 100,000 to 450,000 gallons per day if the Project is fully implemented.

MEASURABLE BENEFIT

The implementation of the program and completion of the Cooperator's final report in accordance with the requirements of this Agreement.

PROJECT TASKS

Key tasks to be performed by the Cooperator:

1. TOILET AND URINAL FIXTURE REBATES/CREDITS – The Cooperator shall ensure new rebated fixtures meet the Environmental Protection Agency's (EPA) WaterSense criteria. Single-family, multi-family, commercial, and institutional properties are eligible for a range of rebate amounts from $40 to $100 depending on the flow rates of the fixtures. Rebates will only be issued when there is a reduction in flush rate from the old fixture to the new fixture. For residential units, a maximum of two toilets per home are eligible. Costs eligible for rebate include the replacement fixture, installation, and necessary components. The District will reimburse 50% of the rebate/credit with the maximum District share being $50 per fixture replaced.

2. EZ TOILET REBATE – The Cooperator shall ensure new rebated fixtures meet the EPA WaterSense criteria. Verification of the old fixture flow rate is not required. For residential units, a maximum of two toilets per home are eligible. Costs eligible for rebate include the replacement fixture and necessary components. The District will reimburse 50% of the rebate with the maximum District share being $20 per fixture replaced.

3. SHOWERHEAD AND AERATOR REBATES – The Cooperator shall provide rebates for WaterSense labeled showerhead and low flow aerators so long as there is a reduction in flow rate from the old fixture to the new fixture. These are available only at institutional, commercial, and multi-family properties. Flow rates and installation will be verified via an inspection. Costs eligible for rebate include the hardware, installation, and necessary components. The District will reimburse 50% of the rebated amount with the maximum District share being $7.50 per showerhead and $2.50 per aerator.

4. IRRIGATION EFFICIENCY IMPROVEMENTS - The Cooperator shall be responsible for: issuing rebates to either the homeowner or the homeowner's irrigation contractor for implementing an irrigation evaluation, subsequent rain shutoff device, and capping unnecessary irrigation heads. The evaluation shall include identification of leaks and inefficiencies as well as any adjustment of the existing irrigation controllers run times as appropriate (irrigation restrictions, etc.); these items will be communicated to, and acknowledged in writing by, the homeowner/tenant. Installed rain

shut-off devices (e.g. rain sensors, WaterSense labeled weather-based irrigation controllers) and capped heads will be enumerated, and proof of installation shall be provided by a paid invoice and the attestation of the contractor and homeowner. This documentation will be stored in an electronic database by the Cooperator. The District will reimburse 50% of the implementation cost with the District maximum payout being $25 per evaluation, $50 per rain shut off device, and $1.50 per capped irrigation head.

5. IRRIGATION CONTROLLERS AND SOIL MOISTRURE SENSORS – The Cooperator shall target high water users for irrigation controllers soil moisture sensors and be responsible for: 1) ensuring equipment installed is a WaterSense approved product; 2) ensuring controller and sensor function properly at the time of installation; 3) educating each homeowner on irrigation controller function with an emphasis on water conservation features for each controller installed to ensure long-term, effective equipment operation. Eligible costs for the rebate and/or direct install include the hardware, equipment, installation, labor and necessary components. The District will reimburse 50% of the implementation cost with the District maximum payout being $275 per sensor/controller.

6. COOLING TOWER OPTIMIZATION – The Cooperator shall provide rebates to incentivize cooling tower water use optimization. Inspections shall be performed for all rebates to ensure equipment such as, but not limited to, impulse water submeters, conductivity sensors, water softeners, filtration and treatment systems, and controllers are installed properly. Rebate recipients shall sign an agreement with the Cooperator that ensures proper operation and maintenance of the rebated equipment. Cooling tower rebate amounts will be based on the expected water savings, $1.25/kgal saved over 5 years, with the total rebate amount not to exceed the equipment/installation costs. The District will reimburse 50% of the rebate amount with the maximum District payout being $10,000 per cooling tower.

7. FLORIDA WATER STAR REBATES — The Cooperator shall be responsible for issuing rebates to home builders for each home certified to meet FWS criteria and working with builders to guide them through the program. The District will reimburse 50% of the rebate cost with the District maximum payout being $500 per single family home and for multifamily properties, $50 per residential unit and $425 per 6000 sq. ft. of landscaped area.

8. PROGRAM ADMINISTRATION/VERIFICATION – The Cooperator shall verify that toilets being replaced and newly installed toilets meet eligibility criteria per this Agreement. Verification may be performed via photographs or inspection and shall include the following: 1) verification the toilet being replaced meets the qualification requirements for replacement and rebate under this Agreement, 2) confirmation of EPA WaterSense certification and label of newly installed toilets. Location and quantity information shall be tracked for all conservation program activities. The District will reimburse 50% of the administration cost for the entire program at a rate of $20 per item rebated or installed except for showerheads and aerators, which will be at a rate of $2 per item, and capped irrigation heads which will be at a rate of $1 per item. The District will reimburse up to 50% of the inspection cost for the entire program at a rate of $30 for each toilet inspection. Inspection costs are only eligible if the property was successful in receiving a rebate.

9. TRACKING – The Cooperator shall track all program activity in an electronic database including addresses where the implementations occurred. Records of all receipts, verification documents, inspection reports, and invoices shall be compiled and maintained by the Cooperator and shall be made available upon request by the District.

10. SAVINGS ANALYSIS – For customer accounts associated with tasks 4, 5, and 6 the Cooperator shall be responsible for a water savings analysis based on one full year of pre-implementation

water use data and one full year of post-implementation water use data. For customer accounts associated with task 7, the Cooperator shall be responsible for a water saving analysis based on a comparison with non-FWS new homes that are otherwise comparable. This includes obtaining customer water use data and performing the subsequent data analysis.

11. DRAFT/FINAL REPORTS - The Cooperator shall provide a draft final report and final report. The report shall contain the following information: 1) number and location of the implementations/rebates performed; 2) a water savings calculation for indoor conservation items that is based on the number of participating properties multiplied by the expected savings rate (if available, the savings rates should be updated via pre vs post implementation water use analysis); 3) verification that fixtures and appurtenances have been inspected and/or verified as described in this Agreement; 4) a summary of program background, implementation, and methods used to promote the Project; 5) full accounting of all funds expended during and in relation to the funded portions of the Project; 6) customer surveys to determine the satisfaction with the various rebate activities; 7) water use data and water savings based on one full year of pre-implementation water use data and one full year of post-implementation water use data as described in Task 10; 8) all pertinent information regarding the program findings, associated conclusions and recommendations for future programs; 9) comparison of the number of proposed implementations and the actual number of implementations, and if the actual is less than the proposed an explanation of why.

DELIVERABLES

The Cooperator shall provide

- Draft final report
- Final report
- Contractor contracts (including program administrator, inspector, etc.)

PROJECT SCHEDULE

DESCRIPTION	COMMENCE	COMPLETE
Implementation of the program	12/31/2025	12/31/2026
Savings Analysis	12/31/2026	12/31/2027
Draft Final Report	01/01/2028	05/01/2028
Final Report	05/01/2028	06/01/2028

PROJECT BUDGET

DESCRIPTION	DISTRICT	COOPERATOR	TOTAL
Rebates/ Credits/ Installations	$364,341	$364,341	$728,682
Program Administration and Inspection	$163,659	$163,659	$327,318
TOTAL PROJECT COSTS	$528,000	$528,000	$1,056,000

The above costs and quantities are estimated pending vendor contract costs. In no instance will the District's reimbursement exceed 50% of the actual cost of the rebated item(s) and installation(s).

Agreement No.

Attachment 6
Southwest Florida Water Management District
Cooperative Funding Agreement Checklist

This checklist is to be used as a tool by the Cooperator and District Contract Manager to monitor and track Cooperative Funding Agreement terms throughout Project implementation.

Cooperator	District	
		For Studies, Design and Non-Construction Conservation Programs:
☐	☐	Copy of solicitation and contract with consultant. If not provided timely, items may not be eligible for reimbursement (Exhibit A, Subparagraph 7.6)
☐	☐	If applicable, design drawings (Exhibit B, Paragraph 4)
		For Construction:
☐	☐	Copy of solicitation, submitted bid form, and contract with contractor. If not provided timely, items may not be eligible for reimbursement (Exhibit A, Subparagraph 7.6)
☐	☐	Copy of Notice to Proceed to contractor (Exhibit B, Paragraph 1)
☐	☐	Owner Direct Purchase Statement (Exhibit A, Subparagraph 5.4)
☐	☐	Copy of construction permits (Exhibit A, Paragraph 16)
☐	☐	If land acquisition included, Property Appraisal and review and comment from District's Real Estate Services on appropriate land value (Exhibit A, Paragraph 16; and Exhibit B, Additional Clauses)
☐	☐	Draft signage (Exhibit B, Additional Clauses)
☐	☐	Any state or federal appropriations or grant funds received by the Cooperator for the Project will be applied to equally reduce each party's share (Exhibit A, Subparagraphs 5.2 and 7.2)
☐	☐	Copy of all required federal, state, and local environmental permit approvals and permitted drawings (Exhibit A, Paragraph 16)
☐	☐	Operational Plan (Exhibit B, Operation and Maintenance Paragraph)
		During Project Work:
☐	☐	Quarterly status reports (Exhibit A, Paragraph 11)
☐	☐	Invoices for reimbursement (Exhibit A, Paragraph 7)
☐	☐	Contingency Form for each contingency item (Exhibit A, Subparagraph 5.3)
☐	☐	Notices for changes to prime contacts (Exhibit A, Paragraph 1)
☐	☐	Requests to extend project task deadline and adjustment to line item budget (Exhibit A, Paragraph 2)
☐	☐	Requests to changes to scope, budget, and/or schedule requiring an amendment to the agreement
		Close Out:
☐	☐	All Deliverables listed in Exhibit C, Project Plan, as described in the tasks
		Survival of the Agreement:
☐	☐	The District, upon request, may review the biennial Operation and Maintenance Report (Exhibit B, Operation and Maintenance Paragraph)

Cooperative Funding Agreement between District and Tampa Bay Water and an Update on the Tampa Bay Water Wise Program

Agenda Item C.1

April 20, 2026

Amelia Brown
Demand Management Program Manager
Tampa Bay Water

TAMPA BAY WATER

TAMPA BAY water wise

- Save up to 3.8 million gallons per day (mgd) by 2030
- Cumulative savings are 1.1 mgd
- Fiscal Year 2026 high savings goal is ~560,000 gallons per day (gpd), low savings goal is ~200,000 gpd
- The high goal is a significant increase from each of the last two years' results, which were 300,000+ gpd

TAMPA BAY WATER

TAMPA BAY water wise

To achieve the high savings goal, the working group adopted these program changes this fiscal year:

- Increased toilet rebate amounts for all customers (now $100 - $200)
- Increased rebate amounts for commercial irrigation projects (now up to 50% of project costs)
- Reviewing changes to the residential sprinkler system rebate based on irrigation contractor feedback

TAMPA BAY WATER

TAMPA BAY water wise

Rebate Forecast:

Rebate Type	2025 Completed	2026 Completed and Projected
Multi-Family	13	21
Hotel	7	7
Commercial/Institutional	3	10
Residential Sprinkler Rebate	20	50
Residential toilets	1198	1100
Florida Water Star	0	900

TAMPA BAY WATER

TAMPA BAY water wise

Water Savings to date (FY26): 122,074 gpd

Water Saving Forecast: Potential to meet the high savings goal

Program Expenditures: On track with planned administrative, marketing, and rebate budgets

Cooperative Funding Agreement No. 26CF0004970 with District

Cooperative Funding Initiative (CFI) Agreement

- The District has co-funded the Tampa Bay Water Wise program since it launched in 2020.
- The District will reimburse up to $528,000 for program implementation costs in calendar year 2026.
- The agency will provide an equal or greater amount in project funding.

Recommendation

- Staff recommends Board approval of Agreement No. 26CF0004970 with the Southwest Florida Water Management District.

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.2

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Warren Hogg, Chief Science Officer

SUBJECT: Water Quality Update and Recommendation to Implement Regional Water Quality Study Drinking Water Treatment Projects - *Approve*

SUMMARY

The updated Regional Water Quality Study completed by Carollo Engineers in January 2026 identifies targeted treatment actions to reduce per- and polyfluoroalkyl substances (PFAS) and total organic carbon (TOC) in finished drinking water. These treatment actions support long-term regulatory compliance and strengthen chloramine disinfectant residuals across the regional delivery and member government distribution systems, particularly during the summer months. The recommended treatment systems will be presented for board consideration. This agenda item also summarizes agency water quality compliance and water quality studies through March 2026, and member government distribution system performance through February 2026.

SUGGESTED ACTION

Staff requests Board approval of PFAS reduction treatment projects at the Regional Surface Water Treatment Plant and the two Brandon Urban Dispersed Wells Water Treatment Plants, and TOC reduction infrastructure at the Eldridge-Wilde and South Pasco Wellfields.

COST/FUNDING SOURCE

No funding requested at this time; individual projects will be brought for board consideration individually. The estimated capital costs for the recommended PFAS reduction and TOC reduction treatment systems at five locations is $239 million.

DISCUSSION

The Regional Water Quality Study Update report, which developed treatment concept designs and implementation plan recommendations based on PFAS bench-scale treatability studies and the current EPA PFAS maximum contaminant levels (MCLs), was finalized by Carollo Engineers, distributed to member governments, and presented to the Board in January 2026. The recommendations from the Carollo Engineer's report were reviewed and associated Capital Improvement Program (CIP) project cost estimates were presented to the Board in February 2026. Staff recommendations for PFAS reduction treatment and TOC reduction treatment at two locations, along with CIP cost estimates, are outlined below.

Recommended PFAS Reduction Treatment

To achieve compliance with the current regulatory MFLs for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), the updated Regional Water Quality Study recommended PFAS reduction treatment at three existing Tampa Bay Water treatment locations based on water quality sample data: the Regional Surface Water Treatment Plant (a suspended ion exchange pilot plant, interim period compliance measures using activated carbon and other options, with construction and operation of a full-scale pilot plant); Brandon Urban Dispersed Wells Water Treatment Plant 5 (fixed bed ion exchange); and Brandon Urban Dispersed Wells Water Treatment Plant 7 (fixed bed ion exchange). These three locations are recommended for implementation of PFAS reduction treatment between 2026 and 2031 to comply with current PFOS and PFOA drinking water limits. Interim measures would be implemented, if necessary, for short-term compliance if the EPA's compliance date is not extended from April 2029 to April 2031 and/or full-scale PFAS treatment options are not ready for service.

Recommended TOC Reduction Treatment

To strengthen disinfection stability in the regional system and member distribution systems, the original and updated Regional Water Quality Study reports recommended TOC reduction treatment at various Tampa Bay Water treatment locations to address this request of the member governments. Two existing treatment locations are recommended for implementation of additional water quality treatment. These two sites are at the Eldridge-Wilde Wellfield (granular activated carbon) and the South Pasco Wellfield (fixed bed ion exchange). These two locations are recommended for project implementation because the water from these two wellfields are among the highest TOC concentrations in the Tampa Bay Water

delivery system and the reduction of TOC at these two locations will assist the downstream member governments in maintaining disinfection residuals in their distribution systems, particularly in the warm summer months. CIP projects will be underway at both locations, and the implementation of TOC reduction at this time will amount to cost savings as compared to implementing this treatment technology at a later time. The remaining TOC reduction projects identified in the Regional Water Quality Study update are not recommended for implementation at this time. These treatment project designs may be revisited in the future based on future water quality conditions in the regional system or requests by member governments and would require subsequent board discussion and approval.

Recommended Implementation Strategy, Costs and Schedule Considerations

Based on CIP implementation scheduling, these recommendations (three PFAS reduction treatment projects and two TOC reduction treatment projects) are projected to be implemented between 2026 and 2031. These projects are individually listed in the agency's CIP that will be presented during the FY 2027 budget workshop in April 2026. As reported at the February 2026 board meeting, the capital costs of the PFAS reduction projects at the Regional Surface Water Treatment Plant and the two Brandon Urban Dispersed Well treatment sites total $187,771,000. The capital costs for the TOC reduction infrastructure at the Eldridge-Wilde and South Pasco Wellfields total $51,228,000.

Staff continue to monitor the EPA litigation associated with the PFOS and PFOA MCLs and compliance timeframe and will implement the PFAS reduction projects in a stepwise approach, if approved by the Board. The uncertainty with the MCLs and compliance timeframe will likely remain until later in calendar year 2026. Tampa Bay Water recommends proceeding with treatment based on the current PFOS and PFOA regulations, recognizing that PFAS treatment at appropriate locations, if approved by the Board, would likely still be in design phases and not the more costly construction phases if EPA is directed by the Court to reconsider and propose different PFOS and PFOA MCLs later this year. The EPA's intention to extend the deadline to comply with the current PFOS and PFOA MCLs is also being challenged by the litigants. If these third parties prevail, the April 2029 compliance deadline would remain. It is, therefore, critical to begin PFAS treatment design as soon as possible and as approved by the Board. Staff is working on contingency plans to achieve compliance with the existing PFAS regulations on an interim basis, if this becomes necessary.

Staff will present these recommendations and CIP cost estimates to the Board on April 20, 2026. Staff will request Board approval of the PFAS reduction treatment systems at the Regional Surface Water Treatment Plant and the two Brandon Urban Dispersed Wells Water Treatment Plants as well as the TOC reduction infrastructure at the Eldridge-Wilde and South Pasco Wellfields.

Drinking Water Quality Compliance

The agency monitors regional system water quality at member government regional delivery locations identified in the Comprehensive Regional Water Quality Monitoring Plan approved by the Florida Department of Environmental Protection (FDEP). Data are reported in accordance with the Master Water Supply Contract (Exhibit D) water quality compliance samples and state and federal requirements. **The agency is in compliance at all regional delivery locations during this reporting**

period.

PFAS Quarterly Compliance Monitoring

The existing EPA PFAS National Primary Drinking Water Regulations, which were finalized in April 2024, currently require an initial PFAS baseline monitoring program be completed on a quarterly basis during a 12 consecutive month period for all of Tampa Bay Water's active delivery locations by April 26, 2027. This monitoring includes points of connection (POCs) to member utilities and points of entry (POEs) into the regional transmission system. These locations are identified in the agency's Comprehensive Regional Water Quality Monitoring Plan that was approved by the Florida Department of Environmental Protection for finished drinking water. While the POCs were previously characterized during the UCMR5 and supplemental monthly sampling programs, the POEs did not require earlier sampling.

Three PFAS quarterly compliance monitoring events for finished drinking water (and individual untreated source water samples) were collected in August and November 2025 and February 2026. These results were consistent with all previous UCMR5 and PFAS supplemental monthly findings and expectations. The fourth (and final) quarterly monitoring event is scheduled for May 2026.

Regional Free Chlorine Maintenance Evaluation

Staff activities on a supplemental water quality characterization program involving TOC species that indicate potential changes in biological stability that lead to chloramines decay have been ongoing to gauge regional transmission system conditions since this past summer. This work is intended to provide potential early detection of water chemistry and biology changes in transmission mains that may be the cause for accelerated chloramines decay observed during summer months. Staff continue to evaluate online water quality monitoring equipment for use to continuously measure the size and number of bacteria to anticipate changes in advance of traditional water quality test methods. Staff is also evaluating alternative chemical delivery control methods coupled with other water quality monitoring technologies to optimize reduction of TOC with existing regional surface water treatment processes. The program goal is to use these data to develop interim operational strategies that could lessen the effects of seasonal chloramines decay until TOC reduction treatment can be implemented, if approved by the Board, per the updated Regional Water Quality Study recommendations. Data are presented and discussed at Water Quality Working Group/Operations Coordination Committee meetings.

Red Tide

Staff continues to review monitoring performed by others to remain current on red tide conditions in Tampa Bay. Red tide conditions have not been reported in the vicinity of the desalination plant intake structure. The desalination plant is currently online.

Water Quality Working Group/Operations Coordination Committee

Water Quality Working Group/Operations Coordination Committee (WQWG/OCC) meetings were held on February 12 and March 12, 2026. Discussion topics included Tampa Bay Water regional

system performance and project status reviews (described above). Member governments submitted their distribution system performance data that are provided in the attached graphs and Tables 1-4. The graphs show, by member government for March 2025 through February 2026, the total number of received complaints, the total distribution system water flushed (by volume), and the water distribution system water flushed (percent of total water delivered).

BACKGROUND

Fifth Unregulated Contaminant Monitoring Rule (UCMR5) and Supplemental PFAS Data Collection

Finished water quality monitoring of 29 PFAS and lithium, which was required by the EPA under UCMR5, began in the Tampa Bay region in January 2023 and ended in April 2024. Results for Tampa Bay Water's four UCMR5-related sampling events were presented to the Board in July 2024. Based on the analyses of quarterly UCMR5 samples and supplemental samples through December 2025, Tampa Bay Water confirmed PFOS at running annual average concentrations slightly greater than or near EPA's MCL at the same three delivery locations: Hillsborough County Lithia and Central WTPs and the Pasco County Lake Bridge Connection. Other PFAS running annual average concentrations at these and other agency delivery locations, which were sampled and analyzed by Tampa Bay Water, continued to be less than the EPA's MCLs or at non-detectable levels. The EPA MCLs for PFAS are based on running annual averages like most drinking water compliance requirements. A running annual average is calculated using drinking water quality data from the most recent 12 months of analytical data.

PFAS National Primary Drinking Water Regulations - Potential Revisions

The EPA final MCLs for six PFAS were adopted in April 2024 and became effective in June 2024. In May 2025, EPA announced their intent to change the April 2024 PFAS regulations by: (1) extending the compliance deadline from April 2029 to April 2031 for PFOS and PFOA; and (2) rescinding regulations for perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA), and the Hazard Index standard for mixtures of these three PFAS and perfluorobutanesulfonic acid (PFBS).

EPA planned to propose these changes in new PFAS drinking water regulations in the fall 2025; however, the proposed rules have not yet been issued, and the EPA has not provided an updated publication schedule as of this writing. The delay is likely the result of recent legal briefings filed by third-party intervenors (Natural Resources Defense Council and Earth Justice) in the EPA's ongoing litigation with the American Water Works Association (AWWA) and others that focused on EPA's position to rescind the four PFAS limits (PFHxS, PFNA, HFPO-DA and the Hazard Index that includes PFBS). The proposed EPA rule changes align with part of the AWWA challenge and negotiations; however, the intervenors are in opposition to the rescinding of the existing regulations for the four PFAS limits.

As a result of this recent litigation activity, the litigation challenging the EPA's scientific basis and projected treatment costs used to develop the PFOS and PFOA MCLs has not advanced. In addition, the EPA's proposal to extend the existing PFOS and PFOA MCL compliance deadline has not been published in the Federal Register. Both actions (related to PFOS and PFOA) are of most interest to Tampa Bay Water and the member governments based on regional PFAS testing to date. The other PFAS (PFHxS, PFNA, HFPO-DA and the Hazard Index that includes PFBS) are of less interest to Tampa Bay Water and the member governments based on testing of our water supplies.

Attachments (3)

Regional Water Quality Study Final Report
Water Quality Exhibits
Water Quality Working Group - Operations Coordination Committee - Meeting Minutes
C.2 Water Quality Update and Recommendations

TAMPA BAY WATER
Supplying Water To The Region

Tampa Bay Water Regional Water Quality Study Update



Regional Water Quality Study Update

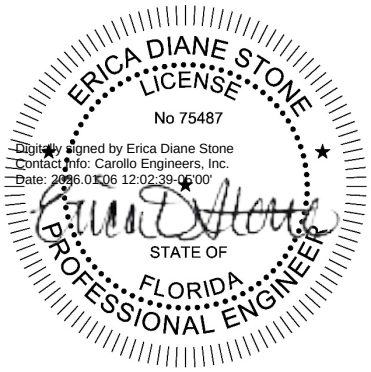
January 2026 / FINAL

carollo

Tampa Bay Water Regional Water Quality Study Update

Regional Water Quality Study Update

January 2026 / FINAL



This item has been digitally signed and sealed by Erica Stone on the date adjacent to the seal.

Signature must be verified on any electronic copies.

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Abbreviations

µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
AACE	Association for the Advancement of Cost Engineering
abs cm^{-1}	absorbance per centimeter
BAC	biologically activated carbon
BAT	best available technology
BUD	Brandon Urbanized Wellfield
BV	bed volume
C.U.	color unit
$CaCO_3$	calcium carbonate
Carollo	Carollo Engineers
CIP	Capital Improvements Program
cm	centimeter
CRWQMP	Comprehensive Regional Water Quality Monitoring Plan
CSMR	chloride-to-sulfate-mass
DBP	disinfection byproduct
DF	diffusivity factor
EBCT	empty bed contact time
ENR CCI	Engineering News-Record Construction Cost Index
EPA	Environmental Protection Agency
FBIX	fixed bed ion exchange
FDA	forced draft aeration
g/L	grams per liter
GAC	granular activated carbon
gpm/ft^2	gallons per minute per square foot
HFPO-DA	hexafluoropropylene oxide dimer acid
HI	Hazard Index
HLR	hydraulic loading rate
IX	ion exchange
M	million
M/yr	million per year
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MDL	method detection limit
mg/L	milligrams per liter
mgd	million gallons per day
mL/L	milliliters per liter
mL/min	milliliters per minute

mm	millimeters
mV	millivolts
NaCl	sodium chloride
NF	nanofiltration
ng/L	nanograms per liter
nitrate-FBIX	FBIX for nitrate removal
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulation
NTU	nephelometric turbidity unit
O&M	operations and maintenance
PAC	powdered activated carbon
PFAS	per- and polyfluoroalkyl substances
PFAS-FBIX	FBIX for PFAS adsorption
PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexane sulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
POC	point of connection
ppb	parts per billion
ppt	parts per trillion
RAA	running annual average
RO	reverse osmosis
ROW	right-of-way
RSSCT	rapid small-scale column test
RSWTP	Regional Surface Water Treatment Plant
RWQS	Regional Water Quality Study
S.U.	standard units
SCHREG POC	Hillsborough County's Lithia WTP
SIX	suspended ion exchange
TBC	Tampa Bypass Canal
TOC	total organic carbon
UCMR5	Unregulated Contaminant Monitoring Rule
UVT	ultraviolet transmittance
Water ARC®	Carollo's Water Applied Research Center
WF	water facility
WTP	water treatment plant
WUP	Water Use Permit

EXECUTIVE SUMMARY

Tampa Bay Water completed a Regional Water Quality Study (RWQS) in April 2023. The RWQS defined optimized solutions for reduction of primarily total organic carbon (TOC), among other parameters, as requested by the Member Governments at that time, and included an implementation plan to guide Tampa Bay Water and the Member Governments in the process of achieving enhanced water quality. In April 2024, the Environmental Protection Agency (EPA) promulgated the final National Primary Drinking Water Regulation (NPDWR) for per- and polyfluoroalkyl substances (PFAS). This study provides an update to the RWQS recommendations with inclusion of EPA's PFAS maximum contaminant levels (MCL) to the water quality goals.

Upon review of the available PFAS data, two source waters were identified as requiring a PFAS treatability study – surface water feeding the Regional Surface Water Treatment Plant (RSWTP) and groundwater feeding the Brandon Urban Dispersed (BUD) Wells. The EPA's three best available treatment technologies for PFAS treatment in drinking water were evaluated for each of these sites: granular activated carbon (GAC), ion exchange, and high-pressure membranes. Bench testing was conducted to evaluate short-listed treatment approaches including fixed bed ion exchange (FBIX) for the BUD Water Treatment Plants (WTPs) to reduce PFAS in these relatively low TOC waters as well as Suspended Ion Exchange (SIX) and GAC for the RSWTP to reduce PFAS and TOC in these relatively high TOC waters. TOC reduction using SIX, which also reduces PFAS, improves performance of downstream GAC to further reduce PFAS and consistently achieve EPA's MCLs.

Results from the bench testing informed updates to the recommended treatment approaches and associated planning-level study costs. The overall recommendations include adding treatment to the existing RSWTP and BUD-5 and BUD-7 WTP sites. Specifically for the BUD WTPs, it is recommended to install fixed bed ion exchange (FBIX) vessels for PFAS removal. With FBIX for PFAS treatment at these sites, it is recommended to also use FBIX for nitrate treatment to maintain like systems. A nitrate goal of 0.4 mg/L NO_3-N is listed in the 2023 RWQS and carried through in this RWQS Update. Nitrate concentrations at the BUD-5 and BUD-7 WTP sites are elevated above the goal, which is less than the NPDWR standard of 10 mg/L. To achieve the nitrate goal of less than 0.4 mg/L, it is recommended to install FBIX for nitrate treatment at the BUD WTP sites, but at a later time as a lower-priority, long-term project. In this way, Tampa Bay Water and the Member Governments have time to determine if nitrate treatment is desired at this level.

Of the treatment approaches bench tested for the RSWTP, SIX is the most cost-effective treatment option due to the downstream benefits of chemical and energy cost savings, reduced filter backwashing, and potentially increased water production resulting from lower TOC. SIX also significantly reduces the high operational cost associated with GAC media replacement for PFAS reduction in the presence of high TOC concentrations. Additionally, treatment at the RSWTP provides a reduction of PFAS concentrations to most of the Regional System. It is recommended to continue to prioritize a SIX and GAC demonstration at the RSWTP to collect design criteria data and refine operational parameters and costs for PFAS treatment under typically highly variable TOC and other source water quality conditions.

It is also recommended to continue to prioritize the three Phase 1 projects (RSWTP, BUD-5 WTP, and BUD-7 WTP) to comply with EPA's PFAS MCL requirements.

The remaining two Phase 1 projects (Eldridge Wilde ozone-GAC and South Pasco FBIX), while not required to satisfy a regulatory requirement, would achieve TOC reduction, as requested by Member Governments to achieve more stable chloramine residuals, particularly during summer months. These two locations are included in Phase 1 because these sites will be undergoing near-term design and construction improvements as existing Capital Improvements Program (CIP) projects, which would result in cost savings as part of ongoing activities (versus later and separate design and construction). By advancing these two sites, which use the two different technologies recommended for TOC reduction, FBIX and ozone-GAC, this would provide full-scale groundwater treatment operational data to better inform the five Phase 2 TOC reduction projects and the up to ten Phase 3 TOC reduction projects. In this way, Tampa Bay Water and the Member Governments have time and performance data to determine the full benefits of region-wide TOC treatment benefits.

The implementation plan has been updated since the RWQS to prioritize meeting PFAS compliance. For example, implementing SIX at the RSWTP was previously in Phase 2 and has been moved to Phase 1. BUD PFAS treatment is recommended for Phase 1 while nitrate treatment at the BUD sites remains in Phase 2. Capital costs for each recommended implementation phase and associated updates are provided in Table ES.1 through Table ES.4. In addition to the cost impacts due to re-prioritization of the implementation plan, other cost updates include changes to the recommended treatment (i.e., nitrate FBIX instead of Biottta and PFAS FBIX for BUD WTPs), as well as direct cost updates (i.e., $2022 to $2024 and updates to SIX costs based on information from the Tippin SIX demonstration). Note that costs presented are planning-level study costs that will be scheduled and programmed into the Tampa Bay Water CIP with appropriate escalations due to timing. These CIP costs, which will include potential changes to the Uniform Rate, are currently being developed and refined by Tampa Bay Water, and will be discussed with Member Governments in 2026, prior to the agency seeking Board action. In this way, Tampa Bay Water and the Member Governments have time for further discussion in the future on increases to the Uniform Rate versus overall system benefit of TOC reduction. Additional details on planning-level study costs are discussed in the Cost Analysis Assumptions section of this report.

Table ES.1 Recommended Implementation Phasing and Associated Capital Costs(1)

Phase	RWQS Update	2023 RWQS(2)	Years
Phase 1	$229.2M	$140.4M	1-6
Phase 2	$239.6M	$260.9M	7-12
Phase 3	$126.8M	$120.0M	13-15
TOTAL	**$595.6M(3)**	**$521.3M(4)**	

Notes:
(1) Cost estimates are provided in $2024 without escalation to mid-point of construction as planning-level estimates. CIP costs will be programmed and escalated accordingly.
(2) Breakdown of the numbers are found in the 2023 RWQS and not in this report because of recommended changes in treatment location priorities and processes.
(3) Total is the sum of the subtotals in Tables ES.2, ES.3, and ES.4.
(4) Total from the 2023 RWQS and not the sum of the subtotals in Tables ES.2, ES.3, and ES.4.

Table ES.2 Phase 1 Implementation Plan and Capital Cost Updates(1)

Project Description	RWQS Update Capital Cost ($M)	2023 RWQS Capital Cost ($M)	2023 RWQS Phase
Phase 1A			
RSWTP SIX Demonstration	$2.3	$2.2	1C
Subtotal	**$2.3**	**$2.2**	
Phase 1B			
BUD-5 WTP PFAS-FBIX	$5.1	N/A	N/A
BUD-7 WTP PFAS-FBIX	$1.9	N/A	N/A
RSWTP SIX	$128.6	$74	2C
Subtotal	**$135.6**	**$74**	
Phase 1C			
Eldridge Wilde Ozone-GAC	$77.6	$73.4	1A
South Pasco FBIX	$13.7	$13	1A
Subtotal	**$91.3**	**$86.4**	
TOTAL	**$229.23**	**$162.6**	

Notes:
(1) Cost estimates are provided in $2024 without escalation to mid-point of construction as planning-level estimates. CIP costs will be programmed and escalated accordingly.

Table ES.3 Phase 2 Implementation Plan and Capital Cost Updates(1)

Project Description	RWQS Update Capital Cost ($M)	2023 RWQS Capital Cost ($M)	2023 RWQS Phase
Phase 2A			
Cypress Creek FBIX	$15.7	$14.9	1B
Cross Bar Ranch FBIX and Greensand	$39.0	$36.9	1B
Subtotal	**$54.7**	**$51.8**	
Phase 2B			
Cosme Odessa Ozone-GAC	$58.0	$54.9	2A
Starkey Ozone-GAC	$41.1	$38.9	2A
Section 21 FBIX	$13.4	$12.7	2A
Northwest Hillsborough Ozone-GAC	$46.3	$43.8	2A
Morris Bridge FBIX	$13.1	$12.4	2A
Subtotal	**$171.9**	**$162.7**	
Phase 2C			
BUD 5 WTP Nitrate-FBIX	$8.3	$16.1 (Biottta)	2B
BUD 7 WTP Nitrate-FBIX	$4.6	$8.1 (Biottta)	2B
Subtotal	**$12.9**	**$24.2**	
TOTAL	**$239.6**	**$238.7**	

Notes:
(1) Cost estimates are provided in $2024 without escalation to mid-point of construction as planning-level estimates. CIP costs will be programmed and escalated accordingly.

Table ES.4 Phase 3 Capital Cost Updates[1][2]

Project Description	RWQS Update Capital Cost ($M)	2023 RWQS Capital Cost ($M)
Option A – 1.5 mg/L TOC Target		
Cypress Bridge FBIX	$14.0	$13.2
South Pasco FBIX	$2.9	$2.7
Cypress Creek FBIX	$4.4	$4.2
Cross Bar Ranch FBIX	$12.7	$12.0
Section 21 FBIX	$2.4	$2.3
Northwest Hillsborough Ozone-GAC	$2.7	$2.6
Morris Bridge FBIX	$0.8	$0.8
TOTAL	**$39.9**	**$37.8**
Option B – 1.25 mg/L TOC Target		
South-Central Hillsborough GAC	$38.5	$44.5
Cypress Bridge FBIX	$16.7	$18.2
Eldridge Wilde Ozone-GAC	$0.2	$0.2
South Pasco FBIX	$5.3	$5.0
Cypress Creek FBIX	$4.4	$4.2
Cross Bar Ranch FBIX	$13.5	$12.8
Cosme Odessa Ozone-GAC	$0.2	$0.2
Section 21 FBIX	$3.2	$3.0
Northwest Hillsborough Ozone-GAC	$6.1	$5.8
Morris Bridge FBIX	$3.7	$3.5
TOTAL	**$91.8**	**$97.4**
Option C – 1 mg/L TOC Target		
South-Central Hillsborough GAC	$47.0	$44.5
Cypress Bridge FBIX	$19.2	$18.2
Eldridge Wilde Ozone-GAC	$0.2	$0.2
South Pasco FBIX	$11.9	$11.3
Cypress Creek FBIX	$9.7	$9.2
Cross Bar Ranch FBIX	$20.5	$19.4
Cosme Odessa Ozone-GAC	$0.2	$0.2
Section 21 FBIX	$6.4	$6.1
Northwest Hillsborough Ozone-GAC	$7.8	$7.4
Morris Bridge FBIX	$3.7	$3.5
TOTAL	**$126.8**	**$120**

Notes:
(1) Phase 3 implementation prioritization is unchanged from the 2023 RWQS.
(2) Cost estimates are provided in $2024 without escalation to mid-point of construction as planning-level estimates. CIP costs will be programmed and escalated accordingly.

INTRODUCTION

Background

Since its inception, Tampa Bay Water has continued to provide high quality water, meeting or exceeding federal and state standards to its Member Governments. Tampa Bay Water completed a Regional Water Quality Study (RWQS) in April 2023. The RWQS defined optimized solutions for reduction of primarily total organic carbon (TOC) and included an implementation plan that will guide Tampa Bay Water and the Member Governments in the process of achieving enhanced water quality. Reduction of TOC was a priority in the RWQS, along with other water quality parameters that included color, sulfide, iron, and nitrate.

Desktop, bench scale, and pilot testing were completed as part of the RWQS, along with regional system water quality blend modeling and a comparison of cost and non-cost considerations for individual treatment options to identify the recommended treatment technologies for each of the Tampa Bay Water treatment facilities.

Regulatory Overview

In April 2024, the Environmental Protection Agency (EPA) promulgated the final National Primary Drinking Water Regulation (NPDWR) for per- and polyfluoroalkyl substances (PFAS). The NPDWR identifies maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) for five individual PFAS and one PFAS mixture (PFAS HI) as listed in Table 1. These MCLG are non-enforceable public-health goals. For PFOS and PFOA the MCLG is 0. The MCL is enforceable and set as close to the MCLG as feasible, using best available treatment technology and considering costs.

The Hazard Index (HI) is calculated as a sum of the measured concentration of each of the four PFAS divided by its corresponding health reference value, as shown in the following equation. The rule requires compliance by April 26, 2029. On this date, the four-quarter running annual average (RAA) will be calculated using the previous four quarters' data; this implies that treatment must be in place by April 2028 to ensure the RAA is below the MCL by the compliance date.

$$HI = \frac{GenX}{10\ ng/L} + \frac{PFBS}{2000\ ng/L} + \frac{PFNA}{10\ ng/L} + \frac{PFHxS}{10\ ng/L}$$

In a May 2025 press release, the EPA indicated intent to rescind all but PFOS and PFOA MCLs and to extend the compliance deadline to 2031. While revised draft regulations are still pending as of the writing of this report, the extended deadline would provide some schedule flexibility but treatment would still be required to meet the updated compliance requirements.

Table 1 PFAS NPDWR Limits

Parameter	MCL (enforceable levels)	MCLG (health based, non-enforceable)
PFOA	4.0 ng/L	zero
PFOS	4.0 ng/L	zero
PFHxS	10 ng/L	10 ng/L
PFNA	10 ng/L	10 ng/L
HFPO-DA (GenX)	10 ng/L	10 ng/L
PFAS HI (mixture MCL)	1.0 (unitless)	1.0 (unitless)

General Notes:
Running annual average (RAA) from quarterly sampling.

This study provides an update to the RWQS recommendations with addition of PFAS to the water quality goals.

Objectives

The goal of this RWQS Update is to review the PFAS characterization and treatability study data, evaluate PFAS management strategies, and incorporate PFAS treatment, if needed, in the RWQS' previously identified treatment solutions. The specific objectives of the RWQS Update are to:

- Revisit and revise the previously defined treatment system design criteria for TOC to meet PFAS treatment goals (where needed, based on the available PFAS data).
- Provide an estimate of capital and operation and maintenance (O&M) costs for the treatment system refinement/ revision.

WATER QUALITY REVIEW

Historical PFAS Data

A robust review of all water quality data was undertaken for the RWQS. As water quality has aligned with historical trends, only water quality relevant to PFAS treatment performance is discussed herein. Of all active Tampa Bay Water regional water delivery locations or points of connection (POC), those associated with the Regional Surface Water Treatment Plant (RSWTP) sources and the Brandon Urban Dispersed (BUD) Wells were found to require a PFAS treatability study. Note that all PFAS data shown in this report have been analyzed by the Tampa Bay Water laboratory unless otherwise noted. Specifically, the August 2024 bench test results presented were analyzed by Pace Analytical Laboratory.

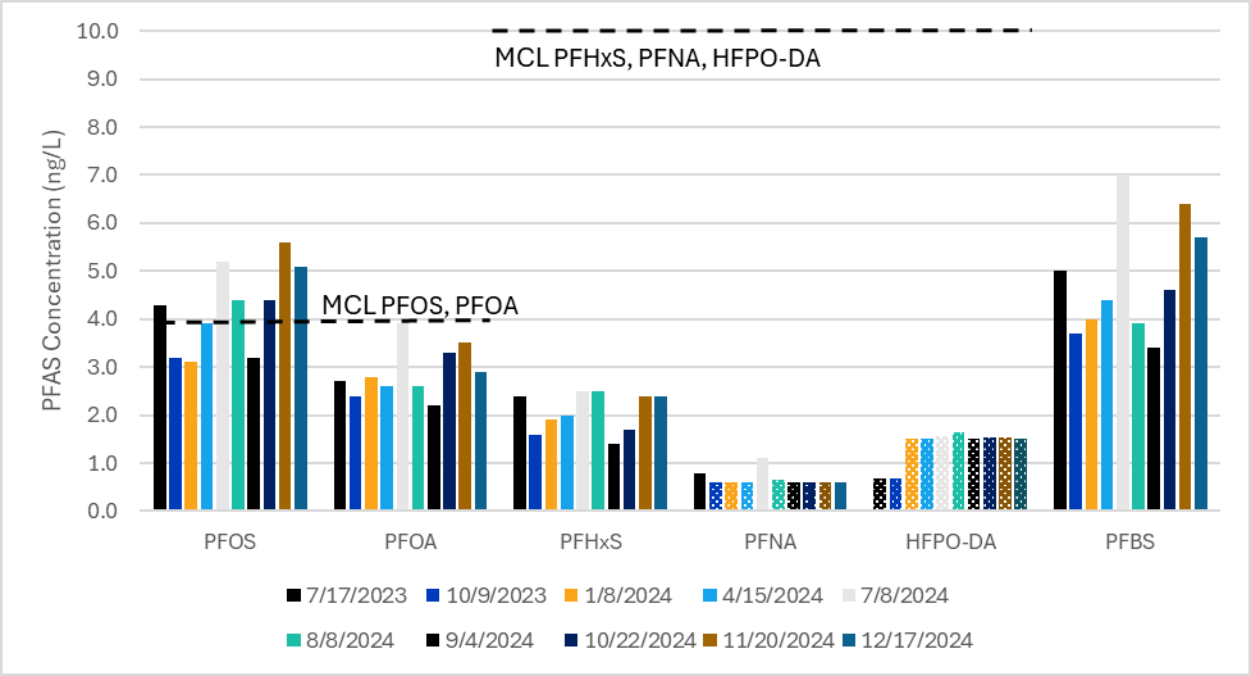
Regional Surface Water Treatment Plant

The RSWTP, which currently has a maximum day design capacity of 120 million gallons per day (mgd) and typically operates at an average 90 mgd, provides enhanced coagulation, intermediate ozone and biological activated carbon (BAC) filtration. The RSWTP receives raw water from three sources (Alafia River, Tampa Bypass Canal [TBC], and the C.W. Bill Young Regional Reservoir), and the finished water blends with the desalination product water when operational. The relative amount of each source impacts water quality at the plant, with significant seasonal variability. The RSWTP is currently undergoing expansion to meet growing demands.

PFAS was monitored in RSWTP finished water delivered to Member Governments at POCs by Tampa Bay Water, and at subsequent downstream point of entry locations by individual Member Governments during the Fifth Round Unregulated Contaminant Monitoring Rule (UCMR5) program. This sampling began in July 2023 and continued quarterly through April 2024, with a total of four sampling events. The UCMR5 data collected by Tampa Bay Water and the Member Governments are provided in Appendix A.

In July 2024, supplemental monthly sampling by Tampa Bay Water commenced. Of the 29 measured PFAS, the regulated PFAS levels from the sampling through December 2024 are summarized in Figure 1.

Of the regulated PFAS, PFOS and PFOA were the only compounds observed to be above the respective MCL of 4 ng/L. PFNA has been detected in the finished water three times above a detection limit of 0.6 ng/L by the Tampa Bay Water lab. PFHxS was detected below the MCL of 10 ng/L. PFBS does not have an MCL, and levels were found to be well below the health-based reference level (2,000 ng/L).

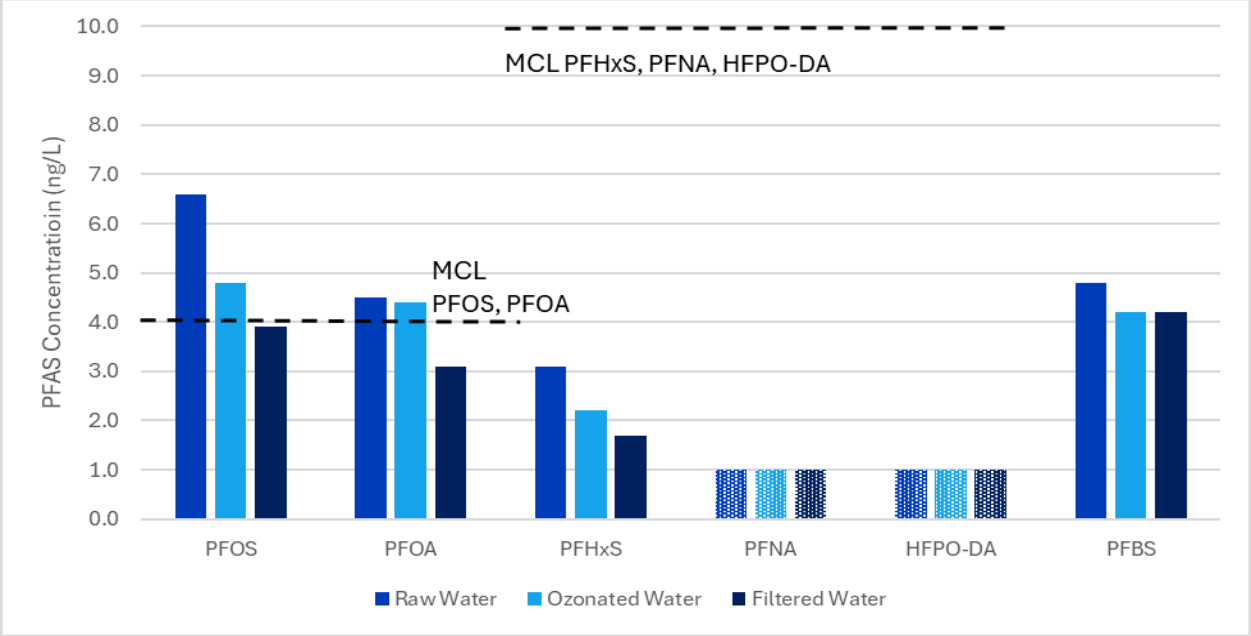


Note: Bars with hatching designate non-detect values.

Figure 1 301REGHILLS POC Regional Supply (Finished Water)

During the collection of bulk water (August 20, 2024) for PFAS benchtop treatability testing (described in a subsequent section of this RWQS Update report), samples were collected to capture PFAS concentrations in the raw water and fate through the treatment plant. These data were analyzed by a third-party laboratory (lab) (Pace Analytical) and shown in Figure 2.

The data are consistent with the finished water sampling to date with PFOS and PFOA being the only compounds detected near or in exceedance of the respective MCL in both the raw and ozonated effluent water. These data indicate that there is some removal of regulated PFAS through the existing treatment processes; however, this observation is limited to a single sample. It is recommended collect additional in-plant samples to better characterize the fate of PFAS through the plant, including waste streams, especially those recycled to the head of the plant. PFNA was not detected by the Pace lab during the in-plant sampling event (August 20, 2024, method detection limit [MDL] of 1 ng/L). HFPO-DA was found to be non-detect with an MDL max of 1.58 ng/L. PFBS was again found to be well below the health-based reference level.



Note: Bars with hatching designate non-detect values.

Figure 2 RSWTP Regulated PFAS (Sampled 8/20/24)

The RSWTP flow is driven by a variety of factors including short- and mid-term environmental climate conditions, surface water availability, and adherence with groundwater water use permit (WUP) compliance. UCMR5 sampling followed an unusually dry rainy season with corresponding RSWTP flow data (July 2023 through April 2024) suggesting an average plant flow of 87 mgd with the predominant source varying throughout the year (Figure 3). Supplemental monthly sampling beginning in July 2024 followed a more typical rainy season (Figure 4). The source water breakdown for the PFAS monitoring sampling events to date is summarized in Table 2. This data indicates slightly elevated PFOS and PFOA concentrations following a more typical rainy season when compared to the earlier UCMR5 data. It is important to continue to monitor PFAS in the source water(s) to better understand the impact of the sources on PFAS occurrence and trends at the RSWTP.

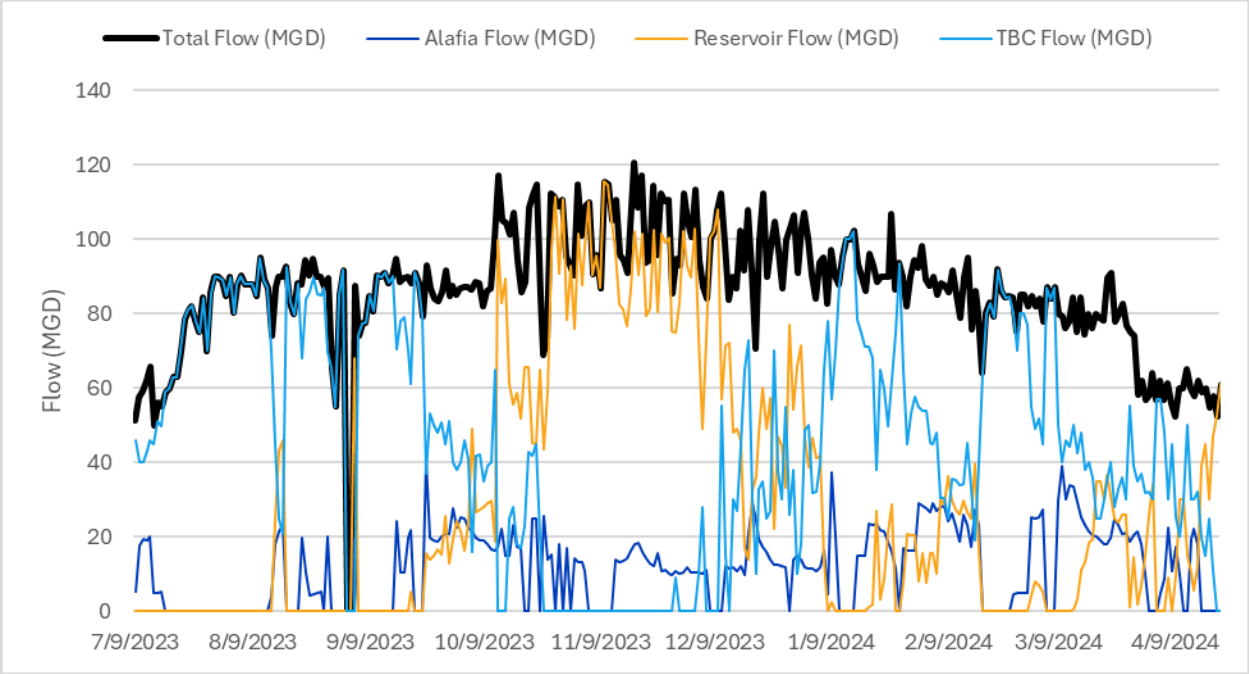


Figure 3 RSWTP Flow with Source Breakdown (July 2023-April 2024, UCMR5 sampling)

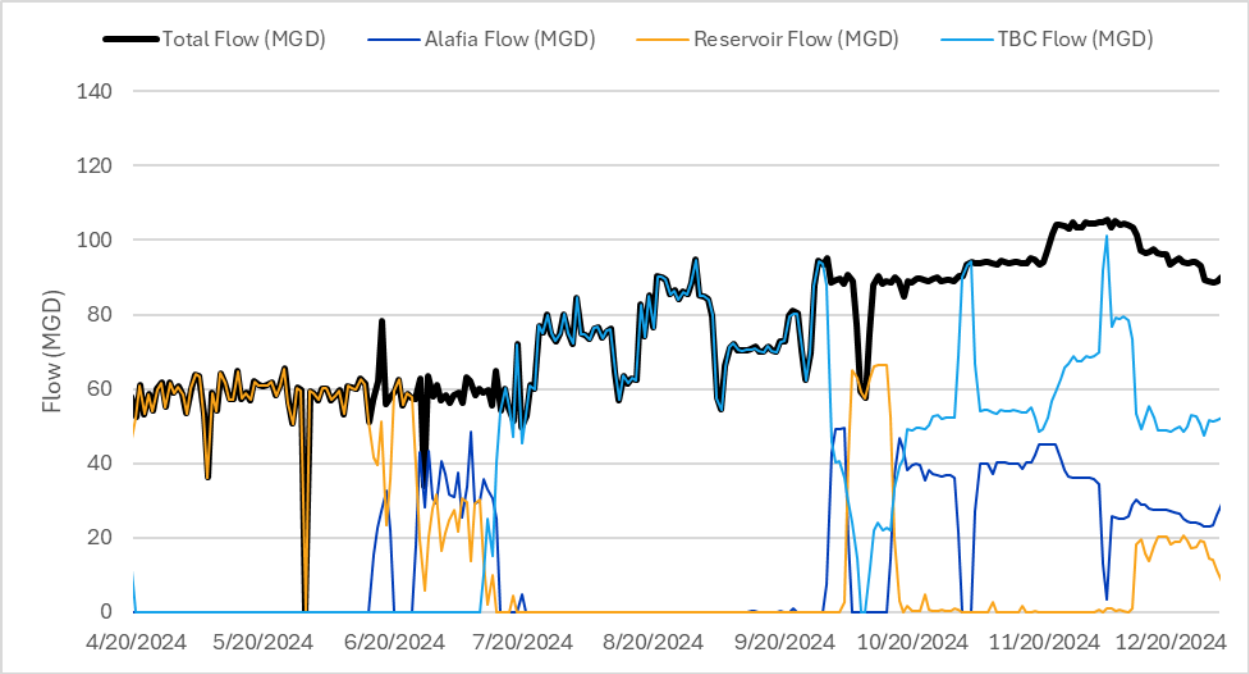


Figure 4 RSWTP Flow with Source Breakdown (April 2024-December 2024, ongoing supplemental sampling)

Table 2 RSWTP Source Water During Sampling Events

Sample Date[2]	Alafia River	Reservoir	TBC	FW PFOS[1]	FW PFOA
7/17/2023 (UCMR5)	0%	0%	100%	**4.3**	2.7
10/9/2023 (UCMR5)	23%	34%	43%	3.2	2.4
1/8/2024 (UCMR5)	6%	0%	94%	3.1	2.8
4/15/2024 (UCMR5)	29%	19%	52%	3.9	2.6
7/8/2024	78%	22%	0%	**5.2**	3.9
8/8/2024	0%	0%	100%	**4.4**	2.6
8/20/2024	0%	0%	100%	3.9[3]	3.1[3]
9/4/2024	0%	0%	100%	3.2	2.2
10/22/2024	44%	0%	55%	**4.4**	3.3
11/20/2024	48%	0%	52%	**5.6**	3.5

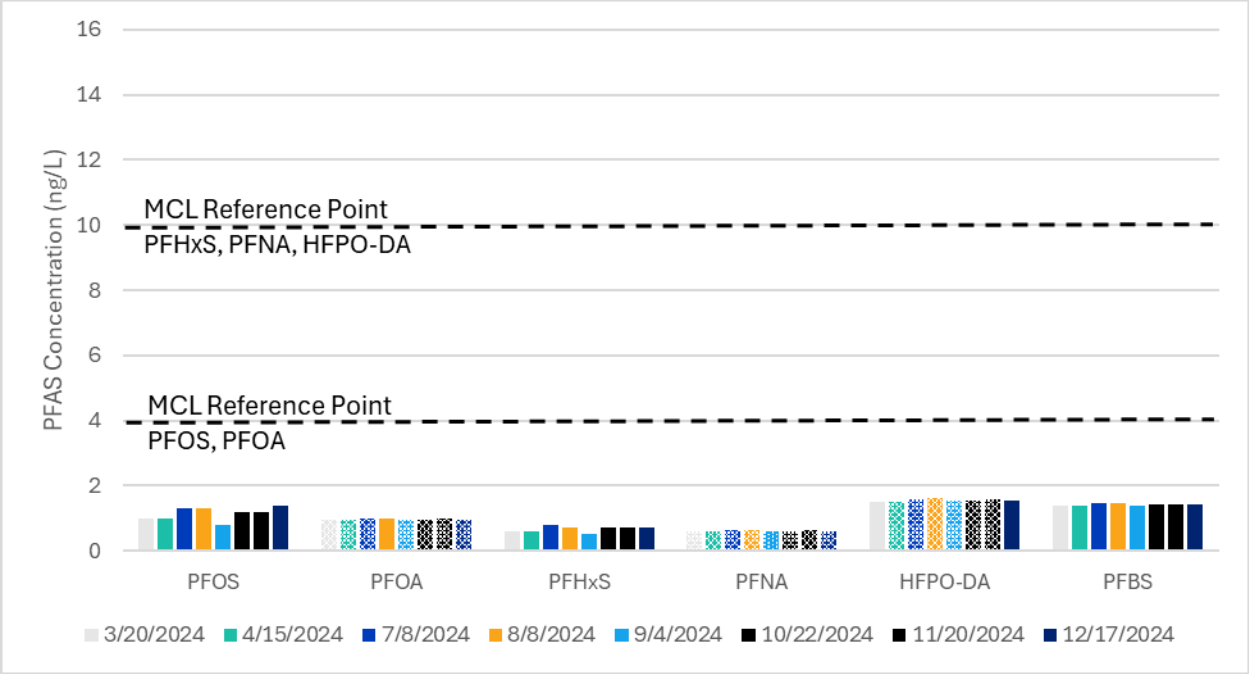
Abbreviations: FW – finished water.

Notes:
(1) Bolded values exceed MCL.
(2) All samples collected at 301REGHILLS POC during UCMR5 sampling unless otherwise noted.
(3) 8/20/2024 sample collected for PFAS Treatability Study. PFOS/PFOA from post-filtration, rather than FW.

BUD Wells

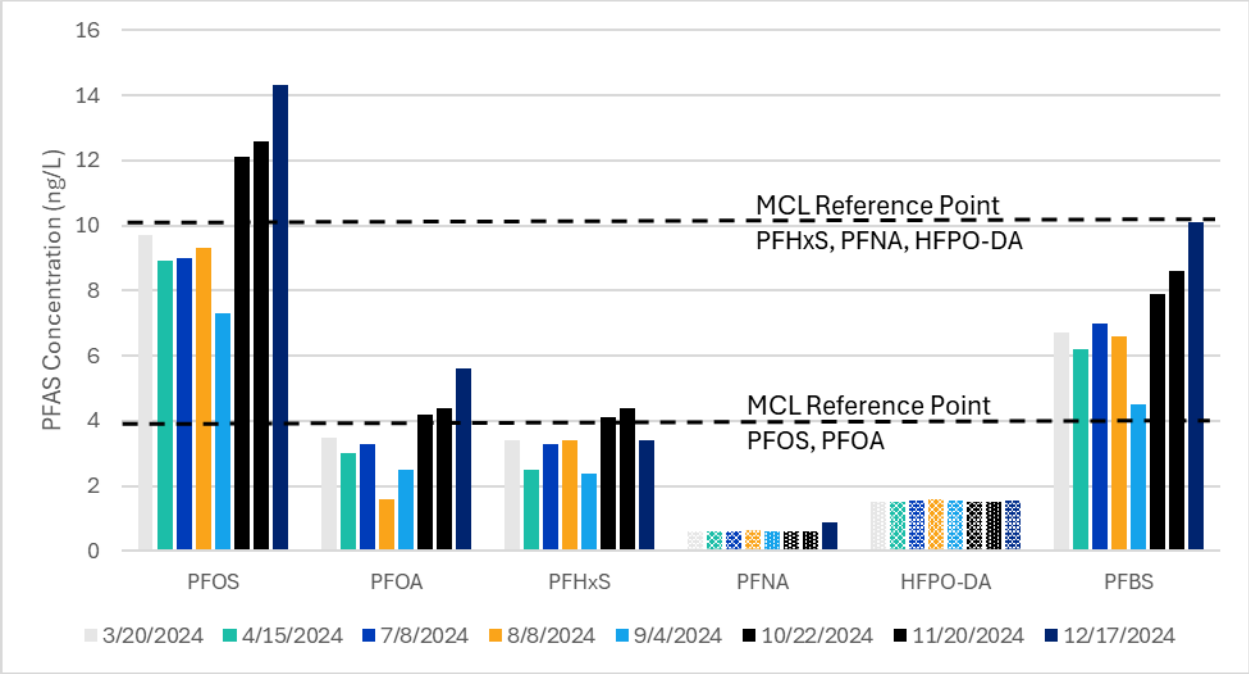
The BUD wells consist of a series of five wells being treated at two sites, the BUD-7 water treatment plant (WTP) and the BUD-5 WTP. BUD-7 WTP treats the flow from BUD-7. BUD-5 WTP treats the combined flow from BUD-2, 4, 5R, and 6. BUD-5R was offline for more than 1 year undergoing rehabilitation and maintenance during most of this study and was returned to service in December 2024.

The actively pumping BUD wells were individually sampled for PFAS and analyzed at the Tampa Bay Water laboratory on March 20, 2024 and April 15, 2024. Subsequently, monthly supplemental monitoring of the BUD wells commenced in July 2024 by Tampa Bay Water. The regulated PFAS results are shown in Figure 5 through Figure 9. PFOS and PFOA are in exceedance or near the MCL reference point of 4 ng/L for BUD-4, 6, and 7. Little detection of PFAS was observed at BUD-2. HFPO-DA and PFNA have not been detected at any BUD wells. PFBS has been detected, but well below the health-based reference level (2,000 ng/L). BUD-5R was offline for much of the sampling due to ongoing maintenance but was sampled December 17, 2024 when it was returned to service. Based on that single sample, BUD-5R has an exceedance of PFOS and lower PFOA than BUD-4, 6, and 7. Note that BUD-7 was not sampled April 15, 2024. BUD-4 and BUD-7 have the highest regulated PFAS detection from the data collected to date. Continued sampling of the BUD wells is recommended due to the variability observed.



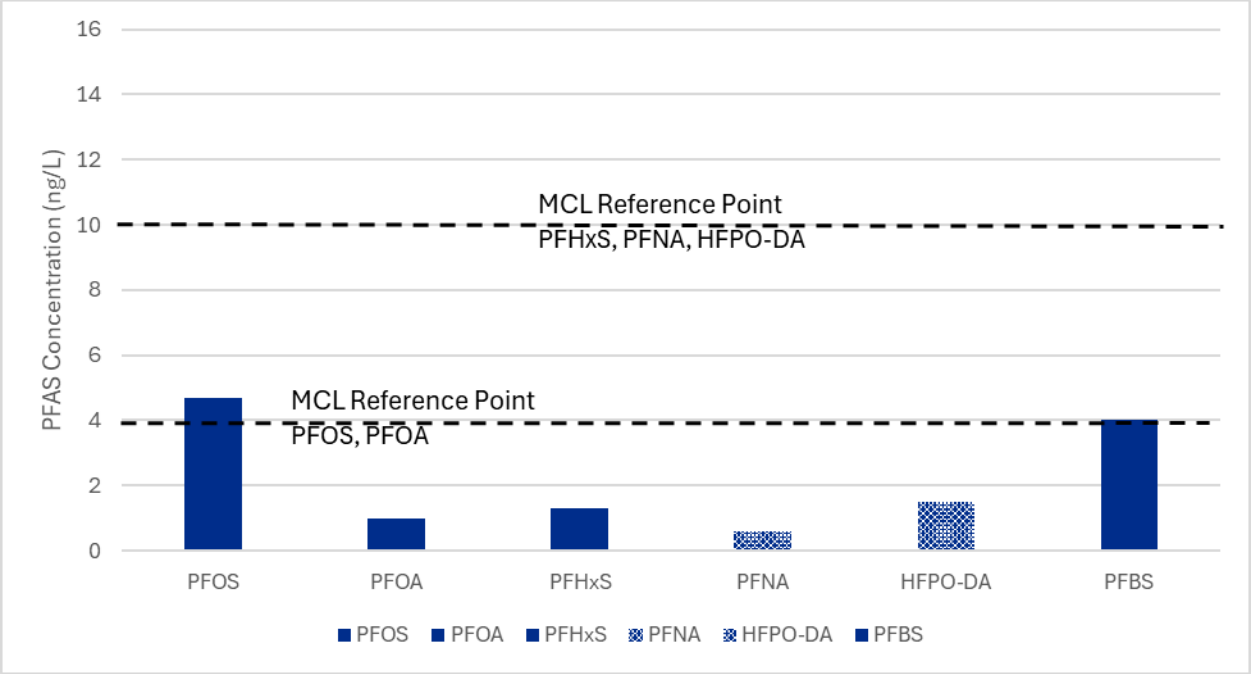
Note: Bars with hatching designate non-detect values.

Figure 5 BUD-2 PFAS Detection



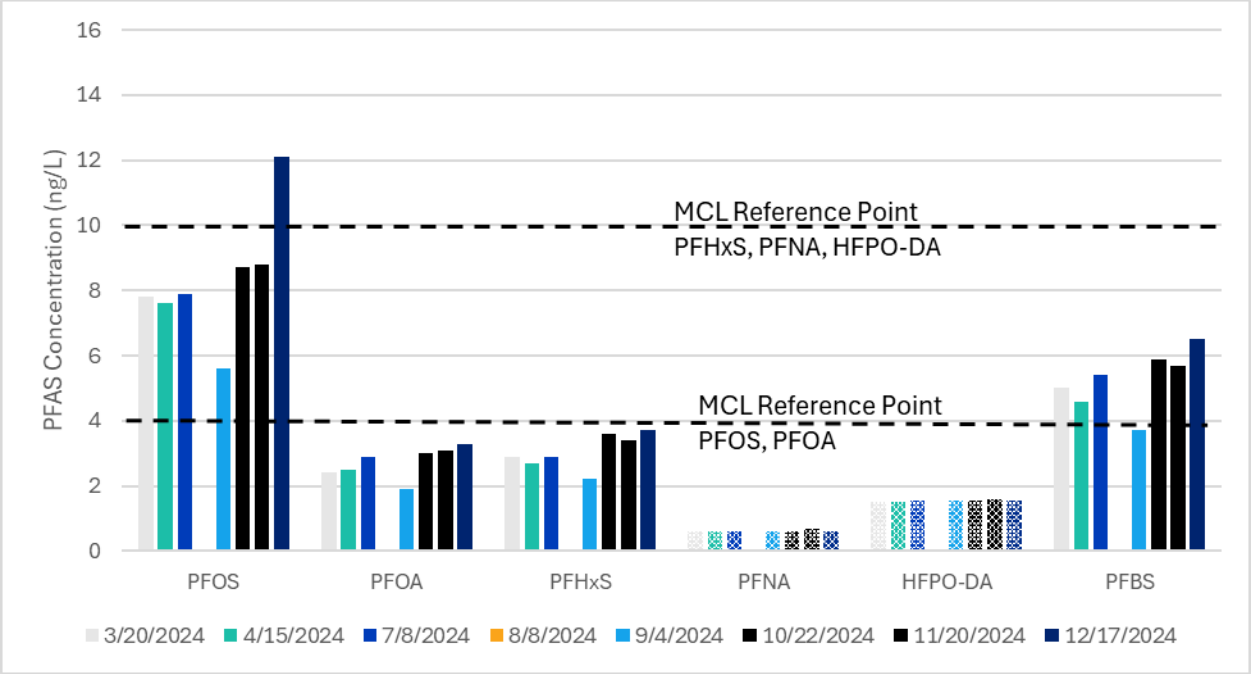
Note: Bars with hatching designate non-detect values.

Figure 6 BUD-4 PFAS Detection



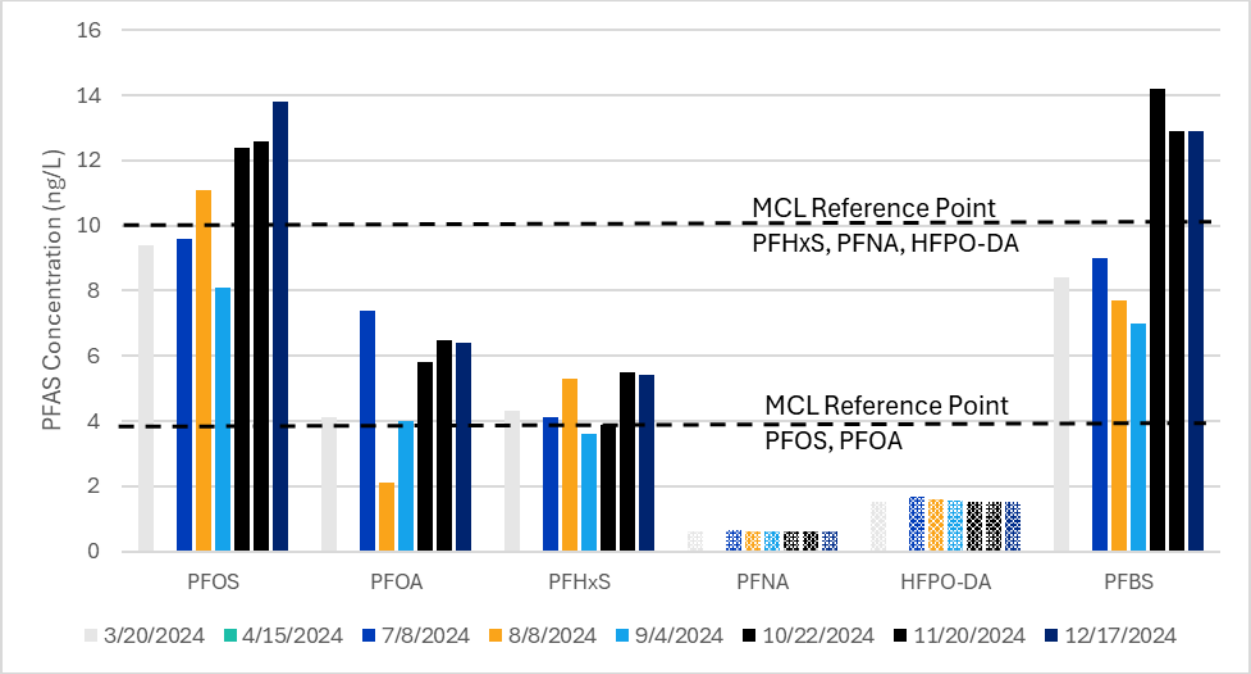
Note: Bars with hatching designate non-detect values.

Figure 7 BUD-5R PFAS Detection



Note: Bars with hatching designate non-detect values.

Figure 8 BUD-6 PFAS Detection



Note: Bars with hatching designate non-detect values.

Figure 9 BUD-7 PFAS Detection

PFAS Water Quality Goals

The goal of this RWQS Update is to identify an implementation plan to achieve MCL compliance for PFAS at all Tampa Bay Water POCs. As such, water quality goals are outlined in Table 3 to match the MCLs. This work updates the RWQS that previously established TOC targets of 1.0 to 2.0 milligrams per liter (mg/L) and a nitrate goal of 0.4 mg/L as N.

Table 3 PFAS Drinking Water Quality Goals

Parameter	Goal
PFOA	< 4.0 ng/L (MCL)
PFOS	< 4.0 ng/L (MCL)
PFHxS	< 10 ng/L (MCL)
PFNA	< 10 ng/L (MCL)
HFPO-DA (GenX)	< 10 ng/L (MCL)
PFAS HI	< 1.0 (MCL)

TREATMENT PROCESS ALTERNATIVES

PFAS treatment technologies have been evaluated for PFAS removal with considerations for both cost and efficacy. The EPA's identified best available technologies (BATs) that have been robustly tested for full-scale applications of PFAS treatment include the following:

1. Granular activated carbon (GAC).
2. Ion exchange (IX).
3. High pressure membranes, such as nanofiltration (NF) or reverse osmosis (RO).

High pressure membranes were eliminated as an option for these Tampa Bay Water sources identified to required PFAS treatment due to higher energy cost and volume of waste residuals (concentrate) combined with the low levels of PFAS detected (when compared to other utilities that are considering NF/RO). Novel adsorbent medias are also available for full-scale use, but limited full-scale implementation presents uncertainty regarding long-term reliability. Co-contaminant competition, namely organics, limits the applicability of IX resin for PFAS adsorption, which is typically applied for source water where TOC is less than approximately 2 mg/L. Furthermore, PFAS-IX resin is single-use and manufacturers also do not recommend that this resin be backwashed to avoid disturbing the mass transfer zone. Organic or TOC fouling of the media still occurs with the use of GAC, but the impact on PFAS treatment performance is lesser than IX resin. With elevated TOC concentration, GAC usage rates to achieve PFAS compliance will increase. Unlike PFAS-IX resin, GAC can be reactivated offsite and reused. While each of the three BATs have their benefits and tradeoffs, site-specific requirements and anticipated costs dictate which are best for Tampa Bay Water.

RSWTP

Due to the high level of organics present in the Tampa Bay Water surface water sources, fixed bed ion exchange (FBIX) is not suitable for PFAS adsorption at the RSWTP following the BAC process. However, TOC pretreatment in the form of suspended ion exchange (SIX) can provide TOC removal, among other water quality benefits previously discussed in the RWQS, and some PFAS removal. Although SIX is not a PFAS removal technology, the low PFAS occurrence in the surface water, the ability to meet the PFAS MCL, and the additional treatment plant benefits make SIX a viable alternative for PFAS treatment at the RSWTP. For the City of Tampa's Tippin Water Treatment Facility with similar source water quality and treatment train, benefits included a 70 percent reduction in coagulant demand, 30 percent reduction in ozone demand, at least 50 percent improvement in filter run volume, and the elimination of sulfuric acid at the plant as well as reduction in capital projects required for capacity expansion. Reduced coagulant results in less solids production, which means less solids handling required but also less product available for resale. Historically, the conventional regenerable IX process has not been seen as a PFAS removal technology, but it is theorized that SIX has such a higher regeneration frequency that PFAS removal occurs. Carollo Engineers (Carollo) has helped optimize conventional FBIX processes and increased the resin regeneration frequency at a full-scale water treatment plant in South Florida and similar PFAS removals to SIX were observed.

Alternatively, post-filter GAC adsorbers could be implemented to remove PFAS from the filtered water prior to disinfection. This GAC would be replaced once effluent or finished water PFAS treatment targets are exceeded. An even more robust approach to treat PFAS at the RSWTP would be to add both SIX pretreatment and GAC post-filter adsorbers. With the pretreatment of TOC, PFOS, and PFOA removal provided by SIX, the GAC is expected to last much longer. This scenario is not able to be evaluated reliably at the bench scale due to inability to produce representative process samples. A pilot would be required to fully test this scenario and quantify the impacts from seasonal variability in water quality and long-term O&M cost savings by pretreating TOC via the SIX process.

A potential short-term approach (or long-term addition to SIX) is to utilize the existing GAC filters for both filtration and adsorption. This is likely not a long-term solution alone due to the expected high GAC changeout rates induced by backwashing the media and disturbing the PFAS mass transfer zone, along with the larger GAC media (compared to adsorbers). However, some PFAS removal is possible without needing to build new infrastructure at full plant capacity (120 mgd). Although this approach will result in relatively shorter GAC service life during full-scale operation, there are other operational approaches to help mitigate the challenge regarding mass transfer zone disturbance, for example, minimizing backwash flowrates, and/ or reducing air scour. These operational approaches, however, could in turn adversely impact filter performance in terms of turbidity and and/ or TOC reduction. Piloting is therefore required to fully understand the implications of this approach. Depending on the piloting results, this approach could perhaps provide an interim solution, before a permanent PFAS treatment process is implemented at the RSWTP. Alternatively, it would serve as a secondary PFAS treatment barrier when combined with SIX.

In summary, the short-listed technologies for RSWTP include the following:

1. SIX for raw water PFAS treatment and additional plant benefits.
    a. TOC reduction.
    b. Other anion removal (i.e., sulfate, bromide, bicarbonate).
    c. Overall plant O&M savings and capital expansion reduction.
2. GAC post-filtration adsorbers for PFAS polishing.
3. Existing filter GAC adsorption for ozonated effluent PFAS treatment within the existing filters. This potential option requires further validation with pilot testing and is likely more viable when SIX pretreatment is installed.

RSWTP PFAS treatment solutions tested are summarized in Figure 10.

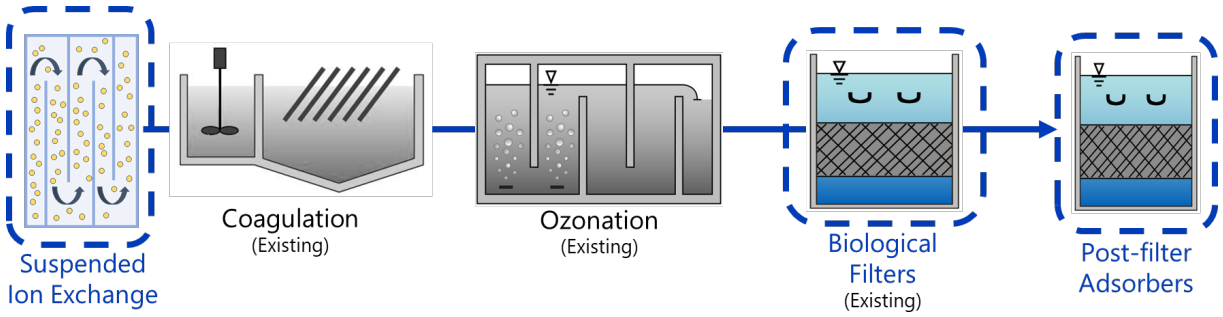


Figure 10 Locations Evaluated for PFAS Treatment at RSWTP

BUD Wells

Given there is lower TOC concentration in the groundwater source from the BUD wells (less than 2.0 mg/L) than the surface water sources, FBIX for PFAS adsorption (PFAS-FBIX) is the most suitable treatment approach for this application. The small site footprint at the BUD-7 WTP, previously identified in the RWQS, will pose a challenge. The BUD-5 WTP site has ample footprint to accommodate a PFAS treatment process if needed. Both the BUD-7 WTP and BUD-5 WTP sites were evaluated for PFAS-FBIX treatment.

All BUD well water is blended at the Regional Supply to Hillsborough County's Lithia WTP (SCHREG POC). As such, the regulatory RAA will be determined at the SCHREG POC and at the current BUD WTPs POEs. With non-steady state adsorptive technologies applied, treated concentrations will increase over time requiring a monitoring plan. Tracking spreadsheets can be developed to understand allowable PFAS concentration leaving respective BUD treatment sites given the respective flow blends at the SCHREG POC. Although blending does not allow for the avoidance of PFAS treatment of the BUD wells all together, tracking the concentrations can allow for optimizing resin replacement frequencies. This study has assumed treatment technologies will be operated to maintain PFAS compliance at each POE;, according to the Comprehensive Regional Water Quality Monitoring Plan (CRWQMP Revision 22, regulatory compliance must be met at both the POEs and POCs.

In the RWQS, the BUD WTPs were low in priority for treatment due to nitrate being the only contaminant needing to be addressed to meet water quality goals. However, given the PFAS detection, these sites rise in priority for treatment due to the need to meet the upcoming PFAS regulatory requirements. BUD well water nitrate exceeds the RWQS finished water goal of 0.4 mg/L as N at BUD-7 (2.4 mg/L), BUD-4 (1.8 mg/L), and BUD-6 (1.3 mg/L), but is below the NPDWR MCL of 10 mg/L. Although biottta® was recommended for nitrate reduction at the BUD WTPs in the RWQS, the incorporation of PFAS along with the required nitrate removal revises the feasible and recommended technology at the BUD sites to FBIX for nitrate removal (nitrate-FBIX). Nitrate-FBIX remains a low priority and can be sequenced after installing PFAS-FBIX, if still requested by the Member Governments. The PFAS-FBIX treatment at the BUD WTPs is a high priority project. However, given the PFAS detection, these sites rise in priority for treatment due to the need to meet the upcoming PFAS regulatory requirements.

BENCH SCALE TESTING

The objective of bench testing was to test the most promising treatment technologies for PFAS at the sites identified. Bench scale testing was completed for the three sites identified for PFAS treatment: BUD-5 WTP (BUD-2, 4, 6 online during sampling), BUD-7 WTP, and the RSWTP.

Bench Scale Testing Objectives

Water samples for the bench-testing were collected from the three sites discussed above: BUD-5 WTP, BUD-7 WTP, and the RSWTP. Bench-scale treatability testing for PFAS was conducted at Carollo's Water Applied Research Center (Water ARC®). The PFAS samples were analyzed at an external laboratory (Pace Analytical), as well as selected duplicate samples for PFAS analysis at Tampa Bay Water's in-house laboratory. Other pertinent and selected water quality analyses were performed at Water ARC® and at an external certified laboratory.

Rapid small-scale column tests (RSSCT) and SIX bench-testing were performed to provide an expedited evaluation of the GAC and IX technologies being considered as alternatives for meeting Tampa Bay Water's PFAS treatment goals. The key objectives of bench scale tests were to:

1. Inform PFAS treatment technology selection.
2. Determine critical design criteria.
3. Evaluate media use rates to estimate O&M costs associated with media changeout.

Appendices A through C contain additional bench-testing data.

Rapid Small-Scale Column Tests (RSSCT)

RSSCTs are used to simulate breakthrough curves of adsorptive media. By scaling down the media size, breakthroughs can be observed in the order of days rather than months. This testing analyzed four RSSCT designs summarized in Table 4. RSSCTs are designed to indicate full-scale conditions as best as possible, but actual full-scale media service life will differ from RSSCT results due to blending of treated effluent from various adsorbers and lower flow rate or longer empty bed contact times (EBCT) (i.e., operational flowrate is lower than design capacity).

RSSCT 1 and 2: For groundwater, FBIX vessel treatment was simulated. Two RSSCT columns with Purolite PFA694E IX media (designed and targeted for PFAS treatment) were tested at bench scale for BUD-7 WTP and BUD-5 WTP. The Purolite PFA694E media is a standard for PFAS treatment and has a good track record in terms of PFAS treatment performance in groundwater sources with similar water quality. Designs targeted 2 to 3 min EBCT and loading rates of 10 to 12 gallons per minute per square foot (gpm/ft^2), as are typical for PFAS adsorption.

RSSCT 3: Due to the low PFAS concentrations observed at the RSWTP to date, this surface water RSSCT used GAC media to test/ simulate a 'GAC cap' scenario whereby existing filter GAC media can be kept in an adsorptive state under normal filter operation and replaced at breakthrough. Media, loading rate, and EBCT were designed to match existing plant filters. It should be noted that this alternate used water from the existing WTP, and this alternative does not reflect SIX pretreatment.

RSSCT 4: A surface water RSSCT simulating, post-filter GAC adsorber for PFAS adsorption at the end of the treatment train (post-filtration and pre-chlorination) at the RSWTP. Calgon F400 GAC is a standard GAC media for PFAS treatment and has a good track record in PFAS treatment applications.

Table 4 RSSCT Design Overview

Parameter	Units	RSSCT 1	RSSCT 2	RSSCT 3	RSSCT 4
Source Feed Water		BUD-5 WTP (Well 2/4/6 online)	BUD-7 WTP	RSWTP Post-Ozonation Water(1)	RSWTP Post-Filtration Water(2)
Media	--	Purolite PFA694E	Purolite PFA694E	Calgon F816	Calgon F400
Type	--	IX	IX	Existing GAC	GAC
Diffusivity Factor, X(3)	--	1	1	0.25	0.25
Full-Scale IX or GAC Adsorber Design					
Empty Bed Contact Time	minutes	2.8	2.3	8.2	10
Hydraulic Loading Rate	gpm/ft^2	10	12.2	3.65	6
RSSCT Column Design					
Upper Sieve Size (Large Scale)	mesh	100	100	100	100
Lower Sieve Size (Large Scale)	mesh	200	200	200	200
Column ID	inches	3/16	3/16	3/16	3/16
Column Diameter	mm	4.76	4.76	4.76	4.76
Hydraulic Loading Rate	gpm/ft^2	10	12.2	3.65	6
Volumetric Flow Rate	mL/min	7.3	8.9	2.6	4.4
Scaling Factor(4)	--	6.12	6.12	15.89	8.48
Empty Bed Contact Time	minutes	0.07	0.06	0.06	0.24
Duration	BVs	300,000	350,000	100,000	80,000
Simulated Service Life at Full Scale	days	583	559	569	556

Abbreviations: BV – bed volume; mL/min – milliliters per minute; mm – millimeters

Notes:
(1) GAC design to match existing filter design.
(2) Finished water pre-chlorination.
(3) Diffusivity factor (DF) of 0.25 is used for GAC RSSCT, DF of 1 is used for IX.
(4) Ratio between unground and ground media sizes used in RSSCT.

Table 5 Analytical Methods Tested for RSSCTs

Analyte	Unit	Method
PFAS	ng/L	EPA 533
TOC	mg/L	EPA 415.3
UVT_{254nm}	abs cm^{-1}	Spectrophotometer
Nitrate	mg/L	Method 10206 Dimethylphenol

Abbreviations: abs cm^{-1} - absorbance per centimeter; UVT - ultraviolet transmittance

SIX Jar Testing

The SIX process was identified as one of the treatment alternatives to address high TOC in the raw surface water supply at the RSWTP in the RWQS. Previous testing with similar surface water sources has demonstrated some PFAS removal with the SIX process, with performance highly dependent on the water quality. As such, SIX jar testing was conducted on the RSWTP raw water to understand the SIX treatment performance in TOC and PFAS removal.

Three series of jar tests were conducted following the details outlined in Table 6. Two different regenerant concentrations were tested; generally, higher regenerant concentrations yield higher removals, but come at higher O&M costs associated with chemical use and might also result in design parameters outside of the normal ranges of the SIX process. The resin tested was Lanxess S5128 strong base anion (SBA) resin; this resin has typically been used in all full-scale SIX installations to date. Two resin doses were tested: 20 milliliters per liter (mL/L) and 30 mL/L. The resin used was 'seasoned resin' from a previous pilot study testing surface water of very similar water quality. Virgin resin was avoided for bench scale testing as it often yields unrealistic, overinflated results. Bench-scale tests were run with a 30-minute SIX contact time. Multiple SIX treatment/ regeneration cycles were performed to simulate steady state performance. In addition to PFAS and TOC, additional anions were measured to better understand the impact on downstream processes (Table 7).

Table 6 Summary of SIX Jar Test on RSWTP Raw Water

Series	Resin Dose (mL/L)	Regenerant Concentration (g/L NaCl)	# of Regeneration Cycles	Data Collected
1	20	20	25	Every 5 cycles; 5 total
2	20	30	25	Every 5 cycles; 5 total
3	30	30	25	Every 5 cycles; 5 total

Table 7 Analytes Tested During SIX Jar Testing

Analyte	Unit	Method
PFAS	ng/L	EPA 533
TOC	mg/L	EPA 415.3
UVT_{254nm}	cm^{-1}	Spectrophotometer
Color	C.U.	Platinum-Cobalt 8025
Bromide	µg/L	EPA 300.0
Alkalinity	mg/L as $CaCO_3$	Colorimetric 10280
Sulfate	mg/L	Turbidimetric 10227
Chloride	mg/L	Mercuric Thiocyanate 10291

Abbreviations: µg/L – micrograms per liter; $CaCO_3$ – calcium carbonate; cm – centimeter; C.U. – color unit; g/L – grams per liter; NaCl – sodium chloride

Bench-Scale Testing Results

Sample Baseline Water Quality

Water for bench testing was collected by Tampa Bay Water and Carollo on August 20, 2024. Sample locations included RSWTP raw water, ozonated effluent, filtered effluent, BUD-7 WTP raw water, and BUD-5 WTP raw water.

Samples were collected and shipped to Water ARC® for testing. Baseline water quality was characterized, and results are summarized in Table 8 through Table 11. As anticipated, the raw surface water contains a high concentration of TOC (25.7 mg/L) (Figure 11). Note that these samples were collected during flood conditions following Hurricane Debby and consisted of 100 percent TBC lower pool. Of the samples collected, not all were in exceedance of the PFAS MCL. PFAS exceedances of the samples collected are summarized in Table 12.



Figure 11 RSWTP Raw Water Sample (8/20/2024, TOC of 25.7 mg/L)

Table 8 RSWTP Raw Water Quality

Parameter	Units	Result
pH	S.U.	7.24
Conductivity	µS/cm	145
Turbidity	NTU	3.4
UV254	abs cm^{-1}	1.2
True Color	C.U.	224
Apparent Color	C.U.	417
Zeta potential	mV	-11.5
Total Hardness	mg/L as $CaCO_3$	65
Total Dissolved Solids	mg/L	180
Alkalinity	mg/L as $CaCO_3$	61
TOC	mg/L	25.7
Phosphate	mg/L	0.2
Chloride	mg/L	17.4
Sulfate	mg/L	28
Bromide	µg/L	54
Fluoride	mg/L	0.2
Nitrate	mg/L - NO_3-N	1.1

Abbreviations: µS/cm – microsiemens per centimeter; mV – millivolts; NTU – nephelometric turbidity units; S.U. – standard units; C.U. – color units

Table 9 RSWTP Sample PFAS (PFAS method EPA 533 by Pace Analytical)

Parameter	Units	Raw Water	Ozonated Effluent	Filtered Effluent	MCL
PFOS	ng/L	6.6	4.8	3.9	4.0
PFOA	ng/L	4.5	4.4	3.1	4.0
PFBS	ng/L	4.8	4.2	4.2	n/a
HFPO-DA	ng/L	<1.0	<1.0	<1.0	10
PFHxS	ng/L	3.1	2.2	1.7	10
PFNA	ng/L	< 1.0	<1.0	<1.0	10
TOC	mg/L	25.7	4.6	3	n/a



Figure 12 RSWTP Filtered Effluent Sample (8/20/2024)

Table 10 BUD Well Sample Results

Parameter	Units	BUD-7 WTP	BUD-5 WTP	MCL
PFOS	ng/L	12.0	6.4	4.0
PFOA	ng/L	7.7	2.4	4.0
PFBS	ng/L	9.8	4.8	n/a
HFPO-DA	ng/L	<1.0	<1.0	10
PFHxS	ng/L	4.0	3.3	10
PFNA	ng/L	<1.0	<1.0	10
TOC	mg/L	0.45	1.0	n/a
Nitrate	mg/L as N	2.9	1.1	10

When BUD-5 WTP was sampled, relative individual well flows were as described in Table 11. Note that BUD-5R was not online at the time of sampling. Recent flow data from July 1, 2023, through August 1, 2024, indicate that this sample was relatively representative of the past year. However, BUD-4 flow was slightly underrepresented, and from the data collected to date, has the highest PFAS concentrations. Bringing BUD-5R online will change the blended flow water quality, especially if PFAS concentrations are significantly different from the BUD-2, 4, and 6.

Table 11 BUD-5 WTP Flow Distribution During Sampling Event

BUD Well No.	Sampled Flowrate (mgd)	Fraction of Blend	2023-2024 Average Flow (mgd)	2023-2024 Average Fraction of Blend
2	1.0	38%	1.97	47%
4	1.0	38%	1.40	33%
6	0.65	24%	0.86	20%
5R	OFFLINE	0%	OFFLINE	0%

Given the water quality data collected, Tampa Bay Water does not need to remove significant fractions of the PFAS detected to meet the regulatory limits.

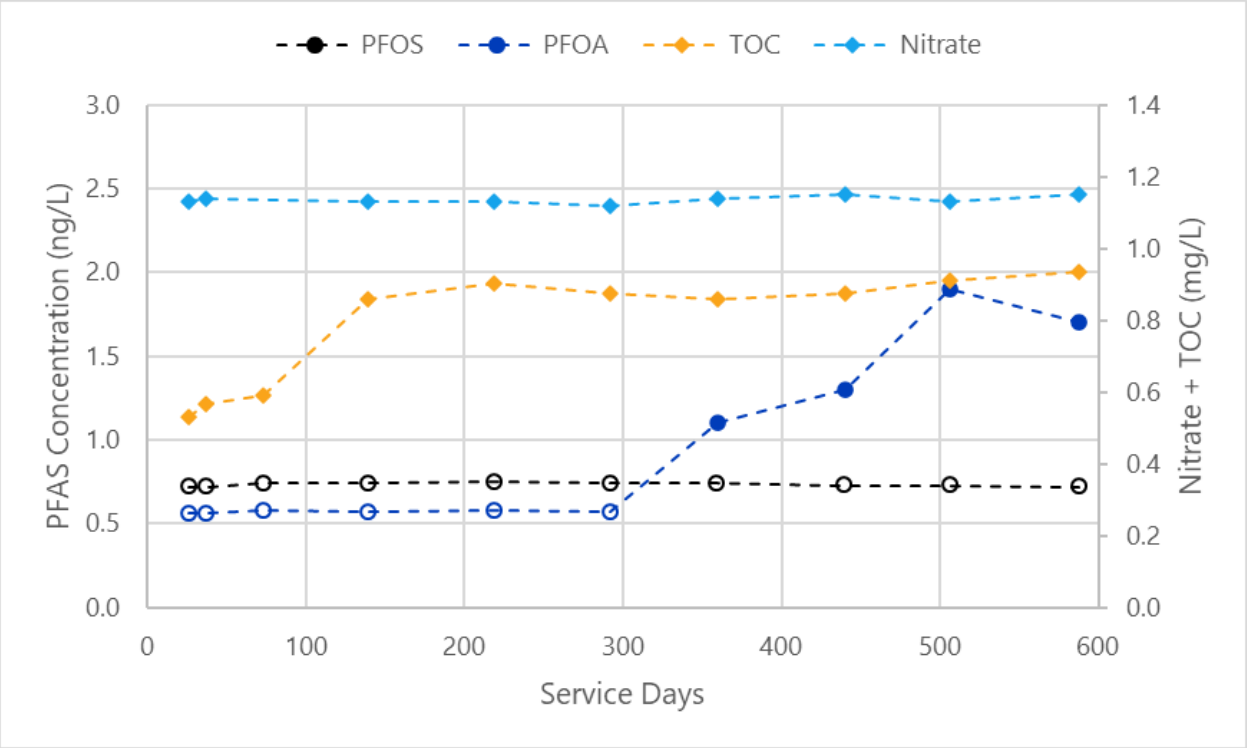
Table 12 PFAS MCL Exceedances in Samples Collected 8/20/24

Location	PFOS	PFOA
RSWTP Raw Water	X	X
RSWTP Ozonated Water	X	X
RSWTP Filtered Water		
BUD-5 WTP	X	
BUD-7 WTP	X	X

RSSCT Results

BUD-5 WTP

Treated PFOS remained non-detect in the RSSCT column effluent throughout the test (Figure 13). At the final data point (588 days), PFOA broke through, reaching 71 percent of the influent concentration (2.4 ng/L). In contrast, TOC broke through much earlier than PFOA, with a 100 percent breakthrough achieved between approximately 80 and 130 days of operation. It is clear from this data that PFOA breaks through faster than PFOS will therefore drive resin changeout but is also below the MCL in the feed. From this data, it is reasonable to expect this resin to last at least 588 days, or 1.6 years before needing to be replaced. No nitrate removal was observed in either of the BUD WTP RSSCTs, as expected. Nitrate control will require additional treatment to meet the current goal of 0.4 mg/L as N.

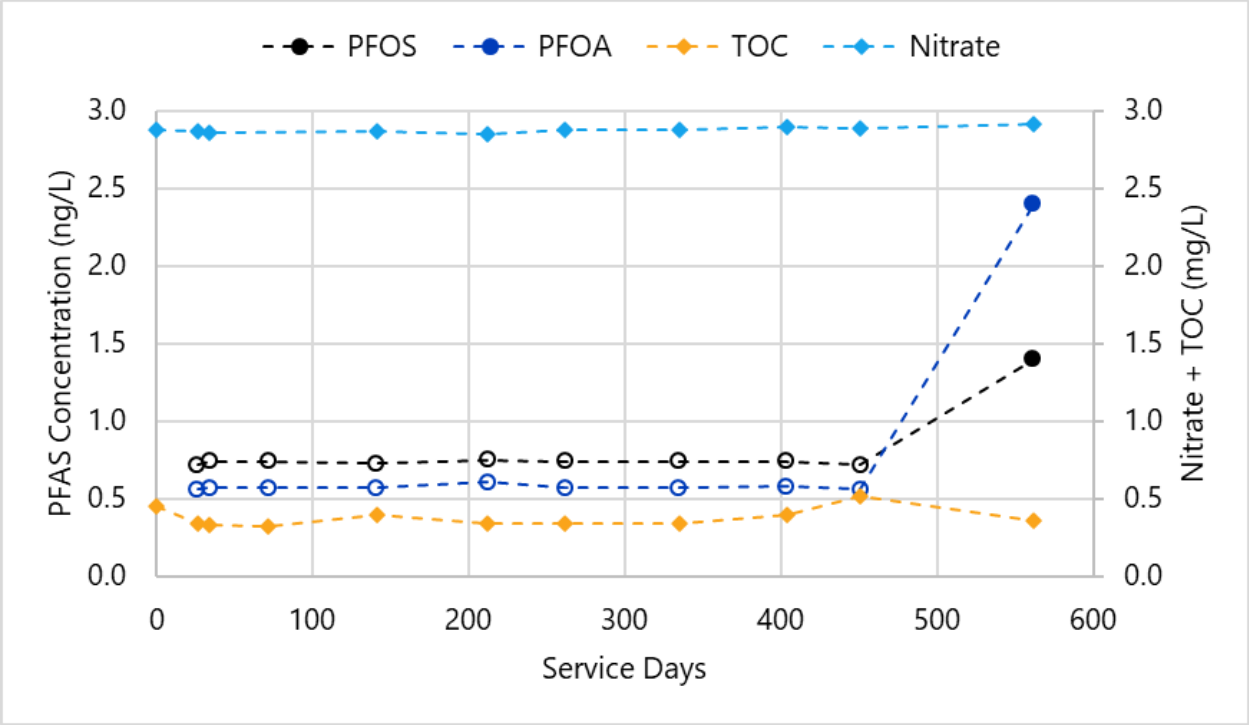


Note: Open circles indicate non-detect results and correspond to Lab MDLs.

Figure 13 PFOA, PFOS, TOC, and Nitrate Breakthrough Curves from FBIX RSSCT Column at BUD-5 WTP

BUD-7 WTP

BUD-7 WTP water quality is different from BUD-5 WTP in that it has higher PFAS but lower TOC (0.45 mg/L at BUD-7 WTP). The lower TOC allowed for more removal of PFAS mass over time, likely due to the lack of shielding or fouling of the resin sites; PFOA and PFOS remained non-detect until the last data point observed some breakthrough (Figure 14). Although TOC loading was lower, TOC broke through at 80 percent right away. Given the sample influent loading, PFOA would likely drive changeouts of media at this site. At the end of the test (562 days), PFOA and PFOS had broken through at 31 percent and 12 percent, respectively. From this data, it is reasonable to expect that media will last at least 562 days, or 1.5 years before needing to be replaced, but likely longer. As was the case for the BUD-5 WTP RSSCT, no nitrate removal was observed. Table 13 provides a summary of IX RSSCT findings for both BUD-5 WTP and BUD-7 WTP.



Notes: Open circles indicate non-detect results and correspond to Lab MDLs.

Figure 14 PFOA, PFOS, TOC and Nitrate Breakthrough Curves from FBIX RSSCT Column at BUD-7 WTP

Table 13 Bench-Scale FBIX RSSCT Performance

	BUD-5 WTP	BUD-7 WTP
Expected Service Life (at 95th percentile flowrate)	>1.6 years	>1.5 years
Compound Driving Breakthrough	PFOA	PFOA
Breakthrough at End of Test	71%	31%

Existing Filter GAC

The existing filter GAC scenario was tested to gain understanding of the potential to use existing full-scale filter GAC for PFAS treatment without disrupting or negatively impacting the filtration process. As such, GAC media was selected to match the existing plant (F816); this media is larger than what is typically used for PFAS adsorption (F400). Additionally, a hydraulic loading rate (HLR) was tested for this RSSCT (3.65 gpm/ft^2) that is in alignment with the design HLR for the full-scale filters. From the data, both PFOS and PFOA broke through at similar rates; PFOA would likely drive breakthrough (Figure 15). These data suggest service life of approximately 12.5 months; however, this RSSCT test does not take into account filter media backwashing which will significantly impact breakthrough (due to the disruption of the PFAS mass transfer zone). Additionally, these filters are historically run in biological mode; although PFAS adsorption and biological growth can occur on the GAC surface at the same time, biofilm development could physically block the GAC pores and limit the accessibility of active adsorption sites to PFAS and organics. Therefore, it is not expected for the media to last this long at full-scale; piloting would be needed to gain full understanding of media service life in the GAC filters.

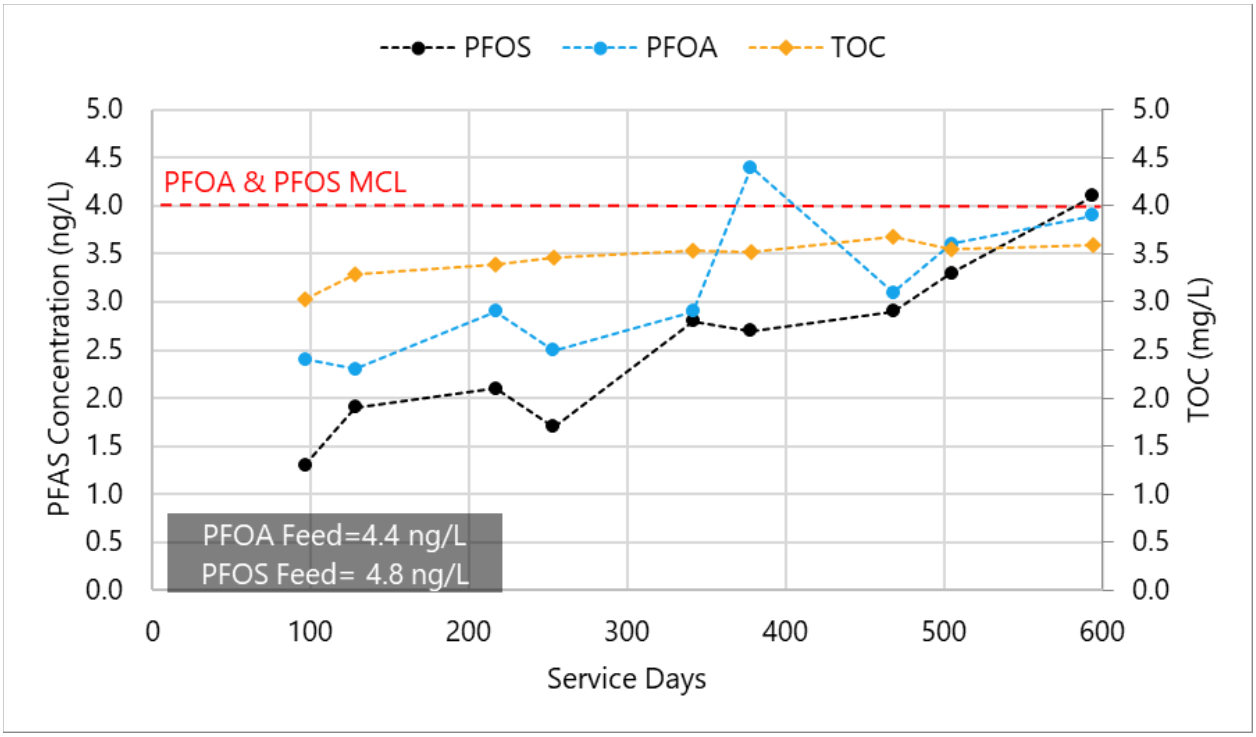


Figure 15 PFOA, PFOS, and TOC Breakthrough Curves from GAC RSSCT Column Simulating Existing Filter GAC at the RSWTP

GAC Post-Filter Adsorber

The GAC post-filter adsorber scenario represents the design of GAC adsorbers at the end of the treatment train at the RSWTP for PFAS removal. It is important to note that none of the PFAS were in exceedance from the filtered water sample collected; therefore, it is impossible to clearly know when exceedances would occur. PFOA is similarly likely to drive media changeouts when it exceeds the MCL in the feed water. PFOA breakthrough (100 percent) was observed at 41,000 BV (286 days) or about 9.5 months. Like all the RSSCTs, TOC broke through faster than PFAS (Figure 16). Table 14 provides a summary of GAC RSSCT findings.

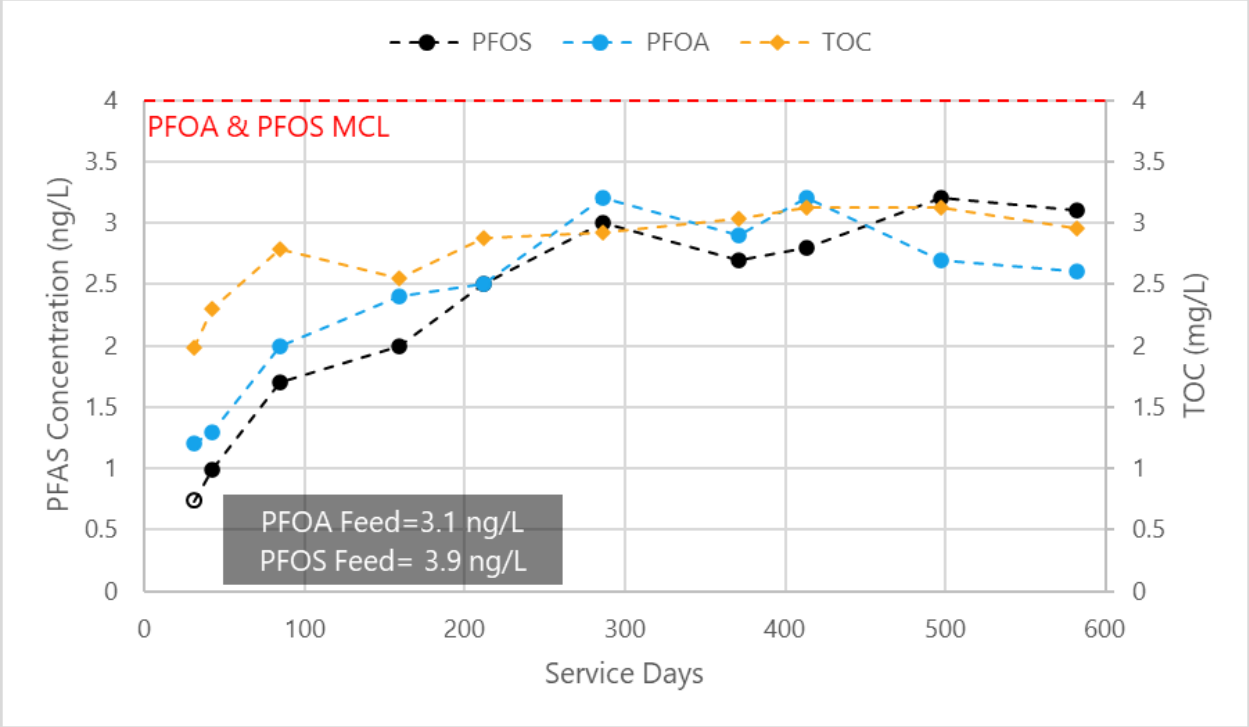


Figure 16 PFOA, PFOS, and TOC Breakthrough Curves from GAC RSSCT Column Simulating GAC Post-Filter Adsorber at the RSWTP

Table 14 Bench GAC RSSCT Performance

	Existing Filter GAC	Post-filter GAC Adsorber
Expected Service Life(1)	12.5 months(2)	9.5 months
Compound Driving Breakthrough	PFOA	PFOA
Service life at 100% breakthrough	377 days	286 days
Breakthrough at End of Test	71%	88%

Notes:
(1) Expected service life is based on breakthrough of PFOA.
(2) Existing filter GAC RSSCT service life will be impacted by filter backwashing and biology.

SIX Jar Test Results

PFAS Results

Of the regulated PFAS, only PFOS and PFOA are near or in exceedance of the respective MCLs. These two compounds will drive treatment needs for at the RSWTP. The results from the SIX bench tests are summarized in Table 15 and Table 16. PFOS is more easily removed than PFOA. Results indicate that higher resin dose (mL/L) provides more performance improvement than increasing regenerant concentration (g/L) at a typical contact time (30 minutes) due to the higher total adsorption capacity at higher resin doses. Given the configurations and raw water quality tested, each of the three conditions achieves the PFAS treatment goal of meeting the upcoming MCLs.

Table 15 PFOA Percent Removal by SIX

Test Condition	No. of SIX Regeneration Cycles					Average
	5	10	15	20	25	Removal
20 mL/L x 30 min x 20 g/L(1)	36%	44%	44%	24%	13%	32%
20 mL/L x 30 min x 30 g/L(1)	49%	22%	24%	31%	29%	31%
30 mL/L x 30 min x 30 g/L(1)	51%	51%	44%	38%	53%	48%

Notes:
(1) Resin dose x Contact time x Regenerant concentration.

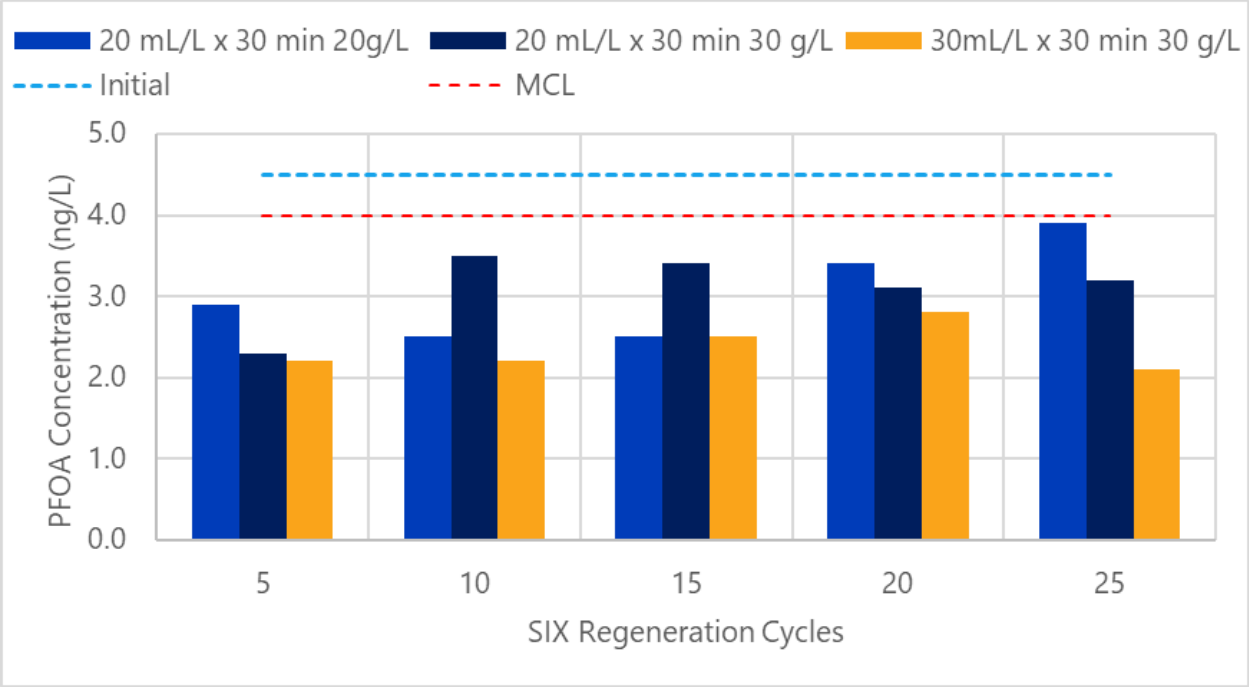


Figure 17 PFOA Removal by SIX

Table 16 PFOS Percent Removal by SIX

Test Condition	No. of SIX Regeneration Cycles					Average
	5	10	15	20	25	Removal
20 mL/L x 30 min x 20 g/L	56%	61%	64%	58%	89%	65%
20 mL/L x 30 min x 30 g/L	62%	65%	56%	67%	68%	64%
30 mL/L x 30 min x 30 g/L	68%	68%	71%	71%	76%	71%

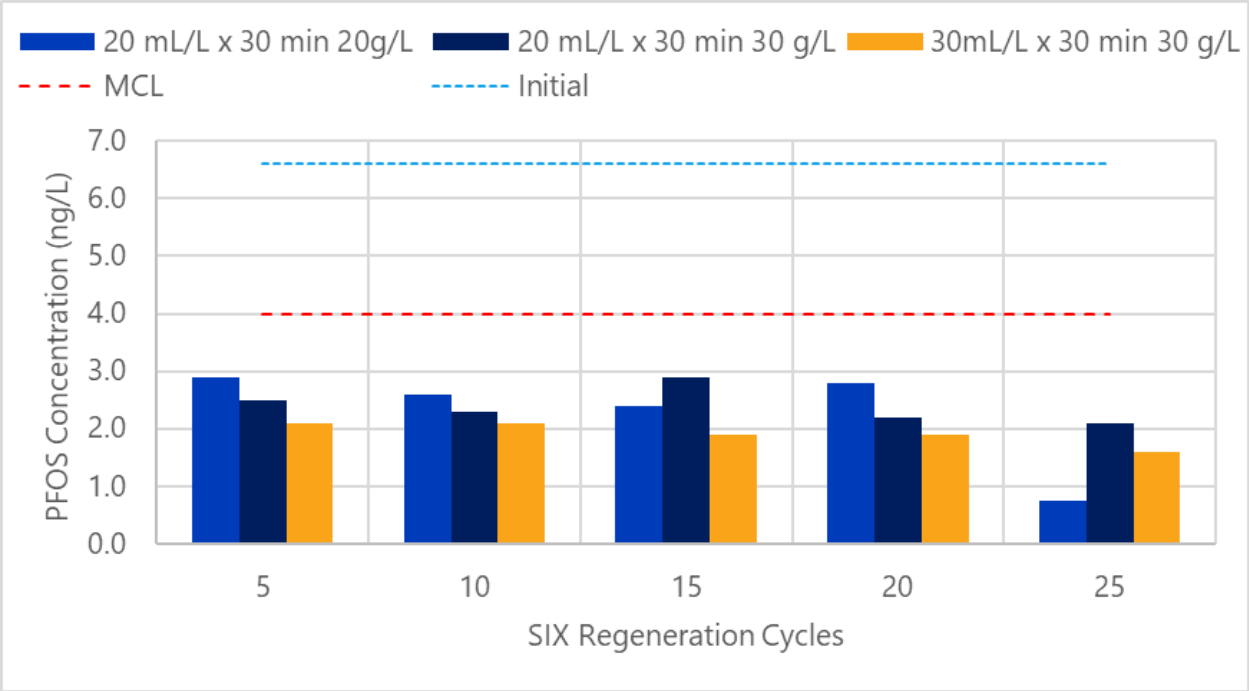


Figure 18 PFOS Removal by SIX

Other Water Quality Results

Additional water quality results are similar to previous testing of SIX at the bench scale performed during the RWQS. Organics are removed by about 50 percent, which is typical to SIX surface water performance (Figure 19). Additional anionic analytes were also tested to better understand the impact on downstream process performance. Color is not well removed given such high raw water color (Figure 20). Alkalinity removal was a bit more variable (Figure 21); bicarbonate is a low affinity anion so small process changes, such as increased concentration of sulfate or TOC, or changes to regenerant concentration, can have more of an impact on performance. Seasonal shifts in raw water alkalinity and TOC may result in operational changes to accommodate, i.e., during the dry season when TOC is low and alkalinity is high, SIX alkalinity removal will improve coagulation effects due to easier depression of pH. Conversely, during the rainy season when TOC is high and alkalinity is low, SIX alkalinity removal may result in need for finished water alkalinity addition. Bromide is well removed, which will likely result in lower bromate formation and disinfection byproduct (DBP) formation (Figure 22). Chloride is released through the SIX process when sodium chloride is used as a regenerant (Figure 23). See Section 2.2.3 in the RWQS for chloride upcycling considerations, estimated to be 35.5 mg/L. It is important to note that rinsing strategy will impact the SIX-treated chloride concentration and rinsing is not optimized at the bench. Sulfate is extremely well removed because sulfate is divalent and thus has high resin affinity (Figure 24). Due to the reduction of sulfate and increase in chloride, an increase in chloride-to-sulfate-mass (CSMR) ratio is expected, suggesting higher potential for lead release in the distribution system (although still lower than CSMRs from the Desal plant). This was previously discussed in the RWQS.

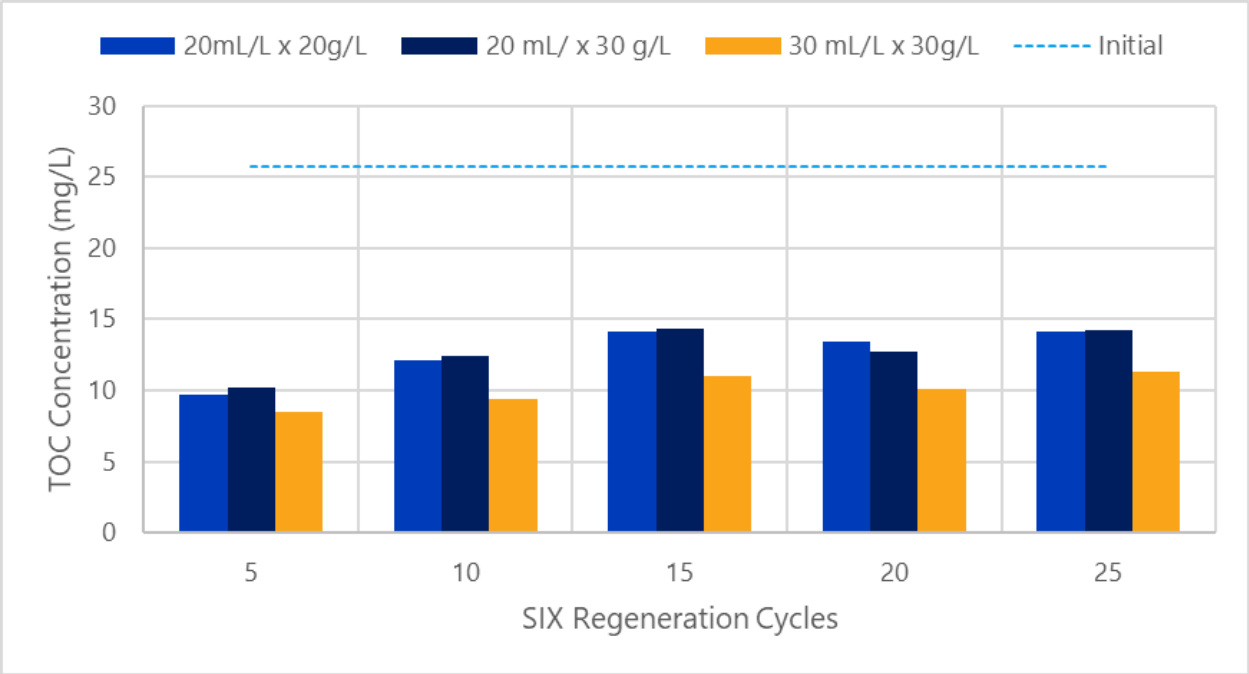


Figure 19 TOC Removal by SIX

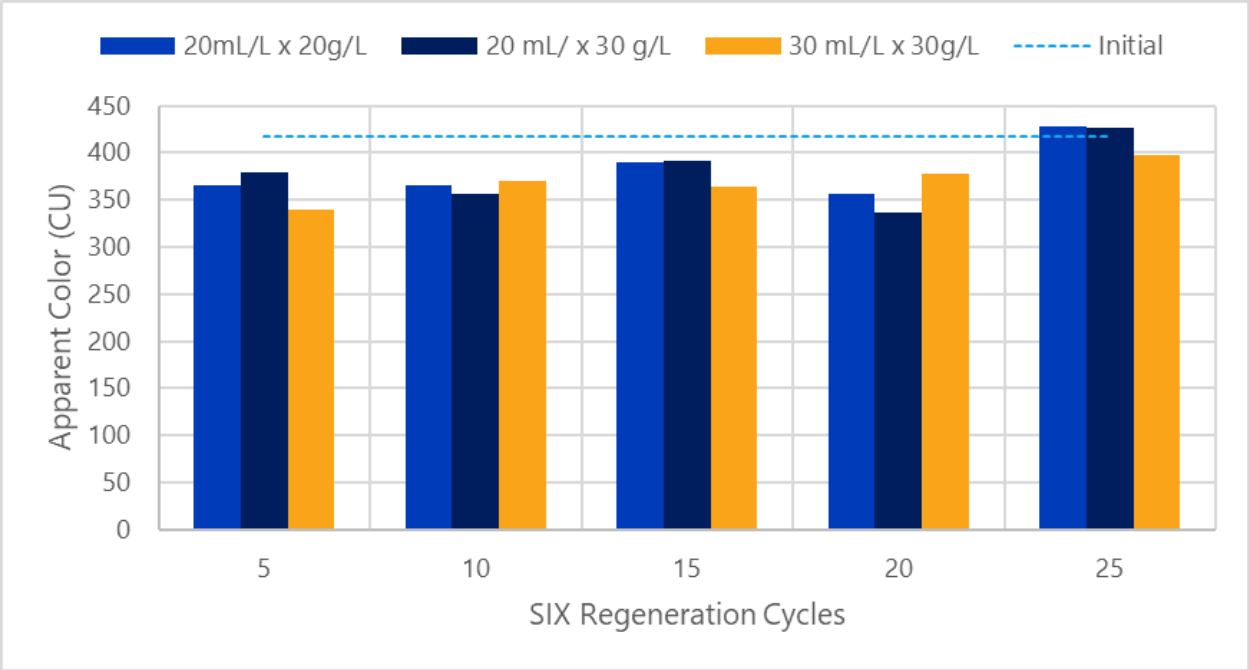


Figure 20 Apparent Color Removal by SIX

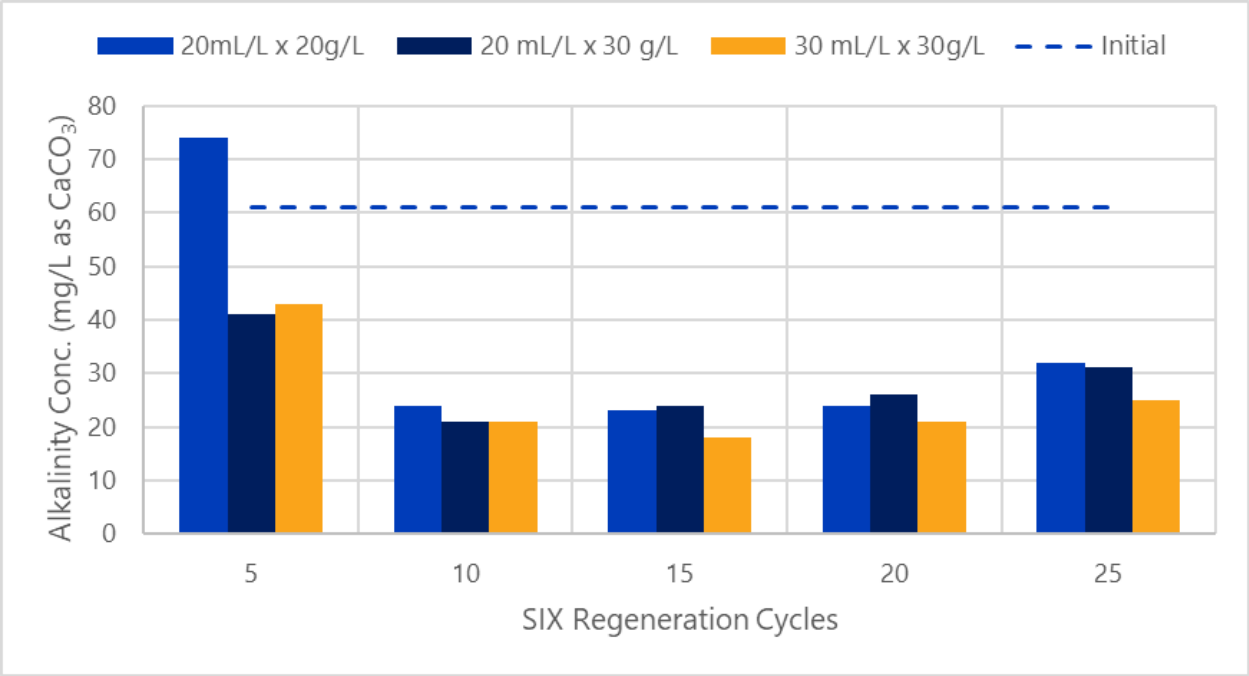


Figure 21 Alkalinity Removal by SIX

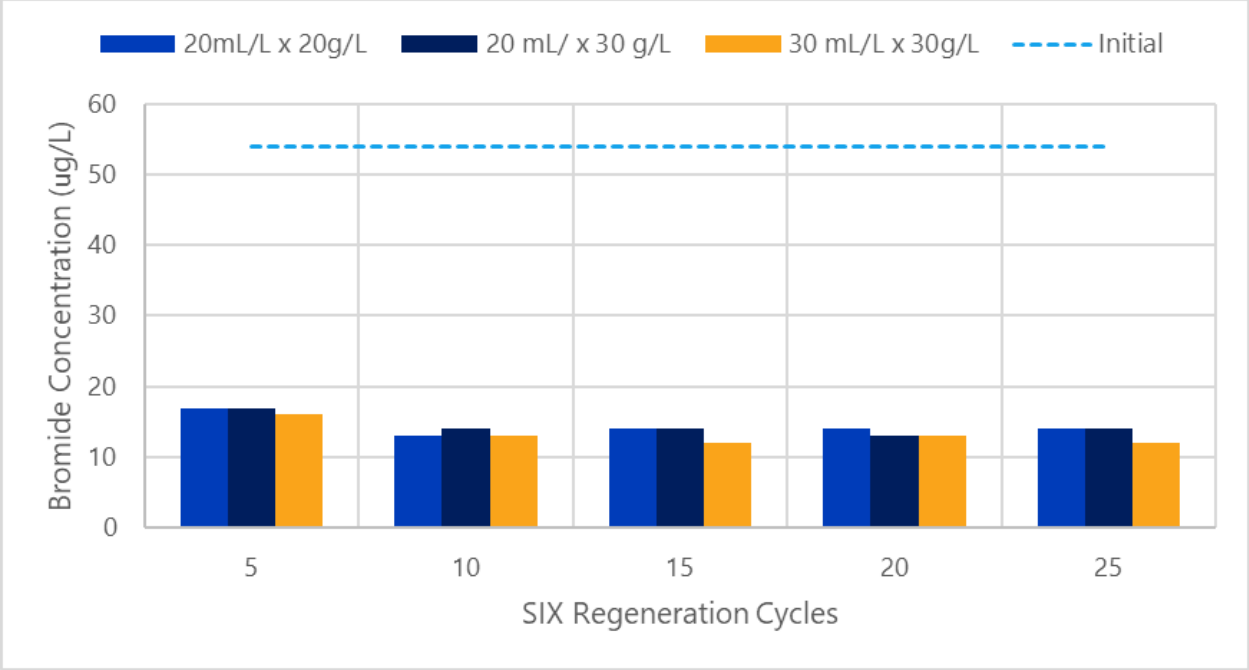


Figure 22 Bromide Removal by SIX

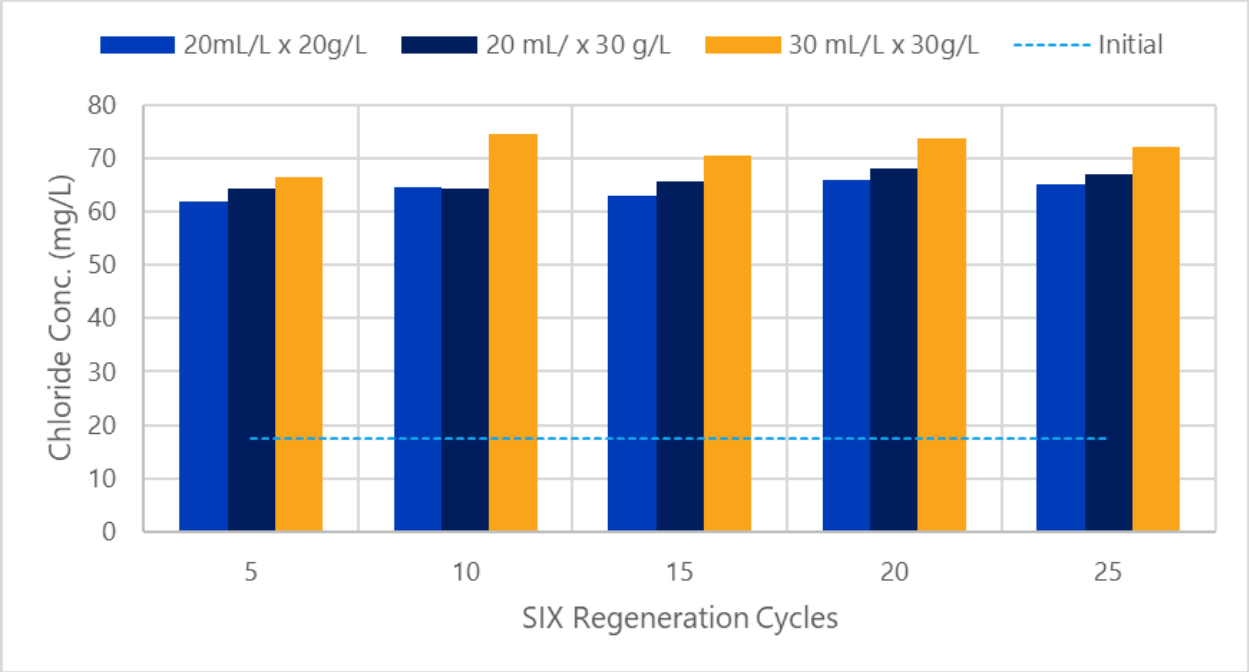


Figure 23 Chloride Addition by SIX

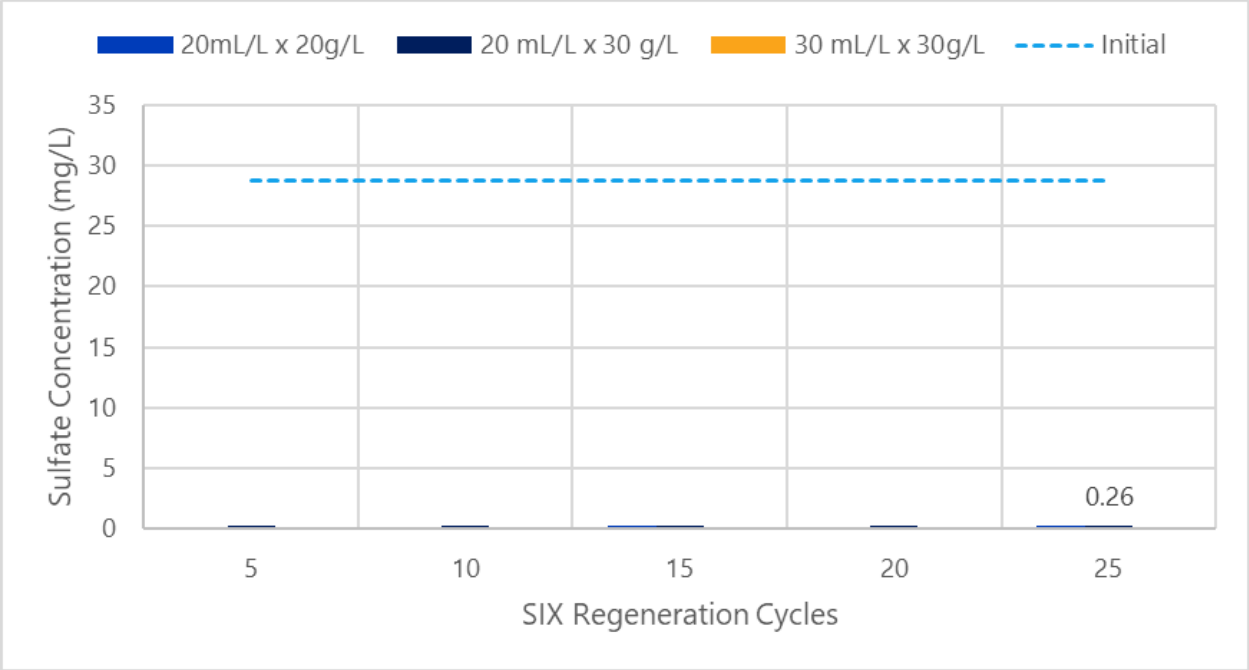


Figure 24 Sulfate Removal by SIX

Overall Conclusions from Bench-Testing

Although PFAS concentrations in surface and groundwater are not expected to vary significantly, the limited available PFAS data does not adequately capture potential seasonal variability, source water impact at the RSWTP, and BUD-5R well water quality. Given the available data, PFAS treatment solutions were tested at the bench scale to identify the best solutions to meet Tampa Bay Water's needs. The following section provides a summary of conclusions drawn.

RSWTP

Implementing SIX upstream of the existing unit processes achieved treated water PFAS goals at the bench scale. The potential benefits to the downstream treatment processes (e.g., reduced TOC, reduced chemical demand, reduced ozone demand, increased filter unit filter run volume, reduced DBP formation) make SIX a promising treatment process for PFAS at the RSWTP.

Conclusions from the GAC RSSCTs performed include the following:

- PFOA will drive GAC media changeout when PFOA is above the MCL in the feed water.
- GAC post-filter adsorbers may require frequent media changeout (estimated every 9.5 months) to meet prescribed PFAS goals due to organics fouling. Regardless of implementing GAC post-filter adsorbers for PFAS or not, it is critical to remove TOC upstream to make PFAS treatment more economically feasible.
- Utilizing existing filter GAC seems a promising secondary barrier for PFAS, but actual performance needs to be better evaluated at the pilot scale as filter operation (backwashing, conversion to BAC, etc.) can significantly impact GAC adsorption performance for PFAS.

The GAC adsorber scenario is a viable option for PFAS treatment at the RSWTP. This would require capital investment in 120 mgd of GAC contactors at the end of the treatment train prior to the addition of disinfectant to match current plant capacity. Replacing media at a frequency of more than once per year will result in significant O&M costs. For any PFAS adsorber treatment process, removing upstream TOC (via SIX or other means) improves GAC PFAS removal and extends anticipated GAC service life. Piloting is required to determine the extent of TOC reduction on extending media life at the RSWTP.

Although utilizing the existing filter GAC for PFAS adsorption is not likely a long-term solution alone, it could provide near-term PFAS removal. If GAC is replaced in any of the full-scale filters in the near-term, it is recommended to monitor PFAS regularly to understand the impact of backwashing and biological conversion on the GAC service life. This can also be piloted.

BUD Wells

Implementing PFAS-FBIX at the BUD WTPs is a viable option. Reasonable media changeout rates of more than 1.5 years are expected. Due to lack of data at the time of analysis, it was assumed that BUD-5R water quality is the average of BUD-4 and BUD-6 for conceptual design considerations. BUD-5R PFAS were found to be slightly lower when sampled in December 2024 so these estimates are conservative.

In the RWQS, nitrate treatment at the BUD WTPs was proposed for biological nitrate reduction with biottta®. To keep like systems at these sites, PFAS-FBIX and nitrate-FBIX are proposed in this study.

Conclusions from the PFAS-FBIX RSSCTs performed include the following:

- Among the six regulated PFAS, PFOA will drive PFAS-FBIX media changeout.
- BUD-5 WTP media changeout is estimated at every 1.6 years.
- BUD-7 WTP media changeout is estimated at every 1.5 years.

CONCEPTUAL DESIGN

The conceptual design is based on bench scale testing results and summarized in the following sections.

BUD Wells

Nitrate Removal

As previously mentioned in the RWQS, nitrate treatment at the BUD WTPs was proposed to be biological nitrogen removal with biottta®. Due to the need for PFAS treatment at these sites and to keep like systems at these sites, regenerable FBIX is proposed for nitrate treatment in place of biottta®.

Two alternatives were considered for treating nitrate at the BUD-5 WTP and BUD-7 WTP. These include the following:

- Addition of nitrate-FBIX at the BUD-5 WTP and the BUD-7 WTP.
- Addition of nitrate-FBIX at the BUD-5 WTP with a pipeline to connect BUD-7 to the BUD-5 WTP for treatment.

The design criteria for the two nitrate alternatives are presented in Table 17. Specific assumptions related to the O&M include the following:

- Waste volume is estimated at 0.3 percent of the annual average production capacity of the plant.
- Salt use for regeneration is estimated at 3,000 pounds per million gallons of annual average production capacity of the plant.
- Six-year resin life.

Table 17 Nitrate-FBIX Design Criteria

Description	Unit	BUD-5 WTP (individual site)	BUD-7 WTP (individual site)	Combined at BUD-5 WTP
Sustainable Capacity(1)	mgd	4.5	1.5	6.0
Annual Average Production	mgd	3.0	1.5	4.5
Number of Units	no.	2	1	3
Vessels per Unit	no.	10	10	10
Diameter of Vessels	feet	4	4	4
Resin Volume	cubic feet	1,200	600	1,800
Annual Waste Volume	gallons	3,285,000	1,642,500	4,927,500
Annual Salt Usage	tons	1,610	813	2,424
Pipeline Length	linear feet			21,374
Pipeline Diameter	inches			12

Notes:
(1) Sustainable capacity is defined by Tampa Bay Water as the production capacity achievable for greater than 5 days.

PFAS Removal

Similar to the nitrate removal alternatives, there are two alternatives that were considered for treating PFAS at the BUD-5 WTP and BUD-7 WTP. These include the following:

- Addition of PFAS-FBIX at the BUD-5 WTP and the BUD-7 WTP.
- Addition of PFAS-FBIX at the BUD-5 WTP with a pipeline to connect BUD-7 to the BUD-5 WTP for treatment.

The design criteria for the PFAS-FBIX are presented in Table 18. Specific assumptions related to the O&M include the following:

- PFAS resin is non-regenerable so there is not a liquid waste disposal or salt cost associated with the operation of treatment system, but there will be spent resin to dispose of.
- Resin replacement life is estimated at 1.6 years for the BUD-5 WTP and 1.5 years for the BUD-7 WTP, based on the results of the bench scale tests.

Table 18 PFAS-FBIX Design Criteria

Description	Unit	BUD-5 WTP (individual site)	BUD-7 WTP (individual site)	Combined at BUD-5 WTP
Sustainable Capacity(1)	mgd	4.5	1.5	6.0
Annual Average Production Capacity	mgd	3.0	1.5	4.5
Number of Units	no.	2	1	3
Vessels per Unit	no.	2	2	2
Diameter of Units	feet	12	12	12
Resin Volume	cubic feet	1,688	598	2,322
Annual Liquid Waste Volume	gallons	0	0	0
Annual Salt Usage	tons	0	0	0
Pipeline Length	linear feet			21,374
Pipeline Diameter	inches			12

Notes:
(1) Sustainable capacity is defined by Tampa Bay Water as the production capacity achievable for greater than 5 days.

RSWTP

As discussed previously, there are three recommended options for PFAS treatment at the RSWTP:

- SIX.
- Existing filter GAC.
- GAC post-filter adsorber.

The following sections detail the design criteria for each of the options. Although the RSWTP is undergoing expansion, design flow assumptions were kept the same as in the original RWQS for consistency.

SIX Design Criteria

The proposed SIX process for the RSWTP includes process basins, resin storage, and resin regeneration. Table 19 shows the design criteria for the proposed RSWTP SIX process.

Table 19 SIX Design Criteria

Description	Unit	RSWTP
Sustainable Capacity(1)	mgd	90
Annual Average Production Capacity	mgd	64
Footprint	feet by feet	135 x 157
Treatment Trains	no.	5

Notes:
(1) Sustainable capacity is defined by Tampa Bay Water as the production capacity achievable for greater than 5 days.

Existing Filter GAC Design Criteria

The existing filter GAC option uses existing infrastructure at the RSWTP, so no capital design criteria are needed. However, based on the results of the bench scale testing, 217,500 cf of GAC media will require replacement every 12.5 months. Note that 12.5 months is used for estimating GAC replacement frequency in this memo, but replacement could be significantly more frequent and will need to be confirmed with demonstration testing.

GAC Post-Filter Adsorber Design Criteria

Table 20 shows the design criteria for the GAC post-filter adsorber alternative.

Table 20 GAC Post-Filter Adsorber Design Criteria

Description	Unit	RSWTP
Sustainable Capacity(1)	mgd	90
Annual Average Production Capacity	mgd	64
Number of Units	no.	95
Diameter of Units	feet	12
Media Volume	cubic feet	126,667
Waste Volume per Regen and Unit	gallons	61,751
Annual Waste Volume	gallons	9,011,042
GAC Life	months	9.5

Notes:
(1) Sustainable capacity is defined by Tampa Bay Water as the production capacity achievable for greater than 5 days.

Cost Analysis

Assumptions

Cost estimates were developed for comparing the alternatives at each pertinent site in accordance with the guidelines established by the Association for the Advancement of Cost Engineering (AACE) Recommended Practice 18-R-97 Cost Estimate Classification System. Class 4 estimates were prepared for the conceptual designs. The cost estimates in this section are based on the design criteria developed and refined with the desktop and bench scale studies performed. Cost estimates are shown in 2024 dollars.

The following assumptions were made in developing the cost estimates:

- Capital costs include all major equipment required for operation of the given system; 10 percent adders for each site work, yard piping, site electrical, and instrumentation and controls; contractor overhead (7 percent); contractor profit (10 percent); contractor mobilization, bonds, and insurance (10 percent); contractor contingency (4 percent); project contingency (30 percent); and engineering, legal, and administrative expenses (25 percent).
- Operating costs include maintenance (1.5 percent of equipment cost), power at 10 cents per kilowatt hour, chemicals, media/ resin replacement, labor, and waste disposal.

- Waste disposal costs were estimated by assuming hauling of IX waste brine at $120 per 1,000 gallons and hauling of GAC backwash/ rinse water at $75 per 1,000 gallons. Potential alternative means of disposal (e.g., possible sewer discharge or deep injection well) are not included in these costs (capital or O&M).
- Lifecycle costs were estimated at 6 percent APR over 30 years.
- Salt and IX Resin unit costs of $113.30 per ton and $500.00 per cubic foot were assumed, respectively.
- GAC is reactivated. The cost of reactivated GAC is $2.0 per pound.
- Capital costs were calculated assuming equipment installed at the sustainable treatment capacity of the facility.
- O&M costs were calculated at the annual average production capacity of the facility.

Nitrate Removal

The nitrate treatment goal of 0.4 mg/L at all POCs can only be achieved by installing nitrate treatment for the BUD wells. The two alternatives considered include installing treatment at both the BUD-5 WTP and BUD-7 WTP, or due to site constraints at BUD-7 WTP, pipe the BUD-7 flow to BUD-5 WTP for combined treatment. The cost comparison of the two alternatives is shown in Table 21. Capital costs include the nitrate-FBIX equipment including vessels, regeneration system, and waste storage tanks and the associated adders defined in the assumptions above. O&M costs include maintenance, labor, power, salt for regeneration, hauling of brine waste, and resin replacement.

Table 21 Cost Comparison of Nitrate Removal Alternatives

Alternative	Capital Cost	O&M Cost	Life Cycle Cost
Treatment at individual sites	$12.9M	$1.6M/yr	$34.9M
Treatment at BUD-5 WTP with connecting pipeline	$24.9M	$1.3M/yr	$42.8M

Abbreviations: M – million; M/yr – million per year

Due to the cost difference, it is recommended to treat for nitrate at the individual BUD sites. Equipment is able to fit at the BUD-7 site but unsightliness may require additional costs to improve facility aesthetics to blend in with the neighborhood, as was done for the Brandon Booster station. Therefore, additional capital cost for building architecture is included in the BUD-7 WTP equipment presented.

Nitrate removal will remain a low priority for the implementation plan due to the existing levels of nitrate being well below regulatory requirements. (It is estimated that health benefits stop improving or begin to plateau at nitrate levels of 1 to 2 mg/L as N). In addition, removal of nitrate at the BUD sites helps to reduce the nitrate concentration at the SCHREG POC, but the treated BUD wells water is blended with water from the RSWTP, which approximately 15 percent of historical data suggests is over the 0.4 mg/L nitrate goal itself. Therefore, the SCHREG POC will likely have nitrate concentrations over 0.4 mg/L occasionally, even with treatment implemented at the BUD sites.

PFAS Removal

PFAS (specifically PFOS and PFOA) have been observed above the MCL at the SCHREG and 301REGHILLS POCs. To bring these POCs into future compliance by the April 2029 deadline and reduce overall PFAS levels for the Regional System, treatment is required at the BUD-5 WTP, BUD-7 WTP, and RSWTP sites.

Similar to nitrate removal, two alternatives were considered for treating PFAS at the BUD WTPs including installing treatment at both the BUD-5 WTP and BUD-7 WTP, or due to site constraints at BUD-7 WTP, pipe the BUD-7 flow to BUD-5 WTP for treatment. The cost comparison of the two alternatives is shown in Table 22. Due to the cost difference, it is recommended to treat PFAS at the individual BUD sites. Equipment is able to fit on the site and should have limited aesthetic impact on neighbors. Capital costs include the PFAS-FBIX vessels, and the associated adders defined in the assumptions above. O&M costs include maintenance, labor, power, and resin replacement. O&M costs account for resin replacement at frequency noted in bench scale tests; however, the O&M costs could be substantially lower if the blended concentration at the POCs remains within compliance by tracking source concentrations and optimizing operations.

Table 22 Cost Comparison of PFAS Removal Alternatives at the BUD Sites

Alternative	Capital Cost	O&M Cost	Life Cycle Cost
Treatment at individual sites	$7.0M	$1.3M/yr	$24.9M
Treatment at BUD-5 WTP site with connecting pipeline	$19.3M	$1.0M/yr	$33.1M

As previously described, three alternatives were tested for treating PFAS at the RSWTP including SIX, existing filter GAC, and GAC post-filter adsorber. Table 23 shows the cost comparison for the three alternatives. Capital costs for SIX include SIX equipment such as process basins, regeneration system, resin storage tanks, and a deep injection well for brine disposal and the associated adders defined in the assumptions above. Capital costs for the GAC post-filter adsorbers include the GAC vessels, backwash/ rinse pump station, and waste storage tanks and the associated adders defined in the assumptions above. GAC vessels were estimated for conservative cost estimating in this report, but GAC contactors would likely be more practical for implementation at the capacity of the RSWTP. O&M costs for SIX include maintenance, labor, power, salt for regeneration, and resin replacement. O&M costs for the existing filter GAC option only includes media replacement. O&M costs for the GAC post-filter adsorber include maintenance, labor, power, hauling for waste disposal, and media replacement.

Table 23 Cost Comparison of PFAS Removal Alternatives at the RSWTP

Alternative	Capital Cost	O&M Cost	Life Cycle Cost
SIX	$128.6M	$4.6M/yr	$191.9M
Existing Filter GAC	-	$14.2M/yr	$195.3M
GAC Post-Filter Adsorber	$83.8	$12.8M/yr	$259.9M

SIX is shown to be the most cost-effective option. Should PFAS removal by SIX be insufficient alone, Tampa Bay Water could consider using the existing filter GAC to provide additional removal. Utilizing existing filter GAC alone is only recommended as an interim solution after piloting is completed to confirm backwash rates can be modified to allow the filters to function for TOC, solids, and PFAS removal without negatively impacting plant production. The cost estimate shown for this scenario assumes GAC replacement every 12.5 months, which may be significantly reduced at demonstration and full-scale.

Given the other noted benefits of SIX which generates cost savings to the overall plant not captured in this estimate, it is recommended that Tampa Bay Water proceed with demonstration testing and implementing SIX for TOC removal, PFAS removal, and improved operations of the RSWTP.

Process Flow Diagrams and Site Plans

The following sections highlight the conceptual process flow diagrams and site plans for the recommended improvements at each site. The site plans are conceptual and will need to be refined and detailed during preliminary design.

RSWTP

Conceptual Process Flow for the RSWTP

The proposed improvement for the RSWTP is SIX. The PFD for the proposed treatment is included in Figure 25. SIX would treat raw surface water, prior to the existing treatment train. In the SIX process configuration, the IX resin is in suspension in a plug flow configuration where the exchange occurs. The resin and water mix then flow into a baffled tank to separate the resin from the treated water. The SIX treated water is then mixed with the bypass raw water and continues to the existing treatment process. The spent IX resin is regenerated onsite with a fresh salt brine. A tank houses the regenerated resin prior to addition to the contactor. The RSWTP site plan, including the proposed SIX treatment is shown in Figure 26.

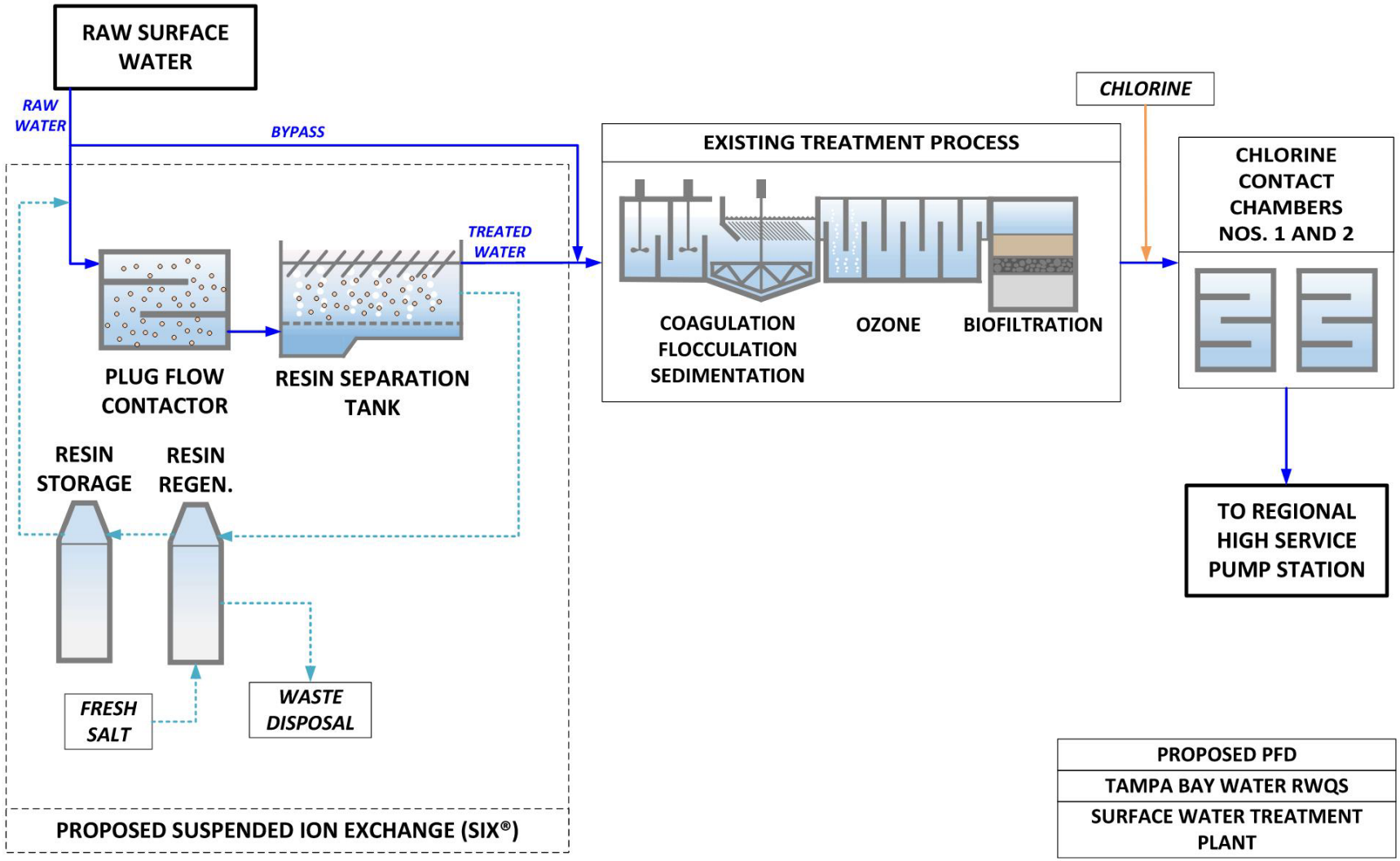


Figure 25 Process Flow Diagram for the Proposed SIX Treatment in the RSWTP



Figure 26 Site Plan for the RSWTP with the Proposed SIX

BUD Wells

Conceptual Process Flow for the BUD Wells

The PFDs for the proposed improvements for the BUD WTPs are included in Figure 27 and Figure 28. The proposed treatment processes for the BUD WTPs are nitrate-FBIX followed by PFAS-FBIX. The nitrate-FBIX treatment includes multiple vessels with the nitrate-FBIX resin, tanks for brine storage, brine pumps, and equalization tanks for the storage of regeneration waste. The PFAS-FBIX treatment is non-regenerable, so the only major equipment will be the vessels with PFAS-FBIX resin along with ancillary equipment. Note that only one vessel is shown schematically for simple representation of the set of vessels proposed.

Site Plan for the BUD Wells

The site plans for BUD-5 WTP and BUD-7 WTP with the proposed nitrate and PFAS treatment systems are shown in Figure 29 and Figure 30. These site plans incorporate the use of a low-profile nitrate-FBIX system, such as the SimPACK system from Envirogen Technologies, Inc., which houses most equipment within 10-foot-tall shipping containers. This type of solution may assist with minimizing aesthetic impact on neighbors (Figure 31).

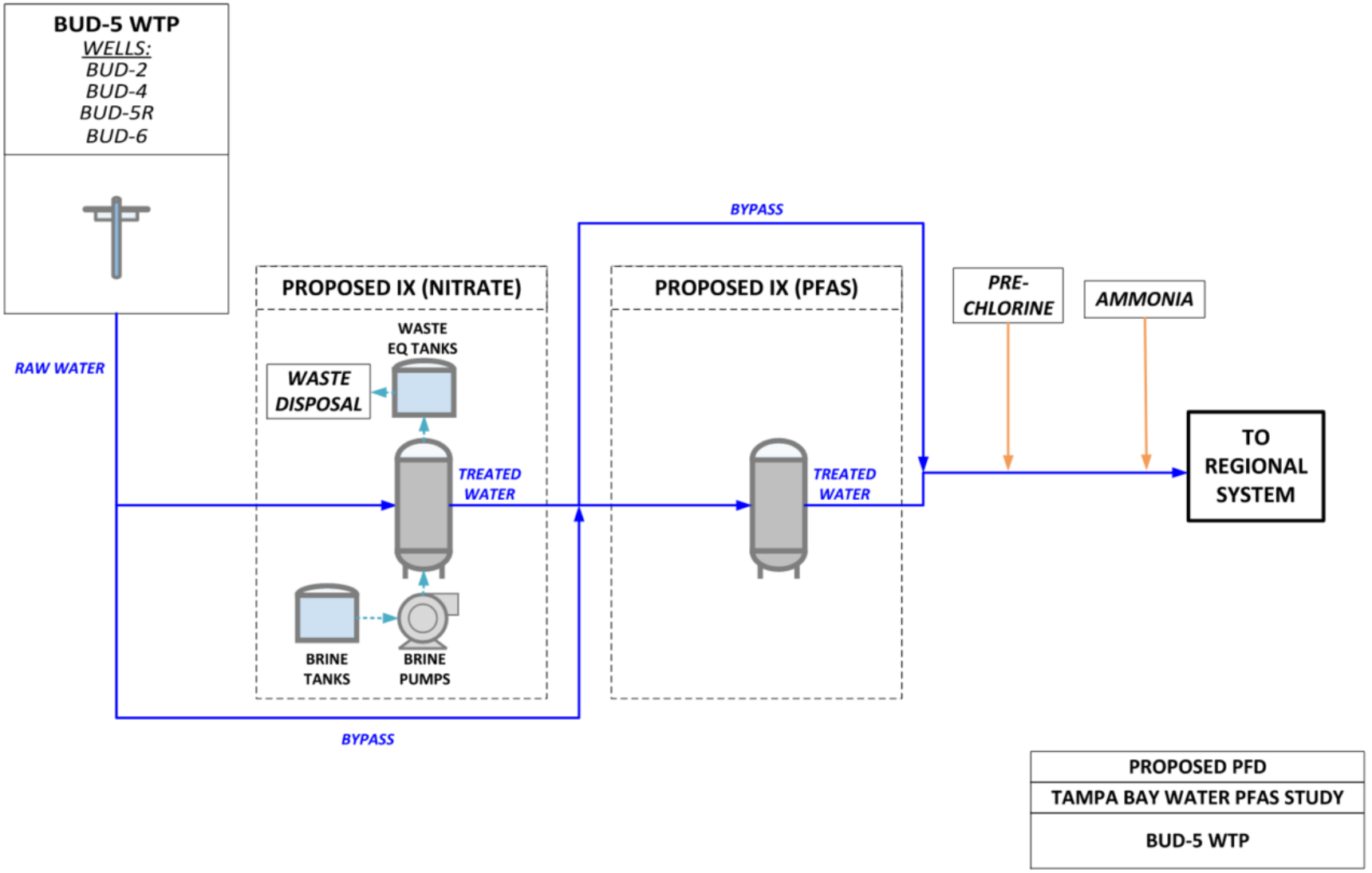


Figure 27 PFD for the Proposed FBIX in the BUD-5 WTP

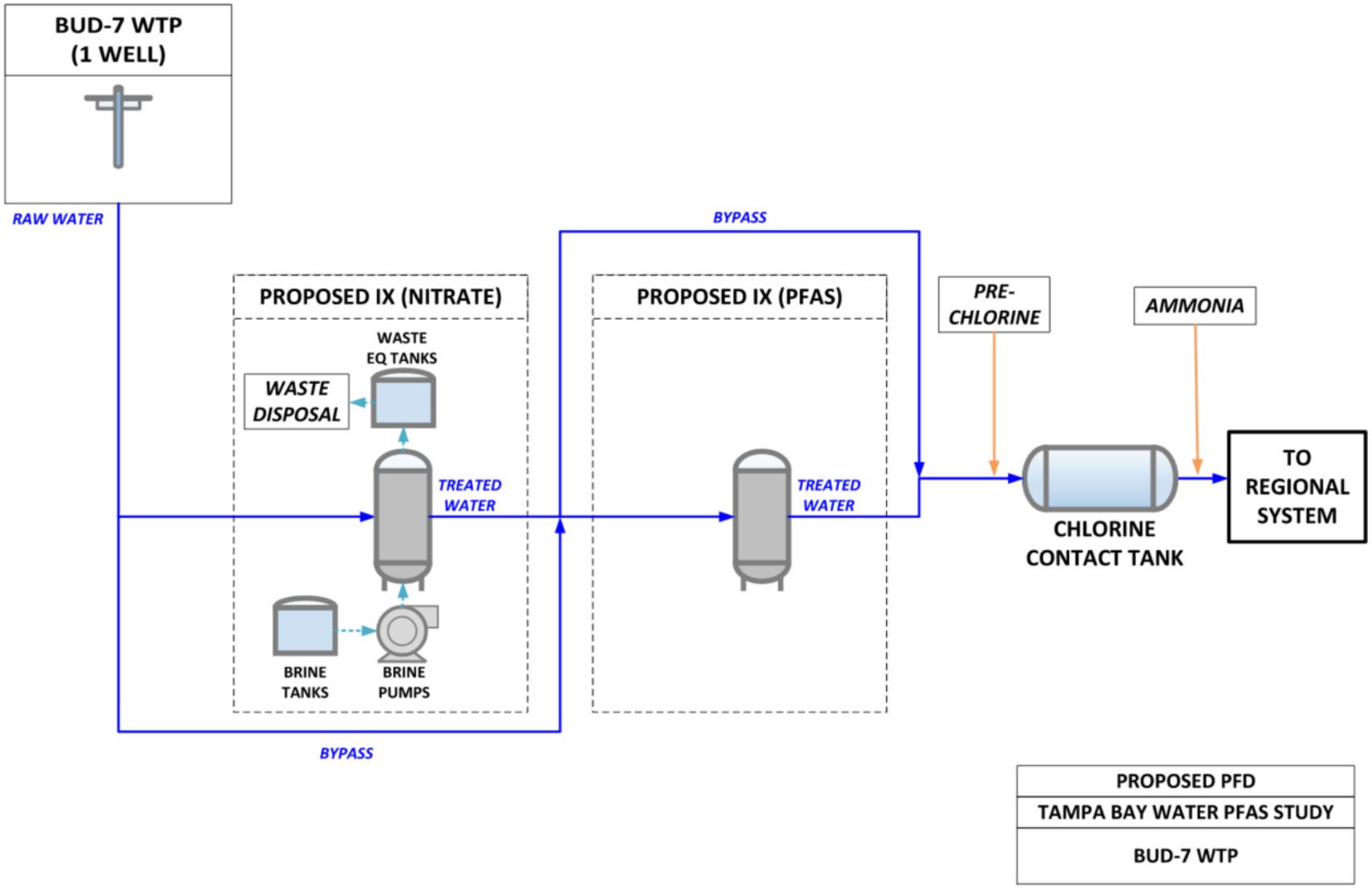


Figure 28 PFD for the Proposed FBIX in the BUD-7 WTP

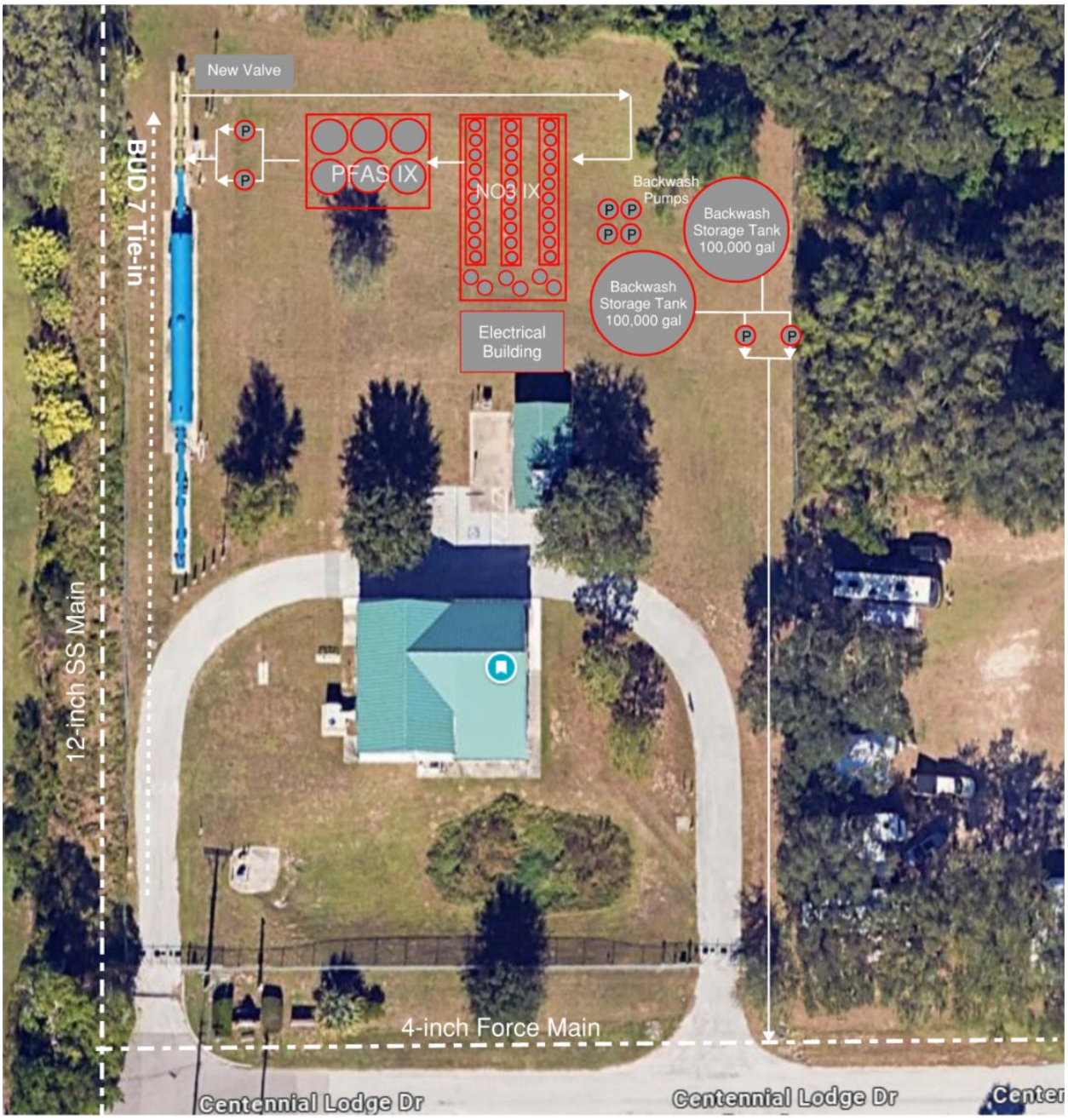


Figure 29 Site Plan for BUD-5 WTP with the Proposed FBIX Treatment

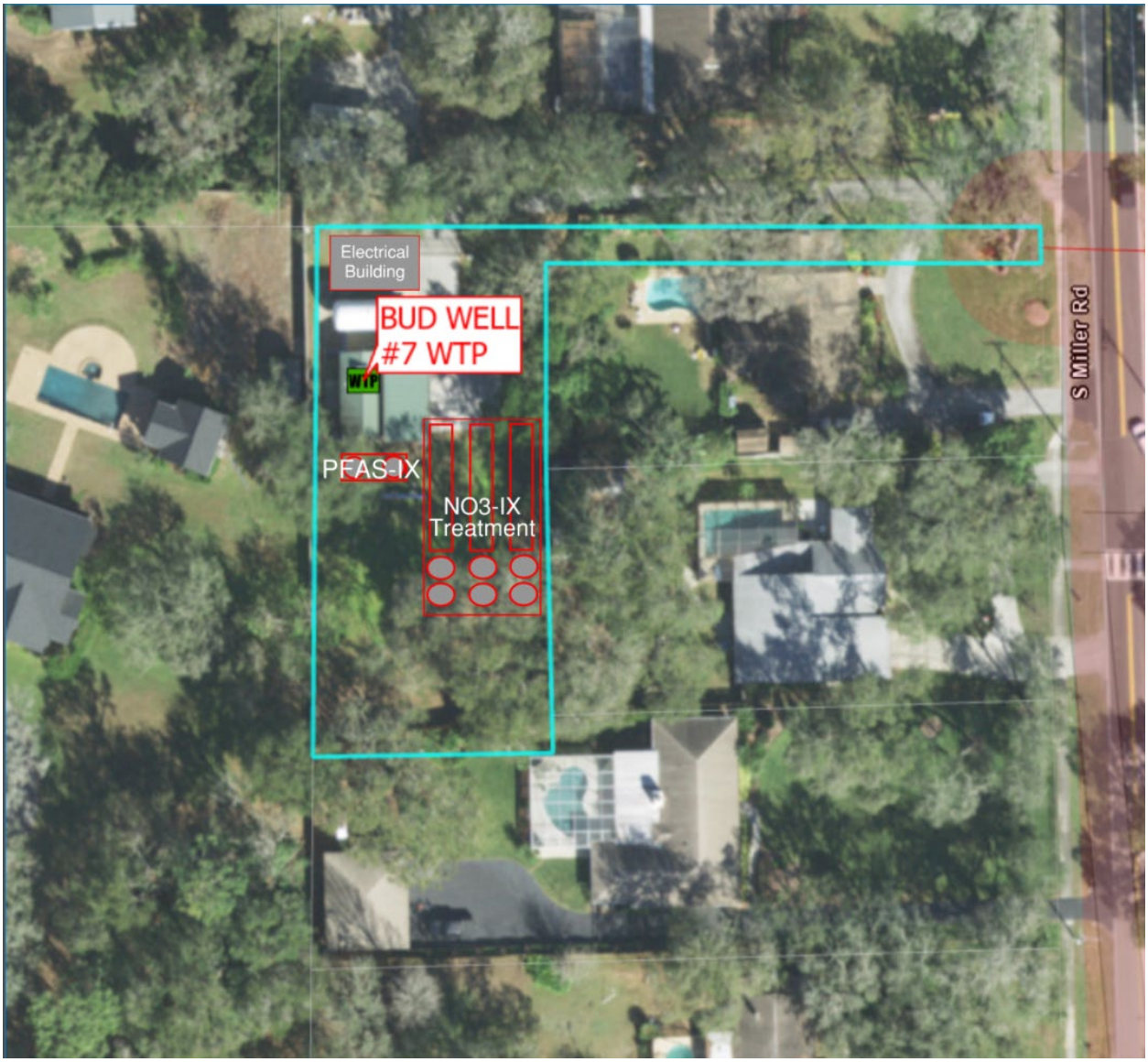


Figure 30 Site Plan for BUD-7 WTP with the Proposed FBIX Treatment



Figure 31 Packaged Nitrate-FBIX System (Envirogen Technologies, Inc.)

Site Assessments

The design criteria for the treatment technologies per supply source has been defined with the number of treatment units, diameter of these units, media volumes, EBCTs, and waste volume. Based on these criteria, each facility site was assessed for available property to support the respective treatment technology. Table 24 provides a brief summary of the property findings. An "*" indicates that property may be sufficient but may not be favorable for modifications because of outlying conditions.

Table 24 Available Property

Site Location	Treatment Technique	Acquire Nearby Property	Sufficient Facility Property	Comments
BUD-5 WTP	Nitrate-FBIX and PFAS-FBIX		X	Sufficient property available for proposed treatment.
BUD-7 WTP	Nitrate-FBIX and PFAS-FBIX	*	X	Sufficient property is available but in a residential area. Trees would need to be removed, which may not be favorable. Need detailed site visit.
RSWTP	SIX		X	Sufficient property is available on the north side of the treatment plant but would require tree removal and major raw water pipeline modifications. Assumes the land will not be sold.

Permitting

The permitting summary for the Tampa Bay Water sites with proposed improvements is provided in Table 25.

Table 25 Permitting Summary for Tampa Bay Water Treatment Sites

Permitting Entity	Permit Description	Items/Activity Potentially Requiring Permit	BUD-5 & 7 WTPs	RSWTP
Location of Treatment Infrastructure, Water Treatment Plant or Stand Alone			Stand Alone	RSWTP
Available Sewer System Description			Hillsborough County Sewer	Hillsborough County Sewer
Potential Residual Disposal Method			Hauling/ Deep Injection Well	Hauling/Deep Injection Well
City of Tampa Planning, Development, and Construction Services	Construction Plan Review and Building Permit	Infrastructure at WTP and/ or route and connection to sanitary sewer	N/A	N/A
Florida Department of State Division of Historical Resources	Minimum Documentation for State and Local Reviews	Infrastructure at WTP and/ or route and connection to sanitary sewer	30 percent; 1 month	30 percent; 1 month
Florida Department of Environmental Protection	National Pollutant Discharge Elimination System (NPDES) for Construction Activity; Notice of Intent (NOI)	Infrastructure at WTP and/ or route and connection to sanitary sewer	48 hours before construction	48 hours before construction
	Environmental Resource Permit; Possible Modification	Infrastructure at WTP and/ or route and connection to sanitary sewer	60 percent; 6 months	60 percent; 6 months
	Underground Injection Control; Well Construction Permit and Operation Permit	Disposal Method-Deep Injection	N/A	60 percent; 6 months
Florida Department of Transportation	Utility Permit	Route/Connection to Sanitary Sewer	N/A	N/A
Florida Fish and Wildlife Commission	Listed Species Incidental take, Migratory Bird Nest Removal, Listed Species Bird Depredation, Bald Eagle Disturbance, and Special Purpose	Infrastructure at WTP and/ or route and connection to sanitary sewer	30 percent; 3 months	30 percent; 3 months
Hillsborough County Planning, Development, and Construction Services	Construction Plan Review and Wetland Impact and Mitigation Agreement	Infrastructure at WTP and/ or route and connection to sanitary sewer	90 percent; 6 months	90 percent; 6 months
Hillsborough County Environmental Protection Commission	Construction Plan Review and Wetland Impact and Mitigation Agreement	Infrastructure at WTP and/ or route and connection to sanitary sewer	60 percent; 6 months	60 percent; 6 months
Pasco County Planning, Development, and Construction Services	Construction Plan Review and Building Permit	Infrastructure at WTP and/ or route and connection to sanitary sewer	N/A	N/A
Pinellas County Planning, Development, and Construction Services	Construction Plan Review and Building Permit	Infrastructure at WTP and/ or route and connection to sanitary sewer	N/A	N/A
Private Landowners	Utility Easement	Part of Applicable County Building Review Submittal for Sanitary Sewer Connection Route where it cannot be constructed in the right-of-way (ROW)	60 percent; 6 months	N/A
Southwest Florida Water Management District	WUP or WUP Modification	Infrastructure at WTP; wells	30 percent; 6-24 months	30 percent; 6-24 months
Tampa Bay Water	Concurrence	-	Concurrence	Concurrence
Tampa Electric Company	ROW Joint Use Permit	Route and connection to sanitary sewer	30 percent; 2 months	30 percent; 2 months
United States Army Corp of Engineers	Section 404 Dredge and Fill Permit	Infrastructure at WTP and/or route and connection to sanitary sewer within wetland	30 percent; 18 months	30 percent; 18 months

IMPLEMENTATION PLAN

The following sections update and reprioritize the implementation phasing plan developed for the RWQS.

Overview of Recommended Treatment Process Improvements

The recommended treatment technologies for each site from the RWQS and updated in this RWQS Update are summarized in Table 26 along with the sustainable operating capacity and annual average production capacity for each treatment facility site.

The sustainable capacity and annual average production capacity values shown in Table 26 were used to develop the calculations and cost estimates for this study to match the original RWQS for consistency. However, appropriate capacity needs to be determined during the predesign and implementation of the projects presented in this memorandum.

Table 26 Recommended Project by Supply Source

Site	Abbreviation	Sustainable Capacity (mgd)(1)	Annual Average Production Capacity (mgd)	Proposed Technologies
Brandon Urban Dispersed 5 WF	BUD-5 WTP	4.5	3.0	Nitrate IX, PFAS IX
Brandon Urban Dispersed 7 WF	BUD-7 WTP	1.5	1.5	Nitrate IX, PFAS IX
Cosme-Odessa WF	CO	17.5	10.0	Ozone, GAC
Cross Bar Ranch WF	CB	38.5	10.0	FBIX, Greensand
Cypress Bridge WF	CY	17.5	8.0	FBIX
Cypress Creek WF	CC	30.0	10.0	FBIX
Eldridge Wilde WF	ELW	25.0	11.0	Ozone, GAC
Morris Bridge WF	MB	17.5	10.0	FBIX
Northwest Hillsborough WF	NWH	15.8	4.0	Ozone, GAC
Section 21 WF	21	18.5	4.0	FBIX
South Pasco WF	SP	23.5	8.0	FBIX
Southcentral WF	SC	35.0	20.0	GAC
Starkey WF	ST	8.0	5.0	Ozone, GAC
RSWTP	RSWTP	90.0	64.0	SIX (existing GAC)

Abbreviations: WF – water facility

General Note:
All design costs assume sustainable capacity.
Notes:
(1) Sustainable capacity is defined by Tampa Bay Water as the production capacity achievable at the site for greater than 5 days. Values in this table were provided by Tampa Bay Water.

As summarized in Table 26, there are a variety of treatment process improvements proposed at multiple Tampa Bay Water facilities. It is recommended that Tampa Bay Water consider a phased implementation approach for these improvements.

Implementation Plan

This implementation provides an update to the implementation plan developed in the RWQS with revisions made based on the findings of this PFAS Treatability Study. The implementation plan for the improvements proposed to meet the water quality goals is proposed in three general phases.

- Phase 1 would focus on the implementation of PFAS removal processes where required and of new TOC removal processes at sites with elevated TOC and with existing capital improvement project plans. Anticipated timeline: 1 to 6 years.
- Phase 2 is proposed to expand the treatment process improvements to additional sites and size the system to meet a TOC goal of 2 mg/L at all POCs at the sustainable capacity. Anticipated timeline: 7 to 12 years.
- Phase 3 would involve expansion of the treatment systems at sites identified to achieve a TOC goal of less than 2 mg/L at all POCs and/ or consider higher treatment capacities (for example maximum day capacities). Anticipated timeline: 13 to 15 years.

Phase 1

Phase 1 is proposed to include design, construction, startup, and process optimization for the initial water treatment improvements at select sites for years 1 through 6. Timing can be adjusted as needed for funding, availability of resources, and project requirements. The sites selected for Phase 1 improvements were prioritized due to the elevated PFAS, high raw water TOC concentrations, variety of technologies for implementation, capacity, and overall regional benefits. It is recommended that the performance, costs, and impacts to the Tampa Bay Water facilities, Regional Transmission System, and the Member Governments' distribution systems be observed during Phase 1 to inform the design and implementation planning details for Phases 2 and 3. The treated water PFAS goal is within regulatory compliance, and the treated water TOC goal at facilities included in Phase 1 is 2 mg/L at the sustainable capacity. The following activities are recommended for Phase 1 of the implementation plan.

Phase 1A

- **Regional Surface WTP**: Consider the benefits of a demonstration at the RSWTP to document the SIX process as pretreatment to existing plant treatment processes with GAC polishing at the end for PFAS removal, TOC removal, and additional overall facility capacity. Concurrently, PAC should be tested as a near-term solution. During this demonstration, the existing filter GAC can be tested along with the expected service life of adding GAC polishing at the end of the RSWTP with SIX. Consider brine disposal options including an onsite deep injection well and/ or partnering with the City of Tampa for a disposal pipeline. Conduct demonstration testing in preparation for SIX implementation. Continue to observe progress and performance of the City of Tampa's SIX process and other facility improvements currently under design and construction.

Phase 1B

- **BUD-5 WTP**: Design, construction, startup, and commissioning of fixed bed ion exchange for PFAS removal at sustainable capacity. Sufficient property is available for the new treatment process.
- **BUD-7 WTP**: Design, construction, startup, and commissioning of fixed bed ion exchange for PFAS removal at sustainable capacity. Sufficient property is available for new treatment process, though tree removal may be required near residential property.
- **Regional Surface WTP**: Implement SIX if demonstration evaluations and testing show favorable results at the RSWTP. This may include implementing a brine disposal option including an onsite deep injection well and/ or partnering with the City of Tampa for a disposal pipeline.

Phase 1C Improvements

- **Eldridge Wilde WF**: Design, construction, startup, and commissioning of ozone system and two-stage GAC system sized to provide a firm treatment capacity at the sustainable operating capacity value of 25 mgd and a TOC treatment goal of 2.0 mg/L. Construction sequencing is anticipated to require installation of the ozone system first, followed by demolition of the existing forced draft aeration (FDA) system, and then the installation of the GAC system in the location of the existing FDAs. The costs provided in this study assume a two-stage GAC system will be installed. However, this system can be operated as a single-stage GAC to determine if performance and operating costs are acceptable. If not, alternatives such as two-stage GAC or FBIX upstream of ozone could be tested and considered for future implementation phases. Sufficient property appears to be available at the existing site for the new treatment processes. However, some property or easements may need to be obtained from Pinellas County for siting and constructing the improvements. A lift station to the Pinellas County sewer system is already available onsite but would need to be re-permitted and potentially resized for the GAC backwash waste stream. Additional property not under control or ownership of Tampa Bay Water may be needed for future phases, and these details will be evaluated during Phase 1. It will be important to coordinate and reassess projects in relation to existing CIP projects.
- **South Pasco WF**: Design, construction, startup, and commissioning of FBIX system at sustainable capacity. The treatment process improvements are recommended to be combined with the existing planned CIP project that involves wellfield, yard piping, storage, and pumping improvements at this site. Sufficient property appears to be available to site the proposed new treatment processes. Onsite lift stations and deep injection wells are not currently available onsite for brine waste disposal. Alternatives for hauling the brine waste stream or the potential to connect to the nearby sewer system will need to be refined and permitted. These brine disposal methods may be temporary if Tampa Bay Water constructs a deep injection well in the future for waste stream disposal. Similar to Eldridge Wilde WF projects, it will be important to coordinate and reassess projects in relation to existing CIP projects for South Pasco WF.
- **Deep Injection Well Investigations (Potential site: Cypress Creek WTP)**: Consider long-term benefits of installing a deep injection well system for disposal of multiple FBIX brine waste streams compared to hauling waste to wastewater treatment facilities or installing sewer connection in the northwest portion of the system. Begin hydrogeologic investigation and permitting.

Phase 2

Phase 2 includes design, construction, startup, and process optimization from years 7 through 12. Timing can be adjusted as needed for funding and project requirements. The remaining pertinent sites will be improved during this phase to achieve the treated water quality goal of 2 mg/L TOC at all the POCs. It is recommended that the performance, costs, and impacts to the Regional System Member Governments' systems be observed during Phase 2 to inform design criteria for Phase 3. The following activities are recommended for Phase 2.

Phase 2A

- **Cypress Creek WF**: Design, construction, startup, and commissioning of FBIX system sized to provide a firm treatment capacity at the sustainable capacity of 30 mgd. Sufficient property appears to be available for the new treatment process, though fencing and access roads would require modification. Onsite lift stations and deep injection wells are not currently available onsite for brine waste disposal. Alternatives for hauling locations or nearby suitable sewer will need to be refined and permitted until Tampa Bay Water installs a deep injection well (see discussion above in Phase 1A: Deep Well Investigations).
- **Cross Bar Ranch WF**: Design, construction, startup, and commissioning of FBIX and Greensand systems sized to provide a firm treatment capacity at the sustainable operating capacity of 38.5 mgd. Sufficient property appears to be available for the new treatment processes at the Cypress Creek WTP, though some tree removal would likely be required. Onsite lift stations and deep injection wells are not currently available onsite for brine and backwash waste disposal. Alternatives for hauling locations or nearby suitable sewer will need to be refined and permitted until Tampa Bay Water installs a deep injection well (see discussion above in Phase 1A: Deep Well Investigations). Phase 1 includes further review of the long-term plan to dispose of backwash effluent via deep injection.

Phase 2B

- **Cosme Odessa WF**: Design, construction, startup, and commissioning of ozone and GAC systems at sustainable capacity. The GAC system design (single-stage, two-stage, or alternate technology) should consider performance and operating data from Eldridge Wilde WF. Nearby property will need to be acquired for new treatment processes. Onsite lift stations are not currently available for GAC backwash waste. Refine and permit connecting to nearby sewer or hauling to a suitable location.
- **Starkey WF**: Design, construction, startup, and commissioning of ozone and GAC systems at sustainable capacity. The GAC system design (single-stage, two-stage, or alternate technology) should consider performance and operating data from Eldridge Wilde WF. Nearby property will need to be acquired for new treatment processes. Onsite lift stations are not currently available for GAC backwash waste. Refine and permit connecting to nearby sewer or hauling to a suitable location.
- **Section 21 WF**: Design, construction, startup, and commissioning of FBIX system at sustainable capacity. Sufficient property is available for the new treatment process, though tree removal near recreational area may be required. An onsite lift station is currently available onsite for facilitating brine waste disposal to sewer. However, if sewer disposal of the brine waste is not permittable, consider hauling to Tampa Bay Water's deep injection well (if available) or other suitable location.

- **Carrollwood/ Northwest Hillsborough WF**: Design, construction, startup, and commissioning of ozone and GAC systems at sustainable capacity. The GAC system design (single-stage, two-stage, or alternate technology) should consider performance and operating data from Eldridge Wilde WF. Nearby property will need to be acquired for new treatment processes. An onsite lift station is currently available for GAC backwash waste but would need to be re-permitted and potentially resized for GAC backwash waste.
- **Morris Bridge WF**: Design, construction, startup, and commissioning of FBIX system at sustainable capacity. Sufficient property is available for the new treatment process, though designated wetland area may require mitigation. Onsite lift stations and deep injection wells are not currently available onsite for brine waste disposal. Consider hauling to Tampa Bay Water's deep injection well (if available) or other suitable location.

Phase 2C

- **BUD-5 WTP**: Design, construction, startup, and commissioning of FBIX for nitrate removal at sustainable capacity. Sufficient property is available for the new treatment process. Refine and permit hauling waste stream to a suitable location.
- **BUD-7 WTP**: Design, construction, startup, and commissioning of FBIX for nitrate removal at sustainable capacity. Sufficient property is available for the new treatment process, though tree removal may be required near residential property. Refine and permit hauling waste stream to a suitable location.

Phase 3

Phase 3 includes design, construction, and startup from years 13 through 15. Timing can be adjusted as needed for funding and project requirements. If determined that the TOC goal of 2 mg/L is insufficient to meet water quality goals at all POCs, additional TOC removal can be implemented. The following activities are recommended for Phase 3.

- **South-Central Hillsborough WF**: Design, construction, startup, and commissioning of a GAC system at sustainable capacity downstream of the existing ozone system. The GAC system design (single-stage, two-stage, or alternate technology) should consider performance and operating data from other facilities. Sufficient property is available, though tree removal and access road modifications may be required. An onsite lift station is currently available for GAC backwash waste.
- **Cypress Bridge WF**: Design, construction, startup, and commissioning of FBIX system at sustainable capacity. Sufficient property is available for new treatment processes, though tree removal may be required. Onsite lift stations and deep injection wells are not currently available for brine waste disposal. Consider hauling to Tampa Bay Water's deep injection well (if available) or other suitable location or refine and permit connecting to a nearby sewer.
- All remaining sites: Expand if needed to meet lower TOC goals.

Implementation Schedule for Recommended Improvements

The recommended implementation schedule is summarized as follows.

- Phase 1 Design and Construction: Year 1 through 4.

- Phase 1 Operation: Year 5 through 6.
- Phase 2 Design and Construction: Year 7 through 10.
- Phase 2 Operation: Year 11 through 12.
- Phase 3 Design and Construction: Year 13 through 15.

Impact on PFAS Compliance Schedule

As previously mentioned, the NPDWR compliance date for PFAS is April 26, 2029. On that date, a four-quarter RAA will be calculated using the data collected from the previous four quarters (April 2028 through April 2029). In order to meet compliance, treatment must be in place in 2028. Although projects impacting PFAS compliance were prioritized first, the proposed implementation schedule will likely not meet the deadline, in particular at the RSWTP. Demonstration testing of SIX at the RSWTP is recommended to be conducted as soon as possible to collect design criteria. During demonstration testing, it is also recommended that powdered activated carbon (PAC) be tested. A PAC dosing system and PAC storage silo can be quickly designed and installed (estimated at less than 1 year) to start removing PFAS at the RSWTP prior to long-term solutions being implemented, i.e., SIX. PAC dosing can be easily turned off after long-term solutions are in place and used, as needed, in the future. Demonstration testing of SIX will also allow for optimization of existing filters configuration for PFAS without negatively impacting plant hydraulics as a near-term option prior to long-term solutions being in place.

Cost Estimates

The following tables summarize the capital costs for the projects outlined in each Phase. The assumptions previously described apply. Cost estimates for improvements identified in the RWQS have been updated to 2024 dollars using the Engineering News-Record Construction Cost Index (ENR CCI).

Table 27 Phase 1 Capital Costs

Project Description	Capital Cost ($M)
Phase 1A	
RSWTP SIX Demonstration	$2.3
Subtotal	**$2.3**
Phase 1B	
Brandon Urban 5 PFAS-FBIX	$5.1
Brandon Urban 7 PFAS-FBIX	$1.9
RSWTP SIX	$128.6
Subtotal	**$135.6**
Phase 1C	
Eldridge Wilde Ozone-GAC	$77.6
South Pasco FBIX	$13.7
Subtotal	**$91.3**
TOTAL	**$229.23**

Table 28 Phase 2 Capital Costs

Project Description	Capital Cost ($M)
Phase 2A	
Cypress Creek FBIX	$15.7
Cross Bar Ranch FBIX and Greensand	$39.0
Subtotal	**$54.7**
Phase 2B	
Cosme Odessa Ozone-GAC	$58.0
Starkey Ozone-GAC	$41.1
Section 21 FBIX	$13.4
Northwest Hillsborough Ozone-GAC	$46.3
Morris Bridge FBIX	$13.1
Subtotal	**$171.9**
Phase 2C	
Brandon Urban 5 Nitrate-FBIX	$8.3
Brandon Urban 7 Nitrate-FBIX	$4.6
Subtotal	**$12.9**
TOTAL	**$239.6**

Table 29 presents the capital costs for Phase 3. It is assumed that the sites identified in Phases 1 and 2 have been upgraded to provide sufficient treatment to meet the TOC goal of 2 mg/L at all POCs. The Phase 3 costs are presented as three options depending on if the selected alternative is to implement treatment for a TOC goal of 1.5, 1.25, or 1.0 mg/L at all POCs.

Table 29 Phase 3 Capital Costs

Project Description	Capital Cost ($M)
Option A – 1.5 mg/L TOC Target	
Cypress Bridge FBIX	$14.0
South Pasco FBIX	$2.9
Cypress Creek FBIX	$4.4
Cross Bar Ranch FBIX	$12.7
Section 21 FBIX	$2.4
Northwest Hillsborough Ozone-GAC	$2.7
Morris Bridge FBIX	$0.8
TOTAL	**$39.9**
Option B – 1.25 mg/L TOC Target	
South-Central Hillsborough GAC	$38.5
Cypress Bridge FBIX	$16.7
Eldridge Wilde Ozone-GAC	$0.2
South Pasco FBIX	$5.3
Cypress Creek FBIX	$4.4
Cross Bar Ranch FBIX	$13.5
Cosme Odessa Ozone-GAC	$0.2
Section 21 FBIX	$3.2
Northwest Hillsborough Ozone-GAC	$6.1
Morris Bridge FBIX	$3.7
TOTAL	**$91.8**
Option C – 1 mg/L TOC Target	
South-Central Hillsborough GAC	$47.0
Cypress Bridge FBIX	$19.2
Eldridge Wilde Ozone-GAC	$0.2
South Pasco FBIX	$11.9
Cypress Creek FBIX	$9.7
Cross Bar Ranch FBIX	$20.5
Cosme Odessa Ozone-GAC	$0.2
Section 21 FBIX	$6.4
Northwest Hillsborough Ozone-GAC	$7.8
Morris Bridge FBIX	$3.7
TOTAL	**$126.8**

APPENDIX A

UCMR5 SAMPLING RESULTS

LIMS Order Sorted	Analyte[1]	CASRN #	Analytical Method	EPA PQL	TBW PQL	TBW MDL	301REGHILLS Collected: 7/17/2023					SCHREG Collected: 7/17/2023				
							POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Hillsborough Central WTP [TBW Lab]	EPTDS$_2$ POE Hillsborough Central WTP [Eurofins]	EPTDS$_2$ POE Hillsborough Central WTP Eurofins MDLs	EPTDS$_2$ POE Hillsborough Central WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Hillsborough Lithia WTP [TBW Lab]	EPTDS$_2$ POE Hillsborough Lithia WTP [Eurofins]	EPTDS$_2$ POE Hillsborough Lithia WTP Eurofins MDLs	EPTDS$_2$ POE Hillsborough Lithia WTP Eurofins PQLs
1	11CL-PF3-OUdS	763051-92-9	EPA 533	5	2	0.41	0.41 U	0.41 U	5 U	5	- - -	0.41 U	0.41 U	5 U	5	- - -
2	9CL-PF3-ONS	756426-58-1	EPA 533	2	2	0.42	0.42 U	0.42 U	2 U	2	- - -	0.42 U	0.42 U	2 U	2	- - -
3	ADONA	919005-14-4	EPA 533	3	2	0.63	0.63 U	0.63 U	3 U	3	- - -	0.63 U	0.63 U	3 U	3	- - -
4	**HFPO-DA**	13252-13-6	EPA 533	5	2	0.67	0.67 U	0.67 U	5 U	5	- - -	0.67 U	0.67 U	5 U	5	- - -
5	NFDHA	151772-58-6	EPA 533	20	2	0.55	0.55 U	0.55 U	20 U	20	- - -	0.55 U	0.55 U	20 U	20	- - -
6	PFBA	375-22-4	EPA 533	5	2	0.68	**5.8**	**7.0**	**7.2**	5	- - -	**4.8**	**2.4**	5 U	5	- - -
7	PFBS	375-73-5	EPA 533	3	2	0.59	**5.0**	**5.1**	**5.0**	3	- - -	**5.0**	**2.1**	3 U	3	- - -
8	8:2FTS	39108-34-4	EPA 533	5	2	0.50	0.50 U	0.50 U	5 U	5	- - -	0.50 U	0.50 U	5 U	5	- - -
9	PFDA	335-76-2	EPA 533	3	2	0.49	**0.60 I**	0.49 U	3 U	3	- - -	0.49 U	0.49 U	3 U	3	- - -
10	PFDoA	307-55-1	EPA 533	3	2	0.35	**0.60 I**	0.35 U	3 U	3	- - -	0.35 U	0.35 U	3 U	3	- - -
11	PFEESA	113507-82-7	EPA 533	3	2	0.41	0.41 U	0.41 U	3 U	3	- - -	0.41 U	0.41 U	3 U	3	- - -
12	PFHpS	375-92-8	EPA 533	3	2	0.35	0.35 U	0.35 U	3 U	3	- - -	0.35 U	0.35 U	3 U	3	- - -
13	PFHpA	375-85-9	EPA 533	3	2	0.60	**4.5**	**4.2**	**4.8**	3	- - -	**3.2**	**1.40 I**	3 U	3	- - -
14	4:2FTS	757124-72-4	EPA 533	3	2	0.61	0.61 U	0.61 U	3 U	3	- - -	0.61 U	0.61 U	3 U	3	- - -
15	**PFHxS**	355-46-4	EPA 533	3	1.6	0.50	**2.4**	**2.2**	3 U	3	- - -	**2.2**	**0.80 I**	3 U	3	- - -
16	PFHxA	307-24-4	EPA 533	3	2	0.58	**9.50**	**9.70**	**10.8**	**3**	- - -	**7.10**	**3.30**	**3.20**	**3**	- - -
17	PFMPA	377-73-1	EPA 533	4	2	0.61	0.61 U	0.61 U	4 U	4	- - -	0.61 U	0.61 U	4 U	4	- - -
18	PFMBA	863090-89-5	EPA 533	3	2	0.54	0.54 U	0.54 U	3 U	3	- - -	0.54 U	0.54 U	3 U	3	- - -
19	**PFNA**	375-95-1	EPA 533	4	2	0.60	**0.80 I**	0.60 U	4 U	4	- - -	0.60 U	0.60 U	4 U	4	- - -
20	6:2FTS	27619-97-2	EPA 533	5	2	0.51	0.51 U	0.60 I	5 U	5	- - -	0.51 U	0.51 U	5 U	5	- - -
21	**PFOS**	1763-23-1	EPA 533	4	1.6	0.58	**4.3**	**4.9**	**5.4**	4	- - -	**4.1**	**2.40**	4 U	4	- - -
22	**PFOA**	335-67-1	EPA 533	4	2	0.94	**2.7**	**2.5**	4 U	4	- - -	**2.1**	**1.0 I**	4 U	4	- - -
23	PFPeA	2706-90-3	EPA 533	3	2	0.62	**12.7**	**13.0**	**13.7**	3	- - -	**9.50**	**4.60**	**4.30**	3	- - -
24	PFPeS	2706-91-4	EPA 533	4	2	0.64	0.64 U	0.64 U	4 U	4	- - -	0.64 U	0.64 U	4 U	4	- - -
25	PFUnA	2058-94-8	EPA 533	2	2	0.32	**0.50 I**	0.32 U	2 U	2	- - -	0.32 U	0.32 U	2 U	2	- - -
26	NEtFOSAA	2991-50-6	EPA 537.1	5	3	0.74	0.74 U	0.74 U	4.7 U	4.7	- - -	0.74 U	0.74 U	4.7 U	4.7	- - -
26	NMeFOSAA	2355-31-9	EPA 537.1	6	3	0.74	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U	0.74 U	5.6 U	5.6	- - -
28	PFTA	376-06-7	EPA 537.1	8	3	0.78	0.78 U	0.78 U	7.6 U	7.6	- - -	0.78 U	0.78 U	7.5 U	7.5	- - -
29	PFTrDA	72629-94-8	EPA 537.1	7	3	0.75	0.75 U	0.75 U	6.6 U	6.6	- - -	0.75 U	0.75 U	6.6 U	6.6	- - -
30	LITHIUM	7439-93-2	EPA 200.7	9	9	5	**10**	no sample	9 U	9	- - -	**10**	no sample	no sample	9	- - -
					Hazard Index [3] -		0.0	0.0				0.0	0.0			

[1] All values are expressed in ppt (or ng/L), except LITHIUM in ppb (or ug/L).

[2] Suspected field or laboratory background contamination.

[3] Used "0.0" if sample result is less than the EPA PQL per PFAS NPDWR

CASRN = Chemical Abstracts Service Registry Number

MRL = Minimum Reporting Level = quantitation limit achieved with 95% confidence by 75% of labs nationwide.

MDL = Method Detection Limit = minimum measured and reported with 99 % confidence that analyte is greater than zero.

POC = Tampa Bay Water point of connection or regional water delivery location.

PQL = Practical Quantitation Level Note: EPA PQLs (per PFAS NPDWR) = EPA's MRLs (per PFAS UCMR5)

EPTDS$_1$ = Member utility entry point to their distribution system - duplicate sample analyzed by Tampa Bay Water.

EPTDS$_2$ = Member utility entry point to their distribution system - sample analyzed by member utility's UCMR5 Certified contract laboratory

I = Results between MDL and MRL or EPA PQL per PFAS NPDWR

U = Indicates that the compound was analyzed for but not detected

PFAS NPDWR = PFAS National Primary Drinking Water Regulation (April 2024)

LITHIAINF Collected: 7/17/2023			LPREG Collected: 7/17/2023					LPPSINF Collected: 7/17/2023			NWHREG Collected: 7/17/2023				
POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [see SCHREG]	$EPTDS_2$ POE Hillsborough Lithia WTP [see SCHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lake Park WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [see LPREG]	$EPTDS_2$ POE Hillsborough Lake Park WTP [see LPREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins PQLs
0.41 U	- - -	- - -	0.41 U	0.41 U	5 U	5	- - -	0.41 U	- - -	- - -	0.41 U	0.41 U	5 U	5	- - -
0.42 U	- - -	- - -	0.42 U	0.42 U	2 U	2	- - -	0.42 U	- - -	- - -	0.42 U	0.42 U	2 U	2	- - -
0.63 U	- - -	- - -	0.63 U	0.63 U	3 U	3	- - -	0.63 U	- - -	- - -	0.63 U	0.63 U	3 U	3	- - -
0.67 U	- - -	- - -	0.67 U	0.67 U	5 U	5	- - -	0.67 U	- - -	- - -	0.67 U	0.67 U	5 U	5	- - -
0.55 U	- - -	- - -	0.55 U	0.55 U	20 U	20	- - -	0.55 U	- - -	- - -	0.55 U	0.55 U	20 U	20	- - -
0.68 U	- - -	- - -	**2.40**	0.68 U	5 U	5	- - -	0.68 U	- - -	- - -	0.68 U	**1.90 I**	5 U	5	- - -
0.59 U	- - -	- - -	0.59 U	0.59 U	3 U	3	- - -	0.59 U	- - -	- - -	0.59 U	**1.30 I**	3 U	3	- - -
0.50 U	- - -	- - -	0.50 U	0.50 U	5 U	5	- - -	0.50 U	- - -	- - -	0.50 U	0.50 U	5 U	5	- - -
0.49 U	- - -	- - -	0.49 U	0.49 U	3 U	3	- - -	0.49 U	- - -	- - -	0.49 U	0.49 U	3 U	3	- - -
0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -	0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -
0.41 U	- - -	- - -	0.41 U	0.41 U	3 U	3	- - -	0.41 U	- - -	- - -	0.41 U	0.41 U	3 U	3	- - -
0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -	0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -
0.60 U	- - -	- - -	0.60 U	0.60 U	3 U	3	- - -	0.60 U	- - -	- - -	0.60 U	**1.10 I**	3 U	3	- - -
0.61 U	- - -	- - -	0.61 U	0.61 U	3 U	3	- - -	0.61 U	- - -	- - -	0.61 U	0.61 U	3 U	3	- - -
0.5 U	- - -	- - -	0.50 U	0.50 U	3 U	3	- - -	0.50 U	- - -	- - -	0.50 U	**0.60 I**	3 U	3	- - -
0.58 U	- - -	- - -	0.58 U	0.58 U	3 U	3	- - -	0.58 U	- - -	- - -	0.58 U	**2.40**	3 U	3	- - -
0.61 U	- - -	- - -	0.61 U	0.61 U	4 U	4	- - -	0.61 U	- - -	- - -	0.61 U	0.61 U	4 U	4	- - -
0.54 U	- - -	- - -	0.54 U	0.54 U	3 U	3	- - -	0.54 U	- - -	- - -	0.54 U	0.54 U	3 U	3	- - -
0.60 U	- - -	- - -	0.60 U	0.60 U	4 U	4	- - -	0.60 U	- - -	- - -	0.60 U	0.60 U	4 U	4	- - -
0.51 U	- - -	- - -	0.51 U	0.51 U	5 U	5	- - -	0.51 U	- - -	- - -	0.51 U	0.51 U	5 U	5	- - -
0.60 U	- - -	- - -	0.60 U	0.60 U	4 U	4	- - -	0.60 U	- - -	- - -	0.60 U	0.60 U	4 U	4	- - -
0.51 U	- - -	- - -	0.51 U	0.51 U	5 U	5	- - -	0.51 U	- - -	- - -	0.51 U	0.51 U	5 U	5	- - -
0.58 U	- - -	- - -	0.58 U	0.58 U	4 U	4	- - -	0.58 U	- - -	- - -	**1.30 I**	**1.60 I**	4 U	4	- - -
0.94 U	- - -	- - -	0.94 U	0.94 U	4 U	4	- - -	0.94 U	- - -	- - -	0.94 U	0.94 U	4 U	4	- - -
0.62 U	- - -	- - -	0.62 U	0.62 U	3 U	3	- - -	0.62 U	- - -	- - -	0.62 U	0.62 U	**3.60**	**3**	- - -
0.64 U	- - -	- - -	0.64 U	0.64 U	4 U	4	- - -	0.64 U	- - -	- - -	0.64 U	0.64 U	4 U	4	- - -
0.32 U	- - -	- - -	0.32 U	0.32 U	2 U	2	- - -	0.32 U	- - -	- - -	0.32 U	0.32 U	2 U	2	- - -
0.74 U	- - -	- - -	0.74 U	0.74 U	4.7 U	4.7	- - -	0.74 U	- - -	- - -	0.74 U	0.74 U	5 U	5	- - -
0.74 U	- - -	- - -	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U	- - -	- - -	0.74 U	0.74 U	6 U	6	- - -
0.78 U	- - -	- - -	0.78 U	0.78 U	7.6 U	7.6	- - -	0.78 U	- - -	- - -	0.78 U	0.78 U	8 U	8	- - -
0.75 U	- - -	- - -	0.75 U	0.75 U	6.6 U	6.6	- - -	0.75 U	- - -	- - -	0.75 U	0.75 U	7 U	7	- - -
5 U	- - -	- - -	**6 I**	no sample	9 U	9	- - -	**7 I**	- - -	- - -	**8 I**	no sample	9 U	9	- - -
0.0			0.0	0.0				0.0			0.0	0.0			

NWHINF Collected: 7/17/2023			LBREGPASCO Collected: 7/18/2023					US41TIE Collected: 7/18/2023				
POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	EPTDS$_2$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Lake Bridge to Pasco County [TBW Lab]	EPTDS$_2$ POE Lake Bridge to Pasco County [Eurofins]	EPTDS$_2$ POE Lake Bridge to Pasco County Eurofins MDLs	EPTDS$_2$ POE Lake Bridge to Pasco County Eurofins PQLs	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE US 41 to Pasco County [TBW Lab]	EPTDS$_2$ POE US 41 to Pasco County [Eurofins]	EPTDS2 POE US 41 to Pasco County [Eurofins]	EPTDS$_2$ POE US 41 to Pasco County Eurofins PQLs
0.41 U	- - -	- - -	- - -	0.41 U	5 U	5	- - -	- - -	0.41 U	5 U	5	- - -
0.42 U	- - -	- - -	- - -	0.42 U	2 U	2	- - -	- - -	0.42 U	2 U	2	- - -
0.63 U	- - -	- - -	- - -	0.63 U	3 U	3	- - -	- - -	0.63 U	3 U	3	- - -
0.67 U	- - -	- - -	- - -	0.67 U	5 U	5	- - -	- - -	0.67 U	5 U	5	- - -
0.55 U	- - -	- - -	- - -	0.55 U	20 U	20	- - -	- - -	0.55 U	20 U	20	- - -
2.50	- - -	- - -	- - -	**4.60**	**5.30**	5	- - -	- - -	**2.40**	5 U	**5**	- - -
1.80 I	- - -	- - -	- - -	**3.7**	**4**	3	- - -	- - -	**1.60 I**	3 U	**3**	- - -
0.50 U	- - -	- - -	- - -	0.50 U	5 U	5	- - -	- - -	0.50 U	5 U	5	- - -
0.49 U	- - -	- - -	- - -	0.49 U	3 U	3	- - -	- - -	0.49 U	3 U	3	- - -
0.35 U	- - -	- - -	- - -	0.35 U	3 U	3	- - -	- - -	0.35 U	3 U	3	- - -
0.41 U	- - -	- - -	- - -	0.41 U	3 U	3	- - -	- - -	0.41 U	3 U	3	- - -
0.35 U	- - -	- - -	- - -	0.35 U	3 U	3	- - -	- - -	0.35 U	3 U	3	- - -
1.50 I	- - -	- - -	- - -	**3.00**	**3.80**	3	- - -	- - -	**1.40 I**	3 U	**3**	- - -
0.61 U	- - -	- - -	- - -	0.61 U	3 U	3	- - -	- - -	0.61 U	3 U	3	- - -
0.70 I	- - -	- - -	- - -	**1.90 I**	3 U	3	- - -	- - -	**0.80 I**	3 U	3	- - -
3.50	- - -	- - -	- - -	**6.60**	**8.10**	3	- - -	- - -	**2.90**	**3.60**	**3**	- - -
0.61 U	- - -	- - -	- - -	0.61 U	4 U	4	- - -	- - -	0.61 U	4 U	4	- - -
0.54 U	- - -	- - -	- - -	0.54 U	3 U	3	- - -	- - -	0.54 U	3 U	3	- - -
0.60 U	- - -	- - -	- - -	0.60 U	4 U	4	- - -	- - -	0.60 U	4 U	4	- - -
0.51 U	- - -	- - -	- - -	0.51 U	5 U	5	- - -	- - -	0.51 U	5 U	5	- - -
1.40 I	- - -	- - -	- - -	**2.90**	**4.40**	4	- - -	- - -	**1.40 I**	4 U	**4**	- - -
0.94 U	- - -	- - -	- - -	**2.00**	4 U	4	- - -	- - -	0.94 U	4 U	4	- - -
4.30	- - -	- - -	- - -	**9.20**	**10.40**	3	- - -	- - -	**3.90**	**4.70**	**3**	- - -
0.64 U	- - -	- - -	- - -	0.64 U	4 U	4	- - -	- - -	0.64 U	4 U	4	- - -
0.32 U	- - -	- - -	- - -	0.32 U	2 U	2	- - -	- - -	0.32 U	2 U	2	- - -
0.74 U	- - -	- - -	- - -	0.74 U	5 U	5	- - -	- - -	0.74 U	5 U	5	- - -
0.74 U	- - -	- - -	- - -	0.74 U	6 U	6	- - -	- - -	0.74 U	6 U	6	- - -
0.78 U	- - -	- - -	- - -	0.78 U	8 U	8	- - -	- - -	0.78 U	8 U	8	- - -
0.75 U	- - -	- - -	- - -	0.75 U	7 U	7	- - -	- - -	0.75 U	7 U	7	- - -
7 I	- - -	- - -	- - -	**6 I**	9 U	9	- - -	- - -	**8 I**	9 U	9	- - -
0.0				0.0					0.0			

ODESSA Collected: 7/18/2023					PC1REG Collected: 7/18/2023				
POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Pasco County Southwest WTP [TBW Lab]	EPTDS$_2$ POE Pasco County Southwest WTP [Eurofins]	EPTDS$_2$ POE Pasco County Southwest WTP Eurofins MDLs	EPTDS$_2$ POE Pasco County Southwest WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Pasco County Little Road WTP [TBW Lab]	EPTDS$_2$ POE Pasco County Little Road WTP [Eurofins]	EPTDS$_2$ POE Pasco County Little Road WTP Eurofins MDLs	EPTDS$_2$ POE Pasco County Little Road WTP Eurofins PQLs
0.41 U	0.41 U	5 U	5	- - -	0.41 U	0.41 U	5 U	5	- - -
0.42 U	0.42 U	2 U	2	- - -	0.42 U	0.42 U	2 U	2	- - -
0.63 U	0.63 U	3 U	3	- - -	0.63 U	0.63 U	3 U	3	- - -
0.67 U	0.67 U	5 U	5	- - -	0.67 U	0.67 U	5 U	5	- - -
0.55 U	0.55 U	20 U	20	- - -	0.55 U	0.55 U	20 U	20	- - -
2.10	**2.60**	5 U	5	- - -	**2.00**	**2.10**	5 U	5	- - -
1.40 I	**1.40 I**	3 U	3	- - -	**1.40 I**	**1.30 I**	3 U	3	- - -
0.50 U	0.50 U	5 U	5	- - -	0.50 U	0.50 U	5 U	5	- - -
0.49 U	0.49 U	3 U	3	- - -	0.49 U	0.49 U	3 U	3	- - -
0.35 U	0.35 U	3 U	3	- - -	0.35 U	0.35 U	3 U	3	- - -
0.41 U	0.41 U	3 U	3	- - -	0.41 U	0.41 U	3 U	3	- - -
0.35 U	0.35 U	3 U	3	- - -	0.35 U	0.35 U	3 U	3	- - -
1.20 I	**1.40 I**	3 U	3	- - -	**1.0 I**	**1.10 I**	3 U	3	- - -
0.61 U	0.61 U	3 U	3	- - -	0.61 U	0.61 U	3 U	3	- - -
0.80 I	**0.90 I**	3 U	3	- - -	**0.60 I**	**0.60 I**	3 U	3	- - -
2.50	**3.00**	**3.70**	**3**	- - -	**2.40**	**2.40**	**3.00**	**3**	- - -
0.61 U	0.61 U	4 U	4	- - -	0.61 U	0.61 U	4 U	4	- - -
0.54 U	0.54 U	3 U	3	- - -	0.54 U	0.54 U	3 U	3	- - -
0.60 U	0.60 U	4 U	4	- - -	0.60 U	0.60 U	4 U	4	- - -
0.51 U	0.51 U	5 U	5	- - -	0.51 U	0.51 U	5 U	5	- - -
1.40 I	**1.70 I**	4 U	4	- - -	**1.20 I**	**1.0 I**	4 U	4	- - -
1.20 I	**1.50 I**	4 U	4	- - -	0.94 U	0.94 U	4 U	4	- - -
3.50	**4.20**	**4.80**	**3**	- - -	**3.40**	**3.50**	**3.80**	**3**	- - -
0.64 U	0.64 U	4 U	4	- - -	0.64 U	0.64 U	4 U	4	- - -
0.32 U	0.32 U	2 U	2	- - -	0.32 U	0.32 U	2 U	2	- - -
0.74 U	0.74 U	4.7 U	4.7	- - -	0.74 U	0.74 U	4.7	4.7	- - -
0.74 U	0.74 U	5.6 U	5.6	- - -	0.74 U	0.74 U	5.6 U	5.6	- - -
0.78 U	0.78 U	7.5 U	7.5	- - -	0.78 U	0.78 U	7.5 U	7.5	- - -
0.75 U	0.75 U	6.6 U	6.6	- - -	0.75 U	0.75 U	6.5 U	6.5	- - -
9 I	no sample	9 U	9	- - -	**8 I**	no sample	9 U	9	- - -
0.0	0.0				0.0	0.0			

ENDOF64 Collected: 7/19/2023					EWH2SEFF Collected: 7/19/2023			MAYTMINF Collected: 7/18/2023 and Recollected: 8/22/2023*					
POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Pinellas County Keller WTP [TBW Lab]	EPTDS$_2$ POE Pinellas County Keller WTP [AEL]	EPTDS$_2$ POE Pinellas County Keller WTP AEL MDLs	EPTDS$_2$ POE Pinellas County Keller WTP AEL PQLs	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE Pinellas County Keller WTP [see ENDOF64]	EPTDS$_2$ POE Pinellas County Keller WTP [see ENDOF64]	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE New Port Richey Maytum WTP [TBW Lab]	EPTDS$_2$ POE* New Port Richey Maytum WTP [Eurofins]	EPTDS$_2$ POE* New Port Richey Maytum WTP Eurofins MDLs	EPTDS$_2$ POE* New Port Richey Maytum WTP Eurofins PQLs	EPTDS$_1$ POE* New Port Richey Maytum WTP [TBW Lab]
0.41 U	0.41 U	4.9 U	4.9	4.9	0.41 U	- - -	- - -	0.41 U	0.41 U	5 U	5	- - -	0.41 U
0.42 U	0.42 U	2 U	2	2	0.42 U	- - -	- - -	0.42 U	0.42 U	2 U	2	- - -	0.42 U
0.63 U	0.63 U	2.9 U	2.9	2.9	0.63 U	- - -	- - -	0.63 U	0.63 U	3 U	3	- - -	0.63 U
0.67 U	0.67 U	4.9 U	4.9	4.9	0.67 U	- - -	- - -	0.67 U	0.67 U	5 U	5	- - -	0.67 U
0.55 U	0.55 U	4.9 U	4.9	4.9	0.55 U	- - -	- - -	0.55 U	0.55 U	20 U	20	- - -	0.55 U
2.30	**1.90 I**	4.9 U	4.9	4.9	0.68 U	- - -	- - -	0.68 U	**1.40 I**	5 U	5	- - -	**1.40 I**
1.70 I	**1.30 I**	2.9 U	2.9	2.9	0.59 U	- - -	- - -	0.59 U	0.59 U	3 U	3	- - -	0.59
0.50 U	0.50 U	4.9 U	4.9	4.9	0.50 U	- - -	- - -	0.50 U	0.50 U	5 U	5	- - -	0.50 U
0.49 U	0.49 U	2.9 U	2.9	2.9	0.49 U	- - -	- - -	0.49 U	0.49 U	3 U	3	- - -	0.49 U
0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -	0.35 U
0.41 U	0.41 U	2.9 U	2.9	2.9	0.41 U	- - -	- - -	0.41 U	0.41 U	3 U	3	- - -	0.41 U
0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	- - -	- - -	0.35 U	0.35 U	3 U	3	- - -	0.35 U
1.30 I	**1.0 I**	2.9 U	2.9	2.9	0.60 U	- - -	- - -	0.60 U	0.60 U	3 U	3	- - -	0.60 U
0.61 U	0.61 U	2.9 U	2.9	2.9	0.61 U	- - -	- - -	0.61 U	0.61 U	3 U	3	- - -	0.61 U
0.50 U	0.50 U	2.9 U	2.9	2.9	0.50 U	- - -	- - -	0.50 U	0.50 U	3 U	3	- - -	0.50 U
3.10	**2.20**	2.9 U	2.9	2.9	**0.80 I**	- - -	- - -	0.58 U	0.58 U	3 U	3	- - -	0.58 U
0.61 U	0.61 U	3.9 U	3.9	3.9	0.61 U	- - -	- - -	0.61 U	0.61 U	4 U	4	- - -	0.61 U
0.54 U	0.54 U	2.9 U	2.9	2.9	0.54 U	- - -	- - -	0.54 U	0.54 U	3 U	3	- - -	0.54 U
0.60 U	0.60 U	3.9 U	3.9	3.9	0.60 U	- - -	- - -	0.60 U	0.60 U	4 U	4	- - -	0.60 U
0.51 U	0.51 U	4.9 U	4.9	4.9	0.51 U	- - -	- - -	0.51 U	0.51 U	5 U	5	- - -	0.51 U
0.80 I	0.58 U	3.9 U	3.9	3.9	0.58 U	- - -	- - -	0.58 U	0.58 U	4 U	4	- - -	0.58 U
1.30 I	**1.30 I**	3.9 U	3.9	3.9	**1.50 I**	- - -	- - -	0.94 U	0.94 U	4 U	4	- - -	0.94 U
4.00	**3.00**	2.9 U	2.9	2.9	**1.10 I**	- - -	- - -	0.62 U	0.62 U	3 U	3	- - -	0.62 U
0.64 U	0.64 U	3.9 U	3.9	3.9	0.64 U	- - -	- - -	0.64 U	0.64 U	4 U	4	- - -	0.64 U
0.32 U	0.32 U	2 U	2	2	0.32 U	- - -	- - -	0.32 U	0.32 U	2 U	2	- - -	0.32 U
0.74 U	0.74 U	4.8 U	4.8	4.8	0.74 U	- - -	- - -	0.74 U	0.74 U	4.7 U	4.7	- - -	0.74 U
0.74 U	0.74 U	5.8 U	5.8	5.8	0.74 U	- - -	- - -	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U
0.78 U	0.78 U	7.7 U	7.7	7.7	0.78 U	- - -	- - -	**0.80 I**	0.78 U	7.5 U	7.5	- - -	0.78 U
0.75 U	0.75 U	6.8 U	6.8	6.8	0.75 U	- - -	- - -	**0.80 I**	0.75 U	6.6 U	6.6	- - -	0.75 U
8 I	no sample	9 U	9	9	5 U	- - -	- - -	**8 I**	no sample	9 U	9	- - -	no sample
0.0	0.0				0.0			0.0	0.0				0.0

COSMEINF Collected: 7/18/2023					MBREGCOT Collected: N/S				
POC Regional Supply [TBW Lab]	$EPTDS_1$ POE St. Petersburg Cosme WTP [TBW Lab]	$EPTDS_2$ POE St. Petersburg Cosme WTP [AEL]	$EPTDS_2$ POE St. Petersburg Cosme WTP AEL MDLs	$EPTDS_2$ POE St. Petersburg Cosme WTP AEL PQLs	POC Regional Supply [TBW Lab]	EPTDS1 POE COT at Morris Bridge [TBW Lab]	$EPTDS_2$ POE COT at Morris Bridge [Eurofins]	$EPTDS_2$ POE COT at Morris Bridge Eurofins MDLs	$EPTDS_2$ POE COT at MB Eurofins PQLs
0.41 U	0.41 U	4.9 U	4.9	4.9	---	---	---	---	---
0.42 U	0.42 U	2 U	2	2	---	---	---	---	---
0.63 U	0.63 U	2.9 U	2.9	2.9	---	---	---	---	---
0.67 U	0.67 U	4.9 U	4.9	4.9	---	---	---	---	---
0.55 U	0.55 U	4.9 U	4.9	4.9	---	---	---	---	---
1.10 I	**1.30 I**	4.9 U	4.9	4.9	---	---	---	---	---
0.60 I	**0.60 I**	2.9 U	2.9	2.9	---	---	---	---	---
0.50 U	0.50 U	4.9 U	4.9	4.9	---	---	---	---	---
0.49 U	0.49 U	2.9 U	2.9	2.9	---	---	---	---	---
0.35 U	0.35 U	2.9 U	2.9	2.9	---	---	---	---	---
0.41 U	0.41 U	2.9 U	2.9	2.9	---	---	---	---	---
0.35 U	0.35 U	2.9 U	2.9	2.9	---	---	---	---	---
0.60 U	0.60 U	2.9 U	2.9	2.9	---	---	---	---	---
0.61 U	0.61 U	2.9 U	2.9	2.9	---	---	---	---	---
0.50 U	0.50 U	2.9 U	2.9	2.9	---	---	---	---	---
1.10 I	**1.0 I**	2.9 U	2.9	2.9	---	---	---	---	---
0.61 U	0.61 U	3.9 U	3.9	3.9	---	---	---	---	---
0.54 U	0.54 U	2.9 U	2.9	2.9	---	---	---	---	---
0.60 U	0.60 U	3.9 U	3.9	3.9	---	---	---	---	---
0.51 U	0.51 U	4.9 U	4.9	4.9	---	---	---	---	---
0.60 I	**0.70 I**	3.9 U	3.9	3.9	---	---	---	---	---
0.94 U	0.94 U	3.9 U	3.9	3.9	---	---	---	---	---
1.40 I	**1.30 I**	2.9 U	2.9	2.9	---	---	---	---	---
0.64 U	0.64 U	3.9 U	3.9	3.9	---	---	---	---	---
0.32 U	0.32 U	2 U	2	2	---	---	---	---	---
0.74 U	0.74 U	5 U	5	5	---	---	---	---	---
0.74 U	0.74 U	6 U	6	6	---	---	---	---	---
0.78 U	0.78 U	8.1 U	8.1	8.1	---	---	---	---	---
0.75 U	0.75 U	7.1 U	7.1	7.1	---	---	---	---	---
6 I	no sample	9 U	9	9	---	---	---	---	---
0.0	0.0								

LIMS Order Sorted	Analyte[1]	CASRN #	Analytical Method	EPA PQL	TBW PQL	TBW MDL	301REGHILLS Collected: 10/9/2023					SCHREG Collected:10/9/2023				
							POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Central WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Central WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Central WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Central WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lithia WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins PQLs
1	11CL-PF3-OUdS	763051-92-9	EPA 533	5	2	0.41	0.41 U	0.41 U	4.8 U	4.8	- - -	0.41 U	0.41 U	4.9 U	4.9	- - -
2	9CL-PF3-ONS	756426-58-1	EPA 533	2	2	0.42	0.42 U	0.42 U	1.9 U	1.9	- - -	0.42 U	0.42 U	1.9 U	1.9	- - -
3	ADONA	919005-14-4	EPA 533	3	2	0.63	0.63 U	0.63 U	2.9 U	2.9	- - -	0.63 U	0.63 U	2.9 U	2.9	- - -
4	**HFPO-DA**	13252-13-6	EPA 533	5	2	0.67	0.67 U	0.67 U	4.8 U	4.8	- - -	0.67 U	0.67 U	4.9 U	4.9	- - -
5	NFDHA	151772-58-6	EPA 533	20	2	0.55	0.55 U	0.55 U	19.4 U	19.4	- - -	0.55 U	0.55 U	19.4 U	19.4	- - -
6	PFBA	375-22-4	EPA 533	5	2	0.68	**5.20**	**4.80**	**6.00**	4.8	- - -	**3.90**	**1.30 I**	4.9 U	4.9	- - -
7	**PFBS**	375-73-5	EPA 533	3	2	0.59	**3.70**	**3.6**	**4.2**	2.9	- - -	**4.7**	**1.30 I**	2.9	2.9	- - -
8	8:2FTS	39108-34-4	EPA 533	5	2	0.50	0.50 U	0.50 U	4.8 U	4.8	- - -	0.50 U	0.50 U	4.9 U	4.9	- - -
9	PFDA	335-76-2	EPA 533	3	2	0.49	0.49 U	0.49 U	2.9 U	2.9	- - -	0.49 U	0.49 U	2.9 U	2.9	- - -
10	PFDoA	307-55-1	EPA 533	3	2	0.35	0.35 U	0.35 U	2.9 U	2.9	- - -	0.35 U	0.35 U	2.9 U	2.9	- - -
11	PFEESA	113507-82-7	EPA 533	3	2	0.41	0.41 U	0.41 U	2.9 U	2.9	- - -	0.41 U	0.41 U	2.9 U	2.9	- - -
12	PFHpS	375-92-8	EPA 533	3	2	0.35	0.35 U	0.35 U	2.9 U	2.9	- - -	0.35 U	0.35 U	2.9 U	2.9	- - -
13	PFHpA	375-85-9	EPA 533	3	2	0.60	**2.20**	**2.00**	2.9	2.9	- - -	**1.80 I**	0.60 U	2.9 U	2.9	- - -
14	4:2FTS	757124-72-4	EPA 533	3	2	0.61	0.61 U	0.61 U	2.9 U	2.9	- - -	0.61 U	0.61 U	2.9 U	2.9	- - -
15	**PFHxS**	355-46-4	EPA 533	3	1.6	0.50	**1.60 I**	**1.50 I**	2.9	2.9	- - -	**1.40 I**	**0.70 I**	2.9 U	2.9	- - -
16	PFHxA	307-24-4	EPA 533	3	2	0.58	**4.50**	**4.60**	**5.90**	2.9	- - -	**3.80**	**0.90 I**	2.9 U	2.9	- - -
17	PFMPA	377-73-1	EPA 533	4	2	0.61	0.61 U	0.61 U	3.9 U	3.9	- - -	0.61 U	0.61 U	3.9 U	3.9	- - -
18	PFMBA	863090-89-5	EPA 533	3	2	0.54	0.54 U	0.54 U	2.9 U	2.9	- - -	0.54 U	0.54 U	2.9 U	2.9	- - -
19	**PFNA**	375-95-1	EPA 533	4	2	0.60	0.60 U	0.60 U	3.9 U	3.9	- - -	0.60 U	0.60 U	3.9 U	3.9	- - -
20	6:2FTS	27619-97-2	EPA 533	5	2	0.51	**0.70 I**	0.51 U	4.8 U	4.8	- - -	0.51 U	**5.10**	4.9 U	4.9	- - -
21	**PFOS**	1763-23-1	EPA 533	4	1.6	0.58	3.2	**2.8**	**4.4**	3.9	- - -	**5.0**	**1.40 I**	3.9 U	3.9	- - -
22	**PFOA**	335-67-1	EPA 533	4	2	0.94	**2.4**	**1.90 I**	3.9 U	3.9	- - -	**2.6**	0.94 U	3.9 U	3.9	- - -
23	PFPeA	2706-90-3	EPA 533	3	2	0.62	**6.30**	**6.10**	**7.90**	2.9	- - -	**5.30**	**1.30 I**	2.9 U	2.9	- - -
24	PFPeS	2706-91-4	EPA 533	4	2	0.64	0.64 U	0.64 U	3.9 U	3.9	- - -	0.64 U	0.64 U	3.9 U	3.9	- - -
25	PFUnA	2058-94-8	EPA 533	2	2	0.32	0.32 U	0.32 U	1.9 U	1.9	- - -	0.32 U	0.32 U	1.9 U	1.9	- - -
26	NEtFOSAA	2991-50-6	EPA 537.1	5	3	0.74	0.74 U	0.74 U	5.0 U	5.0	- - -	0.74 U	0.74 U	5.0 U	5.0	- - -
26	NMeFOSAA	2355-31-9	EPA 537.1	6	3	0.74	0.74 U	0.74 U	6.0 U	6.0	- - -	0.74 U	0.74 U	6.0 U	6.0	- - -
28	PFTA	376-06-7	EPA 537.1	8	3	0.78	0.78 U	0.78 U	8.0 U	8.0	- - -	0.78 U	0.78 U	8.0 U	8.0	- - -
29	PFTrDA	72629-94-8	EPA 537.1	7	3	0.75	0.75 U	0.75 U	7.0 U	7.0	- - -	0.75 U	0.75 U	7.0 U	7.0	- - -
30	LITHIUM	7439-93-2	EPA 200.7	9	9	5	5.0 U	no sample	9.0 U	9.0	- - -	5.0 U	no sample	9.0 U	9.0	- - -
					Hazard Index [3] -		0.0	0.0				0.0	0.0			

[1] All values are expressed in ppt (or ng/L), except LITHIUM in ppb (or ug/L).

[2] Suspected field or laboratory background contamination.

[3] Used "0.0" if sample result is less than the EPA PQL per PFAS NPDWR

CASRN = Chemical Abstracts Service Registry Number

MRL = Minimum Reporting Level = quantitation limit achieved with 95% confidence by 75% of labs nationwide.

MDL = Method Detection Limit = minimum measured and reported with 99 % confidence that analyte is greater than zero.

POC = Tampa Bay Water point of connection or regional water delivery location.

PQL = Practical Quantitation Level Note: EPA PQLs (per PFAS NPDWR) = EPA's MRLs (per PFAS UCMR5)

$EPTDS_1$ = Member utility entry point to their distribution system - duplicate sample analyzed by Tampa Bay Water.

$EPTDS_2$ = Member utility entry point to their distribution system - sample analyzed by member utility's UCMR5 Certified contract laboratory

I = Results between MDL and MRL or EPA PQL per PFAS NPDWR

U = Indicates that the compound was analyzed for but not detected

PFAS NPDWR = PFAS National Primary Drinking Water Regulation (April 2024)

LIMS Order Sorted	LITHIAINF Collected: 10/9/2023			LPREG Collected: 10/9/2023					LPPSINF Collected: 10/9/2023		
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [see SCHREG]	$EPTDS_2$ POE Hillsborough Lithia WTP [see SCHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lake Park WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [see LPREG]	$EPTDS_2$ POE Hillsborough Lake Park WTP [see LPREG]
1	0.41 U	---	---	0.41 U	0.41 U	4.9 U	4.9	---	0.41 U	---	---
2	0.42 U	---	---	0.42 U	0.42 U	2.0 U	2.0	---	0.42 U	---	---
3	0.63 U	---	---	0.63 U	0.63 U	2.9 U	2.9	---	0.63 U	---	---
4	0.67 U	---	---	0.67 U	0.67 U	4.9 U	4.9	---	0.67 U	---	---
5	0.55 U	---	---	0.55 U	0.55 U	19.6 U	19.6	---	0.55 U	---	---
6	0.68 U	---	---	**1.70 I**	**0.80 I**	4.9 U	4.9	---	0.68 U	---	---
7	0.59 U	---	---	**0.90 I**	0.59 U	2.9 U	2.9	---	0.59 U	---	---
8	0.50 U	---	---	0.50 U	0.50 U	4.9 U	4.9	---	0.50 U	---	---
9	0.49 U	---	---	0.49 U	0.49 U	2.9 U	2.9	---	0.49 U	---	---
10	0.35 U	---	---	0.35 U	0.35 U	2.9 U	2.9	---	0.35 U	---	---
11	0.41 U	---	---	0.41 U	0.41 U	2.9 U	2.9	---	0.41 U	---	---
12	0.35 U	---	---	0.35 U	0.35 U	2.9 U	2.9	---	0.35 U	---	---
13	0.60 U	---	---	0.60 U	0.60 U	2.9 U	2.9	---	0.60 U	---	---
14	0.61 U	---	---	0.61 U	0.61 U	2.9 U	2.9	---	0.61 U	---	---
15	0.50 U	---	---	0.50 U	0.50 U	2.9 U	2.9	---	0.50 U	---	---
16	0.58 U	---	---	**1.0 I**	0.58 U	2.9 U	2.9	---	0.58 U	---	---
17	0.61 U	---	---	0.61 U	0.61 U	3.9 U	3.9	---	0.61 U	---	---
18	0.54 U	---	---	0.54 U	0.54 U	2.9 U	2.9	---	0.54 U	---	---
19	0.60 U	---	---	0.60 U	0.60 U	3.9 U	3.9	---	0.60 U	---	---
20	0.51 U	---	---	0.51 U	0.51 U	4.9 U	4.9	---	0.51 U	---	---
21	0.58 U	---	---	**0.90 I**	0.58 U	3.9 U	3.9	---	0.58 U	---	---
22	0.94 U	---	---	0.94 U	0.94 U	3.9 U	3.9	---	0.94 U	---	---
23	0.62 U	---	---	**1.30 I**	0.62 U	2.9 U	2.9	---	0.62 U	---	---
24	0.64 U	---	---	0.64 U	0.64 U	3.9 U	3.9	---	0.64 U	---	---
25	0.32 U	---	---	0.32 U	0.32 U	2.0 U	2.0	---	0.32 U	---	---
26	0.74 U	---	---	0.74 U	0.74 U	5.0 U	5.0	---	0.74 U	---	---
26	0.74 U	---	---	0.74 U	0.74 U	6.0 U	6.0	---	0.74 U	---	---
28	0.78 U	---	---	0.78 U	0.78 U	8.0 U	8.0	---	0.78 U	---	---
29	0.75 U	---	---	0.75 U	0.75 U	7.0 U	7.0	---	0.75 U	---	---
30	5.0U	---	---	5.0 U	no sample	9.0 U	9.0	---	5.0 U	---	---
	0.0			0.0	0.0				0.0		

LIMS Order Sorted	NWHREG Collected: 10/9/2023					NWHINF Collected: 10/9/2023			LBREGPASCO Collected: 10/17/2023				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Lake Bridge to Pasco County [TBW Lab]	$EPTDS_2$ POE Lake Bridge to Pasco County [Eurofins]	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins MDLs	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins PQLs
1	0.41 U	0.41 U	4.8 U	4.8	---	0.41 U	---	---	0.41 U	0.41 U	5.0 U	5.0	---
2	0.42 U	0.42 U	1.9 U	1.9	---	0.42 U	---	---	0.42 U	0.42 U	2.0 U	2.0	---
3	0.63 U	0.63 U	2.9 U	2.9	---	0.63 U	---	---	0.63 U	0.63 U	3.0 U	3.0	---
4	0.67 U	0.67 U	4.8 U	4.8	---	0.67 U	---	---	0.67 U	0.67 U	5.0 U	5.0	---
5	0.55 U	0.55 U	19.3 U	19.3	---	0.55 U	---	---	0.55 U	0.55 U	20 U	20	---
6	**3.1**	**1.80 I**	4.8 U	4.8	---	0.68 U	---	---	**4.80**	**5.20**	**5.70**	5.0	---
7	**2.2**	**1.20 I**	2.9 U	2.9	---	0.59 U	---	---	**3.4**	**3.5**	**3.5**	3.0	---
8	0.50 U	0.50 U	4.8 U	4.8	---	0.50 U	---	---	0.50 U	0.50 U	5.0 U	5.0	---
9	0.49 U	0.49 U	2.9 U	2.9	---	0.49 U	---	---	0.49 U	0.49 U	3.0 U	3.0	---
10	0.35 U	0.35 U	2.9 U	2.9	---	0.35 U	---	---	0.35 U	0.35 U	3.0 U	3.0	---
11	0.41 U	0.41 U	2.9 U	2.9	---	0.41 U	---	---	0.41 U	0.41 U	3.0 U	3.0	---
12	0.35 U	0.35 U	2.9 U	2.9	---	0.35 U	---	---	0.35 U	0.35 U	3.0 U	3.0	---
13	**1.20 I**	**0.70 I**	2.9 U	2.9	---	0.60 U	---	---	**2.00**	**2.10**	3.0 U	3.0	---
14	0.61 U	0.61 U	2.9 U	2.9	---	0.61 U	---	---	0.61 U	0.61 U	3.0 U	3.0	---
15	**1.10 I**	**0.90 I**	2.9 U	2.9	---	**0.60 I**	---	---	**1.50 I**	**1.60 I**	3.0 U	3.0	---
16	**2.6**	**1.40 I**	2.9 U	2.9	---	0.58 U	---	---	**4.30**	**5.00**	**5.30**	3.0	---
17	0.61 U	0.61 U	3.9 U	3.9	---	0.61 U	---	---	0.61 U	0.61 U	4.0 U	4.0	---
18	0.54 U	0.54 U	2.9 U	2.9	---	0.54 U	---	---	0.54 U	0.54 U	3.0 U	3.0	---
19	0.60 U	0.60 U	3.9 U	3.9	---	0.60 U	---	---	0.60 U	0.60 U	4.0 U	4.0	---
20	0.51 U	0.51 U	4.8 U	4.8	---	0.51 U	---	---	0.51 U	0.51 U	5.0 U	5.0	---
21	**2.2**	**1.80 I**	3.9 U	3.9	---	**0.90 I**	---	---	3.5	3.5	4.0 U	4.0	---
22	**1.40 I**	**1.20 I**	3.9 U	3.9	---	0.94 U	---	---	**2.3**	**2.3**	4.0 U	4.0	---
23	**3.4**	**2.00**	2.9 U	2.9	---	0.62 U	---	---	**6.10**	**6.30**	**7.40**	3.0	---
24	0.64 U	0.64 U	3.9 U	3.9	---	0.64 U	---	---	0.64 U	0.64 U	4.0 U	4.0	---
25	0.32 U	0.32 U	1.9 U	1.9	---	0.32 U	---	---	0.32 U	0.32 U	2.0 U	2.0	---
26	0.74 U	0.74 U	5.0 U	5.0	---	0.74 U	---	---	0.74 U	0.74 U	4.8 U	4.8	---
26	0.74 U	0.74 U	6.0 U	6.0	---	0.74 U	---	---	0.74 U	0.74 U	5.7 U	5.7	---
28	0.78 U	0.78 U	8.0 U	8.0	---	0.78 U	---	---	0.78 U	0.78 U	7.6 U	7.6	---
29	0.75 U	0.75 U	7.0 U	7.0	---	0.75 U	---	---	0.75 U	0.75 U	6.7 U	6.7	---
30	5.0 U	no sample	9.0 U	9.0	---	5.0 U	---	---	5.0 U	no sample	9.0 U	9.0	---
	0.0	0.0				0.0			0.0	0.0			

LIMS Order Sorted	US41TIE Collected: 10/17/2023					ODESSA Collected: 10/17/2023				
	POC Regional Supply [TBW Lab]	EPTDS1 POE US 41 to Pasco County [TBW Lab]	EPTDS2 POE US 41 to Pasco County [Eurofins]	EPTDS2 POE US 41 to Pasco County [Eurofins]	$EPTDS_2$ POE US 41 to Pasco County Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pasco County Southwest WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Southwest WTP [Eurofins]	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins PQLs
1	0.41 U	0.41 U	5.0 U	5.0	- - -	0.41 U	0.41 U	4.9 U	4.9	- - -
2	0.42 U	0.42 U	2.0 U	2.0	- - -	0.42 U	0.42 U	2.0 U	2.0	- - -
3	0.63 U	0.63 U	3.0 U	3.0	- - -	0.63 U	0.63 U	3.0 U	3.0	- - -
4	0.67 U	0.67 U	5.0 U	5.0	- - -	0.67 U	0.67 U	4.9 U	4.9	- - -
5	0.55 U	0.55 U	20 U	20	- - -	0.55 U	0.55 U	19.7 U	19.7	- - -
6	**2.90**	**2.70**	5.0 U	5.0	- - -	**3.30**	**3.30**	4.9 U	4.9	- - -
7	**1.8 I**	**1.4 I**	3.0 U	3.0	- - -	**2**	**2**	3.0 U	3.0	- - -
8	0.50 U	0.50 U	5.0 U	5.0	- - -	0.50 U	0.50 U	4.9 U	4.9	- - -
9	0.49 U	0.49 U	3.0 U	3.0	- - -	0.49 U	0.49 U	3.0 U	3.0	- - -
10	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	3.0 U	3.0	- - -
11	0.41 U	0.41 U	3.0 U	3.0	- - -	0.41 U	0.41 U	3.0 U	3.0	- - -
12	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	3.0 U	3.0	- - -
13	**1.10 I**	**1.0 I**	3.0 U	3.0	- - -	**1.50 I**	**1.40 I**	3.0 U	3.0	- - -
14	0.61 U	0.61 U	3.0 U	3.0	- - -	0.61 U	0.61 U	3.0 U	3.0	- - -
15	**0.80 I**	**0.70 I**	3.0 U	3.0	- - -	**1.00 I**	0.50 U	3.0 U	3.0	- - -
16	**2.40**	**2.20**	3.0 U	3.0	- - -	**3.10**	**2.90**	**3.20**	3.0	- - -
17	0.61 U	0.61 U	4.0 U	4.0	- - -	0.61 U	0.61 U	3.9 U	3.9	- - -
18	0.54 U	0.54 U	3.0 U	3.0	- - -	0.54 U	0.54 U	3.0 U	3.0	- - -
19	0.60 U	0.60 U	4.0 U	4.0	- - -	0.60 U	0.60 U	3.9 U	3.9	- - -
20	0.51 U	0.51 U	5.0 U	5.0	- - -	0.51 U	0.51 U	4.9 U	4.9	- - -
21	**1.9 I**	**1.7 I**	4.0 U	4.0	- - -	**2.0**	0.58 U	3.9 U	3.9	- - -
22	**1.5 I**	**1.3 I**	4.0 U	4.0	- - -	**1.80 I**	**1.40 I**	3.9 U	3.9	- - -
23	**3.1**	**3.0**	**3.6**	3.0	- - -	**4.1**	**4.1**	**4.4**	3.0	- - -
24	0.64 U	0.64 U	4.0 U	4.0	- - -	0.64 U	0.64 U	3.9 U	3.9	- - -
25	0.32 U	0.32 U	2.0 U	2.0	- - -	0.32 U	0.32 U	2.0 U	2.0	- - -
26	0.74 U	0.74 U	4.8 U	4.8	- - -	0.74 U	0.74 U	5.0 U	5.0	- - -
26	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U	0.74 U	6.0 U	6.0	- - -
28	0.78 U	0.78 U	7.6 U	7.6	- - -	0.78 U	0.78 U	8.0 U	8.0	- - -
29	0.75 U	0.75 U	6.7 U	6.7	- - -	0.75 U	0.75 U	7.0 U	7.0	- - -
30	5.0 U	no sample	9.0 U	9.0	- - -	5.0 U	no sample	9.0 U	9.0	- - -
	0.0	0.0				0.0	0.0			

LIMS Order Sorted	PC1REG Collected: 10/17/2023					ENDOF64 Collected: E533 10/18/2023 - E537.1 Recollected 12/6/2023					EWH2SEFF Collected: 10/18/2023		
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pasco County Little Road WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Little Road WTP [Eurofins]	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pinellas County Keller WTP [TBW Lab]	$EPTDS_2$ POE Pinellas County Keller WTP [AEL]	$EPTDS_2$ POE Pinellas County Keller WTP AEL MDLs	$EPTDS_2$ POE Pinellas County Keller WTP AEL PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pinellas County Keller WTP [see ENDOF64]	$EPTDS_2$ POE Pinellas County Keller WTP [see ENDOF64]
1	0.41 U	0.41 U	5.0 U	5.0	- - -	0.41 U	0.41 U	4.9 U	4.9	4.9	0.41 U	- - -	- - -
2	0.42 U	0.42 U	2.0 U	2.0	- - -	0.42 U	0.42 U	1.9 U	1.9	1.9	0.42 U	- - -	- - -
3	0.63 U	0.63 U	3.0 U	3.0	- - -	0.63 U	0.63 U	2.9 U	2.9	2.9	0.63 U	- - -	- - -
4	0.67 U	0.67 U	5.0 U	5.0	- - -	0.67 U	0.67 U	4.9 U	4.9	4.9	0.67 U	- - -	- - -
5	0.55 U	0.55 U	20 U	20	- - -	0.55 U	0.55 U	4.9 U	4.9	4.9	0.55 U	- - -	- - -
6	**3.10**	**2.90**	5.0 U	5.0	- - -	**3.40**	0.68 U	4.9 U	4.9	4.9	**2.70**	- - -	- - -
7	**1.90 I**	**1.80 I**	3.0 U	3.0	- - -	**1.90 I**	0.59 U	2.9 U	2.9	2.9	**1.30 I**	- - -	- - -
8	0.50 U	0.50 U	5.0 U	5.0	- - -	0.50 U	0.50 U	4.9 U	4.9	4.9	0.50 U	- - -	- - -
9	0.49 U	0.49 U	3.0 U	3.0	- - -	0.49 U	0.49 U	2.9 U	2.9	2.9	0.49 U	- - -	- - -
10	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	- - -	- - -
11	0.41 U	0.41 U	3.0 U	3.0	- - -	0.41 U	0.41 U	2.9 U	2.9	2.9	0.41 U	- - -	- - -
12	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	- - -	- - -
13	**1.30 I**	**1.20 I**	3.0 U	3.0	- - -	**1.30 I**	0.60 U	2.9 U	2.9	2.9	**1.00 I**	- - -	- - -
14	0.61 U	0.61 U	3.0 U	3.0	- - -	0.61 U	0.61 U	2.9 U	2.9	2.9	0.61 U	- - -	- - -
15	**0.90 I**	**0.70 I**	3.0 U	3.0	- - -	**1.00 I**	0.50 U	2.9 U	2.9	2.9	**0.90 I**	- - -	- - -
16	**2.80**	**2.60**	3.0 U	3.0	- - -	**2.60**	0.58 U	2.9 U	2.9	2.9	**2.10**	- - -	- - -
17	0.61 U	0.61 U	4.0 U	4.0	- - -	0.61 U	0.61 U	3.9 U	3.9	3.9	0.61 U	- - -	- - -
18	0.54 U	0.54 U	3.0 U	3.0	- - -	0.54 U	0.54 U	2.9 U	2.9	2.9	0.54 U	- - -	- - -
19	0.60 U	0.60 U	4.0 U	4.0	- - -	0.60 U	0.60 U	3.9 U	3.9	3.9	0.60 U	- - -	- - -
20	0.51 U	0.51 U	5.0 U	5.0	- - -	0.51 U	0.51 U	4.9 U	4.9	4.9	0.51 U	- - -	- - -
21	**2.0**	**2.2**	4.0 U	4.0	- - -	**2.1**	0.58 U	3.9 U	3.9	3.9	**1.70 I**	- - -	- - -
22	**1.60 I**	**1.30 I**	4.0 U	4.0	- - -	**1.70 I**	0.94 U	3.9 U	3.9	3.9	**1.60 I**	- - -	- - -
23	**3.70**	**3.40**	**3.80**	3.0	- - -	**3.50**	0.62 U	2.9 U	2.9	2.9	**2.90**	- - -	- - -
24	0.64 U	0.64 U	4.0 U	4.0	- - -	0.64 U	0.64 U	3.9 U	3.9	3.9	0.64 U	- - -	- - -
25	0.32 U	0.32 U	2.0 U	2.0	- - -	0.32 U	0.32 U	1.9 U	1.9	1.9	0.32 U	- - -	- - -
26	0.74 U	0.74 U	4.8 U	4.8	- - -	0.74 U	0.74 U	5.0 U	5.0	5.0	0.74 U	- - -	- - -
26	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U	0.74 U	6.1 U	6.1	6.1	0.74 U	- - -	- - -
28	0.78 U	0.78 U	7.7 U	7.7	- - -	0.78 U	0.78 U	8.1 U	8.1	8.1	0.78 U	- - -	- - -
29	0.75 U	0.75 U	6.7 U	6.7	- - -	0.75 U	0.75 U	7.1 U	7.1	7.1	0.75 U	- - -	- - -
30	5.0 U	no sample	9.0 U	9.0	- - -	5.0 U	no sample	9.0 U	9.0	9.0	5.0 U	- - -	- - -
	0.0	0.0				0.0	0.0				0.0		

LIMS Order Sorted	MAYTMINF Collected: 10/17/2023					COSMEINF Collected: 10/17/2023					MBREGCOT Collected: 10/16/2023				
	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE New Port Richey Maytum WTP [TBW Lab]	EPTDS$_2$ POE New Port Richey Maytum WTP [Eurofins]	EPTDS$_2$ POE New Port Richey Maytum WTP Eurofins MDLs	EPTDS$_2$ POE New Port Richey Maytum WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	EPTDS$_1$ POE St. Petersburg Cosme WTP [TBW Lab]	EPTDS$_2$ POE St. Petersburg Cosme WTP [AEL]	EPTDS$_2$ POE St. Petersburg Cosme WTP AEL MDLs	EPTDS2 POE St. Petersburg Cosme WTP AEL PQLs	POC Regional Supply [TBW Lab]	EPTDS1 POE COT at Morris Bridge [TBW Lab]	EPTDS$_2$ POE COT at Morris Bridge [Eurofins]	EPTDS$_2$ POE COT at Morris Bridge Eurofins MDLs	EPTDS$_2$ POE COT at MB Eurofins PQLs
1	0.41 U	0.41 U	5.0 U	5.0	- - -	0.41 U	0.41 U	4.9 U	4.9	4.9	0.41 U	0.41 U	5.0 U	5.0	- - -
2	0.42 U	0.42 U	2.0 U	2.0	- - -	0.42 U	0.42 U	2.0 U	2.0	2.0	0.42 U	0.42 U	2.0 U	2.0	- - -
3	0.63 U	0.63 U	3.0 U	3.0	- - -	0.63 U	0.63 U	2.9 U	2.9	2.9	0.63 U	0.63 U	3.0 U	3.0	- - -
4	0.67 U	0.67 U	5.0 U	5.0	- - -	0.67 U	0.67 U	4.9 U	4.9	4.9	0.67 U	0.67 U	5.0 U	5.0	- - -
5	0.55 U	0.55 U	20 U	20	- - -	0.55 U	0.55 U	4.9 U	4.9	4.9	0.55 U	0.55 U	20.1 U	20.1	- - -
6	0.68 U	**1.70 I**	5.0 U	5.0	- - -	**2.60**	**2.50**	4.9 U	4.9	4.9	**5.40**	**5.20**	**6.10**	5.0	- - -
7	0.59 U	0.59 U	3.0 U	3.0	- - -	**1.50 I**	**1.60 I**	2.9 U	2.9	2.9	**3.4**	**3.2**	**3.4**	3.0	- - -
8	0.50 U	0.50 U	5.0 U	5.0	- - -	0.50 U	0.50 U	4.9 U	4.9	4.9	0.50 U	0.50 U	5.0 U	5.0	- - -
9	0.49 U	0.49 U	3.0 U	3.0	- - -	0.49 U	0.49 U	2.9 U	2.9	2.9	0.49 U	0.49 U	3.0 U	3.0	- - -
10	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	0.35 U	3.0 U	3.0	- - -
11	0.41 U	0.41 U	3.0 U	3.0	- - -	0.41 U	0.41 U	2.9 U	2.9	2.9	0.41 U	0.41 U	3.0 U	3.0	- - -
12	0.35 U	0.35 U	3.0 U	3.0	- - -	0.35 U	0.35 U	2.9 U	2.9	2.9	0.35 U	0.35 U	3.0 U	3.0	- - -
13	0.60 U	0.60 U	3.0 U	3.0	- - -	**1.00 I**	**1.10 I**	2.9 U	2.9	2.9	**2.30**	**2.10**	3.0 U	3.0	- - -
14	0.61 U	0.61 U	3.0 U	3.0	- - -	0.61 U	0.61 U	2.9 U	2.9	2.9	0.61 U	0.61 U	3.0 U	3.0	- - -
15	0.50 U	0.50 U	3.0 U	3.0	- - -	**0.70 I**	**0.80 I**	2.9 U	2.9	2.9	**0.70 I**	**1.50 I**	3.0 U	3.0	- - -
16	0.58 U	0.58 U	3.0 U	3.0	- - -	**2.10**	**2.20**	2.9 U	2.9	2.9	**5.10**	**4.70**	**5.70**	3.0	- - -
17	0.61 U	0.61 U	4.0 U	4.0	- - -	0.61 U	0.61 U	3.9 U	3.9	3.9	0.61 U	0.61 U	4.0 U	4.0	- - -
18	0.54 U	0.54 U	3.0 U	3.0	- - -	0.54 U	0.54 U	2.9 U	2.9	2.9	0.54 U	0.54 U	3.0 U	3.0	- - -
19	0.60 U	0.60 U	4.0 U	4.0	- - -	0.60 U	0.60 U	3.9 U	3.9	3.9	0.60 U	0.60 U	4 U	4.0	- - -
20	0.51 U	0.51 U	5.0 U	5.0	- - -	0.51 U	0.51 U	4.9 U	4.9	4.9	0.51 U	**1.40 I**	5.0 U	5.0	- - -
21	0.58 U	0.58 U	4.0 U	4.0	- - -	**1.70 I**	**2.10**	3.9 U	3.9	3.9	**1.40 I**	**2.7**	4.0 U	4.0	- - -
22	0.94 U	0.94 U	4.0 U	4.0	- - -	**1.20 I**	**1.30 I**	3.9 U	3.9	3.9	**2.4**	**2**	4.0 U	4.0	- - -
23	0.62 U	0.62 U	3.0 U	3.0	- - -	**2.90**	**3.00**	**3.1**	2.9	2.9	**6.80**	**6.50**	**7.50**	3.0	- - -
24	0.64 U	0.64 U	4.0 U	4.0	- - -	0.64 U	0.64 U	3.9 U	3.9	3.9	0.64 U	0.64 U	4.0 U	4.0	- - -
25	0.32 U	0.32 U	2.0 U	2.0	- - -	0.32 U	0.32 U	2.0 U	2.0	2.0	0.32 U	0.32 U	2.0 U	2.0	- - -
26	0.74 U	0.74 U	4.7 U	4.7	- - -	0.74 U	0.74 U	4.4 U	4.4	4.4	0.74 U	0.74 U	4.7 U	4.7	- - -
26	0.74 U	0.74 U	5.7 U	5.7	- - -	0.74 U	0.74 U	5.3 U	5.3	5.3	0.74 U	0.74 U	5.7 U	5.7	- - -
28	0.78 U	0.78 U	7.5 U	7.5	- - -	0.78 U	0.78 U	7.0 U	7.0	7.0	0.78 U	0.78 U	7.6 U	7.8	- - -
29	0.75 U	0.75 U	6.6 U	6.6	- - -	0.75 U	0.75 U	6.2 U	6.2	6.2	0.75 U	0.75 U	6.6 U	6.6	- - -
30	5.0 U	no sample	9.0 U	9.0	- - -	5.0 U	no sample	9.0 U	9.0	9.0	5.0 U	no sample	9.0 U	9.0	- - -
	0.0	0.0				0.0	0.0				0.0	0.0			

LIMS Order Sorted	Analyte[1]	CASRN #	Analytical Method	EPA PQL	TBW PQL	TBW MDL	301REGHILLS Collected: 1/8/2024					SCHREG Collected: 1/8/2024				
							POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Central WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Central WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Central WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Central WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lithia WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins PQLs
1	11CL-PF3-OUdS	763051-92-9	EPA 533	5	2	1.77	1.77 U	1.77 U	5.0 U	5.0	- - -	1.77 U	no sample	5.0 U	5.0	- - -
2	9CL-PF3-ONS	756426-58-1	EPA 533	2	2	1.48	1.48 U	1.48 U	2.0 U	2.0	- - -	1.48 U	no sample	2.0 U	2.0	- - -
3	ADONA	919005-14-4	EPA 533	3	2	0.63	0.63 U	0.63 U	3.0 U	3.0	- - -	0.63 U	no sample	3.0 U	3.0	- - -
4	**HFPO-DA**	13252-13-6	EPA 533	5	2	1.52	1.52 U	1.52 U	5.0 U	5.0	- - -	1.52 U	no sample	5.0 U	5.0	- - -
5	NFDHA	151772-58-6	EPA 533	20	2	1.21	1.21 U	1.21 U	20 U	20	- - -	1.21 U	no sample	20 U	20	- - -
6	PFBA	375-22-4	EPA 533	5	2	0.68	**4.1**	**4.2**	5.0 U	5.0	- - -	**3.1**	no sample	5.0 U	5.0	- - -
7	**PFBS**	375-73-5	EPA 533	3	2	1.39	**4.0**	**3.9**	**3.8**	3.0	- - -	**4.5**	no sample	3.0 U	3.0	- - -
8	8:2FTS	39108-34-4	EPA 533	5	2	1.59	1.59 U	1.59 U	5.0 U	5.0	- - -	1.59 U	no sample	5.0 U	5.0	- - -
9	PFDA	335-76-2	EPA 533	3	2	1.11	1.11 U	1.11 U	3.0 U	3.0	- - -	1.11 U	no sample	3.0 U	3.0	- - -
10	PFDoA	307-55-1	EPA 533	3	2	1.68	1.68 U	1.68 U	3.0 U	3.0	- - -	1.68 U	no sample	3.0 U	3.0	- - -
11	PFEESA	113507-82-7	EPA 533	3	2	1.19	1.19 U	1.19 U	3.0 U	3.0	- - -	1.19 U	no sample	3.0 U	3.0	- - -
12	PFHpS	375-92-8	EPA 533	3	2	1.32	1.32 U	1.32 U	3.0 U	3.0	- - -	1.32 U	no sample	3.0 U	3.0	- - -
13	PFHpA	375-85-9	EPA 533	3	2	0.60	**2.2**	**2.30**	3.0 U	3.0	- - -	**1.90 I**	no sample	3.0 U	3.0	- - -
14	4:2FTS	757124-72-4	EPA 533	3	2	1.53	1.53 U	1.53 U	3.0 U	3.0	- - -	1.53 U	no sample	3.0 U	3.0	- - -
15	**PFHxS**	355-46-4	EPA 533	3	2	0.50	**1.90 I**	**2.1**	3.0 U	3.0	- - -	**2.2**	no sample	3.0 U	3.0	- - -
16	PFHxA	307-24-4	EPA 533	3	2	0.58	**5.2**	**5.4**	**6.0**	3.0	- - -	**4.10**	no sample	3.0 U	3.0	- - -
17	PFMPA	377-73-1	EPA 533	4	2	1.39	1.39 U	1.39 U	4.0 U	4.0	- - -	1.39 U	no sample	4.0 U	4.0	- - -
18	PFMBA	863090-89-5	EPA 533	3	2	1.23	1.23 U	1.23 U	3.0 U	3.0	- - -	1.23 U	no sample	3.0 U	3.0	- - -
19	**PFNA**	375-95-1	EPA 533	4	2	0.60	0.60 U	0.60 U	4.0 U	4.0	- - -	0.60 U	no sample	4.0 U	4.0	- - -
20	6:2FTS	27619-97-2	EPA 533	5	2	1.23	1.23 U	**7.3** [2]	5.0 U	5.0	- - -	**1.70 I**	no sample	5.0 U	5.0	- - -
21	**PFOS**	1763-23-1	EPA 533	4	2	0.58	3.1	3.2	**4.4**	4	- - -	**4.2**	no sample	4.0 U	4	- - -
22	**PFOA**	335-67-1	EPA 533	4	2	0.94	**2.8**	**2.7**	4.0 U	4	- - -	3.2	no sample	4.0 U	4	- - -
23	PFPeA	2706-90-3	EPA 533	3	2	0.62	**6.9**	**7.3**	**8.1**	3.0	- - -	**5.6**	no sample	3.0 U	3.0	- - -
24	PFPeS	2706-91-4	EPA 533	4	2	0.64	0.64 U	0.64 U	4.0 U	4.0	- - -	0.64 U	no sample	4.0 U	4.0	- - -
25	PFUnA	2058-94-8	EPA 533	2	2	1.15	1.15 U	1.15 U	2.0 U	2.0	- - -	1.15 U	no sample	2.0 U	2.0	- - -
26	NEtFOSAA	2991-50-6	EPA 537.1	5	3	2.14	2.14 U	2.14 U	4.7 U	4.7	- - -	2.14 U	no sample	4.7 U	4.7	- - -
26	NMeFOSAA	2355-31-9	EPA 537.1	6	3	2.32	2.32 U	2.32 U	5.6 U	5.6	- - -	2.32 U	no sample	5.6 U	5.6	- - -
28	PFTA	376-06-7	EPA 537.1	8	5	3.09	3.09 U	3.09 U	7.5 U	7.5	- - -	3.09 U	no sample	7.5 U	7.5	- - -
29	PFTrDA	72629-94-8	EPA 537.1	7	5	4.01	4.01 U	4.01 U	6.6 U	6.6	- - -	4.01 U	no sample	6.5 U	6.5	- - -
30	LITHIUM	7439-93-2	EPA 200.7	9	9	5	**9**	no sample	9.0 U	9.0	- - -	**10**	no sample	9.0 U	9.0	- - -
					Hazard Index [3] -		0.0	0.0				0.0				

[1] All values are expressed in ppt (or ng/L), except LITHIUM in ppb (or ug/L).

[2] Suspected field or laboratory background contamination.

[3] Used "0.0" if sample result is less than the EPA PQL per PFAS NPDWR

CASRN = Chemical Abstracts Service Registry Number

MRL = Minimum Reporting Level = quantitation limit achieved with 95% confidence by 75% of labs nationwide.

MDL = Method Detection Limit = minimum measured and reported with 99 % confidence that analyte is greater than zero.

POC = Tampa Bay Water point of connection or regional water delivery location.

PQL = Practical Quantitation Level Note: EPA PQLs (per PFAS NPDWR) = EPA's MRLs (per PFAS UCMR5)

$EPTDS_1$ = Member utility entry point to their distribution system - duplicate sample analyzed by Tampa Bay Water.

$EPTDS_2$ = Member utility entry point to their distribution system - sample analyzed by member utility's UCMR5 Certified contract laboratory

I = Results between MDL and MRL or EPA PQL per PFAS NPDWR

U = Indicates that the compound was analyzed for but not detected

PFAS NPDWR = PFAS National Primary Drinking Water Regulation (April 2024)

LIMS Order Sorted	LITHIAINF Collected: 1/8/2024			LPREG Collected: 1/8/2024					LPPSINF Collected: 1/8/2024		
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [see SCHREG]	$EPTDS_2$ POE Hillsborough Lithia WTP [see SCHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lake Park WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [see LPREG]	$EPTDS_2$ POE Hillsborough Lake Park WTP [see LPREG]
1	1.77 U	- - -	- - -	1.77 U	no sample	5.0 U	5.0	- - -	1.77 U	- - -	- - -
2	1.48 U	- - -	- - -	1.48 U	no sample	2.0 U	2.0	- - -	1.48 U	- - -	- - -
3	0.63 U	- - -	- - -	0.63 U	no sample	3.0 U	3.0	- - -	0.63 U	- - -	- - -
4	1.52 U	- - -	- - -	1.52 U	no sample	5.0 U	5.0	- - -	1.52 U	- - -	- - -
5	1.21 U	- - -	- - -	1.21 U	no sample	20 U	20	- - -	1.21 U	- - -	- - -
6	0.68 U	- - -	- - -	**1.40 I**	no sample	5.0 U	5.0	- - -	0.68 U	- - -	- - -
7	1.39 U	- - -	- - -	1.39 U	no sample	3.0 U	3.0	- - -	1.39 U	- - -	- - -
8	1.59 U	- - -	- - -	1.59 U	no sample	5.0 U	5.0	- - -	1.59 U	- - -	- - -
9	1.11 U	- - -	- - -	1.11 U	no sample	3.0 U	3.0	- - -	1.11 U	- - -	- - -
10	1.68 U	- - -	- - -	1.68 U	no sample	3.0 U	3.0	- - -	1.68 U	- - -	- - -
11	1.19 U	- - -	- - -	1.19 U	no sample	3.0 U	3.0	- - -	1.19 U	- - -	- - -
12	1.32 U	- - -	- - -	1.32 U	no sample	3.0 U	3.0	- - -	1.32 U	- - -	- - -
13	0.60 U	- - -	- - -	0.60 U	no sample	3.0 U	3.0	- - -	0.60 U	- - -	- - -
14	1.53 U	- - -	- - -	1.53 U	no sample	3.0 U	3.0	- - -	1.53 U	- - -	- - -
15	0.50 U	- - -	- - -	0.50 U	no sample	3.0 U	3.0	- - -	0.50 U	- - -	- - -
16	0.58 U	- - -	- - -	**1.20 I**	no sample	3.0 U	3.0	- - -	0.58 U	- - -	- - -
17	1.39 U	- - -	- - -	1.39 U	no sample	4.0 U	4.0	- - -	1.39 U	- - -	- - -
18	1.23 U	- - -	- - -	1.23 U	no sample	3.0 U	3.0	- - -	1.23 U	- - -	- - -
19	0.60 U	- - -	- - -	0.60 U	no sample	4.0 U	4.0	- - -	0.60 U	- - -	- - -
20	1.23 U	- - -	- - -	1.23 U	no sample	5.0 U	5.0	- - -	**3.30** [2]	- - -	- - -
21	0.58 U	- - -	- - -	**0.70 I**	no sample	4.0 U	4.0	- - -	0.58 U	- - -	- - -
22	0.94 U	- - -	- - -	**1.00 I**	no sample	4.0 U	4.0	- - -	0.94 U	- - -	- - -
23	0.62 U	- - -	- - -	**1.60 I**	no sample	3.0 U	3.0	- - -	0.62 U	- - -	- - -
24	0.64 U	- - -	- - -	0.64 U	no sample	4.0 U	4.0	- - -	0.64 U	- - -	- - -
25	1.15 U	- - -	- - -	1.15 U	no sample	2.0 U	2.0	- - -	1.15 U	- - -	- - -
26	2.14 U	- - -	- - -	2.14 U	no sample	4.7 U	4.7	- - -	2.14 U	- - -	- - -
26	2.32 U	- - -	- - -	2.32 U	no sample	5.7 U	5.7	- - -	2.32 U	- - -	- - -
28	3.09 U	- - -	- - -	3.09 U	no sample	7.6 U	7.6	- - -	3.09 U	- - -	- - -
29	4.01 U	- - -	- - -	4.01 U	no sample	6.6 U	6.6	- - -	4.01 U	- - -	- - -
30	**6.0 I**	- - -	- - -	**7.0 I**	no sample	9.0 U	9.0	- - -	**7.0 I**	- - -	- - -
	0.0			0.0					0.0		

LIMS Order Sorted	NWHREG Collected: 1/8/2024					NWHINF Collected: 1/8/2024			LBREGPASCO Collected: 1/10/2024				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Lake Bridge to Pasco County [TBW Lab]	$EPTDS_2$ POE Lake Bridge to Pasco County [Eurofins]	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins MDLs	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins PQLs
1	1.77 U	no sample	5.0 U	5.0	---	1.77 U	---	---	1.77 U	1.77 U	5.0 U	5.0	---
2	1.48 U	no sample	2.0 U	2.0	---	1.48 U	---	---	1.48 U	1.48 U	2.0 U	2.0	---
3	0.63 U	no sample	3.0 U	3.0	---	0.63 U	---	---	0.63 U	0.63 U	3.0 U	3.0	---
4	1.52 U	no sample	5.0 U	5.0	---	1.52 U	---	---	1.52 U	1.52 U	5.0 U	5.0	---
5	1.21 U	no sample	20 U	20	---	1.21 U	---	---	1.21 U	1.21 U	20 U	20	---
6	**1.70 I**	no sample	5.0 U	5.0	---	0.68 U	---	---	**4.2**	**4.3**	5.0 U	5	---
7	**1.60 I**	no sample	3.0 U	3.0	---	1.39 U	---	---	**4.7**	**4.7**	**4.1**	3	---
8	1.59 U	no sample	5.0 U	5.0	---	1.59 U	---	---	1.59 U	1.59 U	5.0 U	5.0	---
9	1.11 U	no sample	3.0 U	3.0	---	1.11 U	---	---	1.11 U	1.11 U	3.0 U	3.0	---
10	1.68 U	no sample	3.0 U	3.0	---	1.68 U	---	---	1.68 U	1.68 U	3.0 U	3.0	---
11	1.19 U	no sample	3.0 U	3.0	---	1.19 U	---	---	1.19 U	1.19 U	3.0 U	3.0	---
12	1.32 U	no sample	3.0 U	3.0	---	1.32 U	---	---	1.32 U	1.32 U	3.0 U	3.0	---
13	**0.90 I**	no sample	3.0 U	3.0	---	0.60 U	---	---	**2.30**	**2.30**	3.0 U	3.0	---
14	1.53 U	no sample	3.0 U	3.0	---	1.53 U	---	---	1.53 U	1.53 U	3.0 U	3.0	---
15	**0.70 I**	no sample	3.0 U	3.0	---	**0.60 I**	**---**	**---**	**2**	**2.1**	3.0 U	3.0	---
16	**2.00**	no sample	**3.0**	3.0	---	0.58 U	**---**	**---**	**5.10**	**5.30**	**5.5**	3.0	---
17	1.39 U	no sample	4.0 U	4.0	---	1.39 U	---	---	1.39 U	1.39 U	4.0 U	4.0	---
18	1.23 U	no sample	3.0 U	3.0	---	1.23 U	---	---	1.23 U	1.23 U	3.0 U	3.0	---
19	0.60 U	no sample	4.0 U	4.0	---	0.60 U	---	---	0.60 U	0.60 U	4.0 U	4.0	---
20	1.23 U	no sample	5.0 U	5.0	---	1.23 U	---	---	1.23 U	1.23 U	5.0 U	5.0	---
21	**2.6**	no sample	4.0 U	4.0	---	**2.4**	---	---	3.5	3.8	**4.2**	4.0	---
22	**1.20 I**	no sample	4.0 U	4.0	---	0.94 U	---	---	**2.7**	**2.8**	4.0 U	4.0	---
23	**2.70**	no sample	**3.9**	3.0	---	0.62 U	---	---	**6.9**	**6.9**	**7.4**	3.0	---
24	0.64 U	no sample	4.0 U	4.0	---	0.64 U	---	---	0.64 U	0.64 U	4.0 U	4.0	---
25	1.15 U	no sample	2.0 U	2.0	---	1.15 U	---	---	1.15 U	1.15 U	2.0 U	2.0	---
26	2.14 U	no sample	4.7 U	4.7	---	2.14 U	---	---	2.14 U	2.14 U	4.8 U	4.8	---
26	2.32 U	no sample	5.6 U	5.6	---	2.32 U	---	---	2.32 U	2.32 U	5.7 U	5.7	---
28	3.09 U	no sample	7.5 U	7.5	---	3.09 U	---	---	3.09 U	3.09 U	7.6 U	7.6	---
29	4.01 U	no sample	6.5 U	6.5	---	4.01 U	---	---	4.01 U	4.01 U	6.7 U	6.7	---
30	**6.0 I**	no sample	9.0 U	9.0	---	**6.0 I**	---	---	**10.0**	no sample	9.0 U	9.0	---
	0.0					0.0			0.0	0.0			

LIMS Order Sorted	US41TIE Collected: 1/10/2024					ODESSA Collected: 1/10/2024				
	POC Regional Supply [TBW Lab]	EPTDS1 POE US 41 to Pasco County [TBW Lab]	EPTDS2 POE US 41 to Pasco County [Eurofins]	EPTDS2 POE US 41 to Pasco County [Eurofins]	$EPTDS_2$ POE US 41 to Pasco County Eurofins PQLs	POC Regional Supply [TBW Lab]	EPTDS1 POE Pasco County Southwest WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Southwest WTP [Eurofins]	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins PQLs
1	1.77 U	1.77 U	5.0 U	5.0	---	1.77 U	1.77 U	5.0 U	5.0	---
2	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	1.48 U	2.0 U	2.0	---
3	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	0.63 U	3.0 U	3.0	---
4	1.52 U	1.52 U	5.0 U	5.0	---	1.52 U	1.52 U	5.0 U	5.0	---
5	1.21 U	1.21 U	20 U	20	---	1.21 U	1.21 U	20 U	20	---
6	**2.2**	**2.3**	5.0 U	5.0	---	**3**	**2.9**	5.0 U	5.0	---
7	**2.6**	**2.4**	3.0 U	3.0	---	**3.4**	**2.9**	3.0 U	3.0	---
8	1.59 U	1.59 U	5.0 U	5.0	---	1.59 U	1.59 U	5.0 U	5.0	---
9	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	1.11 U	3.0 U	3.0	---
10	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	1.68 U	3.0 U	3.0	---
11	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	1.19 U	3.0 U	3.0	---
12	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	1.32 U	3.0 U	3.0	---
13	**1.30 I**	**1.20 I**	3.0 U	3.0	---	**1.70 I**	**1.60 I**	3.0 U	3.0	---
14	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	1.53 U	3.0 U	3.0	---
15	**1.90 I**	**1.20 I**	3.0 U	3.0	---	**1.00 I**	**1.30 I**	3.0 U	3.0	---
16	**2.60**	**2.60**	**3.0**	3.0	---	**3.60**	**3.70**	**4.1**	3.0	---
17	1.39 U	1.39 U	4.0 U	4.0	---	1.39 U	1.39 U	4.0 U	4.0	---
18	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	1.23 U	3.0 U	3.0	---
19	0.60 U	0.60 U	4.0 U	4.0	---	0.60 U	0.60 U	4.0 U	4.0	---
20	**1.40 I**	1.23 U	5.0 U	5.0	---	1.23 U	1.23 U	5.0 U	5.0	---
21	**2.2**	**1.70 I**	4.0 U	4.0	---	**2.5**	**2.6**	4.0 U	4.0	---
22	**1.70 I**	**1.70 I**	4.0 U	4.0	---	**2.0**	**2.1**	4.0 U	4.0	---
23	**3.7**	**3.6**	**3.8**	3.0	---	**5.0**	**4.8**	**5.4**	3.0	---
24	0.64 U	0.64 U	4.0 U	4.0	---	0.64 U	0.64 U	4.0 U	4.0	---
25	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	1.15 U	2.0 U	2.0	---
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	2.14 U	4.7 U	4.7	---
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	5.6 U	5.6	---
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	3.09 U	7.5 U	7.5	---
29	4.01 U	4.01 U	6.5 U	6.5	---	4.01 U	4.01 U	6.6 U	6.6	---
30	**9.0**	no sample	9.0 U	9.0	---	**8.0 I**	no sample	9.0 U	9.0	---
	0.0	0.0				0.0	0.0			

LIMS Order Sorted	PC1REG Collected: 1/3/2024					ENDOF64 Collected: 1/24/2024 (EPA 200.7 and EPA 537.1) and recollected 3/19/2024 (EPA533)						
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pasco County Little Road WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Little Road WTP [Eurofins]	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins PQLs	POC Regional Supply [TBW Lab] 1/24/24	$EPTDS_1$ POE Pinellas County Keller WTP [TBW Lab] 1/24/24	$EPTDS_2$ POE Pinellas County Keller WTP [AEL]	$EPTDS_2$ POE Pinellas County Keller WTP AEL MDLs	$EPTDS_2$ POE Pinellas County Keller WTP AEL PQLs	POC Regional Supply [TBW Lab] 3/19/24	$EPTDS_1$ POE Pinellas County Keller WTP [TBW Lab] 3/19/24
1	1.77 U	1.77 U	5.0 U	5.0	---	1.77 U	1.77 U	4.6 U	4.6	4.6	1.77 U	1.77 U
2	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	1.48 U	1.8 U	1.8	1.8	1.48 U	1.48 U
3	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	0.63 U	2.8 U	2.8	2.8	0.63 U	0.63 U
4	1.52 U	1.52 U	5.0 U	5.0	---	1.52 U	1.52 U	4.6 U	4.6	4.6	1.52 U	1.52 U
5	1.21 U	1.21 U	20 U	20	---	1.21 U	1.21 U	4.6 U	4.6	4.6	1.21 U	1.21 U
6	**2.7**	**2.3**	5.0 U	5.0	---	**2.6**	**2.2**	4.6 U	4.6	4.6	**2.9**	**2.2**
7	**2.1**	**2.3**	3.0 U	3.0	---	**2.7**	**2.2**	2.8 U	2.8	2.8	**3.1**	**2.3**
8	1.59 U	1.59 U	5.0 U	5.0	---	1.59 U	1.59 U	4.6 U	4.6	4.6	1.59 U	1.59 U
9	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	1.11 U	2.8 U	2.8	2.8	1.11 U	1.11 U
10	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	1.68 U	2.8 U	2.8	2.8	1.68 U	1.68 U
11	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	1.19 U	2.8 U	2.8	2.8	1.19 U	1.19 U
12	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	1.32 U	2.8 U	2.8	2.8	1.32 U	1.32 U
13	**1.40 I**	**1.20 I**	3.0 U	3.0	---	**1.40 I**	**1.30 I**	2.8 U	2.8	2.8	**1.50 I**	**1.10 I**
14	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	1.53 U	2.8 U	2.8	2.8	1.53 U	1.53 U
15	**0.90 I**	**1.00 I**	3.0 U	3.0	---	**1.50 I**	**1.20 I**	2.8 U	2.8	2.8	**1.30 I**	**1.00 I**
16	**2.7**	**2.70**	**3.1**	3.0	---	**3.10**	**2.70**	2.8 U	2.8	2.8	**3.20**	**2.40**
17	1.39 U	1.39 U	4.0 U	4.0	---	1.39 U	1.39 U	3.7 U	3.7	3.7	1.39 U	1.39 U
18	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	1.23 U	2.8 U	2.8	2.8	1.23 U	1.23 U
19	0.60 U	0.60 U	4.0 U	4.0	---	0.60 U	0.60 U	3.7 U	3.70	3.70	0.60 U	0.60 U
20	1.23 U	1.23 U	5.0 U	5.0	---	1.23 U	**1.60 I**[2]	4.6 U	4.6	4.6	1.23 U	1.23 U
21	**1.80 I**	**1.70 I**	4.0 U	4.0	---	**2.2**	1.60 I	3.7 U	3.7	3.7	**2.7**	**2.1**
22	**2.0**	**1.70 I**	4.0 U	4.0	---	**1.90 I**	**1.60 I**	3.7 U	3.7	3.7	**1.70 I**	**1.50 I**
23	**3.7**	**3.60**	**4.1**	3.0	---	**4.4**	**3.8**	2.8 U	2.8	2.8	**4.4**	**3.3**
24	0.64 U	0.64 U	4.0 U	4.0	---	0.64 U	0.64 U	3.7 U	3.7	3.7	0.64 U	0.64 U
25	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	1.15 U	1.8 U	1.8	1.8	1.15 U	1.15 U
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	2.14 U	4.8 U	4.8	4.8	2.14 U	2.14 U
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	5.7 U	5.7	5.7	2.32 U	2.32 U
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	3.09 U	7.6 U	7.6	7.6	3.09 U	3.09 U
29	4.01 U	4.01 U	6.6 U	6.6	---	4.01 U	4.01 U	6.7 U	6.7	6.7	4.01 U	4.01 U
30	**7.0 I**	no sample	9.0 U	9.0	---	**8.0 I**	no sample	9.0 U	9.0	9.0	5.0 U	no sample
	0.0	0.0				0.0	0.0				0.0	0.0

LIMS Order Sorted	EWH2SEFF Collected: 1/24/2024			MAYTMINF Collected: 1/3/2024					COSMEINF Collected: 1/16/2024 and 3/26/2024 (AEL)				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pinellas County Keller WTP [see ENDOF64]	$EPTDS_2$ POE Pinellas County Keller WTP [see ENDOF64]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE New Port Richey Maytum WTP [TBW Lab]	$EPTDS_2$ POE New Port Richey Maytum WTP [Eurofins]	$EPTDS_2$ POE New Port Richey Maytum WTP Eurofins MDLs	$EPTDS_2$ POE New Port Richey Maytum WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE St. Petersburg Cosme WTP [TBW Lab]	$EPTDS_2$ POE St. Petersburg Cosme WTP [AEL]	$EPTDS_2$ POE St. Petersburg Cosme WTP AEL MDLs	EPTDS2 POE St. Petersburg Cosme WTP AEL PQLs
1	4.00	---	---	1.77 U	1.77 U	5.0 U	5.0	---	1.77 U	1.77 U	5.2 U	5.2	5.2
2	1.48 U	---	---	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	1.48 U	2.1 U	2.1	2.1
3	0.63 U	---	---	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	0.63 U	3.1 U	3.1	3.1
4	1.52 U	---	---	1.52 U	1.52 U	5.0 U	5.0	---	1.52 U	1.52 U	5.2 U	5.2	5.2
5	1.21 U	---	---	1.21 U	1.21 U	20 U	20	---	1.21 U	1.21 U	5.2 U	5.2	5.2
6	0.68 U	---	---	0.68 U	**1.20 I**	5.0 U	5.0	---	**2.00 I**	**2.5**	5.2 U	5.2	5.2
7	1.39 U	---	---	1.39 U	1.39 U	3.0 U	3.0	---	**1.80 I**	**2.3**	3.1 U	3.1	3.1
8	1.59 U	---	---	1.59 U	1.59 U	5.0 U	5.0	---	1.59 U	1.59 U	5.2 U	5.2	5.2
9	1.11 U	---	---	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	1.11 U	3.1 U	3.1	3.1
10	1.68 U	---	---	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	1.68 U	3.1 U	3.1	3.1
11	1.19 U	---	---	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	1.19 U	3.1 U	3.1	3.1
12	1.32 U	---	---	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	1.32 U	3.1 U	3.1	3.1
13	0.60 U	---	---	0.60 U	0.60 U	3.0 U	3.0	---	**1.10 I**	**1.50 I**	3.1 U	3.1	3.1
14	1.53 U	---	---	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	1.53 U	3.1 U	3.1	3.1
15	**0.60 I**	---	---	0.50 U	0.50 U	3.0 U	3.0	---	**1.20 I**	**1.40 I**	3.1 U	3.1	3.1
16	**0.80 I**	---	---	0.58 U	0.58 U	3.0 U	3.0	---	**2.8**	**3.60**	3.1 U	3.1	3.1
17	1.39 U	---	---	1.39 U	1.39 U	4.0 U	4.0	---	1.39 U	1.39 U	4.2 U	4.2	4.2
18	1.23 U	---	---	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	1.23 U	3.1 U	3.1	3.1
19	0.60 U	---	---	0.60 U	0.60 U	4.0 U	4.0	---	0.60 U	0.60 U	4.2 U	4.2	4.2
20	**7.90**[2]	---	---	**7.90**[2]	1.23 U	5.0 U	5.0	---	**4.70**[2]	**1.70 I**[2]	5.2 U	5.2	5.2
21	0.58 U	---	---	0.58 U	0.58 U	4.0 U	4.0	---	**1.40 I**	**1.80 I**	4.2 U	4.2	4.2
22	**1.20 I**	---	---	0.94 U	0.94 U	4.0 U	4.0	---	**1.30 I**	**1.60 I**	4.2 U	4.2	4.2
23	**1.00 I**	---	---	0.62 U	0.62 U	3.0 U	3.0	---	**3.90**	**5.00**	3.1 U	3.1	3.1
24	0.64 U	---	---	0.64 U	0.64 U	4.0 U	4.0	---	0.64 U	0.64 U	4.2 U	4.2	4.2
25	1.15 U	---	---	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	1.15 U	2.1 U	2.1	2.1
26	2.14 U	---	---	2.14 U	2.14 U	4.7 U	4.70	---	2.14 U	2.14 U	4.9 U	4.9	4.9
26	2.32 U	---	---	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	5.9 U	5.9	5.9
28	3.09 U	---	---	3.09 U	3.09 U	7.5 U	7.50	---	3.09 U	3.09 U	7.8 U	7.8	7.8
29	4.01 U	---	---	4.01 U	4.01 U	6.6 U	6.60	---	4.01 U	4.01 U	6.8 U	6.8	6.8
30	**10**	---	---	**7.0 I**	no sample	9.0 U	9.0	---	**9.0**	no sample	9.0 U	9.0	9.0
	0.0			0.0	0.0				0.0	0.0			

LIMS Order Sorted	MBREGCOT Collected: 1/8/2024				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE COT at Morris Bridge [TBW Lab]	$EPTDS_2$ POE COT at Morris Bridge [Eurofins]	$EPTDS_2$ POE COT at Morris Bridge Eurofins MDLs	$EPTDS_2$ POE COT at MB Eurofins PQLs
1	1.77 U	1.77 U	5.0 U	5.0	- - -
2	1.48 U	1.48 U	2.0 U	2.0	- - -
3	0.63 U	0.63 U	3.0 U	3.0	- - -
4	1.52 U	1.52 U	5.0 U	5.0	- - -
5	1.21 U	1.21 U	20 U	20	- - -
6	**2.10 I**	**4.2**	5.0 U	5.0	- - -
7	**2**	**4.3**	**3.8**	3.0	- - -
8	1.59 U	1.59 U	5.0 U	5.0	- - -
9	1.11 U	1.11 U	3.0 U	3.0	- - -
10	1.68 U	1.68 U	3.0 U	3.0	- - -
11	1.19 U	1.19 U	3.0 U	3.0	- - -
12	1.32 U	1.32 U	3.0 U	3.0	- - -
13	**1.10 I**	**2.30**	3.0 U	3.0	- - -
14	1.53 U	1.53 U	3.0 U	3.0	- - -
15	**0.80 I**	**2.1**	3.0 U	3.0	- - -
16	**2.60**	**5.80**	**6.0**	3.0	- - -
17	1.39 U	1.39 U	4.0 U	4.0	- - -
18	1.23 U	1.23 U	3.0 U	3.0	- - -
19	0.60 U	0.60 U	4.0 U	4.0	- - -
20	1.23 U	**1.30 I**[2]	5.0 U	5.0	- - -
21	3.4	3.4	**4.4**	4.0	- - -
22	**1.60 I**	3.1	4.0 U	4.0	- - -
23	**3.6**	**7.30**	8.0	3.0	- - -
24	0.64 U	0.64 U	4.0 U	4.0	- - -
25	1.15 U	1.15 U	2.0 U	2.0	- - -
26	2.14 U	2.14 U	4.7 U	4.7	- - -
26	2.32 U	2.32 U	5.6 U	5.6	- - -
28	3.09 U	3.09 U	7.5 U	7.5	- - -
29	4.01 U	4.01 U	6.6 U	6.6	- - -
30	**9**	no sample	9.0 U	9.0	- - -
	0.0	0.0			

LIMS Order Sorted	Analyte[1]	CASRN #	Analytical Method	EPA PQL	TBW PQL	TBW MDL	301REGHILLS Collected: 4/15/2024					SCHREG Collected: 4/15/2024				
							POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Central WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Central WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Central WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Central WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lithia WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lithia WTP Eurofins PQLs
1	11CL-PF3-OUdS	763051-92-9	EPA 533	5	2	1.77	1.77 U	1.77 U	4.9 U	4.9	- - -	1.77 U	1.77 U	5.0 U	5.0	- - -
2	9CL-PF3-ONS	756426-58-1	EPA 533	2	2	1.48	1.48 U	1.48 U	2.0 U	2.0	- - -	1.48 U	1.48 U	2.0 U	2.0	- - -
3	ADONA	919005-14-4	EPA 533	3	2	0.63	0.63 U	0.63 U	2.9 U	2.9	- - -	0.63 U	0.63 U	3.0 U	3.0	- - -
4	**HFPO-DA**	13252-13-6	EPA 533	5	2	1.52	1.52 U	1.52 U	4.9 U	4.9	- - -	1.52 U	1.52 U	5.0 U	5.0	- - -
5	NFDHA	151772-58-6	EPA 533	20	2	1.21	1.21 U	1.21 U	19.7 U	19.7	- - -	1.21 U	1.21 U	20.1 U	20.1	- - -
6	PFBA	375-22-4	EPA 533	5	2	0.68	**4.70**	**5.00**	**5.7**	4.9	- - -	**4.00**	**2.00**	5.0 U	5.0	- - -
7	**PFBS**	375-73-5	EPA 533	3	2	1.39	**4.40**	**4.30**	**4.5**	2.9	- - -	**4.40**	**2.10**	3.0 U	3.0	- - -
8	8:2FTS	39108-34-4	EPA 533	5	2	1.59	1.59 U	1.59 U	4.9 U	4.9	- - -	1.59 U	1.59 U	5.0 U	5.0	- - -
9	PFDA	335-76-2	EPA 533	3	2	1.11	1.11 U	1.11 U	2.9 U	2.9	- - -	1.11 U	1.11 U	3.0 U	3.0	- - -
10	PFDoA	307-55-1	EPA 533	3	2	1.68	1.68 U	1.68 U	2.9 U	2.9	- - -	1.68 U	1.68 U	3.0 U	3.0	- - -
11	PFEESA	113507-82-7	EPA 533	3	2	1.19	1.19 U	1.19 U	2.9 U	2.9	- - -	1.19 U	1.19 U	3.0 U	3.0	- - -
12	PFHpS	375-92-8	EPA 533	3	2	1.32	1.32 U	1.32 U	2.9 U	2.9	- - -	1.32 U	1.32 U	3.0 U	3.0	- - -
13	PFHpA	375-85-9	EPA 533	3	2	0.6	**2.40**	**2.40**	2.9 U	2.9	- - -	**2.00**	**1.0 I**	3.0 U	3.0	- - -
14	4:2FTS	757124-72-4	EPA 533	3	2	1.53	1.53 U	1.53 U	2.9 U	2.9	- - -	1.53 U	1.53 U	3.0 U	3.0	- - -
15	**PFHxS**	355-46-4	EPA 533	3	2	0.50	**2.00**	**1.90 I**	2.9 U	2.9	- - -	**1.60 I**	**1.0 I**	3.0 U	3.0	- - -
16	PFHxA	307-24-4	EPA 533	3	2	0.58	**4.90**	**5.00**	**5.8**	2.9	- - -	**4.00**	**2.00**	3.0 U	3.0	- - -
17	PFMPA	377-73-1	EPA 533	4	2	1.39	1.39 U	1.39 U	3.9 U	3.9	- - -	1.39 U	1.39 U	4.0 U	4.0	- - -
18	PFMBA	863090-89-5	EPA 533	3	2	1.23	1.23 U	1.23 U	2.9 U	2.9	- - -	1.23 U	1.23 U	3.0 U	3.0	- - -
19	**PFNA**	375-95-1	EPA 533	4	2	0.60	0.60 U	0.60 U	3.9 U	3.9	- - -	0.60 U	0.60 U	3.0 U	3.0	- - -
20	6:2FTS	27619-97-2	EPA 533	5	2	1.23	1.23 U	1.23 U	4.9 U	4.9	- - -	1.23 U	1.23 U	5.0 U	5.0	- - -
21	**PFOS**	1763-23-1	EPA 533	4	2	0.58	3.90	3.60	**4.0**	3.9	- - -	3.90	**2.00**	4.0 U	4.0	- - -
22	**PFOA**	335-67-1	EPA 533	4	2	0.94	**2.60**	**2.50**	3.9 U	3.9	- - -	**2.40**	**1.50 I**	4.0 U	4.0	- - -
23	PFPeA	2706-90-3	EPA 533	3	2	0.62	**6.80**	**6.70**	**7.9**	2.9	- - -	**5.40**	**2.70**	**3.3**	3.0	- - -
24	PFPeS	2706-91-4	EPA 533	4	2	0.64	0.64 U	0.64 U	3.9 U	3.9	- - -	0.64 U	0.64 U	4.0 U	4.0	- - -
25	PFUnA	2058-94-8	EPA 533	2	2	1.15	1.15 U	1.15 U	2.0 U	2.0	- - -	1.15 U	1.15 U	2.0 U	2.0	- - -
26	NEtFOSAA	2991-50-6	EPA 537.1	5	3	2.14	2.14 U	2.14 U	4.7 U	4.7		2.14 U	2.14 U	4.7 U	4.7	- - -
26	NMeFOSAA	2355-31-9	EPA 537.1	6	3	2.32	2.32 U	2.32 U	5.6 U	5.6		2.32 U	2.32 U	5.6 U	5.6	- - -
28	PFTA	376-06-7	EPA 537.1	8	5	3.09	3.09 U	3.09 U	7.5 U	7.5		3.09 U	3.09 U	7.5 U	7.5	- - -
29	PFTrDA	72629-94-8	EPA 537.1	7	5	4.01	4.01 U	4.01 U	6.6 U	6.6		4.01 U	4.01 U	6.5 U	6.5	- - -
30	LITHIUM	7439-93-2	EPA 200.7	9	9	5	7.0	no sample	9.0 U	9.0	- - -	6.0	no sample	9.0 U	9.0	- - -
					Hazard Index[3] -		0.0	0.0				0.0	0.0			

[1] All values are expressed in ppt (or ng/L), except LITHIUM in ppb (or ug/L).

[2] Suspected field or laboratory background contamination.

[3] Used "0.0" if sample result is less than the EPA PQL per PFAS NPDWR

CASRN = Chemical Abstracts Service Registry Number

MRL = Minimum Reporting Level = quantitation limit achieved with 95% confidence by 75% of labs nationwide.

MDL = Method Detection Limit = minimum measured and reported with 99 % confidence that analyte is greater than zero.

POC = Tampa Bay Water point of connection or regional water delivery location.

PQL = Practical Quantitation Level Note: EPA PQLs (per PFAS NPDWR) = EPA's MRLs (per PFAS UCMR5)

$EPTDS_1$ = Member utility entry point to their distribution system - duplicate sample analyzed by Tampa Bay Water.

$EPTDS_2$ = Member utility entry point to their distribution system - sample analyzed by member utility's UCMR5 Certified contract laboratory

I = Results between MDL and MRL or EPA PQL per PFAS NPDWR

U = Indicates that the compound was analyzed for but not detected

PFAS NPDWR = PFAS National Primary Drinking Water Regulation (April 2024)

LIMS Order Sorted	LITHIAINF Collected: 4/15/2024			LPREG Collected: 4/15/2024					LPPSINF Collected:		
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lithia WTP [see SCHREG]	$EPTDS_2$ POE Hillsborough Lithia WTP [see SCHREG]	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Lake Park WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Lake Park WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Lake Park WTP [see LPREG]	$EPTDS_2$ POE Hillsborough Lake Park WTP [see LPREG]
1	1.77 U	---	---	1.77 U	1.77 U	5.0 U	5.0	---	---	---	---
2	1.48 U	---	---	1.48 U	1.48 U	2.0 U	2.0	---	---	---	---
3	0.63 U	---	---	0.63 U	0.63 U	3.0 U	3.0	---	---	---	---
4	1.52 U	---	---	1.52 U	1.52 U	5.0 U	5.0	---	---	---	---
5	1.21 U	---	---	1.21 U	1.21 U	19.9 U	19.9	---	---	---	---
6	0.68 U	---	---	0.68 U	**0.70 I**	5.0 U	5.0	---	---	---	---
7	1.39 U	---	---	1.39 U	1.39 U	3.0 U	3.0	---	---	---	---
8	1.59 U	---	---	1.59 U	1.59 U	5.0 U	5.0	---	---	---	---
9	1.11 U	---	---	1.11 U	1.11 U	3.0 U	3.0	---	---	---	---
10	1.68 U	---	---	1.68 U	1.68 U	3.0 U	3.0	---	---	---	---
11	1.19 U	---	---	1.19 U	1.19 U	3.0 U	3.0	---	---	---	---
12	1.32 U	---	---	1.32 U	1.32 U	3.0 U	3.0	---	---	---	---
13	0.60 U	---	---	0.60 U	0.60 U	3.0 U	3.0	---	---	---	---
14	1.53 U	---	---	1.53 U	1.53 U	3.0 U	3.0	---	---	---	---
15	0.50 U	---	---	0.50 U	0.50 U	3.0 U	3.0	---	---	---	---
16	0.58 U	---	---	0.58 U	0.58 U	3.0 U	3.0	---	---	---	---
17	1.39 U	---	---	1.39 U	1.39 U	4.0 U	4.0	---	---	---	---
18	1.23 U	---	---	1.23 U	1.23 U	3.0 U	3.0	---	---	---	---
19	0.60 U	---	---	0.60 U	0.60 U	3.0 U	3.0	---	---	---	---
20	1.23 U	---	---	1.23 U	1.23 U	5.0 U	5.0	---	---	---	---
21	0.58 U	---	---	0.58 U	**0.60 I**	4.0 U	4.0	---	---	---	---
22	0.94 U	---	---	0.94 U	**1.10 I**	4.0 U	4.0	---	---	---	---
23	0.62 U	---	---	0.62 U	0.62 U	3.0 U	3.0	---	---	---	---
24	0.64 U	---	---	0.64 U	0.64 U	4.0 U	4.0	---	---	---	---
25	1.15 U	---	---	1.15 U	1.15 U	2.0 U	2.0	---	---	---	---
26	2.14 U	---	---	2.14 U	2.14 U	4.7 U	4.7	---	---	---	---
26	2.32 U	---	---	2.32 U	2.32 U	5.6 U	5.6	---	---	---	---
28	3.09 U	---	---	3.09 U	3.09 U	7.5 U	7.5	---	---	---	---
29	4.01 U	---	---	4.01 U	4.01 U	6.6 U	6.6	---	---	---	---
30	5.0 U	---	---	5.0 U	no sample	9.0 U	9.0	---	---	---	---
	0.0			0.0	0.0						

LIMS Order Sorted	NWHREG Collected:4/15/2024					NWHINF Collected: 4/15/2024			LBREGPASCO Collected: 4/16/2024 (E537.1)5/13/2024 (LB POE) 5/20/2024 (LBREGPASCO)				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [TBW Lab]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [Eurofins]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins MDLs	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	$EPTDS_2$ POE Hillsborough Fawn Ridge WTP [see NWHREG]	POC Regional Supply [TBW Lab]	EPTDS1 POE Lake Bridge to Pasco County [TBW Lab]	$EPTDS_2$ POE Lake Bridge to Pasco County [Eurofins]	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins MDLs	$EPTDS_2$ POE Lake Bridge to Pasco County Eurofins PQLs
1	1.77 U	1.77 U	4.9 U	4.9	---	1.77 U	---	---	1.77 U	1.77 U	5.0 U	5.0	---
2	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	---	---	1.48 U	1.48 U	2.0 U	2.0	---
3	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	---	---	0.63 U	0.63 U	3.0 U	3.0	---
4	1.52 U	1.52 U	4.9 U	4.9	---	1.52 U	---	---	1.52 U	1.52 U	5.0 U	5.0	---
5	1.21 U	1.21 U	19.7 U	19.7	---	1.21 U	---	---	1.21 U	1.21 U	20.0 U	20.0	---
6	**1.90 I**	**1.40 I**	4.9 U	4.9	---	**0.80 I**	---	---	**5.80**	**5.10**	**6.7**	5.0	---
7	1.39 U	1.39 U	3.0 U	3.0	---	1.39 U	---	---	**4.30**	**4.10**	**4.2**	3.0	---
8	1.59 U	1.59 U	4.9 U	4.9	---	1.59 U	---	---	1.59 U	1.59 U	5.0 U	5.0	---
9	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	---	---	1.11 U	1.11 U	3.0 U	3.0	---
10	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	---	---	1.68 U	1.68 U	3.0 U	3.0	---
11	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	---	---	1.19 U	1.19 U	3.0 U	3.0	---
12	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	---	---	1.32 U	1.32 U	3.0 U	3.0	---
13	**0.70 I**	0.60 U	3.0 U	3.0	---	0.60 U	---	---	**3.00**	**2.70**	**3.3**	3.0	---
14	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	---	---	1.53 U	1.53 U	3.0 U	3.0	---
15	0.50 U	0.50 U	3.0 U	3.0	---	0.50 U	---	---	**2.0**	**1.6**	3.0 U	3.0	---
16	**1.40 I**	**0.70 I**	3.0 U	3.0	---	0.58 U	---	---	**6.30**	**5.50**	**6.2**	3.0	---
17	1.39 U	1.39 U	3.9 U	3.9	---	1.39 U	---	---	1.39 U	1.39 U	4.0 U	4.0	---
18	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	---	---	1.23 U	1.23 U	3.0 U	3.0	---
19	0.60 U	0.60 U	3.9 U	3.9	---	0.60 U	---	---	0.60 U	0.60 U	3.0 U	3.0	---
20	1.23 U	1.23 U	4.9 U	4.9	---	1.23 U	---	---	1.23 U	1.23 U	5.0 U	5.0	---
21	**1.20 I**	**1.10 I**	3.9 U	3.9	---	**1.10 I**	---	---	3.20	**2.40**	4.0 U	4.0	---
22	**1.20 I**	**1.0 I**	3.9 U	3.9	---	**1.0 I**	---	---	**2.80**	**2.80**	4.0 U	4.0	---
23	**2.10**	**0.80 I**	3.0 U	3.0	---	0.62 U	---	---	**8.10**	**7.20**	**8.4**	3.0	---
24	0.64 U	0.64 U	3.9 U	3.9	---	0.64 U	---	---	0.64 U	0.64 U	4.0 U	4.0	---
25	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	---	---	1.15 U	1.15 U	2.0 U	2.0	---
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	---	---	2.14 U	2.14 U	5.0 U	5.0	---
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	---	---	2.32 U	2.32 U	6.0 U	6.0	---
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	---	---	3.09 U	3.09 U	8.0 U	8.0	---
29	4.01 U	4.01 U	6.6 U	6.6	---	4.01 U	---	---	4.01 U	4.01 U	7.0 U	7.0	---
30	5.0 U	no sample	9.0 U	9.0	---	5.0 U	---	---	5.0 U	no sample	9.0 U	9.0	---
	0.0	0.0				0.0			0.0	0.0			

LIMS Order Sorted	US41TIE Collected: 4/16/2024 (E537.1) 5/13/2024 (US41TIEPOE) 5/15/2024 (US41TIE)					ODESSA Collected: 4/16/2024 and 5/13/2024(SW WTP)				
	POC Regional Supply [TBW Lab]	EPTDS1 POE US 41 to Pasco County [TBW Lab]	EPTDS2 POE US 41 to Pasco County [Eurofins]	EPTDS2 POE US 41 to Pasco County [Eurofins]	$EPTDS_2$ POE US 41 to Pasco County Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pasco County Southwest WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Southwest WTP [Eurofins]	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Southwest WTP Eurofins PQLs
1	1.77 U	1.77 U	5.0 U	5.0	---	1.77 U	1.77 U	5.0 U	5.0	---
2	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	1.48 U	2.0 U	2.0	---
3	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	0.63 U	3.0 U	3.0	---
4	1.52 U	1.52 U	5.0 U	5.0	---	1.52 U	1.52 U	5.0 U	5.0	---
5	1.21 U	1.21 U	20.0 U	20.0	---	1.21 U	1.21 U	20.0 U	20.0	---
6	**1.90 I**	**1.70 I**	5.0 U	5.0	---	**1.30 I**	**1.70 I**	5.0 U	5.0	---
7	1.39 U	1.39 U	3.0 U	3.0	---	1.39 U	1.39 U	3.0 U	3.0	---
8	1.59 U	1.59 U	5.0 U	5.0	---	1.59 U	1.59 U	5.0 U	5.0	---
9	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	1.11 U	3.0 U	3.0	---
10	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	1.68 U	3.0 U	3.0	---
11	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	1.19 U	3.0 U	3.0	---
12	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	1.32 U	3.0 U	3.0	---
13	**0.90 I**	**0.70 I**	3.0 U	3.0	---	0.60 U	**0.80 I**	3.0 U	3.0	---
14	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	1.53 U	3.0 U	3.0	---
15	**0.70 I**	0.50 U	3.0 U	3.0	---	0.50 U	0.50 U	3.0 U	3.0	---
16	**1.80 I**	**1.30 I**	3.0 U	3.0	---	**1.20 I**	**1.50 I**	3.0 U	3.0	---
17	1.39 U	1.39 U	4.0 U	4.0	---	1.39 U	1.39 U	4.0 U	4.0	---
18	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	1.23 U	3.0 U	3.0	---
19	0.60 U	0.60 U	3.0 U	3.0	---	0.60 U	0.60 U	3.0 U	3.0	---
20	1.23 U	1.23 U	5.0 U	5.0	---	1.23 U	1.23 U	5.0 U	5.0	---
21	**1.0 I**	0.58 U	4.0 U	4.0	---	**1.10 I**	0.58 U	4.0 U	4.0	---
22	**1.20 I**	**1.10 I**	4.0 U	4.0	---	**1.20 I**	**1.20 I**	4.0 U	4.0	---
23	**2.20**	**1.80 I**	3.0 U	3.0	---	**1.70 I**	**1.90 I**	3.0 U	3.0	---
24	0.64 U	0.64 U	4.0 U	4.0	---	0.64 U	0.64 U	4.0 U	4.0	---
25	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	1.15 U	2.0 U	2.0	---
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	2.14 U	4.7 U	4.7	---
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	5.6 U	5.6	---
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	3.09 U	7.5 U	7.5	---
29	4.01 U	4.01 U	6.5 U	6.5	---	4.01 U	4.01 U	6.6 U	6.6	---
30	5.0 U	no sample	9.0 U	9.0	---	5.0 U	no sample	9.0 U	9.0	---
	0.0	0.0				0.0	0.0			

LIMS Order Sorted	PC1REG Collected: 4/17/2024 and 5/13/2024 (Little Road)					ENDOF64 Collected: 4/23/2024					EWH2SEFF Collected: 4/23/2024		
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pasco County Little Road WTP [TBW Lab]	$EPTDS_2$ POE Pasco County Little Road WTP [Eurofins]	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins MDLs	$EPTDS_2$ POE Pasco County Little Road WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pinellas County Keller WTP [TBW Lab]	$EPTDS_2$ POE Pinellas County Keller WTP [AEL]	$EPTDS_2$ POE Pinellas County Keller WTP AEL MDLs	$EPTDS_2$ POE Pinellas County Keller WTP AEL PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE Pinellas County Keller WTP [see ENDOF64]	$EPTDS_2$ POE Pinellas County Keller WTP [see ENDOF64]
1	1.77 U	1.77 U	5.0 U	5.0	---	1.77 U	1.77 U	4.5 U	4.5	4.5	1.77 U	---	---
2	1.48 U	1.48 U	2.0 U	2.0	---	1.48 U	1.48 U	1.8 U	1.8	1.8	1.48 U	---	---
3	0.63 U	0.63 U	3.0 U	3.0	---	0.63 U	0.63 U	2.7 U	2.7	2.7	0.63 U	---	---
4	1.52 U	1.52 U	5.0 U	5.0	---	1.52 U	1.52 U	4.5 U	4.5	4.5	1.52 U	---	---
5	1.21 U	1.21 U	20.0 U	20.0	---	1.21 U	1.21 U	4.5 U	4.5	4.5	1.21 U	---	---
6	**1.30 I**	**1.50 I**	5.0 U	5.0	---	**1.50 I**	**1.20 I**	4.5 U	4.5	4.5	0.68 U	---	---
7	1.39 U	1.39 U	3.0 U	3.0	---	1.39 U	1.39 U	2.7 U	2.7	2.7	1.39 U	---	---
8	1.59 U	1.59 U	5.0 U	5.0	---	1.59 U	1.59 U	4.5 U	4.5	4.5	1.59 U	---	---
9	1.11 U	1.11 U	3.0 U	3.0	---	1.11 U	1.11 U	2.7 U	2.7	2.7	1.11 U	---	---
10	1.68 U	1.68 U	3.0 U	3.0	---	1.68 U	1.68 U	2.7 U	2.7	2.7	1.68 U	---	---
11	1.19 U	1.19 U	3.0 U	3.0	---	1.19 U	1.19 U	2.7 U	2.7	2.7	1.19 U	---	---
12	1.32 U	1.32 U	3.0 U	3.0	---	1.32 U	1.32 U	2.7 U	2.7	2.7	1.32 U	---	---
13	0.60 U	**0.80 I**	3.0 U	3.0	---	**0.80 I**	**0.70 I**	2.7 U	2.7	2.7	0.60 U	---	---
14	1.53 U	1.53 U	3.0 U	3.0	---	1.53 U	1.53 U	2.7 U	2.7	2.7	1.53 U	---	---
15	0.50 U	0.50 U	3.0 U	3.0	---	0.50 U	0.50 U	2.7 U	2.7	2.7	0.50 U	---	---
16	**1.20 I**	**1.40 I**	3.0 U	3.0	---	**1.40 I**	**1.30 I**	2.7 U	2.7	2.7	**0.60 I**	---	---
17	1.39 U	1.39 U	4.0 U	4.0	---	1.39 U	1.39 U	3.6 U	3.6	3.6	1.39 U	---	---
18	1.23 U	1.23 U	3.0 U	3.0	---	1.23 U	1.23 U	2.7 U	2.7	2.7	1.23 U	---	---
19	0.60 U	0.60 U	3.0 U	3.0	---	0.60 U	0.60 U	3.6 U	3.6	3.6	0.60 U	---	---
20	1.23 U	1.23 U	5.0 U	5.0	---	1.23 U	**1.90 I**	4.5 U	4.5	4.5	1.23 U	---	---
21	**0.80 I**	**0.80 I**	4.0 U	4.0	---	**0.70 I**	**0.90 I**	3.6 U	3.6	3.6	0.58 U	---	---
22	**1.20 I**	**1.10 I**	4.0 U	4.0	---	**1.30 I**	**1.10 I**	3.6 U	3.6	3.6	**1.30 I**	---	---
23	**1.50 I**	**1.80 I**	3.0 U	3.0	---	**1.90 I**	**1.60 I**	2.7 U	2.7	2.7	**0.80 I**	---	---
24	0.64 U	0.64 U	4.0 U	4.0	---	0.64 U	0.64 U	3.6 U	3.6	3.6	0.64 U	---	---
25	1.15 U	1.15 U	2.0 U	2.0	---	1.15 U	1.15 U	1.8 U	1.8	1.8	1.15 U	---	---
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	2.14 U	4.7 U	4.7	4.7	2.14 U	---	---
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	5.6 U	5.6	5.6	2.32 U	---	---
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	3.09 U	7.5 U	7.5	7.5	3.09 U	---	---
29	4.01 U	4.01 U	6.5 U	6.5	---	4.01 U	4.01 U	6.5 U	6.5	6.5	4.01 U	---	---
30	5.0 U	no sample	9.0 U	9.0	---	5.0 U	no sample	9.0 U	9.0	9.0	5.0 U	---	---
	0.0	0.0				0.0	0.0				0.0		

LIMS Order Sorted	MAYTMINF Collected: 4/17/2024					COSMEINF Collected: 4/25/2024				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE New Port Richey Maytum WTP [TBW Lab]	$EPTDS_2$ POE New Port Richey Maytum WTP [Eurofins]	$EPTDS_2$ POE New Port Richey Maytum WTP Eurofins MDLs	$EPTDS_2$ POE New Port Richey Maytum WTP Eurofins PQLs	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE St. Petersburg Cosme WTP [TBW Lab]	$EPTDS_2$ POE St. Petersburg Cosme WTP [AEL]	$EPTDS_2$ POE St. Petersburg Cosme WTP AEL MDLs	EPTDS2 POE St. Petersburg Cosme WTP AEL PQLs
1	1.77 U	1.77 U	4.7 U	4.7	---	1.77 U	1.77 U	4.8 U	4.8	4.8
2	1.48 U	1.48 U	1.9 U	1.9	---	1.48 U	1.48 U	1.9 U	1.9	1.9
3	0.63 U	0.63 U	2.8 U	2.8	---	0.63 U	0.63 U	2.9 U	2.9	2.9
4	1.52 U	1.52 U	4.7 U	4.7	---	1.52 U	1.52 U	4.8 U	4.8	4.8
5	1.21 U	1.21 U	18.8 U	18.8	---	1.21 U	1.21 U	4.8 U	4.8	4.8
6	0.68 U	0.68 U	4.7 U	4.7	---	**0.90 I**	**1.30 I**	4.8 U	4.8	4.8
7	1.39 U	1.39 U	2.8 U	2.8	---	1.39 U	1.39 U	2.9 U	2.9	2.9
8	1.59 U	1.59 U	4.7 U	4.7	---	1.59 U	1.59 U	4.8 U	4.8	4.8
9	1.11 U	1.11 U	2.8 U	2.8	---	1.11 U	1.11 U	2.9 U	2.9	2.9
10	1.68 U	1.68 U	2.8 U	2.8	---	1.68 U	1.68 U	2.9 U	2.9	2.9
11	1.19 U	1.19 U	2.8 U	2.8	---	1.19 U	1.19 U	2.9 U	2.9	2.9
12	1.32 U	1.32 U	2.8 U	2.8	---	1.32 U	1.32 U	2.9 U	2.9	2.9
13	0.60 U	0.60 U	2.8 U	2.8	---	0.60 U	0.60 U	2.9 U	2.9	2.9
14	1.53 U	1.53 U	2.8 U	2.8	---	1.53 U	1.53 U	2.9 U	2.9	2.9
15	0.50 U	0.50 U	2.8 U	82.8	---	0.50 U	0.50 U	2.9 U	2.9	2.9
16	0.58 U	0.58 U	2.8 U	2.8	---	**1.0 I**	**1.20 I**	2.9 U	2.9	2.9
17	1.39 U	1.39 U	3.8 U	3.8	---	1.39 U	1.39 U	3.9 U	3.9	3.9
18	1.23 U	1.23 U	2.8 U	2.8	---	1.23 U	1.23 U	2.9 U	2.9	2.9
19	0.60 U	0.60 U	3.8 U	3.8	---	0.60 U	0.60 U	3.9 U	3.9	3.9
20	1.23 U	1.23 U	4.7 U	4.7	---	1.23 U	1.23 U	4.8 U	4.8	4.8
21	0.58 U	0.58 U	3.8 U	3.8	---	**0.60 I**	**0.80 I**	3.9 U	3.9	3.9
22	0.94 U	0.94 U	3.8 U	3.8	---	0.94 U	0.94 U	3.9 U	3.9	3.9
23	0.62 U	0.62 U	2.8 U	2.8	---	**1.40 I**	**1.50 I**	2.9 U	2.9	2.9
24	0.64 U	0.64 U	3.8 U	3.8	---	0.64 U	0.64 U	3.9 U	3.9	3.9
25	1.15 U	1.15 U	1.9 U	1.9	---	1.15 U	1.15 U	1.9 U	1.9	1.9
26	2.14 U	2.14 U	4.7 U	4.7	---	2.14 U	2.14 U	5.0 U	5.0	5.0
26	2.32 U	2.32 U	5.6 U	5.6	---	2.32 U	2.32 U	6.0 U	6.0	6.0
28	3.09 U	3.09 U	7.5 U	7.5	---	3.09 U	3.09 U	8.0 U	8.0	8.0
29	4.01 U	4.01 U	6.6 U	6.6	---	4.01 U	4.01 U	7.0 U	7.0	7.0
30	5.0 U	no sample	9.0 U	9.0	---	5.0 U	no sample	9.0 U	9.0	9.0
	0.0	0.0				0.0	0.0			

LIMS Order Sorted	MBREGCOT Collected: 5/30/2024				
	POC Regional Supply [TBW Lab]	$EPTDS_1$ POE COT at Morris Bridge [TBW Lab]	$EPTDS_2$ POE COT at Morris Bridge [Eurofins]	$EPTDS_2$ POE COT at Morris Bridge Eurofins MDLs	$EPTDS_2$ POE COT at MB Eurofins PQLs
1	1.77 U	---	5.0 U	5.0	---
2	1.48 U	---	2.0 U	2.0	---
3	0.63 U	---	3.0 U	3.0	---
4	1.52 U	---	5.0	5.0	---
5	1.21 U	---	20 U	20	---
6	**3.60**	**---**	5.0 U	5.0	---
7	**1.60 I**	**---**	**3.5**	3.0	---
8	1.59 U	---	5.0 U	5.0	---
9	1.11 U	---	3.0 U	3.0	---
10	1.68 U	---	3.0 U	3.0	---
11	1.19 U	---	3.0 U	3.0	---
12	1.32 U	---	3.0 U	3.0	---
13	**1.0 I**	**---**	3.0 U	3.0	---
14	1.53 U	---	3.0 U	3.0	---
15	**0.60 I**	**---**	3.0 U	3.0	---
16	**2.20**	**---**	**5.1**	3.0	---
17	1.39 U	---	4.0 U	4.0	---
18	1.23 U	---	3.0 U	3.0	---
19	0.60 U	---	4.0 U	4.0	---
20	1.23 U	**---**	5.0 U	5.0	---
21	**1.10 I**	---	4.0 U	4.0	---
22	**1.30 I**	---	4.0 U	4.0	---
23	**2.90**	**---**	**7.0**	3.0	---
24	0.64 U	---	4.0 U	4.0	---
25	1.15 U	---	2.0 U	2.0	---
26	2.14 U	---	4.8 U	4.8	---
26	2.32 U	---	5.7 U	5.7	---
28	3.09 U	---	7.7 U	7.7	---
29	4.01 U	---	6.7 U	6.7	---
30	**8. I**	---	9.0 U	9.0	---
	0.0				

APPENDIX B

LAB RESULTS – SOURCE WATER QUALITY

Table 1 Lab data qualifiers legend

Meaning	Abbreviation
Non Detect	ND
Reporting Limit	RL
Method Detection Limit	MDL
Reported concentration is estimated. <RL but >MDL	J
Not measured	NM

Table 2 RSWTP Raw Water Quality (8/20/24 sample)

Analyzed Date	Parameter	Result	Units
8/29/2024	Temperature	18.4	deg C
8/29/2024	pH	7.24	SU
8/29/2024	Conductivity	145.3	uS/cm
8/30/2024	ORP	245.5	mV
8/29/2024	Turbidity	3.385	NTU
8/29/2024	UV254/UVT	1.227/5.9%	abs cm-1
8/29/2024	Color (True/Apparent)	224/417	PtCo 50 mm
8/30/2024	Zeta potential	-11.51	mV
8/29/2024	Total Hardness	65	mg/L as $CaCO_3$
9/4/2024	TDS	180	mg/L
8/29/2024	Alkalinity	61	mg/L as $CaCO_3$
8/29/2024	TOC	25.68	mg/L
8/29/2024	DOC	25.33	mg/L
8/30/2024	Phosphate	0.226	mg/L
8/29/2024	Chloride	17.4	mg/L
8/29/2024	Sulfate	28.7 (UR)	mg/L
9/4/2024	Bromide	54	ug/L
9/4/2024	Fluoride	0.19 J	mg/L
9/4/2024	PFAS	See Tab 3	ng/L
8/30/2024	Nitrate	1.10 NO3-N	mg/L

Table 3 Additional Sample Water Quality from 8/20/24 Sampling Event

Analyzed Date	Sample ID	UVT_{254} (abs)	TOC (mg/L)	DOC (mg/L)	Nitrate (mg/L)	Bromide (ug/L)	Units
8/29/2024	WTP Ozonated Effluent	0.061	4.619	4.601	NM	53	mg/L
8/29/2024	WTP Filtered Effluent	0.037	3.036	3.012	NM	53	mg/L
8/28/2024	Composite BUD Wells 2,4,6	0.019	0.881	0.83	1.12	NM	mg/L
8/28/2024	BUD Well 7	0.005	0.371	0.366	2.28	NM	mg/L

Table 4 Raw Water PFAS EPA Method 533 (8/20/24 sample)

Parameter*	**BUD 2/4/6** Blend*	**BUD 7***	RSWTP **Raw** Water	RSWTP Ozonated Effluent	RS**WTP Filt Eff***
PFBA	**1.7 J**	**3.8**	13.0	**10.0**	**8.7**
PFBS	**4.8**	**9.8**	4.8	**4.2**	**4.2**
PFPeA	**2.6**	**9.2**	7.8	**6.5**	**6.3**
PFHxA	**1.9 J**	**6.3**	4.1	**4.0**	**3.7**
F53B Major	< 0.77	< 0.75	< 2.0	< 0.73	< 0.75
F53B Minor	< 0.78	< 0.77	< 2.0	< 0.75	< 0.76
ADONA	< 0.56	< 0.55	< 2.0	< 0.54	< 0.55
HFPO-DA	< 1.0	< 1.0	< 2.0	< 0.99	< 1.0
8:2FTS A	< 0.66	< 0.65	< 2.0	< 0.63	< 0.65
PFDA	< 0.70	< 0.68	< 2.0	< 0.66	< 0.68
PFDoA	< 0.86	< 0.84	< 2.0	< 0.82	< 0.84
PFEESA	< 0.61	< 0.60	< 2.0	< 0.58	< 0.59
PFHpS	< 0.71	< 0.70	< 2.0	< 0.68	< 0.69
4:2FTS A	< 0.53	< 0.52	< 2.0	< 0.51	< 0.52
PFHxS	**3.3**	**4.0**	3.1	**2.2**	**1.7 J**
PFMPA	< 0.59	< 0.58	< 2.0	< 0.56	< 0.57
PFMBA	< 0.54	< 0.52	< 2.0	< 0.51	< 0.53
6:2FTS A	< 1.5	< 1.5	< 2.0	< 1.4	< 1.5
PFPeS	< 0.68	< 0.67	< 2.0	< 0.65	< 0.67
PFUnA	< 0.73	< 0.71	< 2.0	< 0.69	< 0.71
NFDHA	< 0.72	< 0.70	< 2.0	< 0.68	< 0.70
PFHpA	**0.96 J**	**2.9**	3.8	**2.3**	**2.6**
PFOA	**2.4**	**7.7**	4.5	**4.4**	**3.1**
PFOS	**6.4**	**12.0**	6.6	**4.8**	**3.9**
PFNA	< 1.0	< 1.0	< 2.0	< 0.99	< 1.0
*Filtered through 0.45 um filter prior to analysis					

APPENDIX C

LAB RESULTS – SIX JAR TESTING

Table 1 Reporting Legend

Acronym	Meaning
RL	Reporting Limit
MDL	Method Detection Limit
J	Value provided is lower than the RL but higher than the MDL

Table 2 SIX Jar Test Matrix

Parameter	Unit	Test Condition #1	Test Condition #2	Test Condition #3
Source Water	-	RSWTP Raw Water	RSWTP Raw Water	RSWTP Raw Water
Resin	-	Lanxess S5128*	Lanxess S5128*	Lanxess S5128*
Contact Time	min	30	30	30
Resin Dose	mL/L	20	20	30
NaCl Regen Conc.	g/L	20	30	30
* Resin seasoned during City of Tampa Tippin Pilot (seasoned 11 months)				

Table 3 SIX Jar Test Results

	Cycle	TOC	UVT	Color	Bromide	Alkalinity	Sulfate	Chloride	Notes
		mg/L	%	mg/L	ug/L	mg/L	mg/L	mg/L	
20 mL/L x 20 g/L	0	25.68	5.9	417	54	61	18	17.4	
	5	9.704	22.2	366	17	74	0.17J	61.8	Homogenized cycles 1-5.
	10	12.16	18.4	366	13	24	0.18J	64.5	Homogenized cycles 6-10.
	15	14.15	15.6	390	14	23	0.22J	62.9	Homogenized cycles 11-15.
	20	13.43	15.6	357	14	24	0.19J	66	Homogenized cycles 16-20.
	25	14.09	13	428	14	32	0.21J	65.1	Homogenized cycles 21-25.
20 mL/L x 30 g/L	0	25.68	5.9	417	54	61	18	17.4	
	5	10.15	20.2	379	17	41	0.22J	64.2	Homogenized cycles 1-5.
	10	12.39	19.1	356	14	21	0.24J	64.4	Homogenized cycles 6-10.
	15	14.38	15.2	391	14	24	0.24J	65.6	Homogenized cycles 11-15.
	20	12.73	14.1	337	13	26	0.22J	68.1	Homogenized cycles 16-20.
	25	14.19	12.9	427	14	31	0.26	67.1	Homogenized cycles 21-25.
30 mL/L x 30 g/L	0	25.68	5.9	417	54	61	18	17.4	
	5	8.516	28.3	339	16	43	0.12J	66.5	Homogenized cycles 1-5.
	10	9.357	23.9	370	13	21	0.11J	74.6	Homogenized cycles 6-10.
	15	10.98	20	364	12	18	0.13J	70.5	Homogenized cycles 11-15.
	20	10.1	20.5	378	13	21	0.12J	73.8	Homogenized cycles 16-20.
	25	11.26	16.8	398	12	25	0.12J	72.1	Homogenized cycles 21-25.
Sent duplicate PFAS sample to TBW for 20 mL/L x 20 g/L and x 30 g/L sets (10 samples total)									

Table 4 SIX Jar Test PFAS Results – Condition: 20 mL/L x 30 min x 20 g/L

Parameter	Cycle 5		Cycle 10		Cycle 15		Cycle 20		Cycle 25	
	Result	DL	Result	DL	Result	DL	Result	DL	Result	DL
PFBA	4.6	0.64	5.8	0.66	6.3	0.65	8.6	0.64	11	0.67
PFBS	1.5J	0.6	1.3J	0.61	1.6J	0.6	1.9J	0.59	2.1	0.62
PFPeA	4.9	0.58	4.1	0.6	3.7	0.59	5	0.58	3.5	0.61
PFHxA	2.7	0.64	2.9	0.65	2.9	0.64	3.5	0.64	3.3	0.66

F53B Major	ND	0.74	ND	0.76	ND	0.75	ND	0.74	ND	0.78
F53B Minor	ND	0.76	ND	0.78	ND	0.76	ND	0.76	ND	0.79
ADONA	ND	0.54	ND	0.56	ND	0.55	ND	0.54	ND	0.57
HFPO-DA	ND	1	ND	1	ND	1	ND	1	ND	1
8:2FTS A	ND	0.64	ND	0.66	ND	0.65	ND	0.64	ND	0.67
PFDA	ND	0.68	ND	0.69	ND	0.68	ND	0.67	ND	0.7
PFDoA	ND	0.83	ND	86	ND	0.84	ND	0.83	ND	0.87
PFEESA	ND	0.59	ND	0.61	ND	0.59	ND	0.59	ND	0.62
PFHpS	ND	0.69	ND	0.71	ND	0.69	ND	0.69	ND	0.72
4:2FTS A	ND	0.52	ND	0.53	ND	0.52	ND	0.52	ND	0.54
PFHxS	1.1J	0.69	ND	0.71	0.90J	0.69	0.94J	0.69	17	0.72
PFMPA	ND	0.57	ND	0.59	ND	0.57	ND	0.57	ND	0.6
PFMBA	ND	0.52	ND	0.54	ND	0.53	ND	0.52	ND	0.55
6:2FTS A	ND	1.5	ND	1.5	ND	1.5	ND	1.5	ND	1.5
PFPeS	ND	0.66	ND	0.68	ND	0.67	ND	0.66	ND	0.69
PFUnA	ND	0.7	ND	0.72	ND	0.71	ND	0.7	ND	0.73
NFDHA	ND	0.7	ND	0.71	ND	0.7	ND	0.69	ND	0.73
PFHpA	2.1	0.55	2.5	0.57	2.7	0.56	2.3	0.55	2.3	0.58
PFOA	2.9	0.56	2.5	0.57	2.5	0.56	3.4	0.56	3.9	0.58
PFOS	2.9	0.72	2.6	0.74	2.4	0.72	2.8	0.72	ND	0.75
PFNA	ND	1	ND	1	ND	1	ND	1	ND	1.1

Table 5 SIX Jar Test PFAS Results – Condition: 20 mL/L x 30 min x 30 g/L

Parameter	**Cycle 5**		**Cycle 10**		**Cycle 15**		**Cycle 20**		**Cycle 25**	
	Result	DL	Result	DL	Result	DL	Result	DL	Result	DL
PFBA	4.6	0.66	9.1	0.65	7.7	0.65	5.1	0.65	8.4	0.66
PFBS	1.5J	0.61	1.7J	0.6	1.6J	0.61	1.7J	0.6	1.9J	0.61
PFPeA	3.5	0.6	3.5	0.59	3.4	0.59	34	0.59	3.9	0.59
PFHxA	2.2	0.65	3.1	0.65	3.1	0.65	2.6	0.65	3.4	0.65
F53B Major	ND	0.76	ND	0.75	ND	0.76	ND	0.76	ND	0.76
F53B Minor	ND	0.78	ND	0.77	ND	0.77	ND	0.77	ND	0.77
ADONA	ND	0.56	ND	0.55	ND	0.55	ND	0.55	ND	0.55
HFPO-DA	ND	1	ND	1	ND	1	ND	1	ND	1
8:2FTS A	ND	0.66	ND	0.65	ND	0.66	ND	0.65	ND	0.66
PFDA	ND	0.69	ND	0.68	ND	0.69	ND	0.68	ND	0.69
PFDoA	ND	0.86	ND	0.85	ND	0.85	ND	0.85	ND	0.85
PFEESA	ND	0.61	ND	0.6	ND	0.6	ND	0.6	ND	0.6
PFHpS	ND	0.71	ND	0.7	ND	0.7	ND	0.7	ND	0.7
4:2FTS A	ND	0.53	ND	0.53	ND	0.53	ND	0.53	ND	0.53
PFHxS	0.99J	0.71	0.85J	0.7	1.4J	0.7	1.6J	0.7	0.94J	0.7
PFMPA	ND	0.59	ND	0.58	ND	0.58	ND	0.58	ND	0.58
PFMBA	ND	0.54	ND	0.53	ND	0.53	ND	0.53	ND	0.53
6:2FTS A	ND	1.5	ND	1.5	ND	1.5	ND	1.5	ND	1.5
PFPeS	ND	0.68	ND	0.67	ND	0.67	ND	0.67	ND	0.68
PFUnA	ND	0.72	ND	0.71	ND	0.72	ND	0.71	ND	0.72

NFDHA	ND	0.71	ND	0.71	ND	0.71	ND	0.71	ND	0.71
PFHpA	2.1	0.57	2.6	0.56	2.4	0.56	2.8	0.56	2.8	0.57
PFOA	2.3	0.57	3.5	0.57	3.4	0.57	3.1	0.57	3.2	0.57
PFOS	2.5	0.74	2.3	0.73	2.9	0.73	2.2	0.73	2.1	0.73
PFNA	ND	1	ND	1	ND	1	ND	1	ND	1

Table 6 SIX Jar Test PFAS Results – Condition: 30 mL/L x 30 min x 30 g/L

Parameter	**Cycle 5**		**Cycle 10**		**Cycle 15**		**Cycle 20**		**Cycle 25**	
	Result	DL	Result	DL	Result	DL	Result	DL	Result	DL
PFBA	3.6	0.63	8	0.67	5.1	0.66	5.2	0.65	6.5	0.59
PFBS	1.2J	0.58	1.2J	0.62	1.3J	0.61	1.5J	0.6	1.2J	0.55
PFPeA	2.6	0.57	3.3	0.61	5.3	0.59	3.4	0.59	2.8	0.54
PFHxA	2.1	0.62	2.5	0.66	2.5	0.65	2.4	0.64	2.2	0.59
F53B Major	ND	0.73	ND	0.78	ND	0.76	ND	0.75	ND	0.69
F53B Minor	ND	0.74	ND	0.79	ND	0.77	ND	0.77	ND	0.7
ADONA	ND	0.53	ND	0.57	ND	0.55	ND	0.55	ND	0.5
HFPO-DA	ND	0.98	ND	1	ND	1	ND	1	ND	0.93
8:2FTS A	ND	0.63	ND	0.67	ND	0.66	ND	0.65	ND	0.59
PFDA	ND	0.66	ND	0.7	ND	0.69	ND	0.68	ND	0.62
PFDoA	ND	0.81	ND	0.87	ND	0.85	ND	0.84	ND	0.77
PFEESA	ND	0.58	ND	0.62	ND	0.6	ND	0.6	ND	0.54
PFHpS	ND	0.67	ND	0.72	ND	0.7	ND	0.7	ND	0.64
4:2FTS A	ND	0.51	ND	0.54	ND	0.53	ND	0.52	ND	0.48
PFHxS	0.81J	0.67	0.98J	0.72	ND	0.7	1.1J	0.7	0.97J	0.64
PFMPA	ND	0.56	ND	0.59	ND	0.58	ND	0.58	ND	0.53
PFMBA	ND	0.51	ND	0.54	ND	0.53	ND	0.53	ND	0.48
6:2FTS A	ND	1.4	ND	1.5	ND	1.5	ND	1.5	ND	1.3
PFPeS	ND	0.65	ND	0.69	ND	0.67	ND	0.67	ND	0.61
PFUnA	ND	0.69	ND	0.73	ND	0.72	ND	0.71	ND	0.65
NFDHA	ND	0.68	ND	0.73	ND	0.71	ND	0.7	ND	0.64
PFHpA	2.3	0.54	2.4	0.58	2.2	0.57	2.8	0.56	1.5	0.51
PFOA	2.2	0.55	2.2	0.58	2.5	0.57	2.8	0.57	2.1	0.52
PFOS	2.1	0.7	2.1	0.75	1.9J	0.73	1.9J	0.73	1.6	0.66
PFNA	ND	0.98	ND	1.1	ND	1	ND	1	ND	0.93

APPENDIX D

LAB RESULTS – RSSCTs

Table 1 Lab Results Legend

Appendix	
Abbreviation	Meaning
ND	Non-Detect
RL	Reporting Limit
MDL	Method Detection Limit
J	Reported Concentration is considered estimated. Lower than RL but above the MDL.

Table 2 RSSCT – BUD 5 (Blend of Wells 2,4,6) with Purolite PFA694E

No.	Date	Averaged Flow Rate mL/min	Total Cumulative Volume mL	Bed Volumes No.	UV254 abs	DOC mg/L	Nitrate mg/L
1	9/4/2024 17:30	0	0	0	0.019	1.004	1.12
2	9/5/2024 9:00	7.19	7,226	13382	0.007	0.531	1.13
3	9/5/2024 16:10	7.21	10,297	19069	0.01	0.565	1.14
4	9/6/2024 15:30	7.20	20,308	37607	0.008	0.591	
5	9/8/2024 10:00	7.19	38,635	71546	0.006	0.857	1.13
6	9/10/2024 13:16	7.18	60,714	112433	0.017	0.903	1.13
7	9/12/2024 13:00	7.13	81,126	150233	0.017	0.873	1.12
8	9/14/2024 9:00	7.11	99,854	184914	0.019	0.857	1.14
9	9/16/2024 13:00	7.15	122,143	226191	0.018	0.873	1.15
10	9/18/2024 9:00	7.04	140,727	260606	0.018	0.910	1.13
11	9/20/2024 13:34	7.18	163,346	302492	0.019	0.935	1.15

Table 3 RSSCT PFAS Results (all units in ng/L)– BUD 5

Parameter	Bed Volumes									
	13382	19069	37607	71546	112433	150233	184914	226191	260606	302492
	Service Life (Days)									
	26	37	73	139	219	292	360	440	507	588
PFBA	1.6 J	1.6 J	1.3 J	1.5 J	1.8 J	1.5 J	1.6 J	1.7 J	1.6 J	1.6 J
PFBS	< 0.60	< 0.60	< 0.62	< 0.61	< 0.62	< 0.61	< 0.61	< 0.60	0.74 J	1.1 J
PFPeA	< 0.59	< 0.59	1.9 J	2.7	2.9	2.3	2.2	2.1	2.4	1.8 J
PFHxA	< 0.64	< 0.64	< 0.66	1.2 J	2.1	1.7 J	1.7 J	1.4 J	1.7 J	< 0.64
F53B Major	< 0.75	< 0.75	< 0.77	< 0.76	< 0.78	< 0.76	< 0.77	< 0.75	< 0.75	< 0.74
F53B Minor	< 0.76	< 0.76	< 0.78	< 0.78	< 0.79	< 0.78	< 0.78	< 0.77	< 0.77	< 0.76
ADONA	< 0.55	< 0.55	< 0.56	< 0.56	< 0.57	< 0.56	< 0.56	< 0.55	< 0.55	< 0.54
HFPO-DA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
8:2FTS A	< 0.65	< 0.65	< 0.67	< 0.66	< 0.67	< 0.66	< 0.66	< 0.65	< 0.65	< 0.64
PFDA	< 0.68	< 0.68	< 0.70	< 0.69	< 0.70	< 0.69	< 0.70	< 0.68	< 0.68	< 0.68
PFDoA	< 0.84	< 0.84	< 0.86	< 0.86	< 0.87	< 0.85	< 0.86	< 0.84	< 0.84	< 0.83

PFEESA	< 0.59	< 0.59	< 0.61	< 0.61	< 0.62	< 0.60	< 0.61	< 0.60	< 0.60	< 0.59
PFHpS	< 0.69	< 0.69	< 0.71	< 0.71	< 0.72	< 0.71	< 0.71	< 0.70	< 0.70	< 0.69
4:2FTS A	< 0.52	< 0.52	< 0.54	< 0.53	< 0.54	< 0.53	< 0.53	< 0.52	< 0.52	< 0.52
PFHxS	< 0.69	< 0.69	< 0.71	< 0.71	< 0.72	< 0.70	< 0.71	< 0.70	< 0.70	< 0.69
PFMPA	< 0.57	< 0.57	< 0.59	< 0.59	< 0.60	< 0.58	< 0.59	< 0.58	< 0.58	< 0.57
PFMBA	< 0.53	< 0.52	< 0.54	< 0.54	< 0.55	< 0.53	< 0.54	< 0.53	< 0.53	< 0.52
6:2FTS A	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
PFPeS	< 0.67	< 0.66	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68	< 0.67	< 0.67	< 0.66
PFUnA	< 0.71	< 0.71	< 0.73	< 0.72	< 0.73	< 0.72	< 0.73	< 0.71	< 0.71	< 0.70
NFDHA	< 0.70	< 0.70	< 0.72	< 0.71	< 0.73	< 0.71	< 0.72	< 0.70	< 0.70	< 0.70
PFHpA	< 0.56	< 0.56	< 0.57	< 0.57	0.59 J	0.86 J	1.0 J	1.4 J	1.0 J	0.91 J
PFOA	< 0.56	< 0.56	< 0.58	< 0.57	< 0.58	< 0.57	1.1 J	1.3 J	1.9 J	1.7 J
PFOS	< 0.72	< 0.72	< 0.74	< 0.74	< 0.75	< 0.74	< 0.74	< 0.73	< 0.73	< 0.72
PFNA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Table 4 RSSCT – BUD 7 with Purolite PFA694E

No.	Date	Averaged Flow Rate	Total Cumulative Volume	Bed Volumes	UV254	DOC	Nitrate
		mL/min	mL	No.	abs	mg/L	mg/L
1	9/4/24 17:30		0	0	0.005	0.4568	2.88
2	9/5/24 9:00	8.87	8785.60	16270	0.005	0.3423	2.87
3	9/5/24 14:00	8.89	11432.80	21172	0.004	0.3345	2.86
4	9/6/24 14:00	8.88	24202.60	44820	0.004	0.327	
5	9/8/24 10:00	8.85	47561.80	88077	0.002	0.3995	2.87
6	9/10/24 7:30	8.86	71684.80	132750	0.004	0.3458	2.85
7	9/11/24 15:02	8.88	88482.80	163857	0.004	0.345	2.88
8	9/13/24 13:19	8.89	113145.40	209529	0.008	0.339	2.88
9	9/15/24 9:00	8.89	136433.60	252655	0.005	0.399	2.9
10	9/16/24 15:00	8.85	152366.60	282160	0.004	0.514	2.89
11	9/19/24 13:00	8.94	189900.60	351668	0.004	0.358	2.91

Table 5 RSSCT PFAS Results (all units in ng/L)– BUD 7

Parameter	Bed Volumes									
	16270	21172	44820	88077	132750	163857	209529	252655	282160	351668
	Service Life (Days)									
	26	34	72	141	212	262	335	404	451	562
PFBA	4.3	3.7	3.9	3.5	3.7	3.7	3.6	3.5	2.3	3.7
PFBS	< 0.60	< 0.61	< 0.61	< 0.60	< 0.62	< 0.61	< 0.61	< 0.61	< 0.60	< 0.62
PFPeA	< 0.58	1.5 J	8.8	8.7	9.3	8.8	8.4	8.1	6.4	7.9
PFHxA	< 0.64	< 0.65	< 0.65	2.4	5.6	6.9	7.2	7.4	4.8	6.5

F53B Major	< 0.74	< 0.76	< 0.76	< 0.75	< 0.78	< 0.76	< 0.76	< 0.76	< 0.75	< 0.77
F53B Minor	< 0.76	< 0.77	< 0.77	< 0.77	< 0.79	< 0.78	< 0.77	< 0.78	< 0.76	< 0.78
ADONA	< 0.54	< 0.56	< 0.56	< 0.55	< 0.57	< 0.56	< 0.56	< 0.56	< 0.55	< 0.56
HFPO-DA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
8:2FTS A	< 0.64	< 0.66	< 0.66	< 0.65	< 0.67	< 0.66	< 0.66	< 0.66	< 0.65	< 0.67
PFDA	< 0.68	< 0.69	< 0.69	< 0.68	< 0.71	< 0.69	< 0.69	< 0.69	< 0.68	< 0.70
PFDoA	< 0.83	< 0.85	< 0.85	< 0.85	< 0.87	< 0.85	< 0.85	< 0.86	< 0.84	< 0.86
PFEESA	< 0.59	< 0.60	< 0.60	< 0.60	< 0.62	< 0.60	< 0.60	< 0.61	< 0.59	< 0.61
PFHpS	< 0.69	< 0.71	< 0.71	< 0.70	< 0.72	< 0.71	< 0.71	< 0.71	< 0.69	< 0.71
4:2FTS A	< 0.52	< 0.53	< 0.53	< 0.52	< 0.54	< 0.53	< 0.53	< 0.53	< 0.52	< 0.54
PFHxS	< 0.69	< 0.70	< 0.70	< 0.70	< 0.72	< 0.70	< 0.70	< 0.71	< 0.69	< 0.71
PFMPA	< 0.57	< 0.58	< 0.58	< 0.58	< 0.60	< 0.58	< 0.58	< 0.59	< 0.57	< 0.59
PFMBA	< 0.52	< 0.53	< 0.53	< 0.53	< 0.55	< 0.54	< 0.53	< 0.54	< 0.53	< 0.54
6:2FTS A	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
PFPeS	< 0.66	< 0.68	< 0.68	< 0.67	< 0.69	< 0.68	< 0.68	< 0.68	< 0.67	< 0.68
PFUnA	< 0.70	< 0.72	< 0.72	< 0.71	< 0.74	< 0.72	< 0.72	< 0.72	< 0.71	< 0.73
NFDHA	< 0.70	< 0.71	< 0.71	< 0.71	< 0.73	< 0.71	< 0.71	< 0.72	< 0.70	< 0.72
PFHpA	< 0.56	< 0.57	< 0.57	< 0.56	< 0.58	< 0.57	0.97 J	1.6 J	2	2.9
PFOA	< 0.56	< 0.57	< 0.57	< 0.57	0.61 J	< 0.57	< 0.57	< 0.58	< 0.56	2.4
PFOS	< 0.72	< 0.74	< 0.74	< 0.73	< 0.75	< 0.74	< 0.74	< 0.74	< 0.72	1.4 J
PFNA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Table 6 RSSCT – GAC Polisher of RSWTP Filtered Water with Calgon F400 GAC

No.	Date	Averaged Flow Rate	Total Cumulative Volume	Bed Volumes	UV254	DOC
		mL/min	mL	No.	abs	mg/L
1	9/4/24 17:30		0	0	0.036	3.003
2	10/28/24 9:30	4.267	796	773	0	0.2684
3	10/28/24 12:30	4.313	1573.2	1527	0.002	0.4829
4	10/28/24 15:30	4.251	1847	1793	0.007	0.8633
5	10/28/24 16:30	4.329	2567.8	2493		
6	10/28/24 18:30	4.333	2620.8	2544	0.011	1.374
7	10/28/24 21:30	4.288	3394		0.015	1.531
8	9/5/24 9:00	4.390	4622.8	4488	0.02	1.98
9	9/5/24 15:00	4.419	6188	6008	0.022	2.299
10	9/6/24 15:00	4.400	12496	12132	0.028	2.784
11	9/8/24 9:30	4.337	23531.8	22846	0.026	2.544
12	9/9/24 15:00	4.452	31404.6	30490	0.031	2.878

13	9/11/24 9:00	4.390	42428.8	41193	0.031	2.921
14	9/13/24 9:00	4.399	55075.2	53471	0.034	3.039
15	9/14/24 9:00	4.357	61340.6	59554	0.033	3.121
16	9/16/24 9:00	4.340	73836.2	71686	0.032	3.121
17	9/18/24 9:03	4.342	86309.2	83795	0.033	2.954

* Column originally started 9/4/24. Column was restarted 10/28/24 to capture early breakthrough data points.

Table 7 RSSCT PFAS Results (all units in ng/L)– GAC Polisher

Parameter	Bed Volumes									
	4488	6008	12132	22846	30490	41193	53471	59554	71686	83795
	Service Life (Days)									
	31	42	84	159	212	286	371	414	498	582
PFBA	6.5	6.8	8.5	8.6	8.2	9	8.5	8.7	10	7
PFBS	1.1 J	1.5 J	2.4	3	3.4	3.5	3.6	3.7	4	3.5
PFPeA	3.2	3.7	4.8	6.2	5.9	5.8	5.2	5.3	6.6	6.8
PFHxA	1.4 J	1.7 J	2.9	3.1	3.1	3.2	3.2	3.3	3.9	2.8
F53B Major	< 0.75	< 0.75	< 0.76	< 0.77	< 0.74	< 0.77	< 0.76	< 0.76	< 0.76	< 0.76
F53B Minor	< 0.76	< 0.77	< 0.77	< 0.78	< 0.76	< 0.78	< 0.77	< 0.78	< 0.78	< 0.77
ADONA	< 0.55	< 0.55	< 0.55	< 0.56	< 0.54	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56
HFPO-DA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
8:2FTS A	< 0.65	< 0.65	< 0.66	< 0.67	< 0.64	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66
PFDA	< 0.68	< 0.68	< 0.69	< 0.70	< 0.67	< 0.70	< 0.69	< 0.69	< 0.69	< 0.69
PFDoA	< 0.84	< 0.85	< 0.85	< 0.86	< 0.83	< 0.86	< 0.85	< 0.85	< 0.86	< 0.85
PFEESA	< 0.60	< 0.60	< 0.60	< 0.61	< 0.59	< 0.61	< 0.60	< 0.60	< 0.61	< 0.60
PFHpS	< 0.70	< 0.70	< 0.70	< 0.71	< 0.69	< 0.71	< 0.71	< 0.71	< 0.71	< 0.70
4:2FTS A	< 0.52	< 0.52	< 0.53	< 0.53	< 0.52	< 0.54	< 0.53	< 0.53	< 0.53	< 0.53
PFHxS	< 0.69	< 0.70	< 0.70	1.6 J	1.3 J	1.4 J	1.7 J	1.4 J	1.8 J	1.1 J
PFMPA	< 0.58	< 0.58	< 0.58	< 0.59	< 0.57	< 0.59	< 0.58	< 0.58	< 0.59	< 0.58
PFMBA	< 0.53	< 0.53	< 0.53	< 0.54	< 0.52	< 0.54	< 0.53	< 0.54	< 0.54	< 0.53
6:2FTS A	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	4.4	< 1.5	< 1.5
PFPeS	< 0.67	< 0.67	< 0.67	< 0.68	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68

PFUnA	< 0.71	< 0.71	< 0.72	< 0.73	< 0.70	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72
NFDHA	< 0.70	< 0.71	< 0.71	< 0.72	< 0.70	< 0.72	< 0.71	< 0.71	< 0.71	< 0.71
PFHpA	< 0.56	0.85 J	1.5 J	2	1.7 J	1.6 J	1.8 J	1.6 J	1.9 J	1.3 J
PFOA	1.2 J	1.3 J	2	2.4	2.5	3.2	2.9	3.2	2.7	2.6
PFOS	< 0.73	0.99 J	1.7 J	2	2.5	3	2.7	2.8	3.2	3.1
PFNA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Table 8 RSSCT – GAC Cap of RSWTP Ozonated Water with Calgon F816 GAC

No.	Date	Averaged Flow Rate	Total Cumulative Volume	Bed Volumes	UV254	DOC
		mL/min	mL	No.	abs	mg/L
1	9/8/24 17:21		0	0	0.061	3.657
2	10/28/24 8:54	2.525	154.2	907		
3	10/28/24 9:30	2.570	194.2	1142	0.017	1.516
4	10/28/24 9:45	2.667	311.2	1831		
5	10/28/24 10:30	2.600	351.2	2066	0.025	2.128
6	10/28/24 10:45	2.667	468.2	2754		
7	10/28/24 11:30	2.600	508.2	2989	0.029	2.395
8	10/28/24 11:45	2.667	625.2	3678		
9	10/28/24 12:30	2.600	665.2	3913	0.031	2.686
10	10/28/24 12:45	2.667	719.8	4234		
11	10/28/24 13:30	2.600	822.2	4836	0.034	2.787
12	10/28/24 13:45	2.667	939.2	5525		
13	10/28/24 14:30	2.600	979.2	5760	0.036	2.963
14	10/28/24 14:45	2.667	1362.2	8013		
15	10/28/24 18:15	2.530	1550.4	9120	0.038	3.098
16	9/9/24 8:30	2.582	2886.6	16980	0.041	3.033
17	9/9/24 14:32	2.597	3829.2	22525	0.043	3.293
18	9/10/24 7:30	2.607	6467.8	38046	0.045	3.384
19	9/10/24 14:30	2.590	7556.8	44452	0.045	3.468
20	9/11/24 7:30	2.605	10199	59994	0.046	3.537
21	9/11/24 14:30	2.592	11280.8	66358	0.047	3.526
22	9/12/24 7:30	2.643	13966.6	82156	0.046	3.683
23	9/12/24 14:32	2.594	15069.6	88645	0.046	3.55
24	9/13/24 7:32	2.618	17735.6	104327	0.044	3.593

* Column originally started 9/8/24. Column was restarted 10/28/24 to capture early breakthrough data points.

Table 9 RSSCT PFAS Results (all units in ng/L)– GAC Cap

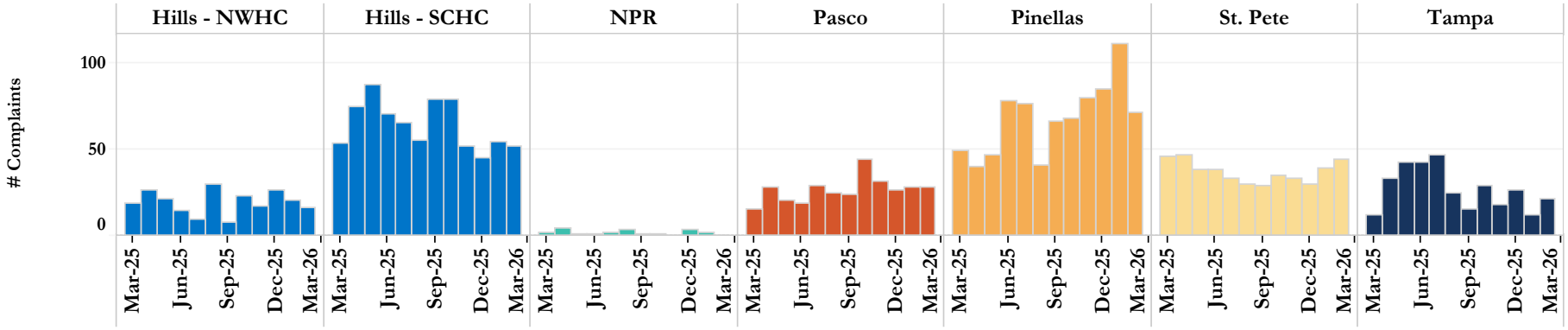
Parameter	Bed Volumes								
	16980	22525	38046	44452	59994	66358	82156	88645	104327
	Service Life (Days)								
	97	128	217	253	342	378	468	505	594
PFBA	11	12	10	10	13	13	12	12	12
PFBS	3.3	3.8	4.1	3.6	4.3	4.6	4.1	4.5	4.6
PFPeA	7.3	8.2	6.5	5.8	6	7.2	6.4	6.6	7.8
PFHxA	3.9	4.4	3.7	3.4	3.9	4.3	4.2	4.1	4
F53B Major	< 0.77	< 0.77	< 0.76	< 0.74	< 0.75	< 0.76	< 0.77	< 0.77	< 0.77
F53B Minor	< 0.78	< 0.78	< 0.77	< 0.76	< 0.76	< 0.78	< 0.78	< 0.78	< 0.78
ADONA	< 0.56	< 0.56	< 0.56	< 0.54	< 0.55	< 0.56	< 0.56	< 0.56	< 0.56
HFPO-DA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
8:2FTS A	< 0.67	< 0.66	< 0.66	< 0.64	< 0.65	< 0.66	< 0.66	< 0.67	< 0.67
PFDA	< 0.70	< 0.69	< 0.69	< 0.67	< 0.68	< 0.69	< 0.70	< 0.70	< 0.70
PFDoA	< 0.86	< 0.86	< 0.85	< 0.83	< 0.84	< 0.85	< 0.86	< 0.86	< 0.86
PFEESA	< 0.61	< 0.61	< 0.60	< 0.59	< 0.59	< 0.61	< 0.61	< 0.61	< 0.61
PFHpS	< 0.71	< 0.71	< 0.70	< 0.69	< 0.69	< 0.71	< 0.71	< 0.71	< 0.71
4:2FTS A	< 0.54	< 0.53	< 0.53	< 0.52	< 0.52	< 0.53	< 0.53	< 0.54	< 0.54
PFHxS	0.94 J	1.3 J	1.7 J	1.6 J	1.8 J	2	2	2.5	2.6
PFMPA	< 0.59	< 0.59	< 0.58	< 0.57	< 0.57	< 0.58	< 0.59	< 0.59	< 0.59
PFMBA	< 0.54	< 0.54	< 0.53	< 0.52	< 0.53	< 0.54	< 0.54	< 0.54	< 0.54
6:2FTS A	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	1.5 J	< 1.5	< 1.5
PFPeS	< 0.68	< 0.68	< 0.68	< 0.66	< 0.67	< 0.68	< 0.68	< 0.68	< 0.69
PFUnA	< 0.73	< 0.72	< 0.72	< 0.70	< 0.71	< 0.72	< 0.73	< 0.73	< 0.73
NFDHA	< 0.72	< 0.72	< 0.71	< 0.69	< 0.70	< 0.71	< 0.72	< 0.72	< 0.72
PFHpA	1.8 J	2.4	2.2	1.9 J	1.9 J	2.1	2.4	2.2	2.4
PFOA	2.4	2.3	2.9	2.5	2.9	4.4	3.1	3.6	3.9
PFOS	1.3 J	1.9 J	2.1	1.7 J	2.8	2.7	2.9	3.3	4.1
PFNA	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Table 10 RSSCT QA/QC – Column Rinse prior to RSSCT Start-up

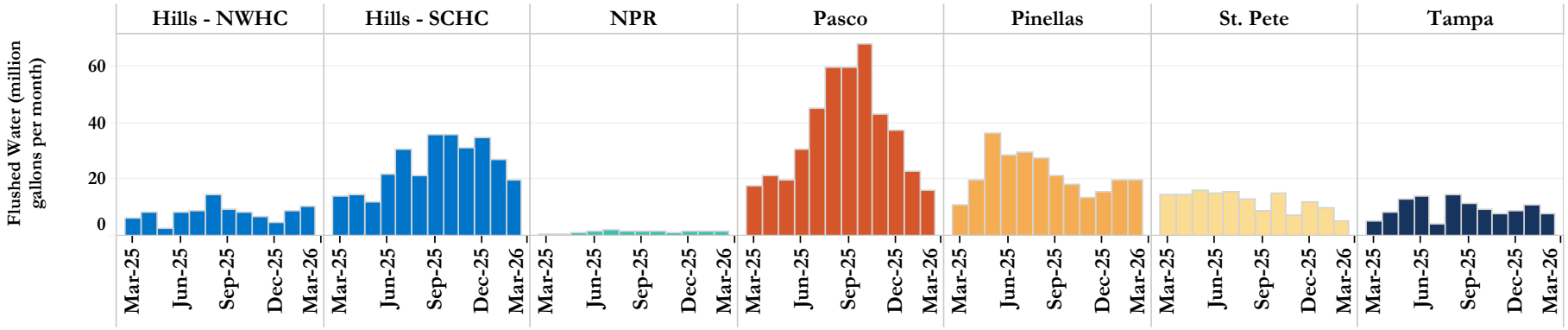
Parameter	Column 1 Blank *BUD 5*	Column 2 Blank *BUD 7*	Column 3 Blank *Ozonated Effluent*	Column 4 Blank *Filtered Effluent*
PFBA	< 0.62	< 0.62	< 0.62	< 0.65
PFBS	< 0.58	< 0.57	< 0.57	< 0.60
PFPeA	< 0.56	< 0.56	< 0.56	< 0.59
PFHxA	< 0.61	< 0.61	< 0.61	< 0.65
F53B Major	< 0.72	< 0.72	< 0.72	< 0.76
F53B Minor	< 0.73	< 0.73	< 0.73	< 0.77
ADONA	< 0.53	< 0.52	< 0.52	< 0.55
HFPO-DA	< 0.97	< 0.97	< 0.97	< 1.0

8:2FTS A	< 0.62	< 0.62	< 0.62	< 0.65
PFDA	< 0.65	< 0.65	< 0.65	< 0.69
PFDoA	< 0.81	< 0.80	< 0.80	< 0.85
PFEESA	< 0.57	< 0.57	< 0.57	< 0.60
PFHpS	< 0.67	< 0.67	< 0.67	< 0.70
4:2FTS A	< 0.50	< 0.50	< 0.50	< 0.53
PFHxS	< 0.67	< 0.66	< 0.66	< 0.70
PFMPA	< 0.55	< 0.55	< 0.55	< 0.58
PFMBA	< 0.50	< 0.50	< 0.50	< 0.53
6:2FTS A	< 1.4	< 1.4	< 1.4	< 1.5
PFPeS	< 0.64	< 0.64	< 0.64	< 0.67
PFUnA	< 0.68	< 0.68	< 0.68	< 0.71
NFDHA	< 0.67	< 0.67	< 0.67	< 0.71
PFHpA	< 0.54	< 0.54	< 0.53	< 0.56
PFOA	< 0.54	< 0.54	< 0.54	< 0.57
PFOS	< 0.70	< 0.69	< 0.69	< 0.73
PFNA	< 0.97	< 0.97	< 0.97	< 1.0
All values below detection indicate PFAS-free columns at start of RSSCTs				

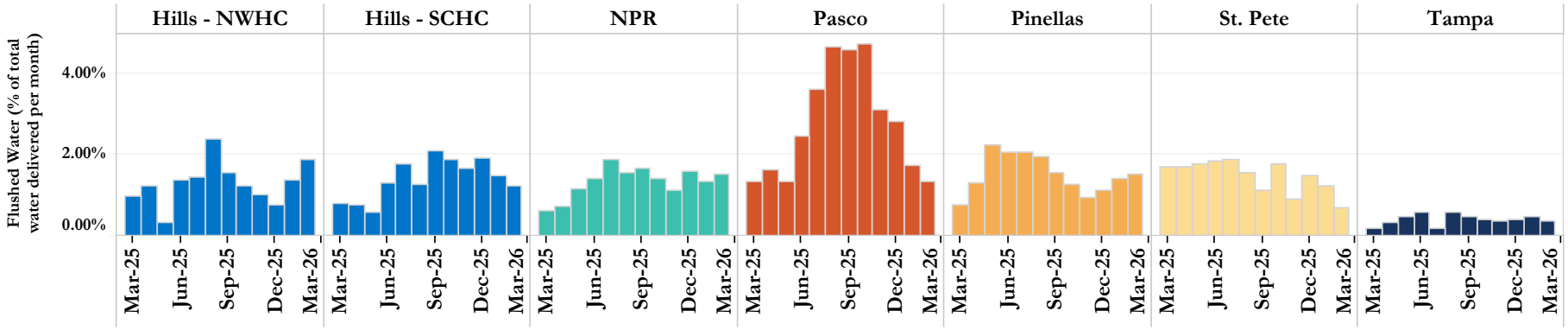
Customer Water Quality Complaints by Member Government (data not normalized for population served)



Distribution System Flushed Water (million gallons per month, data not normalized for production)



Distribution System Flushed Water (% of total water delivered per month)



* Water loss of greater than 10% on an annual basis requires a Water Audit be submitted to the Southwest Florida Water Management District.

Table 1. Customer Water Quality Complaints by Member Government
[Data not normalized for population served]

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2026	Hills - NWHC	20	16										
	Hills - SCHC	54	52										
	NPR	2	0										
	Pasco	28	28										
	Pinellas	111	71										
	St. Pete	39	44										
	Tampa	12	21										
2025	Hills - NWHC	24	20	19	26	21	14	9	30	8	23	17	26
	Hills - SCHC	65	57	53	75	87	70	65	55	79	79	52	45
	NPR	2	2	2	4	1	1	2	3	1	1	0	3
	Pasco	27	22	15	28	20	19	29	25	24	44	31	26
	Pinellas	42	41	49	40	47	78	76	41	66	68	80	85
	St. Pete	49	49	46	47	38	38	33	30	29	35	33	30
	Tampa	28	19	12	33	42	42	47	25	15	29	18	26
2024	Hills - NWHC	20	15	18	19	25	33	41	30	36	22	22	17
	Hills - SCHC	54	56	57	47	60	53	79	71	42	53	53	70
	NPR	1	1	4	4	4	2	0	0	1	0	2	0
	Pasco	28	15	0	30	41	34	31	24	15	15	16	16
	Pinellas	40	46	48	62	62	60	61	67	51	71	171	69
	St. Pete	39	77	38	50	46	24	41	43	34	56	56	44
	Tampa	28	25	35	48	45	52	107	31	27	36	36	36
2023	Hills - NWHC	22	8	19	31	13	8	18	24	22	17	20	20
	Hills - SCHC	57	67	81	96	99	90	68	71	89	77	69	39
	NPR	2	1	4	2	0	4	1	1	1	1	1	0
	Pasco	15	18	31	24	21	20	28	27	40	29	20	20
	Pinellas	40	50	44	65	69	67	97	66	54	77	37	44
	St. Pete	63	58	78	55	68	68	57	47	45	49	32	46
	Tampa	48	31	38	62	45	33	40	46	39	37	21	7

Table 2. Distribution System Flushed Water (million gallons per month) [Data not normalized for production]

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2026	Hills - NWHC	8.65	10.53										
	Hills - SCHC	26.60	19.60										
	NPR	1.35	1.37										
	Pasco	22.48	16.22										
	Pinellas	19.63	19.71										
	St. Pete	9.95	5.39										
	Tampa	10.95	7.84										
2025	Hills - NWHC	5.70	4.31	6.15	8.34	2.47	8.36	8.82	14.38	9.48	8.41	6.63	4.82
	Hills - SCHC	15.50	10.45	14.00	14.39	11.87	21.49	30.53	21.40	35.63	35.47	30.82	34.52
	NPR	0.87	0.63	0.63	0.75	1.23	1.39	1.95	1.62	1.75	1.56	1.14	1.62
	Pasco	26.37	19.91	17.44	21.15	19.41	30.39	44.90	59.62	59.13	67.86	42.74	37.14
	Pinellas	12.98	11.37	11.08	19.86	35.91	28.47	29.42	27.51	21.18	18.05	13.25	15.48
	St. Pete	16.25	17.75	14.40	14.66	16.05	14.89	15.37	12.89	9.00	15.12	7.35	12.00
	Tampa	4.82	3.90	5.00	8.16	12.71	14.02	4.29	14.42	11.40	9.15	7.77	8.99
2024	Hills - NWHC	8.24	10.90	8.92	6.82	8.06	8.15	7.55	6.25	7.67	4.91	4.91	5.86
	Hills - SCHC	17.85	17.05	16.74	21.00	17.24	17.01	25.67	34.50	25.30	12.80	12.80	14.45
	NPR	0.47	0.39	0.63	0.77	0.97	0.63	0.64	0.66	1.77	1.10	1.10	0.83
	Pasco	55.41	34.70	35.71	42.38	34.68	39.03	54.77	54.17	58.98	64.85	64.86	28.18
	Pinellas	14.73	9.63	13.75	16.86	23.65	22.79	16.76	12.51	16.65	8.15	14.61	11.57
	St. Pete	10.35	4.12	8.59	15.68	25.89	24.48	22.99	28.47	21.55	24.24	24.24	24.24
	Tampa	5.27	4.47	4.48	5.55	4.86	4.06	9.48	16.10	12.36	13.19	13.19	13.19
2023	Hills - NWHC	7.28	7.40	9.88	6.20	9.12	10.42	7.77	10.69	8.21	10.23	10.38	8.53
	Hills - SCHC	18.15	20.35	45.91	15.82	18.90	15.78	13.13	13.53	11.87	13.41	12.55	13.80
	NPR	1.05	0.91	0.72	0.39	0.39	0.79	0.67	0.39	0.39	0.39	0.67	0.71
	Pasco	26.12	26.06	27.25	26.51	25.26	37.55	36.30	53.67	40.62	49.95	62.71	50.84
	Pinellas	7.24	6.32	7.36	14.13	18.17	12.09	16.76	25.70	50.71	30.54	23.07	15.76
	St. Pete	14.16	13.18	21.34	8.14	17.91	24.18	20.86	19.45	21.65	23.61	31.61	29.81
	Tampa	5.75	3.43	3.69	2.57	6.94	12.09	5.56	6.66	8.30	11.80	5.00	0.08

Table 3. Distribution System Flushed Water (% of total water delivered per month)

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2026	Hills - NWHC	1.37%	1.87%										
	Hills - SCHC	1.48%	1.22%										
	NPR	1.33%	1.51%										
	Pasco	1.72%	1.33%										
	Pinellas	1.39%	1.51%										
	St. Pete	1.21%	0.69%										
	Tampa	0.47%	0.36%										
2025	Hills - NWHC	0.93%	0.76%	0.97%	1.21%	0.34%	1.36%	1.45%	2.38%	1.53%	1.23%	1.00%	0.76%
	Hills - SCHC	0.97%	0.69%	0.81%	0.74%	0.59%	1.31%	1.76%	1.26%	2.08%	1.85%	1.66%	1.92%
	NPR	0.87%	0.68%	0.61%	0.71%	1.13%	1.41%	1.88%	1.54%	1.67%	1.42%	1.11%	1.58%
	Pasco	2.17%	1.73%	1.35%	1.61%	1.32%	2.43%	3.61%	4.66%	4.57%	4.73%	3.09%	2.79%
	Pinellas	0.89%	0.85%	0.75%	1.28%	2.24%	2.05%	2.07%	1.94%	1.56%	1.25%	0.94%	1.12%
	St. Pete	1.98%	2.35%	1.70%	1.70%	1.78%	1.84%	1.85%	1.53%	1.11%	1.77%	0.89%	1.46%
	Tampa	0.20%	0.18%	0.20%	0.32%	0.47%	0.58%	0.18%	0.57%	0.46%	0.38%	0.36%	0.39%
2024	Hills - NWHC	1.45%	1.99%	1.46%	1.06%	1.08%	1.27%	1.28%	1.06%	1.37%	0.85%	0.85%	0.92%
	Hills - SCHC	1.21%	1.19%	1.04%	1.24%	0.86%	0.97%	1.47%	2.14%	1.63%	0.77%	0.77%	0.79%
	NPR	0.45%	0.40%	0.59%	0.72%	0.80%	0.56%	0.59%	0.62%	1.71%	1.03%	1.08%	0.80%
	Pasco	5.35%	3.49%	2.97%	3.23%	2.24%	2.91%	6.75%	4.60%	5.07%	5.10%	5.10%	2.18%
	Pinellas	0.99%	0.68%	0.88%	1.08%	1.36%	1.44%	1.13%	0.84%	1.16%	0.53%	0.95%	0.77%
	St. Pete	1.26%	0.54%	1.02%	1.89%	2.77%	2.84%	2.68%	3.27%	2.59%	2.68%	2.68%	2.68%
	Tampa	0.20%	0.19%	0.17%	0.23%	0.18%	0.17%	0.39%	0.61%	0.50%	0.56%	0.56%	0.56%
2023	Hills - NWHC	1.17%	1.20%	1.34%	0.84%	1.22%	1.57%	1.15%	1.59%	1.24%	1.45%	1.56%	1.42%
	Hills - SCHC	1.18%	1.35%	2.44%	0.84%	0.97%	0.91%	0.73%	0.74%	0.69%	0.74%	0.73%	0.89%
	NPR	1.00%	0.91%	0.63%	0.34%	0.35%	0.76%	0.60%	0.35%	0.35%	0.29%	0.53%	0.62%
	Pasco	2.42%	2.57%	2.14%	2.06%	1.91%	3.29%	3.03%	5.05%	3.26%	3.85%	5.08%	4.36%
	Pinellas	0.49%	0.45%	0.56%	0.84%	1.10%	0.80%	1.05%	1.63%	3.27%	1.86%	1.48%	1.04%
	St. Pete	1.69%	1.70%	2.37%	0.91%	1.98%	2.84%	2.35%	2.20%	2.46%	2.61%	3.69%	3.56%
	Tampa	0.22%	0.14%	0.14%	0.10%	0.25%	0.47%	0.21%	0.26%	0.33%	0.43%	0.20%	0.00%

Table 4. Regional Total Coliform Rule Compliance (Percent Positive Samples)

Year	Member	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2026	Hills - NWHC	0.75%	0.00%										
	Hills - SCHC	0.00%	0.00%										
	NPR	0.00%	0.00%										
	Pasco	0.54%	0.00%										
	Pinellas	0.93%	0.00%										
	St. Pete	1.08%	1.08%										
	Tampa	0.00%	0.00%										
2025	Hills - NWHC	0.75%	0.00%	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.47%	0.00%	0.00%
	Hills - SCHC	0.90%	0.00%	0.00%	0.45%	0.89%	0.89%	0.89%	2.13%	0.45%	0.00%	0.89%	0.00%
	NPR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%
	Pasco	0.54%	0.54%	1.06%	0.00%	3.05%	0.00%	0.54%	1.56%	0.00%	0.00%	0.54%	0.00%
	Pinellas	0.00%	0.00%	0.00%	0.47%	0.00%	0.00%	0.00%	0.47%	0.93%	0.47%	0.93%	0.00%
	St. Pete	0.00%	0.00%	0.55%	0.00%	1.59%	0.55%	0.00%	0.00%	0.00%	1.56%	0.55%	1.59%
	Tampa	0.41%	0.00%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%
2024	Hills - NWHC	0.00%	0.75%	0.00%	1.47%	0.00%	0.00%	0.75%	0.75%	0.75%	0.00%	0.00%	0.00%
	Hills - SCHC	0.00%	0.00%	2.56%	0.00%	0.89%	2.14%	0.88%	0.45%	0.00%	0.00%	0.00%	0.88%
	NPR	0.00%	0.00%	0.00%	0.00%	2.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Pasco	0.00%	0.00%	0.00%	0.00%	0.64%	0.64%	0.00%	1.06%	0.54%	0.54%	0.54%	0.54%
	Pinellas	0.00%	0.47%	0.00%	0.47%	0.00%	3.03%	0.00%	1.80%	0.93%	0.00%	0.00%	0.00%
	St. Pete	0.55%	0.55%	1.08%	1.08%	0.55%	0.55%	0.55%	0.55%	0.00%	0.00%	0.00%	0.00%
	Tampa	0.00%	0.00%	0.81%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.80%	0.80%	0.00%
2023	Hills - NWHC	0.00%	0.00%	0.00%	0.00%	0.75%	0.00%	1.47%	0.75%	2.16%	0.00%	0.00%	0.75%
	Hills - SCHC	0.00%	0.00%	0.89%	0.00%	1.32%	0.00%	0.45%	0.45%	0.45%	1.32%	0.45%	0.89%
	NPR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%
	Pasco	0.64%	0.64%	0.64%	0.00%	0.64%	0.64%	0.63%	1.26%	0.64%	1.23%	0.64%	0.00%
	Pinellas	0.00%	0.00%	0.47%	0.47%	0.93%	1.80%	0.00%	0.47%	0.00%	0.48%	0.00%	0.47%
	St. Pete	0.00%	1.08%	0.55%	0.00%	0.00%	1.08%	2.56%	0.55%	0.00%	0.00%	0.55%	0.00%
	Tampa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	0.41%	0.00%	0.00%	0.00%

Meeting Minutes

Water Quality Working Group/ Operations Coordination Committee

March 12, 2026 – Microsoft Teams Meeting

HANDOUTS - sent by email prior to meeting

a. Member Government monthly data

b. March 2026 WQWG-OCC Agenda Packet

A. WATER DELIVERY

1. SYSTEM UPDATES

a. **Surface Waters -steady state good**

i. RSWTP – supply from the Reservoir only with the exception of a two-day Alafia supply, approximately 50 MGD

ii. Reservoir – supply at 6.8 BG

iii. Desal – 15 to 17 MGD

b. **Groundwater** – all wellfields are operational and available pending system demands

c. **Transmission Mains** – nitrites are minimal due to cooler weather, chloramine residuals are normal

d. **Projects**

i. New South Hillsborough pipeline construction continues.

ii. South Pasco Wellfield delivery limited in response to Cosme Water Treatment Plant offline. Tampa Bay Water Operations has reconfigured transmission piping connections for delivery to Hillsborough County's Lake Park and Fawn Ridge Water Treatment Plants. Micro were completed and pipelines were being flushed from Lake Park to Cypress Creek WTPs. Laila will advise Hillsborough County in advance when pipe configuration and source blending begins.

iii. Upgrade/chemical piping at Cypress Creek Water Treatment Plant – new permanent chlorine and caustic systems are in service. A temporary ammonia feed system is operational. Residuals temporarily decreased due to changeover but nitrification has not been observed.

2. **UPDATES FROM MEMBER GOVERNMENTS**

a. **Hillsborough County**

i. February 2026 TCR Reporting North Service Area – 0 TCP out of 130 samples – 0%

ii. February 2026 TCR Reporting South Service Area – 0 TCP out of 219 samples – 0%

iii. February 2026 Complaint Report North Service Area – 16 complaints: mostly color, odor

iv. February 2026 Complaint Report South Service Area - 52 complaints: mostly odor and pressure

v. February 2026 Flushing Report North Service Area – 10.53 MG (2.20 MG from auto flushers)

vi. February 2026 Flushing Report South Service Area – 19.60 MG (7.0 MG from auto flushers)

vii. February 2026 Total Delivered Water Report North Service Area – 564 MG, 1.9 % flushed

viii. February 2026 Total Delivered Water South Service Area – 1,613.00 MG, 1.2 % flushed

b. **City of New Port Richey**

i. February 2026 TCR Reporting – 0 TCP out of 63 samples – 0%

ii. February 2026 Complaint Report – 0

iii. February 2026 Flushing Report – 1.372 MG (1.329 MG from auto flushers)

iv. February 2026 Total Delivered Water Report – 90.93 MG, 1.51% flushed

v. Cleaned their water tanks, drained and refilled them.

c. **Pinellas County**

i. February 2026 TCR Reporting – 0 TCP out of 210 samples – 0%

ii. February 2026 Complaint Report – 71 complaints: mostly premise issues and rusty water

iii. February 2026 Flushing Report – 19.71 MG (13.89 MG from auto flushers)

iv. February 2026 Total Delivered Water Report – 1,303.82 MG, 1.51% flushed

v. Most customer calls were related to home water softeners and lead and copper rule revision questions.

d. **Pasco County**

i. February 2026 TCR Reporting – 0 TCP out of 183 samples – 0%

ii. February 2026 Complaint Report – 28 complaints: mostly color, odor and customer issues

iii. February 2026 Flushing Report – 16.22 MG (13.99 MG from auto flushers)

iv. February 2026 Water Delivered Report – 1,220.91 MG, 1.33 % flushed

v. Kevin Jenkins invited several members of Pasco's water quality and water operations teams to participated in today's meeting for the opportunity to see how their work ties together with other member governments and Tampa Bay Water.

vi. Pasco achieved a record low flushing rate of 1.3% last month, which proved that operational adjustments are working along with better weather and chlorine distribution boosters (three are running and two are in progress).

e. **City of St. Petersburg**

i. February 2026 TCR Reporting – 2 TCP out of 186 samples – 1.08%

ii. February 2026 Complaint Report – 44 complaints: mostly premise issues; pressure issues on customer side

iii. February 2026 Flushing Report – 5.38 MG (3.77 MG from auto flushers)

iv. February 2026 Total Delivered Report – 776.95 MG, 0.69% flushed

v. Flushing is lower than last year at this time and is attributed to more efficient flushing practices.

f. **City of Tampa**

i. February 2026 TCR Reporting – 0 TCP out of 240 samples – 0%

ii. February 2026 Complaint Report – 21 complaints: mostly color, pressure and odor

iii. February 2026 Flushing Report – 7.84 MG (7.07 MG from auto flushers)

iv. February 2026 Total Delivered Water Report – 2,155.41 MG, 036% flushed

v. Nitrification is very low and residuals are good.

B. WATER QUALITY MONITORING/TREATMENT

1. **Exhibit D Performance**

i. Exhibit D performance met requirements in February 2026.

ii. Tampa Bay Water is now monitoring the COSBPASS point of connection because the Cosme Water Treatment Plant is out of service for an estimated 13-mo. construction project.

2. **Consumer Confidence Report Update**

    i. Draft CCR tables were sent to all members on March 5, 2026.

    ii. Received DEP approval on March 9, 2026 – no changes were needed to draft tables.

    iii. Tampa Bay Water is now finalizing the 2025 CCR, but DEP has not yet released the new template to the FRWA website.

    iv. If DEP fails to issue the template, Tampa Bay Water will provide the CCR before the compliance deadline of April 1, 2026.

3. **PFAS Quarterly Sampling**

    i. On March 5, DEP issued a memo, "Federal PFAS Initial Monitoring Requirements".

    ii. Thanks to the City of Tampa, Paula Lashuay, for providing a copy, which was emailed to the WQWG.

    iii. DEP is following EPA direction and initial quarterly monitoring must be done by April 26, 2027.

    iv. Even though EPA is pursuing elimination of four of six PFAS – all must be included for initial monitoring.

    v. EPA is being challenged by AWWA on PFOS/PFOA decisions likely later this year or next.

    vi. Tampa Bay Water began our initial PFAS monitoring last year and completed Q3 last month.

    vii. Our data has been consistent with all of our prior findings dating back to July 2023.

4. **Regional Water Quality Study Update**

    For the benefit of the Pasco County team in attendance today, an overview of the Regional Water Quality Study, from the beginning in 2017 to current day status was provided.

C. OTHER TOPICS

None

D. FUTURE MEETINGS

Next WQWG-OCC Meeting is online April 9, 2026 at 1:30 p.m.

WQWG-OCC March 2026 Meeting Attendees

Chris Wetz, Hillsborough County
Mark Lehigh, Hillsborough County
David Lundberg, Hillsborough County
Pedro Rodriquez, Hillsborough County
Zemberial Strong, Hillsborough County
Patti Holowecky, Pinellas County
Royce Rarick, Pinellas County
Wendy Tifft, Pinellas County
Greg Wikholm, City of New Port Richey
Paula Lashuay, City of Tampa
Mike Gilliam, Tampa Bay Water
Shawn Jones, Tampa Bay Water
Steve Fleischacker, Tampa Bay Water
Evelyn Dooley, Tampa Bay Water
Stephen Cantin, Tampa Bay Water
Laila Martin, Tampa Bay Water
Philip Matthews, Tampa Bay Water
Jim Kramer, City of St. Petersburg
John Clausen, City of St. Petersburg
Lauren Tersen, City of St. Petersburg
Sean Pitcher, Pasco County
Antonio Alverez, Pasco County
Kody James, Pasco County
Kevin Jenkins, Pasco County
Stephanie Summerbell, Pasco County
Jason Happle, Pasco County
Jason Adair, Pasco County
Spencer Horn, Pasco County
Carissa Dennison, Pasco County
Christian Villano, Pasco County
Karen Lewis, Pasco County
Tim Smith, SUNDT
Chris Owen, Hazen & Sawyer

Meeting Minutes

Water Quality Working Group/ Operations Coordination Committee

February 12, 2026 – Microsoft Teams Meeting

HANDOUTS - sent by email prior to meeting

a. Member Government monthly data

b. February 2026 WQWG-OCC Agenda Packet

A. WATER DELIVERY

1. SYSTEM UPDATES

a. **Surface Waters**

i. RSWTP – supply from the Reservoir only, approximately 60 MGD

ii. Reservoir – supply at 8.2 BG

iii. Desal – 14 to 15 MGD

b. **Groundwater** – all wellfields are operational and available pending system demands

c. **Transmission Mains** – nitrites are minimal due to cooler weather, chloramine residuals are normal

d. **Projects**

i. New South Hillsborough pipeline construction

ii. Site development work at RSWTP

iii. Upgrade/chemical piping at CCWTP

e. **Other**

i. City of Tampa started purchasing water at MBREGCOT

ii. Cosme WTP shut down for 13-month project, COSBPASS POC in use during this time

2. **UPDATES FROM MEMBER GOVERNMENTS**

a. **Hillsborough County**

i. January 2026 TCR Reporting North Service Area – 1 TCP out of 133 samples – 0.75%

ii. January 2026 TCR Reporting South Service Area – 0 TCP out of 219 samples – 0%

iii. January 2026 Complaint Report North Service Area – 20 complaints: mostly color and odor

iv. January 2026 Complaint Report South Service Area - 54 complaints: mostly odor and pressure

v. January 2026 Flushing Report North Service Area – 8.65 MG (2.20 MG from auto flushers)

vi. January 2026 Flushing Report South Service Area – 26.60 MG (5.0 MG from auto flushers)

vii. January 2026 Total Delivered Water Report North Service Area – 632.53 MG, 1.4 % flushed

viii. January 2026 Total Delivered Water South Service Area – 1,800.00 MG, 1.5 % flushed

ix. Heavier than routine flushing reported in non-residential areas last month.

b. **City of New Port Richey**

i. January 2026 TCR Reporting – 0 TCP out of 21 samples – 0%

ii. January 2026 Complaint Report – 2 color complaints

iii. January 2026 Flushing Report – 1.345 MG (1.329 MG from auto flushers)

iv. January 2026 Total Delivered Water Report – 101.01 MG, 1.33% flushed

v. The city reported color measurements higher than 15 color units for the past two months.

vi. Due to oversight in January, only 21 bacti samples were collected (instead of 42). DEP was notified and the samples have since been collected. A public notification was sent out.

c. **Pinellas County**

i. January 2026 TCR Reporting – 2 TCP out of 216 samples – 0.93%

ii. January 2026 Complaint Report – 111 complaints: mostly premise issues and rusty water

iii. January 2026 Flushing Report – 19.63 MG (13.44 MG from auto flushers)

iv. January 2026 Total Delivered Water Report – 1,412.20 MG, 1.39% flushed

v. More calls (65 ea.) than usual from customers about rusty water.

d. **Pasco County**

i. January 2026 TCR Reporting – 1 TCP out of 185 samples – 0.54%

ii. January 2026 Complaint Report – 28 complaints: mostly color, odor and customer issues

iii. January 2026 Flushing Report – 22.48 MG (18.74 MG from auto flushers)

iv. January 2026 Water Delivered Report – 1,303.27 MG, 1.73 % flushed

v. Pasco reported record low flushing last month, partially attributed to a new transmission main loop in the central part of the county that shortened chloramine decay residence time.

e. **City of St. Petersburg**

i. January 2026 TCR Reporting – 2 TCP out of 186 samples – 1.08%

ii. January 2026 Complaint Report – 39 complaints: mostly premise issues; pressure issues on customer side

iii. January 2026 Flushing Report – 9.95 MG (7.89 MG from auto flushers)

iv. January 2026 Total Delivered Report – 820.55 MG, 1.21% flushed

v. Flushing is lower than last year at this time.

f. **City of Tampa**

i. January 2026 TCR Reporting – 0 TCP out of 240 samples – 0%

ii. January 2026 Complaint Report – 12 complaints: mostly color and odor

iii. January 2026 Flushing Report – 10.95 MG (7.84 MG from auto flushers)

iv. January 2026 Total Delivered Water Report – 2,239.44 MG, 0.47% flushed

v. City is considering scheduling a chlorine maintenance event in March 2026.

vi. City noted that the number of complaints were very low this month.

B. WATER QUALITY MONITORING/TREATMENT

1. **Exhibit D Performance**

Exhibit D performance met requirements in January 2026.

2. **Regional Water Quality Study Update – Final Report Issued on January 9, 2026**

   a. Recommendations

      i. Tampa Bay Water's Planning & Projects Division completed their CIP cost projections in January 2026 for the RWQS Update recommended treatment projects.

      ii. Tampa Bay Water provided a Board presentation on January 26, 2026 that was largely a review of previously presented information.

      iii. Phase 1 recommendations include PFAS reduction treatment at the existing Regional Surface Water Treatment Plant and BUD5 and BUD7 Water Treatment Plants locations (i.e., not at the points of connection).

      iv. Phase 1 recommendations also include TOC reduction treatment at the Eldridge Wilde Water Treatment Plant and the South Pasco Water Treatment Plant.

      v. Phase 2 recommendations for TOC reduction treatment at wellfield water treatment locations at Cosme-Odessa, Carrollwood-Northwest Hillsborough, Cypress Creek/ Cross Bar, Morris Bridge, Section 21 and Starkey.

      vi. Phase 3 recommendations (i.e., further reducing TOC to less than two mg/L), if necessary, will be determined at a later date using full-scale treatment performance data.

      vii. CIP cost projections for the above-described recommendations were presented to member utility directors and others after the Board meeting on January 26, 2026.

   b. Next Steps

      i. A Board presentation will made in February 2026 that will review the recommended treatment locations and provide CIP cost estimates for Phase 1 and Phase 2 projects.

      ii. Seek Board approval for the Phase 1 projects at the April 2026 Board meeting.

3. **PFAS Quarterly Compliance Sampling**

   a. PFAS Q3 compliance sampling was underway and scheduled to be completed in February 2026.

   b. PFAS Q4 compliance sampling is planned for May 2026.

C. OTHER TOPICS

UPDATE: AWWA LITIGATION – EPA PFAS MCLs CHALLENGE

a. The Court ruled against EPA's proposal for the Court to rescind the four PFAS. EPA must now follow the full regulatory process with appropriate public notification procedures.

b. EPA has not yet issued proposed regulation formally extending the PFOS and PFOA compliance date from April 2029 to April 2031. To date only EPA's intent to extend the date has been announced.

c. EPA issued a memo to state agencies with drinking water primacy, asking them to request an extension from EPA for PFAS NPDWRs.

D. FUTURE MEETINGS

Next WQWG-OCC Meeting is online March 12, 2026 at 1:30 p.m.

WQWG-OCC February 2026 Meeting Attendees

Chris Wetz, Hillsborough County
Mark Lehigh, Hillsborough County
Luke Mulford, Hillsborough County
David Lundberg, Hillsborough County
Pedro Rodriquez, Hillsborough County
Ray Harmon, Hillsborough County
Zemberial Strong, Hillsborough County
Trevor Bridge, Pinellas County
Michele Duggan, Pinellas County
Patty Holowecky, Pinellas County
Royce Rarick, Pinellas County
Wendy Tifft, Pinellas County
Greg Wikholm, City of New Port Richey
Michael Stein, City of New Port Richey
Colin Eichenmuller, City of New Port Richey
Paula Lashuay, City of Tampa
Mike Gilliam, Tampa Bay Water
Shawn Jones, Tampa Bay Water
Steve Fleischacker, Tampa Bay Water
Paul Stanek, Tampa Bay Water
Evelyn Dooley, Tampa Bay Water
Stephen Cantin, Tampa Bay Water
Laila Martin, Tampa Bay Water
Waunda Henry, City of St. Petersburg
John Stanley, City of St. Petersburg
Clifton Long, City of St. Petersburg
John Clausen, City of St. Petersburg
Eric Lynch, City of St. Petersburg
Lauren Tersen, City of St. Petersburg
Scott Lewis, City of St. Petersburg
Sean Pitcher, Pasco County
Kevin Jenkins, Pasco County
Kenneth Durr, Pasco County
Michael Ward, Pasco County
Jeffrey Schlitt, Pasco County
Stephanie Summerbell, Pasco County
Karen Lewis, Pasco County
Mike Avila, Pasco County
Tim Smith, SUNDT
Chris Owen, Hazen & Sawyer

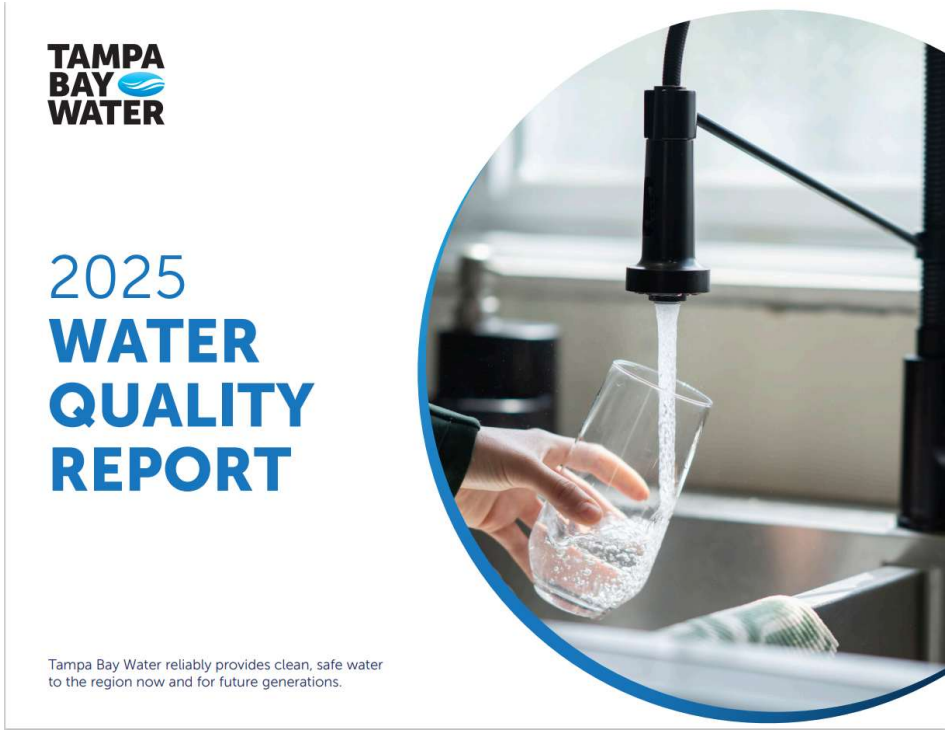
Water Quality Update and Recommendation to Implement Water Quality Treatment

Agenda Item C.2
April 20, 2026

Warren Hogg, P.G.
Chief Science Officer
Tampa Bay Water

Compliance

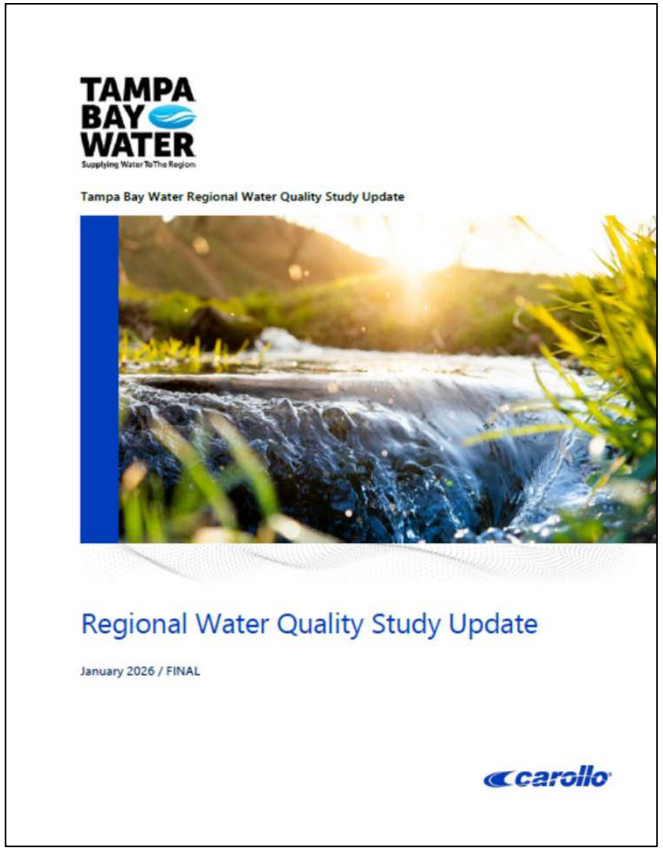
- Meets or is better than state and federal requirements
  - Safe Drinking Water Act National Primary Drinking Water Standards
  - 62-550, Florida Administrative Code
- Meets or is better than Exhibit D requirements



Regional Water Quality Study - Timeline

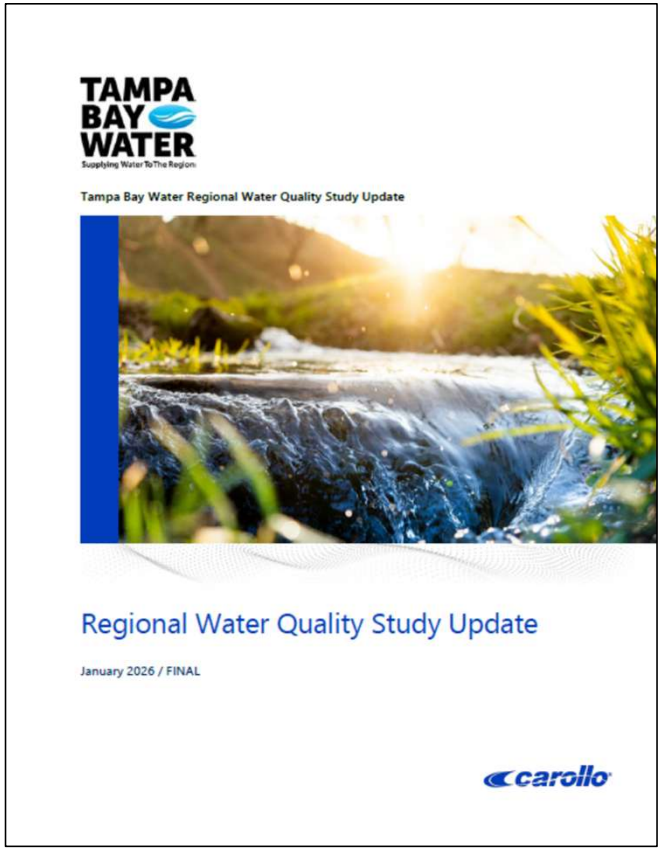
- Total Organic Carbon (TOC) reduction
  - Member utility director requests 2017-2018
  - Desktop evaluations 2018-2019
  - Benchtop and pilot treatability 2020-2022
  - Reports with recommendations 2022-2023

- PFAS reduction treatment
  - Member utility director requests 2023 (January)
  - Treatability studies 2023-2024
  - EPA final drinking water limits 2024 (April)
  - EPA limits challenged by AWWA 2024 (June)
  - EPA intent to change limits 2025 (May)
  - Report with recommendations 2025-2026



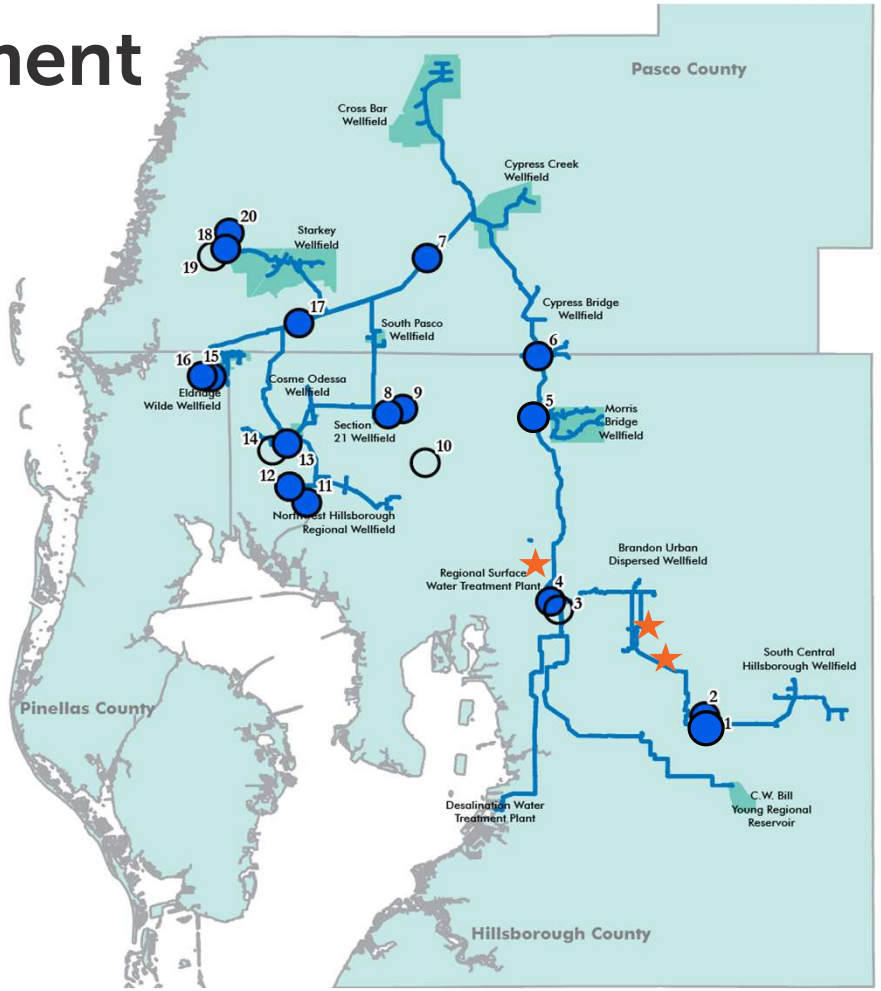
Regional Water Quality Study – January 2026

- PFAS reduction treatment
  - Long-term regulatory compliance with EPA PFAS drinking water limits
- TOC reduction treatment
  - Strengthen disinfectant stability



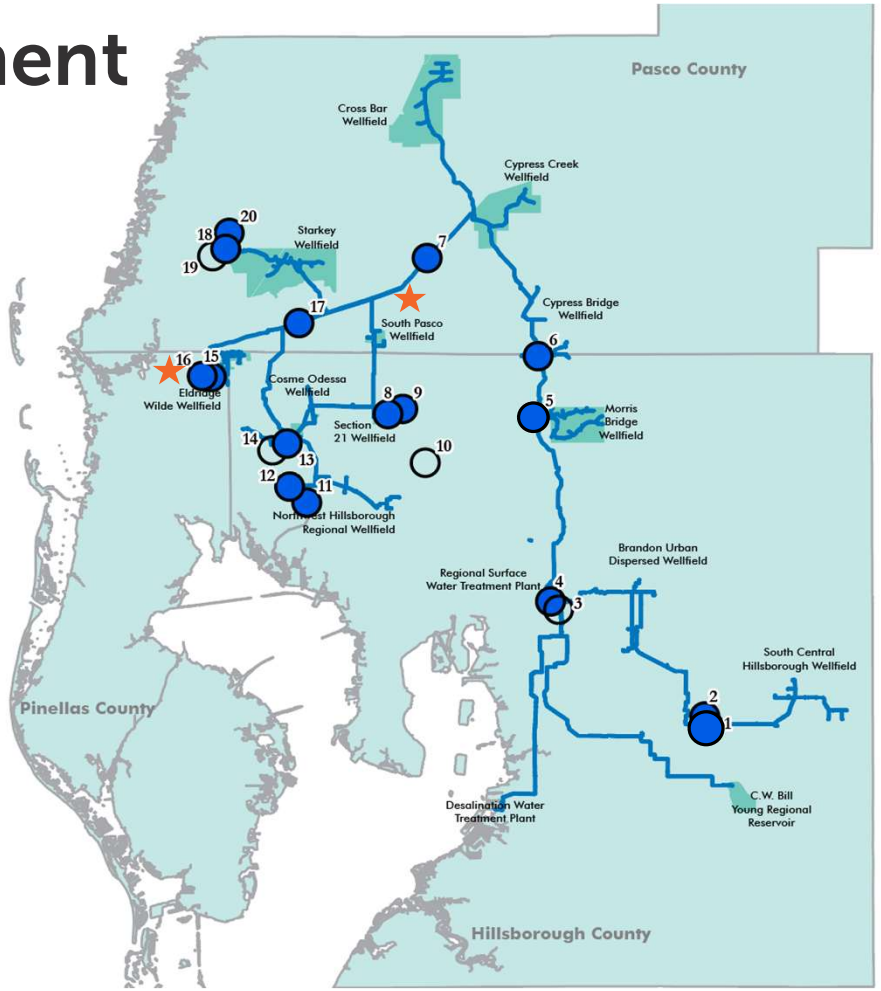
PFAS Reduction Treatment

- Regional Surface Water Treatment Plant
  - Suspended Ion Exchange Pilot Plant
  - Interim Period Compliance Measures
  - Full-scale Plant Construction and Operation
- Brandon Urban Dispersed Wells Water Treatment Plant 5
  - Fixed Bed Ion Exchange
- Brandon Urban Dispersed Wells Water Treatment Plant 7
  - Fixed Bed Ion Exchange



TOC Reduction Treatment

- Two Locations:
  - Eldridge Wilde Wellfield
    - Granular Activated Carbon
  - South Pasco Wellfield
    - Fixed Bed Ion Exchange
- Among highest TOC levels in the region
- Will help reduce additional treatment and flushing in member systems
- Cost savings to implement now



Implementation Strategy, Costs and Schedule

- Implementation strategy
  - Monitor EPA litigation, future rulemaking and compliance timeframe
  - Critical to begin design as soon as possible to meet EPA compliance timeframe
  - Construction not likely to begin before regulatory clarity from EPA

- Costs and Schedule
  - PFAS reduction treatment capital costs (3 locations) = $187,771,000
  - TOC reduction treatment capital cost (2 locations) = $51,228,000
  - Implementation period from 2026 through 2031

Recommendations

Staff recommends:

- Board approval of PFAS reduction treatment projects at the Regional Surface Water Treatment Plant and the two Brandon Urban Dispersed Wells Water Treatment Plants

- Board approval of Total Organic Carbon reduction projects at the Eldridge-Wilde And South Pasco wellfields

TAMPA BAY WATER

Questions?

Phase 1 Recommendations

	Capital, $	O&M
Regional Surface Water Treatment Plant	$171,590,000	$ 2,463,000
Brandon Urban Dispersed Wells WTPs 5 & 7	16,181,000	654,000
PFAS Reduction Treatment:	$ 187,771,000	$ 3,117,000
Eldridge Wilde Water Treatment Plant (GAC)	$ 29,280,000	$ 3,136,000
South Pasco Water Treatment Plant (FBIX)	21,948,000	872,000
TOC Reduction Treatment:	$ 51,228,000	$ 4,008,000
Phase 1 (2026 – 2031):	**$238,999,000**	**$ 7,125,000**

Phase 2 Recommendations

	Capital, $	O&M
Cosme-Odessa (0_3 - GAC)	$ 71,253,000	$ 4,163,000
Carrollwood-Northwest Hillsborough (0_3 - GAC)	73,497,000	1,363,000
Cypress Creek and Cross Bar (FBIX - Greensand)	89,191,000	4,001,000
Morris Bridge (FBIX)	28,747,000	608,000
Section 21 (FBIX)	26,110,000	440,000
Starkey (0_3 - GAC)	49,893,000	3,077,000
TOC Reduction Treatment		
Phase 2 (2032 – 2039):	**$338,691,000**	**$ 13,652,000**

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.3

DATE: April 6, 2025

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Surface Water Treatment Plant Water Quality Pilot Study, Project No. 03511, Amendment 2026-19 for Design Services of Agreement No. 2000-028 with Veolia Water North America - South, LLC - *Approve*

SUMMARY

The Surface Water Treatment Plant Water Quality Pilot Study, Project No. 03511, includes the design and construction of a new pilot plant and the study of water treatment technologies to support compliance with PFAS regulations. An agreement amendment in the amount of $1,827,688.04, inclusive of $135,000 of Owner's Allowance, has been negotiated with Veolia Water North America - South, LLC, for design services.

SUGGESTED ACTION

Approve Amendment 2026-19 of Agreement 2000-028 with Veolia Water North America - South, LLC.

COST/FUNDING SOURCE

$1,827,688.04 / PFAS Recovery Funds

DISCUSSION

In April 2024, the United States Environmental Protection Agency (EPA) issued new drinking water regulations establishing maximum contaminant levels (MCLs) for six per- and polyfluoroalkyl

substances (PFAS) compounds and mixtures. These regulations require public water systems to comply

with PFAS MCLs by April 2029. In May 2025, the EPA announced its intent to revise the regulations by extending the compliance deadline from April 2029 to April 2031; however, the PFAS MCLs and implementation timeframe are the subject of ongoing litigation and the change in the compliance deadline date at this time is uncertain.

The recently completed Regional Water Quality Study Update report (Report) evaluated treatment concept designs, estimated costs, and implementation plan recommendations based on PFAS bench-scale treatability studies and the current EPA PFAS MCLs. The Report recommends targeted water treatment technology upgrades to reduce PFAS levels and achieve regulatory compliance.

To support compliance with these requirements, the Surface Water Treatment Plant Water Quality Pilot Study (Project No. 03511) will be implemented using a structured approach. This scope of work, covered under agreement Amendment 2026-19, focuses on the design and development of pilot testing strategy. Construction-related services will be addressed separately and brought to the Board for approval at a later date.

The scope of work under agreement Amendment 2026-19 consists of two parallel design tracks. Track 1, known as the Interim Pilot, focuses on the evaluation of near-term PFAS treatment options using post-treatment granular activated carbon (GAC) and ion exchange (IX) under existing plant conditions. These near-term options will be essential for compliance with the existing PFAS regulations, particularly if the compliance date remains April 2029. Track 2 will develop the design for a permanent pilot plant to assess continuing performance and optimization opportunities for both existing and new treatment technologies.

Staff requests Board approval of the Contract Amendment 2026-19 with Veolia Water North America - South, LLC under Agreement 2000-028, in the amount of $1,827,688.04. This amount includes $135,000 for Owner's Allowance. The Owner's Allowance will be used, as needed, for additional professional services such as surveying and geotechnical services. Additionally, the proposal includes $865,000 for the early purchase of Actiflo pilot system which is a long lead-time purchase.

The proposal and contract amendment are attached. The proposed contract amendment has been reviewed and approved as to form by Tampa Bay Water's General Counsel's Office.

BACKGROUND

The Surface Water Treatment Plant (SWTP), in service since 2002, is currently undergoing construction to add a fifth treatment train to support the region’s future water demands. The SWTP receives surface water from the Tampa Bypass Canal, Hillsborough River, Alafia River, and the C.W. Bill Young Regional Reservoir. Once expanded in 2028, the facility will have a sustainable capacity of 110 million gallons per day (MGD) of treated water.

The Surface Water Treatment Plant Water Quality Pilot Study Project has been identified in the Capital Improvements Program and the Regional Water Quality Study. The total budget for this project is $5.4 million, which includes both design and construction of the pilot facilities covered by this Contract Amendment.

Attachments (1)

Veolia-TBW SWTP Pilot Am19 04-08-26 VNA Signed
C.3 Surface Water Treatment Plant Water Quality Pilot Facility

Docusign Envelope ID: 6B08F451-5BB0-42CF-8807-B6C979CECBB8

April 8, 2026

Mr. Charles Carden
General Manager
Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763

Subject: **Surface Water Treatment Plant Water Quality Pilot Study - 03511**
Amendment No. 2026-19 for Interim and Permanent Pilot Plant Design

Dear Mr. Carden:

Veolia Water North America - South, LLC (Veolia), your current Operations, Maintenance and Management (OM&M) services partner for the Regional Surface Water Treatment Plant (SWTP), is pleased to present Amendment No. 2026-19 to the Surface Water Treatment Facility Design, Construction and Operation Agreement dated March 20, 2000.

Amendment No. 2026-19 pertains to the Tampa Bay Water Surface Water Treatment Plant Water Quality Pilot Study - 03511, specifically addressing Interim and Permanent Pilot Plant Design.

Construction and Piloting Services will, at Tampa Bay Water's discretion, be covered under separate future amendments, with Interim and Permanent Pilot Plant Design completion being critical to defining the subsequent scopes of work. The design services will include determination of equipment selection, equipment location, review of existing data, Pilot Protocol development, construction cost estimation, early-stage permitting efforts, final design, evaluation of potential treatment options to achieve compliance before full scale implementation is complete and early procurement of long lead items (at Tampa Bay Water's discretion). The final design may be modified in future efforts based on Tampa Bay Water's direction and/or additional regulatory requirements.

Regulatory Consideration

On April 10, 2024, the US EPA (Environmental Protection Agency) issued drinking water regulations for six PFAS (Per- and Polyfluoroalkyl substances) compounds and mixtures. Public water systems must monitor for these compounds and provide information on the levels starting in 2027. However, according to a May 2025 EPA announcement, the deadline for implementing treatment solutions to reduce PFOS (Perfluorooctanesulfonic acid) and PFOA (Perfluorooctanoic acid) levels in drinking water that exceed maximum contaminant levels is expected to be extended to 2031.

Objectives and Design

Tampa Bay Water provided an objectives document that was refined through document exchanges and meetings including Tampa Bay Water, Veolia and Black & Veatch. The result was a set of objectives used to develop the scope of work. Interim and Permanent Pilot Plant Design will center on the design for water treatment process pilot testing to include treatment technologies for PFAS removal and Total Organic Carbon (TOC) optimization, including: granular activated carbon (GAC), ion exchange (IX), and Suspended Ion Exchange (SIX). Included with the design is development of protocols for use in pilot testing.

Docusign Envelope ID: 6B08F451-5BB0-42CF-8807-B6C979CECBB8

Delivery

This Interim and Permanent Pilot Plant Design effort is anticipated to be the first step in the progression toward installation of full-scale PFAS treatment at the SWTP. At this time, it is anticipated that the progression to achieve full scale treatment will be as follows:

- Interim and Permanent Pilot Plant Design
  (Amendment No. 2026-19)
  - Track 1 - For existing plant effluent: Design "interim" pilot facility, select equipment, develop pilot protocol, provide cost estimate, and make efforts to identify potential treatment options to achieve compliance before full scale implementation is complete
  - Track 2 - For new "permanent pilot plant": Design permanent pilot plant, provide construction cost estimate, develop pilot protocol, select equipment and make early purchase of long lead equipment (at Tampa Bay Water's discretion)
- Bid, Construct Interim Pilot Facility, Piloting and Basis of Design for Full Scale PFAS Treatment
  (Future Amendment) (Preceded by Interim and Permanent Pilot Plant Design, Track 1)
  - Procure construction contractor, construct interim pilot facility, conduct piloting and develop full scale PFAS treatment basis of design
  - Make efforts to identify potential treatment options to achieve compliance before full scale implementation is complete (if required based upon regulatory requirements and/or project schedule compared to compliance date)
  - It is recommended that this effort be started prior to Bid, Construct Permanent Pilot Plant, Piloting and (optional) Basis of Design for Full-Scale Treatment, as designing the interim pilot facility at the existing plant effluent will require less time than designing the new permanent pilot plant facility. This approach enables full-scale PFAS treatment to be completed in the shortest timeframe. Preliminary schedules indicate that even by expediting this pathway through existing plant effluent piloting, the full-scale PFAS treatment system will likely be completed after the anticipated 2031 compliance deadline. Therefore, it may be preferred to separate this pathway from the new permanent pilot plant pathway to not hold back the implementation of full-scale PFAS treatment.
- Bid, Construct Permanent Pilot Plant, Piloting and (optional) Basis of Design for Full-Scale Treatment

  (Future Amendment) (Preceded by Interim and Permanent Pilot Plant Design, Track 2)
  - Procure construction contractor, construct permanent pilot facility, conduct piloting and develop full scale basis of design
  - The decision to develop a basis of design for full-scale treatment will depend on the results of piloting, as well as other factors that may arise, making this portion of this effort optional at this time.
- Design-Build of Full Scale PFAS Treatment Facility
  (Future Amendment) (Preceded by Bid, Construct Interim Pilot Facility, Piloting and Basis of Design for Full Scale PFAS Treatment)
  - Procure Design-Builder, design and construct full scale PFAS treatment facility

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- Implement interim options, if viable options are identified, for achieving compliance before full scale implementation is complete (if required)

- <u>(Optional) Design-Build of Full Scale TOC Treatment Facility</u>

  (Future Amendment) (Preceded by Bid, Construct Permanent Pilot Plant, Piloting and Basis of Design for Full-Scale Treatment)

  - Procure Design-Builder, design and construct full scale TOC treatment process and/or other processes selected through piloting efforts conducted at the new permanent pilot plant
  - This effort is considered optional, as the outcomes of the preceding effort remain unknown, along with other potential factors that may influence the decision to execute it in the future

As currently envisioned, each effort listed above will be subject to a separate contract amendment process, Tampa Bay Water staff review, and will require approval by the Tampa Bay Water Board of Directors. A draft contract amendment for each will be submitted to Tampa Bay Water near to, or following, completion of the preceding effort. The reason we need to do these separately is each builds the basis for another and results in the shortest timeframe for implementation of full scale PFAS treatment. Tampa Bay Water has the option to not perform future efforts and/or to change details, such as combining efforts. This may be desirable if regulatory requirements change during the course of work.

Key Dates

Amendment No. 2026-19 contains the following key target milestone dates:

● Notice to Proceed Issued by Tampa Bay Water	May 4, 2026
● Pilot Study Kickoff Meeting	May 19, 2026
● Draft Natural Resources Permit Application	June 15, 2026
● Final Interim Pilot System Protocol Development	August 4, 2026
● Final Permanent Pilot System Protocol Development	August 18, 2026
● Draft ERP Permit Application	October 27, 2026
● Final Design Permanent Pilot Plant	November 18, 2026
● Opinion of Probable Construction Cost for Permanent Pilot Plant	November 23, 2026
● Draft Site Development Permit Application	December 30, 2026

Veolia Staffing

The cost for performing Interim and Permanent Pilot Plant Design includes part-time coverage by Todd Petrie, P.E., Depin Chen, P.E., and an Administrative Assistant. Mr. Petrie will perform project management, stakeholder coordination, technical review, cost estimating review, and general project oversight. Mr. Chen will perform in a technical review role. An Administrative Assistant will primarily be tasked with addressing responsibilities related to Masterworks. Additional Veolia resources will be involved with the project, but are not included as a cost to the project. This includes additional

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technical support resources, operations and maintenance resources, administrative resources and construction group (Capital Program Management, or CPM) resources.

The Facility Expansion Work (expansion of the SWTP) project is in progress and is being led by Veolia's CPM group. Coordination with both Veolia Operations and Veolia CPM groups will be necessary to complete the work. We will make these resources available as needed to support the Interim and Permanent Pilot Plant Design work at no additional cost.

Design Engineer

Black & Veatch (B&V) will serve as the Design Engineering firm (Engineer). Veolia will provide support through various resources as outlined in the previous section. Both Veolia and B&V are uniquely positioned to support this project. As Tampa Bay Water's Integrated Program Manager Consultant, B&V possesses in-depth knowledge of Tampa Bay Water's system and facilities.

Cost

The following is a summary of the cost as contained in Amendment No. 2026-19, Attachment D - Compensation for Interim and Permanent Pilot Plant Design.

Lump Sum Total:	$ 827,688.^{04}
Owner's Allowance for Additional Services:	$ 135,000.^{00}
Owner's Allowance for Early Procurement:	$ 865,000.^{00}
Total:	$1,827,688.^{04}

As a Principle of Veolia Water North America - South, LLC, I can attest that the contents of this Amendment No. 2026-19 were prepared with the intent of addressing Tampa Bay Water's objectives. Our point of contact for this project will be:

Michael Kuhn, MS, P.E., PO, BCEE
Director, Capital Program Management - Municipal & Commercial Business
Veolia Water North America - South, LLC
14055 Riveredge Drive, Suite 240, Tampa, Florida 33637
Telephone: 813-629-1870 Email: mike.kuhn@veolia.com

I invite you to contact Mr. Kuhn or I should you have any questions or require any additional information. We very much look forward to your review of this proposal and commencing with this project.

Very Truly Yours,

Signed by:
Jason Costa
A3444E8383E1417...

Jason Costa
President – Municipal Water Contract Operations Business
Cell 412 315 1820
jason.costa@veolia.com
www.veolianorthamerica.com

Resourcing the world VEOLIA

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Documents Included:

EXHIBIT A - Amendment No. 2026-19 (with the following attachments)

- Attachment A - Engineer Scope of Work for Interim and Permanent Pilot Plant Design
- Attachment B - Engineer Labor Rates for Interim and Permanent Pilot Plant Design
- Attachment C - Company Scope of Work for Interim and Permanent Pilot Plant Design
- Attachment D - Compensation for Interim and Permanent Pilot Plant Design
- Attachment E - Schedule for Interim and Permanent Pilot Plant Design

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EXHIBIT A

Amendment No. 2026-19

Docusign Envelope ID: 2975EEF2-3607-4AE4-B305-BA4965B58B04

SURFACE WATER TREATMENT FACILITY
DESIGN, CONSTRUCTION AND OPERATION AGREEMENT
AMENDMENT NO. 2026-19

THIS AMENDMENT NO. 2026-19 to the Surface Water Treatment Facility Design, Construction and Operation Agreement (Contract 2000-028) is made and entered into this 20th day of April, 2026, by and between **TAMPA BAY WATER, A Regional Water Supply Authority**, an interlocal governmental agency created and existing pursuant to Sections 163.01, 373.713 and 373.715, Florida Statutes, acting by and through its Board of Directors, the governing board thereof ("Tampa Bay Water"), and **VEOLIA WATER NORTH AMERICA - SOUTH, LLC**, a limited liability company organized and existing under the laws of the State of Delaware and authorized to do business in the State of Florida (the "Company"), and **VEOLIA WATER NORTH AMERICA OPERATING SERVICES, LLC.**, formerly known as US FILTER OPERATING SERVICES, INC. a corporation organized and existing under the laws of the State of Delaware and authorized to do business in the State of Florida ("Veolia Operating"), hereinafter collectively referred to as the "Parties".

RECITALS:

A. Tampa Bay Water and US Filter Operating Services, Inc., subsequently known as Veolia Water North America Operating Services, LLC, entered into that certain Surface Water Treatment Facility Design, Construction and Operation Agreement dated as of March 20, 2000, as amended by Amendment #2000-1 dated as of July 25, 2000, Amendment #2000-2 dated as of August 25, 2000, Amendment #2001-3 dated as of December 17, 2001, that certain Chemical Purchase Sales & Use Tax Savings Agreement dated as of March 18, 2002 (Amendment #2002-4), Amendment #2002-5 dated as of May 20, 2002, that certain No-Cost Change Order dated as of September 30, 2002, Amendment #2003-6 dated as of April 21, 2003, Amendment #2003-7 dated as of May 19, 2003, Amendment #2004-8 dated as of June 28, 2004, Amendment #2005-9 dated as of August 15, 2005, Amendment #2007-10 dated as of April 16, 2007 which provided for Facility Modification Work to increase the firm production capacity for Treated Water from the Facility to 99 MGD and re-rate the Facility to 120 MGD unless otherwise rated by the Florida Department of Environmental Protection, Amendment #2008-11 which implemented an owner's direct purchase program, Amendment #2008-12 which modified insurance requirements, Amendment #2017-13 which provided for Tampa Bay Water's withdrawal of funds from the Granular Activated Carbon Reserve Fund, Amendment #2022-14 which extended the term of the Agreement to January 15, 2028, Amendment #2023-15 which provided for certain identified scopes of work related to Facility Expansion Work, Amendment #2024-16 which provided for amendments to Facility Expansion Work, Amendment #2025-17 which provided for the Facility Expansion Work SCADA System Design, Amendment #2025-18, authorizing the Construction Phase Services (Phase 2) for the Facility Expansion Work (hereinafter referred to collectively as the "Agreement") and this Amendment #2026-19 providing for a new pilot plant design (hereinafter referred to collectively as the "**Agreement**").

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B. The Parties desire that the Company perform work in support of Tampa Bay Water's Water Quality Pilot Study ("Project"), CIP #03511, at the Regional Surface Water Treatment Plant ("RSWTP"), as described in further detail in this Amendment; and

C. On April 20, 2026, the Board of Directors of Tampa Bay Water adopted the staff recommendation to approve this Amendment #2026-19 to authorize the Company to perform the work in support of Tampa Bay Water's Project as set forth in this Amendment.

NOW, THEREFORE, in exchange for the mutual promises contained herein and for other good and valuable consideration, the sufficiency of which is hereby acknowledged, and intending to be legally bound, the Parties agree as follows:

1. Recitals. The above Recitals are incorporated herein by reference.

2. Company shall perform work as described below in support of Tampa Bay Water's Water Project, CIP #03511. The objective for the Project is to provide for a pilot plant water treatment train that replicates the existing treatment approach at the facility, accommodates select processes focused on PFAS (Per- and Polyfluoroalkyl substances) treatment at: (1) the existing plant effluent prior to chlorination; and (2) at a pilot plant water treatment train that replicates the existing treatment approach at the facility. This includes required support processes and improvements as provided in this Amendment (collectively, the "Pilot Plant Work"). Efforts as part of this amendment represent the Interim and Permanent Pilot Plant Design and include design services, identification of equipment, drafting of pilot protocol, permitting, cost estimation and, possibly, early purchases of long lead items to benefit the future construction of the designed facilities. Additionally**,** interpretation of PFAS performance data from the existing full-scale biologically activated filters (BAF) during and following planned media changeouts will be performed. Construction is not included, and is anticipated to be addressed in a future amendment. The format for delivery of the Pilot Plant Work will include two distinct "Tracks" as follows:

   (1) **Track 1 – Interim Pilot Test (Slipstream):** A slipstream approach using a small flow drawn from the existing full-scale BAF (Biologically Active Filters) effluent and directed into a dedicated GAC (Granular Activated Carbon) and IX (Ion Exchange) skid.

   (2) **Track 2 – Permanent Pilot System:** A standalone pilot setup that replicates key elements of the existing treatment train (Actiflo, ozone, and BAF) to support continuous, long-term testing. The replicated "permanent" pilot infrastructure will remain on-site for ongoing evaluation, with a rental IX/GAC skid downstream for PFAS treatment evaluation and a rental SIX skid prior to the replicated treatment train to support PFAS treatment evaluation and TOC optimization objectives.

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3. Company has selected Black & Veatch (the "Engineer") to perform Interim and Permanent Pilot Plant Design in accordance with the Scope of Work described in ATTACHMENT A - ENGINEER SCOPE OF WORK FOR INTERIM AND PERMANENT PILOT PLANT DESIGN.

4. Company shall be compensated as provided in ATTACHMENT D - COMPENSATION FOR INTERIM AND PERMANENT PILOT PLANT DESIGN.

5. Termination

   Tampa Bay Water shall have the right to terminate this Amendment #2026-19 in whole or in part, at any time without cause upon written notice to Company. In the event of any such termination without cause, Company's sole and exclusive recovery against Tampa Bay Water shall be limited to that portion of Company's compensation earned to the date of termination, together with any costs reasonably incurred by Company that are directly attributable to the termination. The Company shall not be entitled to any other or further recovery against Tampa Bay Water, including, but not limited to, anticipated fees or profits on Services not required to be performed.

   Tampa Bay Water shall determine that portion of the compensation earned for any incomplete Services based upon the ratio of such part of the Services completed relative to the entire Services. Any such determination shall be made in the reasonable exercise of Tampa Bay Water's discretion.

   Upon any termination of this Agreement and payment by Tampa Bay Water as required above, Company shall deliver to Tampa Bay Water, within ten (10) days of such payment, all papers, drawings, models and other material prepared by and for Company with respect to this Amendment #2026-19.

3. The following Attachments are hereby adopted by the Parties and shall govern and apply to the performance of Services under this Amendment #2026-19:

   ATTACHMENT A - ENGINEER SCOPE OF WORK FOR INTERIM AND PERMANENT PILOT PLANT DESIGN CES

   ATTACHMENT B – ENGINEER LABOR RATES FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

   ATTACHMENT C - COMPANY SCOPE OF WORK FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

   ATTACHMENT D - COMPENSATION FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

   ATTACHMENT E - SCHEDULE FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

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4. Review of Amendment #2026-19. Tampa Bay Water has carefully read and understands the effect of this Amendment #2026-19. Tampa Bay Water had the assistance of separate legal counsel in reviewing, discussing, and considering all terms of this Amendment #2026-19.

5. Review of Amendment #2026-19. The Company and Veolia Operating have read and understand the effect of this Amendment. The Company and Veolia Operating had the assistance of separate legal counsel in reviewing, discussing and considering all terms of this Amendment #2026-19.

6. The Parties' obligations and responsibilities under the Agreement as amended through Amendment #2026-19 are hereby ratified and confirmed. All provisions of the Agreement as amended through Amendment #2026-19 shall apply to and be used by the Parties in construing and interpreting this Amendment #2026-19. However, in the event of any conflict or inconsistency between the Agreement as amended through Amendment #2026-18 and this Amendment #2026-19, this Amendment shall prevail; except that the Parties specifically agree that this Amendment #2026-19 does not amend or modify the Chemical Purchase Sales & Use Tax Savings Agreement dated as of March 18, 2002, as previously agreed to by the Parties.

8. Section 10.6.4 "Tampa Bay Water Payment Costs" of the Agreement shall be amended to read as follows:

   In the event of an early termination of the Service Agreement for any reason, other than a Company Event of Default, Tampa Bay Water, subject to Cost Substantiation, shall reimburse the Company for its actual costs in performing its post-termination responsibilities required under this Section, including all contract-related special order items, supplies, materials, machinery, equipment, order cancellation, order cancellation fees, and other property, ordered or delivered to or by the Company or any Subcontractor prior to early termination.

9. The effective date of this Amendment #2026-19 is April 20, 2026.

10. All terms of the Agreement and previous Amendments not specifically amended herein shall remain in full force and effect.

11. This Amendment #2026-19 shall be governed by, construed, and enforced in accordance with the laws of the State of Florida.

12. This Amendment #2026-19 may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

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IN WITNESS WHEREOF and intending to be legally bound, the duly authorized representatives of the Parties have caused this Amendment #2026-19 to be executed as of the date first written above.

VEOLIA WATER NORTH AMERICA – SOUTH, LLC

DocuSigned by:

By: Joseph Tackett
6945087BC2E5463...

Name: Joseph Tackett

Title: CEO Contract Operations

VEOLIA WATER NORTH AMERICA OPERATING SERVICES, LLC, formerly known as US FILTER OPERATING SERVICES, INC.

DocuSigned by:

By: Joseph Tackett
6945087BC2E5463...

Name: Joseph Tackett

Title: CEO Contract Operations

ATTEST:

By: _____

General Manager

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY

By: _____

Chairman

APPROVED AS TO FORM:

_____

Office of the General Counsel

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ATTACHMENT A

ENGINEER SCOPE OF WORK FOR
INTERIM AND PERMANENT PILOT PLANT DESIGN

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TAMPA BAY WATER
WATER QUALITY PILOT STUDY (CIP 03511)
ENGINEERING SERVICES SCOPE OF WORK – INTERIM AND PERMANENT PILOT PLANT DESIGN
March 24, 2026

BACKGROUND

Black & Veatch (Engineer) will partner with the Company (Veolia) to provide professional services in support of Tampa Bay Water's (Owner) Water Quality Pilot Study (Project), Project No. 03511, at the Regional Surface Water Treatment Plant (RSWTP). This scope of services is for a RSWTP pilot plant design and equipment procurement planning services. The pilot plant will be designed and constructed as a permanent facility that is intended to optimize long-term operations and take steps towards compliance with EPA's Per- and Polyfluoroalkyl Substances (PFAS) low-level parts per trillion (ppt) Maximum Contaminant Levels (MCLs) under raw water quality conditions that are highly variable from season to season and year to year. Presently, PFAS treatment concept design criteria are based on benchtop testing that used water samples collected at discrete time periods (Regional Water Quality Study Update, 2026). The pilot plant will allow testing under continuous flow conditions that will characterize treatment performance and operating variables under highly variable raw water quality (i.e., dynamic vs. static) conditions.

This project establishes the pilot program goals and objectives to support both near-term decision-making and long-term use of a permanent pilot platform. In the near term, pilot testing will be used to define full-scale treatment design criteria and confirm performance under representative plant conditions. Over the long term, the permanent pilot system will provide a smaller-scale platform for potential longer-term use beyond this scope to support operational optimization, such as defining response strategies for highly variable raw water quality and other anomalous conditions, while maintaining reliable water production to meet customer demand. In parallel with pilot program development and pilot plant design, efforts to evaluate existing plant performance and potential interim PFAS risk-reduction measures will be included. This includes the execution of a sampling plan to assess baseline PFAS and TOC removal performance through RSWTP and quantify the impacts of media changeout on existing biologically activated filters (BAF). This scope will also detail pilot protocol and design for end-of-pipe, pilot-scale testing using a slipstream of full-scale BAF effluent to evaluate adsorptive media as a post-treatment PFAS polishing option under existing plant operating conditions.

This water treatment process pilot will include a series of treatment technologies intended for PFAS removal, including granular activated carbon (GAC), ion exchange (IX), and suspended ion exchange (SIX). The project will also evaluate the existing treatment train at pilot scale (coagulation via Actiflo, ozonation, and BAF) for potential improvement or optimization recommendations related to their operation and performance with these new treatment technologies.

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Pilot Study Configurations
In this pilot study, two distinct Tracks will be evaluated:

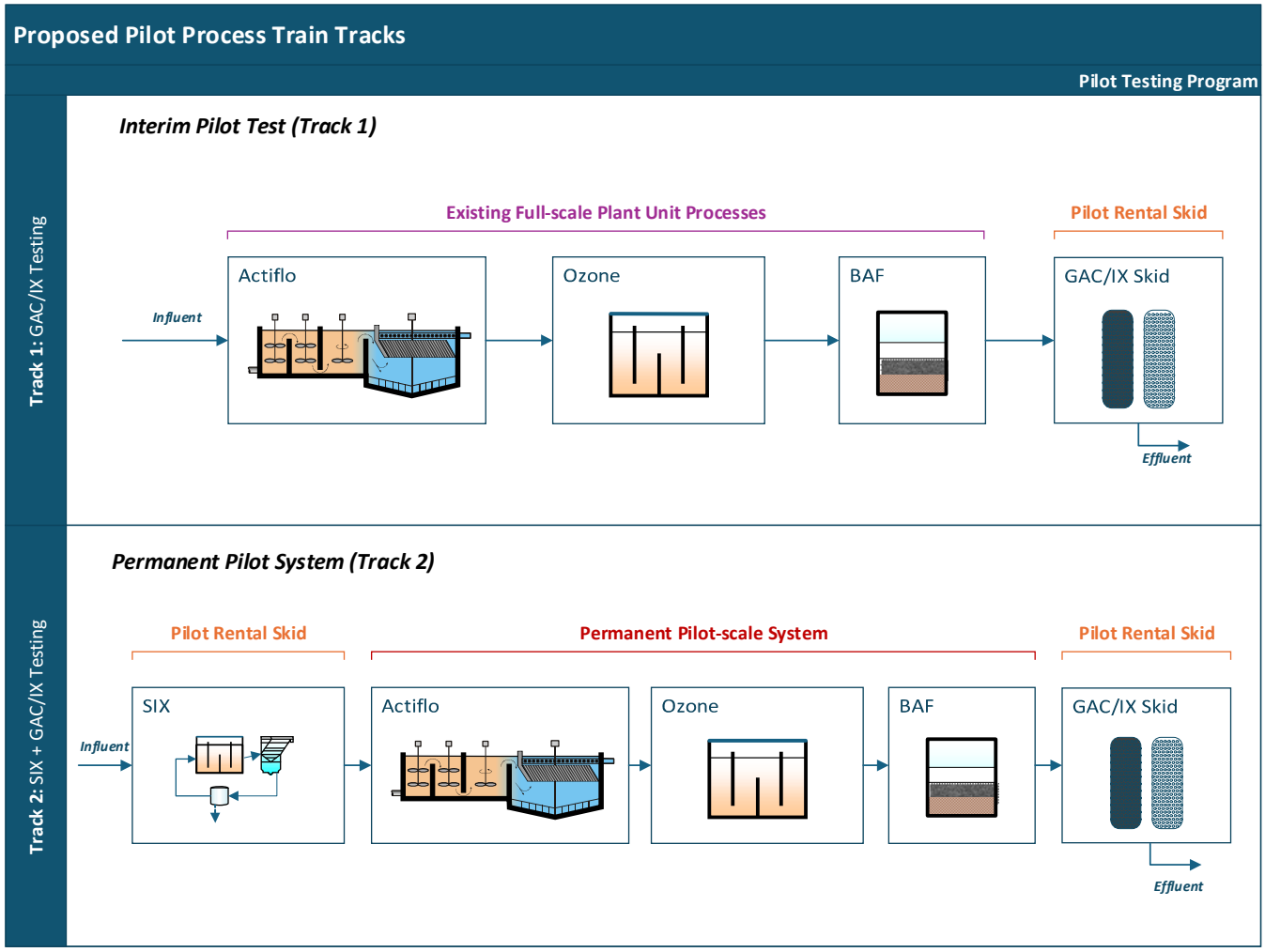
i. **Track 1 – Interim Pilot Test (Slipstream):** A slipstream approach using a small flow drawn from the full-scale BAF effluent and directed into a dedicated GAC and IX skid.
ii. **Track 2 – Permanent Pilot System:** A standalone pilot setup that replicates key elements of the existing treatment train (Actiflo, ozone, and BAF) to support continuous, long-term testing. The replicated "permanent" pilot infrastructure will remain on-site for ongoing evaluation, with a rental IX/GAC skid downstream for PFAS treatment and a rental SIX skid prior to the replicated treatment train to support PFAS treatment and TOC optimization objectives.

The main tasks proposed under this scope of services include the following:

i. Pilot Testing Program Development, which will establish:
ii. Pilot Protocol for the **Interim Pilot Test (Track 1)** –A written protocol defining the pilot treatment schemes, testing logistics (e.g., operation schedule, sampling plan, startup procedures), and key design criteria to support equipment rental/procurement planning.
iii. Other interim measures (Track 1) to support near-term PFAS compliance planning, such as evaluating the impact of existing filter media replacement and operations on achieving effluent water quality goals and identifying feasible temporary compliance strategies pending long-term improvements.
iv. Pilot Protocol for the **Permanent Pilot System (Track 2)** – A written protocol that will serve as the basis of design for the pilot plant, including the pilot treatment scheme(s), testing logistics, and monitoring approach to support full-scale design criteria development and enable potential longer-term operational optimization use beyond this scope, consistent with the goals and objectives described in the next section.
v. Pilot Plant Design – Including:
vi. Preliminary Design – developed to support early equipment procurement
vii. Final Design – issued-for-construction, signed-and-sealed design package to support permitting and development of construction pricing.
viii. Pilot Plant Permitting – as required to support pilot installation and operation.
ix. Equipment Procurement Planning Support

A subsequent effort is anticipated for bidding and constructing Track 1 and 2, to include, but not be limited to, the following: pilot system installation, engineering services during construction, startup and shakedown, continuous pilot operations, data collection, analysis, and reporting, waste stream handling and long term care protocol, and full scale facilities life-cycle cost analysis, conceptual (or preliminary) design drawings and basis of design document(s).

Figure 1 summarizes the two tracks to be evaluated under this project.



RSWTP Pilot Testing Goals & Objectives

The pilot testing goals & objectives, as well as pilot testing benefits are summarized below.

1. Collect and analyze influent, in-plant (partially treated), and treated waters to further characterize water quality variability (including seasonal changes and source blending conditions) and evaluate potential impacts on treatment of PFAS, total organic carbon (TOC), and other key water quality parameters relevant to treatment. Key benefits for TOC reduction in helping achieve PFAS compliance are detailed in the next section.
2. Provide the opportunity to optimize operation of the existing RSWTP unit processes (coagulation via Actiflo, ozonation, and filtration) for treatment of PFAS and TOC (e.g., replacing existing filter media) over the long-term.
3. Evaluate existing and alternative treatment technology combinations in terms of treatment performance and quantify key operational parameters and other requirements (e.g., media replacement, SIX dosage, resin regeneration, salt usage, waste brine generation/ characteristics/ disposal, resin loss, residuals generation, chemical usage). Evaluation will include:
    a. Post-treatment polishing using GAC and/or IX without SIX (Track 1), and
    b. Configurations evaluating SIX as pretreatment upstream of the existing Actiflo/ozonation/BAF processes, with post-treatment polishing (GAC and/or IX) downstream of the BAF as applicable

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(Track 2). SIX will be assessed both with and without downstream polishing to quantify incremental benefits and operational impacts.

Note: Pretreatment refers to new potential processes upstream of the existing Actiflo treatment. Post-treatment polishing refers to new potential processes downstream of the existing BAF treatment.

4. Characterize the quality and quantity of pilot plant recycle and residual streams (e.g., backwash, waste brine) to refine management and/or disposal options, with a focus on PFAS-laden residuals.
5. Assess the impact of influent source water and the SIX process on Alkalinity supplement needs for downstream coagulation (Actiflo) process, and the finished water corrosivity and distribution system lead/copper compliance due to higher CSMR (chloride-to-sulfate mass ratio). Refer to Task 4 for additional details.
6. Provide data to support evaluation of the impacts to RSWTP O&M costs for optimizing existing and alternative treatment technologies and operational strategies, as well as life-cycle cost evaluation and future capital planning for water quality improvements at the RSWTP. This includes developing and testing alternative treatment and operational strategies that target PFAS and TOC reduction (recognizing that TOC can interfere with PFAS removal), enhance finished water quality, and evaluate their impacts to overall RSWTP O&M costs.
7. Compare pilot plant data with full-scale RSWTP to confirm the pilot plant results are representative to the extent possible.

Key Considerations: TOC Relationship to PFAS Performance and Operational Co-Benefits

TOC can interfere with PFAS removal in the existing Regional Surface Water Treatment Plant unit processes, and as such, TOC reduction may be an important factor to evaluate in achieving PFAS compliance. A potential secondary benefit of TOC reduction is lower chlorine demand and improved stability of chloramine residuals in transmission mains and finished water delivery to member utilities. Accordingly, TOC can be a key parameter influencing PFAS treatment performance, particularly for adsorption-based processes (GAC/BAC and IX), and will be tracked alongside PFAS results to support data interpretation and compliance planning. Key considerations include:

1. Adsorption competition: TOC can compete with PFAS for adsorption sites on carbon media, potentially reducing PFAS removal capacity and accelerating breakthrough.
2. Media condition and variability: TOC may contribute to increased biological activity on carbon media (transition from GAC to BAC) and IX resin media fouling, which can negatively affect PFAS removal performance and contribute to performance variability over time.
3. Pilot interpretation and compliance support: Monitoring TOC (and TOC fractions/speciation where useful) helps distinguish water-quality-driven performance changes from operational effects and supports development of treatment and operating strategies to reliably achieve PFAS effluent goals under variable conditions.
4. Secondary operational co-benefit: TOC reduction may reduce disinfectant demand and support chloramine residual stability in transmission mains and finished water delivery. Note that Chloramine decay testing is not included unless specifically requested by the Owner and Company.

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RSWTP Pilot Testing Benefits:

1. Both short-term (Interim Pilot Test) and long-term (Permanent Pilot System) operation duration will be defined with the goal of capturing the seasonal variation in raw water quality and the associated impacts of changing demand patterns and facility operations.
2. Reduce risk by uncovering and identifying unforeseen water quality or operational conditions via continuous flow water quality monitoring that cannot be captured in bench-scale tests nor discrete grab samples, such as biological or particulate fouling, competing contaminants, seasonal shifts in organic character, or other interferences that may impact performance.
    a. Compared to collecting discrete samples at specific time points, a pilot plant enables the analysis of continuous flow streams over extended periods.
    b. This approach facilitates the implementation of continuous sampling using existing and new on-line monitoring equipment, as feasible, which is significantly more effective at detecting variability in sample results.
3. Confirm the treatment performance, robustness, and operational reliability of existing and alternative treatment process configurations for PFAS and interfering TOC removal under real-world plant conditions.
4. Gather real-world performance and operating data to inform more accurate capital, O&M, and life cycle cost estimates for potential future full-scale implementation.
5. Provide a basis to develop and confirm an optimized treatment train that achieves the desired water quality with respect to PFAS and interfering TOC removal at the lowest practical life cycle cost, and document potential co-benefits (e.g., chloramine stability and DBP formation potential) where supported by available data.
6. The purchase & installation of pilot equipment will provide means for long-term testing to evaluate water quality improvements and identify opportunities to optimize and reduce O&M costs for existing treatment processes.
    a. The portion of the pilot facility that represents the existing treatment technologies (Actiflo®, Ozonation, and BAC) will be designed and constructed as permanent to support future RSWTP process evaluations.
    b. The peripheral potential future technologies to be tested (GAC, IX and SIX), or possibly tested, will be temporary in nature.

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SCOPE OF SERVICES

Work shall begin upon execution of an agreement between the Company and Engineer, and work under any other recommendation or condition shall proceed only after the Company has authorized the Engineer in writing to proceed. The Company will not execute an agreement with the Engineer until an agreement between the Owner and Company is executed. Any work requested by Owner that is not included in the items listed in this document shall be classified as Supplemental Services and authorized via Owner's Allowance. It is anticipated that future progression of this work will be completed under an amendment to this contract or a separate agreement.

Task 1 – Project Management, Administration & Meetings

The project management task will include general project administration duties, development of a project execution plan, and preparation of project management documents (budget, schedule, and quality control). The following specific subtasks will be included:

i. Engineer will perform general administrative duties associated with the Project, including project set-up, resource management, progress monitoring, scheduling, QA/QC coordination, and general project correspondence. Engineer will maintain an accurate project documentation and project budget tracking system throughout the project.

ii. Develop a mutually agreed upon Schedule of Values with Company for invoicing purposes over the term of this scope within 10 (ten) business days of Notice to Proceed.

iii. Maintain a project filing system throughout life of project to use for storage and retrieval of project documents using agreed platforms (e.g., Masterworks).

iv. Prepare monthly project status reports that summarize the work completed during the previous invoice period and the project work anticipated for the next period. The project status reports will be submitted with each invoice.

v. Develop a Project Management Plan, including team roles, communication protocols, schedule, and QA/QC plan. The plan will include considerations for health, safety, and risk management.

vi. Conduct a hybrid Project Kickoff Meeting (in-person/virtual) with key project stakeholders.

vii. Participate in regular progress meetings with project team to review ongoing activities, monitoring the project schedule, and budget, reviewing current progress with Company on a regular basis, and discussing issues with Owner as they are noted.

1. Biweekly meetings with Company and Owner designated attendees. These meetings are assumed to be virtual, with 2 to 4 Engineer staff participating based on progress status or specific meeting content anticipated. Up to 20 biweekly meetings are included.
2. Monthly meetings with Company and Owner key project stakeholders. These meetings are assumed to be hybrid, with up to 4 Engineer staff participating based on progress status or specific meeting content anticipated. Up to 10 monthly meetings are included.

viii. Support Company in developing & maintaining a Project Risk Register, including Engineer's participation in hybrid Risk Management meetings throughout this scope.

Task 1 - Meetings and Deliverables

1. Schedule of Values (Interim and Permanent Pilot Plant Design)
2. Draft and Final Project Management Plan (pdf)
3. Monthly Project Status Reports (pdf)
4. Kickoff Meeting (including agenda & meeting minutes)
5. Biweekly PM Meetings (including agenda & meeting minutes)

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6. Monthly Project Progress Meetings (including agenda & meeting minutes)
7. Risk Management Meetings (3)

Engineer will provide all documents in draft form to the Company (within 3 business days of meetings for meeting minutes) for review prior to final issuance (no later than 3 business days after receipt of comments for meeting minutes). Results of resolving the Company's comments will be included in documents prior to final issuance.

Task 2 – Interim Pilot Testing Program Development (Track 1)

Subtask 2.1 - Preparation and Planning

i. Conduct a project initiation meeting to clarify Owner's requirements for piloting; review available data, project organization, and staffing; and present initial work plan and schedule.

ii. Field visit(s) to investigate options for location of the pilot and availability of post-BAF filtered pilot feed water and discharge location for pilot-treated water. No field services (geotech, survey, subsurface utility investigations) are anticipated to be required to support siting and proceeding with the interim pilot. If any such field services are deemed to be necessary, the cost of such will be covered by Owner's Allowance upon approval by the Company and Owner.

iii. Coordinate with vendors for equipment rentals, agreements to be executed by others in the bidding, construction and operations of the interim pilot facility.

Subtask 2.2 – Interim Pilot Testing Protocol

i. Engineer will develop a pilot testing protocol to assess performance of alternative PFAS treatment strategies. Alternatives to be evaluated on the interim pilot test include two GAC media and two AIX resins. The pilot testing protocol will outline the pilot approach, PFAS adsorption column design and configuration, startup and backwashing requirements, media selection, water quality monitoring (sampling plan), chemical feed as necessary (e.g., PFAS spiking), and installation plans. The pilot testing protocol will include a division of responsibilities between Engineer, Company, and Owner regarding pilot equipment procurement, installation, inspections, operations, maintenance, sample collection, analysis, and supply of chemicals and other consumables.

ii. A draft pilot testing protocol will be submitted to Owner and Company for review. The final pilot testing protocol will be submitted to Owner and Company within two weeks of receiving review comments.

iii. Engineer will develop a base Maintenance of Plant Operations (MOPO) plan that captures activities that warrant coordination and tie-ins with the existing facility. The plan will summarize anticipated preferred time of year / timeframes to avoid; potential impacts to production, estimated duration of work. The base plan can be leveraged by installation contractor to formulate detailed MOPOs during construction. Two hybrid workshops are considered to support definition of this plan.

<u>Task 2 - Meetings and Deliverables</u>

1) Project Initiation Meeting (including agenda & meeting minutes)
2) Initial Work Plan and Schedule
3) Interim Pilot Testing Protocol, (Draft and Final), including:
    a. Pilot Layout (Draft and Final)
    b. Waste Streams Management Plan (Draft and Final)
4) Base MOPO Plan (Draft and Final)
5) MOPO Workshops (2) (including agenda & meeting minutes)

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Engineer will provide all documents in draft form to the Company (within 3 business days of meetings for meeting minutes) for review prior to final issuance (no later than 3 business days after receipt of comments for meeting minutes). Results of resolving the Company's comments will be included in documents prior to final issuance.

Task 3 – Evaluate Full-Scale BAF (GAC Media) Changeout and Operations for PFAS Performance

This task will support interpretation of PFAS performance data from the existing full-scale biologically activated filters (BAF) during and following planned media changeout to (1) establish a consistent baseline of PFAS removal by filter, (2) understand performance variability associated with changeout events and operating conditions, and (3) inform an interim operating strategy to support near-term compliance while long-term solutions are developed (if applicable and feasible).

i. Leverage ongoing full-scale monitoring data (BAF influent and individual filter effluents) and associated operational records to evaluate post-changeout PFAS performance trends, using available datasets and planned/ongoing sampling results being executed by Owner.

ii. Coordinate sampling logistics and timing with Company and Owner to align with filter changeout sequencing and facility operations and to ensure sufficient Owner review time and preparedness.

iii. Evaluate PFAS removal performance and variability by filter (and over time) to identify key drivers affecting performance (e.g., time since changeout, operational conditions, and seasonal water quality).

iv. Estimate an interim media management approach, including indicative media changeout/reactivation frequency required to meet PFAS effluent goals during the interim period.

Task 3 - Meetings and Deliverables

1) Media Management Workshop, hybrid (including agenda & meeting minutes)

Engineer will provide all documents in draft form to the Company (within 3 business days of meetings for meeting minutes) for review prior to final issuance (no later than 3 business days after receipt of comments for meeting minutes). Results of resolving the Company's comments will be included in documents prior to final issuance.

Task 4 – Permanent Pilot Testing Program Development (Track 2)

The overall objective of this task is to develop a process pilot testing program to meet the water quality and operational goals established by Tampa Bay Water and the project team. This task will include a review of source water quality and existing operating conditions (e.g., coagulation via Actiflo, ozonation, filtration) at the existing treatment facility, site visits, a development of process pilot testing goals and protocol, definition of pilot testing logistics and pilot plant design & permitting. The existing treatment technologies (coagulation via Actiflo, ozonation, filtration) will be installed as a permanent pilot system, which is further detailed throughout the scope described in this task.

Subtask 4.1: Review & Characterization

The Engineer will review existing information to define representative and bounding conditions for treatment:

i. Characterize influent, in-plant (partially treated), treated waters, and recycle streams to capture water quality variability with regards to PFAS levels, TOC interference, and other key water quality parameters, as available. Engineer will evaluate historical water quality data spanning at least 3 years from October 1, 2022 to present. No additional water quality sampling is included by Engineer as part of this scope of services. Additional sampling to support pilot operations & performance analysis is anticipated as part of pilot operations. It is recognized, however, that the Owner plans to perform sampling and analysis at various RSWTP in-plant and recycle stream locations to initially characterize PFAS and TOC in 2026.

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Engineer will consider the additional Owner-provided 2026 PFAS and TOC sampling results for characterization purposes, subject to data availability.

ii. Review historical water quality data, including monthly operating report (MOR) data including raw water, intermediate process, and finished water quality, and existing treatment performance (e.g. Actiflo settled water, ozone residuals, filter influent (top of filter) and effluent, finished water compliance parameters).

iii. Refine baseline levels of PFAS and TOC in the raw and treated waters.

Subtask 4.2: Track 2 Pilot Protocol – Basis of Design Report Development

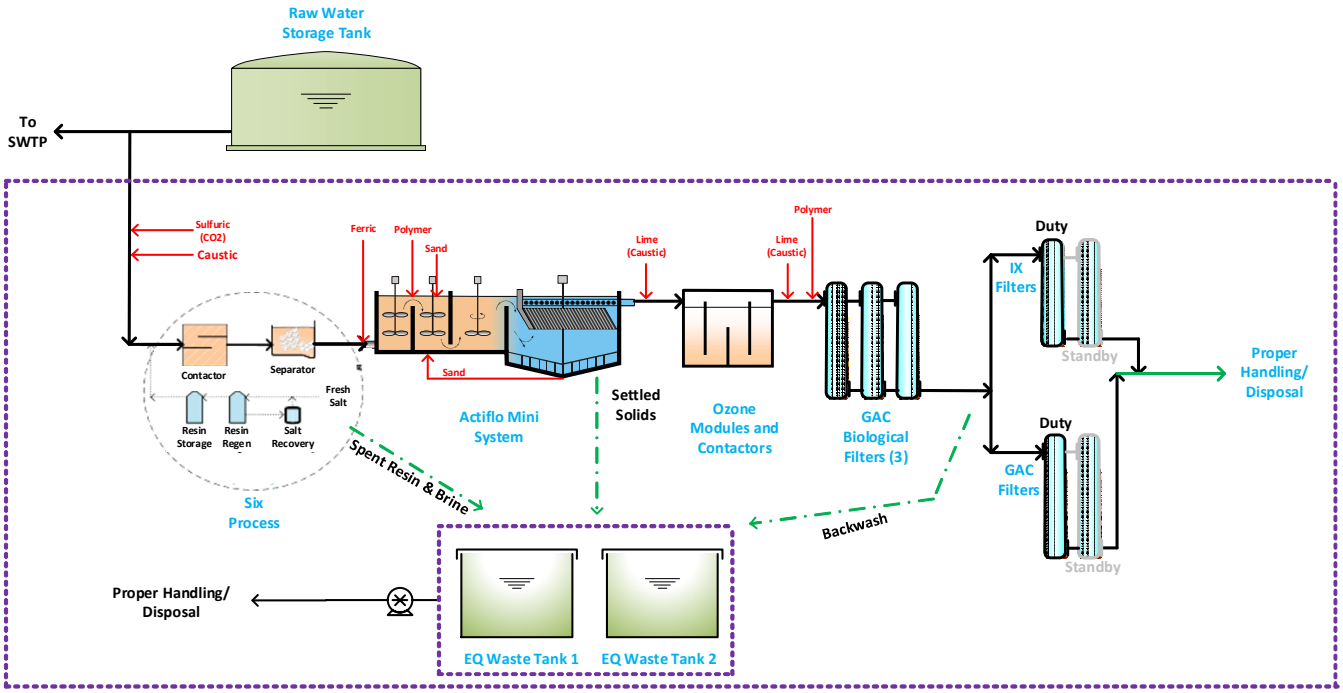
Engineer will prepare a written Pilot Protocol that defines how the pilot will be configured and operated. The Pilot Protocol will serve as the basis of design for the permanent pilot plant. This will include:

i. Develop a written pilot testing protocol covering logistics, sampling program, and operational procedures. The Pilot Protocol will address the Track 2 treatment train configuration described below. Protocol development for Track 1 is addressed separately under Task 2 of this scope.

Pilot System	Objectives
Track 1 (Task 2 – Interim Pilot Test**)** – Full-scale RSWTP Unit Processes + GAC/IX Columns	PFAS Treatment
Track 2 (Task 4) – SIX + Permanent Pilot System (scaled down version of existing full scale plant) + GAC/IX Columns	PFAS Treatment + TOC Optimization

ii. The pilot is anticipated to operate using a single pilot train, with selected pilot unit processes rotated as needed within Track 2 to evaluate planned testing conditions over the overall operating period. Refer to the set of schematics below for details on the different operating scenarios.

iii. The pilot protocol will contemplate opportunities to operate the SIX + Permanent Pilot System (scaled down version of existing full scale plant) + GAC/IX Columns configuration under different testing conditions, to the extent practicable and subject to pilot plant operating constraints.



Pilot Plant

iv. Define pilot objectives, treatment goals, and testing schedule to capture seasonal and operational variability.

v. Identify sampling locations, frequencies, and analytical methods for PFAS, TOC (where applicable), and other key water quality parameters (e.g., alkalinity, hardness, pH, select competing anions).

vi. Establish the basis of design for the various pilot processes.

vii. Develop detailed operational procedures to meet key measurements of success and the goals established in this Scope of Services.

viii. Evaluate the risk of unintended consequences on downstream treatment processes (e.g., settleability, filterability, stabilization, impacts on alkalinity, disinfection, corrosion control, and residuals disposal/handling).

ix. Define the approach and key metrics to evaluate the secondary benefits of various treatment trains (e.g., disinfection residual stability, DBP control) during pilot testing.

x. As applicable, the pilot protocol will address evaluation of impacts of variable influent source water and the SIX process on:

1. Alkalinity supplement needs for the downstream Actiflo® coagulation process; and
2. Finished water corrosivity and lead/copper compliance considerations in downstream distribution systems (e.g., potential changes to CSMR).

xi. Establish the division of responsibilities for the pilot plant, including roles of Owner, Company, Engineer, and external laboratories for equipment supply, installation, operation, maintenance, sampling, analysis, and data management.

xii. Identify chemical addition needs for pilot testing (e.g., PFAS spiking, if required, SIX regeneration) and ensure they are reflected in the Pilot Protocol and preliminary design. PFAS spiking may be considered to improve the resolution of removal data and help expedite decision-making using early performance datasets. Identify and, where practicable, align with existing plant chemical feed points (e.g., chlorine

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feed, coagulant dosing, ozone quenching) so that pilot operation is representative of full-scale treatment processes.

xiii. Evaluate and prepare a Draft Media and Waste Streams Management Plan for Company review to specify media selection criteria and identify suppliers, quantities, storage methods, removal, transportation and proper disposal of media and waste streams. Subsequent to addressing Company's review comments, the Engineer will prepare a Final Media and Waste Streams Management Plan.

xiv. Existing Treatment Optimization Study Approach (as part of protocol development). The pilot testing program will include evaluation and optimization of existing RSWTP processes to maximize PFAS and TOC removal while maintaining turbidity and other required water quality parameters compliance. Existing processes to be evaluated include Actiflo® (coagulation, injection, flocculation, maturation, and sedimentation), ozonation, and BAC filtration. Optimization studies may include, but are not limited to:

1. Varying Actiflo® operating parameters (e.g., zeta potential control), coagulant types, and/or coagulant dosages.
2. Varying BAC backwash scour velocities and/or backwash practices.
3. Evaluating media management strategies (e.g., more frequent media changeout/reactivation) to promote GAC adsorption of PFAS and limit conversion to BAC, as practicable.
4. Evaluating alternative BAC filter media, as appropriate.

xv. Engineer will facilitate up to two (2) Pilot Protocol review workshops with Company and Owner, allowing adequate Owner review time prior to each workshop. Comments received will be incorporated into a final Pilot Protocol.

Subtask 4.3: Pilot Plant – Site Investigations & Field Services

i. Engineer will reference existing record drawings relevant to the areas in which the permanent pilot plant will be constructed.

ii. Conduct as many site visits required to achieve the following:

1. Confirm and refine pilot facility layout options.
2. Identify and verify plant interconnects (e.g., raw water and filtered water)
3. Confirm availability and routing for potential effluent discharge, power, and internet/I&C connections.
4. Develop final recommendations for pilot plant locations

iii. Perform a geotechnical review of existing, available geotechnical information to evaluate suitability of the pilot pad and canopy/shelter foundation. Should additional geotechnical borings be required to support pilot facility foundation design, these field services would be requested from the Owner's Allowance.

iv. Perform a review of existing, available survey, mapping, and subsurface utility information to design pilot layout. Should additional survey investigations be required to supplement existing information, these field services would be requested from the Owner's Allowance.

v. Perform a natural resources survey of the proposed site to confirm absence of wetlands, surface waters, listed species, critical habitats, or other protected resources.

Subtask 4.4: Pilot Plant Design

i. Finalize pilot facility layout, raw water withdrawal points, wastewater/effluent discharge points, power connections, and interconnecting piping routes. A "Tie-In" drawing will be created to reflect connections to existing infrastructure. It will not include coordinates, but will provide sufficient detail to understand

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where connection points will be. Additionally, isolation elements that are required to make tie-ins will be identified (e.g. isolation valves, communication points and sources of energy).

ii. Coordinate with ongoing facility operations and parallel CIP projects to minimize operational impacts or maintenance of plan operations (MOPO) and avoid conflicts with future construction. Engineer will develop a base Maintenance of Plant Operations (MOPO) plan that captures activities that warrant coordination and tie-ins with the existing facility. The plan will summarize anticipated preferred time of year / timeframes to avoid; potential impacts to production, estimated duration of work. The base plan can be leveraged by installation contractor to formulate detailed MOPOs during construction. Two workshops are considered to support definition of this plan.

iii. **Preliminary Design** will consider and address the following:

1. Identify pilot discharge strategy and location, and confirm discharge capacity and quality requirements (including any applicable environmental targets).
2. Conduct a Hazard Analysis and Critical Control Points (HACCP) review to identify critical control points and critical operating points within the pilot system and to inform analyzer/instrument selection and operator/control response procedures.
3. Identify key monitors/analyzers for inclusion on the pilot. This may include multiple instruments for validation and data quality assurance.
4. Identify chemical addition strategy to achieve required stabilization, consistent with the Pilot Protocol.
5. Confirm footprint requirements of proposed pilot-scale equipment and site limitations.
6. Develop preliminary sizing and flow capacity for the proposed pilot equipment.
7. Define pilot-scale system requirements, including water supply, power, instrumentation, and waste streams requirement.
8. Engineer's Opinion of Probable Construction Cost Class IV
9. It is anticipated that this deliverable may be leveraged for Early Equipment Procurement, noted in Task 5.

iv. At the conclusion of this task, a Preliminary Design Review Workshop will be coordinated with Company and Owner to review the findings and incorporate feedback into final design deliverable.

v. **Final Design** – Finalize the preliminary layout and configuration of pilot facilities, including raw water supply source, treated water disposal approach, power source, and bypass piping. Sizing of metering pumps, chemical storage, or booster pumps will be included as part of this task. Schematics will be prepared to define the field assembly and will include:

1. P&ID
2. Main equipment sizing and specification (data sheets)
3. Chemical feed system layout and storage requirement.
4. Site Plan (including yard piping)
5. Shelter concept – A single concrete pad to secure the process equipment to the foundation, with a steel covering the concrete pad/equipment during the pilot test operations. A pre-engineering metal building is proposed to accommodate human working space, electrical elements & instruments.
6. Electrical – It is assumed that sufficient power is available and can be provided from the Repump building to the pilot plant.
7. SCADA I&C – remote data reporting and access

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8. Functional Description
9. Final operating instructions and manuals
10. Preventative maintenance plan and troubleshooting guides and contact information
11. Engineer's Opinion of Probable Construction Cost Class III
12. Engineer's estimate of construction schedule

vi. Drawings will be signed and sealed as required to support permitting efforts detailed in Subtask 4.5 and bidding efforts described in Subtask 5.2.

Subtask 4.5: Site Permitting

i. Engineer will prepare and maintain a Pilot Permitting Matrix to define the permits required for both design and construction periods. The Pilot Permitting Matrix will cite who prepares the application, who signs the application, who pays the application fee, approximate application preparation time, and what the anticipated regulatory review periods are. The Pilot Permitting Matrix will be updated bi-weekly ahead of the Biweekly PM Meetings for review at such meetings.

ii. Permits anticipated for this project are provided below. Engineer will facilitate permitting process, including preparation of permit package, coordination with regulating agency and responses to requests for additional information, in support of permit issuance.

1. Natural Resources permit from Hillsborough County: tree clearing anticipated to facilitate construction of the pilot system. This permit is anticipated to be sought early in the project schedule, to allow for clearing needed to confirm pilot siting. Cost to clear the trees is not included in Engineer's scope of services.
2. Environmental Resource Permit (ERP): to authorize the work associated with the Pilot Plant. It is anticipated that this work will warrant a modification to the facility's existing ERP with the Southwest Florida Water Management District (SWFWMD). All work and work products needed to support securing the permit (e.g. stormwater modeling, etc.), will be produced and provided by the Engineer.
3. Site Development permit from Hillsborough County: for the construction of the permanent pilot system.

iii. Engineer will coordinate with Florida Department of Environmental Protection (FDEP) for consideration of process chemicals (used with SIX) not used at the existing plant

iv. In securing the specified permits, the Engineer will produce and provide work and work products needed to secure such permits.

v. Company will provide support to the Engineer as requested in efforts to secure permits, but such will be limited to provision of available information.

vi. Updates required to the Pilot Design deliverable based on comments received from permitting agencies will be addressed by the Engineer as part of the Owner's allowance or a future amendment.

vii. Engineer will pay all permit application fees and will be reimbursed with application of the agreed upon markup through the Owner's Allowance for Permitting.

viii. Engineer will review and evaluate permitting requirements associated with discharge of pilot-generated waste streams to the headworks (e.g., settled solids, backwash flows) and to the sanitary sewer (e.g., brine regenerant, PFAS waste streams), and will identify appropriate handling, pretreatment, and disposal requirements for incorporation into the Pilot Design.

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Task 4 Meetings & Deliverables:

1. Draft and Final Pilot Protocol (word & pdf), including Media and Waste Streams Management Plan
2. Pilot Protocol Workshops (2) (including agenda & meeting minutes)
3. Preliminary Design (pdf)
4. Preliminary Design Review Workshop (including agenda & meeting minutes)
5. Final Design (pdf)
6. Base MOPO Plan (Draft and Final)
7. MOPO Workshops (2) (including agenda & meeting minutes)
8. Pilot Permitting Matrix (pdf, updated bi-weekly)
9. Draft and Final ERP Permit Application (pdf) and secure permit
10. Draft and Final Natural Resources Permit Application (pdf) and secure permit
11. Draft and Final Site Development Permit Application (pdf) and secure permit

Engineer will provide all documents in draft form to the Company (within 3 business days of meetings for meeting minutes) for review prior to final issuance (no later than 3 business days after receipt of comments for meeting minutes). Results of resolving the Company's comments will be included in documents prior to final issuance.

Task 5 – Equipment Procurement & Cost Estimation Development

Subtask 5.1 Equipment Procurement Planning Support

i. Engineer will provide a detailed list of required items for the assembly of the pilot plant. It is anticipated that procurement of long lead pilot testing equipment (e.g. Actiflo-Mini) will be provided through the Company utilizing Owner's Allowance or additional funding otherwise provided by the Owner. Procurement of minor equipment and materials, and items without long lead times, is not anticipated to be part of the Company's scope of work.

ii. Engineer will support Company and Owner in consideration of and potential implementation of the Owner Direct Purchase program for pilot equipment, such as Actiflo Mini and Ozone System – Mini. Equipment to be considered for Owner Direct Purchase will be indicated as such on the Pilot Equipment & Materials list noted above.

iii. Engineer will provide procurement services common to equipment procurement, such as provision of specifications, shop drawing reviews and approvals for equipment purchased during the Interim and Permanent Pilot Plant Design activities. The cost of such efforts will be negotiated, using established rates, and covered by Owner's Allowance for Early Procurement.

Subtask 5.2 Cost Estimation Development Support Services

i. Engineer will evaluate and consider options for delivery of the construction of the project via the Company, to include subcontractor pre-selection, hard bid or other. The preference for project delivery will be at the discretion of the Company and Owner.

ii. Engineer will develop a Project Cost Estimate for construction and operations services, to include, but not be limited to, engineering services during construction, requirements to procure equipment & materials, pilot construction and startup activities, pilot operations and maintenance, data collection, analysis, and reporting, waste stream handling, , pilot plant maintenance (including long term preservation of equipment), proper disposal of media and other requirements to achieve a fully functional and properly cared for pilot facility, pilot program and requisite deliverables. This applies to both Track 1 and Track 2.

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Task 5 Meetings & Deliverables

1. Pilot Equipment & Materials List
2. Project Cost Estimate (Track 1 and Track 2)

Engineer will provide all documents in draft form to the Company for review prior to final issuance. Results of resolving the Company's comments will be included in documents prior to final issuance.

Owner's Allowance

An Owner's Allowance is reserved for consideration of the following supplemental services and/or fees:

i. Geotechnical field services – should existing geotechnical information not be available or sufficient to support pilot design, 3 to 5 geotechnical borings may be needed. The work would be performed by a subconsultant to the Engineer and will be subject to approval by the Company.
ii. Survey or subsurface utility field services – should existing survey or Subsurface Utility Engineering (SUE) information not be available or sufficient to support pilot design, these services will be subcontracted by the Engineer. Subcontractors will be subject to approval by the Company.
iii. Permitting fees as described in Task 4.5
iv. Engineering support services for Early Procurement of equipment, such as shop drawing review.
v. Additional services requested by Company or Owner not detailed in the scope of work

PROJECT SCHEDULE

The estimated duration of tasks and schedule for completing this scope of services is summarized in the table below. The Engineer will commence work immediately upon receiving both an executed copy of an agreement with the Company and issuance of a Notice to Proceed (NTP) by Company.

Preliminary Project Schedule		
Scope Item	**Dates**	**Duration**
Task 1 – Project Management, Administration & Meetings	May 2026 to Feb 2027	10 months
Task 2 – Interim Pilot Testing Program Development	May 2026 to Aug 2026	4 months
Task 3 - Evaluate Full-Scale BAF (GAC Media) Changeout and Operations for PFAS Performance	May 2026 to Feb 2027	10 months
Task 4 – Permanent Pilot Testing Program Development	May 2026 to Feb 2027	10 months
Task 5 – Equipment Procurement & Cost Estimation Development	July 2026 to Feb 2027	8 months
Combined Overall Schedule	**May 2026 to Feb 2027**	**10 months**

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COMPENSATION

The not-to-exceed budget for tasks described for this scope of services is $666,049. For the performance of services described in Tasks 1 through 5 in this scope of services, Company agrees to compensate Engineer on a lump sum basis, consistent with the terms of the agreement between the Company and Engineer associated with this scope of services.

The table below provides a breakdown of the budget for each of the tasks described in the scope of services for this work assignment.

Project Budget	
Scope Item	**Fee**
Task 1 – Project Management, Administration & Meetings	$123,952
Task 2 – Interim Pilot Testing Program Development	$86,275
Task 3 - Evaluate Full-Scale BAF (GAC Media) Changeout and Operations for PFAS Performance	$45,938
Task 4 – Permanent Pilot Testing Program Development	$348,735
Task 5 – Equipment Procurement & Cost Estimation Development	$61,149
Sub Total	**$666,049**

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ATTACHMENT B
ENGINEER LABOR RATES
FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

The following are the Engineer's unit labor costs to be utilized in determining Engineer's labor costs for change orders and application to calculating costs for Allowance(s) use.

BLACK & VEATCH
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Schedule B Attachment

Hourly Rate Schedule
2020-001 - Integrated Program Management Consulting Services – Black & Veatch
November 21, 2024

Labor Category	Hourly Billing Rate[1]	
	Min	Max
Project Manager I	$222	$242
Project Manager II	$251	$273
Sr Project Manager	$292	$318
Program Manager	$310	$338
Senior Program Manager	$329	$359
Engineering Intern	$98	$107
Staff Engineer I	$121	$132
Staff Engineer II	$137	$149
Design Engineer	$156	$170
Engineer (Global Workforce2)	$87	$95
Project/Planning Engineer I	$172	$187
Project/Planning Engineer II	$191	$208
Senior Engineer I	$203	$222
Senior Engineer II	$229	$249
Sr. Engineer (Global Workforce2)	$147	$160
Engineering Manager	$213	$232
Senior Engineering Manager	$263	$287
Principal-In-Charge	$354	$386
QA/QC Manager	$317	$345
Technical Writer	$134	$146
Graphic Designer	$150	$163
Senior Technical Writer	$172	$187
CADD Technician I	$126	$137
CADD Technician I	$140	$153
Technician (Global Workforce2)	$73	$80
Engineering Technician	$158	$172
Senior Engineering Technician	$184	$201
Accountant	$125	$136
Sr Accountant	$159	$174

Labor Category	Hourly Billing Rate[1]	
	Min	Max
Purchasing Specialist	$147	$160
Administrative Support I	$96	$105
Administrative Support II	$115	$125
Operations Specialist	$175	$191
Senior Operations Specialist	$269	$294
Project/Program Scheduler	$175	$191
Sr Project Controls Specialist	$199	$216
Risk/Construction Mgmt Director	$342	$372
Resident Inspector I[3]	$150	$163
Resident Inspector II[3]	$184	$201
Sr Resident Inspector[3]	$213	$232
Construction Manager[3]	$238	$259
Sr Construction Manager[3]	$266	$290
Construction Administrator[3]	$121	$132
Construction Advisor[3]	$288	$314
Construction Controls[3]	$225	$246
Cost Estimator	$230	$251
Senior Cost Estimator	$274	$299
Water Treatment Specialist	$260	$283
Sr. Water Treatment Specialist	$345	$376
Technical Specialist I	$247	$270
Technical Specialist II	$288	$314
Senior Technical Specialist	$310	$338
Management Consulting - Analyst	$158	$172
Mgmt Consulting - Senior Analyst	$194	$211
Mgmt Consulting - Consultant	$247	$270
Mgmt Consulting - Manager	$287	$313
Mgmt Consulting - Principal	$329	$359

[1] Hourly rates include all labor; overhead; margins and profit; customary expenses; and travel within the Tampa Bay area. Travel outside of the Tampa Bay area will be charged in accordance with Florida Statutes. Rates will be held firm for the next 3 years of the contract (November 2024 to September 2027).

[2] Black & Veatch Integrated Global Workforce professionals located in offices outside of the US.

[3] A 10% reduction in the billing rate will be applied to this billing category for staff on a full-time assignment in a construction/field office (or Tampa Bay Water office) for a duration of over 6 months.

[4] Subconsultant markup will be no more than 5% of the total subconsultant costs.

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ATTACHMENT C
COMPANY SCOPE OF WORK
FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

Veolia (Company) has contracted with the Engineer (Black & Veatch) to perform the scope of work associated with the Interim and Permanent Pilot Plant Design as detailed in ATTACHMENT A - ENGINEER SCOPE OF WORK FOR INTERIM AND PERMANENT PILOT PLANT DESIGN.

Company's scope of work can be generally described as managing and facilitating the execution of the Interim and Permanent Pilot Plant Design, including oversight of the Engineer's efforts. Company will participate in collaborative efforts (e.g. workshops and meetings), and will review and solicit Owner's approval of the various work products generated by the Engineer. Meetings and workshops are included in ATTACHMENT A - ENGINEER SCOPE OF WORK FOR INTERIM AND PERMANENT PILOT PLANT DESIGN.

Company will provide ongoing project management services over the duration of the project, will oversee the work of the Engineer and will provide work products developed by Company and the Engineer to the Owner in accordance with the Engineer's scope of work and the Company's scope of work.

Task 1 - Company Interim and Permanent Pilot Plant Design Activities

Project Management activities performed by Company, unless otherwise noted, will include the following:

- Overall Project Management - Maintain responsibility for completion of the Interim and Permanent Pilot Plant Design services
- Oversee the Engineer's work
- Provide staff to perform Company's scope of work activities
- Facilitate exchange of information and general coordination among the Owner, Engineer and Company
- Facilitate coordination meetings among the stakeholders
- Maintain the project schedule (authored by Engineer and reviewed by Company)
- Participate in project meetings
- Coordinate Engineer's work with Company Operations staff (as needed)
- Coordinate Engineer's geotechnical and surveying activities (if needed and approved and funded by Owner)
- Coordinate Engineer's work with Owner
    - Conveyance of written information in common formats per request of Owner (e.g. Word, Excel, Adobe pdf)
    - Coordinate and facilitate meetings and communication
    - Coordinate and facilitate review activities (including aggregation of Owner and Company review comments)
- Participate in collaborative activities
- Facilitate decisions among stakeholders
- Interface among Owner, Engineer and Company Operations staff
- Prepare Monthly Invoice for issuance to Owner

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- Analyze and respond to request for changes in work from Owner
- Analyze and negotiate requests for change orders from Engineer
- Administration of change orders
- Review Engineer's Invoices
- Compensate Engineer in accordance with agreement between Company and Engineer
- Review deliverables provided by Engineer, including those for Pilot Protocol and each Design step (draft and final)
- Review cost estimate information provided by the Engineer

Task 2 – Company Interim and Permanent Pilot Plant Design Deliverables and Documentation

Both the Company and Engineer will provide deliverables and documentation in support of executing the Interim and Permanent Pilot Plant Design. Those listed below are inclusive of, but not necessarily limited to, deliverables and/or other documentation to be prepared and/or provided by Company during Interim and Permanent Pilot Plant Design (unless otherwise noted):

- Monthly Progress Status Report (updated monthly, prepared by Engineer)
- Monthly Invoice (Invoices will be processed through Masterworks Items Posting and Pay Estimates Modules)
- Schedule of Values
- Record of comments made as a result of reviews of deliverables
- Change Order Register
- Copies of change orders
- Allowance Register (to track Allowance spending and balance)
- Risk Register
- Project Schedule (Excel or pdf format at Owner's discretion, updated monthly, prepared by Engineer)
- Meeting agendas and minutes (prepared by Engineer)
- Decision Log
- Copies of Company Purchase Orders (if applicable)
- Project Management Plan (prepared by Engineer)
- Permitting Matrix (prepared by Engineer)
- Permitting documentation (prepared by Engineer in accordance with Engineer's scope of work)
- Site Investigations information (in accordance with Engineer's scope of work)
- Pilot Testing Protocol (prepared by Engineer)
- Preliminary Design (prepared by Engineer)
- Final Design (prepared by Engineer)
- Pilot Equipment and Materials List (prepared by Engineer)
- Cost Estimates (prepared by Engineer, based upon description in Attachment A – Engineer Scope of Work for Interim and Permanent Pilot Plant Design)
- Base MOPO Plan (prepared by Engineer)

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- Any other documentation requested by Owner as agreed to by the applicable party

Task 3 - Interface with Tampa Bay Water's Masterworks Project Management Software

Veolia will utilize Tampa Bay Water's, Masterworks Project Management Software, for the following activities:

- Invoices will be processed through Masterworks Items Posting and Pay Estimates Modules

The following will be uploaded to Masterworks:

- Monthly Reports
- Minutes of meetings in MS Word and/or Adobe pdf format
- Final versions of design documents following each design review
- Risk Register and updates of such
- Change Order Register (included in monthly invoice, so not individually uploaded)
- Allowance Register (included in monthly invoice, so not individually uploaded)
- Permit Matrix and updates of such, Permit Applications, Permit Documentation (e.g. Requests for Additional Information, etc.), and Registration Forms

Task 4 - Company Procurement Services (Optional)

Procurement and procurement services will be performed at the request of the Owner and related costs will be covered by Owner's Allowance, or additional funding otherwise provided by the Owner, via change order.

- Support procurement of equipment at Owner's request
- Support Owner in application of Owner's Direct Purchase Program

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ATTACHMENT D
COMPENSATION
FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

1.00 COMPANY COMPENSATION

A. Company shall receive compensation for Interim and Permanent Pilot Plant Design as set forth in Table A. Table A includes the cost of performing the scope of work under Amendment #2026-19, not including any changes in the scope of work.

B. Owner and Company shall create a mutually agreed upon Schedule of Values and a mutually agreed upon invoice format.

C. Owner shall pay Company monthly for Interim and Permanent Pilot Plant Design services performed or furnished in accordance with Table A on a percentage of completion basis applied to a mutually agreed upon Schedule of Values. Company will submit an application for payment on or about the first (1st) day of each month and Owner will process applications for payment in accordance with the mutually approved invoice format. The Schedule of Values shall remain unchanged, except as changed by approved change orders, throughout the duration of Interim and Permanent Pilot Plant Design. No retainage will be withheld by the Owner.

1.01 CHANGES AND ADDITIONAL COMPENSATION

A. Owner or Company, may request changes to the scope of work (whether it be the Engineer's or Company's scope of work, hereinafter "Change Order" or "Extra Work Order"), including, but not limited to, increasing or decreasing the scope of work. No change shall be made by Company in the scope of work, or its manner of performance, without an Owner approved Change Order, specifying the changes and specifying whether there is to be an adjustment in the price for performance and how any such adjustment shall be determined.

Owner and Company shall negotiate, prior to the issuance of a Change Order, the amount of any charge for increases or decreases in the scope of work and/or schedule change related to the Change Order. Approved Change Order information will be added to the Schedule of Values and will be subject to payment by Owner as described herein.

Company agrees that all additional work performed without written authorization by Owner, shall be at its own risk.

B. For calculating the cost of changes, Company and Owner agree that Company will be paid a Fixed Fee of 5.5% to cover Company's overhead and a Margin Fee of 3.5%. These fees will be added to costs as described below.

Application of Fixed Fee and Margin Fee: Fixed Fee will be applied all costs with the exception of Company hourly labor and travel costs. Margin Fee will be applied to all costs.

Calculation of Fixed Fee and Margin Fee: The value of the Fixed Fee will be the applicable cost first divided by 0.945 followed by subtraction of the applicable cost. The value of the Margin Fee will be the applicable cost first divided by 0.965 followed by subtraction of the applicable cost.

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Example

Applicable Cost = $10,000

Fixed Fee = ($10,000 / 0.945) - $10,000 = $582.01

Margin Fee = ($10,000 / 0.965) - $10,000 = $362.69

Price (to Owner) = $10,000 + $582.01 + $362.69 = $10,944.70

C. Company's unit labor costs to be utilized in determining Company labor costs are as follows:

Start of Interim and Permanent Pilot Plant Design through September 30, 2027

Resource	Hourly Rate ($) [through Sep 30, 2026]	Hourly Rate ($) [Oct 1, 2026 through Sep 30, 2027]
Project Technical Advisor	$183.45	$189.87
Sr. Project Manager	$183.45	$189.87

If Interim and Permanent Pilot Plant Design services continue beyond September 30, 2027, hourly rates will be renegotiated. If other labor resources are needed to perform changes to the scope of work, the hourly rates will be negotiated by Company and Owner.

D. Engineer's unit labor costs to be utilized in determining Engineer's labor costs are provided in ATTACHMENT B - ENGINEER LABOR RATES FOR INTERIM AND PERMANENT PILOT PLANT DESIGN.

F. Other additional costs, such as necessary equipment and materials, needed to perform Change Order efforts will be included on a lump sum basis with backup to support the value and will be mutually agreed to by Company and Owner.

1.02 OWNER'S ALLOWANCE(S)

The Owner's Allowance(s) shall be separately administered and controlled by Owner. Company shall provide Owner with a written request for Owners' approval detailing the costs anticipated to be charged against the Owner Allowance(s). The use of any Owner's Allowance(s) shall be subject to Owner's review and approval, which shall not be unreasonably withheld. Establishing pricing for use of Owner's Allowance(s) will be the same as establishing pricing for a change order.

Upon the completion of Interim and Permanent Pilot Design, all remaining Allowance(s) values will remain property of the Owner.

Docusign Envelope ID: 2975EEF2-3607-4AE4-B305-BA4965B58B04

ATTACHMENT D
COMPENSATION
FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

Table A – COMPENSATION

Amendment #2026-19 Tampa Bay Water SWTP Water Quality Pilot Study - CIP 03511 (Interim and Permanent Pilot Plant Design)

Pricing Breakdown	
Company Fixed Management Cost	$85,646.05
Engineer Fixed Cost	$666,049.00
Performance Bond (not required)	$0
General Liability (GL) Insurance	$9,104.57
Overhead Fee	$39,294.65
Margin Fee	$27,593.77
Lump Sum Total	$827,688.04
Owner's Allowance for Additional Services[1]	$135,000
Owner's Allowance for Early Procurement[2]	$865,000
Subtotal Allowances	$1,000,000
TOTAL	**$1,827,688.04**

[1] At a minimum the Owner's Allowance for Additional Services may be utilized for permit application fees, surveying activities, geotechnical activities and other activities related to the completion of Interim and Permanent Pilot Plant Design as approved by Owner.

[2] At a minimum the Owner's Allowance for Early Procurement may be utilized for procurement of the Actiflo Mini for the pilot plant due to anticipated long lead time. It will also be utilized for the related procurement support services by Company and Engineer.

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ATTACHMENT E
SCHEDULE
FOR INTERIM AND PERMANENT PILOT PLANT DESIGN

Achieving scheduled completion of the Target Milestones listed below is based on the Key Assumptions also listed below. Various delays, such as approval of deliverables, completing workshops as scheduled, permit review times, etc., may result in a revised schedule with updated Target Milestones. While the Key Assumptions identify the most readily recognized schedule risks, they do not represent an exhaustive list of potential factors that could impact the project schedule.

Key Assumptions:

- Notice to Proceed with the project is issued by May 4, 2026
- Pilot Study Kickoff Meeting occurs on May 19, 2026, or earlier
- Additional site survey or geotechnical study is not required. Such additional work may be completed through the Owner's Allowance; however, this could cause delays in the schedule.
- Workshops occur as scheduled, or earlier than scheduled
- Data is provided in a timely manner following request (reviewing existing data is key activity)
- Reviews of materials subject to review are completed within allotted timeframes
- Permit review and approval periods are not excessive
- Scope of Work changes are not significant enough to alter the overall schedule

Target Milestones:

Notice to Proceed Issued by Tampa Bay Water	May 4, 2026
Pilot Study Kickoff Meeting	May 19, 2026
Draft Natural Resources Permit Application	June 15, 2026
Final Interim Pilot System Protocol Development	August 4, 2026
Final Permanent Pilot System Protocol Development	August 18, 2026
Draft ERP Permit Application	October 27, 2026
Final Design Permanent Pilot Plant	November 18, 2026
Opinion of Probable Construction Cost for Permanent Pilot Plant	November 23, 2026
Draft Site Development Permit Application	December 30, 2026

Additional Schedule Information:

See Attachment A (Engineer Scope of Work for Interim and Permanent Pilot Plant Design) for additional project schedule information.

Surface Water Treatment Plant Water Quality Pilot Facility

Agenda Item C.3
April 20, 2026

Warren Hogg, P.G.
Chief Science Officer
Tampa Bay Water

Project Purpose

- Future Compliance
  - PFAS National Primary Drinking Water Regulations
  - Achieve current EPA PFAS limits/deadline
  - Compliance by April 2029
  - Expected extension to April 2031
- Future and continuous pilot testing to optimize long-term operations.



32532 Federal Register / Vol. 89, No. 82 / Friday, April 26, 2024 / Rules and Regulations

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141 and 142

[EPA–HQ–OW–2022–0114; FRL 8543–02–OW]

RIN 2040–AG18

PFAS National Primary Drinking Water Regulation

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: In March 2023, the U.S. Environmental Protection Agency (EPA) proposed and requested comment on the National Primary Drinking Water Regulation (NPDWR) and health-based Maximum Contaminant Level Goals (MCLGs) for six per- and polyfluoroalkyl substances (PFAS): perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO–DA, commonly known as GenX Chemicals), and perfluorobutane sulfonic acid (PFBS). After consideration of public comment and consistent with the provisions set forth under the Safe Drinking Water Act (SDWA), the EPA is finalizing NPDWRs for these six PFAS. Through this action, the EPA is finalizing MCLGs for PFOA and PFOS at zero. Considering feasibility, the EPA is promulgating individual Maximum Contaminant Levels (MCLs) for PFOA and PFOS at 4.0 nanograms per liter (ng/L) or parts per trillion (ppt). The EPA is also finalizing individual MCLGs and is promulgating individual MCLs for PFHxS, PFNA, and HFPO–DA at 10 ng/L. In addition to the individual MCLs for PFHxS, PFNA, and HFPO–DA, in consideration of the known toxic effects, dose additive health concerns and occurrence and likely co-occurrence in drinking water of these three PFAS, as well as PFBS, the EPA is finalizing a Hazard Index (HI) of 1 (unitless) as the MCLG and MCL for any mixture containing two or more of PFHxS, PFNA, HFPO–DA, and PFBS. Once fully implemented, the EPA estimates that the rule will prevent thousands of deaths and reduce tens of thousands of serious PFAS-attributable illnesses.

DATES: This final rule is effective on June 25, 2024. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of June 25, 2024.

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA–HQ–OW–2022–0114. All documents in the docket are listed on the *http://www.regulations.gov* website. Although listed in the index, some information is not publicly available, *e.g.*, Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through *https://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT: Alexis Lan, Office of Ground Water and Drinking Water, Standards and Risk Management Division (Mail Code 4607M), Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number 202–564–0841; email address: *PFASNPDWR@epa.gov*.

SUPPLEMENTARY INFORMATION:

Executive Summary

The Environmental Protection Agency (EPA) is issuing an adaptive and flexible National Primary Drinking Water Regulation (NPDWR) under the Safe Drinking Water Act (SDWA) to manage risks of per- and polyfluoroalkyl substances (PFAS) in drinking water. The EPA is establishing drinking water standards for six PFAS in this NPDWR to provide health protection against these individual and co-occurring PFAS in public water systems. The EPA's final rule represents data-driven drinking water standards that are based on the best available science and meet the requirements of SDWA. For the six PFAS, the EPA considered PFAS health effects information, evidence supporting dose-additive health concerns from co-occurring PFAS, as well as national and state data for the levels of multiple PFAS in finished drinking water. SDWA provides a framework for the EPA to regulate emerging contaminants of concern in drinking water. Under the statute, the EPA must act based on the "best available" science and information. Thus, the statute recognizes that the EPA may act in the face of imperfect information. It also provides a mechanism for the EPA to update standards as more science becomes available. For the PFAS covered by this rule, the EPA concluded that the state of the science and information has sufficiently advanced to the point to satisfy the statutory requirements and fulfill SDWA's purpose to protect public health by addressing contaminants in the nation's public water systems.

PFAS are a large class of thousands of organic chemicals that have unique physical and chemical properties. These compounds are designed to be stable and non-reactive because of the applications in which they are used: certain industrial and manufacturing processes; stain and water repellants in clothing, carpets, and other consumer products, as well as certain types of fire-fighting foams. PFAS tend to break down slowly and persist in the environment, and consequently, they can accumulate in the environment and the human body over time. Current scientific research and available evidence have shown the potential for harmful human health effects after being exposed to some PFAS. Although some PFAS have been phased out of use in the United States, they are still found in the environment and in humans based on biomonitoring data.

Drinking water is one of several ways people can be exposed to PFAS. The EPA's examination of drinking water data shows that different PFAS can often be found together and in varying combinations as mixtures. Additionally, decades of research demonstrates that exposure to mixtures of different chemicals can elicit dose-additive health effects: even if the individual chemicals are each present at levels considered "safe," the mixture may cause significant adverse health effects. The high likelihood for different PFAS to co-occur in drinking water; the additive health concerns when present in mixtures; the diversity and sheer number of PFAS; and their general presence and persistence in the environment and the human body are reflective of the environmental and public health challenges the American public faces with PFAS, which poses a particular threat for overburdened communities that experience disproportionate environmental impacts. The final NPDWR includes:

1. Individual Maximum Contaminant Levels (MCLs)
   a. Perfluorooctanoic acid (PFOA) MCL = 4.0 nanograms per liter or parts per trillion (ng/L or ppt)
   b. Perfluorooctane sulfonic acid (PFOS) MCL = 4.0 ng/L
   c. Perfluorohexane sulfonic acid (PFHxS) MCL = 10 ng/L
   d. Perfluorononanoic acid (PFNA) MCL = 10 ng/L
   e. Hexafluoropropylene oxide dimer acid (HFPO–DA) MCL = 10 ng/L
2. A Hazard Index MCL to account for dose-additive health effects for mixtures that could include two or more of four

Project Overview

PFAS Pilot and Report (Interim & Permanent)

- Design via amendment to Veolia's Agreement No. 2026-19
- Construction and Pilot Testing

Project Budget

- Today's Requested Approval: $1.83 M
  - Design Services: $827,688
  - Early Equipment Procurement Allowance: $865,000
  - Additional Services Owner's Allowance: $135,000
- Future Request
  - Construction and Pilot Testing: $3.6M

Approach – Parallel Design Tracks and Early Equipment Purchase

Track 1 Interim Pilot	• Develop design concepts for near-term pilot configuration
Track 2 Permanent Pilot Plant	• Design a dedicated pilot facility to support long-term evaluation of emerging treatment technologies
Early Equipment Purchase	• Early Actiflo Mini procurement to mitigate long-lead time risk

Recommendation

- Approve the Amendment to Agreement 2026-19 with Veolia Water North America Operating Services, LLC for design services of the Surface Water Treatment Plant Water Quality Pilot Study Project, in the amount of $1,827,688.04, inclusive of $135,000 for Owner's Allowance.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.4

DATE: March 31, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Morris Bridge Wellfield Improvements, Project No. 50021 - Contract No. 2026-020 with Southeast Drilling Services, Inc. - *Approve*

SUMMARY

An Invitation to Bid for Contract No. 2026-020 was conducted to obtain construction services for the Morris Bridge Wellfield Improvements, Project No. 50021. Southeast Drilling Services, Inc. was determined to be the lowest, responsive, responsible bidder.

SUGGESTED ACTION

Approve Contract No. 2026-020 to the lowest, responsive, responsible bidder, Southeast Drilling Services, Inc. in the amount of $16,299,600.00, inclusive of $895,000.00 in Owner's Allowances and $100 Indemnification.

COST/FUNDING SOURCE

$16,299,600.00 / Renewal & Replacement Funds and Bond Funds

DISCUSSION

On November 25, 2025, Tampa Bay Water posted an Invitation to Bid (ITB) for the Morris Bridge Wellfield Improvements, Project No. 50021. Over 20 contractors were notified through advertisement on EUNA and Tampa Bay Water's website. Tampa Bay Water added 20 known contractors as supplemental contractors and 67 contractors downloaded the bid plans. A non-mandatory pre-bid meeting and site visit was held on December 17, 2025, in which seven (7) contractors participated.

On February 18, 2026, two (2) sealed bids were received from the following contractors and publicly opened with the following results:

BIDDER	**TOTAL BASE BID**
Southeast Drilling Services, Inc.	$15,404,500.00
C&T Contracting Services	$19,248,540.00

* Total Bid amount does not include Owner's Allowances nor indemnification

Tampa Bay Water staff and Stantec Consulting Services, Inc., Tampa Bay Water's Engineer of Record, reviewed and evaluated the bids and determined that Southeast Drilling Services, Inc. is the lowest, responsive, responsible bidder.

Staff concurs with Stantec's evaluation and recommends that Contract No. 2026-020 be awarded to Southeast Drilling Services, Inc. in the amount of $15,404,500.00 plus $895,000 for Owner's Allowances and $100.00 for Indemnification for a total award amount of $16,299,600.00. This contract shall remain effective through the completion of this project.

The proposed contract has been reviewed and approved as to form by Tampa Bay Water's General Counsel. The proposed contract, Bid Price Form, and Stantec's recommendation letter are attached.

BACKGROUND

Tampa Bay Water's Capital Improvements Program Plan (CIP) is a comprehensive ten-year plan of approved and proposed capital projects. The CIP is updated annually and is subject to changes as the needs for specific projects become more defined and as final approval of individual projects is provided by the Board. The Morris Bridge Wellfield Improvements, Project No. 50021 is identified in the CIP and includes the replacement of 15 pumps, motors, associated appurtenances, and control and electrical equipment, including improved safety measures. In addition, this project includes placing five wells out-of-service as identified in the Wellfield Right-sizing Project (152, 157, 161, 162, & 163). Of the 5

abandoned wells, 2 will be completely demolished (152, 157) while the other 3 (161, 162, & 163) will be re-purposed and provided to Hillsborough County Parks and Recreation department for storage use in Flatwoods Conservation Park.

The Morris Bridge Wellfield in Hillsborough County supplies an average of 8 MGD with the current maximum of 45 MGD, after the improvements project the wellfield will produce up to a maximum of approximately 34 MGD to the Tampa Bay region.

Attachments (3)

2026 Apr Board ATT 1 - MBWI Contract 2026-020
2026 Apr Board ATT 2 - SED Bid Price Form
C4 Attachment 3
C.4 Morris Bridge Wellfield Improvements Projects



FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CHIEF FINANCIAL OFFICER

PURCHASING DEPARTMENT
TAYLOR KLINKO, PURCHASING SPECIALIST I

Website: http://www.tampabaywater.org
E-Mail: purchasing@tampabaywater.org

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763-1102

CONTRACT # 2026020

FOR

MORRIS BRIDGE WELLFIELD IMPROVEMENTS

WITH

SOUTHEAST DRILLING SERVICES, INC.

Bid and Contract Documents

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Exhibits	
Exhibit A – Tampa Bay Water Documents	57
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Addendum Two	60
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Exhibit B – Bidder's Response Forms	818
Bid Submittal	825
Exhibit C – Payment & Performance Bonds	856
Exhibit D – Certificate of Insurance	863

CONTRACT

This Contract, made and entered into as of the _____day of _____, 2026, by and between Tampa Bay Water, A Regional Water Supply Authority ("Tampa Bay Water") and Southeast Drilling Services, Inc., a corporation of the State of Florida, or other business entity authorized to do business in the State of Florida ("Contractor"), with respect to that certain Project consisting of the Work to be performed in accordance with the Contract Documents, supplementary conditions, general conditions, Invitation To Bid ("ITB") documents, bid price form, technical specifications and all issued addenda for Tampa Bay Water's Morris Bridge Wellfield Improvements (Project 50021).

W I T N E S S E T H:

Tampa Bay Water and the Contractor in consideration of the mutual covenants and obligations contained herein, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, agree as follows:

1.0 Work

1.1 The Contractor shall perform all of the Work in accordance with the Contract Documents (as that term is defined in the General Conditions which are attached to and made a part of this Contract).

1.2 Contractor shall perform the Work in accordance with generally accepted construction practice under the same or similar circumstances at the same time and in the same locality. Contractor shall have exclusive responsibility for all construction means, methods, techniques, sequences, and procedures necessary or desirable for the correct, prompt, and orderly prosecution and completion of the Work as required by this Contract and the Contract Documents.

1.3 The responsibility to provide the construction means, methods, techniques, sequences and procedures shall include, but not be limited to, the obligation of the Contractor to provide the following construction requirements, as applicable: temporary power and light; temporary offices and construction trailers; required design certifications; required approvals; weather protection; site clean-up and housekeeping; construction trade management; temporary parking; a construction safety plan; safety and first aid facilities; correction of or compensation for defective work or equipment; Subcontractors' insurance certificates; storage areas; workshops and warehouses; temporary fire protection; site security; temporary Utilities; including without limitations; potable water and water for use in performing the Work (in all cases, including a backflow preventer meeting ANSI A40.6); phone; sanitary; gas or fuel; Subcontractor and Supplier qualification; equipment and materials procurement and expediting; receipt and unloading and proper storage of delivered materials and equipment; erection rigging; temporary supports; submittal and shop drawings review and orderly filing system; construction and procurement critical path scheduling; construction coordination; and cooperation with Tampa Bay Water in implementation of Tampa Bay Water's owner's direct purchase sales tax savings program.

1.4 During the progress of the Work, Contractor shall at all times during normal working hours afford Tampa Bay Water and Engineer every reasonable opportunity for observing all Work. During any such observation, all representatives of Tampa Bay Water and Engineer shall comply with all safety and other rules and regulations applicable to presence in or at the Work site.

1.5 Contractor shall have full responsibility, to the extent applicable, for locating all underground Utilities in advance of excavation; scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting underground

Utilities; repairing any damage done to the satisfaction of Tampa Bay Water and Engineer and the owners of those underground Utilities; promptly notifying Tampa Bay Water and Engineer of any newly discovered underground Utility; and the safety, protection and repairing of any damage done to any affected Work. Al1 costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.6 Contractor shall use care and diligence, and shall take all appropriate precautions, to protect the Work and the Work site and the property of other persons (including any materials, equipment, or other items furnished by Tampa Bay Water) from damage due to the nature of the Work, the natural elements, carelessness of others, and from any cause, until final completion of the Work; and for such purpose, Contractor shall provide fencing, protective features (such as tarpaulins, boards, boxing, frames, canvas guards, and fireproofing), and other safeguards to the extent Contractor reasonably determines such are necessary and proper in the performance of the Work.

1.7 Contractor shall ensure that each employee, representative, Subcontractor, Supplier, and others acting for the Contractor use designated access roads and parking areas. Contractor shall employ watchmen on the Work site when necessary and shall also erect and maintain such strong and suitable barriers and such lights as shall effectively prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the Work site. Contractor shall employ any additional temporary fencing and gates to adequately protect the Work.

1.8 Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Contractor shall be responsible for protecting all stored materials and the Work site safe from theft and vandalism.

1.9 All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.10 Contractor shall notify owners of adjacent property (including underground Utility owners) not less than forty-eight (48) hours, or the time period required by Laws and Regulations, whichever period is longer, prior to commencing the Work, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. At least five (5) days prior to providing such notice to adjacent property owners, Contractor shall submit its proposed written notice to Tampa Bay Water for review and approval. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at Contractor's expense, which shall be considered to have been included in the Contract Price.

1.11 In case of damage or destruction to the Work, the Work site or adjacent properties resulting from any cause, and regardless of the extent thereof or the estimated cost of repair, replacement or restoration, and whether or not any insurance proceeds are sufficient or available for the purpose, Contractor shall immediately undertake and complete the repair, replacement and restoration of the damage or destruction to the character and condition existing immediately prior to the damage or destruction, all at Contractor's sole cost and expense, which shall be considered to have been included in the Contract Price, except in the event that such damage or destruction is caused by Tampa Bay Water, its employees, agents, representatives, including Engineer, or is the result of an Uncontrollable Circumstance.

1.12 Contractor shall notify Tampa Bay Water immediately of any damage or destruction to the Work, the Work site or any adjacent properties including, but not limited to, hazardous substance spills, damage to sensitive areas, permit or approval violations, fires and injuries. Additionally, Contractor shall notify the required Insurance carriers and Sureties of any damage or destruction to the Work, the Work site, or adjacent properties, or any accidents on

the Work site, as promptly as possible after Contractor learns of any such damage, destruction or accidents. As soon as practicable after learning of any such occurrence, Contractor shall submit a full and complete written report to Tampa Bay Water.

1.13 In case of an emergency which threatens loss or injury to persons or property, Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and shall immediately provide Notice to Tampa Bay Water and Engineer of its action. Any claim for compensation by Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the amount of compensation if any, shall be determined by mutual contract, subject to cost substantiation.

2.0 Contract Time

2.1 Tampa Bay Water and the Contractor recognize that time is of the essence with respect to Contractor's performance of its obligations under the Contract Documents, and Tampa Bay Water shall suffer financial loss if Substantial Completion and Final Completion of the Work is not achieved within the Contract Time specified in Paragraph 2.2 below. Accordingly, if the Contractor fails to achieve Substantial Completion and Final Completion of the Work within the Contract Time, it shall pay Tampa Bay Water Liquidated Damages in accordance with the terms stated below in Section 3, Liquidated Damages.

2.2 The Contractor shall commence the Work within ten (10) days after the date specified for the commencement of the Work in the Notice to Proceed and shall complete all Work hereunder as follows:

a. All facilities shall be manually operational to provide Tampa Bay Water at its option the full time use of the Project as intended by the Contract Documents and the Contractor shall perform the Work to achieve Substantial Completion within seven hundred two (702) calendar days of issuance of Notice to Proceed as the commencement date of the Contract Time.

b. The Contractor shall perform the Work to achieve Final Completion within seven hundred thirty-two (732) calendar days of issuance of Notice to Proceed as the date of commencement of the Contract Time.

2.3 The completion deadlines in this Section 2 are subject to adjustment in accordance with the General Conditions.

3.0 Liquidated Damages

3.1 If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, as said time period may be adjusted pursuant to the terms of the Contract Documents, Contractor shall pay Tampa Bay Water Liquidated Damages in accordance with the following:

a. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount of One Thousand, Five Hundred Dollars and Zero cents ($1,500.00) for each day that expires after the Contract Time specified above in Paragraph 2.2a. for Substantial Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Substantial Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Substantial Completion of the Work is delayed. The Contractor agrees that these Substantial Completion Liquidated Damages do not constitute a penalty or forfeiture.

b. The Contractor shall pay Tampa Bay Water as Liquidated Damages and not as a penalty, the amount of Five Hundred Dollars and Zero Cents ($500.00) for each day that expires after the time specified in Paragraph 2.2.b. for Final Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Final Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Final Completion of the

Work is delayed. The Contractor agrees that these Final Completion Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Final Completion Liquidated Damages are in addition to, and not duplicative of, the Substantial Completion Liquidated Damages noted in Paragraph 3.1a. above.

4.0 Contract Price

4.1 Tampa Bay Water hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of all of the Contractor's obligations under the Contract Documents, and the Contractor agrees to accept in full payment the Contract Price of: Sixteen Million, Two Hundred Ninety-Nine Thousand, Six Hundred Dollars and No Cents ($16,299,600.00), inclusive of the total Owner's Allowance subject to the conditions governing payments to the Contractor in the Contract Documents. If the Contract Price includes any Unit Price amounts and the actual quantity of Unit Price items installed is different than the estimated quantity, then the Contract Price shall be adjusted in accordance with the Contract Documents. The Contract Price includes, if applicable, only those Alternates accepted by Tampa Bay Water, as identified in Paragraph 4.3 below. The Contract Price includes, if applicable, only those Allowances established by Tampa Bay Water, as identified in Paragraph 4.4 below.

4.2 The Unit Prices and associated estimated quantities included within the Contract Price are attached hereto and made a part hereof as Schedule A.

4.3 The following Bid Options have been accepted by Tampa Bay Water and are included within the Contract Price:

ALTERNATE	Price
Not Applicable	Not Applicable

4.4 The following Allowances have been established by Tampa Bay Water and are included within the Contract Price:

ALLOWANCE	Price
Owner's Allowance	$875,000.00
Permit Allowance	$20,000.00
Indemnification	$100.00

Payment of Allowances shall only be authorized by issuance of Change Authorization signed by Tampa Bay Water in accordance with Article 7.2.1 of the General Conditions.

5.0 Payment

Payment procedures are outlined in the General Conditions, Article 7 Payment. All monies not paid when due shall bear interest at a rate not to exceed the interest rate allowed by law to be paid by governmental entities in Florida, provided that this does not exceed six percent per year simple interest.

Tampa Bay Water's payment to Contractor of any progress or final payment shall not release the Contractor of any liability and shall not be deemed evidence of performance or be construed as an acceptance of defective or improper Work, or Work that does not comply with the requirements of the Contract Documents.

6.0 Miscellaneous

6.1 All Contract Documents are hereby incorporated into and made a part of this Contract by this reference. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents.

The Contract Documents represent the final and entire integrated Contract between the parties with respect to the Work. The Contract Documents supersede all prior oral or written Contracts, if any, between the parties, and any statement, representation, promise or inducement not set forth in the Contract Documents is null and void and not binding on Tampa Bay Water or the Contractor. Except for the warranty and third party beneficiary rights of Tampa Bay Water set forth herein, the Contract Documents shall not in any way create a relationship of any kind between the Engineer and the Contractor or between Tampa Bay Water and a Subcontractor or Supplier, or between Tampa Bay Water and any other person.

If any provision(s) of the Contract Document is/are invalid, illegal, or unenforceable such provision(s) shall be considered divisible, and all other provisions of the Contract Documents shall nevertheless remain in full force and effect.

6.2 The Contractor shall not sell, assign, transfer or otherwise convey any of its rights and shall not delegate any of its duties under the Contract Documents without the prior and expressed written consent of Tampa Bay Water and the Surety. Any attempted sale, assignment, transfer, conveyance or delegation of the Contractor's rights under this Contract or the other Contract Documents in violation of the terms of this paragraph shall be void and shall relieve Tampa Bay Water of any further liability under the Contract Documents but shall not relieve the Contractor or the Contractor's Surety(ies) of any liability. If Tampa Bay Water consents in writing to an assignment, unless specifically stated to the contrary in the consent, the assignment shall not release or discharge the Contractor from any duty, responsibility or obligation set forth in the Contract Documents, and shall not release or discharge the Surety(ies) under the bonds required by the Contract Documents.

6.3 This Contract shall be binding on Tampa Bay Water, the Contractor, and all of their respective successors, heirs, legal representatives and, if Tampa Bay Water has consented to an assignment or delegation as provided in the previous paragraph, assigns and delegates.

6.4 Any waiver by Tampa Bay Water of any provision of the Contract Documents must be specific and in writing and shall apply only to the particular matter concerned and not to other similar or dissimilar matters. Any waiver of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach. Neither the failure of Tampa Bay Water to exercise any power given to Tampa Bay Water under the Contract Documents or to insist upon compliance by the Contractor with Contractor's obligations under the Contract Documents, nor any custom or practice of Tampa Bay Water and Contractor at variance with the terms of the Contract Documents, shall constitute a waiver of Tampa Bay Water's right to demand full and complete compliance by the Contractor with the terms and provisions of the Contract Documents.

6.5 Nothing contained in the Contract Documents shall in any manner authorize, empower or constitute the Contractor, its Subcontractors or Suppliers as agent(s) of Tampa Bay Water; authorize or empower the Contractor, its Subcontractors or Suppliers to assume or create any obligation or responsibility whatsoever, express or implied, on behalf of or in the name of Tampa Bay Water; or authorize or empower the Contractor, its Subcontractors or Suppliers to bind Tampa Bay Water in any manner or make any representation, warranty, covenant, contract or commitment on behalf of Tampa Bay Water. The Contractor shall perform all Work under the Contract Documents as an independent contractor. This Contract does not create, and shall not be construed as creating, any rights enforceable by any person not a party to the Contract.

6.6 This Contract and the Contract Documents shall be governed by and construed in accordance with the Laws and Regulations of the State of Florida without giving effect to any rules governing conflict of laws.

6.7 The parties agree that for any litigation arising under the Contract Documents, venue shall be only in the state courts in and for Pinellas County, Florida.

6.8 All documents prepared or produced by Contractor or any of its Subcontractors pursuant to this Contract are the property of and belong to Tampa Bay Water, provided that Contractor is allowed to reuse such documents with the approval of Tampa Bay Water. If Contractor claims that any such document is proprietary or protected by trade secret or otherwise, Contractor has the burden to establish the basis of any such protection but until judicially declared otherwise, Tampa Bay Water shall have all rights of ownership and use of such documents.

6.9 In no event shall Tampa Bay Water be liable to Contractor, nor shall Contractor be liable to Tampa Bay Water, for any incidental, consequential, or punitive damages based upon claims arising out of or in connection with the performance or non-performance of a party's obligations under this Contract, or the material inaccuracy of any representation made by a party in this Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory. Contractor acknowledges and agrees, however, that claims, which are brought by third parties against Tampa Bay Water and for which, but for the application of this paragraph, Contractor would otherwise have an indemnification obligation under this Contract, shall not be considered consequential damages under this paragraph.

6.10 All express representations, indemnifications, or limitations of liability made in or given in this Contract will survive its completion or termination for any reason.

6.11 To the extent permitted by applicable law, contractor and Tampa Bay Water hereby acknowledge and agree that any and all claims arising out of, connected with, or relating to this Contract or the relationship created hereby are matters which, if adjudicated, should be adjudicated by a court without a jury. Therefore, the parties hereby waive a trial by a jury. Neither Tampa Bay Water nor contractor or any successor thereof shall seek a trial by jury in any action or proceeding (whether at law or in equity, whether direct or collateral, whether in contract or in tort) arising out of or related to this Contract or the relationship created hereby. Neither Tampa Bay Water nor Contractor shall seek to consolidate any action or proceeding in which trial by jury has been waived with any other action or proceeding in which a jury trial cannot be or has not been waived. The provisions of this paragraph cannot be and have not been waived. The provisions of this paragraph have been fully discussed by the parties and their respective attorneys and the provisions hereof shall be subject to no exceptions. Tampa Bay Water and contractor acknowledge and agree that no one, including, without limitation, Tampa Bay Water's agents or contractors, has represented that the provisions of this paragraph or of any other paragraph of this Contract will not be fully enforced.

6.12 Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Contract and that Contractor has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for Contractor any fee, commission, percentage, gift or other consideration contingent upon or resulting from the award or making of this Contract.

7.0 Public Records and Audit Rights

7.1 Contractor shall keep all books, records, files, drawings, plans and other documentation, including all electronically stored items, which concern or relate to the services required hereunder (collectively referred to as "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract, or as otherwise required by any applicable law,

whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to order, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy the Records shall include all of the Records of the Subconsultants.

7.2 IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PRIVDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE AGENCY'S CUSTODIAN OF PUBLIC RECORDS VIA PHONE (727) 796-2355 OPTION 6; EMAIL RECORDS@TAMPABAYWATER.ORG; OR MAIL AT 2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763-1102.

7.3 Contractor must keep and maintain all public records required by the Agency in order to perform services under this Contract.

7.4 Upon request from the Agency's custodian of public records, Contractor shall provide the Agency with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

7.5 Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the Agency.

7.6 Upon completion of the contract, Contractor shall transfer, at no cost, to the Agency all public records in the possession of the Contractor or keep and maintain public records required by the Agency to perform the service under this contract. If the Contractor transfers all public records to the Agency upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Agency, upon request from the Agency's custodian of public records, in a format that is compatible with the information technology systems of the Agency.

8.0 Definitions

Defined terms used in this Contract have the intent and meanings assigned to them in the General Conditions, Article 1, Definitions.

9.0 Engineer

Tampa Bay Water has retained the firm of Stantec Consulting to act as the Engineer, assume all of the duties and responsibilities and have the rights and authority assigned to the Engineer in the Contract Documents with respect to completion of the Work in accordance with the Contract Documents.

10.0 Public Entity Crime Statement

10.1 Pursuant to subsections 287.133(2) and (3), Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity;

may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO, for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

10.2 Contractor hereby certifies and warrants that it has not been placed on any convicted vendor list for the past thirty-six (36) months and is in full compliance with the requirements of subsections 287.133(2) and (3), Florida Statutes.

11.0 Discrimination

Pursuant to Subsection 287.134(2)(a), Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity. Contractor hereby certifies and warrants that it has not been placed on any discriminatory vendor list and is in full compliance with the requirements of subsections 287.134(2)(a), Florida Statutes.

12.0 Drawings and Specifications

12.1 The Drawings consist of the following:

Sheet No.	Sheet Description
G-1	**Cover Sheet**
G-2	**List of Drawings**
G-3	**Symbology and Nomenclature**
G-4	**General Notes**
GC-01	**Civil Notes and Symbols**
DC-1, DC-2 & DC-3	**Well House MBR-152 Demolition Plan**
DC-4 & DC-5	**Well House MBR-157 Demolition Plan**
DC-6 & DC-7	**Well House MBR-161 Demolition Plan**
DC-8 & DC-9	**Well House MBR-162 Demolition Plan**
DC-10	**Well House MBR-163 Demolition Plan**
DC-15	**Well House MBR-152 Discharge Pipe Demolition As-Built Plan and Profile**
DC-16	**Well House MBR-157 Discharge Pipe Demolition As-Built Plan and Profile**
DC-17	**Well House MBR-161 Discharge Pipe Demolition As-Built Plan and Profile**
DC-18	**Well House MBR-162 Discharge Pipe Demolition As-Built Plan and Profile**
DC-19	**Well House MBR-163 Discharge Pipe Demolition As-Built Plan and Profile**
DC-50	**Well Site Restoration Typical Selections**
C-01	**Project Plan**

Sheet No.	Sheet Description
C-10	Well House MBR-150 & MBR-151 Plan
C-11	Well House MBR-153 & MBR-154 Plan
C-12	Well House MBR-155 & MBR-156 Plan
C-13	Well House MBR-158 & MBR-159 Plan
C-14	Well House MBR-160 & MBR-164 Plan
C-15	Well House MBR-165 & MBR-166 Plan
C-16	Well House MBR-167 & MBR-168 Plan
C-17	Well House MBR-169 Plan
C-50	Standard Details
GS-1	Structural General Notes - I
GS-2	Structural Standard Details - I
GS-3	Structural Abbreviations List
DS-1, DS-2 & DS-3	Well House Type I Demolition Plans, Elevations and Section
DS-4	Well House Type II Demolition Plans, Elevations and Section
DS-5 & DS-6	Well House Type III Demolition Plans, Elevations and Section
DS-7	Well House Demolition Details
S-1 & S-2	Well House Type I Plans, Elevations and Sections
S-3	Well House Type II Plans, Elevations and Sections
S-4	Well House Type III Plans, Elevations and Sections
GA-1	General Architectural Code Summary, General Notes & Schedules
GA-2	General Architectural Standard Details
A-1	Architectural Well House Floor Plan and Roof Plan
A-2	Architectural Well House Exterior Elevations
I-1	Instrumentation Abbreviations & Legend
I-2	MBR Site P&ID (Typical)
I-3	Instrumentation Details
I-4	PLC Control Panel Layout
I-5	Control Panel Elementary Schematic - I
I-6	Control Panel Elementary Schematic - II
I-7	Control Panel Elementary Schematic - III
I-8	Network Diagram
GM-1	General Mechanical Notes
GM-2	Pipe and Valve Schedule
GM-3	Standard Details - I
GM-4	Standard Details - II
DM-1	Well House MBR-152 Demolition
DM-2	Well House MBR-157 Demolition
DM-3	Well House MBR-161 Demolition
DM-4	Well House MBR-162 Demolition
DM-5	Well House MBR-163 Demolition
DM-6	Typical Well House Pump and Piping Demolition
M-1	Well House MBR-150 Modifications
M-2	Well House MBR-151 Modifications

Sheet No.	Sheet Description
M-3	Well House MBR-153 Modifications
M-4	Well House MBR-154 Modifications
M-5	Well House MBR-155 Modifications
M-6	Well House MBR-156 Modifications
M-7	Well House MBR-158 Modifications
M-8	Well House MBR-159 Modifications
M-9	Well House MBR-160 Modifications
M-10	Well House MBR-164 Modifications
M-11	Well House MBR-165 Modifications
M-12	Well House MBR-166 Modifications
M-13	Well House MBR-167 Modifications
M-14	Well House MBR-168 Modifications
M-15	Well House MBR-169 Modifications
M-16	Pump Replacement Details
GH-1	General Notes, Symbols and Abbreviations
GH-2	Equipment Schedules and Controls
GH-3	Standard Details
DH-1	HVAC Demolition Plan - I
DH-2	HVAC Demolition Plan - II
H-1	HVAC Floor Plan and Section
GE-1	Electrical Notes
GE-2	Electrical Details
GE-3	Typical Building Layout Type I
GE-4	Typical Building Layout Type II
GE-5	Typical Building Layout Type III
GE-6	Typical Lighting Plan
GE-7	Typical Grounding Plan
GE-8 & GE-9	Typical One-Line
GE-10	Electrical System Block Diagram (Typical)
GE-11	Pump Soft Start Motor Schematic (Typical)
DE-1	Well House MBR-152 Demolition
DE-2	Well House MBR-157 Demolition
DE-3	Well House MBR-161 Demolition
DE-4	Well House MBR-162 Demolition
DE-5	Well House MBR-163 Demolition
DE-6	Well House MBR-150 Demolition
DE-7	Well House MBR-151 Demolition
DE-8	Well House MBR-153 Demolition
DE-9	Well House MBR-154 Demolition
DE-10	Well House MBR-155 Demolition
DE-11	Well House MBR-156 Demolition
DE-12	Well House MBR-158 Demolition
DE-13	Well House MBR-159 Demolition
DE-14	Well House MBR-160 Demolition
DE-15	Well House MBR-164 Demolition
DE-16	Well House MBR-165 Demolition
DE-17	Well House MBR-166 Demolition

Sheet No.	Sheet Description
DE-18	Well House MBR-167 Demolition
DE-19	Well House MBR-168 Demolition
DE-20	Well House MBR-169 Demolition

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12.2 The Specifications consist of the following:

Section	Description
01010	Summary of Work
01015	Project Requirements
01025	Measurement and Payment
01027	Payment Applications
01060	Permits and Regulatory Requirements
01070	Abbreviations and Acronyms
01200	Project Meetings
01300	Submittal Procedures
01310	Construction Progress Schedule
01313	Construction and Schedule Constraints
01320	Schedule of Values
01380	Construction Photographs
01382	Video Monitoring and Documentation
01400	Quality Control
01500	Temporary Facilities and Controls
01505	Mobilization
01540	Security
01610	General Equipment Stipulations
01612	Product Delivery Requirements
01613	Structural Support, Design and Anchorage
01614	Product Storage and Handling Requirements
01615	Equipment and Valve Identification
01631	Product Substitutions
01650	Startup, Testing and Commissioning
01710	Cleaning
01720	Contract Record and Close Out Documentation
01730	Operating and Maintenance Data
01740	Warranties and Bond
01821	Instruction of Operations and Maintenance Personnel
02050	Demolition
02220	Excavating
02270	Erosion and Sedimentation Control
03310	Cast-in-Place Concrete
03315	Grouting
03900	Concrete Repair and Rehabilitation
05500	Miscellaneous Metalwork
05519	Post-Installed Anchors in Concrete
06100	Rough Carpentry
07190	Surface Applied Water Repellents
07630	Flashing and Sheet Metal
07920	Sealants and Caulking
08120	Aluminum Doors and Frames
08710	Finish Hardware
09940	Protective Coatings
10050	Well Rehabilitation and Specific Capacity Testing

Section	Description
11000	Equipment General Conditions
11200	Pumps, General
11213	Submersible Deep Well Vertical Turbine Pumps
13500	Well Abandonment
15005	Valves General
15010	Valve Installation
15011	HVAC General
15052	Exposed Piping Installation
15060	Ductile Iron Pipe – 42-inch Diameter and Smaller
15091	Miscellaneous Ball Valves
15093	Check Valves
15094	Pipe Supports
15104	Resilient-Seated Gate Valves
15108	Air Release and Combination Air Valves
15160	Flow Tubes and Venturi Tubes
15210	Piping Identification
15831	Fan Equipment
15950	HVAC Testing and Balancing
16010	Electrical Requirements
16062	Grounding
16100	Electrical Equipment Installation
16123	600 Volts or Less Wires and Cables
16130	Conduits
16140	Wiring Devices
16276	Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers
16410	Enclosed Switches and Circuit Breakers
16412	Low Voltage Circuit Breakers
16416	Surge Protective Devices
16470	Panelboards and General Purpose Dry-Type Transformers
16485	Reduced Voltage Solid-State Motor Controllers
16670	Lightning Protection System
16951	Functional Testing
17500	Instrumentation and Control System
17530	PLC Control Panels
17560	Instrumentation General Requirements
17562	Flow Instruments
17563	Pressure Instruments
17565	Miscellaneous Instruments

13.0 Scrutinized Companies and Foreign Countries of Concern

13.1 Contractor certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it

is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of $1 million or more if the awarded Contractor:

a. Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or
b. Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or
c. Has been engaged in business operations in Cuba or Syria.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor has been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

13.3 Foreign Countries of Concern. Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign County of Concern. Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor is in violation of Section 287.138, Florida Statutes

14.0 Employee Verification

In accordance with Section 448.095 Florida Statutes, the Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Contractor enters into a contract with a subcontractor, the subcontractor must provide the Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the award/Contract. If Tampa Bay Water has a good faith belief that the Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Contractor, and the Contractor may not be awarded a Contract with Tampa Bay Water for at least 1 year after the date on which the award/Contract was terminated. The Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Contractor and order the Contractor to immediately terminate the award/contract with the subcontractor.

15.0 Anti-Human Trafficking

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

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IN WITNESS WHEREOF, Tampa Bay Water and Contractor have signed two (2) copies of this Contract, and all parts of the Contract Documents have been identified by Owner and Contractor. This Contract will be effective on _____ (which is the Effective Date of the Contract). This Contract may be signed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

WITNESS:

_____

_____
Date

Southeast Drilling Services, Inc.

_____

_____
Name

(CORPORATE SEAL)

ATTEST:

_____
Secretary

Tampa Bay Water, A Regional Water Supply Authority

By: _____

Its: _____

Date: _____

APPROVED AS TO FORM:

_____
General Counsel

(SEAL)

Address for giving notice to:

TAMPA BAY WATER
2575 Enterprise Road
Clearwater, Florida 33763-1102
Attn: Stacy Gundry, Purchasing and Warehouse Manager

The ENGINEER:
Stantec Consulting
777 S Harbour Island Blvd # 600
Tampa, FL 33602

SOUTHEAST DRILLING SERVICES, INC.
10614 East US Highway 92
Tampa, FL 33610
Attn: Bart Ziegler, P.E.

End of Contract

SUPPLEMENTARY CONDITIONS

Supplementary Conditions to the General Conditions, Article 4*, The Contractor and Its Employees*.

The limits of liability for the following insurance required by the General Conditions, Article 4, The Contractor and Its Employees, as amended in the Supplementary Conditions, shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Commercial General Liability. The coverage(s) shall be no less than:
   (a) Minimum limits of $1,000,000 per occurrence combined single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).
   (b) Minimum limits of $2,000,000 Aggregate single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

2. Business Automobile Liability. The coverage shall be no less than:
   (a) Minimum limits of $1,000,000 combined single limit for all liability must be provided.

3. Umbrella/Excess Liability. The coverage shall be no less than:
   (a) Minimum limits of $2,000,000 per occurrence must be provided.
   (b) Aggregate limits of $5,000,000 must be provided.

4. Worker's Compensation and Employer's Liability. The coverage shall include:
   (a) Coverage A:
   State: Statutory limits under the Laws of the State of Florida.
   Federal: Statutory limits under the Laws of the United State of America (e.g., Longshoremen's, etc.)
   (b) Coverage B:
   Employer's Liability, bodily injury, occupational sickness or disease, or death of Contractor's employees shall be no less than:
   1) $500,000 Each Accident
   2) $1,000,000 Each Disease
   3) $500,000 Each Employee

Tampa Bay Water requires Contractor employers to purchase workers compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires the Contractor to purchase said coverage.

5. Builder's Risk "All Risk" or Installation Floater Insurance. Coverage shall be no less than the full insurable replacement value of the Work, including completed Work, Work in progress and all insurable building materials, structures, fences, lights, equipment, pumps, electrical components, and similar insurable property. Exceptions to insurable property include underground property (after installation), site work and road work.

6. Additional Requirements:

(a). Tampa Bay Water must be listed as an Additional Insured on General Liability, Auto Liability and Excess policies;
(b). Excess/Umbrella policies shall be written as "follow form";
(c.) The insurance provided for Tampa Bay Water as Additional Insured shall apply as primary and non-contributory insurance;
(d). The Additional Insured Endorsement utilized for General Liability must be form CG 20 10 (07/04) and CG 20 37 (07/04) or broader wording in Tampa Bay Water's favor as approved by Tampa Bay Water;
(e). Contractor shall maintain General Liability coverage for itself and all Additional Insureds for the duration of the Work and maintain completed operations coverage for itself and Additional Insureds for five (5) years after completion of the Work;
(f). All Contractor insurance policies will include a Waiver of Subrogation in favor of Tampa Bay Water;
(g). Each of Contractor's insurance policies shall be endorsed to provide Tampa Bay Water with at least thirty (30) days written notice prior to any material change or cancellation of the policy, to the fullest extent commercially available;
(h). Deductible amounts on Contractor policies shall not exceed $25,000 and shall require approval from Tampa Bay Water; and
(i). In the event Contractor breaches any provision of the Insurance Requirements of the Contract, Tampa Bay Water may deduct the cost of any insurance from any funds Payable to Contractor under the Contract Documents.

General Conditions

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GENERAL CONDITIONS

1. Definitions

Wherever in the Contract Documents the following terms are used, the intent and meaning shall be as follows:

1.1. Addenda: Instruments issued by Engineer for Tampa Bay Water prior to the advertised time for receipt of Bids that modify the Contract Documents by additions, deletions, clarifications, corrections, or other revisions.

1.2. Contract: The written Contract between Tampa Bay Water and the Contractor covering the Work to be performed.

1.3. Allowances: A specified sum included in the Contract Price to be utilized only at the discretion of Tampa Bay Water.

1.4. Alternates: A specified portion of the Work listed on the Bid which has been added to or deducted from the Base Bid, at Tampa Bay Water's discretion, as identified in the Contract.

1.5. As Approved: The words "As Approved," unless otherwise qualified, shall be understood to be for conformance with the Contract Documents.

1.6. As-Built Contract Documents: A set of the Contract Documents marked up by the Contractor to show the Work as constructed with all modifications from the original Contract Document.

1.7. Base Bid: The sum total of the combined Unit Prices, Lump Sum Prices and Allowances in the Bid, excluding all Alternates.

1.8. Bidder: The person(s), partnership, firm or corporation submitting a Bid for the Work.

1.9. Bid Documents: The "Bid Documents" consist of the Instruction of Bidders, Information to Bidders, Request for Bids, Bid and the Contract Documents.

1.10. Bid Security: The Bid Bond, certified check or cashier's check provided pursuant to this ITB to protect Tampa Bay Water from the unauthorized withdrawal of Bid or refusal to execute the Contract Documents. Electronic Bids received through Bonfire must be accompanied by a copy of a certified check, or cashier's check drawn on a bank in good standing, or the Florida Bid Bond included herein. The Bid Bond must be issued by a surety authorized to issue such bonds in the State of Florida, in the amount of Five percent (5%) of the proposed total Contract Price of the Bid submitted. The Florida Bid Bond included herein shall be given as a guarantee that the Bidder will not withdraw its Bid for a period of One Hundred Twenty (120) days after the opening of Bids.

When submitting the electronic bid, a copy of the Bid Bond should be submitted in the electronic package. The original Bid Bond must be delivered to Tampa Bay Water physically via mail, delivery service or in-person. If submitting electronically, banking information may be redacted on copies of checks. Original checks must be delivered physically and unaltered.

1.11. Business Day: The term Business Day means each day occurring Monday through Friday.

1.12. Change Authorization: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water, authorizes and directs the Contractor to perform changes in the Work as described in the Change Authorization, and/or gives the basis, if any, for a subsequent adjustment in Contract Price or Contract Time. Upon receipt of a Change Authorization, the Contractor is authorized and required to perform the subject changes in the Work.

1.13. Change Order: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water and the Contractor, amends the Contract Documents to provide for changes in the Work, and/or Contract Price, and/or Contract Time.

1.14. Construction Directive: A written instrument issued by the Engineer pursuant to Paragraph 7.2.9.

1.15. Contract Documents: The "Contract Documents" consist of the Contract, Addenda, Supplementary Conditions, General Conditions, Specifications, Drawings, Change Order, Change Authorizations, and all other documents expressly incorporated by specific reference thereto. The Contract Documents are sometimes collectively referred to as the "Contract".

1.16. Contractor: The person(s), partnership, firm, or corporation that entered into and is (are) identified in the Contract.

1.17. Contractor's Representative: The Contractor's superintendent, project manager or other person at the location of Work authorized to direct the Work and receive communications from Tampa Bay Water or Engineer.

1.18. Contract Price: The total compensation payable by Tampa Bay Water to the Contractor for the performance of the Work by the Contractor in accordance with the requirements of the Contract Documents, as stated in the Contract and adjusted by all Change Order and Change Authorizations.

1.19. Contract Time: Unless otherwise specified, the Contract Time for all or a designated part of the Work is the period of time allowed, subject to Change Order and Change Authorizations, for completion of a specified part of the Work. The first Day of Contract Time shall be that date as specified on the Notice to Proceed as the date the Contract Time shall commence.

1.20. Correction Period: The period of time established in Paragraph 4.20.2 hereafter for the correction of Defective Work.

1.21. Day: Unless otherwise specifically stated, the term Day shall be understood to mean calendar day.

1.22. Defective: A term used to refer to Work that is faulty, unsatisfactory, deficient, damaged or does not conform to the requirements of the Contract Documents and all applicable Laws and Regulations.

1.23. Drawings: The term Drawings refers to the various drawings, profiles, cross sections, elevations, details, plans and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, details of the Work to be performed, all as identified in the Contract. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

1.24. Engineer: The person or organization identified as such in the Contract that provided the technical design. The term "Engineer" means the Engineer or its authorized representatives.

1.25. Final Completion: The completion of all the Work in accordance with the Contract Documents.

1.26. Laws And Regulations: Federal, State, and Local Statutes, Judicial and Administrative Decisions, Laws, By-Laws, Codes, Rules, Regulations, Resolutions, Ordinances, and/or Orders applicable to the Project.

1.27. Lump Sum Price: The price paid for a specified quantity of Work, which when performed, is paid for on the basis of an agreed price for the completed Work.

1.28. Notice: The term "Notice" or the requirement to notify, as used in the Contract Documents or applicable Laws and Regulations, shall signify a written communication delivered in person; or by certified or registered mail, return receipt requested, to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended.

1.29. Notice Of Award: The written notice of acceptance of the Bid by Tampa Bay Water to the successful Bidder stating that upon compliance by the Bidder, within the time specified, with the requisite conditions stated in this ITB, Tampa Bay Water will deliver the Contract to the successful Bidder for its execution.

1.30. Notice to Proceed: The written Notice issued by Tampa Bay Water to the Contractor, authorizing it to proceed with the Work in accordance with the Contract Documents, and fixing the date for which the Contract Time shall commence.

1.31. Or Equal: The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the named product in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer.

1.32. Partial Utilization: Use by Tampa Bay Water of a portion of the Work (as designated by Tampa Bay Water) before reaching Substantial Completion for all the Work.

1.33. Payment Application: The forms provided by Tampa Bay Water which shall be used by the Contractor in requesting partial or final payment.

1.34. Permit Allowance: The Permit Allowance is for Tampa Bay Water's use in reimbursing the Contractor for the actual cost of permit fees required by Laws and Regulations necessary to perform the Work. This is a pass-through cost and no mark-ups are allowed on the Permit Allowance.

1.35. Progress Report: A written report(s) indicating progress of the Work, estimated date for delivery of materials, and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule.

1.36. Progress Schedule: Schedule which shows the timing and sequence of Contractor's proposed execution of the Work and all subsequently issued updates thereto, after said updates have been reviewed and accepted by Tampa Bay Water.

1.37. Project : The name of the Project is as identified in the Contract.

1.38. Project Allowance: The Project Allowance is solely for Tampa Bay Water's use in the payment for changes in the Work, where such changes have been approved pursuant to the Contract Documents.

1.39. Project Representative: The authorized representative(s) of the Engineer who is (are) assigned to the Project or any part thereof.

1.40. Record Drawings: Drawings that are prepared by the Engineer reflecting as-built information provided by the Contractor on Contractor's As-Built Contract Documents.

1.41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some part of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other data prepared by a Supplier and submitted by the Contractor to illustrate items of material or equipment.

1.42. Specifications: The term "Specifications" refers to those written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, all as identified in the Contract. Where standard Specifications, common to the construction industry and to standard engineering practice, are referenced to or are otherwise applicable, the applicable portions of the most current versions of such standard Specifications shall become a part of these Contract Documents. If referenced standard Specifications conflict with Specifications contained herein, the requirements contained herein shall control unless contrary to Laws and Regulations.

1.43. Subcontractor: An entity having a Contract with the Contractor for performing labor on the Work on the Project, or for performing both labor on the Project and furnishing materials or equipment.

1.44. Submittal: The term Submittal includes shop drawings, tests, samples, Progress Schedules and other schedules, Progress Reports and other reports, and any other documents required for submission by the Contract Documents.

1.45. Substantial Completion: Substantial Completion shall be that degree of completion of the Work or specified portion of the Work in accordance with the Contract Documents, as specified in the General Conditions, Article 2, Contract Time of the Contract, certified by the Engineer and approved by Tampa Bay Water as evidenced by the Engineer's issuance of a Certificate of Substantial Completion, sufficient to provide Tampa Bay Water, at its discretion, the full-time use of the Work or Partial Utilization of a specified portion of the Work for the purposes for which it was intended.

1.46. Supplier: A manufacturer, fabricator, distributor, material man, or vendor having an Contract with the Contractor for furnishing materials or equipment for the Project.

Tampa Bay Water, A Regional Water Supply Authority/Owner: Tampa Bay Water, A Regional Water Supply Authority, is the Owner of the Work described in the Contract Documents. The term "Owner" and "Tampa Bay Water" are interchangeable

1.47. Uncontrollable Circumstance: Any act, event or condition affecting the Project, Contractor or Tampa Bay Water to the extent that it materially and adversely affects: (i) the ability of either party to perform any obligation hereunder (except for payment obligations); or (ii) the cost of such party's performance, if such act, event or condition is beyond the reasonable control and is not also the result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the party relying thereon as justification for not performing an obligation or complying with any condition required of such party under this Contract;

(1) *Inclusions*. Subject to the foregoing, such acts or events include the following:

(a) an act of God, hurricane, landslide, lightning, earthquake, fire, flood, plague, tornadoes, (but not including reasonably anticipated weather conditions for the geographic area of the Work site), explosion, sabotage or similar occurrence, acts of a public enemy, extortion, war, blockade or insurrection, riot or civil disturbance;

(b) a Change in Law;

(c) the failure of any appropriate governmental body or private utility having operational jurisdiction in the area in which the Project is located to provide and maintain Utilities to the Work site;

(d) any failure of title to the Work site or any enforcement of any encumbrance on the site or on any improvements thereon not consented to in writing by, or arising out of any action or Contract entered into by, the party adversely affected thereby;

(e) the preemption of materials or services by a governmental body in connection with a public emergency or any condemnation or other taking by eminent domain of any portion of the Project or Work site;

(f) the presence at the Work site of (i) subsurface structures, materials or conditions having archaeological significance; (ii) any habitat of endangered or similarly protected species; (iii) functioning subsurface structures at the site (to the extent not identified by Tampa Bay Water to Contractor); and (iv) subsurface conditions of which Contractor, through the exercise of reasonable diligence, could not reasonably be expected to have notice;

(g) strikes by an organized union of the Contractor's Subcontractors;

(h) the failure of Tampa Bay Water to obtain any permit or approval which is Tampa Bay Water's responsibility to obtain, on or prior to the dates set forth in the Project Schedule.

(2) *Exclusions*. It is specifically understood that none of the following acts or conditions shall constitute Uncontrollable Circumstances:

(a) general economic conditions, interest or inflation rates, or currency fluctuations or exchange rates;

(b) changes in the financial condition of Tampa Bay Water, Contractor or any Subcontractor affecting the ability to perform their respective obligations;

(c) the consequences of error, neglect or omissions by the parties and any Subcontractor in the performance of any Work or responsibilities under this Contract;

(d) any increase for any reason in premiums charged by the Contractor's insurers or the insurance markets generally for the required Insurance;

(e) the failure of Contractor to secure any patents or licenses in connection with the technology necessary to perform its obligations hereunder;

(f) the failure of any Subcontractor or Supplier to furnish labor, materials, services or equipment for any reason other than for acts or events specifically included herein as Uncontrollable Circumstances;

(g) equipment failure except when due to acts or events specifically enumerated herein as Uncontrollable Circumstances; or

(h) any Change in Law with respect to the issuance of any permit or approval, the enactment of any statute, or the promulgation of any regulation affecting the standards or requirements of performance, the terms and conditions of which do not impose more stringent or burdensome requirements on the Project or Contractor than in effect on the Effective Date of the Contract.

Unit Price: The price paid for units of Work which, when performed, is measured and paid for on the basis of units.

1.48 Work: The word "Work" within these Contract Documents shall include all material, labor, services, documentation, tools, equipment, fuel, utilities, temporary facilities and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Project in accordance with the Contract Documents, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described in the Contract Documents or indicated and as required by good practice to provide a complete and satisfactory system(s) or structure(s).

1.49 Working Hours: Working Hours shall mean the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday, excluding legal holidays. Maintenance of equipment will be allowed outside of Working Hours.

1.50 Other terms not defined herein shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in the Florida Statutes.

2. Contract Documents

2.1 Intent of Contract Documents

2.1.1. The Contract Documents comprise the entire Contract between Tampa Bay Water and the Contractor concerning the Work. The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the indicated result shall be supplied whether or not specifically called for, with no increase in the Contract Price or extension of the Contract Time. When words which have a customary technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning, unless a contrary definition appears in the Contract Documents, in which case the Contract Documents shall control.

2.1.2. Whenever the terms "as ordered", "as directed", "as required", "as allowed", "As Approved", or terms of like effect, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory", or adjectives of similar effect, are used to describe a requirement, direction, review, or judgment of the Engineer or Tampa Bay

Water as to the Work, it is intended that the requirement, direction, review, or judgment will be to evaluate the Work for compliance with the Contract Documents.

2.1.3. No use of any provision of any standard Specifications, manual, or code (whether or not expressly incorporated by reference in the Contract Documents), or Suppliers' instructions, shall be effective to (a) change the duties and responsibilities of the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or employees from those assigned in the Contract Documents; or (b) to assign to the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or Tampa Bay Water employees, any duty or authority to supervise or direct the execution of the Work or to assume responsibility contrary to the provisions of the Contract Documents.

2.2 Priority of the Contract Documents

2.2.1. In resolving inconsistencies or apparent conflicts among the Contract Documents, the first listed below shall take precedence and control over those following:

a. Contract
b. Supplementary Conditions
c. General Conditions
d. Specifications / Drawings
e. Front-Ends

2.2.2. In resolving inconsistencies between Drawings and Specifications, Contractor shall be obligated to comply with the more costly or stringent requirement, as determined by Tampa Bay Water. Figure dimensions on Drawings shall take precedence over scale dimensions. Detailed Drawings shall take precedence over general Drawings.

2.3 Examination and Verification of Contract Documents

2.3.1. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents with each other, check and verify pertinent figures and all applicable field measurements, and compare and coordinate related requirements for Work (i.e. location, dimensions, fit, completeness, consistency, etc.).

2.3.2. The Contractor shall, immediately upon discovery, report in writing to the Engineer any conflict, error, omission, or ambiguity in the Contract Documents which the Contractor discovers, whether prior to or while performing the Work, and shall obtain a written interpretation or clarification from the Engineer before proceeding with any affected Work. The Engineer shall promptly investigate the matter and until such interpretation or clarification is obtained from the Engineer, any Work done by the Contractor which is directly or indirectly affected by same, will be at the Contractor's risk and the Contractor shall bear all resultant costs and delays.

2.4 Documents to be kept on the Project Site

The Contractor shall keep at least one copy of the Contract Documents on the Project site in good order, available to Tampa Bay Water and its representatives. The Contractor shall maintain on a daily basis at the Project site, and make available to the Engineer on request, one current set of As-Built Contract Documents which have been accurately marked by Contractor to indicate all modifications in the completed Work that differ from the original Contract Documents. As a condition precedent to Final Completion of the Work, the Contractor shall give the Engineer one complete set of these As-Built Contract Documents.

2.5 Additional Contract Documents

The Engineer will provide to the Contractor one electronic S&S files. Paper set(s) can be provided, if needed/requested.

2.6 Ownership of Contract Documents

All portions of the Contract Documents, and copies thereof furnished by the Engineer are the property of Tampa Bay Water. They are not to be used on other work and are to be returned

to the Engineer at the completion of the Work with the exception of the Contractor's record set. Any reuse or adaptation of these materials by Contractor without specific written permission by Tampa Bay Water is expressly prohibited and shall be at the risk of the Contractor and without liability or legal expense to Tampa Bay Water or Engineer. The Contractor shall hold Tampa Bay Water and Engineer harmless from any and all damages and claims, including reasonable attorneys' fees and legal assistants' fees, for such unauthorized use.

3. The Engineer

3.1 Authority of the Engineer

The Engineer shall be a representative of Tampa Bay Water during the Contract Time for performance of the Work. The Engineer shall have authority to reject Work which does not conform to the Contract Documents. However, the Engineer's authority shall not affect the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

3.2 Duties and Responsibility of the Engineer

3.2.1. The Engineer shall make visits to the Project site at intervals appropriate to the various stages of construction to observe the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Visits and observations made by the Engineer are solely for the benefit of Tampa Bay Water and shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligations to conduct comprehensive inspections of the Work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.2. The Engineer shall respond, in writing, within 21 days of receipt (unless more time is reasonably required for response), to all claims by Tampa Bay Water or the Contractor required for performance of the Work and requests for clarification or interpretation of the Contract Documents. The Engineer's response shall be of factual and/or technical nature, and shall not include the legal interpretation of the Contract Documents.

3.2.3. The Engineer may assign one or more Project Representatives to observe the Work. It is understood that such Project Representatives shall have authority to issue Notices of non-conformance and make decisions within the limitations of authority of the Engineer. The Contractor shall furnish all reasonable assistance required by the Engineer or Project Representative for proper observation of the Work. Observations by the Project Representative shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligation to conduct comprehensive inspections of the Work and to furnish materials and perform work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.4. On-site observations by the Engineer, Project Representatives and other assistants shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents, nor constitute acceptance of Defective Work, nor give rise to any duty on their part to make the observations for the benefit of the Contractor.

3.2.5. The Engineer shall review Submittals within the times specified in the General Requirements, or if not specified, within 21 days of receipt (unless more time is reasonably required for review) for conformance with the design of the Project and for compliance with the Contract Documents. The Engineer's review shall not extend to means, methods, techniques, sequences, nor to procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is

indicated in or required by the Contract Documents), nor to safety precautions or programs incident thereto.

3.3 Rejected Work

3.3.1. The Engineer shall have authority to disapprove or reject Work at any time during the performance of the Work, which the Engineer believes to be Defective; or to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. The Engineer's authority does not relieve the Contractor from its responsibility to perform in accordance with the Contract Documents. When the Contractor is notified by the Engineer of rejection of Defective Work, the Contractor shall take immediate action to correct same.

3.3.2. All Defective Work, whether discovered before or after Final Completion, shall be removed and replaced by the Contractor, without cost to Tampa Bay Water, with Work which shall conform to the Contract Documents. Failure on the part of the Engineer to condemn or reject Defective Work shall not be construed to imply acceptance of such Work. Tampa Bay Water shall reserve and retain all of its rights and remedies at law or equity against the Contractor and its Surety for correction of or damages arising from any and all Defective Work.

3.4 Lines and Grades

Lines and grades shall be established as provided in the Drawings or the Supplementary Conditions. All information, stakes or marks shall be carefully preserved by the Contractor, and if the information, stakes or marks are destroyed or removed, all such information, stakes or marks shall be replaced at the Contractor's expense.

3.5 Detail Drawings and Instructions

If required, the Engineer shall furnish within 21 days (unless more time is reasonably required), in writing, additional instructions by means of Drawings or otherwise, as required for the proper execution of the Work. All such Drawings and instructions shall be in writing and consistent with the Contract Documents.

4. The Contractor and Its Employees

4.1 Contractor

4.1.1. The Contractor shall independently perform all Work included in the Contract Documents and shall not be considered an agent of Tampa Bay Water or of the Engineer, nor shall the Contractor's Subcontractors, Suppliers, or employees be agents of Tampa Bay Water or of the Engineer.

4.1.2. The Contractor shall provide competent, suitably qualified and reliable personnel, Subcontractors, and Suppliers to survey and lay-out the Work and furnish and perform the Work in accordance with the Contract Documents.

4.2 Subcontractors and Suppliers

4.2.1. The Contractor shall be responsible and liable to Tampa Bay Water for the acts and omissions of Contractor's employees, agents, and Subcontractors and Suppliers and their respective employees.

4.2.2. The Contractor shall list each Subcontractor or Supplier whom the Contractor intends to award a subcontract, other than those Subcontractors or Suppliers previously listed in the Bid, by submitting to Tampa Bay Water in writing, for each additional Subcontractor and Supplier, the same information required to be set forth in the Bid.

4.2.3. Work performed by a Subcontractor or Supplier shall be through an appropriate written subcontract which expressly binds the Subcontractor or Supplier to the terms and conditions of the Contract Documents for the express benefit of Tampa Bay Water, and requires each of them to assume toward the Contractor all of the obligations which the Contractor assumes toward Tampa Bay Water.

4.2.4. The Contractor shall deliver to Tampa Bay Water a copy of each subcontract with a Subcontractor or Supplier within fifteen (15) Days after receiving the Notice to Proceed or the execution of the subcontract, as applicable.

4.2.5. The Contractor shall perform (with the Contractor's own employees) not less than fifty percent (50%) of the difference between the Contract Price minus the cost of materials for the Project.

4.2.6. Nothing contained in the Contract Documents or any subcontract shall create any contractual relationship between any Subcontractor or Supplier and Tampa Bay Water or Engineer. Provided, however, Tampa Bay Water shall be named an intended third party beneficiary under all such subcontracts.

4.3 Equal Opportunity

4.3.1. At all times during the performance of the Work, Contractor shall comply with Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act of 1992. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, handicap, or marital status. The Contractor shall take affirmative action to ensure that employment applications are used and that employees are treated without regard to their race, color, religion, sex, national origin, age, handicap or marital status for employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

4.3.2. The Contractor shall state in all solicitations or advertisements for employment placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, handicap, or marital status.

4.4 Indemnity

4.4.1. In consideration of One Hundred Dollars ($100.00) separately allocated from the first consideration paid hereunder, and other good and valuable consideration, including Tampa Bay Water's execution of the Contract, the sufficiency of which is hereby acknowledged by Contractor, Contractor shall indemnify and hold harmless Tampa Bay Water, its officers, employees, agents, representatives and consultants from and against all liabilities, costs, losses, and damages (including, but not limited to, all reasonable attorney's fees to the extent caused by the negligence, recklessness or intentional wrongful conduct of Contractor, any Subcontractor, or any individual or entity directly or indirectly employed or utilized by Contractor in the performance of the Work under this Contract. This indemnification shall also include all liabilities, damages, losses and costs including, but not be limited to, reasonable attorneys' fees arising out of any infringement of patents or copyrights incident to performing the Work by the Contractor, any Subcontractor or any person or organization employed by Contractor to perform or furnish any of the Work, or anyone for whose acts any of them may be liable.

4.4.2. With respect to all claims against Tampa Bay Water or the Engineer by any employee of the Contractor, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor (or any Subcontractor or Supplier) under workers' compensation, disability benefit or other employee benefit acts.

4.4.3. The separate consideration recited in Paragraph 4.4.1 above is in consideration of the indemnification obligation set forth in this Paragraph 4.4, as well as any other indemnification provided by Contractor under the Contract Documents.

4.4.4 Contractor acknowledges and agrees its indemnification obligations under Paragraph 4.4.1 shall be effective and fully enforceable even if any party indemnified hereunder is partially at fault or responsible for the claim; provided, however, Contractor shall not be liable or responsible for indemnifying any claim which is the result of the sole negligence of Tampa Bay Water, Engineer or any other party indemnified under Paragraph 4.4.1.

4.5 Bonds and Insurance

A. Performance Bonds, Payment Bonds and Other Bonds

4.5.1. The Contractor shall furnish Performance Bonds and Payment Bonds, each in an amount at least equal to the Contract Price, in accordance with the requirements of Sections 255.05, Florida Statutes, as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall be in the forms specified in the Contract Documents. The Contractor shall also furnish any other bonds required in the Supplementary Conditions. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-Fact who sign Bonds shall attach a certified copy of their Power of Attorney.

B. The Contractor's Insurance – General

4.5.2. The Contractor shall purchase and maintain the coverage specified in this Article and the Supplementary Conditions, and shall be written for not less than the limits of coverage specified in the Supplementary Conditions. The Contractor shall submit certificates to Tampa Bay Water itemizing the policies issued, limits of coverage, expiration dates and endorsements provided, using the form provided in the Contract Documents.

4.5.3. The Contractor shall not start or continue to perform any Work unless it has in full force and effect all required insurance as per the Contract Documents. The Contractor shall submit the insurance certificates provided with these Contract Documents for review by Tampa Bay Water prior to performing any Work. All Subcontractors and Suppliers performing Work on the Project shall provide the same types and limits of insurance as is required of the Contractor hereunder, unless otherwise expressly waived in writing by Tampa Bay Water.

4.5.4. Insurance shall be provided by insurance companies authorized to transact business and which have an agent for service of process in the State of Florida, having at least an "A-" Best's Rating and a Class VIII or better financial size category in accordance with the most current A.M. Best Company rating.

4.5.5. All the policies of insurance shall be endorsed to provide that any failure of the Contractor to comply with any provisions will not prejudice coverage for Tampa Bay Water. Deductible amounts shall be reduced or eliminated upon Tampa Bay Water's written request in which case Contractor shall be entitled to payment of any additional costs for such reduction or elimination of deductibles in accordance with Paragraph 7.2 of these General Conditions. The insurer's costs of providing the insured(s) a defense at trial in bankruptcy proceedings, and/or appeal, including attorneys' fees, and legal assistants' fees, shall not be included within the limits of the policy coverage, but shall remain the insurer's separate responsibility.

4.5.6. To the fullest extent commercially available, all the policies of insurance shall be endorsed to provide that the coverage afforded will not be cancelled, adversely changed or renewal refused until at least thirty (30) Days' prior written Notice has been given to Tampa Bay Water and the Engineer by certified mail, return receipt requested.

Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed prior to its expiration, and certificate filed with Tampa Bay Water at least thirty (30) Days prior to expiration. Tampa Bay Water and Engineer, their officers, agents, and employees shall be named as Additional Insured(s) on the Contractor's and any Subcontractor's commercial general liability, comprehensive automobile liability insurance, umbrella/excess liability and builder's risk policies for any claims arising out of work performed under the Contract Documents.

4.5.7. In case of the breach of any provision of this Article, Tampa Bay Water, at its option, may take out and maintain, at the expense of the Contractor, such insurance as Tampa Bay Water may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under the Contract Documents.

4.5.8. In carrying out any of the provisions of the Contract Documents or in exercising any authority granted by the Contract Documents, there will be no personal liability upon any board member, officer, employee or agent of Tampa Bay Water.

C. The Contractor's Liability Insurance

4.5.9. The Contractor shall purchase and maintain commercial general liability and other insurance appropriate for the Work, in the limits of at least those specified in the Supplementary Conditions, and which shall provide protection from claims itemized below which may arise out of or result from the Contractor's performance and furnishing of the Work and the Contractor's other obligations under the Contract Documents, whether the Work and the obligations be performed or furnished by the Contractor, Subcontractor or any Supplier, to wit:

a. Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees; claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees; claims for damages insured by personal injury liability coverage sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason; claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use; claims arising by operation of Laws and Regulations for damages because of bodily injury or death of any person or for damage to property; and

c. Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use of loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.

4.5.10. The Contractor's liability insurance shall include contractual liability coverage sufficient to cover the Contractor's indemnification obligations under the Contract Documents. The Contractor agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by the Contractor's obligations under the indemnification provisions.

4.5.11. The Contractor's liability insurance shall be endorsed to include as additional insured: Tampa Bay Water, the Engineer, their consultants, any subsidiaries or affiliates, and each of their directors, officers, shareholders, agents, or employees. The insurance afforded to these additional insured shall be primary insurance, and neither the coverage nor the amount of insurance provided under the Contractor's policies shall

be reduced or prorated by the existence of any other insurance applicable to any loss they may have sustained. If the Subcontractors and Suppliers do not purchase and maintain the coverage specified in this Article or the Supplementary Conditions, they shall be included in the Contractor's policies as additional insured.

4.5.12. The Contractor's liability insurance shall remain in effect until three (3) years after Final Completion and at all times after that when the Contractor may be correcting or removing and replacing Defective Work. Evidence of insurance shall be furnished to Tampa Bay Water yearly.

4.5.13. These requirements shall not be construed to limit the liability of the Contractor or its insurers. Tampa Bay Water does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

D. Property Insurance

4.5.14. The Contractor shall purchase and maintain builder's risk "all risk" completed value insurance coverage for physical loss or damage upon the Work at the Project site to its full insurable value, including completed Work and Work in progress. This insurance shall list Tampa Bay Water as an additional insured and shall include the interests of the Contractor, Subcontractors and Suppliers, the Engineer, and Tampa Bay Water's and the Engineer's consultants in the Work, all of whom shall be listed as additional insured. At a minimum, and not by way of limitation, it shall insure against extended coverage, perils of fire, lightning, windstorm, flood, rain, hail, explosions, riot, tornado, hurricane, sink holes, theft, vandalism and malicious mischief, collapse and water damage and shall include damages, losses and expenses arising out of or resulting from any insured loss incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, the Contractor shall purchase and maintain similar property insurance on parts of the Work stored on and off the Project site or in transit whether or not such Work is included in a Payment Application. The policy shall be endorsed to permit use or occupancy by Tampa Bay Water prior to Final Completion. The property insurance may have a deductible amount, which shall be borne by the Contractor, not exceeding $25,000.00. The property insurance shall comply with the requirements of this Article.

E. Waiver of Subrogation Rights

4.5.15. Tampa Bay Water and the Contractor intend that all policies of insurance shall protect Tampa Bay Water, the Contractor, and the Engineer, provide primary coverage for all losses and damages caused by the perils covered. Accordingly, all such policies shall be endorsed to provide that in the event of payment of any loss or damage the insurer shall have no rights of subrogation or other recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by the Engineer or Tampa Bay Water's and the Engineer's consultants, Tampa Bay Water will obtain separate waiver forms, and if such forms are required of any Subcontractor or Supplier, the Contractor will so obtain them.

4.6 Taxes and Charges

The Contractor shall pay any and all sales and use taxes and all withholding taxes, whether State or Federal, and pay all Social Security charges and also all State Unemployment Compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees, or sums whatsoever, which are now required to be paid or withheld under any laws, unless otherwise modified in the Supplementary Conditions.

4.6.2. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to the Project. In such event, Contractor shall cooperate and assist Tampa Bay Water, at no additional cost, with respect to the

implementation of that sales tax savings program. Tampa Bay Water and Contractor shall work together to identify particular pieces of equipment and material that are suitable for direct purchase by Tampa Bay Water. As such items are identified, Tampa Bay Water shall issue purchase orders, in accordance with a schedule mutually acceptable to Tampa Bay Water and Contractor, to the appropriate Suppliers of such items for the direct purchase of those items by Tampa Bay Water. Tampa Bay Water shall pay the Supplier of such items directly and the title for such items shall pass directly from the Supplier to Tampa Bay Water. Notwithstanding the foregoing, Contractor shall remain responsible for the ordering, scheduling, coordinating, insuring, delivery, unloading, storage, installation, operation, and warranties of all such direct purchase items, as if Contractor had purchased the items itself for incorporation into the Work. In that regard, Tampa Bay Water shall assign to Contractor all contract and warranty rights Tampa Bay Water may have against any such Supplier, so as to permit Contractor to assert warranty or other contract claims for defective or nonconforming materials or equipment directly against the Supplier. As Tampa Bay Water issues purchase orders to the Suppliers of such items, Tampa Bay Water and Contractor shall execute a Change Order which deducts from the Contract Price the amount being paid by Tampa Bay Water, plus the amount of sales tax that otherwise would have been paid on such items. As an inducement to Contractor to more fully cooperate and facilitate this sales tax savings program, Contractor shall receive as a bonus, at the time final payment is to be made hereunder, a sum equal to ten percent (10%) of the total amount of sales tax saved by Tampa Bay Water as a result of these direct purchases.

4.7 Codes, Ordinances, Permits, and Licenses

4.7.1. The Contractor shall keep itself fully informed of all applicable Laws and Regulations, which in any manner affect the Work. All permits, licenses, inspection fees, impact fees, and other costs necessary for performance of, compliance with, and/or completion of the Work shall be obtained and paid for by the Contractor, unless otherwise modified in the Supplementary Conditions.

4.7.2. If Tampa Bay Water has obtained and paid for any permits or licenses applicable to the Work, the Contractor shall meet all requirements of those permits and licenses. The Contractor shall bear all costs arising from the Contractor's responsibilities under this Article.

4.7.3 All Work is to be performed by Contractor in accordance with the most current applicable Laws and Regulations. Provided, however, in the event of any changes to any applicable Laws and Regulations that take effect after the date Contractor submitted its Bid to Tampa Bay Water, and under the circumstances it is not reasonable to assume that Contractor was or should have been aware of such changes, and Contractor provides Notice to Engineer of the changes and Engineer thereupon directs Contractor in writing to perform the Work in accordance with such changes, and such changes impact the time and/or cost of Contractor's performance of the Work, a Change Order or Change Authorization shall be issued with respect to such changes.

4.8 Superintendence

4.8.1. The Contractor shall keep at the Project site supervisory personnel who shall direct the Work in a competent manner, applying the skills, expertise and attention necessary to perform the Work in accordance with the Contract Documents. The Contractor shall designate, in writing before starting Work, a competent Project superintendent who shall be an employee of the Contractor and shall have complete authority to represent and to act for the Contractor. The Contractor shall notify Tampa Bay Water

and Engineer in writing prior to any change in superintendent assignment. If Tampa Bay Water objects to the Contractor's superintendent, the Contractor shall submit a replacement superintendent at no increase in Contract Price nor extension in Contract Time. The Contractor shall be responsible for all construction means, methods, techniques, sequences, and procedures, and for providing adequate safety precautions and coordinating all portions of the Work.

4.8.2. If Tampa Bay Water or the Engineer object to any of the Contractor's personnel, by reason of being unfit, incompetent, unskilled, disorderly, intemperate, or otherwise hindering the Work, the Contractor shall promptly correct the problem and, if required by Tampa Bay Water or the Engineer, remove such personnel from the Work. Failure to comply with this provision shall constitute a material breach of the Contract and be grounds for withholding payment.

4.9 Reception of Engineer's Communications

4.9.1. The Contractor's Representative at the Project site shall have authority to act on behalf of and contractually bind the Contractor. All communications given to the Contractor's Representative shall be deemed given to the Contractor. Communications of major importance will be confirmed in writing upon request from the Contractor.

4.9.2. The Engineer may schedule Project meetings for the purposes of discussing and resolving matters concerning the various elements of the Work. The time and place for these meetings and the names of persons required to be present shall be determined by Tampa Bay Water and the Engineer. The Contractor shall comply with these attendance requirements and shall also require its Subcontractors and Suppliers to comply.

4.10 Safety

4.10.1. The Contractor shall be solely responsible for the condition of the Project site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal Working Hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable Laws and Regulations, as well as all applicable safety rules and regulations promulgated by Tampa Bay Water from time to time. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from compliance with the obligations and penalties set forth therein

4.10.2. The Contractor shall develop and maintain for the duration of this Project a safety program, and a written safety plan specific to the Project that will effectively incorporate and implement all safety provisions required by any Laws and Regulations. The Contractor shall appoint an employee assigned to the Work who shall be responsible to supervise and enforce compliance with the safety program.

4.10.3. The Contractor, as a part of its safety program, shall maintain at its office or other prominent place at the Project site, the written safety plan and safety equipment applicable to the Work as prescribed by the aforementioned authorities and all Articles necessary for giving first aid to the injured. The written safety plan shall establish the procedures for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the Project site.

4.10.4. The Contractor must give Tampa Bay Water and the Engineer prompt Notice of all accidents or injuries whatsoever arising out of, or in connection with, the performance of the Work, whether on or adjacent to the Project site, giving full details in writing, including statements of witnesses. The prompt Notice required hereunder shall be

given within 24 hours with respect to any injuries, and within two (2) working days as to all other accidents.

4.10.5. If a claim is made by anyone against the Contractor or any Subcontractor for any reason including, but not limited to, any accident, the Contractor shall give Tampa Bay Water and the Engineer prompt Notice, giving full details of the claim.

4.11 Protection of Work and Property

4.11.1. The Contractor shall have full responsibility for locating all underground utilities in advance of excavation (whether they are indicated on the Contract Documents or indicated by visible markers); scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting the underground utilities; repairing any damage done to the satisfaction of Tampa Bay Water or the owners of those underground utilities; giving prompt Notice to Tampa Bay Water and the Engineer of any newly discovered underground utility; and the safety, protection and repairing of any damage done to any affected Work. All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price and in the Progress Schedule for performing the Work within the Contract Time; except that in the case of newly-discovered underground utilities, those costs and times shall, upon proper documentation, be considered pursuant to the General Conditions, Article 6.8. Differing Site Conditions, for adjustment of the Contract Price and/or the Contract Time.

4.11.2. The Contractor shall at all times safely guard and protect from damage Tampa Bay Water's property, property on which the Project is located if not owned by Tampa Bay Water, adjacent property, and its own Work from injury or loss. The Contractor shall provide all facilities required for protection of the Work according to all Laws and Regulations and local conditions.

4.11.3. The Contractor shall protect its Work and materials from damage due to the nature of the Work, the natural elements, carelessness of others, or from any cause, until Final Completion of the Work.

4.11.4. The Contractor shall notify owners of adjacent property (including underground utility owners) not less than 48 hours, or the time period required by Laws and Regulations, whichever period is longer, prior to the Work affecting the property, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by the Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at the Contractor's expense. The Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to the Project site.

4.12 Responsibility of Contractor to Act in Emergency

In case of an emergency which threatens loss or injury to persons or property, the Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and immediately provide Notice to Tampa Bay Water and the Engineer of its action. Any claim for compensation by the Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the Engineer and the amount of compensation if any, shall be determined by mutual Contract.

4.13 Materials and Appliances

4.13.1. Unless otherwise modified in the Supplementary Conditions, all materials to be incorporated into the Work shall be new. The Contractor shall furnish satisfactory evidence to the Engineer as to the kind and quality of materials.

4.13.2. In selecting and/or approving equipment and materials for installation in the Project, neither Tampa Bay Water nor the Engineer shall be responsible for injuries or claims resulting from failure of the equipment or material to comply with Laws and Regulations and applicable federal, state, and local safety codes or requirements, or other applicable safety requirements, or failure due to the Work being Defective.

4.14 Contractors' and Manufacturers' Compliance with State Safety Laws and Regulations, OSHA, and Other Code Requirements

The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar safety items required by the state and federal (OSHA) industrial authorities and other Laws and Regulations. Further, any features of the Work subject to such safety regulations shall be fabricated, furnished, and installed (including installation of Tampa Bay Water-furnished equipment) in compliance with these requirements. Subcontractors and Suppliers shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all Suppliers and Subcontractors of the provisions of this Article.

4.15 Submittals

4.15.1. After checking and verifying all field measurements and after complying with all applicable procedures, Contractor shall submit to the Engineer for its review all Submittals, which shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to Submittals. All Submittals shall be promptly submitted by Contractor so as to cause no delay to the completion of the Work. All Submittals shall be identified as Engineer may require. The data shown shall be complete with respect to quantities, dimensions, specified performance, and design criteria, materials, and similar data sufficient to enable Engineer to review the information.

4.15.2. All Submittals shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which it is intended. The Contractor shall review all Submittals prior to submission, for compliance with the Contract Documents and shall provide specific written certification of compliance.

4.15.3. Before each submission, the Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and for compliance with the Contract Documents. At the time of each submission, Contractor shall provide specific written Notice of each variation from the requirements of the Contract Documents, and in addition, shall cause a specific notation of each such variation to be made on each Submittal submitted for review and approval. In the absence of such notification, the approval of a Submittal shall not waive or alter the original requirements of the Contract Documents.

4.15.4. The Contractor shall make all corrections required by Engineer, and shall resubmit the required number of corrected copies of Submittals and new samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous Submittals.

4.15.5. Where a Submittal or sample is required by the Contract Documents, any related Work performed prior to the Engineer's review and approval of the pertinent Submittal shall be at the Contractor's sole expense and responsibility.

4.15.6. Submittals are to demonstrate how the Contractor intends to conform with the design of the Project and the information given in the Contract Documents.

4.15.7. All costs incurred by Tampa Bay Water and the Engineer for the review of a particular Submittal after the Engineer's second review shall be borne by the Contractor, and shall be reimbursed by the Contractor to Tampa Bay Water. Tampa Bay Water may withhold such costs from payments to the Contractor.

4.15.8. The Contractor shall not be entitled to any claim for additional time or compensation caused by the review of any resubmittals.

4.16 Substitution of Materials

4.16.1. Whenever materials, equipment, type of construction, or process are described in the Contract Documents by using a brand name, make, manufacturer, supplier, patent, catalog number, or technique, the naming or Specifications of the item is intended to denote the standard of quality and essential characteristics of the item or process required by Tampa Bay Water. Unless words indicating that no substitution is permitted are used, items from prospective suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor in its written application for the substitution to allow the Engineer to determine whether the material or equipment proposed (1) will perform at least equally well, function, and achieve the results called for by the design, (2) is at least of equal materials of construction, quality and necessary essential design features, (3) is suited to the same use as that named or specified, (4) conforms to the desired detailed requirements for that item including, but not limited to, durability, strength, appearance, dimensions, aesthetics (where aesthetics are essential), safety, service, comparable usefulness, reliability, economy of operation, and ease of maintenance, (5) evidences a proven record of performance, and (6) will not extend the Contract Time or increase the Contract Price. Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Tampa Bay Water's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work.

4.16.2. Each application for a substitution shall certify that the proposed substitute will meet each of the six criteria itemized in Paragraph 4.16.1., and that the evaluation and acceptance by the Engineer of the proposed substitute will not prejudice completion of the Work within the Contract Time. All variations of the substitute from the item named or specified shall be identified (operation, materials or construction finish, thickness or gauge of material dimensions, loads, tolerances, deleted/added features, etc.), and information regarding available maintenance, repair, and replacement service shall be indicated. The Contractor is solely responsible for verifying that substitutes are in accordance with the Contract Documents, and that dimensions, arrangement, design, and construction details, and all other features of substitutes are suited to the specified purpose.

4.16.3. A proposed substitute will be accepted as equivalent or "Or-Equal" to that named or specified if, in the Engineer's judgement, it meets the criteria in Paragraph 4.16.1. No substitute shall be utilized, ordered, or installed without the Engineer's prior written acceptance.

4.17 Tests, Samples, and Observations

4.17.1. The Contractor shall furnish, with no increase in Contract Price, the necessary test pieces and samples, including facilities and labor for obtaining the same, as required by the Contract Documents or requested by the Engineer. When required by the Contract Documents or requested by the Engineer, the Contractor shall furnish certificates of any designated tests of materials and equipment.

4.17.2. The Contractor shall establish a quality control system to ensure sufficient supervision, inspection and testing of all items of Work, including those of the Subcontractors and Suppliers, and to ensure conformance to the applicable Contract Documents with

respect to products, workmanship, construction, maintenance, finish, functional performance, and identification. The Contractor's quality control system shall include checking, approval, and coordination of Submittals and the surveillance of all specified tests.

4.17.3. Tampa Bay Water, the Engineer, authorized government agents and their representatives shall at all times be provided safe access to the Work whenever it is in preparation or progress, and the Contractor shall provide facilities for such access and for observations, including maintenance of temporary and permanent access.

4.17.4. If the Contract Documents, Laws and Regulations or any public authority requires any Work to be specially tested or approved, the Contractor shall give timely Notice to the Engineer of its readiness for testing or approval.

4.17.5. If any testing, inspection, or approval reveals failure of any part of the Work to conform to the Contract Documents, the Contractor shall not recover any costs made necessary by that failure, and shall reimburse Tampa Bay Water for all direct, indirect, and consequential costs made necessary by that failure including those of repeated procedures, and compensation for the Engineer's services. Such reimbursement may be withheld from payment to the Contractor.

4.17.6. If a portion of the Work is covered contrary to the Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required by the Engineer, be uncovered for the Engineer's examination and be recovered at the Contractor's expense without change to the Contract Time or Contract Price. If any Work should be covered up without approval or consent of the Engineer, re-examination of questioned Work may be ordered by the Engineer, and if so ordered, the Work shall be uncovered by the Contractor. If it is found that such Work is Defective, Contractor shall bear all direct, indirect, and consequential costs of such uncovering, exposure, observation, inspection, correction of the Defective Work, and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and Tampa Bay Water shall be entitled to reimbursement or to deduct the costs from payment to the Contractor. If it is found that such Work is not Defective, Tampa Bay Water shall reimburse Contractor for the cost of uncovering, inspecting, and recovering such Work.

4.18 Royalties and Patents

The Contractor shall pay all royalty and patent fees unless otherwise specified. Pursuant to the indemnity provisions of the General Conditions, Article 4.4, Indemnity, the Contractor shall defend all suits or claims for infringement of any patent rights and shall save Tampa Bay Water and the Engineer harmless from any and all loss, including reasonable attorneys' fees and legal assistants' fees on account thereof.

4.19 Contractor's Right to Terminate Contract

If the Work is stopped under an order of any court or other public authority for a period of more than 3 months, through no act or fault of the Contractor, its Subcontractors, or their respective employees, or if Tampa Bay Water should fail to pay the Contractor within forty-five (45) Days after the time specified in the General Conditions, Article 7.1. Partial Payments, any sum recommended by the Engineer and approved by Tampa Bay Water, then the Contractor may, upon fifteen (15) Days written Notice to Tampa Bay Water and the Engineer, suspend Work. If Tampa Bay Water fails to correct the conditions, which under this Article justify the Contractor's suspension of the Work, the Contractor may, after fifteen (15) Days additional written Notice to Tampa Bay Water and the Engineer, terminate the Contract. Upon termination, the Contractor's sole and exclusive remedy shall be the same as and limited to those rights set forth in Paragraph 6.6.6 hereafter. Contractor shall not be entitled to any

additional rights or remedies against Tampa Bay Water, including loss profits and other damages, all such other remedies being expressly waived by Contractor.

4.20 Warranty and Guarantee; Correction of Defective Work During Correction Period

4.20.1. The Contractor warrants and guarantees to Tampa Bay Water that all Work will be in accordance with the Contract Documents and will not be Defective, including all Work performed or furnished by any Subcontractor or Supplier. This warranty and guarantee is in addition to and shall survive the Contractor's obligations under the Correction Period set forth in this Article.

4.20.2. The Contractor shall make, at its own expense, all repairs or replacements necessitated by Defective Work, and pay for any damage (whether to the Work itself or other property), including routine repairs resulting from such Defective Work, which becomes evident within the one (1) year after the date of Substantial Completion established by the Engineer for the entire Work or for specified items of Work, or within one (1) year after the date of Final Completion of the Work if Tampa Bay Water did not operate or use the entire facility between the Substantial Completion date and Final Completion, or within such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee required by the Contract Documents ("Correction Period"). After the Correction Period, Contractor shall remain liable to Tampa Bay Water, and its successors, for Defective Work and damage resulting from such Defective Work, but such liability shall not include an obligation to make routine repairs, unless otherwise agreed to in writing.

4.20.3. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all other materials and equipment used in the Project which have a cost of more than $1,000.00 shall require an express warranty from the manufacturer(s) and the Supplier(s) to Tampa Bay Water that the materials (1) are new, (2) have been manufactured and supplied in accordance with the requirements of the Contract Documents, and (3) are not Defective. Such express warranty shall be for a period of not less than the Correction Period.

4.20.4. Defective Work identified for correction during the Correction Period but remaining Defective after its expiration shall be considered as part of the obligations of the warranty or guarantee.

4.20.5. The Contractor agrees to defend, indemnify and hold Tampa Bay Water and the Engineer harmless from liability of any kind arising from damage due to Defective Work. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from Tampa Bay Water or the Engineer. If the Contractor fails to make the repairs and replacements promptly, or in an emergency, where delay would cause serious risk, loss, or damage, Tampa Bay Water may have the Defective Work corrected or the rejected Work removed and replaced, and the Contractor and its Surety shall be liable for the cost thereof.

4.20.6. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all materials shall permit the Contractor to assign to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S). Contractor hereby assigns to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S) of all materials used in the Work.

4.20.7. The specified warranties and guarantees and the Contractor's obligations for correction of Work specified in this Article are in addition to and not in limitation of any other specific remedies provided in the Contract Documents or by Laws and Regulations.

4.20.8. Tests, inspections or approvals shall not in any way relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents, or to warrant and guarantee the Work as provided in the Contract Documents.

4.20.9. These provisions shall not be construed to prohibit Tampa Bay Water from seeking damages or any remedy at law or equity against Contractor for breach of the Contract, Defective Work or the warranties provided herein.

4.21 Allowances

Contractor shall not proceed with any Allowance item unless and until it has received express written authorization from Tampa Bay Water. The Contract Price shall be adjusted by Change Order or Change Authorization based upon the actual cost of the Allowance items authorized in writing by Tampa Bay Water.

4.22 Contractor's Representations:

4.22.1. Contractor has examined and carefully studied the Contract and Contract Documents.

4.22.2. Contractor has visited the Work Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

4.22.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.22.4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions (if any) at or contiguous to the Work site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Work site which have been identified or made available by Tampa Bay Water; and (2) reports and drawings of Hazardous Environmental Conditions (if any) at the Work site which have been identified or made available by Tampa Bay Water.

4.22.5. Contractor is aware of the general nature of Work to be performed by Tampa Bay Water and others at the Work site that relates to the Work to the extent indicated in the Contract Documents.

4.22.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

4.22.7. Contractor has given Tampa Bay Water written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Tampa Bay Water is acceptable to Contractor.

4.22.8. The Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

4.22.9. Contractor's execution of this Contract is not based upon their reliance upon any representation, understanding or Contract not expressly set forth herein. Tampa Bay Water has not made any representation to Contractor except as expressly set forth herein.

4.22.10. Contractor is organized and exists under the laws of the State of Florida and is in good standing in the State of Florida and is authorized to do business in the State of Florida.

4.22.11. Contractor has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein and therein, all of which have been duly authorized by all proper and necessary action of the governing body of the Contractor. Contractor is in compliance with all laws and regulatory requirements to which they are subject.

4.22.12 Contractor executes this Contract as a free and voluntary act, without any duress, coercion, or undue influence exerted by or on behalf of Tampa Bay Water or any other party.

4.22.13 This Contract is a valid, binding and enforceable obligation of Contractor, and does not violate any law, rule, regulation, contract or Contract otherwise enforceable by or against Contractor, except as the same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

5. Tampa Bay Water/Owner

5.1 General Provision

5.1.1. Written communications from Tampa Bay Water to the Contractor shall in general be issued through the Engineer, but if issued directly by Tampa Bay Water, a copy shall be provided to the Engineer.

5.1.2. Tampa Bay Water may issue without negotiation, and at its discretion, Change Authorizations, as provided in the Contract Documents. Only Tampa Bay Water is empowered under the Contract Documents to order changes in the Work that affect Contract Time or Contract Price or quality.

5.1.3. If the Work is Defective, or the Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in a way that the completed Work will conform to the Contract Documents, Tampa Bay Water may order the Contractor to stop the Work, or any portion of the Work in question, until the cause for the stop order has been eliminated; however, this right of Tampa Bay Water to stop the Work shall not give rise to any duty on the part of Tampa Bay Water to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not be allowed to recover any costs resulting from an order to stop the Work, and the Contractor shall reimburse Tampa Bay Water for all direct, indirect, or consequential costs attributable to an order to stop the Work; those costs to be documented as to reasonableness, and Tampa Bay Water shall be entitled to an appropriate decrease in Contract Price, or to withhold such decrease against any amounts recommended for payment. The Contractor shall remain responsible for maintaining and performing in accordance with the Progress Schedule and shall not be entitled to any extension in Contract Time or any increase in Contract Price.

5.1.4. Neither Tampa Bay Water, the Engineer, nor Tampa Bay Water's consultants will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions, and programs related to safety, and neither Tampa Bay Water nor Engineer or any of their consultants shall be responsible for the Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

6. Progress of the Work

6.1 Beginning of the Work

6.1.1. Prior to starting the Work, the Contractor shall prepare and submit to the Engineer, a Progress Schedule and a schedule for Submittals in a format acceptable to Tampa Bay Water and the Engineer and as specified in the General Requirements showing the dates on which each part or division of the Work is expected to be started and completed, and a schedule for Submittals.

6.1.2. No sooner than ten (10) Days before the Notice to Proceed is issued, a pre-construction conference shall be held to review the steps undertaken by the Contractor to comply with the schedule requirements; review the qualifications of the Contractor's on-site personnel; review the Contractor's plans for lay-down and staging

areas, construction traffic, and access to the Project site, parking, communications, procedures, and other similar matters.

6.2 Schedules and Progress Reports

6.2.1. The Progress Schedule or schedule recovery actions, once reviewed and accepted by Tampa Bay Water and Engineer, shall be utilized to report progress or schedule recovery actions, and to evaluate the Contractor's Payment Applications. The Contractor shall be required to keep Tampa Bay Water informed of the progress of the Work by delivering updated Progress Schedules prior to the seventh (7th) day of each month for Tampa Bay Water and Engineer' review and acceptance. Contractor's Submittal of acceptable monthly updates to the Progress Schedules is a condition precedent to Tampa Bay Water's obligation to make payments to Contractor hereunder. Notwithstanding anything in the Contract Documents to the contrary, it is expressly acknowledged and agreed that no review or acceptance of any Progress Schedule by Tampa Bay Water or Engineer shall be construed as an admission or acknowledgement by Tampa Bay Water or Engineer that any such Progress Schedule was either reasonable or achievable.

6.2.2. Prior to the seventh (7th) day of each month, the Contractor shall submit to the Engineer, an itemized Progress Report of the delivery status of purchased equipment and material, Shop Drawings and the status of shop and field fabricated Work. These Progress Reports shall indicate, but shall not be limited to, the dates of the purchase orders, the estimated delivery dates of any material and/or equipment, and cause(s) of delays, if any.

6.2.3. In addition to retainage, Tampa Bay Water shall have the right to withhold all or any portion of Progress Payments for the Work if the Contractor fails to update and submit the Progress Schedule(S) and Progress Reports as specified.

6.2.4. Neither Tampa Bay Water's nor the Engineer's review of the Contractor's Progress Schedule, or Tampa Bay Water's decision to raise or not to raise any objections about the Contractor's Progress Schedule, shall impose on Tampa Bay Water or the Engineer any responsibility for the timing, planning, scheduling, or execution of the Work, nor relieve Contractor of its obligation to complete the Work in a timely manner.

6.3 Prosecution of the Work

6.3.1. Tampa Bay Water and the Contractor agree that time is the essence with respect to Contractor's performance under the Contract Documents. The Contractor shall perform the Work at such time, and in or on such part(s) of the Project site as may be required to complete the Work as required by the Contract Documents.

6.3.2. If the Contractor desires to carry on Work at night or otherwise outside of the Working Hours, it shall give timely Notice to Tampa Bay Water and Engineer to allow satisfactory arrangements to be made for observing the Work in progress. The Contractor shall reimburse Tampa Bay Water for all of Tampa Bay Water's expenses associated with the Work performed outside of normal Working Hours.

6.3.3. The Contractor shall carry on the Work and adhere to the most recent approved Progress Schedule during all disputes or disagreements with Tampa Bay Water. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. Upon receipt of a written order from the Engineer or Tampa Bay Water, the Contractor will immediately proceed with the Work regardless of whether a Change Order or Change Authorization has or has not been issued.

6.4 Tampa Bay Water's Right to Retain Imperfect Work

If any part or portion of the Work completed under the Contract Documents shall prove Defective, Tampa Bay Water shall have the right in its sole discretion, to retain such Work and may make such deductions in the payment due the Contractor as may be just and reasonable.

6.5 Tampa Bay Water's Right to do Work

Should the Contractor neglect to prosecute the Work in conformance with the Contract Documents or neglect or refuse at its own cost to remove and replace Work as shall have been rejected by the Engineer, then Tampa Bay Water may notify the Contractor and its Surety of the condition, and after seven (7) Days written Notice to the Contractor and its Surety, or without Notice if an emergency or danger to the Work or public exists, and without prejudice to any other right which Tampa Bay Water may have under the Contract Documents, take over that portion of the Work which has been improperly executed, and correct the deficiencies and deduct the cost thereof from the payments then or thereafter due the Contractor.

6.6 Tampa Bay Water's Right to Terminate

6.6.1. At any time, Tampa Bay Water may request the Contractor to provide adequate assurances of its ability to complete the Work in the manner and times designated in the Contract Documents. The types of adequate assurances shall be designated by Tampa Bay Water and shall consist of reasonable means for the Contractor to prove its ability to perform.

A. Termination for Cause

6.6.2. Tampa Bay Water, shall have full power and authority to terminate the services of the Contractor seven (7) Days after providing Notice to the Contractor and its Surety, or sooner if safety to persons or property is in question, because:

a. the Contractor refuses or fails to prosecute the Work, or separable part of the Work, with the diligence that will cause its completion within the corresponding Contract Time, including any authorized adjustments; supply sufficient skilled workers, materials or equipment in adherence with the Progress Schedule; or comply with the Progress Schedule requirements; or
b. the Contractor fails to complete the Work, or any separable part, within the corresponding Contract Time, including any authorized adjustments; or
c. the Contractor refuses or fails to make prompt payment to Subcontractors, disregards Laws and Regulations; refuses or fails to perform the Work in conformance with the Contract Documents; or violates any provision of the Contract Documents; or
d. the Contractor fails to provide Tampa Bay Water with adequate assurances in accordance with this Article, that the Contractor can complete the Work in accordance with the Contract Documents.

6.6.3. If, after the furnishing of said Notice, the Contractor and the Surety fail to cure or correct the default, Tampa Bay Water may terminate Contractor's right to perform the Work and take possession of the Project site and of all materials, tools, and appliances thereon, and require Contractor to assign to Tampa Bay Water any or all of Contractor's subcontracts with Subcontractors or Suppliers, as directed by Tampa Bay Water, and finish the Work by whatever method it may deem expedient and charge the cost thereof to the Contractor and Surety. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finally completed. If the expense of completing the Work exceeds such unpaid balance of the Contract Price, the Contractor and its Surety shall pay the difference to Tampa Bay Water.

6.6.4. Where the Contractor's rights to perform the Work have been so terminated by Tampa Bay Water, the termination shall not affect any rights or remedies of Tampa Bay Water against the Contractor then existing or which may accrue after termination. Any retention or payment of monies due the Contractor by Tampa Bay Water shall not release the Contractor from its contractual liability or any other liability.

B. Termination for Convenience

6.6.5. Upon seven (7) Days written Notice to the Contractor and its Surety, Tampa Bay Water may, without cause and without prejudice to any other right or remedy, elect to terminate the Contractor's services under the Contract Documents in whole or in part. Upon receipt of such Notice, the Contractor shall immediately proceed in accordance with any specific provisions or instructions, to protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination.

6.6.6. In any such termination for the convenience of Tampa Bay Water, the Contractor, as its sole and exclusive remedy, shall be entitled to payment for that portion of the Contract Price attributable to the Work completed, prior to receipt of the Notice of termination, in accordance with the Contract Documents, together with Contractor's reasonable and direct out-of-pocket termination expenses; provided, however, Contractor shall not be entitled to any further or additional recovery against Tampa Bay Water including, but not limited to, any lost profit on Work not performed or any other damages however categorized.

6.6.7. If, after Notice of termination for cause as provided in Paragraph 6.6.A above, it is determined the Contractor was not in default or that Tampa Bay Water was not entitled to the remedies set forth therein, the termination shall be deemed to have been for the convenience of Tampa Bay Water and Contractor's rights and remedies shall be the same as and limited to those set forth in Paragraph 6.6.6 above.

6.6.8. No waiver, express or implied, of any covenant, provision, right or remedy herein shall at any time thereafter be held to be a waiver of the terms and conditions of this Article.

6.7 Delays and Extensions of Time

6.7.1. If the Contractor is delayed in the progress of the Work by any act or neglect of Tampa Bay Water or the Engineer, or by any other contractor retained by Tampa Bay Water, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature, or any other cause beyond the fault and neglect of the Contractor, within 48 hours of the start of the occurrence, the Contractor shall provide Notice to Tampa Bay Water. Within seven (7) Days after the event which caused the delay has ended, the Contractor must provide full documentation of the impact of the delay. The Contract Time may be extended by Change Order or Change Authorization for such reasonable time as the Engineer and Tampa Bay Water determine. No extension of time will be granted to the Contractor for delays occurring to parts of the Work that have no measurable impact on the completion of the total Work. No extension of Contract Time will be considered for weather conditions reasonably anticipated for the area in which the Work is being performed. Reasonably anticipated weather conditions will be based on official records of monthly precipitation and other historical data. Adverse weather conditions, if determined by the Engineer to be of a severity that would impact progress of the Work, may be considered as cause for an extension of Contract Time. No request by the Contractor for an equitable adjustment to the Contract Time under this Article will be allowed, unless the Contractor has given the Notice and documentation within the times required.

6.7.2. Delays in delivery of equipment or material purchased by the Contractor or its Subcontractors or Suppliers shall not be considered as a cause for delay. The Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

6.7.3. Within 21 days (unless a longer period of time is reasonably required) after the Contractor submits to Tampa Bay Water and the Engineer a written request for an extension of time, the Engineer will present its written opinion to Tampa Bay Water as to whether an extension of time is justified and, if so, its recommendation as to the

number of Days for time extension. Tampa Bay Water shall make the final decision on all requests for extensions to Contract Time.

6.7.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

6.7.5. Notwithstanding anything in the Contract Documents to the contrary, no interruption, interference, inefficiency, suspension or delay in the commencement or the progress of the Work for any cause whatever, including those for which Tampa Bay Water or Engineer may be responsible, in whole or in part, shall relieve Contractor of its duty to perform or give rise to any right to damages or additional compensation from Tampa Bay Water. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Tampa Bay Water will be the right to seek an extension to the Contract Time, in accordance with the procedures set forth in this Article 6.7; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage for Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion. Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Tampa Bay Water or Engineer, and such delays have a cumulative total of more than 30 calendar days, Contractor may make a claim, in accordance with the procedures set forth in Article 7.3, for its actual and direct delay damages accruing after said 30 calendar days.

6.8 Differing Site Conditions

6.8.1. The Contractor shall promptly, and before the conditions are disturbed, provide Notice to Tampa Bay Water and the Engineer of:

a. any subsurface or latent physical conditions at the Project site which differ materially from those (i) observed by Contractor prior to the Submittal of its Bid or (ii) indicated in the Contract Documents or the Existing Condition Documents referenced in the Information to Bidders,

or

b. any unknown physical conditions at the Project site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

6.8.2. The Engineer shall investigate the reported conditions promptly after receiving the Notice from the Contractor. If the conditions do materially differ and cause an increase or decrease in the Contractor's cost or time for performance of the work, an equitable adjustment shall be made in accordance with the procedures set forth in Articles 6.7 and 7.3 herein. Notwithstanding the provisions of this paragraph, if the reported condition in question would have been revealed by a thorough on-site inspection, Tampa Bay Water in its sole discretion shall have the right to deny any such claim for an adjustment in the Contract Price or Contract Time.

6.8.3. No request by the Contractor for an equitable adjustment to the Contract Price or Contract Time for differing site conditions will be allowed if made after the time periods set forth in Articles 6.7 or 7.3, or Final Completion, whichever first occurs.

6.9 Liquidated Damages

Should the Contractor fail to achieve Substantial Completion of the Work within the Contract Time, as that time may be adjusted pursuant to the terms of the Contract Documents, the Contractor shall pay to Tampa Bay Water the liquidated damages as set forth in the Contract. Tampa Bay Water shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Contractor. If an insufficient amount of the Contract Price

remains, the amount of liquidated damages shall be due and collectible from the Contractor and its Surety, jointly and severally.

6.10 Other Contracts

6.10.1. Tampa Bay Water reserves the right to let other contracts in connection with the Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their equipment and materials for the execution of their work and shall properly interface and coordinate its Work with theirs.

6.10.2. If the execution of any part of the Work depends on the performance of any other contractor, utility service company or Tampa Bay Water, the Contractor shall promptly provide Notice to the Engineer of any defects or deficiencies that render it incompatible with the intended results of these Contract Documents. The Contractor's failure to provide the required Notice shall constitute an acceptance of the work by others as being fit and proper for integration with the Work.

6.11 Use of Premises

6.11.1. The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to the areas shown on the Contract Documents or indicated by Laws and Regulations, permits, easements, licenses or directions of Tampa Bay Water or the Engineer. The Contractor shall provide, at its own expense, any rights-of-way or access to the Work which it may require outside the limits of Tampa Bay Water's property interests or easements and shall furnish Tampa Bay Water and the Engineer copies of permits and Contracts for use of property outside that provided by Tampa Bay Water prior to entering said properties.

6.11.2. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.11.3. The Contractor shall take all precautions to minimize inconvenience to residents living adjacent to the Project site by maintaining access to driveways and providing dust control for the Project site and noise control devices for dewatering equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work.

6.12 Substantial and Final Completion Dates

6.12.1. When the Contractor considers that the entire Work or designated portion thereof has progressed to the point where it is sufficiently complete in accordance with the Contract Documents, and it has been proven to be ready for its intended use, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work or designated portion thereof, Substantially Complete (except for listed items to be completed or corrected prior to Final Completion). The Contractor shall prepare an initial list of items of Work to be corrected or completed for Final Completion and attach that list to the above referenced Notice. Within a reasonable time after that, Tampa Bay Water, the Contractor, and the Engineer shall make an inspection to determine the status of completion.

6.12.2. If Tampa Bay Water and Engineer agree that Substantial Completion of the Work has been achieved, the Engineer shall issue a Certificate of Substantial Completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that Tampa Bay Water shall assume the cost of operating such equipment. Said Certificate shall not be considered as Final Completion of any portion of the Work or relieve the Contractor from completing the remaining Work within the specified time and in compliance with the Contract Documents. The Engineer shall review and supplement the Contractor's initial list of items of Work to be corrected or

completed for Final Completion and such revised and supplemental list shall be attached to the Certificate of Substantial Completion. Provided, however, the failure to include any incomplete or Defective Work on said list shall not relieve or excuse the Contractor from completing all of the Work in accordance with the requirements of the Contract Documents.

6.12.3. When the Contractor considers the entire Work has progressed to the point where it is complete in accordance with the Contract Documents, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work to have reached Final Completion.

6.13 Performance Testing

Operating equipment and systems shall be performance tested in accordance with the General Requirements and in the presence of the Engineer to demonstrate compliance with the Contract Documents. The Contractor shall schedule such testing with the Engineer at least one (1) week in advance of the planned date for testing.

6.14 Tampa Bay Water's Use of Portions of the Work

Following issuance of the Notice of Substantial Completion, Tampa Bay Water may occupy and operate the Work. Such occupancy and operation shall not be considered as Final Completion of any portion of the Work, nor shall such occupancy or use be considered as cause for an extension of the Contract Time.

6.15 Cutting, Patching, or Fitting

The Contractor shall do all cutting, patching, or fitting of its Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown in or reasonably implied by the Contract Documents.

6.16 Cleaning Up

The Contractor shall, at all times, keep property on which Work is in progress and the adjacent property free from accumulations of waste material or rubbish caused by employees or by the Work. Upon completion of the construction, the Contractor shall remove all temporary structures, rubbish caused by employees, Suppliers, Subcontractors, or the Work, and waste materials resulting from its operations.

6.17 Intoxicants

The Contractor and persons under its employ shall not bring onto, possess, sell, or use alcohol, narcotics, drugs (other than prescription drugs, provided the person in possession of the drug has a valid prescription in his or her name, or over-the-counter drugs which may be purchased legally by the person), or controlled substances while on the Project site, including parking lots, at any time, including all breaks and lunch periods. The Contractor and persons under its employ shall not report to, or commence, or continue to work while under the influence of alcohol or any drugs, regardless of whether those drugs were legally or illegally taken. The Contractor and persons under its employ shall not undertake any activities at the Project site which create a nuisance or improperly disturbs or interferes with Tampa Bay Water's operations at the Project site or the use and enjoyment of any adjacent properties by their respective owners. Gambling on the Project site is prohibited.

7. Payment

7.1 Partial Payments

A. General

7.1.1. Within ten (10) days after commencing the Work, but in any event prior to the Submittal of its first Payment Application, Contractor shall submit to Engineer, for Engineer's and Tampa Bay Water's review and approval, a proposed schedule of values which distributes the Contract Price among the various items and categories of Work to be performed. Said schedule of values shall be in such form and contain such detail

as may be required by Engineer and Tampa Bay Water. The final approved schedule of values shall serve as the basis for partial payments and shall be incorporated into the Payment Application form provided by Tampa Bay Water. Nothing contained in this Article shall be construed to affect the right of Tampa Bay Water or Engineer to reject, the whole or any part of the Work, should such Work be found to be Defective. All estimated quantities of Work for which partial payments have been made are subject to review and correction on the final Payment Application. Payment by Tampa Bay Water and acceptance by the Contractor of partial payments based on Unit Price Work, shall not in any way constitute acceptance of the estimated Unit Price Work by Tampa Bay Water.

7.1.2. The Contractor shall provide Tampa Bay Water with copies of its written daily reports at weekly intervals. Refusal of the Contractor to provide its daily reports shall be cause for Tampa Bay Water to withhold payments until the Contractor's daily reports have been provided.

B. Estimate

7.1.3. The Contractor shall not submit more than one Payment Application per month with respect to the Work. Within twenty-five (25) Business Days following submission of a complete and accurate Payment Application to the Engineer, approved by the Engineer, and acceptable to Tampa Bay Water, Tampa Bay Water shall make partial payments to the Contractor on the basis of Work performed during the preceding calendar month by the Contractor. The final working day of each month shall be used as the day for measurement of Work performed.

7.1.4. The Engineer shall, within twenty-five (25) Business Days after receipt of each Payment Application for payment, provide Notice to Tampa Bay Water recommending payment to the Contractor, or return the request to the Contractor providing Notice of the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the request. Payment shall be made by Tampa Bay Water within ten (10) Business Days after a corrected payment request is received.

7.1.5. The Engineer may refuse to recommend and Tampa Bay Water may refuse to pay the whole or any part of any payment, if in the Engineer's or Tampa Bay Water's opinion, the Contractor is not entitled to any such payment. The Engineer may also refuse to recommend and Tampa Bay Water may refuse to pay any payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests of any Work, retract any previous recommendation or payment to such extent necessary in the Engineer's or Tampa Bay Water's opinion to protect Tampa Bay Water from loss for reasons not limited to:

a. The Work is Defective, or completed Work has been damaged requiring correction or replacement;
b. The Contract Price has been reduced because of Change Order;
c. Tampa Bay Water has been required to correct Defective Work or complete all or portions of the Work;
d. The Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents;
e. Written claims have been made against Tampa Bay Water or liens have been filed in connection with the Work;
f. The Contractor's failure to make payment to Subcontractors OR Suppliers for labor, materials, or equipment;
g. Amounts owed by Contractor to Tampa Bay Water as Liquidated Damages; or

h. Any other amounts which may be owed to Tampa Bay Water by Contractor pursuant to the terms of the Contract Documents.

C. Deduction from Estimate

7.1.6. Unless modified in the Supplementary Conditions, Tampa Bay Water shall withhold from each partial payment, five percent (5%) of the amount earned for Work completed. A deduction and retainage of five percent (5%) shall be made on the estimated amount earned for approved items of material delivered to and properly stored at the Project site but not incorporated into the Work. The retainage is to be withheld by Tampa Bay Water until all Work has been performed in accordance with the Contract Documents and until such Work has been accepted by Tampa Bay Water.

7.1.7. Tampa Bay Water may deduct from each Payment Application an amount equal to Tampa Bay Water's estimate of the amount of Liquidated Damages then due, or which may become due.

D. Reimbursement

7.1.8. For Tampa Bay Water's expenses as defined in the General Conditions, Article 4.15. Submittals, and for testing that is performed by Tampa Bay Water or the Engineer which indicates Work is Defective, or for any other cost for which Tampa Bay Water is entitled to reimbursement from Contractor under the Contract Documents, at Tampa Bay Water's election, such reimbursement shall be deducted from the Contractor's monthly partial payments or shall be paid by Contractor within 30 days after Tampa Bay Water makes demand for same upon Contractor.

E. Qualification for Partial Payment for Materials Delivered

7.1.9. Partial payments for materials delivered but not yet incorporated into the Work shall be as described below:

a. Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200.00 for any one item.

b. To receive partial payment for materials delivered to the Project site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials with the Payment Application, the utilization of Tampa Bay Water provided forms is required. At its sole discretion, Tampa Bay Water, with the Engineer's advice, may approve items for which partial payment is to be made. Partial payments shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the Supplier. Proper storage and protection shall be provided by the Contractor, As Approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and upon acceptance of the Work, all materials remaining for which partial payments had been made shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

c. Contractor warrants and guarantees that title to all items of Work requested in any Payment Application, whether incorporated in the Project or not, shall pass to Tampa Bay Water at the time of payment for such items, free and clear of all liens, claims, security interests, and encumbrances.

d. If requested by the Engineer, the Contractor shall provide, with subsequent Payment Applications, invoices receipted by the Subcontractor or Supplier showing payment in full has been made.

F. Payment

7.1.10. The amount of partial payment due the Contractor shall be equal to the current value of the Contract Price earned, less, any retainage, less any amounts previously paid, and any deductions for reimbursement as required by the Contract Documents.

7.2 Payment for Change Orders

7.2.1. Tampa Bay Water, without Notice to the Sureties, shall have the right to order changes to the Work. If the parties agree upon the terms for the change, including any appropriate adjustments to the Contract Price or Contract Time, a Change Order shall be issued. If the parties cannot agree upon the terms for the change, a Change Authorization may be issued by Tampa Bay Water. The terms of the Change Authorization shall be final and binding upon Contractor, unless Contractor makes a claim, within twenty-one (21) days of its receipt of the Change Authorization, challenging those terms it takes objection to, giving full details and supporting documentation for its specific objections. Any terms not specifically objected to within that twenty-one (21) day period shall be deemed final and accepted by Contractor. Regardless of whether or not Contractor files a timely claim with respect to any of the terms of the Change Authorization, Contractor shall proceed with the change to the Work, as set forth in the Change Authorization, as directed by Tampa Bay Water or Engineer.

7.2.2. At Tampa Bay Water's option, payment or credit for any changes covered by a Change Order or a Change Authorization, whether additive or deductive, shall be determined by one or a combination of the methods set forth in a, b, or c, below, as applicable:

a. Unit Prices

Those Unit Prices stipulated in the Contract shall be utilized where they are applicable. In the event the Change Order or Change Authorization results in a change in excess of twenty-five percent (25%) of the original Contract quantity, and the total dollar change in value of that item exceeds twenty-five percent (25%), Tampa Bay Water will review the Unit Price to determine if a new Unit Price shall be negotiated. Unit Prices for new unit items not listed in the Contract shall be negotiated and mutually agreed upon.

b. Lump Sum

A total lump sum amount for the Work negotiated and mutually acceptable to the Contractor and Tampa Bay Water. Lump Sum Price quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor and Subcontractor costs, including labor, material, rentals, approved services, overhead, and profit, all calculated as specified under "C" below.

c. Cost Reimbursement Work

The term "cost reimbursement work" shall be for changes to be compensated for on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of direct cost as required for the change.

Tampa Bay Water, at its sole discretion, may direct the change to be accomplished on a cost reimbursement work basis, in which event the change will be priced based upon the labor, materials, equipment and other costs hereafter noted associated with such change. The cost items for cost reimbursement work shall be limited to the following items:

1. Labor, including superintendent and foremen, for those hours associated with the cost reimbursement work (actual payroll cost, including wages, fringe benefits as established by negotiated labor agreements, contracts, labor insurance and labor taxes as established by law). Expressly excluded from this item are all labor costs associated with negotiating the subject change. No other fixed labor burdens will be considered, unless approved in writing by Tampa Bay Water.

2. Material associated with the change, including sales tax, if paid for by the Contractor or its Subcontractor.
3. Rental, or equivalent rental cost of equipment, including necessary transportation for items having a rental value in excess of $100.00.
   Rental or equivalent rental cost shall be allowed for only those Days or hours during which the equipment is (or would have been for deductive changes) in actual use. Rental and transportation allowances shall not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment shall, in all cases, be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances shall be made for those items, unless specific Contract to that effect is made.
4. Additional bond as required and approved by Tampa Bay Water.
5. Additional insurance (other than labor insurance) as required and approved by Tampa Bay Water.
6. To the costs noted above, for net additive changes, there shall be added the following fixed fees for the Contractor or Subcontractor actually performing the change:
   A. A fixed fee of twenty-five percent (25%) of the cost of item 1 above. For costs incurred for Work performed by Subcontractors, the Contractor's fee shall not exceed ten percent (10%) and the Subcontractor's fee shall be the same as for the Contractor; and
   B. A fixed fee of ten percent (10%) added to the cost of items 2 and 3.

7.2.3. The fixed fees noted above in the previous paragraph shall be considered to be the full compensation for all cost of general supervision, overhead, profit, and any other general expense.

7.2.4. The Contractor's records shall make clear distinction between the direct costs of Work paid for on a cost reimbursement work basis and the costs of other Work. The Contractor shall furnish the Engineer report sheets in duplicate of each day's cost reimbursement work no later than the working day following the performance of said Work. The report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The report sheets shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated.

7.2.5. Material charges shall be substantiated by valid copies of vendors' invoices. Such invoices shall be submitted with the daily reports or, if not available, they shall be submitted with subsequent daily report. Said daily report shall be signed by the Contractor or Contractor's Representative.

7.2.6. Tampa Bay Water reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor shall have no claim for profit or added fees on the cost of such materials and equipment.

7.2.7. To receive partial payments and final payment for cost reimbursement work, the Contractor shall submit to the Engineer, in a manner approved by the Engineer and Tampa Bay Water, detailed and complete documented verification of the Contractor's and any of its Subcontractors' actual costs involved in the cost reimbursement work. Such costs shall be submitted within seven (7) Days after said Work has been performed.

7.2.8. Except for Change Authorizations and Change Order, no other written or oral order from Tampa Bay Water or the Engineer shall be treated as a change in the Work or entitle the Contractor to an adjustment to the Contract Price or Contract Time.

7.2.9. The Engineer, by issuing a Construction Directive, may order minor changes in the Work not involving extra cost, or additional times and not inconsistent with the purpose of the Project, but otherwise, except in an emergency endangering life or property, additions or deductions from the Work shall be performed only in pursuance of an approved Change Authorization or Change Order.

7.2.10. Any compensation paid in conjunction with the terms of a Change Order shall comprise the total compensation due the Contractor for the change defined in the Change Order. By signing the Change Order, the Contractor acknowledges that the stipulated compensation adjustment includes payment for alteration of the Work, payment for the interruption of schedules, extended overhead, delay, or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional adjustment to compensation or time in respect to the subject Change Order.

7.2.11. Tampa Bay Water hereby delegates authority to its General Manager (and his/her designee) to approve any and all Change Order and Change Authorizations in its name, so long as each such Change Order or Change Authorization does not exceed $100,000.00, and further as long as the cumulative total of all Change Order or Change Authorizations does not exceed $100,000.00, unless otherwise approved by the Tampa Bay Water's Board. Each Change Order or Change Authorization over $100,000.00 or which cumulatively exceeds $100,000.00 must be expressly approved by Tampa Bay Water's Board before it shall be binding upon Tampa Bay Water.

7.3 Claims for Additional Compensation

7.3.1. In any case where the Contractor may seek additional compensation, except for an emergency threatening imminent property damage or personal injury, the Contractor shall provide Notice to Tampa Bay Water and the Engineer of its intent to make a claim for such compensation before it begins the Work on which it bases the claim, in order that such matter may be settled or other appropriate action promptly taken. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping an accurate account of actual costs, the Contractor shall be deemed to have waived its claim for additional compensation.

7.3.2. The Contractor's written Notice, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

7.3.3. Claims for additional compensation shall be made in itemized detail and submitted in writing to Tampa Bay Water and Engineer within seven (7) Days following completion of that portion of the Work for which the Contractor bases its claim. If the claim is found to be acceptable by Tampa Bay Water and the Engineer, the Contractor shall be paid as provided in the General Conditions, Article 7.2. Payment for Change Orders. No request by the Contractor for an equitable adjustment to the Contract Price under this Article shall be allowed, unless the Contractor has given Notice within the times required.

7.3.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's final determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

7.4 Release of Liens or Claims

The Contractor shall indemnify and hold harmless Tampa Bay Water and the Engineer from all claims for labor and materials furnished under the Contract Documents. Prior to the final payment, the Contractor shall furnish to Tampa Bay Water, as part of its final Payment Application, a certification that all of the Contractor's obligations on the Project have been

satisfied and that all monetary claims and indebtedness have been paid. The Contractor shall furnish releases or waivers, satisfactory to Tampa Bay Water, from all Subcontractors and Suppliers and of all liens and notices arising out of or filed in connection with the Work. Tampa Bay Water may reduce the amount of retainage withheld upon receipt of an affidavit from Contractor identifying any amounts in dispute with Subcontractor or Suppliers, and provided the amount of retainage withheld continues to exceed the amount in dispute.

7.5 Final Payment

7.5.1. Upon completion of all of the Work, the Contractor shall provide Notice to the Engineer that it has completed its Work and shall request final payment. Upon receipt of such Notice, the Engineer, together with Tampa Bay Water, will inspect and, if acceptable, the Engineer will submit to Tampa Bay Water its recommendation as to acceptance of the Work and as to the final Payment Application of the Contractor. Within sixty (60) Days after the Contractor has submitted its final Payment Application, together with the Sureties' consent to final payment, and upon approval of this Payment Application request by Tampa Bay Water and compliance by the Contractor with provisions in the General Conditions, Article 7.4. Release of Liens or Claims, and all other provisions of the Contract Documents as may be applicable, Tampa Bay Water shall pay to the Contractor all monies due it under the provisions of these Contract Documents. Final payment is further subject to Tampa Bay Water's receipt from Contractor of all as-built DRAWINGs, certifications, maintenance manuals, operating instructions, written guarantees and warranties, and bonds relating to the Work, and assignment of all guarantees and warranties from Subcontractors, vendors, Suppliers or manufacturers, all as required by the Contract Documents.

7.5.2. Contractor and Tampa Bay Water agree that project closeout and release of retainage shall be in accordance with Chapters 218 and 255, Florida Statutes, as amended by Chapter 2023-134, Laws of Florida. Specifically, Contractor shall cooperate with Tampa Bay Water to prepare a punch-list with estimated costs of items to complete the Work. Within 20 business days of completion of said punch-list, Tampa Bay Water shall pay Contractor the remaining contract balance, including retainage previously withheld, less an amount equal to 150% of the estimated cost to complete the items on the punch-list, and also less any amounts that are subject to a good faith dispute made in writing to the Contractor by Tampa Bay Water.

7.6 No Waiver of Rights

Neither the inspection by Tampa Bay Water or the Engineer, nor any payment for or acceptance of the whole or any part of the Work by Tampa Bay Water or Engineer, nor any extension of time, nor any possession taken by Tampa Bay Water, shall operate as a waiver of any provision of the Contract Documents, or any right to damages, nor shall such waive any subsequent breach. Acceptance of final payment shall not release Contractor of any liability under the Contract Documents or otherwise, and shall not be deemed evidence of performance or be construed as acceptance of Defective or improper Work.

7.7 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the final payment shall release Tampa Bay Water and the Engineer from all claims and all liability to the Contractor for all things done or furnished in connection with the Work, and every act of Tampa Bay Water and others relating to or arising out of the Work except claims previously made in writing and identified by Contractor in its final Payment Application as still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or its Sureties from obligations under the Contract Documents and the Performance Bonds, Payment Bonds, and other bonds and warranties, as herein provided.

7.8 Record Maintenance and Auditing Rights

Contractor shall keep all books, records, files and other documentation, including all electronically stored items, which concern or relate to the Work hereunder (collectively referred to herein as the "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract or the date of Final Completion or as otherwise required by law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy Contractor's Records shall include all of the Records of the Subcontractors and Suppliers.

7.9 Hazardous Materials

If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum-related products, or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) report such condition to Tampa Bay Water in writing. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time as appropriate. If no hazardous material is found after the Work has stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by the Contractor, or any of its employees, agents, Subcontractors or Suppliers, no Change Order will be required for an adjustment in the Contract Time, and Contractor shall indemnify Tampa Bay Water for any costs incurred by Tampa Bay Water with respect to such hazardous material.

* * * * * *

End of General Conditions

EXHIBIT A
TAMPA BAYWATER DOCUMENTS

ADDENDUM NUMBER ONE

TO

INVITATION TO BID

FOR

MORRIS BRIDGE WELLFIELD IMPROVEMENTS (PROJECT #50021)
CONTRACT NO. 2026020

RE: REMINDERS, CHANGES & QUESTIONS

This addendum consists of two (2) 8 ½ by 11 inch sheet(s).

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Invitation To Bid for Tampa Bay Water's Morris Bridge Wellfield Improvements (Project#50021), Contract No. 2026020, as fully and completely as if the same were fully set forth therein.

REMINDERS: **SUBMITTAL DUE DATE: February 18, 2026, 2:00 P.M. EST.**

CHANGES:
Change 1: Part 3.0 Bid Preparation, Section 3.2 is hereby revised and now reads as follows.

- All Forms in Section 8.0
- Bid Security
- Evidence that the Bidder is qualified and capable to complete the work
- Any other information called for in this ITB

QUESTIONS:

Q1: For the demolition portion, will the General Contractor be involved?
A1: Yes. The General Contractor will need to include the full building and gear/equipment demolition for Wells 152 and 157. For Wells 161, 162, and 163 the demolition is for just the gear/equipment inside the building. The shell will remain intact.

Q2: Was the pre-bid meeting mandatory for bidders?
A2: No. The pre-bid meeting was not mandatory.

Q3: How many wells can be taken down at one time?
A3: No more than five wells can be down at one time.

Q4: Are the wellhouses all steel or brick?
A4: There are three types of buildings: 1, 2, and 3. All are concrete masonry unit (CMU) block walls, but Type 2 include integral reinforced grouted concrete columns (CMU grouted to 7'4" above the floor). Each building has reinforced concrete slab roof with overhangs.

Q5: Are you going from vertical turbine to submersible pumps and motors?

A5: Yes. Submersible pumps are what we want ordered and used, check specifications for approved brands and manufacturers.

Q6: When will the Notice to Proceed (NTP) be issued?
A6: The contract is currently scheduled to go to the Board for approval at the April 20, 2026 meeting. Tampa Bay Water anticipates issue of the NTP within a month after Board approval.

Q7: Is there any tree, brush, or land clearing involved in the project?
A7: Possibly, there could be trees or limbs in the way sporadically that will need to be removed or moved out of the way. Typically, wells have cleared area around them and some with fencing.

Q8: When will the addendum be posted?
A8: The addendum will be posted to Tampa Bay Water's e-procurement portal, Euna Procurement no later than January 23, 2026, at 5:00 p.m. (EST).

Q9: Section 11213 – 2.2 Manufacturers. Can "Simflo" be added as a manufacturer as good selections were provided during the initial design phase and Tampa Bay Water already have some of these pumps in operation?
A9: It is not possible to add Simflo as an approved manufacturer at this time.

END OF ADDENDUM ONE

ADDENDUM NUMBER TWO

TO

INVITATION TO BID

FOR

MORRIS BRIDGE WELLFIELD IMPROVEMENTS (PROJECT #50021)
CONTRACT NO. 2026020

RE: REMINDER & CHANGE

This addendum consists of one (1) 8 ½ by 11 inch sheet(s).

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Invitation To Bid for Tampa Bay Water's Morris Bridge Wellfield Improvements (Project#50021), Contract No. 2026020, as fully and completely as if the same were fully set forth therein.

REMINDER: **SUBMITTAL DUE DATE: February 18, 2026, 2:00 P.M. EST.**

CHANGE:
Change 1: Specification Section 17500, Instrumentation and Controls Systems, 1-2.06 is hereby revised and now reads as follows:

The Contractor shall utilize the services of a System Supplier to coordinate all control system related items, to approve installation, calibrate and commission field instruments, and to perform all testing, training, and startup activities specified to be provided. The System Supplier is required to have completed two projects of similar scope in the last five years.

END OF ADDENDUM TWO

ADDENDUM NUMBER THREE

TO

INVITATION TO BID

FOR

MORRIS BRIDGE WELLFIELD IMPROVEMENTS (PROJECT #50021)
CONTRACT NO. 2026020

RE: REMINDERS & QUESTIONS

This addendum consists of two (2) 8 ½ by 11 inch sheet(s).

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Invitation To Bid for Tampa Bay Water's Morris Bridge Wellfield Improvements (Project#50021), Contract No. 2026020, as fully and completely as if the same were fully set forth therein.

REMINDERS: **SUBMITTAL DUE DATE: February 18, 2026, 2:00 P.M. EST.**

QUESTIONS:

Q1: Do you need a new road installed, and if so, should it be asphalt or gravel?
A1: No, roadwork is not included in this project. However, should the contractor damage any roads, they are responsible for repairing.

Q2: Do you require any masonry block / veneer to be removed and replaced?
A2: Only if that's the only way to repair, otherwise the plan is to patch/repair in place.

Q3: Do the concrete door pads, slabs or any other concrete need to be removed and replaced?
A3: When installing/adjusting the discharge piping and new flow meters, there may be concrete work required to bring the wellhouse floor back to a finished floor.

Q4: Do you need any fencing installed or removed and replaced?
A4: Existing fencing can be removed and re-installed if the contractor chooses.

Q5: Does the roof need to be removed and replaced?
A5: Please refer to architectural drawings and specifications for cleaning, veneer repairs, roofing repairs, and fascia repairs.

Q6: Do you require epoxy floor coatings?
A6: Yes.

Q7: Who will be providing the pumps, the owners or GC?
A7: The GC is required to order the pumps and motors; however Tampa Bay Water reserves the right/choice to use our ODP program for tax-savings.

Q8: Who is responsible for disposing of the existing pumps, the owners or GC?

A8: The GC is required to remove and dispose existing pumps, motors, equipment; all equipment and material removed is to be disposed of by the GC.

Q9: Do you need the roof hatch removed and replaced?
A9: Please refer to architectural drawings and specifications for cleaning, veneer repairs, roofing repairs, and fascia repairs.

Q10: Are the existing doors staying, or do they need to be removed and replaced?
A10: Doors and frames to be replaced per drawing GA-1. Refer to Door Schedule.

Q11: What is the liquidated cost per day?
A11: The liquidated damage cost per day for substantial completion is $1,500.00. For final completion, it's $500.00 per day.

END OF ADDENDUM THREE

INVITATION TO BID (ITB)

FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CFO

PURCHASING REPRESENTATIVE: TAYLOR KLINKO, PURCHASING SPECIALIST I

E-MAIL: purchasing@tampabaywater.org
WEBSITE: http://www.tampabaywater.org
2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763-1102

Contract No.: 2026020 **Project No.:** 50021
Title: MORRIS BRIDGE WELLFIELD IMPROVEMENTS

Issue Date:	**November 25, 2025**
Pre-Bid Conference & Site Visit:	**December 17, 2025 at 10:00 AM EST** **Tampa Bay Water's Morris Bridge Wellfield** **(Hillsborough County Flatwoods Park)** **14302 Morris Bridge Road** **Thonotosassa, FL 33592**
Inquiry Deadline:	**January 13, 2026 at 5:00 PM EST**
Addendum Posting:	**January 23, 2026 at 5:00 PM EST**
Submittal Due Date:	**February 18, 2026 at 2:00 p.m. EST**
In-Person Public Bid Opening Date:	**February 18, 2026 at 2:30 p.m. EST** **Tampa Bay Water's Administrative Offices** **2575 Enterprise Road** **Clearwater, Florida 33763**

Description: Tampa Bay Water, A Regional Water Supply Authority, is soliciting formal bids for this construction project. This project is located at the Morris Bridge Wellfield and includes replacing the pumps and motors, main disconnect switch; and ancillary power equipment and associated load panels for fifteen (15) of the Morris Bridge Wellfield Pumps and Motors. In addition, new over-current protection devices will be added to reduce the Arc Flash hazard.

Important Notice: Tampa Bay Water issues its solicitations electronically through its contracted vendor, Euna Procurement. All Addenda to such solicitations will be issued exclusively through Euna Procurement. If you have obtained this solicitation from a source other than Euna Procurement, you will not be listed on the plan holders list and may not receive notification of any Addenda issued. Failure to receive any issued Addenda shall not relieve the Bidder from any obligation(s) contained in the Addenda. To access Tampa Bay Water solicitations, any resulting Addenda and Bid results, go to: https://tampabaywater.bonfirehub.com. If you need assistance in registering with Euna Procurement send an email to: Support@GoBonfire.com or visit Euna Procurement's help forum at https://vendorsupport.gobonfire.com/hc/en-us.

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Invitation to Bid (ITB) is to solicit Bids from qualified firms or individuals to replace the pumps and motors, main disconnect switch; and ancillary power equipment and associated load panels for fifteen (15) of the Morris Bridge Wellfield Pumps and Motors. In addition, new over-current protection devices will be added to reduce the Arc Flash hazard. This is Project #50021 under Contract #2026020 ("the Project"). The Project is located in Hillsborough County. The budget for this project is $15,736,180.00.

1.2 SCOPE

The scope of the work contemplated for this project includes replacing the pumps and motors, main disconnect switch; and ancillary power equipment and associated load panels for fifteen (15) of the Morris Bridge Wellfield Pumps and Motors. In addition, new over-current protection devices will be added to reduce the Arc Flash hazard. The scope of the work is more completely described in the Contract Documents, Specifications and Drawings.

1.3 GENERAL INFORMATION

1.3.1 Tampa Bay Water is Florida's largest provider of wholesale drinking water. Our mission is to reliably provide clean, safe water to the Tampa Bay region now and for future generations. We are a regional agency created by an inter-local agreement among our member governments through state enabling legislation. We have a nine-member Board of Directors made up of representatives from the three counties and three cities we serve: Hillsborough County, Pasco County, Pinellas County, New Port Richey, St. Petersburg, and Tampa.

1.3.2 Bidders can familiarize themselves with our agency at www.tampabaywater.org. Tampa Bay Water was recreated in 1998 as the outgrowth of a two-year negotiation process that changed the name, structure, and operations of the West Coast Regional Water Supply Authority. Our predecessor, the West Coast Regional Water Supply Authority, was created in 1974. Tampa Bay Water is now a multi-source provider of drinking water including groundwater, surface water, and desalinated seawater. Tampa Bay Water is a non-profit governmental agency funded through wholesale water rates by its member governments. Our member governments serve more than 2.5 million residents in the Tampa Bay area.

1.3.3 Tampa Bay Water has retained Stantec Consulting ("Engineer") as its Agency Representative for this Project. Stantec Consulting has responsibility for coordinating all activities associated with the design, construction, and commissioning of the Project. Tampa Bay Water and Stantec Consulting are working cooperatively to manage the ITB process, evaluate Bids, and support the negotiations of the Contract. Stantec Consulting shall also provide Project oversight, including reviews for contract compliance, construction monitoring, start-up assistance, and environmental compliance oversight.

1.4 DEFINITIONS

All definitions are either listed below or are included in the General Conditions in the attached Contract.

1.4.1 **AGENCY** is used interchangeably with Tampa Bay Water.

1.4.2 **AGREEMENT** or **CONTRACT** are used interchangeably and refer to the document, along with any amendments, that constitutes authorization for, and commitment by the Contractor to provide construction services to Tampa Bay Water.

1.4.3 **BASE BID** is the sum stated in the Bid for which Bidders offer to perform the work described in the Bidding Documents, to which work may be added or deleted by sums stated in Alternate Bids.

1.4.4 **BID** refers to a Bidder's response to the requirements of this ITB.

1.4.5 **BID OPTION** means a specified portion of the work identified in the scope of work that may be added to or deducted from the Base Bid at Tampa Bay Water's discretion and identified in the Contract. If required, Bid Options shall be evaluated along with the Base Bid and may be used at the discretion of Tampa Bay Water to determine the lowest bid.

1.4.6 **BIDDER** means a business that responds to this solicitation. If Bidder is a consortium, partnership, joint venture, or other organization, this definition shall include all partners, members, or participants.

1.4.7 **CONTRACTOR** means the Bidder who enters into a Contract to provide construction services for this Project.

1.4.8 **ENGINEER** is the licensed design professional of record responsible for designing the Project.

1.4.9 **PROJECT SITE** is Tampa Bay Water's Morris Bridge Wellfield (Hillsborough County Flatwoods Park) located in Hillsborough County at 14302 Morris Bridge Road, Thonotosassa, FL 33592, as shown in the Project Location Map provided in Article 7.0.

2.0 BID PROCESS INFORMATION

2.1 PRE-BID CONFERENCE AND SITE VISIT

A Pre-Bid Conference and Site Visit will be held for this ITB on December 17, 2025 at 10:00 a.m. Eastern Standard Time (EST), at Tampa Bay Water's Morris Bridge Wellfield (Hillsborough County Flatwoods Park), 14302 Morris Bridge Road, Thonotosassa, FL 33592. The Pre-Bid Conference and Site Visit are not mandatory; however, firms are highly encouraged to attend. This will be the only site visit tour offered. Bidders will need to drive to the location in their own vehicles and should dress in appropriate comfortable field tour attire (long pants and closed toe shoes). Tampa Bay Water reserves the right to cancel the site visit if inclement weather or wet/muddy road conditions warrant cancellation.

2.2 INQUIRIES AND ADDENDA

Tampa Bay Water is committed to a fair, open process for interested parties to receive information about the Project and the competitive procurement process that Tampa Bay Water is using for selection of a Contractor and award of the Contract. **Inquiries for additional information or clarifications must be submitted on Euna Procurement's project page for this ITB at https://tampabaywater.bonfirehub or via email to purchasing@tampabaywater.org no later than the Inquiry Deadline on the cover of this ITB**. Any general inquiries may be responded to directly. Any substantive inquiries resulting in information and changes deemed material to the ITB shall be provided in the form of a written addendum which will be published at least five (5) days prior to the Submittal Due Date on Euna Procurement and via link at Tampa Bay Water's web site at www.tampabaywater.org. Failure of any firm to receive any such addendum or interpretation shall not relieve said Bidders from any obligation contained therein.

2.3 BID SUBMISSION

2.3.1 Tampa Bay Water prefers and strongly encourages electronic submission of Bids through our e-procurement portal at https://tampabaywater.bonfirehub.com. Bidders should allow sufficient time and at least one (1) day before the Submittal Due Date to begin the uploading process and finalize submissions. To submit responses electronically, Bidders must register with Euna Procurement and follow the instructions in the portal. Minimum system requirements are Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled. Maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files as the embedded files will not be accessible. Bidders will have the ability to modify their submissions up to the Submittal Due Date in Euna Procurement. Tampa Bay Water is not responsible for any technical problems with the electronic transmission and/or delay in receipt due to technical problems. Such electronic transmittal errors will not alter or affect the deadline date and time for receipt of Responses. If you require assistance, please contact Euna Procurement at Support@GoBonfire.com.

2.3.2 Bidders unable to submit electronically must deliver sealed Bids to the address provided on the cover of this document no later than the above-referenced Submittal Due Date. Include one clearly marked original and one digital copy on a flash drive enclosed in a sealed envelope or carton clearly marked with the name and Contract number and delivered in person, by carrier or messenger, or by certified U.S. Mail.

2.3.3 Late Bids will not be considered. No Bid can be withdrawn after the Submittal Due Date without the written permission of Tampa Bay Water.

2.4 BID WITHDRAWAL OR RESUBMISSION

Bidders may withdraw their Bids by notifying Tampa Bay Water in writing at any time prior to the Submittal Due Date. Such notice shall be in writing over the signature of the Bidder, and it shall be so worded as not to reveal the amount of the original Bid. Bids not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of One-Hundred Twenty (120) calendar days to provide the services set forth in this solicitation, unless extended by mutual agreement. Failure to agree to an extension shall not constitute grounds for forfeiting any bid bond or other security. Withdrawal of a Bid, as prescribed in this paragraph, shall not prejudice the right of a Bidder to resubmit a Bid prior to the Submittal Due Date indicated on the cover of this ITB.

2.5 RIGHT OF REJECTION

Tampa Bay Water reserves the right to reject any or all Bids.

2.6 IN-PERSON PUBLIC BID OPENING

Bids will be publicly opened at Tampa Bay Water's Administrative Offices located at 2575 Enterprise Road, Clearwater, Florida 33763, on the date of the Bid Submittal Deadline, on February 18, 2026 at 2:30 p.m. EST.

3.0 BID PREPARATION

3.1 PROJECT UNDERSTANDING

3.1.1 Beginning on the Issue Date on the cover of this ITB, complete sets of the ITB documents may be obtained through our e-procurement portal at https://tampabaywater.bonfirehub.com. Any addenda shall be provided here as well. Prior to submission of its Bid, each Bidder must ascertain that it has received a complete and accurate set of ITB documents, including all addenda issued.

3.1.2 Bidders are expected to read and understand this ITB and associated documents in their entirety and inspect the project site to inform itself of the conditions related to the execution of the work. Failure to do so will not relieve a successful Bidder of its obligations to furnish the services necessary to carry out all the requirements and provisions set forth in the Contract. Bidders must be able to fully perform the tasks outlined herein, and in the timeline required.

3.1.3 Bidders shall, upon discovery of any conflict, ambiguity, error or omission in the ITB, the Project site or any other general, local or prevailing conditions, make a written request for interpretation or clarification in accordance with the inquiry process provided in the prior section.

3.1.4 If requested by a Bidder in writing within a reasonable time in advance of the date of the opening of the Bids, Tampa Bay Water will make a good faith attempt to provide or obtain access to the project site to allow the Bidder to conduct those reasonable explorations and tests the Bidder deems necessary for submission of a Bid (subject to a review by Tampa Bay Water and the Engineer). If access is granted, the Bidder shall clean up and restore any disturbed area to its former condition upon completion of such explorations and tests.

In consideration of Tampa Bay Water arranging and permitting access to the project site, Bidder acknowledges that by entering the project site, Bidder shall defend, indemnify and hold Tampa Bay Water, Engineer and their consultants harmless from any loss, expense, damage, injury, claim or suit arising out of or relating to Bidder's entry, exploration and testing upon the project site. As a condition to any Bidder being provided access to the project site, that Bidder shall execute and deliver to Tampa Bay Water a Release and Indemnification Agreement, which is available upon request.

3.1.5 Each Bidder shall have the responsibility to inform itself of, and if awarded the Contract shall comply with, all laws and regulations. Examples of such laws and regulations include, but are not limited to, those relating to minimum wages, nondiscrimination in employment, protection of public and employee safety and health, environmental protection, building codes, fire protection, airport operation and safety, grading and drainage, use of explosives, vehicular traffic, access to streets and highways, restoration of lands and property under the control of the State or a Political Subdivision, nuisance control, taxes, permits, licensing, and fees.

3.1.6 Any oral statement, interpretation, clarification, correction, addition or deletion to the ITB documents will be binding only if issued as a written Addendum. Failure to read or reference the addenda in its Bid will not relieve a Contractor of its obligations to comply with the addenda.

3.2 BID CONTENTS: Include the following items:

- All forms in Section 6.0
- Bid Security
- Evidence that the Bidder is qualified and capable to complete the work
- Any other information called for in this ITB.

3.3 QUALIFICATION OF BIDDER

3.3.1 Bidder and its key personnel to be assigned to the work must meet the following minimum qualifications:

- Firm must hold an active license in the State of Florida as a General Contractor.
- Firm must have performed one previous project of similar scope within the past five (5) years.
- Project Superintendent must have served as a Project Superintendent on at least one previous project of similar scope within the past five (5) years.
- Project Manager must have served as a Project Manager on at least one previous project of similar scope within the past five (5) years.
- Drilling/Well Contractor must have performed one previous project of similar well abandonment and well rehabilitation scope within the past five (5) years.
- Drilling/Well Contractor must hold active well driller/drilling license in the State of Florida.

3.3.2 The Bidder must have the authority to perform the type of work in this ITB in accordance with laws and regulations applicable to the Project and local, county and municipal licensing requirements, or the Bidder must provide a covenant describing specific licenses or permits to be obtained prior to award of the Contract.

3.4 RESPONSIVENESS AND RESPONSIBILITY

3.4.1 If any information required by these Bid Documents is missing or incomplete, the Tampa Bay Water Purchasing Department, in its sole discretion, may deem the Bidder non-responsive and reject the Bid, or may waive immaterial or minor deviations or request clarifications that do not alter the substance of the Bid and do not provide competitive advantage to a Bidder.

3.4.2 The Bidder shall provide all information, sufficient to Tampa Bay Water, to evidence its qualifications to perform the work for the price included on the Price Form, within the time stated within this ITB, and in accordance with the requirements of this ITB. The Tampa Bay Water Purchasing Department may request and consider any further information to make a responsibility determination that a Bidder can satisfactorily perform the work.

3.4.3 Failure to deliver information for responsiveness and responsibility required in this ITB or as requested by Tampa Bay Water, within the required period (or within a reasonable time thereafter if agreed to by Tampa Bay Water), may result in the rejection of that Bidder's Bid as either non-responsive or non-responsible and shall constitute proof that the Bidder has relinquished its rights and interests in the award.

3.5 BID COMPLETION

3.5.1 Any Bid may be deemed non-responsive which contains omissions, erasures, alterations, or additions of any kind, or prices not requested, or which may be obviously unbalanced, or which in any manner shall fail to conform to the requirements of this ITB.

3.5.2 Only one Bid from any individual, firm, partner, partnership, or corporation, under the same or different names, shall be considered. If any Bidder has an interest in more than one Bid for the work contemplated, as determined by Tampa Bay Water, all Bids in which such Bidder has an interest shall be rejected.

3.6 BID SECURITY

Bids must be accompanied by a certified check, or cashier's check drawn on a bank in good standing, or a Bid Bond issued by a Surety authorized to issue such bonds in the State of Florida, in the amount of **five percent (5%)** of the proposed total Contract price of the Bid submitted. This bid security shall be given as a guarantee that the Bidder will not withdraw its Bid for the period of time specified in 2.4 Bid Withdrawal or Resubmission, and if awarded the Contract, shall execute the Contract and comply with all its requirements. If the Bidder elects to furnish a Bid Bond, it shall use the Bid Bond form provided in this ITB. The Attorney-in-Fact who

executes these bonds on behalf of the Surety must attach a notarized copy of its power-of-attorney as evidence of its authority to bind the Surety on the date of execution of the bonds. Where laws and regulations require certification by a resident agent, it shall also be provided.

3.7 BID PRICING

3.7.1 Bidders must submit either unit prices or fixed prices or a combination of such, as required by the Price Form herein. All items required to complete the work, but not specifically included in the Price Form, shall be considered incidental and no additional costs for such items will be recognized or paid for by Tampa Bay Water.

3.7.2 Conflicts or Discrepancies found in bid prices stated both numerically and alphabetically shall have the alphabetical representation of the bid price take precedence over the numerical representation unless it is determined, at the sole discretion of Tampa Bay Water, that the conflict has led to a clearly erroneous or unreasonable result; in which case the amount stated numerically shall govern. However, in a case of a discrepancy between unit prices and extended totals, unit prices shall govern.

3.7.3 The estimate of quantities of items which are to be provided on a unit price basis are stated in the Price Form with as much accuracy as possible and is an approximation that shall be the basis for fair comparison of bids and upon which the award of the Contract shall be made. Payment to the Contractor for unit price work shall be made on the basis of units actually provided by the Contractor and accepted by Tampa Bay Water.

3.7.4 The Contractor shall pay all state and local sales and use taxes, as required by all laws and regulations. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to this Project

3.8 SUBCONTRACTORS AND SUPPLIERS

3.8.1 Each Bidder shall list, on the Subcontractor Form included in this ITB, the Subcontractors and Suppliers to whom that Bidder intends to award a subcontract in an amount of two percent (2%) or more of the total price on the Price Form. For each Subcontractor and Supplier identified, the Bidder shall provide all the information required by the forms.

3.8.2 If Tampa Bay Water has reasonable objection to any listed Subcontractor or Supplier, Tampa Bay Water may, after giving its intended Notice of Award, request the Bidder remove or replace that Subcontractor or Supplier, in which case that Bidder shall either perform the associated part of the work itself, if it holds a valid license for that classification and is so qualified, or nominate a substitute Subcontractor or Supplier, within the time period its Bid is to remain open, and without an increase in its price or time required to complete the work. If that Bidder declines, it shall not be awarded the Contract and its Bid shall be deemed withdrawn, but its declining to make the substitution will not constitute grounds for forfeiting its bid security. No Bidder shall be required to employ any Subcontractor or Supplier against whom it has reasonable objection.

3.9 TRADE SECRETS

Tampa Bay Water is subject to the Florida Public Records and Sunshine Laws. Each Bidder may clearly mark each page of the Bid that contains trade secrets or other confidential commercial or financial information which the Bidder believes should not be disclosed outside of the agency. Disclosure of requested information will be determined in accordance with Florida laws, rules and regulations.

4.0 EVALUATION AND AWARD PROCESS INFORMATION

4.1 EVALUATION

All Bids received will be reviewed and tabulated by Tampa Bay Water. The tabulation will be posted on Euna Procurement and on Tampa Bay Water's website.

During the Bid review, Tampa Bay Water reserves the right to seek additional relevant information and clarification regarding any Bidder's qualifications to perform the work and to determine whether a Bidder is deemed responsive and responsible based on that information.

4.2 BID SUPPLEMENTS

After receipt of Bids, Tampa Bay Water shall notify the apparent low Bidder that it must, within two (2) days following notification, provide the following to Tampa Bay Water:

- A preliminary progress schedule, without specific dates, that will be used to track the work;
- Bidder's three (3) most recent and current financial statements, certified by a Certified Public Accountant;
- Resumes for Bidder's project superintendent and other key personnel;
- Five references for recent and similar work performed by bidder; and
- Any additional information requested by Tampa Bay Water.

4.3 BASIS OF AWARD

4.3.1 The Notice of Award will be issued, if at all, by Tampa Bay Water on the basis of the Total Evaluated Bid Price provided by the lowest responsive, responsible Bidder. The Total Evaluated Bid Price is the adjusted amount of the Bidder's proposed total Contract price, as determined by Tampa Bay Water, based upon such line items within the Bid which Tampa Bay Water elects to include in the work.

4.3.2 In accordance with Section 287.05701, Florida Statutes, Tampa Bay Water may not consider a Bidder's social, political or ideological interest when determining if the Bidder is responsible.

4.3.3 Tampa Bay Water's Project Allowance and all other Allowances, as well as all Options as specified in the Bid, must be included in the total price on the Price Form.

4.4 AWARD OF CONTRACT

4.4.1 Tampa Bay Water shall have the right to investigate, among other things, the financial condition, experience record, and the equipment of each Bidder, and to determine to its satisfaction the competency of each to undertake the Project. Tampa Bay Water may request further and supplemental documentation from a Bidder. A Bidder's refusal to provide such documentation may result in the disqualification of its Bid. Tampa Bay Water shall have the sole discretion to determine which factors it deems significant.

4.4.2 The acceptance, if any, of a Bid will be by written Notice of Intent to Award which shall be posted on Euna Procurement in the project file. In the event of failure of the lowest responsive, responsible Bidder to sign the Contract and provide acceptable Performance Bonds and Payment Bonds, Tampa Bay Water may award the Contract to the next lowest responsive, responsible Bidder. Such an award, if made, will be made promptly after the failure of the first Bidder to comply with the award requirements.

4.4.3 Tampa Bay Water reserves the right to accept or reject all bids and to delay or cancel the Project prior to acceptance of any bid in the event Tampa Bay Water has failed to secure all the property or permits necessary for the Project. In addition, Tampa Bay Water reserves the right to include or exclude any Bid Options, and to waive any informalities or irregularities in Bids. Tampa Bay Water further reserves the right to seek clarification from any Bidder after the opening of the Bids and to award the Contract based on updated information obtained.

4.5 NOTIFICATION OF AWARD

Tampa Bay Water will select the lowest, qualified, responsive, responsible Bidder meeting the criteria and Specifications established herein to provide the services under this ITB. The awarded Contractor must be registered to do business in the State of Florida. Information regarding registration can be found at the Florida Department of State, Division of Corporations website at https://dos.myflorida.com/sunbiz. Notification of Tampa Bay Water's decision regarding this solicitation will be posted on Euna Procurement and via the link on Tampa Bay Water's website.

4.6 EXECUTION OF CONTRACT

The Notice of Award to a Bidder will be accompanied by two (2) unexecuted sets of the Contract documents. The successful Bidder shall within ten (10) days after receiving Notice of Award, sign and return to Tampa Bay Water the two (2) sets of Contract documents together with the Certificate of Insurance, Performance Bonds and Payment Bonds as required by the Contract documents. Within thirty (30) days after receiving the signed Contract documents including acceptable Performance Bonds and Payment Bonds from the successful Bidder, Tampa Bay Water's authorized agent will sign the Contract, whereupon Tampa Bay Water shall send the successful Bidder one fully executed copy of the Contract documents. Signature by both parties binds both parties to the Contract documents.

4.7 RIGHT TO PROTEST

Any person who is adversely affected by a Tampa Bay Water decision or intended decision may file a notice of protest in writing within 72 hours after the posting of the notice of decision or intended decision. The formal written protest shall be filed with the Purchasing Manager within ten (10) days after the date of the notice of protest is filed. Failure to file a timely notice of protest or failure to file a timely formal written protest shall constitute a waiver of proceedings. The formal written protest shall state with particularity the facts and law upon which the protest is based.

Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post a bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes. This includes, but is not limited to, any objection to or protest of this ITB, Notice of Award, and/or the actions of Tampa Bay Water.

4.8 NOTICE TO PROCEED

The Contract time shall begin on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the date the Contract is executed by Tampa Bay Water. The Contractor shall begin the work no later than ten (10) days after the date specified for commencement of the work in the Notice to Proceed.

4.9 PERFORMANCE BONDS AND PAYMENT BONDS

The successful Bidder shall deliver to Tampa Bay Water a Performance Bond and a Payment Bond each on the forms set forth in this ITB. Each Bond shall be in the full amount of the total price on the Contract and in accordance with the requirements of Florida Statutes Section 255.05, as security for the faithful performance of the Contractor, and the payment of all persons supplying labor and/or materials for the construction of the work, and to cover all guarantees against defective workmanship or materials, or both, during the warranty period following the date of final completion of the work. The surety or sureties furnishing these bonds shall have a sound financial standing and a record of service satisfactory to Tampa Bay Water, shall be authorized to do business in the State of Florida, and shall be listed on the current U.S.

Department of Treasury Circular Number 570, or amendments thereto in the Federal Register, of acceptable Sureties for Federal Projects.

4.10 RETURN OF BID SECURITY

Within fifteen (15) days after the opening of the Bids, Tampa Bay Water will return the bid security to each Bidder whose Bid is not to be considered further in the award of the Contract. Retained bid securities shall be held until the Contract has been fully executed, after which time all bid securities other than those which have been forfeited, shall be returned to the respective Bidders.

5.0 SPECIAL TERMS AND CONDITIONS

5.1 SUBSTITUTES

The Contract shall be awarded, if at all, on the basis that the Bidder awarded the Contract shall furnish only items of material and equipment named or specified in the Contract documents. Each Bidder shall list the manufacturer and Supplier as required on the Major Equipment Manufacturers Form showing whom that Bidder intends to award a subcontract for furnishing each selected named or specified item. Substitutes shall not be considered until after the Notice of Award.

5.2 CHANGES IN QUANTITIES

Tampa Bay Water reserves the right to increase or decrease the quantity of any unit price work item shown in the bid that it may deem necessary, except that such increases or decreases in quantities of each item of unit price work awarded shall not affect the stated unit price rate if the quantity adjustment is not more than twenty-five percent (25%) of the total quantity shown on the bid for such item of unit price work. If the quantity is adjusted by more than twenty-five percent (25%), the unit price may be equitably adjusted by an appropriately issued change authorization or change order.

5.3 EMPLOYEE VERIFICATION

In accordance with Section 448.095, Florida Statutes, the Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Contractor enters into a contract with a subcontractor, the subcontractor must provide the Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the award/contract. If Tampa Bay Water has a good faith belief that the Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Contractor, and the Contractor may not be awarded a contract with Tampa Bay Water for at least 1 year after the date on which the award/contract was terminated. The Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Contractor and order the Contractor to immediately terminate the award/contract with the subcontractor.

5.4 FOREGIN COUNTRIES OF CONCERN

Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a Contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the :People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

5.5 ANTI-HUMAN TRAFFICKING

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide TAMPA BAY WATER with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

6.0 SUPPLEMENTAL INFORMATION FOR BIDDERS

6.1 The various reports, drawings and other documents listed in this section shall be collectively referred to as the "Existing Condition Documents". The Existing Condition Documents are made available solely to assist Bidders to make their own assessment of the Project. It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Existing Condition Documents thoroughly; (b) visit the Project site to become familiar with general, local and prevailing conditions; (c) familiarize itself with and consider all laws and regulations covering the work; (d) study and carefully correlate the Bidder's observations with this package of ITB documents; and (e) request written interpretations or clarifications promptly after discovering any conflicts, ambiguities, errors or omissions in the ITB documents or Existing Condition Documents.

6.2 The Property Stipulation/Schedule Summary in this section contains information pertaining to scheduling of construction in easements acquired by Tampa Bay Water for this Project.

6.3 Tampa Bay Water and Engineer make no representation or warranty about the accuracy, correctness, or completeness of the Existing Condition Documents. Also, neither Tampa Bay Water nor the Engineer warrants or assumes any responsibility for the accuracy, correctness, reliability or completeness of information or data relating to surface or subsurface conditions, contained in any reports not prepared by Tampa Bay Water, the Engineer or their consultants, including information about underground utilities owned by others at or contiguous to the Project site furnished by the owners of those underground utilities or others.

6.4 Finally, neither Tampa Bay Water nor Engineer assumes any responsibility for any conclusions or interpretations made by any Bidder based on the data, non-technical data, interpretations or opinions contained in the Existing Condition Documents. Notwithstanding the foregoing, Bidders should refer to the Contract documents (especially Paragraph 6.8 of the General Conditions) for provisions concerning changes that may be permitted due to materially different site conditions.

EXISTING CONDITION DOCUMENTS

Surface and Subsurface Structures and Underground Utilities

Structure/Utility Owner	Type/Description	Method of Identification

Not Applicable

Technical Data, Geophysical Reports and Tests

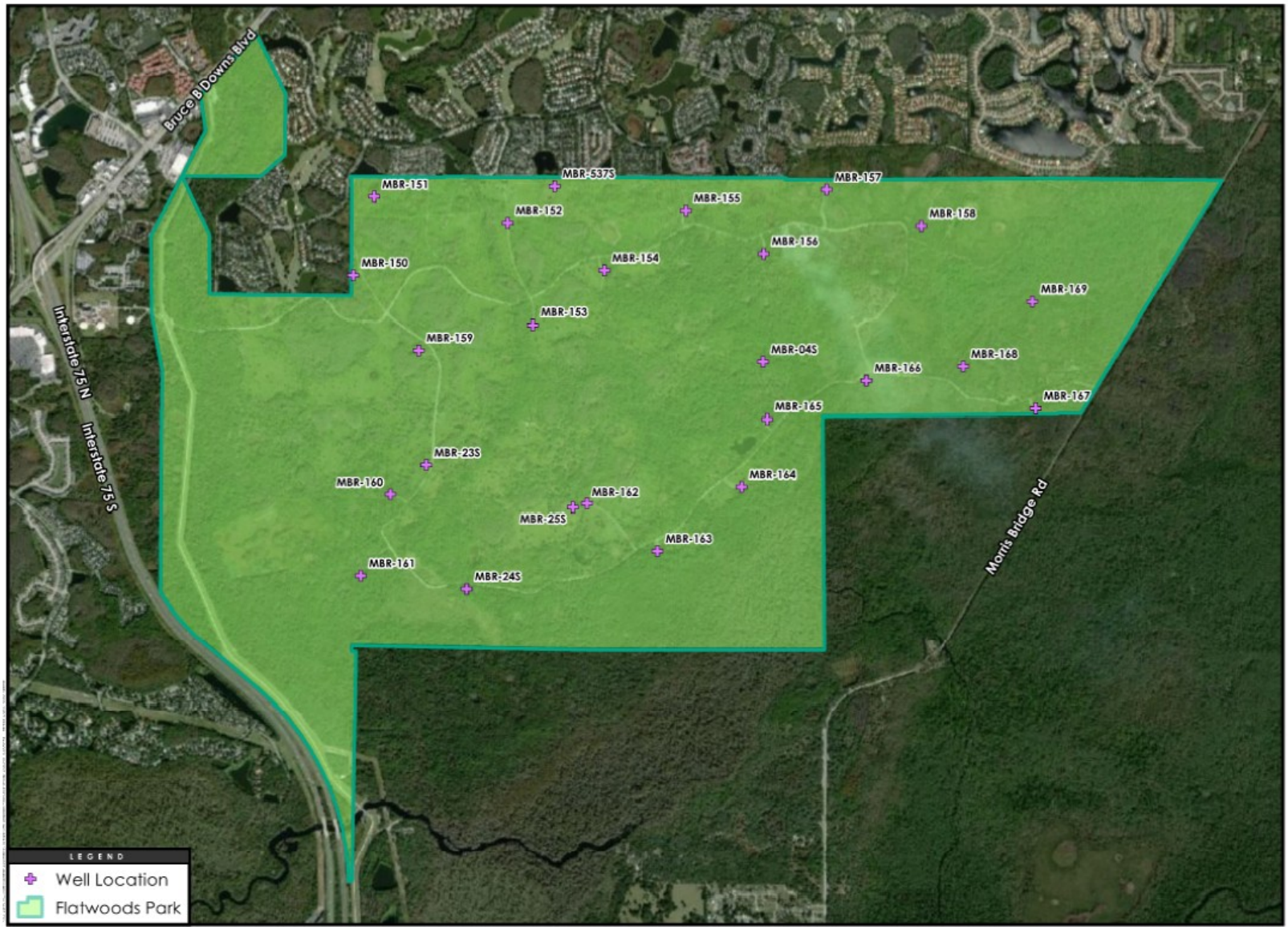
Not Applicable

Property Stipulation/Schedule Summary

Not Applicable

7.0 PRE-BID CONFERENCE LOCATION MAP

Pre-Bid to be held at Tampa Bay Water's Morris Bridge Wellfield (Hillsborough County Flatwoods Park) 14302 Morris Bridge Road, Thonotosassa, FL 33592 on December 17, 2025 at 10:00 am EST.


Bruce B Downs Blvd
Interstate 75 N
Interstate 75 S
Morris Bridge Rd
MBR-151
MBR-537S
MBR-157
MBR-155
MBR-152
MBR-158
MBR-156
MBR-154
MBR-150
MBR-169
MBR-153
MBR-159
MBR-04S
MBR-168
MBR-166
MBR-167
MBR-165
MBR-23S
MBR-164
MBR-160
MBR-162
MBR-25S
MBR-163
MBR-161
MBR-24S
LEGEND
Well Location
Flatwoods Park

8.0 BID SUBMITTAL FORMS

SEE EXHIBIT B – BIDDER'S RESPONSE FORMS

9.0 SAMPLE CONTRACT

REFER TO CONTRACT STARTING ON PAGE THREE (3)

10.0 TECHNICAL SPECIFICATIONS

TAMPA BAY WATER

Project No. 50021

Morris Bridge Wellfield Improvements

Issued For Bid Contract Specifications

Prepared by Stantec

October 2025

MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT
TAMPA BAY WATER PROJECT NO.: 50021

SPECIFICATIONS
PROFESSIONAL ENGINEER - RESPONSIBLE CHARGE CERTIFICATIONS

Division 1 – General Requirements

Division 2 – Specific Provisions

Division 11 – Equipment

Division 13 – Well Abandonment

Division 15 – Mechanical



David Socha, P.E.
State of Florida License No. 73821

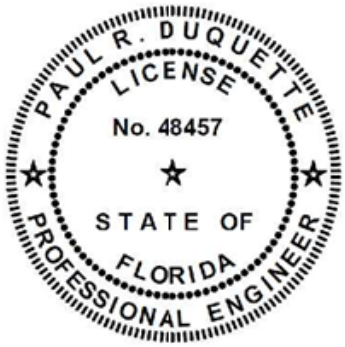
This item has been digitally signed and sealed by David Socha on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Division 1 – General Requirements

Section 01613 Structural Design, Support, and Anchorage

Division 3 – Concrete

Division 5 – Metals



Paul Duquette, P.E.
State of Florida License No. 48457

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SPECIFICATIONS
PROFESSIONAL ENGINEER - RESPONSIBLE CHARGE CERTIFICATIONS

Division 6 – Wood, Plastics, and Composites

Division 7 – Thermal and Moisture Protection

Division 8 – Doors and Windows

Division 9 – Finishes

Section 09940 – Protective Coatings



Shana L. Wygonik, R.A.
State of Florida License No. AR96070
FL Corp Arch License No. AA26000733

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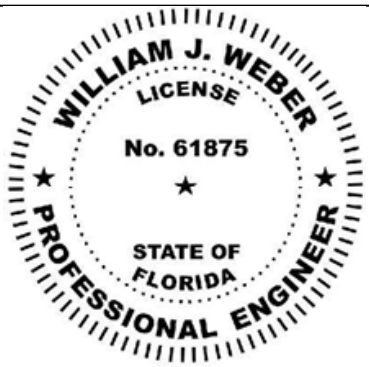
Division 2 – Site Work



William J Weber, P.E.
State of Florida License No. 61875

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SPECIFICATIONS
PROFESSIONAL ENGINEER - RESPONSIBLE CHARGE CERTIFICATIONS

Division 16 – Electrical

Division 17 – Instrumentation



Bradley Charles Buchanan, P.E.
State of Florida License No. 86225

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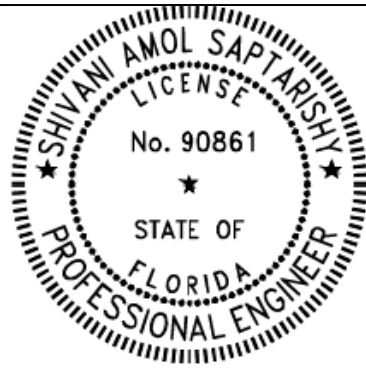
Division 15 – Mechanical

Section 15011 – HVAC General

Section 15831 – Fan Equipment

Section 15950 – HVAC Testing and Balancing



Shivani Amol Saptarishy
State of Florida License No. 90861

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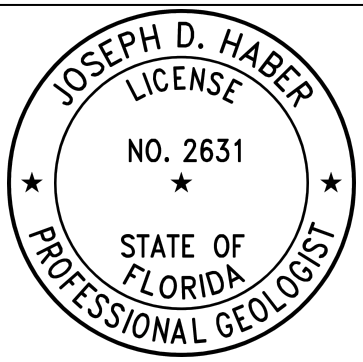
SPECIFICATIONS
PROFESSIONAL ENGINEER - RESPONSIBLE CHARGE CERTIFICATIONS

Section 10050 – Well Rehabilitation and

Specific Capacity Testing



Joseph David Haber, PG
State of Florida License No. 2631

This item has been digitally signed and sealed by Joseph David Harber on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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DIVISION 09 – FINISHES
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DIVISION 11 – EQUIPMENT
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11200 Pumps, General 1 : 07
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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. The WORK described herein consists of improvements to the Morris Bridge Wellfield including well sites MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169, the well abandonment and demolition of piping and equipment in well sites MBR-161, MBR-162, and MBR-163, and the well abandonment and complete demolition of well sites MBR-152 and MBR-157, as indicated on the CONTRACT DRAWINGS and specified herein. Each well site operates independently and remotely with its own building, electrical service, and control system. Each building houses the electrical motor starter, motor, pump, instrumentation, control system and miscellaneous lighting and ventilation equipment.

1-1.02. The project is located inside the Flatwoods Park in Northeast Hillsborough County, Florida, as shown on the CONTRACT DRAWINGS.

1-2. WORK DESCRIPTION

1-2.01. The WORK of this PROJECT consists of furnishing all labor, materials, equipment, testing and commissioning, supervision, and incidentals necessary for completing improvements at 15 of the existing 20 well sites, the decommissioning of 3 well sites, and the demolition of 2 well sites, as shown on the CONTRACT DRAWINGS and specified herein. The WORK is generally described as follows:

Demolition and Decommissioning: Demolition of all electrical, control, and mechanical equipment within each of the existing 20 well houses, as shown in the CONTRACT DRAWINGS. Additionally, for all existing well houses, except for the ones located at well sites MBR-161, MBR-162, and MBR-163, the demolition of the existing doors and frames as shown on the CONTRACT DRAWINGS.

Demolition of well house building structures at sites MBR-152 and MBR-157, as shown on the CONTRACT DRAWINGS.

Abandonment of the wells for sites MBR-152, MBR-157, MBR-161, MBR-162, and MBR-163. For these well sites, demolition of the discharge piping up to the isolation gate valve closest to the main collection header pipe, except where noted otherwise in the CONTRACT DRAWINGS.

For sections of the discharge pipe that will be abandoned in place, grouting of that section of pipe will be required as indicated in the CONTRACT DRAWINGS.

Electrical: Replacing the existing main service disconnect switches at all rehabilitated well sites; replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformers at sites MBR-151, MBR-158, MBR-167, MBR-168, MBR-169; furnishing and installing a new conventional style lightning protection system; furnishing and

installing new Reduced Voltage Solid-State (RVSS) Motor Controller soft starters at all well sites.

Instrumentation and Controls: Replacement of the existing RTUs in accordance with the latest OWNER standards; replacement of all existing instrumentation; furnishing and installing standard door intrusion switch and motion detector for security.

Specialties (Well Rehabilitation and Specific Capacity Testing): Rehabilitation of production wells that have lost specific capacity due to the precipitation of minerals (calcium carbonate) or biofouling caused by slime-producing bacteria that reduce the porosity and permeability of a well's production interval. These wells typically require mechanical brushing of the casing and jet development of the open hole to remove sediment or organic debris, disinfection and stimulation (acidization) using high concentration acid and well development. Section 10050 describes requirements for rehabilitation, pre- and post-rehabilitation specific capacity testing, as well as pre- and post-rehabilitation geophysical (video) log inspections.

Process Mechanical: Replacing the existing pumps and motors at MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169 with new submersible vertical turbine pumps and motors per the requirements of Section 11213; replacement of the existing flow meters with new Venturi flow meters; new check valves, and isolation gate valves, air release valves, piping, fittings, couplings, and flexible joints, as shown in the CONTRACT DRAWINGS; and the modification of the existing pumps' pedestals to accommodate the installation of the new wellheads. A video logging is required for each well casing where a new pump will be installed in accordance with the requirements specified in Section 11213.

Building Mechanical: Replacement of the existing exhaust fans in kind at all 15 rehabilitated well sites.

Structural: The existing masonry and roof structural elements of the following 15 well house buildings will be used: MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169.

Minor structural repairs uncovered during field investigations, as shown on the CONTRACT DRAWINGS and specified herein, for well sites MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-161, MBR-162, MBR-163, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169.

Architectural: Installation of new impact rated doors with louvers, frames, and door hardware at 15 well house buildings (MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169); aesthetic improvements to the building including cleaning and pressure washing exterior walls for the veneered wellhouses, repairing, and patching minor holes, providing overall interior painting to match adjacent finishes and exterior painting of the concrete block wellhouses; replacement of exterior wood trim and providing exterior paint coating for the well houses; replacement of exterior roof flashing where exterior wood trim is replaced.

Civil: Grouting of the 12-inch raw water pipeline that will be abandoned in place as indicated in the CONTRACT DRAWINGS; regrading of the corridors disturbed by the demolition of the electrical supply and discharge piping at sites MBR-152, MBR-157, MBR-161, MBR-162, and MBR-163, site restoration after excavations for installation of new buried piping for sites MBR-

150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169; site restoration upon completion of demolition at sites MBR-152 and MBR-157, as shown on the CONTRACT DRAWINGS.

Construction sequencing and scheduling constraints shall be adhered to, to maintain the ability of the wellfield to continue sending water supply to the treatment plant throughout the construction duration, as described in Section 01313 Construction and Schedule Constraints and Section 01650 Startup and Commissioning.

1-2.02. All materials, equipment, skills, tools and labor which are necessary and incidental for the proper completion of the WORK, shall be furnished and installed by the CONTRACTOR at no additional cost to the OWNER, whether specifically indicated in the CONTRACT DOCUMENTS or not.

1-2.03. In carrying out the WORK, comply with all applicable basic materials and construction requirements specified in the CONTRACT DOCUMENTS.

1-2.04. Public utility installations or structures owned or controlled by the OWNER or other governmental body which are shown on the DRAWINGS to be removed, relocated, replaced or rebuilt by the CONTRACTOR shall be considered as a part of the general cost of doing the WORK. No separate payment shall be made therefore.

1-3. CONTRACT PRICE

1-3.01. Construct the WORK based on the Bid Schedule. The CONTRACTOR's compensation for all construction, materials, equipment, and installation shown on the CONTRACT DRAWINGS and included in the SPECIFICATIONS will be deemed to be included in the unit Bid Schedule.

1-3.02.

1-4. SUBSTANTIAL AND FINAL COMPLETION

1-4.01. Before substantial completion, inspect and take all necessary remedial measures of every portion of the WORK to ensure the overall performance is in compliance with the terms of the CONTRACT DOCUMENTS.

1-4.02. The WORK shall be complete including all incidental mechanical, electrical, testing and calibration, and disinfection and ready for the OWNER to resume operations.

1-4.03. SUBSTANTIAL and FINAL COMPLETION of the WORK shall be completed, tested and ready for operation in accordance with the dates as contained in the CONTRACT DOCUMENTS.

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01015

PROJECT REQUIREMENTS

PART 1 – GENERAL

1-1.01. The Work to be performed under these CONTRACT DOCUMENTS consists of the furnishing of all labor, materials and equipment, and performance of all WORK included in these CONTRACT DOCUMENTS. The Work is generally described in Section 01010 - Summary of Work.

PART 2 – MATERIALS AND EQUIPMENT

2-1.01. Suppliers

The names of proposed SUPPLIERS who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the ENGINEER for approval, in accordance with the General Conditions, to afford proper investigation and checking. Such approval shall be obtained before SHOP DRAWINGS will be reviewed by the ENGINEER. No SUPPLIER will be approved for any materials to be furnished unless it shall be of good reputation and the plant at which the items are to be manufactured is of ample capacity. The SUPPLIER shall, upon the request of the ENGINEER, be required to submit evidence that the SUPPLIER has manufactured a similar product to the one specified and that it has been previously used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

Any two or more pieces of material or equipment of the same size, kind, type or classification, and being used for identical types of service, shall be made by the same SUPPLIER (manufacturer).

PART 3 – STORAGE

3-1.01. Storage of materials and equipment shall be onsite per the approved CONTRACTOR staging/laydown plan.

PART 4 – SUBSTITUTES AND "OR-EQUAL" ITEMS

4-1.01. Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specified item shall be understood as establishing the type, function, and quality desired. Requests for review of equivalency will not be accepted from anyone except CONTRACTOR, and such requests will not be considered until after the Contract has been awarded. Other manufacturers' products may be accepted, provided sufficient information is submitted to allow ENGINEER to determine that the products proposed are equivalent to those named. Such items shall be submitted for review by the procedure set forth in the Submittals Procedures section.

PART 5 – PREPARATION FOR SHIPMENT

5-1.01. All materials shall be suitably packaged to facilitate handling and protect against damage

during transit and storage. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of ENGINEER.

5-1.02 Each item, package, or bundle of material shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

PART 6 – SALVAGE OF MATERIALS AND EQUIPMENT (NOT USED)

PART 7 – LAND FOR CONSTRUCTION PURPOSES (NOT USED)

PART 8 – OPERATION OF EXISTING FACILITIES

8-1.01. The sequence of well groupings and the expected sequence of construction is defined in Section 01650 Startup, Testing and Commissioning Section and construction constraints are in Section 01313 Construction and Schedule Constraints.

8-1.02. CONTRACTOR shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period – other than the approved outages.

8-1.03. CONTRACTOR shall notify, and obtain the written approval of, the OWNER and ENGINEER before executing any work that require any of the operational facilities to be placed out of service.

PART 9 – NOTICES TO OWNERS AND AUTHORITIES

9-1.01. CONTRACTOR shall, as provided in the General Conditions, notify OWNERS of adjacent property and utilities when prosecution of the WORK may affect them.

9-1.02. When it is necessary to temporarily deny access to property, or when any utility service connection must be interrupted, CONTRACTOR shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.

9-1.03. Utilities and other concerned agencies shall be notified at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

PART 10 – LINES AND GRADES

10-1.01. Safeguarding Marks:

- The CONTRACTOR shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the WORK and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

- The CONTRACTOR shall notify the ENGINEER immediately upon disturbing or

destroying any reference marks.

PART 11 – CONNECTIONS TO EXISTING FACILITIES

11-1.01. Unless otherwise specified or indicated, CONTRACTOR shall make all necessary connections to existing facilities, including structures, drain lines, and utilities such as water, sewer, gas, telephone, and electric. In each case, CONTRACTOR shall receive permission from OWNER or the owning utility prior to undertaking connections. CONTRACTOR shall protect facilities against deleterious substances and damage.

11-1.02. Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

PART 12 – UNFAVORABLE CONSTRUCTION CONDITIONS

12-1.01. During unfavorable weather, wet ground, or other unsuitable construction conditions, CONTRACTOR shall confine its operations to work which will not be affected adversely by such conditions. No portion of the Work shall be constructed under conditions which would affect adversely the quality or efficiency thereof unless special means or precautions are taken by CONTRACTOR to perform the Work in a proper and satisfactory manner.

PART 13 – CUTTING AND PATCHING

13-1.01. As provided in General Conditions, CONTRACTOR shall perform all cutting and patching required for the Work and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

13-1.02. CONTRACTOR shall perform all cutting and patching required for and in connection with the Work, including but not limited to the following:

- Removal of improperly timed Work.
- Removal of samples of installed materials for testing.
- Alteration of existing facilities.
- Installation of new Work in existing facilities.

13-1.03. CONTRACTOR shall provide all shoring, bracing, supports, and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations. CONTRACTOR shall not undertake any cutting or demolition which may affect the structural stability of the Work or existing facilities without ENGINEER'S concurrence.

13-1.04. Materials shall be cut and removed to the extent indicated on the Drawings or as required to complete the Work. Materials shall be removed in a careful manner, with no damage to adjacent facilities or materials. ***Materials which are not salvageable shall be removed from the site by***

CONTRACTOR.

13-1.05. All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to ENGINEER, to obtain a finished installation with the strength, appearance, and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

PART 14 – HAZARDOUS ENVIRONMENTAL CONDITIONS AT SITE (NOT USED)

PART 15 – CLEANING UP

15-1.01. CONTRACTOR shall keep the premises free at all times from accumulations of waste materials and rubbish. CONTRACTOR shall provide adequate trash receptacles about the Site and shall promptly empty the containers when filled.

15-1.02. Construction materials, such as concrete forms and scaffolding, shall be neatly stacked by CONTRACTOR when not in use. CONTRACTOR shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.

15-1.03. Volatile wastes shall be properly stored in covered metal containers and removed daily.

15-1.04. Wastes shall not be buried or burned on the Site or disposed of into storm drains, sanitary sewers, streams, or waterways. All wastes shall be removed from the Site and disposed of in a manner complying with local ordinances and antipollution laws.

15-1.05. Adequate cleanup will be a condition for recommendation of progress payment applications.

PART 16 – APPLICABLE CODES

16-1.01. References in the CONTRACT DOCUMENTS to local codes mean the Florida Building Code, Latest Edition.

16-1.02. Other standard codes which apply to the Work are designated in the Specifications.

PART 17 – REFERENCE STANDARDS

17-1.01. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or laws or regulations in effect at the time of opening of Bids (or on the effective date of the Contract or Agreement if there were no Bids), except as may be otherwise specifically stated in the CONTRACT DOCUMENTS. However, no provision of any referenced standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their SUBCONTRACTORS, consultants, agents, or employees from those set forth in the CONTRACT DOCUMENTS, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees, any duty or authority to

supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the CONTRACT DOCUMENTS.

PART 18 – PRECONSTRUCTION CONFERENCE

18-1.01. Prior to the commencement of WORK at the Site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by the CONTRACTOR and its superintendent, Principal SUBCONTRACTORS, Representatives of principal suppliers and manufacturers as appropriate, ENGINEER and its resident Project Representative, Representatives of OWNER, government representatives as appropriate, Others as requested by CONTRACTOR, OWNER, or ENGINEER.

18-1.02. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference a preliminary schedule for each of the following:

a. Progress Schedule. Procurement schedule
b. Schedule of Values for progress payment purposes.
c. Schedule of Shop Drawings and other submittals.

18-1.03. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

a. CONTRACTOR's preliminary schedules.
b. Transmittal, review, and distribution of CONTRACTOR's submittals.
c. Processing Applications for Payment.
d. Maintaining record documents.
e. Critical Work sequencing.
f. Field decisions and Change Orders.
g. Use of premises, office and storage areas, security, housekeeping, and OWNER's needs.
h. Major equipment deliveries and priorities.
i. CONTRACTOR's assignments for safety and first aid.

18-1.04. ENGINEER will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

PART 19 – PROGRESS MEETINGS

19-1.01. CONTRACTOR shall schedule and hold regular progress meetings at least monthly and at other times as requested by ENGINEER, OWNER, or required by progress of the Work. CONTRACTOR may at its discretion request attendance by representatives of its Suppliers, manufacturers, and other SUBCONTRACTORS.

19-1.02. ENGINEER shall preside at the meetings. Meeting minutes shall be prepared and distributed by ENGINEER. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

PART 20 – SITE ADMINISTRATION

20-1.01. CONTRACTOR shall be responsible for all areas of the Site used by it, and by all SUBCONTRACTORS in the performance of the Work.

PART 21 – CONSTRUCTION LIMITS

21-1.01. The CONTRACTOR's use of OWNER property for storage of materials, parking of trailers, employee parking, and other uses, shall be as designated by the OWNER and/or ENGINEER. If no area is designated, the CONTRACTOR shall submit a staging plan to the ENGINEER for approval prior to mobilizing to the site. The ENGINEER and the OWNER will jointly approve this plan.

21-1.02. CONTRACTORS shall restrict operations to approved staging areas and parking areas. Use of unpaved areas for roadways and parking shall not be permitted, except if approved in writing by the ENGINEER.

21-1.03. No onsite temporary fuel storage will be allowed unless pre-approval of the method of storage is obtained from the ENGINEER and/or OWNER. All fuel storage is to be properly contained to prevent accidental spills from leaking into the surrounding environment.

PART 22 – FIRST AID

22-1.01. The CONTRACTOR shall keep upon the site, at each location where operations are in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when individuals are employed on the WORK. The CONTRACTOR shall keep at the site a handbook containing all emergency phone numbers (i.e., fire, hospital, EMS, etc.).

PART 23 – PROTECTION OF WETLAND AREAS

23-1.01. The CONTRACTOR shall properly dispose of all surplus material, including soil, in accordance with LAWS AND REGULATIONS and all PROJECT permits.

23-1.02. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection, Southwest Florida Water Management District, U.S. Army Corps of Engineers or other applicable jurisdictional agencies.

PART 24 – USE OF CHEMICALS

24-1.01. All chemicals used during PROJECT construction or furnished for PROJECT operation, whether herbicide, pesticide, disinfection, polymer, reactant, or of other classification, shall show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with LAWS AND REGULATIONS and instructions.

PART 25 – COOPERATION WITH OTHER CONTRACTORS AND FORCES

25-1.01. During progress of the WORK, it may be necessary for other contractors and persons employed by the OWNER to work in or about the PROJECT.

25-1.02. The OWNER reserves the right to put such other contractors to work and to afford such access to the site of the WORK at such times as the OWNER deems proper.

25-1.03. The CONTRACTOR shall not impede or interfere with the work of and shall coordinate

with such other contractors engaged in or about the WORK and shall so arrange and conduct all WORK that such other contractors may complete their work at the earliest date possible.

PART 26 – MAINTENANCE OF TRAFFIC

26-1.01. General

- The CONTRACTOR shall be responsible for the proper maintenance control and detour of traffic in the area of construction during the course of construction. No claims for additional payment shall be considered for costs incurred in the proper maintenance, control, detour and protection of traffic.

- Traffic shall be maintained at all times where practical and as more particularly specified hereinafter. No traffic shall be detoured without prior knowledge and approval of the OWNER. The CONTRACTOR shall provide NOTICE to the ENGINEER a minimum of seven (7) DAYS in advance of such time as the traffic detour is proposed.

- All traffic control signs and devices, barricades, flashers, flambeaus and similar devices shall be furnished and maintained by the CONTRACTOR.

- Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic and pedestrian safety at all times. Necessary access to adjacent property shall be provided at all times.

- Excavation shall be conducted in a manner to cause the least possible interruption to traffic. Where traffic must cross excavations, the CONTRACTOR shall provide suitable bridges at street intersections and driveways.

26-1.02. Traffic Lanes

- No traffic lane closures shall be allowed unless express written approval has been provided to the CONTRACTOR from the OWNER.

- Steel plate or bridging shall be furnished where required to maintain traffic as specified above and during the time required for curing of concrete slab pavement restoration.

PART 27 – EMPLOYEE DRESS AND APPEARANCE

27-1.01. All CONTRACTORS, subcontractors, and their employees, must be dressed in such standards as not to bring discredit to the OWNER. In all cases, all workers and employees working at the plant shall wear shoes, pants, shirts, and the required personal protective equipment (PPE). All persons shall be professionally dressed and act professionally while on OWNER property.

PART 28 – USE OF OWNER FACILITIES

28-1.01. Except as otherwise authorized, the CONTRACTOR shall not use OWNER’s telephones, restrooms, break rooms, or other facilities provided for OWNER

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SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - SCOPE

1-1.01. This section covers methods of measurement and payment for items of Work under this Contract. The LUMP SUM PRICE for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR and shall cover all Work required by the CONTRACT DOCUMENTS. These costs shall include all costs for permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of OSHA. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum PRICEs bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the PRICEs bid. The Bid Form and this Section are not intended to depict the construction sequencing, that is noted in other Sections of the CONTRACT DOCUMENTS.

PART 2 - ESTIMATED QUANTITIES

2-1.01. All estimated quantities stipulated in the Bid Form or other CONTRACT DOCUMENTS are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the Bids submitted for the Work. The actual amounts of work done and materials furnished under unit PRICE items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. CONTRACTOR agrees that it will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefor.

PART 3 - PAYMENT ITEMS

3.1. BID ITEM NO. 1 – MOBILIZATION/DEMOBILIZATION

3-1.01. Description. Under the Bid Item for Mobilization and Demobilization furnish all labor, materials, equipment, and services to perform those operations necessary for the movement of personnel, equipment, supplies and incidentals to and from the project site and for establishment of temporary offices, buildings, safety equipment, sanitary facilities and first aid supplies as required by the specifications and state and local law and regulations. The cost of assistance to the ENGINEER and his Resident Project Representative shall also be included under this Bid Item. The costs of bonds and any required insurance, and any other pre-construction or post-construction expense necessary to start or completion of the WORK, excluding the cost of construction materials, shall also be included under this Bid Item. The cost of all other WORK as shown and specified that is not specifically included under other Bid Items shall also be included under this Bid Item.

3-1.02. Payment. Payment for Mobilization and Demobilization will be made at the Bid LUMP SUM PRICE for Bid item 1 according to the following schedule:

Percent of Original Contract Amount Earned*	Allowable Percent of the LUMP SUM PRICE for Mobilization and Demobilization
0	Cost of Bonds and Insurance**
3	Balance of First 60
95	Remaining 40

*WORK installed and not including materials stored.
**As verified by receipted invoice.

Payment for Mobilization and Demobilization will be subject to retainage as described in these CONTRACT DOCUMENTS.

Payment for Mobilization and Demobilization will be limited to five percent (5%) of the original CONTRACT PRICE for the PROJECT.

3.2. BID ITEM NO. 2 – MBR-150 WELL SITE WORK

3-2.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in the Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new Venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-2.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-150 Well Site Work.

3.3. BID ITEM NO. 3 – MBR-151 WELL SITE WORK

3-3.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in the noted in the Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the

well, installation of new submersible pump and motor, instrumentation including a new Venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformer, new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-3.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-151 Well Site Work.

3.4. BID ITEM NO. 4 – MBR-152 WELL SITE WORK

3-4.01. Description. Under this Bid Item furnish all materials, labor and equipment to complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings including, but not limited to, the existing concrete pump pedestal, the pump and motor, pump discharge piping and associated flow meter, valves, and fittings up to the point depicted on the CONTRACT DOCUMENTS, exhaust fan and associate louvers, superstructure and foundation, roof hatch, doors, electrical systems, and controls, demolition of the power supply between the main transmission line and the well house; civil site restoration at the well site and along corridor disturbed by the demolition of the electrical supply and discharge piping; as well as grouting of the discharge pipe left in place, and well abandonment.

3-4.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-152 Well Site Work.

3.5. BID ITEM NO. 5 – MBR-153 WELL SITE WORK

3-5.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances;

structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-5.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-153 Well Site Work.

3.6. BID ITEM NO. 6 – MBR-154 WELL SITE WORK

3-6.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-6.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-154 Well Site Work.

3.7. BID ITEM NO. 7 – MBR-155 WELL SITE WORK

3-7.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances;

structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-7.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-155 Well Site Work.

3.8. BID ITEM NO. 8 – MBR-156 WELL SITE WORK

3-8.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-8.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-156 Well Site Work.

3.9. BID ITEM NO. 9 – MBR-157 WELL SITE WORK

3-9.01. Description. Under this Bid Item furnish all materials, labor and equipment to complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings including, but not limited to, the existing concrete pump pedestal, the pump and motor, pump discharge piping and associated flow meter, valves, and fittings up to the point depicted on the CONTRACT DOCUMENTS, exhaust fan and associate louvers, superstructure and foundation, roof hatch, doors, electrical systems, and controls, demolition of the power supply between the main transmission line and the well house; civil site restoration at the well site and along corridor disturbed by the demolition of the electrical supply and discharge piping; as well as grouting of the discharge pipe left in place, and well abandonment.

3-9.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-157 Well Site Work.

3.10. BID ITEM NO. 10 – MBR-158 WELL SITE WORK

3-10.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformer, new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-10.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-158 Well Site Work.

3.11. BID ITEM NO. 11 – MBR-159 WELL SITE WORK

3-11.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-11.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-159 Well Site Work.

3.12. BID ITEM NO. 12 – MBR-160 WELL SITE WORK

3-12.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish, cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; providing exterior paint coating; civil site restoration after excavations for installation of new buried piping is completed.

3-12.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-160 Well Site Work.

3.13. BID ITEM NO. 13 – MBR-161 WELL SITE WORK

3-13.01. Description. Under this Bid Item furnish all materials, labor and equipment to complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including the pump and motor, pump discharge piping and associated flow meter, valves, and fittings up to the point depicted on the CONTRACT DOCUMENTS, exhaust fan, electrical systems, and controls, demolition of the power supply between the main transmission line and the well house; civil site restoration along corridor disturbed by the demolition of the electrical supply and discharge piping; as well as grouting of the discharge pipe left in place, and well abandonment.

3-13.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-161 Well Site Work.

3.14. BID ITEM NO. 14 – MBR-162 WELL SITE WORK

3-14.01. Description. Under this Bid Item furnish all materials, labor and equipment to complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings including the pump discharge piping and associated flow meter, valves, and fittings up to the point depicted on the CONTRACT DOCUMENTS, exhaust fan, electrical systems, and controls, demolition of the power supply between the main transmission line and the well house; civil site restoration along corridor disturbed by the demolition of the electrical supply and discharge piping; as well as grouting of the discharge pipe left in place, and well

abandonment.

3-14.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-162 Well Site Work.

3.15. BID ITEM NO. 15 – MBR-163 WELL SITE WORK

3-15.01. Description. Under this Bid Item furnish all materials, labor and equipment to complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings including the pump and motor, pump discharge piping and associated flow meter, valves, and fittings up to the point depicted on the CONTRACT DOCUMENTS, exhaust fan, electrical systems, and controls, demolition of the power supply between the main transmission line and the well house; civil site restoration along corridor disturbed by the demolition of the electrical supply and discharge piping; as well as grouting of the discharge pipe left in place, and well abandonment.

3-15.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-163 Well Site Work.

3.16. BID ITEM NO. 16 – MBR-164 WELL SITE WORK

3-16.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-16.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-164 Well Site Work.

3.17. BID ITEM NO. 17 – MBR-165 WELL SITE WORK

3-17.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct,

maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-17.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-165 Well Site Work.

3.18. BID ITEM NO. 18 – MBR-166 WELL SITE WORK

3-18.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-18.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-166 Well Site Work.

3.19. BID ITEM NO. 19 – MBR-167 WELL SITE WORK

3-19.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformer, new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-19.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-167 Well Site Work.

3.20. BID ITEM NO. 20 – MBR-168 WELL SITE WORK

3-20.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformer, new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-20.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-168 Well Site Work.

3.21. BID ITEM NO. 21 – MBR-169 WELL SITE WORK

3-21.01. Description. Under this Bid Item furnish all materials, labor and equipment to construct, maintain and complete all WORK shown on CONTRACT DOCUMENTS. This WORK includes, but is not limited to the following: Demolition and proper disposal of all of the items noted in Section 02050 Demolition and the Drawings, including but not limited to the pump and motor, pump discharge piping and associated flow meter, valves, and fittings, exhaust fan and associated louvers, doors and frames, electrical systems, and controls; video-logging the well, installation of new submersible pump and motor, instrumentation including a new venturi flow meter; new check valves, and isolation gate valve, air release valves, discharge piping, fittings, and couplings; electrical improvements including replacing disconnect switches, replacing all wiring, distribution equipment, surge protection devices, lighting, receptacles; replacement of outdoor transformer, new reduced voltage solid-state motor controller soft starter; instrumentation and controls improvements including replacement of all existing instrumentation, replacement of existing RTUs, new standard door intrusion and motion detector; HVAC exhaust louvers, exhaust fans, and appurtenances; structural repairs as indicated on the CONTRACT DOCUMENTS; architectural improvements including the installation of new impact rated doors with louvers, frames, and door hardware; repairing and patching minor holes with finish to match adjacent wall texture and finish; cleaning and preparing interior walls and ceilings for interior painting to match adjacent finishes; cleaning and pressure washing exterior walls and roof system; replacement of exterior wood trim; replacement and extension of exterior metal roof flashing where exterior wood trim is replaced; provide exterior clear water repellent on brick veneer; civil site restoration after excavations for installation of new buried piping is completed.

3-21.02. Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for Bid Item for MBR-169 Well Site Work.

3.22. BID ITEM NO. 22 – CONTRACT RECORD AND CLOSE OUT DOCUMENTATION

3-22.01 Description. Under Bid Item for Contract Record and Close Out Documentation, complete all the requirements of Specification Section 01720 Contract Record and Close Out Documentation.

3-22.02 Payment. Payment for Contract Record and Close Out Documentation will be made at the CONTRACT LUMP SUM for Bid Item Contract Record and Close Out Documentation.

3.23. BID ITEM NO. 23 – PERMIT ALLOWANCE

3-23.01 Description. The WORK under this Bid Item includes reimbursement for the actual cost of payment for permit fees required as authorized by OWNER and required by laws and regulations and necessary to perform WORK in accordance with the General Conditions. See Specification Section 01060 – Permits and Regulatory Requirements.

3-23.02. Payment. Include in the total bid PRICE an allowance of $20,000 for various permit fee costs. Fully document and obtain prior approval by OWNER of any amount of permit fees charged to the permit allowance before proceeding with the WORK associated with this BID ITEM.

3.24. BID ITEM NO. 24 – PROJECT ALLOWANCE

3-24.01. Description. The WORK under this Bid Item furnishing all labor, materials, equipment, and services required due to additional work authorized by OWNER.

3-24.02. Payment. Include in the total bid PRICE an allowance of $875,000 for various contingencies and environmental allowances. Fully document and obtain prior approval by OWNER of any amount of extra WORK and/or alterations to the WORK charged to the project allowance.

3.25. BID ITEM NO. 25 – INDEMNIFICATION

3-25.1. Description. The WORK under this Bid Item includes providing the Indemnity in accordance with Article 4.4 of the General Conditions.

3-25.02. Payment. In accordance with Article 4.4 of the General Conditions include with the total bid PRICE $100.00 separately allocated for the Indemnity requirements of the CONTRACT DOCUMENTS.

3.26. BID ITEM NO. 26 – WELL PRE-CONSTRUCTION/REPLACEMENT ASSESSMENT SPECIFIC CAPACITY TESTING

3-26.1. Description. All fifteen (15) active wells require specific capacity testing to be performed with the existing equipment according to Specification 10050. One (1) specific capacity test will be performed per well.

3-26.2 Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for each pre-assessment specific capacity test.

3.27. BID ITEM NO. 27 – WELL PRE-CONSTRUCTION/REPLACEMENT GEOPHYSICAL (VIDEO) LOG INSPECTION

3-27.1. Description. The fifteen (15) active wells require flushing the well and 360-degree geophysical video log inspection after removal of existing pumps, and prior to installing the new pump and motor. The five (5) wells to be abandoned will not need geophysical log inspection.

3-27.2 Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for each video log inspection (one (1) per well).

3.28.BID ITEM NO. 28 – WELL POST-CONSTRUCTION/REPALCEMENT SPECIFIC CAPACITY TESTING

3-28.1. Description. All fifteen (15) active wells require post-construction capacity testing to be performed with the new pump and motor equipment after installation according to Specification 10050.

3-28.2 Payment. Payment will be made at the CONTRACT LUMP SUM PRICE for each post-construction specific capacity test.

END OF SECTION

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SECTION 01027

PAYMENT APPLICATIONS

PART 1 - GENERAL

1-1. REQUIREMENTS INCLUDED

1-1.01. The CONTRACTOR shall submit PAYMENT APPLICATIONS to the OWNER in accordance with the schedule established in the General Conditions of the CONTRACT DOCUMENTS.

1.2. FORMAT AND DATA REQUIRED

1-2.01. The CONTRACTOR shall submit PAYMENT APPLICATIONS to OWNER through MasterWorks. Access to this software will be setup by the OWNER and usernames and passwords provided to the CONTRACTOR and ENGINEER. Instructions on procedures for submitting payment applications will be provided after award of the CONTRACT, if this is the method of submitting payment applications chosen by the OWNER.

1-2.02. The CONTRACTOR shall provide itemized data on continuation sheet of format, schedules, line items, and values.

1-3. PREPARATION OF EACH PAYMENT APPLICATION

1-3.01. Application Form:

Complete required information, including that for CHANGE ORDERS executed prior to date of submittal of application.

Complete summary of dollar values to agree with respective totals indicated on continuation sheets.

Execute certification with signature of a responsible officer of CONTRACTOR.

1-3.02. Continuation Sheets:

Complete total list of all scheduled component items of work, with item number and dollar value for each item as specified in the finalized schedule of values as approved by the OWNER. All scheduled component items of work shall include a column with the Tampa Bay Water General Ledger codes provided to the CONTRACTOR.

Complete dollar value in each column for each scheduled line item when work has been performed or products stored on site.

List each CHANGE ORDER executed prior to date of submission, at the end of the continuation sheets. List by CHANGE ORDER Number, and description, as for an original component item of work.

Payment on component material stored on site shall be in accordance with the General Conditions.

1-4. SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

1-4.01. When the OWNER requires substantiating data, the CONTRACTOR shall submit suitable information, with a cover letter identifying:

a. PROJECT

b. PAYMENT APPLICATION number and date.

c. Detailed list of enclosures.

d. For stored products: In accordance with the General Conditions.

1-4.02. The CONTRACTOR shall submit to electronic copies of data and cover letter.

1-4.03. The CONTRACTOR shall maintain an updated set of AS-BUILT DRAWINGS in accordance with Section 01720. As a prerequisite for monthly progress payments, the CONTRACTOR shall exhibit the updated AS-BUILT DRAWINGS for review and approval by the OWNER or the ENGINEER.

1-5. SUBMITTAL PROCEDURE

1-5.01. The CONTRACTOR shall submit electronic copies of the PAYMENT APPLICATION to the OWNER at the time stipulated in the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01060

PERMITS AND REGULATORY REQUIREMENTS

PART 1 - GENERAL

1-1. REGULATORY AGENCIES:

1-1.01. General: The CONTRACTOR shall;

a. Obtain and pay for all permits and licenses required for the Performance of the WORK, except as otherwise specified herein.

b. Schedule all inspections and obtain all written approvals from respective agencies, as required by the permits and licenses.

c. Comply with all conditions specified in each of the permits and licenses.

d. A copy of the permits obtained by the OWNER will be furnished to the CONTRACTOR at the preconstruction conference or upon request.

1-2. PERMITS OBTAINED BY OWNER:

1-2.01. The following permits / approvals will be obtained by OWNER:

a. Florida Department of Environmental Protection (FDEP)

- Owner will complete application for a Specific Permit to Construct PWS Components during design. CONTRACTOR shall complete construction prior to the permit expiration date.
- Partial Certification of Construction Completion and request for clearance to place Permitted PWS Components into Operation for each well site prior to returning them to service. CONTRACTOR shall disinfect the PWS components and complete any required pressure testing per the permit requirements.
- Final Certification of Construction Completion and request for clearance to place Permitted PWS Components into Operation when the project is complete.
- Wetland Delineation – It was anticipated that the wetlands within the extent of the project drawings may need to be formally delineated. The wetlands have been flagged and surveyed. Per the pre-application meeting on January 31, 2023, the work should qualify for an exemption.
- Environmental Resource Permit – The project will not include new impervious area, no wetlands impacts, an impacts to the buffer areas will be temporary; based on the pre-application meeting with FDEP the project will not require a general permit and 404 permit; however, since the project area is greater than 5 acres a request for exemption will be filed.

b. Hillsborough County Environmental Protection Commission

- Wetland Delineation – There are wetlands within 200 feet of the well sites; the

requirements herein will be updated after the requirements are confirmed at pre-submittal conference in early 2023.

- Wetland Setback Variance – Activities will be within the wetland setbacks at well sites 150, 152, 161 and 162. A variance request will be submitted to Hillsborough County prior to issuing the project to bid.

1-3. PERMITS OBTAINED BY CONTRACTOR:

1-3.01. The CONTRACTOR shall be responsible for obtaining all other permits necessary in the performance of the WORK. Such permits / approvals include, but are not limited to:

a. Hillsborough County Building Department

- The CONTRACTOR shall be responsible for obtaining the required Hillsborough County Building Permits. OWNER will provide lead and asbestos sampling necessary for the demolition. CONTRACTOR shall prepare a draft application for OWNER review, sign and submit applications and shall be responsible for scheduling and paying for (from the permit allowance) all ancillary permits and for inspections required by various building trades such as mechanical, electrical, etc. ENGINEER shall provide signed and sealed documents for each well site and assist CONTRACTOR with design related Requests for Information. CONTRACTOR will include permit activities on the construction schedule and will provide OWNER with copies of all permits when obtained.
- The CONTRACTOR shall apply and pay for any permits required for the installation and use of temporary construction trailer(s).
- CONTRACTOR shall provide to the OWNER documentation the Hillsborough County Building Permit has been closed out in accordance with Section 01720 – Contract Record and Closeout Documentation.

b. Florida Fish and Wildlife Conservation Commission (FWCC)

- Gopher tortoise burrows have been identified near well sites 152, 154, 162, 163 and 168. Gopher tortoises within 30 feet of the project area will need to be relocated within the wellfield. The CONTRACTOR shall submit application for, and pay fees (from the permit allowance) associated with endangered species including, but not limited to, Gopher Tortoise Relocation Permit from the FWCC, and associated gopher tortoise relocation efforts where applicable. Additionally, the CONTRACTOR shall provide a survey and evidence if a known bald eagle nest is active and take necessary steps. CONTRACTOR shall prepare a draft application for OWNER review, sign and submit application(s). The CONTRACTOR shall be responsible for the relocation of gopher tortoises prior to any construction activities on the site and shall adhere to all requirements outlined in the FWCC permit. Additionally, the CONTRACTOR shall contact the FWCC and address any additional endangered species surveys required to permit the WORK at the site.

c. FDEP and the Environmental Protection Agency (EPA)

- The Contractor shall obtain any required NPDES Generic Permit for Stormwater Discharge During Construction Activities from FDEP and/or EPA prior to completing WORK onsite. CONTRACTOR shall prepare a draft application for OWNER review,

sign and submit application(s). CONTRACTOR shall prepare a draft Pollution Prevention Plan (PPP) for OWNER and ENGINEER to review.

d. Southwest Florida Water Management District (SWFWMD)

- The CONTRACTOR shall obtain Well Abandonment Permits for plugging and abandoning the five (5) production wells prior to performing the work. The CONTRACTOR is required to give SWFWMD a 24-hour notice prior to beginning abandonment procedures All wells abandoned, including completed and incomplete wells shall be plugged by filling them from bottom to top with grout. Use of clean aggregate to bridge cavernous or lost circulation zones shall be allowed if measurements indicate loss of grout within the borehole or screened portion does not connect two (2) or more aquifers of differing water quality. Prior approval to use aggregate or other material must be obtained from SWFWMD. Obstructions must be cleared from all wells prior to plugging and abandoning. Upon completion of well abandonment, the SWFWMD Well Grouting/Abandonment Form must be submitted and can be filed at no charge. One form is required per well. The permit is valid for 90 days once it is issued, the Contractor shall obtain and submit the forms prior to performing any well abandonment work during construction.

1-3.02. CONTRACTOR will be responsible for obtaining extensions to permits obtained by the OWNER if construction authorized by permits has not been completed by expiration date noted on these permits.

a. Permits may require that a representative of permitting agency be present at site during construction or prior to covering up of activity authorized by permit. CONTRACTOR will be responsible for notifying the respective permitting agency in compliance with requirements of such permits.

b. CONTRACTOR shall include time to obtain permits in his construction schedule.

c. CONTRACTOR will provide OWNER and ENGINEER with copies of approved permits and inspections, and ENGINEER will compile all correspondence in permit close-out documents as per Specification Section 01720.

End of Section

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SECTION 01070

ABBREVIATIONS AND ACRONYMS

1. LIST OF ABBREVIATIONS.

Abbreviations for standards and organizations used in the CONTRACT DOCUMENTS are defined as follows and on the DRAWINGS:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies
AFBMA	Antifriction Bearing Manufacturers Association now recognized as the ABMA
AFPA	American Forest & Paper Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHRI	Air-Conditioning, Heating and Refrigeration Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association International
ANSI	American National Standards Institute
APA	Engineered Wood Association (formerly American Plywood Association)
API	American Petroleum Institute
AREMA	American Railway Engineers and Maintenance-of-Way Association
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air- Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	ASTM International
AWG	American Wire Gauge
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society

AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America (formerly SCPI)
CDA	Copper Development Association
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EEI	Edison Electric Institute
EJCDC	Engineers' Joint Contract Documents Committee
EPA	Environmental Protection Agency
FBC	Florida Building Code
FCC	Federal Communications Commission
FCI	Fluid Controls Institute
FDEP	Florida Department of Environmental Protection
Fed Spec	Federal Specification
FGMA	Flat Glass Marketing Association
FHWA	Federal Highway Administration
FIA	Factory Insurance Association
FM	Factory Mutual
FSA	Fluid Sealing Association
HEI	Heat Exchange Institute
HMI	Hoist Manufacturers Institute
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
I-B-R	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
IBC	International Building Code
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
IRI	Industrial Risk Insurers

ISA	International Society of Automation
LEED	Leadership in Energy and Environmental Design
MHI	Materials Handling Institute
MIL	Military Specification
MMA	Monorail Manufacturers Association
MSS	Manufacturers Standardization Society of Valve and Fitting Industry
NAAMM	National Association of Architectural Metals Manufacturers
NACE	NACE International
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NBS	See NIST
NCSPA	National Corrugated Steel Pipe Association
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NECA	National Electrical Contractors Association
NEII	National Elevator Industry, Inc.
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology (formerly NBS)
NLA	National Lime Association
NPC	National Plumbing Code
NPT	National Pipe Thread
NRMCA	National Ready Mixed Concrete Association
NSC	National Safety Council
NSF	NSF International (formerly National Sanitation Foundation)
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers Association
OSHA OHP	Occupational Safety and Health Administration Overhead Power
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PS	Product Standard
RIS	Redwood Inspection Service
SAE	SAE International
SDI	Steel Door Institute
SFPA	Southern Forest Products Association
SI	Systéme International des Unités (International System of Units)
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association

SPFA	Steel Plate Fabricators Association
SPI	Society of the Plastics Industry
SPTA	Southern Pressure Treaters Association
SSFI	Scaffolding, Shoring & Forming Institute, Inc
SSPC	The Society for Protective Coatings
SWFWMD	Southwest Florida Water Management District
TABB	Testing, Adjusting, and Balancing Bureau
UL	Underwriters' Laboratories
USBR	U.S. Bureau of Reclamation
USGBC	U.S. Green Building Council
WEF	Water Environment Federations

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 – GENERAL

1-1 REQUIREMENTS INCLUDED

1-1.01. The CONTRACTOR shall schedule and shall administer the preconstruction meeting, periodic progress meetings, and specially called meetings throughout the progress of the WORK. The ENGINEER shall prepare agenda for meetings, make physical arrangements for meetings, preside at meetings, and shall prepare and distribute meeting minutes.

1-1.02. Representatives of CONTRACTORS, SUBCONTRACTORS, and SUPPLIERS attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1-1.03. The CONTRACTOR shall attend meetings to ascertain that the WORK is expedited consistent with CONTRACT DOCUMENTS and PROGRESS SCHEDULE. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

1-2 PRECONSTRUCTION MEETING

1-2.01. The Preconstruction Meeting will be conducted no more than ten (10) days after the NOTICE TO PROCEED is issued, and before any WORK at the site is started.

1-2.02. The following shall be in attendance at the Preconstruction Meeting:

a. OWNER and OWNER'S representatives
b. ENGINEER and associated professional consultants.
c. CONTRACTOR'S PROJECT representatives

1-2.03 In addition to those identified in the Contract General Conditions, the following items may be addressed at the preconstruction meeting:

a. Distribution and discussion of:
    1. List of major SUBCONTRACTORS and SUPPLIERS
    2. PROGRESS SCHEDULE
    3. Proposed schedule of values

b. Critical work sequencing

c. Major equipment deliveries and priorities.

d. PROJECT coordination:
    1. Designation of responsible personnel
    2. Addresses and phone numbers

3. Emergency phone numbers

e. Procedures and processing of:
   1. CHANGE AUTHORIZATIONS
   2. PROPOSAL REQUESTS
   3. SUBMITTALS
   4. CHANGE ORDERS
   5. PAYMENT APPLICATIONS

f. Distribution of conformed CONTRACT DOCUMENTS.

g. Procedures for maintaining record documents.

h. Construction photographs and pre, during, and post construction audio-video.

i. Use of premises:
   1. Office, work, storage and staging areas
   2. OWNER'S and ENGINEER'S requirements

j. Submittal of shop drawings

k. Temporary utilities.

l. Housekeeping procedures.

m. Bond and Insurance certifications.

n. Progress meetings.

o. Working Hours.

p. Safety procedures and first aid.

q. Security.

1.3 PROGRESS MEETINGS

1-3.01. Unless directed otherwise by the OWNER and/or ENGINEER, progress meetings will be held every thirty (30) days or less with the first meeting thirty (30) days after the preconstruction meeting or thirty (30) days or less after the date of NOTICE TO PROCEED.

1-3.02. Progress meetings will be held at a location designated by the OWNER.

1-3.03. The following shall be in attendance:

a. OWNER'S representative(s).

b. ENGINEER and associated professional consultants as needed.
c. CONTRACTOR.
d. SUBCONTRACTORS and SUPPLIERS as appropriate to the agenda.
e. Others as required.

1-3.04. The following items may be discussed at the progress meetings:

a. Review of minutes of previous meeting.
b. Review of PROGRESS REPORT.
c. Field observations, problems, conflicts.
d. Problems and critical/long lead items which impede compliance with PROGRESS SCHEDULE.
e. Review of off-site fabrication, delivery schedules.
f. Corrective measures and procedures to maintain/regain PROGRESS SCHEDULE, if necessary.
g. Revisions to PROGRESS SCHEDULE.
h. PROGRESS during succeeding work period.
i. Review SUBMITTAL schedules; expedite as required.
j. Pending changes and substitutions.
k. Review proposed changes for effect on PROGRESS SCHEDULE and on completion date(s).
l. Other business.

A. The CONTRACTOR shall attend progress meetings and shall study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics as listed in 1-3.04.

B. The CONTRACTOR shall provide a current SUBMITTAL log at each progress meeting in accordance with Section 01300 - Submittals.

C. The CONTRACTOR shall provide a current three (3) week look ahead PROGRESS SCHEDULE and PROGRESS REPORT at each progress meeting in accordance with Section 01310 - Project Schedules.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1-1. SHOP DRAWINGS AND ENGINEERING DATA.

1-1.01. General: The Project has been designed by ENGINEER and ENGINEER will perform design-intent reviews of submittals. This Section will define a protocol for the transmittal of shop drawings, samples, and other submittals.

1-1.02. Shop drawings and engineering data (SUBMITTALS) covering all equipment and all fabricated components and building materials which will become a permanent part of the Work under this CONTRACT shall be submitted to ENGINEER for review, as required. Submittals shall verify compliance with the CONTRACT DOCUMENTS and shall include DRAWINGS and descriptive information in sufficient detail to show the kind, size, arrangement, and the operation of component materials and devices; the external connections, anchorages, and supports required; the performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

1-1.03. Each submittal shall cover items from only one section of the specification unless the item consists of components from several sources. CONTRACTOR shall submit a complete initial submittal including all components. When an item consists of components from several sources, CONTRACTOR'S initial submittal shall be complete including all components.

1-1.04. All submittals, regardless of origin, shall be approved by CONTRACTOR and clearly identified with the name and number of this CONTRACT, CONTRACTOR'S name, and references to applicable specification paragraphs and CONTRACT DRAWINGS. Each copy of all submittals, regardless of origin, shall be stamped or affixed with an approval statement of CONTRACTOR. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified, and inapplicable data crossed out. The current revision, issue number, and date shall be indicated on all DRAWINGS and other descriptive data.

1-1.05. CONTRACTOR shall be solely responsible for the completeness of each submittal. CONTRACTOR'S stamp or affixed approval statement of a submittal, per Figure 1-01300, is a representation to OWNER and ENGINEER that CONTRACTOR accepts sole responsibility for determining and verifying all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto, and that CONTRACTOR has reviewed and coordinated each submittal with other Shop DRAWINGS and with the requirements of the Work and the CONTRACT DOCUMENTS.

1-1.06. All deviations from the requirements of the CONTRACT DOCUMENTS shall be identified as deviations on each submittal and shall be tabulated in CONTRACTOR'S letter of transmittal using Figure 2-01300. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by CONTRACTOR (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.

1-1.07. CONTRACTOR shall submit shop DRAWINGS electronically. All submittals shall be made with the selected method. Submittals made by any method other than that required, will be returned without review.

1-1.08. For electronic submittals, DRAWINGS and the necessary data shall be submitted electronically to ENGINEER as specified below. Submittal documents shall be in color to facilitate use of red line markups. All electronic files shall be in Portable Document Format (PDF) as generated by Adobe Acrobat Professional Version 7.0 or higher. The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated. PDF images must be at a readable resolution. For most documents, they should be scanned or generated at 300 dots per inch (dpi). Use of higher resolution is acceptable. Optical Character Recognition (OCR) capture must be performed on these images so that text can be searched, selected and copied from the generated PDF file. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file. The opening view for each PDF document shall be as follows:

a. Initial View: Bookmarks and Page

b. Magnification: Fit In Window

c. The file shall open to CONTRACTOR'S transmittal letter, with bookmarks to the left. The first bookmark shall be linked to the Table of Contents.

d. PDF document properties shall include the submittal number for the document title and CONTRACTOR'S name for the author.

e. Electronic submittal file sizes shall be limited to 10 MB. When multiple files are required for a submittal the least number of files possible shall be created.

1-1.09. CONTRACTOR shall post submittals and retrieve ENGINEER's submittal review comments through Masterworks. Access to this software will be setup by the OWNER and usernames and passwords provided to the CONTRACTOR and ENGINEER. Instructions on procedures for posting and retrieving submittals will be provided after award of the CONTRACT, if this is the method of SUBMITTAL reviews chosen by the OWNER.

1-1.10 Submittals will not be accepted from anyone but the CONTRACTOR. Submittals shall be consecutively numbered in direct sequence of submittal and without division by SUBCONTRACTs or trades.

1-2. ENGINEER'S REVIEW OF SUBMITTALS.

1-2.01. ENGINEER's review of submittals covers only general conformity to the DRAWINGS and Specifications, external connections, and dimensions that affect the layout; it does not indicate thorough review of all dimensions, quantities, and details of the material, equipment, device, or item covered. ENGINEER's review shall not relieve CONTRACTOR of sole responsibility for errors, omissions, or deviations in the DRAWINGS and data, nor of CONTRACTOR'S sole responsibility for compliance with the CONTRACT DOCUMENTS.

1-2.02. ENGINEER's submittal review period shall be 21 consecutive calendar days and shall

commence on the first calendar day following receipt of the submittal or resubmittal in ENGINEER's office.

1-2.03. When the DRAWINGS and data are returned with review status "REVISE AND RESUBMIT" or “REJECTED” the corrections shall be made as instructed by ENGINEER. If submittals are made electronically, the corrected DRAWINGS and data shall be resubmitted through Masterworks. When the DRAWINGS and data are returned with review status “MAKE CORRECTIONS AS NOTED", "NO EXCEPTIONS TAKEN", or "FOR INFORMATION ONLY", no additional copies need be furnished unless specifically requested by ENGINEER.

1-3. RESUBMITTAL OF SHOP DRAWINGS AND DATA.

1-3.01. CONTRACTOR shall accept full responsibility for the completeness of each resubmittal. CONTRACTOR shall verify that all corrected data and additional information previously requested by ENGINEER is provided on the resubmittal. Resubmittals shall be in an organized and consistent format.

1-3.02. When corrected copies are resubmitted, CONTRACTOR shall direct specific attention to all revisions in writing and shall list separately any revisions made other than those called for by ENGINEER on previous submittals. Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) or a unique identification that indicates the initial submittal and correct sequence of each resubmittal.

1-3.03. If more than one resubmittal is required because of failure of CONTRACTOR to provide all previously requested corrected data or additional information, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER for review of the additional resubmittals. This does not include initial submittal data such as shop tests and field tests that are submitted after initial submittal.

1-3.04. Resubmittals shall be made within 30 days of the date of the letter returning the material to be modified or corrected, unless within 14 days CONTRACTOR submits an acceptable request for an extension of the stipulated time period, listing the reasons the resubmittal cannot be completed within that time.

1-3.05. The need for more than one resubmittal, or any other delay in obtaining ENGINEER’s review of submittals, will not entitle CONTRACTOR to extension of the CONTRACT Times unless delay of the Work is the direct result of a change in the Work authorized by a Change Order or failure of ENGINEER to review and return any submittal to CONTRACTOR within the specified review period.

1-4. COLOR SELECTION.

1-4.01. CONTRACTOR shall submit samples of colors and finishes for all accepted products before ENGINEER will coordinate the selection of colors and finishes with OWNER. ENGINEER will prepare a schedule of finishes that includes the colors and finishes selected for both manufactured products and for surfaces to be field painted or finished and will furnish this schedule to CONTRACTOR within 60 days after the date of acceptance of the last color or finish sample.

1-5. MAJOR EQUIPMENT SHOP DRAWINGS, PIPE LAYING SCHEDULES, AND SURVEYING MANUAL.

1-5.01. Refer to Section 01720 CONTRACT Record and Close-Out Documentation for requirements regarding major equipment SHOP DRAWINGS, pipe laying schedules, and surveying manual; at the completion of construction. Section 01720 covers hard copy sets and an electronic file copy of these manuals.

1-6. OPERATION AND MAINTENANCE DATA AND MANUALS.

1-6.01. Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention. The equipment Supplier shall prepare a Project specific operation and maintenance manual for each type of equipment indicated in the individual equipment sections or the equipment schedule.

1-6.02. Unless otherwise agreed by ENGINEER, the operation and maintenance manual for each type of equipment shall only be submitted for review following completion of review of all shop DRAWINGS and ENGINEERING data pertaining to that equipment.

1-6.03. Parts lists, and operating and maintenance instructions shall be furnished for other equipment not listed in the individual equipment sections or the equipment schedule.

1-6.04. Operation and maintenance manuals shall include the following:

a. Equipment function, normal operating characteristics, and limiting conditions.
b. Assembly, installation, alignment, adjustment, and checking instructions.
c. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.
d. Lubrication and maintenance instructions.
e. Guide to troubleshooting.
f. Parts lists and predicted life of parts subject to wear.
g. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.
h. Test data and performance curves, where applicable.
i. Cover page that includes the phone number to call for service
j. Warranty information in accordance with the CONTRACT DOCUMENTS
k. As specified in other Sections.

1-6.05. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by CONTRACTOR.

1-6.06. An electronic copy of each manual shall be submitted to ENGINEER prior to the date of shipment of the equipment. The manuals shall be submitted and ENGINEER's review comments retrieved, through the Project website or email accessible through the Internet. ***Procedures for submission of the electronic copy, and for retrieving and responding to review comments***

will be provided after award of the CONTRACT.

1-6.07. When the O&M manuals are returned with the review status "MAKE CORRECTIONS AS NOTED", the corrections shall be made as instructed by ENGINEER, and corrected manuals resubmitted to ENGINEER for review. ***When corrections are required, a corrected version of the electronic copy shall be resubmitted. When the electronic copy is approved by the ENGINEER three hardcopies of each O&M manual shall be delivered and one electronic copy shall be delivered on a flash drive or external drives to the ENGINEER. The final electronic copies of the O&M Manual shall be submitted no later than 30 days prior to placing the equipment in operation. Final hardcopies of the O&M Manual shall be submitted prior to project closeout.***

1-6.08. All material shall be marked with Project identification, and inapplicable information shall be marked out or deleted.

1-6.09. Shipment of equipment will not be considered complete until all required manuals and data have been received.

1-7. HARD COPY OPERATION AND MAINTENANCE MANUALS.

1-7.01. Hard copies submitted for review shall be temporarily bound in heavy paper covers bearing suitable identification. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11 inch paper, with standard three-hole punching. DRAWINGS and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger DRAWINGS shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. The final hard copy of each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders in heavy paper covers with a table of contents and suitable index tabs.

1-8. ELECTRONIC OPERATION AND MAINTENANCE MANUALS.

1-8.01. Electronic manuals shall be in Adobe Acrobat's Portable Document Format (PDF), and shall be prepared at a resolution between 300 and 600 dots per inch (dpi), depending on document type. Optical Character Recognition (OCR) capture shall be performed on these documents. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

1-8.02. File size shall be limited to 10 MB. A single PDF file greater than 10 MB may only be submitted if acceptable to OWNER. When multiple files are required the least number of files possible shall be created. File names shall be in the format OMXXXXX-YYYZ-V.pdf, where XXXXX is the five digit number corresponding to the specification section, YYY is a three digit O&M manual number, e.g. 001, Z is the letter signifying a resubmittal, A, B, C, etc., and V is a number used only when more than one 10 MB file is required for an O&M manual.

1-8.03. Documents prepared in PDF format shall be processed as follows:

1. Pages shall be searchable (processed for optical character recognition) and indexed when multiple files are required.

2. Pages shall be rotated for viewing in proper orientation.

3. A bookmark shall be provided in the navigation frame for each entry in the Table of Contents.

4. Embedded thumbnails shall be generated for each completed PDF file.

5. The opening view for PDF files shall be as follows:

   Initial View: Bookmarks and Page
   Page Number: Title Page (usually Page 1)
   Magnification: Set to Fit in Window
   Page: Single Page

6. Where the bookmark structure is longer than one page the bookmarks shall be collapsed to show the chapter headings only.

   When multiple files are required the first file of the series (the parent file) shall list every major topic in the Table of Contents. The parent file shall also include minor headings bookmarked based on the Table of Contents. Major headings, whose content is contained in subsequent files (children) shall be linked to be called from the parent to the specific location in the child file. The child file shall contain bookmark entries for both major and minor headings contained in the child file. The first bookmark of any child file shall link back to the parent file and shall read as follows "Return to the *Equipment Name* Table of Contents", e.g.
   Return to the Polymer Feed System Table of Contents.

7. DRAWINGS shall be bookmarked individually.

8. Files shall be delivered without security settings to permit editing, insertion and deletion of material to update the manual provided by the manufacturer.

1-9. LABELING.

1-9.01 As a minimum, the following information shall be included on all final O&M manual materials, including electronic and hard copy manuals:

a. Equipment name and O&M title spelled out in complete words.
b. Project Name.
c. OWNER Project/CONTRACT Number.
d. Specification Section Number. Example: “Section 15500” Manufacturer’s name.
e. File Name and Date.

For example:

Backwash Pump Operation and Maintenance Manual
Somewhere Plant Expansion
Project/CONTRACT No.
Specification Section 11110 Manufacturer
OM11110-001.pdf, 5/05/07

END OF SECTION

SUBMITTAL No. _____
SECTION_____

Do not combine multiple sections together unless required by specifications.

(CONTRACTOR'S Letterhead)
SUBMITTAL IDENTIFICATION &
CONTRACTOR'S APPROVAL STATEMENT

DATE:_____ COPIES_____ DRAWING SHEET NO. _____

Description submittal contents:
_____
_____
Location:
_____
_____
Manufacturer:
_____
_____
SUBCONTRACTOR or Supplier (Optional)
_____

REMARKS:
_____
_____
_____
_____

CONTRACTOR'S APPROVAL

(Construction Company) has reviewed and coordinated the submitted documentation and verifies that the equipment and material meet the requirements of the Work and the CONTRACT Documents. We accept sole responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data contained in the submittal as required by the CONTRACT Documents.

Deviations: □ None □ Yes (See attached Figure 2-0130001 33 00 for written description)

Approved By:_____Date: _____

This approval does not release SUBCONTRACTOR / vendor from the contractual responsibilities.

Project No._____Phase_ CONTRACT No. _____
Project Description: _____

REFERENCE: Section 01300, Shop DRAWING and ENGINEERING

FIGURE 1-01300

SUBMITTAL No. _____
SECTION _____
Do not combine multiple sections together unless required by specifications.

(CONTRACTOR'S Letterhead)

SUBMITTAL IDENTIFICATION &
CONTRACTOR'S APPROVAL STATEMENT

DATE:_____ COPIES_____ DRAWING SHEET NO. _____

Description submittal contents: _____
Location:_____
Manufacturer:_____
SUBCONTRACTOR or Supplier (Optional)
_____

DEVIATIONS

Project No._____Phase_____
CONTRACT No. _____
Project Description: _____

SECTION 01310

CONSTRUCTION PROGRESS SCHEDULE

1.1. GENERAL OVERVIEW.

1-1.01. A Progress Schedule shall be used to control the Work and to provide a definitive basis for determining project progress. The Progress Schedule shall be prepared, maintained, and updated by CONTRACTOR and historical dates agreed monthly with ENGINEER. CONTRACTOR shall submit a preliminary Progress Schedule and a Progress Schedule for acceptance by ENGINEER. These schedules shall be CONTRACTOR'S working schedules and shall be used to plan, organize, and execute the Work, record and report actual performance and progress, and show how CONTRACTOR plans to complete all remaining Work as of the end of each progress report period.

1-1.02. The Progress Schedule shall comprise all the detailed construction-related activities using the critical path method (CPM). The Progress Schedule shall provide sufficient detail and clarity to reflect the intricacies and interdependencies of activities so CONTRACTOR can plan, schedule, monitor, control, and report on the progress of his work. In addition, it shall provide ENGINEER and OWNER a tool to monitor and follow the progress for all phases of the Work.

1-2. PRE-CONSTRUCTION SCHEDULING CONFERENCE.

1-2.01. ENGINEER will conduct a pre-construction scheduling conference with CONTRACTOR to review requirements for the schedules including Schedule of Values, cost-loading and schedule configuration. The conference shall be conducted sufficiently early to allow CONTRACTOR to submit the preliminary Progress Schedule within ten days of the Effective Date of the AGREEMENT.

1-2.02. At this meeting, CONTRACTOR shall explain in detail the procedure to be used to develop the schedule activity cost-loading or Schedule of Values and cash flow. This procedure is subject to the review and acceptance of ENGINEER.

1-3. PRELIMINARY PROGRESS SCHEDULE.

1-3.01. Following the pre-construction scheduling conference but within ten calendar days after the Effective Date of the AGREEMENT, CONTRACTOR shall submit a preliminary Progress Schedule for review by ENGINEER. The preliminary Progress Schedule shall show detailed construction-related activities for the first 60 days of the project. The remainder of the CONTRACT activities shall be shown as summary bars within the milestones of the Work. If ENGINEER has comments on the preliminary Progress Schedule, CONTRACTOR shall make the necessary changes and resubmit it within ten calendar days. No progress payments will be made during the period specified above for the preliminary Progress Schedule until the preliminary Progress Schedule has been accepted by ENGINEER.

1-3.02. The preliminary Progress Schedule shall:

a. Illustrate a feasible schedule for completion of the Work within the CONTRACT Times and Milestones specified.

b. Provide an elementary example of the schedule in the format to be used for the Progress Schedule.

c. Include the activity code structure as described in Paragraph 19 of this specification.

1.4. PRELIMINARY PROGRESS SCHEDULE SUBMITTAL FORMAT.

1-4.01. CONTRACTOR shall submit two electronic copies of the schedule and enable the use of the schedule as an executable file as described herein. A brief narrative shall accompany the submittal, describing CONTRACTOR'S scheduling approach to the project. The narrative shall include a description of the CONTRACT milestones, approach for construction activities during the period of the preliminary Progress Schedule, description of the general approach of the activities for the work beyond the preliminary Progress Schedule period, a description of the project's critical path, identification of critical long-lead submittals, and planned outages. The narrative shall also incorporate activity codes, calendars, weather days, milestone constraints, and work breakdown structure in accordance with the requirements specified herein.

1.5. PROGRESS SCHEDULE.

1-5.01. The Progress Schedule comprises all the construction-related activities for the Work and shall show the order in which CONTRACTOR proposes to carry out the work. CONTRACTOR shall include milestones, coordination necessitated by limited access and available work areas, and the availability and use of manpower, material and equipment. CONTRACTOR shall use the Progress Schedule to plan, schedule and coordinate the Work including activities of SUBCONTRACTORs, equipment vendors, and suppliers.

1-5.02. The Progress Schedule shall be to the level of detail acceptable to ENGINEER, and shall include the following:

a. Organization and structural breakdown of the Project.
b. Milestones and completion dates.
c. Type of work to be performed and the labor trades involved.
d. Purchase, manufacture and delivery activities for major materials and equipment.
e. Preparation, submittal, and acceptance of shop drawings and material samples.
f. Deliveries of OWNER-furnished equipment and/or materials.
g. Acceptances required by regulatory agencies and/or other third parties.
h. Assignment of responsibility for each activity.
i. Access requirements to work areas.
j. Identification of interfaces and dependencies with preceding, concurrent and follow-on CONTRACTORs.
k. Tests, submittal of test reports and acceptance of test results.
l. Planning for phased or total acceptance by OWNER; including start up and commissioning.
m. Identification of any manpower, material, and equipment restrictions.
n. Sequence of construction to maintain plant operations.
o. Planned outages.

1-5.03. The activities included in the Progress Schedule shall be defined in work days. Durations shall be based on the labor (crafts), equipment, and materials required to perform each activity

on a normal workday basis. Activity durations shall be 20 working days or less except in the case of non-construction activities such as procurement of materials, delivery of equipment, and concrete curing. All durations shall be the result of definitive manpower and resource planning by CONTRACTOR to perform the Work, in consideration of contractually defined on-site work conditions and CONTRACTOR'S planned means and methods.

1-5.04. When the Progress Schedule is accepted by ENGINEER, ENGINEER will save a copy of the Progress Schedule as the baseline schedule and will use it for analysis of CONTRACTOR'S progress.

1-5.05. CONTRACTOR shall update the Progress Schedule monthly and submit a copy with each month's pay request.

1-6. ELECTRONIC PROGRESS SCHEDULE FORMAT AND REPORTING.

1-6.01. The Progress Schedule shall be created using Microsoft Project Management (MS Project) scheduling software.

1-6.02. CONTRACTOR shall use ENGINEER'S file-naming format throughout the project.

a. Schedule to be provided to OWNER in PDF file type.

b. Electronic schedule files shall be saved with .XML or .XER file extensions and provided to OWNER upon request.

c. MS Project settings for "Baseline Type" shall be used in the following manner:

    i. Select <None> as the baseline type for the preliminary Progress Schedule submittal.

    ii. Once the preliminary and Progress Schedule are accepted, the baseline type shall be named <Initial Plan>.

    iii. Each subsequent Progress Schedule update shall set the baseline type to <Last Performance Update>.

d. The data date for schedule calculation in the preliminary Progress Schedule and Progress Schedule shall be set as the date of the Notice to Proceed unless otherwise specified by ENGINEER.

1.7. COST-LOADING. Not used

1.8. RESOURCE-LOADING. Not used

1.9. COORDINATING PROGRESS SCHEDULE WITH OTHER CONTRACT SCHEDULES.

1-9.01. Where work is to be performed under this CONTRACT concurrently with or contingent upon work performed on the same facilities or area under other CONTRACTS, the Progress Schedule shall be coordinated with the schedules of the other CONTRACTS. OWNER will provide

the schedules of other CONTRACTS for preparation and updating of the Progress Schedule. CONTRACTOR shall revise the Progress Schedule as required by changes in schedules of other CONTRACTS.

1-9.02. In case of interference between the operations of different CONTRACTORS, OWNER will determine the work priority of each CONTRACTOR and the sequence of work necessary to expedite the completion of the entire project. In all such cases, the decision of OWNER shall be accepted as final.

1-10. SUBMITTALS.

1-10.01. The Progress Schedule and associated reports shall be submitted to ENGINEER for acceptance within the period of the preliminary Progress Schedule specified herein. If the Progress Schedule is not submitted, no progress payments will be made after the due date until the Progress Schedule has been submitted.

1-10.02. Printouts and electronic layouts required as part of the Progress Schedule submittal and monthly updates are as follows:

a. Summary Schedule: one page milestone and summary schedule, sorted by total Float, early-start, early-finish.

b. Detailed Project Schedule: organized by Work Breakdown Structure (WBS) or area of work; sorted by total Float, early-start, early-finish.

c. Critical Path Schedule: sorted based on the total Float, early-start, early-finish.

d. 60-Day Look Ahead Schedule: sorted by total Float, early-start, early-finish.

e. Activities in Progress: organized by WBS or area of work; sorted by total Float, early-start, early-finish.

f. Cash Flow Trending Report: presented in an S-Curve format based on original planned early start and late start forecasted expenditures. In addition, the historical actual data point(s) are to be graphed within the S-Curve graphic report.

g. Monthly payment projections.

h. Out-of-sequence Report: tabular report showing work performed out-of-sequence.

1-10.03. CONTRACTOR shall submit additional layouts if directed by ENGINEER. The submittal shall include the following:

a. Narrative report summarizing the milestones, critical path, project approach including phasing or use of crews, significant submittal and fabrication items, coordination or interface requirements, OWNER-provided items, and list of SUBCONTRACTORS and vendors.

b. Graphic reports including critical path report (longest path), summary schedule report, total Float report by early-start early- finish, look-ahead report grouped by

work breakdown structure or project phasing, and cash flow projection. Cash flow projections include estimated cumulative cost curves based on early and late start dates and projection of monthly payments over the life of the project

1-10.04. The schedule, critical path, and look-ahead schedules shall be submitted on E (34”x44”) size paper or 36” wide plots as well as PDF file type versions.

1-10.05. The Progress Schedule file shall be submitted in an executable format, using MS Project format on a read-write compact disk.

1-10.06. The narrative and graphic reports shall be provided on 8”x11” paper and E-size plots respectively.

1-10.07. CONTRACTOR shall submit 5 copies of each deliverable.

1-11. MONTHLY SCHEDULE UPDATES.

1-11.01. Monthly Progress Schedule updates shall be submitted for the duration of the CONTRACT on a date agreed to by OWNER, ENGINEER, and CONTRACTOR. If monthly Progress Schedule updates are not submitted by the due date, progress payments will be withheld until the required information is submitted.

1-11.02 The updated schedule shall be reviewed each month in a meeting with ENGINEER to verify:

a. Actual start dates.

b. Actual completion dates.

c. Activity percent completion.

d. Revised logic (as-built and projected) and changes in activity durations, cost assigned.

e. Cost influence of change orders, if any.

f. Revisions due to extension of time.

1-11.03. Prior to each meeting, CONTRACTOR shall prepare a complete and accurate report of current procurement and construction progress through the end of the update period, and a depiction of how CONTRACTOR plans to continue the Work to meet all CONTRACT completion dates. All network changes and status data agreed to during each update meeting shall be considered as accepted by both parties unless written notice of any exceptions is given within five calendar days after the meeting.

1-11.04. For major network changes that cannot be agreed to during an updating meeting, CONTRACTOR shall submit the proposed changes for ENGINEER’S acceptance prior to inserting such changes into the network. Submittals may be in the form of marked-up networks, fragnets, or schedule abstracts, provided they are submitted with a letter of transmittal. A fragnet is defined as a sequence of new activities and/or activity revisions that are proposed to be added

to the existing schedule to demonstrate how project events have an impact on the schedule.

1-12. DATA DATE.

1-12.01 The data date is the re-settable date that serves as the end of a reporting period. The reporting period will be recorded on a monthly basis, e.g., January 1st through January 31st with the 31st as the data date. If required for coordination purposes by OWNER, ENGINEER will provide specific data dates to be used by CONTRACTOR.

1-13. REVIEW PROCESS.

1-13.01. ENGINEER will review CONTRACTOR'S preliminary Progress Schedule and full Progress Schedule submittals within 15 calendar days after receipt of all required information.

1-13.02. At the request of OWNER or ENGINEER, CONTRACTOR shall participate in any meetings necessary to reach a mutual agreement and acceptance of the preliminary Progress Schedule, Progress Schedules, or Cash Flow Projections.

1-13.03. If any of the required submittals are returned to CONTRACTOR for corrections or revisions, they shall be resubmitted within ten calendar days after the return mailing date. Resubmittals shall include all information and media included in the first submittal. Review and response by ENGINEER will be given within 10 calendar days after receipt of each resubmittal.

1-13.04. Schedules shall show CONTRACT completion of the Work on the CONTRACT completion date and with zero or positive total Float even if CONTRACTOR plans to finish early. In no event shall acceptance of the Progress Schedule be a basis for a claim for delay against OWNER or ENGINEER by CONTRACTOR for an early finish. A Progress Schedule containing activities with negative Float or that extend beyond the date that the Work is completed and ready for final payment will not be acceptable.

1-13.05. Acceptance of the Progress Schedule by ENGINEER does not relieve CONTRACTOR of responsibility for accomplishing the Work by the CONTRACT completion date. Omissions and errors in the accepted Progress Schedule shall not relieve CONTRACTOR of obligations under the CONTRACT. Acceptance by ENGINEER in no way makes ENGINEER or OWNER an ensurer of the Progress Schedule's success or liable for time or cost overruns. ENGINEER and OWNER hereby disclaim any obligation or liability by reason of acceptance of the Progress Schedule by ENGINEER.

1-14. RESPONSIBILITY FOR SCHEDULE COMPLIANCE.

1-14.01. Whenever it becomes apparent from the current Progress Schedule that the critical path is delayed and the CONTRACT completion date will not be met, CONTRACTOR shall mitigate the delay by taking some or all of the following actions at no additional cost to OWNER.

a. Increase construction manpower in such quantities and crafts as will bring the project back on schedule within the completion dates and milestones.

b. Increase the number of working hours per shift, shifts per day, working days per week, and the amount of construction equipment, or any combination of the foregoing, to substantially eliminate the backlog of work.

c. Re-schedule activities to achieve maximum practical concurrence of activities and to comply with the schedule date(s).

1-14.02. Within ten calendar days of ENGINEER'S request, CONTRACTOR shall submit a recovery schedule and written statement of the steps intended to remove or arrest the delay to the critical path in the schedule. If CONTRACTOR fails to submit the required information or should fail to take measures acceptable to ENGINEER, ENGINEER with OWNER concurrence may direct CONTRACTOR to increase manpower, equipment and scheduled work hours to remove or arrest the delay to the critical path and CONTRACTOR shall promptly provide such level of effort at no additional cost to OWNER.

1-14.03. In the event CONTRACTOR fails to follow the updated or revised recovery schedule, OWNER may elect to withhold progress payments until CONTRACTOR complies with the revised schedule.

1-14.04. Should CONTRACTOR'S efforts not remove or arrest the delay to the critical path of the accepted schedule, then OWNER shall be entitled to supplement CONTRACTOR'S workforce and equipment to remove and arrest any delay, and shall be entitled to deduct all costs and expenses associated therewith from payments due to CONTRACTOR. If insufficient CONTRACT funds remain, OWNER may recover such funds from CONTRACTOR and its Surety.

1-15. CHANGES IN THE WORK, DELAYS, AND EXTENSIONS OF TIME.

1-15.01. When changes in the Work or delays are experienced by CONTRACTOR and CONTRACTOR requests an extension of time, CONTRACTOR shall submit a written time impact analysis to ENGINEER illustrating the influence of each change or delay to the current CONTRACT Times. Each time impact analysis shall include a fragnet incorporating the change or delay into the Progress Schedule to demonstrate how CONTRACTOR was delayed.

1-15.02. Each time impact analysis shall demonstrate the estimated time impact based on the events of the change or the delay; the date the change was given to CONTRACTOR or the delay incurred, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest update of the Progress Schedule or as adjusted for the events of delay.

1-15.03. Three copies of the time impact analysis and an electronic copy on compact disk shall be submitted within seven calendar days of delay occurrence or direction to proceed with a change is given to CONTRACTOR. No time extensions will be considered if the time impact analysis is not submitted within the specified time.

1-15.04. ENGINEER will review CONTRACTOR'S time impact analysis. CONTRACTOR shall furnish such justification and supporting evidence as ENGINEER deems necessary to determine whether CONTRACTOR is entitled to an extension of time. ENGINEER'S review of each time impact analysis will be made within five working days of receipt of the time impact analysis and additional information as required by ENGINEER, unless subsequent meetings and negotiations are necessary.

1-15.05. The CONTRACT Times will be adjusted only for causes specified in paragraph 15. Time extensions will be granted only to the extent that equitable time adjustments for the activity or

activities affected exceed the total or remaining Float along the critical path at the time of actual delay. Delays in activities which are not on the critical path and do not affect CONTRACT Times, will not be considered for an extension of time.

1-16. CAUSES FOR EXTENSIONS OF TIME

1-16.01. Additional positive total Float in the Progress Schedule generated by efficiencies of OWNER or CONTRACTOR is a shared commodity to be reasonably used by either party, and belongs exclusively to the Project. CONTRACTOR is not entitled to any additional compensation for completion of the project prior to expiration of the CONTRACT Times.

1-17. OWNER-Initiated Changes

1-17.01. OWNER-initiated changes to the Work that absorb Float time will not be considered for an extension of time. OWNER-initiated changes that affect the critical path of the Progress Schedule shall be grounds for extending or shortening completion dates. Use of Float time for CONTRACTOR initiated changes will require OWNER'S concurrence. CONTRACTOR'S changes, however, shall give way to OWNER-initiated changes competing for the same Float time.

1-18. Outside CONTRACTOR'S Control

1-18.01. Events outside of CONTRACTOR'S control that affect the critical path of the Progress Schedule will be considered for an extension or reduction of the CONTRACT Times.

1-19. WEATHER DELAYS

1-19.01. ENGINEER will obtain weather data during construction from a reputable source, and will maintain weather records.

1-19-.02. ENGINEER will determine CONTRACTOR'S entitlement to an extension of the CONTRACT Times as a result of weather delays, based on the flow chart in Figure 1-01310 and the data included in Tables 1 and 2. Extensions of time will be granted at the discretion of ENGINEER for circumstances not covered by the flow chart.

1-19.03. Any weather-related extension of CONTRACT Times shall be non-compensable. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather days is less than expected, shall contribute to the project Float and shall not affect the CONTRACT Times.

1-19.04. Application for a weather related extension of time shall be submitted to ENGINEER, and shall state the extension requested and be supported by the relevant weather data.

Table 1 Average Monthly Precipitation (inches) 10 year average 2007 – 2017 NOAA National Data Center, Annual Climatological Summaries											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.10	2.94	3.04	3.23	3.92	7.39	7.39	7.93	6.23	3.19	1.96	2.63

Table 2 Average Number of Calendar Days with Precipitation of 0.50 Inches or More in a Single 24-hour Period 10 year average 2002 – 2011 NOAA National Data Center, Annual Climatological Summaries											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	1	2	2	1	4	5	5	4	2	1	2

1-20. AS-BUILT SCHEDULE.

1-20.01. As a condition precedent to release of final payment, the last update to the Progress Schedule submitted shall be identified by CONTRACTOR as the “As-Built Schedule”. The “As-Built Schedule” shall reflect the exact manner in which the project was actually constructed (including actual start and completion dates, activities, sequences, and logic) and shall be signed and certified by CONTRACTOR’S project manager.

1-21. SCHEDULING SOFTWARE APPLICATION

1-21.01. Scheduling software shall be MS Project without exception. PDF copies shall be made available to OWNER upon request.

1-22. SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS: Not used.

1-23. ACTIVITY CODES

1-23.01. The MS Project activity codes and work breakdown structure (WBS) to be confirmed or revised by ENGINEER are listed below. Confirmation or revision of the activity codes and WBS will be provided to CONTRACTOR within three workdays of the Effective Date of the CONTRACT. Use of ENGINEER prescribed activity codes and WBS is mandatory.

1-23.02. “Project Codes” as defined by MS Project is reserved for OWNER. Only “Activity Codes” at Project Level will be permitted for CONTRACTOR use.

Activity Code	Code Value	Description
Phase	0005	Construction Phase
Construction Phase	A	Milestones
	BC	Administrative
	D	Submittals Construction
	E	Activities Closeout Phase Submittals
Submittals	SUB	Review & Approve
	R&A	Fabricate & Deliver
	F&D	

Other Codes to be prescribed by ENGINEER or requested by CONTRACTOR for project specific criteria.

1-24. ACTIVITY RELATIONSHIPS

1-24.01. Relationships between activities shall be identified with the following information:

a. Predecessor and successor activity ID.

b. Relationship types:

i. FS - Finish to start

ii. SS - Start to start

iii. FF - Finish to finish

iv. SF - Start to finish – This relationship is not allowed, unless authorized by ENGINEER.

1-25. PROJECT CALENDARS

1-25.01. Project Calendars shall use workdays and calendar days as the planning unit for the schedule. Use of Global Calendars is reserved for OWNER. Each calendar shall be set to start on Mondays with holidays in accordance with OWNER policy. The following calendars shall be used for each activity except as otherwise accepted by ENGINEER:

a. 5-Day x 8 Hour Workweek (with holidays) shall be used for 5-day 40-hour workweek activities: Monday through Friday. All holidays and non-work days shall be assigned to this calendar. This calendar shall be used for all normal work activities, submittals, and fabricate and delivery activities. This calendar shall be the default calendar for the project unless otherwise specified.

b. 5-Day x 10-Hour Workweek (with holidays) shall be used for 5-day 50-hour workweek

activities: Monday through Friday. All holidays and non-work days shall be assigned to this calendar.

c. 6-Day x 10-Hour Workweek (with holidays) shall be used for 6-day 60-hour workweek activities. Monday through Saturday. All holiday and non-work days shall be assigned to this calendar.

d. 7-Day Calendar (no holidays) shall be used for 7-day workweek activities. No non-work days shall be entered into this calendar.

e. Additional Calendars may be assigned depending on need. However, CONTRACTOR shall consult with ENGINEER before other calendars are entered and/or used in the Progress Schedule.

1-25.02. The work day to calendar day correlation shall be based on a single shift and 5- day work week with adequate allowance for holidays, adverse weather and all other special requirements of the Work. CONTRACTOR may, at his option, propose alternate baseline calendars to allow a second shift and/or a single shift on Saturdays subject to the concurrence and acceptance of OWNER. Under no circumstances will a schedule be accepted which allows regularly scheduled work on Sundays.

1-25.03. The holidays observed by OWNER are as follows:

New Year's Day
M.L. King Jr. Day
Memorial Day
July 4th
Labor Day
Veterans Day
Thanksgiving Day
Day after Thanksgiving Day
Christmas Day

1-25.04. FLOAT. CONTRACTOR shall not use Float suppression techniques, including preferential sequencing (arranging critical path through activities more susceptible to OWNER caused delay); lag logic restraints; zero total or free Float constraints; extended activity times; or imposing constraint dates other than as required by the CONTRACT. Float suppression will be cause for rejection of the preliminary Progress Schedule or full Progress Schedule and its updates.

1-25.05. MANDATORY MILESTONES. The CONTRACT duration shall be equal to the time period between the Notice to Proceed and the completion of the Work in readiness for final payment. The following milestones are mandatory.

a. Notice to Proceed.
b. Milestones, if any, as indicated in CONTRACTOR'S Bid.
c. Substantial Completion as indicated in CONTRACTOR'S Bid.
d. Completion and readiness for final payment, as indicated in CONTRACTOR'S Bid.

1-25.06. The following additional milestones are to be considered and incorporated into the

Progress Schedule in accordance with the CONTRACT, if applicable.

a. Permit constraints.
b. Facility shut down or outage milestone requirements.
c. Applicable phasing milestones.
d. Other milestones deemed appropriate by ENGINEER.

END OF SECTION

SECTION 01313

CONSTRUCTION AND SCHEDULE CONSTRAINTS

1-1. SCOPE

1-1.01 The WORK shall be scheduled, sequenced, and performed in a manner which minimizes disruption to the operation and maintenance of the existing Morris Bridge Wellfield and booster station.

1-1.02 The CONTRACTOR shall incorporate the construction and schedule constraints of this section in preparing the construction schedule required under Section 01310 – Construction Progress Schedule.

1-2. EXISTING INFRASTRUCTURE

1-2.01 The WORK shall be executed while the existing infrastructure is in operation, except authorized shutdowns. Operation of the existing infrastructure shall not be jeopardized nor shall the efficiency as a result of the execution of the WORK.

1-2.02 Unless indicated otherwise, temporary pumping, piping, power, lighting, controls, instrumentation, alarms, security devices, and safety devices shall be provided by the CONTRACTOR whenever its activity or interruption due to its activity affects the existing infrastructure.

1-2.03 The construction constraints in this Section do not include every item affecting the completion of the WORK but are intended to describe the sequence of critical events necessary to minimize disruption to the existing infrastructure operation. It shall be understood and agreed by the CONTRACTOR that the critical events described are not inclusive and that additional items of WORK not included may be required to minimize disruption and ensure compliance.

1-2.04 Deviation from or modification of these suggested sequences is permitted if techniques and methods known to the CONTRACTOR will result in less disruption, and if deviation is approved in advance by the ENGINEER.

1-3. OPERATION OF INFRASTRUCTURE

1-3.01 Operational functions (turning existing valves, turning off wells, etc.) or shutdowns required to facilitate CONTRACTOR'S operation will be done by the OWNER'S personnel only.

1-3.02 The OWNER’S operation and maintenance personnel will cooperate in every way that is practical in order to facilitate CONTRACTOR'S operation. However, certain shutdowns and connections may only be permissible at times other than normal working hours such as nights or weekends. No additional payment will be made to the CONTRACTOR for any night, weekend, or holiday premium or overtime payments.

1-3.03 If it becomes necessary for the proper operation or maintenance of portions of the infrastructure, the OWNER may require the CONTRACTOR to reschedule an approved shutdown.

The CONTRACTOR shall then reschedule its operations so there shall be no conflict with necessary operations or maintenance of the infrastructure. The CONTRACTOR shall, within two DAYS of notice by the OWNER that a rescheduled shutdown is necessary, furnish the ENGINEER a revised outage request and a plan for rescheduling the shutdown in accordance with the requirements of the construction schedule. No additional compensation will be given if the OWNER must cancel a scheduled shutdown.

1-4. OUTAGE REQUESTS

1-4.01 Modifications to existing infrastructure, the construction of new infrastructure, and the connection of new to existing infrastructure may require the temporary outage of existing infrastructure. In such cases, the CONTRACTOR shall coordinate WORK with the ENGINEER as described below. The CONTRACTOR shall submit a detailed outage plan and time schedule for construction activities which will make it necessary to remove a pipeline, electrical circuit, equipment, structure, road, or other infrastructure from service. CONTRACTOR shall coordinate with Florida authorities and state park personnel for power shutdowns.

1-4.02 The outage plans shall be submitted to the ENGINEER for acceptance a minimum of two weeks in advance of the time that such outages are required. The outage plans shall be coordinated with the construction schedule and shall meet the restrictions and conditions of this Section. The outage plan shall describe the length of time required to complete the operation; any necessary temporary power, controls, instrumentation, or alarms required to maintain control and monitoring, the amount of manpower, and equipment which the CONTRACTOR shall provide in order to ensure proper operation of associated infrastructure. Costs for preparing and implementing the outage plans shall be the responsibility of the CONTRACTOR as part of the WORK.

1-4.03 The CONTRACTOR shall not begin an alteration affecting existing infrastructure until specific written approval has been granted by the ENGINEER in each case.

1-4.04 The ENGINEER will coordinate the CONTRACTOR'S planned procedure with the OWNER’S personnel. The ENGINEER has the authority to modify any proposed shutdown procedures if such procedures would adversely impact the OWNER’S operations.

1-4.05 The ENGINEER shall be notified in writing at least two weeks in advance of the required outage if the schedule for performing the WORK has changed or if revisions to the outage plan are required. The CONTRACTOR shall provide written confirmation of the shutdown date and time two DAYS prior to the actual shutdown.

1-5. TEMPORARY CONNECTIONS

1-5.01 Making connections to existing infrastructure shall be thoroughly planned in advance, and required equipment, materials, and labor shall be on hand at the time of undertaking the connections. WORK shall be completed as quickly as possible and with as little delay as possible and shall proceed continuously (24 hours a DAY and seven DAYS a week) if necessary to complete modifications and/or connections in the minimum time.

1-5.02 The cost of any temporary facilities and night, weekend, or holiday activity and overtime payments required during process interruptions shall be included in the WORK.

1-5.03 Temporary facilities and piping shall be located to minimize interference with CONTRACTOR'S construction facilities and OWNER'S operation and maintenance of the existing infrastructure. Unless otherwise indicated, each temporary pipeline shall be of the same size as its connection to the existing or permanent facility at the downstream end of the pipeline. Piping materials shall be suitable for the material being conveyed and be as required in the CONTRACT SPECIFICATIONS.

1-5.04 When temporary electrical power, controls, instrumentation, or alarms are required for routine continuous operations of existing or new equipment, the CONTRACTOR shall provide the necessary equipment and appurtenances. Prior to installing said equipment and appurtenances, CONTRACTOR shall furnish a submittal on the proposed components and installation for ENGINEER'S review and approval.

1-5.05 A plan showing the size and location of the temporary facilities and piping shall be submitted to the ENGINEER at the same time as the outage plan required under this Section. Costs for design, provision, operation, and removal of temporary facilities and piping shall be part of the WORK.

1-6. PROJECT COMPONENTS REQUIRING CONSTRUCTION SEQUENCING AND SCHEDULE CONTRAINTS

1-6.01 The Morris Bridge Wellfield shall remain in service during the execution of this PROJECT. To achieve this objective, the CONTRACTOR shall execute the WORK in a sequence that has a maximum of five (5) wells out of service for PROJECT WORK, at any time during the PROJECT. Proposed grouping for wells out of service are:

- Group 1: MBR-153, MBR-154, MBR-155, MBR-156, MBR-158
- Group 2: MBR-150, MBR-151, MBR-159, MBR-160, MBR-164
- Group 3: MBR-165, MBR-166, MBR-167, MBR-168, MBR-169

1-6.02 CONTRACTOR is required to finish the WORK on the group of 5 wells before beginning the WORK on the group, which includes commissioning, testing and clearance to be put back in service, as further described in 1.7 below.

1-7. CONSTRUCTION SEQUENCING

1-7.01. Construction Sequencing. Construction activities shall be scheduled and sequenced to ensure continuous operation of the existing facilities, unless otherwise specifically allowed for in these CONTRACT DOCUMENTS and with written authorization from the OWNER. The CONTRACTOR'S scheduling shall develop construction sequencing so that the WORK will not adversely impact OWNER’S operations, which, as stated in 1.6 above, require that a maximum of five (5) wells are out of service for PROJECT WORK, at any time during the PROJECT. The CONTRACTOR shall be responsible for development of the construction sequencing in accordance with the sequence note above. In implementing the construction sequencing, the CONTRACTOR shall maintain the remaining ten (10) existing wells in service until new facilities are constructed and are operational to supplement the operational capacity. When new facilities are operational and accepted by the OWNER, an equal number of existing wells may be taken out of service for execution of the WORK.

1-7.02 Demolition of the five (5) wells which will be taken out of service can be scheduled to occur

at any time during the execution of the project.

1-7.03. The following general guidelines shall be used by the CONTRACTOR in planning the sequence of construction.

1-7.03.01 Safe working conditions for personnel shall be maintained during rehabilitation, modification, and demolition WORK. The foregoing includes at least the provision of temporary equipment guards, supports, warning signs, walkways, covers over openings, hand railing, protection of electrical equipment and power supply, and proper trench excavation, when required.

1-7.03.02. Temporary facilities shall be constructed in accordance with applicable codes and regulations to operate safely and properly.

1-7.03.03. Above-grade valves to be temporarily shut off during the WORK shall be tagged as such and shall be chained and padlocked. Buried valves shall have the valve box cover secured. Opening and closing of all existing valves shall be done by the OWNER.

1-7.03.04. Electrical and mechanical equipment shall be similarly shut down.

1-7.04. Specific Construction Sequencing Requirements. The following construction sequencing requirements are necessary to ensure that Tampa Bay Water can continuously meet water demands:

- ALL WELLS – No WORK shall commence on a new group of wells until all of the WORK on the previous group of five (5) wells has been completed and OWNER's acceptance is received for return to normal operation.

- All WELLS – Bacteriological clearance on the wells requires that for each well, 10 samples are taken over a 5-day period but at least 6 hours apart. The samples shall be taken and analyzed by the OWNER, unless specifically authorized otherwise by the OWNER on a case by case basis. This shall be per FDEP 62-550 and 62-555, F.A.C. requirements.

1-8. PERMITS

1-8.01. The CONTRACTOR shall abide by the conditions of permits and shall obtain proof of satisfaction of conditions from issuers of permits prior to acceptance of the WORK by the OWNER.

1-8.02. The CONTRACTOR is responsible for the gopher tortoise relocation and associated permits.

1-8.03. The CONTRACTOR is responsible for providing a survey reporting all eagle's nests near the project site, if any. If a nest is identified, the nest must be monitored throughout the entirety of the project, including during construction, startup, or testing activities, if the activities are within 660-feet of an active nest during the nesting season, October 1st through May 15th. The CONTRACTOR shall be responsible for any associated permits.

1-8.04. CONTRACTOR must comply with all permit conditions, but not limited to, those in the following permits. Copies of the permit conditions are contained in the permit notebook available for review and on file at the office of the ENGINEER.

1-8.05.01. The Florida Department of Environmental Protection (FDEP) Form 62- 555.900(1) Application for a Specific Permit to Construct PWS Components.

1-8.05.02. Hillsborough County Building Department – Building Permit(s).

1-9. SCHEDULE CONSTRAINTS.

1-9.01. General: It is the CONTRACTOR'S responsibility to coordinate and plan the construction activities to integrate each schedule constraint into performance of the overall WORK.

End of Section

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SECTION 01320

SCHEDULE OF VALUES

1-1. SCHEDULE OF VALUES

1-1.01. After review of the preliminary schedule at the preconstruction conference, and before submission of the first Application for Payment, CONTRACTOR shall prepare and submit to ENGINEER a Schedule of Values covering each lump sum item. The Schedule of Values, showing the value of each kind of work, shall be acceptable to ENGINEER before any Application for Payment is prepared.

1-1.02. The sum of the items listed in the Schedule of Values shall equal the CONTRACT PRICE. Such items as Bond premium, temporary construction facilities, and plant may be listed separately in the Schedule of Values, provided the amounts can be substantiated. Overhead and profit shall not be listed as separate items.

1-1.03. The Schedule of Values shall have sufficient detail such that partial completion of separable items of work can easily be calculated. The Schedule of Values shall have separate lines for manufacturer's field services, O&M manuals, and performance testing for each item of equipment requiring such services.

1-1.04. An unbalanced Schedule of Values providing for overpayment of CONTRACTOR on items of WORK which would be performed first will not be accepted. The Schedule of Values shall be revised and resubmitted until acceptable to ENGINEER. Final acceptance by ENGINEER shall indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments, and shall not constitute an agreement as to the value of each indicated item.

1-2. SCHEDULE OF PAYMENTS (NOT USED)

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SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1-1. CONSTRUCTION PHOTOGRAPHS BY CONTRACTOR

1-1.01. CONTRACTOR shall be responsible for the production of construction photographs as provided herein. ENGINEER shall designate the subject of each photograph.

1-1.02. A minimum of 10 photographs of each of the well sites, photographs of the pump/motor work areas, photographs of structural, HVAC, and electrical improvements where applicable and other pertinent features thereof, shall be taken before the commencement of Work and promptly submitted to ENGINEER. The same views shall be re-photographed upon completion of all construction activities and submitted with CONTRACTOR's application for final payment. Additional photographs shall be taken each month throughout the progress of the Work at such times as requested by ENGINEER and submitted with CONTRACTOR's application for progress payment.

1-1.03. All photographs shall be color digital, produced by a competent professional photographer. CONTRACTOR shall submit the photographs electronically. Digital images shall be compiled on CD, DVD, or Flash drive and provided with a descriptive index of the images.

ENGINEER will transmit the digital files to OWNER.

END OF SECTION

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SECTION 01382

VIDEO MONITORING AND DOCUMENTATION

PART 1 - GENERAL

1-1. VIDEO MONITORING AND DOCUMENTATION BY CONTRACTOR

1-1.01. CONTRACTOR shall be responsible for the production of pre-construction and construction videos and video documentation as provided herein.

1-2. PRE-CONSTRUCTION VIDEO MONITORING.

1-2.01. Pre-construction videos shall be documented by CONTRACTOR prior to commencing any work and promptly submitted to ENGINEER. Videos of the same views shall be produced upon completion of all construction activities and submitted with CONTRACTOR'S application for final payment. Pre-construction videos shall include the entire project area to serve as a record of the site's pre-construction conditions.

1-2.02. Videos shall be submitted in MPEG format with a minimum video resolution of 12 megapixels. Video submittals shall be made in accordance with Section 01300 – Submittal Procedures. In addition to project information required by the Section 01300, each video submittal shall include the following additional information:

- Date video was taken.
- Text description of area where video was taken, including vantage point, direction of view and elevation of camera.
- Text or audio description of purpose of video.
- Text or audio narration of extents and content of video.

END OF SECTION

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SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1-1. TESTING SERVICES

1-1.01. All tests to determine compliance with the CONTRACT DOCUMENTS shall be performed by an independent commercial testing firm acceptable to ENGINEER excluding testing as specified to be conducted directly by CONTRACTOR. The testing firm's laboratory shall be staffed with experienced technicians, properly equipped and fully qualified to perform the tests in accordance with the specified standards.

1-1.02. Testing services provided by OWNER are for the sole benefit of OWNER and/or as required by the governing building code; however, test results shall be available to CONTRACTOR. Testing necessary to satisfy CONTRACTOR'S internal quality control procedures shall be the sole responsibility of CONTRACTOR.

1-1.03. Testing Services provided by CONTRACTOR. Unless otherwise specified, CONTRACTOR shall provide all testing services in connection with the following:

a. Concrete materials and trial batch mixtures.

b. Concrete Moisture-density (Proctor) tests and relative density tests on embedment, fill, and backfill materials.

c. Asphaltic concrete materials and design mixtures.

d. Embedment, fill, and backfill materials.

e. In-place field density tests on embedments, fills, and backfill.

f. All other tests and engineering data required for ENGINEER’S review of materials and equipment proposed to be used in the Work.

g. Any inspections, tests, or approvals required for OWNER or ENGINEER acceptance of materials or equipment to be incorporated in the Work.

1-1.04. This includes any items required for acceptance of materials, concrete mix designs or equipment submitted for approval prior to CONTRACTOR’s purchase for incorporation in the Work.

1-1.05. Testing, adjusting, and balancing of mechanical, electrical, and other equipment and systems as specified to be incorporated into the Work. This includes services required by manufacturers of equipment or other products such as concrete repair products, pipe, coatings, linings and roof membranes furnished under the CONTRACT DOCUMENTS.

1-1.06. Any Work (or part thereof) required by the CONTRACT DOCUMENTS to be approved by OWNER or ENGINEER, including cleaning, disinfection, and all other aspects of clearing the system for use by any regulatory agencies.

1-1.07. Excluding those conducted directly by an Authority Having Jurisdiction, or expressly specified to be conducted directly by CONTRACTOR, inspections and tests shall be performed by independent inspectors, approved agencies, or other qualified individuals or entities acceptable to OWNER and ENGINEER.

1-1.08. Transmittal of Test Reports. Written reports of tests and engineering data furnished by CONTRACTOR for ENGINEER'S review of materials and equipment proposed to be used in the Work shall be submitted as specified for SHOP DRAWINGS.

1-2. OFFSITE INSPECTION

1-2.01. Inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, will be performed by ENGINEER or an independent testing firm or Approved Agency acceptable to ENGINEER as specified in the materials and equipment sections.

1-2.02. Except as otherwise specified in other sections, CONTRACTOR shall give appropriate written notice to ENGINEER not less than 10 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

1-2.03. The inspection organization will submit a written report to ENGINEER, with a copy to CONTRACTOR, at least once each week or as directed by the Statement of Special Inspections as applicable.

1-3. MANUFACTURER'S FIELD SERVICES.

1-3.01. Manufacturer's field services shall be as specified herein unless otherwise noted in the respective equipment sections.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

1-1. OFFICE AT SITE OF WORK

1-1.01. During the performance of this CONTRACT, CONTRACTOR shall maintain a suitable office at the Site, in the location as noted on the DRAWINGS, which shall be the headquarters of its representative authorized to receive DRAWINGS, instructions, or other communication or articles. The CONTRACTOR's office space at the site shall include a meeting space sufficiently sized to hold regular project meetings and shall include tables and chairs for up to 15 people. Any communication given to the said representative or delivered at CONTRACTOR'S office at the Site in the representative's absence shall be deemed to have been delivered to CONTRACTOR.

1-1.02. Copies of the DRAWINGS, SPECIFICATIONS, and other CONTRACT DOCUMENTS shall be always kept at CONTRACTOR's office at the Site and available for use.

1-1.03. In addition, CONTRACTOR shall provide a suitable field office with at least 160 square feet of floor space, adjacent to his office at the Site, for use of the Resident Project Representative (RPR) and inspectors. The partitioning off of the CONTRACTOR's own office space for use by the RPR will not be permitted. The office shall be provided with two outside entrance doors having a substantial lock and stairs with handrail to access the office. A concrete stoop with boot scraper shall be provided at the foot of the stairs. Gravel shall be placed and maintained throughout the life of the project in a 10-foot-wide area around the office perimeter. Skirting shall be installed around the entire perimeter of the office, and the office shall be provided with the necessary tie downs. A pole mounted light shall be provided to adequately illuminate the area outside the office.

1-1.04. Windows for light and ventilation shall be provided in the RPR's office. All windows shall be equipped with blinds. Adequate indoor lighting and thermostatically controlled heating and air conditioning shall be provided.

1-1.05. CONTRACTOR shall pay all electricity and heating bills and shall provide voice and data services as specified herein.

1-1.06. The RPR's office shall be plumbed for both hot and cold-water service. A restroom located inside the office shall be provided and shall include a sink with hot and cold-water service and a toilet. There are no existing sanitary sewers at project site; therefore, CONTRACTOR shall provide an adequately sized holding tank designed for sanitary waste for RPR trailer restroom, or other provisions as necessary. The tank shall be located away from RPR's office and shall be properly anchored. CONTRACTOR shall be responsible for emptying the holding tank on a weekly basis. The RPR will not be required to use portable sanitary facilities on a regular basis, due to a lack of available facilities.

1-1.07. The office shall be furnished with a desk, a four-drawer filing cabinet, a worktable, two chairs, two plan racks, a 2'-6" wide X 6' high bookcase with six shelves, printer/company machines with associated supplies, such as printer ink, pens, and paper. Appliances to be provided shall include a 1.2 cubic foot, 1000-watt microwave oven and a 4.4 cubic foot refrigerator with freezer.

1-1.08. A cleaning service shall clean the RPR's office weekly throughout the project duration. All office cleaning fees shall be paid by CONTRACTOR.

1-1.09. Maintenance of the RPR's office shall be by CONTRACTOR throughout the duration of the project. Maintenance requests not resolved in 48 hours may be resolved by the RPR and the cost of such maintenance back charged to CONTRACTOR.

1-1.10. The general arrangement of the RPR's office and facilities provided shall be acceptable to ENGINEER.

2-1. WATER

2-1.01. There is no potable water available at the project site. The CONTRACTOR must provide water service to the restroom facilities in the RPR trailer, including hotwater to the sink. If piped water from a non-potable water source is used for the restroom, the restroom must have a sign displayed prominently that reads "NON-POTABLE WATER, DO NOT DRINK"; or similar. Additionally, the CONTRACTOR must provide drinking water in bottles, delivered to the trailer weekly or more frequently as needed. The water shall be provided with a commercial-grade top-load dispenser and include hot and cold waterspouts.

2-1.02. No separate payment for water used or required will be made and all costs in connection therewith shall be included in the BID.

3-1. POWER

3-1.01. Power for heating, lighting, and operation of CONTRACTOR's plant, all trailers and equipment in connection with the Work to be done under this Contract shall be provided by OWNER without charge to CONTRACTOR, subject to the following conditions:

a. CONTRACTOR at its own expense shall make authorized connections to the existing power sources and shall extend temporary service lines to the required areas. The CONTRACTOR is responsible for all temporary power distribution and equipment. Temporary wiring shall conform to Article 590 of the NEC.

b. CONTRACTOR shall at all times provide adequately against waste and needless use of power. Electrical power shall be used only in such quantities as will not interfere with OWNER's requirements, and care shall be taken not to overload the existing facilities. CONTRACTOR shall provide any additional or temporary electrical power or power of other voltages it may require for prosecution of the Work.

c. CONTRACTOR shall determine temporary power requirements prior to construction. CONTRACTOR shall coordinate temporary power requirements with the sequence of construction activities and the OWNER to confirm availability and limitations of identified sources. Power cannot be sourced from a well that is in service due to limited transformer capacity.

3-1.02. These provisions shall not be construed as a guarantee by OWNER of the uninterrupted continuation of power, and interruptions beyond the control of OWNER shall not be reason for claims for additional costs nor for extensions of time. CONTRACTOR shall provide, at no additional cost to OWNER, any necessary power required for prosecution of the Work during such interruptions.

4-1. VOICE AND DATA SERVICES

4-1.01. CONTRACTOR shall make all necessary arrangements and pay all installation charges cell phone and hotspot internet service.

4-1.02. CONTRACTOR's attention is called to the fact that no landline telephone or internet service is available at the site. As such, CONTRACTOR shall make such provisions by alternate means (cellular signal booster, radio repeaters, satellite, etc.).

5-1. SANITARY FACILITIES

5-1.01. CONTRACTOR shall furnish temporary sanitary facilities at the Site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.

5-1.02. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. CONTRACTOR shall enforce the use of such sanitary facilities by all personnel at the Site.

6-1. FENCES

6-1.01. All existing fences affected by the Work shall be maintained by CONTRACTOR until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the OWNER of the fence, and the period the fence may be left relocated or dismantled has been agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

6-1.02. On completion of the Work across any tract of land, CONTRACTOR shall restore all fences to their original or to a better condition and to their original locations, unless directed otherwise by OWNER's representative.

7-1. PROTECTION OF PUBLIC AND PRIVATE PROPERTY

7-1.01. Public utility installations and structures shall include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto whether owned or controlled by the OWNER, other governmental bodies or privately owned by individuals, firms or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, telecommunications, cable television, sewerage, drainage, water or other public or private property that may be affected by the WORK.

7-1.02. CONTRACTOR shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains, wires, manholes, vaults, and other underground construction uncovered or otherwise affected by its construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod and shrubs in yards, parkways, and medians, shall be restored to their original condition, whether within or outside the easement. All replacements shall be made with new materials.

7-1.03. No trees shall be removed, except where authorized by the CONTRACT DOCUMENTS. Whenever practicable, CONTRACTOR shall tunnel beneath trees in yards and parking when on or near the line of trench. Hand excavation shall be employed as necessary to prevent injury to trees. Trees left standing shall be adequately protected against damage from construction operations.

7-1.04. CONTRACTOR shall be responsible for all damage to streets, roads, highways, shoulders, trails, ditches, embankments, culverts, bridges, trails, and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or workers to or from the Work or any part or site thereof, whether by CONTRACTOR or its SUBCONTRACTORs.

7-1.05. CONTRACTOR shall make satisfactory and acceptable arrangements with the OWNER of, or the agency or authority having jurisdiction over, the damaged property concerning its repair or replacement, or payment of costs incurred in connection with the damage. The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the CONTRACTOR as herein provided, shall be done by methods approved by the owners of such utilities.

7-1.06. The CONTRACTOR shall, at all times in performance of the WORK, employ approved methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of public utility installations and structures; and shall, at all times in the performance of the WORK, avoid unnecessary interference with or interruption of public utility service, and shall cooperate fully with the owners thereof to that end.

8-1. DAMAGE TO EXISTING PROPERTY

8-1.01. CONTRACTOR will be held responsible for any damage to existing structures, Work, materials, or equipment because of his operations and shall repair or replace any damaged structures, Work, materials, or equipment to the satisfaction of, and at no additional cost to, OWNER.

8-1.02. CONTRACTOR shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.

8-1.03. CONTRACTOR shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, trails, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or workers to or from the Work. CONTRACTOR shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

9-1. TREE AND PLANT PROTECTION

9-1.01. All trees and other vegetation which must be removed to perform the Work shall be removed and disposed of by CONTRACTOR; however, no trees or cultured plants shall be unnecessarily removed unless their removal is indicated on the DRAWINGS. All trees and plants not removed shall be protected against injury from construction operations.

9-1.02. Trees considered by ENGINEER to have any significant effect on construction operations are indicated on the DRAWINGS and those which are to be preserved are so indicated.

9-1.03. CONTRACTOR shall take extra measures to protect trees designated to be preserved, such as erecting barricades, trimming to prevent damage from construction equipment, and installing pipe and other Work by means of hand excavation or tunneling methods. Such trees shall not be endangered by stockpiling excavated material or storing equipment against their trunks.

9-1.04. When injuring or removal of trees designated to be preserved cannot be avoided, or when removal and replacement is indicated on the DRAWINGS, each tree injured beyond repair or removed shall be replaced with a similar tree of the nearest size possible.

9-1.05. All trimming, repair, and replacement of trees and plants shall be performed by qualified nurserymen or horticulturists.

10-1. SECURITY

10-1.01. The site is enclosed with existing gates and security fencing; however the CONTRACTOR shall be responsible for protection of the Site, and all Work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

10-1.02. No Claim shall be made against OWNER by reason of any act of an employee or trespasser, and CONTRACTOR shall make good all damage to OWNER's property resulting from CONTRACTOR’s failure to provide security measures as specified.

10-1.03. Security measures shall be at least equal to those usually provided by OWNER to protect OWNER’s existing facilities during normal operation, but shall also include such additional security fencing, barricades, lighting, and other measures as required to protect the Site.

11-1. PROTECTION OF WORK AND PUBLIC

11-1.01. The CONTRACTOR shall comply with all applicable LAWS AND REGULATIONS and all permit conditions in the execution of the WORK.

11-1.02. Barriers and Lights

- During the prosecution of the WORK, the CONTRACTOR shall put up and maintain at all times such barriers and lights as shall effectually prevent accidents.

- The CONTRACTOR shall provide suitable barricades, red lights, “danger” or “caution” or “street closed” signs and watchmen at all places where the WORK causes obstructions to the normal traffic or constitutes in any way a hazard to the public.

- The CONTRACTOR shall install temporary fencing in areas where fencing is removed or in areas accessed by livestock to protect the WORK, the public, and livestock.

11-1.03. Smoke Prevention

The CONTRACTOR shall use hard coal, coke, oil or gas as fuel for equipment generating steam. Strict compliance with LAWS AND REGULATIONS regulating the production and emission of

smoke shall be required.

11-1.04. Noise

The CONTRACTOR shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The CONTRACTOR shall strictly observe all LAWS AND REGULATIONS covering noise control.

11-1.05. Access to Public Services

Neither the materials excavated nor the materials or plant used in the construction of the WORK shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

12-1. ACCESS ROADS

12-1.01. CONTRACTOR shall establish and maintain temporary access roads to various parts of the Site as required to complete the Project. Such roads shall be available for the use of all others performing Work or furnishing services in connection with the Project.

13-1. PARKING

13-1.01. CONTRACTOR shall provide and maintain suitable parking areas for the use of all workers and others performing work or furnishing services in connection with the Project, as required to avoid any need for parking personal vehicles where they may interfere with public traffic, OWNER's operations, or construction activities.

14-1. DUST CONTROL

14-1.01. CONTRACTOR shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. When practicable, dusty materials in piles or in transit shall be covered to prevent blowing dust.

14-1.02. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

15-1. TEMPORARY DRAINAGE PROVISIONS

15-1.01. CONTRACTOR shall provide for the drainage of storm water and such water as may be applied or discharged on the Site in performance of the Work. Drainage facilities shall be adequate to prevent damage to the Work, the Site, and adjacent property.

15-1.02. Existing drainage channels and conduits shall be cleaned, enlarged, or supplemented as necessary to carry all increased runoff attributable to CONTRACTOR's operations. Dikes shall be constructed as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect OWNER's facilities and the Work, and to direct water to drainage channels or conduits. Ponding shall be provided as necessary to prevent downstream flooding.

16-1. EROSION CONTROL

16-1.01. CONTRACTOR shall prevent erosion of soil on the Site and adjacent property resulting from its construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operation that will disturb the natural protection.

16-1.02. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation shall be preserved to the greatest extent practicable. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

16-1.03. The CONTRACTOR, at no expense to the OWNER, shall remove any siltation deposits and correct any erosion problems as directed by the OWNER which results from construction operations.

17-1. POLLUTION CONTROL

17-1.01. CONTRACTOR shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes shall be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance shall be permitted to enter sanitary sewers, and reasonable measures shall be taken to prevent such materials from entering any drain or watercourse.

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

1-1.01. The WORK specified in this Section includes the preparatory work and operations in mobilizing for beginning work on the PROJECT including, but not limited to, those operations necessary for the movement of personnel, pumps, motors, other equipment, supplies and incidentals to the project site, tree protection, temporary buildings, other construction facilities/field offices, safety equipment and first aid supplies, demobilization, and any other items necessary for the proper performance and completion of the WORK in accordance with the CONTRACT DOCUMENTS and as required by State and Local LAWS AND REGULATIONS.

1-1.02. The cost of bonds and required insurance, and any other preconstruction expense necessary for the start of the WORK, excluding the cost of construction materials, shall also be included in this Section.

1-1.03. The cost of field engineering, permitting and permit fees, initial PROGRESS SCHEDULE, color photographs, pre- and post-construction records, research and detection of underground facilities, sanitary and other temporary utilities, are included in this Section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01540

SECURITY

PART 1 - GENERAL

1-1. DESCRIPTION

1-1.01. The CONTRACTOR shall require its personnel, and the personnel of its SUBCONTRACTORS and SUPPLIERS, to cooperate at all times with the OWNER's, CITY's, and COUNTY's security policies and personnel at Tampa Bay Water facilities, including, but not limited to, check-in and check-out when entering and leaving the site.

1-1.02. The CONTRACTOR shall ensure that each employee, representative, SUBCONTRACTOR, SUPPLIER, and others acting for the CONTRACTOR, uses designated access roads and parking areas.

1-1.03. The CONTRACTOR shall ensure that all personnel and personnel of its SUBCONTRACTORS meet the standard for the Jessica Lundsford Act while working on any agency property adjacent to a school.

1-1.04. The CONTRACTOR shall employ watchmen on the WORK when necessary and shall erect and maintain such strong and suitable barriers and such lights as shall effectually prevent the happening of any accident to health or to property or to any partially completed WORK or to any materials stored on or adjacent to the site of the WORK.

1-1.05. Materials shall be stored at the designated contractor's laydown area and shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Materials at risk for theft shall be secured by the CONTRACTOR in a manner appropriate to the location.

1-1.06. The CONTRACTOR will be required to provide a copy of the driver's license for those receiving keys. Access materials must be returned to the owner upon final completion. It is the responsibility of the CONTRACTOR to safeguard access materials which are to be used by the assigned party and to notify the OWNER of lost or stolen keys.

1-1.07. All of the above shall be provided at no additional cost to the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01610

GENERAL EQUIPMENT STIPULATIONS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. When an equipment specification section in this CONTRACT references this section, the equipment shall conform to the general stipulations set forth in this section, except as otherwise specified in other sections.

1-2. COORDINATION

1-2.01. CONTRACTOR shall coordinate all details of the equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible. CONTRACTOR shall be responsible for all structural and other alterations in the Work required to accommodate equipment differing in dimensions or other characteristics from that contemplated in the Drawings or Specifications.

1-3. MANUFACTURER'S EXPERIENCE

1-3.01. Unless specifically named in the Specifications, a manufacturer shall have furnished equipment of the type and size specified which has been in successful operation for not less than the past 5 years.

1-4. WORKMANSHIP AND MATERIALS

1-4.01. The CONTRACTOR shall provide and maintain modern plant, tools, and equipment as may be necessary, in the opinion of the OWNER, to perform in a satisfactory and acceptable manner all the WORK. Only equipment of established reputation and proven efficiency shall be used. The CONTRACTOR shall be solely responsible for the adequacy of the workmanship, materials and equipment, prior approval of the OWNER notwithstanding.

1-4.02. CONTRACTOR shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

1-4.03. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable ENGINEERING and shop practice. Individual parts shall be manufactured to standard sizes and thicknesses so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

1-4.04. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4 inch thick. When dissimilar metal components are used, consideration shall be given to prevention of galvanic corrosion.

1-5. STRUCTURAL DESIGN REQUIREMENTS

1-5.01. All equipment, including non- structural components and non-building structures as defined in ASCE 7, and their anchorage, shall be designed and detailed in accordance with Section 01613 Structural Design, Support, and Anchorage.

1-6. LUBRICATION

1-6.01. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.

1-6.02. Lubricants of the types recommended by the equipment manufacturer shall be provided in sufficient quantities to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by OWNER. Lubricants for equipment where the lubricants may come in contact with water before or during a potable water treatment process or with potable water, shall be food grade lubricants. This includes lubricants for equipment not normally in contact with water, but where accidental leakage of the lubricants may contaminate the water.

1-6.03. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

1-7. ELECTRIC MOTORS

1-7.01. Unless otherwise specified, motors furnished with equipment shall meet the requirements specified in Section 11213 Deep Well Submersible Vertical Turbine Pumps.

1-8. DRIVE UNITS

1-8.01. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. Drive units shall be designed for 24 hour continuous service.

1-9. GEAR MOTORS

1-9.01. The use of gearmotors sharing an integral housing or cutgears into the motor output shaft, or that require removal of lubricant from the gear reducer to change out the motor will not be acceptable.

1-10. GEAR REDUCERS

1-10.01. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated, rolling element, antifriction bearings throughout.

1-10.02. Unless superseded by individual specification requirements each helical, spiral bevel, combination bevel-helical, and worm gear reducers shall have a service factor of at least 1.50

based on the nameplate horsepower of the drive motor. Cycloidal gear reducers shall have a service factor of at least 2.0 based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class III. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall be designed and manufactured in compliance with applicable most current AGMA standards, except the L10 bearing life shall be 200,000 hours.

1-10.03. The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F.

1-10.04. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent over greasing of the bearing. The use of permanently sealed grease lubricated bearings will not be acceptable in large sized reducers. In small reducers, similar to basin equipment, permanently sealed grease lubricated bearings rated L10 200,000-hour life may be provided at the manufacturer's option. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings. A dipstick or a sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.

1-10.05. Gear reducers which require the removal of parts or the periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.

1-10.06. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

1-11. ADJUSTABLE SPEED DRIVES (NOT USED)

1-12. V -BELT DRIVES (NOT USED)

1-13. SAFETY GUARDS

1-13.01. All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard. Safety guards shall be fabricated from 16 USS gage thick or thicker galvanized, aluminum-clad sheet steel, or stainless sheet steel or from 1/2 inch mesh galvanized expanded metal, or pultrusion molded UV resistant materials. Each safety guard shall be reinforced or shaped to provide suitable strength to prevent vibration and deflection and shall comply with OSHA. Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.

1-14. ANCHOR BOLTS

1-14.01. Equipment suppliers shall furnish suitable anchor bolts for each item of equipment. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete is placed. Anchor bolt materials shall comply with the Anchorage in Concrete and Masonry section, and sleeves shall be provided as indicated on the drawings. Unless otherwise specified, anchor bolts shall be at least 3/4 inch in diameter.

1-14.02. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

1-15. EQUIPMENT BASES

1-15.01. Unless otherwise indicated or specified, all equipment shall be installed on concrete bases at least 6 inches high. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment. Each unit and its drive assembly shall be supported on a single baseplate of neat design. Baseplates shall have pads for anchoring all components, and adequate grout holes. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout as specified in Section 03315 Grouting.

1-16. SPECIAL TOOLS AND ACCESSORIES

1-16.01. The CONTRACTOR shall, unless otherwise stated in the CONTRACT DOCUMENTS, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment. Such tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

1-16.02. Spare parts shall be furnished as specified herein and shall comply with one of the following requirements:

- Those spare parts not available to the OWNER within twenty-four (24) hours.
- Those spare parts identified by the SUPPLIER as critical.
- Those spare parts so specified.
- A list of all spare parts with manufacturer part numbers, descriptions, current costs, and models shall be provided with the spare parts.

1-16.03. Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the SUPPLIER'S (manufacturer's) name, model name or number, year of manufacture, serial number, cost, supplier purchased from, and weight.

1-16.04. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

1-17. SHOP PAINTING

1-17.01. All iron and steel surfaces of the equipment shall be protected with suitable protective coatings applied in the shop. Surfaces of the equipment that will be inaccessible after assembly shall be protected for the life of the equipment. Coatings shall be suitable for the environment where the equipment is installed. Exposed surfaces shall be finished, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with an epoxy or polyurethane enamel or universal type primer suitable for top coating in the field with a universal primer and aliphatic polyurethane system.

1-17.02. Surfaces to be coated after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of a universal primer.

1-17.03. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound as recommended by the equipment manufacturer.

1-18. PREPARATION FOR SHIPMENT

1-18.01. Equipment shall be prepared for shipment as specified in Section 01612 Product Delivery Requirements.

1-19. STORAGE

1-19.01. Handling and storage of equipment shall be as specified in Section 01614 Product Storage and Handling Requirements section.

1-20. INSTALLATION AND OPERATION

1-20.01. The CONTRACTOR shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the WORK and to handle all emergencies normally encountered in WORK of this character.

1-20.02. Equipment shall be erected in a neat and workmanlike manner on the foundations, at the locations and at the elevations shown on the DRAWINGS, unless directed otherwise by the OWNER during installation. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

1-20.03. The CONTRACTOR shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be AS APPROVED by the ENGINEER and made

of ample size and strength for the purpose intended. Substantial templates and working drawings for installation shall be furnished by the CONTRACTOR.

1-20.04. Installation and operation shall be as specified in respective equipment sections and Section 01650 Startup, Testing, and Commissioning.

1-21. OBSERVATION OF PERFORMANCE TESTS

1-21.01. Where the Specifications require the presence of ENGINEER, initial tests shall be observed or witnessed by ENGINEER. OWNER shall be reimbursed by CONTRACTOR for all costs of subsequent visits by ENGINEER to witness or observe incomplete tests, retesting, or subsequent tests.

1-22. PROGRAMMING SOFTWARE

1-22.01. Programming software shall be provided for any equipment which includes a programmable logic controller (PLC) or other digital controller that is user-programmable. The software shall be suitable for loading and running on a laptop personal computer operating with a Windows- based operating system. A copy of the manufacturer's original operating logic program shall be provided for use in maintaining and troubleshooting the equipment. Where multiple pieces of equipment, from the same or different vendors, use the same programming software, only one copy of the software need be provided.

END OF SECTION

SECTION 01612

PRODUCT DELIVERY REQUIREMENTS

PART 1 – GENERAL

1-1. SCOPE

1-1.01. This section covers packaging and shipping of materials and equipment.

1-2. PREPARATION FOR SHIPMENT

1-2.01. All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

1-2.02. Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted and coated surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

1-2.03. Grease and lubricating oil shall be applied to all bearings and similar items.

1-3. SHIPPING

1-3.01. Before shipping, each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1-4. DELIVERY

1-4.01. The CONTRACTOR shall deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the WORK so as to complete the WORK within the CONTRACT TIME.

1-4.02. The CONTRACTOR shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the WORK of any related CONTRACTOR.

1-4.03. The CONTRACTOR shall be solely responsible for delivery, receipt, inspection, loading, and unloading of materials and equipment. OWNER shall not receive, load, or unload deliveries. Materials and equipment shall not be delivered to OWNER warehouse(s).

END OF SECTION

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SECTION 01613

STRUCTURAL DESIGN, SUPPORT AND ANCHORAGE

PART 1 - GENERAL

1-1. THE REQUIREMENT

1-1.01. The Contractor shall provide calculations and details for structural and non-structural components, supports, and anchorages as required by the CONTRACT DOCUMENTS and the 7th Edition (2020) Florida Building Code (FBC). The CONTRACTOR shall furnish and install all such structural and non-structural components, supports, and anchorages in accordance with the calculations and details.

1-1.02. Where a conflict exists between the requirements of the CONTRACT DOCUMENTS and the 7th Edition (2020) FBC, the more stringent requirement shall apply.

1-1.03. Exemptions to this requirement that are permitted by the 7th Edition (2020) FBC, ASCE 7, or any other applicable Building Code or Reference Document, shall not apply unless the exemption is explicitly listed within this Specification Section.

1-1.04. Design parameters used to determine Wind design forces shall be as listed herein.

1-2. REFERENCES

1-2.01. FBC 7th Edition (2020) Florida Building Code

1-2.02. ASCE 7 American Society of Civil Engineers Standard 7-16 – Minimum Design Loads for Buildings and Other Structures.

1-2.03. ACI 318 Building Code Requirements for Structural Concrete (2014 edition)

1-2.04. TMS 402 Building Code Requirements for Masonry Structures (2016 edition)

1-2.05. TMS 602 Specifications for Masonry Structures (2016 edition)

1-3. CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. Calculations and Details

1-3.02.1. Calculations and details are considered a Delegated Designs as defined in the Florida Administrative Code.

1-3.02.2. Calculations and details shall be complete, accurate, and in accordance with the requirements of the FBC and ASCE 7, and shall be signed and sealed by a Professional Engineer registered in the State of Florida.

1-3.02.3. Calculations shall be clear and concise and show equipment and other non-structural component anchorage forces and the capacities of the anchorage elements proposed by the CONTRACTOR. The calculations shall substantiate a complete load path from the component or equipment being anchored into the supporting structure or foundation.

1-3.02.3.1. The calculations and details shall demonstrate a complete lateral and vertical load path, and shall clearly indicate all forces imposed on the supporting structure.

1-3.02.3.2. Calculations and details are required for all Non-Structural components, supports, anchorages, and attachments.

1-3.02.3.3. Non-Structural components shall include all architectural, mechanical, and electrical components, equipment, piping, ductwork, and all other similar or related appurtenances necessary to produce the complete architectural, mechanical, and electrical systems.

1-3.02.3.4. When the CONTRACT DOCUMENTS require the CONTRACTOR to design structures or structural components, calculations and details for those structures and structural components, and their supports, anchorages, and attachments, are required.

1-3.02.3.5. When computer generated calculations and analyses are included as part (or as the whole) of the calculations, the calculations shall include, but not be limited to, the following: derivations of all input parameters; clear indication of the applicable load combinations and building code equations; diagrams of all members, geometry, loads, forces, reactions and deflections, for all components and connections; and output results demonstrating all stress, force, deflection and other CONTRACT DOCUMENT and building code requirements have been satisfied.

1-3.02.3.6. All calculations associated with anchorage into concrete or masonry shall be done using Strength Level forces, and shall be in accordance with the applicable provisions of ACI 318 and TMS 402, respectively.

1-3.02.3.7. Refer to Part 2 below for additional requirements.

1-04 - WIND DESIGN CRITERIA

1-4.01. DESIGN REQUIREMENTS

1-4.01.1. Design Parameters:

Risk Category: IV.

Ultimate Design Wind Speed, V_{ult}: 155 miles per hour.

Nominal Design Wind Speed, V_{asd}: 120 miles per hour.

Exposure Category: C.

Topographic Factor, K_{zt}: 1.0.

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. Non-Structural Component Supports and Anchors

2-1.01.1. Unless otherwise indicated, non-structural component supports, anchors, and restrainers shall be adequately designed for all applicable static, dynamic, operational, and wind loads.

2-1.01.2. Wall-mounted equipment weighing more than 250 pounds or which is within 18-inches of the floor shall be provided with fabricated steel supports. Pedestals shall be of welded steel or engineered framing support systems. If the supported equipment is a panel or cabinet or is enclosed with removable sides, the pedestal shall match the supported equipment in appearance and dimensions.

2-1.01.3. All equipment and all other non-structural components shall be supported and anchored in place by methods that satisfy the building code and the CONTRACT DOCUMENTS.

2-1.01.4. All equipment and all other non-structural components shall be supported and anchored in place by methods that satisfy the manufacturer's applicable wind certification requirements.

2-1.01.5. Component attachments shall be bolted, welded, or otherwise positively fastened without consideration of frictional resistance produced by the effects of gravity.

2-1.02. Non-Building Structures

2-1.02.1 Non-Building Structures shall be designed in accordance with ASCE 7 Chapter 15.

2-1.02.2 Non-Building Structures, foundations, supports, anchors, and restrainers shall be adequately designed for all applicable static, dynamic, operational, and wind loads.

2-1.03. Anchors – General

2-1.03.1. The CONTRACTOR shall determine the size, type, capacity, location, and other placement requirements of anchorage elements. Anchoring methods and leveling criteria in the manufacturer's literature shall be followed. Submit methods and criteria with the calculations and details.

2-1.03.2. Anchor bolt calculations shall clearly show that the capacity of the anchor and the capacity of the concrete or masonry that the anchor is embedded in are adequate to resist all applicable load combinations, including wind loads.

2-1.03.3. Reduction factors associated with edge distance, embed length, grout and base plate thickness, and bolt spacing shall all be considered and based on the actual dimensions of the concrete or masonry that resists the anchorage forces.

2-1.03.4. Where anchorage is required into or through equipment pads, the following requirements shall apply unless otherwise approved by the ENGINEER:

2-1.03.4.1. For tensile forces, the embed length and associated concrete failure zone shall be provided entirely within the structural slab. No portion of the equipment pad may be considered as effective in resisting tensile forces.

2-1.03.4.2. For shear forces, the edge distance and associated concrete failure zone shall be provided entirely within the equipment pad. No portion of the structural slab may be considered as effective in resisting shear forces.

2-1.03.4.3. Anchor bolt details shall include required bolt diameter, embed, spacing, and edge distances.

2-1.03.4.4. Where additional reinforcement is required to satisfy anchorage requirements, such reinforcement shall be included in the anchorage details, and shall be furnished and installed by the CONTRACTOR.

2-1.04. Mechanical and Electrical Equipment Foundations

2-1.04.1. Equipment foundations are indicated on Drawings. The CONTRACTOR, through the equipment manufacturer, shall verify the size and weight of the equipment foundation to ensure compatibility with equipment.

2-1.04.02. Equipment foundation dimensions shall be coordinated with the equipment base geometry and the edge distance and embed requirements of the equipment anchorage calculations.

2-1.05. Mechanical and Electrical Equipment Equipment (Housekeeping) Pads

2-1.05.1. General

2-1.05.1.1. Equipment, tanks, control cabinets, enclosures, and related equipment shall be mounted on concrete equipment pads, unless otherwise indicated. The top surface of the equipment pads shall be level, unless otherwise indicated, or otherwise required by the equipment manufacturer.

2-1.05.1.2. Equipment pads shall be sized to accommodate the bearing and anchorage requirements of the equipment, subject to the constraints listed below.

2-1.05.1.3. Final geometry of the equipment pads shall not result in a condition that violates applicable building code provisions, including but not limited to the provisions of the National Electric Code.

2-1.05.2. Mechanical Equipment Pads

2-1.05.2.1. Mechanical equipment pad heights shall be coordinated with process equipment and piping elevation requirements. Where no such elevation constraints exist, the equipment pad height shall be as shown on the drawings, or as indicated below when no specific height is provided.

2-1.05.2.2. Equipment pads for mechanical equipment shall be 3.5 inches tall (maximum) at the front of the equipment.

2-1.05.2.3. Mechanical equipment pads shall extend not more than 2 inches beyond the front, back, and sides of the equipment, except as indicated below, unless otherwise shown on the drawings.

2-1.05.2.4. Where necessary to meet wind anchorage requirements, the pads may be extended beyond the 2 inch limit indicated above. The pads shall extend not more than 6 inches beyond the front, back, and sides of the equipment.

2-1.05.3. Electrical Equipment Pads

2-1.05.3.1. Electrical equipment pads shall be 3.5 inches tall (maximum) at the front of the equipment.

2-1.05.3.2. Electrical equipment pads shall extend not more than 2 inches beyond the front, back, and sides of the equipment, except as indicated below, unless otherwise shown on the drawings.

2-1.05.3.3. Where necessary to meet anchorage requirements, the pads may be extended beyond the 2 inch limit indicated above. The pads shall extend not more than 6 inches beyond the front, back, and sides of the equipment.

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

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SECTION 01614

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers delivery, storage, and handling of materials and equipment.

1-2. DELIVERY

1-2.01. CONTRACTOR shall bear the responsibility for delivery of equipment, spare parts, special tools, and materials to the site and shall comply with the requirements specified herein and shall provide required information concerning the shipment and delivery of the materials specified in this CONTRACT. These requirements also apply to any sub-suppliers making direct shipments to the Site.

1-2.02. CONTRACTOR shall, either directly or through contractual arrangements with others, accept responsibility for the safe handling and protection of the equipment and materials furnished under this CONTRACT before and after receipt at the port of entry. Acceptance of the equipment shall be made after it is installed, tested, placed in operation and found to comply with all the specified requirements.

1-2.03. All items shall be checked against packing lists immediately on delivery to the site for damage and for shortages. Damage and shortages shall be remedied with the minimum of delay.

1-2.04. Delivery of portions of the equipment in several individual shipments shall be subject to review of ENGINEER before shipment. When permitted, all such partial shipments shall be plainly marked to identify, to permit easy accumulation, and to facilitate eventual installation.

1-3. STORAGE

1-3.01. Upon delivery, all equipment and materials shall immediately be stored and protected until installed in the Work.

1-3.02. Stacked items shall be suitably protected from damage by spacers or load distributing supports that are safely arranged. No metalwork (miscellaneous steel shapes and reinforcing steel) shall be stored directly on the ground. Masonry products shall be handled and stored in a manner to hold breakage, chipping, cracking, and spalling to a minimum. Cement, lime, and similar products shall be stored off the ground on pallets and shall be covered and kept completely dry at all times. Pipe, fittings, and valves may be stored out of doors, but must be placed on wooden blocking. PVC pipe, geomembranes, plastic liner, and other plastic materials shall be stored off the ground on pallets and protected from direct sunlight.

1-3.03. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above 60°F. Electrical equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.

1-3.04. Equipment having moving parts, such as gears, bearings, and seals, shall be stored fully lubricated with oil, grease, etc., unless otherwise instructed by the manufacturer. Manufacturer's storage instructions shall be carefully followed by CONTRACTOR.

1-3.05. When required by the equipment manufacturer, moving parts shall be rotated a minimum of twice a month to ensure proper lubrication and to avoid metal to metal "welding". Upon installation of the equipment, CONTRACTOR shall, at the discretion of ENGINEER, start the equipment at one-half load for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

1-3.06. When required by the equipment manufacturer, lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment by CONTRACTOR at the time of acceptance.

1-3.07. Equipment and materials shall not show any pitting, rust, decay, or other deleterious effects of storage when installed in the Work.

1-3.08. In addition to the protection specified for prolonged storage, the packaging of spare units and spare parts shall be for export packing and shall be suitable for long-term storage in a damp location. Each spare item shall be packed separately and shall be completely identified on the outside of the container.

1-4. HANDLING.

1-4.01. Stored items shall be laid out to facilitate their retrieval for use in the Work. Care shall be taken when removing the equipment for use to ensure the precise piece of equipment is removed and that it is handled in a manner that does not damage the equipment.

1-4.02. During handling, carbon steel constructed material including chains, straps, and forks on lifting equipment shall not directly contact any equipment or material constructed of stainless steel. It shall be the CONTRACTOR'S responsibility to correct any carbon steel contamination of stainless steel.

END OF SECTION

SECTION 01615

EQUIPMENT AND VALVE IDENTIFICATION

PART 1 – GENERAL

1-1. SCOPE

1-1.01. This section covers the furnishing and installation of nameplates and tags for identification of equipment, valves, panels, and instruments.

1-2. GENERAL

1-2.01. Except as otherwise specified in equipment, valve, and instrumentation sections, nameplates and tags shall be as specified herein. Nameplates or tags shall be provided for all equipment, valves, operator interfaces, control and electrical panels, cabinets, instruments, and instrument racks that have been named and/or tagged on the Drawings.

1-3. SUBMITTALS

1-3.01. Drawings and data shall be submitted in accordance with the requirements of the Submittals Procedures section for each type of tag provided including materials, colors, sizes, letter sizes, and installation instructions.

PART 2 - PRODUCTS

2-1. EQUIPMENT NUMBER PLATES

2-1.01. All equipment tagged on the drawings, except for submerged equipment shall be provided with number plates bearing the equipment tag number identified on the Drawings. Number plates shall be beveled, 1/8th inch thick laminated black phenolic plastic engraving stock with white core. Lettering on number plates shall be capitalized block letters ¾ inch high. Number plate height shall be twice the letter height. Number plate length shall be as needed, with suitable margins all around. Lettering shall be placed in one row where practicable; however, where necessary due to excessive length, lettering shall be placed on more than one row and centered.

2-1.02. Number plates shall be attached with stainless steel panhead screws, rivets, or drive screws.

2-1.03. When a number plate cannot be installed due to the physical size, space, or mounting surface geometry of the equipment, the CONTRACTOR shall provide a 12-gauge stainless steel tag with engraved or imprinted equipment tag number. Lettering on tags shall be ¼ inch high. Tags shall be rectangular with smooth edges and shall be fastened to the equipment with stainless steel mechanical fasteners or with a stainless-steel chain.

2-2. EQUIPMENT INFORMATION PLATES

2-2.01. Equipment shall be provided with engraved or stamped equipment information plates securely affixed with mechanical fasteners to the equipment in an accessible and visible location.

Equipment information plates shall be in addition to the number plates specified.

2-2.02. Equipment information plates shall indicate the manufacturer's name, address, product name, catalog number, serial number, capacity, operating and power characteristics, labels of tested compliances, and any other pertinent design data. Equipment information plates listing the distributing agent only will not be acceptable.

2-3. VALVE AND GATE TAGS

2-3.01. Temporary Tags. Each valve and gate with an identifying number indicated on the Drawings or listed in the valve or gate schedule, shall be tagged or marked in the factory with the identifying number.

2-3.02. Permanent Tags. All valves and gates, except buried or submerged valves, that have been assigned a number on the Drawings or in the valve or gate schedule, shall be provided with a permanent number plate. Tags shall be permanently attached to valves and gates with stainless steel mechanical fasteners or with stainless steel chains. Numerals shall be ¾ inch high and shall be black baked enamel on an anodized aluminum plate.

All buried valves shall be tagged with a brass plate cast into a 6-inch by 6-inch concrete pad at grade next to the valve box. The valve number shall be engraved in the brass plate with lettering and numerals at least 1 inch high.

2-4. PANEL NAMEPLATES

2-4.01. Nameplates shall be provided on the face of each panel and cabinet. Panel identification nameplates shall be mounted at the top of the panel shall include the panel descriptive name and tag number as indicated on the Drawings, in two or three lines of text. Lettering shall be ¾ inch high.

2-4.02. Nameplates for devices mounted on or in the panel shall be inscribed with the text as indicated on the Drawings. Where nameplate information is not indicated on the Drawings, inscriptions shall be in accordance with information in the supplier's submittal drawings as guided by information in the relevant specification section. Panel device nameplates shall have engraved letters 3/16 inch high.

2-4.03. Nameplate material and size shall be as specified above for equipment number plates. Nameplates shall be secured to the panel with stainless steel panhead screws.

2-5. INSTRUMENT TAGS

2-5.01. Temporary Tags. Where instruments are not provided with permanent tags furnished from the factory, instruments shall be tagged or marked in the factory with the instrument tag number indicated on the Drawings.

2-5.02. Permanent Tags. Instruments shall be tagged with the instrument tag number indicated on the Drawings. Tags shall be 12-gauge stainless steel with engraved or imprinted symbols. Lettering on tags shall be ¼ inch high. Tags shall be rectangular with smooth edges and shall be fastened to the instrument with stainless steel mechanical fasteners or with a stainless steel chain.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01631

PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1-2. DEFINITIONS

1-2.01. Definitions used in this Section are intended not to change or modify the meaning of other terms used in the CONTRACT DOCUMENTS.

1-2.02. Substitutions: Request for changes in products, materials, equipment, and methods of construction required by CONTRACT DOCUMENTS proposed by the CONTRACTOR after award of the Contract are considered requests for “substitutions”. Request for substitutions prior to bids are not considered substitutions but as “Prior Approvals”. The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period and accepted prior to award of Contract are considered as included in the Contract Documents. "Prior Approvals" shall meet the requirements specified in this Section for Substitution Request Submittal.

2. Revisions to CONTRACT DOCUMENTS requested by the OWNER or ENGINEER.

3. Specified options of products and construction methods included in CONTRACT DOCUMENTS.

1-2.03. Substitution Request Submittal: Requests for substitution will be considered if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the ENGINEER.

1-2.04. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

1-2.05. At the beginning of the request for substitution, clearly state the basis on which the request is made. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

1. Product Data, including Drawings and descriptions of products, fabrication, and installation procedures.

2. Samples of both the proposed substitution and the specified product, where applicable or requested.

3. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

4. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by separate CONTRACTORS, that will become necessary to accommodate the proposed substitution.

5. A statement indicating the substitution's effect on the CONTRACTOR'S Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall CONTRACT Time.

6. Cost information, including a proposal of the net change, if any in the Contract Sum.

7. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

1-2.06. OWNER or ENGINEER's Action: Within one week of receipt of the request for substitution, the OWNER or ENGINEER will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the OWNER or ENGINEER will notify the CONTRACTOR of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a CHANGE ORDER.

PART 2 – PRODUCTS

2-1. SUBSTITUTIONS

2-1.01. Conditions: The CONTRACTOR'S substitution request will be received and considered by the OWNER or ENGINEER when: extensive revisions to Contract Documents are not required; proposed changes are in keeping with the general intent of the CONTRACT DOCUMENTS; the request is timely, fully documented, and properly submitted; and when one or more of the following conditions are satisfied, as determined by the OWNER or ENGINEER; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

2. The specified product or method of construction cannot be provided within the CONTRACT Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

3. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

4. A substantial advantage is offered to the OWNER, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the OWNER may be required to bear. Additional responsibilities for the OWNER shall include additional compensation to the ENGINEER for redesign and evaluation services, increased cost of other construction by the OWNER or separate CONTRACTORS, and similar considerations.

5. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the CONTRACTOR certifies that the substitution will overcome the incompatibility.

6. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

7. The specified product or method of construction cannot provide a warranty required by the CONTRACT DOCUMENTS and where the CONTRACTOR certifies that the proposed substitution provide the required warranty.

2-1.02. The Contractor's submittal and OWNER or ENGINEER's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the CONTRACT DOCUMENTS does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

2-1.03. If a proposed substitution requires investigation, testing, or approval to determine its suitability for incorporation into the Work, the testing of the proposed substitution shall be determined by the ENGINEER. The CONTRACTOR shall bear all costs of such investigations or tests, including the ENGINEER's additional services made necessary by such substitutions.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01650

STARTUP, TESTING, AND COMMISSIONING

PART 1 - SUMMARY

1-1. SCOPE

1-1.01. This section includes the requirements for startup, testing, and commissioning of the wells and other PROJECT components defined in the CONTRACT DOCUMENTS which will require separate commissioning procedures to properly clear the components for service with the OWNER and regulatory agencies. The purpose of this section is to define the requirements for bringing the wells and other PROJECT components online and for obtaining OWNER and ENGINEER approval and FDEP partial clearances.

1-1.02. The section will define the requirements for bringing individual equipment online and providing proper operation and performance of that work.

1-1.03. The startup, testing and commissioning requirements contained herein represent the expectations of the OWNER and ENGINEER and shall be adhered to. However, the CONTRACTOR is required to develop, submit, and maintain detailed plans, including designation of management and staff, for these activities as specified herein. Deviations from this plan may be allowed but shall be approved in writing by the ENGINEER and OWNER prior to implementation of any deviations. Additional requirements such as cleaning, disinfection, and pressure and leakage testing are specified in other sections and must be accounted for in the planning of the WORK.

1-1.04. The startup, testing, and commissioning services referenced or specified herein addresses wells that will be improved as part of this PROJECT and require FDEP clearance before being returned to service.

1-1.05. Specific sequencing of the WORK is defined in the Construction and Schedule Constraints Section.

1-1.06. The startup, testing, and commissioning activities referenced herein include the following:

- Disinfection of wells
- Final flushing and neutralization of heavily chlorinated water
- Bacteriological tests (analysis by OWNER)
- Startup and testing of miscellaneous electrical, instrumentation, and HVAC equipment where applicable.
- Startup and Testing of new well pumps and motors
    - Equipment checkout
    - Startup checks
    - Functional testing
- Final acceptance testing of new well pumps and motors

1-2. DEFINITIONS

1-2.01. Startup and Testing is the transitional phase between completion of construction and start of commissioning and includes the following:

- Pre-Startup Activities and Checks - Inspections, tests and other activities necessary to determine that equipment, systems and subsystems have been properly manufactured and installed. Pre-startup activities shall include an audit of all factory testing of equipment and compiling the results for comparison to startup and commissioning testing.

- Functional Testing – Initial limited operation of equipment, to demonstrate capability of installed components to perform their intended functions, respond to controls, and safely interface with external systems, followed by operation of individual systems in manual and automatic mode to test full functionality of individual systems.

- Acceptance testing - Continuous testing of equipment under specified operating conditions in accordance with the technical SPECIFICATIONS and applicable regulations to demonstrate proper performance.

PART 2 – GENERAL

2-1.01. The CONTRACTOR shall be responsible for and furnish all labor, materials, instruments, incidentals, and equipment required for startup, testing, and commissioning. Temporary facilities required to carry out the specified testing, including temporary pipe, pumps, and other appurtenances, shall be furnished and installed, and removed when no longer required for startup, testing, and commissioning. Chemicals required for startup and testing shall be provided by the CONTRACTOR except as otherwise specified herein. Wastewater, including flushing water shall be disposed of at the expense of the CONTRACTOR, in a manner acceptable to the OWNER, and in accordance with all laws, regulations**,** and permits. Startup and testing shall be conducted during normal working hours during the workweek of Monday through Friday, unless otherwise approved by the OWNER.

2-1.02. Constraints. Startup and testing shall be conducted in a manner that does not compromise operation of the existing facilities or the quality of the water entering the facility. Any startup and testing activities affecting operation of the existing treatment facility shall be coordinated with the OWNER and shall be shown on the PROGRESS SCHEDULE. The OWNER will cooperate with the CONTRACTOR to the extent possible but will have sole authority in decisions affecting existing operations.

2-1.03. The minimum constraints for startup and testing are defined in the Construction and Schedule Constraints Section.

PART 3 – STARTUP MANAGER, STARTUP TEAM, AND MANUFACTURER'S FIELD SERVICES REPRESENTATIVES

3-1.01. The CONTRACTOR shall maintain a dedicated startup team led by a startup manager. The CONTRACTOR shall not change the startup manager throughout the full period of performance of the WORK without written permission of the OWNER. Once engaged in the PROJECT, the startup manager shall attend regular construction progress meetings. No startup activities shall begin until the startup manager has arrived at the jobsite.

3-1.02. The startup manager shall be on Site full time at least 5 days prior to any field startup and testing activities and shall remain on site until all startup, testing, and commissioning activities are complete and a final FDEP clearance has been received for the PROJECT.

3-1.03. The startup manager shall be a startup and testing expert with a minimum of 5 years of experience starting up equipment and systems of similar type, size, capacity, and complexity to the equipment and systems included in this PROJECT. The startup manager shall have the necessary experience to fully understand all startup requirements, to manage the CONTRACTOR'S resources providing the startup services, and to prepare all startup documentation, as specified. The startup manager's assigned duties and responsibilities are those specifically related to planning, supervising, and executing startup activities and shall include, but shall not be limited to the following:

- Coordinating all testing and startup activities.
- Preparing all startup and field-testing plans, documentation, and forms.
- Liaising between the CONTRACTOR, ENGINEER, and OWNER for all startup and testing activities.
- Developing a comprehensive schedule for all startup activities and providing regular schedule updates. The startup and testing schedule shall be incorporated into the PROGRESS SCHEDULE.
- Scheduling and leading startup, testing, and commissioning planning meetings.
- Conducting coordination meetings during startup, testing, and commissioning at least weekly.
- Coordinating manufacturers' services and their certification of proper installation and/or operation of equipment as required by the SPECIFICATIONS.
- Overseeing and administering all startup, testing, and commissioning activities, including either direct participation in the activities and/or oversight and monitoring of activities. It shall be the startup manager's responsibility to assure that all tests have been completed in accordance with accepted testing procedures.
- Ensuring readiness for and coordinating maintenance, repair, and adjustment of equipment and systems during startup testing, and commissioning.
- Conducting or overseeing pre-test checks to ensure readiness for testing. Verify all piping hydrostatic testing and flushing has been completed prior to field testing connected equipment.
- Ensuring all testing equipment is in proper working order and has been calibrated to appropriate standards.
- Developing safe work policies and procedures including lockout/tagout procedures and personal protective equipment policies, that will be followed during all field startup and testing activities. At a minimum, the CCONTRACTOR shall comply with OSHA and the OWNER'S established safety guidelines. It shall be the startup manager's responsibility to assure all safety procedures are followed at all times.
- Reviewing and approving all equipment training sessions prior to submission to ENGINEER, to assure that the training is compliant with the requirements of the SPECIFICATIONS and includes all applicable operation, maintenance, safety, functional, performance, and startup

and testing information.

- Organizing teams made up of qualified representatives of suppliers, SUBCONTRACTORS, and others, as appropriate, to efficiently and expeditiously startup and test the equipment and systems installed and constructed under this CONTRACT. The objective of this program shall be to demonstrate to the ENGINEER and OWNER that the structures, systems, and equipment constructed and installed under this CONTRACT meet all performance requirements and the facility is ready for operation as intended. In addition, the testing program shall produce baseline operating conditions for the OWNER to use in a preventive maintenance program.
- Ensuring the development and maintenance of records documenting all startup, testing, and commissioning activity. The records shall be organized by major process system into organized files/binders and turned over to the OWNER prior to applying for final payment. Testing records shall be accessible to the ENGINEER and OWNER at all times to allow monitoring of the progress.
- Ensuring the startup team is equipped and ready to make emergency repairs and adjustments to equipment installed and modified as part of the PROJECT.
- Scheduling and conducting a one-day workshop with the OWNER and ENGINEER to resolve SUBMITTAL review comments to the CONTRACTOR'S startup, testing, and commissioning plan SUBMITTAL.
- Notifying the OWNER and all respective equipment manufacturers at least 21 days prior to the date when each equipment system is scheduled for pre-startup activities and checks.
- Organize International Electrical Testing Association (NETA) acceptance testing in accordance with the Electrical Equipment Installation section.

3-1.04. Startup Team. The startup team shall include the startup manager and all staff deemed necessary for successful completion of startup, testing, and commissioning. This will typically include engineers, major equipment vendors, operators, and representatives from the Instrumentation and Control System supplier. Additional trade representatives may be included as PROJECT requirements dictate.

3-1.05. Manufacturer's Field Services Representative. The manufacturers shall provide a technically qualified field-service representative for the installation, startup, and testing of equipment furnished, as specified in the equipment sections. The manufacturer shall submit qualifications and experience records for all key personnel to be involved in startup activities.

3-1.06. The manufacturer's field services representative shall be employed full-time in installation, startup, and testing of similar equipment and facilities and work directly for the manufacturer. The representative shall have conducted startup activities like those required herein on at least two other projects of similar complexity. The OWNER or ENGINEER shall have the right to reject the manufacturer's field services representative at any time, for immediate replacement by the manufacturer, if the accepted qualifications are not representative of the actual experience or abilities of the representative, as determined by the OWNER or ENGINEER.

PART 4 – SUBMITTALS

4-1.01. CONTRACTOR shall submit the following information in accordance with the

requirements of Section 01300 Submittals Procedures.

4-1.02. Startup manager's qualifications and past project experience including contact names, addresses and current telephone numbers of OWNER representatives that can be used to verify the accuracy of the information. SUBMITTAL shall be made at the preconstruction conference.

4-1.03. Manufacturers' field services representative's qualifications and past project experience including contact names, addresses and current telephone numbers that can be used to verify the accuracy of the information.

4-1.04. Qualification SUBMITTALs shall be made 3 weeks before the manufacturer's representative is scheduled to be on Site.

4-1.05. Manufacturer's certification of proper installation of all equipment as specified in the equipment sections.

4-1.06. Manufacturer's certificate of proper operation of all equipment as specified in the equipment sections.

4-1.07. Equipment and system startup, testing, and commissioning plans and schedule in accordance with the requirements of this section. CONTRACTOR shall develop a flushing, disinfection and pressure testing plan prior to startup including the location for where flushing water is to be discharged. Startup manager shall coordinate with SUBCONTRACTORS and include their information in the startup and testing plan.

4-1.08. Unless otherwise specified in the equipment sections, preliminary copies of field calibration results. SUBMITTAL shall be made prior to the start of each test for associated systems.

PART 5 – STARTUP AND TESTING REQUIREMENTS

5-1.01. All water used in the following tests shall be from the wells, unless otherwise stated. Also, the water shall either be disposed of on the ground at the well house or sent into the system, as follows:

- Once the wells and piping have been disinfected and the proper bacteriological samples taken, all of the water used thereafter for startup checks and all functional tests may be sent into the system (provided all other required clearances and approvals have been obtained).

5-1.02. Startup Checks. Prior to field testing of all equipment, the CONTRACTOR shall perform the following:

- Inspect and clean equipment, devices, and connected piping so they are free of foreign material.
- Lubricate equipment in accordance with manufacturer's instructions. Turn rotating equipment by hand.
- Open and close new valves by hand and operate other new devices to check for binding, interference, or improper functioning.
- Test and commission related electrical system components in accordance with the requirements specified in the Electrical and the Electrical Equipment Installation sections.

- Calibrate all instruments associated with the equipment.
- Check for proper rotation, adjustment, alignment, balancing, mechanical and electrical connections, and any other conditions that may damage or impair equipment from functioning properly.
- Inspect and verify proper anchorage.
- Obtain manufacturer's certification of proper installation where specified in the equipment sections.

5-1.03. All equipment shall be confirmed ready to test by the ENGINEER based on the following**:**

- Acceptance of CONTRACTOR'S startup and testing plan.
- Notification in writing by the startup manager that each piece of equipment or system is ready for testing.
- Verification by the ENGINEER and OWNER that all lubricants, tools, maintenance equipment, spare parts and approved equipment operation and maintenance manuals have been furnished as specified.
- Cleanliness of equipment, devices, and connected work.
- Adequate completion of work adjacent to or interfacing with equipment to be tested.
- Confirmation of manufacturer's representative's availability to assist with testing, where specified, and satisfactory fulfillment of all other manufacturers' responsibilities as specified.
- ENGINEER'S inspection of all related civil construction, mechanical, and electrical installations.
- Confirmation of completion of acceptable testing of all adjacent piping, duct work and other affected Work.

5-1.04. Functional Testing. All startup checks shall be completed prior to functional testing. Functional testing shall be in accordance with relevant standards and in accordance with instructions of the manufacturers.

5-1.05. Ancillary and/or temporary facilities necessary to recycle, control, or discharge water, air, chemical, or gas from facilities being tested, shall be operational.

5-1.06. Functional testing shall include the functional operation of each piece of equipment. All moving parts of equipment and machinery shall be tested and adjusted so that they move freely and function satisfactorily. Functional testing shall demonstrate correct operation of all hardwired interlocks and controls.

5-1.07. Functional testing of valves shall include at least 4 full open-close operations. Testing shall demonstrate the proper installation of the valves and the proper functioning of the actuators.

5-1.08. Once functional testing of individual pieces of equipment is completed, individual systems functional testing shall commence. Individual system functional testing shall include startup of the complete system of mechanical, electrical, and instrumentation and control equipment as a functional process system. Field inspection prior to startup as specified in the Instrumentation and Control System section, other testing by the Instrumentation and Control System supplier required to verify readiness for automatic operation of the individual system, shall be completed before commencement of individual system functional testing.

5-1.09. Individual system functional testing shall include operation in manual and automatic modes, startup operation, and shutdown in normal and emergency modes. Individual systems shall be tested over their entire operating range and for sufficient time to demonstrate the intended functionality of each piece of equipment and the system. If any part of a system shows evidence of unsatisfactory or improper operation during the test period, correction or repairs shall be made and the functional testing shall be repeated until satisfactory results are obtained.

5-1.10. Functional testing of all process and pumping equipment and drive motors, including auxiliary equipment, shall be in accordance with the appropriate and approved test codes, such as those specified by the American Society of Mechanical Engineers, Hydraulic Institute Standards, and IEEE.

5-1.11. Qualified personnel from the electrical and mechanical trades responsible for installation of the equipment, shall be available during functional testing involving electrically operated equipment. Where appropriate, a representative of the Instrumentation and Control System supplier shall also be available.

5-2. STARTUP AND TESTING PROCEDURE

5-2.01. Specific requirements for individual system startups are as follows; each well site includes new well pumps and motors and shall follow the requirements below of the Startup and Testing Procedure for Equipment section below:

1. Each individual well shall be disinfected per the Florida Department of Environmental Protection (FDEP) Administrative Code 62-555.316 (6) and American Water Works Association (AWWA) standard C-654.

2. All well sites discharge, lateral and collector main piping shall be disinfected per FDEP Administrative Code 62-555.340 and AWWA standard C-651.

3. All wetted components of the well pumps and above grade discharge piping, valves, and fittings shall be swabbed/sprayed with a 5 percent chlorine solution prior to installation.

4. The well pump below grade connections (joints) to the lateral piping at each well house shall remain uncovered and a visual inspection for leaks be monitored with normal operating pressures.

5-2.02. Functional Acceptance Testing. Once the CONTRACTOR'S functional testing is complete and associated documentation has been submitted and accepted by the ENGINEER, the CONTRACTOR shall conduct functional acceptance testing of each well site, to demonstrate individual systems and group systems meet the specified requirements. Acceptance testing shall include the successful demonstration of all operating functions and conditions that are specified for the equipment, system, and controls.

5-2.03. The Functional Acceptance Testing shall include the following submissions prior to commencement:

- Prerequisite checklist, to be acknowledged by the ENGINEER prior to initiating the test, that demonstrates that all testing and other WORK required to be completed prior to the test is

complete.

- Listing of OWNER'S personnel necessary to operate the system and conduct any related monitoring of performance.
- A listing of CONTRACTOR'S personnel designated to supervise and direct the OWNER'S operators as required herein.
- Listing of standby personnel, equipment, and materials that will be available if needed during the test period.
- Step-by-step procedures for operation of the facility showing how local and remote control of equipment will be demonstrated.
- Description of all data and other information to be reported in support of the completed test. Include any blank data logs that may be used for recording results.
- Descriptions of all necessary calculations that must be completed to verify the specified results are being achieved, including formulas.
- Blank sign-off form for the test acknowledging the CONTRACTOR’S, ENGINEER’S, OWNER’S, and the equipment manufacturer’s acceptance of the test.

5-2.04. CONTRACTOR shall provide OWNER and ENGINEER 14 DAYS notice prior to testing of any individual system.

5-2.05. Well acceptance testing shall continue for 7 days under normal operating conditions and simulated emergency start and stops as initiated by the OWNER and with all parts operating satisfactorily in all respects under a range of conditions to simulate the full operating range of the equipment or system. Each well shall be run for a total run time of 100 hours in the 7 days.

5-2.06. The OWNER shall conduct the testing, but the CONTRACTOR is responsible for any issues noted by the OWNER during the testing.

5-2.07. If any part of a system shows evidence of unsatisfactory or improper operation during the testing period, correction or repairs shall be made and the test repeated until the test is successfully completed. Testing interrupted by power failure will not be required to be repeated, but the test shall be continued upon restoration of power and extended to the specified duration at no additional cost to the OWNER.

5-2.08. During this testing period the OWNER shall operate all equipment, manually, remotely and under all operating conditions to verify proper operation of the well site.

PART 6 – COMMISSIONING

6-1.01. Once startup and testing is complete, documentation of all startup and testing activities shall be submitted for reviewed and accepted by the ENGINEER. After acceptance, commissioning of the constructed facilities shall be conducted by the CONTRACTOR working with the OWNER and ENGINEER. The facility shall be operated in accordance with the operating permit, laws, and regulations. The CONTRACTOR shall provide mechanics, electricians, and controls technicians during commissioning as required for troubleshooting and repair.

PART 7 – STARTUP SCHEDULE AND STARTUP AND COMMISSIONING PLANS

7-1.01. Plans and schedules shall be developed to facilitate coordinated and efficient startup, testing, and commissioning of the PROJECT equipment and systems identified in Section 1 of this SPECIFICATION as the well sites.

7-1.02. The CONTRACTOR shall submit a startup, testing, and commissioning plan and schedule to the ENGINEER no later than 45 calendar days prior to the commencement of startup and testing. A minimum of 14 days shall be allowed for review by ENGINEER and OWNER. The schedule and plan must be accepted a minimum of 15 days prior to commencement of startup and testing. The schedule and plan shall include sections for startup checks, functional testing, functional acceptance testing, and commissioning where applicable.

7-1.03. Forms for startup, testing, and commissioning shall include identification of equipment or system, startup/test date, nature of startup/test, startup/test objectives, startup/test prerequisites, startup/test results, instruments employed for the startup/test and signature spaces for the ENGINEER'S witness (where applicable) and the CONTRACTOR'S startup manager.

7-1.04. Startup Schedule. This schedule shall serve as a companion to but shall not be a replacement for the startup plan. The startup schedule described in this section shall be integrated into the overall Progress Schedule and shall be prepared as specified for the Progress Schedule in the Construction Progress Schedule section. The Startup Schedule shall be updated weekly during the startup, testing, and commissioning period.

7-1.05. Startup Plan. The Startup Plan shall include the following:

- Introduction with a narrative description of the overall testing and startup program. The description shall include all contractual or regulatory treatment requirements to be demonstrated.
- A summary of the objectives and approach for startup checks, functional testing, functional acceptance testing, and commissioning.
- List of the instruments, equipment, and systems that will undergo startup and testing with references to the appropriate PIDs, equipment tags/identification numbers, SPECIFICATION number and standards for testing procedures.
- Schedule for startup and field testing for each instrument, piece of equipment (including redundant equipment), and system.
- Safety and emergency response plan including a list of emergency and non-emergency contacts (email and phone).
- Organization chart for CONTRACTOR'S startup and testing personnel with assigned responsibilities for each.
- Startup and testing record keeping plan.
- Plan for disposal of water/wastewater from startup, testing, commissioning including information on any required regulatory permits/approvals.
- Description of temporary facilities that will be provided.

7-1.06. Within 7 to 14 days of initial SUBMITTAL of the startup plan, the CONTRACTOR shall schedule a workshop with the OWNER and ENGINEER to present the plan. The CONTACTOR

shall submit minutes of the workshop, including action items and a schedule for updating the startup plan, to the ENGINEER within 3 days of the workshop.

7-1.07. Individual plans for each phase of startup, testing, and commissioning can be assembled as chapters in the startup plan or submitted as individual documents but should be correlated to ensure there is not disagreement between chapters or separate documents.

7-1.08. Startup Checks Plan. The startup checks plan shall be subdivided into plans for each system and major component. Each system/major component plan shall include but not be limited to the following:

- Identification of information for each component or piece of equipment to be inspected as part of the system. All applicable tag numbers shall be included.
- Specific activities to be completed on each component, piece of equipment, or system as required to demonstrate proper installation and connection.
- A tracking checklist of prerequisites for the checks and each step of the checking procedure, including any temporary facilities or utility requirements.
- Listing of manufacturer's representative(s) to be on site during the check. Sign off forms for the CONTRACTOR'S startup manager.

7-1.09. Functional Testing and Functional Acceptance Testing Plans. The functional testing plan shall include procedures and reporting for functional testing. The functional testing plan shall be subdivided into testing plans for each system. Each system test plan shall include but not be limited to the following:

- A narrative description of the purpose and goals of the test for each component, piece of equipment, or system, which should include all activities (including those required by vendors/suppliers) necessary to verify proper equipment and system functionality.
- Identification of each component or piece of equipment to be tested as part of the system. All applicable tag numbers shall be included.
- Schedule and duration for the tests.
- Prerequisites for each test, including any temporary facilities or utility requirements.
- Pass/fail criteria for the test.
- A checklist for tracking testing progress which includes prerequisites for the test and each step of the testing procedure. The check list shall include specified performance criteria that are to be met.
- A description of test apparatus required to conduct the test.
- Identification of all temporary facilities and chemicals require during startup.
- Listing of manufacturer's representative(s) to be on site during the test. Certificates of proper installation, as applicable to the test.
- Step-by-step detailed procedure of the test. The level of detail shall be sufficient for a witness to be able to follow the steps during the test and be confident that the test is being performed as planned. All steps required to proceed through the test in an orderly manner are considered significant and each of these steps shall be included in the procedure.
- Copies of the data recording forms that will be used during the test.
- Calculation methodologies to be used to evaluate the data and/or test criteria for the test.

- Sample computations or analyses for the test with results in the same format as the final report. This item is intended to demonstrate how data collected will be used to generate final results. A sample shall be included for each type of computation required for the test and analysis of results.
- Blank sign-off forms for the test acknowledging the startup manager's, ENGINEER'S, OWNER'S, and equipment manufacturer's acceptance of the test where applicable.
- Equipment manufacturer's certificated of proper operation of all equipment as specified in the equipment sections.

PART 8 – REPORTS AND RECORDS

8-1.01. Records of all startup and testing shall be compiled by the CONTRACTOR and submitted to the ENGINEER. Prior to being submitted to the ENGINEER, the startup manager shall certify that the results recorded, and the tested systems comply with the Contract requirements. Records shall include all documentation assembled for each piece of equipment or system involved in the startup and testing, including all certifications, forms, and check lists completed during the startup and test, and sign-off forms.

8-1.02. Records of all startup and testing shall be compiled as separate documents for each system tested and shall be submitted within 48 hours of completion of the startup and testing for each system. Testing samples that require analysis periods greater than 48 hours shall be clearly defined in the startup plan but shall not preclude delivery of the balance of the records within the 48-hour timeframe.

8-1.03. The CONTRACTOR shall provide formal reporting and documentation of failures, malfunctions or defects, and repairs made during the startup and/or testing activities. A "System Problem Report" form is included at the end of this section and shall be used by the CONTRACTOR to document problems that arise during these tests and their resolution. Records submitted shall include "System Problem Report" forms completed during testing.

END OF SECTION

SYSTEM PROBLEM REPORT

Project Name:

Test Name:

Test Number:

Problem Type: Hardware Software Documentation Unknown Other

SYMPTOMS:	Time:	Date:	By:

Description:

Can problem be reproduced at will? Y / N

DIAGNOSIS:	Time:	Date:	By:

Description:

CORRECTION:	Time:	Date:	By:

Description:

FINAL SIGN OFF	Time:	Date:	By:

SECTION 01710

CLEANING

PART 1 - GENERAL

1-1. DESCRIPTION

1-1.01. Scope of Work: The CONTRACTOR shall execute cleaning during progress of Work and at completion of the Work as required by the General Conditions.

1-2. DISPOSAL REQUIREMENTS

1-2.01. The CONTRACTOR shall conduct cleaning and disposal operations to comply with all applicable LAWS AND REGULATIONS.

PART 2 - MATERIALS

2-1. MATERIALS

2-1.01. The CONTRACTOR shall use only those cleaning materials which do not create hazards to health or property and which do not damage surfaces.

2-1.02. The CONTRACTOR shall use only those cleaning materials and methods recommended by the SUPPLIER of the surface material to be cleaned.

2-1.03. The CONTRACTOR shall use cleaning materials only on surfaces so recommended by cleaning material SUPPLIER.

PART 3 - EXECUTION

3-1. CLEANING DURING CONSTRUCTION

3-1.01. The CONTRACTOR shall execute daily cleaning to keep the WORK, the site and adjacent areas free from accumulations of waste materials, water, eroded material, rubbish, and windblown debris resulting from construction operations.

3-1.02. The CONTRACTOR shall provide suitable on-site containers for the daily collection of all waste materials, debris, and rubbish.

3-103. The CONTRACTOR shall remove waste materials, debris and rubbish from site containers periodically and dispose of at properly licensed and permitted disposal areas away from the site.

3-1.04. The CONTRACTOR shall schedule operations so that dust and other contaminants resulting from the cleaning process do not fall on wet or newly-coated surfaces.

3-1.05. The CONTRACTOR shall remove from the site all surplus materials and temporary structures when no further need therefore develops and as approved by the ENGINEER. The CONTRACTOR shall be responsible and liable for all spillage and shall incur all associated

costs including, but not limited to, costs related to repair and maintenance resulting from any such damage.

3-2. FINAL CLEANING

3-2.01. The CONTRACTOR shall employ skilled workmen for final cleaning.

3-2.02. The CONTRACTOR shall remove all grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and all other foreign materials from sight-exposed interior and exterior surfaces.

3-2.02. Prior to FINAL COMPLETION, the CONTRACTOR shall conduct an inspection of sight-exposed interior and exterior surfaces and all WORK areas, to verify that the entire WORK and the entire construction area of the WORK are clean.

END OF SECTION

SECTION 01720

CONTRACT RECORD AND CLOSE OUT DOCUMENTATION

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section addresses documentation items that are required to be delivered through the ENGINEER to the OWNER prior to final payment and close out of the CONTRACT. The CONTRACTOR will assist the ENGINEER in acquiring the material necessary to assemble and deliver the various documentation items. Requirements set forth in other sections of these specifications shall be coordinated with this section so that all documentation items required to close out the CONTRACT are delivered to the OWNER after it is reviewed and where required approved by the ENGINEER.

1-1.02. CONTRACT close out documentation items include:

- Permit Manual
- Major Equipment SHOP DRAWINGS, Pipe Laying Schedules, and Surveying Manual
- Operation and Maintenance Manual
- Warrantees, Guarantees, and Certificates Manual
- Construction Photographs / Videos
- Conformed to Construction Records DRAWINGS
- As-Built Schedule

1-1.03. The requirements for these CONTRACT close out documentation items are described in this section.

1-2. PERMIT MANUAL

1-2.01. This manual shall contain copies of all regulatory and government agency permits issued for the project during both the design and the construction phase of the PROJECT. The manual shall be divided into sections with each section dedicated to one particular regulatory agency. Agencies may include but are not limited to: United States Army Corps of Engineers; Southwest Florida Water Management District; Florida Department of Environmental Protection; the project's home County agencies such as Planning and Growth Management and Building Department, Environmental Protection Commission; and State Agencies such as Florida Fish and Wildlife Conservation Commission.

1-2.02. The CONTRACTOR shall submit to the ENGINEER any CONTRACTOR- obtained permit documents including all items described below.

1-2.03. Each section of the manual dealing with a regulatory permit shall contain:

- Permit application (as sent to the regulatory agency)
- All Requests for Additional Information (RAIs)
- All RAI responses

- Any other written communication pertaining to the permit received and/or sent to the regulatory agencies during the permit application process
- Permit as issued by the regulatory agency
- All close out documents associated with each permit. Examples include but are not limited to:

    - All drinking water system permit Requests for Clearance and copies of issued Clearances (with bacteriological and pressure test results, if applicable)
    - Completed Environmental Resource Permit Certificate of Completion
    - Transfer to Operation forms
    - Building Department Certificates of Occupancy/Completion/Compliance, with copies of completed inspection forms.

1-2.04. The manual shall also contain a checklist of all permit-related documents supporting each of the permits. Each permit checklist will include but is not limited to:

- Type of Permit
- Document Title (Type)
- Document Author
- Document Date

1-2.05. The manual shall also contain a section that summarizes all permit-required operational-phase actions and the schedule for their execution. Examples of operational phase actions include but are not limited to:

- System inspections
- Monitoring and/or sampling requirements
- Special conditions

1-2.06. This summary will include a timetable for the required actions.

1-2.07. Two hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this section.

1-2.08. The two hard copy sets of the permit manual as described above shall contain all the items described, excluding:

- Permit application (as sent to the regulatory agency)
- All Requests for Additional Information (RAIs)
- All RAI responses
- Any other written communication pertaining to the permit received and/or sent to the regulatory agencies during the permit application process

1-3. MAJOR EQUIPMENT SHOP DRAWINGS

1-3.01. This manual shall contain a copy of the accepted SHOP DRAWINGS for the major materials and equipment associated with the project. The manual shall be divided into sections with each section dedicated to a particular SPECIFICATION section.

1-3.02. Two hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this section.

1-4. OPERATION AND MAINTENANCE MANUAL

1-4.01. This manual shall contain operation and maintenance information on all equipment requiring maintenance and other attention.

1-4.02. Four hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this section.

1-5. WARRANTIES, GUARANTEES, BONDS, AND CERTIFICATES MANUAL

1-5.01. This manual shall contain all warranties, guarantees, bonds, certificates, and similar documents, including those customarily provided by manufacturers and suppliers which cover a period greater than the one-year correction period. Show OWNER as beneficiary on these documents.

1-5.02. Two hard copy sets of this manual and one electronic file copy are to be delivered to the OWNER. The requirements for hard copies and for electronic files are provided below in this section.

1-6. CONSTRUCTION PHOTOGRAPHS

1-6.01. This manual shall contain construction photographs obtained from the CONTRACTOR, ENGINEER, and OWNER. All photographs are to be color digital compiled on a flash drive or external hard drive and provided with a descriptive index of the images with dates.

1-6.02. Two electronic file copies are to be delivered to the OWNER.

1-7. CONFORMED TO CONSTRUCTION RECORDS DRAWINGS

1-7.01. The CONTRACTOR is to maintain on a daily basis at the PROJECT site one current set of AS-BUILT CONTRACT DOCUMENTS which have been accurately marked by CONTRACTOR to indicate all modifications in the completed Work that differ from the original CONTRACT DOCUMENTS. The CONTRACTOR is to give the set of AS-BUILT CONTRACT DOCUMENTS to the ENGINEER who in turn will produce Conformed to Construction Record DRAWINGS.

1-7.02. Four full-size hard copies (34” x 22”) of DRAWINGS, or other size stated by the OWNER, each signed and sealed by the Engineer(s) of Record with wet stamp and signature, shall be delivered to the OWNER. In addition, one electronic file of each DRAWING in Win. OS - AutoCAD 2020 format, one PDF copy to match the size of the DRAWINGS, and one electronic file of each

drawing signed and sealed (seal must be inked) shall be scanned and saved as Win. OS - Tif 6.0 files with a resolution of 300 dpi, shall be provided to the OWNER on a USB drive. The files should be labeled by DRAWING title and page number.

1-8. REQUIREMENTS FOR MANUAL HARD COPIES

1-8.01. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11-inch paper, with standard three-hole punching. DRAWINGS and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. Each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents, suitable index tabs, and a label on the binder spine.

1-9. REQUIREMENTS FOR ELECTRONIC FILES

1-9.01. For all documents except Conformed to Construction Records Drawings, each electronic copy shall be delivered on a unique CD-ROM in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated and any extra blank pages removed.

1-9.02. Scanned images must be at a readable resolution. For most documents, they will be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

1-9.03. One PDF document (PDF file) shall be created for each manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

1-9.04. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

1-9.05. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

END OF SECTION

SECTION 01730

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1-1. OPERATION AND MAINTENANCE DATA AND MANUALS

1-1.01. Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention. The equipment Supplier shall prepare a project specific operation and maintenance manual for each type of equipment indicated in the individual equipment sections or the equipment schedule.

1-1.02. Parts lists and operating and maintenance instructions shall be furnished for other equipment not listed in the individual equipment sections or the equipment schedule.

1-1.03. Operation and maintenance manuals shall include the following:

1. A description that clearly identifies the purpose of the equipment and how the equipment works. This description shall be specific to the project or facility that the equipment is being installed at.

2. Equipment function, normal operating characteristics, and limiting conditions.

3. Assembly, installation, alignment, adjustment, and checking instructions.

4. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.

5. Lubrication and maintenance instructions.

6. Guide to troubleshooting.

7. Parts lists and predicted life of parts subject to wear.

8. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.

9. Test data and performance curves, where applicable.

1-1.04. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by CONTRACTOR. The operation and maintenance manual shall include a copy of all material used for any training provided for the equipment, including any slide shows used during training.

1-1.05. Six preliminary copies of operation and maintenance manual shall be submitted to ENGINEER before shipment of the equipment. Preliminary copies shall be in hardcopy format.

1-1.06. After review by ENGINEER, six final copies of operation and maintenance manuals shall be delivered to ENGINEER not later than 30 days prior to placing the equipment in operation. Operation and maintenance manuals must be accepted by OWNER prior to placing equipment in operation. In addition, one electronic copy shall be included with each final operation and maintenance SUBMITTAL.

1-1.07. Shipment of equipment will not be considered complete until all required manuals and data have been received in format acceptable to OWNER.

1-2. HARD COPY OPERATION AND MAINTENANCE MANUALS

1-2.01. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11 inch paper, with standard three-hole punching. DRAWINGS and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. Each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents and suitable index tabs.

1-3. ELECTRONIC OPERATION AND MAINTENANCE MANUALS

1-3.01. Each electronic copy shall be delivered on a flash drive in Adobe Acrobat's Portable Document Format (PDF) and shall be prepared at a resolution between 300 and 600 dots per inch (dpi), depending on document type. Blank pages shall be removed from the electronic copy of the operations & maintenance manuals.

1-3.02. File size shall be limited to 10 MB. When multiple files are required the least number of files possible shall be created. File names shall be in the format OMXXXXX- YYYZ-V.pdf, where XXXXX is the five digit number corresponding to the specification section, YYY is a three digit O&M manual number, e.g. 001, Z is the letter signifying a resubmittal, A, B, C, etc., and V is a number used only when more than one 10 MB file is required for an O&M manual.

1-3.03. The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated.

1-3.04. Scanned images must be at a readable resolution. For most documents, they should be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

1-3.05. One PDF document (PDF file) shall be created for each equipment service manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

1-3.06. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

1-3.07. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page

2. Magnification: Fit In Window

3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

1-4. LABELING

1-4.01. As a minimum, the following information shall be included on all final O&M manual materials, including CD-ROM disks, jewel cases, and hard copy manuals:

1. Equipment name followed by “Operation and Maintenance Manual.”

2. Project Name.

3. Tampa Bay Water Contract No: Example: “Tampa Bay Water Contract No. XXXXX”

4. Specification Section Number. Example: “Section XXXXX”

5. Manufacturer’s Name.

6. File Name and Date. Example: “OMXXXXX_YYYZ-V.pdf”, “5-05-02”

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1-1. DESCRIPTION

1-1.01. The CONTRACTOR shall compile specified warranties and bonds, as required by the General Conditions and as specified in these SPECIFICATIONS.

1-1.02. The CONTRACTOR shall co-execute SUBMITTALS when so specified.

1-1.03. The CONTRACTOR shall review SUBMITTALS to verify compliance with CONTRACT DOCUMENTS.

1-1.04. The CONTRACTOR shall submit required SUBMITTALS to the OWNER'S construction manager for review and transmittal to the ENGINEER for review.

1-1.05. Disclaimers and Limitations: SUPPLIER'S (manufacturer's) disclaimers and limitations on product warranties do not relieve the CONTRACTOR of the warranty of the Work that incorporates the products, nor does it relieve suppliers, SUPPLIERS (manufacturers), and SUBCONTRACTORS required to countersign special warranties with the CONTRACTOR.

1-2. DEFINITIONS

1-2.01. Standard Product Warranties are preprinted written warranties published by individual SUPPLIERS (manufacturers) for particular products and are specifically endorsed by the SUPPLIER (manufacturer) to the OWNER.

1-2.02. Special Warranties are written warranties required by or incorporated by the OWNER, either to extend time limits provided by standard warranties or to provide greater rights for the OWNER.

1-3. WARRANTY REQUIREMENTS

1-3.01. For all material, the CONTRACTOR shall submit an express warranty from the product SUPPLIER (manufacturer). The SUPPLIER'S warranty period shall be concurrent with the CONTRACTOR'S CORRECTION PERIOD, unless otherwise specified.

1-3.02. The CONTRACTOR shall be responsible for obtaining express certificates for material warranty for all major items for which the normal list price is more than $1,000. The ENGINEER reserves the right to request warranties for material not classified as major. The CONTRACTOR shall warrant material not considered to be "major" in the CONTRACTOR'S correction period even though specific certificates of warranty may not be required.

1-3.03. In the event that the material or equipment SUPPLIER (manufacturer) is unwilling to provide a one-year warranty coinciding with the CONTRACTOR'S CORRECTION PERIOD, the CONTRACTOR shall obtain from the SUPPLIER a two-year warranty commencing at the time of material or equipment delivery to the PROJECT site. This two-year warranty from the

SUPPLIER shall not relieve the CONTRACTOR of its responsibilities during the CORRECTION PERIOD.

1-3.04. The OWNER shall incur no labor or equipment cost during the CORRECTION PERIOD.

1-3.05. The warranty shall cover all necessary labor, and materials resulting from faulty or inadequate design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all material and components furnished by the CONTRACTOR.

1-3.06. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

1-3.07. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

1-3.08. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the WORK to an acceptable condition complying with requirements of the CONTRACT DOCUMENTS. The CONTRACTOR is responsible for the cost of replacing or rebuilding defective WorkK regardless of whether the OWNER has benefited from use of the Work through a portion of its anticipated useful service life.

1-3.09. Owner's Recourse: Written warranties made to the OWNER are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the OWNER can enforce such other duties, obligations, rights, or remedies.

1-3.10. Rejection of Warranties: The OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the CONTRACT DOCUMENTS.

1-3.11. The Owner reserves the right to refuse to accept Work for the PROJECT where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1-4. SUBMITTAL REQUIREMENTS

1-4.01. The CONTRACTOR shall assemble in one document all warranties, bonds and service and maintenance contracts, executed by each of the respective SUPPLIERS (manufacturers), and SUBCONTRACTORS.

1-4.02. Five (5) original signed copies of each warranty, bond, and contract are required.

1-4.03. A Table of Contents shall be provided and shall be neatly typed, in orderly sequence and shall provide complete information for each item including, at a minimum:

1. Product of work item.
2. Firm, with name of responsible principal, address and telephone number.
3. Scope of work item.
4. Date of beginning of warranty, bond, or service and maintenance contract.
5. Duration of warranty, bond, or service maintenance contract.
6. Other information for OWNER'S personnel including instances which might affect the validity of warranty or bond.
7. CONTRACTOR, name of responsible principal, address and telephone number.

1-4.04. Two (2) copies of the document shall be submitted to the OWNER'S construction manager.

1-5. FORM OF SUBMITTALS

1-5.01. Format:

1. Page size: 8-1/2 inches x 11 inches

    a. Sheets shall be punched for use in a standard three O-ring binder.
    b. Larger sheets shall be folded to 8-1/2 inches x 11 inches.

2. Cover: Each packet cover shall identify with typed or printed title "WARRANTIES AND BONDS" and the following information:

    a. PROJECT name and number.
    b. Name of CONTRACTOR.

1-5.02. Binder: Commercial quality, three O-ring binder, with durable and cleanable plastic covers and maximum ring size of two inches shall be used.

1-5.03. The CONTRACTOR shall also submit the warranties and bonds, after the review and approval by the OWNER and the ENGINEER, in electronic format as specified in Section 01300 of the SPECIFICATIONS.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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Section 02050

DEMOLITION

PART 1 – GENERAL

1-1. SCOPE

1-1.01. This section covers the demolition of existing structures, piping, equipment, and sitework and the salvage of existing materials and equipment as indicated on the Drawings.

1-2. GENERAL

1-2.01. CONTRACTOR shall be responsible for all WORK under this section. CONTRACTOR shall provide 14 days written notice prior to beginning demolition activities.

1-2.02. Demolition and salvage WORK shall create minimum interference with OWNER'S operations and minimum inconvenience to OWNER. CONTRACTOR shall provide protection and safety of all roadways, sidewalks, and all accessible areas during demolition activities.

1-2.03. The Contractor shall be responsible for acquiring appropriate necessary permits for the work. Copies of the permits shall be submitted to the Owner prior to commencement of demolition.

1-2.04. The Work as indicated is not all-inclusive, and the CONTRACTOR shall be responsible to perform the reconstruction indicated plus that which can be reasonably inferred from the Contract Documents as necessary to complete the Project. The Specifications and Drawings identify the major facilities that shall be demolished and reconstructed, but auxiliary utilities such as water, air, chemicals, drainage, lubrication, fluid power, electrical wiring, controls, and instrumentation are not necessarily shown.

1-2.05. The CONTRACTOR shall note that the Drawings used to indicate demolition and reconstruction are based on survey of surface features, limited verification of buried utilities, record information, and site photographs provided describing the existing facilities. The record information has been reproduced in the Drawings to show existing conditions and to clarify the scope of Work. The information provided may not be complete or accurate. The Contractor shall conduct a comprehensive survey at the Site to verify the correctness and exactness of the Drawings, the scope of Work, and the extent of auxiliary utilities.

1-2.06. The Contractor shall be responsible for the offsite disposal of debris resulting from reconstruction in compliance with local, state, and federal codes and requirements.

1-2.07. Blasting will not be permitted.

1-3. CONTRACTOR SUBMITTALS

1-3.01. A demolition plan shall be submitted to the Engineer for review. The demolition plan shall detail demolition and reconstruction activities and procedures, including operational sequences, in accordance with Section 01300 – Submittal Procedures. The procedures shall provide for safe

conduct of the Work, careful removal and disposition of materials and equipment, protection of existing facilities which are to remain undisturbed, coordination with existing facilities to remain in service, and timely disconnection and reconnection of utility services. The procedures shall include a detailed description and time schedule of the methods and equipment to be used for each operation and the sequence of operation.

1-3.02. The Engineer's review shall be limited to a review of the scope and intent of demolition as required by the contract documents. The CONTRACTOR shall be responsible for the means and methods to ensure the work is conducted in a safe and proper manner. The Engineer's review of the demolition plan shall in no way alleviate the CONTRACTOR from this responsibility.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3-1. DEMOLITION

3-1.01. Removal of equipment or facilities shall include removal of all accessories, piping, wiring, supports, associated electrical starters and devices, baseplates and frames, and all other appurtenances, unless otherwise directed. Existing materials and equipment removed, and not indicated to be reused as a part of the WORK, shall become CONTRACTOR'S property unless otherwise specified, and shall be removed from the Site.

3-1.02. CONTRACTOR shall conduct demolition activities in a manner that prevents damage to existing facilities which are indicated to remain and shall provide all necessary protection for existing facilities. Any remaining facilities damaged during demolition shall be repaired by CONTRACTOR to a condition equal to or better than the original condition.

3-1.03. When demolition is complete, all debris shall be removed from the Site.

3-1.04. Structure Demolition. The following structures include demolition work, and the debris shall be removed from the jobsite:

- Well Site MBR-152
- Well Site MBR-157

3-1.05. Piping and Equipment Demolition. The following equipment shall be removed and shall become the property of CONTRACTOR. All such items shall be promptly removed from the jobsite. When existing pipe is removed, the CONTRACTOR shall plug the resulting open ends whether or not so indicated. Where removed piping is exposed, the remaining piping shall be blind-flanged or fitted with a removable cap or plug.

3-1.06. Pumps and motors and all electrical, control, and mechanical equipment within each well house, and associated structures, for wells MBR-150, MBR-151, MBR-152, MBR-153, MBR-154, MBR-155, MBR-156, MBR-157, MBR-158, MBR-159, MBR-160, MBR-161, MBR-162, MBR-163, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, and MBR-169, except as noted in the DRAWINGS.

3-1.07. Sitework Demolition: For the well sites that will be abandoned or demolished (MBR-152, MBR-157, MBR-161, MBR-162, and MBR-163), demolish discharge piping by excavation and removal up to isolation gate valve closest to the main collection header pipe, blow-off the power supply between the main transmission line and the well houses. Piping under and within 50-ff off wetlands will be abandoned in place according to section 3-3 of this specification.

3-2. SALVAGE

3-2.01. Items To Be Salvaged by OWNER. (NOT USED)

3-2.02. Items To Be Salvaged by CONTRACTOR for OWNER.

- Flow totalizer from each well site.

3-2.03. Existing materials and equipment removed, and not reused as a part of the WORK, shall become CONTRACTOR'S property unless otherwise specified, and shall be removed from the jobsite.

3-2.04. Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified herein or indicated to be salvaged and to remain the property of OWNER. CONTRACTOR shall store and protect salvaged items specified or indicated to be reused in the WORK. Any items damaged in removal, storage, or handling shall be replaced by CONTRACTOR in kind or with new items.

3-2.05. Contractor may, at his option, furnish and install new items instead of those specified or indicated to be salvaged and reused, in which case such removed items will become CONTRACTOR'S property.

3-3. ABANDONMENT

3-3.01. Existing facilities to be abandoned shall be prepared as indicated. Where existing buried piping is to be abandoned, the CONTRACTOR shall remove the abandoned pipe for a distance of 5-feet from any connecting structures. Openings at the existing structures shall be repaired. The remaining pipe shall be capped at both ends prior to backfill. Buried piping, 12-inches diameter or greater shall be completely filled with sand or flowable fill prior to closure of the piping ends.

END OF SECTION

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SECTION 02220

EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.1. DESCRIPTION

1-1.01. Scope of Work: The CONTRACTOR shall perform all excavating, grading, and backfilling as required for construction as shown on the DRAWINGS and specified herein. The CONTRACTOR shall furnish all additional, approved fill material required in accordance with the SPECIFICATIONS.

1-1.02. Definitions:

a. Maximum Dry Density: Maximum dry weight in pounds per cubic foot of a specific material.

b. Optimum Moisture: Percentage of water in a specific material at which the material can be compacted to the maximum dry density for a given compactive effort.

c. Rock Excavation: Excavation of any hard natural substance which requires the use of special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

d. Suitable Materials: Suitable materials for fills shall be a non-cohesive, non-plastic granular local sand and shall be free from vegetation, organic material, marl, clay, silt, muck and deleterious debris. Hydric soils within wetland impact areas will be considered suitable material for the top 12-inches of backfill within the wetland impact areas.

e. Unsuitable Materials: Unsuitable materials are highly organic soil (peat or muck) classified as A-8 in accordance with AASHTO Designation M 145; clayey sands (Unified Soil Classification SC); plastic clays (United Soil Classification CL/CH); and organic debris. (This provision does not apply to the replacement of hydric soils in wetland impact areas.)

1-1.03. Plan For Earthwork: The CONTRACTOR shall be responsible for having determined the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the WORK, the general and local conditions and all other matters which can in any way affect the WORK. The CONTRACTOR shall consider, and the plan for earthwork shall reflect, the equipment and methods to be employed in the excavation, backfilling and compaction operations. No claims for extras based on soil or rock sub-strata or groundwater table conditions shall be allowed.

1-1.04. Trench Safety Act: The CONTRACTOR shall be responsible for complying with the

Trench Safety Act (90-96, Florida Law) and OSHA standards for Trenching and Excavation Safety, at a minimum.

1.2. QUALITY ASSURANCE

1-2.01. A Testing Laboratory employed by the OWNER shall make such tests as are determined required by the OWNER. The CONTRACTOR shall schedule the WORK so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of the progress. Costs for soil testing and re- testing shall be paid by the CONTRACTOR.

1.3. PROTECTION

1-3.01. Trench Cut Slopes: Trench cuts shall be sloped to guard against sidewall sloughing or collapse.

1-3.02. Pumping and Drainage:

a. The CONTRACTOR shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations.

1-3.03. Except where trees are indicated to be removed, trees shall be protected from injury during construction operations.

PART 2 – PRODUCTS

2.1. MATERIALS

2-1.01. General:

a. All fill material shall be subject to the approval of the ENGINEER.

b. All fill material shall be free of organic material, trash, deleterious debris, roots, clay balls, rubble or other objectionable material (except for hydric soils as detailed here-in).

c. Excess or unsuitable material shall be removed from the job site by the CONTRACTOR at no additional cost to the OWNER.

2-1.02. Common Fill: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than one-half (½) inch in diameter. It shall have physical properties which allow it to be easily spread and compacted. Additionally, common fill shall have no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

2-1.03. Select Fill: Select fill shall be as specified above for common fill, except that the material shall contain no stones larger than ¼ inch in largest dimension, and shall be no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

2-1.04. Crushed Stone: Crushed stone shall be FDOT #57 washed and graded stone.

PART 3 - EXECUTION

3-1. EXCAVATION

3-1.01 Excavating for Roadways/Structures/Utilities: Excavation shall be made to such dimensions as shall give suitable room for maintenance of traffic, building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.

3-1.02 Pipeline: Excavation shall be to the design elevation as shown on the DRAWINGS unless unsuitable subgrade materials are encountered at the bottom of the pipeline excavation, in which case these unsuitable materials shall be undercut and removed a minimum of 24-inches below the bottom of the pipeline and shall be replaced with compacted approved select fill before placing the pipe. All organic laden sands or debris beneath the pipe bottom level shall be completely removed from beneath the pipe and replaced with compacted approved select fill.

3-1.03. Excavation for precast or prefabricated structures other than pipeline shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the bedding material. Prior to placing the bedding material, the excavation shall be surveyed to indicate to the satisfaction of the ENGINEER that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

3-1.04. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation is leveled and left ready to receive the WORK. Material disturbed below the foundation elevation in dewatered excavations shall be replaced with Class B concrete.

3-1.05. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

3-1.06. The CONTRACTOR shall immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of the WORK.

3-1.07. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the DRAWINGS and shall anticipate the encounter of unknown obstructions during the course of the WORK.

3-1.08. Encounters with subsurface obstructions shall be hand excavated and immediately brought to the attention of the ENGINEER.

3-1.09. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. Subgrade soils which become soft, loose, "quick" or otherwise unsatisfactory for support of pipes or structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced with crushed stone as required by the ENGINEER at the CONTRACTOR'S expense.

3-1.10. All pavements shall be cut prior to removal, with saws or power tools approved by the ENGINEER.

3-1.11. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

3-1.12. All locations and elevations as required herein shall be permanently documented by the CONTRACTOR, on the AS-BUILT DRAWINGS.

3-1.13. Hydric soils within designated wetland impact areas shall be segregated and stockpiled separately during excavation. Excavation and stockpiling of hydric soils shall be in accordance with all appropriate permits.

3-2. UNDERCUT

3-2.01. If the bottom of any excavation is below that shown on the DRAWINGS or specified because of CONTRACTOR error, convenience, or unsuitable natural bedding material or subgrade due the CONTRACTOR'S excavation or dewatering methods, the excavation shall be refilled to the specified bottom of excavation grade with compacted approved select fill at no cost to the OWNER. Compaction method shall be as approved by the ENGINEER.

3-3. FILL AND COMPACTION

3-3.01. The CONTRACTOR shall compact and backfill excavations and construct embankment according to the following schedule. (Proctor Requirement shall be ASTM D-1557, modified Proctor):

Area	Material	Compaction
1. Pipe Bedding or Crushed Stone	Select Fill	95% of maximum dry density by modified Proctor method (in 12” loose lifts if additional bedding material is required).
2. Pipe Trench Backfill	Common Fill	12” loose lifts, 95% of maximum dry density by modified Proctor method (98% under roadways and drives). Note: Above the top of the pipe only, backfill material with a maximum fines content of 20% may be used.
3. Bedding Beneath Structures (other than pipeline) and Beneath Buried Valve	Select Fill or Crushed Stone	12” loose lifts, compacted to 98% of maximum dry density by modified Proctor method. Fill shall not be placed over any in-place soils until those deposits have been compacted to 98% modified Proctor.
4. Backfill Around Structures	Common Fill	8" loose lifts, 98% of (other than pipeline) maximum dry density by modified Proctor method.

3-3.02. Excavations shall be backfilled to the original grade or as indicated on the DRAWINGS. Deviation from this grade because of settling shall be corrected. Backfill

operation shall be performed to comply with all LAWS AND REGULATIONS and in such a manner that it does not create a nuisance or safety hazard. Care shall be used in operating compaction equipment to avoid damage to pipe or structures. Pipe bedding and trench backfill shall be firmly tamped under the pipe haunches along both sides of the pipe at the same time, taking care not to lift up the pipe off its bed. Backfilling shall continue by bringing the fill up equally on each side of the pipe to avoid displacing the pipe laterally.

3-3.03. After the pipe bedding has been compacted to the required density, tested and accepted by the ENGINEER; and prior to pipe placement, the pipe bedding materials shall be scarified or loosened (by a method and to a depth approved by the ENGINEER) to a depth of 6-9 inches for the entire width and length of the pipe to allow the pipe to be saddled by the loosened bedding. After the loosening method has been approved by the ENGINEER during initial pipe placement, the CONTRACTOR shall proceed with this approved procedure for the entire length of the pipeline, unless otherwise determined unacceptable by the ENGINEER.

3-3.04. Embankments shall be constructed true to lines, grades and cross sections shown on the DRAWINGS or ordered by the ENGINEER. Embankments shall be placed in successive layers of not more than 8 inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the WORK during the construction phase shall be distributed so as to cover the maximum surface area of each layer.

3-3.05. If the CONTRACTOR requests approval to backfill utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the ENGINEER. Approval will be considered only after the CONTRACTOR has performed tests, at the CONTRACTOR'S expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The ENGINEER'S approval shall be in writing.

3-3.06. Hydric soils stockpiled during excavation shall be replaced within the top 12-inches of wetland impact areas and in accordance with all applicable permits.

3-4. DISPOSAL

3-4.01. The CONTRACTOR shall properly dispose of all excess or unsuitable material at no additional expense to the OWNER.

END OF SECTION

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SECTION 02270

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1. DESCRIPTION

1-1.01. The CONTRACTOR shall furnish all necessary labor, equipment, material and transportation necessary to provide temporary and permanent erosion and sediment control, stormwater pollution prevention and associated inspection, maintenance and reporting, all as required by appropriate government agency permits, the DRAWINGS and this SPECIFICATION.

1.2. SUBMITTALS

1-2.01. The CONTRACTOR shall submit a site-specific erosion control plan at least fifteen (15) DAYS prior to commencing the WORK for review by the ENGINEER.

1-2.02. Prior to commencing the WORK, the CONTRACTOR shall provide a detailed PROGRESS SCHEDULE to indicate dates of major grading activities and determine sequencing of soil disturbing activities on all portions of the site.

PART 2 - PRODUCTS

2.1. STABILIZATION CONTROLS

2-1.01. Stabilization shall consist of seeding and mulch, in accordance with the appropriate sections of the SPECIFICATIONS.

2-1.02. FABRIC

2-1.03. Fabric may be woven or non-woven, made from polypropylene, polyethylene, or polyamid, and shall contain sufficient UV inhibitors so that it will last for 2 years in outdoor exposure.

2-1.04. Fabric shall have the following properties:

Parameter	Standard Method	Value
Grab tensile strength	ASTM D 4632	100 lb
Burst strength	ASTM D 3786	200 psi
Apparent opening size	ASTM D 4751	Between 200 and 70 sieve size

2-1.05. Fabric Manufacturer, or equal

2-1.06. Mirafi

2.2. POSTS

2-2.01. Posts shall be wood, at least 2-inches by 2-inches, at least 6-feet long.

2.3. FENCING

2-3.01. Woven wire fabric fencing shall be galvanized, mesh spacing of 6-inches, maximum 14-gauge, at least 30-inches tall.

2.4. FASTENERS

2-4.01. Fasteners to wood posts shall be steel, at least 1-1/2 inches long.

PART 3 - EXECUTION

3.1. INSTALLATION

3-1.01. The CONTRACTOR shall install temporary erosion and sediment control items in the area where construction activities are to commence prior to WORK in said area.

3-1.02. Barrier systems shall be installed in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated.

3-1.03. Attach the woven wire fencing to the posts that are spaced a maximum of 6 feet apart and embedded a minimum of 12-inches. Install posts at a slight angle toward the source of the anticipated runoff.

3-1.04. Trench in the toe of the filter fabric barrier with a spade or mechanical trencher so that the downward face of the trench is flat and perpendicular to the direction of flow. Lay fabric along the edges of the trench. Backfill and compact.

3-1.05. Securely fasten the fabric materials to the woven wire fencing with tie wires.

3-1.06. Reinforced fabric barrier shall have a height of 18-inches.

3-1.07. Provide the filter fabric in continuous rolls and cut to the length of the fence to minimize the use of joints. When joints are necessary, splice the fabric together only at a support post with a minimum 6-inch overlap and seal securely.

3-1.08. No disturbed area shall be denuded for more than thirty (30) calendar days unless otherwise authorized by the ENGINEER or OWNER. During construction, denuded areas shall be covered by mulches such as straw, hay, filter fabric, seed and mulch, sod, or other permanent vegetation.

3-1.09. The CONTRACTOR shall install temporary or permanent stabilization as soon as

possible for areas of the site where construction activities have ceased, but in no case shall the time be greater than fourteen (14) calendar days after the construction activity has temporarily or permanently ceased.

3-1.10. Off-site runoff shall be diverted away or through the construction area.

3-1.11. Stabilized Construction Entrance: The CONTRACTOR shall provide a stabilized construction entrance for vehicles entering or exiting onto public roads. Stabilized construction entrances shall be provided for both on site and off site locations of stockpiled material. The CONTRACTOR shall be responsible for monitoring the system and modifying the system or procedures as needed, with the written approval of the OWNER.

3-1.12. Dewatering: Installation of the pipeline may require temporary dewatering prior to construction. The CONTRACTOR shall be responsible for discharging the dewatering flow to a temporary settling basin such as areas created by staked hay bales in dry grassed swales or other similar settling areas, however at no time shall the CONTRACTOR discharge dewatering flow directly to wetland areas.

3-1.13. Protection and Stabilization of Soil Stockpiles: Fill material stockpiles shall be protected at all times by on-site drainage controls which prevent erosion of the stockpiled material. Control of dust from such stockpiles shall be required.

3-1.14. Sediment Trapping Measures: Sediment basins and traps, perimeter berms, filter fences, berms, sediment barriers (hay bales), vegetative buffers and other measures intended to trap sediment and/or prevent the transportation of sediment onto adjacent properties, or into existing water bodies; shall be installed prior to commencement of construction.

3.2. MAINTENANCE AND REPAIRS OF CONTROLS

3-2.01. The CONTRACTOR shall be responsible for maintenance and repairs of erosion and sediment control devices, and removal of erosion and sediment control devices after SUBSTANTIAL COMPLETION of the WORK.

3-2.02. Maintenance and repair of the controls for abatement of erosion and water pollution shall be included in the CONTRACT PRICE.

3-2.03. All control measures shall be maintained daily by the CONTRACTOR. All measures shall be maintained in good working order. If a repair is necessary, it shall be initiated within 24 hours.

3-2.04. Built-up sediment shall be removed from silt fences and staked turbidity barriers should it reach one-third the height of the fence.

3-2.05. Temporary and permanent seeding and planting shall be inspected for bare spots, washouts, and healthy growth.

3-2.06. Stabilized construction entrances shall be maintained to prevent clogging of rock bedding which may impede the usefulness of the structure.

3.3. OTHER CONTROLS

3-3.01. Waste Disposal: The CONTRACTOR shall provide litter control and collection during construction activities. All fertilizer, hydrocarbon, or other chemical containers shall be disposed of by the CONTRACTOR according to EPA's standard practices as detailed by the manufacturer. No solid materials including building and construction materials shall be discharged to wetlands or buried on-site.

3-3.02. Off-Site Vehicle Tracking: The CONTRACTOR shall control off-site vehicle tracking by covering loaded haul trucks with tarpaulins, removing excess dirt on roads daily and maintaining the stabilized construction accesses.

3-3.03. Sanitary Waste: The CONTRACTOR shall be responsible for all sanitary waste to be collected from portable units by a licensed sanitary waste management contractor as required by LAWS AND REGULATIONS.

3.4. INSPECTION

3-4.01. All erosion and water pollution abatement and control measures shall be inspected daily by the CONTRACTOR.

3-4.02. The cost of the CONTRACTOR'S inspections and reporting required for the control and abatement of erosion and water pollution shall be included in the proposed CONTRACT PRICE.

3.5. TRACKING AND REPORTING

3-5.01. The CONTRACTOR shall submit with the PROGRESS REPORT a report to the OWNER and the ENGINEER documenting the daily inspections, maintenance or repairs to the erosion and sediment control devices.

END OF SECTION

SECTION 03310

CAST-IN-PLACE CONCRETE

PART 1 -- GENERAL

1-1. THE SUMMARY

1-1.01. The CONTRACTOR shall provide cast-in-place concrete, joints in concrete, reinforcement steel and appurtenant work, formwork, bracing, shoring, supports, and shall design and construct falsework, complete and in place, in accordance with the Contract Documents.

1-2. CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-2.02. Shop Drawings

1. Shop bending diagrams, placing lists, and drawings of reinforcing steel prior to fabrication.

2. Details of the concrete reinforcing steel and concrete inserts shall be submitted at the earliest possible date after receipt by the CONTRACTOR of the Notice to Proceed. Details of reinforcing steel for fabrication and erection shall conform to Concrete Reinforcing Steel Institute Manual of Standard Practice and the requirements herein. The shop bending diagrams shall show the actual lengths of bars, to the nearest inch measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface. Include bar placement diagrams which clearly indicate the dimensions of each bar splice.

3. Where mechanical couplers are required or permitted to be used to splice reinforcing steel, submit manufacturer's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and Shop Drawings that show the location of each coupler with details of how they are to be installed in the formwork.

4. If reinforcement steel is spliced by welding at any location, submit mill test reports that contain the information necessary for the determination of the carbon equivalent per AWS D1.4 Structural Welding Code – Reinforcing Steel. The CONTRACTOR shall submit a written welding procedure for each type of weld for each size of bar which is to be spliced by welding; merely a statement that AWS procedures will be followed is not acceptable. The CONTRACTOR shall submit certifications of procedure qualifications for each welding procedure used and welder qualifications, for each welding procedure, and for each welder performing the WORK. Such qualifications shall be as specified in AWS D1.4.

5. Manufacturer's information demonstrating compliance with requirements of the following:

    a. Preformed joint filler

b. Bond breaker

c. Form ties and related accessories

d. Form gaskets

e. Form release agent

f. List of form materials and locations of use

g. Mill tests for cement

h. Admixture certification. Chloride ion content shall be included.

i. Aggregate gradation test results and certification

j. Materials and methods for curing

6. Placement drawings showing the location and type of joints for each structure.

1-2.03. Mix Designs: Prior to beginning the WORK, submit preliminary concrete mix designs which shall show the proportions and gradations of materials proposed for each class and type of concrete. The mix designs shall be checked by an independent testing laboratory acceptable to the ENGINEER. Costs related to such checking shall be the CONTRACTOR's responsibility. When a water reducing admixture is to be used, the CONTRACTOR shall furnish mix designs for concrete both with and without the admixture.

1-2.04. Delivery Tickets: Where ready-mix concrete is used, the CONTRACTOR shall furnish certified delivery tickets at the time of delivery of each load of concrete. Each ticket shall show the state certified equipment used for measuring, and the total quantities, by weight, of cement, sand, each class of aggregate, admixtures, the amounts of water in the aggregate, added at the batching plant, and the amount allowed to be added at the Site for the specific design mix. In addition, each certificate shall state the mix number, total yield in cubic yards, and the time of day to the nearest minute, corresponding to the time when the batch was dispatched, when it left the plant, when it arrived at the Site, when unloading began, and when unloading was finished.

1-3. QUALITY ASSURANCE

1-3.01. Testing of Reinforcing Steel

1. If requested by the ENGINEER, the CONTRACTOR shall furnish samples from each heat of reinforcing steel in a quantity adequate for testing. Costs of initial tests will be paid by the CONTRACTOR. Costs of additional tests, if material fails initial tests, shall also be the CONTRACTOR's responsibility.

2. If requested by the ENGINEER, the CONTRACTOR shall furnish samples of each type of welded splice used in the WORK in a quantity and of dimensions adequate for testing. At the discretion of the ENGINEER, radiographic testing of direct butt welded splices will be performed. The CONTRACTOR shall provide assistance necessary to facilitate testing. The CONTRACTOR shall repair any weld that fails to meet the requirements of AWS D1.4. The costs of testing will be paid by the CONTRACTOR.

1-3.02. Testing of Materials

1. Tests on component materials and for compressive strength of concrete will be performed as indicated herein. Tests for determining slump will be in accordance with the requirements of ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.

2. Testing for aggregate shall include sand equivalence, reactivity, organic impurities, abrasion resistance, and soundness in accordance with ASTM C 33 - Concrete Aggregates.

3. The cost of laboratory tests on cement, aggregates, and concrete, will be paid by the CONTRACTOR. The CONTRACTOR shall pay the cost of any additional tests and investigations on WORK that does not meet the Specifications. The laboratory will meet or exceed the requirements of ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

4. Concrete for testing shall be furnished by the CONTRACTOR at no cost to the OWNER, and the CONTRACTOR shall assist the TESTING LAB in obtaining samples and disposal and cleanup of excess material.

1-3.03. Field Compression Tests

1. Compression test specimens shall be taken during construction from the first placement of each class of concrete herein and at intervals thereafter as selected by the ENGINEER to ensure continued compliance with these Specifications. Each set of test specimens will be a minimum of 4 cylinders.

2. Compression test specimens for concrete will be made in accordance with Section 9.2 of ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field. Specimens will be 6-inches diameter by 12-inches high cylinders.

3. Compression tests will be performed in accordance with ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens. One test cylinder will be tested at 7 Days and 2 at 28 Days. The remaining cylinder will be held to verify test results, if needed.

1-3.04. Evaluation and Acceptance of Concrete

1. Evaluation and acceptance of the compressive strength of concrete will be according to the requirements of ACI 318 - Building Code Requirements for Reinforced Concrete, and as indicated herein.

2. If any concrete fails to meet these requirements, immediate corrective action shall be taken to increase the compressive strength for subsequent batches of the type of concrete affected.

3. Concrete that fails to meet the ACI requirements and these Specifications is subject to removal and replacement as part of the WORK.

1-3.05. Construction Tolerances: The CONTRACTOR shall set and maintain concrete forms and perform finishing operations so that the concrete is within the tolerances herein. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances. Tolerance is the permissible variation from lines, grades, or dimensions indicated. Where tolerances are not indicated, permissible deviations will be in accordance with ACI 117 - Standard Tolerance for Concrete Construction and Materials.

1. The variation from required lines or grades shall not exceed 1/4-inch in 10-feet and there shall be no offsets or visible waviness in the finished surface.

PART 2 -- PRODUCTS

2-1. FORM AND FALSEWORK MATERIALS

2-1.01. Except as otherwise expressly accepted by the ENGINEER, lumber for use as forms, shoring, or bracing shall be new material.

2-1.02. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Lumber shall be Douglas Fir or Southern Yellow Pine, construction grade or better, in conformance with U.S. Product Standard PS 20 - American Softwood Lumber Standard.

2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Yellow Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 - Construction and Industrial Plywood for Concrete Forms, Class I, and shall be edge sealed.

3. Form materials shall be metal, wood, plywood, or other material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade required. Metal forms shall be an approved type that will accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO Ext. Grade.

2-1.03. Unless otherwise indicated, exterior corners in concrete members shall be provided with 3/4-inch chamfers or be tooled to a 1/2-inch radius. Re-entrant corners in concrete members shall not have fillets unless otherwise indicated.

2-1.04. Forms and falsework to support the roof and floor slabs shall be designed for the total dead load, plus a live load of 50 psf (minimum). The minimum design load for combined dead and live loads shall be 100 psf.

2-2. FORM TIES

2-2.01. Form ties shall be provided with a plastic cone or other suitable means for forming a conical hole to ensure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties or other removable form-tie fasteners having a circular cross-section shall not exceed 1-1/2 inches; and such fasteners shall be such as to

leave holes of regular shape for reaming. Form ties shall be **Wrench Head Snap Ties** by **MeadowBurke, Snap Ties** by **Dayton/Richmond**, or equal.

2-2.02. Removable taper ties may be used when approved by the ENGINEER. Taper ties shall be **Taper Ties** by **MeadowBurke, Taper Ties** by **Dayton/Richmond**, or equal.

2-3. REINFORCEMENT STEEL

2-3.01. General: Reinforcement steel for cast-in-place reinforced concrete construction shall conform to the following requirements:

1. Bar reinforcement shall conform to the requirements of ASTM A 615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, for Grade 60 Billet Steel Reinforcement, unless otherwise indicated.

2. Welded wire fabric reinforcement shall conform to the requirements of ASTM A 1064 - Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete, and the details indicated. Welded wire fabric with longitudinal wire of W4 size wire and smaller shall be either furnished in flat sheets or in rolls with a core diameter of not less than 10-inches. Welded wire fabric with longitudinal wires larger than W4 size shall be furnished in flat sheets only.

3. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A 82 - Steel Wire, Plain, for Concrete Reinforcement.

2-3.02. Accessories

1. Accessories shall include necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. Bar supports shall meet the requirements of the CRSI Manual of Standard Practice including special requirements for supporting epoxy coated reinforcing bars. Wire bar supports shall be CRSI Class 1 for maximum protection with a 1/8-inch minimum thickness of plastic coating which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.

2. Concrete blocks (dobies) used to support and position reinforcement steel shall have the same or higher compressive strength than required for the concrete in which they are located. Where concrete blocks are used on concrete surfaces exposed to view, the color and texture of the concrete blocks shall match that required for the finished surface. Wire ties shall be embedded in concrete block bar supports.

2-3.03. Epoxy coating for reinforcing and accessories, where indicated, shall conform to ASTM A 775 - Epoxy Coated Reinforcing Steel Bars.

2-4. MECHANICAL COUPLERS

2-4.01. Mechanical couplers shall be provided where indicated and where approved by the ENGINEER. Couplers shall develop a tensile strength that exceeds 125 percent of the yield strength of the reinforcing bars being spliced at each splice.

2-5. WELDED SPLICES

2-5.01. Welded splices shall be provided where indicated and where approved by the ENGINEER. Welded splices of reinforcement steel shall develop a tensile strength exceeding 125 percent of the yield strength of the reinforcing bars that are connected.

2-5.02. Materials required to perform the welded splices to the requirements of AWS D1.4 shall be provided.

2-6. CONCRETE MATERIALS

2-6.01. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. Cement shall be used in the sequence of receipt of shipments.

2-6.02. Materials for the WORK shall comply with the requirements of ACI 301- Structural Concrete for Buildings, as applicable.

2-6.03. Storage of materials shall conform to the requirements of ACI 301.

2-6.04. Materials for concrete shall conform to the following requirements:

1. Cement shall be standard brand portland cement conforming to ASTM C 150 - Portland Cement for Type I or Type II.

2. Water shall be potable, clean, and free from objectionable quantities of silty organic matter, alkali, salts, and other impurities. The water shall be considered potable, for the purposes of this Section only, if it meets the requirements of the local governmental agencies. Agricultural water with high total dissolved solids (over 1000 mg/l TDS) shall not be used.

3. Aggregates shall be obtained from pits acceptable to the ENGINEER, shall be non-reactive, and shall conform to ASTM C 33. Maximum size of coarse aggregate shall be as indicated. Lightweight sand for fine aggregate will not be permitted.

4. Ready-mix concrete shall conform to the requirements of ASTM C 94 - Ready-Mixed Concrete.

5. Air-entraining agent meeting the requirements of ASTM C 260 – Air Entraining Admixtures for Concrete shall be used. Concrete floors to receive a dry-shake floor hardener shall have an air content not to exceed 3 percent. The OWNER reserves the right, at any time, to sample and test the air-entraining agent. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement. Air content shall be tested at the point of placement. Air entraining agent shall be **Micro-Air** by **Master Builders, Daravair** by **W.R. Grace, Sika AEA-15** by **Sika Corporation,** or equal.

6. Admixtures: Admixtures may be added at the CONTRACTOR's option to control the set, affect water reduction, and increase workability. In either case, the addition of an

admixture shall be at the CONTRACTOR's expense. The use of an admixture shall be subject to acceptance by the ENGINEER. Concrete containing an admixture shall be first placed at a location determined by the ENGINEER. If the use of an admixture is producing an inferior end result, the CONTRACTOR shall discontinue use of the admixture. Admixtures shall conform to the requirements of ASTM C 494 - Chemical Admixtures for Concrete. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used. Admixtures shall contain no free chloride ions, shall be non-toxic after 30 Days, and shall be compatible with and made by the same manufacturer as the air entraining admixture.

a. Concrete shall not contain more than one water-reducing admixture. Concrete containing an admixture shall be first placed at a location determined by the ENGINEER.

b. Set controlling admixture may be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80 degrees F, a set retarding admixture such as **Plastocrete 161 MR** by **Sika Corporation, Pozzolith 300R** by **BASF, Daratard** by **Grace Construction Products,** or equal shall be used. Where the air temperature at the time of placement is expected to be consistently under 40 degrees, a set accelerating admixture such as **Plastocrete 161FL** by **Sika Corporation, MasterSet FP 20** by **BASF, Polarset** by **Grace Construction Products,** or equal shall be used.

c. Normal range water reducer shall conform to ASTM C 494, Type A. It shall be **WRDA 79** by **Grace Construction Products, Pozzolith 322-N** by **BASF, Plastocrete 161** by **Sika Corporation,** or equal. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions and recommendations.

7. Calcium Chloride: Calcium chloride will not be permitted in concrete.

2-7. CURING MATERIALS

2-7.01. Materials for curing concrete shall conform to the following requirements and ASTM C 309 - Liquid Membrane-Forming Compounds for Curing Concrete:

1. Curing compounds shall be white-pigmented and resin-based. Sodium silicate compounds shall not be allowed. Concrete curing compound shall be **Kurez VOX White Pigmented** by **Euclid Chemical Company, Cure R-2** by **L&M Construction Chemicals, 1200-White** by **W.R. Meadows,** or equal. When curing compound must be removed for finishes or grouting, curing compounds shall be **Kurez DR VOX** by **Euclid Chemical Company, Masterkure-100W** by **ChemRex MBT, L&M Cure R** by **L&M Construction Chemicals, 1100-Clear** by **WR Meadows,** or equal. Curing compounds shall meet local VOC requirements.

2. Polyethylene sheet for use as concrete curing blanket shall be white and shall have a nominal thickness of 6-mils. The loss of moisture when determined in accordance with the requirements of ASTM C 156 - Standard Test Method for Water Retention by

Concrete Curing Materials, shall not exceed 0.055 grams per square centimeter of surface.

3. Evaporation retardant shall be a material such as MasterKure ER 50 by BASF/Master Builders, Eucobar by Euclid Chemical Company, E-CON by L&M Construction Chemicals, Inc., or equal.

2-8. JOINT MATERIALS

2-8.01. Materials for joints in concrete shall conform to the following requirements:

1. Joint filler material shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. Non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction; for Type I, except as otherwise indicated.

2. Elastomeric joint sealer shall conform to the requirements of Section 07920- Sealants and Caulking.

3. Mastic joint sealer shall be a material that does not contain evaporating solvents; that will tenaciously adhere to concrete surfaces; that will remain permanently resilient and pliable; that will not be affected by continuous presence of water and will not in any way contaminate potable water; and that will effectively seal the joints against moisture infiltration even when the joints are subject to movement due to expansion and contraction. The sealer shall be composed of special asphalts or similar materials blended with lubricating and plasticizing agents to form a tough, durable mastic substance containing no volatile oils or lubricants and shall be capable of meeting the test requirements set forth hereinafter, if testing is required by the ENGINEER.

2-9. MISCELLANEOUS MATERIALS

2-9.01. Damp proofing agent shall be an asphalt emulsion such as Hydrocide 600 by ChemRex Sonneborn, Emulsified Asphalt by Euclid Chemical Company, Sealmastic by W. R. Meadows Inc., or equal.

2-9.02. Epoxy adhesives shall be the following products:

1. For bonding freshly mixed, plastic concrete to hardened concrete, Sikadur 32 Hi-Mod Epoxy Adhesive by Sika Corporation, MasterEmaco ADH 326 by BASF/Master Builders; BurkEpoxy MV by Burke by Edoco, or equal.

2. For bonding hardened concrete or masonry to steel, Sikadur 31 Hi-Mod Gel by Sika Corporation, BurkEpoxy NS by Burke by Edoco, Concresive Paste (LPL) by Chem Rex MBT; or equal.

2-9.03. Epoxy grout for grouting reinforcing bars shall be specifically formulated for such application, for the moisture condition, application temperature, and orientation of the hole to be filled. Epoxy grout shall meet the requirements in Section 03315 - Grouting.

2-10. CONCRETE DESIGN REQUIREMENTS

2-10.01. General

1. Concrete shall be composed of cement, admixtures, aggregates, and water of the qualities indicated. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage, and where deposited in forms, to have good consolidation properties and maximum smoothness of surface. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the OWNER. Mix changes shall be subject to review by the ENGINEER.

2. The CONTRACTOR is cautioned that the limiting parameters below are NOT a mix design. Admixtures may be required to achieve workability required by the CONTRACTOR's construction methods and aggregates. The CONTRACTOR is responsible for providing concrete with the required workability.

2-10.02. Water-Cement Ratio and Compressive Strength: The minimum compressive strength and cement content of concrete shall be not less than the following tabulation.

Type of Work	**Class of Concrete Min 28-Day Compressive Strength, psi**	**Max Size Aggregate in**	**Cement Content Per cu yd, lbs**	**Max W/C Ratio (by weight)**
Structural concrete	4,000	1	564 to 600	0.45
Sitework concrete	3,000	1	470 (min)	0.50
Lean concrete	2,000	1	376 (min)	0.60

2-11. CONSISTENCY

2-11.01. Consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143. The slumps shall be as follows:

Part of Work	Slump (in
All concrete unless indicated otherwise	3-inches plus or minus 1-inch
Ductbank and pipe encasement	5-inches plus or minus 1-inch

2-12. MEASUREMENT OF CEMENT AND AGGREGATE

2-12.01. The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment furnished by the CONTRACTOR and acceptable to the ENGINEER; provided that, where batches are so proportioned as to contain an integral number of conventional sacks of cement and the cement is delivered at the mixer in the original unbroken sacks, the weight of the cement contained in each sack may be taken without weighing as 94 pounds.

2-13. MEASUREMENT OF WATER

2-13.01. The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the ENGINEER and capable of measuring the water in variable amounts within a tolerance of one percent.

2-14. READY-MIXED CONCRETE

2-14.01. At the CONTRACTOR'S option, ready-mixed concrete may be used if it meets the requirements as to materials, batching, mixing, transporting, placing, the supplementary requirements as required herein, and is in accordance with ASTM C 94.

2-14.02. Ready-mixed concrete shall be delivered to the WORK, and discharge shall be completed within one hour after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever comes first. In hot weather, under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 degrees F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes.

2-14.03. Truck mixers shall be equipped with electrically actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counter shall be actuated at the time of starting the mixer at mixing speed.

2-14.04. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. Materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.

2-14.05. Each batch of ready-mixed concrete delivered to the WORK shall be accompanied by a delivery ticket furnished to the ENGINEER in accordance with the requirements above.

2-14.06. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the ENGINEER.

PART 3 -- EXECUTION

3-1. GENERAL FORMWORK REQUIREMENTS

3-1.01. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. The CONTRACTOR shall assume full responsibility for the adequate design of forms, and any forms that are unsafe or inadequate in any respect shall promptly be removed from the WORK and replaced. A sufficient number of forms of each kind shall be available to permit the required rate of progress to be maintained. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state, and federal regulations. Design, construction, maintenance, preparation, and removal of forms shall be in accordance with ACI 347 - Guide to Formwork for Concrete and the requirements herein.

3-1.02. Forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete.

3-2. CONSTRUCTION

3-2.01. Vertical Surfaces: Vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is indicated. Not less than 1-inch of concrete shall be added to the indicated thickness of a concrete member where concrete is permitted to be placed against trimmed ground in lieu of forms. Permission to do this on other concrete members will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

3-2.02. Construction Joints: Concrete construction joints will not be permitted at locations other than those indicated, except as may be acceptable to the ENGINEER. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory affect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.

3-2.03. Form Ties

1. Embedded Ties: Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.

2. Removable Ties: Where taper ties are approved for use, after the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink or regular cement grout. Exposed faces

of walls shall have at least the outer 2-inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

3-3. REUSE OF FORMS

3-3.01. Forms may be reused only if in good condition and only if acceptable to the ENGINEER. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view.

3-4. REMOVAL OF FORMS

3-4.01. Careful procedures for the removal of forms shall be strictly followed, and this WORK shall be done with care so as to avoid injury to the concrete. No heavy loading on green concrete will be permitted. Members which must support their own weight shall not have their forms removed until they have attained at least 75 percent of the 28-Day strength of the concrete. Forms for vertical walls and columns shall remain in place at least 48 hours after the concrete has been placed. Forms for parts of the WORK not specifically mentioned herein shall remain in place for periods of time as recommended in ACI 347.

3-5. GENERAL REINFORCEMENT REQUIREMENTS

3-5.01. Reinforcement steel, welded wire fabric, couplers, and other appurtenances shall be fabricated, and placed in accordance with the requirements of the Building Code and the supplementary requirements indicated herein.

3-6. FABRICATION

3-6.01. General

1. Reinforcement steel shall be accurately formed to the dimensions and shapes indicated, and the fabricating details shall be prepared in accordance with ACI 315 and ACI 318, except as modified by the Drawings.

2. The CONTRACTOR shall fabricate reinforcement bars for structures in accordance with bending diagrams, placing lists, and placing drawings. Said drawings, diagrams, and lists shall be prepared by the CONTRACTOR.

3. Unless otherwise indicated, dowels shall match the size and spacing of the spliced bar.

3-6.02. Bending or Straightening: Reinforcement shall not be straightened or re-bent in a manner that will injure the material. Bars shall be bent or straight as indicated. Do not use bends different from the bends indicated. Bars shall be bent cold unless otherwise permitted by the ENGINEER. No bars partially embedded in concrete shall be field bent except as indicated or specifically permitted by the ENGINEER.

3-7. PLACING

3-7.01. Reinforcement steel shall be accurately positioned as indicated and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at

intersections. Reinforcement steel shall be supported by concrete, plastic or metal supports, spacers or metal hangers that are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. Concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. For concrete over formwork, the CONTRACTOR shall provide concrete, metal, plastic, or other acceptable bar chairs and spacers.

3-7.02. The portions of accessories in contact with the formwork shall be made of concrete, plastic, or steel coated with a 1/8-inch minimum thickness of plastic which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.

3-7.03. Tie wires shall be bent away from the forms in order to provide the required concrete coverage.

3-7.04. Bars additional to those indicated which may be found necessary or desirable by the CONTRACTOR for the purpose of securing reinforcement in position shall be provided by the CONTRACTOR as part of the WORK.

3-7.05. Unless otherwise indicated, reinforcement placing tolerances shall be within the limits specified in ACI 318 except where in conflict with the requirements of the Building Code.

3-7.06. The minimum spacing requirements of ACI 318 shall be followed for reinforcing steel.

3-7.07. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs. Slab bolsters shall be spaced not more than 30-inches on centers, shall extend continuously across the entire width of the reinforcing mat, and shall support the reinforcing mat in the plane indicated.

3-7.08. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than 3-feet on centers in any direction. The construction practice of placing welded wire fabric on the ground and hooking into place in the freshly placed concrete shall not be used.

3-8. SPLICING

3-8.01. General: Reinforcement bar splices shall only be used at locations indicated. When it is necessary to splice reinforcement at points other than where indicated, the character of the splice shall be reviewed and accepted by the ENGINEER.

3-8.02. Splices of Reinforcement

1. The length of lap for reinforcement bars, unless otherwise indicated, shall be in accordance with ACI 318 for a Class B splice.

2. Welded splices shall be performed in accordance with AWS D1.4.

3. Laps of welded wire fabric shall be in accordance with the ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.

3-9. CLEANING AND PROTECTION

3-9.01. Reinforcement steel shall always be protected from conditions conductive to corrosion until concrete is placed around it.

3-9.02. The surfaces of reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcing shall be reinspected and, if necessary recleaned.

3-10. PROPORTIONING AND MIXING

3-10.01. Proportioning: Proportioning of the concrete mix shall conform to the requirements of ACI 301.

3-10.02. Mixing: Mixing of concrete shall conform to the requirements of ACI 301.

3-10.03. Slump: Slumps shall be as indicated herein.

3-10.04. Retempering: Retempering of concrete or mortar which has partially hardened shall not be permitted.

3-11. PREPARATION OF SURFACES FOR CONCRETING

3-11.01. General: Earth surfaces shall be thoroughly wetted by sprinkling prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.

3-11.02. Joints in Concrete: Concrete surfaces upon or against which concrete is to be placed, where the placement of the concrete has been stopped or interrupted so that, as determined by the ENGINEER, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bonding. Except where the Drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of laitance, loose or defective concrete, and foreign material, and be roughened to a minimum 1/4-inch amplitude. Such cleaning and roughening shall be accomplished by hydroblasting. Pools of water shall be removed from the surface of construction joints before the new concrete is placed.

3-11.03. Placing Interruptions: When placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will secure proper union with subsequent WORK; provided that construction joints shall be made only where acceptable to the ENGINEER.

3-11.04. Embedded Items

1. No concrete shall be placed until formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and accepted by the ENGINEER at least 4 hours before placement of concrete. Surfaces of forms and embedded items that have become encrusted with

dried grout from previous usage shall be cleaned before the surrounding or adjacent concrete is placed.

2. Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms at locations indicated or by Shop Drawings and shall be acceptable to the ENGINEER before any concrete is placed. Accuracy of placement is the responsibility of the CONTRACTOR.

3-11.05. Casting New Concrete Against Old: Where concrete is to be cast against old concrete (defined as any concrete which is greater than 60 Days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by hydroblasting (exposing aggregate) prior to the application of an epoxy bonding agent. Application shall be according to the bonding agent manufacturer's instructions and recommendations.

3-11.06. No concrete shall be placed in any structure until water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the WORK. No concrete shall be deposited underwater nor shall the CONTRACTOR allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, shall be subject to the review of the ENGINEER.

3-11.07. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2-inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.

3-11.08. Openings for pipes, inserts for pipe hangers and brackets, and anchors shall, where practicable, be provided for during the placing of concrete.

3-11.09. Anchor bolts shall be accurately set and shall be maintained in position by templates while being embedded in concrete.

3-12. HANDLING, TRANSPORTING, AND PLACING

3-12.01. General: Placing of concrete shall conform to the applicable requirements of Chapter 8 of ACI 301 and the requirements of this Section. No aluminum materials shall be used in conveying any concrete.

3-12.02. Non-Conforming WORK or Materials: Concrete which during or before placing is found not to conform to the requirements indicated herein shall be rejected and immediately removed from the WORK. Concrete which is not placed in accordance with these Specifications or which is of inferior quality shall be removed and replaced.

3-12.03. Unauthorized Placement: No concrete shall be placed except in the presence of a duly authorized representative of the ENGINEER. The CONTRACTOR shall notify the ENGINEER in writing at least 24 hours in advance of placement of any concrete.

3-12.04. Placement in Wall and Column Forms

1. Concrete shall not be dropped through reinforcement steel or into any deep form nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4-feet in walls and 8-feet in columns below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6-feet in horizontal direction. Concrete in wall forms shall be deposited in uniform horizontal layers not deeper than 2-feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft. The rate of placing concrete in wall forms shall not exceed 5-feet of vertical rise per hour. Sufficient illumination shall be provided in the interior of forms so that the concrete at the places of deposit is visible from the deck or runway.

2. The surface of the concrete shall be level whenever a run of concrete is stopped. To ensure a level, straight joint on the exposed surface of walls, a wood strip at least

   3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel, and laitance shall be removed.

3-12.05. Conveyor Belts and Chutes: Ends of chutes, hopper gates, and other points of concrete discharge throughout the CONTRACTOR'S conveying, hoisting, and placing system shall be so designed and arranged that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the ENGINEER. Chutes longer than 50-feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the required consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. Conveyor belts and chutes shall be covered.

3-12.06. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F nor less than 40 degrees F in moderate weather, and not less than 50 degrees F in weather during which the mean daily temperature drops below 40 degrees F. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the required minimum temperature. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the CONTRACTOR shall employ effective means, such as precooling of aggregates and mixing water, using ice, or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90 degrees F. The CONTRACTOR shall be entitled to no additional compensation on account of the foregoing requirements.

3-12.07. Cold Weather Placement

1. Placement of concrete shall conform to ACI - 306.1 - Cold Weather Concreting, and the following.

2. Earth foundations shall be free from frost or ice when concrete is placed upon or against them.

3. Maintain the concrete temperature above 50 degrees F for at least 72-hours after placement.

3-13. PUMPING OF CONCRETE

3-13.01. General: If the pumped concrete does not produce satisfactory end results, the CONTRACTOR shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

3-13.02. Pumping Equipment

1. The pumping equipment shall have 2 cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the CONTRACTOR may have a standby pump on the Site during pumping.

2. The minimum diameter of the hose conduits shall be in accordance with ACI 304.2R - Placing Concrete by Pumping Methods.

3. Pumping equipment and hose conduits that are not functioning properly, shall be replaced.

4. Aluminum conduits for conveying the concrete shall not be permitted.

3-14. TAMPING AND VIBRATING

3-14.01. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete. Vibrators shall be high speed power vibrators (8000 to 12,000 rpm) of an immersion type in sufficient number and with at least one standby unit as required.

3-14.02. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the required results within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall not contact the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3-15. FINISHING CONCRETE SURFACES

3-15.01. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions indicated are defined as tolerances and are indicated above. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.

3-15.02. Formed Surfaces: No treatment is required after form removal except for curing, repair of defective concrete, and treatment of surface defects.

3-15.03. Unformed Surfaces: After proper and adequate vibration and tamping, unformed top surfaces of slabs, floors, walls, and curbs shall be brought to a uniform surface with suitable tools. Whenever the air temperature exceeds 85 degrees F or the wind speed exceeds 25 mph at the time of placement, the concrete shall be treated as follows. Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each WORK operation as necessary to prevent drying shrinkage cracks. The classes of finish for unformed concrete surfaces are designated and defined as follows:

1. Finish U1 - Sufficient leveling and screeding to produce an even, uniform surface with surface irregularities not to exceed 3/8-inch. No further special finish is required.

2. Finish U2 - After sufficient stiffening of the screeded concrete, surfaces shall be float finished with wood or metal floats or with a finishing machine using float blades. Excessive floating of surfaces while the concrete is plastic and dusting of dry cement and sand on the concrete surface to absorb excess moisture will not be permitted. Floating shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. Surface irregularities shall not exceed 1/4-inch. Joints and edges shall be tooled where indicated or as determined by the ENGINEER.

3. Finish U3 - After the Finish U2 surface has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be performed with firm pressure such as will flatten the sandy texture of the floated surface and produce a dense, uniform surface free from blemishes, ripples, and trowel marks. The finish shall be smooth and free of irregularities.

4. Finish U4 - Trowel the Finish U3 surface to remove local depressions or high points. In addition, the surface shall be given a light broom finish with brooming perpendicular to drainage unless otherwise indicated. The resulting surface shall be rough enough to provide a nonskid finish.

3-15.04. Unformed surfaces shall be finished according to the following schedule:

UNFORMED SURFACE FINISH SCHEDULE	
Area	Finish
Grade slabs and foundations to be covered with concrete or fill material	U1
Floors to be covered with grouted tile or topping grout	U2
Slabs to be covered with built-up roofing	U2
Interior slabs and floors to receive architectural finish	U3
Slabs	U4
Top surface of walls	U3

3-16. CURING AND DAMP PROOFING

3-16.01. **General:** Concrete shall be cured for not less than 7 Days after placing, in accordance with the methods indicated below for the different parts of the WORK.

Surface to be Cured or Dampproofed	Method
Unstripped forms	1
Construction joints between footings and walls, and between floor slab and columns	2
Encasement and ductbank concrete and thrust blocks	3
Concrete surfaces not specifically provided for elsewhere in this Paragraph	4
Buried slabs and backfilled walls	5

3-16.02. Method 1: Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removal. If steel forms are used, the exposed concrete surfaces shall be kept continuously wet until the forms are removed. If forms are removed within 7 Days of placing the concrete, curing shall be continued in accordance with Method 4 below.

3-16.03. Method 2: The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

3-16.04. Method 3: The surface shall be covered with moist earth not less than 4 hours nor more than 24 hours after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 Days after placement of concrete.

3-16.05. Method 4: The surface shall be sprayed with a liquid curing compound.

1. It shall be applied in accordance with the manufacturer's printed instructions at a maximum coverage rate of 200 square feet per gallon and in such a manner as to cover the surface with a uniform film that will seal thoroughly.

2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the 7 Day curing period. If the seal is damaged or broken before the expiration of the curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.

3. Wherever curing compound has been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, compound shall be entirely removed by wet sandblasting just prior to the placing of new concrete.

4. Curing compound shall be applied as soon as the concrete has hardened enough to prevent marring on unformed surfaces, and within 2 hours after removal of forms. Repairs required to be made to formed surfaces shall be made within the said 2 hour period; provided, however, that any such repairs which cannot be made within the said 2 hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet sandblasted to remove the curing compound.

5. During the curing period, no traffic of any nature and no depositing of any materials, temporary or otherwise, shall be permitted on surfaces coated with curing compound. Foot traffic and the depositing of materials may be allowed after 3 Days if the surface is covered with 5/8-inch plywood placed over polyethylene sheets.

3-16.06. Method 5: This method applies to both buried slabs and walls to be backfilled.

1. The concrete shall be kept continuously wet by the application of water for a minimum period of at least 7 Days beginning immediately after the concrete has reached final set or forms have been removed.

2. Until the concrete surface is covered with the curing medium, the entire surface shall be kept damp by applying water through nozzles that atomize the flow so that the surface is not marred or washed.

3. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held substantially in contact with the concrete surface to prevent being dislodged by wind or any other causes. Edges shall be continuously held in place.

4. The curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours.

5. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall be removed, any dry spots shall be rewetted, and curing compound shall be immediately applied in accordance with Method 4 above.

6. The CONTRACTOR shall dispose of excess water from the curing operation to avoid damage to the WORK.

7. Damp proofing: The exterior surfaces of buried roof slabs and backfilled walls shall be dampproofed as follows.

   a. Immediately after completion of curing, the surface shall be sprayed with a damp proofing agent consisting of an asphalt emulsion. Application shall be in 2 coats. The first coat shall be diluted to one-half strength by the addition of water and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon of dilute solution. The second coat shall consist of an application of the undiluted material, and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon. Damp proofing material shall be as indicated above.

   b. As soon as the material has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used if it produces a uniformly coated white surface and remains until placing of the backfill. If the whitewash fails to remain on the surface until the backfill is placed, the CONTRACTOR shall apply additional whitewash

3-16.07. The CONTRACTOR may submit alternate methods of curing which maintain the concrete in a continuously wet condition for acceptance by the ENGINEER.

3-17. PROTECTION

3-17.01. The CONTRACTOR shall protect concrete against injury until final acceptance.

3-17.02. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. The CONTRACTOR shall provide such protection while the concrete is still plastic and whenever precipitation is imminent or occurring.

3-18. CURING IN COLD WEATHER

3-18.01. Water curing of concrete may be reduced to 6 Days during periods when the mean daily temperature in the vicinity of the Site is less than 40 degrees F; provided that, during the prescribed period of water curing, when temperatures are such that concrete surfaces may freeze, water curing shall be temporarily discontinued.

3-18.02. Concrete cured by an application of curing compound will require no additional protection from freezing if the protection at 50 degrees F for 72 hours is obtained by means of approved insulation in contact with the forms or concrete surfaces; otherwise, the concrete shall be protected against freezing temperatures for 72 hours immediately following 72 hours protection at 50 degrees F. Concrete cured by water shall be protected against freezing temperatures for 72 hours immediately following the 72 hours of protection at 50 degrees F.

3-18.03. Discontinuance of protection against freezing temperatures shall be such that the drop in temperature of any portion of the concrete will be gradual and will not exceed 40 degrees F in 24 hours. In the spring, when the mean daily temperature rises above 40 degrees F for more than 3 Days, 72 hour protection at a temperature not lower than 50 degrees F may be discontinued for as long as the mean daily temperature remains above 40 degrees F; provided, that the concrete shall be protected against freezing temperatures for not less than 48 hours after placement.

3-18.04. Where artificial heat is employed, special care shall be taken to prevent the concrete from drying. Use of unvented heaters will be permitted only when unformed surfaces of concrete adjacent to the heaters are protected for the first 24 hours from an excessive carbon dioxide atmosphere by application of curing compound; provided, that the use of curing compound for such surfaces is otherwise permitted by these Specifications.

3-19. TREATMENT OF SURFACE DEFECTS

3-19.01. As soon as forms are removed, exposed concrete surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the ENGINEER. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall be repaired as indicated below. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be completely removed and replaced. Repairs and replacements shall be performed promptly.

3-19.02. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of laitance or soft material, plus not less than 1/32-inch depth of the surface film from hard portions by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces underneath will remain moist but not so wet as to overcome the suction upon which a good bond depends. The material used for repair shall consist of a mixture of one sack of cement to 3 cubic feet of sand. For exposed walls, the cement shall contain such a proportion of Atlas white portland cement as is required to make the color of the patch match the color of the surrounding concrete.

3-19.03. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with dry-packed cement grout. Holes left by form-tying devices having a rectangular cross-section, and other imperfections having a depth greater than their least surface dimension, shall not be reamed but shall be repaired in an approved manner with dry-packed cement grout.

3-19.04. Repairs shall be built up and shaped in such a manner that the completed WORK will conform to the requirements of this Section as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures. Surfaces of repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.

3-20. CARE AND REPAIR OF CONCRETE

3-20.01. The CONTRACTOR shall protect concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, which becomes defective at any time prior to the final acceptance of the completed WORK, which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete.

END OF SECTION

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SECTION 03315

GROUTING

PART 1 -- GENERAL

1.1. THE SUMMARY

1-1.01. The CONTRACTOR shall provide grout, complete and in place, in accordance with the Contract Documents. For concrete repair material and procedures, reference Section 03900 – Concrete Repair and Rehabilitation.

1-1.02. Grout provided as a base support for mechanical and electrical equipment shall conform to manufacturer's requirements and the requirements of this section.

1-1.03. The following types of grout are covered in this Section:

1. Non-Shrink Grout
2. High Strength Non-Shrink Grout
3. Non-Shrink Epoxy Grout
4. Topping Grout and Concrete/Grout Fill

1.2. REFERENCE SPECIFICATIONS, CODES AND STANDARDS

1-2.01. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).

1-2.02. ASTM C307 -- Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings.

1-2.03. ASTM C531 – Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

1-2.04. ASTM C579 – Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

1-2.05. ASTM C580 – Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

1-2.06. ASTM C827 – Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.

1-2.07. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.

1-2.08. ASTM C1090 – Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout.

1-2.09. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

1-2.10. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.

1-2.11. ASTM C1339 – Standard Test Method for Flowability and Bearing Area of Chemical-Resistant Polymer Machinery Grouts.

1.3. CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 - Contractor Submittals.

1. Certified testing lab reports for tests indicated herein.

2. Test results and service report from the field tests and the demonstration and training session verifying the requirements indicated herein.

3. Manufacturer’s literature containing instructions and recommendations on the mixing, handling, placement, curing, and appropriate uses for each type of grout used in the WORK, and location of use.

4. Documentation indicating that the grouts contain no chlorides or other chemicals that cause corrosion.

5. Manufacturer’s Safety Data Sheet documenting composition of grouts.

6. Submit manufacturer's written warranty as indicated herein.

7. Name and telephone number of grout manufacturer's representative who will give on-site service. The representative shall have at least one year of experience with the indicated grouts.

1.4. QUALITY ASSURANCE

1-4.01. Field Tests

1. Compression test specimens will be taken from the first placement of each type of grout, and at intervals thereafter selected by the ENGINEER. The specimens will be made by the ENGINEER or its representative.

2. Compression tests and fabrication of specimens for cement grout and cement based non-shrink grout will be performed in accordance with ASTM C1107 at intervals during construction selected by the ENGINEER.

3. Compression tests and fabrication of specimens for topping grout and concrete/grout fill will be performed in accordance with Section 03310 - Cast-in-Place Concrete at intervals during construction selected by the ENGINEER.

4. Compression tests and fabrication of specimens for epoxy grouts will be performed in accordance with ASTM C579, Method B, at intervals during construction selected

by the ENGINEER. A set of 3 specimens will be made for testing at 7 Days and each earlier time period as appropriate.

5. The cost of laboratory tests on grout will be paid by the CONTRACTOR. Where test results show the grout to be defective, the CONTRACTOR shall pay for the tests, removal and replacement of Defective Work, and re-testing, all as part of the WORK.

6. The CONTRACTOR shall assist the TESTING LAB in obtaining specimens for testing and shall furnish materials necessary for fabricating the test specimens.

1-4.02. Construction Tolerances: Construction tolerances shall be as indicated in Section 03310 unless indicated otherwise.

1-4.03. Pre-Installation Demonstration and Training.

1. Non-Shrink Grouts

   a. The grout manufacturer shall give a demonstration and training session for the cement based and epoxy non-shrink grouts to be used on the project before any installation of grout is allowed.

   b. The CONTRACTOR shall transport the test cubes to an independent test laboratory, obtain the test reports, and report these demonstration and training test cube strengths to the ENGINEER.

1.5. SPECIAL CORRECTION OF DEFECTS PROVISIONS

1-5.01. Manufacturer's Warranty

1. Furnish one year warranty for WORK provided under this section.

2. Manufacturer's warranty shall not contain a disclaimer limiting responsibility to the purchase price of products or materials.

PART 2 -- PRODUCTS

2.1. APPLICATION

2-1.01. Unless indicated otherwise, grouts shall be provided as listed below whether indicated on the Drawings or not.

Application	Type of Grout
Beam and column (1 or 2 story) base plates less than 16-inches in the least dimension.	Non-Shrink
Column base plates (greater than 2 story or larger than 16-inches in the least dimension)	High Strength Non-Shrink

Application	Type of Grout
Under precast concrete elements	High Strength Non-Shrink
Storage tanks and other non-motorized equipment or machinery under 30 horsepower	Non-Shrink
Motorized equipment over 30 horsepower and equipment under 30 horsepower but subject to severe shock loads and high vibrations	Non-Shrink Epoxy
Filling blockout spaces for embedded items such as railing posts, gate guide frames, etc.	Non-Shrink
Toppings and concrete/grout fill less than 3-inches thick	Topping Grout
Toppings and concrete/grout fill greater than 3-inches thick	Structural Concrete per 03310
Anchor bolts, anchor rods and reinforcing steel required to be set in epoxy or adhesive.	Post Installed Anchors in Concrete per Section 05519
Repair of holes and defects in concrete members.	Concrete Repair and Rehabilitation per Section 03900

2.2. NON-SHRINK GROUTS

2-2.01. General

1. All non-shrink grout shall be cement based unless otherwise noted.

2. Cement-based non-shrink grout shall be a prepackaged, inorganic, fluid, non-gas liberating, non-metallic, cement type grout requiring only the addition of water. Cement from kilns burning metal-rich hazardous waste fuel shall not be used.

3. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each non-shrink grout shall be as recommended by the manufacturer for the particular application.

4. The manufacturer’s product information shall state the acceptability of the non-shrink grout for the intended purpose and location.

5. Grout shall not contain chlorides or additives that may contribute to corrosion.

6. Grout placed in continuously wet environments or in exterior conditions shall not contain gypsum or calcium salt.

7. All cement-based non-shrink grout shall have the following general properties:

    a. Meet the requirements of ASTM C1107.

    b. Have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C827. The grout when tested shall not bleed or segregate at maximum allowed water.

    c. No shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C1090.

    d. A minimum bond strength (concrete to grout) of 1900 psi per modified ASTM C882.

8. Environmental and ambient conditions shall be a factor in the selection of non-shrink grout. If a non-shrink grout is to be used in a high sulfate environment, marine environment, high temperature environment, or freeze/thaw environment, the manufacturer's product information shall state the acceptability for each environmental condition.

2-2.02. Non-Shrink Grout

1. Non-Shrink Grout shall have a minimum 28 Day compressive strength of 5000 psi when mixed at a fluid consistency and tested per ASTM C109.

2. Non-Shrink Grout shall be **Five Star Grout** by **Five Star Products, Five Star Fluid Grout 100** by **Five Star Products, Sikagrout 212** by **Sika Corporation,** or approved equal.

2-2.03. High Strength Non-Shrink Grout

1. High Strength Non-Shrink Grout shall have a minimum 28-Day compressive strength of 10,000 psi when mixed at a fluid consistency and tested per ASTM C109.

2. High Strength Non-Shrink Grout shall be **Five Star High Strength Grout** by **Five Star Products, Sikagrout 428 FS,** or approved equal.

2.3. NON-SHRINK EPOXY GROUT

2-3.01. Non-shrink epoxy grout shall be a flowable, non-shrink, 100 percent solids system. The epoxy grout system shall have 3 components: resin, hardener, and specially blended aggregate, each premeasured and prepackaged. The resin component shall not contain any non-reactive diluents.

2-3.02. The manufacturer's product information shall state the acceptability of the epoxy grout for the intended purpose and location.

2-3.03. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged.

2-3.04. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable.

2-3.05. Non-shrink epoxy grout shall have a negligible (less than 0.0006 in/in) length change after hardening, and a coefficient of thermal expansion less than 0.00003 in/in F when tested in accordance with ASTM C531.

2-3.06. Non-shrink epoxy grout shall develop a minimum compressive strength of 9000 psi in 24 hours and 13,000 psi in seven days when tested in accordance with ASTM C579, method B.

2-3.07. The effective bearing area shall be a minimum of 85 percent effective bearing area (EBA) in accordance with ASTM C1339, for bearing area and flow.

2-3.08. The chemical formulation of the non-shrink epoxy grout shall be that recommended by the manufacturer for the particular application. Do not reduce aggregate loading or add solvents to increase flowability.

2-3.09. Non-shrink epoxy grout shall have the following minimum properties when tested at 7 Days:

1. Minimum bond strength to concrete of 3000 psi per ASTM C882 modified.

2. Minimum bond strength to steel of 1700 psi per ASTM C882 modified.

3. Minimum flexural strength of 2500 psi per ASTM C580.

4. Minimum tensile strength of 2000 psi per ASTM C307.

2-3.10. Non-shrink epoxy grout shall be **Five Star DP Epoxy Grout** by **Five Star Products, Inc.**, **Masterflow 648** by **BASF Corporation**, **Sikadur 42 Grout-Pak** by **Sika Corporation**, or approved equal.

2.4. TOPPING GROUT AND CONCRETE/GROUT FILL

2-4.01. Where fill thickness is 3-inches or greater, structural concrete as indicated in Section 03310 - Cast-in-Place Concrete, may be used when accepted by the ENGINEER. Fiber reinforcing shall be as indicated below.

2-4.02. Grout for topping of slabs and concrete/grout fill for built-up surfaces of tanks, channels, and basin bottoms shall be composed of cement, fine aggregate, coarse aggregate, water, and admixtures proportioned and mixed as indicated. Materials and procedures indicated for structural concrete in Section 03310 - Cast-in-Place Concrete, shall apply unless indicated otherwise.

2-4.03. Topping grout and concrete/grout fill shall contain a minimum of 564 pounds of cement per cubic yard with a maximum water/cement ratio of 0.45.

2-4.04. Coarse aggregate shall be graded as follows:

U.S. Standard Sieve Size	Percent By Weight Passing
1/2 in	100
3/8 in	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 30	0

2-4.05. Final mix design shall be as determined by trial mix design as indicated in Section 03310 except that drying shrinkage tests are not required.

2-4.06. Topping grout and concrete grout/fill shall contain air-entraining agent per Section 03310.

2-4.07. Strength: Minimum compressive strength of topping grout and concrete/grout fill at 28 days shall be 4000 psi.

2.5. CURING MATERIALS

2-5.01. Curing materials shall be in accordance with Section 03310 and as recommended by the manufacturer of prepackaged grouts.

2.6. CONSISTENCY

2-6.01. The consistency of grout shall be as necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is defined such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the particular application.

2-6.02. The slump for topping grout and concrete/grout fill shall be adjusted to match placement and finishing conditions but shall not exceed 4-inches.

2.7. MEASUREMENT OF INGREDIENTS

2-7.01. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurements shall not be allowed.

2-7.02. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

PART 3 -- EXECUTION

3.1. PRODUCT DELIVERY, STORAGE AND HANDLING

3-1.01. Grout shall be stored in accordance with manufacturer's recommendations.

3.2. GENERAL

3-2.01. CONTRACTOR shall arrange for the manufacturer of prepackaged grouts to provide on-site technical assistance within 72 hours of request, as part of the WORK.

3-2.02. Grout shall not be placed until base concrete or masonry has attained its design strength, unless authorized otherwise by the ENGINEER.

3-2.03. When cementitious grouts are used on concrete surfaces, the concrete surface shall be saturated with water for 24 hours prior to placement. Upon completion of the saturation period, excess water shall be removed with clean, oil free compressed air prior to grouting. Concrete substrate shall not be wet prior to placement of epoxy grouts.

3-2.04. Surface preparation, curing, and protection of cement grout shall be in accordance with Section 03310. The finish of the grout surface shall match that of the adjacent concrete unless otherwise indicated.

3-2.05. Surfaces that will be in contact with grout shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete, and other deleterious materials.

3-2.06. Shade the WORK from sunlight for at least 24 hours before and 48 hours after grouting.

3-2.07. Contact the grout manufacturer's representative for assistance on hot and cold weather grouting techniques and precautions if applicable.

3.3. GROUTING PROCEDURES

3-3.01. General: Mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

3-3.02. Structural, equipment, tank, and piping support bases shall be grouted, unless indicated otherwise.

1. The original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a minimum one-inch thickness of grout or other thickness if indicated.

2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout through a headbox of appropriate size. The mixture shall be of a fluid consistency and poured continuously into the space between the plate and the base concrete. Forms for grout shall be tight against retaining surfaces, and joints shall be sealed as recommended by the grout manufacturer to be liquid-tight. Forms shall be coated as recommended

by the grout manufacturer for easy form release. Where this method of placement is not practical or where required by the ENGINEER, alternate grouting methods shall be submitted by the CONTRACTOR for acceptance by the ENGINEER.

3. Concrete equipment pads for equipment bases that will be epoxy-grouted shall be sized so that, when the equipment base is fully grouted, the epoxy grout is stopped not less than 4-inches from the edge of the pad.

3-3.03. Topping Grout and Concrete/Grout Fill

1. Mechanical, electrical, and finish WORK shall be completed prior to placement of topping or concrete/grout fill. To ensure bonding to the base slab, the base slab shall be given an exposed aggregate finish. Alternatively, where accepted by the ENGINEER, the base slab shall be given a roughened textured surface by a close-spaced rake while the surface is green. After curing, high pressure washing shall expose the aggregates and produce not less than a 3/16-inch amplitude roughness. Jackhammers or chipping hammers shall not be used.

2. The minimum thickness of grout topping and concrete/grout fill shall be one-inch. Where the finished surface of concrete/grout fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2 inches wide by 1-1/2 inches deep.

3. The base slab shall be thoroughly cleaned and wetted to saturated surface dry (SSD) condition per the International Concrete Repair Institute (ICRI) -- Technical Guide for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays, prior to placing topping grout and grout fill. No topping grout shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat cement grout shall be broomed into the surface of the slab just before topping or fill placement. The neat cement grout shall not be allowed to dry before topping placement. If it does dry, it must be immediately removed using wet stiff brooms and reapplied. The topping and fill shall be compacted by rolling or thorough tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade. Coat surface with evaporation retardant as needed to prevent plastic shrinkage cracks.

4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.

5. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping or fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement, or mixture of dry cement and sand shall be applied to the surface.

3.4. CONSOLIDATION

3-4.01. Grout shall be placed in such a manner, for the consistency necessary for each application, to assure that the space to be grouted is completely filled.

END OF SECTION

SECTION 03900

CONCRETE REPAIR AND REHABILITATION

PART 1 -- GENERAL

1.1. THE SUMMARY

1-1.01. Remove, repair, or rehabilitate existing concrete members and surfaces as indicated.

1-1.02. Provide all materials and equipment necessary to accomplish the WORK.

1-1.03. Repair damage to concrete and concrete surfaces which results from the removal of embedded items, from construction activities, or which existed previously in structures indicated to be repaired.

1.2. REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

ACI 201.1R-08	Guide for Making a Condition Survey of Concrete in Service
ACI 546R-14	Concrete Repair Guide

1.3. CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with the requirements of Section 01300 – Contractor Submittals.

1-3.02. Shop Drawings

1. Submit Shop Drawings for strengthening required around new openings.

2. Submit detailed drawings showing proposed methods for supporting existing structures, equipment, and piping during demolition and repair activities.

1-3.03. Concrete Repair Products and Procedures

1. Submit a comprehensive plan for each repair method indicated within this Section, the plan shall include the following:

   a. Manufacturer's literature containing instructions and recommendations on the mixing, handling, placement, curing, and appropriate uses for each product.

   b. Curing products and procedures for each repair method for which curing is recommended by the manufacturer.

1.4. QUALIFICATIONS OF CONCRETE RESTORATION FIRMS

1-4.01. The concrete restoration WORK shall be performed by an experienced firm customarily engaged in performing similar repair work on cast-in-place concrete structures.

1-4.02. The restoration firm shall have completed at least 5 similar projects in the last 5 years.

1-4.03. The restoration firm shall be certified by the manufacturer of the repair materials.

1.5. QUALITY ASSURANCE

1-5.01. Field Tests of Cement Based Mortars and Grouts.

1. The ENGINEER may take compression test specimens during construction from the first placement of each type of mortar or grout, and at intervals thereafter as selected by the ENGINEER in order to ensure continued compliance with the indicated requirements.

2. The CONTRACTOR shall assist the ENGINEER in obtaining specimens for testing.

3. The compression tests and fabrication of specimens for repair mortar and non-shrink grout will be performed as specified in ASTM C 109.

4. A set of 5 specimens will be made for testing at 7 days, 28 days, and additional time periods as appropriate.

5. Any material, already placed, which fails to meet the indicated performance requirements is subject to removal and replacement as part of the WORK.

6. The cost of laboratory tests on mortar and grout will be paid by the CONTRACTOR, including the cost of any additional tests and investigation on the WORK that does not meet the indicated requirements.

7. The CONTRACTOR shall supply all necessary materials for fabricating the test specimens.

1-5.02. Repair Concrete: Repair concrete shall be tested as required in Section 03310 – Cast-in-Place Concrete.

1-5.03. Epoxy Grout: Epoxy grout shall be tested as required in Section 03315 – Grouting.

1-5.04. Construction Tolerances: Construction tolerances shall comply with the requirements of Section 03310 – Cast-in-Place Concrete, except as otherwise indicated.

PART 2 -- PRODUCTS

2.1. GENERAL

2-1.01. All products and materials in contact with potable water shall be certified as being in conformance with ANSI/NSF Standard 61 – Drinking Water System Components – Health Effects.

2.2. REPAIR MORTAR

2-2.01. Provide repair mortar as a pre-packaged, 2-component, polymer-modified, cementitious, non-sag mortar, specifically formulated for the repair of surface defects.

2-2.02. Provide the mortar with a penetrating corrosion inhibitor.

2-2.03. Repair mortar shall have the following properties:

Physical Property	Value	ASTM Standard
Compressive Strength (min.) at 7 days at 28 days	 6000 psig 7000 psig	C-109
Bond Strength (min.) 98% C-666 at 28 days	 2200 psig	C-882 (modified)
Freeze/Thaw resistance (min.) 300 cycles	 98 percent	C-666

2-2.04. a minimum repair thickness of 1/4 inch, unless otherwise indicated.

2-2.05. Repair Mortar shall be SikaTop 123 Plus, by Sika Corporation, or equal.

2.3. NON-SHRINK GROUT

2-3.01. Provide non-shrink grout conforming to the requirements of Section 03315 – Grouting.

2.4. CONCRETE MATERIALS

2-4.01. Cement

1. Use Type II Portland cement unless otherwise indicated.

2. Where repairs are to be made on wall surfaces open to view and above normal water surface elevations, blend white Portland cement with the Type II cement as needed in order to match the color of the adjacent existing concrete surface.

2-4.02. Structural Repair Grout

1. Where required, provide structural repair grout meeting the requirements of a Structural Concrete Mix design per Section 03310 – Cast-in-Place Concrete.

2. As an alternate to ready mix concrete, the contractor may use Five Star Structural Concrete ES-60 by Five Star Products Inc, or equal, and extended 60% by weight with 3/8", non-reactive, washed aggregate per the manufacturer's requirements.

3. Provide a minimum repair thickness of 3 inches.

2-4.03. Cement Grout

1. Provide cement grout that meets the requirements of Section 03315 – Grouting.

2. Provide a minimum repair thickness of one inch.

2-4.04. Miscellaneous Materials**:** For concrete construction materials not covered specifically in this Section, conform to the requirements of Section 03310 – Cast-in-Place Concrete.

2.5. AGGREGATE

2-5.01. Obtain the written permission of the manufacturer and ENGINEER before using aggregate to extend repair mortar and grout products.

2-5.02. If allowed and unless otherwise indicated, provide aggregate consisting of 3/8-inch clean, washed gravel or crushed stone as required in Section 03310 – Cast-in-Place Concrete.

2.6. BONDING AGENT AND ANTI-CORROSION COATING

2-6.01. Provide a bonding agent that is a solvent-free, moisture-tolerant, epoxy-modified, cementitious product, specifically formulated as a bonding agent and anti-corrosion coating.

2-6.02. Bonding Agent shall be **Armatec 110 EpoCem**, by **Sika Corporation**, or equal.

2.7. EPOXY GROUT

2-7.01. Provide an epoxy grout conforming to the requirements of Section 03315 – Grouting

2.8. EPOXY RESIN

2-8.01. Use epoxy resin for structural crack repair.

2-8.02. For crack injection, provide a 2-component, moisture-tolerant, low-viscosity, high-strength epoxy resin adhesive that is specially formulated for that usage.

2-8.03. Provide a minimum bond strength of 2900 psi when tested per ASTM C 882 at 14 days, moist cured.

2-8.04. Epoxy Resin shall be **Sikadur 35, Hi-Mod LV**, by **Sika Corporation**, **KEMKO 068 LoVis IR**, by **ChemCo Systems, Inc.**, or equal.

2.9. PROTECTIVE COATING

2-9.01. Waterproofing

1. Provide a 2-component, polymer-modified, cementitious waterproofing and protective slurry mortar for concrete.

2. Apply the material in 2 coats, with a coverage of 40 sq ft/gal/coat.

3. Waterproofing shall be **Sika Top Seal 107**, by **Sika Corporation**, or equal.

2.10. FORMWORK

2-10.01. Where needed, provide formwork that meets the requirements of Section 03310 – Cast-in-Place Concrete.

2.11. REINFORCEMENT STEEL

2-11.01. Where required, provide reinforcing steel that meets the requirements of Section 03310 – Cast-in-Place Concrete .

2.12. POLYURETHANE SEALANT

2-12.01. Provide a 2-part polyurethane, gun-grade sealant.

2-12.02. Polyurethane Sealant shall be **Sikaflex – 2C**, by **Sika Corporation**, or equal.

2.13. POLYURETHANE CHEMICAL GROUT

2-13.01. Use polyurethane chemical grout for non-structural crack repair.

2-14.02. Polyurethane Chemical Grout shall be **SikaFix HH**, by **Sika Corporation**, **Flex LV PURe**, by **WR Grace/De Neef**, **Flex SLV PURe**, by **WR Grace/De Neef**, or equal.

2.14. HYDROPHILIC WATERSTOP

2-15.01. Provide hydrophilic waterstop of the type which expands in the presence of water to form a watertight joint seal without damaging the concrete in which it is cast.

2-15.02. Provide hydrophilic waterstop that is bentonite-free, and manufactured from chloroprene rubber and modified chloroprene rubber with hydrophilic properties.

2-15.03. Hydrophilic Waterstop shall be **Hydrotite RSS-040 P**, by **Greenstreak Group, Inc.**, KM **4mm String**, by **Adeka Ultra Seal**, or equal.

2.15. HIGH STRENGTH EPOXY GEL

2-16.01. High-Strength Epoxy Gel for crack surface sealing shall be **Denepox Rapidgel**, by **WR Grace/De Neef**, or equal.

PART 3 -- EXECUTION

3.1. GENERAL

3-1.01. Repairs

1. Repair techniques will be reviewed during the pre-construction meeting between the CONTRACTOR, ENGINEER, and OWNER.

2. The CONTRACTOR shall be familiar with the cause of deteriorated concrete and shall choose the right equipment, repair materials and techniques to be used for each particular repair.

3. Choose repair materials to match the adjacent concrete surface in color and texture.

4. Apply repair materials in strict accordance with the manufacturer's printed instructions, including temperature and moisture requirements throughout application and curing.

5. Protect adjacent portions of the structure, including all valves, pipes, and mechanical equipment from debris generated by repair activities.

6. For portions of the structure that are not identified to be repaired, maintain in their original condition.

3-1.02. Structural Stability

1. Use caution not to weaken the structural capacity of a beam, column, wall, slab, walkway, or other concrete member during concrete removal.

2. For severely deteriorated concrete members, consult with the ENGINEER before removing a major portion of any structural member.

3. Shoring may be required in order to support the structure and to protect workers.

3-1.03. Provide off-site disposal of debris generated as a result of repair procedures.

3-1.04. Provide concrete construction procedures not specifically addressed in this Section in accordance with the requirements of Section 03310 – Cast-in-Place Concrete.

3.2. REPAIR SEQUENCING

3-2.01. Unless otherwise indicated, perform concrete repairs in the following sequence, with no activity in an area being started until previous activities in that area have been completed, including curing, cleanup, and the like:

1. Removal of equipment, miscellaneous metals, and other surface features that would interfere with the repair.

2. Removal of concrete sections which require complete replacement.

3. Surface preparation hydroblasting over the entire area to be repaired.

4. Embedded metal repair.

5. Crack repair.

6. Spalled and delaminated concrete repair.

7. Scaled concrete.

8. Pop-out repair, and repair of other surface damage, deterioration, or defects.

9. Patching of holes in concrete.

10. Replacement of concrete sections which require complete replacement.

11. New construction.

12. Application of protective coatings.

3-2.02. For areas which require combinations of spalled and delaminated concrete repair, scaled concrete, and pop-out repair, perform these repairs at the same time.

3-2.03. Limit the size of the repair area in order to permit the repairs to be performed together, without sacrificing the quality of the individual repairs.

3.3. EMBEDDED METAL REPAIR

3-3.01. Unless otherwise indicated, repair anchor bolts and other embedded metal, except rebar, that are exposed at the concrete surface and are showing signs of corrosion, as follows:

1. Cut off or otherwise remove corroded metal fastened at the surface.

2. Burn back embedded metals to a depth of at least 1.5 inches beyond the surface of sound concrete.

3. Chip away unsound concrete around the embedded metal.

4. Apply epoxy grout to the repair area until level with the surface of the surrounding sound concrete.

3-3.02. Unless otherwise indicated, repair embedded rebar that is exposed at the concrete surface following the procedures outlined in the appropriate concrete repair subsection, below.

3.4. CRACK REPAIR

3-4.01. Structural Cracks - Structural Cracks are defined as follows:

1. All cracks where reinforcing steel is passing across the crack, including erratic cracks, and cracks at construction joints.

2. Repair structural cracks with epoxy resin.

3-4.02. Non Structural Cracks - Non Structural Cracks are defined as follows:

1. Cracks occurring at flexible joints, contraction joints or expansion joints.

2. Repair non-structural cracks with polyurethane chemical grout.

3-4.03. Efflorescence

1. Prior to the crack repair, clean efflorescence from the cracks and the surrounding area.

2. Clean the efflorescence by light hydro-blasting or scrubbing.

3-4.04. Pressure Injection: Pressure Injection to be performed prior to leak testing and roof membrane installation.

1. General

   a. The indicated repair materials have been selected to minimize the loss of material during the injection process. The areas selected for crack repair are to be identified by the Contractor, Engineer or Construction Manager and be determined prior to leak tests and roof membrane installation. The injection of cracks may also be required as a result of the leak test.

   b. In order to avoid excessive loss of injected material at the lower exposed portions of the cracks, space the injection ports a distance no greater than the thickness of the wall being repaired.

2. Open through thickness structural cracks are to be repaired to deliver a watertight hydraulic structure passing the specified leakage test. All 3 foot long minimum or greater through thickness cracks greater than a minimum 15 mil thickness in the walls are to be injected unless they do not accept grout. All 2 foot long minimum through thickness cracks greater than 10 mil thickness in the foundation, water conduits, floor slabs and roof are to be injected unless they do not accept grout. Perform structural crack repairs by pressure injection in accordance with the manufacturer's directions, and in accordance with the following basic procedure:

   a. Remove unsound and foreign materials from the crack in a manner that does not trap debris in the crack and prevent the flow of repair materials.

   b. Remove any contamination by flushing with water or solvent, allowing adequate time for air-drying or blow out the solvent with compressed air. For potable water applications, any solvents must be fully flushed from the joint unless NSF/ANSI Standard 61 approved.

   c. Install the injection ports in accordance with the manufacturer's directions.

   d. Sealing

1) Seal the surface in order to keep the pressure injecting materials from leaking out before it has set or gelled.

2) Seal a surface by brushing an epoxy over the surface of the crack and allowing it to harden, or use high injection pressures to cut-out the cracks in a 'V' shape, fill with an epoxy, and strike off flush with the surface.

3) Surface patching or sealant shall be performed where needed to provide for complete penetration of the injected polyurethane grout and to prevent wastage. Seal surface of crack with fast setting hydraulic cement or high strength epoxy gel. The floor surface along the cracks shall be cleaned and all wasted grout and surface seal material shall be completely removed from the concrete surface following completion of the repair work

e. Inject the repair materials, with consideration of the following items:

1) Carefully select the pressure of the hydraulic pump or other device, because too much pressure can extend the existing cracks and cause more damage.

2) For vertical cracks, start by pumping material into the entry port at the lowest elevation until the material level reaches the entry port above, then cap the lower injection port and repeat the process at successively higher ports until the crack has been completely filled.

3) For horizontal cracks, start at one end of the crack and work to the other end, filling the crack until the pressure can be maintained.

4) For very fine cracks, start the injection of repair material at the widest end and proceed toward the thinner end, using low-viscosity repair material.

f. Cleanup

1) Remove the surface seal by grinding or other appropriate means.

2) Coat fittings and holes at injection ports with an epoxy patching compound.

3) If crack repairs are part of repair for surface defects, painting with epoxy is not necessary and surface preparation may be started after crack repairs have been completed.

3. Open through thickness non-structural cracks are to be repaired to deliver a watertight hydraulic structure passing the specified leakage test. Open through thickness cracks with lengths of at least 3 feet on each side of the wall and roof, at least 2 feet of length on the foundation or floor slab are to be injected unless they do not accept grout. All 3 foot long minimum or greater through thickness cracks greater than a minimum 15 mil thickness in the walls are to be injected unless they do not accept grout. All 2 foot long through thickness cracks greater than 10 mil thickness in the floors and roof are to be injected unless they do not accept grout. Perform non-structural crack repairs

in accordance with the manufacturer's directions, and in accordance with the following basic procedure:

a. Remove unsound and foreign materials from the crack in a manner that does not trap debris in the crack and prevent the flow of repair materials.

b. Remove contamination by flushing with water or solvent, allowing adequate time for air-drying or blow out the solvent with compressed air. Any solvents must be fully flushed from the joint unless NSF/ANSI Standard 61 approved.

c. Install the injection ports in accordance with the manufacturer's directions.

d. Moisture

    1) For non-structural cracks, moisture must be present for the chemical grout to react.

    2) Prior to injecting the repair materials, inject the crack with a small amount of water in order to completely moisten the crack.

e. Inject the repair materials, with consideration of the following items:

    1) Carefully select the pressure of the hydraulic pump or other device, because too much pressure can extend the existing cracks and cause more damage.

    2) For vertical cracks, start by pumping material into the entry port at the lowest elevation until the material level reaches the entry port above, cap the lower injection port and repeat the process at successively higher ports until the crack has been completely filled, and then, starting again at the lowest port, re-inject into all ports in order to ensure that all voids are properly sealed off.

    3) For horizontal cracks, start at one end of the crack and work to the other end, filling the crack until the pressure can be maintained.

    4) For very fine cracks, start the injection of repair material at the widest end and proceed toward the thinner end.

f. Cleanup

    1) Remove excess surface material by grinding or other appropriate means.

    2) Coat fittings and holes at injection ports with an epoxy patching compound.

    3) If crack repairs are part of repair for surface defects, painting with epoxy is not necessary and surface preparation may be started after crack repairs have been completed.

3.5. SPALLED AND DELAMINATED CONCRETE REPAIR

3-5.01. Repair spalls and delaminated concrete using repair mortar.

3-5.02. Surface Preparation

1. Remove all delaminated concrete and all unsound concrete beyond the spalled or delaminated area.

2. Boundaries

    a. Determine the boundaries of the patch by sawcuts to a depth of at least 1/4 inch up to one inch deep.

    b. Refer to the Structural Drawings for sawcut locations.

    c. Where the sawcut locations are not shown on the Drawings, the boundaries shall be layouts designed to reduce boundary edge length.

    d. Avoid excessive or complex edge conditions.

3. Sawcuts

    a. Perform sawcuts perpendicular to the surface or slightly undercut.

    b. Construct sawcuts in maximum 1/4-inch increments.

    c. After each incremental cut, inspect the cut surface in order to ensure that the existing reinforcement has not been cut.

    d. If at any depth the reinforcement becomes exposed, terminate the sawcut and notify the ENGINEER.

4. Chip away concrete within the repair area to a depth sufficient to expose sound concrete over the entire repair area, or to a minimum depth required by repair mortar, whichever is greater.

5. Base the selection of partial depth concrete removal equipment on the size of repair area, depth of concrete to be removed, and the location of the deteriorated concrete such as wall, slab-on-grade, underside or top of elevated slab.

6. Removal

    a. The maximum allowable pneumatic chipping hammer shall be a 30-lb class hammer.

    b. Hydroblast removal shall use a maximum pressure of 40,000 psig.

    c. Sand blasting is not permitted.

    d. Hydroblast concrete removal is recommended for large area of surface defects.

e. Remove water blasting debris daily in order to prevent it from setting up.

f. If a chipping hammer is used, ensure that the existing reinforcement is not damaged during the concrete removal operations.

g. Remove protrusions, such as mortar spatter or fins, by grinding or by striking with a hammer or other tool.

7. Reinforcement

a. Remove concrete from around reinforcement when the rebar is rusted, more than half the rebar perimeter is already exposed, the concrete bond around the rebar is broken, or if the concrete is unsound or honey-combed.

b. Remove concrete in order to provide a clear space of minimum one inch on all sides of the reinforcement, such that the rebar can be cleaned and the repair material will completely surround the rebar.

c. Clean exposed reinforcement by water blasting or wire brushing.

d. After fully exposing and cleaning the reinforcement, check for steel deterioration, and if the cross-sectional area of the steel has been reduced by more than 10 percent, whether by deterioration, surface preparation, or a combination of both, provide additional reinforcement.

e. Consult with the ENGINEER before adding or replacing rebar.

3-5.03. Repairing Surface Defects

1. Clean the concrete surface after removing unsound concrete, repairing cracks, and cleaning the reinforcement.

2. Ensure that the concrete surface and reinforcement are free of form-release agents, curing compounds, surface hardeners, oils, grease, food, chemicals, and other contaminants.

3. Remove dust, including new dust generated by surface preparation or scarifying.

4. Prior to application of the bonding agent, apply anti-corrosion coating to exposed rebar in accordance with the manufacturer’s recommendations, allow the coating to dry, reapply the coating, and allow to dry again.

5. Prior to applying the repair mortar, apply bonding agent in accordance with the manufacturer’s recommendations.

6. Repair Mortar

a. Apply repair mortar in accordance with the manufacturer’s recommendations.

b. The thickness of each lift of repair mortar shall be in accordance with the manufacturer's recommendations, with the minimum thickness being not less than 1/4 inch.

7. Fully consolidate the repair mortar, working the material into the substrate to completely fill all pores and voids in the area to be filled.

8. Bring the repair surface into alignment with the adjacent existing surfaces in order to provide a uniform, even surface.

9. Match the repair surface to adjacent existing surfaces in texture by applying necessary coatings and surface treatments.

10. Float-finish the repaired surface using wood or sponge floats.

11. For repaired surfaces to receive a protective coating, brush-finish the surface in order to produce a roughened substrate for the coating.

12. Minimum and maximum ambient and surface temperatures shall be as recommended by repair material manufacturer.

3-5.04. Curing

1. Curing of repair mortar to receive waterproofing shall be as follows:

a. Keep the mortar continuously wet by the application of water for a minimum period of at least 7 consecutive days, beginning immediately after the mortar has reached final set.

b. Weight the curing blankets or otherwise held them in place in order to prevent being dislodged by wind or other causes, and to be substantially in contact with the concrete surface.

c. Ensure that edges are continuously held in place; and,

d. Keep the curing blankets and concrete continuously wet by the use of sprinklers or other means, both during and after normal working hours.

2. If the repair mortar is not to receive waterproofing, provide curing in accordance with the manufacturer's recommendations except that the minimum cure period shall be 7 days.

3. During cold weather, maintain the repair material temperature above 50 degrees F for at least 3 days after placement.

3.6. SCALED CONCRETE REPAIR

3-6.01. Repair scaling and pop-outs using repair mortar.

3-6.02. Surface Preparation

1. Prior to repair, prepare the surface in accordance with the repair mortar manufacturer's recommendations with the following minimum requirement.

2. Remove unsound concrete from surfaces by high-pressure water blasting, using a minimum pressure of 10,000 psigg and maximum pressure of 40,000 psigg.

3. Clean exposed reinforcement by water blasting or wire brushing.

3-6.03. Repairing Surface Defects

1. Clean the concrete surface after removing unsound concrete, repairing cracks, and cleaning reinforcement.

2. Ensure that the concrete surface and reinforcement are free of form-release agents, curing compounds, surface hardeners, oils, grease, food, chemicals, and other contaminants.

3. Remove dust, including new dust generated by surface preparation or scarifying.

4. Prior to application of the bonding agent, apply anti-corrosion coating to exposed rebar in accordance with the manufacturer's recommendations, allow the coating to dry, reapply the coating, and allow to dry again.

5. Prior to applying the repair mortar, apply bonding agent in accordance with the manufacturer's recommendations.

6. Apply repair mortar in accordance with the manufacturer's recommendations, using a minimum repair material thickness of 1/4 inch.

7. Fully consolidate the repair material, working the material into the substrate to completely fill all pores and voids in the area to be filled.

8. Bring the repair surface into alignment with the adjacent existing surfaces in order to provide a uniform, even surface.

9. Match the repair surface to adjacent existing surfaces in texture by applying necessary coatings and surface treatments.

10. Float-finish the repaired surface using wood or sponge floats.

3-6.04. Provide strip joint in newly placed mortar at the location of repaired cracks.

3-6.05. Curing

1. Curing of repair mortar to receive waterproofing shall be as follows:

    a. Keep the mortar continuously wet by the application of water for a minimum period of at least 7 consecutive days, beginning immediately after the mortar has reached final set.

b. Weight the curing blankets or otherwise held them in place in order to prevent being dislodged by wind or other causes, and to be substantially in contact with the concrete surface.

c. Ensure that edges are continuously held in place; and,

d. Keep the curing blankets and concrete continuously wet by the use of sprinklers or other means, both during and after normal working hours.

2. If the repair mortar is not to receive waterproofing, provide curing in accordance with the manufacturer's recommendations except that the minimum cure period shall be 7 days.

3. During cold weather, maintain the repair material temperature above 50 degrees F for at least 3 days after placement.

3.7. POP-OUT REPAIR, AND REPAIR OF OTHER SURFACE DAMAGE, DETERIORATION, OR DEFECTS

3-7.01. Repair pop-outs and other surface damage, deterioration, and defects which are 1/4 inch deep or shallower, using the procedures described under "SCALED CONCRETE REPAIR," above.

3-7.02. Repair other pop-outs and surface damage, deterioration, and defects using the procedures described under "SPALLED AND DELAMINATED CONCRETE REPAIR," above.

3.8. REPLACEMENT OF CONCRETE SECTIONS WHICH REQUIRE COMPLETE REPLACEMENT

3-8.01. Refer to the Structural Drawings for locations where the level of concrete deterioration is such that complete removal and replacement of the deteriorated section is required.

3-8.02. At these locations, remove the deteriorated concrete in accordance with the details on the Structural Drawings and the requirements of this Section.

3-8.03. Limits

1. The limits of concrete removal shall be as indicated on the Structural Drawings.

2. If no limits of removal are indicated, determine the limits in accordance with the procedures described under "Boundaries – Spalled and Delaminated Concrete Repair."

3-8.04. Provide sawcuts in accordance with the procedures described under "Sawcuts – Spalled and Deliminated Concrete Repair."

3-8.05. After removal of the concrete, prepare the area and provide repair concrete in accordance with the details on the Structural Drawings and the requirements of this Section.

3-8.06. Unless otherwise indicated, match the finished cross-section of the repaired concrete to the cross-section of the adjacent undamaged concrete.

3.9. PATCHING OF HOLES IN CONCRETE

3-9.01. General

1. For the purposes of this Section, holes are defined as penetrations completely through the concrete member and with interior surfaces approximately perpendicular to the surface of the existing member.

2. Interior surface areas which are inclined and do not meet this criteria shall be chipped as needed to meet this requirement.

3. The perimeter of holes at the surface shall form a regular shape composed of curved or straight line segments.

4. Provide the minimum depth of placement for the material used; score the existing concrete by saw cutting, and chip as needed to meet this requirement.

5. Roughen the interior surface of holes less than 12 inches in diameter to a minimum of 0.125-inch amplitude, and roughen larger holes to a minimum of 0.25-inch amplitude.

6. At holes, coat the existing surface to be repaired with a bonding agent.

3-9.02. Patching Small Holes: For holes which are less than 12 inches in their least dimension and extend completely through concrete members, fill with non-shrink grout.

3-9.03. Patching Large Holes

1. Fill holes which are larger than 12 inches in their least dimension with structural repair grout.

2. Provide large holes which are normally in contact with water or soil with hydrophilic waterstop placed in a groove.

3. Alternatively, bond the hydrophilic waterstop to the surface using an epoxy grout which completely fills all voids and irregularities beneath the waterstop material.

4. Install the waterstop in accordance with the requirements of Section 03310 – Cast-in-Place Concrete.

5. Provide reinforcing steel in layers matching existing reinforcement location, size, spacing and cover requirements unless directed otherwise by the ENGINEER.

6. In locations where NSF/ANSI Standard 61 approval is required by the authority having jurisdiction, use one of the following procedures:

    a. Provide Product Data showing the proposed structural repair grout is NSF/ANSI Standard 61 approved.

    b. Complete the repair with structural repair grout. Coat all surfaces required to have NSF/ANSI Standard 61 approval completely with Sikadur 31, Tyfo S, or equal.

c. Place the structural repair grout to within 1 ½" of the finished surface of the repair. Complete the remainder of the repair with SikaTop123 Plus, or equal.

3.10. PATCHING OF LINED HOLES

3-10.01. General

1. This WORK applies to those openings which have embedded material over all or a portion of their inside edge.

2. The requirements for repairing holes in concrete, as indicated above, apply as modified herein.

3. The ENGINEER will determine whether the embedded material is allowed to remain.

3-10.02. Where embedded material is allowed to remain, trim it back a minimum of 2 inches from the concrete surface.

3-10.03. Roughen or abrade the embedded material in order to promote good bonding to the repair material.

3-10.04. Remove substances that interfere with good bonding.

3-10.05. Completely remove embedded items that are not securely and permanently anchored into the concrete.

3-10.06. Completely remove embedded items which are larger than 12 inches in their least dimension, unless they are composed of a metal to which reinforcing steel can be welded; where reinforcement is required, weld it to the embedded metal.

3-10.07. The following requirements shall apply to concrete members which are in contact with water or soil:

1. Using epoxy grout, fill lined openings which are less than 4 inches in their least dimension.

2. Using an epoxy bonding agent, coat lined openings which are greater than 4 inches but less than 12 inches in their least dimension, prior to being filled with non-shrink grout.

3. Using an epoxy bonding agent, coat lined openings which are greater than 12 inches in their least dimension, and provide a hydrophilic waterstop bonded to the interior of the opening with epoxy adhesive, prior to being filled with approved repair material.

3.11. APPLICATION OF PROTECTIVE COATINGS

3-11.01. Waterproofing

1. Apply waterproofing in accordance with the manufacturer's printed instructions.

2. Do not begin waterproofing WORK until repairs and new construction in the affected area have been completed and adequately cured.

END OF SECTION

SECTION 05500

MISCELLANEOUS METALWORK

PART 1 -- GENERAL

1.1 THE SUMMARY

1-1.01. Provide miscellaneous metalwork and appurtenances, complete and in place, as indicated in accordance with the Contract Documents.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1-2.01. Federal Specifications

MIL-G-18015 A (3)	(Ships) Aluminum Planks. (6063-T6)
MIL-PRF-907F	Antiseize Thread Compound, High Temperature

1-2.02. Commercial Standards

AA-M32C22A41	Aluminum Assn.
AASHTO HL-93	Truck Loading
AISC	Manual of Steel Construction
ASTM A 36	Carbon Structural Steel
ASTM A 48	Gray Iron Castings
ASTM A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 193	Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service
ASTM A 194	Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service
ASTM A 307	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM F 3125	High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

ASTM A 500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 992	Steel for Structural Shapes for Use in Building Framing
ASTM F 1554	Standard Specification for Anchor Bolts, Steel, 36, 55 and 105-ksi Yield Strength
ANSI/AWS D1.1	Structural Welding Code - Steel
ANSI/AWS D1.2	Structural Welding Code - Aluminum
ANSI/AWS QC1	Qualification and Certification of Welding Inspectors

1.3 CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with the requirements of Section 01300 – Submittal Procedures.

1-3.02. Shop Drawings

a. Shop Drawings shall conform to AISC recommendations and specifications, and shall show holes, and the like, as may be required for other parts of the WORK.

b. Shop Drawings shall include complete details of members and connections, anchor bolt layouts, schedules for fabrication procedures, and diagrams for the sequence of erection.

1-3.03. Grating

a. Submit layout drawings for grating, showing the direction of span, type and depth of grating, size and shape of grating panels, seat angle details, and details of grating hold down fasteners.

b. Submit load and deflection tables for each style and depth of grating used.

1-3.04. Anchor Submittals

a. For post installed anchors in concrete other than powder-drive pins or impact anchors, refer to Section 05519 – Post Installed Anchors in Concrete.

b. For post installed anchors in concrete masonry units shall meet the requirements of the equipment manufacturer.

c. For powder-drive pins or impact anchors, complete structural calculations and anchorage details shall be prepared and submitted by the Contractor for all anchors and anchor groups that are shown but not completely detailed (type, size, location, spacing and embedment) on the Contract Documents. Calculations and anchorage details shall be signed and stamped by a Professional Engineer registered in the state in which the project is located.

1.4 QUALITY ASSURANCE

1-4.01. Weld procedures and welder qualifications shall be available in the CONTRACTOR's field office for review.

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS

2-1.01. Steel

Wide Flange Shapes	ASTM A 992
Shapes, Plates, Bars	ASTM A 36
Pipe, Pipe Columns, Bollards	ASTM A 53, Type E or S, Grade B standard weight unless indicated otherwise
HSS	ASTM A 500 Grade B

2-1.02. Corrosion Protection

a. Unless otherwise indicated, fabricated steel metalwork which will be used in a corrosive environment and/or will be submerged in water or wastewater shall be coated in accordance with the requirements of Section 09940 - Protective Coating, and shall not be galvanized prior to coating.

b. Other miscellaneous steel metalwork shall be hot-dip galvanized after fabrication.

2-1.03. Stainless Steel

a. Unless otherwise indicated, stainless steel metalwork and bolts shall be fabricated from Type 316 stainless steel.

2-1.04. Aluminum

a. Unless otherwise indicated, aluminum metalwork shall be fabricated from Alloy 6061-T6.

b. Aluminum in contact with concrete, masonry, wood, porous materials, or dissimilar metals shall have contact surfaces coated in accordance with the requirements of Section 09960 - Protective Coating.

2-1.05. Cast Iron

a. Unless otherwise indicated, iron castings shall conform to the requirements of ASTM A 48, Class 50B, or better.

2.2 BOLTS AND ANCHORS

2-2.01. Standard Service (Non-Corrosive Application)

a. Bolts, anchor rods, anchor bolts, washers, and nuts shall be fabricated from steel as indicated.

b. Threads on galvanized bolts, rods and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing.

c. Except as otherwise indicated, steel for bolt material, anchor rods, anchor bolts, and cap screws shall be in accordance with the following requirements:

    1. Structural Connections: ASTM A 307, Grade A or B, hot-dip galvanized.

    2. Headed Anchor Rods and Anchor Bolts: ASTM F1554, Grade 36, hot-dip or mechanically galvanized with Grade A matching nuts.

d. High-Strength Bolts, where indicated: ASTM F 3125, A325.

e. Pipe and Equipment Flange Bolts: ASTM A 193, Grade B-7.

2-2.02. Corrosive Service

a. Bolts, anchor rods, anchor bolts, nuts, and washers in the locations listed below shall be fabricated from stainless steel as indicated.

    1. Buried locations.

    2. Locations subject to seasonal or occasional flooding.

    3. Inside buried vaults, manholes, and structures that do not drain through a gravity sewer or to a sump with a pump.

    4. Locations indicated or designated by the engineer to be provided with stainless steel bolts.

2-2.03. Unless otherwise indicated, stainless steel bolts, nuts, anchor rods, and washers shall be fabricated from Type 316 stainless steel, Class 2, conforming to ASTM A 193 for bolts and to ASTM A 194 for nuts.

2-2.04. Buried pipe flange bolts and nuts on pipe of Class 275 and greater shall be in accordance with ASTM A193/A194, Grade B7.

2-2.05. Coating

a. Threads on stainless steel bolts and rods shall be protected with an antiseize lubricant suitable for submerged stainless steel bolts, meeting government specification MIL-A-907E.

b. Buried bolts in poorly drained soil shall be coated the same as the buried pipe.

c. Antiseize lubricant shall be classified as acceptable for potable water use by the NSF.

d. Antiseize lubricant shall be "PURE WHITE" by **Anti-Seize Technology,** Franklin Park, IL, 60131, **AS-470** by **Dixon Ticonderoga Company,** Lakehurst, NJ, 08733, or equal.

2-2.06. Bolt Requirements

a. The bolt and nut material shall be free-cutting steel.

b. The nuts shall be capable of developing the full strength of the bolts.

c. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads.

d. Bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.

e. Bolts and nuts shall be installed with washers fabricated from material matching the base material of bolts, except that hardened washers for high-strength bolts shall conform to the requirements of the AISC Specification.

f. Lock washers fabricated from material matching the bolts shall be installed where indicated.

g. The length of each bolt shall be such that the bolt extends at least 1/8 inch beyond the outside face of the nut before tightening, except for anchor bolts which shall be flush with the face of the nut before tightening.

2.3 POWDER-DRIVEN PINS

2-3.01. Powder-driven pins for installation in concrete or steel shall be fabricated from heat-treated steel alloy.

2-3.02. If the pins are not inherently sufficiently corrosion-resistant for the conditions to which they will be exposed, they shall be protected in an acceptable manner.

2-3.03. Pins shall have capped or threaded heads capable of transmitting the loads the shanks are required to support.

2-3.04. Pins that are connected to steel shall be provided with longitudinal serrations around the circumference of the shank.

2.4 IMPACT ANCHOR

2-4.01. Impact anchors shall be an expansion-type anchor in which a nail-type pin is driven to produce the expansive force.

2-4.02. The pin shall be provided with a zinc sleeve with a mushroom-style head and stainless steel nail pin.

2-4.03. Anchors shall be Zinc Nailon Anchors, manufactured by Simpson Strong-Tie, Inc., Metal Hit Anchors, manufactured by Hilti, Inc., Rawl Zamac Nailin, manufactured by the Rawlplug Company, or equal.

PART 3 -- EXECUTION

3.1 FABRICATION AND INSTALLATION REQUIREMENTS

3-1.01. **Fabrication and Erection:** Except as otherwise indicated, the fabrication and erection of structural steel shall conform to the requirements of the American Institute of Steel Construction "Manual of Steel Construction."

3-1.02. Powder-Driven Pins

a. Powder-driven pins shall be installed by a craftsperson certified by the manufacturer as being qualified to install the manufacturer's pins.

b. Pins shall be driven in one initial movement by an instantaneous force that has been carefully selected to attain the required penetration.

c. Driven pins shall conform to the following requirements where "D" is equal to the pin shank diameter:

Material Penetrated by Pin	Material Minimum Thickness	Pin Shank Penetration in Supporting Material	Minimum Space From Pin's CL to Edge of Penetrated Material	Minimum Pin Spacing
Concrete	16D	6D minimum	14D	20D
Steel	1/4-inch	Steel thickness	4D	7D

3.2 WELDING

3-2.01. Method

a. Welding shall be performed by the metal-arc method or gas-shielded arc method as described in the American Welding Society "Welding Handbook" as supplemented by other pertinent standards of the AWS.

b. The qualification of the welders shall be in accordance with the AWS Standards.

3-2.02. Quality

a. In assembly and during welding, the component parts shall be adequately clamped, supported, and restrained in order to minimize distortion and for control of dimensions.

b. Weld reinforcement shall be as indicated by the AWS Code.

c. Upon completion of welding, remove weld splatter, flux, slag, and burrs left by attachments.

d. Welds shall be repaired in order to produce a workmanlike appearance, with uniform weld contours and dimensions.

e. Sharp corners of material that is to be painted or coated shall be ground to a minimum of 1/32 inch on the flat.

3.3 GALVANIZING

3-3.01. Structural steel plates shapes, bars, and fabricated assemblies required to be galvanized shall, after the steel has been thoroughly cleaned of rust and scale, be galvanized in accordance with the requirements of ASTM A 123.

3-3.02. Any galvanized part that becomes warped during the galvanizing operation shall be straightened.

3-3.03. Bolts, anchor rods, anchor bolts, nuts, and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the requirements of ASTM A 153.

3-3.04. Field Repairs

a. Field repairs to damaged galvanizing shall be performed by preparing the surface and applying a coating.

b. Surface preparation shall consist of removing oil, grease, soil, and soluble material by cleaning with water and detergent (SSPC SP1) followed by brush-off blast cleaning (SSPC SP7) over an area extending at least 4 inches into the undamaged area.

c. The coating shall be applied to at least 3 mils dry film thickness, and shall be **Zinc-Clad XI** by **Sherwin-Williams**, **Galvax** by **Alvin Products**, **Galvite** by **ZRC Worldwide**, or equal.

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SECTION 05519

POST-INSTALLED ANCHORS IN CONCRETE

PART 1 -- GENERAL

1.1 THE SUMMARY

1-1.01. Provide post-installed anchors and appurtenances, complete and in place, as indicated in accordance with the Contract documents.

1-1.02. Unless otherwise indicated, drilled concrete anchors shall be adhesive anchors.

1-1.03. Section Includes:

1. Adhesive anchors
2. Expansion anchors
3. Screw anchors
4. Undercut anchors (dynamic loading)

1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

1-2.01. Definitions

1. Epoxy anchors are considered to be adhesive anchors.
2. Expansion anchors, screw anchors, and undercut anchors are considered to be mechanical anchors.

1-2.02. References

1. IBC 2018 – International Building Code
2. ACI 318 – Building Code Requirements for Structural Concrete (ACI 318-19) and Commentary
3. ACI 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary (ACI 350-06)
4. ACI 355.2 – Qualification of Post Installed Mechanical Anchors in Concrete and Commentary (ACI 355.2-07).
5. ASCE 7 – ASCE Standard ASCE/SEI 7-22 Minimum Design Loads for Buildings and Other Structures
6. ICC ES AC 193 – Mechanical Anchors in Concrete Elements

7. ICC ES AC 308 –Post Installed Adhesive Anchors in Concrete Elements

8. NSF 61 – NSF/ANSI 61-2016 Drinking Water System Components – Health Effects

1.3 SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. Submit the following:

1. Product data and technical information

2. Safety Data Sheets (SDS) for adhesives

3. Manufacturer's literature containing installation instructions and appropriate uses for each type of post-installed anchor and location of use

4. Current ICC-ES or IAPMO-UES Evaluation Reports

5. Certification for each installer demonstrating that they have been qualified in accordance with the Quality Assurance requirements below

1-3.03. No substitution for the indicated anchors will be considered unless accompanied with an ICC-ES or IAPMO-UES report verifying strength and material equivalency.

1-3.04. Complete structural calculations and anchorage details shall be prepared and submitted by the Contractor for all anchors and anchor groups that are shown but not completely detailed (type, size, location, spacing and embedment) on the Contract Documents. Calculations and anchorage details shall be completed and submitted in accordance with Section 01300 – Structural Design, Support and Anchorage.

1. Where adhesive anchors are used for structural applications (such as dowels between new and existing concrete) and an embedment depth is not shown on the contract documents, the anchor shall be installed in accordance with Method 1 or Method 2 below:

   a. Method 1: The minimum depth of embedment shall be greater than or equal to the development length (l_d) determined in accordance with ACI 318 for a cast in place reinforcing bar of the same diameter and grade, unless it can be shown by calculation that the anchor spacing and edge distance is sufficient to develop the tensile strength of the anchor in a lesser depth of embedment. Calculations shall be submitted in accordance with Section 01300 – Submittal Procedures.

   b. Method 2: Adhesive anchors in concrete that cannot develop the tensile capacity of the steel element may be used to transfer forces, provided that the loads on the anchor are amplified by the system overstrength factor (Ω_o) in Table 12.2-1 of ASCE 7-16. Calculations shall be submitted in accordance with Section 01300 – Submittal Procedures.

1.4 QUALITY ASSURANCE

1-4.01. Special inspection for all post-installed anchor installations shall be provided:

1. As recommended or required by the ICC-ES or IAPMO-UES report.

2. As required by the enforceable building code.

3. As otherwise indicated in the Contract Documents.

1-4.02. The most stringent of the above requirements shall be used. The cost of Special Inspection of post-installed anchors shall be paid for by the CONTRACTOR.

1-4.03. Before installing adhesive anchors in the WORK, anchor installers shall be trained and qualified at the Site by the manufacturer's representative. Training and qualification for each installer shall include at least:

1. Hole drilling procedure, hole preparation and cleaning techniques, adhesive injection technique and dispenser training/maintenance, rebar dowel preparation and installation, and proof loading if required.

2. Each installer shall be re-qualified every 6 months for the duration of the project by the same qualifying procedure.

1-4.04. Before installing mechanical anchors in the WORK, anchor installers shall be trained and qualified at the Site by the manufacturer's representative. Training and qualification for each installer shall include at least:

1. Hole drilling procedure, hole preparation and cleaning techniques, and torqueing.

2. Each installer shall be re-qualified every 6 months for the duration of the project by the same qualifying procedure.

1-4.05. Defective anchors noted by the Special Inspector shall be replaced and re-installed by the CONTRACTOR without any additional compensation.

1.5 DELIVERY, STORAGE, AND HANDLING

1-6.01. Deliver products to job site in manufacturer’s or distributor’s packaging undamaged, complete with installation instructions.

1-6.02. Protect and handle materials in accordance with manufacturer’s recommendations to prevent damage or deterioration.

1-6.03. Anchoring adhesives shall be stored at temperatures prescribed by the manufacturer and must not be used beyond the expiration date.

1.6 SITE CONDITIONS

1-6.01. Post-installed anchors shall be installed in concrete having a minimum age of 21 days at time of anchor installation.

1-6.02. The anchor or fastener coating, plating, or steel type must provide suitable corrosion resistance for the environment in which the anchor or fastener is installed. Anchors, nuts, and washers in the locations listed below shall be fabricated from type 316 or 304 stainless steel:

1. buried locations

2. locations subject to seasonal or occasional flooding

3. inside buried vaults, manholes, and structures that do not drain through a gravity sewer or to a sump with a pump

4. locations indicated or designated by the ENGINEER to be provided with stainless steel anchors.

PART 2 -- PRODUCTS

2.1 ADHESIVE ANCHORS

2-1.01. General

1. The adhesive anchor system shall consist of: 1) adhesive product; and 2) threaded rod or reinforcing bar insert. The complete system shall be compatible as required by the adhesive manufacturer.

2. Adhesives shall be injectable, two-component, cartridge-type systems dispensed and mixed through a static mixing nozzle supplied by the manufacturer.

3. The evaluation report issued by ICC-ES or IAPMO-UES shall state the acceptability of the adhesive anchor for the intended purpose and location.

4. Adhesive anchors shall be permitted when regular ambient temperatures are consistent with manufacturer’s recommendation for long and short term temperatures.

5. Adhesive anchors shall not be used where anchors are subject to vibration or fire.

6. Adhesive anchors shall not be used in overhead applications.

7. Where required, adhesive shall be capable of being used in submerged applications once cured.

2-1.02. Adhesive Anchors in Concrete

1. Threaded rod inserts shall meet the requirements of Section 05500- Miscellaneous Metals.

2. Reinforcing dowel inserts shall meet the material requirements of Section 03310 – Cast-in-Place Concrete.

3. Adhesive for use in concrete adhesive anchors shall be certified for use in accordance with ICC-ES AC 308.

4. Where not detailed on the drawings, adhesive anchors shall be designed in accordance with ACI 318 as amended by the specific design provisions of ICC-ES AC 308.

5. Adhesive anchors shall have an evaluation report issued by ICC-ES or IAPMO-UES and shall have been tested and qualified for performance in cracked and uncracked concrete in accordance ICC-ES AC308 to resist static, wind, and earthquake (Seismic Design Categories A through F).

6. Adhesive anchors for concrete shall be HIT-RE 500 V3 by Hilti, or equal.

2.2 EXPANSION ANCHORS

2-2.01. General

1. Expansion anchors are post-installed torque-controlled mechanical expansion anchors used to resist structural loads.

2. Expansion anchors shall be an imperial sized, threaded stud with an integral cone expander, expansion clip, nut and washer.

3. Lead caulking anchors will not be permitted.

4. Non-embedded buried or submerged anchors shall be fabricated from stainless steel.

5. The evaluation report issued by ICC-ES or IAPMO-UES shall state the acceptability of the expansion anchor for the intended purpose and location.

6. Anchors subjected to dynamic or vibratory loading shall be suitable for the intended loading and location as indicated in the manufacturer's technical product data.

2-2.02. Expansion Anchors for Concrete

1. Anchors shall be designed in accordance with ACI 318, which requires post-installed mechanical anchors to be qualified according to ACI 355.2.

2. Anchors shall have an evaluation report issued by ICC-ES or IAPMO-UES and have been tested and qualified for performance in cracked and uncracked concrete in accordance with ACI 355.2 and ICC-ES AC193.

3. Expansion anchors shall be Kwik-Bolt TZ by Hilti, or equal.

2.3 SCREW ANCHORS

2-4.01. General

1. Screw anchors used in exterior and corrosive environments shall be fabricated from stainless steel.

2. The evaluation report issued by ICC-ES or IAPMO-UES shall state the acceptability of the screw anchor for the intended purpose and location.

3. Anchors subjected to dynamic or vibratory loading shall be suitable for the intended loading and location as indicated in the manufacturer's technical product data.

2-4.02. Screw Anchors for Concrete

1. Anchors shall be designed in accordance with ACI 318 as amended by the specific design provisions of ICC-ES AC193.

2. Anchors shall have an evaluation report issued by ICC-ES or IAPMO-UES and have been tested and qualified for performance in cracked and uncracked concrete in accordance with ICC-ES AC193.

3. Screw anchors for concrete shall be Kwik HUS-EZ (KH-EZ) by Hilti, or equal.

2.4 UNDERCUT ANCHORS

2-4.01. General

1. Undercut anchors are post-installed mechanical anchors that require pre-drilling and a special undercut notch configuration cut into the concrete before installation.

2. Self-undercutting anchors are post-installed torque-controlled mechanical anchors that cut their own undercut notch by application of a setting torque that forces a sleeve over a cone.

3. The evaluation report issued by ICC-ES or IAPMO-UES shall state the acceptability of the undercut anchor for the intended purpose and location.

4. Anchors subjected to dynamic or vibratory loading shall be suitable for the intended loading and location as indicated in the manufacturer's technical product data.

5. Undercut anchors used in exterior and corrosive environments shall be fabricated from stainless steel.

2-4.02. Undercut Anchors for Concrete

1. Anchors shall be designed in accordance with ACI 318 as amended by the specific design provisions of ICC-ES AC193.

2. Anchors shall have an evaluation report issued by ICC-ES or IAPMO-UES and have been tested and qualified for performance in cracked and uncracked concrete in accordance with ACI 355.2 and ICC-ES AC193.

3. Undercut anchors for concrete shall be HDA by Hilti, or equal.

PART 3 -- EXECUTION

3.1 INSTALLATION REQUIREMENTS

3-1.01. Post-installed anchors shall be installed in strict accordance with the manufacturer's instructions, the ICC-ES or IAPMO-UES report, and project specific design requirements indicated on the Contract Documents or in the design calculations provided by the CONTRACTOR per Section 1.3.D.

3-1.02. Where holes are drilled in concrete, holes shall be accurately and squarely drilled, and the holes shall be cleaned in accordance with the manufacturer's recommendations.

3-1.03. Post-installed anchors shall not be installed until the concrete has reached the required 21 days or per manufacturer's requirements, whichever is longer.

3-1.04. Acceptable installation and performance temperature ranges shall be verified with manufacturer's literature prior to installation. Minimum substrate temperatures shall be maintained during the full curing period as required by the manufacturer.

3-1.05. Adhesive anchors shall not be loaded until the adhesive has reached its indicated strength in accordance with the manufacturer's instructions.

3-1.06. The CONTRACTOR shall identify the position of reinforcing steel and other embedded items prior to drilling holes. Care shall be exercised in drilling to avoid damaging existing reinforcing or embedded items. The location of drilled holes shall be adjusted to avoid drilling through or cutting any existing reinforcing bars or embedded items. Notify the ENGINEER if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and communications conduit, and piping.

3-1.07. Core drilling of holes is not allowed.

3-1.08. Identification of reinforcing steel and/or embedded items, relocation of drilled holes and adjustments or modifications to anchored or fastened items shall be considered part of the WORK and shall be provided at no additional cost to the OWNER.

3-1.09. All abandoned drilled holes shall be repaired in accordance with Section 03900 Concrete Repair and Rehabilitation at no additional cost to the OWNER.

END OF SECTION

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SECTION 06100 - ROUGH CARPENTRY

PART 1 -- GENERAL

1.1 THE SUMMARY

1-1.01. The CONTRACTOR shall construct rough carpentry and appurtenant WORK, complete and in place, in accordance with the Contract Documents.

1-1.02. The WORK shall include, at least the following items:

1. Wood framing, including plates, studding, joists, rafters, purlins, and similar framing elements.

2. Wood blocking, furring, stripping, backing, and nailers, as indicated, or otherwise required for securing other WORK.

3. Plywood sheathing, board sheathing, sidings, and starter boards.

4. Rough hardware appurtenant to the WORK of this Section, as defined below.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

2-1.01. Rough Carpentry shall be in accordance with the following standards, as applicable and as indicated:

1. Southern Pine Inspection Bureau

2. West Coast Lumber Inspection Bureau (WCLIB)

3. Western Wood Products Association

4. Redwood Inspection Service (RIS)

5. American Institute of Timber Construction (AITS)

6. American Plywood Association (APA)

7. American Hardboard Association (AHA)

8. ASTM International (ASTM)

1.3 CONTRACTOR SUBMITTALS

1-3.01. Furnish the following in accordance with Section 01300 – Submittal Procedures.

1. Manufacturers' catalogs showing rough hardware conforming to or equivalent to hardware indicated.

2. Fabrication and erection drawings for glued laminated beams and wood trusses or joists.

3. Certificates of compliance.

4. Certificate of Conformance indicating conformance and grade compliance with AITC A 190.1 - Structural Glued Laminated Timber, Production Requirements for Glulam, by the American Institute of Timber Construction.

PART 2 -- PRODUCTS

2.1 UNTREATED LUMBER

2-1.01. Grading: Lumber shall be graded in accordance with the rules of one of the following associations: "Grading Rules for Southern Pine Lumber" of the Southern Pine Inspection Bureau; "Standard Grading and Dressing Rules No. 17" of the West Coast Lumber Inspection Bureau (WCLIB); "Grading Rules for Western Lumber" published by Western Wood Products Association; or “Standard Specification for Grades of California Redwood Lumber” of the Redwood Inspection Service (RIS).

2-1.02. Grade Marking: Each piece of lumber shall bear the official grade mark of one of the above-mentioned grading rules. The association standards selected for grading and grade marking of the lumber shall be as acceptable to the ENGINEER.

2-1.03. Size Dressing: Lumber, except as otherwise indicated, shall be dressed to size in accordance with the standards of the association under which the lumber is graded. Lumber shall be S4S unless otherwise indicated.

2-1.04. Drying: Lumber incorporated in the WORK, except where otherwise indicated, shall be air or kiln dried to a moisture content of not more than 19 percent and not less than one percent.

2.2 TREATED LUMBER

2-2.01. Marking: Each piece of treated lumber shall bear the approval mark of an approved testing agency.

2-2.02. Kiln Drying: Kiln-dried lumber shall be treated with a water-borne preservative and shall have a maximum moisture content of 15 percent after treatment.

2-2.03. Pressure-Treated Lumber: Pressure-treat in accordance with AWPA C1 - Manual of Recommended Practice, Standard for Preservative Treatment by Pressure Process – All Timber Products. Preservative shall conform to American Wood Preservers Assn. P5 – Standard for Waterborne Preservatives. Creosote shall not be used.

2-2.04. Preservative: Two thorough coats of preservative, **Zehrung Zerpel, Sherwin Williams, Kemwood Penta**, or equal, shall be applied at least 2 hours before installation, to surfaces that come in contact with, or are set close to concrete and plaster, except lumber indicated to be pressure-treated. Tank dipping or pressure-treating may be used.

2-2.05. Cuts: Wherever necessary to cut, notch, dap, drill, or frame treated lumber, newly cut or bored surfaces shall be treated with 2 heavy coats of the same preservative used in the original treatment. The minimum penetration depth shall be 1/4-inch.

2.3 ROUGH HARDWARE

2-3.01. General: The term "rough hardware" shall include nails, screws, lag screws, bolts, nuts, washers, plates, metal fasteners, and framing anchors; anchor bolts which are to be embedded into concrete, concrete masonry, or brick masonry; and similar items employed in erection and construction of the rough carpentry WORK. Rough hardware shall be of standard manufacture, approved by a recognized agency for the intended applications and shall be provided with laboratory test results on capabilities when requested by the ENGINEER. Hardware items shall be steel unless otherwise indicated.

2-3.02. Anchors and Fasteners: Anchors and fasteners for securing wood items, unless otherwise indicated, shall be as follows:

1. Bolts, nuts, and studs shall conform to the following:

    a. ASME B18.5 - Round Head Bolts

    b. FF-N-836E – Nut: Square, Hexagon, Cap, Slotted, Castle. Knurled, Welding, and Single Ball Seat

    c. FF-S-1362 – Stud, Plain, General Purpose

    d. FF-B- 575C – Bolts, Hexagon and Square

2. Nails and staples shall conform to ASTM F1667 – Driven Fasteners - Nails, Spikes and Staples, and shall be the type and size best suited for the intended application. Nails shall be galvanized steel, aluminum, or stainless steel, as appropriate, where exposed to weather. Nails used for fastening plywood to nailers on steel beams shall be of wire gauge noted for common nails, but of 1/2 length. Nails used for exterior (exposed to view) plywood siding, siding, or trim shall be stainless steel.

3. Wood screws shall conform to the requirements of Federal Specification FF-S-111D(1) – Screw, Wood, for the style and material as indicated or be best suited for the purpose. Wood screws shall be galvanized where exposed to view or to weather.

4. Lag screws or lag bolts shall conform to the requirements of ASME B18.2.1 - Square and Hex Bolts and Screws, for the type and grade best suited for the purpose. Lag screws or lag bolts shall be galvanized where exposed to view or weather.

5. Toggle bolts shall conform to the requirements of Federal Specification FF-B-588D – Bolt, Toggle: and Expansion Sleeve, Screw, for the type and grade best suited for the purpose.

6. Expansion shields shall be in accordance with Section 05 50 00 - Miscellaneous Metalwork.

7. Power-driven pins shall be in accordance with Section 05 50 00 - Miscellaneous Metalwork.

2-3.03. Metal Framing Devices: Metal framing devices shall be specially-designed joist hangers, header hangers, framing anchors, post anchors, and structural framing connectors fabricated from steel, hot-dip galvanized after fabrication, and be designed to conform to code requirements. Documentation of load tests by an independent testing laboratory shall be submitted if requested by the ENGINEER. The framing devices shall be as manufactured by **Silver Metal Products, Inc., Easy Ardes Rib, Simpson Co., Heckmann Building Products**, or equal. The framing devices shall be equal or superior to those indicated as per design, friction, and loading. The framing device shall be provided complete with the proper sized nails, bolts, lag bolts, or other required fasteners called for in the design calculations for the framing devices.

2-3.04. Plyclips: Plyclips shall be extruded aluminum clips, manufactured from 6063-T6-aluminum alloy and be designed for intended use. Size shall be as required for plywood or shall be as indicated.

2.4 MISCELLANEOUS PRODUCTS

2-4.01. Building Paper: Building paper or felt shall be non-perforated, asphalt-saturated organic felt conforming to ASTM D 226 – Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, 15 lb/100 sq ft.

2-4.02. Termite Shields: Termite shields shall be not less than 26-gauge, zinc-coated steel or 30-gauge, terne steel coated with 40 lb of coating material per 100 square feet.

PART 3 -- EXECUTION

3.1 GENERAL

3-1.01. Preliminaries: Rough carpentry shall be as indicated and as necessary for complete WORK. The CONTRACTOR shall verify drawing dimensions with actual field conditions and shall inspect related WORK and adjacent surfaces, and shall report to the ENGINEER conditions that could prevent proper execution of this WORK.

3-1.02. Work Coordination and Performance: The CONTRACTOR shall coordinate the subcontractors and trades doing related work. Work of this section shall be carefully planned and laid out. WORK shall be performed under the direction of a capable, experienced supervisor.

3-1.03. Rough Hardware: Rough hardware not otherwise indicated that is necessary for the satisfactory execution of framing, including nails, spikes, dowels, fasteners, and similar incidentals shall be provided by the CONTRACTOR. Rough hardware shall be coordinated, furnished, installed, and embedded as indicated and as required for completeness.

3.2 FASTENERS AND FRAMING DEVICES

3-2.01. Nailing: Where nail spacing is not otherwise regulated by the Building Code, nails shall not be driven closer together than 1/2 their length unless driven in drilled holes, nor driven closer to the edge of a member than 1/4 of their length. Where necessary to prevent splitting, holes shall be drilled slightly smaller than nail diameters. The nails shall penetrate the second or farther member not less than 1/2 the nail length. Common nails shall be used unless otherwise indicated.

3-2.02. Bolts and Nuts: Malleable or cut-steel washers shall be provided under bolt heads and nuts except where bearing on steel plates or other steel attachments or where flat-head countersunk bolts are indicated. Bolt holes shall be drilled 1/32-inch to 1/16-inch larger diameter than the bolts they are to accommodate and shall be bored true-to-line. Members shall be clamped together and bolts shall be driven in place and nuts shall be drawn up tightly. Bolts shall be drawn tight again immediately prior to enclosing with finish or, if left exposed, upon completion of other WORK. Holes at anchor bolts embedded in concrete may be 1/16-inch larger than bolt diameter.

3-2.03. Screws: Lag and wood screws shall be screwed, not driven, into place. Holes to receive lag screws shall be bored first of the same diameter and depth as shank, then continued to depth equal to length of screw, with diameter equal to the base of the screw thread. Screws shall penetrate into the farther member a distance equal to a least 7 times the diameter of the screw shank. Washers shall be installed under each lag screw head bearing on wood.

3-2.04. Metal Framing Devices: Metal framing devices shall be provided where indicated. Nails for the framing devices shall be as furnished or recommended by the manufacturer of the anchor device. Nails shall be driven to their full depth at holes in anchors. Bolt and lag fasteners shall be drawn tight.

3.3 FRAMING

3-3.01. Strength Considerations: Structural wood framing members shall not be spliced between bearing points or supports. Approval shall be obtained from the ENGINEER before cutting of any wood members that may weaken the structure. Due care shall be exercised in placing framing so that structural and other important members do not require cutting for openings, pipes, vents, conduits, or ducts. Bearing surfaces on which wood structural members are to rest shall be finished to give full, true, and even support. Wedges or shims shall not be used to correct faulty WORK. Wood members that have been split or otherwise damaged to such an extent as to impair their strength shall be removed and replaced by the CONTRACTOR as part of the WORK.

3-3.02. Cutting and Notching: Only skilled workmen shall be used for cutting and framing of wood members required to accommodate structural members, for routing of piping, conduit, ducts, and for the installation of mechanical, electrical, or other apparatus or equipment. Members shall not be cut, notched, or bored more than 1/4 of their depth without adequate and approved reinforcing.

3-3.03. Blocking and Backing: Blocking and backing in walls and ceilings shall be nominal 2-inch thick material of a depth as needed and shall be accurately located around light fixtures, ceiling registers, grilles, and other required mechanical and electrical items. The blocking shall fit snugly and shall be spiked into the supporting framing members. Wood blocking (backing) to receive sheathing, siding, metal lath, and gypsum board shall be provided wherever necessary for securing the facing materials.

3-3.04. Backing for Specialties and Accessories: Backing shall be accurately located and installed for building specialties, toilet accessories, and finish hardware items as required.

3-3.05. Furring: Furring shall be 2-inch by 3-inch wood studs spaced at 16-inches on centers, laid flat to the wall. Light metal framing may be substituted at non-thermal wall conditions in accordance with Section 05 40 00 - Cold Formed Metal Framing. Other sizes and spacing of furring or stripping shall be as indicated.

3-3.06. Sand Blasting: Members required to be sandblasted shall be lightly sandblasted. Field sandblasting shall conform to requirements of governing authorities.

END OF SECTION

SECTION 07190

SURFACE APPLIED WATER REPELLENTS

PART 1 -- GENERAL

1.1 SUMMARY

1-1.01. The Contractor shall provide Surface Applied Water Repellants and appurtenant Work, complete and in place, in accordance with the Contract Documents.

1.2 REFERENCES

1-2.01. Where reference is made to any of the below, the revision in effect at the time of bid opening shall apply.

American Society of Testing and Materials (ASTM)	
ASTM C 140	Water Repellency in Water Absorption
ASTM D 3278	Standard Test Method for Flashpoint of Liquids by Small Sealed Closed-End Apparatus
ASTM E 514	Standard Test Method for Water Penetration and Leakage through Masonry
Environmental Protection Agency (EPA): Method 24	

1.3 CONTRACTOR SUBMITTALS

1-3.01. The Contractor shall furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. Literature: Manufacturer's specifications, technical data, installation methods, and maintenance instructions.

1-3.03. Warranty: Submit a copy of the warranty.

1-3.04. Certifications:

1. Certification by the Surface Applied Water Repellant Manufacturer that the water repellant provided is suitable for, and compatible with, the required installation.

2. Certification by the Surface Applied Water Repellant Manufacturer that the water repellant is suitable for, and compatible with, the masonry veneer, mortar, and admixtures provided under Section 04816 – Masonry Veneer.

3. Certification of Manufacturer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, Manufacturer's products, and contact information of the consultant firm of record, general contractor and Owner.

4. Certification of installer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, and contact information of the consultant firm of record, general contractor and Owner.

5. Certification by the Manufacturer's field representative that surfaces have been prepared and the products have been applied in accordance with the Manufacturer's recommendations.

6. Certification by the Manufacturer that the products provided achieves a Class E rating, when tested in accordance with ASTM E 514.

7. Certification by the Manufacturer that the products supplied complies with local regulations controlling the use of volatile organic compounds (VOCs).

8. Certification by the Manufacturer's field representative that the products provided achieves a passing result when tested in accordance with RILEM Test Method II.4.

9. When requested by the Engineer, furnish other certifications as may be required to demonstrate compliance with the Contract Documents.

1-3.05. Application Schedule: Furnish a detailed and complete application schedule indicating location and detail of installation.

1-3.06. Samples: When requested by Engineer, submit samples of the materials proposed. Samples shall be clearly marked to show the Manufacturer's name, product identification, finish and color. New samples shall be resubmitted of each, as required, until approved by Engineer. Upon approval, the samples shall become the standard for acceptance for the project with regard to color, finish and quality of each item. Approval of samples shall not relieve Contractor from compliance with the Contract Documents.

1.4 QUALITY ASSURANCE

1-4.01. Single Source Responsibility: Surface Applied Water Repellants shall be provided by a single Manufacturer.

1-4.02. Manufacturer Qualifications:

1. Surface Applied Water Repellant Manufacturer shall have a minimum of 20 years of water repellant manufacturing experience.

2. Surface Applied Water Repellants Manufacturer shall have a minimum of 5 similar successful projects over the most recent 10 years, employing similar products, materials, applications, and performance requirements.

3. Manufacturers without these qualifications will not be accepted.

1-4.03. Installer Qualifications:

1. Installer shall have a minimum of 5 years' experience in the successful completion of at least 5 projects of similar size and scope, employing similar products, materials, applications, and performance requirements.

2. Installer shall be trained, certified, and authorized by the Manufacturer to install the Manufacturer's product, when applicable.

3. Installers without these qualifications will not be accepted.

1-4.04. Manufacturer's Technical Field Representative: The Contractor shall arrange for a Manufacturer's technical field representative to be on Site, at the beginning of water repellent application (and periodically throughout), to train the installers and to supervise the Work. The Manufacturer's technical field representative shall observe as necessary to certify in writing that the completed Work has been performed according to the Manufacturer's instructions.

1-4.05. Field Sample:

1. Coordinate field sample with other field samples required in other Sections.

2. Prior to installation, erect sample wall panel mock-up on Site using materials and joint details required for final Work. Provide special features as directed.

3. The field sample shall not exhibit any deterioration of color or finish of the substrate, including but not limited to discoloration, staining, streaking, and fading.

4. Apply material in accordance with the requirements in Part 3 – Execution, below.

5. Manufacturer's technical field representative shall be present to review technical aspects and conduct the field sample installation.

    a. Apply Surface Applied Water Repellant to 2-feet (.61 m) by 2-feet (.61 m) test panel area, in accordance with Manufacturer's written instructions, to determine coverage rates, effectiveness, aesthetics, and desired results.

    b. Allow 10 days or until test panels are thoroughly cured before evaluating final appearance and results.

    c. Conduct RILEM test method II.4 to evaluate water repellent performance.

    d. Do not begin full-scale application until test panels are inspected and approved by the Engineer.

    e. Do not begin full-scale application until test panels are inspected and approved.

6. Obtain the Engineer's acceptance of qualities of field sample before installation. Modify and/or reconstruct field sample at the direction of Engineer until acceptance. Retain field sample during construction as a standard for judging completed Work. Do not alter, move, or destroy field sample until directed by the Engineer.

7. Acceptance of field sample shall not relieve the Contractor from compliance with the Contract Documents.

1.5 SPECIAL WARRANTY PROVISIONS

1-5.01. The Contractor shall furnish Manufacturer's extended 10-year warranty to cover defects in materials, products, and manufacturing workmanship.

1-5.02. The Contractor shall furnish separate, but concurrently running, 5-year written warranty to cover defects in installation and associated later.

1-5.03. All warranty items shall be non-prorated for the entire warranty period.

1-5.04. The term of the warranty shall begin on the date of Substantial Completion.

PART 2 -- PRODUCTS

2.1 GENERAL

2-1.01. Surface Applied Water Repellant shall be a water-based, clear silane/siloxane sealer designed to provide protection for split-faced, lightweight and standard concrete masonry units.

2-1.02. Surface Applied Water Repellant shall be suitable for, and compatible with, masonry veneer, masonry mortar, and admixtures in Section 04816 – Masonry Veneer.

2.2 SURFACE APPLIED WATER REPELLANT

2-2.01. Manufacturer and Product, or Equal:

1. Subject to the requirements herein, provide Manufacturer and product listed below, or equal.

   a. Master Builders; MasterProtect H 177.

2. Description:

   a. Surface Applied Water Repellant shall comply with standard specification, ASTM D 3278 (>212 deg F [> 100 deg C]), ASTM C 140 (45 percent reduction in weight gain), ASTM E 514 (99 percent reduction in weight gain), and VOC content shall be less than 2.50 lb/gal (1.13 kg/liter) per EPA method 24.

PART 3 -- EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

3-1.01. Deliver materials to Site in Manufacturer’s original, unopened packages, containers, or bundles with labels intact, which clearly identify contents.

3-1.02. Store materials carefully in accordance with the Manufacturer’s written instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the products.

3-1.03. Handle materials in strict accordance with Manufacturer's written instructions.

3.2 APPLICATION SCHEDULE

3-2.01. Surface Applied Water Repellant shall be applied to above grade, exterior masonry veneer, exposed concrete masonry blocks, and all precast sills and caps.

3-2.02. Surface Applied Water Repellant shall also be applied elsewhere, where indicated on the Contract Drawings.

3.3 PROJECT CONDITIONS

3-3.01. Comply with Manufacturer’s written instructions for environmental conditions before, during, and after installation.

3-3.02. Protect surrounding Work from damage that may result from operations under this Section.

3-3.03. Protect against uneven and excessive evaporation and from strong flows of dry air, both natural and artificial.

3.4 INSPECTION

3-4.01. The Contractor shall be totally responsible for the proper performance and completion of the Work under this Section.

3-4.02. Systems and components shall be inspected before installation.

1. Damaged or defective items shall be rejected and marked as such and shall be removed from the Site.

3-4.03. The Contractor shall verify coordination with adjacent Work.

1. Examine substrates, areas, and conditions where the product will be installed for compliance with the requirements for installation, taking into account tolerances, and other conditions affecting performance of installed the product.

a. Surfaces to receive the product shall be dry, free of oil, dirt, dust and other contaminants and loose materials, and shall be in the proper condition as indicated by the Manufacturer prior to the application of the Surface Applied Water Repellants materials.

b. Masonry, concrete, and cementitious products shall have been completely cured and the surface shall be dry and free from frost at the time of application.

2. Notify the Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3. Commencement of the installation by the Contractor shall indicate Contractor's acceptance of the substrate, areas, and conditions.

3.5 SURFACE PREPARATION

3-5.01. Surface preparation shall be in compliance with the applicable references and with the Manufacturer's written instructions.

3-5.02. Coatings, including curing compounds, form release agents, and other substances shall be removed as recommended by the Surface Applied Water Repellant Manufacturer.

3-5.03. Substrate shall be swept to remove all loose materials prior to beginning application.

3.6 PREPARATION

3-6.01. Sequence installation properly with the installation and protection of other Work, so that neither will be damaged by the installation of the other.

3.7 INSTALLATION

3-7.01. Installation shall comply with the requirements of the Contract Documents, with applicable references, and with Manufacturer's written instructions. Where a conflict occurs among these requirements, the more stringent shall apply, as directed by the Engineer.

3-7.02. Surfaces shall receive complete coats and coverage rates as recommended in writing by the Manufacturer.

3.8 CLEANING, FINISHING, AND PROTECTION

3-8.01. Adhesive papers used for masking which become firmly bonded when exposed to heat and/or light shall not be used.

1. Remove masking film and temporary labels as soon as possible after installation. Films and labels left in place after installation shall be the responsibility of the Contractor.

2. Residue shall not be left on any surfaces.

3. The surfaces of materials adjoining the product shall be cleaned free of overspray and smears of the product or other soiling due to the installation of the product.

3-8.02. Upon completion of the application, the product and appurtenances shall be cleaned of dirt and other foreign matter to the satisfaction of the Engineer.

1. Cleaning shall be performed again immediately prior to acceptance of the WORK, as determined by the Engineer.

2. Cleaning shall be performed in accordance with the Manufacturer's written instructions.

3-8.03. The Contractor shall make adjustments required and retest until accepted.

3-8.04. The product shall be protected from damage from subsequent construction operations.

3-8.05. Damaged or defective items shall be removed and replaced at the direction of the Engineer.

3-8.06. When the product Work is completed, remove unused materials, containers, and equipment, and clean the Site of Surface Applied Water Repellant debris.

END OF SECTION

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SECTION 07630 - FLASHING AND SHEET METAL

PART 1 -- GENERAL

1.1. THE REQUIREMENT

1-1.01. The CONTRACTOR shall provide sheet metal and appurtenant WORK, complete and in place, in accordance with the Contract Documents.

1-1.02. The principal items of sheet metal WORK shall include sheet metal flashings, collars, pitch pockets (pans), equipment platforms, equipment (sleeper) supports at all roof penetrations which are not provided as part of the roofing system, and all other components necessary to make building weathertight.

1.2. CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-2.02. **Product Data**: Manufacturer's specifications, literature, and published installation instructions, and maintenance instructions for all sheet metal products.

1-2.03. **Shop Drawings**: Show materials, gauges, finishes, layout, jointing, sizes, profiles, fabrication of special shapes, fasteners, and method of attachment to adjacent construction.

1-2.04. **Samples**: Color and other samples, where required for color selections and/or review by the ENGINEER.

PART 2 -- PRODUCTS

2.1. GENERAL

2-1.01. Sheet metal shall be aluminum, unless otherwise indicated. Sheet metal WORK in connection with roofing shall be in accordance with roofing manufacturer's published specifications. Sheet metal shall be finished with baked on factory-applied Kynar system having a minimum dry film thickness of 2-mils, unless otherwise indicated.

2-1.02. Material thickness shall be not less than thickness indicated. Where thicknesses are not indicated, the thickness shall be not less than that required by referenced standards found in AArchitectural Sheet Metal Manual (ASMM).

2.2. ALUMINUM PRODUCTS

2-2.01. Aluminum shall be 0.032-inch minimum thickness and shall conform to ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate, alloy 3003-H14, with clear anodized finish AA-C12-A41, unless indicated otherwise. Thickness of aluminum to be welded shall be as necessary for welding method being used.

2-2.02. Reglets shall be of extruded aluminum with protective coating such as manufactured by **Superior Concrete Accessories, Morrison and Company Cushion-Lock, Fry Reglet,** or equal.

2.3. FERROUS METALS

2-3.01. Galvanized steel shall be 24-gauge minimum thickness conforming to ASTM A 653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

2-3.02. Stainless steel shall be 24-gauge minimum thickness conforming to ASTM A 176 - Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip, Type 304, dull No. 2D finish. Stainless sheet metal wainscots, workbench, top units, sinks, sinks and counters shall not be painted.

2-3.03. Terne metal for roofing and roofing products shall be not less than 40 lb weight conforming to Federal Specification QQ-T-201E - Terneplate, For Roofing and Roofing Products.

2.4. LEAD AND SOLDERING MATERIALS

2-4.01. Lead shall be 4 to 6 percent antimony and remainder shall be lead. Lead sheet shall be soft temper, except hard temper for flanges. Weight shall be not less than 4 lb/sq ft unless otherwise indicated.

2-4.02. Solder shall conform to ASTM B 32 - Solder Metal, Alloy Sn, 50 percent tin, 50 percent lead.

2-4.03. Soldering flux shall be of a type not injurious to metal surface being treated.

2.5. FASTENERS

2-5.01. Fastening devices shall be of the same material as the sheet metal being used or corrosion-resistant metal compatible with sheet metal being used. Fasteners exposed to the weather shall have neoprene washers of 0.04-in minimum thickness. A rubber-type washer shall be used beneath the aluminum washer or fastener head where weathertightness is required.

2.6. PLASTIC CEMENT

2-6.01. Plastic cement shall conform to ASTM D 2822 - Asphalt Roof Cement.

2.7. SEALING MATERIALS

2-7.01. Sealants shall be in accordance with Section 079213 - Sealants and Caulking or shall be of the silicone type. Colors shall be selected by the ENGINEER from manufacturer's full range of standard colors.

2-7.02. Sealer tape shall be polyisobutylene sealer tape specifically formulated for setting flanges on bituminous roofing.

2.8. COATING MATERIALS

2-8.01. Primer coat for galvanized steel shall conform to Federal Specification TT-P-641G(1) - Primer Coating, Zinc Dust-Zinc Oxide (For Galvanized Surfaces), Type II.

2-8.02. Asphaltic coating compound shall conform to ASTM D 1187 - Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

2.9. SHOP FABRICATION REQUIREMENTS

2-9.01. All aluminum shall be welded where indicated. Welding shall conform to Reference Standards.

2-9.02. Galvanized steel corner joints shall be soldered. Other joints shall be as indicated, or as required by the Reference Standards.

2-9.03. Downspouts shall be of sizes indicated.

2-9.04. Elongated holes shall be provided where necessary for material expansion and where indicated in Reference Standards.

2-9.05. All WORK and finishes shall be protected from scratches and abrasions.

2-9.06. Flashing, reglets and counter-flashing and associated flashing shall be fabricated by the same manufacturer and be installed as a complete flashing system. Flashing shall be creased longitudinally or otherwise formed with sufficient spring action to hold bottom edges firmly against base flashing or similar material.

2-9.07. Intersecting corners of copings shall be accurately fitted and [welded] [soldered]. Corners may be shop-assembled, manufactured, or extruded units. Coping shall be per "Architectural Sheet Metal Manual" (ASMM; 5th ed. Chantilly, VA: Sheet Metal and Air Conditioning Contractors National Association (SMACNA), 1993), Figure 3-1, except modified as indicated, with Figure 3-2, Alternate 5 seams that allow for 1/4-inch expansion per each 10-ft of length.

PART 3 -- EXECUTION

3.1. PRODUCT DELIVERY, STORAGE, AND HANDLING

3-1.01. **Delivery of Materials:** Materials shall be delivered to Site in manufacturer's original, unopened packages or bundles with labels intact and clearly identifying products.

3-1.02. **Storage:** All materials shall be carefully stored in accordance with the manufacturer's instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the products.

3.2. GENERAL

3-2.01. The CONTRACTOR shall coordinate the flashing necessary with the different trades to make sure all items which penetrate the roof are provided with all necessary sheet metal items and WORK, such as pipes, ducts, support racks, equipment platforms or sleepers, and supports. Sheet metal shop manufactured curbs, equipment supports, and equipment platforms shall be provided where prefabricated curbs, supports, or platforms are not required to be provided under other Sections.

3-2.02. All WORK shall conform to Reference Standards. Flashing WORK shall be coordinated with roofing WORK. Sheet metal and roofing shall provide a weather-tight and watertight assembly.

3-2.03. Sheet metal WORK shall be accurately formed to dimensions and shapes indicated. WORK shall be fitted snugly, with straight, true lines with exposed faces aligned in proper plane, free from waves and buckles. Arises and angles shall have true and sharp lines, and surfaces shall be free from waves and buckles. Exposed edges shall be hemmed. Holes for fasteners within sheet metal WORK exposed to temperature changes shall be elongated holes for material expansion and movement.

3-2.04. Sheet metal WORK shall be furnished complete with supports, hangers, bracing, anchors, and other devices as required for reinforcement and proper attachment to adjacent construction. Fastenings shall be concealed wherever possible. Joints, fastenings, reinforcements, and supports shall be sized and located as required to preclude distortion or displacement due to thermal expansion and contraction.

3-2.05. Surfaces upon which sheet metal is to be placed shall be dry, smooth, even, and free of any projections and hollows. Sheet metal shall be laid with all joints true and even and firmly attached with all fastener heads flush with the top surface.

3-2.06. The underlayment shall be overlapped at least 2-inches so as to shed water and shall be secured along the lapped edges. Aluminum or stainless steel fasteners shall be used with aluminum sheet metal.

3-2.07. Dissimilar materials shall be isolated with 2 coats of asphaltic paint, asphaltic coating compound, or sealer tape. Only stainless steel fasteners shall be used to connect isolated dissimilar metals.

3-2.08. Joints shall be sized and spaced to permit sheet movement for thermal expansion and contraction of 1/4-inch per 10-ft length, on 100 degree F temperature difference. Holes for fasteners or anchors shall be elongated to provide for movement.

3-2.09. Roofing sheet metal items shall be built into the roofing in strict accordance with directions of roofing manufacturer.

3.3. INSTALLATION

3-3.01. Flashing at vertical surfaces shall be installed at intersections of roof with vertical surfaces and at projections through roof. Corner units shall be factory-fabricated and shall have mitered soldered or welded corner joints, and shall be installed with 3-inch (min) lap joint over flashing on each side.

3-3.02. Flanges of sheet metal items shall be set on continuous sealer tape on top edge envelope ply of roofing. Flanges shall be nailed through sealer tape at 3-inch (max) spacing or securely fastened per Reference Standards.

3-3.03. Stainless steel wainscots shall be set in waterproof adhesive. Bottom of wainscot shall be surface screwed into blocking with stainless steel countersunk flat head screws. Top and sides shall have concealed hemmed edge and be concealed cleat fastened. Stainless steel wainscots shall not be painted.

3.4. PROTECTIVE COATING

3-4.01. The CONTRACTOR shall provide protective coating, per Section 09940 - Protective Coatings, on all installed visible sheet metal products that are not provided with pre-finish coating system. Color shall match the adjacent surface materials color. The CONTRACTOR shall obtain final color approval from the ENGINEER prior to finish coat application. Colors may vary for each adjacent material.

- END OF SECTION -

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SECTION 07920 – SEALANTS AND CAULKING

PART 1 -- GENERAL

1.1. SUMMARY

1-1.01. Section Includes:

1. Sealants and caulking.

1-1.02. Related Requirements

01300 – Submittal Procedures

1.2. REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1. Where reference is made to any of the below, the revision in effect at the time of bid opening shall apply.

2. American Society for Testing and Materials (ASTM):

   a. ASTM C 920 - Elastomeric Joint Sealants

1-2.01. ASTM D 1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1. Sealant, Waterproofing, and Restoration Institute (SWRI).

1.3. SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. The Contractor shall coordinate color samples with other Sections through the submittal process, as required by the Engineer.

1.4. ACTION SUBMITTALS

1-4.01. Product Data

1. Manufacturer’s specifications, technical data, installation methods, and maintenance instructions, and the following:

2. Joint width and depth tables.

3. Manufacturer’s full range color charts, indicating custom color availability, for color selection by Owner.

1-4.02. Certifications:

1. Certification of installer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, and contact information of the consultant firm of record, general contractor, and owner.

2. Certification by the Manufacturer's technical field representative that surfaces have been prepared and the products have been applied in accordance with the Manufacturer's recommendations.

3. Certification from an independent testing laboratory that the submitted materials meet the requirements of the references indicated.

1-4.03. Application Schedule

1. Furnish a detailed and complete application schedule indicating location and detail of installation.

1-4.04. Samples

1. When requested by the Engineer, submit samples of the materials proposed. Samples shall be clearly marked to show the Manufacturer's name, product identification, finish, and color. New samples shall be resubmitted of each, as required, until approved by the Engineer. Upon approval, the samples shall become the standard for acceptance for the project with regard to color, finish, and quality of each item. Approval of samples shall not relieve the Contractor from compliance with the Contract Documents.

1.5. QUALITY ASSURANCE

1-5.01. Single Source Responsibility

1. Sealants and Caulking shall be provided by a single Manufacturer, each.

1-5.02. Qualifications

1. Manufacturer

   a. Sealants and caulking Manufacturer shall have a minimum of 20 years of sealants and caulking manufacturing experience.

2. Installer

   a. Installer shall have a minimum of 5 years' experience in the successful completion of at least 5 projects of similar size and scope, employing similar products, materials, applications, and performance requirements.

1-5.03. Manufacturer's Technical Field Representative

1. The Contractor shall arrange for a Manufacturer's technical field representative to be on Site for at least 1 day, beginning at the start of surface preparation and continuing through application, to train the installers and to supervise the Work. The Manufacturer's technical field representative shall observe as necessary to certify in writing that the completed Work has been performed according to the Manufacturer's instructions.

1-5.04. Sealant and caulking Work shall comply with the following references:

1. SWRI.

2. ASTM C 920.

1.6. WARRANTY

1-6.01. Manufacturer

1. Furnish Manufacturer's 5-year written warranty to cover defects in materials, products, and manufacturing workmanship.

1-6.02. Special Warranty

1. The Contractor shall furnish separate, but concurrently running, 5-year written warranty to cover labor.

1-6.03. Warranties shall be non-prorated for the entire warranty period.

1-6.04. The term of the warranties shall begin on the date of Substantial Completion.

PART 2 -- PRODUCTS

2.1. GENERAL

2-1.01. Sealant and caulking, including compressible filler and joint backing, shall be recommended by the Manufacturer for the installation indicated.

2-1.02. Sealant and caulking, including compressible filler and joint backing, shall be suitable for, and compatible with, the required installation.

2-1.03. Sealant and caulking, including compressible filler and joint backing, shall be suitable for, and compatible with, the substrates and surfaces indicated.

2-1.04. Refer to Section 03 32 00 – Joints in Concrete for joint treatment in concrete hydraulic structures.

2-1.05. Refer to Section 07 84 00 – Fire Safing and Fire Stopping Sealants for fire-rated applications.

2-1.06. Colors for sealants and caulking above grade and exposed to view shall be selected by the Owner from Manufacturer's full color range, including custom colors.

2.2. INTERIOR AND EXTERIOR SEALANTS (HORIZONTAL OR SLOPED PLANES)

2-2.01. Manufacturer and Product, or Equal:

1. Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

    a. **MasterSeal SL2** by **BASF**, including primer as recommended by Manufacturer.

2-2.02. Description: Two part, pour grade polyurethane base, ASTM C 920, Type M, Grade P, Class 25, Use T, NT, M, A, and I.

2.3. INTERIOR AND EXTERIOR SEALANTS (VERTICAL PLANE)

2-3.01. Manufacturer and Product, or Equal:

1. Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

    a. **MasterSeal NP2** by **BASF**, including primer as recommended by Manufacturer.

2-3.02. Description: Multi-component, gun grade, polyurethane ASTM C 920, Type M, Grade NS Class 25, Use NT, T, M, A, G, and O.

2.4. COMPRESSIBLE FILLER

2-4.01. Manufacturer and Product, or Equal:

1. Subject to the requirements indicated, provide Manufacturer listed below, or equal:

    a. Hohmann & Barnard.

2-4.02. Description:

1. Compressible filler shall be an impregnated preformed compressible sealant, produced by combining permanently elastic, high density open cell, polyurethane foam with stabilizing acrylics. Compressible filler shall be supplied pre-compressed in a tape form with a PSA on one side.

2. Compressible filler shall be compatible with sealant Manufacturer's product and shall not stain the sealant nor the materials to which applied.

2.5. JOINT BACKING (BACKER ROD)

2-5.01. Description:

1. Joint backing for joints in superstructure shall be approved, resilient, closed cell polyethylene rods of diameters to suit joint conditions. Joint backing shall comply with ASTM D 1752, Type II or III.

2. Where joint depth will not allow for a rod and still provide 3/8-inch (9.5 mm) minimum depth of sealant, provide approved bond breaker tape at the bottom of the joint.

3. Joint backing shall be compatible with sealant Manufacturer's product and shall not stain the sealant nor the materials to which applied.

PART 3 -- EXECUTION

3.1. DELIVERY, STORAGE, AND HANDLING

3-1.01. Deliver materials to Site in Manufacturer's original, unopened packages, containers, or bundles with labels intact, which clearly identify contents.

3-1.02. Store materials carefully in accordance with the Manufacturer's written instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the products.

3.2. HANDLE MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

3.3. APPLICATION SCHEDULE

3-3.01. Joints noted as "caulk," "caulking," or "sealant" shall be caulked as specified herein.

3-3.02. Joints to be caulked or sealed include through-bolt holes, door frames, louver and ventilator frames, joints between openings where items pass through exterior walls, concrete masonry, or combination of these surfaces, and as otherwise indicated or required for watertightness, weatherproofing, or airtightness.

1. Sealants and caulking shall be provided at both exterior and interior surfaces of exterior wall penetrations.

3-3.03. Sealants and caulking shall be provided at exterior wall joints, between adjacent materials, joints between frames or louvers and adjacent materials, copings, caps, sills, masonry control joints, and other joints and penetrations indicated or required for the completion of the Work.

3-3.04. Sealants and caulking shall be provided at interior joints between frames and masonry, at tops of masonry walls, between masonry and structural concrete, floor joints in tile, joints in rooms to be airtight, and other joints and penetrations on the Contract Drawings or as required for the completion of the Work.

3-3.05. Sealants and caulking shall also be installed elsewhere, where indicated on the Contract Drawings.

3.4. PROJECT CONDITIONS

3-4.01. Comply with Manufacturer's written instructions, and referenced standards, for environmental conditions before, during, and after installation.

3-4.02. Protect surrounding Work from damage that may result from operations under this Section.

3.5. INSPECTION

3-5.01. The Contractor shall be totally responsible for the proper performance and completion of the Work under this Section.

3-5.02. Systems and components shall be inspected before installation.

1. Damaged or defective items shall be rejected and marked as such and shall be removed from the Site.

3-5.03. The Contractor shall verify dimensions, tolerances, and method of attachment with adjacent Work.

1. Examine substrates, areas, and conditions where sealants and caulking will be installed for compliance with the requirements for installation, taking into account tolerances, and other conditions affecting performance of installed sealants and caulking.

    a. Surfaces to receive sealants and caulking, including compressible filler and joint backing, shall be dry, free of oil, dirt, dust and other contaminants and loose materials, and shall be in the proper condition as indicated by the Manufacturer prior to the application of the sealant and caulking materials.

    b. Masonry, concrete, and cementitious products shall have been completely cured and the surface shall be dry and free from frost at the time of application.

    c. Joint shapes and sizes shall be as indicated. Where not indicated, joint shapes and sizes shall be as necessary for job conditions, as directed by the Engineer.

2. Notify the Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3. Commencement of the installation by the Contractor shall indicate Contractor's acceptance of the substrate, areas, and conditions.

3.6. SURFACE PREPARATION

3-6.01. Surface preparation shall be in compliance with the applicable references and with the Manufacturer's written instructions.

3-6.02. Coatings, including curing compounds, form release agents, and other substances shall be removed as recommended by the sealant and caulking Manufacturer.

3-6.02. Protrusions, bumps, ridges, and loose substrate surface materials shall be removed by sanding or grinding.

3-6.03. Laitance, efflorescence, and loose mortar shall be removed from the joint cavity.

3-6.04. Ferrous metal surfaces shall be cleaned of rust, mill scale, and other coatings by wire brush, grinding, or sandblasting.

3-6.05. Protective coatings shall be removed from surfaces to receive sealants and caulking.

1. Solvents used to remove protective coating shall be as recommended by the sealant and caulking Manufacturer, shall be compatible with the adjacent materials and surfaces, shall not damage adjacent finishes, and shall be non-staining.

3-6.06. Bituminous or resinous materials shall be removed from surfaces to receive sealants and caulking.

3-6.07. Immediately before application of sealant and caulking materials, scrape surfaces to be covered free from foreign materials and brush clean.

3-6.08. Substrate shall be swept to remove all loose materials prior to beginning sealant and caulking installation.

3.7. PREPARATION

3-7.01. Sequence installation properly with the installation and protection of other WORK, so that neither will be damaged by the installation of the other.

3.8. INSTALLATION

3-8.01. Installation shall comply with the requirements of the Contract Documents, with applicable references, and with Manufacturer’s written instructions. Where a conflict occurs among these requirements, the more stringent shall apply, as directed by the Engineer.

3-8.02. Primer, if recommended by the Manufacturer for the application, shall be applied per the Manufacturer's recommended procedures.

1. Primer shall be used on concrete masonry units, wood, or other porous surfaces in accordance with instructions furnished with the sealant. Primer shall be applied to the joint surfaces to be sealed. Surfaces adjacent to joints shall not be primed.

3-8.03. Multi-component sealants shall be mixed according to Manufacturer’s printed instructions. Sealant in guns shall be applied with a nozzle of proper size to fit the width of joint. Sealant shall be installed to the required depth without displacing the backing. Unless otherwise indicated or recommended by the Manufacturer, the installed sealant shall be tooled so that the surface is uniformly smooth and free of wrinkles and to assure full adhesion to the sides of the joint. Sealants shall be installed free of air pockets, foreign embedded matter, ridges, and sags. Sealer shall be applied over the sealant if recommended by the sealant Manufacturer.

3-8.04. Sealant depth in joints shall be half of the width of joint, but not less than 1/8-inch (3.2 mm) deep and 1/4-inch (6.4 mm) wide nor more than 1/2-inch (12.7 mm) deep and one-inch wide (25.4 mm). For joints greater than 1-inch (25.4 mm) wide, provide sealant in a 2 to 1 width-to-depth ratio.

3-8.05. Joints shall have a rigid filler material installed to proper depth prior to application of sealant.

3-8.06. Masking film shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking shall be removed as soon as possible after joint has been filled and tooled.

3-8.07. Backing shall be installed to provide the indicated sealant depth. The installation tool shall be shaped to avoid puncturing the backing.

3-8.08. Bond-breaker shall be applied to fully cover the bottom of the joint without contaminating the sides where sealant adhesion is required.

3-8.09. A full bead of sealant shall be applied into the joint under sufficient pressure, with the nozzle drawn across sealant, to completely fill the void space and to ensure complete wetting of contact area to obtain uniform adhesion. During application, the tip of the nozzle shall be kept at the bottom of the joint thereby forcing the sealant to fill from the bottom to the top. Sealants shall be tooled immediately after exposure with a caulking tool or soft bristled brush moistened with solvent. The finished sealant-filled joint shall be slightly concave unless otherwise indicated.

3.9. CLEANING, FINISHING, AND PROTECTION

3-9.01. Adhesive papers used for masking which become firmly bonded when exposed to heat and/or light shall not be used.

1. Remove masking film and temporary labels as soon as possible after installation. Films and labels left in place after installation shall be the responsibility of the Contractor.

2. Residue shall not be left on any surfaces.

3. The surfaces of materials adjoining caulked joints shall be cleaned free of smears of sealant or other soiling due to caulking operations.

3-9.02. Sealants and caulking shall be protected from damage from subsequent construction operations.

3-9.03. The Contractors shall make adjustments required until accepted.

3-9.04. Damaged or defective items shall be removed and replaced at the direction of the Engineer.

3-9.05. When sealant and caulking Work is completed, remove unused materials, containers, and equipment, and clean the Site of sealant and caulking debris.

END OF SECTION

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SECTION 08120 – ALUMINUM DOORS AND FRAMES

PART 1 -- GENERAL

1.1 THE SUMMARY

1-1.01. The CONTRACTOR shall provide aluminum doors and frames and appurtenant WORK, complete, in place, and operational in accordance with the Contract Documents.

1.2 REFERENCES

1-2.01. Where reference is made to any of the below, the revision in effect at the time of bid opening shall apply.

1-2.02. Aluminum Association.

1-2.03. American National Standards Institute (ANSI).

1-2.04. American Society for Testing and Materials (ASTM):

ASTM B 209	Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 221	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes and Tubes
ASTM E 84	Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E 330	Structural Load Test
ASTM E 1886	Impact Test Procedures
ASTM E 1996	Wind Load Test

1-2.05. Building Code: Refer to the Drawings to determine which Building Code applies. The applicable Building Code, defined by the Drawings, is referred to herein as “the CODE.”

1-2.06. Federal Specifications:

FS HH-I-529b	Insulation Board, Thermal (Mineral Aggregate).
FS HH-I-530	Insulation Board, Thermal (Urethane).

1.3 CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. Literature: Manufacturer’s specifications, technical data, installation methods, and maintenance instructions.

1-3.03. Certifications:

A. Certification of compliance with the requirements of paragraph 2.1.A.

B. Certification of installer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, and contact information of the consultant firm of record, general contractor, and owner.

1-3.04. Shop Drawings: Complete Shop Drawings showing location and detail of installation.

A. Shop Drawings shall be drawn to sufficient scale and shall include dimensions, show elevations and details of construction of each door and frame type, schedule of doors and frames, frame elevations and details, location and installation requirements for hardware, thickness of materials, joints, provisions for expansion and contraction, connections, accessories, and trim. Shop Drawings shall show installation conditions at openings with various wall thickness and materials.

B. Include details of core and edge construction, through-door louvers, vision panels, and trim for openings.

1.4 QUALITY ASSURANCE

1-4.01. Single Source Responsibility: Aluminum doors and frames shall be provided by a single Manufacturer.

1-4.02. Manufacturer Qualifications:

A. Aluminum door and frame Manufacturer shall have a minimum of 5 similar successful projects over the most recent 10 years, employing similar products, materials, applications, and performance requirements.

1-4.03. Installer Qualifications:

A. Installer shall have a minimum of 5 years' experience in the successful completion of at least 5 projects of similar size and scope, employing similar products, materials, applications, and performance requirements.

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS

2-1.01. Structural Requirements:

A. Aluminum doors and frames, including related assemblies, components, and attachment details shall comply with the CODE and shall be designed and installed for resistance to the structural design criteria indicated in the Contract Documents in accordance with the CODE. Where a conflict occurs between the requirements of this Section and the CODE, the more stringent shall apply.

B. The CONTRACTOR shall provide additional non-standard bracing, reinforcements, anchors, and heavier gauge materials if required to conform to the structural design criteria indicated and to other performance requirements indicated.

2-1.02. Aluminum Alloy for Doors and Frames: ASTM B 221, alloy 6063-T5 for extrusions. ASTM B 209, alloy and temper best suited for aluminum sheets and finish required.

2-1.03. Refer to Section 08710 – Finish Hardware, for door hardware to be provided for Aluminum Doors and Frames.

2.2 ACCEPTABLE MANUFACTURERS

2-2.01. Subject to the requirements indicated, provide Manufacturer and product listed below, with modifications by the Manufacturer for custom upgraded features as required to comply with the specification. Door and frame shall be hurricane rated louver doors with Florida Product Approval:

A. Cline Aluminum Doors; Series 100BE, FBC Approval Number FL6336.

2.3 ALUMINUM DOORS

2-3.01. Aluminum full louver doors shall be 1 3/4-inches thick, constructed with extruded aluminum alloy 6063-T5 tubular jamb rails 0.125-inch lock side, 0.190-inch (hinge side) and minimum 0.040-inch thick smooth aluminum alloy 5005-H34 face sheets.

2-3.02. Door Edge: Door edges shall have rigid aluminum subframe with integral edge caps. No snap-on or applied door edge at hinge or lock edge.

2-3.03. Sub-Frame: Aluminum sub-frame shall be 1 3/8-inches (35 mm) x 4 1/2-inches (114 mm) 6063-T5 tubular aluminum with a 1 3/4-inch (44.5 mm) integral edge cap at hinge and lock side with an applied edge cap top and bottom to ensure proper protection from the weather. Sub-frame shall be connected by a 3/8-inch (9.5 mm) cadmium plated steel tie rod top and bottom. Overall door tolerance shall be plus or minus 1/16-inch (1.6 mm). Extrusion tolerances shall be as set by the American Aluminum Manufactures Association.

2-3.04. Insulated core: All voids between sub-frames shall be filled with an isocyanurate rigid foam board with a minimum R-value of 9. Core shall be laminated between two sheets of 1/8-inch (3.2 mm) tempered hardboard for impact reinforcing. Tempered hardboard shall be the same size as face sheets.

2-3.05. Face Sheets: Face sheet shall be one piece 0.090” (2.3 mm) smooth aluminum of anodizing quality with a minimum tensile strength of 22,000 psi. Face sheets shall be concealed under 1/2-inch (13 mm) edge cap full perimeter.

2-3.06. Lamination: Sub-frame, insulated core, hardboard, and face sheets shall be bonded together with a thermosetting two-component epoxy adhesive under 110 lbs (49.9 kG) pressure to form a water, heat, and chemical resistant bond.

2.4 ALUMINUM FRAMES

2-4.01. Manufacturer and Product:

A. Subject to the requirements indicated, provide Manufacturer and product by the same Manufacturer as the door.

2-4.02. Description:

A. Material: Frame members shall be made of 6063-T6 extruded aluminum alloy with minimum yield strength of 28,750 pound per square inch (mm). All screws and miscellaneous fasteners shall be stainless steel, or other corrosion resistant material.

B. Frames shall be 0.125-inch (3.18 mm) minimum wall thickness, extruded tubular 5 aluminum with pile weather-stripped doorstops. For interior installations, punch single leaf frames to receive 3 silencers. Double leaf interior frames shall receive one silencer per leaf at head.

C. Aluminum door frames shall be 1 3/4-inches (44.5 mm) x 5 3/4- inches (146.1 mm) open back with an applied door stop.

D. Frame joints and components shall be factory milled and fitted to hairline cracks. Corners shall be mechanically joined with interlocking 3/16-inch (4.8 mm) wall, aluminum channel clips and flat head stainless steel screws.

E. Construction: Frame shall be squared cut to provide neat hairline joints. Jambs and header shall be fastened with stainless steel screws. All frames shall be mortise for hinges and lock strike plates. Surface mounted hardware shall be drilled and tapped in the field. Hinge, lock, and strike reinforcing plate shall be made of 1/4-inch (6.4 mm) aluminum plate.

F. Frames shall be completely fabricated and reinforced for hardware as specified in Section 08710 – Finish Hardware.

2.5 THROUGH-DOOR LOUVERS

2-5.01. Through-door louvers shall be sight proof, 2” inverted-Y type blades constructed of extruded aluminum 6063-T5 alloy and provide 50 percent free air flow. All fastenings shall be stainless steel or aluminum. Inside louver trim to be secured by counter sunk Jackson head screws. All frames and trim members to be mitered at corners and rigidly secured by corner brackets. Insect screen shall be 14-18 mesh, 0.011 diameter aluminum set in a 0.050-inch extruded aluminum 6063-T5 alloy frame.

2.6 PROVISIONS FOR HARDWARE

2-6.01. Hardware templates and hardware shall be delivered to the door manufacturer for use in fabrication of aluminum doors and frames. Cut, reinforce, drill, and tap down and frame in accordance with hardware manufacturer’s recommendations. Surface-applied hardware, push plates, kick plates, and mop plates shall be drilled and tapped in the field. Provide hinge reinforcements of 1/4-inch (6.4 mm) aluminum flat bar and secure to door edge or frames with stainless steel machine screws.

A. Coordinate additional requirements for required hardware with Specification Section 08710 – Finish Hardware.

B. Door Hardware Reinforcement:

1. Components shall be reinforced for hardware installation in accordance with ANSI.

a. Doors shall be completely reinforced for, and shop fabricated to receive all specified hardware. Reinforcement shall be 6061-T6 alloy, 0.250-inch (6.35 mm) thick, minimum.

2.7 FINISH AND COLOR

2-7.01. All exposed aluminum doors and frames shall be chemically cleaned of all fabricating oils and foreign materials and be given an anodic finish. Finish shall be 343 medium bronze anodize, designation AA-M12-C22-A34, Architectural Class II (0.4 Mil to 0.7 Mil).

2.8 FABRICATION

2-8.01. The CONTRACTOR shall field verify size, location, and placement of doors and frames, shall advise the ENGINEER in writing of any necessary adjustments, and shall make the necessary adjustments prior to fabrication. The CONTRACTOR shall coordinate field measurements and Shop Drawings with fabrication and shop assembly to minimize field adjustments.

2-8.02. Doors and frames shall be fabricated to be rigid, neat in appearance, and free from defects, including warping, cupping, buckling, or other defects. Metal shall be accurately formed to required sizes and profiles.

2-8.03. Doors and frames shall be fit and assembled in the Manufacturer's plant.

2-8.04. Doors and frames shall be prepared to receive mortised and concealed door hardware, including cutouts, reinforcing, drilling, and tapping in accordance with final Door Hardware Schedule and templates provided by hardware supplier, and as indicated in the Contract Documents.

A. Comply with applicable requirements of ANSI for preparation for hardware on doors and frames.

B. Include thru-bolting holes as required per hardware template.

C. Do not include unnecessary cutouts in door faces not required by hardware template.

2-8.05. Doors and frames shall be reinforced to receive surface-applied hardware. Drilling and tapping for surface-applied door hardware may be done at Site.

2-8.06. Fasteners: All screws and miscellaneous fasteners shall be stainless steel, or other corrosion resistant material.

PART 3 -- EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

3-1.01. Deliver materials to Site in Manufacturer’s original, unopened packages, containers, or bundles with labels intact, which clearly identify contents.

A. Aluminum doors and frames shall be shipped and stored with temporary stiffeners and spacers in place to prevent distortion.

3-1.02. Store materials carefully in accordance with the Manufacturer's written instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the products.

3-1.03. Handle materials in strict accordance with Manufacturer's written instructions.

3.2 PROJECT CONDITIONS

3-2.01. Comply with Manufacturer's written instructions for environmental conditions before, during, and after installation.

3-2.02. Protect surrounding WORK from damage that may result from operations under this Section.

3.3 INSPECTION

3-3.01. The CONTRACTOR shall be totally responsible for the proper performance and completion of the WORK under this Section.

3-3.02. Systems and components shall be inspected before installation.

A. Damaged or defective items shall be rejected and marked as such and shall be removed from the Site.

B. Exposed surfaces that exhibit pitting, seam marks, roller marks, stains, discoloration, or other surface imperfections on the finished units shall be rejected.

3-3.03. The CONTRACTOR shall verify dimensions, tolerances, and method of attachment with adjacent WORK.

A. Examine substrates, areas, and conditions where doors and frames will be installed for compliance with the requirements for installation, taking into account tolerances, and other conditions affecting performance of installed doors and frames.

1. Provide inserts, backing, blocking, anchoring devices, and reinforcements that must be built into other WORK for the installation of aluminum doors and frames. Coordinate delivery with other WORK to avoid delay.

B. Notify the ENGINEER in writing of conditions detrimental to the proper and timely completion of the WORK. Do not proceed with the WORK until unsatisfactory conditions have been corrected in an acceptable manner.

C. Commencement of the installation by the CONTRACTOR shall indicate CONTRACTOR's acceptance of the substrate, areas, and conditions.

3.4 PREPARATION

3-4.01. Sequence installation properly with the installation and protection of other WORK, so that neither will be damaged by the installation of the other.

3.5 INSTALLATION

3-5.01. Installation shall comply with the requirements of the Contract Documents, with applicable references, with the requirements of the CODE, and with Manufacturer's written instructions. Where a conflict occurs among these requirements, the more stringent shall apply, as directed by the ENGINEER.

3-5.02. The CONTRACTOR shall provide corrosion resistant fasteners, anchors, and shims required for a complete installation, and shall be secure, plumb, level, straight, and true to line, allowing for required movement, including expansion and contraction.

3-5.03. The CONTRACTOR shall provide separation of dissimilar materials to ensure no galvanic action occurs.

A. Protection from Dissimilar Materials:

1. Dissimilar Metals:

a. Where aluminum surfaces come in contact with metals other than stainless steel, zinc, or small areas of white bronze, the CONTRACTOR shall protect from direct contact by one or a combination of the following methods:

1) Paint the dissimilar metal with one coat of heavy- bodied bituminous paint.

b. Apply a good quality caulking material between the aluminum and the dissimilar metal.

c. Use a non-absorptive tape or gasket in permanently dry locations.

2. Masonry and Concrete:

a. The CONTRACTOR shall provide aluminum surface in contact with mortar, concrete, or other masonry materials with one coat of heavy-bodied bituminous paint.

3-5.04. The CONTRACTOR shall block and reinforce walls as required to support the Aluminum Doors and Frames and appurtenances.

3-5.05. Setting Masonry Anchorage Devices: Provide masonry anchorage devices where required for securing frames to in-place concrete or to existing masonry construction. Set anchorage devices opposite each anchor location, in accordance with details on Shop Drawings and anchorage device Manufacturer's instructions.

3-5.06. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

3-5.07. In new masonry construction, coordinate frame setting to occur after the building of masonry walls. Provide the required anchors.

3-5.08. At in-place concrete or masonry construction, set frames and secure in place with the required anchors.

3-5.09. Remove spreader bars only after frames or bucks have been properly set and secured.

3.6 CLEANING

3-6.01. Adhesive papers used for masking which become firmly bonded when exposed to heat and/or light shall not be used.

A. Remove masking film and temporary labels as soon as possible after installation. Films and labels left in place after installation shall be the responsibility of the CONTRACTOR.

B. Residue shall not be left on any surfaces.

3-6.02. Upon completion of the installation, doors, frames, and appurtenances shall be cleaned of dirt and other foreign matter to the satisfaction of the ENGINEER.

A. Cleaning shall be performed again immediately prior to acceptance of the WORK, when directed by the ENGINEER.

B. Cleaning shall be performed in accordance with the Manufacturer's written instructions.

3-6.03. Adjusting and cleaning shall consist of ensuring smooth operation, lubricating, and testing the doors and frames.

A. Doors and frames shall operate smoothly, quietly, and without squeaking and binding.

3-6.04. Doors and frames shall be protected from damage from subsequent construction operations.

3-6.05. The CONTRACTOR shall make adjustments required and retest until accepted.

3-6.06. The CONTRACTOR shall remove scratches and blemishes to the satisfaction of the ENGINEER.

3-6.07. Damaged or defective items shall be removed and replaced at the direction of the ENGINEER.

A. Remove and replace defective WORK, including doors or frames that are warped, bowed, or otherwise unacceptable.

3-6.08. When door and frame WORK is completed, remove unused materials, containers, and equipment, and clean the Site of door and frame debris.

END OF SECTION

SECTION 08710 –FINISH HARDWARE

PART 1 -- GENERAL

1.1 THE SUMMARY

1-1.01. The CONTRACTOR shall provide finish hardware and appurtenant WORK, complete, in place, and operational in accordance with the Contract Documents.

1.2 REFERENCES

1-2.01. Where reference is made to any of the below, the revision in effect at the time of bid opening shall apply.

1-2.02. Americans with Disabilities Act (ADA):

ADAAG	Americans with Disabilities Accessibility Guidelines

1-2.03. American National Standards Institute (ANSI):

ANSI A 117.1	Accessible and Usable Buildings and Facilities
ANSI A 156.1	Butts and Hinges
ANSI A 156.3	Exit Devices
ANSI A 156.4	Door Controls – Door Closers
ANSI A 156.5	Auxiliary Locks and Associated Products
ANSI A 156.6	Architectural Door Trim
ANSI A 156.7	Template Hinge Dimensions
ANSI A 156.8	Door Controls – Overhead Stops
ANSI A 156.13	Mortise Locks and Latches
ANSI A 156.15	Closer Holder Release Devices
ANSI A 156.16	Auxiliary Hardware
ANSI A 156.18	Material and Finishes

1-2.04. Builders' Hardware Manufacturers' Association (BHMA).

1-2.05. Building Code: Refer to the Drawings to determine which Building Code applies. The applicable Building Code, defined by the Drawings, is referenced herein as "the CODE."

1-2.06. Door and Hardware Institute (DHI): Recommended Procedure for Processing Hardware Schedules and Templates" and "Architectural Hardware Scheduling and Format."

1-2.07. National Fire Protection Association (NFPA):

NFPA 80	Fire Doors and Windows
NFPA 101	Life Safety Code

1.3 CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 – Submittal Procedures.

1-3.02. Literature: Manufacturer's specifications, technical data, installation methods, and maintenance instructions.

1-3.03. Warranty: Submit a copy of the warranty.

1-3.04. Certifications:

A. Certification by the door hardware Manufacturer that the door hardware provided is suitable for, and compatible with, the required installation.

B. Certification of Manufacturer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, Manufacturer's products, and contact information of the consultant firm of record, general contractor and owner.

C. Certification of supplier's qualifications demonstrating compliance with the qualifications requirements indicated.

D. Certification of installer qualifications demonstrating compliance with the qualifications requirements indicated. Include a list of 5 similar completed projects with addresses of the project location, date of project completion, and contact information of the consultant firm of record, general contractor and owner.

E. Submit certification from a recognized testing agency that fire doors have passed tests to meet fire ratings indicated.

F. Certification that materials, construction requirements, and fire ratings will be met in the final installation.

G. Certification for hardware in fire rated openings indicating compliance with UL 10C and UBC 7-2.

H. When requested by the ENGINEER, furnish other certifications as may be required to show compliance with the Contract Documents.

1-3.05. Shop Drawings: Complete Shop Drawings showing location and detail of installation.

A. Furnish a complete, detailed hardware schedule. The hardware schedule shall indicate groups, type, style, function, Manufacturer's name, catalog number, location, and finish of each item to be provided, in accordance with the DHI "Architectural Hardware Scheduling Sequence and Format." The hardware schedule shall include the following additional information:

1. List each door opening, organized into "hardware sets" indicating complete designations of every item required for each door opening to function as intended.

2. Location of each hardware set cross-referenced to floor plans and schedules on the Drawings.

3. Door sizes shall be noted on the hardware schedule, and hardware shall be in strict accordance with height, width, and thickness requirements.

4. Special mounting instructions or requirements that vary from standard.

5. Handing and degree of swing of each door.

6. Keying information.

7. Fastenings and other pertinent information.

8. Explanation of all abbreviations, symbols, and codes contained in schedule.

9. The hardware schedule shall also include a complete template list showing template references and data for each item requiring preparation of doors and frames.

10. Submit separate detailed keying schedule for approval indicating clearly how the OWNER'S final instructions on keying of locks has been fulfilled.

1-3.06. Samples: When requested by the ENGINEER, submit samples of the materials proposed. Samples shall be clearly marked to show the Manufacturer's name, product identification, finish and color. New samples shall be resubmitted of each, as required, until approved by the ENGINEER. Upon approval, the samples shall become the standard for acceptance for the project with regard to color, finish, and quality of each item. Approval of samples shall not relieve the CONTRACTOR from compliance with the Contract Documents.

1.4 QUALITY ASSURANCE

1-4.01. Single Source Responsibility: Door hardware shall be provided by a single Manufacturer, each.

1-4.02. Manufacturer Qualifications:

A. Door hardware Manufacturer shall have a minimum of 20 years of door hardware manufacturing experience.

B. Door hardware Manufacturer shall have a minimum of 5 similar successful projects over the most recent 10 years, employing similar products, materials, applications, and performance requirements.

C. Manufacturers without these qualifications will not be accepted.

1-4.03. Supplier Qualifications:

A. Supplier shall be a recognized architectural door hardware supplier who has maintained an office and has been furnishing hardware in the project's vicinity for a period of at least 2 years.

B. Supplier shall employ at least one Architectural Hardware Consultant (AHC) who shall be responsible for the preparation and execution of the WORK of this Section and who shall be available to the OWNER, the ENGINEER, and the CONTRACTOR during business hours for consultation about the project's hardware and requirements.

C. Supplier shall be a certified direct distributor and be a full sales and service organization for the Manufacturers proposed.

D. Suppliers without these qualifications will not be accepted.

1-4.04. Installer Qualifications:

A. Installer shall have a minimum of 5 years' experience in the successful completion of at least 5 projects of similar size and scope, employing similar products, materials, applications, and performance requirements.

B. Installer shall be trained, certified, and authorized by the Manufacturer to install the Manufacturer's product.

C. Installers without these qualifications will not be accepted.

1.5 SPECIAL WARRANTY PROVISIONS

1-5.01. Furnish Manufacturer's written warranty to cover defects in materials, products, and manufacturing workmanship. The term of the warranty shall be as indicated below:

A. Mortise Locksets: 5 years.

B. Exit Devices: 5 years.

C. Door Closers: 10 years.

1-5.02. The CONTRACTOR shall furnish separate, but concurrently running, 5-year written warranty to cover labor.

1-5.03. Warranties shall be non-prorated for the entire warranty period.

1-5.04. The term of the warranties shall begin on the date of Substantial Completion.

PART 2 -- PRODUCTS

2.1 GENERAL

2-2.01. Door hardware shall be recommended by the Manufacturer for the installation indicated.

2-2.02. Door hardware shall be suitable for, and compatible with, the required installation. Coordinate hardware with door and frame Specification Section 08120 – Aluminum Doors and Frames.

2-2.03. Door hardware shall be best grade, entirely free from imperfections in manufacture and finish. Qualities, weights, and sizes specified herein are the minimum that will be accepted.

2-2.04. Hand of door shall be as indicated. If door handing changes prior to fabrication, the CONTRACTOR shall make necessary adjustments at the direction of the ENGINEER.

2-2.05. The WORK hereunder shall include fabrication and mounting templates as needed for fabricators and for control of application of hardware items.

A. In addition, thereto, the CONTRACTOR shall provide trim, attachments, and fastenings indicated or required for proper and complete installation.

2-2.06. Door hardware shall be coordinated with other WORK requiring door hardware or attaching to it. Copies of schedules, templates, etc., shall be furnished in ample time to avoid fabrication and construction delays. Each item of hardware shall be identified according to the approved list and schedule. Hardware shall be made to template.

2-2.07. The CONTRACTOR shall furnish the hardware supplier with Shop Drawings from other trades with which hardware must be coordinated. After checking these Shop Drawings, the CONTRACTOR shall promptly supply necessary template information to all concerned as may be required to facilitate the progress of the job.

A. Furnish all templates and schedules required by the Manufacturers of the doors and frames to enable the Manufacturers to make proper provision in their WORK to receive the door hardware. All locks, lock strikes, and flush bolts shall be made to ANSI standard dimensions.

B. Procedures for template information shall be in accordance with the handbook, “Recommended Procedure for Processing Hardware Schedules and Templates.”

2.2 HINGES

2-2.01. Manufacturer or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

B. Pemko.

2-2.02. Description:

A. Hinges shall conform to ANSI A 156.1/BHMA A 2111 and shall be 5-knuckle design, heavy weight (0.180-inch minimum (4.6 mm)), ball bearing type, with flush tips.

B. Two hinges shall be provided for each door leaf up to and including 5-feet (1.5 m) in height and an additional hinge shall be added for each 2½-feet (.76 m) or fractions thereof of additional door height.

C. Hinges shall be 4½ inches (114.3 mm) by 4½-inches (114.3 mm), except at doors exceeding 36-inches (914 mm) in width.

    1. Doors exceeding 36-inches (914 mm) in width shall have 5-inches (127 mm) by 4½-inches (114.3 mm) hinges.

D. Hinges on exterior doors shall be provided with non-removable pins (NRP).

E. Provide hinges with countersunk, Phillips flat-head screws unless otherwise indicated.

2.3 CYLINDERS AND KEYING

2-3.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

Sargent, Signature High Security Cylinders.

2-3.02. Description:

A. Locks and cylinders shall be master keyed to the OWNER'S requirements as directed by the ENGINEER.

B. The CONTRACTOR shall have the hardware supplier submit a keying schedule for approval prior to placing an order for the locks and keying of cylinders. The keying schedule shall be coordinated between the OWNER, the ENGINEER, the CONTRACTOR, and the hardware supplier.

2-3.03. Keying:

A. Locks and cylinders shall be construction master-keyed. Locks and cylinders to be master-keyed or grandmaster-keyed as directed by the OWNER. The factory shall key locks and cylinders. Furnish the following key amounts:

    1. Two (2) change keys per lock.

    2. Three (3) grand master keys.

    3. Six (6) master keys per master level.

    4. Six (6) construction/temporary keys.

B. Master keys and all high-security or restricted keyway blanks shall be sealed in tamper-proof packaged boxes when shipped from the factory. The boxes shall be shrink-wrapped and imprinted to ensure the integrity of the packaging.

2.4 SURFACE MOUNTED OVERHEAD CLOSERS

2-4.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

A. Sargent 351 Series.

2-4.02. Description:

A. Closers shall be ANSI A 156.4, Grade 1 Certified.

B. Closers shall have non-ferrous covers, one-piece, aluminum alloy bodies forged steel arms, and separate valves for adjusting and backcheck, closing and latching cycles, and adjustable spring to provide up to 50 percent increase in spring power.

C. Closers shall be furnished with parallel arm mounting on doors and shall be mounted to permit 180-degree door swing wherever wall conditions permit. Furnish without hold open arms unless otherwise indicated. Closers shall not be installed on exterior or corridor side of doors; install closers on door unless otherwise approved in writing by the ENGINEER.

D. Closers shall be powder coated to match door hardware with a special rust inhibitor (SRI) pretreatment, as recommended in writing by the Manufacturer, applied prior to the powder coating.

E. Where closers or other items have lever or similar arms, attachment to doors shall be with sex bolts only.

F. Closers for out-swinging exterior doors shall be top-jamb-mounted and furnished with adapter plates.

G. The CONTRACTOR shall be responsible to provide the correct arm with the closers.

H. Closers shall be provided with sex bolts for fastening through doors, frames and transoms.

2.5 MORTISE LOCKSETS AND LATCHSETS

2-5.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

A. Sargent 8200 Series.

2-5.02. Description:

A. Locksets shall be ANSI A 156.13 Series 1000 Grade 1. Functions shall be manufactured in a single sized case formed from minimum 12-gauge steel. Lockset shall have a field-adjustable, beveled armored front, with a 0.125-in (3.2 mm) minimum thickness and shall be reversible without opening the lock body. The lockset shall be 2¾-inch (69.9 mm) backset with a one-piece ¾-inch (19 mm) anti-friction stainless steel latch bolt. The deadbolt shall be a full 1-inch (25.4 mm) throw made of stainless steel and have two hardened steel roller inserts. To ensure proper alignment, all trim, shall be thru-bolted and fully interchangeable between rose and escutcheon designs.

B. Function of locksets shall be appropriate for doors use. Hardware supplier shall verify lock functions with the OWNER and the ENGINEER prior to ordering material.

C. Lock strikes shall be non-handed, boxed type of sufficient length and having curved lips to protect the trim and jambs and be so shaped as to avoid the possibility of tearing clothing. Strikes shall be provided with metal strike boxes.

D. Locks shall be provided with the same cylinder and keyway for master keying. They shall be the product of the same Manufacturer as the locksets unless otherwise indicated. The correct cylinders with necessary modifications and components such as cams, collars, rings, retainers, plates, fasteners, etc., shall be provided for other specialty hardware such as exit devices, store front locksets, and sliding door locks where the hardware manufacture specified is different than cylinder Manufacturer.

E. Exit doors shall be openable at all times from the inside without the use of key or any special knowledge or effort.

2.6 STRIKES

2-6.01. Manufacturer: To be provided by exit device and lockset and latch set device Manufacturer.

2-6.02. Description:

A. Strikes shall be compatible with the installation required.

B. All strikes shall be non-handed with a curved lip.

2.7 EXIT DEVICES

2-7.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

A. Sargent, 80 Series.

2-7.02. Description:

A. Exit devices shall be certified to meet ANSI A 156.3 Grade 1.

B. Exit devices shall be listed by Underwriters Laboratories and shall bear the UL label for life safety in full compliance with NFPA 80 and NFPA 101.

C. Mounting rails shall be formed from a solid single piece of stainless steel, brass, or bronze no less than 0.072-inch (1.83 mm) thick. Push rails shall be constructed of 0.062-inch (1.57 mm) thick material. Painted or anodized aluminum shall not be considered heavy duty and are not acceptable. Hex key dogging shall be standard for all life safety panic hardware. Lever trim shall be available in finishes and designs to match that of the specified locksets.

2.8 LOCK GUARDS

2-8.01. Manufacturer, or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

2-8.02. Description: Provide high security, corrosion resistant, surface mounted lock guards with concealed fasteners compatible with the installation, at each exterior door.

2.9 DOOR TRIM AND PROTECTIVE PLATES

2-9.01. Manufacturer, or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

B. Pemko.

2-9.02. Description:

A. Kickplates shall be 0.050-gauge, 2-inches (50.8 mm) less width of door, beveled on 3 sides, and 10-inches (254 mm) high, except where necessary to clear a louver in which case they shall be 8-inches (213 mm) high.

B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be as indicated.

2.10 WALL MOUNTED DOOR STOPS

2-10.01. Manufacturer, or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

2-10.02. Description:

A. Where a door is indicated to open against a wall, wall mounted doorstops, in the form of wall bumpers, shall be provided. Provide convex or concave design as indicated.

B. Wall mounted doorstops shall be non-ferrous, and of the type given in the hardware schedule.

C. Provide door stops with the proper fasteners, as required by the substrate to which stops are to be secured.

2.11 OVERHEAD STOPS WITH HOLD OPEN FUNCTION

2-11.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

A. Rixson.

2-11.02. Description:

A. Overhead type door holders shall be of correct size for door, 90 degree openable and allowing for checkmating. Interior doors shall be provided with overhead stops if wall type stops cannot be used.

B. Track, slide, arm, and jamb bracket shall be constructed of extruded bronze and shock absorber spring shall be of heavy tempered steel.

C. Overhead stops shall be of non-handed design.

2.12 WEATHERSTRIPPING, GASKETING AND SEALS

2-13.01. Manufacturer, or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

B. Pemko.

2-13.02. Description:

A. Provide continuous weather seal on exterior doors.

B. Provide continuous light or sound seals on interior doors where indicated.

C. Provide UL rated fire and smoke seals on all fire rated doors. Provide intumescent seals as required to meet UL 10C and UBC 7-2. Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by Manufacturer.

2.13 THRESHOLDS

2-13.01. Manufacturer, or Equal: Subject to the requirements indicated, provide products from the Manufacturer listed below, or equal.

A. McKinney.

B. Pemko.

2-13.02. Description:

A. Provide threshold at each exterior door, and at other locations where indicated. Provided in size and configuration indicated, fabricated to accommodate door hardware and to fit door frames.

B. Thresholds shall be aluminum unless otherwise noted.

C. Threshold units shall comply with ADAAG and ANSI A 117.1.

D. At Fire Rated doors, provide UL rated thresholds.

E. Where adjacent floor material differs, provide threshold as appropriate.

F. Provide marble threshold at toilet rooms.

2.14 SILENCERS

2-14.01. Manufacturer and Product, or Equal: Subject to the requirements indicated, provide Manufacturer and product listed below, or equal:

A. McKinney.

B. Pemko.

2-14.02. Description: Interior door frames shall be provided with rubber silencers, 3 for each single door and 2 for each pair of doors.

2.15 FASTENERS

2-15.01. Provide necessary screws, bolts, and other fasteners of suitable size and type to secure the hardware into position. The fasteners shall match the hardware in material and finish.

2-15.02. The hardware provided, such as expansion bolts, sex bolts, toggle bolts and other approved anchorages shall be coordinated with the job and to each setting condition.

2-15.03. Phillips head screws shall be used at exposed conditions. Machine screws shall be used at metal doors and frames.

2-15.04. Required screws shall be supplied as necessary for securing door hardware in the appropriate manner. Thru-bolts shall be supplied for exit devices and door closers where required by the CODE and where the appropriate blocking or reinforcing is not present in the door to preclude their use.

2.16 FINISHES

2-16.01. Door hardware shall be 630/US 32D (stainless steel satin finish) unless otherwise indicated.

2-16.02. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI A 156.18 including coordination with traditional U.S. finishes shown by certain Manufacturers for their products.

2-16.03. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with Manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

PART 3 -- EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

3-1.01. Deliver materials to Site in Manufacturer’s original, unopened packages, containers, or bundles with labels intact, which clearly identify contents.

A. Locks, exit devices, door closers, overhead door holders, hinges, kickplates, pulls and push plates, thresholds, and other similar items shall be individually packed in separate, suitable, original, containers as furnished by the hardware Manufacturers. Each container shall be clearly marked with item numbers, article numbers, and names corresponding to those listed in the hardware schedule.

    1. Small miscellaneous items that would not require specific location identifications, such as wall mounted stops and silencers may be quantity packed if properly labeled with item numbers and other identification.

B. The CONTRACTOR shall check the hardware upon delivery with the aid of a representative of the hardware supplier's firm.

3-1.02. Store materials carefully in accordance with the Manufacturer's written instructions, in an area that is protected from deleterious elements, and in a manner that will prevent damage to the products.

3-1.03. Handle materials in strict accordance with Manufacturer's written instructions.

3.2 PROJECT CONDITIONS

3-2.01. Comply with Manufacturer's written instructions for environmental conditions before, during, and after installation.

A. The CONTRACTOR shall make certain that the building is secured and free from weather elements prior to installing interior door hardware.

3-2.02. Protect surrounding WORK from damage that may result from operations under this Section.

3.3 INSPECTION

3-3.01. The CONTRACTOR shall be totally responsible for the proper performance and completion of the WORK under this Section.

3-3.02. Systems and components shall be inspected before installation.

A. Damaged or defective items shall be rejected and marked as such and shall be removed from the Site.

B. Exposed surfaces that exhibit pitting, seam marks, roller marks, stains, discoloration, or other surface imperfections on the finished units shall be rejected.

3-3.03. The CONTRACTOR shall verify dimensions, tolerances, and method of attachment with adjacent WORK.

A. Examine substrates, areas, and conditions where door hardware will be installed for compliance with the requirements for installation, taking into account tolerances, and other conditions affecting performance of installed door hardware.

1. Provide inserts, backing, blocking, anchoring devices, and reinforcements that must be built into other WORK for the installation of door hardware. Coordinate delivery with other WORK to avoid delay.

B. Notify the ENGINEER in writing of conditions detrimental to the proper and timely completion of the WORK. Do not proceed with the WORK until unsatisfactory conditions have been corrected in an acceptable manner.

C. Commencement of the installation by the CONTRACTOR shall indicate CONTRACTOR'S acceptance of the substrate, areas, and conditions.

3.4 PREPARATION

3-4.01. Sequence installation properly with the installation and protection of other WORK, so that neither will be damaged by the installation of the other.

3.5 INSTALLATION

3-5.01. Installation shall comply with the requirements of the Contract Documents, with applicable references, with the requirements of the CODE, ADAAG, ANSI A 117.1 and with Manufacturer's written instructions. Where a conflict occurs among these requirements, the more stringent shall apply, as directed by the ENGINEER.

A. Mount hardware units at heights indicated in the following applicable publications, except as specifically indicated or required to comply with the governing regulations.

1. The CONTRACTOR shall comply with DHI recommended locations for hardware as applicable for specified doors.

3-5.02. The CONTRACTOR shall provide corrosion resistant fasteners, anchors, and shims required for a complete installation, and shall be secure, plumb, and true to line, allowing for required movement, including expansion and contraction.

3-5.03. The CONTRACTOR shall provide separation of dissimilar materials to ensure no galvanic action occurs.

3-5.04. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing WORK specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

3.6 CLEANING, FINISHING, AND PROTECTION

3-6.01. Adhesive papers used for masking which become firmly bonded when exposed to heat and/or light shall not be used.

A. Remove masking film and temporary labels as soon as possible after installation. Films and labels left in place after installation shall be the responsibility of the CONTRACTOR.

B. Residue shall not be left on any surfaces.

3-6.02. Upon completion of the installation, door hardware and appurtenances shall be cleaned of dirt and other foreign matter to the satisfaction of the ENGINEER.

A. Cleaning shall be performed again immediately prior to acceptance of the WORK, when directed by the ENGINEER.

B. Cleaning shall be performed in accordance with the Manufacturer's written instructions.

3-6.03. Adjusting and cleaning shall consist of ensuring smooth operation, lubricating and testing the door hardware.

A. Door hardware shall operate smoothly, quietly, and without squeaking and binding.

1. The CONTRACTOR shall adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.

2. Latches and bolts shall be installed to automatically engage in keepers, whether activated by closers or by manual push. In no case should additional manual pressure be required to engage latch or bolt in keepers.

3. Closers and hinges shall be carefully adjusted to operate the doors noiselessly and evenly, and hinges shall be installed so as not to bind. Closers, closer arms, and hold-open arms shall be attached with sex bolts.

4. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3-6.04. Door hardware shall be protected from damage from subsequent construction operations.

3-6.05. The CONTRACTOR shall make adjustments required and retest until accepted.

3-6.06. The CONTRACTOR shall remove scratches and blemishes to the satisfaction of the ENGINEER.

3-6.07. Damaged or defective items shall be removed and replaced at the direction of the ENGINEER.

3-6.08. When door hardware WORK is completed, remove unused materials, containers, and equipment, and clean the Site of door hardware debris.

3-6.09. The hardware Supplier shall do a final inspection prior to Substantial Completion to ensure that all hardware has been correctly installed and is in proper working order and shall provide a written report of this inspection to the ENGINEER the file.

3.7 HARDWARE SCHEDULE

3-7.01. The following schedule is furnished for whatever assistance it may afford the CONTRACTOR. The CONTRACTOR shall not consider it as entirely inclusive. Should any particular door or item be omitted in any scheduled hardware group, the CONTRACTOR shall

provide door or item with hardware same as required for similar purposes as accepted by the ENGINEER, and at no additional cost to the OWNER. Quantities listed are for each pair of doors, or for each single door.

3-7.02. Abbreviations:

A. BO – By Others.

B. MC – McKinney.

C. RX – Rixson.

D. SA – Sargent.

E. PMD – painted to match door.

Hardware Schedule:

1. ED – Double Exterior Doors:

Quantity	Device	Description
Per Spec.	Hinges	
1	Exit Device (ANSI 08)	8613 ET
1	Exit Device (ANSI 02)	8610
2	Closer	180 Degrees with Hold Open
2	Kick Plates	
1	Threshold	Pemko 2005AV Mill Aluminum
1	Weatherstrip/Gasketing	Pemko S88D at Head and Jambs
1	Door Top Drip	Pemko 346 at Door Head
2	Door Bottom	Pemko 321DN Annodized Aluminum

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SECTION 09940 - PROTECTIVE COATINGS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers field applied protective coatings, including surface preparation, protection of surfaces, inspection, and other appurtenant work for equipment and surfaces designated to be coated with heavy-duty maintenance coatings. Regardless of the number of coats previously applied, at least two field coats in addition to any shop coats or field prime coats shall be applied to all surfaces unless otherwise specified.

1-2. GENERAL

1-2.01. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirements, Contractor shall comply with the manufacturer's minimum recommendations. When equivalent products are acceptable to Engineer, Contractor shall comply with this specification and the coating manufacturer's recommendations.

1-2.02. Governing Standards: All cleaning, surface preparation, coating application, thickness, testing, and coating materials (where available) shall be in accordance with the referenced standards of the following AWWA, ANSI, NACE, SSPC, NSF, and ASTM.

1-2.03. Delivery and Storage: All coating products shall be received and stored in accordance with the coating manufacturer's recommendations.

1-2.04 Coatings, Painting, and Linings Covered in Other Sections - Not used.

1-3. SUBMITTALS

1-3.01. Contractor shall submit color cards for all coatings proposed for use, together with complete descriptive specifications and the completed Coating System Data Sheets, to Engineer for review and color selection. Requests for review submitted directly to Engineer by coating suppliers will not be considered.

1-3.02. When the proposed products will be in contact with raw water, Contractor shall submit certifications that the proposed systems are in compliance with ANSI/NSF 61.

1-3.03. Contractor shall submit a Coating System Data Sheet for each separately identified surface in the Coating Schedule that will be used in the project. Each field coating system shall be acceptable to the coating material manufacturer. Each Coating System Data Sheet shall include application temperature limits including recoat time requirements for the ambient conditions at the site, including temperatures up to 130°F [54°C]. Temperature requirements shall be specified by the coating manufacturer.

1-3.04. Each proposed coating system shall be assigned a unique number with a prefix letter based on the following:

Prefix	Surfaces
A	Iron and steel
C	Concrete and concrete block
E	Equipment - submerged nonsubmerged
F	Nonferrous metal
G	Galvanized
H	High temperature
P	PVC and FRP

1-3.05. Each coating system that will be applied entirely in the field shall be assigned only a prefix letter and no suffix letter. When appropriate under the indicated conditions, the following suffix shall be added to the coating system numbers:

-F Each shop-applied coating system that includes a finish coat applied in the field.

1-3.06. A separate Coating System Data Sheet shall be developed and submitted for each variation or change in a coating system or surface to be coated.

1-3.07. The manufacturer’s standard colors will be acceptable for all coatings.

1-4. QUALITY ASSURANCE.

1-4.01. Coating System Data Sheet Certifications: The coating applicator and coating manufacturer shall review and approve in writing the coating manufacturer's written recommendations for the coating system and the intended service. Any variations from the specifications or the coating manufacturers published recommendations shall be submitted in writing and approved by the coating manufacturer. The coating manufacturer shall observe the surface preparation, mixing, and application of the coating systems and submit a written report of his observations and any additional recommendations.

1-4.02. Special Interior Coating Systems - Not used.

PART 2 - PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS.

2-1.01 Alternative Manufacturers: In addition to the coatings listed herein, equivalent products of the following manufacturers will also be acceptable:

PPG
Rust-Oleum

2-1.02. Equivalent Coatings: Whenever a coating is specified by the name of a proprietary product or of a particular manufacturer or vendor, it shall be understood as establishing the desired type and quality of coating. Other manufacturers' coatings will be accepted, provided that sufficient information is submitted to enable Engineer to determine that the proposed coatings are equivalent to those named. Information on proposed coatings shall be submitted for review in

accordance with the Submittals section. Requests for review of equivalency will be accepted only from Contractor, and will be considered only after the contract has been awarded.

2.2. MATERIALS

2-2.01. All coatings shall be delivered to the job in original, unopened containers, with labels intact. Coatings shall be stored indoors and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the coating formulation shall be added to the coating for any purpose.

2-2.02. All coatings shall conform to the air quality regulations applicable at the location of use. Coating materials that cannot be guaranteed by the manufacturer to conform, whether or not specified by product designation, shall not be used.

2-2.03. The coatings specified have been selected on the basis of the manufacturer's statement that the VOC content of the product is 2.8 lbs per gallon or less; however, it shall be the Contractor's responsibility to use only coating materials that are in compliance with the requirements of all regulatory agencies. Local regulations may require some coatings to have a lower VOC content than specified herein. The coatings specified may meet the VOC limits in the unthinned (as shipped) condition, but may exceed the limits if thinned according to the manufacturer's recommendations. In such case, the coatings shall not be thinned beyond the 2.8 lbs per gallon limit, and if the product cannot be thinned to suit the application method or temperature limits, another manufacturer's coating shall be used, subject to acceptance by Engineer.

2-2.04. Contractor shall be responsible for ensuring the compatibility of field coatings with each other or with any previously applied coatings. Coatings used in successive field coats shall be produced by the same manufacturer. The first field coat over shop coated or previously coated surfaces shall cause no wrinkling, lifting, or other damage to underlying coats.

2-2.05. All coatings used on surfaces that will be in contact with potable or treated water shall be certified as being in compliance with ANSI/NSF 61. Coatings that cannot be so certified, whether or not specified by manufacturer and by product designation, shall not be used.

2-2.06. Primers :

Universal Primer	Ameron "Amercoat 385 Epoxy", Carboline "Rustbond", ICI Devoe "Devran 224HS", Tnemec "Series 27 F.C. Typoxy", or Sherwin-Williams "Macropoxy 646".
Epoxy Concrete Block Filler	Ameron "Amerlock 400BF Epoxy Block Filler", Carboline "Sanitile 600", ICI Devoe "Blox Filler 4000", Tnemec "Series 54-660", or Sherwin-Williams "Kem Cati-Coat HS".
Epoxy Concrete Filler and Surfacer	Tnemec "Series 63-1500", Ameron NuKlad 114A, or Carboline "Carboguard 510".

2-2.07. Intermediate and Finish Coatings :

Epoxy Enamel (NSF certified systems)	
Ferrous Metal Surfaces and Concrete Surfaces in Contact with Treated or Raw Water in Potable Water Facilities	Ameron "Amerlock 400 High-Solids Epoxy Coating", Carboline "Carboguard 891", ICI Devoe "Bar-Rust 233H" Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "Macropoxy 646NSF"; immersion service.
Epoxy Enamel	
Concrete Floors	Ameron "Amerlock 400", Carboline "Carboguard 890", ICI Devoe "Devran 224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Armorseal 1000HS"; nonskid.
Ferrous Metal Surfaces and Masonry or Concrete Surfaces Other Than Floors	Ameron "Amercoat 385 Epoxy", Carboline "Carboguard 890", ICI Devoe Devran "224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Macropoxy 646".
Aliphatic Polyurethane	Ameron "Amercoat 450H", Carboline "Carbothane 134HG", ICI Devoe "Devthane 379H" Tnemec "Series 1074 Endura-Shield II", or Sherwin-Williams "Acrolon 218HS".
Coal Tar Epoxy	High-build coal tar epoxy; Ameron "Amercoat 78HB Coal Tar Epoxy", Carboline "Bitumastic 300 M", Tnemec "46H-413 Hi-Build Tneme-Tar", or Sherwin-Williams "Hi-Mil Sher-Tar Epoxy".
Medium Consistency Coal Tar	Carboline "Bitumastic 50" or Tnemec "46-465 H.B. Tnemecol".
Vinyl Ester	Tnemec "Series 120 Vinester" Carboline "Plasite 4110" or Sherwin-Williams "Magnalux 304FF".
Heat-Resistant	Suitable for temperatures up to 400°F [207°C]; Ameron "Amerlock 400", Carboline "Thermaline 450", Tnemec "43-36 Chrome Aluminum", or Sherwin-Williams "Silver-Brite Aluminum".

High Heat-Resistant	Suitable for temperatures up to 1000°F [537°C]; Ameron " Amercoat 878", Carboline "Thermaline 4700 VOC", Tnemec "Series 39 Silicone Aluminum" or Sherwin-Williams "Silver-Brite Hi-Heat Silicone Aluminum".

2-2.08. Vinyl Ester With Graphite Filler Coating System: The corrosion protection system shall be a two component, 100 percent solids, solvent-free, vinyl ester resin, graphite filled, high-build protective and waterproofing coating, Dudick "Protecto-Coat 805". Concrete surface primer shall be a catalyzed vinyl ester resin containing conductive fillers, 100 percent solids, Dudick "Primer 27C". Finish coats shall be a two component, 100 percent solids, solvent-free, graphite filled vinyl ester resin.

PART 3 - EXECUTION

3.1. SURFACE PREPARATION

3-1.01. All surfaces to be coated shall be clean and dry and shall meet the recommendations of the coating manufacturer for surface preparation. Freshly coated surfaces shall be protected from dust and other contaminants. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. The gloss on previously coated surfaces shall be dulled if necessary for proper adhesion of topcoats.

3-1.02. Surfaces shall be free of cracks, pits, projections, or other imperfections that would interfere with the formation of a smooth, unbroken coating film, except for concrete block construction where a rough surface is an inherent characteristic.

3-1.03. When applying touchup coating or repairing previously coated surfaces, the surfaces to be coated shall be cleaned as recommended by the coating manufacturer, and the edges of the repaired area shall be feathered by sanding or wire brushing to produce a smooth transition that will not be noticeable after the coating is applied. All coatings made brittle or otherwise damaged by heat of welding shall be completely removed.

3-1.04. Galvanized Surfaces: Galvanized surfaces shall be prepared for coating according to the instructions of the manufacturer of the epoxy enamel. Any chemical treatment of galvanized surfaces shall be followed by thorough rinsing with clean water.

3-1.05. Ferrous Metal Surfaces: Ungalvanized ferrous metal surfaces shall be prepared for coating by using one or more of the following cleaning procedures as specified: solvents (SSPC-SP1); blasting (SSPC-SP5, -SP6, -SP7, or -SP10); power tools (SSPC-SP3 or -SP11); or hand tools (SSPC-SP2). Oil and grease shall be completely removed in accordance with SSPC-SP1 before beginning any other cleaning method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used.

3-1.06. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible

after installation shall have the surfaces prepared and coated before installation. Motors, drive trains, and bearings shall be protected during surface preparation in accordance with the equipment manufacturer's recommendations.

3-1.07. All cut or sheared edges shall be ground smooth to a 1/8 inch minimum radius for all material 1/4 inch thickness and larger. For material thickness less than 1/4 inch all cut or sheared edges shall be ground smooth to a radius equal to 1/2 the material thickness. Grinding of rolled edges on standard shapes with a minimum radius of the 1/16 inch will not be required.

3-1.08. All ferrous metal surfaces shall have all welds ground smooth and free of all defects in accordance with NACE Standard RPO178, Appendix C, Designation C and sharp edges ground smooth, if not previously prepared in the shop. Instead of blending of the weld with the base metal as required by the NACE standard, it will be acceptable to furnish a welded joint that has a smooth transition of the weld to the base metal. All welds shall be ground smooth to ensure satisfactory adhesion of paint.

3-1.09. The cleaning methods and surface profiles specified herein are minimums, and if the requirements printed in the coating manufacturer's data sheets exceed the limits specified, the value printed on the data sheets shall become the minimum requirement.

3-1.10. Ferrous Metal Surfaces – Non-immersion Service: Ferrous metal surfaces, including fabricated equipment, in non-immersion service shall be cleaned to the degree recommended by the coating manufacturer for surfaces to be coated with coal tar epoxy, epoxy enamel, and heat-resistant coatings, except galvanized surfaces. Blast cleaning to at least SSPC-SP6 shall be used where recommended by the coating manufacturer, and may be used elsewhere at the option of Contractor, provided that no dust is permitted to settle on adjacent wet coating. Surface profile shall be as recommended by coating manufacturer, but not less than 2 mils.

3-1.11. Ferrous Metal Surfaces: Immersion Service. Surface preparation of ferrous metal surfaces in immersion service shall consist of blast cleaning to at least SSPC-SP10 and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 3.5 mils.

3-1.12. Concrete Surfaces: All concrete surfaces shall be free of objectionable substances and shall meet the coating manufacturer's recommendations for surface preparation. Any other surface preparation recommended by the coating material manufacturer shall be brought to Engineer's attention and may be incorporated into the work if acceptable to Engineer.

3-1.13. All concrete surfaces shall be dry when coated and free from dirt, dust, sand, mud, oil, grease, and other objectionable substances. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started.

3-1.14. New concrete shall have cured for at least 4 weeks before coating is applied as recommended by the material manufacturer. Concrete surfaces shall be tested for capillary moisture in accordance with ASTM D4263. There shall be no capillary moisture when coatings are applied on concrete.

3-1.15. All surfaces to be coated shall be cleaned in accordance with ASTM D4258 and abraded in accordance with ASTM D4259. Surface profile shall be at least 25 percent of the dry

film thickness specified for the coating system. Prior to application of the coating, the surfaces shall be thoroughly washed or cleaned by air blasting to remove all dust and residue. Spalled areas, voids, and cracks shall be repaired in accordance with the Concrete section and as acceptable to the Engineer. Fins and other surface projections shall be removed to provide a flush surface before application of coating.

3-1.16. Except where epoxy enamel is applied as damp-proofing, the concrete surfaces, including those with bug holes less than 1 inch in any dimension, shall be prepared when required and as recommended by the manufacturer, using an epoxy concrete filler and surfacer. Where coating with a vinyl ester the concrete filler and surfacer shall be as recommended by the manufacturer to be compatible with vinyl ester.

3-1.17. Concrete Block Surfaces: Voids and openings in concrete block surfaces shall be pointed. All exposed exterior surfaces and surfaces to be coated with epoxy enamel, including the joints, shall be filled so that a continuous unbroken coating film is obtained.

3-1.18. Copper Tubing: All flux residue shall be removed from joints in copper tubing. Immediately before coating is started, tubing shall be wiped with a clean rag soaked in xylol.

3-1.19. Plastic Surfaces: All wax and oil shall be removed from plastic surfaces that are to be coated, including PVC and FRP, by wiping with a solvent compatible with the specified coating.

3-1.20. Hardware: Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to coating if there is no evidence of dirt, corrosion, or foreign material.

3-1.21. Aluminum: When a coating system is required, remove all oil or deleterious substance with neutral detergent or emulsion cleaner or blast lightly with fine abrasive.

3-1.22. Stainless Steel: When a coating system is required, surface preparation shall conform to the coating manufacturer's recommendations.

3.2. MIXING AND THINNING

3-2.01. Coating shall be thoroughly mixed each time any is withdrawn from the container. Coating containers shall be kept tightly closed except while coating is being withdrawn.

3-2.02. Coating shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied coating be reduced, by addition of coating thinner or otherwise, below the thickness recommended by the coating manufacturer. Thinning shall be done in compliance with all applicable air quality regulations.

3.3. APPLICATION

3-3.01. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be thoroughly dry and hard before the next coat is applied. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer.

3-3.02. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.

3-3.03. Priming: Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) of primer before application of the primer coat. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating.

3-3.040. Abraded and otherwise damaged portions of shop-applied coating shall be cleaned and recoated as recommended by the manufacturer of the finish coating. Welded seams and other uncoated surfaces, heads and nuts of field-installed bolts, and surfaces where coating has been damaged by heat shall be given a brush coat of the specified primer. Before the specified spot or touchup coating of metal surfaces, edges, corners, crevices, welds, and bolts in the area of the spot or touchup coating shall be given a brush coat of primer. This patch, spot, or touchup coating shall be completed, and the paint film shall be dry and hard, before additional coating is applied.

3-3.05. Epoxy Enamel. When used, epoxy enamel shall be applied in accordance with the coating manufacturer's recommendations, including temperature limitations and protection from sunlight until top-coated.

3-3.06. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

3-3.07. When applying high build epoxy coatings with a roller or brush and where a dry film thickness of at least 4-6 mils per coat is required, two or more coats shall be applied to achieve the recommended dry film thickness equal to a spray applied coating.

3-3.08. Coal Tar Epoxy. When used, the application of coal tar epoxy, including time limits for recoating, shall conform to the recommendations of the coating manufacturer.

3-3.09. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

3-3.10. Vinyl Ester. When used, the application of vinyl ester coating system, including time limits for recoating and temperature requirements of the materials, shall conform to the recommendations of the coating manufacturer.

3-3.11. Film Thickness. The total coating film thickness including intermediate coats and finish coat, shall be not less than the following:

Type of Coating	Minimum Dry Film Thickness
Medium consistency coal tar	20 mils.
Coal tar epoxy (two coats)	20 mils.
Epoxy enamel	
Floors	5 mils.

Type of Coating	Minimum Dry Film Thickness
Surfaces with first coat of epoxy enamel and final coat of aliphatic polyurethane	7 mils (5 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Surfaces with first and second coat of epoxy enamel and final coat of aliphatic polyurethane	12 mils (10 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Other surfaces (two coats)	10 mils.
Immersion service (three coats)	15 mils.
Vinyl ester	30 mils.
Heat-resistant (silicone)	3 mils.
High heat-resistant (silicone)	3 mils.
Other surfaces (one coat)	5 mils.
Other surfaces (two coats)	10 mils.

3-3.12. Weather Conditions. Coatings shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied coating.

3-3.13. Coatings shall not be applied at temperatures lower than the minimum temperature recommended by the coating manufacturer, or to metal surfaces such as tanks or pipe containing cold water, regardless of the air temperature, when metal conditions are likely to cause condensation. When necessary for proper application, a temporary enclosure shall be erected and kept heated until the coating has fully cured.

3-3.14. Coatings shall not be applied at temperatures higher than the maximum temperature recommended by the coating manufacturer. Where coatings are applied during periods of elevated ambient temperatures, Contractor and the coatings manufacturer shall be jointly responsible to ensure that proper application is performed including adherence to all re-coat window requirements. Precautions shall be taken to reduce the temperature of the surface application, especially for metal, at elevated temperatures above 100°F [38°C] including shading application area from direct sunlight, applying coating in the evening or at night, and ventilating the area to reduce the humidity and temperature,

3-3.15. Vinyl ester coating materials, when required, shall be maintained during transportation, storage, mixing, and application at the temperature required by the coating manufacturer, 35°F [2°C] to 90°F [32°C].

3.4. REPAIRING FACTORY FINISHED SURFACES

3-4.01. Factory finished surfaces damaged prior to acceptance by Owner shall be spot primed and recoated with materials equivalent to the original coatings. If, in the opinion of Engineer, spot repair of the damaged area is not satisfactory, the entire surface or item shall be recoated.

3.5. PROTECTION OF SURFACES.

3-5.01. Throughout the work Contractor shall use drop cloths, masking tape, and other suitable measures to protect adjacent surfaces. Contractor shall be responsible for correcting and repairing any damage resulting from its or its subcontractors' operations. Coatings spilled or spattered on adjacent surfaces which are not being coated at the time shall be immediately removed. Exposed concrete or masonry not specified to be coated which is damaged by coatings

shall be either removed and rebuilt or, where authorized by Owner, coated with two coats of masonry coating.

3.6. FIELD QUALITY CONTROL.

3-6.01. The following inspection and testing shall be performed: surface profile, visual inspection, and wet and dry film thickness testing. All inspection and testing shall be witnessed by Engineer.

3-6.02. Surface Profile Testing. The surface profile for ferrous metal surfaces shall be measured for compliance with the specified minimum profile. The surface profile for concrete shall comply with SSPC 13/NACE 6 Table 1 for severe service.

3-6.03. Visual Inspection. The surface of the protective coatings shall be visually inspected.

3.6.04. Film Thickness. Coating film thickness shall be verified by measuring the film thickness of each coat as it is applied and the dry film thickness of the entire system. Wet film thickness shall be measured with a gauge that will measure the wet film thickness within an accuracy of ±0.5 mil. Dry film thickness shall be measured in accordance with SSPC-PA 2.

3-6.05. Spark Testing. Not required.

3-6.06. Adhesion Testing. Not required.

3.7. FIELD PRIMING SCHEDULE.

3-7.01. In general, steel and cast iron surfaces of equipment are specified to be shop primed. Any such surfaces which have not been shop primed shall be field primed. Damaged or failed shop coatings which have been determined unsuitable by Engineer shall be removed and the surfaces shall be field coated, including prime coat (if any). Galvanized, aluminum, stainless steel, and insulated surfaces shall be field primed. Primers used for field priming, unless otherwise required for repair of shop primers, shall be:

Surface To Be Primed	Material
Equipment, surfaces to be coated with	
Aliphatic polyurethane	Universal primer.
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.
Vinyl ester	Same as finish coats.
Steel and cast iron, surfaces to be coated with	
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.
Aluminum	Epoxy enamel.
Galvanized	Epoxy enamel.
Copper	Epoxy enamel.
Stainless steel	Epoxy enamel.
Plastic surfaces, including PVC and FRP	Same as finish coats.

Surface To Be Primed	Material
Insulated piping	As recommended by manufacturer of finish coats.
Concrete, surfaces to be coated with epoxy enamel	
For damp-proofing	Epoxy enamel.
For all other surfaces	Epoxy concrete filler and surfacer.
Concrete block exposed in exterior locations	Epoxy concrete block filler.
Concrete block to be coated with epoxy enamel	Epoxy concrete block filler.

3-7.02. Unless otherwise recommended by the coating manufacturer or specified herein, priming will not be required on concrete, or concrete block, nor on metal surfaces specified to be coated with epoxy enamel, coal tar epoxy, and heat-resistant coatings. Concrete surfaces to be coated with epoxy enamel shall be filled with epoxy concrete filler and surfacer so that a continuous film is obtained, except where concrete is damp-proofed with epoxy enamel.

3.8. FINISH COATING SYSTEMS.

3-8.01. The following schedule lists coatings systems and coating system designations.

No.	Finish Coating Systems	Coating System Designation						
		A	C	E	F	G	H	P
1.	Epoxy enamel – One coat	x			x	x		
2.	Epoxy enamel – Two coats	x	x	x	x	x		x
3.	Epoxy enamel / NSF – Two coats		x	x				
4.	Epoxy enamel – Three coats	x	x	x				
5.	Epoxy enamel / NSF – Three coats		x	x				
6.	Epoxy enamel – First coat Aliphatic polyurethane – Finish coat	x	x	x	x	x		x
7.	Epoxy enamel – First and second coat Aliphatic polyurethane – Finish coat			x	x	x		
8.	Universal primer – First coat Aliphatic polyurethane – Finish coat	x		x				
9.	Medium consistency coal tar – Two coats	x	x	x				
10.	Coal tar epoxy – Two coats	x	x	x				
11.	Vinyl ester – Two coats			x				
12.	Heat resistant – Two coats						x	
13.	High heat resistant – Two coats						x	

3-8.02. Surfaces Not To Be Coated. Unless otherwise specified, the following surfaces shall be left uncoated:

a. Exposed aluminum, except ductwork.
b. Polished or finished stainless steel. Unfinished stainless steel, except flashings and counter flashings, shall be coated.
c. Nickel or chromium.
d. Galvanized surfaces, except piping, conduit, ductwork, and other items specifically noted.
e. Rubber and plastics, except as specified.
f. Exterior concrete.
g. Surfaces specified to be factory finished.

3-8.03. Shop Finishing. Items to be shop finished include the following. Shop finishing shall be in accordance with the coating schedule and the manufacturer's recommendations.

a. All pumps and valves.
b. Exhaust fans.

3-8.04. Field Coating. Items to be field coated include the following. Field coating shall be in accordance with the field priming schedule, the coating schedule, and the manufacturer's recommendations.

a. Surfaces not indicated to be shop finished and surfaces where blast cleaning can be performed in the field.
b. All interior ferrous metal surfaces except stainless steel.
c. Other items as otherwise specified.

3.9. METAL SURFACES COATING SCHEDULE

Surface To Be Coated	Finish Coating System
Non-galvanized structural and miscellaneous steel exposed to view or to the elements in exterior locations.	A6
Non-galvanized structural and miscellaneous steel exposed to view inside buildings.	A2
Unless otherwise specified, pumps, motors, speed reducers, and other machines and equipment exposed to view.	E8
Electrical equipment cabinets, and similar Items and equipment (unless factory finished) exposed to view.	E8
Cast Iron, ductile iron, and steel piping inside buildings, including valves, fittings, flanges, bolts, supports, and accessories, and galvanized surfaces after proper priming.	A2

Surface To Be Coated	Finish Coating System
Supports and miscellaneous metal for equipment handling corrosive chemicals.	Indoor - A2
Aluminum in contact with concrete.	F1
Aluminum and galvanized ductwork and conduit indoors.	F2 or G2
Aluminum and galvanized ductwork and conduit exposed to elements outdoors.	F7 or G7
Ductile iron piping, fittings, supports, valves, bolts, and accessories exposed above grade	A8

3.10. CONCRETE AND MASONRY SURFACES COATING SCHEDULE.

Surface To Be Coated	Finish Coating System
Concrete adjacent to corrosive chemical storage and feed equipment.	Vinyl Ester With Graphite Filler

3.11 MISCELLANEOUS SURFACES COATING SCHEDULE. - Not Used

3-12. PIPING IDENTIFICATION SCHEDULE

3-12.01. Exposed piping and piping in accessible chases shall be identified with lettering or tags designating the service of each piping system, marked with flow directional arrows, and color coded.

3-12.02. Piping scheduled to be color coded shall be completely coated with the indicated colors, except surfaces specified to remain uncoated shall include sufficiently long segments of the specified color to accommodate the lettering and arrows. All other piping shall be coated to match adjacent surfaces, unless otherwise directed by Engineer.

3-12.03. Location. Lettering and flow direction arrows shall be provided on pipe near the equipment served, adjacent to valves, on both sides of wall and floor penetrations, at each branch or tee, and at least every 50 feet in straight runs of pipe. If, in the opinion of Engineer, this requirement will result in an excessive number of labels or arrows, the number required shall be reduced as directed.

3-12.04. Lettering. Lettering shall be a vinyl label on piping or shall be applied as snap-on markers. Snap-on markers shall be plastic sleeves, Brady "Bradysnap-On B-915" or Seton "Setmark". Letter size shall be as follows:

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5/8 inch and smaller	Metal tags -1/4 inch
3/4 to 4 inches	3/4 inch

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5 inches and larger	2 inches

3-12.05. Color Coding and Lettering. All piping for the following services shall be color coded. Bands shall be 6 inches wide spaced along the pipe at 5 foot intervals. For services not listed, the color coding and lettering shall be as directed by the Engineer.

Piping Identification		
Service	**Color of Pipe**	**Color of Letters**
Ammonia	White	Black
Chlorine (solution)	Yellow	Black
Drain	Dark gray	White
Fire Protection Water	Red	White
Nonpotable or Raw Water	Clover (Tnemec)	Black
Plumbing Vents	Dark gray	White
Potable Water (hot or cold)	Safety blue	Black
Sample	Safety blue	Black
Service Water	Safety blue	Black
Caustic	Yellow with green bands	Black

3-12.06. Electrical conduit (with the exception of galvanized) shall be coated to match adjacent ceiling or wall surfaces as directed by Engineer. Vent lines shall be coated to match surfaces they adjoin.

3-12.07. In addition, special coating of the following items will be required:

Item	Color
Valve handwheels and levers	Match service piping color
Hoist hooks and blocks	Yellow and black stripes

3-12.08. Numerals at least 2 inches high shall be painted on or adjacent to all accessible valves, pumps, flowmeters, and other items of equipment which are identified on the drawings or in the specifications by number.

End of Section

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Section 10050
WELL REHABILITATION AND SPECIFIC CAPACITY TESTING

PART 1 – GENERAL

1-1 THE SUMMARY

This specification describes the scope of work needed for the typical rehabilitation of production wells that have lost specific capacity due to the precipitation of minerals (calcium carbonate) or biofouling caused by slime-producing bacteria that reduce the porosity and permeability of a well's production interval. These wells typically require mechanical brushing of the casing and jet development of the open hole to remove sediment or organic debris, disinfection and stimulation (acidization) using high concentration acid and well development. The CONTRACTOR should be prepared to access any wells within the wellfield that are deemed in need of rehabilitation. In addition, the construction specifications of the production wells may differ considerably, therefore the CONTRACTOR should review the specifications of all the wells within the wellfield to gain an understanding of typical casing and open hole diameters as well as casing and total depths.

The CONTRACTOR shall provide all labor, materials, transportation, tools, supplies, services, equipment, and appurtenances, unless specifically accepted hereinafter, required to complete the testing, evaluation and rehabilitation of the production wells.

1-2 REFERENCES

A. Standards referenced in this Section are listed below:

1. American Water Works Association (AWWA)

a) AWWA Standard for Water Wells

2. American National Standards Institute (ANSI)

a) ANSI 60 standard for Disinfection Chemicals used for Drinking Water Treatment

1-3 CONTRACTOR SUBMITTALS

A. The following information will be submitted by the CONTRACTOR to the ENGINEER for approval prior to the start of rehabilitation activities. The submittal shall include, but is not limited to the following items:

a. Equipment List
b. Calibration reporting for all flow meters
c. Information sheets for geophysical logging tools
d. List of subcontractors
e. Certified transport and site to dispose of any solids and liquid acids
f. Identification of laydown and storage areas for the pump and drop pipe appurtenances and other equipment.
g. Identification of OWNER-approved discharge areas
h. Certification for handling of acid and equipment, including safety plan
i. Field Work Schedule
j. Proposed methods for collecting and disposal of fluids including acid residuals,

development and test water

k. Well development plan including sediment removal methods and pumping systems
l. Size and volume of fractionation tank(s) need to complete activities
m. Acidization plan including list of acid vendor(s) and layout of equipment

B. Driller's Log shall be filled out and kept at the site for review by the ENGINEER at the end of each week. Electronic copies of this log shall be submitted to the ENGINEER. This log shall contain, but not limited to, the following information for each day's activity:

a. Number of crew on the Site and name of superintendent for each shift
b. Rehabilitation activities completed each day
c. Flow rates, test data and water quality samples collected
d. Emergency phone numbers of personnel involved in rehabilitation work

1-4 QUALITY ASSURANCE

A. Records:

1. The tests, records and daily logs, as described in 1-3(B), will be reviewed to assure the quality of the rehabilitation and site restoration prior to acceptance of Work by the ENGINEER.

B. The OWNER and ENGINEER will perform technical observation of all rehabilitation activities. The CONTRACTOR shall cooperate with the ENGINEER in performing this observation, which shall include, but not be limited to, specific capacity testing, pump string inspection, geophysical logging, down-hole video logs, mechanical scrubbing, jet development, acidization and well development.

C. Products used in the Work specified under this Specification shall be provided by manufacturers regularly engaged in the production of such items that have a successful history of product acceptability, as interpreted by the ENGINEER. Equipment of less quality or of inferior design to that specified will not be accepted.

D. The CONTRACTOR shall provide a Project Superintendent specific to this project as a supervisor to oversee proper performance of the Work. The Project Superintendent shall attend all meetings and have the authority to make decisions on behalf of the CONTRACTOR. Field personnel or designated responsible personnel shall be in attendance at the site at a minimum of once a day to evaluate the construction and to prepare a daily job report. The Project Superintendent shall be responsible for all coordination, document handling, submittal review and processing, quality control, and project scheduling. The Project Superintendent once approved by the ENGINEER shall not be replaced without prior consent by the ENGINEER.

1. The Project Superintendent shall be a direct employee of the CONTRACTOR.

2. The Project Superintendent shall fluently speak, read, and write in English.

PART 2 – PRODUCTS

2.1 MATERIALS

A. A nylon Casing Brush of appropriate diameter for each well similar to the J400 cleaning

brushes manufactured by Cotey Chemical Corporation or equivalent that is safe for brushing polyvinyl chloride (PVC) or stainless steel (SST) well casing.

B. A Jetting Tool recommended and provided by the CONTRACTOR and approved by the ENGINEER capable of creating a maximum water velocity of 25 feet per second horizontal flow within the open-hole interval. The jetting tool shall have a minimum of four horizontal jets, equally spaced at 90 degrees apart and be able to rotate 360 degrees.

C. A Sulfate-Reducing Bacteria (SRB), Iron-Reducing Bacteria (IRB) and SLYM-BART™ tester for each well, similar to the Biological Activity Reaction Test (BART) kits manufactured by HACH (Part No. 2434809).

D. Up to 5,000 gallons of 20 Baume (32%) Hydrochloric Acid with Inhibitor in acid totes or tanker from a reputable acid vendor for each well. The volume of acid needed for each well will be calculated by the ENGINEER and coordinated with the CONTRACTOR prior during the preconstruction meeting.

E. Sodium Bisulfate for water dichlorination prior to discharge.

F. Sodium Hypochlorite and/or calcium hypochlorite for well disinfection.

PART 3 – EXECUTION

The selected CONTRACTOR is required to attend a pre-construction meeting and well site visit with the OWNER and ENGINEER to be held at a meeting location to be determined by the OWNER to discuss the schedule and coordination necessary to complete the following tasks.

3-1 SPECIFIC CAPACITY TESTING AND WELLHEAD DISASSEMBLY

A. The CONTRACTOR shall perform pre-rehabilitation specific capacity testing, utilizing the OWNER's existing pump. The anticipated flow rate for all specific capacity testing is anticipated to range between 1,400 and 2,000 gallons per minute (gpm).

B. The CONTRACTOR shall assist the on-site ENGINEER with measuring the static and dynamic water levels in the well before, during and after specific capacity testing.

C. The CONTRACTOR shall furnish and install a pressure transducer to monitor water levels in the well before, during and after specific capacity testing. The transducer shall be placed at a depth of at least 75 feet bls and approved by the ENGINEER.

D. The pump must be turned off for at least 30 minutes prior to testing and after installation of the transducer, allowing background data collection of static conditions. The specific capacity test shall be run for one (1) hour with water level recording occurring in 1 second intervals. If needed, the CONTRACTOR shall adjust the flow rate so that the test can be run continuously for the full hour without pump cavitation. After the one (1) hour test, the pump shall be turned off and the

transducer shall remain in the well for an additional 30 minutes to collect water level recovery data.

E. The CONTRACTOR shall provide the testing kits and collect bacteriological samples using Sulfate-Reducing Bacteria (SRB), Iron-Reducing Bacteria (IRB) and SLYM-BART™ testers, similar to the BART testing kits manufactured by HACH, for collection after pre- rehabilitation specific capacity testing for both wells.

F. Following pre-rehabilitation specific capacity testing and prior to wellhead disassembly, the CONTRACTOR shall, to the satisfaction of the OWNER, properly shut off and temporarily disconnect power and all wiring from the wellhead. The CONTRACTOR shall coordinate with the on-site ENGINEER during well shut off and disassembly of wellhead. The on- site ENGINEER will communicate with OWNER staff to shut down the well from the OWNER's control center and will communicate with the CONTRACTOR when confirmation has been received from OWNER. The CONTRACTOR shall not disconnect power or manually shut down or disconnect the pumping equipment without coordinating with the on-site ENGINEER. The CONTRACTOR shall be responsible for damage to OWNER's equipment if the proper shut-down and disconnection procedures are not followed to OWNER's satisfaction. No more than two (2) wells can be shut off at any given time.

G. The CONTRACTOR shall carefully disassemble the wellhead and remove/disassemble the pump string as necessary and make every effort to control flow and minimize well discharge from the site. A thorough inspection shall be conducted while carefully disassembling the wellhead, including bolts, flanges, drop-pipe, couplings, O-Ring Seals, mechanical seals and/or other hardware.

H. The CONTRACTOR shall inspect the drop-pipe, pump wiring (if applicable) and pump assembly for visible signs of wear or damage and immediately coordinate with the on-site ENGINEER if replacement of hardware or repairs to the wellhead pump or wiring is deemed necessary. Each disassembled section of the pump string, including vertical turbine bowls, shall be carefully laid out on elevated plastic sheeting immediately adjacent to the well. The plastic sheeting must be of a suitable thickness (minimum of 6 mils) and be large enough so that it can be folded over to cover all pump string sections. The plastic sheeting must be secured in a manner to prevent direct exposure of the pump string during all testing, evaluation and rehabilitation activities. The ENGINEER shall coordinate with OWNER to determine the level of repair, the availability of the hardware and whether the CONTRACTOR'S Owner’s Allowance will need to be utilized.

3-2 PRE AND POST REHABILITATION GEOPHYSICAL LOGGING

A. The CONTRACTOR shall coordinate with the on-site ENGINEER to schedule geophysical and video logging for all fifteen (15) wells that will remain active. Geophysical logging of the wells shall be conducted pre rehabilitation activities as described in specification 11213.

The following pre rehabilitation geophysical logs are required during this project:

1. Four-Arm X-Y Caliper with Theoretical Borehole Volume (TBHV) calculations
2. Natural Gamma Ray
3. Dual Induction
4. Spontaneous-Potential
5. Fluid Temperature with Differential (static and dynamic)
    a. Fluid Resistivity/Conductivity/TDS (static and dynamic)
    b. Flow Meter (static and dynamic)
6. Flow Interpretation Log (Flow calculated from 0 to 100%)
7. Dynamic Color Video Survey (DCVS) - Color Dual-Axis Video (full 90-degree tilt) under dynamic conditions (water clarity must allow full view of casing and borehole).

The CONTRACTOR shall conduct post rehabilitation geophysical logs only on wells that have received rehabilitation according to section 3-4

B. The CONTRACTOR shall be required to provide geophysical logging data deliverables for the well. Each log will be submitted to the ENGINEER with a scale of 5 inches = 100 feet. The required deliverables are as follows:

1. Two (2) field copies of the recorded data (Hard Copy) delivered the day of logging.
2. Two (2) Copies of the electronic log files provided in Portable Document Format (PDF) delivered via thumb-drives or through email and file sharing links within 5 (5) days of logging the well.
3. Two (2) electronic copies of the video log should be delivered within 5 (5) days of the logging of the well.

3-3 BACTERIAL CLEARANCE

A. After all rehabilitation activities have been completed and the wellhead has been reassembled, the CONTRACTOR shall sanitize each well, pump and pump column using proper disinfection techniques in accordance with Sections 1 - 4 and Section 5.2 of American Water Works Association (AWWA) Standard C654, as incorporated into Rule 62-555.330, F.A.C. Proper sanitization includes a chlorine concentration of at least 50 mg/L for a minimum of 8 hours. Either sodium hypochlorite or calcium hypochlorite that meets NSF/ANSI 60 standard for chemicals used in sanitizing drinking water systems shall be used. At no time shall the chlorine concentration within the well exceed 200 mg/L. Any damage to the OWNER's equipment due to excessive chlorine concentrations shall be the responsibility of the well CONTRACTOR.

B. After a minimum of 8 hours shut-in time, the CONTRACTOR shall flush the well and piping to remove all chlorinated water to yield a “zero” chlorine residual. All water pumped from the well must be properly collected in a tank and dechlorinated using sodium bisulfite before disposal to a pre-approved discharge area. Field testing to ensure a chlorine residual of zero prior to disposal is required.

C. IF WELL IS OFFLINE FOR LESS THAN 6 MONTHS: In accordance with Rule 62-555.315(6)(a) and (c), the CONTRACTOR shall be required to contract a NELAC-certified lab to collect two (2) bacteria samples (Total Coliform Only) taken on separate days with at least six (6) hours between samples. The well must be purged for at least 15 minutes with no chlorine residual prior to sampling. Detection of any residual chlorine (>0.0 mg/L) will negate the bacteria results. The well can only be put back into service once the results of both consecutive bacteria samples are deemed negative and the results have been received from the lab. If either of the samples are positive for Total Coliform, the well must be re-sampled until two consecutive samples show the absence of coliform. The CONTRACTOR shall be responsible for clearance of the well to be placed back online including any additional bacteria samples required and/or additional disinfection if deemed necessary in coordination with the OWNER or ENGINEER. The CONTRACTOR shall work with the on- site ENGINEER and OWNER staff to discuss purging techniques for bacteria sampling prior to scheduling.

D. IF WELL IS OFFLINE FOR MORE THAN 6 MONTHS: In accordance with Rule 62-555.315(6)(a) and (b), the CONTRACTOR shall be required to contract a NELAC-certified lab to collect at least twenty (20) bacteria samples (Total Coliform and E. Coli). The CONTRACTOR may request from the FDEP that the number of bacteria samples be reduced to ten (10) samples. Up to two (2) samples may be collected on the same day if they are collected at least six (6) hours apart. The well must be purged for at least 15 minutes with no chlorine residual prior to sampling. Detection of any residual chlorine (>0.0 mg/L) will negate the bacteria results. If any sample shows the presence of E. coli or if more than ten percent (>1 sample) of the total number of samples collected show the presence of total coliform or if either of the last two samples collected shows the presence of total coliform, the well shall be required to be re-disinfected. The CONTRACTOR shall be responsible for clearance of the well to be placed back online including any additional bacteria samples required and/or additional disinfection if deemed necessary in coordination with the OWNER or ENGINEER. The CONTRACTOR shall work with the on-site ENGINEER and OWNER staff to discuss purging techniques for bacteria sampling prior to scheduling.

3-4 REHABILITATION OF PRODUCTION WELLS

A. The CONTRACTOR shall conduct pre-rehabilitation specific capacity testing in accordance with Section 3-1 and pre-rehabilitation geophysical logging in accordance with Section 3-2 for fifteen (15) wells prior to removing the existing pump and motor equipment.

B. Approval to proceed with well rehabilitation will be determined by the OWNER and ENGINEER based the results of geophysical logging of the wells and pre-rehabilitation specific capacity testing.

C. The CONTRACTOR shall brush the casing using a casing brush of appropriate diameter for each well as manufactured by Cotey Chemical Corporation or equivalent as approved by the OWNER AND/OR on-site ENGINEER, which is safe for brushing polyvinyl chloride (PVC) and stainless steel (SST) well casing. The CONTRACTOR shall introduce approximately 10 pounds of calcium hypochlorite granules to the well while brushing to neutralize any biofouling present. The casing brush shall run up and down the entire length of the casing a minimum of three times. After receiving the ENGINEER's authorization to proceed, the CONTRACTOR shall commence well development using a combination of air development, pump development and jet development using an approved jetting tool.

    1. The CONTRACTOR shall recommend and provide a jetting tool capable of creating a maximum water velocity of 25 feet per second horizontal flow within the open-hole interval. The jetting tool shall have a minimum of four horizontal jets, equally spaced at 90 degrees apart. The total flow rate delivered to the jetting tool shall not be more than 500 gpm.

    2. The CONTRACTOR shall rotate, raise, and lower the jetting tool in 30-foot sections (or other interval depending on the length of the drill rod or hydril tubing) throughout the open-hole interval or as directed by the OWNER and/or ENGINEER. The CONTRACTOR shall raise and lower the jetting tool no faster than 10 feet per minute during jet development. The CONTRACTOR shall make as many passes as required to ensure complete development but no fewer than three (3). Jet development shall not be performed within 10 feet of the bottom of casing to preserve the integrity of the well seal.

    3. Water for jetting shall be recycled using settling tanks. Prior to reintroduction into the borehole, jetting water shall be chlorinated to obtain a 50-parts per million (ppm) concentration. Water shall be clear and free of sand and suspended solids prior to reintroduction into the well. The CONTRACTOR shall use all means necessary to settle, clean, and chlorinate water prior to reintroduction into the well, including but not limited to the use of settling tanks.

D. The CONTRACTOR shall install an eductor or reverse airlift pipe at the base of the borehole to clear material from the base of the borehole. The water shall be directed into on-site settling tanks and dechlorinated with sodium bisulfate prior to discharge. The location of water discharge shall be coordinated with the ENGINEER and approved by OWNER. Best practices shall be used to minimize turbidity and erosion from the discharge. The CONTRACTOR shall be responsible for meeting all regulatory requirements for disposing of discharged groundwater from the well safely and

properly using Best Management Practices (BMPs). The chlorine residual in the well shall be tested to be less than 0.1 ppm prior to acidization. The CONTRACTOR shall be responsible for providing water on-site.

E. The WELL CONTRACTOR shall acidize the well as follows:

1. Install temporary, high-pressure, steel header at wellhead with injection ports, pressure gauges, a pressure relief discharge line and pressure-relief valves. A minimum 10,000-gallon tank should be available onsite to contain all discharge from the well.

2. Install 2-inch-diameter freshwater injection tubing to approximately 20 to 30 feet above the acid injection line as directed by the ENGINEER. Install 2-inch- diameter acid injection tubing shall be placed five (5) feet above the bottom on the casing or as directed by the on-site ENGINEER. The tubing and fittings are to be mild steel. No galvanized pipe shall come in contact with the acid.

3. Inject freshwater into freshwater tubing for ½ hour at an approximate rate of 50 gpm and evaluate flow versus wellhead pressure.

4. Evacuate air from the well casing and wellhead.

5. Begin acid injection of up to ½ of the total acid volume of 20 Baume (32%) Hydrochloric Acid with Inhibitor at an approximate rate of 50 gpm and monitor wellhead pressure and acid flow rate.

6. If wellhead pressure begins to increase, then decrease, or terminate injection of acid and continue pumping water. If wellhead pressure exceeds 60 pounds per square inch (psi), then pressure shall be vented at the wellhead through the pressure release valve with all discharge collected in the onsite storage tank(s).

7. After 1 hour, inject the remaining ½ of the total acid volume of 20 Baume (32%) Hydrochloric Acid, continue pumping water for one hour, and monitor pressure. Follow the same procedure if wellhead pressure exceeds 60 psi.

8. Pump freshwater in both tubes at 50 gpm for 30 minutes. Shut-in well overnight (minimum 12 hours) to allow acid to react with the formation, and release wellhead pressure as necessary.

9. After a minimum of 12 hours shut-in time, remove tubing and high-pressure steel header. Install a temporary pump or airlift system. Pump-off acid residuals and water into 10,000-gallon settling tanks. The CONTRACTOR shall be responsible for disposing of discharge water in accordance with Local, State and Federal regulations. Produced waters with a pH less than

6.0 SU must also be diverted to settling tanks and treated (neutralized) to increase the pH to between 6.0 and 8.0 SUs. Once pH readings are within this range, the on-site ENGINEER shall determine if the developed water is suitable for discharge to an OWNER-approved discharge location.

10. The CONTRACTOR shall reinstall the eductor or reverse airlift pipe to the base of the borehole to clear material from the base of the borehole. The water shall be directed into on-site settling tanks prior to discharge or shall be hauled from the site. The location of water discharge shall be coordinated with the on-site ENGINEER. Best practices shall be used to minimize turbidity and erosion from the discharge. The CONTRACTOR shall be responsible for meeting all regulatory requirements for disposing of discharged groundwater from the well safely and properly using BMPs.

F. The CONTRACTOR shall continue to develop the well until the turbidity is below 30 NTUs, pH is between 6.5 and 8.5 SU and specific conductance decreases to within 5% of pre-acidization levels.

G. The CONTRACTOR shall conduct post-rehabilitation geophysical logging in accordance with Section 3-2 only on wells that have received rehabilitation.

H. After installing the new equipment. The CONTRACTOR shall conduct a 30-minute leak test to ensure that the wellhead is properly sealed, and the pump is operating properly.

I. The CONTRACTOR shall conduct capacity testing and assist the on-site ENGINEER with measuring the static and dynamic water levels in the well before, during and after the Specific Capacity Test. The CONTRACTOR shall furnish and install a pressure transducer to monitor water levels in the well before, during and after the specific capacity test. The transducer shall be placed at a depth of at least 75 feet bls and approved by the ENGINEER. The pump must be turned off for at least 30 minutes prior to testing and post installation of the transducer allowing background data collection of static conditions. The specific capacity test shall be run for one (1) hour for water level monitoring. If needed, the CONTRACTOR shall adjust the flow rate of the specific capacity test so that the test can be run continuously for the full hour without pump cavitation. After the one (1) hour test, the pump must be turned off and the transducer shall remain in the well for an additional 30 minutes to collect the water level recovery data.

J. The CONTRACTOR shall disinfect and collect bacteria clearance samples of the well in accordance with Section 3-3.

K. OTHER REQUIREMENTS AND CONSIDERATIONS

1. The well rehabilitation and specific capacity testing shall be planned in coordination of all other plan improvements for this project. The well site

shall be protected to avoid any damages to other equipment. The CONTRACTOR is responsible for removing all trash and unused equipment. Any damage to the wellhead, pad, fencing or grounds that is the result of the CONTRACTOR'S activities shall be repaired by the CONTRACTOR at no cost to OWNER.

2. The CONTRACTOR shall protect the well pad, piping and surface equipment so that no damage to the well pad or system occurs during evaluation, testing, back-plugging or acidization activities.

3. The CONTRACTOR shall be responsible for repairing any damage caused by the performance of the project. This includes, but is not limited to sidewalks, walk paths, surface grading, sodding, landscaping replacement, pavement, curbing etc.

4. It is anticipated that temporary lay-flat discharge piping would be satisfactory to reach an approved water discharge area; however, the CONTRACTOR shall make the final determination during the pre-construction meeting.

5. Personal Protection Equipment (PPE) should be worn at all times, and pump hoists and other equipment used by the CONTRACTOR must be in good working order, appropriately cleaned and maintained for use on public supply wells and able to complete the proposed work in a timely manner.

6. Once work begins, the CONTRACTOR shall work continuously until the testing activities on a well are completed and the well is back into service. Work continuously means that the CONTRACTOR shall work until the well is brought back into service. Redirecting crews from the site for weeks or days at a time is not acceptable.

7. The CONTRACTOR shall closely coordinate with the on-site ENGINEER with emphasis on daily scheduling, inspection results, identification of replacement hardware and potential repairs and disassembly and reassembly of the wellhead. The CONTRACTOR shall provide an accurate daily schedule to the on-site ENGINEER and arrive at the well at the time communicated to the on-site ENGINEER.

8. Approval of any additional repairs to the wells will be at the OWNER's discretion, however repairs that are required to put the well back into service shall be identified by the CONTRACTOR as soon as possible.

9. It should be noted that any water pumped from the well during testing or flushing must be properly disposed of at OWNER-approved discharge areas. All discharge must be free of chlorine, possess a pH of 6.5 to 8.5 SU and turbidity less than 30 NTUs prior to discharge to a pre-approved area.

10. The CONTRACTOR may utilize the available power at each respective well site for their equipment and related purposes. The CONTRACTOR shall coordinate with OWNER's representative to properly connect to OWNER's power at each site.

11. It is the CONTRACTOR's responsibility to maintain compliance with all local and state regulatory requirements.

12. OWNER reserves the right to utilize the line-item costs submitted by the CONTRACTOR on the bid form to contract similar well-rehabilitation efforts at different OWNER production wells if needed during the project time frame.

END OF SECTION

SECTION 11000

EQUIPMENT GENERAL CONDITIONS

PART 1 - GENERAL

1-1. SCOPE OF WORK

1-1.01. The CONTRACTOR shall provide equipment and appurtenant WORK, complete and operable, in accordance with the Contract Documents.

1-1.02. The provisions of this Section shall apply to equipment throughout the Contract except where otherwise indicated.

1-1.03. **Equipment Arrangement:** Unless specifically indicated otherwise, the arrangement of equipment indicated is based upon information available at the time of design and is not intended to show exact dimensions particular to a specific manufacturer. Some aspects of the Drawings are diagrammatic and some features of the illustrated equipment arrangement may require revision to meet the actual equipment requirements. Structural supports, foundations, piping and valve connections, and electrical and instrumentation connections indicated may have to be altered to accommodate the equipment provided. No additional payment will be made for such revisions and alterations. Substantiating calculations and drawings shall be submitted prior to beginning the installation of equipment.

1-2. REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1-2.01. Equipment shall be in accordance with the following standards, as applicable and as indicated in each equipment specification:

American Society for Testing and Materials (ASTM).

American National Standards Institute (ANSI).

American Society of Mechanical Engineers (ASME).

American Water Works Association (AWWA).

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).

American Welding Society (AWS).

National Fire Protection Association (NFPA).

Federal Specifications (FS).

National Electrical Manufacturers Association (NEMA).

Manufacturer's published recommendations and specifications.

General Industry Safety Orders (OSHA).

1-2.02. The following standards are referenced in this Section:

ASME B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
ASME B16.5	Pipe Flanges and Flanged Fittings, Steel, Nickel Alloy and other Special Alloys
ASME B46.1	Surface Texture
ANSI S12.6	Method for the Measurement of the Real-Ear Attenuation of Hearing Protectors
ASME B1.20.1	General Purpose Pipe Threads (Inch)
ASME B31.1	Power Piping
AWWA C206	Field Welding of Steel Water Pipe
AWWA C207	Steel Pipe Flanges for Waterworks Service - Sizes 4 In. Through 144 In. (100 mm through 3,600 mm)
AWWA D100	Welded Steel Tanks for Water Storage
ASTM A 48	Gray Iron Castings
ASTM A 108	Steel Bars, Carbon, Cold-Finished, Standard Quality

1-3. CONTRACTOR SUBMITTALS

1-3.01. Shop Drawings: Furnish complete drawings and technical information for equipment, piping, valves, and controls. Where indicated or required by the ENGINEER, Shop Drawings shall include clear, concise calculations showing equipment anchorage forces and the capacities of the anchorage elements proposed by the CONTRACTOR.

1-3.02. Spare Parts List: The CONTRACTOR shall obtain from the manufacturer and submit at the same time as Shop Drawings a list of suggested spare parts for each piece of equipment. CONTRACTOR shall also furnish the name, address, and telephone number of the nearest distributor for each piece of equipment.

1-4. QUALITY ASSURANCE

1-4.01. Costs: Responsibility shall be the CONTRACTOR'S for performing and paying the costs of inspection, startup, testing, adjustment, and instruction services performed by factory representatives. The OWNER will pay for costs of power and water. If available, the OWNER'S operating personnel will provide assistance in the field testing.

1-4.02. Inspection: The CONTRACTOR shall inform the local authorities, such as building and plumbing inspectors, fire marshal, OSHA inspectors, and others, to witness required tests for piping, plumbing, fire protection systems, pressure vessels, safety systems, and related items needed to obtain required permits and certificates and shall pay inspection fees.

1-4.03. Quality and Tolerances: Tolerances and clearances shall be as shown on the Shop Drawings and shall be closely adhered to.

- Machine WORK shall be of high-grade workmanship and finish, with due consideration to the special nature or function of the parts. Members without milled ends and which are to be framed to other steel parts of the structure may have a variation in the detailed length of not greater than 1/16-inch for members 30-feet or less in length, and not greater than 1/8-inch for members over 30-feet in length.

- Castings shall be homogeneous and free from non-metallic inclusions and defects. Surfaces of castings which are not machined shall be cleaned to remove foundry irregularities. Casting defects not exceeding 12.5 percent of the total thickness and where defects will not affect the strength and serviceability of the casting may be repaired by approved welding procedures. The ENGINEER shall be notified of larger defects. No repair welding of such defects shall be carried out without the ENGINEER'S written approval. If the removal of metal for repair reduces the stress resisting cross-section of the casting by more than 25 percent or to such an extent that the computed stress in the remaining metal exceeds the allowable stress by more than 25 percent, then the casting may be rejected. Costs of casting new material shall be the CONTRACTOR'S responsibility as part of the WORK.

- Materials shall meet the physical and mechanical properties in accordance with the reference standards.

1-4.04. Machine Finish: The type of finish shall be the most suitable for the application and shall be shown in micro-inches in accordance with ANSI B46.1. The following finishes shall be used:

- Surface roughness not greater than 63 micro-inches shall be required for surfaces in sliding contact.

- Surface roughness not greater than 250 micro-inches shall be required for surfaces in contact where a tight joint is not required.

- Rough finish not greater than 500 micro-inches shall be required for other machined surfaces.

- Contact surfaces of shafts and stems which pass through stuffing boxes and contact surfaces of bearings shall be finished to not greater than 32 micro-inches.

1-4.05. Manufacturer's Experience: Equipment manufacturer shall have a record of at least 5 years of successful, trouble free operation in similar applications and size equal or larger than the equipment in this Contract.

PART 2 - PRODUCTS

2-1. GENERAL REQUIREMENTS

2-1.01. Noise Level: When in operation, no single piece of equipment shall exceed the OSHA noise level requirement of 105 dBA for one hour exposure per day.

2-1.02. High Noise Level Location: The CONTRACTOR shall provide one personal hearing protection station at each high noise level location. Locations are defined as follows:

- Outdoor Location: Any single equipment item or any group of equipment items that produce noise exceeding OSHA noise level requirements for a 2 hour exposure. Where such equipment is separated by a distance of more than 20-feet, measured between edges of footings, each group of equipment shall be provided with a separate hearing protection station.

- Indoor Location: Any single equipment item or any group of equipment items located within a single room not normally occupied, that produces noise exceeding OSHA noise level requirements for a 2 hour exposure.

- Indoor Location: Any single equipment item or any group of equipment items located within a single room normally occupied by workers, that produces noise exceeding OSHA noise level requirements for an 8 hour exposure.

2-1.03. Personal Hearing Protection: The CONTRACTOR shall furnish 3 pairs of high attenuation hearing protectors in the original unopened packaging. The ear protectors shall be capable of meeting the requirements of ANSI S12.6 and shall produce a noise level reduction of 25 dBA at a frequency of 500 Hz. The hearing protectors shall have fluid filled ear cushions and an adjustable, padded headband. The protectors shall be stored in a weatherproof, labeled, steel cabinet, provided at an approved location near the noise producing equipment.

2-1.04. Drive Trains and Service Factors: Service factors shall be applied in the selection or design of mechanical power transmission components. Components of drive train assemblies between the prime mover and the driven equipment shall be designed and rated to deliver the maximum peak or starting torque, speed, and horsepower. All of the applicable service factors shall be considered, such as mechanical (type of prime mover), load class, start frequency, ventilation, ambient temperature, and fan factors. Drive train components include couplings, shafts, gears and gear drives, drive chains, sprockets, and V-belt drives. Unless otherwise indicated, the following load classifications shall apply in determining service factors:

Type of Equipment	Service Factor	Load Classification
Pumps centrifugal or rotary	1.0	Uniform

2-1.05. Mechanical Service Factors

	Mechanical Service Factors	
	Electric Motor	**Internal Combustion Engine**
Uniform	1.25	1.50
Moderate Shock	1.50	1.75
Heavy Shock	2.00	2.25

2-1.06. For thermal rating adjustments such as start frequency, ambient temperature, and hourly duty cycle factor, ventilation factor, and fan factor, refer to gear manufacturer sizing information.

2-1.07. For service factors of electric motors, see Section 11213 Submersible Deep Vertical Turbine Pumps.

2-1.08. Where load classifications are not indicated, service factors shall be for standard load classifications and for flexible couplings.

2-1.09. **Welding:** Unless otherwise indicated, welding shall conform to the following:

- Latest revision of AWWA D100.
- Latest revision of AWWA C206.
- Composite fabricated steel assemblies that are to be erected or installed inside a hydraulic structure, including any fixed or movable structural components of mechanical equipment, shall have continuous seal welds to prevent entrance of air or moisture.
- Welding shall be by the metal-arc method or gas-shielded arc method as described in the American Welding Society's "Welding Handbook" as supplemented by other pertinent standards of the AWS. Qualification of welders shall be in accordance with the AWS Standards.
- In assembly and during welding, the component parts shall be adequately clamped, supported, and restrained to minimize distortion and for control of dimensions. Weld reinforcement shall be as specified by the AWS code. Upon completion of welding, weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workmanlike appearance with uniform weld contours and dimensions. Sharp corners of material that are to be painted or coated shall be ground to a minimum of 1/32-inch on the flat.

2-1.10. Protective Coating: Equipment shall be painted or coated in accordance with the requirements specified in Section 11213 Deep Well Vertical Turbine Pumps. Non-ferrous metal and corrosion-resisting steel surfaces shall be coated with grease or lubricating oil.

Coated surfaces shall be protected from abrasion or other damage during handling, testing, storing, assembly, and shipping.

2-1.11. Potable water contact: Materials immersed in or exposed to potable water shall be listed as compliant with NSF Standard 61.

2-1.12. Protection of Equipment: Equipment shall be boxed, crated, or otherwise protected from damage and moisture during shipment, handling, and storage. Equipment shall be protected from exposure to corrosive fumes and shall be kept thoroughly dry. Pumps, motors, drives, electrical equipment, and other equipment having anti-friction or sleeve bearings shall be stored in weather tight storage facilities prior to installation. For extended storage periods, plastic equipment wrappers should be avoided to prevent accumulation of condensate in gears and bearings. In addition, motor space heaters shall be energized and shafts shall be rotated. Equipment delivered to the Site with rust or corroded parts shall be rejected. If equipment develops defects during storage, it shall be disassembled, cleaned, and recoated to restore it to original condition.

2-1.13. Identification of Equipment Items

- At the time of shipping, each item of equipment shall have a legible identifying mark corresponding to the equipment number in the Contract Documents for the particular item.
- After installation, each item of equipment shall be given permanent identification.
- Pumps, compressors, and blowers larger than 150 horsepower shall receive stainless steel plate stenciled nametags.

2-1.14. **Shop Fabrication:** Shop fabrication shall be performed in accordance with the Contract Documents and the Shop Drawings.

2-2. EQUIPMENT SUPPORTS AND FOUNDATIONS

2-2.01. Equipment Supports: Unless otherwise indicated, equipment supports, anchors, and restrainers shall be adequately designed for static, dynamic, wind, and seismic loads. The design horizontal seismic force shall be the greater of: that noted in the general structural notes or as required by the governing building code, or 10 percent of gravity. Submitted design calculations for equipment supports shall bear the signature and seal of an engineer registered in the State wherein the project is to be built, unless otherwise indicated. Calculations shall account for forces and distribution of forces on supporting structures resulting from normal operation, normal operation plus seismic loadings, and normal operation plus wind loadings.

2-2.02. Wall-mounted equipment weighing more than 250 pounds or which is within 18-inches above the floor shall be provided with fabricated steel supports. Pedestals shall be of welded steel. If the supported equipment is a panel or cabinet or is enclosed with removable sides, the pedestal shall match the supported equipment in appearance and dimensions.

2-2.03. Wind requirements: Exterior freestanding equipment shall be anchored in place by methods that satisfy the building code. Calculations shall be performed and signed and stamped, analyzing lateral and overturning forces and shall include a factor of safety against

overturning equal to 1.5. Calculations shall include the distribution of forces imposed on the supporting structure and anchors, verifying that each anchor can develop the required resistance forces.

2-2.04. **Anchors:** CONTRACTOR shall determine the size, type, capacity, location, and other placement requirements of anchorage elements. Anchoring methods and leveling criteria in the manufacturer's literature shall be followed. Submit methods and criteria with the Shop Drawings.

2-2.05. **Equipment Foundations:** Mechanical equipment, tanks, control cabinets, enclosures, and related equipment shall be mounted on minimum 3.5-inch high concrete bases, unless otherwise indicated. Equipment foundations are indicated on Drawings. The CONTRACTOR through the equipment manufacturer shall verify the size and weight of equipment foundation to ensure compatibility with equipment.

2-3. COUPLINGS

2-3.01. Mechanical couplings shall be provided between the driver and the driven equipment. Flexible couplings shall be provided between the driver and the driven equipment to accommodate slight angular misalignment, parallel misalignment, end float, and to cushion shock loads.

2-3.02. Each coupling size shall be determined based on the rated horsepower of the motor, speed of the shaft, and the load classification service factor. The CONTRACTOR shall have the equipment manufacturer select or recommend the size and type of coupling required to suit each specific application.

2-3.03. **Differential Settlement:** Where differential settlement between the driver and the driven equipment may occur, 2 sets of universal type couplings shall be provided.

2-3.04. Taper-Lock or equal bushings may be used to provide for easy installation and removal of shafts of various diameters.

2-4. SHAFTING

2-4.01. **General:** Shafting shall be continuous between bearings and shall be sized to transmit the power required. Keyways shall be accurately cut in line. Shafting shall not be turned down at the ends to accommodate bearings or sprockets whose bore is less than the diameter of the shaft. Shafts shall rotate in the end bearings and shall be turned and polished, straight, and true.

2-4.02. **Design Criteria:** Shafts shall be designed to carry the steady state and transient loads suitable for unlimited number of load applications, in accordance with ASME B106.1M - Design of Transmission Shafting. Where shafts are subjected to fatigue stresses, such as frequent start and stop cycles, the mean stress shall be determined by using the modified Goodman Diagram. The maximum torsional stress shall not exceed the endurance limit of the shaft after application of the factor of safety of 2 in the endurance limit and the stress concentration factor of the fillets in the shaft and keyway. Stress concentration factor shall be in accordance with ASME Standard B17.1 - Keys and Keyseats.

2-4.03. **Materials:** Shafting materials shall be appropriate for the type of service and torque transmitted. Environmental elements such as corrosive gases, moisture, and fluids shall be taken into consideration. Materials shall be as indicated unless furnished as part of an equipment assembly.

- Low carbon cold-rolled steel shafting shall conform to ASTM A 108, Grade 1018.
- Medium carbon cold-rolled shafting shall conform to ASTM A 108, Grade 1045.
- Other grades of carbon steel alloys shall be suitable for service and load.
- Corrosion-resistant shafting shall be stainless steel or Monel, whichever is most suitable for the intended service.

2-4.04. **Differential Settlement:** Where differential settlement between the driver and the driven equipment may occur, a shaft of sufficient length with 2 sets of universal type couplings shall be provided.

2-5. DRIVE GUARDS

2-5.01. Power transmission trains, prime movers, machines, shaft extensions, and moving machine parts shall be guarded to conform with the OSHA Safety and Health Standards (29CFR1910). The guards shall be constructed of minimum 10-gauge expanded, flattened steel with smooth edges and corners, galvanized after fabrication, and securely fastened. Where required for lubrication or maintenance, guards shall have hinged and latched access doors.

2-6. BEARINGS

2-6.01. **General:** Bearings shall conform to the standards of the American Bearing Manufacturers Association, Inc. (ABMA).

2-6.02. To assure satisfactory bearing application, fitting practice, mounting, lubrication, sealing, static rating, housing strength, and lubrication shall be considered in bearing selection.

2-6.03. Re-lubricatable type bearings shall be equipped with a hydraulic grease fitting in an accessible location and shall have sufficient grease capacity in the bearing chamber.

2-6.04. Lubricated-for-life bearings shall be factory-lubricated with the manufacturer's recommended grease to ensure maximum bearing life and best performance.

2-6.05. **Anti-Friction Type Bearing Life:** Except where otherwise indicated, bearings shall have a minimum L-10 life expectancy of 5 years or 20,000 hours, whichever occurs first. Where so indicated, bearings shall have a minimum rated L-10 life expectancy corresponding to the type of service, as follows:

Type of Service	Design Life, years	L-10 Design Life, hours
	(whichever comes first)	
8-hour shift	10	20,000
16-hour shift	10	40,000
Continuous	10	60,000

2-6.06. Bearing housings shall be of cast iron or steel and bearing mounting arrangement shall be as indicated or as recommended in the published standards of the manufacturer. Split-type housings may be used to facilitate installation, inspection, and disassembly.

2-6.07. **Sleeve Type Bearings:** Sleeve-type bearings shall have a cast iron or ductile iron housing and Babbitt or bronze liner. Bearing housing shall be bolted and doweled to the lower casing half. These housings shall be provided with cast iron caps bolted in place and the bearing end caps shall be bored to receive the bearing shells. Sleeve bearings shall be designed on the basis of the maximum allowable load permitted by the bearing manufacturer. If the sleeve bearing is connected to an equipment shaft with a coupling, the coupling transmitted thrust will be assumed to be the maximum motor or equipment thrust. Lubricant, lubrication system, and cooling system shall be as recommended by the bearing manufacturer.

2-6.08. **Plate Thrust Bearings:** Thrust bearings shall be the **Kingsbury** Type or approved Equal, designed and manufactured to maintain the shaft in the fixed axial position without undue heating or the necessity of adjustment or attention. Bearings shall be oil lubricated to suit the manufacturer's standard method of lubrication for the specific bearing. If bearing cooling is required, manufacturer shall provide necessary piping, filters, and valves.

2-7. PIPING CONNECTIONS

2-7.01. **Pipe Hangers, Supports, and Guides:** Pipe connections to equipment shall be supported, anchored, and guided to avoid stresses and loads on equipment flanges and equipment. Supports and hangers shall be in accordance with Standard Detail M-103.

2-7.02. **Flanges and Pipe Threads:** Flanges on equipment and appurtenances shall conform to ASME B16.1, Class 125, or B16.5, Class 150, unless otherwise indicated. Pipe threads shall be in accordance with ASME B1.20.1.

2-8. NAMEPLATES

2-8.01. Equipment nameplates of stainless steel shall be engraved or stamped and fastened to the equipment in an accessible location with No. 4 or larger oval head stainless steel screws or drive pins. Nameplates shall contain the manufacturer's name, model, serial number, size, characteristics, and appropriate data describing the machine performance ratings.

2-9. TOOLS AND SPARE PARTS

2-9.01. **Tools:** The CONTRACTOR shall furnish one complete set of special wrenches and other special tools necessary for the assembly, adjustment, and dismantling of the equipment. Tools shall be of best quality hardened steel forgings with bright finish. Wrench heads shall have work faces dressed to fit nuts. Tools shall be suitable for professional work and manufactured by **Snap On, Crescent, Stanley,** or approved equal. The set of tools shall be neatly mounted in a labeled toolbox of suitable design provided with a hinged cover.

2-9.02. Spare parts shall be furnished as indicated in the individual equipment sections. Spare parts shall be suitably packaged in a metal box and labeled with equipment numbers by means of stainless steel or solid plastic nametags attached to the box.

2-10. EQUIPMENT LUBRICANTS

2-10.01. The CONTRACTOR shall provide lubricants for equipment during shipping, storage, and prior to testing, in accordance with the manufacturer's recommendations. Lubricants that could come in contact with potable water shall be food grade lubricants. After satisfactory completion of all startup testing required by individual equipment sections, the CONTRACTOR shall conduct one complete lubricant change on all equipment. In addition, the CONTRACTOR shall be responsible for the proper disposal of used lubricants. The OWNER will then be responsible for subsequent lubricant changes.

PART 3 - EXECUTION

3-1. MANUFACTURER'S SERVICES

3-1.01 Inspection, Startup, and Field Adjustment: Where required by the specific pump Section, furnish an authorized service representative of the manufacturer at the Site continuously to supervise the following items and to certify in writing that the equipment and controls have been properly installed, aligned, lubricated, adjusted, and readied for operation:

- installation of the equipment
- inspection, checking, and adjusting the equipment
- startup and field testing for proper operation, efficiency, and capacity
- performance of field adjustments to ensure that the equipment installation and operation comply with the indicated requirements

3-1.02 Instruction of OWNER's Personnel: Where required by the individual pump Section, furnish an authorized training representative of the manufacturer at the Site for the number of Days indicated in the specific pump Section, to instruct the OWNER's personnel in the operation and maintenance of the equipment, including step-by-step troubleshooting with necessary test equipment.

- Furnish instruction specific to the model of equipment provided.
- Qualifications: Furnish a representative with at least 2 years' experience in training. Submit a resume for the representative.

- Schedule the training a minimum of 3 weeks in advance of the first session.

- Lesson Plan Review: Submit the proposed training material and a detailed outline of each lesson for review. Incorporate review comments into the material. The trainees will keep the training materials. The OWNER may videotape the training for later use with the OWNER's personnel.

3-2. INSTALLATION

3-2.01 **General:** Equipment shall be installed in accordance with the manufacturer's written recommendations.

3-2.02 **Alignment:** Equipment shall be field tested to verify proper alignment.

3-3. PACKAGED EQUIPMENT

3-3.01 When any system is furnished as pre-packaged equipment, the CONTRACTOR shall coordinate space and structural requirements, clearances, utility connections, signals, and outputs with Subcontractors to avoid later change orders.

3-3.02 If the packaged system has any additional features (as safety interlocks, etc.) other than required by the Contract Documents, the CONTRACTOR shall coordinate such features with the ENGINEER and provide material and labor necessary for a complete installation as required by the manufacturer.

3-4. FIELD ASSEMBLY

3-4.01 Studs, cap screws, bolt and nuts used in field assembly shall be coated with **Never Seize** compound or equal.

3-5. WELDING

3-5.01 Welds shall be cleaned of weld-slag, splatter, etc. to provide a smooth surface.

3-6. FIELD TESTS

3-6.01 Where indicated by the individual equipment sections, equipment shall be field tested after installation to demonstrate satisfactory operation without excessive noise, vibration, or overheating of bearings or motor.

3-6.02 The following field testing shall be conducted:

- Start equipment, check, and operate the equipment over its entire operating range. Vibration level shall be within the amplitude limits as indicated or as recommended by the reference applicable standards.

- Obtain concurrent readings of motor voltage, amperage, capacity, vibration, and bearing temperatures.

3-6.03 The ENGINEER shall witness field-testing. The CONTRACTOR shall notify the ENGINEER of the test schedule 3 Days in advance.

3-6.04 In the event that any equipment fails to meet the test requirements, the equipment shall be modified and retested until it satisfies the requirement.

END OF SECTION

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SECTION 11200

PUMPS GENERAL

PART 1 - GENERAL

1-1. SCOPE OF WORK

1-1.01. Provide pumps and pumping appurtenances, complete and operable, as indicated in accordance with the Contract Documents.

1-1.02. The provisions of this Section shall apply to pumps and pumping equipment throughout the Contract Documents, except where otherwise indicated.

1-1.03. The requirements of Section 11000 – Equipment General Conditions, apply to this Section.

1-1.04. Unit Responsibility: The pump manufacturer shall be made responsible for furnishing the WORK and for the coordination of design, assembly, testing, and installation of the WORK of each specific pump Section. The CONTRACTOR shall be responsible to the OWNER for compliance with the requirements of each specific pump Section.

1-1.05. Single Manufacturer: Where 2 or more pump systems of the same type or size are required, provide pumps produced by the same manufacturer.

1-2. CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with the requirements of Section 01300 Submittals Procedures.

1-2.02. Shop Drawings

- Submit pump name, identification number, and specification Section number.
- Submit performance data curves showing head, capacity, horsepower demand, NPSHr3 required, and pump efficiency over the entire operating range of the pump.
- Require the equipment manufacturer to indicate the head, capacity, required horsepower, pump efficiency, and NPSHr corresponding to each flow condition indicated in the respective performance requirement paragraph of each individual pump specification section. Indicate in the pump curve minimum submergence required at maximum flow for vertical and submersible pumps.
- Submit performance curves at intervals no greater than 100 RPM from minimum speed to maximum speed for each centrifugal pump equipped with a variable speed drive.
- Require the manufacturer to indicate the limits on the performance curves recommended for stable operation without surge, cavitation, or excessive vibration.

Indicate on the pump performance curve the limits of the Preferred Operating Region (POR) and the Allowable Operating Region (AOR).

- Submit assembly and installation drawings, including shaft size, seal, coupling, bearings, anchor bolt plan, part nomenclature, material list, outline dimensions, and shipping weights.

- Where lead containing materials are used for drinking water service pumps submit a calculation to demonstrate that the weighted average of lead content of all wetted components do not exceed 0.25% to meet the requirement of the Reduction of Lead in Drinking Water Act.

- Submit data for the electric motor proposed for each pump.

- Submit an elevation drawing of the proposed local control panel, showing panel-mounted devices, details of enclosure type, a single-line diagram of power distribution, current draw of the panel, and a list of all terminals required to receive inputs or to transmit outputs from the local control panel.

- Submit a wiring diagram of field connections, with identification of terminations between local control panels, junction terminal boxes, and equipment items.

- Submit a complete electrical schematic diagram.

1-2.03. Rotodynamics and Structural Analyses: Not Used.

1-2.04. Technical Manual: Submit a Technical Manual containing the required information indicated in Section 01300 – Submittals Procedures and each specific pump Section.

- Submit a spare parts list containing the required information indicated in Section 01300 – Submittals Procedures and each specific pump Section.

1-2.05. Factory Test Data: For pumps that shall be factory witness tested, submit factory test plan showing piping diameter sizes and lengths, locations of valves and instruments that will be used during testing as part of shop drawing submittal. For pumps that shall be factory witness tested, submit current calibration certificates of all test instruments prior to testing. Submit signed, dated, and certified factory test data for each pump system which requires factory testing. Submit these data before shipment of equipment.

1-2.06. Submit the manufacturer's certification of proper installation.

1-2.07. Submit the CONTRACTOR's certification of satisfactory field testing.

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. Compliance with the requirements of the specific pump Sections may necessitate modifications to the manufacturer's standard equipment.

2-1.02. Performance Curves: Provide centrifugal pumps with a continuously rising pump curve, or with a pump curve that does not cross the system curve within the pump curve's "dip region". Unless otherwise indicated, the required shaft horsepower for the entire pump assembly at any point on the performance curve shall not exceed the rated horsepower of the motor or engine or encroach on the service factor. For VFD driven pumps, the rated horsepower of the selected motor shall be 110 percent of the maximum brake horsepower required by the pump.

2-1.03. Provide entirely compatible components of each pump system provided under the specific pump Sections. In each unit of pumping equipment, incorporate basic mechanisms, couplings, electric motors or engine drives, variable speed controls, necessary mountings, and appurtenances.

2-1.04. Unless otherwise specified the rotating assembly shall be dynamically balanced to ISO 1940 G6.3.

2-2. MATERIALS

2-2.01. Provide materials suitable for the intended application.

2-2.02. For materials not indicated, provide high-grade, standard commercial quality, free from defects and imperfections that might affect the serviceability of the product for the purpose for which it is intended, and conforming to the following requirements:

2-2.03. For drinking water service, use materials with weighted average of lead content of all wetted components not to exceed 0.25% to meet the requirement of the Reduction of Lead in Drinking Water Act.

2-2.04. All elastomeric materials such as gaskets, seals, O-rings in contact with water with chloramine and ozone shall be Teflon, Viton-A or other materials compatible with the fluid service. Test certificate from a material testing laboratory to provide proof of test shall be made available to the ENGINEER if requested.

2-2.05. Miscellaneous stainless steel parts shall be of Type 316.

2-2.06. Provide anchor bolts, washers, and nuts in standard service (non-corrosive application) of galvanized steel.

2-2.07. Provide anchor bolts, washers, and nuts in corrosive service of stainless steel.

2-2.08. Materials in contact with potable water shall be listed as compliant with NSF Standard 61. Test certificate from a material testing laboratory to provide proof of test shall be made available to the ENGINEER if requested

2-3. PUMP COMPONENTS - GENERAL

2-3.01 Flanges and Bolts: Provide suction and discharge flanges conforming to ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, or ASME B16.5 - Pipe Flanges and Flanged Fittings dimensions. Pressure class shall be suitable for the application or as otherwise recommended by the pump manufacturer.

2-3.02 Lubrication: Vertical pump shafts for clean water pumps shall be product water-lubricated, unless otherwise indicated. Provide deep-well pumps with product water lubricated bearings and seals, and open line shafts.

2-3.03 Hand Holes: Provide hand holes on pump casings shaped to follow the contours of the casing in order to avoid any obstructions in the water passage.

2-3.04 Drains: Provide and connect pipe gland seals, air valves, and cooling water drains to the nearest floor sink or drain, using galvanized steel pipe or copper tube that is properly supported with brackets.

2-3.05 Stuffing Boxes: Provide high pressure stuffing boxes for the pump seal, these stuffing boxes shall be of the best quality and compatible with the specified operating conditions, using the manufacturer's suggested materials best suited for the specific application.

2-3.06 Wiring: Wiring shall comply with the requirements of Division 16 – Electrical.

2-4. PUMP APPURTENANCES

2-4.01 Nameplates: Equip each pump with a stainless steel nameplate indicating serial number(s), rated head and flow, impeller size, pump speed, and manufacturer's name and model number.

2-4.02 Solenoid Valves: Require the pump manufacturer to provide solenoid valves on the water or oil lubrication lines and on cooling water lines. Provide solenoid valve electrical ratings compatible with the motor control voltage.

2-4.03 Gauges: Equip pumps with pressure gauges installed at the pump discharge lines. Located gauges in a representative location, where not subject to shock or vibrations, in order to achieve true and accurate readings. Where subject to shock or vibrations, wall-mount the gauges or attach the gauges to galvanized channel floor stands and connect by means of flexible connectors.

2-5. FACTORY TESTING

Conduct the following tests on each indicated pump system:

2-5.01 Motors

- Test electric motors in accordance with the requirements of Section 11213 Submersible Vertical Turbine Pumps.

- Furnish test results to the pump manufacturer prior to the pump test.

2-5.02 Certified Factory Non-Witnessed Tests

Perform factory non-witnessed tests on centrifugal pumps with drives up to and including 125 hp in accordance with the ANSI/HI 14.6, Rotodynamic Pumps for Hydraulic Performance Acceptance Test.

For pumps with drives 15 hp and larger shall meet hydraulic acceptance criteria Grade "1U" unless otherwise indicated. Such tests shall, at a minimum, consist of the following:

- Hydrostatic Test;
- Performance Test:
    - Conduct performance testing at maximum speed, obtain a minimum of 5 hydraulic test readings between shutoff head and 25 percent beyond the maximum indicated capacity, and record on data sheets as defined by the Hydraulic Institute Standards;
    - For variable speed driven pumps, test each pump between maximum and minimum speed at intervals no greater than 100 RPM;
    - Submit pump curves showing head, flow, bhp, NPSHr and efficiency results. The manufacturer's certification shall be visible on each submitted curve;
- Mechanical testing shall be limited to observation during the hydraulic performance test for any abnormal bearing temperature and pump vibration. Any deficiencies shall be corrected by the manufacturer.
- NPSHr3
    - Perform a net positive suction head required test (NPSHr3), if required by the specific pump Section.
    - Acceptance criteria shall be in accordance with ANSI/HI 14.6
    - If not required by the specific pump Section, submit the published manufacturer-calculated NPSHr3 curve.
- Additional tests as indicated in the specific pump specification sections.
- Perform tests using the completely assembled project pump, motor, and VFD system (if equipped with variable speed drive). Calibrated factory motor may be used in lieu of project motor subject to approval of the ENGINEER.
- Testing of prototype models will not be accepted.
- Submit certification signed by a senior official of the pump manufacturer that the required pump shaft horsepower did not exceed the rated motor horsepower of 1.0 service rating at any point on the curve.
- The OWNER reserves the right to have an OWNER's representative and/or the ENGINEER to be present during these tests. A minimum of 4 weeks notification prior to the tests shall be provided by the CONTRACTOR.
- If the OWNER decides to witness these tests, excluding salaries, all costs for the attendances of one representative for the OWNER shall be borne by the CONTRACTOR and shall be included in the Contract Price, including travel and

subsistence costs. The cost shall include repetitive visits, if required. If additional witnessed testing is required due to failure of the pumps to meet specified conditions, all expenses of the OWNER shall be covered by the CONTRACTOR.

- No equipment shall be shipped until the test data have been approved by the ENGINEER.

2-5.03 Acceptance: In the event of failure of any pump to meet any of the requirements, make necessary modifications, repairs, or replacements in order to conform to the requirements of the Contract Documents, and re-test the pump until found satisfactory. The CONTRACTOR and OWNER shall agree on the corrective measures prior to the CONTRACTOR proceeding with corrective work.

PART 3 - EXECUTION

3-1. MANUFACTURER'S SERVICES

3-1.01 For Inspection, Startup, Field Adjustments, and Instruction of OWNER's personnel see Section 11000 – Equipment General Conditions.

3-2. INSTALLATION

3-2.01 Install pumping equipment in accordance with the manufacturer's written recommendations.

3-2.02 Alignment: Field-test the equipment in order to verify proper alignment and freedom from binding, scraping, shaft run out, or other defects. Measure the pump drive shafts just prior to assembly in order to ensure correct alignment without forcing. Ensure that the equipment is secure in position and neat in appearance.

3-2.03 Lubricants: Provide the necessary oil and grease for initial operation.

3-3. PROTECTIVE COATING

3-3.01 Coat materials and equipment in accordance with the requirements of Section 11213 Submersible Deep Well Vertical Turbine Pumps.

3-4. FIELD TESTS

3-4.01 Field-test each pump system after installation simulating all of the operational scenarios as specified in order to demonstrate:

- Satisfactory operation without excessive noise and vibration;
- Meet indicated head, flow, and efficiency at the design point.

3-4.02 Conduct the following field testing:

- The pump is driven by constant speed, test the pump and motor at the maximum RPM.

- Obtain concurrent readings of motor voltage, amperage, pump suction head, and pump discharge head.

- Check each power lead to the motor for proper current balance.

- Ensure that electrical and instrumentation tests conform to the requirements of the Section under which that equipment is specified.

3-4.03 Field testing will be witnessed by the ENGINEER. Furnish 3 Days advance notice of field testing.

3-4.04 If the pumping system fails to meet the indicated requirements, modify or replace the pump and re-test as indicated above until it satisfies the indicated requirements.

3-4.05 Certification: After each pumping system has satisfied the requirements, certify in writing that it has been satisfactorily tested and that final adjustments have been performed. Certification shall include the date of the field tests, a listing of persons present during the tests, and the test data.

3-4.06 The CONTRACTOR shall be responsible for costs of field tests, including related services of the manufacturer's representative, except for power and water, which the OWNER will bear.

3-4.07 If available, the OWNER'S operating personnel will provide assistance in field testing.

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SECTION 11213

SUBMERSIBLE DEEP WELL VERTICALTURBINE PUMPS

PART 1 -- GENERAL

1.1 REQUIREMENTS

A. The CONTRACTOR shall provide submersible deep well vertical turbine pumps, pump discharge wellhead and sole plate as well as all materials necessary for furnishing, installing and testing them, for these units to be complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 11200 – Pumps, General, apply to this Section.

C. The Supplier shall examine the Site conditions, intended application, and operation of the pump system, and recommend the pump that will best satisfy the indicated requirements.

1.2 SCOPE OF WORK

A. Furnish and install all materials, equipment, and incidentals necessary for the replacement of the vertical turbine pumps, electrical motors, and all appurtenances as specified herein.

Pump Designations	VTP-150, VTP-151, VTP-153, VTP-154, VTP-155, VTP-156, VTP-158, VTP-159, VTP-160, VTP-164, VTP-165, VTP-166, VTP-167, VTP-168, VTP-169
Number of Pumps	15
Pump Location	Replacing well turbine pumps in 15 existing well sites. See drawings for locations.

B. Submersible Deep Well Turbine Pumps furnished under this contract, and all related components in contact with water shall be NSF 61 Certified.

C. This Specification does not purport to cover all materials or installation procedures which may be required. However, it is the intent of the OWNER to obtain a complete and working installation under this PROJECT, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether they are specifically shown on the PLANS or stated herein.

D. The existing pump pedestal at the 15 wells will be modified as part of the PROJECT in accordance with the pump manufacturer's recommendations. The replacement shall include a new pump sole plate with wellhead, anchor bolts or any other mounting equipment necessary for pump installation.

E. The CONTRACTOR shall submit a shop drawing in accordance with Section 01300 for the pump sole plate, anchor bolts and any miscellaneous component required to be replaced

to facilitate pump replacement. Anchor bolt calculations shall be provided in accordance with Section 01613 Structural Design, Support, and Anchorage.

1.3 SUBMITTALS

Submit to the OWNER or OWNER'S Representative, shop drawings and product data. Submittals shall include the following:

A. The shop drawings shall include details of pump assembly; installation layout and procedures; piping and electrical connections and requirements; types of materials used in pump construction; details on all pump accessories, such as couplings, discharge piping from pump to wellhead, wellhead, discharge bend, etc.; dimensions of major components; weights, structural and operating features, space required, clearances, type of finish or shop coat, and other pertinent data.

B. Literature and drawings describing the equipment in sufficient detail, including parts list and materials of construction, to indicate full conformance with the detail specifications.

C. Total weight of pumping unit, discharge piping and cables supported from the wellhead.

D. A list of manufacturer's recommended spare parts to be supplied, with the manufacturer's current price for each item.

E. Submit motor product data and test reports.

F. MANUFACTURER'S certified performance curves for each pump and motor combination furnished illustrating pump characteristics of head, discharge flow, efficiency, impeller size, motor speed, brake horsepower, and NSPH. Curves shall be submitted on 8 ½ inch by 11-inch sheets, at as large a scale as practical. The performance shall be plotted from no flow at shut off head to maximum pump run out head and flow allowed by the MANUFACTURER.

G. Certified shop test report/results. MANUFACTURER shall submit certified shop test report/results to the ENGINEER for approval before pumps are shipped.

1.4 DESIGN DATA

A. MANUFACTURER'S certified rating curves, to satisfy the specified design conditions, showing pump characteristics of discharge, anticipated field head, brake horsepower, bowl efficiency and guaranteed net positive suction head required (NPSHR). Curves shall show the full recommended range of performance and include shut-off head. This information shall be prepared specifically for the pump proposed. Catalog sheets showing a family of curves will not be acceptable.

1.5 FACTORY TEST REPORTS

A. Six (6) certified copies of the factory (shop) test reports shall be prepared by the MANUFACTURER and delivered to the ENGINEER prior to shipment of the pumps.

1.6 OPERATION AND MAINTENANCE DATA

A. Complete operating and maintenance instructions in accordance with Specification Section 01730 Operating and Maintenance Data shall be furnished for all equipment included under this Section. The maintenance instructions shall include troubleshooting data and full preventative maintenance schedules and complete spare parts lists with ordering information.

1.7 REFERENCE STANDARDS

A. Design, manufacturing, and assembly of elements of the equipment specified herein shall be in accordance with Section 01070 Abbreviations and Acronyms, and the following:

1. ANSI/AWWA E102

2. Hydraulic Institute Standards

B. Where reference is made to one of the above standards, the revision in effect at the time of award shall apply.

1.8 QUALITY ASSURANCE

A. Pumps, motors, discharge bend, discharge pipe column, bearings, sole plate, anchor bolts, wellhead and all other parts will be furnished by the pump MANUFACTURER. The CONTRACTOR and pump MANUFACTURER shall assume responsibility for the items specified herein and for the satisfactory installation and operation of the entire pumping system.

B. The equipment specified herein is intended to be standard pumping equipment of proven ability. Units specified herein shall be furnished by a single MANUFACTURER. The equipment furnished shall be designed, constructed, and installed to operate satisfactorily when installed into the existing conditions.

C. Pumps shall be designed and furnished in accordance with the Hydraulic Institute Standards and E102 AWWA Standard for Submersible Vertical Turbine Pumps, except where otherwise specified herein.

D. The pump MANUFACTURER shall be fully responsible for the design, arrangement, and operation of the pumping units and ensure that neither harmful nor damaging vibrations occur at design speed within the specified operating conditions.

E. Balance. All rotating parts shall be accurately machined and the impeller shall be statically and dynamically balanced to meet the requirements of ISO 1940 G6.3

1.9 DELIVERY STORAGE AND HANDLING

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the unit and equipment are ready for operation.

B. All equipment and parts must be properly protected against any damage during shipment. Pumps shall be shipped and handled in such manner as to prevent damage. At the job site, pumps and motors shall be stored in clean, dry, and protected locations.

C. Each pump package shall be properly labeled and should contain all parts for each pump. The label should indicate which production well number the pump is provided for and its net weight.

D. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the OWNER.

E. The finished surfaces of all exposed flanges shall be protected by wooden or equivalent blank flanges, strongly built, and securely bolted thereto.

F. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

G. No shipment shall be made until approved by the OWNER in writing.

H. After hydrostatic or other tests, all entrapped water shall be drained prior to shipment, and proper care shall be taken to protect part from the entrance of water during shipment, storage, and handling.

I. For protection of bearings during shipment and installation, the bearing shall be properly processed. Anti-friction bearings, if pre-lubricated, shall be protected in accordance with the bearing manufacturer's recommendations against formation of rust during a long period of storage while awaiting completion of installation and start-up of the machine in which they are used. Anti-friction bearings which are not pre-lubricated shall be properly treated in accordance with the bearing manufacturer's recommendation against formation of rust during a long period of storage while waiting completion of installation and start-up by the application of Exxon, Rust-Ban No. 392 or equal treatment.

PART 2 -- PRODUCTS

2.1 GENERAL CONDITIONS

A. The pumps shall be designed and constructed to operate satisfactorily with a reasonable service life.

B. The pumps shall be designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, without cavitation and without excessive vibration or strain. All parts shall be so designed and proportioned as to have liberal strength, stability and stiffness and to be especially constructed to meet the specified requirements. Ample room and facilities shall be provided for inspection, repairs and adjustment.

C. All necessary bolts, nuts and washers shall be furnished and shall be stainless steel 316.

D. Each major piece of equipment shall be furnished with a stainless-steel nameplate (with embossed data) to be securely mounted to the discharge well head. As a minimum, the nameplate for the pumps shall include the manufacturer's name and model number, serial

number, rated flow capacity, head, speed, number of stages, column length and any other pertinent data.

E. If pumps do not mate, vertically and horizontally, to the existing piping, the CONTRACTOR shall replace/modify the existing pump foundation, mounting equipment, and/or piping at CONTRACTOR'S expense, so that the pumps are free from stresses imposed by the existing piping. CONTRACTOR shall submit shop drawings in accordance with specification Section 01300 Submittal Procedures for all foundation, mounting equipment, and/or piping modifications required. Pump foundations, sole plates, anchor bolts and any other mounting equipment in need of replacement shall conform with the pump MANUFACTURER'S recommendations.

F. All pumping units specified shall be furnished by a single manufacturer with standard dimensions so that parts will be interchangeable between the wells.

2.2 MANUFACTURERS:

A. **Goulds Pumps, Inc./Xylem**

B. **Peerless Pumps**

C. **Flowserve**

No other pump MANUFACTURERS will be accepted.

2.3 SPARE PARTS

Spare parts shall be provided and suitably packaged, with labels indicating the contents of each package. Spare parts shall be delivered to OWNER as directed. The following spare parts shall be furnished as part of this project:

Spare Part	Quantity
Bearings	4 per bearing type and size
Wear Rings (bowl and impeller)	4 per pump type
Rubber components and seals	1 set per pump type

2.4 OPERATING CONDITIONS

A. The pumping units shall be suitable for the following service conditions:

Type of environmental exposure.	Indoor
Ambient air temperature range.	35 to 120°F
Liquid temperature range.	55 to 85°F
Pumps start and stop against a closed isolation valve.	No
Site elevation.	Varies
Units subject to freezing temperatures.	No

No crane facilities available onsite. Should a temporary crane be necessary, it can be operated through the existing well house roof hatch to facilitate motor/pump removal. (See drawings for details)

All equipment furnished shall be designed to meet all specified conditions and to operate satisfactorily at the site elevation indicated.

Pumps for all the wells shall be designed for the conditions of service tabulated below.

Well No.	Pump Tag No.	Casing OD Size (in)	Pump Bowl Depth (ft)	Rated Flow (GPM)	Rated Head (FT)	Min Pump Efficiency at Rated Head (%)	Max Pump Speed (RPM))	Min Pump Column Size (in)	Pump Discharge Size(in)	Maximum Motor Size (hp)
150	VTP-150	16	80	1875	75	75%	1800	10	10	60
151	VTP-151	16	90	2000	100	75%	1800	10	10	75
153	VTP-153	16	80	1750	80	75%	1800	10	10	60
154	VTP-154	16	80	2000	70	75%	1800	10	10	60
155	VTP-155	16	90	1750	80	75%	1800	10	10	60
156	VTP-156	16	70	1750	80	75%	1800	10	10	60
158	VTP-158	16	90	2000	100	75%	1800	10	10	75
159	VTP-159	16	70	2000	70	75%	1800	10	10	60
160	VTP-160	16	70	2125	65	75%	1800	10	10	60
164	VTP-164	16	70	2000	70	75%	1800	10	10	60
165	VTP-165	16	70	2000	70	75%	1800	10	10	60
166	VTP-166	16	80	1750	80	75%	1800	10	10	60
167	VTP-167	16	100	1875	115	75%	1800	10	10	75
168	VTP-168	16	80	2000	107.5	75%	1800	10	10	75
169	VTP-169	16	110	1600	125	75%	1800	10	10	75

General Notes:
1. Pumps shall not be designed for reverse rotation.
2. Provide up to two (2) motor sizes at the same RPM. Max motor size shall be 75 HP.
3. Maximum length of any component or subassembly shall be 10 feet.

2.5 PUMP REQUIREMENTS

A. **Construction:** Construction of submersible deep well turbine pumps shall conform to the following requirements:

Bowls	Cast-iron. Interior water passages and exterior surfaces coated with 10- to 12-mils vitreous enamel for sizes 18-inches and smaller; interior and exterior of sizes 20-inches and larger coated with fusion bonded epoxy in accordance with Section 09940 - Protective Coating, except that DFT shall be 10- to 12-mils

Impeller (multi-stage vertical turbine)	ASTM B584 Alloy C903 or ASTM A351 Gr CF8M 316SS statically and dynamically balanced to meet the requirement of ISO 1940 G6.3
Impeller seal ring	Aluminum bronze
Impeller shaft method of connection	Type 316 stainless steel impeller lock collet
Wear rings	Bronze replaceable
Bowl shaft	Stainless steel, Type 410 or 416
Suction case and strainer	Stainless steel strainer, Type 316.Type 316 stainless steel shaft in max 10-ft lengths, turned, ground, and polished with min 8-mils thick hard chrome journals.
Column	Pipe should be AWWA C200 steel with threaded sleeve type steel coupling, A53, Grade B and a wall thickness not less than Schedule 40, epoxy-lined and coated, in maximum 10-ft lengths,
Motor Adaptor	Cast Iron
Suction case bearing	Bronze. For any bearing packed with grease, grease shall be water resistant and NSF 61 compliant.
Bowl bearing	Rubber with bronze
Pump to motor coupling	Stainless steel
Wellhead	Cast iron or carbon steel, epoxy-lined with flange, sole plate, and fittings to connect sounding tube, power cables and other connections as indicated on drawings constructed to support 150% of the weight of all items in the well. Tapping for electrical wire, instrumentation, sounder tube and venting shall be provided. A screened vent cap shall be included. The discharge head shall have lifting eyes. The discharge head shall rest on a sole plate mounted to the pump pedestals. A .25-inch neoprene gasket and cadmium plated stainless steel bolts with nuts shall seal the discharge head to the sole plate. If the well casing below the discharge head is to be encased in concrete the sole plate shall

	have tapped bolt holes. The discharge outlet shall be as indicated. Each sounding tube shall be 2" stainless steel and shall have sufficient length to insert level instrument into the pump column in a way that the instrument can drop straight down to water's level.

B. Drive

1. Motor Design

a. The pump manufacturer shall supply the pump-motor assembly and shall accept responsibility for this assembly. The pump manufacturer shall mate pumps and motors and adjust the pump thrust plug.

b. The motor shall comply with the latest NEMA standards applicable to submersible motors.

c. The motor shall be of the "squirrel cage" induction type, suitable for reduced voltage starting. The motor shall be liquid filled and be rated at 460-volt, 3-phase, 60 Hertz for continuous operation. Mercury-seal motors are not acceptable. The motor horsepower rating shall not be exceeded over the full range of pump operation specified from shut-off to maximum flow. It shall have a service factor of 1.15. The 1.15 service factor shall be achieved at a minimum cooling flow velocity of 1.5 fps. with 77°F water.

d. The motor shall be equipped with fill liquid lubricated radial and Kingsbury type thrust bearings. The motor thrust bearing shall be sized to carry the weight of all rotating parts plus the unbalanced thrust of the pump, regardless of the direction of rotation. A mechanical shaft seal shall be provided in the motor housing to prevent loss of fill liquid. Motor shall be equipped with a pressure relief valve, drain plug and filling device.

e. Provide a bearing rated for a minimum of 130 percent of the maximum pump downthrust load.

f. Fill the motor with a water and propylene glycol solution for cooling and lubrication.

g. Do not use oils or grease lubrication.

h. Provide a flexible diaphragm in order to permit expansion of internal motor fluid.

i. The shaft seal shall be a Nitrite rubber lip seal or a Nitrite, carbon, carbide or ceramic face seal.

j. A mercury-type shaft seal will not be accepted.

k. Provide exterior material construction of Type 316 or 316L stainless steel. Provide shaft and coupling of 400 series stainless steel. Provide fasteners of 316 stainless steel.

l. Do not exceed the nameplate horsepower shall not be exceeded at any point on the pump curve.

m. The motor shall be heavy-duty canned type NEMA design 1,800 RPM with outside diameter not to exceed 12 inches.

n. The motor power factor shall not be less than 0.65 at pump design flow. Motor starter overload relays shall be sized for motor full load current for +/- 10 percent voltage range.

o. Motor winding insulation shall be rated for continuous duty at not less than 130˚C.

2. Electrical Cable

a. Provide necessary cables for power connection, control wires, and overload protection, sheathed, coded, and suitable for submersible pumps, and of sufficient length for direct and continuous connection from the motor to the terminal boxes located above ground.

b. Conduit between the terminal boxes and the starter shall be sealed with polywater FST or approved equal.

c. Provide the surface plate with a power cable splice box that meets the requirements of the National Electrical Code.

d. If indicated, provide a junction box that meets the requirements of the National Electrical Manufacturer's Association (NEMA).

e. Connect cables to the pumps and test at the factory.

f. If the cables are not assembled in the factory, the field connection of the cable to the motor shall be supervised and certified by the pump manufacturer's representative.

g. Splicing of cable between the motor and the terminal box will not be accepted.

h. The size and type of cable shall be determined by the pump manufacturer, suitable for the application.

i. Fully contain the motor lead-to-electrical cable within the water-tight motor housing and conform to IEEE and NEC standards.

j. Provide an electrical wire of annealed, bare, 19-stranded copper conductors insulated with PVC.

k. Jacket the power conductors plus a ground conductor in a flat heavy-duty PVC jacketing.

l. Provide UL-listed cable in accordance with UL83 Type TW Construction A, as Deep Well Submersible Cable.

m. Size power conductors to allow no more than 3 percent voltage loss in the entire length.

n. Size the grounding conductor in accordance with Table 24.3 of UL83.

o. Fully contain the motor lead-to-electrical cable within the water-tight motor housing and conform to IEEE and NEC standards

p. The motor power cord shall be routed through a conduit equipped with an O.Z. Gedney cable gland. The cable shall be secured to the column pipe with 316 stainless steel hose clamps or tyraps at a maximum of 20-foot intervals. Care shall be exercised during installation of the pump to avoid damaging the motor power cord.

3. Cable Entry

a. Design the cable entry water seal such that it precludes specific torque requirements in order to ensure a watertight and submersible seal.

b. It shall permit no entry of water into any high voltage area even if the cable is severed below the water level.

c. Connect cables to the pumps and test at the factory. If the cables are not assembled in the factory, the field connection of the cable to the motor shall be supervised and certified by the pump manufacturer's representative.

4. Motor Protection

a. In cases where the pump manufacturer recommends or requires additional monitoring and interlocks for warranty purposes, the contractor shall furnish and install the required protection/monitoring. The contractor shall coordinate with the starter supplier to incorporate interlocks, vendor specific alarm relay devices, and indicators and connect the alarm signals to the PLC.

2.6 SURFACE PREPARATION AND SHOP PRIME PAINTING

A. Each pump and associated equipment shall be shop-primed and finished-coated in accordance with the manufacturer's standard practice prior to shipment. Color shall be selected by the OWNER or OWNER'S Representative and an adequate supply of touch-up paint shall be supplied by the MANUFACTURER.

B. All interior and exterior wetted surfaces of pump columns and discharge elbows and the exterior of the bowl assemblies shall be cleaned of all rust and mill scale. Surfaces of the equipment that will be inaccessible after assembly shall be protected for the life of the equipment.

C. Coating: Exterior of pump bowl assembly, sole plate and interior and exterior of suction pipe, discharge head, and column pipe shall be sand-blasted and coated with NSF 61 approved Carboline Carboguard 891, Tnemec Potapox N140 or equal which has passed AWWA C210, D102 criteria. 1st coat 4-6 mils. 2nd coat 4-6 mils.

D. Nuts and Bolts: All bolts and nuts shall be coated in the field with Never-Seez White Food Grade with PTFE by Bostik, Inc. (Middleton, MA) or equal

2.7 SHOP TEST

A. In addition to the factory tests in Section 11200, perform the following procedures with the factory test prior to shipment:

1. Hydrostatically test the hydraulic end of pump assembled to the motor not less than 150 percent of the shutoff head of the pump.

2. Leak-Test

   a. Leak-test the motor not less than 150 percent the maximum submergence at Site conditions.

   b. If the motor is to be installed inside an artesian well, leak-test the motor at a test of pressure equal to at least 150 percent of the static pressure above the centerline of the motor.

3. Acceptance criteria for hydrostatic and leak test shall be zero leak..

4. Verify the pump characteristic curves by testing at shutoff head, 25, 50, 75, 100, and 125 percent of the indicated design flow, and at maximum "run-out" flow, and recording the measured head and motor current for each flow.

5. Verify cavitation-free service and absence of motor overheating during conditions simulating the actual operating conditions after installation.

6. Design the motor seals for complete water tightness at 150 percent of the actual maximum submergence at the Site for 30 minutes, and submit data on factory testing and quality control with the Shop Drawings.

7. Properly lubricate and protect parts such that no damage or deterioration will occur even during a prolonged delay from the time of shipment until installation is completed and the pumps are ready for operation.

8. Properly protect unpainted finished ferrous surfaces in order to prevent rust and corrosion.

9. Protect the finished surfaces of exposed flanges by strong wooden blind flanges.

10. Properly crate each pump o protect against damage during shipment.

B. For each pump, the MANUFACTUER will conduct shop tests as described in ANSI/HI 14.6 for capacity, power requirements, and pump efficiency at specified rated head, evaluated head, shutoff head, operating head extremes, and at as many other points as necessary for accurate performance curve plotting but not less than ten. All tests and test reports shall be made in conformity with the requirements and recommendations of the Hydraulic Institute Standards. Acceptance testing shall be Table 14.6.3.4 Grade 1U, with no minus tolerance or margin allowed.

C. (6) certified copies of a report covering each test shall be prepared by the MANUFACTURER and delivered to the ENGINEER prior to shipment of the pumps. The report shall include data and test information as stipulated in the Hydraulic Institute Standards, copies of the test log originals, test reading to curve conversion equations, and certified performance curves. The curves shall include head, pump input power, pump efficiency, rpm, and shop test NPSH available, plotted against capacity. The curves shall be easily read and plotted to scales consistent with performance requirements, with all test points clearly shown.

PART 3 -- EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. CONTRACTOR shall be responsible for the delivery, handling of products and shall coordinate storage of materials with operations staff.

B. Equipment shall be boxed, crated, or otherwise protected from damage, dirt, and moisture during shipment, handling, and storage. Equipment shall be protected from exposure to corrosive fumes and shall be kept thoroughly dry.

C. Each item of equipment shipped shall have a legible identifying mark corresponding to the equipment number shown or specified for the item.

D. Transport products by methods which prevent product damage. Deliver products in undamaged, dry condition in manufacturer's unopened containers or packaging. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

E. Load and unload equipment and appurtenances by hoists or skidding. Do not drop products. Do not skid or roll products on or against other products. Pad slings and hooks in a manner which prevents damage to products.

F. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions. Store products which will be deteriorated by sunlight in a cool location out of direct sunlight. Rubber products shall not come in contact with petroleum products.

G. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering and as recommended by manufacturer; provide ventilation which avoids condensation.

H. Equipment having moving parts such as gears, bearings, and electric motors; instruments; control panels; motor control centers; and switchgear shall be stored in a temperature and humidity-controlled area until equipment is installed, and permanent HVAC systems are in operation.

I. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged and are maintained under required conditions and in accordance with manufacturer’s requirements.

J. Promptly remove damaged products from the job site. Replace damaged products with undamaged products

3.2 INSTALLATION

A. Installation of pumping equipment shall be in strict accordance with the respective MANUFACTURER'S instructions and recommendations. Equipment shall be installed by experienced and mechanically skilled workmen with previous experience in similar installations. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the MANUFACTURER'S recommendations.

B. All necessary piping, fittings, concrete pedestal, anchor bolts, grouting, etc. shall be provided to ensure a complete and satisfactory installation of the pumping equipment including pump, electric motor, line shafting, column pipe, electrical connections, and piping connections.

C. Hardware: All anchor bolts, nuts and washers, brackets and the hardware items shall be stainless steel 316.

D. Install piping, fittings, and other appurtenances to the pump installation in accordance with the MANUFACTURER'S installation instructions, the requirements of referenced Sections included with these Specifications and as shown on the Drawings. Equipment shall be installed in a workmanlike manner so that individual equipment will function properly and freely, and no individual parts shall be strained.

E. Noise and Vibrations: All equipment containing moving parts shall be installed level and plumb, unless otherwise indicated in the Drawings or in the Specifications; and shall be anchored securely in order that noise be suppressed to a minimum and that vibrations do not cause damage while in operation.

3.3 FACTORY SERVICE REPRESENTATIVE

A. The CONTRACTOR shall arrange for the services of a qualified factory service representative. This service shall be scheduled for three (3) trips requiring up to six (6) full working days per trip for a total of eighteen (18) full working days.

B. The duties of the service representative shall be as follows: After the equipment has been installed but before it is operated by others, the representative shall inspect the completed installation for soundness (no damaged or cracked components), completeness, correctness of setting and alignment, that the pumps are free from stresses imposed by attached piping, and for the adequacy and correctness of packing, sealing, and lubricants. The service representative shall start-up the equipment and instruct the OWNER'S personnel in proper operation and maintenance procedures. The responsibility of the CONTRACTOR regarding start-up shall be fulfilled when the start-up and testing are complete, the equipment is functioning properly, and has been accepted by the OWNER.

C. The service representative shall submit to the ENGINEER six (6) copies of a signed report of the result of his inspection, adjustments and start- up. The report shall include descriptions of the inspection, adjustments made, and the start-up. The report shall also

include a statement that the equipment is ready for permanent operation and that nothing in the installation will render the manufacturer's warranty null and void. Final payment shall not be made to the CONTRACTOR until this report has been submitted to and approved by the ENGINEER.

3.4 INSPECTION AND TESTING

A. After pump has been completely installed, the CONTRACTOR shall conduct, in the presence of the ENGINEER, testing of all mechanical equipment and piping as in operation to demonstrate capacity, correct alignment, smooth operation, proper adjustment, and freedom from noise, vibration, over-heating and leaking, and to ensure satisfactory compliance with the Specifications. All defects shall be corrected. The CONTRACTOR shall supply all oil, grease, and all other material necessary to complete the field tests related to the pump and motor.

B. If the pump performance does not meet the performance requirements, corrective measures shall be taken by the CONTRACTOR, or pump shall be removed and replaced with a pump which satisfies the conditions specified.

3.5 VIDEO LOG

A. Prior to installing the pump column, the CONTRACTOR shall Video Log the well in color on DVD. The Video Log shall render a detailed look at the condition of the well and provide a continuous depth profile characterizing casing, screen, rock, and fluid properties adjacent to the well. Two (2) copies of the Video Log for each well shall be provided to the OWNER.

3.6 DISINFECTION

A. Pump Disinfection: Prior to installing the pump in the well, all interior and exterior parts of the pump coming in contact with the water shall be disinfected with a five percent (5%) chlorine solution (chlorine bleach). The method of disinfecting the pump shall be approved by the OWNER or OWNER’S representative prior to installing the pump.

B. Well and Piping Disinfection: Piping, fittings, suction barrel, and appurtenances installed to connect the pump to existing piping, shall be disinfected and flushed in accordance with AWWA C651, the Ten States Standards for Water Works as incorporated by FDEP, other pertinent FDEP regulations, and the Florida Administrative Code. The method of disinfecting the pumps shall be approved by the OWNER or OWNER’S representative prior to installing the pump.

3.7 WARRANTY

A. All pumping equipment shall carry a manufacturer’s warranty of one (1) year that shall commence upon acceptance by the OWNER.

- END OF SECTION -

WELL NO.	PUMP TAG NO.	EXISTING CASING SIZE (IN)	PUMP BOWL DEPTH (FT)	RATED FLOW (GPM)	RATED HEAD (FT)	MINIMUM PUMP EFFICIENCY AT RATED HEAD (%)	MAXIMUM PUMP SPEED (RPM)	MINIMUM PUMP COLUMN SIZE (IN)	PUMP DISCHARGE SIZE (IN)	MAXIMUM REQUIRED HP
150	VTP-150	16	80	1875	75	75%	1800	10	10	60
151	VTP-151	16	90	2000	100	75%	1800	10	10	75
153	VTP-153	16	80	1750	80	75%	1800	10	10	50
154	VTP-154	16	80	2000	70	75%	1800	10	10	50
155	VTP-155	16	90	1750	80	75%	1800	10	10	50
156	VTP-156	16	70	1750	80	75%	1800	10	10	50
158	VTP-158	16	90	2000	100	75%	1800	10	10	75
159	VTP-159	16	70	2000	70	75%	1800	10	10	50
160	VTP-160	16	70	2125	65	75%	1800	10	10	50
164	VTP-164	16	70	2000	70	75%	1800	10	10	50
165	VTP-165	16	70	2000	70	75%	1800	10	10	50
166	VTP-166	16	80	1750	80	75%	1800	10	10	50
167	VTP-167	16	100	1875	115	75%	1800	10	10	75
168	VTP-168	16	80	2000	107.5	75%	1800	10	10	75
169	VTP-169	16	110	1600	125	75%	1800	10	10	75

GENERAL NOTES:

1. PUMPS SHALL NOT BE DESIGNED FOR REVERSE ROTATION. MOTORS SHALL INCLUDE A NON-REVERSE RATCH.
2. PROVIDE UP TO THREE (3) MOTORS TYPE FOR THE ENTIRE WELLFIELD. MAX MOTOR SIZE SHALL BE 75 HP. MOTORS WITH THE SAME HP SHALL BE THE SAME RPM.

SECTION 13500

WELL ABANDONMENT

PART 1 – GENERAL

1-1. SCOPE OF WORK

1-1.01 The CONTRACTOR shall furnish all equipment and materials necessary to prepare the site for the plugging and formally abandon five (5) existing production wells, located at well sites MBR-152, MBR-157, MBR-161, MBR-162, and MBR-163 at the Morris Bridge Wellfield.

1-1.02. The work sequence shall be as follows:

a. Mobilization shall provide for the assembling of all personnel, materials, and equipment to the job sites.

b. For each well that needs to be abandoned, the CONTRACTOR shall disconnect and remove all electrical systems and remove the existing pump.

c. Following the previous step, for wells MBR-152 and MBR-157, the CONTRACTOR shall demolish and remove the top portion of the well casing to approximately 2 feet below existing grade, and then perform the well abandonment as described below. For wells MBR-161, MBR-162, and MBR-163 the CONTRACTOR shall cut the existing casing flush with the slab finished floor, and then perform the well abandonment as described below.

   The CONTRACTOR shall demolish all existing underground piping impacted by the well abandonment, unless noted otherwise in the CONTRACT DRAWINGS. For sections for the discharge pipe that will be abandoned in place, grouting of that section of pipe will be required as indicated in the CONTRACT DRAWINGS.

1-1.03. The well abandonment work shall be performed by a licensed Florida water well contractor with equipment which is adequate to complete all phases of well abandonment. If the CONTRACTOR's equipment is not capable of satisfactorily performing the work provided in these specifications, the CONTRACTOR at his own expense shall substitute equipment satisfactory to the ENGINEER.

1-1.04. The CONTRACTOR shall provide sound proofing barriers, provide mufflers on equipment, and take whatever steps necessary during well abandonment and all other work incidental thereto to ensure that noise levels conform to applicable noise ordinances. The CONTRACTOR shall take all necessary measures to limit access to the abandonment site to minimize public hazards.

1-1.05. All work performed shall be in full conformance with Southwest Florida Water Management District's (SWFWMD) and Florida Department of Environmental Protection's (FDEP) rules and regulations for well abandonment.

1-2. CONTRACTOR SUBMITTALS

1-2.01. **General:** All CONTRACTOR submittals shall conform to the applicable requirements of Section 01300 Submittal Procedures, and the supplementary requirements specified herein. All measurements of depths shall be referenced to existing ground surface at each well site.

1-2.02. **Equipment List:** The CONTRACTOR shall submit a list of the equipment it proposes to utilize on the project which shall include manufacturer's load capacities, horsepower, year of manufacture and year of purchase by the present owner. The list shall include drilling or pump rig, grout pump and grout mixer.

1-2.03. **Daily Log:** A daily log of abandonment activities shall be prepared by the CONTRACTOR. The log shall include types, additives, quantities, and measured setting depths of materials utilized, methods of material installation, and all other pertinent information pertaining to abandonment activities. The log will include all difficulties or unusual conditions met in daily activities. The daily log shall be always available for inspection at the site.

1-2.04. **Completion Report Required:** A Water Well Completion Report (Form 0124) must be filed and submitted within 30 days of completion of work to the applicable regulating agency. Two copies each of these reports shall be submitted to the ENGINEER.

1-2.05. **Final Description:** The final well description shall show the following: existing casing diameter, depth and material; depths, quantities and material composition of abandonment materials, final wellhead completion; and all other pertinent details.

1-3. QUALITY ASSURANCE

1-3.01. At the time of well abandonment utilizing grout, the CONTRACTOR will reserve grout samples in sturdy containers on site for inspection by the ENGINEER. The purpose of these samples will be to observe the grout curing process. If the grout mixture fails to fully cure within 48-hours or if gravel or grout depths are unacceptable to the ENGINEER, the well shall be drilled out and the abandonment materials satisfactorily reinstalled at the CONTRACTOR's expense.

1-4. MATERIALS DELIVERY, STORAGE AND PROTECTION OF MATERIALS

1-4.01. All materials shall be delivered in an undamaged condition and stored, if necessary, to provide protection against damage. All defective or damaged materials shall be replaced with new materials at the CONTRACTOR's expense.

1-5. CONTRACTOR'S EQUIPMENT

1-5.01. The CONTRACTOR's equipment shall be clean, well maintained, and in good operating condition when delivered to the site and during the entire operation.

1-5.02. The equipment shall be of adequate size, strength, horsepower, and capacity for the project and shall be of the type successfully utilized by the CONTRACTOR for the abandonment of similar wells within the last 2 years.

1-5.03. All equipment shall be provided with safety devices as required by governmental authorities having jurisdiction.

1-6. MOBILIZATION AND OPERATION REQUIREMENTS

1-6.01. The CONTRACTOR shall mobilize its equipment and personnel to effectively commence its abandonment operations within the time limit specified. A storage area for materials if required by the CONTRACTOR is provided as shown in the Drawings.

1-6.02. All equipment shall be carefully maintained during the CONTRACTOR's operations period. Any damage to the surrounding property and/or facilities of any nature due to the CONTRACTOR's operations shall be repaired or replaced at the CONTRACTOR's expense.

1-7. FINAL CLEANUP

1-7.01. The CONTRACTOR shall thoroughly clean the site after completion of its operations. All excess grout, gravel, debris, and other materials utilized during well abandonment shall be removed and disposed of by the CONTRACTOR.

1-7.02. The CONTRACTOR shall promptly remove its equipment, temporary facilities, and materials, and leave the site in a condition acceptable to the OWNER following completion of work activities. The CONTRACTOR shall repair any damage to property and facilities caused by its operation prior to final acceptance of the work.

PART 2 - PRODUCTS

2-1. MATERIALS AND EQUIPMENT

2-1.01. **Gravel Pack Material:** The CONTRACTOR shall identify and document the screened intervals of the wells to be abandoned. Gravel pack material shall be used to abandon the screened interval and the interval 10 feet above the screened interval of the well. All gravel shall be hard, well rounded, water-worn gravels washed clean of silt, dirt and foreign matter; crushed rock will not be accepted. The gravel shall be of a size approved by the ENGINEER. The gravel shall be placed in the screened interval of the well using the tremie method and shall extend a maximum of 10 feet above the top of the screen.

2-1.02. **Sand Pack Material:** The sand used for the 1-foot-thick sand pack shall be of medium size passing the U.S. Standard Sieve Mesh No. 35 and retained in the U.S. Standard Mesh No. 60 and consist of sound, non-reactive material. The sand pack shall be installed immediately above the gravel pack interval. Crushed aggregate shall not be accepted. The sand shall be free of vegetative matter and placed in the production well only above the gravel pack material.

2-1.03. **Sealing Material:** The sealing material shall be neat cement with 5 percent bentonite powder (by weight of cement). The neat cement shall be composed of one sack of Type II Portland cement (94 pounds) conforming to ASTM C 150 and SFWMD Rules Chapter 40E-3 F.A.C., 4.7 pounds of bentonite and 5 gallons of potable water to produce the slurry mixture capable of effectively sealing the well. Cement shall be emplaced in the production well above the sand seal.

2-1.04. **Grouting Method:** Tremie pipe shall be used to pressure grout all wells. The tremie pipe used for the production well abandonment shall be a minimum 2-inch Schedule 40 threaded and coupled or flush threaded black steel pipe. The CONTRACTOR shall furnish a grout mixer capable of mixing the volume of grout required to assure continuous grouting operations. The grout mixer shall have sufficient agitation by means of paddles or jetting of fluid to create a homogeneous mix of the cement, bentonite and clear water. The CONTRACTOR shall furnish a grout pump capable of providing sufficient pressure to overcome tremie pipe friction losses, fill the well intervals with grout, and displace any fluids in the well.

2-1.05. **Water Source:** The CONTRACTOR shall make all necessary provisions for conveying potable water to the wellsite for use during the abandonment operation.

PART 3 - EXECUTION

3-1. GENERAL

3-1.01. The work shall be performed in accordance with AWWA Standard for Water Wells A100-06 and adhere to all regulatory requirements by a competent crew with equipment which is sufficient to complete all phases of well abandonment.

3-1.02. All work required to be repeated, resulting form the CONTRACTOR's performance, including all additional materials, labor and equipment required, shall be furnished at the expense of the CONTRACTOR and no claim for additional compensation shall be made or be allowed therefore, except as specifically provided herein.

3-2. CONSTRUCTION OF WELLS TO BE ABANDONED

3-2.01. The exact locations of the wells are shown on the CONTRACT DRAWINGS. A summary of the well data can be found below in Table 1. The CONTRACTOR shall verify the depth of the wells prior to initiating abandonment operations.

Well	Diameter (inches)	Total Depth (feet bls)	Cased Depth (feet bls)	Screened or Open-Hole Interval
MBR-152	16	572	<220	Contractor to confirm
MBR-157	16	614	<222	Contractor to confirm
MBR-161	16	542	<221	Contractor to confirm
MBR-162	16	608	<217	Contractor to confirm
MBR-163	16	616	<220	Contractor to confirm

3-3. WELL ABANDONMENT

3-3.01. **Production Well:** All work associated with plugging and abandonment of a production or public supply well shall conform to State of Florida well drilling practices and to AWWA standards (AWWA; A100-06). SWFWMD oversees plugging and abandoning in the state of Florida and provides the required forms that the contractor submits once the abandonment activities are complete. Abandonment shall adhere to Rule 40D-3.531(5), Florida Administrative Code (F.A.C.). The 62-532.900 Permit for Water Well Construction, Repair, or Abandonment shall be obtained and submitted prior to any work performed by the licensed water well Contractor.

3-3.02. The Contractor is required to give SWFWMD a 24-hour notice prior to beginning abandonment procedures. All wells abandoned, including completed and incomplete wells shall be plugged by filling them from bottom to top with grout. Use of clean aggregate to bridge cavernous or lost circulation zones shall be allowed if measurements indicate loss of grout within the borehole or screened portion does not connect two (2) or more aquifers of differing water quality. Prior approval to use aggregate or other material must be obtained from SWFWMD. Obstructions must be cleared from all wells prior to plugging and abandoning. Upon completion of well abandonment, the SWFWMD Well Grouting/Abandonment Form must be submitted and can be filed at no charge.

3-4. WELLHEAD AND SITE COMPLETION

3-4.01. The CONTRACTOR shall terminate the well casing to a final depth as indicated on the CONTRACT DRAWINGS. The excavation shall be backfilled and compacted with previously excavated material and graded to match existing grade for MBR-152 and MBR-157. For wells MBR-161, MBR-162, and MBR-163, cut the existing casing flush with the slab finished floor and top concrete to match the existing top of concrete elevation, as shown on the CONTRACT DRAWINGS.

3-4.02. The CONTRACTOR shall remove all raw water piping located above grade. Below-grade piping serving an individual well site shall be removed up to the isolation gate valve closest to the main collection header pipe, unless noted otherwise in the CONTRACT DRAWINGS. For sections for the discharge pipe that will be abandoned in place, grouting of that section of pipe will be required as indicated in the CONTRACT DRAWINGS .

3-4.03. The CONTRACTOR shall provide an as-built record drawing for each well that has been abandoned. The as-built drawing shall be prepared in accordance with Section 01720 – Contract Closeout and Documentation, and shall indicate the extent of abandonment, removal, and abandonment in-place. The final below-grade elevation of each abandoned well casing shall be indicated on the as-built drawings.

3.5 DISPOSAL OF ABANDONMENT WASTES

3-5.01 The CONTRACTOR shall provide all facilities, equipment, and materials required for the removal of abandonment wastes and materials from the well site according to State and local regulations.

END OF SECTION

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SECTION 15005

VALVES, GENERAL

PART 1 -- GENERAL

1.1 SUMMARY

1-1.01. Provide valves, actuators, and appurtenances, complete and operable, as indicated in accordance with the Contract Documents.

1-1.02. The provisions of this Section shall apply to all valves and valve actuators except where otherwise indicated.

1-1.03. Valves and actuators in particular locations may require a combination of units, sensors, limit switches, and controls, as indicated.

1-1.04. Support

1. Where a valve is to be supported by means other than the piping to which it is attached, obtain from the valve manufacturer a design for its support and foundation.

2. Submit the support design, including drawings and calculations sealed by an engineer, with the Shop Drawings.

1-1.05. Unit Responsibility

1. The Contractor shall assign a single manufacturer to be responsible for the supply, coordination of design, assembly, testing, and furnishing of each valve; however, the Contractor shall be responsible to the Owner for compliance with the requirements of each valve Section.

1-1.06. Single Manufacturer

1. Where 2 or more valves of the same type and size are required, the valves shall be furnished by the same manufacturer.

1.2 CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with the requirements of Section 01300 – Submittal Procedures.

1-2.02. Furnish the following information on Shop Drawings:

1. valve name, size, Cv factor, pressure rating, identification number (if any), and specification section number;

2. complete information on the valve actuator, hydraulic power units (HPU), pneumatic air supply system including size, manufacturer, model number, limit switches, and mounting;

3. cavitation limits for control valves;

4. assembly drawings showing part nomenclature, materials, dimensions, weights, and relationships of valve handles, hand wheels, position indicators, limit switches, integral control systems, needle valves, and control systems;

5. A valve-labeling schedule, listing the valves to be furnished with stainless steel tags, indicating in each case the valve location and the proposed wording for the label.

1-2.03. Furnish a technical manual containing the required information for each valve, as indicated.

1-2.04. Furnish a spare parts list, containing the required information for each valve assembly, as indicated.

1-2.05. Factory Test Data

1. Where indicated, submit signed, dated, and certified factory test data for each valve requiring certification, before shipping the valve.

2. Furnish a certification of quality and test results for factory-applied coatings.

1-2.06. Field Test Data

1. Submit signed, dated, and certified field test data for each valve.

PART 2 -- PRODUCTS

2.1 PRODUCTS

2-1.01. General

1. Provide valves and gates of new and current manufacture.

2. Provide valves 6-inch and larger with actuators with position indicators.

2-1.02. Protective Coating

1. Coat the exterior surfaces of valves and the wet interior surfaces of ferrous valves of sizes 2-inch and larger in accordance with the manufacturer standards for water supply.

2. The valve manufacturer shall certify in writing that the required coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with the indicated requirements.

3. Do not coat the machined flange faces of valves except where such flanges are not adjoining a mating flange as shown in the Contract Documents. Apply rust inhibitor coating on machined surfaces of the flange prior to shipment.

2-1.03. Valve Labeling

1. Except when such requirement is waived by the Engineer in writing, provide a label on shut-off valves and control valves except for hose bibbs and chlorine cylinder valves.

2. Furnish a label composed of 1/16-inch plastic or stainless steel, a minimum of 2 inches by 4 inches in size and permanently attached to the valve or on the wall adjacent to the valve as directed by the Engineer.

2-1.04. Valve Testing

1. As a minimum, unless otherwise indicated or recommended by the reference standards, test valves 3 inches in diameter and smaller in accordance with the manufacturer's standard procedure.

2. Factory-test valves 4 inches in diameter and larger as follows:

   a. Hydrostatic Testing

      1) Subject valve bodies to an internal hydrostatic pressure equivalent to twice the water-rated pressure of the valve.

      2) Metallic valves rating pressures shall be based at 100 degrees F.

      3) Plastic valves rating pressures shall be based at 73 degrees F, or at a higher temperature according to material type.

      4) During the hydrostatic test, there shall be no visible leakage through the valve body, end joints, or shaft seals, nor shall parts of the valve be permanently deformed.

      5) Allow test duration of at least 10 minutes, in order to allow visual examination for leakage.

   b. Seat Testing

      1) Test the valves for leaks in the closed position, with the pressure differential across the seat equal to the water rated pressure of the valve.

      2) Provide test duration of at least 10 minutes, in order to allow visual examination for leakage.

      3) The leakage rate shall be the more stringent of the following:

         a) As recommended by the reference standard for that type of valve; or

         b) Leakage past the closed valve not to exceed one fluid ounce per hour per inch diameter for metal seated valves, and drop-tight for resilient seated valves.

c. Performance Testing

1) Shop-operate the valves from the fully-closed to the fully-open position, and reverse under no-flow conditions in order to demonstrate that the valve assembly operates properly.

2-1.05. Certification

1. Prior to shipment of valves with sizes larger than 12-inches in diameter, submit certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, or ASTM.

2-1.06. Valve Markings

1. Permanently mark valve bodies in accordance with MSS SP25 - Standard Marking Systems for Valves, Fittings, Flanges, and Unions.

2.2 MATERIALS

2-2.01. General

1. Provide materials suitable for the intended application.

2. Provide materials in contact with potable water listed as compliant with NSF Standard 61.

3. Ensure that materials not indicated are of high-grade standard commercial quality, free from defects and imperfections that might affect the serviceability of the product for the purpose for which it is intended.

4. Unless otherwise indicated, provide valve and actuator bodies conforming to the following requirements:

a. Cast Iron: Close-grained gray cast iron, conforming to ASTM A 48 - Gray Iron Castings, Class 30, or to ASTM A 126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings

b. Ductile Iron: ASTM A 536 - Ductile Iron Castings, or to ASTM A 395 - Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures

c. Steel: ASTM A 216 - Steel Castings, Carbon Suitable for Fusion Welding for High-Temperature Service, or to ASTM A 515 - Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service

d. Bronze: ASTM B 62 - Composition Bronze or Ounce Metal Castings, and valve stems not subject to dezincification shall conform to ASTM B 584 - Copper Alloy Sand Castings for General Applications. Bronze materials in contact with potable water service shall be free of lead content meeting the Lead Reduction Act.

e. Stainless Steel: Stainless steel valve and operator bodies and trim shall conform to ASTM A 351 - Steel Castings, Austenitic, for High-Temperature Service, Grade CF8M, or shall be Type 316 stainless steel

f. PVC: Polyvinyl chloride materials for valve body, flanges, and cover shall conform to Cell Classification 12454

g. CPVC: Chlorinated Poly Vinyl Chloride materials for valve body, flanges, and cover shall conform to Cell Classification 23447

h. NSF Standard 61: Materials shall be listed for use in contact with potable water.

i. Elastomeric materials used for seat, seals and O-rings shall be compatible with temperature, pressures and fluid or gas service.

   1) Elastomeric materials for water with chloramines shall be Teflon or Viton-A.

   2) Elastomeric materials for water with dissolved ozone residual shall be Teflon suitable for ozone service.

   3) Elastomeric materials for oxygen (LOX or GOX) shall be Teflon specially manufactured and packaged suitable for oxygen service.

2.3 VALVE CONSTRUCTION

2-3.01. Bodies

1. Provide valve bodies that are cast, molded (in the case of plastic valves), forged, or welded, of the materials indicated, and with smooth interior passages.

2. Provide wall thicknesses uniform and in agreement with the applicable standards for each type of valve, without casting defects, pinholes, and other defects that could weaken the body.

3. Perform welds on welded bodies by certified welders and ground welds smooth.

4. Provide valve ends as indicated, and rated for the maximum temperature and pressure to which the valve will be subjected.

2-3.02. Valve End Connections

1. Unless otherwise indicated, valves 2-1/2 inches in diameter and smaller may be provided with threaded end connections.

2. Provide valves 3 inches in diameter and larger with flanged end connections.

3. Flanges, bolts and gaskets shall be as specified in Section 40 05 00 - Piping, General.

2-3.03. Bonnets

1. Connect valve bonnets to the body by clamping, screwing, or flanging.

2. Provide bonnets of the same material, temperature, and pressure rating as the body.

3. Make provisions for the stem seal with the necessary glands, packing nuts, and yokes.

2-3.04. Stems

1. Provide valve stems of the materials indicated, or, if not indicated, of the best commercially-available material for the specific service, with adjustable stem packing, O-rings, chevron V-type packing, or other suitable seal. Bronze materials in contact with potable water shall be NSF 61 approved and free of lead. Elastomeric materials shall be compatible with fluid service.

2-3.05. Stem Guides

1. Provide stem guides spaced with an L/R ratio not to exceed 200:1. Submit calculations for L/R ratios and guide spacing to the Engineer for review.

2. Stem guides shall have slotted holes and shall be adjustable in two directions.

2-3.06. Internal Parts

1. Provide internal parts and valve trim as indicated for each individual valve.

2. Where not indicated, construct valve trim from Type 316 stainless steel or other material best-suited for the intended service.

2-3.07. Nuts and Bolts

1. Unless otherwise indicated, provide nuts and bolts on valve flanges and supports in accordance with the requirements of Section 15061 Ductile Iron Pipe 42 Inches and Smaller.

2.4 VALVE ACTUATORS

2-4.01. Provide standard manufacturer manual valve actuators.

2.5 VALVE ACCESSORIES

2-5.01. Provide valves complete with the accessories required to provide a functional system.

2.6 SPARE PARTS

2-6.01. Furnish the required spare parts, suitably packaged and labeled with the valve name, location, and identification number.

2-6.02. Furnish the name, address, and telephone number of the nearest distributor for the spare parts of each valve.

2-6.03. Spare parts are intended for use by the Owner, after expiration of the correction of defects period.

2.7 MANUFACTURERS

2-7.01. Valve manufacturers shall have a successful record of not less than 5 years in the manufacture of the indicated valves.

PART 3 -- EXECUTION

3.1 VALVE INSTALLATION AND TRIAL OPERATION

3-1.01. General

1. Install valves, actuating units, stem extensions, valve boxes, and accessories in accordance with the manufacturer's written instructions and as indicated.

2. Adequately brace gates in order to prevent warpage and bending under the intended use.

3. Firmly support valves in order to avoid undue stresses on the pipe.

3-1.02. Access

1. Install valves in a manner to provide easy access for actuation, removal, and maintenance, and to avoid interference between valve actuators and structural members, handrails, and other equipment.

3-1.03. Valve Accessories

1. Where combinations of valves, sensors, switches, and controls are indicated, properly assemble and install such items such that systems are compatible and operating properly.

2. Clearly note the relationship between interrelated items on Shop Drawing submittals.

3-1.04. Trial Operation

1. After installation, schedule trial operation witnessed by the Engineer and the Owner representative.

2. All valves shall be cleaned thoroughly of all foreign materials and final adjustments made. The valves shall then be operated through one complete cycle from a fully closed position to a fully open position and back to a fully closed position to verify that the assembly is functional.

3. For control valves that operate in multiple operating scenarios, the Contractor shall simulate all operational scenarios including the hydraulic power units, pilot control system or pneumatic air supply system to demonstrate compliance to the specifications.

4. A field leakage test meeting the maximum allowable specified requirement shall be conducted.

5. Test certificate shall be signed by the valve manufacturer and the Contractor and shall be submitted to the Engineer.

END OF SECTION

SECTION 15010

VALVE INSTALLATION

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers the installation of new valves and actuators purchased by CONTRACTOR as part of this WORK. Cleaning, disinfection, pressure and leakage testing, insulation, and pipe supports are covered in other sections. The following specification sections are applicable to valves to be installed:

Title
AWWA Butterfly Valves
Air Valves

1-2. GENERAL

1-2.01. Equipment installed under this section shall be erected and placed in proper operating condition in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1-2.02. Coordination. Flanged connections to valves including the bolts, nuts, and gaskets are covered in the appropriate pipe specification section. Valve ends shall match piping.

PART 2 – PRODUCTS - Not Applicable.

PART 3 - EXECUTION

3-1. INSPECTION

3-1.01. All valves and accessories shall be inspected for damage and Cleanliness before being installed. Any material damaged or contaminated in handling on the job shall not be used unless it is repaired and re-cleaned to the original requirements by CONTRACTOR. Such material shall be segregated from the clean material and shall be inspected and approved by OWNER or his representative before its use.

3-2. INSTALLATION.

3-2.01. General. Valves shall be installed with sufficient clearance for proper operation of any external mechanisms, and with sufficient clearance to dismantle the valve for in-place maintenance. Installation shall be in accordance with the valve manufacturer’s recommendations.

3-2.02. Unless otherwise indicated on the DRAWINGS or specified, all valves installed in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs of piping having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and operating handwheel shall be installed above the valve horizontal centerline as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as reviewed by ENGINEER.

3-2.03. Installation Checks. - Not used.

3-2.04. AWWA Butterfly Valves. Not used.

3-2.05. Whenever an actuator must be removed to permit installation of a valve, the actuator shall be promptly reinstalled.

3-2.06. Check Valves.

3-2.07. Swing Check Valves. Install valves oriented for the correct flow direction. Only valves designed for vertical installation shall be installed in vertical piping.

3-2.08. Plug Valves. - Not used.

3-2.09. Resilient Seated Gate Valves. – Resilient gate valves shall be installed with the shaft vertical unless otherwise necessary for proper operation or as acceptable to Engineer.

3-2.10. Air Release and Combination Air Valves. The exhaust from each valve shall be piped to a suitable point acceptable to ENGINEER or as indicated on the Drawings.

3-2.11. Hydrants. – Not used.

3-2.12. Valve Boxes. – Not used.

3-3. VALVE ACTUATORS

3-3.01. Valve actuators and accessories shall be factory mounted on the valve, calibrated, and tested by the valve or actuator manufacturer.

3-4. FIELD QUALITY CONTROL

3-4.01. Field Testing. After installation, all valves shall be tested in accordance with the Pipe and Valve Schedule on the CONTRACT DRAWINGS.

3-4.02. Pressure Tests. Pressure testing shall be in accordance with the Pipe and Valve Schedule on the CONTRACT DRAWINGS.

3-4.03. Leakage Tests. All valves shall be free from leaks. Each leak that is discovered within the correction period stipulated in the General Conditions shall be repaired by and at the expense of CONTRACTOR. This requirement applies whether pressure testing is required or not.

3-5. ADJUSTING

3-5.01. After installation, the opening and closing time shall be adjusted as needed for each pneumatic, hydraulic and electric actuated valve.

END OF SECTION

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SECTION 15011

HEATING, VENTILATING, AND AIR CONDITIONING, GENERAL

PART 1 -- GENERAL

1.1 SUMMARY

1-1.01. The Contractor shall provide heating, ventilating, and air conditioning systems and associated equipment complete with supports, mounting frames, ventilators, ductwork, piping, louvers, panels, filters, grilles, electric drive units and controls, mechanical equipment, electrical work, appurtenances, testing, and balancing, as indicated in accordance with the Contract Documents.

1-1.02. The equipment shall be installed ready for operation.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1-2.01. The Work and materials shall be in full accordance with the latest rules and regulations or publications of the State Energy Resources Conservation and Development Commission, the State Fire Marshall, the Industrial Safety Orders, the Health and Safety Rules (Air Conditioning systems), the local plumbing code, the local building code, and other local codes.

1-2.02. Nothing in the Contract Documents shall be construed to permit Work in violation of the above codes, rules and regulations.

1-2.03. In the absence of applicable codes, the installation and workmanship shall follow the standards set by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).

1.3 CONTRACTOR SUBMITTALS

1-3.01. Shop Drawings:

1. Submit complete shop drawings and certificates, test reports, affidavits of compliance, for all equipment, ductwork and piping systems, in accordance with the requirements in Section 01300 – Submittal Procedures, and as indicated in the individual equipment, piping or ductwork Sections.

2. Construction Drawings

    a. The HVAC Drawings define the general layout, configuration, routing, size and the general intent of the design. and are not fabrication drawings.

    b. The ductwork dimensions provided on the design drawings represent a free area and they are clear inside dimensions. The contractor shall be responsible to account for the loss of free area due acoustical lining, or any internal obstructions, and oversize the ductwork to provide the same free area as the one shown on the design drawings.

c. It shall be the Contactor's responsibility to develop the Shop Drawings required for the construction of the HVAC system.

3. The Shop Drawings shall include all necessary dimensions and details regarding equipment, pipe and ductwork joints, fittings, valves, appurtenances, design calculations, and material lists.

4. The submittals shall include detailed layout, spool, or fabrication drawings which shall show all fittings, and supports as necessary to accommodate the equipment as a complete and functional system.

1-3.02. Equipment Numbers:

1. Equipment is identified by assigned numbers for reference and location purposes in the Contract Documents.

2. Indicate the appropriate equipment numbers on the Shop Drawings and other submittals.

1-3.03. Furnish certified fan curves for each fan.

1.4 WARRANTY

1-4.01. Air conditioners, heaters, fans, ventilators, grilles, and the like, that are provided by the Contractor shall carry the manufacturer’s standard warranty.

1-4.02. Warranties shall be furnished to the Engineer upon final acceptance of the completed systems by the Owner.

1-4.03. Refrigerant compressors shall carry a manufacturer's 5-year warranty.

1-4.04. Control System:

1. The temperature and equipment control system shall be warranted free from defects in workmanship and material under normal use and service for a period of one year after acceptance by the Engineer.

2. Equipment that proves to be defective in workmanship or material during the warranty period shall be adjusted, repaired, or replaced by the automatic control manufacturer as part of the Contract.

PART 2 -- PRODUCTS

2.1 GENERAL

2-1.01. Quality:

1. Mechanisms and other parts shall be amply proportioned for the stresses which may occur during operation and for any other stresses which may occur during fabrication and erection.

2. Individual parts furnished which are alike in all units shall be alike in workmanship, design, and materials, and shall be of the manufacturer's top-line, industrial-commercial grade.

2-1.02. Supports:

1. Equipment and appurtenances shall be firmly anchored or connected to supporting members.

2. Equipment shall be supported on restrained spring-type vibration isolators.

3. Supports as required for the proper installation of the equipment, but not forming an integral part of the building structure, shall be provided unless otherwise indicated.

2-1.03. Noise and Vibration Control

1. The system shall be free of objectionable vibrations and noise.

2. Provide flexible connections in ducts and piping connections to fans, compressors, and other vibrating equipment.

2-1.04. Seismic Restraints

1. Design the equipment, duct and piping supports and restraints for static, dynamic, and seismic loads in Zone 4 in accordance with the International Building Code.

2. Seismic restraints shall not induce stresses in the equipment, ductwork and piping caused by thermal expansion and contraction.

3. Comply with Structural drawings and specifications for Seismic and Wind Design Criteria.

2.2 MOTORS

2-2.01. Motors provided with the equipment shall conform to the latest IEEE and NEMA requirements for mechanical and electrical characteristics, including service factors.

2-2.02. Each motor shall bear the manufacturer’s nameplate with complete motor data.

2-2.03. Each motor shall be of ample size and construction to continuously carry the loads which might be imposed by the equipment throughout the full range of operation of the equipment.

2-2.04. The maximum motor loading shall be less than or equal to the nameplate horsepower rating, exclusive of the service factor.

2.3 ELECTRICAL WORK

2-3.01. The Work of this section shall include:

1. Provide controls, sensors and control panels relating to the HVAC systems, including starters, thermostats, motorized dampers, louver operators and other equipment as indicated.

2. Provide control wiring of 120-volt and less as indicated in this Section and in conformance the requirements of Division 16 – Electrical and Division 17 – Instrumentation and Control.

2-3.02. The Work of Division 16 shall include:

1. Provide local power disconnects, where required.

2. Provide circuit breakers, starters in motor control centers, and 120-, 208-, 240- and 480-volt power feeders from the starters and circuit breakers to the HVAC equipment, as indicated.

2-3.03. Starters, whether as an integral or separate part of the equipment, shall be in accordance with the requirements of Division 16.

2-3.04. Enclosures shall be of the same NEMA class as the electrical equipment in the same area.

2-3.05. Starters shall be of the same manufacturer as the starters indicated under Division 16.

2-3.06. Low-voltage control wiring shall be in accordance with the National Electric Code.

2-3.07. Control wiring for line voltage 120-volt and higher shall be in conformance with the requirements of Division 16.

2-3.08. Control Panels shall be in conformance with the requirements of Division 16.

2-3.09. Conduit shall be in conformance with the requirements of Division 16.

2.4 WELDING

2-4.01. The welding of black steel or alloy pipe shall be carried out in strict accordance with AWS procedures and the codes and ordinance of the City of Tampa and the State of Florida pertaining to welded steel pipelines.

2-4.02. Welding shall be accomplished by means of the shielded electric arc process and performed by workers who are certified for this Work.

2.5 EXPANSION JOINTS AND LOOPS

2-5.01. Provide expansion loops or expansion joints at the indicated locations and as necessary to provide for the expansion of piping.

2-5.02. The maximum straight run of pipe without an expansion joint or loop installed shall not exceed 75 feet.

2-5.03. Provide an expansion joint or loop at every building construction joint.

2-5.04. Construction

1. The pipe expansion joints on metal piping 3-inch and smaller shall be of the 2-ply stainless steel bellows type, with a 1-1/2-inch compression stroke, a 1/2-inch extension and a total stroke of 2 inches.

2. The joints shall be suitable for a maximum operating temperature of 750 degrees F and a maximum working pressure of 175 psig.

3. The compensator shall have male pipe thread ends for steel pipe and female sweat ends for copper pipe.

2-5.05. Pipe Expansion Joints Manufacturers, or Equal

1. **Flexonics, Model H** for steel piping and **Model HB** for copper piping

2. **Keflex Series 7Q**

3. **Adsco Compensators**

2.6 HANGERS AND SUPPORTS

2-6.01. Anchorage and bracing for all suspended ductwork and other distribution systems needs to be provided per 2020FBC Section 1613/ASCE 7-10 Chapter 13

2-6.02. Provide all necessary hangers, supports, concrete inserts, anchors and guides for material and equipment to be installed.

2-6.03. No perforated strap hangers and no wire supports will be accepted.

2-6.04. Insulation Allowance:

1. Hangers supporting insulated pipe shall be sized to fit the pipe plus the insulation.

2. The insulation at support points shall be provided with a metal shield in order to prevent damage to the insulation.

2-6.05. Anchors and guides shall be constructed of steel, in accordance with approved Shop Drawings, and as indicated.

2-6.06. Anchors:

1. Anchorages shall be obtained by welding lugs onto the pipe and providing abutting surfaces against the lugs to restrict longitudinal movement.

2. Bolting materials shall be cadmium-plated.

2-6.07. Guides shall be located not more than 20 feet from each expansion loop or joint.

2-6.08. Hangers for ductwork and equipment shall be as indicated and in accordance with the guidelines of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

2-6.09. Inserts shall be galvanized.

2.7 BACKDRAFT OR GRAVITY DAMPERS

2-7.01. General

1. Provide backdraft dampers on the exhaust fans and ventilators where indicated.

2. Damper sizes and capacities shall be as indicated on the Drawings.

2-7.02. Design and Construction

1. The dampers shall be of the multi-blade type, with soft-seating gaskets for minimizing noise and air leakage when closed.

2. Blades shall be constructed of 16-gauge aluminum, and shall be of an air foil design.

3. Frames shall be fabricated from 16-gauge extruded aluminum alloy.

4. The frames shall be totally out of the air stream, and arranged for flange mounting.

5. The dampers shall be designed to operate at 0.05 inch w.g. S.P., or less.

6. Blades shall be individually counterbalanced, and shall be provided with non-ferrous pins turning in nylon bearings.

2-7.03. Damper Manufacturers, or Equal

1. **Ruskin, Model CD40**

2. **Air Balance, Inc.**

3. **Air Dynamic.**

2.8 HIGH-PERFORMANCE HURRICANE WALL LOUVERS

2-8.01. General:

1. Provide high-performance hurricane wall louvers where indicated.

2. The louvers shall be of the stationary type, with horizontal drainable blades within a 6-inch-deep louver frame.

2-8.02. Fabrication:

1. Design: Extruded aluminum, stationary louvers with horizontally mounted drainable blades.

a. Miami-Dade Notice of Acceptance Number: 20-1015.06.

2. Application: Miami-Dade Approved Product for use in open structures or installations where the enclosed space is designed to accommodate water infiltration (wet rooms). Open structure building envelope protection for single unit sizes up to 88 inches wide by 120-inches high (2236 mm by 3048 mm). Factory assembly.

3. Miami-Dade County Protocols Compliance:

   a. TAS-201 Large and Small Missile Impact Test.

   b. TAS-202 Uniform Static Air Pressure Test.

   c. TAS-203 Cyclic Wind Pressure Test – Maximum Design Pressure Rating +/- 120 psf (5.75 kPa).

4. Florida Building Code (FBC) High Velocity Hurricane Zones: Test Application Standard. (Pending).

5. Florida Product Approval #FL 12226.2.

6. Frame:

   a. Frame Depth: 6 inches (152 mm), nominal.

   d. Wall Thickness: 0.081 inch (2.1 mm), nominal.

   e. Material: Extruded aluminum, Alloy 6063-T6.

7. Blades:

   a. Style: Drainable, horizontally mounted.

   b. Wall Thickness: 0.081 inch (2.1 mm), nominal.

   c. Material: Extruded aluminum, Alloy 6063-T6.

8. Minimum Assembly Size: 12 inches wide by 12 inches high (305 mm x 305 mm).

9. Maximum factory assembly size 88” x 120” (2236 x 3048).

10. Maximum field assembly size. Unlimited width by 120” (3048) high.

11. Unlimited height by 88 (2236) width in vertical configuration.

12. Recycled Content: 18% post-consumer. 55% pre-consumer, post-industrial, total 73% by weight.

2-8.03. Performance Data:

1. Based on testing 48 inches x 48 inches (1,219 mm x 1,219 mm) size unit in accordance with AMCA 500.

2. Free Area: 57 percent, nominal.

3. Free Area Size: 9.08 square feet (0.84 m²).

4. Maximum Recommended Air Flow through Free Area: 1,023 fpm (5.20 m/s).

5. Air Flow: 9,289 cfm (4.38 m³/s).

6. Maximum Pressure Drop at 1,023 fpm): 0.20 inches w.g. (0.05 kPa).

Design Wind load: Incorporate structural supports required to withstand wind load of ±148 psf (7.08 kPa).

2-8.04. Louvers shall be factory engineered to withstand the specified seismic loads.

1. Minimum design loads shall be calculated to comply with ASCE – 7, or local requirements of Authority Having Jurisdiction (AHJ).

2.9 ACCESSORIES

2-9.01. Bird Screen:

1. Aluminum: Aluminum, 5/8 inches by 0.040 inch (16 mm by 1 mm), expanded and flattened.

2. Frame: Removable. Rewirable.

2-9.02. Insect Screens:

1. Aluminum: 18-16 mesh, mill finish, .011 inch (0.3 mm) wire.

2. Frame: Aluminum.

2-9.03. Extended Sills:

1. Extruded aluminum, Alloy 6063-T6. Minimum nominal thickness 0.060 inch (1.5 mm).

2-9.04. Finish:

1. Provide louvers with a **Kynar® 500**, or equal, finish.

2. The color of the louver shall be submitted for the Engineer's approval.

2-9.05. High-performance Hurricane Wall Louvers Manufacturer, or Equal

1. **Ruskin Model ELF6375DXD**

2. **Greenheck**

2.10 VIBRATION ISOLATORS

2-10.01. General:

1. Provide vibration control isolation all rotating equipment except electric motors.

2. Where rotating units are part of factory-assembled package units, such as a package air handling unit, provide the isolator under the unit casing.

2-10.02. Support suspended equipment by a combination of spring and fiberglass isolation hangers, incorporating minimum 2-inch thick neoprene jacketed fiberglass inserts in series with springs, encased in steel brackets.

2-10.03. Mount floor-mounted or platform-mounted built-up or package air handling units on structural steel or concrete bases with isolator springs and brackets.

2-10.04. Springs used in the vibration isolators shall have approximately one inch of deflection under load, and shall have a minimum additional travel of 50 percent between the design height and the solid height.

2-10.05. All isolation equipment shall be provided in strict compliance with the manufacturer's recommendations.

2-10.06. Pads:

1. For vibration isolation between HVAC equipment and supports and where indicated, provide 3/4-inch-thick rubber pads for full contact between equipment and support.

2. The pads shall be **Mason Industries**, **Super W Pads**, or equal.

2.11 TEMPERATURE AND EQUIPMENT CONTROL

2-11.01. General:

1. Design and provide a complete electric-electronic system of automatic temperature control as indicated.

2. The temperature control equipment and devices shall be furnished by **Johnson Controls**, **Honeywell**, or **Barber Colman**.

2-11.02. Wiring and Switches:

1. Provide wiring incidental to the temperature control system, including electrical interlock.

2. Furnish detailed wiring diagrams along with necessary supervision.

3. Provide control wiring (line voltage or low voltage) as required to complete the temperature control system (by interconnecting starters, thermostats, PE switches, relays, and like devices) in accordance with the requirements of Division 16.

4. Provide HOA switches in accordance with the requirements of Division 16.

5. Switches shall be UL-listed and of a type to meet the current and voltage requirements of the particular application.

2-11.03. Thermostats:

1. Room thermostats shall be of the digital type, provided with heating and cooling setpoints.

2. Adjustment shall be accomplished by pressing the thermostat UP or DOWN arrows.

3. Comfort Setpoints: adjustable from 66 to 80 degrees F.

4. Setback Setpoints: adjustable from 55 to 70 degrees F for heating setback; adjustable from 75 to 90 degrees F for cooling setback.

5. Automatic Setback Time Period:

   a. 7-day setback programming;

   b. up to 2 automatic setback comfort time periods per day;

   c. built-in setback override, adjustable from 10 minutes to 40 hours;

   d. 7-day electric time clock; and

   e. heat/cool/fan annunciators to indicate equipment operation and automatic heating/cooling changeover

6. The thermostats shall meet the Energy Conservation Standard approval where required by the State having jurisdiction over the Project.

7. Provide an insulating back where exterior wall mounting is indicated.

8. Provide guards for room thermostats installed in areas other than administrative offices or control rooms.

2-11.04. Relays:

1. Provide 2-position relays, capacity relays, sequencing relays, and other controls as necessary in order to provide a properly operating automatic control system.

2. Relays shall be UL-listed and of a type to meet the current and voltage requirements of the particular application.

2-11.05. Control Panels:

1. General:

a. Control panels shall be provided with relays, control switches, transformers, pilot lights, timers, time clocks, step controllers, gages, thermostats (unless otherwise indicated), and other accessories necessary for the particular system.

b. The panels shall be of aluminum construction with a baked enamel finish, and shall be provided with a hinged front door and locking handle.

c. Manual switches and direct-reading gauges shall be flush-mounted on the front face, and identified by engraved and riveted Bakelite or laminated plastic nameplates with white letters on black background.

d. Manual switches shall be of heavy-duty, oil-tight construction.

2-11.06. Wiring:

a. Control devices shall be prewired internally.

b. Wires leaving the panel shall be terminated at separate numbered terminal strips.

c. Provide individual connectors for every item of mechanical equipment, integral and remote pilot lights, and other devices described for each panel.

d. Power and control circuit requirements shall be as indicated on the Electrical Drawings.

e. Identify wires by color coding or numerical tags at both ends.

f. Wire each control device to the terminal strip without splices.

g. Provide integral circuit protection for panel-mounted control devices.

h. Wire each panel with a single 20-amp, 120-volt, ac feeder in accordance with the requirements of Division 16.

2-11.07. Diagrams:

a. Secure the panel electrical wiring diagrams to the inside of the panel door.

2.12 PAINTING

2-12.01. Painting of the equipment and materials shall comply with the requirements of Section 09940 – Protective Coating.

2-12.02. Touch-Ups

1. Touch up factory-painted surfaces that are rusted or scratched.

2. Clean finishes to be touched up to bright metal, prime with a corrosion inhibitor, and finish with a coating to match the original finish.

PART 3 -- EXECUTION

3.1 GENERAL

3-1.01. Openings - New Construction

1. Provide necessary openings in walls, floors and roofs for the passage of heating and ventilating equipment in the buildings.

2. Openings shall be as indicated or as required to provide passage for heating and ventilating Work.

3. Provide hanger and support inserts into masonry or structural steel as required for proper completion of the Work.

3-1.02. Openings - Existing Construction

1. Provide openings required in the existing construction for piping and equipment that are not specifically indicated.

2. Openings shall be cut in a neat and orderly manner with as little damage to existing structures as possible.

3. The patching of openings that have been cut shall match the existing construction.

4. Provide hangers and supporting members installed in the existing masonry or structural steel as required for proper completion of the Work.

3.2 BALANCING AND TESTING

3-2.01. Testing of all equipment and systems shall be performed and completed by Contractor at their own cost.

3-2.02. Balancing Subcontractor

1. After the installation Work has been completed, the Contractor shall provide the services of an independent balancing subcontractor who shall perform necessary adjustments of volume dampers, volume controllers, exhaust blowers, exhaust fans, and supply registers.

2. The balancing subcontractor shall:

   a. Have at least 5 years of balancing experience, and experience in at least 5 projects of the Project type;

   b. Not be associated with any firms doing engineering or construction work in HVAC and/or Plumbing;

   c. Use the balancing methods approved by the Associated Air Balance Council; and,

d. Send a copy of all correspondence and reports, as they are written, pertaining to this project, directly to the Engineer.

3-2.03. The Contractor shall:

1. 15011 Submit to the Engineer an experience resume and project resume for approval of the balancing subcontractor;

2. Demonstrate to the Owner, in an extensive operating test covering every component of the installation, that the entire heating, ventilating and air conditioning system meets the indicated requirements and is ready for continuous, satisfactory operation; and,

3. Make repairs and revisions as necessary to make the system operative, as part of the Contract.

3.3 VIBRATION ISOLATORS

3-3.01. Install isolation equipment in strict compliance with the manufacturer's recommendations.

3.4 TEMPERATURE AND EQUIPMENT CONTROL

3-4.01. After completion of the installation, use trained personnel to adjust thermostats and sensors in the motors and other provided equipment, and place them in complete operating condition subject to the approval of the Engineer.

3-4.02. Instruct the operating personnel in the operation of the control system.

END OF SECTION

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SECTION 15052

EXPOSED PIPING INSTALLATION

PART 1 - GENERAL

1-1. SCOPE

1-1.01. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all exposed piping, fittings, and specials. The Work includes the following:

1. All types and sizes of exposed piping, except where exposed piping installations are specified under other Sections or other contracts.
2. Unless otherwise shown or specified, this Section includes all piping beginning at the outside face of structures or structure foundations and extending into the structure. Piping embedded in concrete within a structure or foundation shall be considered as exposed and is included herein. Piping that is permanently or intermittently submerged, or installed in sub-aqueous environments, is considered as exposed and is included in this Section.
3. Work on or affecting existing exposed piping.
4. Installation of all jointing and gasket materials, specials, flexible couplings, mechanical couplings, harnessed and flanged adapters, sleeves, tie rods, and all Work required for a complete exposed piping installation.
5. Supports, restraints, and other anchors.
6. Field quality control, including testing.
7. Cleaning and disinfecting.
8. Incorporation of valves, meters, and special items shown or specified into the piping systems per the Contract Documents and as required.

1-2. GENERAL

1-2.01. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before exposed piping Work.

1-2.02. Coordinate with appropriate piping Sections of Division 15, Mechanical.

1-2.03. Related Sections.

Title
Section 09940, Protective Coatings.
Section 15094, Pipe Supports.

1-3. REFERENCES

1-3.01. Standards referenced in this Section are:

ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings.

ASME Boiler and Pressure Vessel Code.

ASME B31.3, Process Piping.

American Society for Non-Destructive Testing (ASNT), ASNT-TC-1A, Recommended Practice, Personnel Qualification, and Certification in Non- destructive Testing.

ASTM A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.

ASTM B32, Specification for Solder Metal.

ASTM D4161, Standard Specification for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals

ASTM D4174, Standard Practice for Cleaning, Flushing, and Purification of Petroleum Fluid Hydraulic Systems

ASTM F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure

AWS D1.1/D1.1M, Structural Welding Code-Steel.

ANSI/AWWA C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

ANSI/AWWA C206, Field Welding of Steel Water Pipe.

ANSI/AWWA C600, Installation of Ductile Iron Water Mains and Their Appurtenances.

ANSI/AWWA C606, Grooved and Shouldered Joints.

ANSI/AWWA C651, Disinfecting Water Mains.

AWWA M9, Concrete Pressure Pipe.

AWWA M11, Steel Pipe - A Guide for Design and Installation.

AWWA M23, PVC Piping - Design and Installation.

AWWA M41, Ductile-Iron Pipe and Fittings.

AWWA M45, Fiberglass Pipe Design.

AWWA M55, PE Pipe - Design and Installation.

SAE J1227, Method for Assessing the Cleanliness Level of New Hydraulic Fluid.

1-4. SUBMITTALS

The CONTRACTOR shall submit the following:

1-4.01. Shop Drawings:

1. Detailed drawings in plan and, as applicable, section.
2. Details of piping, valves, supports, accessories, specials, joints, harnessing, and main anchor supports, and connections to existing piping, structures, equipment, and appurtenances.
3. Laying schedules for concrete pipe and piping with restrained joints.

1-4.02. Testing Plans, Procedures, and Testing Limitations.

1. Submit description of proposed testing methods, procedures, and apparatus, and obtain ENGINEER's approval prior to testing.

1-4.03. Certificates:

1. Submit a certificate signed by manufacturer of each product certifying product conforms to applicable referenced standards.
2. Welder's Certificate to comply with Paragraph 3.1.E.7.c.
3. Source Quality Control Submittals:
    a. Submit copies of testing report for each test.
4. Site Quality Control Reports:
    a. Submit copies of testing report for each test.

1-4.04. Closeout Submittals:

1. Record Documentation:
    a. Maintain accurate and up-to-date record documents showing field and Shop Drawing modifications. Record documents for exposed piping Work shall show actual location of all piping and appurtenances on a copy of the Drawings, unless otherwise approved by ENGINEER.
    b. Include section drawings with exposed piping record documents when the Contract Documents include section Drawings.
    c. Conform to Section 01782, Record Documents.

1-5. DELIVERY, STORAGE AND HANDLING

1-5.01. Delivery:

1. Deliver products to Site to ensure uninterrupted progress of the Work.

2. Upon delivery, inspect pipe and appurtenances for cracked, gouged, chipped, dented, and other damage and immediately remove damaged products from Site.
3. Conform to requirements of Section 01651, Transportation and Handling of Materials and Equipment.

1-5.02. Storage:

1. Store products for convenient access for inspection and identification. Store products off the ground using pallets, platforms, or other supports. Protect packaged products from corrosion and deterioration.
2. Pipe and fittings other than thermoplastic materials may be stored outdoors without cover. Thermoplastic pipe and fittings stored outdoors shall be covered.
3. Conform to requirements of Section 01661, Storage and Protection of Products.

1-5.03. Handling:

1. Handle pipe, fittings, specials, and accessories carefully with approved handling devices. Do not drop or roll material of delivery vehicles. Do not otherwise drop, roll, or skid piping.
2. Avoid unnecessary handling of pipe.
3. Keep pipe interiors free of dirt and foreign matter.
4. Protect interior linings and exterior coatings of pipe and fittings from damage. Replace pipe and fittings with damaged lining regardless of cause of damage. Repair damaged coatings.
5. Conform to requirements of Section 01651, Transportation and Handling of Materials.

PART 2 - PRODUCTS

2-1. MATERIALS

2-1.01. Piping materials are specified in the Exposed Piping Schedule at the end of this section. Piping materials shall conform to Specification for each type of pipe and piping appurtenances in applicable sections of Division 15.

2-1.02. Markings and Identification:

1. Pipe Markings:
   a. Clearly mark each piece of pipe or fitting with a designation conforming to that shown on the approved Shop Drawings.
   b. Manufacturer shall cast or paint on each length of pipe and each fitting the pipe material, diameter, and pressure or thickness class.

2-1.03. Provide products that comply with Section 15094, Pipe Supports.

PART 3 - EXECUTION

3-1. INSPECTION

3-1.01. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3-2. INSTALLATION

3-2.01. General:

1. Install piping as shown, specified and as recommended by the pipe and fittings manufacturer.
2. If there is a conflict between manufacturer's recommendations and the Contract Documents, request in writing instructions from ENGINEER before proceeding.
3. Provide pipe manufacturer’s installation specialist at Site as specified on this Section.

3-2.02. Temporary Blind Flanges, Plugs, Caps, and Bulkheads:

1. Temporarily plug installed pipe at the end of each day of work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.
2. Install standard plugs in all bells at dead ends, tees, and crosses. Cap all spigot and plain ends.
3. Fully secure and block blind flanges, plugs, caps, and bulkheads installed for testing, designed to withstand specified test pressure.
4. Where plugging is required for phasing of Work or subsequent connection of piping, install watertight, permanent type blind flanges, plugs, caps, or bulkhead acceptable to ENGINEER.

3-2.03. Piping Installation:

1. Conform to manufacturer’s instructions and requirements of standards and manuals listed in this Section, as applicable:
2. Install straight runs true to line and elevation.
3. Install vertical pipe truly plumb in all directions.
4. Install piping parallel or perpendicular to walls of structures. Piping at angles and 45 degree runs across corners of structures will not be accepted unless specifically shown on the Contract Documents or approved by the ENGINEER.
5. Install small diameter piping generally as shown when specific locations and elevations are not indicated. Locate such piping as required to avoid ducts, equipment, beams, and other obstructions.

6. Install piping to leave all corridors, walkways, work areas, and similar spaces unobstructed. Unless otherwise approved by ENGINEER provide a minimum headroom clearance under piping and pipe supports of 7.5 feet. Clearances beneath piping shall be measured from the outermost edge of piping, flanges or other type of joint that extends beyond the nominal outside diameter of piping.
7. Protect and keep clean interiors, fittings, and valves of pipe that will convey potable water, chemicals, and other pipe designated by ENGINEER.
8. Cutting: Cut pipe from measurements verified at Site. Field cut pipe, where required, with a machine specially designed for cutting type of pipe being installed. Make cuts carefully without damage to pipe, coating, or lining, and with a smooth end at right angles to axis of pipe. Cut ends of push-on joint type pipe shall be tapered and sharp edges filed off smooth. Do not flame-cut pipe.

3-2.04. Jointing Pipe:

1. General:
    a. Make joints in accordance with pipe manufacturer's recommendations and Contract Documents.
    b. Cut piping accurately and squarely and install without forcing or springing.
    c. Ream out pipes and tubing to full inside diameter after cutting. Remove all sharp edges on end cuts.
    d. Remove all cuttings and foreign matter from inside of pipe and tubing before installation. Thoroughly clean all pipe, fittings, valves, specials, and accessories before installing.
2. Thermoplastic Pipe Joints – Not Used.

3-2.05. Closures:

1. Provide closure pieces, such as blind flanges and caps, shown or required to complete the Work.

3-3. WORK AFFECTING EXISTING PIPING

3-3.01. Locations of existing piping shown on Drawings is approximate. Determine the true location of existing piping to which connections are to be made, crossed, and that could be disturbed, and determine location of other facilities that could be affected by the Work.

3-3.02. When taking existing pipelines out of service conform to Section 01310 Project Coordination requirements.

3-3.03. Work on Existing Pipelines:

1. Cut or tap pipes as shown or required with machines and tools specifically designed for cutting or tapping pipelines.
2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to

complete the Work.

4. Conform to applicable requirements of Section 01310, Project Coordination.

3-4. PAINTING

3-4.01. Field painting shall conform to Section 09940 Protective Coatings.

3-5. FIELD QUALITY CONTROL

3-5.01. Testing, General:

1. Test all piping, except as exempted in the Exposed Piping Schedule.
2. Notification:
    a. Notify ENGINEER at least 48 hours prior to testing.
    b. When authorities having jurisdiction are to witness tests, notify ENGINEER and authorities having jurisdiction in writing at least 48 hours in advance of testing.
3. Conduct all tests in presence of ENGINEER.
4. Remove or protect pipeline-mounted devices that could be damaged by testing.
5. Provide all apparatus and services required for testing, including:
    a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required to maintain OWNER's operations.
    b. Temporary bulkheads, bracing, blocking, and thrust restraints.
6. Provide air if an air test is required, power if pumping is required, and gases if gases are required.
7. Unless otherwise specified, OWNER will provide fluid required for hydrostatic testing. CONTRACTOR shall provide means to convey fluid for hydrostatic testing into the pipe being tested. CONTRACTOR shall provide fluid for other types of testing required.
8. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.

9. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest valve. Piping not installed by CONTRACTOR and that fails the test shall be repaired upon authorization of ENGINEER or OWNER. Repair of existing piping will be paid as extra work unless otherwise specified.

3-5.02. Test Schedule:

1. Refer to the Exposed Piping Schedule for type of test required and required test pressure.
2. Unless otherwise specified, the required test pressures are at lowest elevation of pipeline segment being tested.

3. For piping not listed in Exposed Piping Schedule:
    a. Hydrostatically test pipe that will convey liquid at a pressure greater than five psig. Provide process air pipe test for pipe that will convey air or gas under pressure or vacuum, except chlorine gas, which requires a separate test.
    b. Disinfect for bacteriological testing piping that conveys potable water.
4. Test Pressure:
    a. Use test pressures listed in Exposed Piping Schedule.
    b. If test pressure is not listed in Exposed Piping Schedule, or if a test is required for piping not listed in the Exposed Piping Schedule, test pressure will be determined by the ENGINEER based on the maximum anticipated sustained operating pressure and the methods described in the applicable ANSI/AWWA manual or standard that applies to the piping system.

3-5.03. Hydrostatic Testing:

1. Fill pipeline slowly to minimize air entrapment and surge pressures. Fill rate shall not exceed one foot of pipe length per second in the pipe being tested.
2. Expel air from pipe as required. Obtain approval of ENGINEER prior to tapping pipe for expelling air.
3. Examine joints and valves and make repairs to eliminate visible leakage.
4. After specified wetting period, add fluid as required to pressurize line to required test pressure. Maintain test pressure for a stabilization period of ten minutes before beginning test.
5. Timed test period shall not begin until after the pipe has been filled, exposed to the required wetting period, air has been expelled, and pressure stabilized.
6. Timed Test Period: After the stabilization period, maintain test pressure for at least two hours. During timed testing period, add fluid as required to maintain pressure within five psig of required test pressure. For HDPE pipe, after three hour expansion phase, reduce test pressure by ten psig and do not add liquid. The test pressure shall then remain steady for one hour, indicating no leakage.
7. Pump from a test container to maintain test pressure. Measure volume of fluid pumped from test container and record on test report. Record pressure at test pump at fifteen-minute intervals for duration of test.

3-5.04. Allowable Leakage Rates: Leakage is defined as the quantity of fluid supplied to pipe segment being tested to maintain pressure within five (5) psi of the test pressure during timed test period. No Leakage shall be allowed for pipes with flanged, welded, fused, threaded, soldered, or brazed joints.

3-5.05. Test duration shall be at least two hours.

3-5.06. Bacteriological Testing:

1. Bacteriological testing for potable water lines, finished water lines, and other

piping per Exposed Piping Schedule, is specified in Article 3.6 of this Section.

3-6. CLEANING AND DISINFECTION

3-6.01. Cleaning, General: Clean pipe systems as follows:

1. Thoroughly clean all piping, including flushing with water, dry air, or inert gas as required, in a manner approved by ENGINEER, prior to placing in service. Flush chlorine solution and sodium hypochlorite piping with water.
2. Piping 24-inch diameter and larger shall be inspected from inside and debris, dirt and foreign matter removed.
3. For piping that requires disinfection and has not been kept clean during storage or installation, swab each section individually before installation with a five percent hypochlorite solution.

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SECTION 15060

DUCTILE IRON PIPE AND FITTINGS

42-INCH DIAMETER AND SMALLER

PART 1 – GENERAL

1-1. DESCRIPTION

1-1.01. Scope: The CONTRACTOR shall provide and install ductile iron pipe of the sizes 42-inch diameter and smaller and in the locations shown on the DRAWINGS and as specified herein.

1-1.02. Pipe shall be designed for a design working pressure of 50 psi with an additional surge pressure of 125 psi for a total working plus surge pressure of 175 psi.

1-2. QUALITY ASSURANCE

1-2.01. The pipe and fittings shall be manufactured, constructed and installed in accordance with established industry practices and methods and shall comply with these SPECIFICATIONS as applicable. All WORK specified herein shall conform to or exceed the requirements of the latest edition of the applicable portions of the following standards:

1. Cement mortar lining for water: AWWA C104.
2. Rubber gasket joints: AWWA C111.
3. Ductile iron pipe thickness: AWWA C150
4. Ductile iron pipe centrifugally cast in metal or sand lined molds: AWWA C151.
5. Ductile iron pipe flanges: ANSI B 16.1 and AWWA C115.
6. Ductile iron compact fittings: AWWA C153.
7. Ductile iron fittings: AWWA C110.
8. AWWA C600 Standard for Installation of Ductile Iron Water Mains and Appurtenances.
9. Drinking water treatment chemicals -Health effects: NSF No. 60.
10. Drinking water system components -Health effects: NSF No. 61.

1-2.02. Qualifications: All ductile iron pipe and cast iron fittings shall be furnished by SUPPLIERS who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished.

1-2.03. SUPPLIER (manufacturer): Pipe shall be as manufactured by the American Cast Iron Pipe Company, U.S. Pipe and Foundry Company or McWane Cast Iron Pipe Co., or equal.

1-3. SUBMITTALS

1-3.01. SHOP DRAWINGS: The CONTRACTOR shall submit SHOP DRAWINGS of pipe and fittings in accordance with the requirements of the CONTRACT DOCUMENTS, the requirements of AWWA C110, C150, C151, and the following supplemental requirements as applicable:

1. Certified Dimensional Drawings of all pipe, specials, and fittings.

2. Detailed and certified calculations of required joint restraint length.

1-3.02. Certifications: For pipe of all sizes the CONTRACTOR shall furnish a certified affidavit of compliance for all pipe and other products or materials furnished under this Section of the SPECIFICATIONS, as specified in ANSI/AWWA C105, C110, C150, and C151; respectively, and the following supplemental requirements:

1. Physical and chemical properties of all ductile iron.

2. Results of previously performed proof of design tests demonstrating that the proposed restrained joint arrangement can transmit the required forces.

3. Hydrostatic test reports.

4. Results of shop tests.

5. The SUPPLIER of the pipe shall submit through the CONTRACTOR an affidavit that the pipe, fittings and other products or materials furnished comply with all applicable provisions of these SPECIFICATIONS including all applicable AWWA standards.

1-3.03. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.

1-4. DELIVERY, STORAGE AND HANDLING

1-4.01. All pipe shall be shipped and stored at the PROJECT site with wood lagging between pipes such that pipes do not make contact with one another.

1-4.02. The CONTRACTOR shall exercise extra care when handling lined pipe. Damage to the lining will render it unfit for use and shall require replacement.

PART 2 - PRODUCTS

2-1. MATERIALS

2-1.01. Ductile Iron Pipe shall conform to ANSI A21.51 and AWWA C151. The pipe thickness shall be in accordance with AWWA C150 and shall meet the following minimum requirements:

1. The minimum thickness of ductile iron pipe shall be:

   1.1. For buried pipe 20 inches in diameter and smaller: Class 350

   1.2. For pipe with flanges: Class 53. (Special Class)

2. Pipe shall be supplied in lengths not in excess of 20 feet having rubber-ring type push-on joints, standard mechanical joints or restrained joints where required for underground piping, and flanged joints piping for all above ground piping as shown on the DRAWINGS.

3. Coatings and Linings shall be in accordance with the following:

   3.1. The exterior of ductile iron pipe and fittings shall be:

      3.1.1. Buried pipe and fittings: Factory applied bituminous coating of coal tar varnish or asphalt base paint, one-mil thick.

      3.1.2. Buried ductile iron pipe shall be encased with polyethylene sleeves as specified in AWWA C105 minimum 8 mils thick. For pipe 16-inches through 42-inches in diameter, two 8-mil layers shall be provided. Only prefabricated sleeves secured by 4-inch polyethylene tape will be allowed. Polyethylene sleeves shall be blue in color, manufactured with ultraviolet inhibitors and installed by Method A in AWWA C105.

      3.1.3. Exposed above ground pipe and fittings shall be coated in accordance with Section 09940.

      3.1.4. The interior of ductile iron pipe and fittings shall be cement lined in accordance with ANSI A21.4 and AWWA C104.

2-1.02. Fittings: All ductile iron pipe fittings shall be rated for a minimum of 350 psi for pipe sizes 20-inches and smaller and in accordance with AWWA C110. All flanged fittings shall be Class 125 (ANSI B16.1) unless otherwise specifically noted.

2-1.03. Joints:

1. General: Joints in "runs" of aboveground piping shall be flanged. Joints in "runs" of buried piping shall be of the push-on or mechanical-joint type per AWWA C111

except where flanged joints are required to connect to valves, meters, and other equipment.

2. Flanges:

   2.1. All flanged fittings shall be rated for a minimum of 350 psi for pipe sizes 20-inches and smaller and in accordance with AWWA C110. All flanges shall be Class 125 (ANSI B16.1) unless otherwise specifically noted. Flanges shall be long-hub type screwed tightly on pipe by machine at the foundry prior to facing and drilling. Flange faces shall be coated with rust inhibitor immediately after facing and drilling. Field assembled screwed on flanges are prohibited.

   2.2. Gaskets: Gaskets shall be beaded ring-type, 1/4-inch thick; meeting the requirements of AWWA C111, rated for potable water service and suitable for service with chloramines. Gaskets shall be American "Tomseal", U.S. Pipe "Flange-Tyte" or approved equal.

   2.3. Bolts and Nuts for Flanges: Bolts and nuts for flanges shall be heavy head carbon steel, ASTM A 307, Grade B, "American Standard, Heavy". Bolts used in flange insulation kits shall conform to ASTM B193, Grade B7. Bolts and nuts shall comply with ASTM A 194, Grade 2H. All bolts and nuts shall be cadmium or zinc coated or galvanized.

3. Mechanical and push-on joints:

   3.1. Mechanical Joints: Jointing materials for mechanical joints shall be provided by the pipe and fitting SUPPLIER. Materials assembly and bolting shall be in strict accordance with ANSI/AWWA C111 and ANSI/AWWA C153, latest revisions. Tee head bolts and nuts for mechanical joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan or an approved equal.

   3.2. Single seal gasket push on type joints shall conform to the requirements of ANSI A21.1 1 and shall be "Tyton", "Fastite", "Super Bell Tite", "Altite", or approved equal.

4. Restrained Joints for buried pipe: Restrained joints shall be provided for all buried piping systems. Pipe joints and fittings shall be restrained as follows:

   4.1. Manufactured restrained joints shall be: Flex-Ring or Lok-Ring manufactured by the American Cast Iron Pipe Company; Lok-tyte or, Tr-Flex type manufactured by the United States Pipe Company or an equal approved by the ENGINEER. Joints shall be SUPPLIER'S (manufacturer's) standard specifically modified push-on type joints with joint restraint provided by ductile iron glands located

behind welded on retainer rings joined together by corrosion resistant, high strength steel tee head bolts and nuts or with joint restraint provided by a welded-on retainer ring and a split flexible ring or locking ring assembled behind the retainer ring. Restrained joint pipe and fittings shall be ductile iron only and shall comply with applicable portions of this SPECIFICATION. Manufactured restrained joints shall be capable of deflection after assembly. Deflection shall not exceed 75 percent of the SUPPLIER'S (manufacturer's) recommendations. Tee head bolts and nuts for restrained joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan, or an equal approved by the ENGINEER. Restrained joints utilizing tie rods, or retainer glands and set screws will not be allowed. Field Welding or grooving of the restrained joint or components will not be acceptable.

5. Gaskets: Gaskets shall be suitable for service with chloramines. Gaskets shall have plain tips unless otherwise specified and shall be fabricated and tested in accordance with AWWA C111.

6. Flanged Dismantling Joint:

   6.1. General: The CONTRACTOR shall furnish and install where required or where shown on the DRAWINGS, NSF-61 certified manufactured flanged dismantling joints for use in potable water piping.

   6.2. Rated Pressure: The entire dismantling joint unit shall be rated for working pressure plus surge pressure as a minimum.

   6.3. Construction: Coupling bodies shall be fabricated from steel, ASTM A 512 - Cold-Drawn Butt-Weld Carbon Steel Mechanical Tubing or A 513 - Electric-Resistance Welded Carbon and Alloy Steel Mechanical Tubing. Provide flanges in conformance with AWWA C207. The body shall be at least the same wall thickness as the pipe to which the coupling is connected, but not less than 1/4 inch thick. If the strength of the body material is less than the strength of the pipe material, the thickness of the middle ring shall be increased to have the same strength as the pipe. The follower flange shall be fabricated from steel, ASTM A 576 - Steel Bars, Carbon, Hot Wrought, Special Quality or AISI C1012.

   6.4. Coatings: Shop applied fusion bonded epoxy coating, NSF-61 certified for use in potable water systems.

   6.5. Bolts, Nuts and Washers: Provide bolts and nuts per AWWA C111/A21.11. Provide washers sized to mating bolt or rod and adequate to preserve the corrosion resistance of epoxy coated surfaces.

6.6. Deflections: Joint deflection shall be limited to 75% of the SUPPLIER'S (manufacturer's) recommended maximum.

6.7. Manufacturer: CONTRACTOR to supply dismantling joints model 975 as manufactured by Smith-Blair, Style 131 as manufactured by Dresser Industries, model 309 as manufactured by JCM Industries, or an ENGINEER approved equal.

7. Flanged Expansion Joints for above ground piping:

7.1. General: The CONTRACTOR shall furnish a restrained NSF No. 61 certified, flanged, single arch rubber expansion joint on each pump discharge pipe, as shown in the DRAWINGS.

7.2. Materials of Construction: The rubber expansion joint shall be NSF No. 61 certified made of EPDM tube and cover.

7.3. Flanges: The rubber expansion joint shall be provided with flanged connections per the requirements specified herein, under section 2.01.C.2

7.4. Restraint: The rubber expansion joint coupling shall be provided with thrust lugs and threaded tie rods, as required for the operating conditions, and indicated in the DRAWINGS.

7.5. Misalignment: Pipe misalignment may occur at this type of joints, but such movement shall never exceed 75% of the manufacturer’s recommended maximum allowable compression, extension, or deflection.

7.6. Manufacturer: CONTRACTOR to supply Garlock Style 206 Sure-Tec® NSF-61 EPDM expansion joint, Proco® Series 231 NSF-61 EPDM expansion joint, or ENGINEER approved equal.

PART 3 - EXECUTION

3-1. INSPECTION AND TESTING

3-1.01. All pipe shall be inspected and tested at the foundry.

3-1.02. The OWNER shall have the right to have any or all piping, fittings or special castings inspected and tested by an independent testing agency at the foundry or elsewhere. Such inspection and testing will be at the OWNER'S expense.

3-1.03. The CONTRACTOR shall mark as rejected and immediately remove from the PROJECT site, all pipe lengths showing a crack, damaged lining, or receiving a severe blow that may cause an incipient fracture, even though no such fracture can be seen.

3-2. INSTALLATION

3-2.01. The CONTRACTOR shall provide and install all required piping and accessories in strict accordance with the requirements of AWWA C600, CONTRACT DOCUMENTS and manufacturer's recommendations. The most stringent recommendations shall apply.

1. Push-on joints: SUPPLIER'S Recommendation and AWWA C600.

2. Bolted joints: SUPPLIER'S Recommendations and AWWA C600.

3. Flanged joints:

   3.1. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. The CONTRACTOR shall clean flanges by wire brushing before installing flanged fittings. The CONTRACTOR shall clean flange bolts and nuts by wire brushing, lubricate bolts with non-seizing lubricant.

   3.2. The CONTRACTOR shall insert the nuts and bolts (or studs) finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

   3.3. The CONTRACTOR shall carefully tighten joints to prevent undue strain upon valves, and other equipment.

   3.4. If flanges leak under pressure testing, the CONTRACTOR shall loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

3-2.02. Fabrication:

1. Tapped connections:

   1.1. The CONTRACTOR shall make all tapped connections as shown on the DRAWINGS or as directed by the ENGINEER.

   1.2. The CONTRACTOR shall make all connections watertight and of adequate strength to prevent pullout.

   1.3. The CONTRACTOR shall drill and tap normal to the longitudinal axis of the pipe.

   1.4. The maximum sizes of taps in pipes and fittings without bosses shall not exceed the sizes listed in the appendix of ANSI A 21.51 based on two full threads.

2. Cutting:

2.1. The CONTRACTOR shall perform all cutting with machines having rolling wheel cutters or knives designed to cut ductile iron. The use of a hammer and chisel to cut pipe is prohibited.

2.2. The CONTRACTOR shall after cutting, examine all cut ends for possible cracks and advise the ENGINEER for observation.

2.3. The CONTRACTOR shall carefully 45 degree chamfer all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

3-2.03. Pipe Deflection:

1. Push-on Mechanical Joints and Flexible Joints: The maximum deflection in any direction shall not exceed 75 percent of the SUPPLIER'S (manufacturer's) instructions and recommendations.

3-3. TESTING

After all piping has been placed, each run shall be tested between valves by the CONTRACTOR to the Field Test Pressure stated on the CONTRACT DRAWINGS. A low pressure test shall be conducted for a period of not less than four hours at a pressure of approximately 50 percent of the Field Test Pressure. The allowable leakage shall be one-half of the lesser amount as determined by the equations of Section 4.2.2 Allowable Leakage of AWWA C600. Upon successful completion of the low pressure test the pipe segment shall be tested to the full Field Test Pressure in accordance with AWWA C600. The observed leakage under full Field Test Pressure shall not exceed the lesser amount as determined by the equations of Section 4.2.2 Allowable Leakage of AWWA C600. The CONTRACTOR shall furnish all necessary meters, gauges, bulkheads, and other materials and appliances necessary to conduct the tests as herein required.

Every precaution must be taken to remove, valve-off or otherwise protect delicate control equipment in or attached to pipelines, to prevent damage or injury thereto.

3-4. DISINFECTION

After water lines are tested hydrostatically and immediately prior to being accepted for SUBSTANTIAL COMPLETION, disinfect pipes in accordance with AWWA C651 except as modified herein. Disinfection shall be done using calcium hypochlorite solution, liquid chlorine, or chlorine solution of strength to achieve not less than 50 parts per million of free chlorine in the pipeline. Fill the line with water and maintain line under pressure of not less than ten (10) pounds per square inch for not less than 48 hours. During this period when the line is under pressure, open and close all valves within the section being tested, as required to affect

disinfection of valve working parts. Following this period, flush the line clean for biological testing.

Any remaining superchlorinated water shall be neutralized using sodium thiosulfate or other acceptable neutralizing agent before allowing controlled flushing to surface ditches. Discharges shall be controlled in accordance with the permitted stormwater pollution prevention plan requirements with turbidity barriers, monitoring, and other acceptable measures. After flushing bacteriological sampling will then be performed. The CONTRACTOR will be required to submit a complete testing, disinfection and flushing plan for review and approval prior to the performance of any of these activities.

Repeat the disinfection process if biological testing shows unsatisfactory samples. All procedures shall be in conformance with the General Requirements. No cross-connection between the water mains and any pipe which has not been disinfected, shall be permitted. The CONTRACTOR shall furnish and install blind flanges or shall otherwise plug outlets for disinfection purposes.

3-5. WATER FOR USE IN THE TESTING AND DISINFECTION

The CONTRACTOR will be responsible to provide the water required for all pressure testing, flushing, and disinfection activities for this PROJECT.

END OF SECTION

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SECTION 15091

MISCELLANEOUS BALL VALVES

PART 1 - GENERAL

1-1. SCOPE.

1-1.01. This section covers the furnishing of manually operated or remote activated two position (open-close) ball valves as specified herein.

Miscellaneous ball valves shall be provided where AWWA type ball valves are not required.

Piping, pipe supports, insulation, and accessories that are not an integral part of the valves or are not specified herein are covered in other sections.

1-2. GENERAL.

1-2.01. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If the requirements in this section are different from those in Section 01610 General Equipment Stipulations, the requirements in the section shall take precedence.

1-2.02. Permanent Number Tags. Tags shall be in accordance with Section 01615 - Equipment and Valve Identification.

1-3. SUBMITTALS.

1-3.01. Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with the Submittals section. Included in the submittal shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft.

1-4. DELIVERY, STORAGE, AND HANDLING.

1-4.01. Shipping shall be in accordance with the Shipping section. Handling and storage shall be in accordance with Section 01614 - Product Storage and Handling Requirements.

PART 2 - PRODUCTS

2-1. CONSTRUCTION.

2-1.01. Ball valves shown on the drawing, but not specified herein, shall be selected to match piping material they are installed in.

2-1.02. Valves Type VB-1.

VB CAV shutoff valve. 2 inch and smaller	Rating	Minimum 600 psig nonshock CWP
	Code	MSS SP-110
	Type	In-line, two piece, end entry, full port
	Body/Bonnet	ASTM B584–C84400 bronze
	Trim	
	Seat	Reinforced Teflon
	Ball	Brass, or chrome plated brass
	Stem	Brass or bronze
	Thrust Washer	Reinforced Teflon
	Stem Seal	Teflon or Viton
	End Connection	Threaded End
	Temp. Limitations	-20 to 400°F [-29 to 204°C]
	Valve Operator	Lever
	Manufacturers	Conbraco Industries "Apollo 77-100 Series"; or approved equal

2-1.03. Valves Type VB-10 - Not Used.

2-1.04. Valves Type VB-11 - Not Used.

2-1.05. Length Tolerance. Unless otherwise specified, the actual length of valves shall be within plus or minus 1/16 inch [1.6 mm] of the specified or theoretical length.

2-1.06. Shop Coatings. All ferrous metal surfaces of valves and accessories, both interior and exterior, shall be shop coated for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating.

Coating Materials	
Asphalt Varnish	Fed Spec TT-C-494.
Coal Tar Epoxy	High-build coal tar epoxy; Ameron "Amercoat 78HB Coal Tar Epoxy", Carboline "Bitumastic 300 M", Tnemec "46H-413 Hi-Build Tneme-Tar", or Sherwin-Williams "Hi-Mil Sher-Tar Epoxy".
Epoxy Enamel (for liquid service)	Ameron "Amerlock 400 High-Solids Epoxy Coating", Carboline "Carboguard 891", or Tnemec "Series N140 Pota-Pox Plus".
Rust-Preventive Compound	As recommended by the manufacturer.

Surfaces To Be Coated

Unfinished Surfaces

Interior Surfaces

Liquid Service	Asphalt varnish (two coats) or epoxy enamel.
Exterior Surfaces of Valves To Be Buried, Submerged, or Installed in Manholes or Valve Vaults	Asphalt varnish or coal tar epoxy.
Exterior Surfaces of all other valves	Universal primer.

2-2. VALVE ACTUATORS.

2-2.01. Ball valves, except those which are equipped with power actuators or are designed for automatic operation, shall be provided with manual actuators. Unless otherwise specified or indicated on the CONTRACT DRAWINGS, each manual actuator shall be equipped with a lever operator.

2-3. ACCESSORIES.

2-3.01. If the drawings indicate the need for extension stems, stem guides; position indicator; floor boxes; valve boxes; or operating stands, refer to the Ball Valve Schedule.

PART 3 - EXECUTION

3-1. INSTALLATION.

3-1.01. Materials furnished under this section shall be installed in accordance with the Valve Installation section.

END OF SECTION

1.010	1.020	1.031	1.040	1.060	2.010	2.020	3.010	3.020	4.010	4.020	10.010	10.020	10.030	10.031
Tag Number	Size	Application (1)	Type of Installation(1)	Ball Class (3)	Upstream Pressure for Design Flow	Downstream Pressure for Design Flow	Design Pressure (4)	Maximum Flow Through Valve (5)	Type of Manual Actuator (6)	Limit Switches(7)	Extension Stems	Floor Boxes	Cast Iron Operating Stands	Fabricated Steel Operating Stands
	(in)				(psi)	(psi)	(psi)	(gpm)						
BV-150A	2	RW	IP	FP	33	32	150	400	L	No	No	No	No	No
BV-151A	2	RW	IP	FP	44	43	150	400	L	No	No	No	No	No
BV-153A	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-154A	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-155A	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-156A	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-158A	2	RW	IP	FP	44	43	150	400	L	No	No	No	No	No
BV-159A	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-160A	2	RW	IP	FP	29	28	150	400	L	No	No	No	No	No
BV-164A	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-165A	2	RW	IP	FP	33	32	150	400	L	No	No	No	No	No
BV-166A	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-167A	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-168A	2	RW	IP	FP	50	49	150	400	L	No	No	No	No	No
BV-169A	2	RW	IP	FP	47	46	150	400	L	No	No	No	No	No
BV-150B	1	RW	IP	FP	33	32	150	10	L	No	No	No	No	No
BV-151B	1	RW	IP	FP	44	43	150	10	L	No	No	No	No	No
BV-153B	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No
BV-154B	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-155B	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-156B	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No
BV-158B	1	RW	IP	FP	44	43	150	10	L	No	No	No	No	No
BV-159B	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-160B	1	RW	IP	FP	29	28	150	10	L	No	No	No	No	No
BV-164B	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-165B	1	RW	IP	FP	33	32	150	10	L	No	No	No	No	No
BV-166B	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-167B	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No
BV-168B	1	RW	IP	FP	50	49	150	10	L	No	No	No	No	No
BV-169B	1	RW	IP	FP	47	46	150	10	L	No	No	No	No	No
BV-150C	2	RW	IP	FP	33	32	150	400	L	No	No	No	No	No
BV-151C	2	RW	IP	FP	44	43	150	400	L	No	No	No	No	No
BV-153C	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-154C	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-155C	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-156C	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-158C	2	RW	IP	FP	44	43	150	400	L	No	No	No	No	No
BV-159C	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-160C	2	RW	IP	FP	29	28	150	400	L	No	No	No	No	No
BV-164C	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-165C	2	RW	IP	FP	33	32	150	400	L	No	No	No	No	No
BV-166C	2	RW	IP	FP	31	30	150	400	L	No	No	No	No	No
BV-167C	2	RW	IP	FP	35	34	150	400	L	No	No	No	No	No
BV-168C	2	RW	IP	FP	50	49	150	400	L	No	No	No	No	No
BV-169C	2	RW	IP	FP	47	46	150	400	L	No	No	No	No	No
BV-150D[8]	3/8	RW	IP	SP	33	0	150	0.5	L	No	No	No	No	No
BV-151D[8]	3/8	RW	IP	SP	44	0	150	0.5	L	No	No	No	No	No
BV-153D[8]	3/8	RW	IP	SP	35	0	150	0.5	L	No	No	No	No	No
BV-154D[8]	3/8	RW	IP	SP	31	0	150	0.5	L	No	No	No	No	No
BV-155D[8]	3/8	RW	IP	SP	31	0	150	0.5	L	No	No	No	No	No
BV-156D[8]	3/8	RW	IP	SP	35	0	150	0.5	L	No	No	No	No	No
BV-158D[8]	3/8	RW	IP	SP	44	0	150	0.5	L	No	No	No	No	No
BV-159D[8]	3/8	RW	IP	SP	31	0	150	0.5	L	No	No	No	No	No
BV-160D[8]	3/8	RW	IP	SP	29	0	150	0.5	L	No	No	No	No	No
BV-164D[8]	3/8	RW	IP	SP	31	0	150	0.5	L	No	No	No	No	No
BV-165D[8]	3/8	RW	IP	SP	33	0	150	0.5	L	No	No	No	No	No
BV-166D[8]	3/8	RW	IP	SP	31	0	150	0.5	L	No	No	No	No	No
BV-167D[8]	3/8	RW	IP	SP	35	0	150	0.5	L	No	No	No	No	No
BV-168D[8]	3/8	RW	IP	SP	50	0	150	0.5	L	No	No	No	No	No
BV-169D[8]	3/8	RW	IP	SP	47	0	150	0.5	L	No	No	No	No	No
BV-150E	1	RW	IP	FP	33	32	150	10	L	No	No	No	No	No
BV-151E	1	RW	IP	FP	44	43	150	10	L	No	No	No	No	No
BV-153E	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No

1.010	1.020	1.031	1.040	1.060	2.010	2.020	3.010	3.020	4.010	4.020	10.010	10.020	10.030	10.031
Tag Number	Size	Application (1)	Type of Installation(1)	Ball Class (3)	Upstream Pressure for Design Flow	Downstream Pressure for Design Flow	Design Pressure (4)	Maximum Flow Through Valve (5)	Type of Manual Actuator (6)	Limit Switches(7)	Extension Stems	Floor Boxes	Cast Iron Operating Stands	Fabricated Steel Operating Stands
	(in)				(psi)	(psi)	(psi)	(gpm)						
BV-154E	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-155E	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-156E	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No
BV-158E	1	RW	IP	FP	44	43	150	10	L	No	No	No	No	No
BV-159E	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-160E	1	RW	IP	FP	29	28	150	10	L	No	No	No	No	No
BV-164E	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-165E	1	RW	IP	FP	33	32	150	10	L	No	No	No	No	No
BV-166E	1	RW	IP	FP	31	30	150	10	L	No	No	No	No	No
BV-167E	1	RW	IP	FP	35	34	150	10	L	No	No	No	No	No
BV-168E	1	RW	IP	FP	50	49	150	10	L	No	No	No	No	No
BV-169E	1	RW	IP	FP	47	46	150	10	L	No	No	No	No	No
BV-150F	2	RW	IP	FP	33	0	150	2500	L	No	No	No	No	No
BV-151F	2	RW	IP	FP	44	0	150	2500	L	No	No	No	No	No
BV-153F	2	RW	IP	FP	35	0	150	2500	L	No	No	No	No	No
BV-154F	2	RW	IP	FP	31	0	150	2500	L	No	No	No	No	No
BV-155F	2	RW	IP	FP	31	0	150	2500	L	No	No	No	No	No
BV-156F	2	RW	IP	FP	35	0	150	2500	L	No	No	No	No	No
BV-158F	2	RW	IP	FP	44	0	150	2500	L	No	No	No	No	No
BV-159F	2	RW	IP	FP	31	0	150	2500	L	No	No	No	No	No
BV-160F	2	RW	IP	FP	29	0	150	2500	L	No	No	No	No	No
BV-164F	2	RW	IP	FP	31	0	150	2500	L	No	No	No	No	No
BV-165F	2	RW	IP	FP	33	0	150	2500	L	No	No	No	No	No
BV-166F	2	RW	IP	FP	31	0	150	2500	L	No	No	No	No	No
BV-167F	2	RW	IP	FP	35	0	150	2500	L	No	No	No	No	No
BV-168F	2	RW	IP	FP	50	0	150	2500	L	No	No	No	No	No
BV-169F	2	RW	IP	FP	47	0	150	2500	L	No	No	No	No	No

Notes:
(1) Abbreviations for the service are as indicated below:
RW Raw Water (Inside Wellhouse)

2) Abbreviations for installation types are as follows:

V20 Vault, depth 20 feet or less
V Vault, depth greater than 20 feet, actual depth of xx feet(Vxx)
IP In plant

3) Abbreviation for Ball Class as follows:
FP Full Port
SP Standard Port

4) If no design pressure data is specified, a shutoff pressure equal to the AWWA class of the valve shall be used in sizing the actuator.

5) If no maximum flow data is specified, a value of 35 fps shall be used in sizing the actuator.

6) Abbreviations for manual actuator types are as follows:

HW Handwheel
CW Chainwheel
WN Wrench Nut
L Lever

7) Abbreviations for limit switches on manual and cylinder operated valves.

EOT End of travel (open - close)
PSS Pump start - stop (two intermediate positions)
ELSCH See electrical schematics

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SECTION 15093

CHECK VALVES

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers the furnishing of rubber flapper swing check valves as specified herein. Piping, pipe supports, and accessories that are not an integral part of these valves or are not specified herein are covered in other sections.

1-2. GENERAL

1-2.01. Equipment furnished under this section shall be fabricated and assembled in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by ENGINEER.

1-2.02. Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1-3. SUBMITTALS

1-3.01. Complete dimensional drawings, details, specifications, test certificates, parts list drawings, and operation and maintenance manuals covering the valves and their appurtenances shall be submitted in accordance with section 01330 Submittal Procedures.

PART 2 - PRODUCTS

2-1. RUBBER FLAPPER SWING CHECK VALVES

2-1.01. This section covers rubber flapper swing check valves for well pump discharge service.

A. Acceptable Products. The valve manufacturer shall have 5 years minimum experience in the manufacturing of rubber flapper swing check valves. The rubber flapper swing check valves shall be APCO Series 100, as manufactured by Valve & Primer Corporation, Schaumburg, Illinois; or equal.

B. Service Condition. The rubber flapper swing check valves shall be designed for a working pressure of not less than 250 psi. The rubber flapper swing check valves shall operate satisfactorily without excessive wear or flutter of the discs.

C. Materials. Materials used in the manufacture of the rubber flapper swing check valves shall be as follows:

Body and Cover	Ductile Iron ASTM A536 Gr.65-45-12 Class B

Flapper	Buna-N or other elastomers
Shop Coatings:	
Universal Primer (tie coat)	PPG Amercoat “Amercoat 385 Epoxy”, Carboline “Rustbond”, ICI Devoe “Devran 224HS”, Tnemec “Series 27 F.C. Typoxy”, or Sherwin-Williams “Dura Plate 235”.
Epoxy (NSF certified systems)	PPG Amercoat “Amerlock 400 High-Solids Epoxy Coating”, Carboline “Carboguard 891”, ICI Devoe “Bar-Rust 233H”, Tnemec “Series N140 Pota-Pox Plus”, or Sherwin-Williams “Dura Plate 235 NSF”; immersion service.
Rust-Preventive Compound	As recommended by manufacturer

E. Valve Construction. The valves shall be designed, manufactured and tested in accordance with ANSI/AWWA C508.

1. Valves shall be full body flanged type, with a domed access cover and only one moving part – the valve disc. Flange diameter and drilling shall conform to ANSI B16.1, Class 125.

2. The rubber flapper swing check valves shall have a heavily constructed ductile Iron body and cover. The body shall be long pattern design (not wafer) with integrally cast-on end flanges. The flapper shall be Buna-N having an O-ring seating edge and be internally reinforced with steel and nylon.

3. The flapper shall be captured between the body and the body cover in a manner to permit the flapper to flex from closed to full open position. The flapper shall be easily removed without the need to remove the valve from the pipeline. Rubber flapper swing check valves shall have full pipe size flow area. Seating surface shall be on a 45 degree angle requiring the flapper to travel only 35 degrees from closed to full open position for minimum head loss. Valves shall have non-slam closure characteristics.

4. The valve shall be proof of design cycle tested 1,000,000 times with no signs of wear or distortion to the valve disc or seat and shall remain drop tight at both high and low pressures. The test results shall be independently certified and submitted.

5. All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. The manufacturer shall provide test certificates.

2-2. SHOP PAINTING

2-2.01. All interior and exterior ferrous metal surfaces, except finished surfaces, bearing surfaces, and stainless steel components, of valves and accessories shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting.

The following surfaces shall be painted:

Unfinished Surfaces

Interior Surfaces	Epoxy
Exterior Surfaces	Universal primer.

Polished or Machined Surfaces

Flange Faces	Rust-preventive compound.
Other Surfaces	Epoxy.

2-2.02. Interior coatings shall comply with AWWA C550 and shall be free of holidays.

2-2.03. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

PART 3 - EXECUTION

3-1. INSTALLATION

3-1.01. Materials furnished under this section will be installed in accordance with Valve Installation section.

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SECTION 15094

PIPE SUPPORTS

PART 1 -- GENERAL

1-1. THE SUMMARY

1-1.01. The CONTRACTOR shall provide pipe supports, hangers, guides, and anchors, complete and in place, as indicated in accordance with the Contract Documents.

1-1.02. Where pipe support systems are not indicated on the Drawings, the CONTRACTOR shall design and provide the supports in accordance with this Section. The absence of pipe supports and details on the contract drawings does not relieve the Contractor of responsibility for sizing and providing the pipe supports.

1-1.03. The provisions of this Section shall apply to piping in Division 15.

1-1.04. The CONTRACTOR shall provide supporting devices for supporting and restraining piping as indicated on the Drawings. Where pipe support devices and/or restraining details are not indicated on the Drawings, it is the CONTRACTOR'S responsibility to develop the details necessary to support and restraint the piping for a complete and functional pipe support system.

1-2. CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with the requirements of Section 01300 – Submittal Procedures.

1-2.02. Shop Drawings.

1. Submit Shop Drawings which shall include the following information:

    a. Drawings of pipe supports, hangers, anchors, and guides.

    b. Pipe support schedule or layout indicating where the supports will be installed.

PART 2 -- PRODUCTS

2-1. GENERAL REQUIREMENTS

2-1.01. Code Compliance

1. Piping systems and pipe connections to equipment shall be properly anchored and supported in order to prevent undue deflection, vibration, and dislocation due to seismic events, line pressures, pipe weight, fluid weight, liquid movement, thermal changes, vibration, and probable forces applied during construction as well as stresses on piping, equipment, and structures.

2. Supports and parts thereof shall conform to the requirements of ASME B31.1 - Power Piping – Chapter II, Part 5 -Expansion, Flexibility, and Pipe Supporting

Element and design the pipe supporting elements in accordance with the rules of MSS SP-58 -Pipe Hangers and Supports – Materials, Design and Manufacture, except as supplemented or modified in this Section.

3. Supports for plumbing piping shall be in accordance with the latest edition of the applicable plumbing code or local administration requirements.

2-1.02. Structural Members

1. Wherever possible, pipes shall be supported from structural members.

2. Where it is necessary to frame structural members between existing members, such supplementary members shall be provided by the CONTRACTOR.

3. Supplementary members shall be in accordance with the requirements of the Building Code and the American Institute of Steel Construction, and shall be as acceptable to the ENGINEER.

2-1.03. Pipe Hangers

1. Pipe hangers shall be capable of supporting the pipe in operation, allowing free expansion and contraction of the piping and preventing excessive stress on equipment.

2. Hangers shall have a means of vertical adjustment after erection.

3. Hangers shall be designed to prevent becoming disengaged by any movement of the supported pipe.

4. Hangers subject to shock, seismic disturbances, or thrust imposed by the actuation of safety valves shall include hydraulic shock suppressors.

5. Hanger rods shall be subjected to vertical loading only.

2-1.04. Hangers Subject to Lateral or Axial Movement.

1. At hanger locations where lateral or axial movement is anticipated, suitable linkage shall be provided to permit such movement.

2. Where lateral or axial pipe movement is greater than 1/2 inch, or where the hanger rod deflection from the vertical is greater than 4 degrees from the cold-to-hot position of the pipe, the hanger rod and structural attachment shall be offset in such a manner that the rod is vertical in the hot position.

2-1.05. Freestanding Piping

1. Freestanding pipe connections to equipment such as chemical feeders and pumps shall be firmly attached to support frames fabricated from angles, channels, or I-beams anchored to the structure.

2. Exterior, freestanding overhead piping shall be supported on fabricated pipe stands consisting of pipe columns anchored to concrete footings, or with horizontal, welded steel angles, and U-bolts or clamps securing the pipes.

2-1.06. Materials of Construction

1. Pipe support assemblies, including framing, hardware, and anchors, shall be of steel construction, galvanized after fabrication, unless otherwise indicated.

2-1.07. Point Loads

1. Meters, valves, heavy equipment, and other point loads on PVC, FRP, or other plastic pipes, shall be supported on both sides, according to manufacturer's recommendations, in order to avoid undue pipe stresses and failures.

2. In order to avoid point loads, the supports on PVC, FRP, or other plastic piping shall be equipped with extra wide pipe saddles or galvanized steel shields for general service.

2-1.08. Concrete Anchors

1. Unless otherwise indicated, concrete anchors for pipe supports shall be according to the following table; consult the ENGINEER for any anchor applications not appearing on the table.

2. Anchor embedment shall be in accordance with the requirements of Section 05500 – Miscellaneous Metalwork.

Pipe Support Application	Type of Concrete Anchor
New Concrete	Use embedded concrete insert anchors on a grid pattern. Use **Grinnell (Anvil International), Tolco**, or equal.
Existing Concrete	Use non-shrink grouted anchors, expansion anchors, or epoxy anchors. Epoxy anchors are not permitted for vertical hanging applications or where sustained tension is exerted on the anchor. Exceptions: Expansion anchors and epoxy anchors are not permitted for pipe supports subject to vibrating loads. Epoxy anchors are not permitted where the concrete temperature is in excess of 100 degree F or higher than the limiting temperature recommended by the manufacturer.
Vibratory Loads and High-Temperature Conditions	Use non-shrink grouted anchors.

2-1.09. Noise Reduction

1. In order to reduce the transmission of noise in piping systems, copper tubes in buildings and structures shall be wrapped with a 2-inch wide strip of rubber fabric or similar suitable material at each pipe support, bracket, clip, or hanger.

2-2. SUPPORT SPACING

2-2.01. Supports for piping with the longitudinal axis in approximately a horizontal position shall be spaced to prevent excessive sag, bending, and shear stresses in the piping, with special consideration given where components such as flanges and valves impose concentrated loads.

2-2.02. Where pipe spacing are indicated on the Drawings and are referenced to a Standard Detail, that requirement shall take preference over the general requirements of this section.

2-2.03. Pipe support spacing shall not exceed the maximum indicated spans. Piping with grooved joint couplings, flexible joints, and bend fittings shall be balanced supported by a minimum of two pipe supports per pipe length, one at near each joint/fitting.

2-2.04. For temperatures other than ambient temperatures or those listed, and for other piping materials or wall thicknesses, the pipe support spacings shall be modified in accordance with the pipe manufacturer's recommendations.

2-2.05. Vertical supports shall be provided to prevent the pipe from being overstressed from the combination of loading effects.

2-2.06. Ductile Iron Pipe

1. Install supports for ductile iron pipe in accordance with the recommendations of the Ductile Iron Pipe Research Association (DIPRA) Design of Ductile Iron Pipe on Supports.

2. As a minimum, where support spacing is not indicated on the Drawings, the CONTRACTOR shall use the spacing indicated in the following schedule:

Nominal Pipe Diameter, inches	Support Configuration
All diameters	two supports per pipe length, with one of the two supports located at a joint

2-2.07. Other Pipe Materials

1. Support spacing for pipe constructed of other materials shall be based on design temperature and in accordance with the pipe manufacturer's recommendations.

2-3. MANUFACTURED SUPPORTS

2-3.01. Stock Parts

1. Where not specifically indicated, designs that are generally accepted as exemplifying good engineering practice and using stock or production parts shall be utilized wherever possible.

2. Such parts shall be locally available, new, of best commercial quality, and designed and rated for the intended purpose.

2-3.02. Manufacturers, or Equal

1. Basic PSA, Inc.

2. Bergen-Paterson Pipe Supports Group

3. Grinnell

4. Power Piping Company

5. TOLCO (Eaton B-Line)

2-4. COATING

2-4.01. Unless otherwise indicated, fabricated pipe supports other than stainless steel or non-ferrous supports shall be blast-cleaned after fabrication and hot-dip galvanized in accordance with ASTM A 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products and shall receive protective coatings in accordance with the requirements of Section 09940 – Protective Coating.

PART 3 -- EXECUTION

3-1. INSTALLATION

3-1.01. General

1. Pipe supports, hangers, brackets, anchors, guides, and inserts shall be installed in accordance with the manufacturer's printed instructions and per ANSI/MSS SP-58 Pipe Hangers and Supports- Materials, Design, Manufacture, Selection, Application and Installation.

2. Embedded concrete inserts for pipe hangers and supports shall be coordinated with the formwork.

3-1.02. Appearance

1. Pipe supports and hangers shall be positioned in order to produce an orderly, neat piping system.

2. Hanger rods shall be vertical, without offsets.

3. Hangers shall be adjusted to line up groups of pipes at the proper slope for drainage and venting, as close to ceilings or roofs as possible, and without interference with other WORK.

3-2. FIELD FABRICATION

3-2.01. Quality Control

1. Field fabricated pipe hangers and supports shall be fabricated and installed by experienced welders and fitters, using the best welding procedures available.

2. Hangers and supports shall be neat in appearance without sharp corners, burrs, or edges.

END OF SECTION

SECTION 15104

RESILIENT-SEATED GATE VALVES

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers furnishing resilient-seated non-rising stem AWWA gate valves for clear water service and as indicated in the Resilient-Seated Gate Valve Schedule. Resilient-seated gate valves shall be furnished complete with actuators and accessories as specified herein.

1-1.02. The minimum design working water pressure shall be 175 psig.

1-2. GENERAL

1-2.01. Equipment provided under this section shall be fabricated and assembled in full conformity with the CONTRACT DRAWINGS, CONTRACT SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by ENGINEER.

1-2.02. Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1-2.03. Governing Standard. Except as modified or supplemented herein, all resilient-seated gate valves shall conform to the applicable requirements of ANSI/AWWA C509.

1-3. SUBMITTALS

1-3.01. Complete DRAWINGS, details, and SPECIFICATIONS covering the valves and their appurtenances shall be submitted in accordance with the Submittals Procedures section.

1-3.02. All valves shall be tested in accordance with Section 5 of the governing standard. Certified copies of the results of all tests, together with an affidavit of compliance as indicated in Section 6.3 of the governing standard, shall be submitted to ENGINEER before the valves are shipped.

PART 2 - PRODUCTS

2-1. MATERIALS

2-1.01. Except as modified or supplemented herein, materials used in the manufacture of resilient-seated gate valves shall conform to the requirements of the governing standard.

2-1.02. Bronze Components. All bronze valve components in contact with liquid shall contain less than 16 percent zinc. All aluminum bronze components in contact with liquid shall not contain less than 79 percent copper.

2-1.03. Gaskets. Gaskets shall be free of asbestos and corrosive ingredients.

2-1.04. Shop Coatings.

Epoxy

For Raw or Treated Water Service in potable water facilities (NSF certified systems)	PPG Amercoat "Amerlock 400 High-Solids Epoxy ", Carboline "Carboguard 891", Sherwin-Williams “Dura Plate 235 NSF” or Tnemec "Series N140 Pota-Pox Plus".

Rust-Preventive Compound As recommended by manufacturer.

Universal Primer As recommended by manufacturer.

2-2. VALVE CONSTRUCTION

2-2.01. Ends. Valve ends shall be compatible with connecting piping. Buried valves shall be flanged or mechanical joint ends and as indicated in the Resilient-Seated Gate Valve Schedule. Above grade valves shall be flanged ends. Except as modified or supplemented herein, the ends shall conform to the applicable requirements of the governing standard.

2-2.02. Stem Seals. Valve stem shall be the non-rising type. O-ring stem seals shall be provided for all gate valves.

2-2.03. Rotation. The direction of rotation of the hand wheel or the wrench nut to open the valve shall be to the left (counterclockwise).

2-2.04. Shop Coatings. All interior and exterior ferrous metal surfaces of valves and accessories shall be shop coated for corrosion protection. The valve manufacturer’s standard fusion-bonded coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field coating.

Surfaces shall be coated as follows:

Unfinished Surfaces

Interior Surfaces	Epoxy
Exterior Surfaces of Valves to be Buried	Epoxy
Exterior Surfaces of Valves to be Submerged	Epoxy
Exterior Surfaces of All Other Valves	Universal Primer.

Polished or Machined Surfaces	
Flange Faces	Rust-preventive compound.
Other Surfaces	Epoxy.

2-2.05. The interior surfaces of each valve shall be subjected to a nondestructive holiday test in accordance with ASTM G62, Method A, and shall be electrically void-free.

2-2.06. Interior coatings shall comply with ANSI/AWWA C550 and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils.
Universal Primer	3 mils.

2-3. VALVE ACTUATORS

2-3.01. Requirements for valve actuators shall be as specified in the Resilient-Seated Gate Valve Schedule.

2-4. ACCESSORIES - Not Used

PART 3 - EXECUTION

3-1. INSPECTION

3-1.01. All valves and accessories shall be inspected for damage and cleanliness before being installed. Any material damaged or contaminated in handling on the job shall not be used unless it is repaired and re-cleaned to the original requirements by CONTRACTOR. Such material shall be segregated from the clean material and shall be inspected and approved by the OWNER or its representative before its use.

3-2. INSTALLATION

3-2.01. Valves shall be installed with sufficient clearance for proper operation of any external mechanisms, and with sufficient clearance to dismantle the valve for in-place maintenance. Installation shall be in accordance with the valve manufacturer's recommendations.

3-2.02. Unless otherwise indicated on the CONTRACT DRAWINGS, all valves installed in horizontal runs of pipe having centerline elevations 3 feet 6 inches or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs of piping having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and operating hand wheel shall be installed above the valve horizontal centerline as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as reviewed by ENGINEER.

3-2.03. Installation Checks. An installation check by an authorized representative of the manufacturer is not required.

3-3. FIELD QUALITY CONTROL

3-3.01. Field Testing. After Installation, all valves shall be tested as indicated on the Pipe and Valve Schedule on the CONTRACT DRAWINGS.

1. Pressure Tests. Pressure testing shall be in accordance with the Pipe and Valve Schedule on the CONTRACT DRAWINGS.

2. Leakage Tests. All installed valves shall be free from leaks. Each leak that is discovered within the CORRECTION PERIOD stipulated in the General Conditions shall be repaired by and at the expense of CONTRACTOR. This requirement applies whether pressure testing is required or not.

END OF SECTION

Schedule 15104-S01
Resilient Seated Gate Valves Schedule

1.010	1.020	1.031	1.040	1.050	2.010	3.010	3.020	3.030	3.040		
Tag Number	Size (in)	Application (4)	Type of Installation(1)	Ends(2)	Type of Manual Actuator(3)	Extension Stems	Floor Boxes	Cast Iron Operating Stands	Fabricated Steel Operating Stands	P&I DWG No.	Global ID
GV-150	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-151	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-153	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-154	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-155	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-156	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-158	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-159	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-160	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-164	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-165	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-166	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-167	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-168	10	RW	IP	F	HW	No	No	No	No	I-2	
GV-169	10	RW	IP	F	HW	No	No	No	No	I-2	

Schedule 15104-S01
Resilient Seated Gate Valves Schedule

Notes:

(1)	Abbreviations for installation types are as follows:
B4	Buried, depth of 4 feet [1.2 m] or less
B20	Buried, depth greater than 4 feet [1.2 m] but 20 feet [6.1 m] or less
B	Buried, depth greater than 20 feet [6.1 m], actual depth of xx feet (Bxx)
SV20	Submerged or vaulted, depth 20 feet [6.1 m] or less
SV	Submerged or vaulted, depth greater than 20 feet [6.1 m], actual depth of xx feet(SVxx)
IP	In plant

(2)	Abbreviations for types of ends:
F	Flanged
MJ	Mechanical joint
P	Push-on joint

(3)	Abbreviations for types of manual actuators:
WN	Wrench nut
HW	Handwheel

(4)	Abbreviations for the service are as indicated below:
	RW: Raw Water (Inside Wellhouse)

SECTION 15108

AIR VALVES

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers furnishing combination air valves and air /vacuum valves as required by the WORK, and as indicated in the Air Valve Schedule.

1-2. GENERAL

1-2.01. Equipment provided under this section shall be fabricated and assembled in full conformity with the Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1-2.02. Valves shall be furnished with all necessary parts and accessories indicated on the Drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1-2.03. General Equipment Stipulations

1-2.04. The General Equipment Stipulations shall apply to all equipment furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

1-2.05. Governing Standard

1-2.06. Except as modified or supplemented herein, all valves furnished under this section shall conform to the applicable performance requirements of ANSI/AWWA C512.

1-2.07. Identification

1-2.08. Air valves shall be tagged in accordance with the Equipment and Valve Identification section.

1-3. SUBMITTALS

1-3.01. Complete assembly drawings, together with detailed specifications and data covering materials used and accessories forming a part of the valves furnished, shall be submitted in accordance with the Submittals Procedures section.

PART 2 - PRODUCTS

1-4. CONSTRUCTION

Three inch and smaller air release and vacuum relief valves for clean water applications shall be integral type, Apco model AVV 140 as manufactured by DeZurik, or Val-Matic “Combination Air Release Valve Series 201C.2 (Single body) as manufactured by Val-Matic Valve and Manufacturing Co, or ENGINEER approved equal.

2-2. MATERIALS

Except as modified or supplemented herein, materials of

construction shall comply with the governing standard.

Valve Body and Cover	ASTM A126 Class B cast iron
Float	Type 316 stainless steel
Shop Coatings	
Epoxy (NSF-61 Certified)	PPG Amercoat “Amerlock 400 High Solids Epoxy”, Carboline “Carboguard 891”, Sherwin-Williams "Macropoxy 646NSF" or Tnemec “Series N140 Pota-Pox Plus”.

PPG Amercoat “Amercoat 385 Epoxy”, Carboline “Carboguard 890”, Sherwin- Williams "Macropoxy 646" or Tnemec “Series N69 Hi-Build Epoxoline II”.

Rust-Preventive	As recommended by manufacturer.

2-3. SHOP PAINTING

All interior and exterior ferrous metal surfaces, except stainless steel components, shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field coating. Field painting is covered in the Protective Coatings section.

Surfaces shall be painted as indicated:

Interior Surfaces of Valves in Clean Water Applications (Raw or Treated Water in Potable Water Facilities)	NSF-61 Certified Epoxy.

Interior epoxy coatings for clean water valves shall comply with ANSI/AWWA C550/NSF 61. Interior coatings for all valves shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

2-4. SHUTOFF VALVES

A shutoff valve shall be provided in the piping leading to each air valve. Shutoff valves shall be ball valves as specified in the Miscellaneous Ball Valves section.

PART 3 - EXECUTION

3-1. INSTALLATION

Combination air valves shall be installed in accordance with the Valve Installation section.

END OF SECTION

Schedule 15108-S01
Air Valves Schedule

1.010	1.020	1.030	1.040	1.050	1.060	2.010	3.010	3.020		
Tag Number	**Type (1)**	**Location (2)**	**Inlet Size**	**Outlet Size**	**Orifice Size**	**Inlet Type (3)**	**Outlet Type (3)**	**Working Pressure**	**P&I Dwg No.**	**Global ID**
			(in)	(in)	(in)			(psig)		
AV-150A	CAV	IP	2"	2"	3/32"	T	T	33	I-2	
AV-151A	CAV	IP	2"	2"	3/32"	T	T	44	I-2	
AV-153A	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-154A	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-155A	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-156A	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-158A	CAV	IP	2"	2"	3/32"	T	T	44	I-2	
AV-159A	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-160A	CAV	IP	2"	2"	3/32"	T	T	29	I-2	
AV-164A	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-165A	CAV	IP	2"	2"	3/32"	T	T	33	I-2	
AV-166A	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-167A	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-168A	CAV	IP	2"	2"	3/32"	T	T	50	I-2	
AV-169A	CAV	IP	2"	2"	3/32"	T	T	47	I-2	
AV-150B	CAV	IP	2"	2"	3/32"	T	T	33	I-2	
AV-151B	CAV	IP	2"	2"	3/32"	T	T	44	I-2	
AV-153B	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-154B	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-155B	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-156B	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-158B	CAV	IP	2"	2"	3/32"	T	T	44	I-2	
AV-159B	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-160B	CAV	IP	2"	2"	3/32"	T	T	29	I-2	
AV-164B	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-165B	CAV	IP	2"	2"	3/32"	T	T	33	I-2	
AV-166B	CAV	IP	2"	2"	3/32"	T	T	31	I-2	
AV-167B	CAV	IP	2"	2"	3/32"	T	T	35	I-2	
AV-168B	CAV	IP	2"	2"	3/32"	T	T	50	I-2	
AV-169B	CAV	IP	2"	2"	3/32"	T	T	47	I-2	

Notes:
(1) Abbreviations for the valve types are as indicated below:
ARV: Air Release Valve
CAV: Combination Air Release Valve
ARVR: Air Release and Vacuum Relief Valve
VRV: Vacuum Relief Valve

(2) Abbreviations for locations are as indicated below:
IP: In-plant
IV: In-vault
UG: Underground
OD: Outdoors

(3) Abbreviations for the inlet connection are as indicated below:
T: Threaded, ASNI/ASME B1.20.1, NPT
125F: Flanged Class 125
250F: Flanged Class 250

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Section 15160

FLOW TUBES AND VENTURI TUBES

PART 1 – GENERAL

1-1. SCOPE

1-1.01. The Flow Tubes and Venturi Tubes section covers the furnishing and installation of venturi tubes.

1-2. GENERAL

1-2.01. Equipment furnished and installed under the Flow Tubes and Venturi Tubes section shall be fabricated and installed in full conformity with detail drawings, specifications, and engineering data of the equipment manufacturer, unless exceptions are noted by Engineer.

1-2.02. Equipment required for transmission, metering, and control is covered under other sections.

1-2.03. Workmanship and Materials. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

1-2.04. Preparation and Shipment. All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times. Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage.

1-3. SUBMITTALS

1-3.01. Complete installation drawings, together with detailed specifications and data covering the equipment furnished, shall be made as specified in the Submittals Procedures section.

1-3.02. Submittals shall verify compliance with the Contract Documents and shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and the operation of component materials and devices; the external connections, anchorages, and supports required; the performance characteristics and flow curves; and dimensions needed for installation and correlation with other materials and equipment. Submittals shall be subject to review by Engineer and approval must be given prior to fabrication.

1-3.03. One (1) A standard calibration curve or tabulation for each flow tube shall be prepared and certified by the manufacturer. Each calibration curve or tabulation shall show the flow at various differentials across the tube, and shall cover the entire specified range of flow.

PART 2 - PRODUCTS

2-1. PERFORMANCE AND DESIGN REQUIREMENTS

2-1.01. Each tube shall produce a differential the square root of which is directly proportional to flow. The accuracy limit shall include all variations in flow coefficient and errors introduced by upstream and downstream piping as well as irregularities of manufacture. Each tube shall measure the actual flow within the accuracy, over a 10:1 flow range, at the design operating temperature and pressure.

2-1.02. The Venturi flow meter shall have an accuracy of +/-0.5% of actual flow above a pipe Reynolds number of 75,000 with a minimum discharge coefficient of 0.9900 which is independent of line size and Beta ratio. Permanent pressure loss not shall exceed 10% of the differential pressure being produced.

2-1.03. The Contractor shall verify that the piping supplied is suitable for installation of the tubes furnished and as specified on the drawings. Contractor shall provide the venturi manufacturer dimensional data for the upstream mating pipe, including pipe material, pipe class, flange class and bolting pattern, wall thickness, liner thickness, and confirmed inside diameter of the pipe being used immediately upstream the Venturi on the project.

2-1.04. Each tube shall withstand a hydrostatic pressure equal to that specified for the piping system in which the tube is to be installed.

2-2. ACCEPTABLE MANUFACTURERS

2-2.01. The basis of design and preapproved venturi meter is the PFS HVT-PIFS or HVT-FIFS. Venturi tubes shall be manufactured by Primary Flow Signal, or pre-approved equivalent in full compliance with the specifications herein.

2-2.02. Manufacturers shall provide evidence of experience in manufacturing insert Venturi primary devices with static-tapped upstream spools of similar size. The manufacturer and Venturi meter shall fully comply with all the requirements specified within this section and shall be required to provide proof of compliance with all specifications. Manufacturers proposals to contractors shall include the proposed Venturi sizing and flow calculations, Venturi drawings, manufacturing plan, complete flow laboratory calibration plan, and detailed explanation of exceptions to any specification.

2-3. MATERIALS AND CONSTRUCTION

2-3.01. Tube materials and construction shall be as specified herein. Interior sections shall be precision-shaped to the proper diameter and contour. All interior cross sections of tubes perpendicular to the tube axis shall be circular, with no inward projections. Flanges shall be compatible with the adjacent piping. Pressure rating of the venturi tube shall be equal or greater than the maximum expected operating pressure or test pressure of the adjacent piping.

2-3.02. Full Body Venturi Tubes. (NOT USED)

2-3.03. Insert Flow Tubes. Inlet and outlet cones, throat section and holding flange shall be provided as indicated below.

2-3.04. The Venturi manufacturer shall provide flange x flange 304 stainless steel static-tapped spool piece to be installed upstream from flow tube as indicated on the drawings. 304 Stainless steel piping shall match material of the flow tube, and all 304 stainless steel piping shall be furnished and installed as indicated in other Sections. The FL x FL static-tapped spool piece shall be provided and shipped to the site with the high-pressure sensing tap already installed in the correct location. The inside diameter of the upstream spool shall match the inside diameter of the upstream mating pipe.

2-3.05. Tapped connections shall be provided for the differential pressure lines of each insert tube, with a permanent marking for each connection on the holding flange. Pressure sensing taps shall be the manufacturer's standard size NPT.

2-3.06. The venturi inlet and outlet cones shall have a thickness that is suitable for long term service for air flow measurement in a wastewater pumping station environment.

2-3.07. Tube materials and construction shall be as follows:

2-3.08. Inlet and Outlet Cone Material: Stainless Steel Type 316, or polyester resin reinforced with glass, 30% by weight suitable for use up to 250 degrees Fahrenheit.

2-3.09. Throat Liner and Pressure Tap Bushings: Stainless Steel Type 316

2-3.10. Insert Venturi Holding Flange: Stainless Steel Type 316.

2-3.11. 2-3.03. Static Tap. The static tap shall be 3/4" NFT where it inserts into the spool piece. The static tap shall be completed by the venturi tube manufacturer.

2-3.12. 2-3.04. Vent Cleaner Assemblies. 316 stainless steel manual vent cleaner assemblies shall be provided by the manufacturer for each pressure port (low and high) of each venturi tube. The assembly shall include an isolating ball valve, 3/4"cross fitting, and cleanout rods.

2-3.13. 2-4.01. Shop Tests. Venturi tubes and metering spools shall be factory tested by a certified quality control expert. Venturi meters shall certify that critical cross-sectional measurements are taken using NIST traceable certified micrometers to confirm the correct shape and geometry has been thoroughly confirmed, and surface finish has been properly verified. The venturi shall be factory calibrated to confirm an accuracy of +/-0.5% of flowrate of flow down to 75,000 pipe Reynolds number.

2-3.14. 2-5. WARRANTY. The venturi tubes shall be warranted for a period of 25 years from date of installation against defects in workmanship and materials.

PART 3 - EXECUTION

3-1. INSTALLATION

3-1.01. An experienced, competent, and authorized representative of the manufacturer shall visit the site of the Work and inspect, check, adjust if necessary, and approve the equipment installation.

3-1.02. The manufacturer’s representative shall furnish a written report certifying that the equipment has been properly installed; is in accurate alignment; is free from any undue stress imposed by connecting piping or anchor bolts; and has been operated satisfactorily.

3-1.03. All costs for these services shall be included in the contract price.

3-1.04. Manufacturer shall include a minimum of one (1) eight-hour day and one (1) trip to the site.

3-1.05. Flow tubes shall be installed in accordance with the equipment manufacturer's instructions.

END OF SECTION

SECTION 15210

PIPING IDENTIFICATION

PART 1 -- GENERAL

1.1. THE SUMMARY

1-1.01. The CONTRACTOR shall provide identification for the piping and valves, complete and in place, in accordance with the Contract Documents.

1.2. REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1-2.01. Commercial Standards

ASME A13.1 Scheme for the Identification of Piping Systems

1.3. CONTRACTOR SUBMITTALS

1-3.01. Furnish submittals in accordance with Section 01300 -Submittal Procedures.

1-3.02. Shop Drawings: Provide a list of the suggested wording for each pipe label and valve tag, prior to fabrication.

1-3.03. Samples

1. Sample of each type of identification device.

PART 2 -- PRODUCTS

2.1. EXPOSED PIPING OR ABOVE GROUND PIPING IDENTIFICATION

2-1.01. Pipe markers, type as indicated below, suitable for outdoor application from -40 degrees to 180 degrees Fahrenheit; in accordance with ASME A13.1 requirements.

1. Marker Type

   a. Adhesive: Vinyl or polyester sheet with UV- resistant ink, shaped similar to pipe curvature and coated with pressure sensitive adhesive.

2. Marker Area: Sized per pipe size according to ASME A13.1 and conforming to the color codes in the Identification Colors table below.

3. Lettering: Sized per pipe size according to ASME A13.1 and conforming to the color codes in the Identification Colors table below.

4. Arrows: At least one arrow at each marker area, showing direction of flow.

2-1.02. Pipe 1-inch diameter and smaller or pipe not suitable for the marker type(s) listed above shall be identified with aluminum or stainless steel pipe identification tags with stamped-in ¼” high identification lettering.

2-1.03. Manufacturer or Equal.

1. **Seton Identification Products**, Opti Code Pipe Markers (adhesive type)
2. **Grainger, Inc.** (adhesive, snap around)
3. **Marking Services, Inc.**(adhesive, snap around)

2.2. BURIED PIPELINE IDENTIFICATION

2-2.01. Underground Warning Tape

1. Material:
    a. Polyethylene tape or polyolefin film. The material and ink shall be chemically inert and shall not degrade when exposed to acids, alkalis and other destructive substances commonly found in soil.
    b. 6” wide tape with a minimum 4 mil thickness.
    c. Message: “CAUTION, LINE BURIED BELOW” with the name of the fluid service in black lettering on a colored background.
        1) Water: Blue
        2) Raw Water: Green
        3) Gas and other services: Yellow
        4) Other services: colors as approved by the OWNER.
2. Manufacturer, or Equal:
    a. Reef Industries, Inc.
    b. Seton Identification Products
    c. T. Christy Enterprises, Inc.

2-2.02. Tracer Wire

1. Material:
    a. Solid copper conductor with 30 mil HMWPE.
    b. 10 gauge or thicker wire.
2. Manufacturer, or Equal:
    a. Kris-Tech Wire

b. Corrpro Companies, Inc.

2-2.03. Witness Markers

1. Material:

   a. UV resistant glass fiber and resin reinforced thermosetting composite material.

   b. Constructed as a single pipe with pointer at the bottom end.

   c. Message of the markers “CAUTION, LINE BURIED BELOW” with the name of the fluid service, and the following information:

      1. Phone number for underground service alert.

      2. Phone number for OWNER in case of emergency.

      3. Application station number and offset information if marker is not directly over the pipe.

      4. Name of buried appurtenance or fitting if applicable.

2. Manufacturers, or Equal

   a. Carsonite Composites, Utility Marker

   b. Berntsen International, Inc.

2.3. EXISTING IDENTIFICATION SYSTEMS

2-3.01. In installations where existing piping identification systems have been established, the CONTRACTOR shall follow the existing system. Where existing identification systems are incomplete, utilize the existing system as far as practical and supplement with the system indicated herein.

2.4. IDENTIFICATION OF VALVES AND SHORT PIPE LENGTHS

2-3.01. Valves and sections of pipe that are too short to be identified with markers and arrows shall be identified with metal or plastic tags.

2-3.02. Metal tags shall be stainless steel with embossed lettering. Plastic tags shall be solid black plastic laminate with white embossed letters. Tags shall be designed to be firmly attached to the valves or short pipes or to the structure immediately adjacent to the valves or short pipes.

2-3.03. Wording on valve tags shall describe the exact function of each valve (e.g., "HWR-BALANCING," "CLS THROTTLING", "RAS-PUMP SHUT-OFF," etc.) and include the valve number as indicated in the Contract Drawings. Wording on small pipes shall describe the contents of the pipe.

PART 3 -- EXECUTION

3.1. GENERAL

3-1.01. Markers and identification tags shall be installed in accordance with the manufacturer's printed instructions, and shall be neat and uniform in appearance. Tags and markers shall be readily visible from all normal working locations.

3.2. VALVE TAGS

3-2.01. Valve tags shall be permanently attached to the valve or structure by means of 2 stainless steel bolts or screws.

3.3. MARKER LOCATIONS

3-3.01. Each pipe shall be marked at:

1. Intervals of 20-feet in straight runs.
2. At least once in every room.
3. Within 2 feet of turns, elbows, and valves.
4. On the upstream side of tees, branches, and other distribution points.
5. On both sides of walls and floors through which the piping passes.

3.4. IDENTIFICATION COLORS

1. Conform to the following color codes.

Pipe Contents		**Marker Color**	**Letter Color**	**Pipe Color**
Symbol	**Service**			
RW	RAW WATER	green	white	olive green

END OF SECTION

SECTION 15831 – FAN EQUIPMENT

PART 1 -- GENERAL

1-1. SUMMARY

1-1.01. Provide fans, blowers, ventilators, and appurtenances, complete and operable, as indicated in accordance with the Contract Documents.

1-1.02. Where 2 or more fans, blowers, ventilators or appurtenances of the same type or size are required, they shall be furnished by the same manufacturer.

1-2. CONTRACTOR SUBMITTALS

1-2.01. Furnish submittals in accordance with the requirements of Division 1.

1-2.02. Shop Drawings:

1. Submit certified fan curves for each fan.

1-2.03. O&M Data

1. Submittals shall include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.

1-3. EXTRA MATERIALS

1-3.01. Furnish, tag, and box for shipment and storage the following spare parts:

1. Drive Belts: Provide one for each fan .

1-4. REFERENCES

1-4.01. The following is a list of standards that may be referenced in this section:

1. Air Moving and Conditioning Association (AMCA):
    a. AMCA 300-14 Reverberant Room Method for Sound Testing of Fans.
    b. Standard 99, Standards Handbook, Reverberant Room Method for Sound Testing of Fans.
    c. Standard 210, Laboratory Methods of Testing Fans for Rating.
2. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE):
    a. HVAC Applications chapter in “Seismic Restraint Design”.
    b. Structural drawings and specifications for Seismic and Wind Design Criteria.

3. Institute of Electrical and Electronics Engineers, Inc. (IEEE): 112, Standard Test Procedure for Polyphase Induction Motors and Generators.

4. National Electrical Manufacturers Association (NEMA): MG 112.53a, Motors and Generators.

5. National Fire Protection Association (NFPA):

   a. 70, National Electric Code (NEC).

   b. 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

6. Occupational Safety and Health Act (OSHA).

7. Underwriters Laboratories Inc. (UL): Product Directories.

1-5. MOTORS

1-5.01. All motors shall conform to the latest IEEE and NEMA requirements for mechanical and electrical characteristics, including service factors.

1-5.02. Motors shall be in accordance with the requirements of Division 16.

1-5.03. Each motor shall bear the manufacturer's nameplate with complete motor data.

1-5.04. Each motor shall be of ample size and construction to carry continuously all loads which might be imposed by the piece of equipment it drives throughout the full range of operation of the equipment, and the maximum motor loading shall in all cases be less than or equal to the nameplate horsepower rating, exclusive of the service factor.

1-5.05. All 2-speed motors shall be 2-winding motors.

PART 2 -- PRODUCTS

2-1. PROPELLER WALL FANS

2-1.01. Provide panel-mounted direct-driven propeller wall fans as indicated.

2-1.02. General Description:

1. Maximum continuous operating temperature 150° Fahrenheit (65° Celsius) with appropriate motor selection.

2. Minimum continuous operating temperature -10° Fahrenheit (-23° Celsius).

3. Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual unit serial number.

2-1.03. Propeller:

1. Propeller constructed of cast aluminum tapered airfoil blades and cast aluminum hub.

2. Securely attached to motor shaft with a standard square key, set screw and tapered bushing.

3. Statically and dynamically balanced in accordance with AMCA Standard 204-05.

4. The propeller and fan inlet will be aligned and shall have precise running tolerances for maximum performance and operating efficiency.

5. Propellers are not coated when fan coatings accessory is selected regardless of material type.

2-1.04. Motors:

1. AC Induction Motor:

   a. Motor enclosure: Totally Enclosed Fan Cooled.

   b. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.

2-1.05. Drive Frame:

1. Drive frames and fan panels shall be bolted construction

2. Drive frame assemblies and fan panels shall be galvanized steel or painted steel

3. Drive frame shall be formed steel and fan panels shall have pre-punched mounting holes, formed flanges, and a deep formed inserted venturi

2-1.06. Disconnect Switches:

1. NEMA rated: 4X

2. Positive electrical shut-off.

3. Wired from fan motor to junction box.

2-1.07. Options/Accessories:

1. Dampers:

   a. Type: Gravity

   b. Prevents outside air from entering back into the building when fan is off.

   c. Balanced for minimal resistance to flow.

d. Galvanized frames with pre-punched mounting holes.

2. Dampers Guards:

a. Guard material: Aluminum.

b. Shall completely enclose the damper or wall opening on the discharge side of the fan.

3. Finishes:

a. Types: Hi-Pro Polyester.

4. Wall Housing:

a. Mounting arrangement: Flush Exterior.

b. Constructed of galvanized steel or painted steel with heavy gauge mounting flanges and pre-punched mounting holes.

c. Housing shall include OSHA approved motor guard.

d. Reduces installation time and provides maximum installation flexibility.

5. Wall Collar:

a. Constructed of galvanized steel or painted steel with heavy gauge mounting flanges and pre-punched mounting holes.

6. Motor Side Guard:

a. Guard type: OSHA Guard.

b. Protective guard completely enclose the motor and drive side of the fan.

2-1.08. Fans shall ha a spun-steel venturi mounting panel, a steel wire guard, a motor mount, and resilient anti-vibration pads at the mounting points of the panel.

2-1.09. Fans shall meet the following requirements:

Fan Identification	**EF-1**
Capacity, scfm	**800**
Static Pressure, inches H2O	**0.25**
Motor HP	**1/10**
Motor Voltage / Phase / Hertz	**115/1/60**
Motor RPM	**1350**

2-1.10. Manufacturers, or Equal:

1. Greenheck, Model SE
2. Cook
3. Twin City
4. Aerovent
5. Penn

PART 3 -- EXECUTION

3-1. INSTALLATION

3-1.01. Fans, blowers, ventilators, and hoods shall be installed in strict accordance with the manufacturer's recommendations.

3-1.02. Pipe the housing drains to the nearest utility drain.

END OF SECTION

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SECTION 15950 – HVAC TESTING AND BALANCING

PART 1 -- GENERAL

1-1. SUMMARY

1-1.01. The Work included in this Section shall consist of the furnishing of all labor, instruments, tools, and services as required for the total system balancing of the heating, ventilating, and air conditioning (HVAC) systems as indicated in the Contract Documents.

1-1.02. The Work under this Section shall include the following items:

1. Preparation for balancing of air systems.
2. Preparation for balancing of hydronic and steam systems.
3. Preparation of control systems.
4. Notification requirements by the General Contractor of systems readiness.

1-2. REFERENCES

Associated Air Balance Council (AABC) MN-4	Test and Balance Procedures

PART 2 -- EQUIPMENT (NOT USED)

PART 3 -- EXECUTION

3-1. GENERAL

3-1.01. Testing, adjusting, and balancing (TAB) of the air conditioning systems and related ancillary equipment shall be performed by a certified, independent third-party, AABC Agency, selected and employed by the Contractor and approved by the Owner.

3-1.02. The preparation for and corrections necessary for the testing, adjusting, and balancing of these systems, as described herein, are the responsibility of the Contractor.

3-1.03. Make changes or replacements to fan sheaves and belts, dampers, valves, and the like, as may be required for correct balance as advised by the TAB firm, as part of the Work.

3-1.04. Provide and coordinate the services of qualified, responsible subcontractors, suppliers, and personnel, as required to correct, repair, or replace deficient items or conditions found during the course of the Project, including the testing, adjusting, and balancing period.

3-1.05. Operate the systems for the length of time necessary to properly verify their completion and readiness for TAB.

3-1.06. Testing of all equipment and systems shall be performed and completed by Contractor at their own cost.

3-1.07. Scheduling

1. Project completion schedules shall allow for sufficient time to permit the completion of TAB services prior to Owner occupancy.

2. Allow adequate time for coordinating Owner-required services associated with the testing and balancing activities during the construction period and prior to Substantial Completion.

3-1.08. Accessibility

1. Install valves, dampers, and miscellaneous adjustment devices in a manner that will leave them accessible and readily adjustable.

2. Should any such device not be readily accessible, provide access as requested by the TAB firm.

3. Malfunctions encountered by TAB personnel and reported to the Contractor shall be corrected by the Contractor immediately such that the balancing work can proceed with minimal delays.

3-1.09. The TAB firm shall check, adjust, and balance the components of the HVAC system in order to obtain the optimal performance of the equipment.

3-1.10. The Work is intended to be accomplished after the system components are installed and operating as indicated and required.

3-1.11. It shall be the responsibility of the Contractor to place the equipment into service.

3-1.12. The following components of the HVAC systems shall be tested, adjusted, and balanced:

1. air moving equipment;

2. control systems (testing and verification).

3-2. FIELD TESTING

3-2.01. During the progress of the work, tests shall be performed as indicated and as required by authorities having jurisdiction, including the local building department, the Owner, the Owner's insuring agency, and the Engineer.

3-2.02. Perform such tests as part of the Work, including qualified personnel, equipment apparatus, additional thermometer wells, gauge connections, instrument connections, and services as required to perform the tests.

3-2.03. Submit 6 copies of each complete test report to the Engineer for review, and send 2 copies of the accepted report to the Owner.

3-3. DEFECTIVE WORK

3-3.01. Leaks, damage, and defects discovered or resulting from tests shall be repaired or replaced to a like-new condition.

3-3.02. Leaky pipe joints, ductwork, and the like, shall be removed and replaced with acceptable materials.

3-3.03. Reporting

1. During the balancing process, as abnormalities and malfunctions of equipment or components are discovered by the TAB personnel, the TAB firm shall advise the Engineer and Owner in writing such that the conditions may be corrected by the Contractor.

2. The written document need not be formal, but must be understandable and legible.

3. The TAB firm shall not instruct or direct subcontractors in any of the Work.

3-4. CONTRACTOR'S RESPONSIBILITIES

3-4.01. Have the building and air conditioning systems in complete operational readiness for the TAB Work to begin.

3-4.02. Allow sufficient time for the TAB firm to perform their Work within the construction schedule.

3-4.03. Complete the Work by systems or floors, whichever is the more efficient method for testing systems.

3-4.04. Scheduling

1. Within 2 weeks after the construction schedule has been developed, schedule a TAB coordination meeting to include the TAB firm, the Contractor and primary subcontractors, the Engineer, and the Owner, Tampa Bay Water, for the purpose of developing a testing schedule for the Project.

2. Submit copies of the proposed schedule to the TAB firm at least one week prior to the coordination meeting.

3-4.05. Promptly correct deficiencies of materials and workmanship identified as delaying completion of the TAB firm's Work.

3-4.06. Assume responsibility for added costs to the Owner resulting from failure to have the building and air conditioning systems ready for TAB when scheduled, and from failure to correct deficiencies promptly.

3-4.07. Coordinate with the TAB firm to compile and submit:

1. One (1) set of HVAC specifications.

2. One (1) copy of relevant revisions, clarifications, and modifications.

3. One (1) complete set of Drawings, less the Civil and Structural sheets.

4. One (1) set of the HVAC floor plans of the conditioned spaces.

5. One (1) copy of approved submittal data for installed equipment.

6. One (1) copy of related changes as required to accomplish the indicated test procedures.

3-4.08. Provide all HVAC control communications software with the appropriate licenses and hardware interfaces.

3-5. TAB FIRM'S RESPONSIBILITIES

3-5.01. The following observations and tests shall be performed by the TAB firm:

1. During the construction submittal stage and before the submittal documents are finalized, review the mechanical and HVAC submittals, drawings and specifications for balance-ability and furnish commentary.

2. During construction, review approved HVAC submittals such as control diagrams, air handling devices, and the like, that pertain to TAB work and balancing.

3. Perform construction observations and submit a written report including the following topics.

   a. The ductwork prior to insulation and ceiling cover-up; and,

4. Perform a pre-balance site review and submit a written report.

3-6. OPERATIONAL READINESS

3-6.01. "Operational readiness," as referred to in this Section, shall be defined as the time when the construction status of the building permits the closing of doors, windows, ceilings, and the like, in order to obtain simulated or projected operating conditions.

3-6.02. Operational readiness of the HVAC system shall require that the following items have been accomplished:

1. Air Distribution Systems

   a. The installation conforms to the indicated design requirements.

   b. Dampers have tight closure and open fully with smooth and free operation.

   c. Fans (supply, return, and exhaust) are operating and verified for freedom from vibration, proper fan rotation and belt tension.

d. Motor amperage and voltage have been recorded on each phase at start-up, and verified that they do not exceed nameplate ratings.

2. Automatic Controls

a. A meeting has been held with the Engineer, the TAB firm, and the Owner, for a pre-submittal review of the proposed controls strategy.

b. Control components have been installed in accordance with project requirements and are functional, including electrical interlocks, damper sequences, air and water resets, fire and freeze stats, high- and low-temperature thermostats, safeties, and the like.

c. Controlling instruments have been calibrated and set for design operating conditions with the exception of components that require input from the TAB firm, but a default has been set.

1) Cooperate with the TAB firm and provide all software and interfaces in order to communicate with the system.

d. Controls, sensors, operators, sequences, and the like, have been checked before notifying the TAB firm that the Energy Management System is operational.

1) Furnish technical support (technicians and necessary computers) for a complete check of these systems.

e. A start-up report has been submitted.

1) The start-up report shall include the submitted and actual RPM, and the actual and nameplate voltage and amperage of all motors.

2) This requirement applies to each piece of electrically-driven air conditioning equipment in the system, including supply and exhaust fans, other fans of fractional horsepower, pumps, and the like.

3) Furnish the addresses and initial set points of all controlled devices.

3-7. NOTIFICATION OF SYSTEM READINESS

3-7.01. After the above operational readiness items have been accomplished, notify the Engineer in writing, certifying that the Work has been accomplished and that the building and the air conditioning systems are in operational readiness for testing, adjusting, and balancing.

3-7.02. With the notification, include a copy of tabulated data as required.

3-7.03. The Engineer will notify the TAB firm of the readiness for balancing, and forward copies of the Contractor's certification and tabulated motor voltages, currents, and RPM.

3-7.04. If the TAB firm has been notified as described above and the inspection reveals that the TAB services notification is premature, costs of the inspection and wasted work accomplished by the TAB firm shall be reimbursed to the appropriate parties by the Contractor.

3-8. TESTING AND BALANCING

3-8.01. In coordination with the TAB firm, submit an overview of system TAB procedures including:

1. An agenda.
2. Field observation reports.
3. System testing, including:
    a. Traverses to be made.
    b. Instrumentation to be used.
    c. How correction factors for grilles and diffusers will be obtained.
    d. How measurements will be verified at maximum and minimum.
    e. How control components will be verified.
4. Report forms with each systems components identified and numbered.

3-8.02. Personnel

1. All personnel employed on the Work shall be employees of the TAB firm.
2. The Work shall be performed under the direct supervision of an AABC-Certified Test and Balance Engineer.
3. Submit resumes for each person on the Project, including education, experience, and certification.

3-8.03. Warranty

1. The TAB firm shall submit a National Performance Guaranty in accordance with AABC National Standards.

3-9. INSTRUMENTATION

3-9.01. Ensure that instruments being used are currently calibrated and listed in the TAB report, showing instrument description, serial number, and date of calibration.

3-9.02. The accuracy of instruments used shall be as indicated in the current AABC National Standards.

3-10. FINAL AIR BALANCE

3-10.01. When systems are complete and ready for operation, the TAB firm shall perform a final air balance for all air systems and record the results.

3-10.02. The volume of air for the exhaust air equipment shall be tested and balanced within the tolerances of the AABC Standard.

3-10.03. Fan volumes shall be adjusted by changing fan speed.

3-10.04. The general scope of balancing by the TAB firm shall include the following items:

1. Filters: Check air filters and filter media and balance only systems with essentially clean filters and filter media.

2. Fan Speed: Measure and record RPM at each fan speed.

3. Voltage and Amperage Readings: Measure and record the final operating amperages and voltage for each motor.

4. Static Pressure Profile

    a. Static pressure profiles shall be measured and recorded across each supply fan, cooling coil, heating coil, return air fan, air handling unit filter, and exhaust fan, and at the furthest air device or terminal unit from the air handler supplying that device.

    b. Furnish static pressure profiles for systems which do not perform as designed.

5. Equipment Air Flow: Adjust and record exhaust, return, outside, and supply air CFM and temperatures, as applicable, at each fan and coil.

3-11. TESTING OF TEMPERATURE CONTROL SYSTEMS

3-11.01. Coordinate with the Contractor in order to ensure that the most effective total system operation is within the design limitations, and to obtain a mutual understanding of the intended control performance.

3-11.02. Verify that all control devices are properly connected and operated by the intended controller.

3-11.03. Observe that all valves are properly installed in the piping system in relation to direction of flow and location.

3-11.04. Observe the calibration of all controllers.

3-11.05. Verify the proper application of all normally opened and normally closed valves.

3-11.06. Sensors

1. Observe the locations of all sensors in order to verify whether their position will allow them to sense the intended temperatures and pressures of the media accurately.

2. The Contractor shall relocate the sensors as deemed necessary by the TAB firm.

    a. Verify that the sequence of operation for control modes is in accordance with approved Shop Drawings and as indicated.

    b. Verify the proper operation of all interlock systems.

    c. Perform variable volume system verification in order to assure the system and its components track, with changes from full flow to minimum flow.

3-12. REPORTS

3-12.01. The indicated TAB activities shall culminate in a report neatly typed and arranged.

3-12.02. Include with the data the date tested, personnel present, records of test instruments used, and a list of all measurements taken.

3-12.03. The intent of the final report is to provide a reference of actual operating conditions for the Owner’s operations personnel.

3-12.04. All measurements and recorded readings (air, water, electricity, and the like) that appear in the reports shall be certified by the TAB firm's TBE (Testing and Balancing Engineer).

3-12.05. Submit report data on forms approved by the Engineer.

3-12.06. Submit 6 copies of the final report to the Engineer and 2 copies to the Owner, indicating a summary of actual operating data and any abnormal operating conditions.

3-12.07. The report shall contain all required information as indicated herein, as well as information indicated in the AABC Standard.

3-13. TAB FINAL ACCEPTANCE AND BALANCING

3-13.01. At the time of TAB final acceptance inspection, the TAB firm shall recheck, in the presence of the Engineer, specific and random selections of data that were recorded in the certified test and balance report.

3-13.02. Points and areas for recheck shall be selected by the Engineer.

3-13.03. Measurements and test procedures shall be the same as the submitted and approved test and balance agenda.

3-13.04. Selections for verification, specific plus random, shall not exceed 10 percent of the total number tabulated in the report, except where special air systems require a complete recheck for safety reasons.

3-13.05. If 10 percent of the random verification tests demonstrate a measured flow deviation of 10 percent or more from that recorded in the certified test and balance report, the report shall be automatically rejected.

3-13.06. In the event the report is rejected, all systems shall be readjusted and tested, new data recorded, a new certified test and balance report submitted, and a new inspection test made, as part of the Work.

3-13.07. Final Acceptance will not occur until after the successful completion of the TAB verification process.

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SECTION 16010

ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. Section Includes: General electrical requirements applicable to all electrical and controls work, pertinent to each building for Morris Bridge Wellfield fifteen (15) well houses, including to the following:

1. Provide electrical materials, installation and connection of equipment furnished that requires electric power and control.
2. Provide new electrical distribution equipment, including motor starter for well pump, lighting panels, transformers, circuit breakers and provide other electrical equipment as specified in other sections and as indicated on the Drawings.
3. Disconnect and remove existing electrical equipment indicated in each well house, and remove existing wiring and raceways connected to remaining ancillary electrical and control equipment.
4. Disconnect and remove existing underground electric service cable.

1-2. SYSTEM DESCRIPTION

1-2.01. Furnish and install a tested and working electrical system, as indicated on the Drawings and as specified. System includes all items not specifically mentioned in these Specifications or indicated on the Drawings or accepted Shop Drawings, but which are obviously necessary to make a complete working installation, and shall be deemed to be included herein.

1-2.02. Notify ENGINEER in writing of discrepancies within the Contract Documents and discrepancies between the Contract Documents and actual field conditions.

1-2.03. The Specifications and Drawings indicate or specify minimum sizes of equipment, electric devices, and other components of electrical system, but the Specifications and Drawings do not indicate every offset and fitting, or every structural or mechanical difficulty that may be encountered during the execution of the Work.

1-2.04. Install equipment at locations indicated on the Drawings as closely as field conditions permit. Obtain accepted equipment submittal dimensions prior to installing conduits.

1-2.05. Make minor variations to alignment of equipment and/or installation of raceway systems to avoid conflict with other portions of the Work.

1-2.06. Single Line Diagrams: Single line diagrams indicate circuit voltages for low voltage equipment, also indicate some wire and conduit sizes, circuit protection rating, and other pertinent data. Use single line diagrams to resolve conflicts.

1-2.07. Provide grounding for all electrical and controls equipment, and when not indicated on the Drawings, provide grounding in accordance with NEC Article 250 and as specified in Section 16062.

1-3. PERFORMANCE REQUIREMENTS

1-3.01. Operate electrical equipment successfully at full-rated load, without failure, at an ambient air temperature of 40 degrees Celsius, and rated for an altitude of 30 feet.

1-3.02. Coordination of Electrical Equipment Rating: Verify actual equipment, motor full-load, and locked-rotor current ratings. When providing equipment with different motor full-load and locked-rotor current ratings than indicated on the Drawings, coordinate branch circuit conductor sizes, motor overload protection, motor controllers, control power transformers, and branch circuit overcurrent protection required for equipment provided; confirm with Record Engineer.

1-3.03. Branch Circuit Conductor Current Carrying Capacity: Minimum 125 percent of the full-load current rating of equipment.

1-3.04. Branch Circuit Conductor Size: Adequate to prevent voltage drop greater than 2 percent from branch circuit protection device to equipment with equipment running at full-load and rated voltage. Include conductor derating in accordance with ambient temperature and conduit fill requirements.

1-3.05. Motor Running Overload Protection Devices: Rated or selected to trip at no more than the following percent of motor nameplate full-load current rating:

a) 125 percent for motors with marked service factor not less than 1.15.
b) 125 percent for motors with marked temperature rise not over 40 degrees Celsius.
c) 115 percent for all other motors.

1-3.06. Size and provide upon verification of actual motor or nameplate data.

1-3.07. Where power factor correction capacitors are provided on load side of motor running overload protection device, selection or setting shall be based on the improved power factor of motor circuit and not the full-load nameplate current of motors.

1-3.08. Overload Heaters Required for Motors with Temperature Rise of 50 Degrees Celsius: As selected from motor controller manufacturer's overload heater selection tables and required NEC temperature correction factors.

1-3.09. Motor Controller Size: Coordinated with horsepower size of motor.

1-3.010. Motor-Branch-Circuit Short Circuit and Ground Fault Protections Device: Capable of tripping open in 30 seconds or less on locked-rotor current of motor. This device shall also protect the motor-branch-circuit conductors and the motor control apparatus against overcurrent due to short-circuit or ground faults. Protect motor control circuits with device type

specified or as indicated on the Drawings.

1-4. SUBMITTALS

1-4.01. Shop Drawings and Product Data:

a) Include data on and details of control devices, wire, cables, raceways, and other electrical equipment specified or indicated on the Drawings.
b) Include protective device coordination study, short circuit fault analysis,
c) circuit breaker settings, and other calculations and studies as specified.
d) Install Arc Flash Labels.
e) Detailed schematic diagrams for control equipment. Schematic diagrams to show existing wiring.
f) Point-to-point interconnection diagrams, for all devices.
g) Calibration and testing forms.
h) Loop diagrams.
i) Factory testing procedures.
j) Functional testing plan.
k) Training plan for plant staff.

1-4.02. Project Record Documents:

a) Include drawings of wiring terminations at electrical equipment including, but not limited to:
b) Terminal/junction boxes.
c) Revised Shop Drawings reflecting modifications made during progress of the Work including testing, and revised Specifications and Drawings with conductors identified identically as on the Specifications and Drawings and accepted Shop Drawings. Updated Shop Drawings shall include all drafting work.

1-4.03. Acceptance Testing Information and Documents: Submit as specified in Section 16950.

1-4.04. Operating and Maintenance Data (Electrical Equipment): Manuals shall include the following:

a) Comprehensive index.
b) Complete “as-built” set of approved shop drawings.
c) Internal and interconnecting CAD-generated wiring and control diagrams with data to explain detailed operation and control of the equipment. Diagrams shall contain tabulated “as left” settings for all timing relays and alarm and trip setpoints.
d) A control sequence describing startup, operation and shutdown for all equipment functional modes as applicable (i.e., LOCAL- MANUAL, LOCAL-AUTOMATIC, REMOTE-MANUAL, REMOTE AUTOMATIC, etc.).
e) Description of the function of each principal item of equipment.
f) Installation and maintenance instructions.

g) Safety precautions.
h) Diagrams and illustrations.
i) Testing methods.
j) Performance data.
k) Pictorial “exploded” parts list with part numbers. Emphasis shall be placed on the use of special tools and instruments. The list shall indicate sources of supply, recommended spare parts, and name of servicing organization.
l) Appendix; list qualified permanent servicing organizations for support of the equipment, including addresses and certified qualifications.
m) Provide operations and maintenance (O&M) manuals.

1-5. QUALITY ASSURANCE

1-5.01. Regulatory Requirements: Perform electrical work, including connection to electrical equipment integral with mechanical equipment, in accordance with latest published requirements of the following codes and code/standard making organizations:

a) American National Standards Institute (ANSI).
b) American Society for Testing and Materials (ASTM).
c) Institute of Electrical and Electronics Engineers (IEEE).
d) Insulated Cable Engineers Association (ICEA).
e) National Electrical Code (NEC).
f) National Electrical Contractors Association (NECA).
g) National Electrical Safety Code (NESC).
h) National Electrical Manufacturers Association (NEMA).
i) National Fire Protection Association (NFPA).
j) National Fire Protection Association (NFPA); Standard for Fire Protection in Wastewater Treatment and Collection Facilities (NFPA- 820).
k) State of Florida Building Code and local codes.

1-5.02. When applicable, materials and equipment used in performance of electrical work shall be listed or labeled by Underwriters' Laboratories or other equivalent, recognized, and independent testing laboratory, for the class of service intended.

1-5.03. Manufacturer Qualifications:

a) Low Voltage Equipment: Manufacturer of proposed product with components uniquely selected by engineering review.
b) Proprietary bussing and enclosure designs listed by UL in manufacturer's own file for minimum 15 years with satisfactory performance record.
c) Capable of providing warranty for assembly when built-up with components from various manufacturers.
d) Experience and Requirements for Electrical Subcontractor: The electrical work shall be furnished and installed by a single electrical and controls specialty entity (or electrical

subcontractor) with at least 10 years of prior experience in electrical construction project for the water and/or wastewater process industry.

e) The electrical contracting entity shall have a specialty active license in the State of Florida.

1-6 DELIVERY, STORAGE, AND HANDLING

1-6.01. Ship electrical panels and other electrical distribution equipment in sealed dust and moisture-proof plastic sheet enclosures. Equipment containing dirt, dust, water, grease, rust, or damaged parts or components may be rejected.

1-6.02. Provide for delivery, unloading, transportation, and storage of equipment until installation. Protect electrical and instrumentation equipment and panels from physical and environmental damage. Store and maintain equipment in a weatherproof building until installed.

1-6.03. Store electrical equipment including instrumentation control panels and other enclosures that house electronic equipment rated for a specified ambient or environmental temperature range, in air conditioned buildings to protect equipment from temperatures above 100 degrees Fahrenheit and heated buildings to protect equipment from temperatures below 40 degrees Fahrenheit. Assume liability for the storage facilities or equipment stored therein.

1-6.04. Maintain storage facilities in neat condition with utilities. Maintain stored equipment in same condition as when received.

1-6.05. Provide continuous access for inspection of stored equipment.

1-7. SEQUENCING AND SCHEDULING

1-7.01. Coordinate work with OWNER, to minimize downtime of existing operating equipment and electrical distribution system and to preclude unsafe operations. Notify OWNER 10 days prior to power interruptions. Coordinate downtime with OWNER.

1-7.02. Prior to performing work on live or energized electrical equipment, identify the circuits and coordinate with Owner prior to de-energize the circuits. Also, provide necessary safety protection in accordance with Electrical Life Safety Code and OSHA requirements if work needs to be momentarily performed with energized circuits.

PART 2 – PRODUCTS – (NOT USED)

PART 3 - EXECUTION

3-1. PREPARATION

A. Cutting, Patching and Repairing: Where it becomes necessary to cut into existing work for the purpose of making electrical installations, use core drills for making circular holes. Other demolition methods for cutting or removing shall be reviewed

by the ENGINEER prior to starting the work.

3-1.01 INSTALLATION

A. Corrosion Protection:

1. Isolate dissimilar metals, except conduit and conduit fittings, that may come in contact, with neoprene washers, 9 mil polyethylene tape, or gaskets.
2. Restore factory finishes which are damaged or rusted to their original new condition in accordance with manufacturer's instructions.

B. Provide all insets and hangers required to support raceways and other electrical equipment. If the inserts, hangers, sleeves, or openings, are improperly placed or installed, do all necessary work to rectify the errors.

3-1.02 CLEANING

A. Clean each piece of electrical equipment, existing and new, both inside and outside, paint each equipment if necessary to match existing paint.

3-1.03 PROTECTION

A. Protect products in outdoor locations or air heated areas and provide heat to eliminate condensation until acceptance by OWNER.

END OF SECTION

SECTION 16062

GROUNDING

PART 1 - GENERAL

1-1. SUMMARY

A. Section Includes: Grounding electrode systems, consisting of bare ground conductors and ground rods.

1-2. REFERENCES

A. National Electrical Code (NEC), Article 250 - Grounding.

PART 2 - PRODUCTS

2-1. MATERIALS

A. Driven Ground Rods:

1. Copper-clad steel.

2. 3/4-inch diameter.

3. 10 feet long, minimum.

B. Ground Conductor: Bare copper.

C. Connections: Exothermic Weld

D. Precast Ground Wells: Eight inch or larger inside diameter with cast iron traffic rated cover.

1. Manufacturers: one of the following or equal:

a. Oldcastle Precast.
b. Christy, valve boxes.

PART 3 - EXECUTION

3-1 INSTALLATION

3-1.01. Provide grounding electrode system conductors continuously, interconnected with grounding rods, to structure ground ring or grounding system to provide a continuous grounding electrode system.

3-1.02. Bond electrical enclosures, including metallic raceways, panels, motor control center, enclosed circuit breaker and other similar metallic panels, cases and devices associated with power, instrumentation, and control systems to the grounding electrode system.

3-1.03. Drive new ground rods and install grounding conductors.

3-1.04. Extend grounding conductors through concrete to accessible points for grounding equipment and electrical enclosures.

3-1.05. Install grounding system at each structure where motor control centers, panelboards, panels, or other electrical equipment are installed.

3-1.06. Provide exothermic weld type connections for grounding cable to rods or cable.

3-1.07. When size is not indicated on the Drawings, size grounding conductors in accordance with NEC Table 250-66 and Table 250-122.

3-1.08. Provide a green insulated equipment grounding conductor, or multi- conductor cable with integral green insulated grounding conductor, with each feeder and branch circuit from the power source grounding means to the pump motor, electrical load equipment, lighting fixtures, instruments, control panels and wiring devices.

3-1.09. Provide ground bushings at both ends of rigid conduit runs. Do not use locknuts. Bond ground bushings to the grounding system.

3-1.10. When not indicated on the Drawings, provide a minimum size of No. 2/0 or larger grounding electrode systems in compliance with NEC-250.

3-1.11. Install precast ground well boxes in locations shown on the drawings, away from heavy traffic area and avoid interference with other underground utilities.

3-1.12. Existing ground system shall be inspected/tested for integrity and bonded to the new grounding system.

3-2 FIELD QUALITY CONTROL

3-2.01. Coordinate work schedule with ENGINEER to witness ground resistance testing.

3-2.02. Where maximum allowable ground resistance of 5 ohms is exceeded, install additional grounding mats or ground rods until ground resistance is equal to or below 5 ohms resistance required by the National Electrical Code.

END OF SECTION

SECTION 16100

ELECTRICAL EQUIPMENT INSTALLATION

PART 1 - GENERAL

1-1. SCOPE

1-1.01 This section covers the installation of electrical equipment.

1-2. GENERAL

1-2.01. Equipment specified to be installed under this section shall be erected and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

1-3. COORDINATION

1-3.01. When manufacturer's field services are provided by the equipment manufacturer, CONTRACTOR shall coordinate the services with the equipment manufacturer. CONTRACTOR shall give ENGINEER written notice at least 14 days prior to the need for manufacturer's field services.

1-4. DELIVERY, STORAGE, AND HANDLING

1-4.01. Storage. Upon delivery, all equipment and materials shall immediately be stored and protected by CONTRACTOR in accordance with Section 01614, and in accordance with manufacturer's written instructions, until installed in the Work. Equipment shall be protected by CONTRACTOR against damage and exposure from the elements. At no time shall the equipment be stored on earth or grass surfaces or come into contact with earth or grass. CONTRACTOR shall keep the equipment clean and dry at all times. Openings shall be plugged or capped (or otherwise sealed by packaging) during temporary storage.

1-4.02. Handling. Electrical equipment shall be moved by lifting, jacking, or skidding on rollers as described in the manufacturer's instructions. Special lifting harness or apparatus shall be used when required. Lifting and jacking points shall be used when identified on the equipment. CONTRACTOR shall have required unloading equipment on site to perform unloading work on the date of equipment delivery.

1-5. ARC FLASH HAZARD LABELS

1-5.01. Permanent arc flash hazard labels indicating incident energy, arc flash protection boundary and PPE will be provided to the contractor by Stantec for installation on disconnects, switchgear, switchboards, motor control centers, motor control line-ups, and transfer switches (as applicable).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3-1. INSTALLATION, TESTING, AND COMMISSIONING

3-1.01. All installation work shall be in accordance with manufacturer's written instructions.

3-1.02. All material, equipment, and components specified to be installed according to this Section shall be installed, tested, and commissioned for operation in compliance with NECA 1000 – NEIS Specification System. Where required in NECA 1000, testing and commissioning procedures shall be followed prior to energizing equipment.

3-1.03. Electrical equipment cubicles and vertical sections shall be installed plumb and level. Drawout equipment carriages, circuit breakers, and other removable components shall operate free and easy without binding or distortion.

3-1.04. Unless otherwise indicated or specified, all indoor floor-mounted electrical equipment and control cabinets shall be installed on concrete equipment pads four inches [102 mm] in height.

3-1.05. Cleaning. All deposits of oil, grease, mud, dirt, or debris shall be cleaned from the electrical equipment following installation and field wiring. A detergent water-based solution, or other liquid cleaners not harmful to material or equipment finishes, shall be used as recommended by the manufacturer. Dust shall be vacuum cleaned. Do not use blowers or compressed air to remove dust.

END OF SECTION

SECTION 16123

600 VOLT OR LESS WIRES AND CABLES

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. Section Includes:

1. 600 volt class wire and cable.
2. Instrumentation class wire and cable.
3. Communication and Security System wire and cable.
4. Requirements for identification of existing wiring terminations.

1-1.02. Related Sections: Section 16130 - Conduits.

1-2. REFERENCES

1-2.01. American Society for Testing and Materials (ASTM):

a) B 3 - Standard Specification for Soft or Annealed Copper Wire.

b) B 8 - Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

1-2.02. Insulated Cable Engineers Association (ICEA).

1-2.03. National Electrical Code (NEC):

a) Article 250 - Grounding.

b) Article 310 - Conductors for General Wiring.

c) Article 725 - Class 1, Class 2, and Class 3 Remote - Control, Signaling, and Power-Limited Circuits.

d) Article 800 - Communication Circuits.

1-3. SUBMITTALS

1-3.01. Shop Drawings: Show splice locations. Submit cable pulling calculations for all cable feeder larger than 2/0 AWG and pulling lengths longer than 200 feet. Submit cable pulling calculations for all conductor runs longer than 400 feet.

1-3.02. Product Data: Include wires, cables, pulling compounds, and splicing materials.

1-4. QUALITY ASSURANCE

1-4.01. Conform to ASTM and ICEA standards.

1-4.02. Furnish mechanical conductor connector and heat-shrink type insulation by same manufacturer.

PART 2 - PRODUCTS

2-1. WIRE AND CABLE MATERIALS

2-1.01. Conductors: ASTM B 8, soft drawn copper, maximum 12 months old, minimum 97 percent conductivity. American Wire Gauge (AWG) sizes as indicated on the Drawings, Class B or C stranded.

A. Insulation Thickness: Minimum specified by NEC Article 310.

B. Conductor Sizes: As indicated on wiring schedules and Drawings.

2-2.02 600-VOLT CLASS CABLE

A. Power Wire and Cable:

1. Manufacturers: One of the following or equal:
   a. Okonite Company.
   b. General Cable.
   c. Rockbestos Company.
   d. Southwire Company

B. Control Wire and Cable:

1. Manufacturers: One of the following or equal:
   a. Okonite Company.
   b. General Cable.
   c. Rockbestos Company.
   d. Southwire Company

C. Insulation for Individual Wires or Multiple Conductor Cable for Power and Control Circuits:

1. Type XHHW-2 insulation for use in dry and wet locations and underground ductbanks.

D. Jackets for Multiple Conductor Cable for Power and Control Circuits: Type CPE.

E. Solid-conductor wire, Number 12 AWG and smaller, may be used only for lighting and receptacle circuits.

2-2.03. INSTRUMENTATION CLASS CABLE

A. Single Pair or Triad Applications:

1. Manufacturers: One of the following or equal:
   a. The Okonite Company, Okoseal-N Type P-OS.
   b. Equivalent manufactured by Cooper Industries, Belden Wire and Cable Division.

B. Multiple Pair or Triad Applications:

1. Manufacturers: One of the following or equal:
   a. The Okonite Company, Okoseal-N Type SP-OS.
   b. Equivalent manufactured by Cooper Industries, Belden Wire and Cable Division.

C. Approved for cable tray installation in accordance with the National Electrical Code.

D. Number of Individually Shielded, Twisted Pairs and Triads: As indicated on the Drawings or as necessary for the application.

E. Voltage Rating: 600 volts.

F. Cable Type: TC.

G. Temperature Rating: 90 degrees Celsius dry location, 75 degrees Celsius wet location.

H. Conductors: Bare, soft annealed copper in accordance with ASTM B 3, Class B, 7-strand concentric in accordance with ASTM B 8.

I. Conductor Insulation: Flame-retardant polyvinyl chloride, 15 mils nominal thickness, with nylon jacket 4 mils nominal thickness, 90 degrees Celsius temperature rating in accordance with Underwriter's Laboratory Subject 1277.

J. Color Code: Provide conductor color code as specified in Section 16075.

K. Single Pair or Triad Shielding:

1. Group Shielding: Minimum 1.35 mil double-faced aluminum/synthetic polymer-backed tape overlapped to provide 100 percent coverage.
2. Drain Wire: 7-strand tinned copper drain wire, 2 sizes smaller than conductor.

L. Jacket: Black, flame-retardant in accordance with Underwriters' Laboratory Subject 1277, 90 degrees Celsius temperature rating, rip cord laid longitudinally under jacket to facilitate removal.

M. Conductor Size: Number 16 AWG minimum unless otherwise indicated on the Drawings.

N. Numerically identify one conductor within each pair and triad.

2-3 RELATED MATERIALS

2-3.01 Splicing Material:
a. In conformance with ANSI C119.1, IEEE 383, and ICEA 5-19-81.

2-3.02. Manufacturers: One of the following or equal:
a. Elastimold.
b. Thomas-Betts.
c. Raychem, FCSM Series.

2-3.03 Wire Nuts (only applies to lighting/receptacles circuit):
a. Manufacturers: One of the following or equal:
- 3M.
- Thomas and Betts.

b. Rated 600 volt with live-spring feature for tight fitting connections.

2-3.04 Junction Boxes and Terminal Cabinets: As specified in Section 16134.

2-3.05 Pulling Compound: As recommended by conductor manufacturer.

2-4 WIRE AND CABLE FABRICATION

2-4.01. Permanently mark American Wire Gauge (AWG) size, grade of insulation, voltage, and manufacturer's name on outer covering at maximum 24 inch intervals.

2-4.02. Identify and mark conductors in accordance with NEC Article 310.

2-4.03. Color code wire and cable as specified in Section 16075.
a. Integral color insulation for Number 2 AWG and smaller.
b. Wrap colored tape around cable larger than Number 2 AWG.

2-4.04. Fabricate cable ends with provisions for field testing.

2-5. SOURCE QUALITY CONTROL

2-5.01. Test full lengths in accordance with ASTM and ICEA Standards.

PART 3 - EXECUTION

3-1. IDENTIFICATION OF EXISTING WIRING TERMINATION

3-1.01. Perform functional testing at each well house building of existing wiring connections, between existing motor control center (to be removed) and other remaining equipment such RTU

equipment, security equipment, ventilation fan, miscellaneous receptacles, instruments and lighting systems.

3-1.02. Create and provide necessary wiring diagrams of existing electrical and control system at each well house building, with identification of all wiring connections and terminations on remaining existing equipment that will be connected to new equipment in new motor control center. The required wiring diagrams shall be produced on 11”x17” drawing size paper or full size 22”X34” size paper, using AutoCAD drafting software, version 17 or newer version. Also, the diagrams shall include clear numeric identification of existing terminal blocks, for the termination of new wiring associated with new equipment in new motor control center.

3-2. INSTALLATION

3-2.01. Install continuous circuit conductors from source to load without splices or terminations in intermediate pull boxes, except for Number 10 AWG and smaller conductors for lighting and receptacles.

3-2.02. Splices:

a. Where splices are necessary because of extremely long wire or cable lengths that exceed standard manufactured lengths, install and label junction boxes for power conductors or termination cabinets for control and instrument conductors.
b. Power and control conductors routed in common raceways may be spliced in common junction boxes.
c. Install NEMA 4X junction and terminal boxes in wet and outdoor locations. Clearly label junction and terminal boxes containing splices with the word "SPLICE."
d. Leave sufficient slack at junction boxes and termination boxes to make proper splices and connections. Do not pull splices into conduits.
e. Splices in below grade pull boxes or in any box subject to flooding shall be made watertight using:

    1. A heat shrink insulating system listed for submersible applications.
    2. Or an epoxy resin splicing kit.

f. Properly coat wires and cables with pulling compound before pulling into conduits and prevent mechanical damage to conductors during installation.

3-3. 600-VOLT CLASS CABLE

3-3.01. Size power conductors in accordance with National Electrical Code when sizes are not indicated on the Drawings.

3-3.02. Install Number 12 AWG wiring and larger gauge where required per Code for power circuits unless otherwise specified or indicated on the Drawings, and Number 14 AWG for control wiring unless otherwise specified.

3-3.03. Install minimum 16 AWG for internal panel control wiring with type MTW or SIS insulation.

3-3.04. Do not exceed cable manufacturer's pulling tension and side-wall pressures.

3-3.05. Terminations and Splices (600 Volt or Less):

a. Terminations: Terminate control and instrument conductors in terminal boxes in accordance with Section 16134.
b. Splicing: Join conductors mechanically with splice connectors and install heat-shrink type insulation. Splice conductors in accordance with manufacturer's instructions. Make waterproof heat shrink type splices in wet and below grade locations.
c. Splice or weld grounding conductors of different sizes.
d. Conductor Number 10 AWG and smaller for lighting and receptacle circuits may be spliced in junction boxes with wire nuts.

3-3.06. All conductors for installation in underground conduits, in sizes No. 10 AWG and smaller shall be of the multi-conductor type with overall jacket.

3-4. INSTRUMENTATION CLASS CABLE

3-4.01. Install instrumentation class cables in separate raceway systems.

3-4.02. Install instrument cable in metallic conduit within non-dedicated pull boxes.

3-4.03. Install cable without splices between instruments or between field devices and instrument enclosures or panels.

3-4.04. Do not make intermediate terminations, except in designated terminal boxes indicated on the Drawings.

3-4.05. Ground cable shields at only one location, typically at panels, not at field instruments.

3-5. SIGNAL CABLE AND CONDUIT INSTALLATION

3-5.01. Separate and isolate electrical signal cables from sources of electrical noise and power cables by minimum 12 inches.

3-5.02. Install signal cables in dedicated raceways, including through underground vaults and pull boxes.

3-6. FIELD QUALITY CONTROL

3-6.01. Testing: Provided cable testing in accordance with requirements specified in Section 16950.

3-7. WIRING SUPPLEMENTAL REQUIREMENTS

3-7.01. CONTRACTOR shall include necessary conductors and wiring termination to provide complete functioning of any and all motorized equipment, electrical outlets, fixtures, communication outlets, instruments, and devices within 10 linear feet of location shown on the Drawings.

3-7.02. CONTRACTOR shall include necessary conductors and related materials to provide any and all pull boxes within 20 linear feet of location shown on the Drawings.

3-7.03. Prior to installation of any raceway or related items identified in paragraphs A and B above, the OWNER shall have the right to make changes related to preferred location, at no additional cost.

3-7.04. CONTRACTOR shall provide necessary conductors for all equipment specified, identified in wiring/raceway schedules, equipment schedules, panelboards schedules, electrical single line diagrams, block diagrams, process and instrumentation diagrams (P&IDs), fixture schedules, and devices. Said necessary conductors may not be shown on the plan drawings, but they shall be sized by CONTRACTOR in accordance with requirements of the National Electrical Code, and included in this allowance if the conductor are necessary for the complete operation of the included device or equipment.

END OF SECTION

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SECTION 16130

CONDUITS

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. Section Includes:
1. Galvanized rigid steel conduit.
2. Flexible conduit, polyvinyl chloride-coated rigid steel conduit, and rigid nonmetallic polyvinyl chloride conduit.

1-2. REFERENCES

A. American National Standards Institute (ANSI):
1. C80.1 - Rigid Steel Conduit, Zinc Coated.

B. Electrical Manufacturers Association (NEMA):
1. RN-1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.

C. National Electrical Code (NEC):
1. Table 300-5 - Minimum Cover Requirements (0 to 600 volts, Nominal).
2. Article 500 - Hazardous (Classified) Locations.
3. Table 10-4(b) - Minimum Cover Requirements (over 600 volts, Nominal).

D. Underwriters' Laboratories, Inc (UL):
1. UL 6 - Rigid Metal Conduit.

1-3. SUBMITTALS

1-3.01. Product data.

1-3.02. Shop Drawings:
Installation drawing shall include individual conduit numbers, routing, conduit sizes, circuit numbers contained in each conduit, and number and size of wires in each conduit.

PART 2 - PRODUCTS

2-1. CONDUIT

2-1.01. Galvanized Rigid Steel Conduit:
1. Domestic raw steel, made smooth, clean, and free of burrs and rough spots to enhance wire pulling; interior and exterior surfaces coated with solid, unbroken layer of zinc; threads hot dip galvanized after cutting; entire surface finish coated with secondary bichromate treatment applied over galvanizing able to extend surface protection and prevent oxidation; threads protected by color

coded end caps to provide quick trade size identification.

2. Manufacturers: One of the following or equal:
   a. Triangle PWC, Inc.
   b. Allied Tube and Conduit Corporation.

2-1.02. Liquid-tight Flexible Conduit: Grounding type, weatherproof, watertight, maximum 60-inch lengths.

1. Manufacturers: One of the following or equal:
   a. American Brass Company.
   b. General Electric.

2-1.03. Flexible Metal Conduit: Aluminum with minimum trade size of 1/2-inch, maximum length allowed 60 inches.

1. Manufacturers: One of the following or equal:
   a. ALFLEX.
   b. Allied Tube and Conduit Corporation.

2-1.04. Polyvinyl Chloride-coated Rigid Steel Conduit:

1. Galvanized rigid steel conduit with coating conforming to ANSI C80.1 and UL 6; bendable without damage to coatings.
2. Manufacturers: One of the following or equal:
   a. Perma Kote by Robroy Industries.
   b. OCAL, Inc.

2-1.05. Rigid Nonmetallic Polyvinyl Chloride Conduit:

1. High density, Schedule 40, 90 degrees Celsius, heavy-duty polyvinyl chloride, made from virgin polyvinyl chloride compound; maximum 6 grams per 100 grams smoke emission.
2. Manufacturers: One of the following or equal:
   a. Carlon.
   b. Triangle Conduit and Cable.

2-2. RELATED MATERIALS

2-2.01. Couplings, Connectors, and Fittings:

1. Threaded.
2. Manufactured with same materials and process as corresponding conduit.

2-2.02. Conduit Fittings:

With wedge nut covers, weathertight when located outdoors or in wet or corrosive locations indicated on the Drawings, matching type for corresponding conduit systems.

1. Manufacturers: One of the following or equal:
   a. Crouse-Hinds.
   b. Appleton.

2-2.03. Galvanized Rigid Steel Conduit Expansion Fittings for Exposed Locations:

1. Manufacturers: One of the following or equal:
   a) OZ/Gedney, Type AX with jumper.
   b) Appleton, Type XJ with Jumper.

2-2.04. Galvanized Rigid Steel Conduit Expansion Fittings at Structural Expansion Joints:
1. Manufacturers: One of the following or equal:
   a) Spring City, Type D.
   b) Crouse-Hinds, Type D.

2-2.05. Polyvinyl Chloride-coated Rigid Steel and Aluminum Conduit Couplings: One provided loose with each length of conduit.

2-2.06. Fasteners for Polyvinyl Chloride-Coated Rigid Steel Conduit: Polyvinyl chloride-coated steel fasteners with Type 316 stainless steel bolts, nuts, and hardware.

2-2.07. Fasteners for Galvanized Rigid Steel Conduit: Galvanized steel fasteners with Type 316 stainless steel bolts, nuts, and hardware.

2-2.08. Conduit Mounting Strut:
1. Type 316 stainless steel for mounting of polyvinyl chloride-coated rigid steel conduit.
2. Hot-dip galvanized for other conduit types.

2-2.09. Conduit Thruwall Seals:
1. Hot-dip galvanize.
2. Polyvinyl chloride oversize sleeve.
3. Manufacturers: One of the following or equal:
4. O-Z/Gedney, Type "WSK."

2-3. POLYVINYL CHLORIDE-COATED RIGID STEEL CONDUIT FABRICATION

2-3.01. Coat rigid steel conduit, conduit fittings, and hangers with polyvinyl chloride.

Conduit:

a) Ensure that surfaces, including galvanizing, remain intact and undisturbed on both inside and outside of conduit throughout preparation and application processing.
b) Bond polyvinyl chloride coating to outer surfaces of conduit except threads.
c) Provide bond between polyvinyl chloride coating and conduit surface that is greater than tensile strength of plastic.
d) Provide minimum 40 mil thick coating on conduit.
e) Coat interior of conduit and condulet fittings with nominal 2 mil thick corrosion-resistant urethane finish.
f) Coat threads with clear urethane finish.

2-3.02. Couplings:
a) Bond polyvinyl chloride coating to outer surfaces of couplings.
b) Extend polyvinyl chloride sleeve equal to outside diameter of uncoated conduit beyond both ends of coupling approximately 1 pipe diameter or 1-

1/2 inches, whichever is smaller.

c) Provide minimum 40 mil thick coatings on couplings and sleeves.
d) Bond polyvinyl chloride coating to outer surface of conduit bodies and fittings.
e) Extend polyvinyl chloride sleeves from hubs.
f) Provide same coating thickness on conduit bodies, fittings, and sleeve walls as on couplings in length and thickness.
g) Coat covers on conduit bodies on both sides so covers are completely interchangeable.
h) Coat interior of conduit couplings, sleeves, and conduit bodies with corrosion-resistant urethane finish.
i) Ensure that inside of conduit bodies remain undisturbed during processing and retain manufacturer's finish.

2-3.03. Polyvinyl Chloride Coated, Mounting Hardware, and Associated Fittings:

a) All mounting hardware and associated fittings shall be polyvinyl chloride coated in accordance with the intent of reference NEMA RN-1.
b) The polyvinyl chloride exterior coating shall have a normal thickness of 40 mils (.040 inch) except where part configuration or application otherwise dictate.
c) All fasteners for polyvinyl chloride coated fittings and mounting hardware shall be of the Type 316 stainless steel.

PART 3 - EXECUTION

3-1. INSTALLATION

3-1.01. Install conduit runs in accordance with schematic representation as indicated on the Drawings and as specified. Modify conduit runs to suit field conditions, as accepted by the ENGINEER.

3-1.02. Provide necessary conduits for wiring of existing lighting fixtures and receptacle outlets to be interconnected with new panelboard included in new motor control center, whether or not conduits are indicated on the Drawings.

3-1.03. Install straight and true conduit runs with uniform and symmetrical elbows, offsets, and bends. Make changes in direction with long radius bends or with condulet fittings.

3-1.04. Install conduit runs so that runs do not interfere with proper and safe operation of equipment and not block or interfere with ingress or egress, including equipment removal hatches.

3-1.05. Install exposed conduit runs within the well house buildings.

3-1.06. Securely fasten exposed conduits with clamps or straps. Run exposed conduit on walls and ceilings only, parallel to planes of walls or ceilings. Do not run conduit diagonally. Securely fasten exposed polyvinyl chloride- coated rigid steel conduits with Type 316 stainless steel clamps or straps.

3-1.07. Use flexible conduit for short lengths required to facilitate connections between rigid

conduit and motors, vibrating equipment, or control equipment. Maximum length shall be per NEC, Article 350.

3-1.08. Thoroughly ream conduit after threads have been cut to remove burrs. Seal joints with accepted conductive sealant compound and make watertight. Set up joints tight. Use bushings or conduit fittings at conduit terminations.

3-1.09. Install runs between pull boxes or junction boxes with total bends equaling not more than 270 degrees. Install NEC required pull boxes at locations acceptable to the ENGINEER. Plug conduits brought into pull boxes, manholes, handholes, and other openings until used to prevent entrance of moisture. Cap spare conduits and provide plastic pulling tape below threaded cap. Provide bonding bushing and bond wire.

3-1.10. Provide appropriate hangers, supports, and fasteners to suit applications.

3-1.11. After complete installation of 2 inch and larger conduit runs, snake conduits with conduit cleaner equipped with a cylindrical mandrel of a diameter not less than 85 percent of nominal diameter of conduit. Remove and replace conduits through which mandrel will not pass.

3-1.12. Clean and ensure that new and existing conduit runs are not crushed or creased. Verify internal dimensions of existing conduit prior to installation of conductors. Verify that no foreign objects or obstructions are present in conduit prior to installing conductors.

3-1.13. Install conduit system to provide firm mechanical assemblies with electrical conductivity throughout.

3-1.14. Install expansion fittings across expansion joints and at other locations where necessary to compensate for thermal or mechanical expansion and contraction as indicated on the Drawings.

3-1.15. Install conduits complete between outlets, boxes, and circuit source before conductors are installed.

3-1.16. Provide 1/4-inch polypropylene pull line in each empty electrical conduit.

3-1.17. Open-ended conduits containing SO (or similar) cable that continues outside the conduit to the utilization equipment shall be sealed with conduit sealing bushings.

3-1.18. Conduits terminating at a wireway shall be supported independently from the wireway. Provide a conduit support within 1 foot of the wireway. The weight of the conduit shall not bear on the wireway.

3-1.19. Rigid galvanized steel conduits which have been field cut and threaded shall be painted with cold galvanizing compounds. Provide polyvinyl chloride coating to match original on field cut threads for polyvinyl chloride coated rigid galvanized steel conduit.

3-1.20. PVC-coated galvanized rigid steel elbows shall be used for conduit stub-ups from underground conduit to exterior main circuit breaker for each well house

3-1.21. Underground conduits shall be temporarily sealed to prevent intrusion of foreign material

before conductors are installed.

3-2. POLYVINYL CHLORIDE-COATED RIGID STEEL

3-2.01. Attach cover to conduit body with Type 316 stainless steel screws.

3-2.02. Where patching is required, apply 40 mil thick polyvinyl chloride coating in accordance with manufacturer's instructions.

3-3. RIGID NONMETALLIC POLYVINYL CHLORIDE

3-3.01. Install at underground depths required by code. Provide clean backfill material for all underground conduit trenches.

3-3.02. Underground conduit trench backfill shall be compacted and final surface shall be patched to match new condition similar to existing surface finish.

3-4. SCHEDULES

3-4.01. Provided Conduit Sizes: In accordance with NEC, unless otherwise indicated on the Drawings or specified as follows:

a) Concealed Conduit in Partitions or Accessible Ceilings: Minimum 3/4 inch.
b) Exposed Conduit: Minimum 3/4 inch.
c) Rigid Steel Encased in Concrete: Minimum 1 inch.
d) Rigid Non-Metallic Polyvinyl Chloride Encased in Concrete where subject
e) to mechanical damage: Conduit Minimum size 2 inches.

Conduit Uses and Applications:

a) Rigid Steel Conduit: Typical, Exposed Conduit Runs in dry and non-corrosive locations, unless otherwise noted.
b) Liquid Tight Flexible Conduit: Final motor and instrument connection in non-hazardous areas.
c) Polyvinyl Chloride-Coated Rigid Steel Conduit: Entering or exiting concrete including minimum 12 inches above and below grade or finished floor, in corrosive NEMA 4X designated areas, plus exposed outdoor locations, and where indicated on the Drawings.

3-5. RACEWAYS SUPPLEMENTAL REQUIREMENTS

3-5.01. CONTRACTOR shall include necessary raceways and supports to provide any and all motorized equipment, electrical outlets, fixtures, communication outlets, instruments and devices within 10 linear feet of location shown on the Drawings.

3-5.02. CONTRACTOR shall provide necessary raceways for all equipment specified, identified in wiring schedules, equipment schedules, panel boards schedules, electrical single line diagrams, block diagrams, process and instrumentation diagrams (P&IDs), fixtures schedules, and devices. Said necessary conduits may not be shown on the plan drawings, but they shall be sized by CONTRACTOR in accordance with requirements specified and the

National Electrical Code, and include in this allowance, the raceways necessary for the installation of the conductors and for the complete operation of the included device or equipment.

3-6. RACEWAYS IDENTIFICATION

3-6.01. Each new conduit, new wireway, and new boxes shall be identified by a specific number. The numbering system shall be in accordance with identification named on the Drawings or the process equipment identification.

END OF SECTION

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SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1-1 SUMMARY

1-1.01. Section Includes: Wiring devices including the following:
1. Snap switches and toggle switches.
2. Plugs and receptacles.
3. Enclosures and covers

1-2 SUBMITTALS

1-2.01 Product Data.

1-3 QUALITY ASSURANCE

1-3.01 Provide industrial grade products for wiring devices. Commercial grade products are not acceptable, unless otherwise specified or indicated on the Drawings.

1-4 WARRANTY

1-4.01 Submit manufacturer's standard warranty.

PART 2 – PRODUCTS

2-1 SNAP OR TOGGLE SWITCHES

2-1.01. Manufacturers: One of the following or equal:
1. Hubbell.
2. General Electric.
3. Leviton.
4. Bryant.

2-1.02. Number of Poles: As indicated on the Drawings.

2-1.03. Rating: 20 amperes, 125 volt.

2-1.04. Special Switches and Covers: As specified or indicated on the Drawings.

2-2. 120 VOLT RECEPTACLES

2-2.01. Manufacturers: One of the following or equal:
a) Hubbell.
b) General Electric.
c) Leviton.
d) Bryant.

2-2.02. Duplex Receptacles: 2-pole, 3-wire, grounded, 125 volts, industrial, rated at 20 amperes.

2-2.03. All receptacles shall be Ground Fault Interrupter Receptacles (GFI): Rated at 20 amperes at 125 volts alternating current, tripping at 5 mA. NEMA WD-1, Configuration 5-20R, and capable of interrupting 5,000 amperes without damage.

2-2.04. GFCIs shall be weather resistant-listed in accordance with NEC Article 406.8.

2-3. ENCLOSURES AND COVERS

2-3.01. Surface-mounted switches and receptacles shall be housed in FS or FD-type weatherproof conduit fittings

2-3.02. Receptacles shall be provided with a hinged die-cast aluminum cover/enclosure marked "Suitable for Wet Locations when in use" and "UL Listed."

2-3.03. Toggle switches shall have UL listed covers marked “Suitable for Wet Locations”

PART 3 - EXECUTION

3-1 INSTALLATION

A. Provide wiring devices in accordance with manufacturer's instructions.

B. Mount wiring devices as indicated on the Drawings.

1. Provide adequate supporting pillars for wiring devices to be located above ground or above decks, where there is no structural wall or surface for box mounting.

C. Provide checkout, field, and functional testing of wiring devices.

D. Test each receptacle for polarity and ground integrity, using a standard receptacle tester.

3-1.01 PROTECTION

A. Protect products until acceptance by OWNER.

END OF SECTION

SECTION 16276

PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. Section Includes

1. The supply of materials, design, assembly, fabrication, testing, and installation of pad-mounted, liquid-filled, medium voltage transformers.

2. The Contractor shall provide pad-mounted transformers complete and operable in accordance with this Specification, the Contract Documents and the transformer data sheets included in Part 4 of this Section.

1-2. REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

1-2.01. Reference Specifications

01300	Submittal Procedures
16010	Electrical Requirements
16062	Grounding

1-2.02. Reference Standards

ASTM INTERNATIONAL (ASTM)	
ASTM D117	Standard Guide for Sampling, Test Methods, and Specifications for Electrical Insulating Liquids
ASTM D3487	Standard Guide for Sampling, Test Methods, and Specifications for Electrical Insulating Liquids
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)	
IEEE C57.12.00	IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power and Regulating Transformers
IEEE C57.12.28	IEEE Standard for Pad-Mounted Equipment – Enclosure Integrity
IEEE C57.12.70	IEEE Standard for Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80	IEEE Standard Terminology for Power and Distribution Transformers
IEEE C57.12.90	IEEE Standard Test Code for Liquid-Immersed Distribution Power, and Regulating Transformers
IEEE C57.13	IEEE Standard Requirements for Instrument Transformers

IEEE C62.11	Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV)
IEEE 386	IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5kV through 35kV
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)	
NEMA TR 1	Transformers, Step Voltage Regulators and Reactors
NEMA 260	Safety Labels for Pad-Mounted Switchgear and Transformers Sited in Public Areas
INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)	
ANSI/NETA ATS	Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems
ANSI/NETA MTS	Standard for Maintenance Testing Specifications for Electrical Power Equipment and Systems
USA Federal Regulations, Policies and Acts	
Energy Policy and Conservation Act 1975 & Energy Policy Act 2005	
10 CFR 429	Certification, Compliance, and Enforcement for Consumer Products and Commercial and Industrial Equipment
10 CFR 431	Energy Efficient Program for Certain Commercial and Industrial Equipment

1-2.03. Reference Codes

NFPA 70	NFPA 70 – National Electrical Code (NEC), 2017 Edition.

1-3. ACTION SUBMITTALS

1-3.01. Submit documents in accordance with Section 01330 – Contractor Submittals and Section 16010 – Electrical Requirements.

1-3.02. Product Data

1. Submit sufficient information to determine compliance with the Contract Documents, Drawings, and Transformer Data Sheet.

2. Identify submittal data with the specific equipment tags and/or service descriptions to which they pertain. Submittal data shall be clearly marked to identify the specific model numbers, options, and features of equipment.

3. Submit Manufacturer's data sheets or catalog pages clearly identifying the make, model, part number, equipment and component ratings, selected options, and selected accessories.

4. Submit Manufacturer's data for insulating liquid, including all relevant listings (i.e., UL, FM).

5. Submit descriptive bulletins, including accessories.

6. Recommended spare parts list.

1-3.03. Shop Drawings

1. Equipment dimension drawings, weights, conduit/cable entry details, and dimensioned anchoring information. Provide plan drawings and front and side elevation drawings drawn to scale.

2. Provide rating information of transformers, switches, fuses, and breakers, including:

   a. Primary and secondary voltages and winding configurations

   b. Voltage taps

   c. kVA ratings

   d. Number of phases

   e. Insulation rating and temperature rise

   f. Impedance

   g. Enclosure type / environmental ratings

3. Provide catalog data on all devices including pressure-relief valves, liquid sampling valves, gauges, fuses, fuse mounting methods, bushing wells, bushing inserts, spades, and separable connectors.

4. Submit time current curves for protective devices, transformer inrush and damage curve.

5. Associated equipment anchorage details.

6. Furnish manufacturer's installation manuals on the transformers and accessories.

7. Submit a list of spare parts and materials.

8. Winding materials.

1-3.04. Test and Evaluation Reports

1. Contractor shall submit, with shop drawings, sample test forms as specified herein.

1-4. CLOSEOUT SUBMITTALS

1-4.01. Operation and Maintenance Data

1. Contractor shall include the following operating and maintenance data for materials and products as per the requirements outlined in Division 01 and Section 16010 – Electrical General Requirements:

   a. Shop Drawings incorporating all changes made during fabrication and installation (as-built)

   b. Completed test forms

   c. Manufacturer's published operation and maintenance procedures

1-4.02. Warranty Documentation

1. Contractor shall provide manufacturer's warranty documentation. Submit this information with the operating and maintenance data.

1-4.03. Record Documentation

1. Contractor shall include as-left transformer tap and ancillary device settings such as alarm setpoints. Submit this information with the operating and maintenance data and as-built drawings.

1-5. SPARE PARTS

1-5.01. Contractor shall provide a recommended spare parts list with the following information provided as a minimum:

1. Contact information for the closest parts stocking location to the Owner.

2. Critical spare parts shall be identified as those parts being associated with long lead times and/or those being critical to the unit's operation.

3. Maintenance spares shall be identified as being those parts required to regularly perform scheduled maintenance on the furnished equipment. These spares shall include, but shall not be limited to, consumable spares that are required to be exchanged during scheduled maintenance periods.

1-5.02. Contractor shall provide spare parts for each type and size of unit furnished. At a minimum, the following shall be provided:

1. Provide the minimum spare parts recommended by the manufacturer.

1-5.03. Spare parts shall be properly marked and packaged for long term storage. Printed circuit boards shall be provided in separate anti-static containers.

1-6. TOOLS

1-6.01. Contractor shall provide any manufacturer specific special tool required to remove and/or install recommended or furnished spare parts.

1-7. QUALITY ASSURANCE

1-7.01. Manufacturer Qualifications:

1. Manufacturer shall be a firm engaged in the manufacture of specified products of types and sizes required, and whose products have been in satisfactory use in similar service for a minimum of ten years.

1-7.02. All materials used shall be marked in accordance with the National Electrical Code and installed in accordance with all applicable regulations and ordinances.

1. Equipment assemblies shall be UL listed and labeled and marked for intended use.

1-8. STORAGE AND HANDLING

1-8.01. Contractor shall handle and store the products in accordance with the manufacturer's written requirements.

1-8.02. Prior to delivery, ensure that suitable storage space is available to store materials in a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, and corrosive atmospheres. Materials shall be protected during delivery and storage and shall not exceed the manufacturer-stated storage requirements. As a minimum, store indoors in clean, dry space with uniform temperature to prevent condensation. In addition, protect electronics from all forms of electrical and magnetic energy that could reasonably cause damage.

1-8.03. Deliver materials in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and equipment tag number or service name as identified within the Contract Documents.

1-8.04. Inspect and report any concealed damage or violation of delivery, storage, and handling requirements.

PART 2 - PRODUCTS

2-1. PAD-MOUNTED, LIQUID-FILLED, MEDIUM VOLTAGE TRANSFORMERS

2-1.01. Regulatory Requirements

1. Transformers shall be designed, constructed, and rated in accordance with UL and NEMA standards. Transformers shall be UL listed and UL/FM certified to comply with NEC requirements for installations near buildings. Transformers shall comply with 10 CFR 431 as registered on US Department of Energy's Compliance Certification Database per 10 CFR 429.

2-1.02. Performance / Design Criteria

1. Site Conditions

   a. The transformer assembly and associated accessories shall be designed and constructed for operation under Site Conditions as listed in the Transformer Data Sheet in Part 4.

2. Ratings

   a. Continuous kVA Rating: 112.5 kVA ONAN

   b. Primary voltage, configuration, and basic impulse insulation level (BIL): 13200V, Delta, 95kV BIL

   c. Secondary voltage, configuration, and basic impulse insulation level (BIL): 480V, Grounded Wye, 30kV BIL

   d. The transformer shall be furnished with four, 2.5% voltage taps 2-FCAN, 2-FCBN, off load full capacity high-voltage taps.

   e. The average temperature rise of the windings shall be 65° C when the transformer is operated at rated kVA output in a 40° C ambient. The transformer shall be capable of being operated at rated load in a 30° C average, 40° C maximum ambient, as defined by IEEE C57.12.00 without loss of service life expectancy.

   f. The percent impedance voltage, as measured on the rated voltage connection, shall be: ~%5

   g. The transformer shall meet the energy efficiency requirements of the Department of Energy, Code of Federal Regulations 10 CFR 431 Subpart K Efficiency Levels.

   h. Transformer sound levels shall meet NEMA TR 1 requirements.

2-1.03. Transformer Construction

1. Pad-mounted enclosure shall contain all devices and accessories in a weather-resistant, tamper-proof enclosure. High and low voltage compartments shall be isolated from each other and interlocked such that the high voltage compartment cannot be opened unless the secondary compartment is opened.

2. Insulating Liquid shall be non-hazardous, biodegradable vegetable based FR3 oil, complying with ASTM D6871, and tested according to ASTM D117.

3. Transformer windings shall be copper.

4. The tank and components shall be gasketed and sealed to ensure a waterproof, leak-proof, corrosion-free unit. The cover shall be bolted or welded and the handhole fastenings tamper resistant.

5. Compartment depth shall be in accordance with IEEE Std C57.12.34 unless additional depth is specified in the transformer datasheet.

6. Door padlocking and secured with Hex or Penta-head type door bolts.

7. The base of the transformer shall be suitable for mounting on a flat slab type foundation and equipped with removable sills suitable for skidding, rolling or jacking.

8. Lifting lugs and jacking step with towing eye.

9. The exterior of the unit shall be painted green.

10. The tank shall be complete with a stainless steel laser engraved nameplate and connection diagram.

2-1.04. PRIMARY CONNECTION

1. The high voltage terminations and equipment shall be dead front.

2. Manually gang operated, oil immersed load break switching, Loop feed with two, two-position ON/OFF switches.

3. HV Bushings:

    a. Dead-front bushings shall be 200 Amp, either universal wells or one-piece integrated for use with separable connectors. Bushings shall be externally clamped and front removable. Provide each bushing well with matching bushing inserts and parking stands with insulated parking bushings.

4. Surge Arresters:

    a. Liquid-immersed Distribution Class Type: 10.2 kV MCOV rating in accordance with IEEE C62.11.

5. Fuse Protection:

    a. Provide Bay-O-Net liquid immersed fuses in series with oil immersed current-limiting fuses. Bay-O-Net fuses are to be externally replaceable with a hot-stick without opening the transformer tank.

6. Spare Fuses: For each transformer, provide three additional spare fuses, the same size as those installed. Spare fuses shall be shipped with the transformer.

7. External operated tap changer operable only when the transformer is deenergized. Equip with two 2 ½ % taps above and below normal. Equip with warning nameplate stating, “DO NOT OPERATE WHEN TRANSFORMER IS ENERGIZED.”

2-1.05. SECONDARY CONNECTION

1. Live-front construction

2. Secondary low-voltage molded epoxy bushings with externally removable tin plated copper spade terminals designed for copper conductors, dimensioned per ANSI C57.12.26. Number of holes shall be sufficient to accommodate the number of secondary conductors indicated on the drawings, with each pair of holes dedicated to one cable only.

3. Molded epoxy neutral bushing with neutral ground strap, removable, grounded to tank.

4. Grounding Pad

2-1.06. ACCESSORIES

1. Liquid level gauge, dial type.

2. Thermometer, dial type.

3. External drain valve with sampling device.

4. Pressure vacuum gauge

5. Pressure relief valve

2-2. IDENTIFICATION DEVICES

2-2.01. Provide equipment identification in accordance with the drawings and Section 16010 – Electrical Requirements.

2-3. SEISMIC RESTRAINTS

2-3.01. Design and fabricate transformers, and anchorage devices for them, to withstand static and seismic forces in any direction.

2-4. SOURCE QUALITY CONTROL

2-4.01. Factory Tests: Perform design and routine tests according to standards specified for components. Conduct transformer tests according to IEEE C57.12.90.

2-4.02. Factory Tests: Perform the following factory-certified tests on each transformer:

1. Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.

2. Ratios on rated-voltage connection and on tap extreme connections.

3. Polarity and phase relation on rated-voltage connection.

4. No-load loss at rated voltage on rated-voltage connection.

5. Excitation current at rated voltage on rated-voltage connection.

6. Impedance and load loss at rated current on rated-voltage connection and on tap extreme connections.

7. Applied potential.

8. Induced potential.

PART 3 - EXECUTION

3-1. GENERAL

3-1.01. The work shall be installed as indicated in Section 16010 – Electrical General Requirements, and as described herein.

3-2. EXAMINATION/INSPECTION

3-2.01. Examine areas and conditions for compliance with requirements for pad-mounted transformers.

3-2.02. Examine roughing-in of conduits and grounding systems to verify the following:

1. Wiring entries comply with layout requirements.

2. Entries are within conduit-entry tolerances specified by manufacturer, and no feeders will have to cross section barriers to reach load or line lugs.

3-2.03. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.

3-2.04. Verify that ground connections are in place and that requirements have been met as specified in Section 16062 - Grounding. Maximum ground resistance shall be 25 ohms at location of transformer.

3-2.05. Check factory made connections of transformer unit for mechanical security and electrical continuity.

3-2.06. Check transformer insulating liquid for correct quantity and specification according to manufacturer’s instructions.

3-2.07. Proceed with installation only after unsatisfactory conditions have been corrected.

3-3. INSTALLATION

3-3.01. Construct concrete bases of dimensions indicated on detailed shop drawings.

3-3.02. Ensure concrete pad is fully cured before transformer is installed.

3-3.03. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3-3.04. Tack-weld or bolt transformers to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.

3-3.05. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.

3-3.06. Make connections as indicated.

3-3.07. Connect transformer unit ground bus to system ground.

3-3.08. Ensure care is taken to prevent contamination of liquid and components when field filling transformers.

3-3.09. Use only metal hose when field-filling transformer with oil: never, under any circumstances, use rubber hose.

3-3.10. Set transformer taps to produce rated secondary voltage at no-load.

3-4. TESTING AND COMMISSIONING

3-4.01. Perform tests and document results in accordance NETA Standard for Acceptance Testing Specifications Section 7.2.2 Transformers, Liquid Filled and with Section 16010 - Electrical Requirements.

PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMER DATASHEET	DATA SHEET No.	
	SPEC. No.	
	PROJECT NO:	
	REQ.	P.O.

PLANT:	REV	DESCRIPTION	DATE	BY	CHK'D	APPR.
LOCATION:						
	0A	Issued for Review				

DESCRIPTION	REQUIREMENTS
1.0 APPLICABLE STANDARDS	NEMA, IEEE Stds as listed in specification
Regulatory Requirements	UL Listed, FM Certification
2.0 SITE CONDITIONS	
Location (Indoor/Outdoor)	Outdoor
Elevation (m)	100 ft.
Ambient Temperature min/max	-40◦C / +40◦C
Area Classification	Non-classified
Seismic Zone	
Unusual Conditions	Coastal, Extreme Humidity
3.0 RATINGS	
Power: (ONAN kVA/ ONAF kVA/ etc.)	112.5 kVA ONAN
Primary Voltage	13.2 kV
Secondary Voltage	0.48 kV
Frequency	60Hz
Temperature Rise	65◦C
Primary Winding Connection	Delta
Primary Winding BIL (kV)	95 kV
Secondary Winding Connection	Grounded Wye
Secondary Winding BIL (kV)	30 kV
Primary Taps	2FCAN/2FCBN, ± 2.5% taps

Impedance (%)	5 %
Efficiency	Meets DOE 10 CFR431
Sound Level	As per NEMA TR 1
4.0 TRANSFORMER CONSTRUCTION	
Liquid Preservation	Sealed Tank
Liquid Type	FR3 Oil
Winding Conductor Material	Copper
Compartment Depth	Manufacturer Standard
Gasket material	Manufacturer Standard
Bolt-on covers for handholes	Bolt-on
Door padlock and bolt type	Hex or Penta-head type
Lifting lugs and jacking step	Required, Lifting lugs Qty 4
Jacking or Skidding Required	Required
Exterior Finish	Green
Interior Finish	Manufacturer Standard
Nameplate and Connection Diagram	Required, Stainless steel
Other	
5.0 PRIMARY CONNECTION	
Type	Dead front
Primary Switching Type	Loop feed with two, 2- position ON/OFF switch
High Voltage Bushing	Dead-front 200A
Surge Arresters	Liquid-immersed Distribution Class
MCOV Rating (IEEE C62.11)	IEEE C62.11
Fuse Protection	Bay-O-Net Expulsion Fuse Dual/Load Sensing
Spare Fuses	Required
Grounding Pad	Required

6.0 SECONDARY CONNECTION	
Type	Live front
Secondary Termination	Full length Bottom entry
Secondary Bushings	6-Hole Spade copper
Neutral bushing	Required, with removable neutral grounding strap
Grounding Pad	Required
7.0 ACCESSORIES	
Liquid Level Gauge	Required
Dial Type Thermometer	Required
External drain valve with sampling device	Required
Pressure/Vacuum Gauge	Required
Pressure Relief Valve	Required
Upper filter press and filling plug	
IR windows	
Other	
8.0 TESTING REQUIREMENTS	
Factory Tests	As per IEEE Std C57.12.90
Witness Testing	Not Required
Other Tests	
Certified Test Results	Required
NOTES:	

END OF SECTION

SECTION 16410

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1-1. SUMMARY

1-1.01. Section Includes:
a. Non-fusible switches (Manual Transfer Switch).
b. Enclosed circuit breakers.
c. Enclosures.

1-1.02. Definitions
a. NC: Normally closed.
b. NO: Normally open.
c. SPDT: Single pole, double throw.

1-1.03. Action Submittals

1-1.04. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

1-1.05. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1-1.06. Wiring Diagrams: For power, signal, and control wiring.

1-2. QUALITY ASSURANCE

1-2.01. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1-2.02. Comply with NFPA 70.

PART 2 - PRODUCTS

2-1. FUSIBLE SWITCHES

2-1.01 Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Eaton / Cutler-Hammer
b. General Electric Company
c. Siemens
d. Square D
e. Type GD, General Duty will not be accepted.
f. Type HD, Heavy Duty, Single Throw, 600-V ac: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position. The switch shall have label for on-off position.

2-1.02 Accessories:

a. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
b. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
c. Lugs: Suitable for number, size, and conductor material.

2-2. ENCLOSED CIRCUIT BREAKERS

2-2.01. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Eaton / Cutler-Hammer

b. General Electric Company

c. Siemens

d. Square D

2-2.02. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

2-2.03. Circuit Breakers: Refer to Section 16412.

2-2.04. Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.

2-2.05. Lugs: Suitable for number, size, trip ratings, and conductor material.

2-2.06. Application Listing: Appropriate for application.

2.3. ENCLOSURES

2-3.01. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

2-3.02. Outdoor Locations: NEMA 4X, Type 304 Stainless Steel.

2-3.03. Indoor Locations: NEMA 4X, Type 304 Stainless Steel.

PART 3 - EXECUTION

3-1. INSTALLATION

3-1.01. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

3-1.02. Install fuses in fusible devices.

3-1.03. Comply with NECA 1.

3-2. IDENTIFICATION

3-2.01. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.

3-2.02. Label each enclosure with engraved metal or laminated-plastic nameplate.

3-3. FIELD QUALITY CONTROL

3-3.01. Perform tests and inspections.

3-3.02. Acceptance Testing Preparation:

a. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
b. Test continuity of each circuit.

3-3.03. Tests and Inspections:

3-3.04. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3-3.05. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3-3.06. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

3-3.07. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION

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SECTION 16412

LOW VOLTAGE CIRCUIT BREAKERS

PART 1 - GENERAL

1-1. SUMMARY

A. Section Includes: Low voltage circuit breakers as indicated on the Drawings and as specified.

1-1.01. References

A. National Electrical Manufacturers Association (NEMA): Standards Publication No. AB1.

B. National Electrical Code (NEC): Article 430-52.

PART 2 - PRODUCTS

2-1. MANUFACTURERS

2-1.01. Circuit Breakers: Manufacturers: One of the following or equal:

1. Cutler-Hammer.
2. General Electric Company.
3. Siemens.
4. Schneider Electric / Square D.

2-1.02. Motor Circuit Protectors: One of the following manufacturers or equal:

A. Cutler-Hammer.

B. General Electric Company.

C. Schneider Electric / Square D.

D. Siemens.

2-1.03. Circuit Breakers - Low Voltage

2-1.04. Circuit Breaker Frame and Trip Ratings: As indicated on the Drawings and coordinated with the ratings of the equipment actually furnished. Modify ratings where necessary to suit this equipment and in accordance with the short circuit fault analysis and protective device coordination study.

2-1.05. Circuit Breakers for Motor Control Centers: As specified and indicated on the Drawings. Where no indication of type is given on the Drawings, the following governs:

When an integral part of a UL-listed combination controller: Motor circuit protectors.

2-1.06. All other circuit breakers: Molded case circuit breakers.

2-1.07. Provide motor circuit protectors and circuit breakers with non-aluminum line and load terminals suitable for the required conductor type, size, and number of conductors.

2-1.08. Panelboard Circuit Breakers: Bolt-in type. Snap-in circuit breakers are not acceptable.

2-1.09. Breakers and Motor Circuit Protectors shall be listed and meet all applicable UL standards.

2-2. MOLDED-CASE CIRCUIT BREAKERS

2-2.01. The Main Service Circuit Breaker for each well house shall be for Separate Mounting: Air-break type, manually operated circuit breaker with electronic trip unit including adjustable longtime current setting, adjustable long time delay, adjustable short time pick-up, adjustable short time delay and frame size as indicated on the Drawings. The enclosure shall be 316 stainless steel.

2-2.02. Molded-Case Circuit Breakers: Ambient compensating which provides inverse time delay overload and instantaneous short circuit protection by means of a thermal magnetic element. Accomplish compensation by a secondary bimetal that will allow the breaker to carry rated current between 25 degrees Centigrade and 50 degrees Centigrade with tripping characteristics which are approximately the same throughout this temperature range.

2-2.03. On Breakers with Interchangeable, Thermal, Adjustable Magnetic Trip: The accessibility and position of the adjustment knob shall not be changed from those on the standard breaker.

2-2.04. Breakers: Operated by a handle and provided with a quick-make, quick- break switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits and abnormal currents.

2-2.05. Tripping Due to Overload, Short Circuit, or Ground Fault: Clearly indicate tripping by the handle automatically assuming a position between the manual ON and OFF positions.

2-2.06. Latch Surfaces: Ground and polished.

2-2.07. Poles: Constructed so they all open, close and trip simultaneously. Conform to the applicable requirements of NEMA Standard No. AB1.

2-2.08. Breakers: Completely enclosed in a molded case.

Non-Interchangeable Trip Breakers: Sealed covers.
Interchangeable Trip Breakers: Sealed trip unit to prevent tampering.
Ampere Ratings: Clearly visible.
Contacts: Non-welding silver alloy.
Arc Extinction: Accomplished by means of arc chutes.

2-2.09. Minimum Interrupting Ratings: At least equal to the available short circuit at the line terminals as determined by the CONTRACTOR's short circuit fault analysis and as accepted by the ENGINEER.

2-2.10. Molded Case Breakers shall meet standard UL-489

2-3. MOTOR CIRCUIT PROTECTORS

2-3.01. Motor Circuits: Protected by motor circuit protectors, as permitted by Item I below.

2-3.02. Motor Circuit Protectors: Operated by a handle and provided with a quick- make, quick-break switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits.

2-3.03. Tripping: Clearly indicated by the handle automatically assuming a position between the manual ON and OFF positions.

2-3.04. Latch Surfaces: Ground and polished.

2-3.05. Poles: Constructed so they all open, close, and trip simultaneously.

2-3.06. Motor Circuit Protectors: Completely enclosed in a molded case.

2-3.07. Trip Unit: Sealed to prevent tampering.

2-3.08. Ampere Ratings: Clearly visible.

2-3.09. Contacts: Non-welding silver alloy.

2-3.10. Arc Extinction: Accomplished by means of arc chutes.

2-3.11. Provide each pole of motor circuit protectors with instantaneous short circuit protection by means of a single adjustable magnetic only element. The single adjustment screw is to adjust all poles simultaneously.

2-3.12. Furnish motor circuit protectors with provision for locking the maximum achievable trip setting to values less than maximum obtainable trip setting. Each adjustment typically to have 8 main setting points and mid-setting points following a linear scale so that each point has a significant value within calibration tolerances.

2-3.13. Motor Circuit Protectors: Suitable for use with current limiters, having 100,000 ampere interrupting capacity and a built-in trip indicator, that are fully coordinated with the motor circuit protectors so that the motor circuit protectors will open all 3 phases if the limiter operates.

2-3.14. Current limiters shall be so constructed that they can only be replaced by an identical or similar limiter having the same interrupting capacity.

2-3.15. Minimum Interrupting Rating: At least equal to the available short circuit current at the line terminals as determined by the CONTRACTOR's short circuit fault analysis, but not less

than 65,000 RMS amperes.

2-3.16. Motor Circuit Protectors Continuous Current Rating: As specified herein or as indicated on the Drawings.

2-3.17. Setting: The motor circuit protectors setting shall be in accordance with the CONTRACTOR's protective device coordination study as accepted by the ENGINEER and in accordance with the motor circuit protectors manufacturer's recommendation based on motor nameplate current.

2-3.18. Utilize an instantaneous trip circuit breaker or motor circuit protector only as part of a listed combination motor controller which provides coordinated motor branch-circuit overload, and short-circuit and ground-fault protection in accordance with NEC Article 430-52.

PART 3 – EXECUTION

3-1. INSTALLATION

A. Provide separate mounted circuit breakers with adequate enclosure and handle for disconnecting means and lock-out features.

B. Provide circuit breakers on panelboards according to quantity and rating shown on panelboard schedule.

C. Mount circuit breakers as indicated on the Drawings.
   1. Provide adequate supporting pillars for circuit breakers to be located above ground or above decks, where there is no structural wall or surface for box mounting.

END OF SECTION

SECTION 16416

SURGE PROTECTIVE DEVICES

PART 1 - GENERAL

1-1. SUMMARY

A. Section Includes: Surge protective devices (SPD) for use on 480 and 208 volt, alternating current systems, including separate enclosure for mounting adjacent to motor control center, and separate enclosure for unit protecting power distribution panelboard in motor control center.

1-1.01. References

A. Underwriters' Laboratories, Inc. (UL):

1. 1449 - High Performance Suppression System, Rev.4
2. 1283 - High Frequency Extended Range Power Filter.

B. American National Standards Institute (ANSI):

1. C62.41 - Category C3 (Service Entrance).
2. C62.45 - Category C Surge.

1-1.02. Submittals

A. Shop Drawings: Include component layout and wiring terminations.

B. Product data.

C. Manufacturer's installation instructions.

D. Operating and maintenance data.

E. Warranties.

1-1.03. Quality Assurance

a) Manufacturer Qualifications: Manufacturer of surge protective device systems for minimum 5 years with satisfactory performance record.

b) Regulatory Requirements: UL rating of Surge protective device shall meet or exceed UL rating of panelboard, motor control center, or other equipment in which suppressor is installed. UL rating of equipment in which suppressor is installed shall not be affected by suppressor.

1-1.04. SEQUENCING AND SCHEDULING

Coordinate with and furnish suppressors to motor control center, and distribution panel manufacturer prior to shipment of equipment to site.

1-1.05. Warranty

Provide equipment with SPD protection and warranty to correct defective products for minimum period of 3 years in accordance with manufacturer's standard warranty.

PART 2 - PRODUCTS

2-2. SURGE PROTECTIVE DEVICES

2-2.01. Ratings: 277/480 volt grounded wye and 120/208 volt grounded wye.

2-2.02. Manufacturers: One of the following or equal:

1. Current Technology, TransGuard Model for motor control center installation or Series TG300 for external mounting.
2. Transtector, equivalent product.
3. Advanced Protection Technologies, equivalent product.
4. If furnished with MCC and/or panelboard, the manufacturer of the SPD unit can be the same as the MCC equipment.

2-2.03. Components:

1. 30 ampere circuit breaker and disconnect
2. Status indicating pilot lights.
3. Two dry contacts for remote status annunciation.
4. NEMA 4X enclosure.

2-2.04. Characteristics:

1. Single Pulse Surge Current Capacity per Phase: 600,000 amperes.
2. Capacity Per Protection Modes:

    a. L-N Mode: 300,000 amperes.
    b. L-G Mode: 300,000 amperes.
    c. N-G Mode: 300,000 amperes.
    d. L-L Mode: 300,000 amperes.

3. Surge Life Cycle: 1.2 by 50 micro-seconds 20 kilovolt open circuit voltage, 8/20 micro-second waveform 10 kiloamperes short circuit current Category C3 Bi-wave in accordance with ANSI C62.41 and C62.45.
4. Suppression and Filter Technology: Manufacturer's standard.
5. Continuous Operating Voltage: Minimum 115 percent of nominal.
6. Suppression Voltage In Protective Modes: As follows when tested in accordance with UL 1449:

a. For 480 volt systems:
   1) L-N: 800.
   2) L-G: 800.
   3) N-G: 800.
   4) L-L: 2000.

b. For 208 volt systems:
   1) L-N: 500.
   2) L-G: 500.
   3) N-G: 400.
   4) L-L: 600

7. EMI/RFI High Frequency Noise Power Filter:

Frequency	100 KHz	1 MHz	10 MHz	100 MHz
Attenuation (dB)	34	51	54	48
Attenuation Ratio	50:1	350:1	500:1	250:1

8. Minimum American Wire Gauge Copper in Surge or Noise Suppression Path: Number 6.
9. Field Replaceable Fusing: Current limiting, protecting each pole.

2-2.05. Spares: Furnish two of each unique surge protective device used in project as spare.

PART 3 - EXECUTION

3-1. INSTALLATION

A. Install suppressors in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 16470

PANELBOARDS AND GENERAL PURPOSE DRY TYPE TRANSFORMERS

PART 1 - GENERAL

1-1. THE SUMMARY

1-1.01. The CONTRACTOR shall provide panelboards and general purpose dry-type transformers, complete and operable, in accordance with the Contract Documents.

1-1.02. Single Manufacturer: Like products shall be the end product of one manufacturer in order to achieve standardization of appearance, operation, maintenance, spare parts, and manufacturer's services.

1-2. CONTRACTOR SUBMITTALS

a) Shop Drawings

b) Transformers

c) Dimension drawings

d) Technical certification sheets

e) Drawing of conduit entry/exit locations

f) Transformer ratings, including:

g) Voltage

h) Continuous current

i) Basic impulse level for equipment over 600 volts

j) KVA

k) Descriptive bulletins

l) Product sheets

m) Panelboards

n) Breaker layout drawings with dimensions and nameplate designations

o) Component list

p) Drawings of conduit entry/exit locations

q) Assembly ratings including:

r) Short circuit rating

s) Voltage

t) Continuous current

u) Cable terminal sizes

v) Descriptive bulletins

w) Product sheets

x) Installation information

y) Seismic certification and equipment anchorage details

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. Transformers.

2-1.02 The transformers shall be dry-type, designed, manufactured, and tested in accordance with the latest applicable standards of ANSI and NEMA.

2-1.03 Transformers shall be UL-listed and bear the UL label.

2-1.04. Panelboards.

2-1.05. Panelboards shall be dead front factory assembled. Panelboards shall comply with NEMA PB-1-Panelboards, as well as the provisions of UL 50 - Safety Enclosures for Electrical Equipment and UL 67 - Safety Panelboards. Panelboards used for service equipment shall be UL labeled for such use. Lighting panelboards shall be rated for 120/208 volt, 3 phase operation or 120/240 volt for single phase operation as indicated. Power panelboards shall be rated for 480 volts, 3 phase, 3 wire operation, unless indicated otherwise.

2-1.06. The manufacturer of the panelboard shall be the manufacturer of the major components within the assembly, including circuit breakers.

2-2. TRANSFORMERS

2-2.01. Energy Efficiency: Standard dry-type transformers shall meet the energy efficiency requirements of the Department of Energy Code of Federal Regulations (10 CFR PART 431), DOE 2016 Efficiency Levels.

2-2.02 Ratings.

2-2.03. KVA and voltage ratings shall be as indicated.

2-2.04. Transformers shall be designed for continuous operation at rated kVA, for 24 hours a day, 365 days a year operation, with normal life expectancy as defined in ANSI C57.96 - Guide for Loading Dry Type Distribution and Power Transformers.

Transformer sound levels shall not exceed the following ANSI and NEMA levels for self-cooled ratings:

Up to 9 kVA	40 dB
10 to 50 kVA	45 dB
51 to 150 kVA	50 dB

2-2.05. Construction

2-2.06 Insulation Systems

2-2.07 Transformers shall be insulated as follows:

a) 2 kVA and smaller: 150 deg C insulation system based upon 80 deg C rise.

b) to 15 kVA: 185 deg C insulation system based upon 115 deg C rise.

c) 15 kVA and larger: 220 deg C insulation system based upon 150 deg C rise.

d) Required performance shall be obtained without exceeding the above indicated temperature rise in a 40 deg C maximum ambient.

e) Insulation materials shall be flame-retardant and shall not support combustion as defined in ASTM D 635 - Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

f) Transformer windings shall be copper.

g) Transformers shall have four 2-1/2 percent taps, 2 above and 2 below 480 volts.

h) Transformer shall include vibration dampeners between the core and the enclosure to minimize and isolate sound transmission.

i) Manufacturers: General Electric, Eaton, Schneider Electric/Square D Company, or equal.

2-3. PANELBOARDS

2-3.01. Ratings

1. Panelboards rated 240 VAC or less shall have short circuit ratings not less than 10,000 amperes RMS symmetrical or as indicated by the Short Circuit Study, whichever is greater.

2. Panelboards rated 480 VAC shall have short circuit ratings not less than 65,000 amperes RMS symmetrical or as indicated by the Protective Device Study, whichever is greater.

3. Panelboards shall be labeled with a UL short circuit rating. Series ratings are not acceptable.

2-3.02. CONSTRUCTION

1. Lighting and power distribution panels shall have tin-plated copper bus bars.

2. Breakers shall be one, 2, or 3 pole as indicated, with ampere trip ratings as required by the equipment. Breakers shall be quick-make and quick-break, inverse time trip characteristics, to trip free on overload or short circuit, and to indicate trip condition by the handle position.

3. The panels shall have hinged doors with combination catch and latch. The front panels shall be so arranged that when the plates are removed, the gutters, terminals and wiring will be exposed and accessible. The doors shall have inner doors within the plates to have only the breaker operating mechanism exposed when they are opened. Live conductors and terminals shall be concealed behind the plates.

4. Panelboards shall be rated for the intended voltage.

5. Circuit breakers shall be interchangeable and capable of being operated in any position as well as being removable from the front of the panelboard without disturbing adjacent units. No plug-in circuit breakers will be acceptable.

6. Panelboards shall be UL listed except for special enclosures which are not available with UL listing.

7. Panelboards shall be suitable for use as service entrance where indicated.

8. Manufacturers: General Electric, Eaton, Schneider Electric/Square D Company, or equal

PART 3 - EXECUTION

3-1. GENERAL

A. WORK of this Section shall be installed as indicated in Section 16010 - Electrical Requirements.

END OF SECTION

SECTION 16485

REDUCED VOLTAGE SOLID STATE MOTOR CONTROLLERS

PART 1 - GENERAL

1-1. QUALIFICATIONS

1-1.01. Manufacturer.

1. The manufacturer shall have a minimum of 25 years of experience in the manufacture of low voltage solid-state reduced-voltage controllers.

2. The approved manufacturers are:
   a) Rockwell Automation Allen-Bradley

1-1.02. Support.

1. The manufacturer shall maintain factory trained and authorized service facilities within 75 miles of the project and shall have a demonstrated record of service for at least the previous ten years.

2. Support personnel are to be direct employees of the manufacturer and be available 24 hours per day through a toll-free number.

3. The manufacturer shall provide all required start-up and training services.

1-1.03. Certification.

1. To ensure all quality and corrective action procedures are documented and implemented all manufacturing locations shall be certified to the ISO-9001 Series of Quality Standards.

2. Third party manufacturers and brand labeling shall not be allowed.

1-1.04. Definitions.

1. The Solid-State Reduced-Voltage Controller Unit shall refer to the actual controller unit with all specified accessories herein; that will be mounted within the specified enclosure.

1-2. REFERENCES

1-2.01. The controller shall be designed to meet or exceed the applicable requirements of the following agencies.

1. EN
2. UL

3. IEC

4. NEMA
5. IEEE

1-2.02. The following standards shall be met.

1. Creep distances and clearances 600V (UL) and 690V (IEC).

2. Power terminal markings per EN 50005 and EN 60947-4-2.

3. Dielectric withstand per UL 508 and IEC 947.

4. EMC Emission levels, Conducted Radio & Radiated: Class A per IEC60947-4-2.

5. EMC Immunity levels: per EN/IEC60947-4-2.

6. Surge withstand per IEEEC62.41 and IEC61000-4-5.

1-2.03. Environmental Requirements.

A. Confirm to specified service conditions during and after installation of products.

1-2.04. Submittals.

1-2.05. Refer to Section 16100 for procedure on submittal of final documentation.

1-2.06. The Contractor shall provide certification that the solid-state reduced-voltage controller has been installed in accordance with the manufacturer's instructions.

1-2.07. The Contractor shall provide certification that the Contractor has properly adjusted any timing devices required in the starting circuitry.

1-2.08. Final Drawings

1. The manufacturer shall provide final drawings reflecting the "As-Shipped" state of the installed equipment.

2. Manufacturer drawings shall be provided in DWG format.

3. Manufacturer drawings do not need to be stamped if a drawing schedule is provided that lists the drawing numbers, revision levels, and status of drawings (Preliminary, Approval, Final, etc.).

4. The Contractor shall be responsible for making any changes to the "As-Shipped" drawings from the manufacturer to reflect any field modifications. The manufacturer shall update the drawings to reflect the "As-Installed" condition based on the Contractor markups.

1-2.09. Test reports indicating manufacturer's standard testing were performed.

A. Maintenance Data

1. Solid-state reduced-voltage controller installation instructions and User Manual.

2. Installation / Operation instructions for major components such as circuit.

3. As-programmed parameter listing.

4. Field service report from start-up service.

5. Solid state reduced voltage controller spare parts listing and pricing.

6. Include name and phone number for a local distributor for the spare parts.

1-3. DELIVERY, STORAGE, AND HANDLING

1-3.01. The Contractor shall coordinate the shipping of equipment with the manufacturer.

1-3.02. The Contractor shall store the equipment in a clean and dry space.

1-3.03. The Contractor shall protect the units from dirt, water, construction debris and traffic.

1-3.04. During storage the Contractor shall connect internal space heaters (if specified) with temporary power and store the units in accordance with the manufacturer's written instructions.

1-3.05 FIELD MEASUREMENTS

A. The Contractor shall verify all field measurements prior to the fabrication of the solid state reduced voltage controller.

1-4. SPARE MATERIALS

1-4.01. Provide one (1) set of three (3) of each size power fuse utilized.

1-4.02. Provide spares equal to 10 percent of the installed quantity for primary and secondary control power fuses.

1-4.03. Provide one (1) spare control relay for each unique relay utilized on the project.

5-1. WARRANTY

1-5.01. The manufacturer shall provide their standard parts warranty for eighteen (18) months from the date of shipment or twelve (12) months from the date of being energized, whichever occurs first.

1-5.02. The manufacturer shall confirm this warranty as part of the submittal.

1-5.03. This warranty applies only to stand alone solid-state reduced-voltage controllers.

PART 2 - PRODUCTS

2-1. MANUFACTURER

2-1.01. The soft start shall be SMC-50 series as manufactured by Allen Bradley, no substitutions allowed.

2-1.02. RATINGS

A. The solid state reduced voltage controller shall accept an input voltage from 200…480V AC three-phase plus 10 percent or minus 15 percent.

B. The solid state reduced voltage controller shall have a short circuit current rating of 65 kA @ 480V

C. Environmental Ratings:

1. Storage ambient temperature range: -25…+75°C.

2. Operating ambient temperature range: -20…+50°C as standard and up to 65°C maximum with derating.

3. The relative humidity range: 5%…95% non-condensing.

4. Operating elevation: up to 2000 meters as standard and up to 4000 meters maximum with derating.

5. The manufacturer shall provide a tool for evaluating thermal capabilities of the solid state reduced voltage controller.

2-2. SOLID STATE REDUCED VOLTAGE CONTROLLER UNIT DESIGN

A. The enclosure-type controller device shall be modular, consisting of a power structure and a logic component.

B. Power Structure

1. The power structure shall include built-in electronic 3-phase current monitoring and overload protection.

2. Furnish starter with MOV protection modules.

3. The family of devices must be available from 1…520 A in a line motor connection

4. For devices rated 90…180 A, the power structure shall consist of three power poles with integral heat sinks in a single housing

5. For devices rated 210…520 A, the power structure shall consist of three power poles with integrated heat sinks and mounted separately for ease of maintenance

6. The power structure shall be modular in design and easily replaceable

7. Back-to-back SCR pairs shall be the only power switching semiconductor means acceptable. Diode-SCR (Silicon Controlled Rectifier) combinations shall not be acceptable.

8. SCRs shall have the following minimum repetitive peak inverse voltage ratings.
   a) 1400V for units rated 200…480V

9. SCRs shall have built in temperature monitoring sensors.

10. Use of an External bypass must be available as an option if internal bypass is not available, see drawings.

11. The manufacturer must supply guidance on obtaining Type 2 coordination per IEC 60947 4-2

12. Vendor to provide and install power available/phase sequence monitor. Monitor to be factor wired to terminal point ready for field installation.

    a) Manufacturer: Time Mark Corporation, Model C265

C. Logic Component / Control Module:

1. The logic component shall be a self-contained control module, compatible with the full range of power structures.

2. The control module shall provide continuous 32-bit digital microprocessor control and supervision of all controller operation, including pulse firing of all 6 SCRs.

3. The control module shall consist of the following.

   a) Self-tuning power supply accepting 24VDC control power input.
   b) SCR firing circuitry that incorporates an RC snubber network to prevent false firing.
   c) Input / output circuitry (two 24V DC inputs and 4 relay outputs standard).
   d) Four (4) DPI communication ports.
   e) Built in multi-color status LEDs.
   f) A reset push button on solid state reduced voltage controller.

4. The control terminals shall have the following characteristics

a) The control terminal wiring connector shall be easily removable and located on the front top of the device for easy access.
b) The terminals shall be UL rated for 600V, 7 mA maximum, and accept wires from #24 AWG…#14 AWG.
c) The terminals are UL Recognized to accept a maximum of two (2) #16 AWG wires per terminal.

5. The control module shall mount directly to the power structure.

6. The control module shall be easily removed from the power structure, without the need to disassemble associated printed circuit board assemblies.

7. The control module shall have conformal coated printed circuit boards as standard.

8. The control module shall have a battery backed time of day clock.

9. Additional selector switch (Hand, Off, Auto) shall be provided and mounted on the enclosure. The selector switch shall be factor wired utilizing the provided output to control and operated external well house exhaust fan.

D. Logic Components:

1. The controller shall have a dedicated bezel used to house an optional human interface module (HIM) for parameter configuration and monitoring.

The HIM shall have the following capabilities:

a) Full numeric tactile feedback keypad with integrated navigation.
b) Multi-language support.
c) Multi-line LCD display.
d) Dynamic soft keys that change function based on the display.
e) Remote mounting.

2. The controller shall have 4 option ports used to house user selectable option modules. These shall include the following:

a) Parameter configure module used to provide limited control parameter configuration using rotary position and SIP switches.
b) Digital input / output module: the module shall provide four (4) 24V DC inputs and four (4) relay outputs.
c) Motor PTC, ground fault, and external current transformer module. This module shall provide interface capability to all three (3) of the sensors.

2-3 SOLID STATE REDUCED VOLTAGE CONTROLLER UNIT MODES

A. Initial and Pre-Starting Modes:

1. Start Delay pre-start

a) Shall be programmable from 0…30 seconds.

2. Integral motor winding heater pre-start

a) The selectable start option will begin at the end of this option.
b) Programmable time from 0…1000 seconds.
c) Programmable current from 0…100% of full load current

3. Motor tuning function (initial start)

a) Either automatically initiated by the controller on the initial start sequence of the motor or manually initiated by user.

B. Starting Modes:

1. Soft start

a) Programmable initial torque value of 0…90% of locked rotor torque.
b) Programmable acceleration ramp time from 0…1000 seconds.
c) Current limit 50…600% of full load current.

2. Current limit start

a) Adjustable from 50…600% of motor full load current.
b) Adjustable ramp time from 0…1000 seconds.

3. Linear speed acceleration start

a) Programmable ramp time from 0…1000 seconds
b) Programmable initial torque value of 0…90% of locked rotor torque.
c) Programmable current limit from 50…600% of full load current.

4. Full voltage start

a) Provides across the line starting.
b) Ramp time shall be less than 0.1 seconds.

5. Selectable kickstart

a) A selectable kickstart, or boost, shall be provided at the beginning of the voltage ramp.
b) The kickstart shall provide an adjustable pulse of 0…90% of locked rotor torque.
c) The kickstart time shall be adjustable from 0…2 seconds.
d) Kickstart shall be available for soft start, current limit start, torque control start, pump start, and dual ramp start.

6. Pump start

a) Pump start and stop parameters are typically configured together.
b) Initial torque programmable from 0…90% of locked rotor torque.
c) Backspin timer programmable from 0…999 seconds.
d) Ramp time programmable from 0…1000 seconds.

7. Torque control start

a) Starting torque programmable from 0…300 percent of rated motor torque.
b) Maximum torque programmable from 0…300 percent of rated motor torque.
c) Ramp time programmable from 0…1000 seconds.

8. Dual ramp start

a) Provides two (2) separate start profiles with separately adjustable ramp times, current limit level, initial torque, starting and max torque, and kickstart time and level.
b) Ramp times programmable from 0…1000 seconds.
c) Current limit level programmable from 50…600% full load current.
d) Initial torque programmable from 0…90% of locked rotor torque.
e) Starting and maximum torque programmable from 0…300% of locked rotor torque.

9. Timed start

a) Forces the starting profile to complete the entire user-configured ramp time before applying full voltage.

10. Start delay

a) User configurable start delay of 0…30 seconds from the point when the start command is enabled until the start sequence actually occurs.
b) Applies to any start mode.

11. Backspin

a) Provided in order to avoid starting a motor into a backspin condition.
b) The user-configured time begins to count down after a stop maneuver is complete
c) All start inputs are ignored until the backspin timer has timed out.

C. Stopping Modes:

1. Coast-to-stop

a) No further parameters needed.

2. Soft stop

a) The soft stop option shall provide a voltage ramp-down for an extended motor stopping time.
b) Soft stop shall be initiated by a dedicated Soft Stop input. A coast-to-rest stop shall still be possible with a separate stop input.
c) Stop time programmable from 0…999 seconds.
d) The load shall stop when the motor voltage drops to a point where the load torque is greater than the motor torque.

3. Linear speed deceleration

a) Stop time programmable from 0…999 seconds.
b) Current limit level programmable from 50…600% of full load current.

4. Pump stop

a) The pump control option shall be implemented to provide closed loop control of a motor to match the specific torque requirements of centrifugal pumps for both starting and stopping.
b) This shall aid in eliminating the phenomena commonly referred to as “water hammer.”
c) Stop time programmable from 0…999 seconds.
d) Pump pedestal programmable from 0…50%.
e) See section 2.03 B 6 for more information.

D. Braking Control Modes:

1. Smart Motor Braking, SMB

a) Stop time programmable from 0…999 seconds.
b) Braking current programmable from 0…400% of full load current.

2. Accu-Stop

a) Provide a brake from full speed to a present slow speed and then a brake or coast to stop.
b) Requires four (4) settings:
    1. SMB setting
    2. A control input that is set for stop
    3. A second input that is set for start
    4. A third input that is set for slow speed

3. External Braking Control

a) Will remove power from the motor and enable an external mechanism to brake the motor during the user configured stop time from 0…999 seconds.
b) When the stop time is complete, the unit will open the auxiliary output and switch to the stopped state.

4. Preset slow speed

a) Provides a slow speed for applications requiring a slow speed.
b) The preset slow speed option shall provide two jog speeds in the forward direction: high (15% of base speed) and low (7% of base speed).
c) The preset slow speed option shall provide two jog speeds in the reverse direction: high (20% of base speed) and low (10% of base speed). Reverse operation of the motor shall be available in the jog mode without the use of a reversing contactor.
d) The starting current for the slow speed operation shall be user adjustable from 0…450% of the motor's full load current rating.
e) The running current for the slow speed operation shall be user adjustable from 0…450% of the motor's full load current rating.

E. Running Modes

1. SCR Control – Normal Run Operation

a) The unit shall run at full voltage when the unit is at full speed and no external bypass contactor is provided.

2. SCR Control – Energy Saver Run Operation

a) Only applies during light motor load situations when enabled by user
b) The controller reduces current to the motor and thereby saves energy

3. External Bypass – Run Operation (Optional Requirement – See Drawings)

a) An external bypass contactor shall be configured to operate the motor while running at full voltage and speed.
b) The controller shall control the external bypass contactor by using one of the auxiliary relay outputs configured to Ext. Bypass using the output's configuration parameter
c) For units rated 210…520 A operation in external bypass mode with current feedback can be accomplished using the internal current sensors and an optional current feedback mounting kit.

4. Emergency Run

a) A control terminal or network input can be configured as the Emergency Run command input.
b) When this input is active all faults are disabled.

2.4 SOLID STATE REDUCED VOLTAGE CONTROLLER UNIT FEATURES

A. Overload Protection

1. Shall meet applicable standards as a motor thermal protective device.

2. Shall utilize three-phase current sensing. The use of two current transformers shall be unacceptable.

3. Make available selectable trip class settings from 5…30 in increments of 1 as standard.

4. Electronic thermal memory shall provide enhanced motor protection.

5. Shall provide alternative overload capabilities based on Over Power conditions

B. Digital Outputs

1. A minimum of two (4) auxiliary contacts shall be provided, as standard, for customer use.

2. The contacts shall be rated for 120VAC maximum.

3. Functional operation of the contacts shall be programmable for: normal, up-to speed, Ext. bypass, Ext brake, aux control, network 1-4.

4. The relay contacts shall be programmable for normally open (N.O.) or normally closed (N.C.) operation.

5. The controller shall be scalable to enable adding up to nine (9) outputs.

C. DPI Serial Communication Port

1. Four (4) DPI serial communication ports shall be provided as standard.

2. A separate port that supports optional communication protocol interface modules that shall be available for connection to DH485, MODBUS/TCP, ControlNet, DeviceNet, RS485.

D. Metering – the controller shall provide the following motor and/or power system metering functions indicated through the optional LCD display.

1. Three-phase current
   a) Current per phase
   b) Current average

2. Three-phase voltage
   a) Volts per phase, phase to phase
   b) Volts, average phase to phase
   c) Volts, phase to neutral
   d) Volts, average phase to neutral

3. Torque in percent of maximum

4. Power in Mega Watts (MW)
   a) Real power per phase
   b) Real power

c) Real demand d) Maximum real demand

5. Reactive power in Mega VAR (MVAR)
   a) Reactive power per phase
   b) Reactive power
   c) Reactive demand
   d) Maximum reactive demand

6. Apparent power in Mega VA (MVA)
   a) Apparent power per phase
   b) Apparent power
   c) Apparent demand
   d) Maximum apparent demand

7. Energy in Mega Watt hours (MWh)
   a) Real energy
   b) Real demand

8. Apparent energy in Mega VA hours (MVAh)

9. Power factor
   a) Power factor

10. Energy savings in percent

11. Elapsed time in hours
   a) Elapsed time, resettable
   b) Elapsed time 2, not resettable

12. Running time in hours

13. Motor speed in percent of full speed

14. Actual start time (last 5 starts) in seconds

15. Peak start current (last 5 starts) in Amps

16. Total starts

17. Total Harmonic Distortion (THD)
   a) THD of voltage per phase in percent
   b) THD of current per phase in percent

18. Line frequency in Hertz

19. Current imbalance in percent

20. Voltage unbalance in percent

21. Event log of last 100 events including start, stops, faults, alarms, and parameter changes

E. Protection and Diagnostics

1. Pre-start line fault advising of shorted SCR or missing load connection with phase indication.

2. Running line fault advising power loss, shorted SCR, or missing load connection.

3. Pre-start power loss with phase indication.

4. Over temperature.

5. Open gate with phase indication.
.
6. The following programmable protection shall be provided as standard with the controller.

   a) Overload
   b) Underload
   c) Undervoltage
   d) Overvoltage
   e) Current imbalance
   f) Voltage unbalance
   g) Phase reversal
   h) High and low line frequency
   i) Stall
   j) Jam
   k) Real power
      1. Motor over power real
      2. Motor under power real
   l) Apparent power
      1. Motor over power apparent
      2. Motor under power apparent
   m) Power factor
   n) Excessive starts per hour
   o) Preventive maintenance
      1. Preventive maintenance hours
      2. Preventive maintenance starts
   p) Line loss
   q) Silicon-Controller Rectifier (SCR) Specific protection
      1. SCR shorted
      2. SCR over temperature
      3. Open SCR gate

7. When fault conditions are detected, the controller shall inhibit starting or shutting down SCR pulse firing.

8. A Snapshot record maintains historical data that describes certain conditions that existed prior to a protection fault. The following instantaneous values should be available:

   a) Volts Phase A-B
   b) Volts Phase B-C
   c) Volts Phase C-A
   d) Current Phase A
   e) Current Phase B
   f) Current Phase C
   g) Power Factor
   h) MtrTherm Usage
   i) Motor Speed
   j) THD Vave
   k) THD Iave
   l) Product Status
   m) Board Temp
   n) Line Frequency
   o) Peak Vline A-N (for Shorted SCR faults)
   p) Peak Vline B-N (for Shorted SCR faults)
   q) Peak Vline C-N (for Shorted SCR faults)
   r) Peak I A (for Shorted SCR faults)
   s) Peak I B (for Shorted SCR faults)
   t) Peak I C (for Shorted SCR faults)

9. Fault diagnostics shall be indicated by a multi-color LED as standard, four (4) diagnostic LEDs on the option module, or by descriptive text on the optional LCD display. (The exclusive use of fault codes is unacceptable.)

10. An auxiliary contact that is user programmable for fault indication shall be provided for customer use.

11. Meter accuracy for diagnostics shall be accurate to 3% over nominal sensing range for current and 1% over entire range for voltage.

2-5 HMI

A. LCD Display

1. An alphanumeric, backlit LCD display shall be provided for controller set-up, diagnostics, status and monitoring. The display shall be four-line, 16 characters minimum.

2. Digital parameter adjustment shall be provided through a keypad. Analog potentiometer adjustments are not acceptable.

3. Mount the HIM display on the starter door so it can be adjusted without opening the panel door.

PART 3 - EXECUTION

3-1 MANUFACTURER'S SERVICES

A. The service division of the manufacturer shall perform all start-up services.

B. Start-up personnel shall be direct employees of the manufacturer and shall be factory trained.

C. At a minimum, the start-up service shall include:

1. Pre-power check
   a) Megger motor resistance: phase-to-phase and phase-to-ground
   b) Verify system grounding per manufacturer's specifications
   c) Verify power and signal grounds
   d) Check connections
   e) Check environment

2. Power-up and commissioning
   a) Measure incoming power phase-to-phase and phase-to-ground
   b) Measure DC bus voltage
   c) Measure AC current unloaded and loaded
   d) Measure output voltage phase-to-phase and phase-to-ground
3. Recording of all measurements
4. Tuning for system operation
5. Providing a parameter list

3.-1.01 TRAINING

A. Manufacturer to provide a quantity of one (1) session of on-site instruction.

B. The service engineer shall perform training.

C. The instruction shall include the operational and maintenance requirements of the controller.

D. The basis of the training shall be the installed controller, the engineered drawings and the user manual. At a minimum, the training shall do the following:

1. Review of the engineered drawings identifying the components shown on the drawings.
2. Review starting / stopping options for the controller.
3. Review operation of the Human Interface for programming and monitoring of the controller.
4. Review the maintenance requirements of the controller.
5. Review safety concerns with operating the controller.

END OF SECTION

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SECTION 16670

LIGHTNING PROTECTION SYSTEM

PART 1 - GENERAL

1-1. THE SUMMARY

1-1.01. The CONTRACTOR, through a qualified Subcontractor, shall design and provide a lightning protection system, complete and operable, as indicated in accordance with the Contract Documents.

1-1.02. The lightning protection Subcontractor shall be certified by the Lightning Protection Institute (LPI), for both the design and the installation of the lightning protection system.

1-1.03. Reference Specifications, Codes, And Standards

Codes

a) NFPA 780 Standard for the Installation of Lightning Protection Systems

b) NFPA 70 National Electric Code

c) UL 96A Lightning Protection Components

d) LPI-175 Lightning Protection Institute Installation Code

1-1.04. Contractor Submittals

1. Furnish Shop Drawings in accordance with the requirements of Section 16010 – Electrical Requirements.

2. Products: Furnish manufacturer’s catalog data for all materials.

3. Drawings.

4. Furnish a scaled drawing of the facility showing the lightning protection system.

5. The drawing shall show, at a minimum:

    a. The location of air terminals.

    b. The routing of conductors.

    c. Connections to the electrical grounding system and ground rods.

    d. Details of air terminal mounting and bonding to vents, chimneys, antennas, and other metallic structures.

    e. Cross-reference the materials provided with the manufacturer’s catalog numbers and cuts.

PART 2 - PRODUCTS

2-1 GENERAL

1. Products shall be UL-listed for use in lightning protection systems.

2. Products shall be Class I for structures not greater than 75 feet high and Class II for structures higher than 75 feet.

3. Air terminals shall be of copper construction.

2-1.01. Air Terminals

1. Air terminals shall project a minimum of 10 inches above the objects protected, and shall be located at intervals not exceeding 20 feet along ridges and around the perimeter of flat roof or gently sloping roofs.

2. Flat or gently sloping roofs exceeding 50 feet in width shall be provided with additional air terminals at intervals not exceeding 50 feet on the flat or gently sloping area.

3. Locate air terminals within 24 inches of the roof edge and outside corners of the protected area.

4. Provide air terminals for metal stacks, flues, and mechanical equipment having a metal thickness of less than 3/16 inch and not within a zone of protection of an air terminal.

5. Equipment with a metal thickness 3/16 inch or greater shall be bonded in accordance with code requirements.

6. Air terminals shall be No. 71, 1/2-inch by 12-inch (or longer, as required), constructed of solid copper, and shall use air terminal bases of cast bronze construction.

2-1.02. Conductors

1. Structures Less than 75 Feet High.

2. With Aluminum Roofs.

3. Main size conductors on the roof shall be No. 29, Class I copper lightning conductor, consisting of 29 strands of 17 AWG copper wire weighing 190 lbs. per 1000 feet.

4. Secondary bonding conductors shall be No. 14, secondary bonding conductor, consisting of 14 strands of 17 AWG copper wire.

2-1.03. Down Conductors

1. Down conductors shall be No. 29, Class I copper lightning conductor.

2. Conceal down conductors in exterior wall construction.

3. Use bimetallic connectors for the transition from aluminum roof conductors to copper down conductors.

2-1.04. Down Conductors

1. Down conductors shall be No. 29, Class I copper lightning conductor.

2. Conceal down conductors in exterior wall construction.

3. Provide buildings over 60 feet high with a conductor counterpoise cable constructed of 29/17 copper in conformance with NFPA code requirements.

2-1.05. Miscellaneous Hardware

1. Provide miscellaneous hardware as may be required for the installation of the lightning protection system.

2. The hardware shall be compatible with the indicated air terminal and conductor materials.

3. Nuts, bolts, and other fasteners shall be constructed of stainless steel.

4. Corrosion Protection

5. Provide corrosion protection at the junctions of dissimilar metals and at locations where the components of the lighting protection system may be subjected to corrosion.

6. Use bimetallic connectors and fittings for splicing and bonding dissimilar metals.

7. Bimetallic connectors shall be located not less than 18 inches above grade.

8. Copper components within 24 inches of a chimney or vent emitting corrosive gases shall be protected by a hot-dipped lead coating or by another method as approved by the ENGINEER.

2-1.06. Grounding Materials

1. Ground rods and ground conductors shall conform to the requirements of Section 16062 – Grounding.

2. Down conductors shall be connected to the ground rods using exothermic weld connections.

3. Structural Steel System.

4. Structural steel may be substituted for down conductors.

5. Roof penetrations from steel to perimeter cables shall be at intervals not exceeding 100 feet in accordance with the requirements of UL 96A, LPI 175, and NFPA 780.

6. Use exothermic welds for steel connections.

PART 3 - EXECUTION

3-1 GENERAL

1. The lightning protection system shall be installed in accordance with applicable code requirements by a Subcontractor certified in the following organizations:

    a. NFPA

    b. LPI

    c. UL

2. Bends in conductors shall be gradual, utilizing a radius of 8-inches or greater and forming an angle of at least 90 degrees.

3-1.01. Roof Penetrations

1. Roof penetrations shall be made using a conduit sleeve passing through a pitch pocket.

2. The CONTRACTOR shall construct the pitch pockets in such a way as to maintain the roofing integrity.

3-1.02. Interconnections Of Metals

1. Metal bodies within 6 feet of the conductor shall be bonded to the system with approved fittings and conductor.

2. Bonding of metallic objects and systems at roof levels and elsewhere on the structure shall be complete.

3. The primary bonds for metal bodies of conductance, which shall include the following items, shall be bonded with appropriate fittings and full-size conductor:

    - Roof mechanical equipment (where applicable).

    - Metal openings/hatches.

    - Exterior architectural metal fascia, curtain walls, or mullions, which extend the full height of the structure, shall be bonded, if not inherently bonded through the building frame.

    - Metal Bodies of Conductance

    - Metal bodies of inductance located within 6 feet of a conductor or object with secondary bonds shall be bonded with secondary cable and fittings.

4. Typical of these are:

    a) Roof flashings

    b) Parapet coping

    c) Gravel guards

    d) Isolated metal building panels or siding

    e) Roof drains and down spouts

    f) Roof insulation vents

    g) Other sizeable miscellaneous metal fabrications

3-1.03. Inspection And Acceptance

1. The lightning protection system shall be inspected, tested, and certified.
2. The CONTRACTOR shall retain the services of an independent inspector.
3. An LPI/UL Certificate of Inspection shall be furnished to the ENGINEER.

END OF SECTION

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SECTION 16951

FUNCTIONAL TESTING

PART 1 - GENERAL

1-1. SUMMARY

A. Section Includes: Electrical equipment and system testing requirements for the complete facility, including the following:

B.

1. Testing for each Well pump system

2. Operational Testing.

1-1.01. Submittals - Start-Up Plan

A. Provide functional testing plans and procedures for all project equipment and systems and for all modes of operation. Functional testing procedures shall be in the cause and effect format.

1-1.02. General Testing Procedures

A. Electrical Systems: As specified in this Section and the individual equipment specification sections.

1. Electrical testing shall be performed in two stages. The first stage shall consist of electrical equipment testing prior to energization and operation of electrical equipment. The following shall be submitted for OWNER and ENGINEER review prior to equipment startup and energization:

a. Completed field calibration, loop acceptance, and end-to-end acceptance testing data forms.
b. The following completed electrical equipment testing data forms:

1) Low-Voltage Cables.
2) Grounding Systems.
3) Rotating Machinery: AC Motors.

2. The second stage of testing shall involve the completion of functional testing which include all possible operating scenarios, alarm conditions, prohibitive interlocks, and indication functions. Contractor shall perform a “dry run” for all functional tests to ensure that systems are working properly prior to witnessing by the OWNER. After the “dry run” is successfully completed, CONTRACTOR shall provide minimum 48 hours notice to the OWNER that systems are ready for witnessed functional testing. The OWNER will witness functional testing and will initial all functional testing forms upon successful operation of systems.

1-1.03. Functional Testing

A. Functional testing shall not begin until Stages 1 of Electrical Testing have been completed for individual systems or pieces of equipment.

B. Functional testing shall be performed in multiple phases according to the completion and construction schedule of allowed maximum quantity of three to four well houses, that would be modified, in order to maintain the remainder wellfield in continuous operation.

C. The CONTRACTOR is responsible for functional testing for all project equipment and systems in all modes of operation.

D. Functionally test mechanical and electrical equipment for proper operation after general start-up and testing tasks have been completed for individual systems or pieces of equipment.

E. Verify that Controls of the well pump operate to the satisfaction of the Owner Representative.

F. Interconnection of the well pump controls and monitoring system with the new site PLC and SCADA command center controls shall be tested, and operation of the control system shall include verification with (Tampa Bay Water District) SCADA command center that the local well controls are functioning in remote mode, including well house control features such as existing security system, well level controls and existing ancillary instrumentation, such as water pressure transmitters and water flow meters.

1-1.04. Record Keeping

A. Maintain and submit following records generated during functional testing:

1. Daily logs of equipment testing identifying all tests conducted and outcome.

2. Data sheets of testing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 17500

INSTRUMENTATION AND CONTROL SYSTEM

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers the furnishing and installation of an instrumentation and control system The system shall be furnished as specified, complete with all hardware, input/output hardware, instrumentation, and all devices, accessories, appurtenances, testing, system commissioning and training necessary for proper operation.

1-1.02. PLC programming is the responsibility of Tampa Bay Water and is not in the scope of the contractor with exception for loading the PLC testing program furnished by Tampa Bay Water.

1-1.03. Associated Sections. This section also includes the equipment and services specified in the following sections.

Section 17530	PLC CONTROL PANELS
Section 17530-A	PLC INPUT OUTPUT LIST
Section 17560	INSTRUMENTATION – GENERAL REQUIREMENTS
Section 17562	FLOW INSTRUMENTS
Section 17563	PRESSURE INSTRUMENTS
Section 17565	MISCELLANEOUS INSTRUMENTS

1-2. GENERAL

1-2.01. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Designer.

1-2.02. General Equipment Stipulations. If requirements in this specification differ from those in a referenced General Equipment Stipulations, the requirements specified herein shall take precedence.

1-2.03. Drawings. The drawings indicate locations and arrangements of equipment and may include installation details, block DIAGRAMS, and one-line diagrams showing connections and interfaces with other equipment. The input/output (I/O) lists are attached as an appendix to the Programmable Logic Controllers section.

1-2.04. Principal components of the instrumentation systems shall be as indicated on the P&ID drawings and instrument device schedule attached to this section.

1-2.05. 1-2.03. Codes, Permits and Agency Approvals. All work performed and all materials used shall be in accordance with the 2020 National Electrical Code, and with applicable local regulations and ordinances. Where mandated by codes, panels, assemblies, materials, and equipment shall be listed by Underwriters' Laboratories. The Contractor shall, as part of his work, arrange for and obtain all necessary permits, inspections, and approvals by the authorities having local jurisdiction of such work. This shall include any third-party inspections and testing of panels and equipment.

1-2.06. Supplier's Qualifications. Equipment and software furnished under this section and under other related sections listed in the Scope paragraph above shall be designed, coordinated, and supplied by a single manufacturer or supplier, hereinafter referred to as the System Supplier. The System Supplier shall be regularly engaged in the business of supplying computer-based monitoring, control, and data acquisition systems. The Contractor shall utilize the services of a Tampa Bay Water pre-qualified System Supplier to coordinate all control system related items, to approve installation, calibrate and commission field instruments, and to perform all testing, training, and startup activities specified to be provided. Tampa Bay Water will supply an approved System Supplier list upon request.

1-2.07. Coordination. Systems supplied under this section shall be designed and coordinated by System Supplier for proper operation with related equipment and materials furnished by other suppliers under other sections of these specifications, under other contracts, and, where applicable, with related existing equipment. All equipment shall be designed and installed in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the manufacturer, and the manufacturer of the related equipment.

1-2.08. Related Equipment and Materials. Related equipment and materials may include, but will not be limited to, instrumentation, motor controllers, measuring devices, conduit, cable, and piping as described in other sections or furnished under other contracts.

1-2.09. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with System Supplier's equipment drawings and shall be as close as practical to the tag numbers used on the project drawings and device schedules. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the device. Hand-lettered or tape labels will not be acceptable.

1-3. GENERAL REQUIREMENTS

1-3.01. The drawings and specifications indicate the extent and general arrangement of the systems.

1-3.02. If any departures from the drawings or specifications are deemed necessary by System Supplier, details of such departures and the reasons shall be submitted to ENGINEER for review with or before the first stage submittal. No departures shall be made without prior written acceptance.

1-3.03. The specifications describe the minimum requirements for hardware and software. Where System Supplier's standard configuration includes additional items of equipment or

software features not specifically described herein, such equipment or features shall be furnished as a part of the system and shall be warranted as specified herein.

1-3.04. Governing Standards. Equipment furnished under this section shall be designed, constructed, and tested in accordance with IEEE 519, ANSI C37.90, FCC Part 15 - Class A, and NEMA ICS-1-109.60.

1-3.05. Dimensional Restrictions. Layout dimensions will vary between manufacturers and the layout area indicated on the drawings is based on typical values. The System Supplier shall review the contract drawings, the manufacturer's layout drawings and installation requirements, and make any modifications requisite for proper installation subject to acceptance by ENGINEER. At least three feet of clear access space shall be provided in front of all components of the instrumentation and control system components.

1-3.06. Workmanship and Materials. System Supplier shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

1-3.07. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and thicknesses so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except for testing.

1-3.08. Corrosive Fluids. All parts which are exposed to corrosive conditions shall be made from corrosion resistant materials. System Supplier shall submit certification that the instrument manufacturer approves the selection of materials of primary elements that are in contact with the specified process fluid to be inert to the effects of the process fluid.

1-3.09. Appurtenances. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, and isolation devices shall be furnished as needed for proper performance of the equipment.

1-3.10. Programming Devices. A programming or system-configuring device shall be provided for systems that contain any equipment that requires such a device for routine calibration, maintenance, and troubleshooting. The programming device shall be complete, newly purchased for this project, and shall be in like-new condition when turned over to OWNER at completion of start-up.

1-4. SUBMITTALS

1-4.01. Complete dimensional, assembly, and installation drawings, wiring and schematic diagrams; and details, specifications, and data covering the materials used and the parts, devices and accessories forming a part of the system furnished, shall be submitted in accordance with the submittals section, and as described below.

1-4.02. Submittal data shall be grouped and submitted in three separate stages. The submittals for each stage shall be completed before submittals of subsequent stages are submitted. Incomplete submittals, submittals not conforming to the submittal requirements,

individual drawings and data sheets submitted at random intervals will not be accepted for review and returned.

1-4.03. Review or approval of submittals shall not relieve the Contractor from providing a complete and functional system.

1-4.04. Submit, in accordance with any referenced project submittals section and Section 01300, shop drawings to establish compliance with the project specifications and drawings. These shop drawings shall fully demonstrate that the equipment and services to be furnished will comply with the provisions of this Section and shall provide a true and complete record of the equipment as manufactured and delivered.

1-4.05. Submittals shall be made in both electronic and hardcopy format. Electronic submittal shall be in Adobe Portable Document Format 'pdf'. Hardcopy of submittals shall be bound in separate three-ring 'D' binders no larger than 3 inches, with an index, sectional dividers, and with all drawings reduced to a minimum size of 11-in by 17-in for inclusion within the binder. Submittals shall be made as follows:

1-4.06. 1-4.01. Field Instruments. This submittal shall provide complete documentation of all field instruments using ISA-20 format. A complete Bill of Materials (BOM) listing all instrumentation equipment shall be provided.

1-4.07. Provide ISA data sheets and/or equipment specification sheets for each instrument listing model numbers, options, and ancillary devices that are being provided. Provide an index, proper identification, and P&ID tag cross referencing. The sheets shall include, but not be limited to, the following information:

a. Instrument P&ID ISA tag number.
b. Instrument description, location and process function.
c. Manufacturer's complete model number.
d. Instrument maximum performance specifications.
e. Instrument calibrated range.
f. Instrument input - output signal characteristics.
g. Instrument accuracy.
h. Instrument repeatability.
i. Instrument materials of construction.
j. Environmental specifications.
k. Electrical and/or pneumatic requirements.
l. Electrical hazardous area classification.
m. Physical size with dimensions, enclosure NEMA classification, and mounting details.
n. Specific mounting or installation details including calibration manifolds, mounting brackets, etc. furnished with the instrument.
o. Calibration or communications protocols provided(Hart, fieldbus, etc).
p. Isolation diaphragm provided

q. Additional instrument options or calibration / test equipment provided
r. Instrument sizing calculations where applicable

1-4.08. PLC Control System Hardware: This submittal shall provide complete documentation of the proposed hardware (PLC's, termination cabinets, communication equipment, cables, peripherals, etc.). A complete Bill of Materials (BOM) listing all equipment shall be provided. The submittal shall include the following as a minimum:

a. A complete schematic system block diagram(s) showing the interconnections between major hardware components including, but not limited to: panels, power supplies, consoles, telemetry equipment, local PLC processors, Uninterruptible Power Supplies (UPS), and vendor supplied PLC equipment. Include Ethernet address, field bus node address, Modbus node address, etc. as applicable.
b. Furnish a manufacturer's cut sheet for each hardware component listing all model numbers, options, auxiliary and ancillary devices that are being provided. Provide an index, proper identification, and cross referencing. The cut sheets shall include, but not be limited to the following data: P&ID Drawing ISA tag number (if applicable), device name and function, manufacturer's complete model number, device location, device environmental and electrical requirements, communications protocols, and device hazardous area classification (if applicable).
c. Provide a PLC Input/Output(I/O) list for all signals connected to each PLC. The list shall be organized by PLCs. The I/O list shall be submitted in a Microsoft Excel™ 2019 or later electronic file format on a CD and on 8 ½ by 11 hard copy. The list shall contain the following fields: PLC tag, point ISA tag, point description, I/O type (AI, AO, DI, DO, Spare), analog calibrated range in engineering units, digital point active state and analog signal alarm limits.

1-4.09. Control Panels and Panel Mounted equipment. This submittal shall provide complete documentation of all control panels, panel instruments, field surge protection devices, and panel components. A complete Bill of Materials (BOM) listing all instrumentation and control equipment shall be provided. The submittal shall include the following:

a. Provide equipment specification cut sheets for each panel component provided clearly listing all model numbers, options, electrical characteristics, environmental characteristics and performance ratings. Provide an index, proper identification, and cross referencing to P&ID tags as applicable.
b. Provide a field wiring, panel wiring, panel field terminals, and conduit identification scheme for use in panel construction and field terminations.
c. Provide detailed drawings for all control panels, consoles and/or enclosures which shall include:
    1. Panel assembly and layout Drawings to scale. Drawings shall include base, front, and interior subpanel layouts.
    2. Panel materials of construction, NEMA rating, mounting details, and optional accessories (sun shields, air conditioning).
    3. Panel internal wiring diagrams showing all power connections, panel power

derivation and distribution, fuse and circuit breaker sizes, surge protection devices, and grounding arrangement.

4. Panel external loop wiring diagrams showing interconnections between panels and all field equipment including the field equipment terminal numbers and intermediate termination panel numbering if applicable.
5. Provide power requirements and heat dissipation calculations for each panel.

Provide color selection samples for selection by the OWNER.

1-4.10. Spare Parts This submittal shall provide a combined and complete listing of all spare parts from all specification sections on the project provided by the System Supplier.

a. The submittal shall be indexed by specification section number and list all spare parts and disposables provided under that specification section.
b. The submittal shall contain the specific specification paragraph reference for the component, the tag, description and complete model number, and the supplier and supplier's contact number.

1-4.11. Operation and Maintenance Manuals
Complete system documentation, in the form of Operation and Maintenance Manuals shall be submitted and approved before the commencement of field acceptance testing. O&M Manuals shall include:

a. Manufacturer's instruction manuals for each type of equipment furnished. When instruction booklets cover more than one specific model or range of device, product data sheets shall be included which indicate the device model number and other special features.
b. ISA type data sheets and calibration sheets for every instrument furnished. Include any additional calibration sheets for instruments not furnished, but require calibration for proper operation of the system.
c. As-Built panel fabrication and wiring drawings from control panel to final device including intermediate panels if used. Drawings include all terminal numbers and wire numbers.
d. Panel interconnection drawings to field device drawings including field terminal numbers.
e. Inventory and location list of all available spare parts provided including part description, quantity provided, model number, ordering part number, on site storage location, and supplier contact information. Any spare parts used during startup shall be replaced by the System Supplier.

1-4.12. Factory Acceptance Test Plan Within 45 days of the scheduled Factory Acceptance Test, the System Supplier shall submit the final Factory Acceptance Test plan. All documentation shall be submitted and approved before the commencement of any acceptance testing. The plan shall include as a minimum (submitted in both electronic and hardcopy):

a. A three ring 'D" notebook organized and indexed per the approved preliminary test plan, all signoff forms, all test procedures and methods, testing schedule, and any other pertinent data required for the test.

b. A list of items or equipment that can not be tested or simulated at the FAT and must be tested in the field.
c. Sample testing sign-off documents which support the proposed testing procedure.
d. An outline of the proposed testing sequence including anticipated duration for each test module. At a minimum, test outline and test documentation should provide for:
    1. PLC I/O verification.

1-4.13. System Installation, Startup and Site Demonstration Plan. Within 30 days of the scheduled Factory Acceptance Test, the System Supplier shall submit an equipment installation, I/O field testing and commissioning plan. The System Supplier, Contractor, and other Equipment Suppliers shall jointly determine a sequence and schedule for the installation of I&C components and subsequent testing. All installation and startup activities must be coordinated and approved by the OWNER before they can proceed.

1-4.14. Final System Documentation. Within 30 days of the successful completion of startup and commissioning, the Contractor shall submit final documentation for the project. The documentation shall reflect the As Installed and As Accepted final state of the system. This shall include:

a. Updated field wiring, panel wiring, or network drawings including any test or startup data.
b. Final calibration data sheets for all instrumentation.
c. Final configuration data for all devices including alarm and control setpoints, all device switch settings, and network settings.

1-5. PREPARATION FOR SHIPMENT

1-5.01. All electronic equipment and instruments shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements, shall be kept dry at all times, and shall not be exposed to adverse ambient conditions.

1-5.02. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of ENGINEER.

1-5.03. Each shipment shall include an appropriate shipping list that indicates the contents of the package, including the specific instrument tags. The shipping list shall be accessible without exposing the instruments to the atmosphere. The shipping list shall also contain any cautionary notes regarding storage of the instruments, including requirements to protect the instrument from static discharge, desensitizing chemicals (solvents, paints, etc.), or ambient atmospheric conditions.

1-5.04. Individual instruments shall be appropriately tagged or labeled to positively identify the device. All identification shall be visible without the need to unpack the instrument from its protective packaging.

1-5.05. Instrument shipment and storage requirements shall be coordinated with ENGINEER or OWNER prior to shipment. System Supplier shall provide adequate storage and be ready to accept the shipment before shipping any equipment to the site. Additional shipping and storage requirements shall be as detailed in the individual instrument specifications.

1-5.06. Components which are shipped loose due to transportation limitations shall be assembled and disassembled by the manufacturer prior to shipment to assure that all components fit together and are adequately supported.

1-6. DELIVERY, STORAGE, AND SHIPPING

1-6.01. Shipping shall be in accordance with the shipping section. Handling and storage shall be in accordance with the handling and storage section.

1-7. SPARE PARTS

1-7.01. Spare parts and consumable items are specified in other sections.

1-7.02. Packaging. All spare parts shall be delivered to OWNER before final acceptance of the system. Packaging of spare parts shall provide protection against dust and moisture and shall be suitable for storage. Circuit boards and other electronic parts shall be enclosed in anti-static material. All packages shall be clearly marked with the manufacturer's name, part number or other identification, date of manufacture, and approximate shelf life.

1-7.03. Replacement. System Supplier may utilize spare parts and supplies during system installation, de-bugging, startup, or training, but shall restore all such materials and supplies to the specified quantities before final acceptance of the systems.

PART 2 - PRODUCTS

2-1. GENERAL REQUIREMENTS

2-1.01. All equipment furnished under each section referenced in SCOPE is a part of this section and shall be selected by System Supplier for its superior quality and intended performance. Equipment and materials used shall be subject to review. Specific equipment shall be furnished as specified with no exceptions. These items are indicated in the applicable sections.

2-1.02. Standard Products. The systems furnished shall be standard products. When two or more units of the same type of equipment are supplied, they shall be the products of the same manufacturer; however, all components of the systems furnished hereunder need not be the products of one manufacturer unless specified herein.

2-1.03. To the extent possible, instruments used for similar types of functions and services shall be of the same brand and model line. Similar components of different instruments shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished.

2-2. PERFORMANCE AND DESIGN REQUIREMENTS

2-2.01. The design of the systems furnished hereunder shall utilize concepts, techniques and features that provide maximum reliability and ease of maintenance and repair. The systems shall include board-level devices such as light emitting diodes or other indicators to facilitate quick diagnosis and repair. Diagnostic software shall be furnished to facilitate system-level troubleshooting.

2-2.02. When redundant hardware is provided, the system shall be capable of performing all specified functions, without reconfiguring hardware or software, with only one device of each category in service.

2-2.03. Factory Assembly. Equipment shall be shipped completely factory assembled, except where its physical size, arrangement, configuration, or shipping and handling limitations make the shipment of completely assembled units impracticable.

2-3. POWER SUPPLY AND INSTRUMENT SIGNALS

2-3.01. The power supply to all control system equipment will be 120 volts, 60 Hz, single phase. System Supplier shall be responsible for distribution of power among enclosures, consoles, peripherals, and other components of the system from the power supply receptacles and junction boxes indicated on the drawings. Power distribution hardware shall include cables and branch circuit over-current protection installed in accordance with the electrical section.

2-3.02. Unless otherwise indicated, the AC power to the instrumentation will be unregulated 120 volts ac. Unless otherwise indicated, all transmitted electronic analog instrument signals shall be 4-20 mA dc and shall be linear with the measured variable.

2-3.03. Power Supplies. Power supplies for voltages other than those listed above shall be an integral part of the equipment furnished. Internal power supplies shall be regulated, current limiting, and self-protected.

2-3.04. Surge Withstand. All equipment shall meet all surge withstand capability tests as defined in ANSI C37.90 without damage to the equipment.

2-3.05. Uninterruptible Power Supply. An individual UPS shall be provided with each PLC panel as indicated in this section or as shown in the drawings. The System Supplier shall be responsible for coordinating the size of the UPS unit with the equipment furnished hereunder, and shall advise ENGINEER if a unit of higher capacity is necessary. For 24VDC control power, The UPS shall be PULS UB10.245 or approved equal with external battery modules.

2-4. SERVICE CONDITIONS AND ENVIRONMENTAL REQUIREMENTS

2-4.01. The equipment provided for the instrumentation and control system shall be suitable for the service conditions specified in the attached equipment sections.

2-4.02. All equipment shall be designed and selected to operate without degradation in performance throughout the environmental extremes specified. Equipment shall be designed to

prevent the generation of electromagnetic and radio frequency interference and shall be in compliance with FCC Rules and Regulations, Part 15, for Class A computing devices.

2-4.03. Ambient Temperature and Elevation. All equipment located in non air conditioned indoor areas shall be suitable for an ambient temperature range of 0°C to 50°C and a relative humidity of 10 to 95 percent, non-condensing. All equipment located outdoors shall be suitable for operation in an ambient temperature range 0°C to 60°C and a relative humidity of 5 to 100 percent. Heaters and air conditioning/cooling equipment shall be provided where essential to maintain equipment within its manufacturer-recommended operating ranges.

2-4.04. All equipment and instruments shall be designed to operate at the site elevation of 500 ft

2-4.05. Deleterious Effects. All system equipment will be installed in areas without anti-static floor construction and without any provisions for control of particulates or corrosive gases other than ordinary office-type HVAC filtering. System Supplier shall furnish any additional air cleaning equipment, anti-static chair pads, or other protective measures necessary for proper operation of the system.

2-4.06. All input/output hardware shall meet or exceed, without false operation, all requirements of NEMA ICS-1-109.60, Electrical Noise Tests.

2-4.07. Lightning Protection. In addition to other environmental protection specified herein, the entire system shall be provided with lightning protection. Lightning protection measures shall include the following:

2-4.08. Grounding. All major components of the system shall be grounded in accordance with Section 16050-3-10. Any modifications recommended by System Supplier shall be submitted to OWNER and ENGINEER for review and approval.

2-4.09. Surge Suppressors. Surge and lightning suppressors shall be non-faulting, non-interrupting, self clearing, and shall protect against both line-to-line and line-to-ground surges. Surge devices shall be as specified in other Sections. Surge protective devices shall be applied for the following:

a. All 120 vac power connections to control panels, field instruments, and equipment.
b. All analog signal circuits shall be protected at both the transmitter and the control system end of the circuit. Surge protection devices shall not impede or interfere with the use of smart transmitter calibration/communication.
c. All metallic pair (twisted and untwisted) conductor local area network and data highway termination points where any part of the data highway cable is routed outside of the building envelope.
d. All serial PLC data highway and remote I/O network termination points where any part of the circuit is routed outside of the building envelope.

2-5. INSTALLATION TEST EQUIPMENT

2-5.01. All necessary testing equipment for calibration and checking of system components shall be provided by System Supplier. System Supplier shall also furnish calibration and maintenance records for all testing and calibration equipment used on the site if requested by ENGINEER.

PART 3 - EXECUTION

3-1. INSTALLATION REQUIREMENT

3-1.01. The installation of equipment furnished hereunder shall be by the Contractor or their assigned subcontractors.

3-1.02. Field Wiring. Field wiring materials and installation shall be in accordance with the electrical section.

3-1.03. Instrument Installation. Instruments shall be mounted so that they can be easily read and serviced and so that all appurtenant devices can be easily operated. Installation details for some instruments are indicated on the drawings.

3-1.04. Salvage of Existing Equipment. Existing equipment and materials removed or replaced under this contract shall be disposed of.

3-1.05. Any mounting brackets, enclosures, stilling wells, piping, conduits, wiring, or openings that remain after removal of equipment and support hardware shall be removed or repaired in a manner acceptable to OWNER and ENGINEER.

3-1.06. Transmitters or switches containing mercury shall be removed and disposed of by personnel trained in the handling of hazardous materials and using approved procedures.

3-2. SYSTEMS CHECK

3-2.01. System Supplier shall provide the services of a trained and experienced field supervisor to assist the installation contractor during installation, and to calibrate, test, and advise others of the procedures for installation, adjustment, and operation.

3-2.02. Field Manager. The System Supplier shall appoint a field services manager who shall be responsible for the coordination of all system check-out and startup activities, and who shall be immediately available to Engineer and Owner by phone or on site for the duration of this project.

3-2.03. Field Inspection at Delivery. The field supervisor shall inspect major equipment items within five working days of delivery, to assure that the equipment was not damaged during shipment and shall supervise or assist with unpacking, initial placement, and initial wiring of the system.

3-2.04. Field Calibration of Instruments. After each instrument has been installed, a technical representative of System Supplier shall calibrate each instrument and shall provide a

written calibration report for each instrument, indicating the results and final settings. The adjustments of calibrated instruments shall be sealed or marked, insofar as possible, to discourage tampering. Instrument calibration shall be done before checkout of the system operation. A typical instrument calibration report is attached to the end of this section. This shall include all new instrumentation provided by the System Supplier, and all existing instrumentation required by his control system for proper operation of the plant. If the existing instrumentation is unable to be calibrated, the System Supplier shall notify the OWNER and ENGINEER in writing and it will become the OWNER responsibility to repair or replace the instrument.

3-2.05. Training for Installation Personnel. The field supervisor shall train the installation personnel in reading and understanding submittal drawings, review any OWNER special coordination requirements or procedures, and in the correct installation and wiring procedures for the equipment. Two days shall be included for this training.

3-3. FIELD INSPECTION PRIOR TO START UP

3-3.01. After installation and wiring connections are complete, the field supervisor, with additional System Supplier's personnel shall verify that each external connection to the system is correctly wired and field process components and devices are functioning as intended.

3-3.02. Analog Signals. Analog input signals shall be simulated at the transmitting source, and verified to be received at the proper register addresses in the control system. Analog outputs shall be generated at the control system, and verified to be received with the correct polarity, at the respective receiving device.

3-3.03. Discrete Signals. Discrete input and output signals shall be simulated and verified that they are received at the respective receiving device, and at the proper voltage.

3-3.04. Devices by Other Suppliers. If interrelated devices furnished by other suppliers or under other contracts, such as valve actuators, motor controls, chemical feeders, and instruments, do not perform properly at the time of system checkout, the field supervisor shall use suitable test equipment to introduce simulated signals to and/or measure signals from these devices to locate the sources of trouble or malfunction.

3-3.05. System Check Out Report. The System Supplier shall submit a written report on the results of such tests to ENGINEER & OWNER. System Supplier shall prepare a testing procedure to be approved by OWNER and ENGINEER that shall demonstrate that the system conforms to the specifications. The testing procedure shall be submitted at least 30 days in advance of testing. The testing shall be conducted by System Supplier and witnessed by OWNER and/or ENGINEER.

3-3.06. System Supplier shall notify ENGINEER and OWNER in writing at least 14 days before any proposed testing date. If a test is concluded unsuccessfully, the test shall be repeated. System Supplier shall reimburse OWNER and ENGINEER for all expenses incurred in connection with attending repeated factory or site testing necessitated by system failure or inadequate preparation.

3-4. TESTING

3-4.01. The System Supplier shall test all provided equipment at his facility prior to shipment and again after installation. Unless specified in other specification sections, all equipment provided by the System Supplier shall test as a single, fully integrated system.

3-4.02. The System Supplier shall provide all required testing hardware and software to fully test the hardware functionality of the system. All components of the system shall be completely networked as shown on the system block diagram and all aspects of the communication system functional.

3-4.03. As a minimum, testing shall include:

a. Factory Acceptance Test (FAT)
b. Site Demonstration Test (SDT)

3-4.04. 3-5.01. Factory Acceptance Testing (FAT). After system assembly at System Supplier's facility, the system shall be tested before the system is shipped to the site. Testing shall be conducted which progressively demonstrate that the supplier supplied component subsystems conform to the specifications. Testing shall be in two phases, an unwitnessed phase and a witnessed phase.

3-4.05. The System Supplier shall be responsible for staging the equipment required for the FAT in a neat and orderly manner in an environmentally conditioned location approved by OWNER and ENGINEER.

3-4.06. Preliminary (Unwitnessed) Factory Acceptance Testing. The System Supplier shall be responsible for conducting an ongoing testing process during system assembly and staging to ensure that the system hardware meet the functional requirements as defined by the specifications. Preliminary testing will normally be unwitnessed; however the OWNER reserves the right to have OWNER staff and/or ENGINEER witness portions of the preliminary testing. At a minimum, preliminary testing shall be as described below.

3-4.07. The System Supplier shall perform a complete, end-to-end checkout for every I/O point from the field termination assembly. The I/O Point Checkout shall be conducted on all System Supplier furnished PLCs. System Supplier shall test every input and output point for proper operation, including wired spares. Test signals shall be injected to verify the operation of each Analog Input (AI) and Discrete Input (DI). Each Analog Output (AO) and Discrete Output (DO) shall be also tested for proper operation.

3-4.08. The System Supplier shall develop a Point Checkout Form for each I/O point. The checkout form shall include the point tag, descriptor, all checks performed for the point, date and time of the check, and a signoff block for the System Supplier's representative. The completed I/O Checkout forms for all points shall be submitted for OWNER and ENGINEER review prior to scheduling the FAT.

3-4.09. The following items shall be checked for each I/O point:

a. For each analog input point:
   - Value at 0%, 25%, 50%, 75%, & 100% of full scale (ramped in both directions)
b. For each analog output point:
   - Milliamp reading at 0%, 25%, 50%, 75%, & 100% of full scale (ramped in both directions).
c. For each analog (input and output) point:
   - Constant 50% signal for two (2) minutes to verify the absence of signal drift (test conducted with surge and isolator in circuit).
d. For each discrete input point:
   - Status and Alarm points - proper indication
e. For each discrete output point:
   - Proper operation (latching or momentary)

3-4.10. 3-5.03. Witnessed Factory Acceptance Testing. Prior to scheduling the witnessed FAT, the System Supplier shall have successfully completed the un-witnessed test using the approved test procedures. At least 14 days prior to the requested start date, the System Supplier shall submit a written request for scheduling the FAT. This written request shall include a certification by the System Supplier Project Manager that the FAT un-witnessed testing has been successfully completed and include and copies of the completed test documentation.

3-4.11. Using the approved FAT Procedures, System Supplier, ENGINEER and OWNER shall jointly conduct a Factory Acceptance Test replicating the un-witnessed tests referenced in 3-5.02 under simulated operating conditions.

3-4.12. The following equipment shall be staged for the factory test:

a. All PLCs provided by the System Supplier. These PLCs shall be fully constructed and installed in panels ready for shipment to the project site.

3-4.13. The test results shall be recorded in the test procedure document.

3-4.14. 3-5.04 Daily Testing Schedule. The System Supplier shall begin each day of witnessed testing by meeting with the OWNER and ENGINEER. The purpose of this meeting is to review the test results from the previous day and to preview the testing for the current day.

3-4.15. The System Supplier shall make two sets of the following documentation available for use by the OWNER and ENGINEER during the FAT:

a. All drawings, specifications, addenda and change-orders.
b. All FAT Procedures
c. Approved Shop drawings and hardware submittals for equipment being tested.
d. Preliminary O&M Manuals.

3-4.16. System Hardware Testing. Prior to the beginning of testing, all system components shall be inventoried. The System Supplier shall prepare a System Configuration Inventory List which contains each separate system component including manufacturer, model and part number, description, and serial number. This list shall be annotated to reflect the status of all system components at the time of FAT. The System Supplier shall maintain the System Configuration Inventory List until Final Acceptance. The Inventory List shall be updated to reflect any equipment replacement or substitutions.

3-4.17. A physical inspection shall be conducted for all hardware devices to assess structural integrity and component layout. As a minimum, the following items shall be inspected and verified:

a. Control panel frame structure, sub-panel mounting, paint work and finish, and panel dimensions.
b. Control panel wiring layout and control and power wire routing.
c. Equipment mounting and equipment tagging.
d. PLC and I/O system physical layout.
e. Panel ventilation, device clearances, and environmental conditioning.
f. UPS installation.

3-4.18. Processors, processor modules, and peripheral devices associated with the system shall be assembled together as they will be installed in the field and shall be tested. The test shall demonstrate proper operation of each hardware device and communications among devices. All standard hardware diagnostic programs shall also be demonstrated.

3-4.19. Uninterruptable Power Supply Testing. Each UPS shall be fully tested to verify conformity with the specifications. Testing shall include:

a. Load Capacity – Testing will confirm the UPS load capacity is greater than the system connected load plus specified excess capacity.
b. Backup Time – Test will confirm the UPS meets the specified backup time.
c. UPS Status and Alarm Signals – Test will confirm the specified UPS status and alarm signals are functional.
d. UPS Battery Recharge Time – Test will confirm the specified UPS fully discharged battery recharge time.

3-4.20. FAT Completion. Throughout the FAT, System Supplier shall maintain a listing of all discrepancies. At the conclusion of all formal testing, OWNER/ENGINEER shall review the FAT punch list with the System Supplier to determine resolution. If it is determined that discrepancies exist which affect critical system functions, the System Supplier shall correct those deficiencies and conduct an FAT retest prior to shipment. System Supplier shall reimburse OWNER and ENGINEER for all expenses incurred in connection with attending repeated factory or site testing.

3-4.21. If it is determined that the system deficiencies do not significantly affect system functionality, the OWNER and ENGINEER may grant the System Supplier written approval for shipment. However, all FAT punch list items shall be corrected and demonstrated to OWNER and ENGINEER prior to the start of the Site Demonstration Test.

3-4.22. Site Demonstration Test (SDT) After a successful FAT and written approval from the OWNER, the system may be shipped to the site. Field testing shall be conducted in two phases. The un-witnessed Preliminary Phase performed by the System Supplier, and the witnessed phase.

3-4.23. After field installation of the system and calibration of all field instruments necessary to the proper operation of the control system, the System Supplier shall perform a preliminary test to ensure all components and systems are still functioning properly, and that all field wiring is terminated correctly. The checkout shall be on a loop by loop basis.

3-4.24. Upon successful completion of the preliminary testing, the System Supplier shall notify the OWNER and ENGINEER and request a date to begin the witnessed SDT.

3-4.25. The SDT shall be performed to verify complete operation of the system, requiring a repeat of the Factory Acceptance Test but with the equipment installed at the permanent sites and connected to the process I/O, and shall include additional tests required to verify field-installed equipment which was not available at the factory.

3-4.26. The System Supplier shall:

a. Repeat the hardware tests used during FAT (complete with actual field wiring) connected to physical end point devices and instruments rather than simulation.
b. Demonstrate all equipment control and status monitoring functions. Actuation of field devices shall be closely coordinated with OWNER staff.
c. Record system performance parameters and system responses under field operational conditions.
d. Verify accuracy of documentation, especially operator’s manuals, software documentation, record drawings, and site operating instructions.

3-4.27. Completion of Test. Successful completion of the site acceptance test, including the operational demonstration, is prerequisite to Substantial Completion as specified in the Supplementary Conditions.

3-5. TRAINING

3-5.01. System Supplier shall conduct training courses for personnel selected by OWNER. Training shall be conducted by experienced instructors who are familiar with the specific system supplied. Where noted, the System Supplier shall contract the equipment manufacturer to provide the training. All training shall be at the OWNER facility.

Training Category	Hours/ Session	No. of Sessions	Provided By	Students Per Session	Total Hours
Instrument Maintenance	2	2	Instrument Supplier	10	4

3-5.02. General Training Requirements. In general, the System Supplier's standard training courses may be used to meet the training objectives specified. Where standard courses do not meet these objectives, additional coursework shall be developed. Clock hour requirements for each level of training are listed on the data sheet. A "clock hour" is defined as one hour of instruction or supervised training exercise. Training hour requirements noted in the data sheet are the number of hours of training to be provided for each student. Additional training time shall be provided if considered necessary to meet the training objectives.

3-5.03. Training Costs. All costs associated with the training program, including travel, lodging, and per diem expenses for OWNER personnel to attend off-site training programs, shall be the responsibility of System Supplier and shall be included in the contract price.

3-5.04. Lessons. Training lesson plans and other information for the second stage submittal as defined herein shall be submitted at least 30 days prior to the start of training.

3-5.05. Video Recording. All training sessions shall be video recorded for OWNER future use in training other personnel at the OWNERs discretion. Video recorded sessions shall be saved to DVD/R media for delivery to OWNER. Videos of System Supplier's standard training programs may be substituted if they cover the same topics and are developed for the same versions of hardware and software. Furnishing videos of standard training programs shall not relieve System Supplier from any of the training requirements specified herein.

3-5.06. Instrument Training. Training on the calibration, maintenance, troubleshooting, and repair for the instrument devices provided under this project shall be provided. Training shall also be provided for any hand-held or computer-based calibration devices and their associated software.

3-6. EXTENDED SUPPORT OR WARRANTY

3-6.01. The process control system shall be warranted for a period of one year(s) beginning immediately after written notice of final acceptance. The service shall include all travel and living expenses for repair of all equipment failures, and phone and personal support as needed.

END OF SECTION

INSTRUMENT CALIBRATION SHEET

INSTRUMENT NAME & SERVICE:		
BRAND & MODEL NO.:		
TAG OR LOOP NO.:		
MAXIMUM INPUT/OUTPUT RANGE:	CALIBRATED RANGE:	
CALIBRATION TEST INPUT:	INSTRUMENT MEASURED OUTPUT:	REQUIRED OUTPUT:
PROPORTIONAL BAND:		
RESET:		
POSITION OF SWITCHES, JUMPERS, ETC.		
COMMENTS:		
DATE OF CALIBRATION: CALIBRATED BY:		
Tampa Bay Water	INSTRUMENT CALIBRATION REPORT	Figure 1-17500

SECTION 17530

PLC CONTROL PANELS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. The contractor shall furnish and install PLC control panels as indicated on the drawings and accordance with the contract documents for each of the following well sites:

MBR-151, MBR-153, MBR-154, MBR-159, MBR-160, MBR-164,
MBR-150, MBR-155, MBR-156, MBR-158, MBR-165, MBR-166,
MBR-167, MBR-168, MBR-169

1-2. GENERAL

1-2.01. Equipment furnished and installed under this section shall be fabricated and assembled in full conformity with the drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

1-2.02. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials provided under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

1-2.03. Drawings. General dimensions and arrangements are indicated on the drawings. System Supplier shall be responsible for coordinating the console and enclosure sizes and arrangements to accommodate the equipment provided.

1-3. SUBMITTALS

1-3.01. Submittals shall be made as specified in the Instrumentation and Control System section.

1-4. DELIVERY, STORAGE, AND SHIPPING

1-4.01. Delivery, storage, and shipping shall be as per The Instrumentation and Control System section.

1-5. SPARE PARTS

1-5.01. Furnish two of each type of surge protector used.

PART 2 - PRODUCTS.

2-1. GENERAL PANEL DESIGN AND FABRICATION FEATURES

2-1.01. All panel enclosures furnished shall conform to the stipulations of NEMA ICS-6-1993. The following paragraphs describe general fabrication specifications for the PLC cabinets, instrument panels, consoles, enclosures, and subpanels. The System Supplier is to provide all necessary components and devices, brackets, wiring, fans, cooling, and heating devices necessary for a complete and operational system.

2-1.02. Panel Arrangement. Install all components and wiring in a neat and professional manner as to allow for easy maintenance and installation. Components should be installed and wired such that the removal of a single component does not affect the functionality of other components.

2-1.03. Power Entrance. The power entrance to each panel shall be provided with a surge protection device. Surge protectors shall be nominal 120 volts ac with a nominal clamping voltage of 200 volts. Surge protectors shall be of a non-faulting and non-interrupting design, with a response time of not more than 25 nanoseconds.

2-1.04. Power wiring: Power wiring shall be segregated from other wiring. Normal panel power is 120 VAC single phase. Where higher voltages are used in the panel, provide personnel shields to prevent accidental contact. Provide a warning label on panel front. Power distribution wiring on the line side of panel fuses shall be minimum 12 AWG. Secondary power distribution wiring shall be minimum 14 AWG. Wiring for ac power distribution, dc power distribution, and control circuits shall have different colors and shall agree with the color-coding legend on System Supplier's panel wiring diagrams. With the exception of electronic circuits, all interconnecting wiring and wiring to terminals for external connection shall be stranded copper, insulated for not less than 600 volts, with a moisture resistant and flame retardant covering rated for not less than 90°C.

2-2. INSTRUMENT AND CONTROL WIRING

2-2.01. All internal panel wiring shall be type MTW stranded copper wiring rated not less than 600 volts. Electronic analog circuits shall be twisted and shielded pairs rated not less than 300 volts. Analog circuits shall be separated from ac power circuits. Wires within the panel shall conform to the minimum size as shown in the table below.

Type	Min. Wire Size	Color
AC Control	14 AWG	Red
DC Control	14 AWG	Blue
Analog Circuits	18 AWG Twisted Pair	Red(+), Blk(-)

2-2.02. All wiring shall be grouped or cabled and firmly supported inside the panel. Each individual wire in power, control, and instrumentation circuits shall be provided with identification markers at each point of termination. The wire markers shall be positioned to be readily visible for inspection and the identification numbers shall match the identification on the supplier's panel wiring drawings. Wiring shall be bundled in groups and bound with nylon cable ties or routed in Panduit or similar nonmetallic slotted ducts. Ducts shall be readily accessible within the panel, with removable covers, and with space equal to at least 40 percent of the depth of the duct remaining available for future use after completion of installation and field wiring. Sufficient space shall be provided between cable groups or ducts and terminal blocks for easy installation or removal of cables. Splicing of wires is not permitted. Signal wiring for multiple units should be such that the removal of a single unit shall not affect the operation of an adjacent unit.

2-2.03. Signal Wiring. Surge protection shall be provided for all field analog and all PLC digital signals. The surge protection shall not interfere with the circuit normal operation and be maintenance free. Surge protection shall be connected to a good earth ground of limited length. If this is not possible, locate the surge protection devices in a termination enclosure where a good ground is available. Surge suppressors shall be DIN rail mounted.

2-2.04. Digital Surge Protectors. All digital circuits shall be protected at the panel end with surge protection. Surge protectors shall provide line-to line and line-to-ground protection.

2-2.05. Analog Surge Protectors All analog input and output circuits shall be protected at both the panel and field ends with surge protection.

2-2.06. Analog Signal Isolators All analog input and output circuits shall be isolated from the field with single channel, fixed standard range, three way signal isolators.

2-2.07. Terminal Blocks. Terminal blocks for external connections shall be suitable for 12 AWG wire and shall be rated 30 amperes at not less than 300 volts. Terminal blocks shall be fabricated complete with marking strip, covers, and pressure connectors. Terminals shall be labeled to agree with identification shown on the supplier's submittal drawings. A terminal shall be provided for each conductor of external circuits, plus one ground for each shielded cable. Not less than 10 inches of clearance shall be provided between the terminal strips and the base of vertical panels for conduit and wiring space. Not less than 25 percent spare terminals shall be provided. Each control loop or system shall be individually fused, and all fuses or circuit breakers shall be clearly labeled and located for easy maintenance. All terminals and terminal strips shall be labeled with permanent tags. Handwritten tags are not acceptable.

2-2.08. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with the Instrument Device Schedule and with the supplier's equipment drawings. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the device. Hand-lettered labels or tape labels will not be permitted.

2-2.09. Nameplates: Nameplates shall be provided on the face of the panel or on the individual device. Panel nameplates shall have approximate dimensions and legends, as indicated on the drawings, and shall be made of laminated phenolic material having engraved letters approximately 3/16 inch [5 mm] high extending through the black face into the white layer. Nameplates shall be secured firmly to the panel. Panel face nameplates do not replace the requirement for device identification tags as specified under the Device Tag Numbering System paragraph.

2-2.10. Painting. Not Used

2-2.11. Component Layout Panel component arrangement shall provide all required manufacturers clearances, allow heat variations within the enclosure, and provide sufficient room to remove component wiring and/or components. Components should be installed and wired such that the removal of a single component does not affect the functionality of other components.

2-2.12. Factory Test. Panels shall be factory tested for electrical functionality, PLC and computer programming by the panel fabricator at the Factory Acceptance Test (FAT) per

requirements of 17500. The FAT must be passed and final approval given in writing by ENGINEER and OWNER before shipment.

2-3. ENCLOSURE

2-3.01. The following paragraphs specify the enclosure requirements.

2-3.02. Cabinets: Cabinets shall contain the system components indicated on the drawings, shall be NEMA Type 4X, suitable for wall mounting. The enclosure shall be fabricated from USS 14 gage, or heavier, stainless steel. Cabinets shall be equipped with full size gasketed doors with hinges and a chromium-plated or stainless steel three-point latch. Panels shall be pad lockable.

2-3.03. Subpanels: Subpanels shall be neatly arranged with sufficient space for future expansion as specified. Provision should be made for future wiring, field terminals, Panduit, etc., in the same ratio as in the finished panel. This space does not include any identified spare points.

- All field wiring shall terminate on field terminals and not on panel components.
- Panels may not have side sub-panels without approval of ENGINEER and OWNER.
- Power and AC wiring shall be routed in separate Panduit from analog, communication, or DC signals.
- Field wiring shall terminate only on one side of a terminal strip, and panel interior wiring on the other side.

2-4. PANEL INTERIOR MOUNTED DEVICES

2-4.01. PLC Processor. The PLC shall be the Automation Direct BX-DM1E-36ER3-D with BX-P-USB USB port or OWNER and ENGINEER pre-approved equal without exception.

2-4.02. Interchangeability. All programmable logic controller systems shall be products of the same manufacturer and of the same series or product line. Processors, local and remote input/output hardware, communications modules, and specialty modules such as coprocessors and ASCII modules shall be interchangeable among all I/O panels and systems.

2-4-03. PLC Arrangement. The PLCs shall be distributed and arranged as indicated on the drawings. The System Supplier shall meet all of the PLC manufacturer’s installation and operational requirements.

2-4.04. Expandability. Each PLC processor and associated I/O shall have future rack slot expandability. The enclosure shall be sized and constructed to easily accommodate installation and wiring for any type of PLC card utilizing the spare expansion slots.

2-4.05. Spare I/O . Each PLC input/output enclosure shall be provided with a minimum of 10% spare inputs and outputs of each type (AI,AO,DI,DO). Spare I/O shall be installed, wired, and interfaced properly to the terminal strip including surge suppressors, signal isolators and interposing relays. The spare I/O shall be in addition to any I/O installed and reserved for future process signals as may be indicated on the I/O list.

2-4.06. In addition, each PLC input/output enclosure shall be capable of accommodating 20 percent of additional input/output capacity of each type as originally assembled, without the need for additional expansion racks, communication adapters, cables, or field or PLC power supplies.

2-4.07. Appurtenances. The PLC processor and I/O hardware shall be provided as complete systems, as shown on the block diagram and schematic drawings. The PLCs shall include all necessary hardware and software for a complete working system. All special rack or panel mounted power supplies, special interconnecting and programming cables, special grounding hardware, or isolation devices shall be furnished for proper operation of the equipment. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, intrinsically safe relays and current repeaters, surge suppression devices, and isolation devices shall be furnished and installed for proper operation of the equipment.

2-4.08. Power Supplies. Regulated dc power supplies for instrument loops or field contact wetting voltage shall be designed and arranged so that loss of one supply is bumpless and does not affect other loops in the system. Power supplies shall be suitable for an input voltage variation of ±10 percent, and the supply output shall be fused or short-circuit protected. Output voltage regulation shall be by the instrumentation equipment supplied.

2-4.09. Multi-loop or multi-system power supplies will be acceptable if backup power supply units are provided which will automatically supply the load upon failure of the primary supply. The backup supply systems shall be designed so either the primary or the backup supply can be removed, repaired, and returned to service without disrupting the instrument system operation. Multi-loop power supply connections shall be individually fused so a fault in one instrument loop will be isolated from the other loops being fed from the same supply. Fuses shall be of the blown indicating type, replaceable while the circuit is energized, and clearly labeled, grouped, and located for easy access. Multi-loop supply systems shall be oversized for an additional 50 percent future load. Failure of a multi-loop supply shall be indicated on the respective instrument panel or enclosure. Power Supplies shall:

a. Mounting: DIN Rail
b. Efficiency: >90%
c. Ripple: <40 mV (PP)
d. Parallel Operation: Yes
e. Status Output: Yes
f. Temperature: -25 to 60 Deg. C.
g. Regulation: 24 VDC, +/- 1%

2-4.10. Power supplies shall be Phoenix Contact Quint-PS or Mini-PS series, or approved equal.

2-4.11. Relays. Relays indicated to be provided in panels, enclosures, or systems furnished under this section shall be of the plug-in socket base type with dustproof plastic enclosures and retaining clips. Relays shall be UL recognized and shall have not less than double-pole, double-throw contacts. Control circuit relays shall have silver cadmium oxide contacts rated 10 amperes at 120 V ac. Electronic switching-duty relays shall have gold-plated or gold alloy contacts suitable for use with low-level signals. Relays used for computer input, alarm input, or indicating light service shall have contacts rated at least 3 amperes. Time delay relays shall have dials or switch

settings engraved in seconds and shall have timing repeatability of ±2 percent of setting. Latching and special purpose relays shall be for the specific application. Unless otherwise indicated, all relays shall have an integral pilot light that illuminates to indicate an energized condition. Relays and relay sockets shall be DIN rail mountable and have retaining clips. Relays shall be Eagle Signal "Series 22, 80"; IDEC "Series RR"; Potter & Brumfield "Series KRP, CB"; or Struthers-Dunn "Series A3, A4".

2-4.12. Panel Mounted Analog Surge Protectors. All analog input and output circuits shall be protected at both the panel and field ends with surge protection devices. Surge protectors shall provide line-to line and line-to-ground protection. The suppression circuit shall be a multistage hybrid device utilizing surge arresting diodes and gas discharge tubes. The surge protector shall consist of a DIN rail mounted base terminal block and a removable plug protection module

.

a.	Nominal Voltage	24 VDC
b.	Max. Operating Voltage	28 VDC
c.	Max. Operating Current @ 40 Deg C	450 ma
d.	Nominal Discharge Current (8 x 20 uS Waveform IEEE C62.41.2)	10 kA
e.	Nominal Discharge Current (10 x 350 uS Waveform IEC 1024	2.5 kA
f.	Output Voltage Limitation Sym. @ 1kv/uSec	< 40 Volts
g.	Series Resistance	2.2 ohm
h.	Temperature Range	-40 to +80 Deg C

2-4.13. Surge protectors shall be Phoenix Contact MCR-PlugTrab PT 2x2 series or approved equal.

2-4.14. Panel Mounted Digital Surge Protectors. All analog input and output circuits shall be protected at both the panel and field ends with surge protection devices. Surge protectors shall provide line-to line and line-to-ground protection. The suppression circuit shall be a multistage hybrid device utilizing surge arresting diodes and gas discharge tubes. The surge protector shall consist of a DIN rail mounted base terminal block and a removable plug protection module.

a.	Nominal Voltage	▪ DC Unit: 5 to 24 VDC models ▪ AC Unit: 60 to 230 VAC model
b.	Nominal Operating Current	▪ DC Unit: 300 ma ▪ AC Unit: 26 ampl
c.	Nominal Discharge Current (8 x 20 uS Waveform IEEE C62.41.2))	▪ DC Unit 10 kA ▪ AC Unit 10 kA
d.	Peak Clamping Voltage 1kV/uSec rise time	▪ DC Unit 41 VDC @ 24 VDC ▪ AC Unit 600 Volts

2-4.15. The DC unit surge suppressor shall be a Phoenix Contact PlugTrab PT 2x1 series, and the AC unit shall be a Phoenix Contact PlugTrab PT 2-PE/S series or approved equal.

2-4.16. Control Panel Main Power Surge Protectors. The control panel main power circuit shall have an overvoltage protection device for power system electrical transients. The unit shall be DIN rail mountable consisting of a hard-wired base and removable surge arrestor. Unit failure or removal shall not interrupt power flow to the panel.

a.	Nominal Operating Voltage	120 VAC
b.	Maximum Operating Voltage	150 VAC
c.	Maximum Operating Current	26 amps
d.	Maximum Discharge Surge Current (8x20 uSec)	10 KA
e.	Response Time (L-N)	< 25 nSec

2-4.17. The surge suppressor shall be a Phoenix Contact Mains-PlugTrab PT series or approved equal.

2-4.18. Strip Heaters. Electric strip heaters shall be provided as indicated on the drawings, as specified, and for the application. Strip heaters shall be sized to prevent condensation within the enclosure and to maintain the equipment above its minimum operating temperature. Strip heaters shall not present an Operator shock hazard. Strip heaters shall be located to avoid overheating electronic hardware or producing large temperature fluctuations. Strip heaters shall be controlled by adjustable thermostats with adjustment ranges of 30° to 90°F. A circuit breaker disconnect switch shall be provided within the enclosure.

2-4.19. Flow Totalizer. The flow totalizer shall feature the following:

a. Panel mounted.
b. Accepted 24VDC 4-20mA input.
c. Provide 24VDC 4-20mA output.
d. Totalize flow and display in gallons.
e. Retain data after loss of power.
f. Low-Flow Cutoff.
g. Square Root Linearization.
h. Manufacturer: Precision Digital PD6200 or approved equal.

2-5. SIGNAL CONVERTERS

2-5.01. Protocol converters shall be provided to allow connection of PLC serial Modbus RTU RS-232/RS-485 devices to the Ethernet network. The unit shall be locally configurable using its serial port, or remotely configurable over Ethernet using a common web browser.

2-5.02. The unit shall have the following features:

Serial Interface:

a.	Interface	RS-232, RS-485

b. Connector Screw terminals or RJ45
c. Data Rate 100 to 125,200 bps
d. Characters 7 or 8 data bits
e. Parity Odd, even, or none
f. Stop bits 1 or 2
g. Flow Control - Software XON/XOFF
h. Flow Control - Hardware RTS/CTS

Network Interface:
a. Standards TCP/IP
b. Interface 10/100BaseT Ethernet
c. Connector RJ45

Physical:
a. Isolation Ethernet-1500 Vrms, Serial-2000 Vrms
b. Power 9-30 VDC, 9-24 VAC, 3 watts max
c. Mounting DIN Rail – 35mm
d. Operating Temperature 32 to 140 deg F.

2-5.03. The signal converter shall be a Lantronix External Device Server, Model Xpress-DR-IAP for compatibility with existing equipment.

PART 3 - EXECUTION

3-1. GENERAL INSTALLATION REQUIREMENTS

3-1.01. Installation requirements are specified in the Instrumentation and Control System section. In addition, equipment furnished under this section shall conform to the following manufacturing stipulations.

3-1.02. Wiring. All wiring shall be grouped or cabled and firmly supported inside the panel. Wiring shall be bundled in groups and routed in Panduit or similar nonmetallic slotted ducts. Ducts shall be readily accessible within the panel with removable covers and shall have a space of at least 40 percent of the depth of the duct available for future use after installation is complete and all field wiring installed. Sufficient space shall be provided between cable groups or ducts and terminal blocks for easy installation or removal of cables.

3-2. FIELD SERVICES.

3-2.01. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the Instrumentation and Control System section. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. SYSTEM SUPPLIER shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

3-3. PROGRAMMING AND TESTING

3-3.01. The OWNER will provide a TEST program for the contractor to load onto the PLC and run. The Contractor shall use the TEST program to validate panel wiring. Final PLC programming, SCADA integration will be by the OWNER.

3-4. NETWORK CONFIGURATION

3-4.01. The OWNER will perform configuration of the protocol converter and SCADA telemetry.

END OF SECTION

Item	PLC Panel ID	Type	Service Description	Field Device / System Tag	Analog Data			Discrete Data			Comments
					Signal Type	Calibrated Range	Power	Closed State	Power Source	Interp Relay	
1	MBR-150-PLC-101	DO	Well Pump Run Signal to ETM	MBR-150-YI-104				Run	Local	No	
2	MBR-150-PLC-101	DI	Run Status from Well Pump Starter	MBR-150-YI-101				Run	Local	No	
3	MBR-150-PLC-101	DO	Start/Stop Command to Well Pump Starter	MBR-150-HC-101				Start/ Run	Local	No	
4	MBR-150-PLC-101	DI	Fault Status from Well Pump Starter	MBR-150-XA-101				Fail	Local	No	
5	MBR-150-PLC-101	DI	In Auto Status from Well Pump Starter	MBR-150-YI-102				In Auto	Local	No	
6	MBR-150-PLC-101	DI	Fault Status from Well Pump Starter	MBR-150-YI-103				In Hand	Local	No	
7	MBR-150-PLC-101	DI	Power Available from Well Pump Starter	MBR-150-EI-101				Power OK	Local	No	
8	MBR-150-PLC-101	AI	Discharge Pressure	MBR-150-PI-107	4-20mA	0-100 PSI	24VDC				
9	MBR-150-PLC-101	AI	Discharge Flow	MBR-150-FI-07	4-20mA	0-3000 GPM	24VDC				
10	MBR-150-PLC-101	DI	Well House Intrusion Alarm Motion Detected	MBR-150-MA-111				Alarm	Local	No	Lock in Alarm
11	MBR-150-PLC-101	DI	Well House Intrusion Alarm Hatch Opened	MBR-150-ZOA-115				Alarm	Local	No	Lock in Alarm
12	MBR-150-PLC-101	DI	Well House High Ambient Temperature Alarm	MBR-150-TAH-117				Alarm	Local	No	
13											
14											
15											

SECTION 17560

INSTRUMENTATION GENERAL REQUIREMENTS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. This section covers the furnishing of all instrumentation equipment required for the Computer Control System as indicated on the DRAWINGS and as required.

1-1.02. Principal components of the instrumentation systems shall be as indicated on the P&ID drawings; as indicated on the instrument device schedules attached to this Section 17560.

1-1.03. Note: Not all instruments shown in these sections may be required to be provided by the CONTRACTOR (or CONTRACTOR System Supplier), but may be provided by Others, or included for future use as specifically designated.

1-1.04. Control System. Section 17500 shall apply to all systems described in this section. All applicable requirements defined in Section 17500 shall apply to equipment and services provided under Section 17560.

1-1.05. Terminology. When the phrase "as required" is stated in this section it shall mean "as required in any attached Data Sheet(s)" or shown on the DRAWINGS.

1-1.06. GENERAL. CONTRACTOR or System Supplier shall select the equipment furnished under this section for its superior quality and the intended performance. The CONTRACTOR or System Supplier shall install all equipment in accordance with the manufacturer's instructions. Equipment and materials used shall be subject to review and shall comply with the following requirements.

1-1.07. General Equipment Requirements. Not used. When required, the General Equipment Requirements shall apply to all equipment provided under this section.

1-1.08. DRAWINGS. Supplementing this section, the drawings indicate locations and arrangement of instruments and enclosures, provide mounting details, and may show device schedules and other information regarding the connection and interaction with other equipment.

1-1.09. Governing Standards. Governing Standards for instruments shall be as indicated in Section 17500.

1-1.10. Corrosive Fluids. All parts, which are exposed to corrosive conditions, shall be made from corrosion resistant materials. CONTRACTOR shall submit certification that the instrument manufacturer approves the selection of materials of primary elements which are in contact with the specified process fluid to be inert to the effects of the process fluid.

1-1.11. Elevation and Temperature. All instruments shall be designed to operate within an elevation range of 1000 feet above sea level and temperature range of 0 to 104 degrees Fahrenheit. Provide heaters, pipe heat tracing, air conditioning, and equipment enclosures and

sub shields as required.

1-1.12. Power and Instrument Signals. Unless otherwise indicated, electric power supply to the instrumentation equipment will be unregulated 120 volts ac. Unless otherwise indicated, all transmitted electronic analog instrument signals shall be 4-20 mA dc and shall be linear with the measured variable.

1-1.13. Appurtenances. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, calibration manifolds, isolation valves, and electronic isolation devices shall be furnished as needed for proper performance of the equipment. All field power supplies shall be redundant with bumpless transfer in the event of a failure.

- Provide control panel signal isolators for all analog signals.
- Provide surge suppression for all analog signals both at the transmitter and control panel termination.
- Provide manufacturer's stainless steel calibration manifolds for transmitters.
- Provide manufacturer's recommended stainless steel mounting brackets and hardware.
- Provide all instruments with Hart communications if available.

1-1.14. Field Mounted Transmitter Analog Surge Protectors. All analog input and output circuits shall be protected at both the panel and field ends with surge protection. Field (at instrument) surge protectors shall provide line-to line and line-to-ground protection. The suppression circuit shall be a multistage hybrid device utilizing surge arresting diodes and gas discharge tubes.

a.	Nominal Voltage	24 VDC
b.	Max. Operating Voltage	28 VDC
c.	Max. Operating Current	250 ma
d.	Nominal Discharge Current (8 x 20 uS Waveform)	▪ Normal Mode 10 kA ▪ Common Mode 10 kA
e.	Response Time	▪ Normal Mode 1 nSec ▪ Common Mode 100 nSec
f.	Series Resistance	10 ohm
g.	Pipe Nipple	▪ Material 304 SS ▪ Thread ¾" NPT ▪ Length 4"

1-1.15. The surge suppressor shall be a Phoenix Contact PipeTrab Model S-PT1-2PE-24DC without exception for compatibility with existing installations.

1-1.16. Four Wire Field Mounted Transmitter Surge Protectors.

1-1.17. All four-wire transmitters (120 VAC plus 4 to 20 ma) that are not UPS powered and/or are located outside of the building housing the monitoring PLC shall have power and signal surge protection at the transmitter. Refer to electrical drawings for exceptions. The surge protector is a

single hybrid unit contained in a NEMA 4X polycarbonate case. Field wiring is terminated with quick disconnect or barrier terminal strips.

a.	AC Input Voltage	120 VAC, 60 Hz. with LED indicator
b.	AC Max. Output Current	15 Amps fused
c.	AC Surge Protection	▪ Technology: 3-Stage Series Hybrid ▪ Max Surge Amps (8x20uS): 10 kA ▪ Response Time: < 5 nanoseconds
d.	DC Signal Protection	▪ Technology: Series Hybrid ▪ Peak Surge Amps: 10kA ▪ Response Time: < 1 nanosecond ▪ Voltage Clamp: 8 to 200 Volts Selectable
e.	DC Resistance	5 Ohms typical
f.	Nominal Outside Dimensions-Polycarbonate Case	6.9”H x 6.9”W x 3”D

1-1.18. The surge suppressor shall be an Emerson Network Power EDCO SLAC series without exception.

1-1.19. Interchangeability and Appearance. To the extent possible, instruments used for similar types of functions and services shall be of the same brand and model line. Similar components of different instruments shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished. Where devices have standardized by the OWNER, no substitutions shall be allowed.

1-1.20. Programming Devices. For systems that require a dedicated programming or configuring device for calibration, maintenance, or troubleshooting; one such programming device shall be provided for each Owner facility (quantity and type required shall be as indicated in Paragraph 1-5). The programming device shall include appropriate operation manuals and shall be included in the training requirements. For systems that allow the programming device functions to be implemented in software running on a laptop computer, the software shall be provided instead of the programming device. The programming device shall be complete, newly purchased for this project, and shall be in like-new condition when turned over to OWNER at completion of startup.

1-1.21. Configuration Software/Serial Interface. Devices indicated as requiring a serial interface shall be provided with all accessories required to properly communicate over the serial link. An appropriate cable shall be provided to allow the transmitter serial interface to be connected to a personal computer.

1-1.22. One licensed copy of the diagnostic/interface software shall be provided for each Owner facility (quantity and type required shall be as indicated in Paragraph 1-5). Software shall be capable of running under the latest version of Microsoft’s Windows XP or Vista operating system. If the software furnished performs the same functions as the programming device, specified elsewhere, then the programming device shall not be furnished.

1-1.23. Interconnecting Cable. For systems where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated in the drawings or Instrument Device Schedule.

1-1.24. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with tag numbers used on the project DRAWINGS and device schedules. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the panel or subpanel using machine screws with tapped holes where possible. Hand-lettered or tape labels will not be acceptable.

1-2. SUBMITTALS.

1-2.01. Submittals shall be as required in Section 17500.

1-2.02. DELIVERY, STORAGE, AND SHIPPING. Delivery, storage and shipping shall be as required in Section 17500.

1-2.03. SPARE PARTS. Spare parts shall be provided specified below, and as specified in the applicable instrument section.

a.	Pressure Instruments	One
b.	Flow Instruments	(Venturi) - One DP flow transmitter

PART 2 - PRODUCTS

2-1. INDIVIDUAL DEVICE SPECIFICATIONS

2-1.01. Individual instruments and related devices shall be provided as specified in one or more of the following sections, as required:

17561	Panel Mounted Instruments
17562	Flow Instruments
17563	Pressure and Level Instruments
17564	Analytical Instruments
17565	Miscellaneous Instruments

PART 3 - EXECUTION

3-1. INSTRUMENTATION INSTALLATION REQUIREMENTS

3-1.01. Additional instrumentation installation requirements are outlined in Section 17500. Instruments shall be installed and calibrated in accordance with the following requirements.

3-1.02. Field Calibration. After each instrument has been installed, a technical representative of CONTRACTOR shall calibrate each instrument and shall provide a written calibration report for

each instrument, indicating the results and final settings. The adjustments of calibrated instruments shall be sealed or marked, insofar as possible, to discourage tampering. Instrument calibration shall be done before checkout of the system operation. A typical instrument calibration report is attached to the end of each section. Calibration Data Sheets shall be submitted in a single 3-ring binder when calibration of all instruments has been completed. Instruments shall be calibrated at 0, 25, 50 , 75 and 100 percent of its calibrated range.

3-1.03. Systems Check. A technical representative of CONTRACTOR shall participate in the checkout of instrumentation systems. Systems check requirements shall be as specified in Section 17500.

3-1.04. Installation Test Equipment. Unless specified otherwise, all test equipment for the calibration and checking of system components shall be provided by CONTRACTOR for the duration of the testing work and this test equipment will remain the property of CONTRACTOR.

3-1.05. Mounting of Field Instruments. Instruments shall be mounted so that they can be easily read and serviced, and so that all appurtenant devices can be easily operated. Typical installation details for some instruments are indicated on the DRAWINGS.

- Instruments shall be mounted such that all readouts upright and are easily readable from directly in front of the instrument.
- Instruments and process or electrical connections shall be made in a neat and professional manner such that they are not a trip hazard or interfere with routine maintenance.
- Instruments which require bleeding of process lines for calibration shall be located such that liquid is not spilled on other equipment or in areas where it could be considered a hazard or nuisance. If this is not possible, provide a means to drain or convey the liquid to a suitable location. The ENGINEER and OWNER shall make the final to determination if an installation is acceptable. Installations deemed not acceptable shall be modified by the CONTRACTOR at no additional cost to the OWNER.

3-2. CUSTOMER TRAINING

3-2.01. Instrumentation training requirements are outlined in Section 17500.

INSTRUMENT NAME & SERVICE:		
MANUFACTURER, MODEL NO., SERIAL NO.:		
TAG OR LOOP NO.:		
INPUT/OUTPUT RANGE:		
INPUT	ACTUAL OUTPUT	DESIRED OUTPUT
PROPORTIONAL BAND:		
RESET:		
POSITION OF SWITCHES, JUMPERS, ETC.		
COMMENTS:		
DATE OF CALIBRATION: CALIBRATED BY:		
Tampa Bay Water	INSTRUMENT CALIBRATION REPORT	Figure 1-17560

Item	Tag	PLC	Service Description	Device Type & Size	Output Type	Output Range	Device Power	Elec. Dwg.	I&C Dwg.	Comments
1	MBR-150-PIT-107	MBR-150-PLC-101	Discharge Pressure	Pressure Indicating Transmitter	4-20mA	0-3,000 GPM	24VDC Loop	GE-10	I-2	(Coordinate with Process Mechanical)
2	MBR-150-FIT-109	MBR-150-PLC-101	Discharge Flow	Flow Indicating Transmitter 10” Venturi	4-20mA	0-100 PSI	24VDC Loop	GE-10	I-2	(Coordinate with Process Mechanical)
3	MBR-150-MS-111	MBR-150-PLC-101	Motion Detected	Motion Sensor	Dry Contact	On/Off	12VDC Powered 24VDC Sense	GE-10	I-2	Security
4	MBR-150-ZSO-115	MBR-150-PLC-101	Door Open	Position Switch	Dry Contact	On/Off	24VDC Sense	GE-10	I-2	Security
5	MBR-150-ZSO-116	MBR-150-PLC-101	Hatch Open	Position Switch	Dry Contact	On/Off	24VDC Sense	GE-10	I-2	Security
6	MBR-150-TSH-117	MBR-150-PLC-101	High Ambient Temp.	Temperature Switch	Dry Contact	104˚F	24VDC Sense	GE-10	I-2	Initial Setting 104˚F for 30 min. (Coordinate with HVAC)
7										
8										
9										
10										
11										
12										
13										
14										
15										

SECTION 17562

FLOW INSTRUMENTS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. The Flow Instrument Section covers the furnishing of flow instruments and accessories required for the Instrumentation and Control System as indicated on the drawings.

1-1.02. Equipment and services provided under this section shall be subject to the Instrumentation and Control System section. This section shall be used and referenced only in conjunction with the Instrumentation and Control System section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

1-1.03. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

1-2. DESIGN CRITERIA

1-2.01. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by Contractor.

1-2.02. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

1-2.03. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the drawings or as indicated in the Instrument Device Schedule. The instruments shall be installed at the locations indicated on the drawings or in the Instrument Device Schedule.

1-2.04. Where possible, each instrument shall be factory wet flow calibrated to the full scale flow range of the sensors or calibration ranges indicated on the drawings or in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Testing (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. Calibration and configuration data shall be stored digitally in each device, including the instrument tag designation indicated on the drawings or Instrument Device Schedule.

1-3. SUBMITTALS

1-3.01. Submittals shall be made as specified in the Instrumentation and Control System section.

1-4. SHIPMENT, PROTECTION, AND STORAGE

1-4.01. Equipment provided under this section shall be shipped, protected, and stored as specified in the Instrumentation and Control System section. Identification of packaging shall be as specified in the Instrumentation and Control System section.

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. The following paragraphs provide minimum device requirements. The drawings or Instrument Device Schedule shall be used to determine any additional instrument options, requirements, or service conditions.

2-1.02. Interconnecting Cable. For instruments where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated on the drawings or in the Instrument Device Schedule. The interconnecting cable shall be provided in the length necessary for installation. Splices shall not be allowed in the installed cable.

2-1.03. Programming Device. For instruments that require a dedicated programming device for calibration, maintenance, or troubleshooting, one such programming device shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). The programming device shall include appropriate operation manuals and shall be included in the training requirements. For systems that allow the programming device functions to be implemented in software, running on a laptop computer, the software shall be provided instead of the programming device.

2-2. FLOW INSTRUMENTATION

2-2.01. Premium Accuracy Differential Pressure (Flow) Transmitters. Transmitters shall be an all solid state, electronic, loop powered two-wire Premium Smart transmitters and have the minimum ratings as listed below.

a) Transmitters shall be the capacitance or single-crystal silicon resonant sensor type.

b) Process fluid shall be isolated from the sensing elements by AISI Type 316 stainless steel, or Hastelloy-C diaphragms as indicated on the drawings. The isolation diaphragm shall use a silicone oil fluid fill.

c) Differential pressure transmitters shall be furnished with a manufacturer supplied integral 3-way 316 SS isolation and calibration manifold with easy access calibration ports.

d) Transmitters shall have self-diagnostics and electronically adjustable span, zero, and damping.

e) The transmitter shall have a 2-wire, isolated, 4-20 ma analog output that is user selectable for linear or square root output.

f) Transmitters shall be enclosed in a NEMA Type 4X housing. All parts shall be stainless steel, or other corrosion-resistant materials as required by the application.

g) Transmitters shall have microprocessor-based smart electronics with HART protocol interface.

h) Transmitters shall be provided with integral lightning surge protection.

i) Transmitters shall not be damaged by reverse polarity.

j) Transmitters shall be factory calibrated to the required range.

k) Transmitters shall be provided with an engraved stainless steel tag with instrument tag ID and calibration data.

l) Transmitters installed outdoors or in a potentially corrosive environment shall be installed within a NEMA 4X enclosure with appropriate temperature controls to prevent freezing or overheating.

m) Transmitters shall be installed using 2" pipe bracket only unless alternative is pre-approved by OWNER. No direct mounting of the transmitter or manifold to a sub-panel or other fixture will be allowed.

Physical Specifications

a.	Enclosure	NEMA 4X aluminum
b.	Wetted Parts	316 SS or Hastelloy C-276
c.	Mounting Hardware	Manufacturer supplied 316 SS mounting brackets and hardware
d.	Analog Output	Linear, isolated 4-20 ma, 2-wire, 24 VDC
e.	Power Supply	12 to 45 VDC (Nominal 24 VDC)
f.	Transmitter LCD Display	5 digit LCD displaying 4 transmitter variables in rotation.
g.	FM Approvals	Explosion Proof For Class 1, 2 & 3 Division 1

Performance Specifications

a.	Accuracy	+/- 0.065 % of calibrated span
b.	Installed Stability	+/- 0.125% of URL (Upper Range Limit) for 5 years
c.	Operating Temperature	-40 to 185 Deg. F
d.	Relative Humidity	0 to 100% noncondensing
e.	Temperature Effect per 50 Deg. F	+/1(0.025% URL + 0.125% span) from 5:1 to 100:1 rangeability
f.	Ranageablility	100:1
g.	Span & Zero Adjustment	Continuous over range
h.	Static Overpressure Limit	3626 psig minimum

2-2.02. Transmitter shall be Rosemount Model 3051CD or Yokogawa Model EJX110A series or pre-approved equal.

2-2.03. Insert Flow Venturi Element with Integral Spool Piece Primary flow element shall be fiberglass reinforced plastic with metal flange, throat and pressure taps. End connections shall be integral center flange to fit between existing mating pipe. The insert shall be provided with an integral spool piece with static tap. Insert flow meter shall be the pressure vessel type.

2-2.04. Inlet and outlet cones, throat and holding flange shall be provided as specified in Instrument Device Schedule and Installation Drawings. If a plastic tube material is specified, but the manufacture's tube will not meet the temperature requirements, then a stainless steel insert tube or full body metal venturi shall be provided.

2-2.05. Tapped connections shall be provided for the differential pressure lines of each insert tube, with a permanent marking for each connection on the holding flange. Pressure sensing taps shall be 1/4" or 1/2" NPT.

2-2.06. The flowmeter shall be sized to provide approximately 200 inches of differential at maximum design flow for the installation.

2-2.07. Accuracy of the meter shall be bench calibrated to 0.50% full range, and 0.25% flow calibrated at the design average flow range. Temperature range shall be -60to 200°F. Beta range shall be from 0.30 to 0.75. The venturi shall be factory calibrated with the spool piece.

2-2.08. Tube materials and construction shall be as follows:

Inlet and Outlet Cone Material	Fiberglass reinforced plastic
Throat liner or Bushings	Stainless steel
Holding Flange Type	ANSI/ASME B16.5, Class 150, flat faced

2-2.09. The meter shall be as manufactured by Primary Flow Signal, Inc. model "HVT-PS" without exception.

PART 3 - EXECUTION

3-1. FIELD SERVICES

3-1.01. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the Instrumentation and Control System section.

3-1.02. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. The System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 17563

PRESSURE INSTRUMENTS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. The Pressure Instruments section covers the requirements for pressure and level instruments and accessories required for the Instrumentation and Control System as indicated on the drawings and documents. All instruments shown in this section may not be required to be provided by the CONTRACTOR or System Supplier. Refer to the Instrumentation Device Schedule, 17560-A and P&ID drawings for a tabulation of required instruments.

1-1.02. Equipment and services provided under this section shall be subject to the requirements of Instrumentation and Control System, Section 17500. This section shall be used and referenced only in conjunction with this section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

1-1.03. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

1-1.04. Instrument wetted materials shall be selected by the System Supplier based on the application and are subject to approval by the ENGINEER and OWNER.

1-2. DESIGN CRITERIA

1-2.01. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by Contractor.

1-2.02. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

1-2.03. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the drawings or as indicated in the Instrument Device Schedule. The instruments shall be installed at the locations indicated on the drawings or in the Instrument Device Schedule.

1-2.04. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated in the drawings or in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. Calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the drawings and/or Instrument Device Schedule.

1-3. SUBMITTALS

1-3.01. Submittals shall be made as specified in the Instrumentation and Control System section.

1-4. SHIPMENT, PROTECTION, AND STORAGE

1-4.01. Equipment provided under this section shall be shipped, protected, and stored in accordance with the requirements of the Instrumentation and Control System section. Identification of packaging shall be as described in the Instrumentation and Control System section.

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. The following paragraphs provide minimum device stipulations. The drawings or Instrument Device Schedule shall be used to determine any additional instrument options, requirements, or service conditions. Section 17560 stipulates general requirements applicable to all instruments.

2-2. PRESSURE INSTRUMENTATION

2-2.01. Premium Accuracy Gage Pressure Transmitters. Transmitters shall be an all solid state, electronic, loop powered two-wire Premium Smart transmitters and have the minimum ratings as listed below.

a) Transmitters shall be the capacitance or piezo-resistive type.

b) Process fluid shall be isolated from the sensing elements by AISI Type 316 stainless steel, or Hastelloy-C, diaphragms as indicated on the drawings. The isolation diaphragm shall use a silicone oil fluid fill.

c) Transmitters shall be provided with the manufacturers integral 316 SS 2-way isolation and calibration manifold.

d) Transmitters shall have self-diagnostics and electronically adjustable span, zero, and damping.

e) Transmitters shall be enclosed in a NEMA Type 4X housing. All parts shall be stainless steel, or other corrosion-resistant materials as required by the application.

f) Transmitters shall have microprocessor-based smart electronics with HART protocol interface.

g) Transmitters shall be provided with integral lightning surge protection.

h) Transmitters shall not be damaged by reverse polarity.

i) Transmitters shall be factory calibrated to the required range.

j) Transmitters shall be provided with an engraved stainless steel tag with instrument tag ID and calibration data.

Physical Specifications

a.	Enclosure	NEMA 4X aluminum
b.	Wetted Parts	316 SS or Hastelloy C-276
c.	Mounting Hardware	Manufacturer supplied 316 SS mounting brackets and hardware
d.	Analog Output	Linear, isolated 4-20 ma, 2-wire, 24 VDC
e.	Power Supply	12 to 45 VDC (Nominal 24 VDC)
f.	Transmitter LCD Display	5 digit LCD displaying 4 transmitter variables in rotation.
g.	FM Approvals	Explosion Proof For Class 1, 2 & 3 Division 1

Performance Specifications

a.	Accuracy	+/- 0.065 % of calibrated span
b.	Installed Stability	+/- 0.125% of URL (Upper Range Limit) for 5 years
c.	Operating Temperature	-40 to 185 Deg. F
d.	Relative Humidity	0 to 100% noncondensing
e.	Temperature Effect per 50 Deg. F	+/1(0.025% URL + 0.125% span) from 5:1 to 100:1 rangeability
f.	Ranageablility	100:1
g.	Span & Zero Adjustment	Continuous over range
h.	Static Overpressure Limit	3626 psig minimum

Transmitter shall be Rosemount Model 3051CG or Yokogawa Model EJX430A series or pre-approved equal.

2-2.02. Premium Accuracy Differential Pressure Transmitters. Differential pressure indicating transmitters shall have the requirements and specifications as the gage pressure transmitters above except for body type and as noted below.

- Differential pressure transmitters shall be furnished with a manufacturer supplied integral 3-way 316 SS isolation and calibration manifold with easy access calibration ports.
- The transmitter shall have a 2-wire, isolated, 4-20 ma analog output that is user selectable for linear or square root output.
- A 8.5 x 11 inch laminated flow verse differential pressure curve shall be provided.

Transmitter shall be Rosemount Model 3051CD or Yokogawa Model EJX430A series or pre-approved equal.

PART 3 - EXECUTION

3-1. FIELD SERVICES

3-1.01. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the Instrumentation and Control System section.

3-1.02. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 17565

MISCELLANEOUS INSTRUMENTS

PART 1 - GENERAL

1-1. SCOPE

1-1.01. The section covers the requirements for all miscellaneous instruments and accessories required for the Instrumentation and Control System as indicated on the drawings and documents. All instruments shown in this section may not be required to be provided by the System Supplier. Refer to the Instrumentation Device Schedule, 17560-A and P&ID drawings for a tabulation of required instruments.

1-1.02. Equipment and services provided under this section shall be subject to the requirements of Instrumentation and Control System, Section 17500. This section shall be used and referenced only in conjunction with this section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the drawings or the Instrument Device Schedule.

1-1.03. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the drawings or the Instrument Device Schedule.

1-1.04. Terminology. When the phrase "as required" is stated in this section it shall mean "as required in any attached Data Sheet(s)" or shown on the DRAWINGS.

1-1.05. Design Criteria. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by SYSTEM SUPPLIER.

1-1.06. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.

1-1.07. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated in the Instrument Device Schedule. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. For "smart" devices, calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the Instrument Device Schedule.

1-1.08. Submittals. Submittals shall be made in accordance with the requirements of Section 17500.

1-1.09. Shipment, Protection, and Storage. Equipment provided under this section shall be shipped, protected, and stored in accordance with the requirements of Section 17500. Identification of packaging shall be as described in Section 17500.

PART 2 - PRODUCTS

2-1. GENERAL

2-1.01. The following paragraphs provide minimum device requirements. The Instrument Device Schedule shall be used to determine any additional instrument options, requirements, or service conditions.

2-1.02. Interconnecting Cable. For systems where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated in the Instrument Device Schedule.

2-2. MISCELLANEOUS INSTRUMENTS

2-2.01. Panel Door Proximity Switches. Proximity switches shall be magnetic proximity type, consisting of two sensors. One sensor shall be fixed to the door and the other to the door frame. The sensor mounted to the door shall have no electrical connections. Switches shall be provided with DPDT contacts rated 5 amperes at 120 V ac. All necessary mounting hardware shall be provided to allow both the sensors to be installed at the locations indicated on the drawings.

2-2.02. Magnetic Door Intrusion Security Switch. Industrial, high security, wide gap, surface mount, magnetic intrusion switches shall be provided as shown on the drawings or documents.

The switch shall:

a.	The switch shall be enclosed in a brushed aluminum housing.
b.	The switch shall be a hermetically sealed reed switch in polyurethane potting.
c.	Switch contacts shall be DPDT form C rated for 30V AC/DC at 250 ma max. and biased with a Alinco VII magnetic.
d.	The switch will be difficult to defeat with an external magnet.
e.	The switch shall be UL-634 rated.
f.	The switch leads shall be in 3 feet of armored stainless steel cable permanently attached to the switch.
g.	The switch make/break distance shall be 0.2” minimum, and 0.6” maximum.
h.	The switch shall be surface mount, tamper resistant, and suitable for mounting on steel doors.

The switch shall be Model 2707AL as manufactured by General Electric Sentrol Division without exception.

2-2.03. Dual X-Band and PIR Motion Detectors Motion detectors shall be provided as shown on the drawings. The mounting shall be unobtrusive. The motion detector shall combine microwave (X-Band) and PIR technologies into a single unit with microprocessor based signal processing.

The motion detector shall:

- Shall be digital for fast and accurate detection.
- Shall be tamper protected.
- Shall have a Form C, 25 VDC, 125 ma Output Relay.
- Shall have sensitivity adjustment.
- Shall have self-adjusting detection thresholds.
- Shall have active IR for anti-masking.
- Shall have LRD diagnostics.
- Shall have digital fluorescent light filtering

Specifications:

a.	Power Requirements	50 ma max @ 12 VDC
b.	Temperature	32 to 120 Deg F
c.	PIR White Light Immunity	6500 LUX
d.	RFI Immunity	30 V/m, 10 MHz to 1000 MHz
e.	Microwave Frequency	X Band
f.	ESD Immunity	10 kV

The unit shall be as manufactured by Honeywell Model DT-900 or approved equal.

PART 3 - EXECUTION

3-1. FIELD SERVICES

3-1.01. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in Section 17560.

3-1.02. Instruments shall not be shipped to the work site until two weeks prior to the scheduled installation. The system supplier shall be responsible for coordinating the installation schedule with the installation contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

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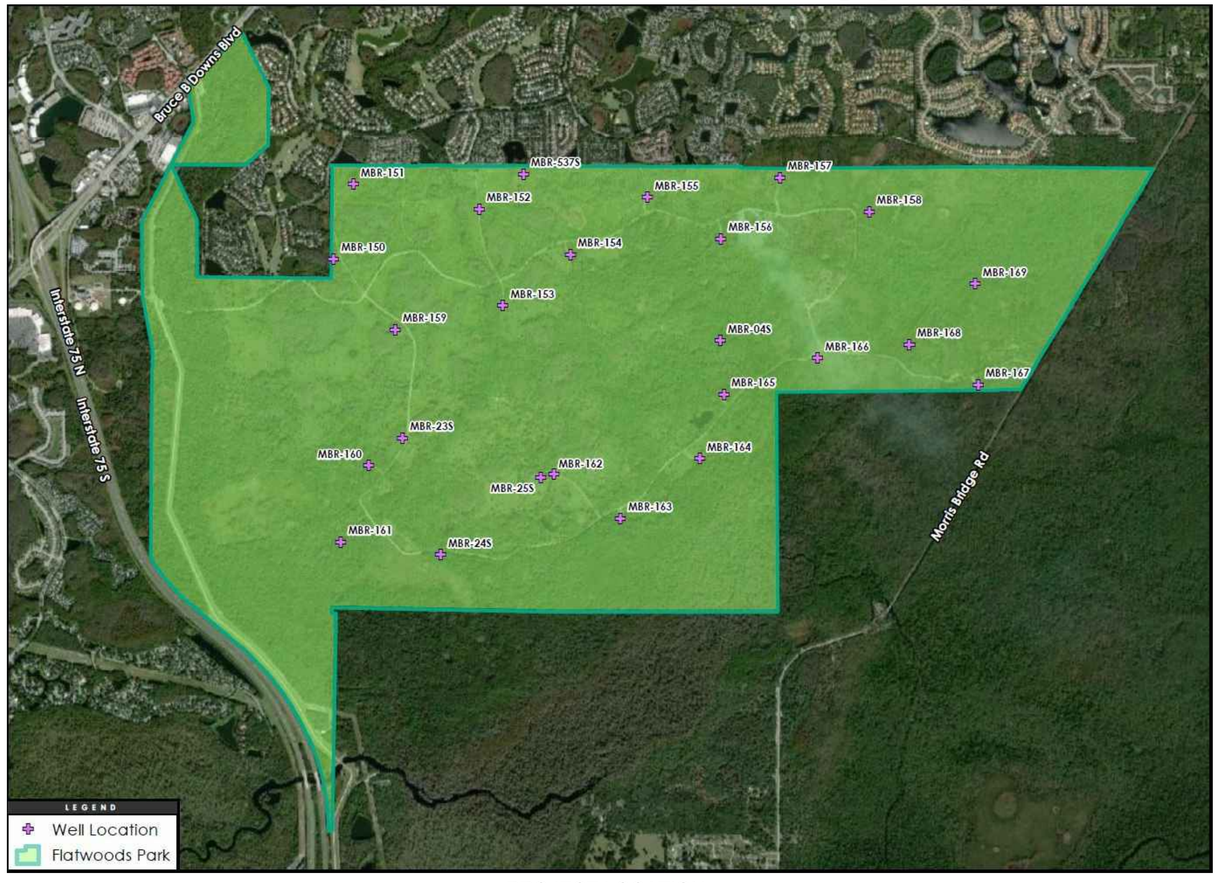
11.0 DRAWINGS

TAMPA BAY WATER
PROJECT NO. 50021
MORRIS BRIDGE WELLFIELD
IMPROVEMENTS PROJECT



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PROJECT LOCATION:
NORTH HILLSBOROUGH COUNTY, FLORIDA.

ISSUED FOR BID
DECEMBER 2024

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

The contractor shall be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The contractor shall assign and drawings are the property of Stantec. Reproduction and use for any purpose other than those authorized by Stantec is forbidden.

SEALS

TAMPA, FLORIDA
MORRIS BRIDGE
WELLFIELD
IMPROVEMENTS
PROJECT

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	DS

COPYRIGHT:

DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: G-1.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

COVER SHEET

SCALE: NO SCALE

SHEET NO: G-1

SHEET 1 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154732\G-1.DWG Scale:1:1 SavedDate:11/21/2024 Time:13:37 Plot Date: Vadhawkar, Samir; 4/30/2025; 13:43 ; Layout:LAYOUT1

LIST OF DRAWINGS



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SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
1	G-1	COVER SHEET
2	G-2	LIST OF DRAWINGS
3	G-3	SYMBOLOGY AND NOMENCLATURE
4	G-4	GENERAL NOTES



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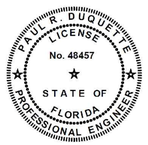
SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		CIVIL
5	GC-1	CIVIL NOTES AND SYMBOLS
6	DC-1	WELL HOUSE MBR-152 DEMOLITION PLAN
7	DC-2	WELL HOUSE MBR-152 DEMOLITION PLAN
8	DC-3	WELL HOUSE MBR-152 DEMOLITION PLAN
9	DC-4	WELL HOUSE MBR-157 DEMOLITION PLAN
10	DC-5	WELL HOUSE MBR-157 DEMOLITION PLAN
11	DC-6	WELL HOUSE MBR-161 DEMOLITION PLAN
12	DC-7	WELL HOUSE MBR-161 DEMOLITION PLAN
13	DC-8	WELL HOUSE MBR-162 DEMOLITION PLAN
14	DC-9	WELL HOUSE MBR-162 DEMOLITION PLAN
15	DC-10	WELL HOUSE MBR-163 DEMOLITION PLAN
16	DC-15	WELL HOUSE MBR-152 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE
17	DC-16	WELL HOUSE MBR-157 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE
18	DC-17	WELL HOUSE MBR-161 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE
19	DC-18	WELL HOUSE MBR-162 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE
20	DC-19	WELL HOUSE MBR-163 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE
21	DC-50	WELL SITE RESTORATION TYPICAL DETAIL
22	C-01	PROJECT PLAN
23	C-10	WELL HOUSE MBR-150 AND MBR-151 PLAN
24	C-11	WELL HOUSE MBR-153 AND MBR-154 PLAN
25	C-12	WELL HOUSE MBR-155 AND MBR-156 PLAN
26	C-13	WELL HOUSE MBR-158 AND MBR-159 PLAN
27	C-14	WELL HOUSE MBR-160 AND MBR-164 PLAN
28	C-15	WELL HOUSE MBR-165 AND MBR-166 PLAN
29	C-16	WELL HOUSE MBR-167 AND MBR-168 PLAN
30	C-17	WELL HOUSE MBR-169 PLAN
31	C-50	STANDARD DETAILS



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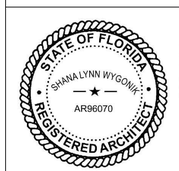
SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		STRUCTURAL
32	GS-1	STRUCTURAL GENERAL NOTES - I
33	GS-2	STRUCTURAL STANDARD DETAILS - I
34	GS-3	STRUCTURAL ABBREVIATIONS LIST
35	DS-1	WELL HOUSE TYPE I DEMOLITION, PLANS, ELEVATIONS, AND SECTION
36	DS-2	WELL HOUSE TYPE I DEMOLITION, PLANS, ELEVATIONS, AND SECTION
37	DS-3	WELL HOUSE TYPE I DEMOLITION, PLANS, ELEVATIONS, AND SECTION
38	DS-4	WELL HOUSE TYPE II DEMOLITION, PLANS, ELEVATIONS, AND SECTION
39	DS-5	WELL HOUSE TYPE III DEMOLITION, PLANS, ELEVATIONS, AND SECTION
40	DS-6	WELL HOUSE TYPE III DEMOLITION, PLANS, ELEVATIONS, AND SECTION
41	DS-7	WELL HOUSE DEMOLITION DETAILS
42	S-1	WELL HOUSE TYPE I PLANS, ELEVATIONS, AND SECTIONS
43	S-2	WELL HOUSE TYPE I PLANS, ELEVATIONS, AND SECTIONS
44	S-3	WELL HOUSE TYPE II PLANS, ELEVATIONS, AND SECTIONS
45	S-4	WELL HOUSE TYPE III PLANS, ELEVATIONS, AND SECTIONS



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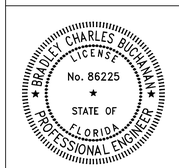
SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		ARCHITECTURAL
46	GA-1	GENERAL ARCHITECTURAL CODE SUMMARY, GENERAL NOTES & SCHEDULES
47	GA-2	GENERAL ARCHITECTURAL STANDARD DETAILS
48	A-1	ARCHITECTURAL WELL HOUSE FLOOR PLAN AND ROOF PLANS
49	A-2	ARCHITECTURAL WELL HOUSE EXTERIOR ELEVATIONS



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SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		INSTRUMENTATION
50	I-1	INSTRUMENTATION ABBREVIATIONS & LEGEND
51	I-2	MBR SITE P&ID (TYPICAL)
52	I-3	INSTRUMENTATION DETAILS
53	I-4	PLC CONTROL PANEL LAYOUT
54	I-5	CONTROL PANEL ELEMENTARY SCHEMATIC - I
55	I-6	CONTROL PANEL ELEMENTARY SCHEMATIC - II
56	I-7	CONTROL PANEL ELEMENTARY SCHEMATIC - III
57	I-8	NETWORK DIAGRAM



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SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		PROCESS MECHANICAL
58	GM-1	GENERAL MECHANICAL NOTES
59	GM-2	PIPE AND VALVE SCHEDULE
60	GM-3	STANDARD DETAILS - I
61	GM-4	STANDARD DETAILS - II
62	DM-1	WELL HOUSE MBR-152 DEMOLITION
63	DM-2	WELL HOUSE MBR-157 DEMOLITION
64	DM-3	WELL HOUSE MBR-161 DEMOLITION
65	DM-4	WELL HOUSE MBR-162 DEMOLITION
66	DM-5	WELL HOUSE MBR-163 DEMOLITION
67	DM-6	TYPICAL WELL HOUSE PUMP AND PIPING DEMOLITION
68	M-1	WELL HOUSE MBR-150 MODIFICATIONS
69	M-2	WELL HOUSE MBR-151 MODIFICATIONS
70	M-3	WELL HOUSE MBR-153 MODIFICATIONS
71	M-4	WELL HOUSE MBR-154 MODIFICATIONS
72	M-5	WELL HOUSE MBR-155 MODIFICATIONS
73	M-6	WELL HOUSE MBR-156 MODIFICATIONS
74	M-7	WELL HOUSE MBR-158 MODIFICATIONS
75	M-8	WELL HOUSE MBR-159 MODIFICATIONS
76	M-9	WELL HOUSE MBR-160 MODIFICATIONS
77	M-10	WELL HOUSE MBR-164 MODIFICATIONS
78	M-11	WELL HOUSE MBR-165 MODIFICATIONS
79	M-12	WELL HOUSE MBR-166 MODIFICATIONS
80	M-13	WELL HOUSE MBR-167 MODIFICATIONS
81	M-14	WELL HOUSE MBR-168 MODIFICATIONS
82	M-15	WELL HOUSE MBR-169 MODIFICATIONS
83	M-16	PUMP REPLACEMENT DETAILS



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SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		HVAC
84	GH-1	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
85	GH-2	EQUIPMENT SCHEDULES AND CONTROLS
86	GH-3	STANDARD DETAILS
87	DH-1	HVAC DEMOLITION PLAN - I
88	DH-2	HVAC DEMOLITION PLAN - II
89	H-1	HVAC FLOOR PLAN AND SECTION



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SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		ELECTRICAL
90	GE-1	ELECTRICAL NOTES
91	GE-2	ELECTRICAL DETAILS
92	GE-3	TYPICAL BUILDING LAYOUT TYPE I
93	GE-4	TYPICAL BUILDING LAYOUT TYPE II
94	GE-5	TYPICAL BUILDING LAYOUT TYPE III
95	GE-6	TYPICAL LIGHTING PLAN
96	GE-7	TYPICAL GROUNDING PLAN
97	GE-8	TYPICAL ONE-LINE
98	GE-9	TYPICAL ONE-LINE
99	GE-10	ELECTRICAL SYSTEM BLOCK DIAGRAM (TYPICAL)
100	GE-11	PUMP SOFT START MOTOR SCHEMATIC (TYPICAL)
101	DE-1	WELL HOUSE MBR-152 DEMOLITION
102	DE-2	WELL HOUSE MBR-157 DEMOLITION
103	DE-3	WELL HOUSE MBR-161 DEMOLITION
104	DE-4	WELL HOUSE MBR-162 DEMOLITION
105	DE-5	WELL HOUSE MBR-163 DEMOLITION
106	DE-6	WELL HOUSE MBR-150 DEMOLITION
107	DE-7	WELL HOUSE MBR-151 DEMOLITION
108	DE-8	WELL HOUSE MBR-153 DEMOLITION
109	DE-9	WELL HOUSE MBR-154 DEMOLITION
110	DE-10	WELL HOUSE MBR-155 DEMOLITION
111	DE-11	WELL HOUSE MBR-156 DEMOLITION
112	DE-12	WELL HOUSE MBR-158 DEMOLITION
113	DE-13	WELL HOUSE MBR-159 DEMOLITION
114	DE-14	WELL HOUSE MBR-160 DEMOLITION
115	DE-15	WELL HOUSE MBR-164 DEMOLITION
116	DE-16	WELL HOUSE MBR-165 DEMOLITION
117	DE-17	WELL HOUSE MBR-166 DEMOLITION
118	DE-18	WELL HOUSE MBR-167 DEMOLITION
119	DE-19	WELL HOUSE MBR-168 DEMOLITION
120	DE-20	WELL HOUSE MBR-169 DEMOLITION

GENERAL SHEET NOTES

1. GRAYED OUT OR * DRAWINGS TO BE PROVIDED LATER IN DETAILED DESIGN

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FILE NAME: G-2.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE
LIST OF DRAWINGS

SCALE: NO SCALE

SHEET NO: G-2

SHEET 2 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154732\G-2.DWG Scale:1:1 SavedDate:12/4/2024 Time:12:13 Plot Date: Vadhawkar, Samir 4/30/2025; 13:44 ; Layout:LAYOUT1

GENERAL SYMBOLOGY

- NEW CONSTRUCTION
- EXISTING (SCREENED)
- FUTURE (PHANTOM)
- EXISTING TO BE REMOVED OR DEMOLISHED

MATERIAL SYMBOLOGY

- CONCRETE (PLAN AND SECTION)
- GROUT OR SAND (PLAN AND SECTION)
- BRICK (PLAN AND SECTION)
- CMU (PLAN AND SECTION)
- STEEL/METAL/FRP (SMALL SCALE SECTION)
- CHECKER PLATE OR SOLID FRP GRATING (PLAN)
- CHECKER PLATE (SECTION)
- GRATING (PLAN)
- GRATING OR SOLID FRP GRATING (SECTION)
- SAFETY GRATING (PLAN)
- SAFETY GRATING (SECTION)
- RAILING (PLAN)
- WOOD (PLAN OR ELEVATION)
- LUMBER/FRAMING - NOMINAL
- LUMBER - TRIMMED (BLOCKING OR SHIMS)
- OR GLULAM (SECTION)
- GLULAM (ELEVATION)
- OR PLYWOOD (SMALL SCALE)
- FINISHED GRADE
- GRAVEL/DRAINROCK/AGGREGATE BASE

VALVE AND GATE ACTUATORS

- DIAPHRAGM OPERATOR
- D = DIGITAL
E/H = ELECTROHYDRAULIC
P = PNEUMATIC
S = SOLENOID
T = TEMPERATURE
- HAND / MANUAL OPERATOR
(ALSO SHOWN AS NO OPERATOR)
- MOTOR OPERATOR
- PISTON ACTUATOR
- PRESSURE BALANCED DIAPHRAGM ACTUATOR
- PRESSURE REGULATOR WITH EXTERIOR TAP
- PRESSURE REGULATOR (SELF CONTAINED)
- PRESSURE RELIEF OR SAFETY ACTUATOR
- WEIGHT BALANCED OPERATOR

VALVES

- 3 WAY MULTI-PORT VALVE
- 4 WAY MULTI-PORT VALVE
- AIR VACUUM, AIR RELEASE, OR
AIR VACUUM AND AIR RELEASE ASSEMBLY
- ANGLE VALVE
- BACK-PRESSURE VALVE
- BACKFLOW PREVENTER VALVE
- BACKWATER VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CHECK VALVE - ANGLE
- CHECK VALVE - BALL
- CHECK VALVE - SILENT
- CHECK VALVE - STOP
- CONE VALVE
- DIAPHRAGM VALVE
- FLAP VALVE
- GATE VALVE
- GLOBE VALVE
- HOSE BIBB VALVE
FROM TOP, FRONT AND SIDE VIEW
- NEEDLE VALVE
- PINCH VALVE
- PLUG VALVE - ECCENTRIC
- PLUG VALVE - LUBRICATED
- OR PRESSURE REGULATING VALVE
- PRESSURE RELIEF VALVE
- SLEEVE VALVE
- TELESCOPING VALVE

GATES

- SLIDE GATE
(CAST IRON, ALUMINUM OR STAINLESS STEEL)
- STOP GATE OR SHEAR GATE

PUMPS & COMPRESSORS

- AIR DRIVEN DIAPHRAGM PUMP
- HORIZONTAL ANSI END SUCTION PUMP
- CENTRIFUGAL PUMP
- CENTRIFUGAL WET PIT PUMP
OR TURBINE PUMP
- CHEMICAL METERING PUMP
- CIRCULATING PUMP
- DRUM PUMP
- GEAR PUMP OR ROTARY
POSITIVE DISPLACEMENT BLOWER
- HORIZONTAL SPLIT CASED PUMP
- HOSE PUMP
- PISTON PUMP
- PROGRESSIVE CAVITY PUMP
- ROTARY LOBE PUMP
- SAMPLE PUMP
- SUBMERSIBLE PUMP
- SUBMERSIBLE TURBINE PUMP
- VERTICAL TURBINE PUMP
- PISTON DRIVEN COMPRESSOR
- COMPRESSOR

FLOW MEASUREMENT INSTRUMENTS

- DM DENSITY FLOWMETER
- DISPLACEMENT FLOWMETER
- FLOW ORIFICE
- FLOW ORIFACE WITH QUICK CHANGE FITTINGS
- FLOW TUBE
- FLOW TURBINE
- FLOW VANE
- FLUME

FLOW MEASUREMENT INSTRUMENTS (CONTINUED)

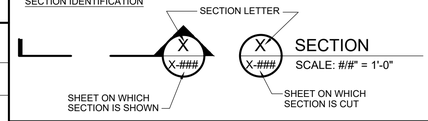
- MM MAGNETIC FLOWMETER
- PADDLE WHEEL METER
- PITOT TUBE METER (DOUBLE)
- PITOT TUBE METER (SINGLE)
- ROTAMETER / VARIABLE AREA FLOWMETER
- ULTRASONIC FLOWMETER
- VENTURI FLOWMETER
- VORTEX SHEDDING FLOWMETER
- WEIR METER

PIPING ENDS (SINGLE-LINE)

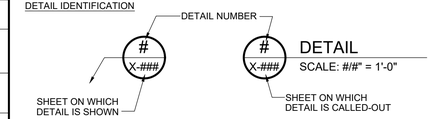
- BLIND FLANGE
- CAP - BREATHER
- CAP - SCREW / THREADED
- CAP - WELDED
- CAP - QUICK DISCONNECT
- EXPANSION JOINT
- FLANGED
- FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER - RESTRAINED
- OR FLEXIBLE CONNECTION - BELLOWS TYPE
- GROOVED END COUPLING
- MECHANICAL JOINT
- PIPE MATERIAL CHANGE
- PUSH-ON JOINT - BELL AND SPIGOT
- PUSH-ON JOINT - RESTRAINED
- REDUCER - CONCENTRIC
- REDUCER - ECCENTRIC
- REMOVABLE SPOOL PIECE
- SLEEVE TYPE COUPLING
- SLEEVE TYPE COUPLING - RESTRAINED
- UNION
- WELDED

REFERENCE SYMBOLS

SECTION IDENTIFICATION



DETAIL IDENTIFICATION

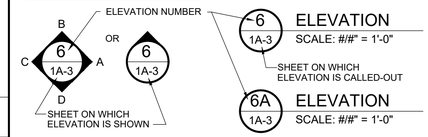


STANDARD DETAIL IDENTIFICATION

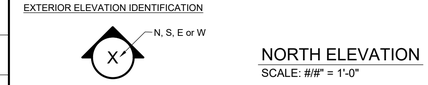


STANDARD DETAILS ARE LOCATED ON DISCIPLINE GENERAL SHEETS, IN NUMERICAL ORDER

INTERIOR ELEVATION IDENTIFICATION

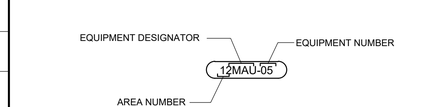


EXTERIOR ELEVATION IDENTIFICATION



EQUIPMENT IDENTIFICATION

SEE EQUIPMENT SCHEDULE/SPECIFICATIONS



MISCELLANEOUS

4-12	ROOM NUMBER	###	COORDINATE POINT
2-16	DOOR NUMBER	Ø	ROUND OR DIAMETER
1-8	WINDOW NUMBER	@	AT
13	ACCESSORY NUMBER	∠	ANGLE
4	WALL TYPE NUMBER	℄	CENTERLINE
A	SHEET KEY NOTES		

DISCIPLINE SPECIFIC SYMBOLS ARE SHOWN ON THE DISCIPLINE GENERAL DRAWINGS.

FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS.

REV 012216

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SEALS

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MORRIS BRIDGE
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FILE NAME:	G-3.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

SYMBOLOGY AND NOMENCLATURE

SCALE: NO SCALE

SHEET NO: G-3

SHEET 3 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154732\G-3.DWG Scale:1:1 SavedDate:11/21/2024 Time:13:37 Plot Date: Vadhawker, Samir; 4/30/2025; 13:44 ; Layout:LAYOUT1

GENERAL NOTES

GENERAL

1. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC., WHICH ARE WITHIN THE PROJECT AREA AND WHICH HAVE BEEN CONSTRUCTED SINCE THE PREPARATION OF THESE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES AFFECTING THE WORK.

2. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIALS AND BEGINNINGS OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

3. THE INFORMATION PROVIDED IN THESE PLANS IS TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO PRICING PROJECT, TO CONDUCT WHATEVER INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH, PRICING OF THE PROJECT WILL BE BASED.

4. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE MAY BE UTILITY CONFLICTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ANY AND ALL EXISTING UTILITIES ON THIS PROJECT. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL REQUIRED AGENCIES, AND BY PROSPECTING. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO THE WORK.

5. CONTRACTOR SHALL DEVELOP A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND APPOINT A DESIGNATED SWPPP INSPECTOR FOR THE PROJECT SITE. THE CONTRACTOR SHALL PAY FOR AND FILE A NOTICE OF INTENT TO USE THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION GENERIC PERMIT FOR STORM WATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (REFERRED AS "FDEP GENERIC PERMIT") AT LEAST ONE WEEK PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL FILE A NOTICE OF TERMINATION TO USE THE FDEP GENERIC PERMIT AT THE COMPLETION OF THE PROJECT.

6. CONTRACTOR SHALL RETURN THE ENTIRE GRASSED OR PAVED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES TO THE ORIGINAL CONDITION OR BETTER UPON COMPLETION OF THE WORK, IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. GRADE SHALL BE RETURNED TO ORIGINAL ELEVATION. DISTURBED GRASSED AREAS SHALL BE RE-GRADED AND SODDED.

7. CONTRACTOR'S OPERATIONS SHALL BE LIMITED TO WITHIN THE EASEMENTS. ACCESS TO OTHER AREAS OF SITE SHALL BE COORDINATED WITH OWNER.

8. WHERE REQUIRED, THE SOIL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO CONSTRUCTION, MAINTAINED THROUGHOUT CONSTRUCTION, AND UNTIL THE SITE IS PERMANENTLY STABILIZED. THE CONTRACTOR SHALL PROVIDE AND INSTALL SILT SCREENS AROUND THE PROPOSED CONSTRUCTION ACTIVITY, EACH WELL SITE, AND ALL ROADWAY WORK, AS NECESSARY, TO PREVENT THE TRANSPORT OF SEDIMENT DOWNSTREAM INTO STREET, STORM SEWERS, OPEN DITCHES, LAKES, DETENTION PONDS, ETC., AND SHALL PERFORM ALL NECESSARY INSPECTIONS. THESE AREAS, ACTIVITIES, AND REQUIRED BMPS OR OTHER MITIGATIONS WILL BE DETAILED IN THE REQUIRED CONTRACTOR DEVELOPED SWPPP.

9. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL BUILDING PERMITS. INCLUDING THE REQUIRED NOTICE OF COMMENCEMENT FILED WITH THE CLERK OF THE COURT.

10. ALL DEMOLITION DEBRIS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.

11. CONTRACTOR SHALL LEGALLY DISPOSE OF ALL EXCAVATED MATERIALS REMOVED FROM THE SITE AND SHALL OBTAIN ALL NECESSARY PERMITS TO DO SO.

12. OPERATIONS AT THIS FACILITY ARE ONGOING AND, AS SUCH ANY SHUTDOWNS REQUIRED BY THE WORK MUST BE COORDINATED WITH THE OWNER. OWNER MUST BE NOTIFIED ACCORDING TO SPECIFICATION 01015 PROJECT REQUIREMENTS.

13. ANY DISTURBANCE TO ANY LAND OR OTHER APPURTENANCES, OUTSIDE THE EASEMENT LIMITS, CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER OF THE LAND OR APPURTENANCE. NO PAYMENT SHALL BE MADE FOR SUCH WORK.

14. CONTRACTOR'S LAYDOWN AREAS AND MATERIAL STORAGE AREA SHALL BE LIMITED TO WITHIN THE EASEMENTS, AND AS APPROVED IN WRITING BY THE OWNER AND ENGINEER. CONTRACTOR SHALL SUBMIT A PLAN DETAILING THE PROPOSED USE OF THESE AREAS AND TRAFFIC PATTERNS BETWEEN THESE AREAS AND THE WORK FOR OWNER ACCEPTANCE.

15. THE PROJECT SHALL BE CONSTRUCTED IN GROUPS AS NOTED IN THE CONTRACT DOCUMENTS TO ENSURE NECESSARY FLOW REQUIREMENTS, PER THE SPECIFICATION, ARE MET. PRIOR TO ANY WELL OR PIPELINE BEING PLACED BACK INTO SERVICE, THE SYSTEM MUST BE DISINFECTED, PRESSURE TESTED, AND CLEARED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION. REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS.

16. NO WATER FROM TEMPORARY DEWATERING OPERATIONS SHALL BE DISCHARGED IN A LOCATION OR MANNER WHICH WILL CAUSE THE TRANSFER OF SEDIMENT INTO DITCHES OR OTHER WETLAND AREAS. REFER TO SPECIFICATION SECTION 02270 FOR DEWATERING REQUIREMENTS.

17. STOCKPILING OF FILL MATERIAL AND MATERIAL STORAGE CAN ONLY BE PLACED WITHIN AREAS THAT ARE PROTECTED USING APPROVED EROSION CONTROL MEASURES AS REQUIRED BY THE NPDES PROGRAM AND IN WRITING BY THE OWNER AND ENGINEER.

18. LOCATIONS AND DIMENSIONS OF THE EASEMENTS ARE BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE LIMITS OF THE EASEMENTS IN ORDER TO AVOID ENCROACHMENTS. ALL CONSTRUCTION SHALL BE COMPLETED WITHIN THE EASEMENT LIMITS.

19. ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY WILL BE COMPACTED TO 95% OF MAXIMUM DENSITY AND SODDED.

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DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

GENERAL NOTES

SCALE: NO SCALE

SHEET NO: G-4

SHEET 4 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154732\G-4.DWG Scale:1:1 SavedDate:11/19/2024 Time:15:09 Plot Date: Vadhawkar, Samir; 4/30/2025; 13:44 ; Layout:LAYOUT1

CIVIL GENERAL NOTES

GENERAL

1. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION. THIS INCLUDES DIRT, GRAVEL, GRASSED, OR ASPHALT ROADS USED IN THE EXECUTION OF THE WORK.
2. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL DEBRIS FROM DEMOLITION AT CONTRACTORS EXPENSE.
3. ALL BUILDING COORDINATES ARE TO OUTSIDE CORNER OF COLUMN OR BUILDING.
4. THE CONTRACTOR SHALL DISPOSE OF ALL NON-ORGANIC WASTES SUCH AS OLD GUNITE, PIPING, ROCK RUBBLE ETC. AT AN APPROVED LANDFILL OR, OTHER SUITABLE DISPOSAL SITES AT THE CONTRACTOR'S EXPENSE.
5. CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS AND BENCHMARKS AND RESTORE ALL SURVEY MONUMENTS AND BENCHMARKS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION.
6. CONTRACTOR SHALL LIMIT ALL CONSTRUCTION ACTIVITIES WITHIN THE EASEMENT LIMITS AND SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE ANY CONSTRUCTION ACTIVITIES THAT FALL OUTSIDE EASEMENT.

UTILITIES

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. THE CONTRACTOR SHALL POTHOLE FOR EXISTING UTILITIES PRIOR TO SUBMITTAL OF SHOP DRAWINGS, FOR POINTS OF CONNECTIONS.
2. THE CONTRACTOR SHALL PROTECT ALL REMAINING EXISTING UTILITIES.
3. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS AND SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT UTILITY LINES WHETHER SHOWN OR NOT SHOWN.
4. PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER. PRIOR TO ANY EXCAVATION IN THE VICINITY OF ANY EXISTING UNDERGROUND FACILITIES, INCLUDING ALL WATER, SEWER, STORM DRAIN, GAS, PETROLIUM PRODUCTS, OR OTHER PIPELINES; ALL BURIED ELECTRIC POWER, COMMUNICATIONS, OR TELEVISION CABLES; ALL TRAFFIC SIGNAL AND STREET LIGHTING FACILITIES; AND ALL ROADWAY, STATE HIGHWAY, AND RAILROAD RIGHTS-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE AUTHORITIES REPRESENTING THE OWNERS OR AGENCIES RESPONSIBLE FOR SUCH FACILITIES NOT LESS THAN 3 DAYS NOR MORE THAN 7 DAYS PRIOR TO EXCAVATION SO THAT A REPRESENTATIVE OF SAID OWNERS OR AGENCIES CAN BE PRESENT DURING SUCH WORK IF THEY SO DESIRE. IN THE CASE OF THE UNDERGROUND UTILITY SERVICE ALERT CENTER, THIS NOTICE WILL GIVE THEM TIME TO MARK THE LOCATION OF THE UTILITIES. THE CONTRACTOR SHALL ALSO NOTIFY THE REGIONAL OR LOCAL UNDERGROUND SERVICE ALERT COMPANY AT LEAST 3 DAYS, BUT NO MORE THAN 7 DAYS, PRIOR TO SUCH EXCAVATION.

PIPING

1. THE CONTRACTOR SHALL COMPLY WITH THE STATE DEPARTMENT OF HEALTH SERVICES CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 36 INCHES OF COVER ON ALL PIPELINES UNLESS OTHERWISE SHOWN OR DIRECTED.
3. STRAIGHT SLOPES SHALL BE MAINTAINED BETWEEN INVERT ELEVATIONS SHOWN OR SPECIFIED.
4. THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES, PULL BOXES AND MANHOLES TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR SPECIFIED. MANHOLES IN OPEN FIELDS SHALL BE SET ONE FOOT ABOVE GRADE. APPROXIMATE RIM ELEVATIONS ARE SHOWN ON DRAWINGS.
5. ALL PIPE TRENCHING AND BACKFILL SHALL BE IN ACCORDANCE WITH DETAIL C-601 FOR FLEXIBLE PIPE. THE PIPING SHOWN ON THESE PLANS SHALL BE RESTRAINED JOINT DESIGN AT ALL SLEEVE TYPE COUPLINGS.
6. ALL PIPING SHALL BE RESTRAINED JOINT DESIGN UNLESS INDICATED OTHERWISE. COUPLINGS AND RESTRAINED JOINTS SHALL BE PROVIDED WHETHER SHOWN ON THE DRAWINGS OR NOT. ALL OTHER PIPES, COUPLINGS AND RESTRAINED JOINTS SHALL BE APPROVED BY THE ENGINEER. ALL RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURERS' RECOMMENDATIONS.

CIVIL GENERAL NOTES - CONTINUED

EROSION CONTROL

1. THE CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN FOR WORK DURING THE CONSTRUCTION, SIGNED AND STAMPED BY A REGISTERED CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION.
   a. ALL SLOPES SHALL BE PROTECTED FROM EROSION DURING ROUGH GRADING OPERATIONS AND THEREAFTER, UNTIL INSTALLATION OF FINAL GROUNDCOVER (SEE LANDSCAPE PLANS FOR FINAL GROUNDCOVER).
   b. ALL SLOPE PROTECTION SWALES SHALL BE CONSTRUCTED AT THE SAME TIME AS BANKS ARE GRADED.
   c. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS OR AS REQUIRED BY THE CITY, DISTRICT, OR OTHER REGULATORY AUTHORITY. CONCEPTUAL SILT FENCE LOCATIONS SHOWN ARE CONCEPTUAL AND THE CONTRACTOR IS REQUIRED TO FINALIZE SILT FENCE LOCATIONS AS PART OF THEIR SWPPP AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (E.G. HYDROSEEDING, MULCHING OF STRAW, SAND BAGGING, DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS INTO EXISTING PUBLIC STREETS, WATERWAYS, OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS.

SURVEY AND CONTROL

1. THIS DOCUMENT IS NOT REFLECTIVE OF A BOUNDARY SURVEY. EASEMENT LIMITS SHOWN HEREIN HAVE BEEN GRAPHICALLY DEPICTED BASED ON INFORMATION PROVIDED BY TAMPA BAY WATER.

   THE UNDERSIGNED HAS PERFORMED A CURSORY REVIEW OF THIS PLOTTED EASEMENT INFORMATION IN RELATION TO RECORD DATA OBTAINED FROM THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT; AND IN RELATION TO THAT CERTAIN EASEMENT AGREEMENT RECORDED IN OFFICIAL RECORD BOOK 3114, PAGE 999, OF THE PUBLIC RECORDS OF HILLSBOROUGH COUNTY, FLORIDA.

   THE ABOVE NOTED REVIEW HAS INDICATED THAT THE PLOTTED EASEMENT DATA MAY CONTAIN ERRORS IN POSITIONING OF BETWEEN 0-3 FEET FOR CERTAIN WELL-SITES ALONG THE NORTHERN PORTION OF THE FLATWOODS PARK TRAIL LOOP; AND BETWEEN 0-9 FEET FOR CERTAIN WELL SITES ALONG THE SOUTHEN PORTION OF THE FLATWOODS PARK TRAIL LOOP. THESE ERRORS ARE GENERALLY IN AN EAST/WEST DIRECTION AND ARE REFLECTIVE ONLY OF POTENTIAL POSITIONING ERRORS BASED ON APPARENT INCONSISTENCIES FOUND BETWEEN THE VARIOUS DATA SOURCES CONSULTED. THIS STATEMENT IS NOT REFLECTIVE OF A FORMAL DETERMINATION OF THE EXISTENCE AND NATURE OF ANY SPECIFIC ERRORS AND NOTICE OF THESE CONDITIONS ARE BEING MADE AS THE RESOLUTION OF INCONSISTENCIES, IF ANY, IN EASEMENT INFORMATION PROVIDED TO STANTEC FOR USE IN PREPARING THIS MAP IS BEYOND STANTEC'S CONTRACTUAL SCOPE OF SERVICES.

2. AERIALS WERE OBTAINED FROM THE LAND BOUNDARY INFORMATION SYSTEM (LABINS) DATED 2020.
3. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
4. HORIZONTAL POSITIONS SHOWN HEREON ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT), FLORIDA WEST (ZONE 0902)

PERMITTING

1. SEE SPECIFICATION SECTION 01060 FOR PERMITS AND REGULATORY REQUIREMENTS
2. THERE ARE NO NEW SEPTIC TANK OR SEWER LINE CONNECTIONS PROVIDED FOR THE PROJECT.
3. THE POWER DISTRIBUTION INFRASTRUCTURE SUPPLYING ALL WELLS SITES IS OWNED BY TAMPA BAY WATER.
4. WIRELESS CELLULAR RADIO CONNECTION SHALL BE FURNISHED AND INSTALLED BY TAMPA BAY WATER.

DRAINAGE SYMBOLS

- RIPRAP
- HAY BALE
- SILT FENCE

CORROSION CONTROL SYMBOLS

- ETS — ELECTROLYSIS TEST STATION
- T — CATHODIC TEST STATION
- CTS — CORROSION TEST STATION CASING
- CATS — TEST STATION INSULATING JOINT
- IJTS — TEST STATION FOREIGN PIPELINE
- FPTS — TEST STATION CURRENT SPAN
- CSTS — TEST STATION

GENERAL CIVIL SYMBOLS

- NEW
- EXISTING
- FUTURE
- EXISTING TO BE REMOVED OR DEMOLISHED
- CENTERLINE/30-FT WETLAND BUFFER LINE
- EARTH (IN SECTION)
- COMPACTED EARTH (IN SECTION)
- S=0.0123 — SLOPE ON PAVED SURFACE
- 3:1 — BERM SLOPE (HORZ TO VERT)

TOPOGRAPHY AND MAPPING SYMBOLS

- 125 — MAJOR CONTOURS
- MINOR CONTOURS
- TOP OF SLOPE
- TOE OF SLOPE
- P/L — PROPERTY LINE
- R/W — RIGHT-OF-WAY LINE
- GB — GRADE BREAK
- R — RIDGE LINE
- ESMT — EASEMENT LINE
- TEMP ESMT — TEMPORARY EASEMENT LINE
- TRAIL OR DIRT ROAD
- FLOW LINE
- FLOOD HAZARD AREA
- EDGE OF WETLANDS
- RAILROAD
- GUARDRAIL (PERMANENT)
- GUARDRAIL (REMOVABLE)
- VEGETATION
- WELL

GEOTECHNICAL SYMBOLS

- B-X — SOIL BORING LOCATION
- TEST PIT LOCATION
- XX — OBSERVATION HOLE
- MW — MONITORING WELL

PIPING AND UTILITIES

UTILITIES (SINGLE LINE) SEE PIPE SCHEDULE FOR ADDITONAL PIPING INFO

- UTILITIES (SIZE WHERE NOTED)
- G — UNDERGROUND

G	NATURAL GAS LINE
HPG	HIGH PRESSURE GAS LINE
LPG	LIQUID PETROLIUM GAS LINE
W	WATER
PW	POTABLE WATER
FIRE	FIRE SUPPLY WATER LINE
REW	RECLAIMED WATER
UW	UTILITY / NON-POTABLE WATER
IRRG	IRRIGATION LINE
SDR	STORM DRAIN
SS	SANITARY SEWER
STM	STEAM LINE
TEL	TELEPHONE
COMM	COMMUNICATIONS LINE
FOC	FIBER OPTIC CABLE
CATV	CABLE TV
E	POWER
UNID	UNIDENTIFIED
ABND	ABANDONED UTILITY

- BUMPED HEAD
- PP — POWER POLE
- BURIED ACCESS MANOLE (IN PLAN) LOCATE ON SIDE SHOWN
- BURIED ACCESS MANHOLE (IN PROFILE)
- AV/AR VALVE (IN PLAN)
- AV/AR VALVE (IN PROFILE)
- A/R VALVE (IN PLAN) LOCATE ON SIDE SHOWN
- BLOWOFF (IN PROFILE) LOCATE ON SIDE SHOWN
- BLOWOFF (IN PLAN)
- BLOWOFF (IN PROFILE)
- FH — FIRE HYDRANT (IN PLAN)
- FH — FIRE HYDRANT (IN PROFILE)
- MH — MANHOLE (IN PLAN)
- MH — MANHOLE (IN PROFILE)
- COTG / PCOTG — CLEANOUT TO GRADE OR PRESSURE CLEANOUT TO GRADE (IN PLAN)
- COTG / PCOTG — CLEANOUT TO GRADE OR PRESSURE CLEANOUT TO GRADE (IN PROFILE)
- GATE VALVE
- BUTTERFLY VALVE
- ECCENTRIC PLUG VALVE
- LUBRICATED PLUG VALVE

ROAD AND PAVING SYMBOLS

- ASPHALT CEMENT PAVING
- CONCRETE PAVING (HEAVY DUTY)
- GRAVEL PAVING
- CONCRETE PAVING (LIGHT DUTY) SIDEWALKS ETC...
- CONCRETE CURB
- CONCRETE CURB AND GUTTER
- DROP INLET CATCH BASIN
- CURBSIDE DROP INLET CATCH BASIN WITH LOCAL DEPRESSION
- SIDE INLET CATCH BASIN WITH LOCAL DEPRESSION
- CONCRETE WALK
- DRIVEWAY/ACCESS RAMP

CONTROL SYMBOLS

- BM-XX — BENCH MARK
- ### — SITE COORDINATES (SEE TABLE ON DRAWINGS)
- N XXXXXXX E XXXXXXX — SITE COORDINATES
- EL XXXX.XX — MONUMENT
- HORIZONTAL CONTROL POINT
- VERTICAL CONTROL POINT
- HORZ AND VERT CONTROL POINT
- XXX.XX — FINISHED ELEVATION
- (XXX.XX) — EXISTING ELEVATION
- DELTA

STRUCTURES

- SITE OR RETAINING WALL
- x x — FENCE (CHAINLINK)
- FENCE (WOOD)
- STRUCTURE
- STRUCTURE (BELOW GRADE)
- CB CB — CATCH BASIN

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Tel: 813 204-3305
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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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0	09/2025	ISSUED FOR BID	DS

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	GC-01.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

CIVIL NOTES AND SYMBOLS

SCALE: NO SCALE

SHEET NO: GC-01

SHEET 5 OF 120

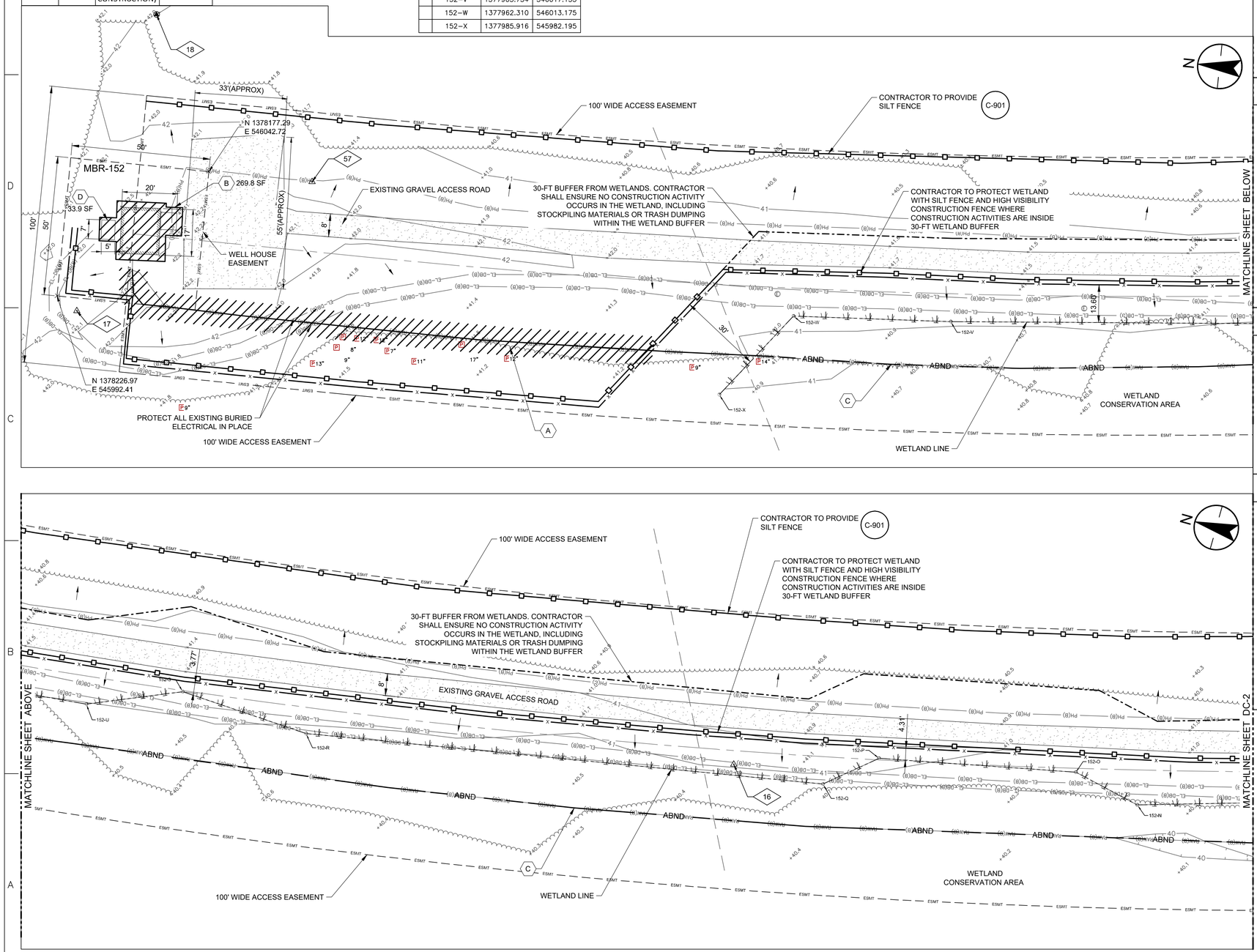
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\GC-01.DWG Scale:1:1 SavedDate:2/2/2025 Time:18:22 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:27 ; Layout:GC-01

WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	152-N	1377419.808	546095.697
	152-O	1377444.316	546101.060
	152-P	1377513.958	546086.690
	152-Q	1377530.949	546072.303
	152-R	1377715.230	546039.481
	152-S	1377762.062	546041.986
	152-U	1377794.299	546028.270
	152-V	1377905.754	546017.155
	152-W	1377962.310	546013.175
	152-X	1377985.916	545982.195

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
16	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1377563.77	546070.47	40.92	0705-09D
17	CAPPED IRON ROD 5/8 TP/RP L.B.7866,0705-09E	1378219.32	545987.79	42.22	0705-09E
18	BENCHMARK "4825 MBR-BM-3"	1378202.01	546097.01	41.70	0705-09F
57	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378139.91	546042.98	41.89	

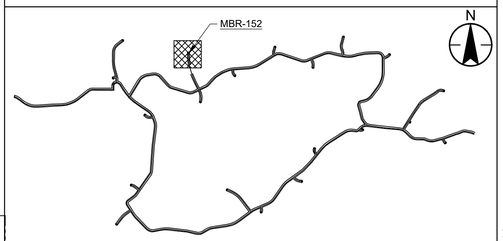
IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
152	323.7	33.9 (NO NEW CONSTRUCTION)	-289.8

0 20 40
SCALE IN FEET



1 C-1 WELL SITE MBR-152
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 15 FOR PIPE PROFILES.
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS.
6. SEE SHEET DM SHEETS FOR MECHANICAL DEMOLITION DETAILS.
7. SEE SHEET DE SHEETS FOR ELECTRICAL DEMOLITION.
8. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
9. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-152 PIPELINE (APPROX. 200 FT).
B. DEMOLISH BUILDING, CONCRETE PADS, FENCING, AND RESTORE SITE PER SHEET DC - 50.
C. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 30-FT FROM WETLAND BOUNDARY. (APPROX. 670 FT).
D. DEMOLISH AND REPLACE ELECTRICAL VAULT PER SHEET DE - 1 .

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- EXISTING GRAVEL
- P 12" PINE *

* INDICATES PINE TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: DC-1.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-152 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-1

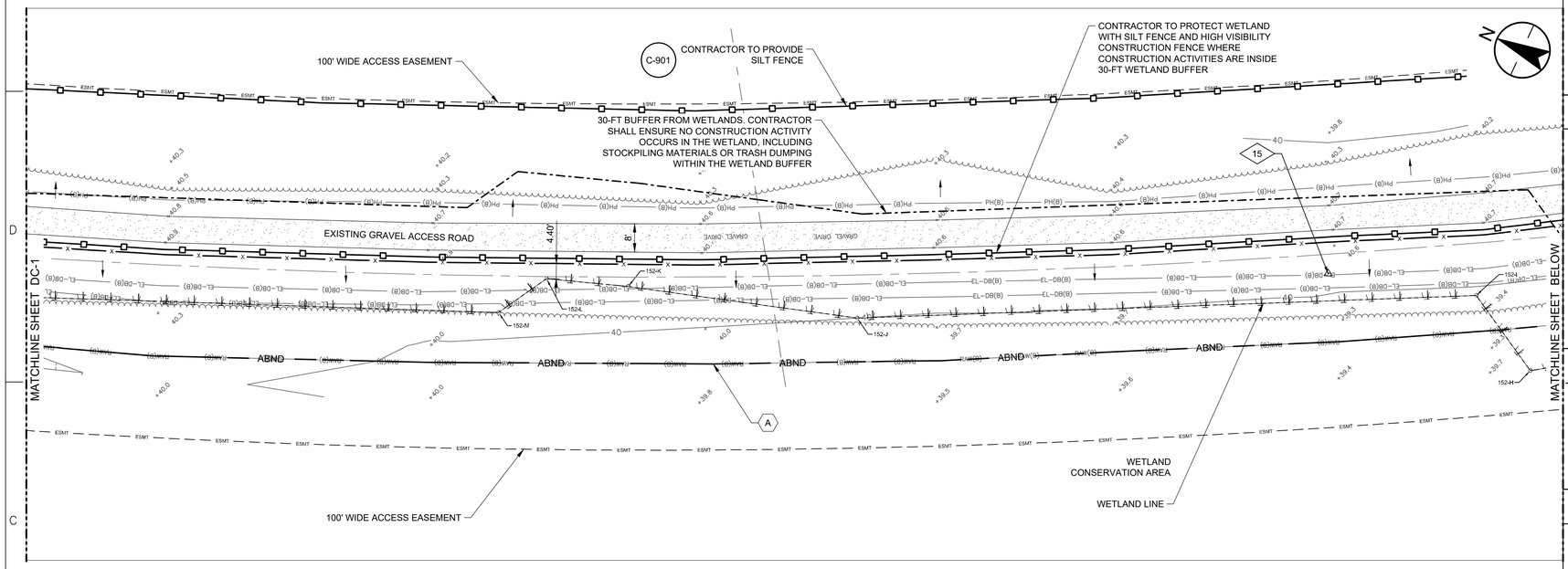
SHEET 6 OF 120

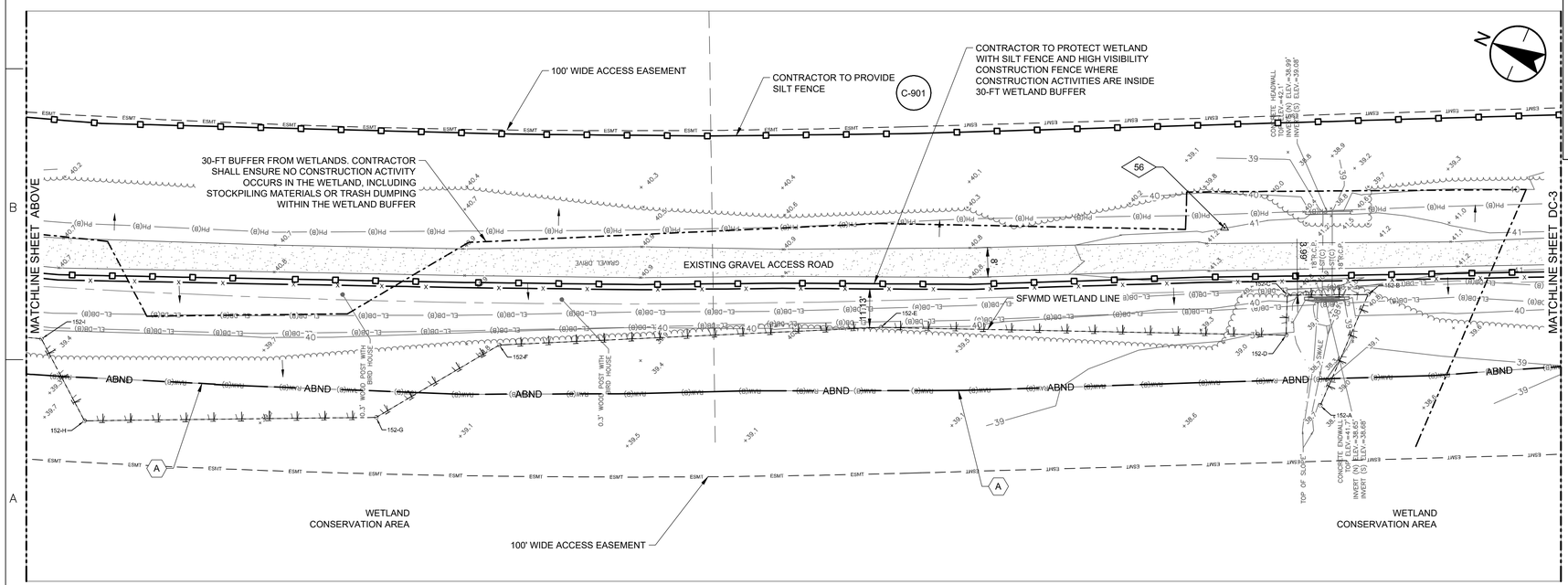
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:04 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:29 ; Layout:DC-1

WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	152-A	1376655.508	546387.233
	152-B	1376657.603	546422.019
	152-C	1376678.346	546411.390
	152-D	1376673.491	546400.907
	152-E	1376779.048	546350.315
	152-F	1376875.299	546296.216
	152-G	1376897.635	546261.587
	152-H	1376972.489	546222.825

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
15	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1377036.75	546230.76	40.29	0705-09C
56	CAPPED IRON ROD 5/8 TP/RP L.B.7866	1376703.31	546420.62	41.18	

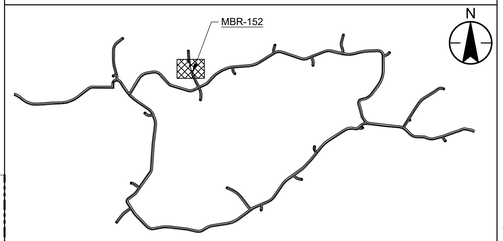
0 20 40
SCALE IN FEET





1 C-1 WELL SITE MBR-152
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 15 FOR PIPE PROFILES.
5. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 30-FT FROM WETLAND BOUNDARY. (APPROX. 860 FT)

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- EXISTING GRAVEL

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PROJECT NO.:	50021
FILE NAME:	DC-2.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-152 DEMOLITION PLAN

SCALE: 1" = 20'

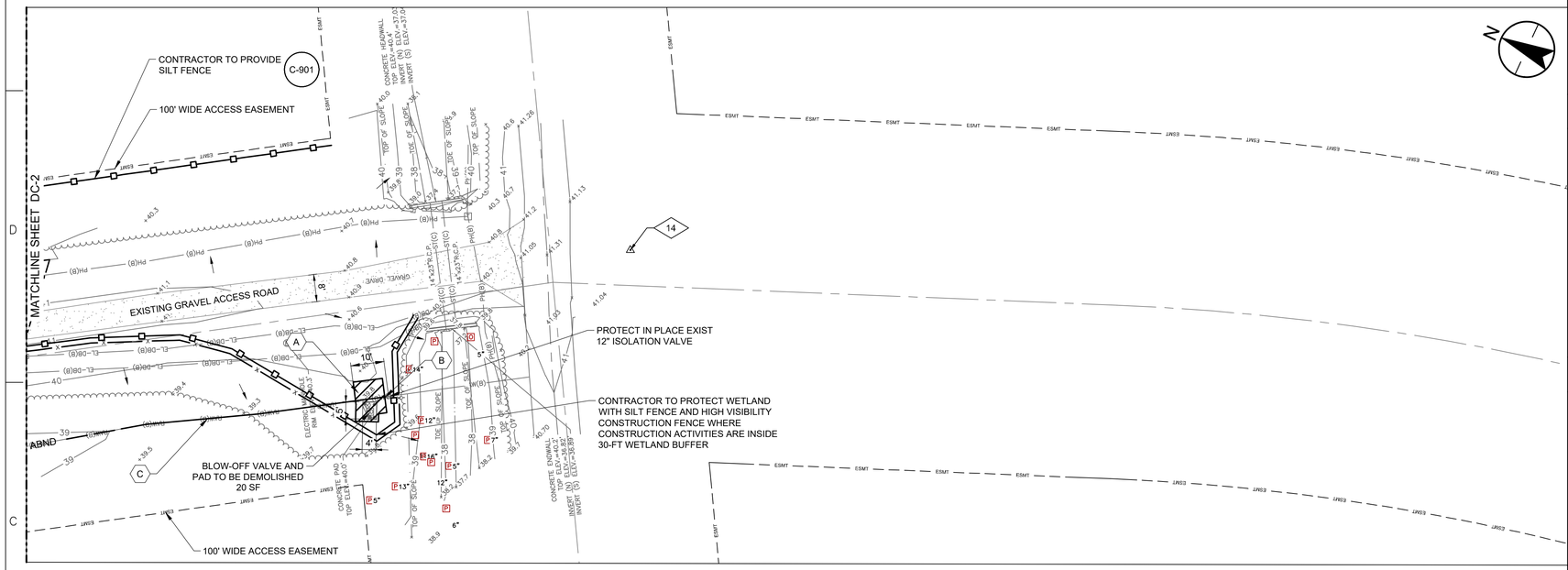
SHEET NO: DC-2

SHEET 7 OF 120

User: SVADHAWKAR Spec: NAT CADD STD File: C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale: 1:1 SavedDate: 4/30/2025 Time: 16:04 Plot Date: Vadhawkar, Samir 4/30/2025; 16:29 ; Layout:DC-2

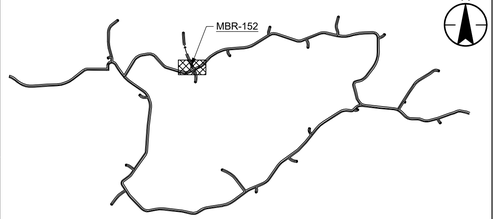
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
14	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1376474.51	546530.39	40.95	0705-09B

0 20 40
SCALE IN FEET



1 C-1 WELL SITE MBR-152
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 15 FOR PIPE PROFILES.
5. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-152 PIPELINE FROM THE ISOLATION VALVE TO A LENGTH OF APPROXIMATELY 10 FT.
B. CONTRACTOR SHALL INSTALL A BLIND FLANGE OR MECHANICAL JOINT PLUG TO CAP THE ISOLATION VALVE AS DETERMINED BY FIELD INVESTIGATION.
C. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 10-FT SHORT OF ISOLATION VALVE LOCATION (APPROX. 100 FT).

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *
- O 12" OAK *

* INDICATES PINE/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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The contractor is responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The Contractor is to assume sole responsibility for the means, methods, techniques, sequences and procedures necessary for the coordination and completion of the Work in accordance with the Contract Documents and all Applicable Laws. Construction must be performed in accordance with the latest Occupational Safety and Health Administration (OSHA) Standards.

SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: DC-3.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-152 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-3

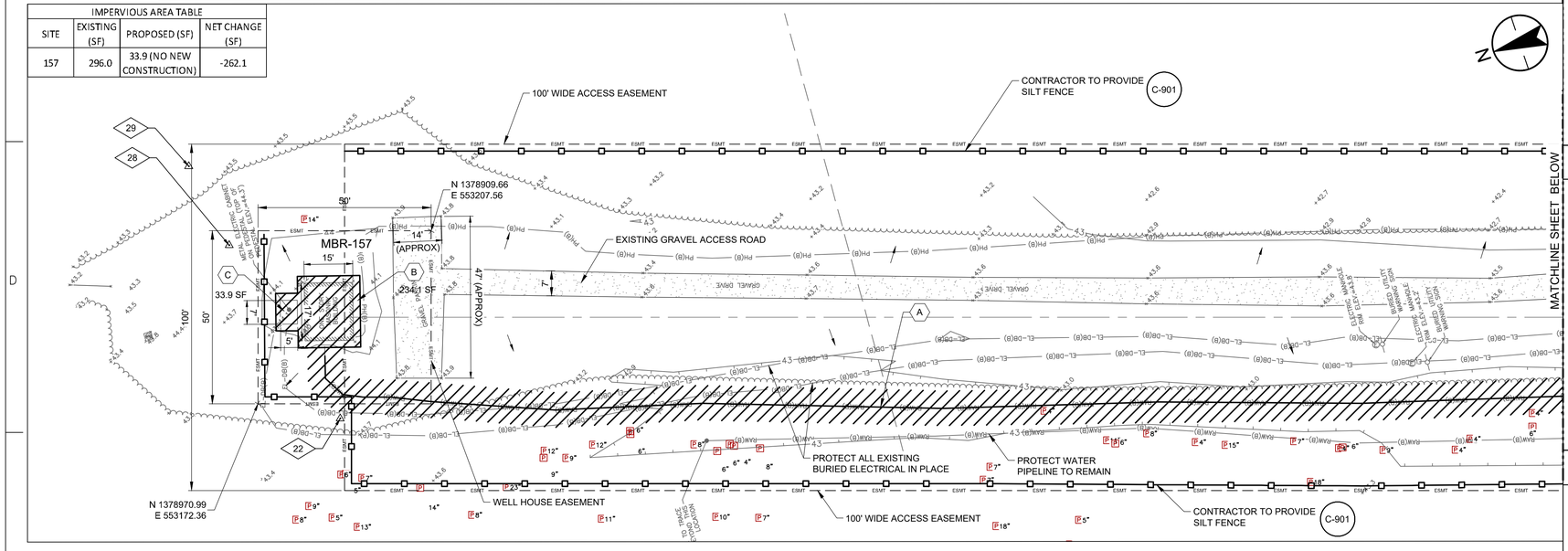
SHEET 8 OF 120

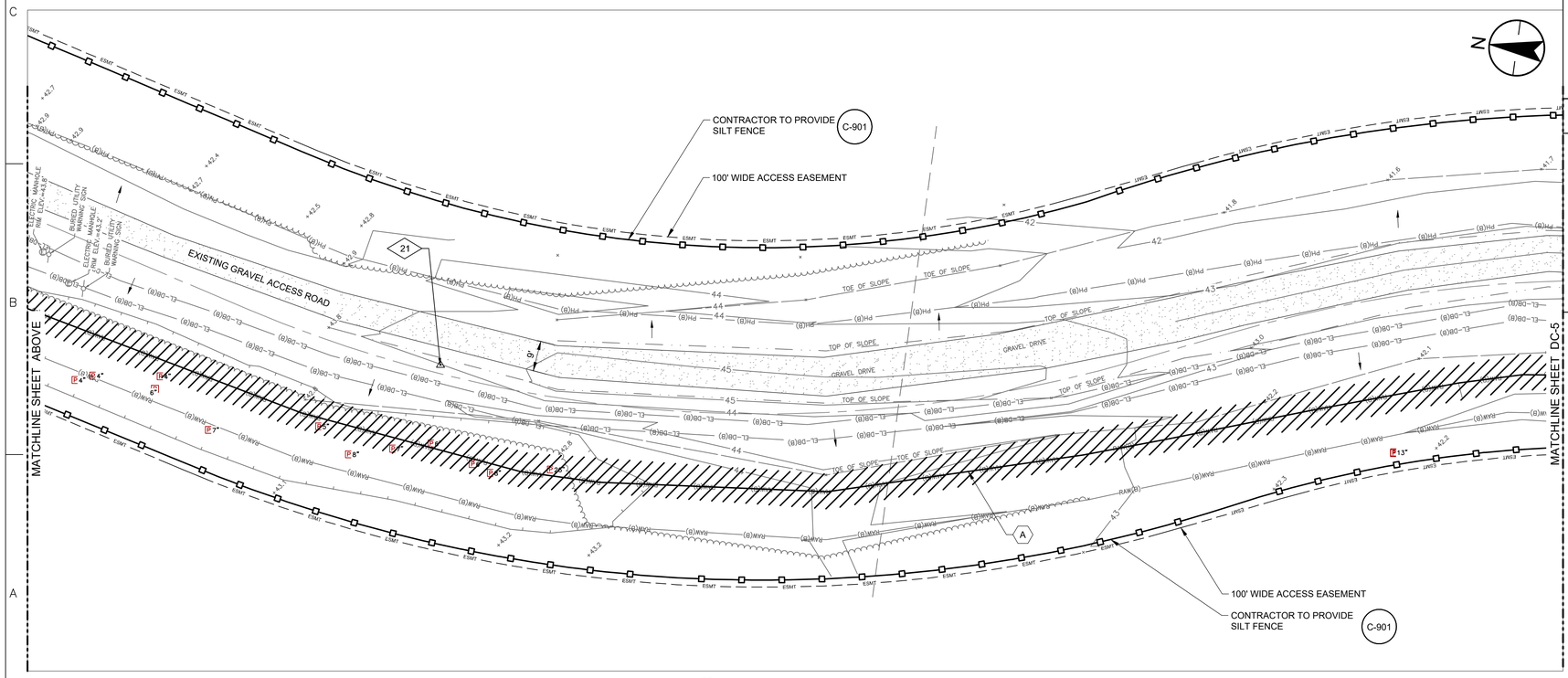
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:8/29/2025 Time:12:24 Plot Date: Vadhawkar, Samir 8/29/2025; 12:35 ; Layout:DC-3

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
21	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378536.58	553087.71	43.82	0705-10C
22	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378949.19	553162.09	43.69	0705-10D
28	CAPPED IRON ROD 5/8" "TP/RP LB 7866"	1378967.05	553218.76	43.63	
29	CONCRETE MONUMENT "18540"	1378972.37	553243.81	43.60	0705-10E

IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
157	296.0	33.9 (NO NEW CONSTRUCTION)	-262.1

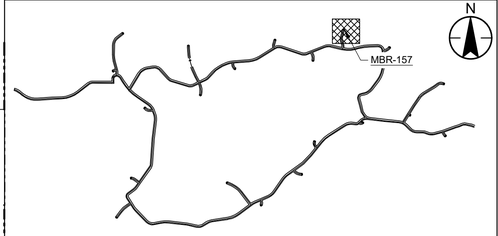
0 20 40
SCALE IN FEET





2 C-1 WELL SITE MBR-157
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.SEE SURVEY NOTES ON SHEET GC-01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
3. SEE DC - 16 FOR PIPE PROFILES.
4. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS.
5. SEE SHEET DM - 2 FOR MECHANICAL DEMOLITION DETAILS.
6. SEE SHEET DE - 2 FOR ELECTRICAL DEMOLITION.
7. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-157 PIPELINE (APPROX. 827 FT) .
B. DEMOLISH BUILDING, CONCRETE PADS, FENCING, AND RESTORE SITE PER SHEET DC - 50.
C. DEMOLISH AND REPLACE ELECTRICAL VAULT PER SHEET DE - 2.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *

* INDICATES PINE/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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Tel: 813 204-3305
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The Contractor is solely responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The Contractor is to design and develop the means, methods, techniques, sequences and procedures of construction for his/her/their portion of the Work. Shop Drawings prepared by the Contractor, its subcontractors, fabricators or suppliers which are required to gain regulatory approval shall be certified by a professional engineer registered in the jurisdiction in which the Work is performed.

SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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FILE NAME:	DC-4.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-157 DEMOLITION PLAN

SCALE: 1" = 20'

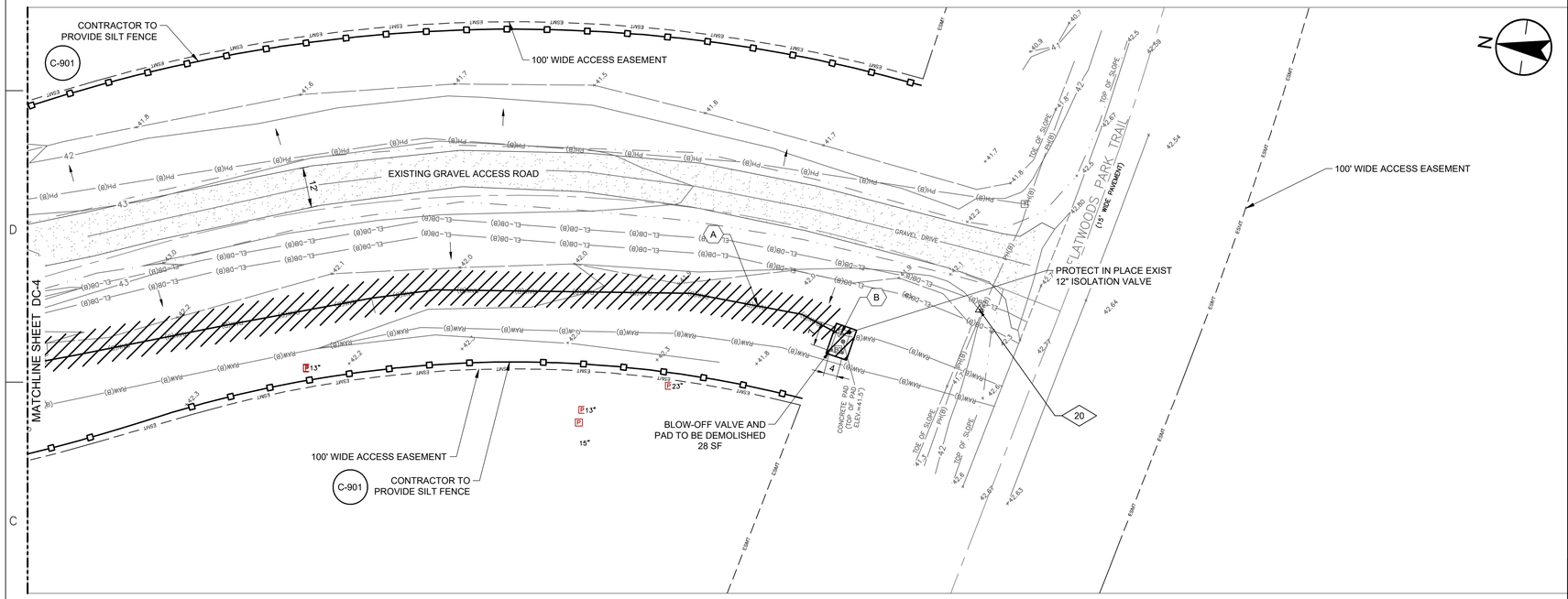
SHEET NO: DC-4

SHEET 9 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 Saveddate:4/30/2025 Time:16:04 Plot Date: Vadhawkar, Samir 4/30/2025; 16:30 ; Layout:DC-4

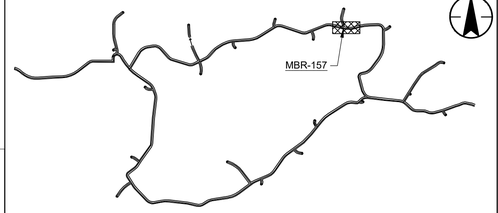
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
20	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378070.54	553142.50	41.97	0705-10B

0 20 40
SCALE IN FEET



2 C-1 WELL SITE MBR-157
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 16 FOR PIPE PROFILES.
5. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-157 PIPELINE (APPROX. 175 FT) .
B. CONTRACTOR SHALL INSTALL A BLIND FLANGE OR MECHANICAL JOINT PLUG TO CAP THE ISOLATION VALVE AS DETERMINED BY FIELD INVESTIGATION.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *

* INDICATES PINE/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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FILE NAME: DC-5.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-157 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-5

SHEET 10 OF 120

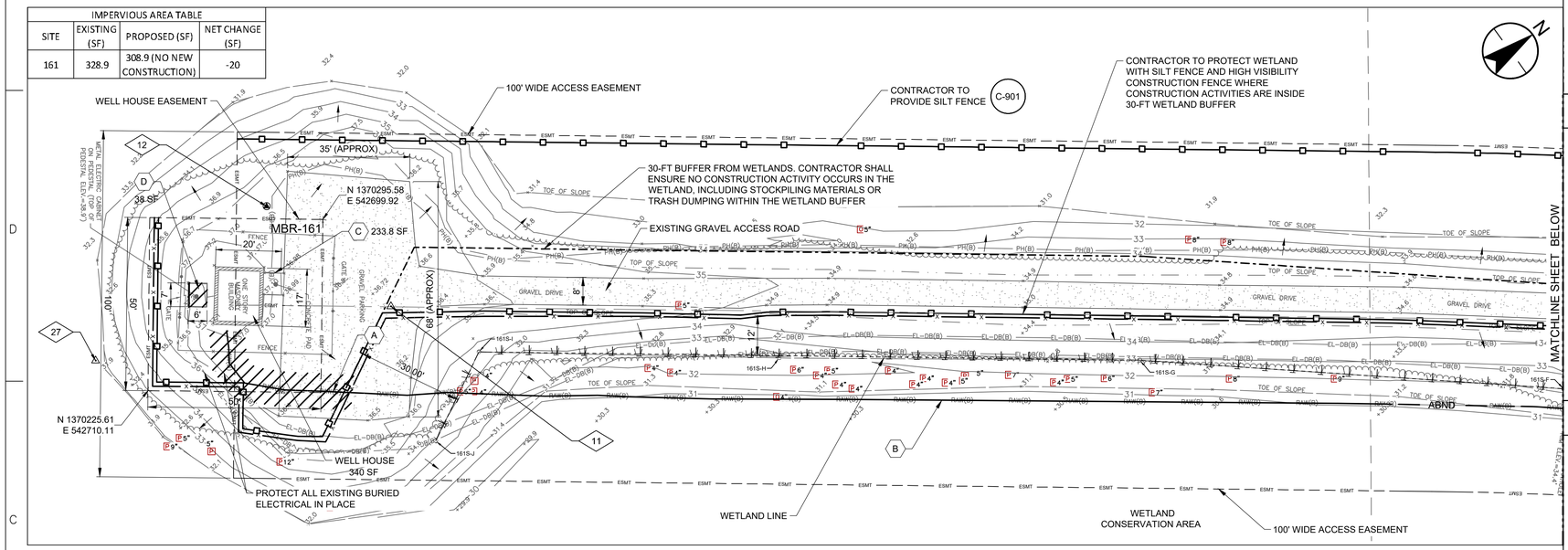
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:8/29/2025 Time:12:24 Plot Date: Vadhawkar, Samir, 8/29/2025; 12:33 ; Layout:DC-5

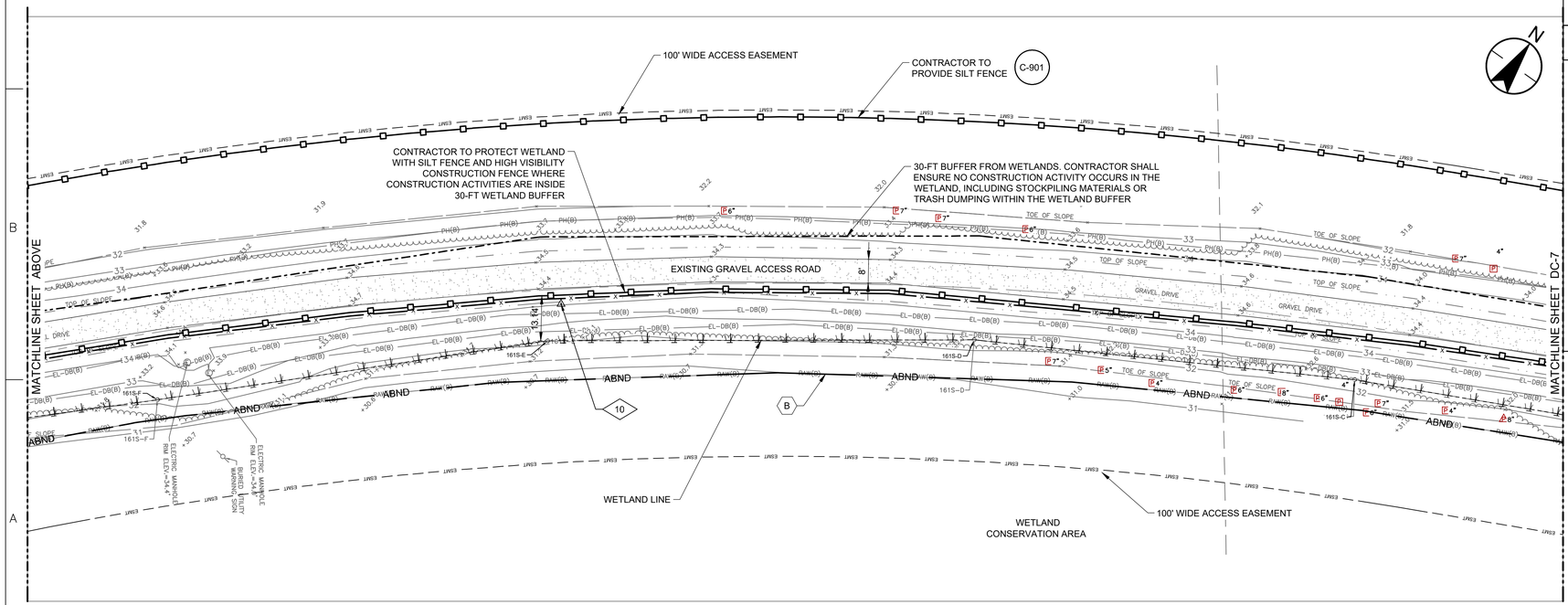
WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	161S–D	1370727.745	543113.637
	161S–E	1370644.779	543022.573
	161S–F	1370556.407	542950.494
	161S–G	1370462.377	542871.742
	161S–H	1370378.551	542809.861
	161S–I	1370309.485	542757.391
	161S–J	1370284.279	542770.833

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
10	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1370655.26	543018.27	34.01	0705–08D
11	NAIL AND DISK TP/RP L.B.7866	1370296.65	542731.80	36.64	0705–08E
12	BENCHMARK "6015 MBR–BM–30"	1370284.68	542687.27	36.32	0705–08F
27	CAPPED IRON ROD 5/8" "TP/RP LB 7866"	1370218.47	542694.23	31.75	

IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
161	328.9	308.9 (NO NEW CONSTRUCTION)	-20

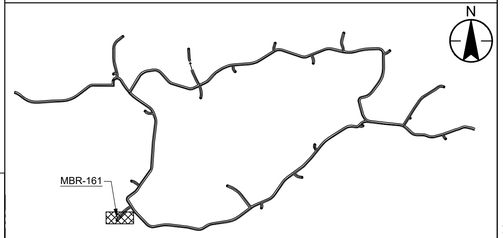
0 20 40
SCALE IN FEET





3 C-1 WELL SITE MBR-161
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 17 FOR PIPE PROFILES.
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS.
6. SEE SHEET DM - 3 FOR MECHANICAL DEMOLITION DETAILS.
7. SEE SHEET DE - 3 FOR ELECTRICAL DEMOLITION.
8. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-161 PIPELINE (APPROX. 60 FT)
B. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 30-FT FROM WETLAND BOUNDARY. (APPROX. 850 FT)
C. PROTECT EXISTING CONCRETE PADS AND PAVING ADJACENT TO WELL HOUSE.
D. DEMOLISH AND REPLACE ELECTRICAL VAULT PER SHEET DE - 3.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *
- 12" PALM *
- 12" OAK *

* INDICATES PINE/PALM/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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FILE NAME: DC-6.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-161 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-6

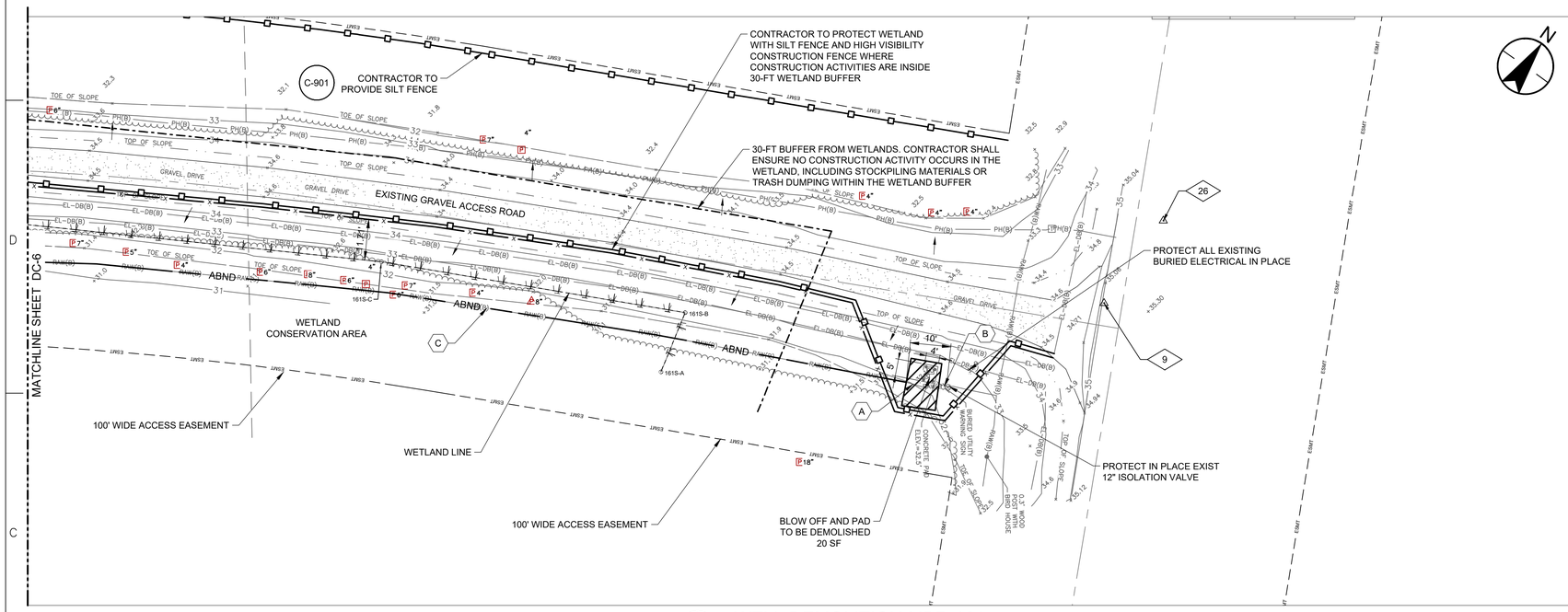
SHEET 11 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:04 Plot Date: Vadhawkar, Samir 4/30/2025; 16:31 ; Layout:DC-6

WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	161S–A	1370823.460	543283.351
	161S–B	1370840.732	543277.089
	161S–C	1370793.032	543202.785

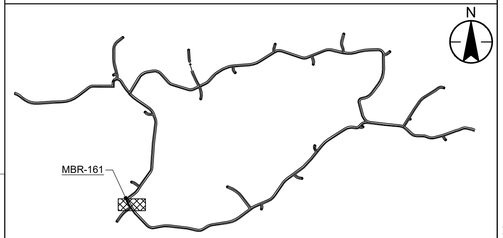
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
9	NAIL AND DISK TP/RP L.B.7866	1370923.41	543364.22	35.15	0705–08C
26	NAIL AND DISK "TP/RP L.B.7866"	1370952.35	543360.92	35.34	

0 20 40
SCALE IN FEET



3 / C-1 WELL DEMOLITION MBR-161
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 17 FOR PIPE PROFILES.
5. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-161 PIPELINE FROM THE ISOLATION VALVE TO A LENGTH OF APPROXIMATELY 10 FT.
B. CONTRACTOR SHALL INSTALL A BLIND FLANGE OR MECHANICAL JOINT PLUG TO CAP THE ISOLATION VALVE AS DETERMINED BY FIELD INVESTIGATION.
C. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 10-FT SHORT OF ISOLATION VALVE LOCATION (APPROX. 256 FT).

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- GRAVEL
- 12" PINE *
- 12" PALM *

* INDICATES PINE/PALM TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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FILE NAME: DC-7.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-161 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-7

SHEET 12 OF 120

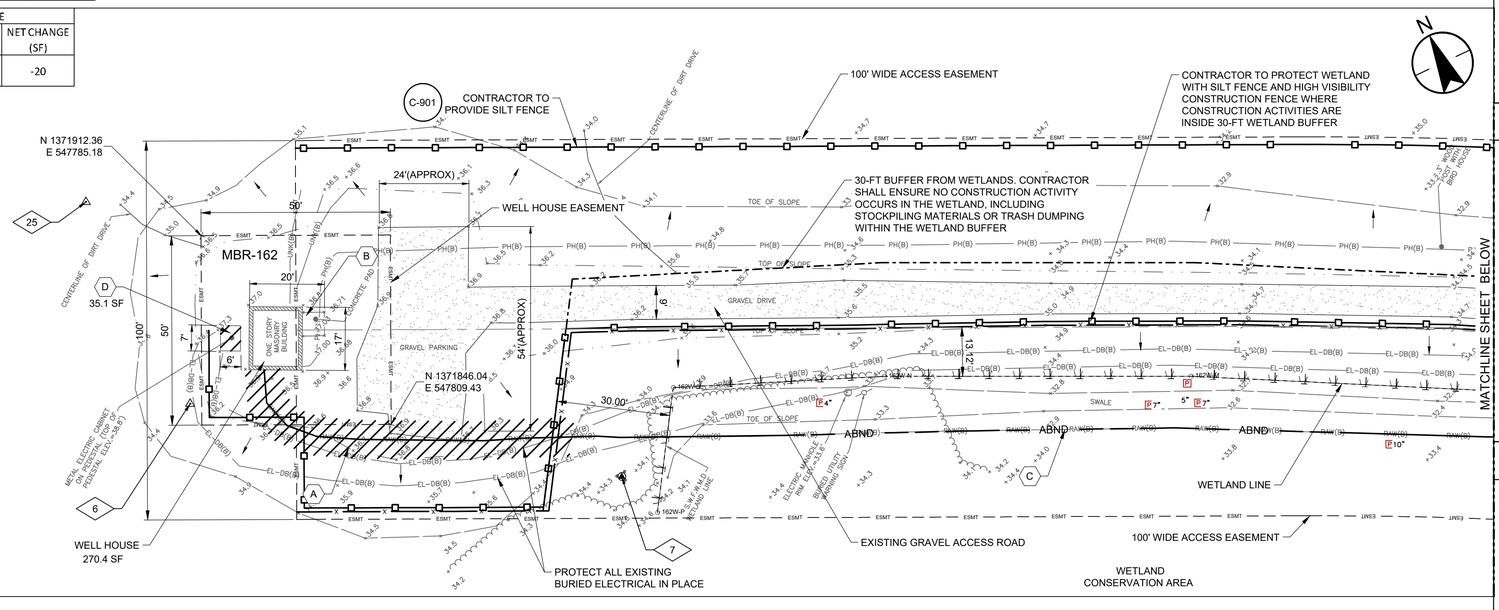
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:8/29/2025 Time:12:24 Plot Date: Vadhawkar, Samir 8/29/2025; 12:31 ; Layout:DC-7

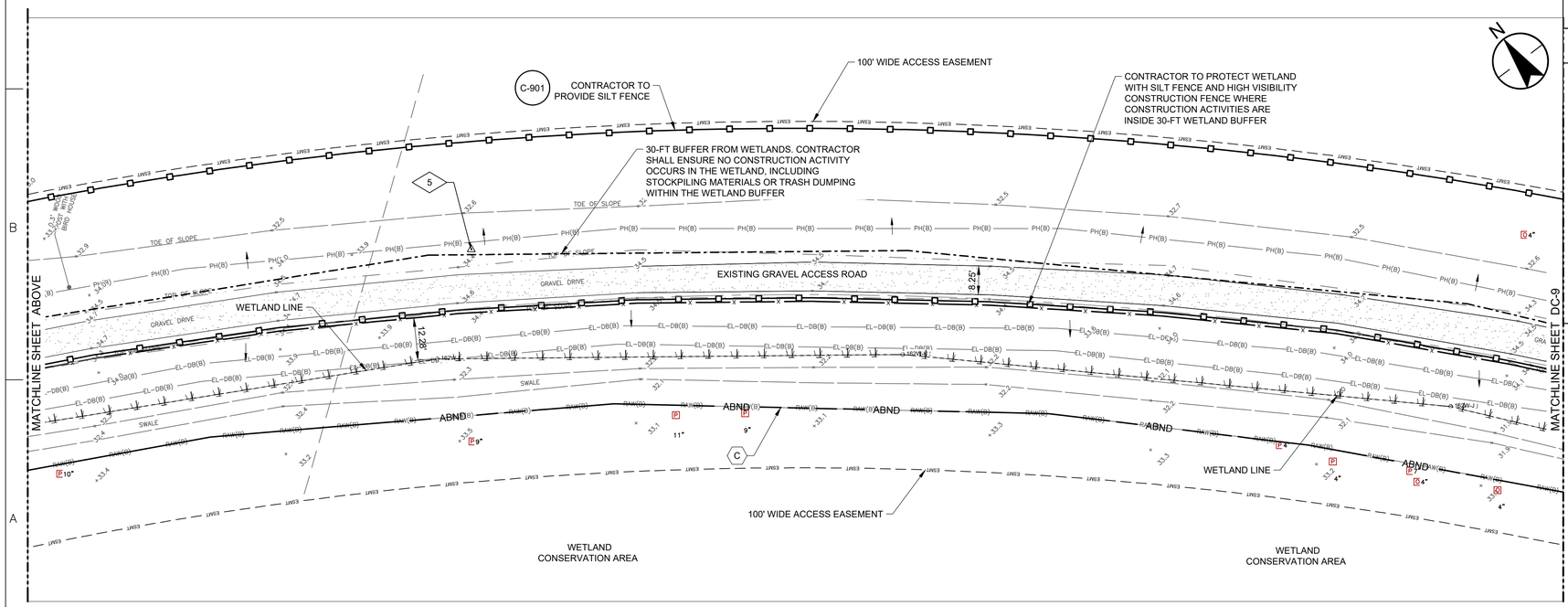
WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	162W-0	1371823.285	547880.980
	162W-J	1371503.164	548378.319
	162W-K	1371610.514	548260.979
	162W-L	1371690.452	548152.868
	162W-M	1371768.066	548006.025
	162W-N	1371802.336	547932.712
	162W-P	1371795.162	547863.217

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
5	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1371709.79	548179.78	34.06	0705-07F
6	CAPPED IRON ROD 5/8 TP/RP L.B.7866,0705-07G	1371873.44	547763.66	35.88	0705-07G
7	BENCHMARK "4822 MBR-PCM-5"	1371807.76	547858.72	33.82	0705-07H
25	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1371933.33	547761.34	34.46	

IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
162	325.5	305.5 (NO NEW CONSTRUCTION)	-20

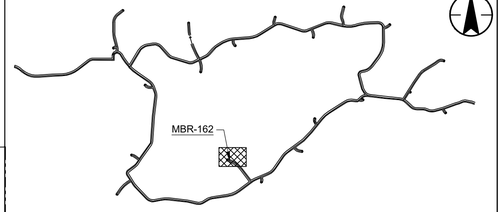
0 20 40
SCALE IN FEET





4 / C-1 WELL SITE MBR-162
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 18 FOR PIPE PROFILES.
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS.
6. SEE SHEET DM - 4 FOR MECHANICAL DEMOLITION DETAILS.
7. SEE SHEET DE - 4 FOR ELECTRICAL DEMOLITION.
8. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE 12" RAW WATER MBR-162 PIPELINE (APPROX. 125 FT)
B. PROTECT EXISTING CONCRETE PADS AND PAVING ADJACENT TO WELL HOUSE.
C. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 30-FT FROM WETLAND BOUNDARY (APPROX. 700 FT).
D. DEMOLISH AND REPLACE ELECTRICAL VAULT PER SHEET DE - 4.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *
- O 12" OAK *

* INDICATES PINE/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

ISSUED FOR BID

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DC-8.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-162 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-8

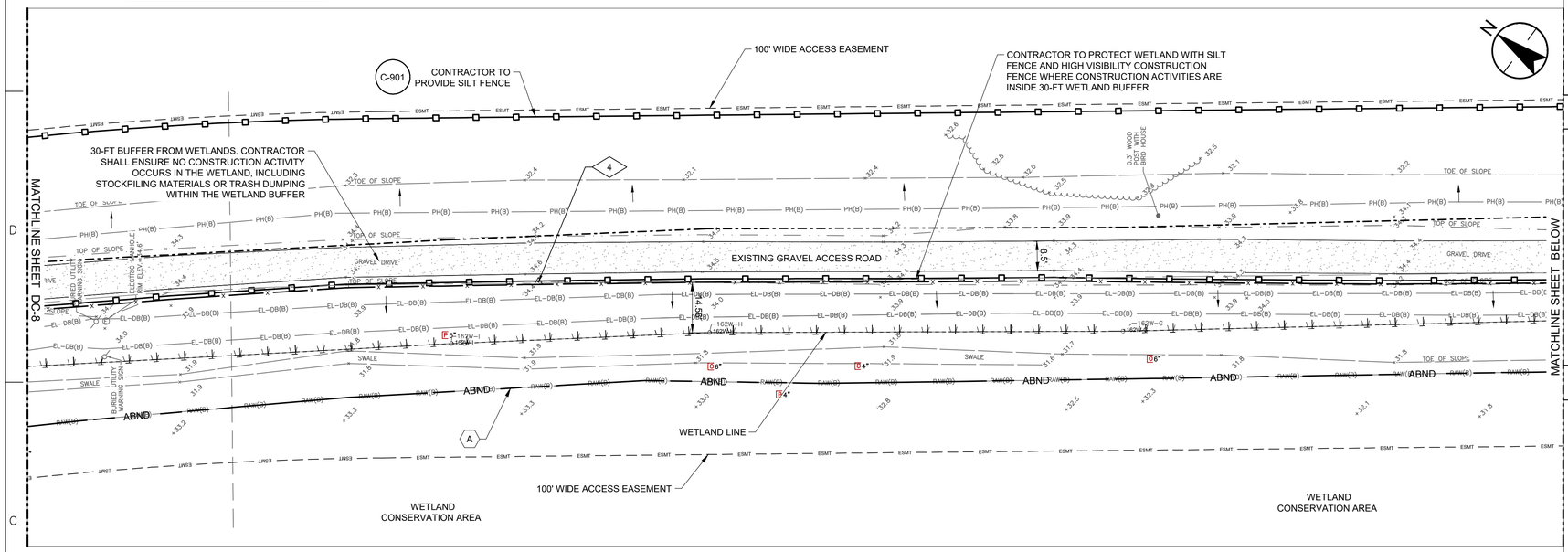
SHEET 13 OF 120

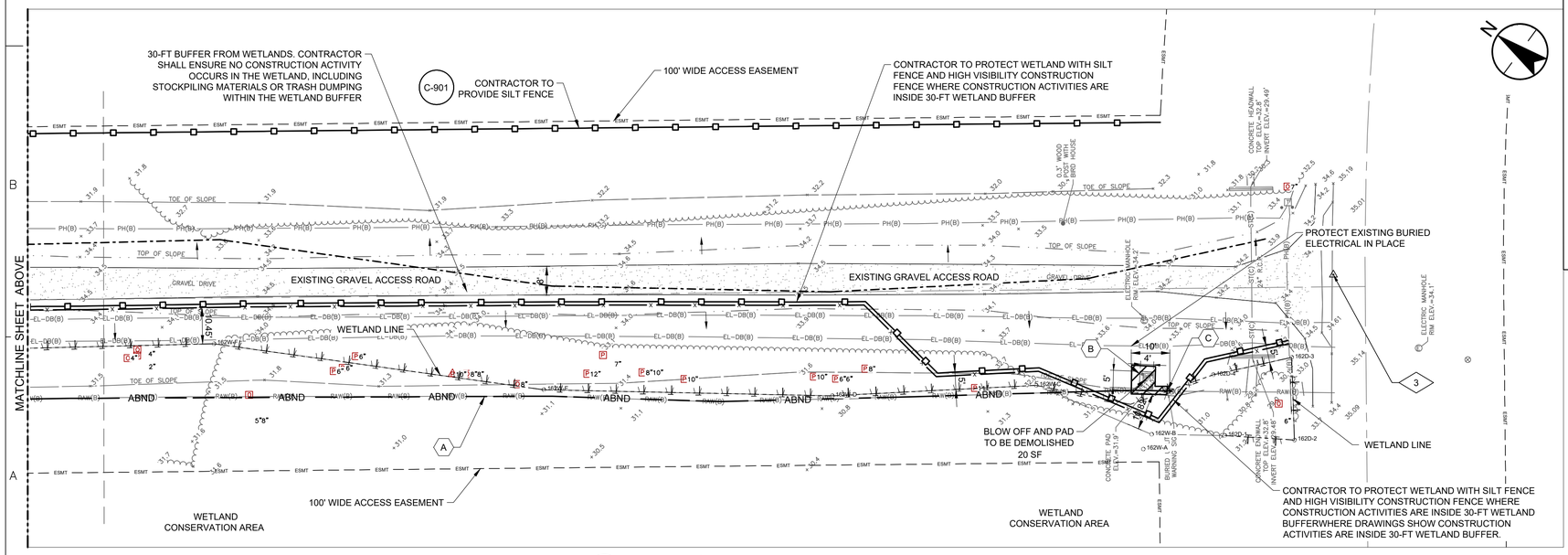
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:04 Plot Date: Vadhawkar, Samir 4/30/2025; 16:32 ; Layout:DC-8

WETLAND POINT TABLE			
	DESIGNATION	NORTHING	EASTING
	162D-1	1370855.408	548843.783
	162D-2	1370838.462	548854.719
	162D-3	1370853.293	548873.401
	162D-4	1370868.505	548855.893
	162W-B	1370872.598	548831.497
	162W-C	1370907.846	548823.026

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
3	NAIL AND DISK "TP/RP L.B.7866"	1370857.75	548899.76	35.21	0705-07D
4	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1371381.87	548499.87	34.56	0705-07E

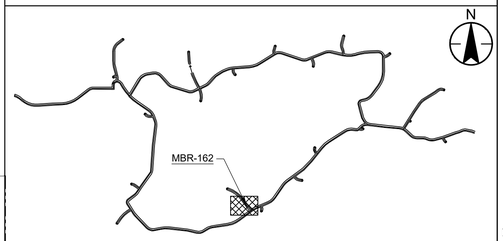
0 20 40
SCALE IN FEET





4 C-1 WELL SITE MBR-162
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 18 FOR PIPE PROFILES.
5. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. FULLY GROUT PIPE AND ABANDON IN PLACE BENEATH WETLAND AND EXTENDING 10-FT SHORT OF ISOLATION VALVE LOCATION. (APPROX. 760 FT)
B. REMOVE MBR-162 PIPELINE FROM THE ISOLATION VALVE TO A LENGTH OF APPROXIMATELY 10 FT.
C. CONTRACTOR SHALL INSTALL A BLIND FLANGE OR MECHANICAL JOINT PLUG TO CAP THE ISOLATION VALVE AS DETERMINED BY FIELD INVESTIGATION.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *
- 12" PALM *
- O 12" OAK *

* INDICATES PINE/PALM/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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PROJECT NO.: 50021

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SHEET TITLE

WELL HOUSE MBR-162 DEMOLITION PLAN

SCALE: 1" = 20'

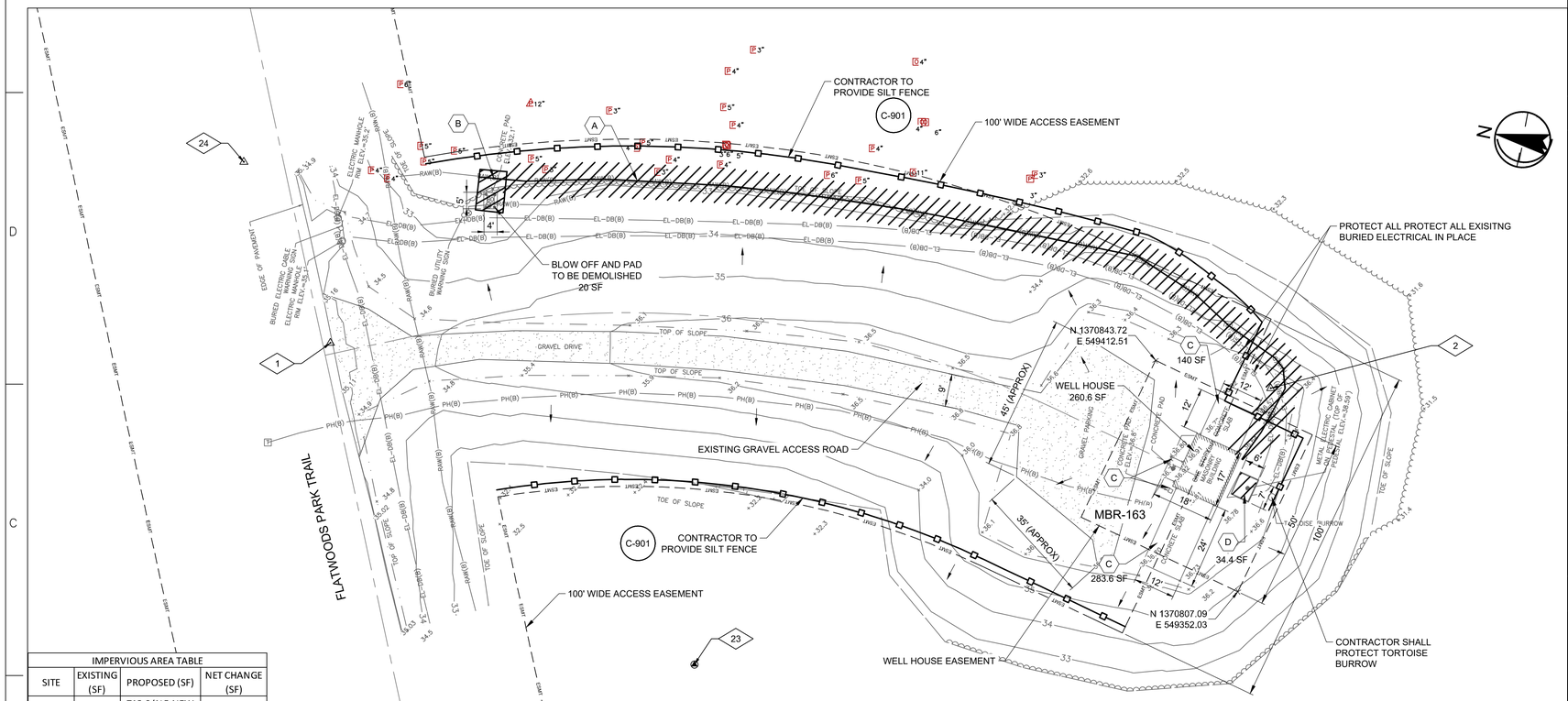
SHEET NO: DC-9

SHEET 14 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:8/29/2025 Time:12:24 Plot Date: Vadhawkar, Samir 8/29/2025; 12:29 ; Layout:DC-9

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
1	NAIL AND DISK TP/RP L.B.7866	1371077.55	549369.66	35.21	0705-07C
2	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1370809.61	549411.29	36.28	0705-07B
23	BENCHMARK "4847 MBR-BM-25"	1370956.25	549299.99	32.14	0705-07A
24	NAIL AND DISK "TP/RP L.B.7866"	1371112.44	549415.76	35.06	

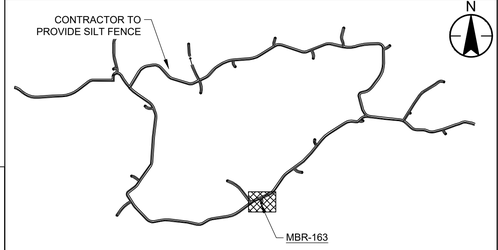
0 20 40
SCALE IN FEET



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
163	738.6	718.6 (NO NEW CONSTRUCTION)	-20

5 / C-1 WELL SITE MBR-163
SCALE : 1" = 20'

KEY PLAN



GENERAL SHEET NOTES

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2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE DC - 19 FOR PIPE PROFILES.
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS.
6. SEE SHEET DM - 5 FOR MECHANICAL DEMOLITION DETAILS.
7. SEE SHEET DE - 5 FOR ELECTRICAL DEMOLITION.
8. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
6. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. REMOVE MBR-163 PIPELINE (APPROX. 270 FT)
B. CONTRACTOR SHALL INSTALL A BLIND FLANGE OR MECHANICAL JOINT PLUG TO CAP THE ISOLATION VALVE AS DETERMINED BY FIELD INVESTIGATION.
C. PROTECT EXISTING CONCRETE PADS AND PAVING ADJACENT TO WELL HOUSE.
D. DEMOLISH AND REPLACE ELECTRICAL VAULT PER SHEET DE - 5.

LEGEND

- EASEMENT
- SILT FENCE
- TEMPORARY CONSTRUCTION FENCE
- SHEET FLOW DIRECTION
- GRAVEL
- P 12" PINE *
- 12" PALM *
- 12" OAK *

* INDICATES PINE/PALM/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SHEET TITLE

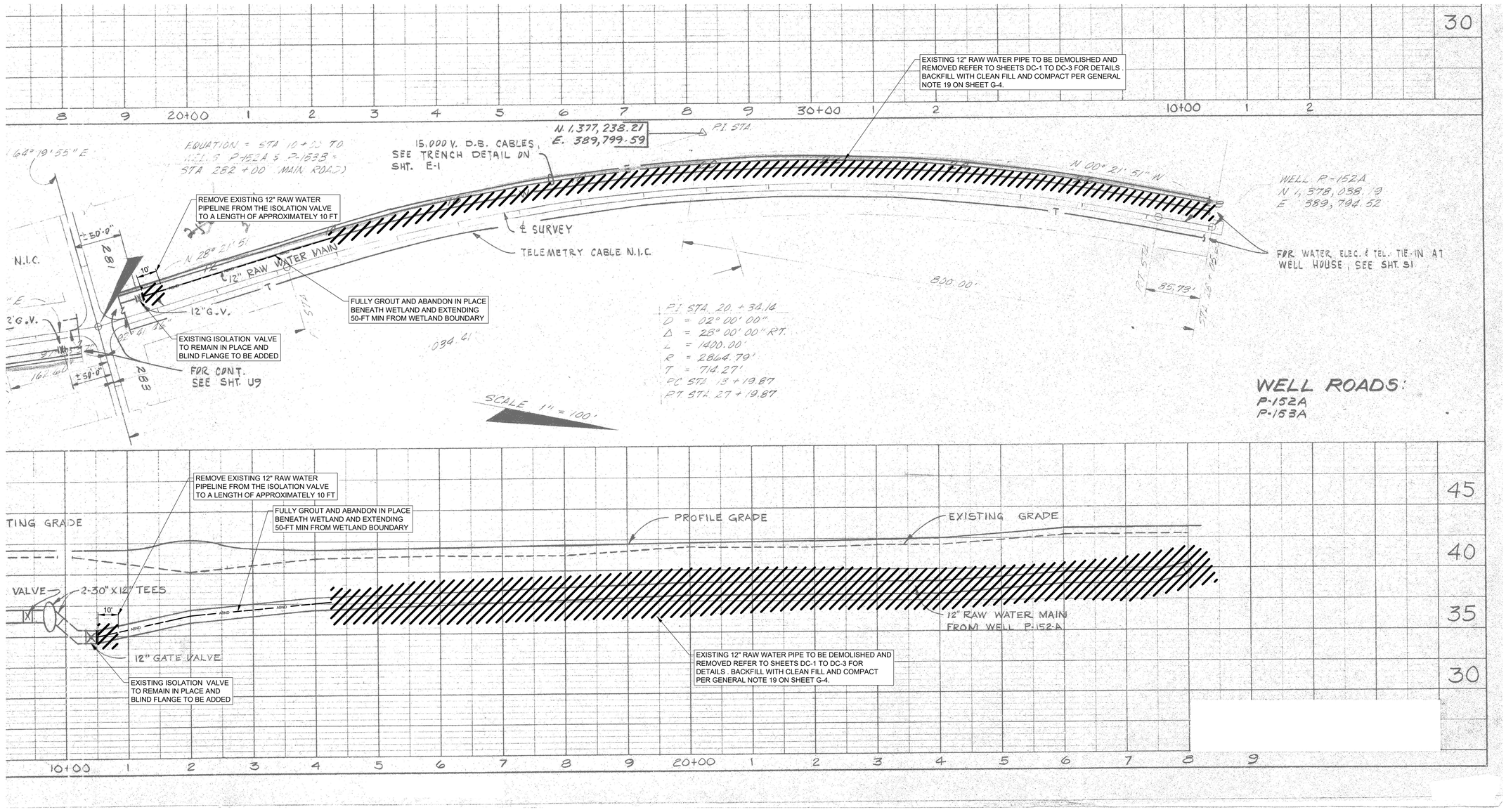
WELL HOUSE MBR-163 DEMOLITION PLAN

SCALE: 1" = 20'

SHEET NO: DC-10

SHEET 15 OF 120

Plot Date: Vadhawkar, Samir, 8/29/2025; 12:30 ; Layout:DC-10
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-01.DWG Scale:1:1 SavedDate:8/29/2025 Time:12:24



PROFILE

SCALE : NO SCALE

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SHEET TITLE

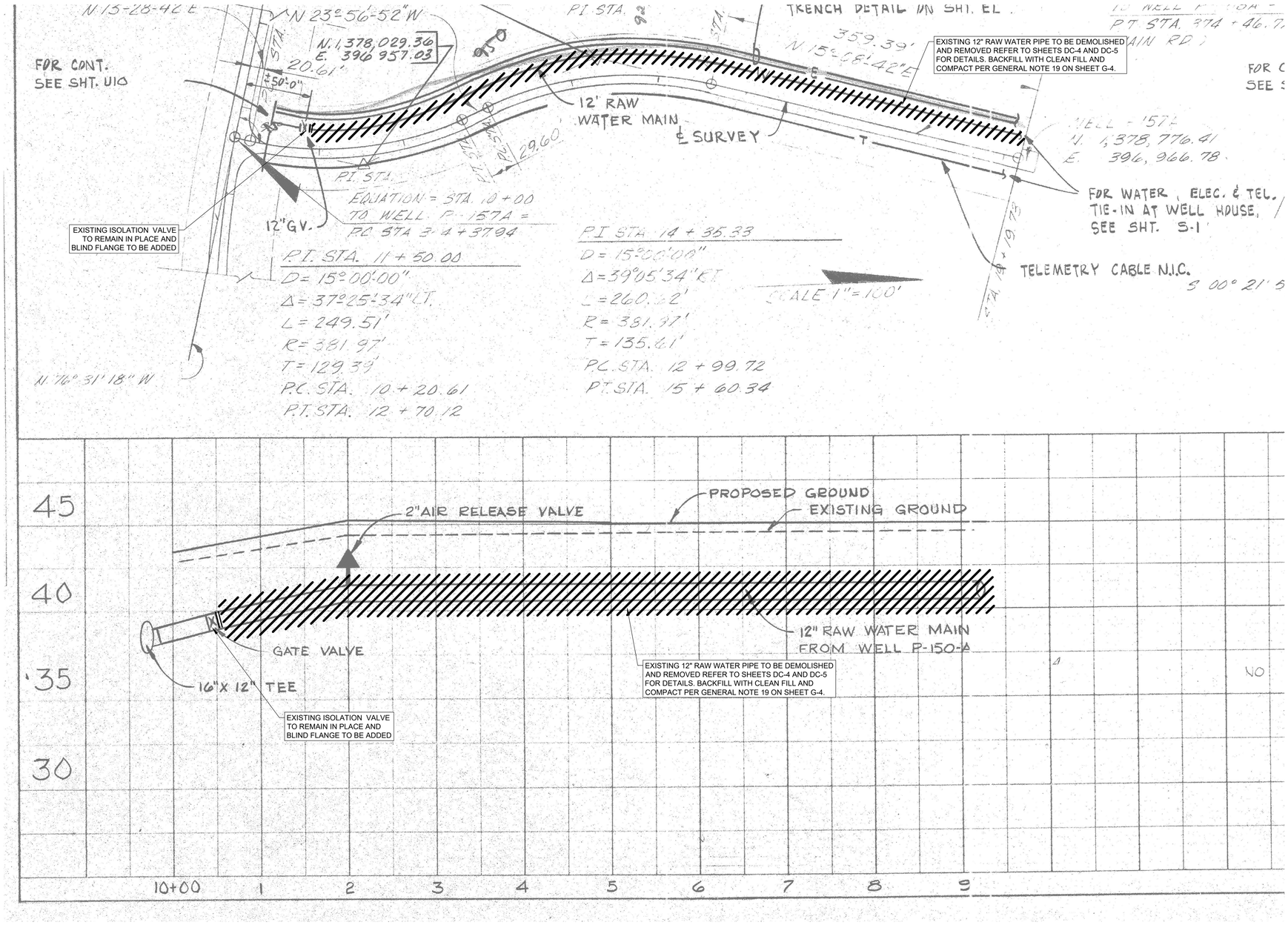
WELL HOUSE MBR-152 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE

SCALE: NO SCALE

SHEET NO: DC-15

SHEET 16 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-15.DWG Scale:1:1 SavedDate:2/2/2025 Time:18:13 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:28 ; Layout:LAYOUT1



PROFILE

SCALE : NO SCALE

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SHEET TITLE

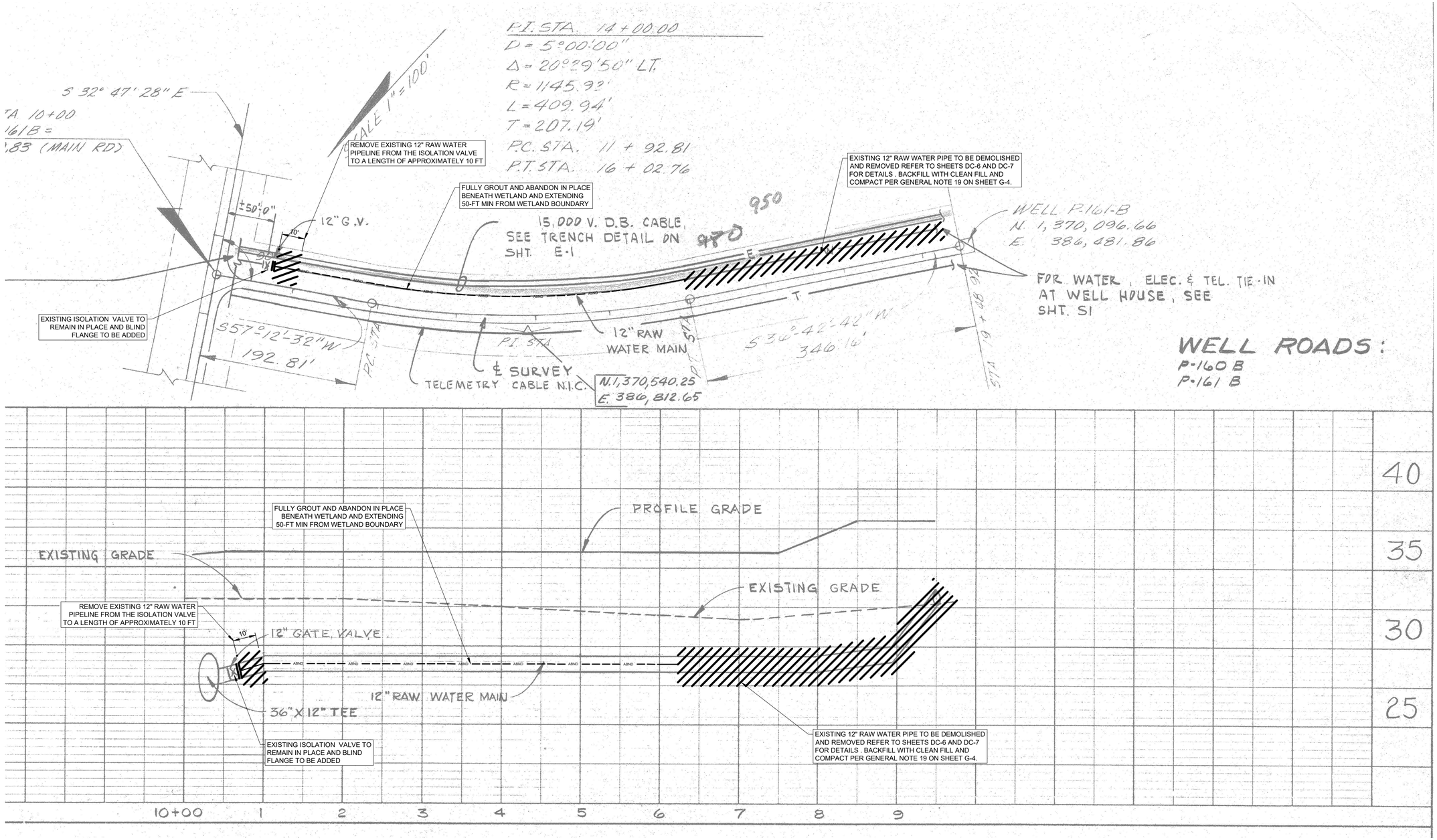
WELL HOUSE
MBR-157 DISCHARGE
PIPE DEMOLITION
ASBUILT PLAN AND
PROFILE

SCALE: NO SCALE

SHEET NO: DC-16

SHEET 17 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-16.DWG Scale:1:1 SavedDate:2/2/2025 Time:18:13 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:28 ; Layout:LAYOUT1



PROFILE

SCALE : NO SCALE

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SHEET TITLE

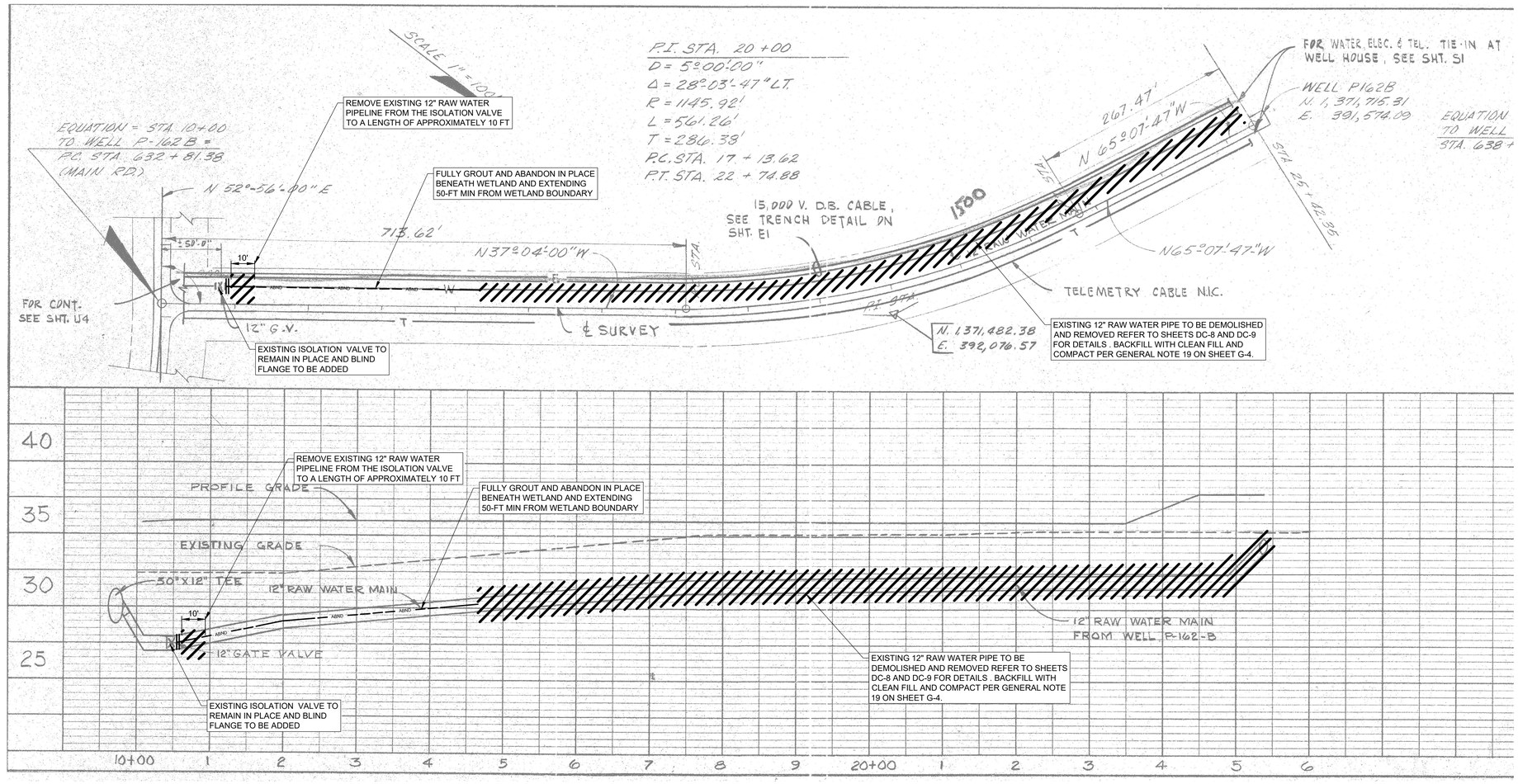
WELL HOUSE MBR-161 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE

SCALE: NO SCALE

SHEET NO: DC-17

SHEET 18 OF 120

User: SVADHAWKAR Spec: NAT CADD STD File: C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-17.DWG Scale: 1:1 SavedDate: 2/2/2025 Time: 18:14 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:28 ; Layout: LAYOUT1



PROFILE

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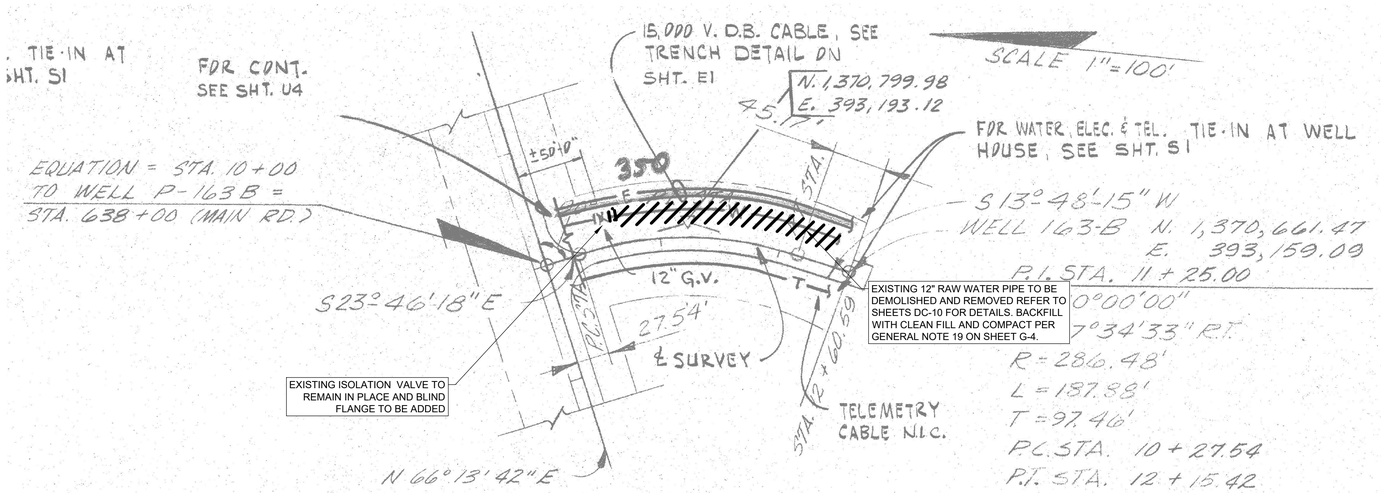
WELL HOUSE MBR-162 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE

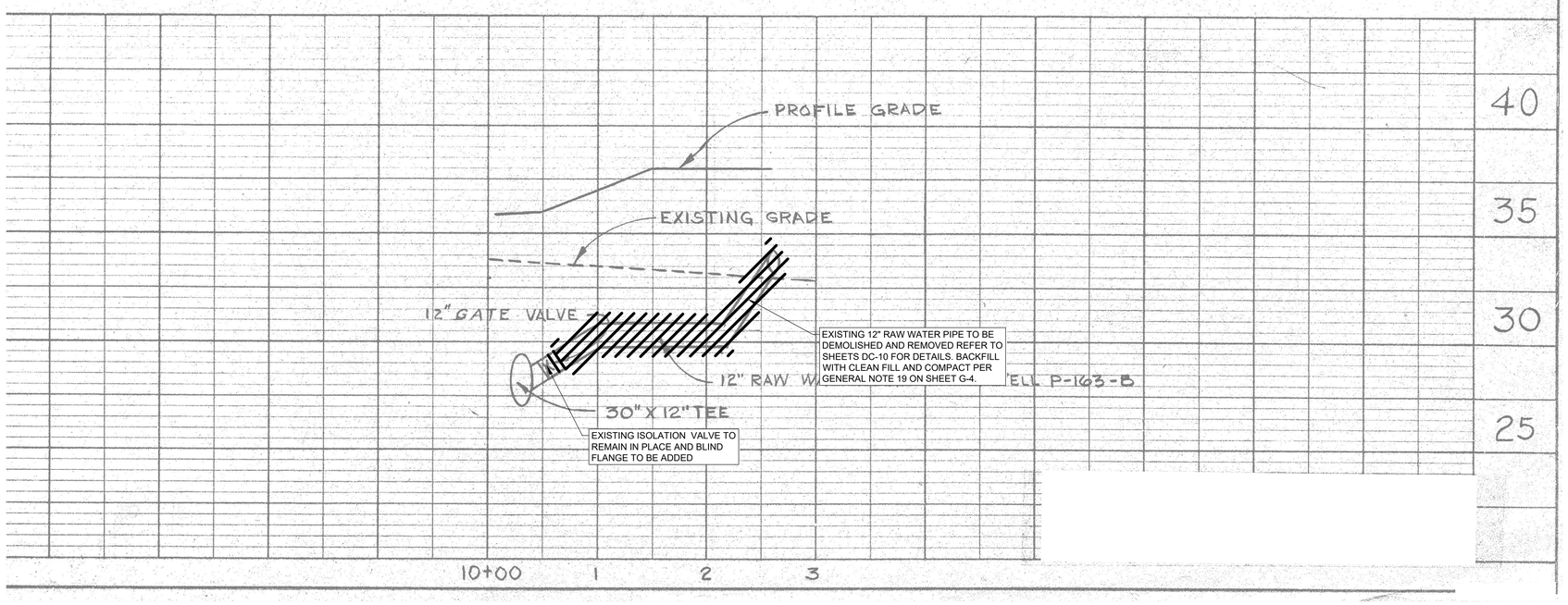
SCALE: NO SCALE

SHEET NO: DC-18

SHEET 19 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-18.DWG Scale:1:1 SavedDate:2/2/2025 Time:18:14 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:27 ; Layout:LAYOUT1





PROFILE

SCALE : NO SCALE

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SHEET TITLE

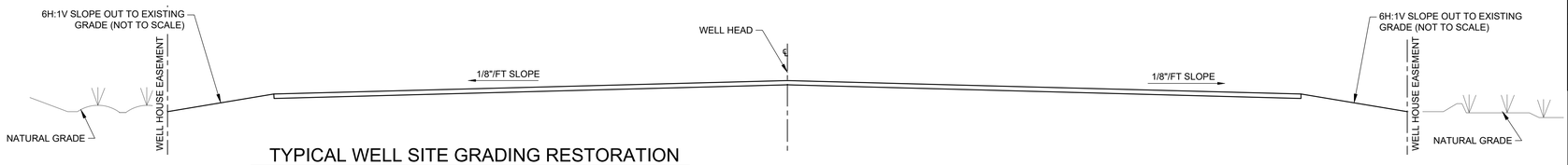
WELL HOUSE MBR-163 DISCHARGE PIPE DEMOLITION ASBUILT PLAN AND PROFILE

SCALE: NO SCALE

SHEET NO: DC-19

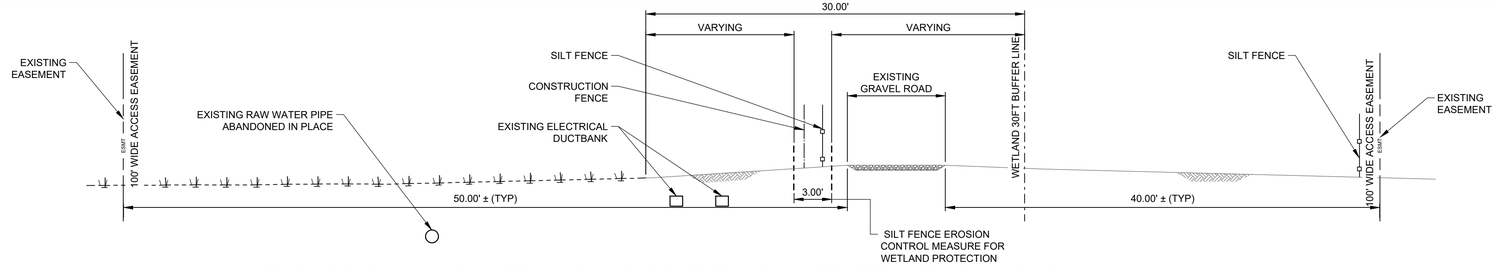
SHEET 20 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-19.DWG Scale:1:1 SavedDate:2/12/2025 Time:18:14 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:27 ; Layout:LAYOUT1



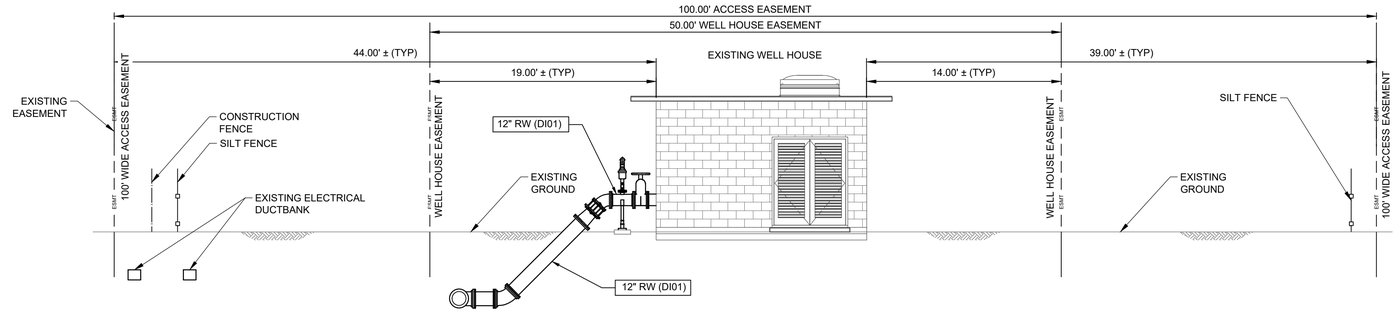
TYPICAL WELL SITE GRADING RESTORATION

NTS



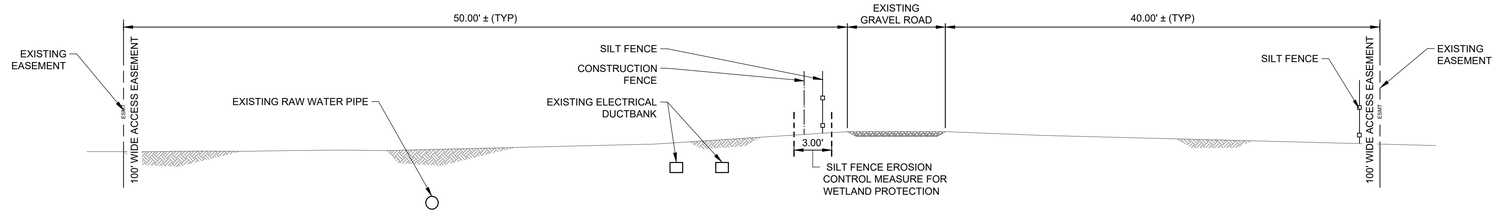
CROSS SECTION - 100' WIDE ACCESS EASEMENT (WELLSITE MBR - 152, 161 AND 162)

NTS



TYPICAL CROSS SECTION AT WELL HOUSE

NTS



TYPICAL CROSS SECTION - 100' WIDE ACCESS EASEMENT

NTS

GENERAL SHEET NOTES

1. AREA DISTURBED BY WELL REMOVAL SHALL BE BACKFILLED WITH CLEAN FILL COMPACTED TO 95% MAXIMUM DENSITY WITH A 6-IN TOP LAYER OF TOPSOIL AND BAHIA GRASS SOD MEETING EXISTING GRADE.

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APPROVED BY: KB

SHEET TITLE

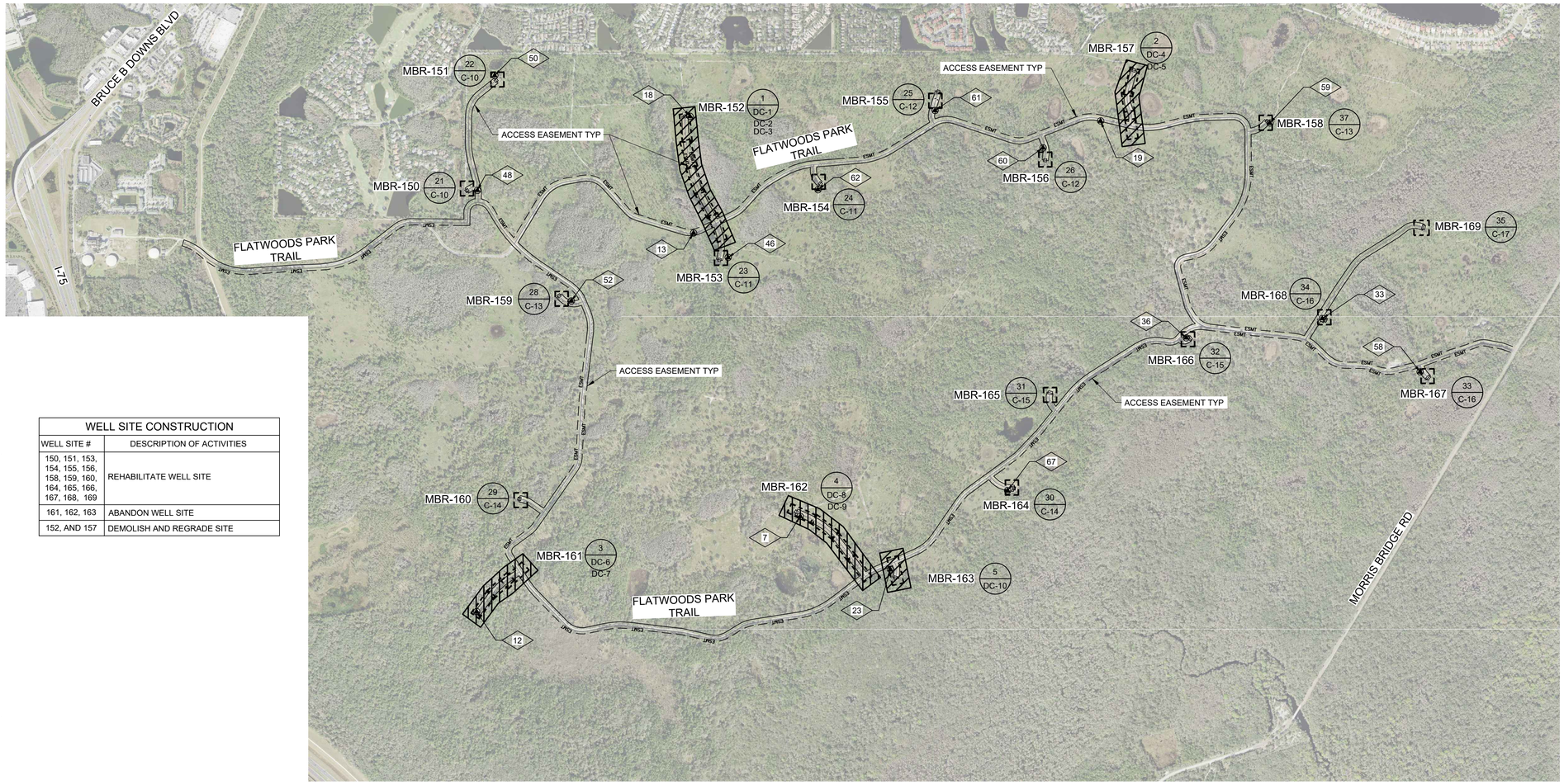
WELL SITE RESTORATION TYPICAL SECTIONS

SCALE: NO SCALE

SHEET NO: DC-50

SHEET 21 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\DC-50.DWG Scale:1:1 SavedDate:2/2/2025 Time:18:14 Plot Date: Vadhawkar, Samir, 4/30/2025, 16:27 ; Layout:DC-50



PROJECT PLAN

SCALE : 1" = 1000'

WELL SITE CONSTRUCTION	
WELL SITE #	DESCRIPTION OF ACTIVITIES
150, 151, 153, 154, 155, 156, 158, 159, 160, 164, 165, 166, 167, 168, 169	REHABILITATE WELL SITE
161, 162, 163	ABANDON WELL SITE
152, AND 157	DEMOLISH AND REGRADE SITE

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
7	BENCHMARK "4822 MBR-PCM-5"	1371807.756	547858.720	33.817	0705-07H
12	BENCHMARK "6015 MBR-BM-30"	1370284.682	542687.273	36.320	0705-08F
13	BENCHMARK "18562"	1376336.311	546152.462	38.298	0705-09A
18	BENCHMARK "4825 MBR-BM-3"	1378202.008	546097.007	41.700	0705-09F
19	BENCHMARK "4833 MBR-BM-11"	1378127.230	552657.765	42.090	0705-10A
23	BENCHMARK "4847 MBR-BM-25"	1370956.254	549299.987	32.140	0705-07A
33	BENCHMARK "4838 MBR-BM-16"	1374970.856	556201.316	36.280	0705-44A
36	BENCHMARK "4821 MBR-PCM-4"	1374660.145	554028.572	36.002	
46	BENCHMARK "4827 MBR-BM-5"	1375944.252	546705.522	39.420	
48	BENCHMARK "4818 MBR-PCM-1"	1377019.307	542698.043	41.013	0705-63A
50	BENCHMARK "4823 MBR-BM-1"	1378854.327	542974.764	45.560	0705-64B
52	BENCHMARK "6019 MBR-BM-34"	1375249.492	544200.341	37.510	0705-48A
58	BENCHMARK "4842 MBR-BM-20"	1374117.197	557766.419	33.700	
59	BENCHMARK "4820 MBR-PCM-3"	1378095.198	555363.687	40.271	0705-63B
60	BENCHMARK "4832 MBR-BM-10"	1377698.910	551738.241	40.496	0705-51C
61	BENCHMARK "4830 MBR-BM-8"	1378296.815	550011.799	40.880	0705-50A
62	BENCHMARK "4819 MBR-PCM-2"	1377029.701	548143.523	41.091	0705-62A
67	BENCHMARK "4845 MBR-BM-23"	1372216.287	551170.680	32.820	0705-57A

SITE ADDRESS

WELL SITE	FOLIO NUMBER	ADDRESS
MBR-150	059404-0000	9202 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-151	059404-0000	9206 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-152	059404-0000	9210 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-153	059404-0000	9218 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-154	059405-0000	9214 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-155	059405-0000	10082 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-156	059405-0000	10076 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-157	059406-0000	10088 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-158	059406-0000	10092 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-159	059404-0000	9273 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-160	059498-0000	9433 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-161	059498-0000	9491 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-162	059498-0000	9770 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-163	059497-0000	9795 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-164	059497-0000	9891 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-165	059497-0000	9956 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-166	059406-0000	10069 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-167	059406-0000	10251 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-168	059406-0000	10170 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592
MBR-169	059406-0000	10160 FLATWOODS PARK TRL. THONOTOSASSA, FL 33592

N

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SCALE IN FEET

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: C-01.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

PROJECT PLAN

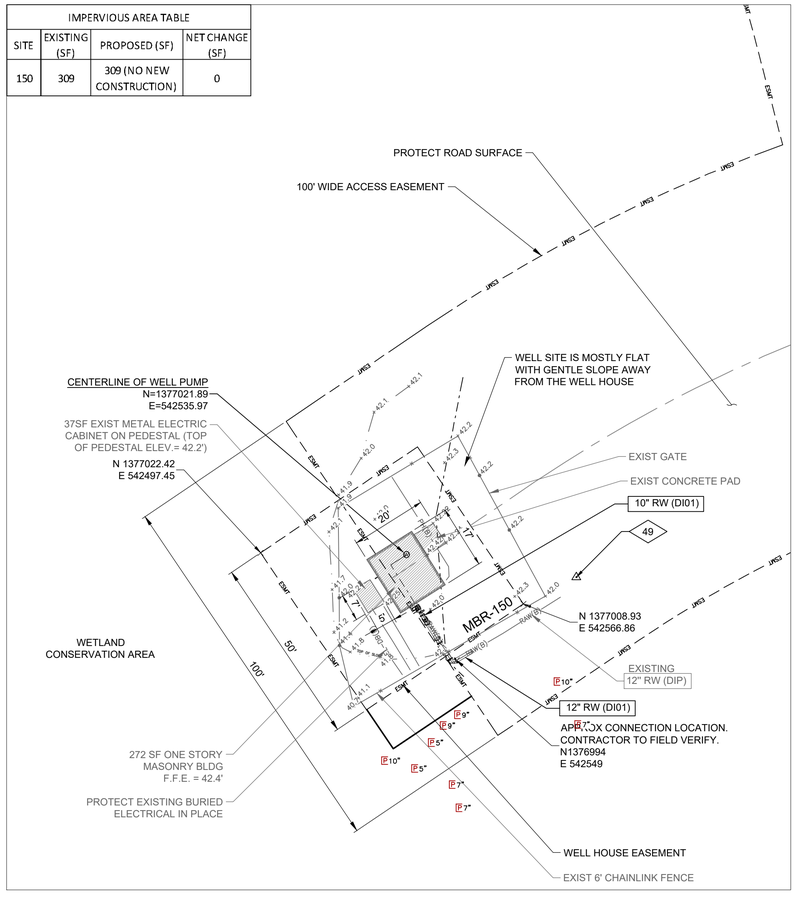
SCALE: 1" = 1000'

SHEET NO: C-01

SHEET 22 OF 120

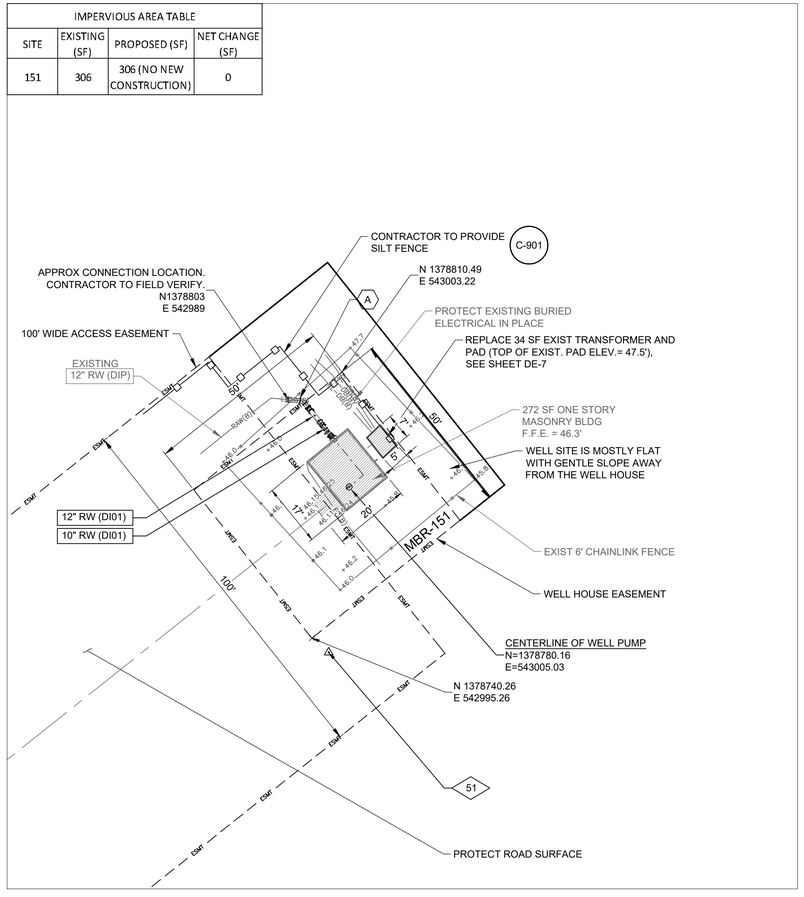
User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-01.DWG Scale:1:1 SavedDate:12/9/2024 Time:18:45 Plot Date: Plot Date: Vadhawkar, Samir; 4/30/2025; 16:27 ; Layout:C-01

IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
150	309	309 (NO NEW CONSTRUCTION)	0



21 C-1 **WELL SITE MBR-150**
SCALE : 1" = 20'

IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
151	306	306 (NO NEW CONSTRUCTION)	0



22 C-1 **WELL SITE MBR-151**
SCALE : 1" = 20'

ADDITIONAL CONTROL POINT TABLE					
POINT #	NORTH	EAST	ELEVATION	DESCRIPTION	DESIGNATION
48	1377019.307	542698.043	41.01	BENCHMARK "4818 MBR-PCM-1"	0705-63A

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
31000	V.V.H.003	1376994.35	542548.14	42.89'	5.05	37.84'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
31001	V.V.H.006	1376993.48	542548.33	42.81'	5.01	37.80'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE

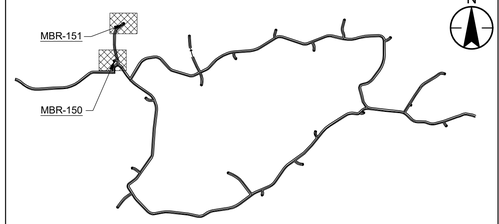
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
50	BENCHMARK "4823 MBR-BM-1"	1378854.33	542974.76	45.56	0705-64B
51	NAIL AND DISK "TP/RP L.B.7866"	1378736.51	542999.68	46.19	0705-64A

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33000	V.V.H.025	1378803.61	542984.45	47.93'	5.00	42.93'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
33001	V.V.H.026	1378803.02	542991.24	47.24'	5.07	42.17'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE

N

0 20 40
SCALE IN FEET

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE S SHEETS FOR STRUCTURAL DETAILS, M SHEETS FOR MECHANICAL DETAILS AND E SHEETS FOR ELECTRICAL DETAILS
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS, DM SHEETS FOR MECHANICAL DEMOLITION DETAILS AND DE SHEETS FOR ELECTRICAL DEMOLITION DETAILS.
6. CONTRACTOR SHALL PROTECT FENCE IN PLACE OR REPLACE FENCE IN-KIND IF FENCE IS REMOVED FOR EASE OF CONSTRUCTION.
7. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
8. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

LEGEND

- ESMT — EASEMENT
- SILT FENCE
- x — x — TEMPORARY CONSTRUCTION FENCE
- 30-FT WETLAND BUFFER LINE
- EDGE OF WETLANDS
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- NEW IMPERVIOUS AREA
- P 12" — PINE *

* INDICATES PINE TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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FILE NAME: C-10.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

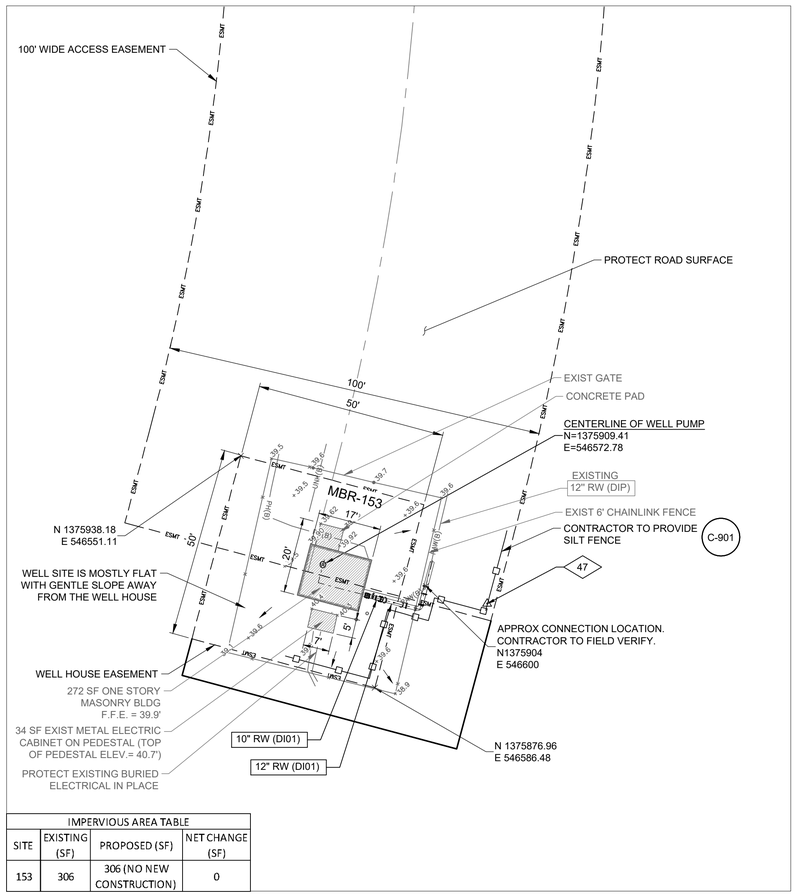
WELL HOUSE MBR-150 AND MBR-151 PLAN

SCALE: 1" = 20'

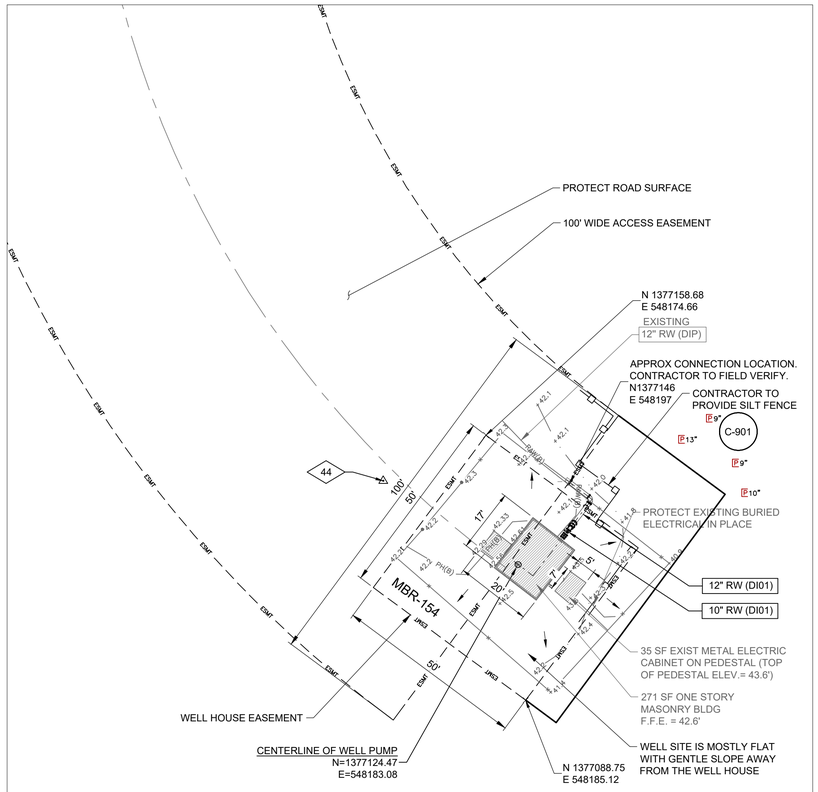
SHEET NO: C-10

SHEET 23 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 Savedate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:34 ; Layout:10



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
153	306	306 (NO NEW CONSTRUCTION)	0



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
154	306	306 (NO NEW CONSTRUCTION)	0

23 C-1 WELL SITE MBR-153

SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
47	NAIL AND DISK "TP/RP L.B.7866"	1375899.12	546616.14	39.41	

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33010	V.V.H.019	1375903.02	546599.73	40.61'	5.03	35.58'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33011	V.V.H.020	1375900.03	546594.88	40.69'	5.04	35.65'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

24 C-1 WELL SITE MBR-154

SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
44	NAIL AND DISK "TP/RP L.B.7866"	1377146.64	548147.53	42.02	0705-62B

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33014	V.V.H.023	1377152.29	548188.72	42.18'	4.56	37.62'	TOP OF 12" DUCTILE IRON RAW WATER LINE

N

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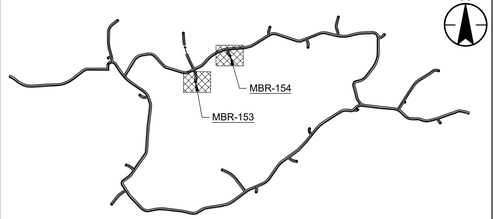
SCALE IN FEET

KEY PLAN



GENERAL SHEET NOTES

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8. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

LEGEND

- ESMT — EASEMENT
- SILT FENCE
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- P 12" — PINE *

* INDICATES PINE TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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MORRIS BRIDGE
WELLFIELD
IMPROVEMENTS
PROJECT

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FILE NAME: C-11.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

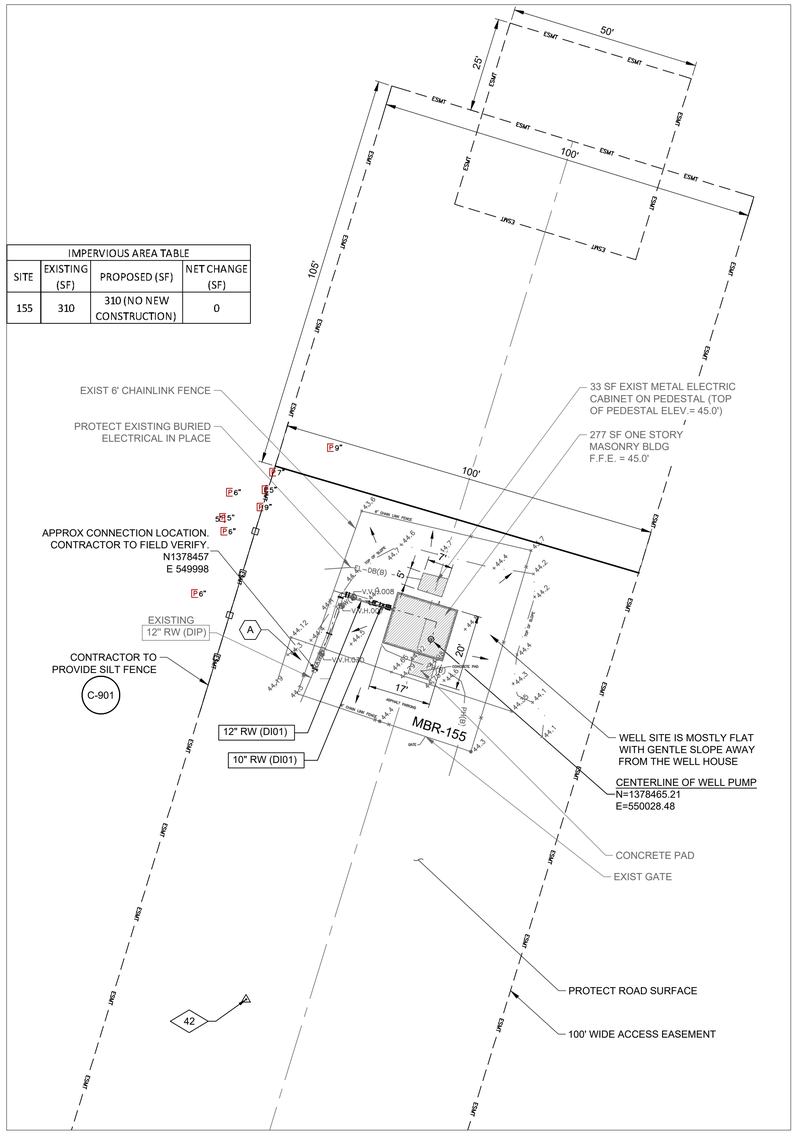
WELL HOUSE
MBR-153 AND
MBR-154 PLAN

SCALE: 1" = 20'

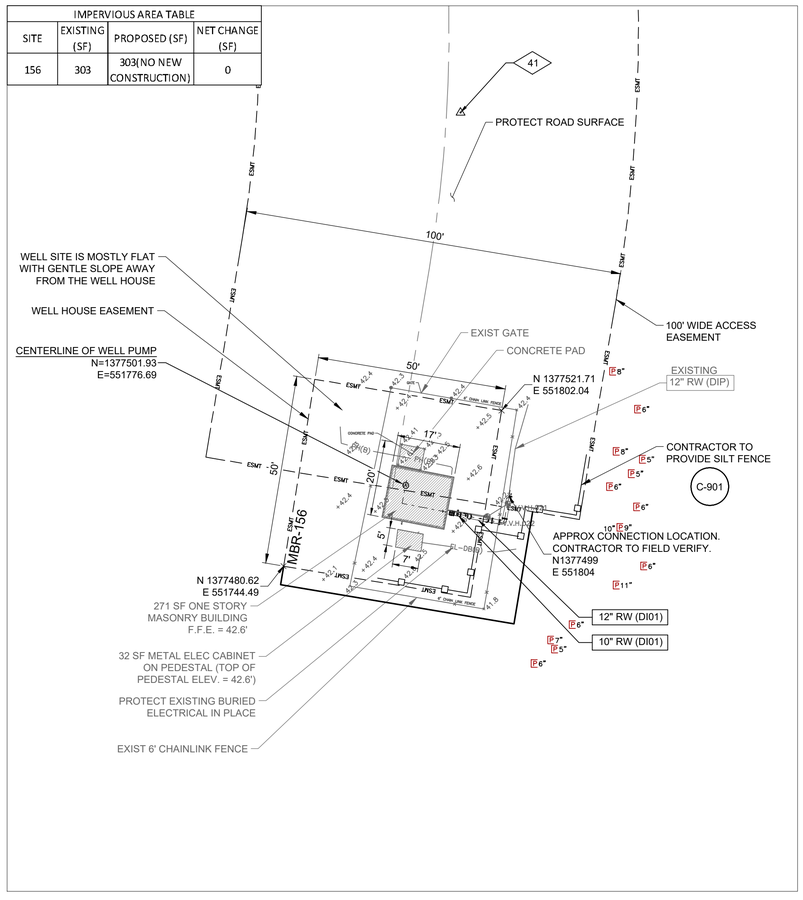
SHEET NO: C-11

SHEET 24 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:35 ; Layout:11



25 C-1 WELL SITE MBR-155
SCALE : 1" = 20'



26 C-1 WELL SITE MBR-156
SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
42	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378370.11	549979.62	42.22	0705-50B

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
31007	V.V.H.007	1378473.99	550004.91	45.57'	5.03	40.54'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
31006	V.V.H.008	1378476.19	550007.97	43.95'	4.99	38.96'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33016	V.V.H.030	1378461.37	549999.61	44.52'	3.60	40.92'	TOP OF 12" DUCTILE IRON RAW WATER LINE

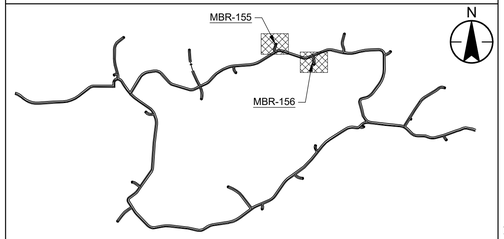
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
41	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1377600.31	551791.20	42.41	0705-51B

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33018	V.V.H.021	1377497.09	551803.65	43.28'	5.16	38.12'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33019	V.V.H.022	1377493.75	551798.31	43.41'	5.07	38.34'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

N

0 20 40
SCALE IN FEET

KEY PLAN



GENERAL SHEET NOTES

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2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
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7. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
8. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. CONTRACTOR TO REMOVE ASPHALT PAVING TO INSTALL NEW PIPE CONNECTION AND CONDUIT. AREA MUST BE RESTORED TO ORIGINAL CONDITION OR BETTER UPON COMPLETION OF WORK AND SHALL MATCH ADJACENT ELEVATIONS AND GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING.

LEGEND

- ESMT — EASEMENT
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- P 12" — PINE *

* INDICATES PINE TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: C-12.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

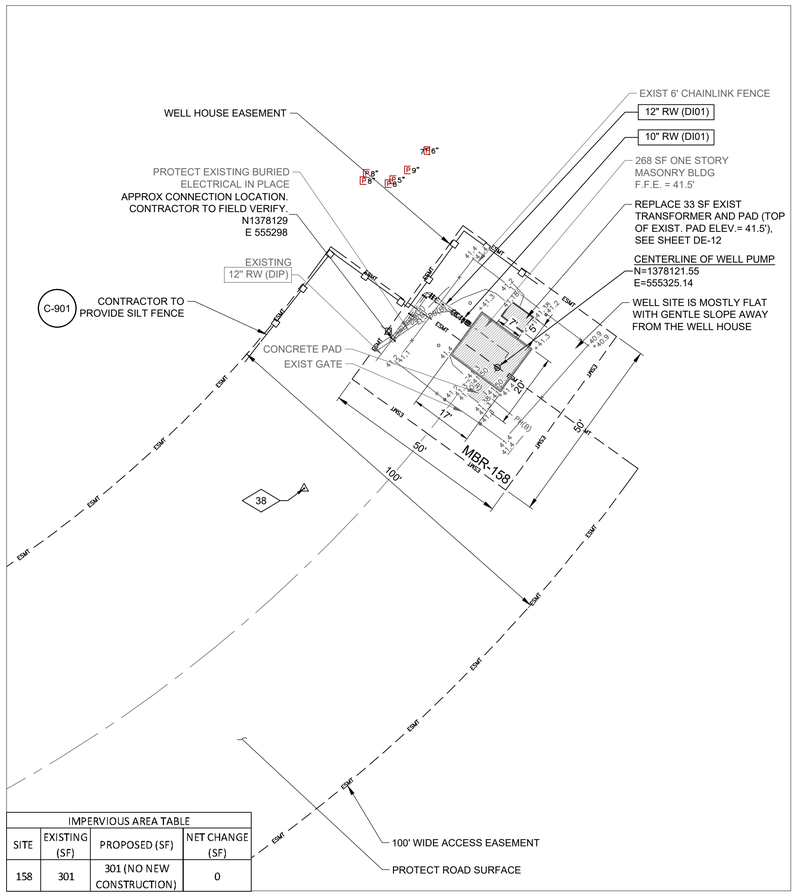
WELL HOUSE MBR-155 AND MBR-156 PLAN

SCALE: 1" = 20'

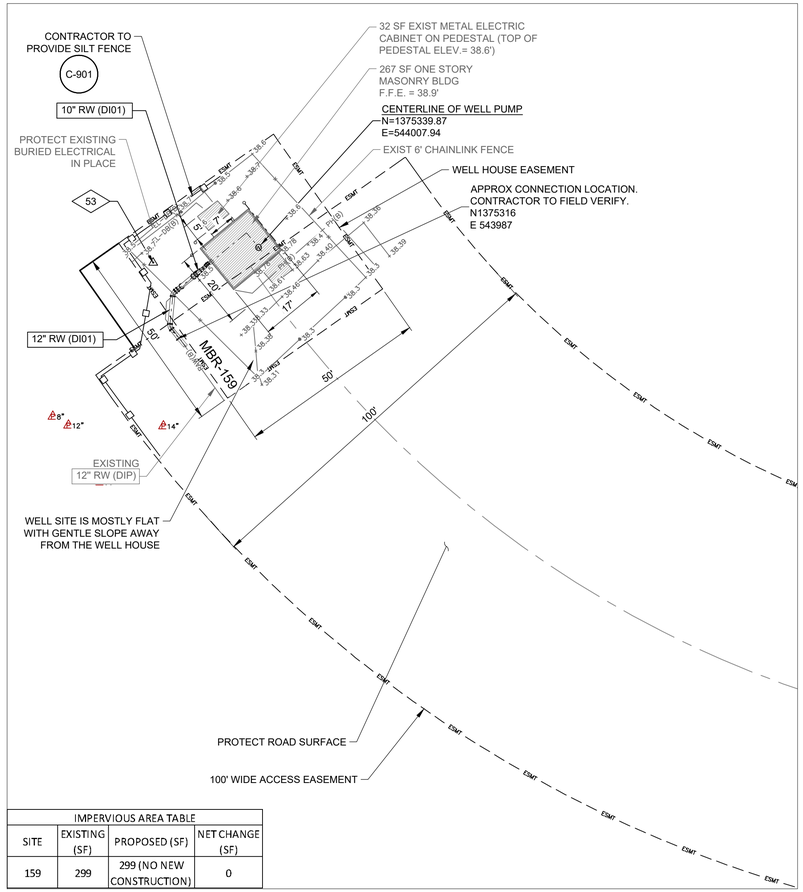
SHEET NO: C-12

SHEET 25 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:36 ; Layout:12



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
158	301	301 (NO NEW CONSTRUCTION)	0



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
159	299	299 (NO NEW CONSTRUCTION)	0

27 C-1 WELL SITE MBR-158

SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
38	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1378089.58	555274.16	40.80	
59	BENCHMARK "4820 MBR-PCM-3"	1378095.20	555363.69	40.27	0705-63B

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
25871	V.V.H.009	1378135.21	555303.42	41.47'	5.08	36.39'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
25870	V.V.H.010	1378136.42	555312.78	41.98'	5.02	36.96'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
33021	V.V.H.029	1378126.43	555295.73	41.02'	4.36	36.66'	TOP OF POSSIBLE 16" DUCTILE IRON RAW WATER LINE

28 C-1 WELL SITE MBR-159

SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
53	CAPPED IRON ROD 5/8 TP/RP L.B.7866,0705-48B	1375335.86	543980.14	38.67	0705-48B

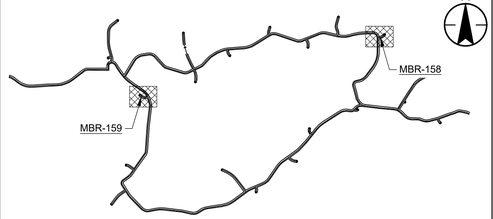
LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
25872	V.V.H.001	1375320.88	543983.38	39.99'	4.83	35.16'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
25873	V.V.H.002	1375325.57	543983.67	39.95'	5.20	34.75'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

N

0 20 40

SCALE IN FEET

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE S SHEETS FOR STRUCTURAL DETAILS, M SHEETS FOR MECHANICAL DETAILS AND E SHEETS FOR ELECTRICAL DETAILS
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS, DM SHEETS FOR MECHANICAL DEMOLITION DETAILS AND DE SHEETS FOR ELECTRICAL DEMOLITION DETAILS.
6. CONTRACTOR SHALL PROTECT FENCE IN PLACE OR REPLACE FENCE IN-KIND IF FENCE IS REMOVED FOR EASE OF CONSTRUCTION.
7. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
8. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

LEGEND

- EASEMENT (ESMT)
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- NEW IMPERVIOUS AREA
- 12" PINE *
- 12" PALM *

* INDICATES PINE/PALM TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

TAMPA BAY WATER
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The Contractor is responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The Contractor shall assume sole responsibility for observance of all safety regulations during construction. Stantec will not be responsible for any safety precautions in connection with the work.

SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: C-13.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

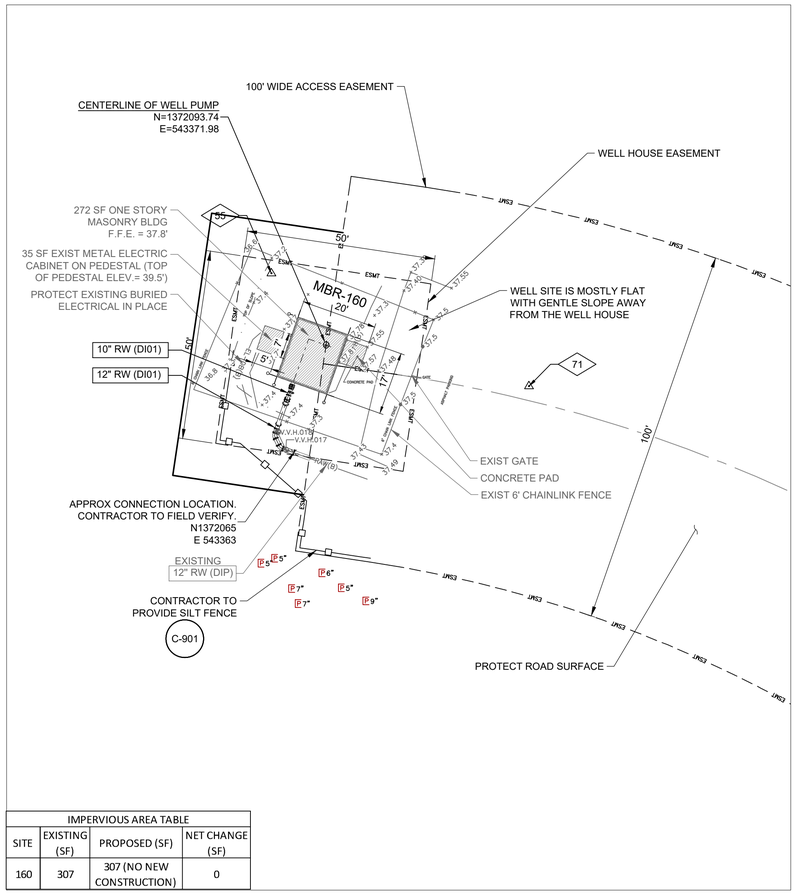
WELL HOUSE MBR-158 AND MBR-159 PLAN

SCALE: 1" = 20'

SHEET NO: C-13

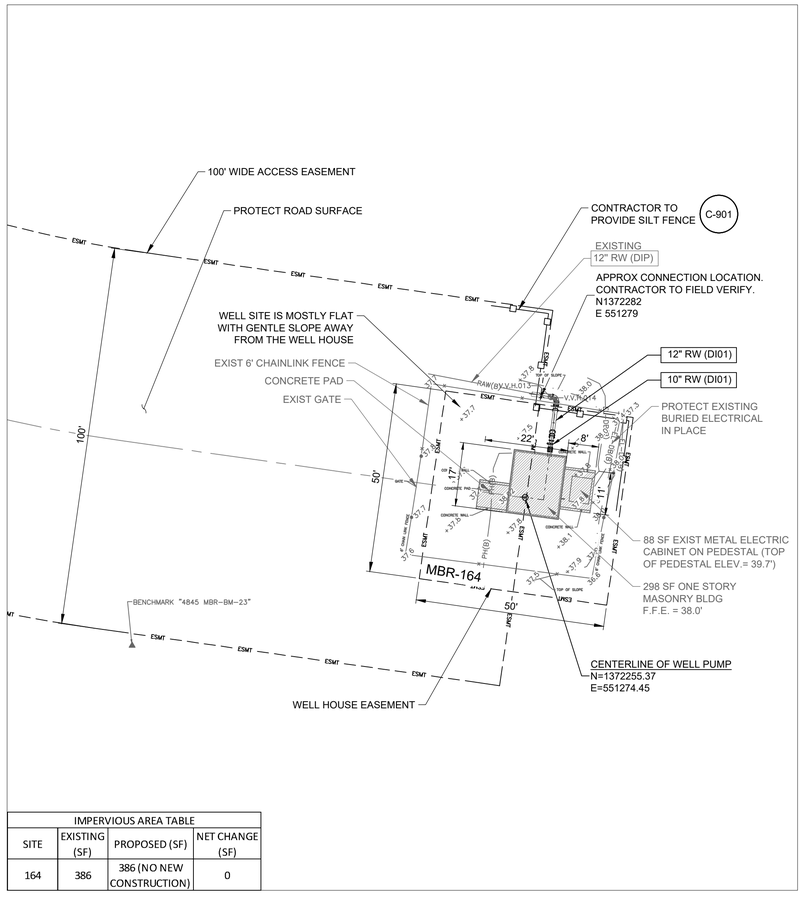
SHEET 26 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:37 ; Layout:13



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
160	307	307 (NO NEW CONSTRUCTION)	0

29 C-1 WELL SITE MBR-160
SCALE : 1" = 20'



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
164	386	386 (NO NEW CONSTRUCTION)	0

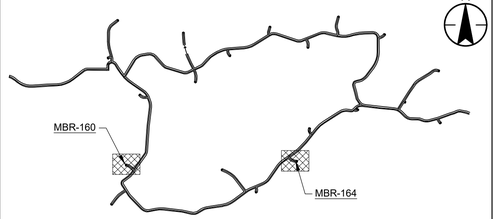
30 C-1 WELL SITE MBR-164
SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
55	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1372112.65	543357.53	37.27	0705-53B
71	NAIL AND DISK TP/RP LB7866	1372082.85	543425.54	37.31	

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33039	V.V.H.017	1372066.04	543361.34	37.33'	5.05	32.28'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33040	V.V.H.018	1372070.70	543359.14	37.81'	5.03	32.78'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33036	V.V.H.013	1372281.85	551281.18	39.00'	6.50	32.50'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33037	V.V.H.014	1372281.02	551282.56	40.44'	7.93	32.51'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

KEY PLAN



GENERAL SHEET NOTES

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2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
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LEGEND

- ESMT — EASEMENT
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- P 12" — PINE *

* INDICATES PINE TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

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MORRIS BRIDGE
WELLFIELD
IMPROVEMENTS
PROJECT

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DATE: SEPT 2025
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FILE NAME: C-14.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

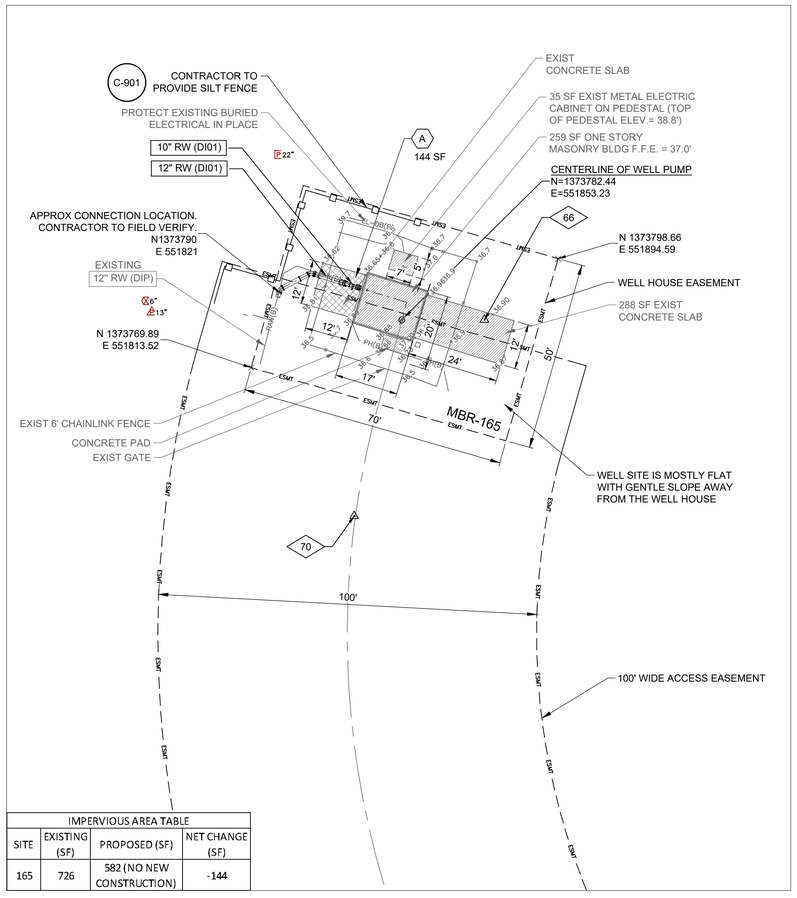
WELL HOUSE
MBR-160 AND
MBR-164 PLAN

SCALE: 1" = 20'

SHEET NO: C-14

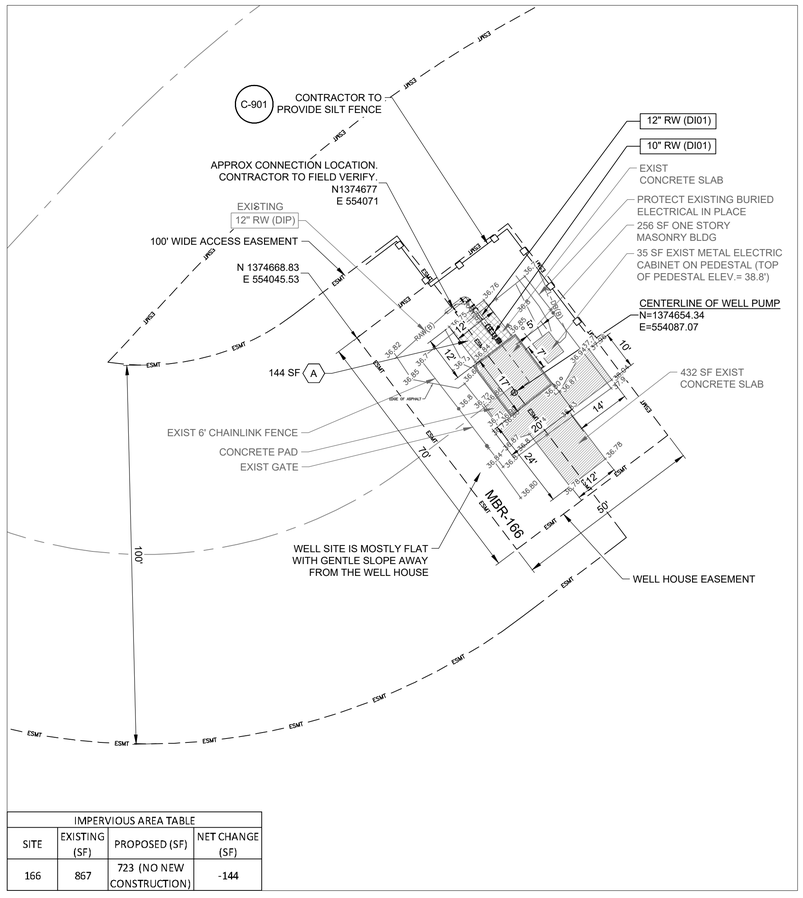
SHEET 27 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SaveDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 5/1/2025; 10:20 ; Layout:14



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
165	726	582 (NO NEW CONSTRUCTION)	-144

31 C-1 WELL SITE MBR-165
SCALE : 1" = 20'



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
166	867	723 (NO NEW CONSTRUCTION)	-144

32 C-1 WELL SITE MBR-166
SCALE : 1" = 20'

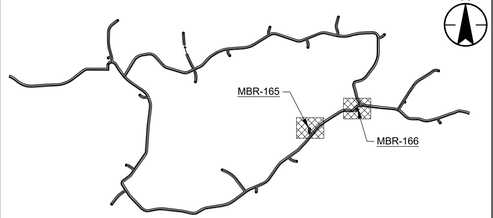
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
70	NAIL AND DISK "TP/RP LB7866"	1373730.74	551840.70	36.49	

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33033	V.V.H.015	1373796.71	551825.70	36.61'	5.01	31.60'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33034	V.V.H.016	1373794.85	551822.16	36.44'	4.99	31.45'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
37	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1374798.59	554130.05	34.69	

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33023	V.V.H.011	1374677.76	554071.76	36.73'	5.02	31.71'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE
33024	V.V.H.012	1374677.81	554074.30	36.82'	5.05	31.77'	TOP OF FLANGE (@FLANGE FACE) OF 12" STEEL RAW WATER LINE

KEY PLAN



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SHEET KEYNOTES

A. CONTRACTOR TO REMOVE CONCRETE PAD TO INSTALL NEW PIPE CONNECTION AND CONDUIT. AREA MUST BE BACKFILLED TO MATCH ADJACENT ELEVATIONS AND GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING.

LEGEND

- EASEMENT
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- EXISTING IMPERVIOUS AREA TO BE DEMOLISHED
- 12" PINE *
- 12" MAPLE *
- 12" PALM *

* INDICATES PINE/MAPLE/PALM TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: C-15.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

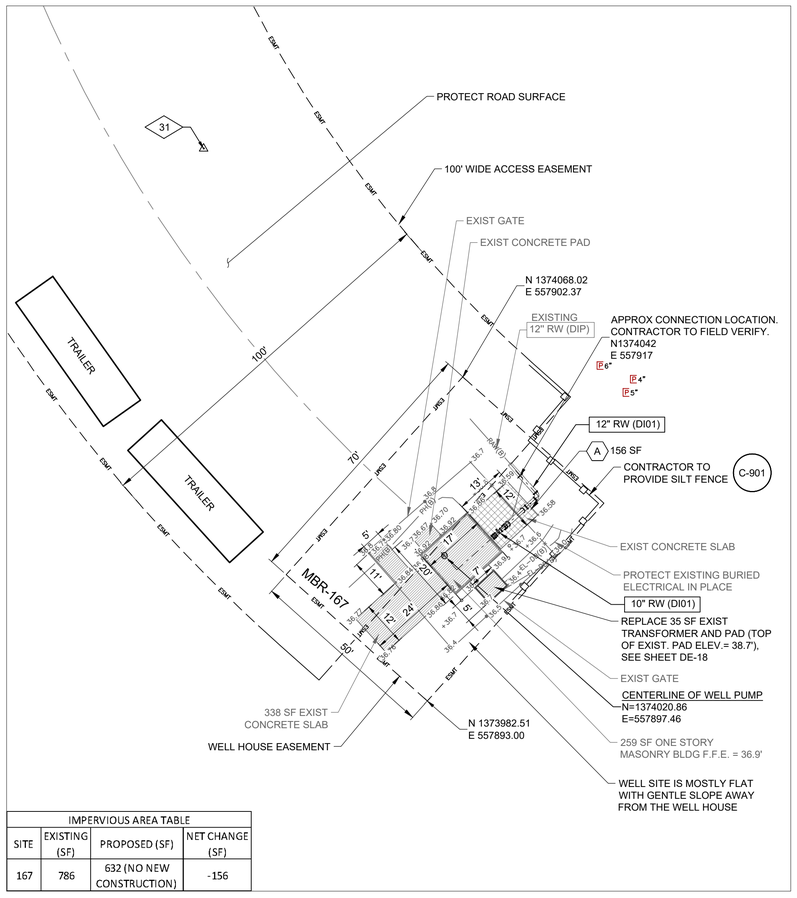
WELL HOUSE MBR-165 AND MBR-166 PLAN

SCALE: 1" : 20'

SHEET NO: C-15

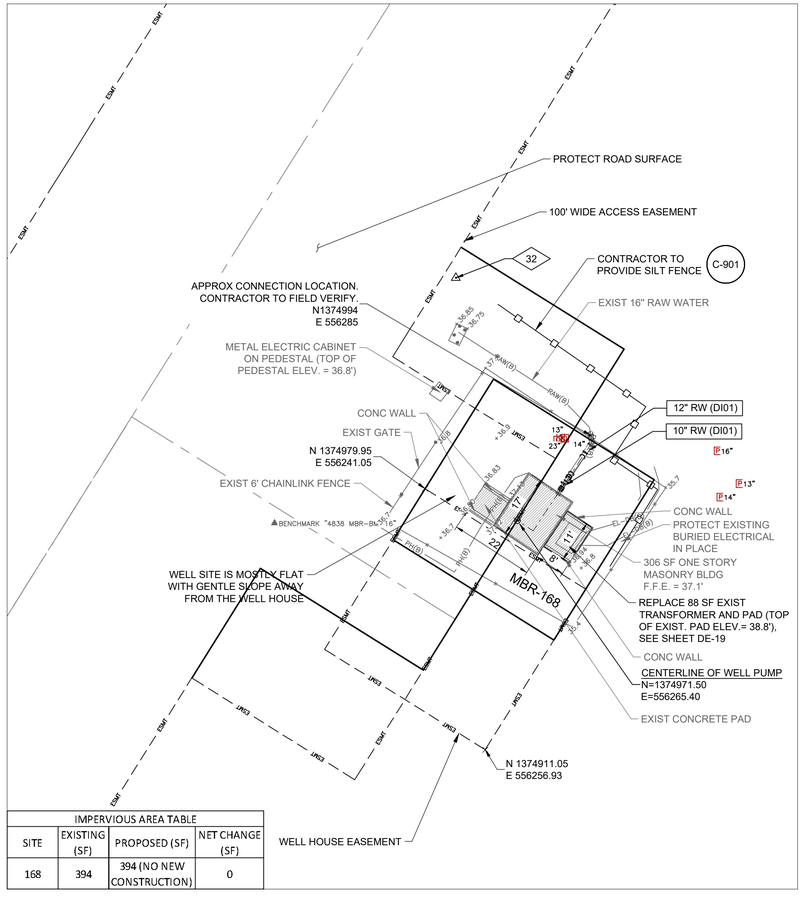
SHEET 28 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Wednesday, April 30, 2025; 16:38 ; Layout:15



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
167	786	632 (NO NEW CONSTRUCTION)	-156

33 C-1 WELL SITE MBR-167
SCALE : 1" = 20'



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
168	394	394 (NO NEW CONSTRUCTION)	0

34 C-1 WELL SITE MBR-168
SCALE : 1" = 20'

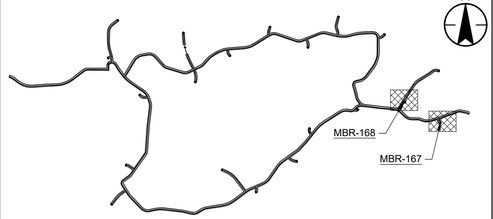
BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
31	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1374128.28	557833.93	34.70	

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33031	V.V.H.024	1374041.39	557918.24	36.87'	4.98	31.89'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
32	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1375035.57	556249.16	36.06	0705-44B
33	BENCHMARK "4838 MBR-BM-16"	1374970.86	556201.32	36.28	0705-44A

LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
25869	V.V.H.004	1374992.34	556285.09	37.67'	5.28	32.39'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
25868	V.V.H.005	1374996.11	556284.46	36.98'	4.82	32.16'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE
33025	V.V.H.028	1374990.71	556284.78	37.62'	5.02	32.60'	TOP OF FLANGE (@FLANGE FACE) OF 16" STEEL RAW WATER LINE

KEY PLAN



GENERAL SHEET NOTES

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SHEET KEYNOTES

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LEGEND

- EASEMENT
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- EXISTING IMPERVIOUS AREA TO BE DEMOLISHED
- NEW IMPERVIOUS AREA
- P 12" PINE *
- O 12" OAK *

* INDICATES PINE/OAK TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: C-16.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

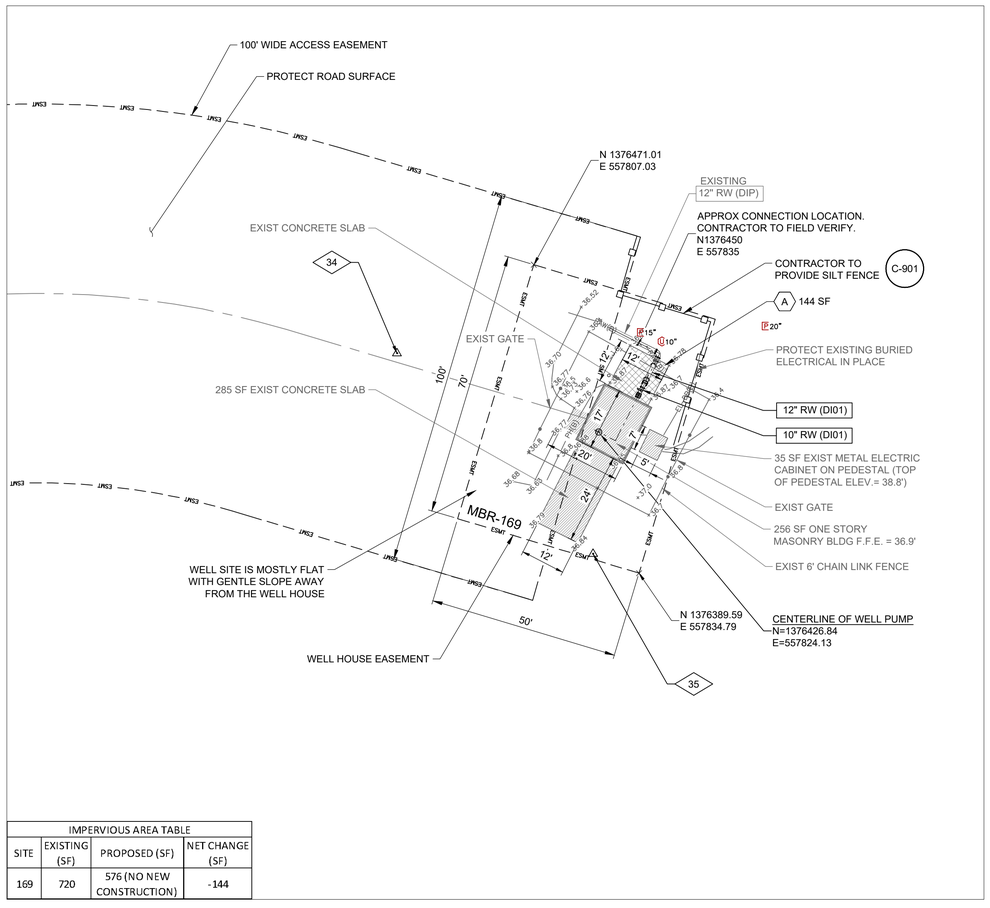
WELL HOUSE MBR-167 AND MBR-168 PLAN

SCALE: 1" : 20'

SHEET NO: C-16

SHEET 29 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:39 ; Layout:16



IMPERVIOUS AREA TABLE			
SITE	EXISTING (SF)	PROPOSED (SF)	NET CHANGE (SF)
169	720	576 (NO NEW CONSTRUCTION)	-144

35 / C-1 WELL SITE MBR-169

SCALE : 1" = 20'

BENCHMARK AND HORIZ/VERT CONTROL TABLE					
POINT #	DESIGNATION	NORTHING	EASTING	ELEVATION	BOOK PAGE
34	NAIL AND DISK "TP/RP L.B.7866"	1376447.64	557770.90	36.42	0705-45A
35	CAPPED IRON ROD 5/8" "TP/RP L.B.7866"	1376394.71	557822.65	36.70	0705-45B

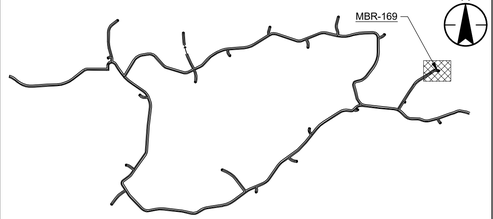
LEVEL A UTILITY DATA TABLE							
REFERENCE POINT #	V.V.H. DESIGNATION	NORTHING	EASTING	REFERENCE POINT ELEVATION	DEPTH TO TOP OF UTILITY	ELEVATION OF TOP OF UTILITY	UTILITY DESCRIPTION
33029	V.V.H.027	1376456.16	557823.29	36.39'	3.39	33.00'	TOP OF 16" DUCTILE IRON RAW WATER LINE

N

0 20 40

SCALE IN FEET

KEY PLAN



GENERAL SHEET NOTES

1. EASEMENT AS SHOWN INCLUDES VEGETATED AREAS. CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS.
2. CONTRACTOR SHALL SUBMIT A PLAN FOR USE OF THESE AREAS. SEE GENERAL NOTES ON SHEET G-4.
3. SEE SURVEY NOTES ON SHEET GC - 01 REGARDING ACCURACY OF EASEMENT LIMITS SHOWN.
4. SEE S SHEETS FOR STRUCTURAL DETAILS, M SHEETS FOR MECHANICAL DETAILS AND E SHEETS FOR ELECTRICAL DETAILS
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS, DM SHEETS FOR MECHANICAL DEMOLITION DETAILS AND DE SHEETS FOR ELECTRICAL DEMOLITION DETAILS.
6. CONTRACTOR SHALL PROTECT FENCE IN PLACE OR REPLACE FENCE IN-KIND IF FENCE IS REMOVED FOR EASE OF CONSTRUCTION.
7. CONTRACTOR SHALL ACQUIRE TEMPORARY EASEMENT TO ACCOMMODATE CONSTRUCTION ACTIVITIES OUTSIDE EASEMENT.
8. LAYDOWN AREAS PROPOSED BY THE CONTRACTOR NEED TO BE WITHIN THE EXISTING TAMPA BAY WATER EASEMENTS AND WITHIN THE SILT FENCE/CONSTRUCTION AREAS.

SHEET KEYNOTES

A. CONTRACTOR TO REMOVE CONCRETE PAD TO INSTALL NEW PIPE CONNECTION AND CONDUIT. AREA MUST BE BACKFILLED TO MATCH ADJACENT ELEVATIONS AND GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING.

LEGEND

- ESMT — EASEMENT
- SILT FENCING
- SHEET FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- EXISTING IMPERVIOUS AREA TO BE DEMOLISHED
- P 12" — PINE *
- U 12" — UNKNOWN *

* INDICATES PINE/UNKNOWN TREE CONSISTING OF A SINGLE TRUNK "12" INCHES IN DIAMETER AS MEASURED AT BREAST HEIGHT.

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE
WELLFIELD
IMPROVEMENTS
PROJECT

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
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SHEET TITLE

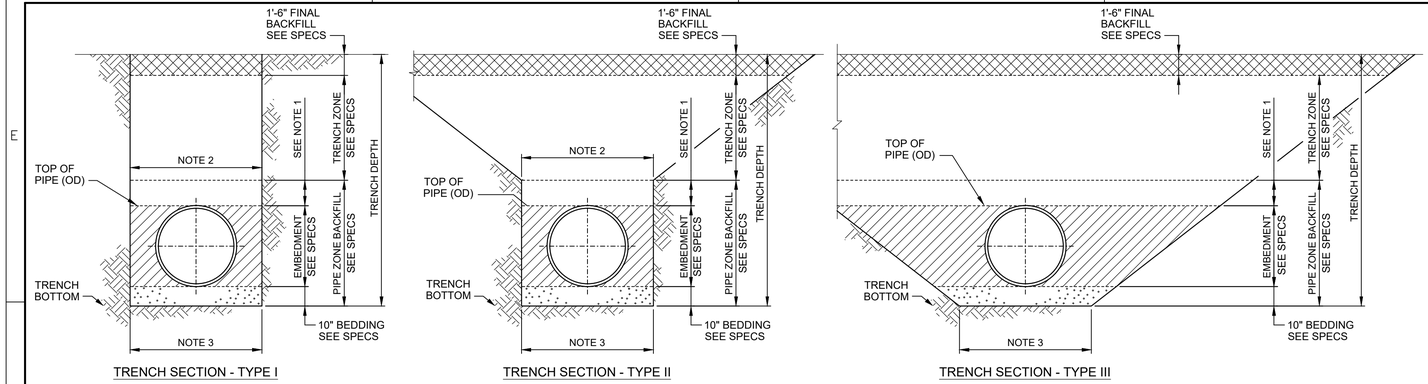
WELL HOUSE
MBR-169 PLAN

SCALE: 1" : 20'

SHEET NO: C-17

SHEET 30 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-10.DWG Scale:1:1 SavedDate:4/30/2025 Time:16:23 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:40 ; Layout:17



TRENCH SECTION - TYPE I | TRENCH SECTION - TYPE II | TRENCH SECTION - TYPE III

NOTES:

1. 6" MIN FOR PIPE DIAMETER < 24"
   12" MIN FOR PIPE DIAMETER > 24"
2. MAX TRENCH WIDTH @ TOP OF PIPE:
   OD + 36" FOR, 18" AND LARGER PIPE OD
   OD + 24" FOR LESS THAN 18"
3. MIN TRENCH BOTTOM WIDTH:
   OD + 24" FOR MECHANICAL COMPACTION

A. FLEXIBLE PIPE REFERS TO ALL STEEL, DUCTILE-IRON, AND PLASTIC PIPES.

B. TYPICAL TRENCH SECTIONS (I, II AND III) ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE ADVISED SHOULD THIS OCCUR.

C. THE NEED FOR PROTECTIVE SYSTEMS AND EXCAVATION SLOPES SHALL BE DETERMINED CONSIDERING APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, AND GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS.

E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND COMPLIANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS.

F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALL SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED, ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.

G. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER.

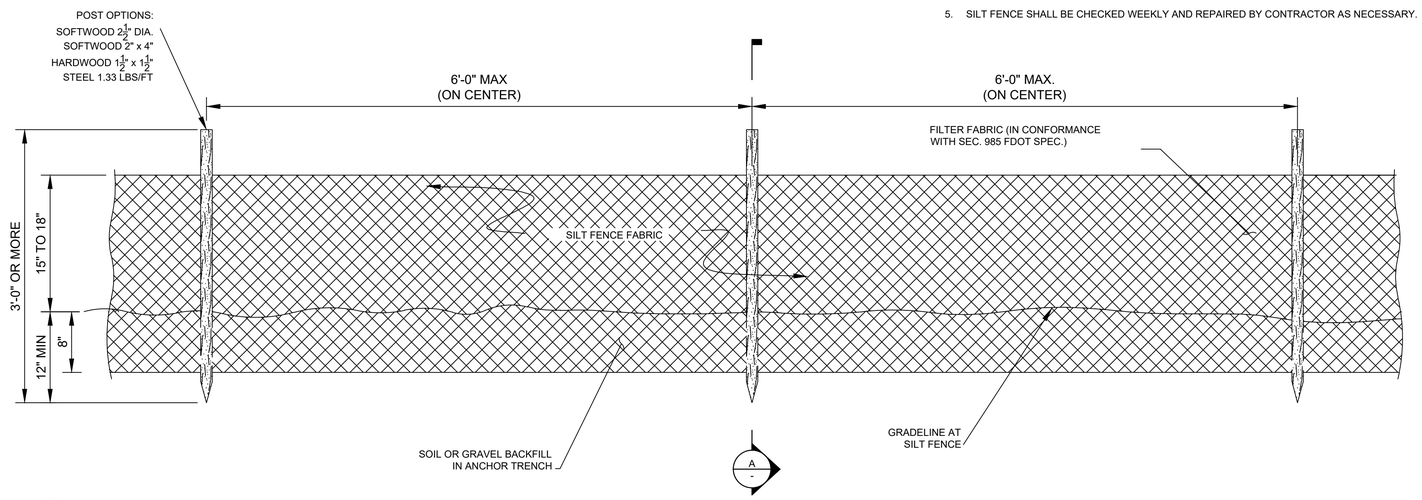
H. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTION OF THE SPECIFICATIONS ARTICLE ENTITLED, "FILL AND BACKFILL MATERIAL REQUIREMENTS."

I. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTIONS OF THE SPECIFICATIONS, OR AS ORDERED BY THE ENGINEER.

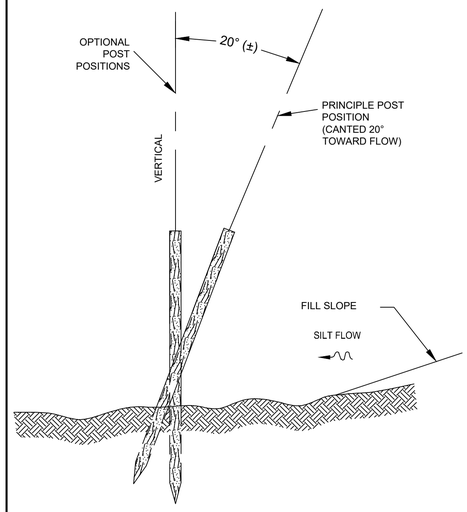
C-601 TRENCH SECTION FLEXIBLE PIPE

REV 010119

1. CONTRACTOR SHALL INSPECT ALL TEMPORARY SILT FENCES IMMEDIATELY AFTER EACH RAINFALL AND DAILY DURING PROLONGED RAINFALL.
2. CONTRACTOR SHALL MAKE A DAILY REVIEW OF THE LOCATION OF SILT FENCES IN AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CHANGED THE NATURAL CONTOUR AND DRAINAGE RUNOFF TO ENSURE THAT THE SILT FENCES ARE PROPERLY LOCATED FOR EFFECTIVENESS.
3. CONTRACTOR SHALL REMOVE SEDIMENT DEPOSITS WHEN THE DEPOSIT REACHES APPROXIMATELY 1/2 OF THE VOLUME CAPACITY OF THE TEMPORARY SILT FENCE OR AS DIRECTED BY THE DISTRICT.
4. SILT FENCE SHALL BE PREFABRICATED WITH WOODEN POSTS.
5. SILT FENCE SHALL BE CHECKED WEEKLY AND REPAIRED BY CONTRACTOR AS NECESSARY.



C-901 SILT FENCE BARRIER BMP DETAIL



A - SILT FENCE BARRIER SECTION

NTS

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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SHEET TITLE

STANDARD DETAILS

SCALE: NO SCALE

SHEET NO: C-50

SHEET 31 OF 120

User:SVADHAWKAR Spec:NAT CADD STD File:C:\PW_WORKING\WTR\SVADHAWKAR\D0154725\C-50.DWG Scale:1:1 SavedDate:12/9/2024 Time:18:45 Plot Date: Vadhawkar, Samir; 4/30/2025; 16:33 ; Layout:C-50

GENERAL NOTES

GENERAL

THESE NOTES ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE.

STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE COORDINATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. BOLT SIZES, TYPES, AND PATTERNS SHALL BE VERIFIED WITH THE MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO ENSURE ACCURACY OF PLACEMENT.

MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.

STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH MECHANICAL, ELECTRICAL, CIVIL, ARCHITECTURAL AND SHOP DRAWINGS PROVIDED BY MANUFACTURERS OF EQUIPMENT.

STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE STRUCTURES HAVE NOT BEEN DESIGNED TO RESIST THESE LOADS WHILE ONLY PARTIALLY CONSTRUCTED. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED FROM ALL CONSTRUCTION LOADS BY BRACING AND BALANCING UNTIL ALL STRUCTURAL ELEMENTS ARE IN PLACE, AND THE COMBINED MASONRY ASSEMBLAGE HAS REACHED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH. OVERLOADING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.

UNLESS OTHERWISE SHOWN, ON ALL STRUCTURAL DRAWINGS THE FINISHED GRADE AROUND STRUCTURES IS SHOWN THUS, INDICATING EITHER GROUND SURFACE, TOP OF CONCRETE SLAB, OR AC PAVEMENT. FOR DETAILS OF FINISH SURFACES SEE CIVIL DRAWINGS.

CONCRETE (EXCEPT PRECAST CONCRETE)

UNLESS OTHERWISE NOTED OR SPECIFIED, ALL STRUCTURAL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS.

REINFORCEMENT STEEL SHALL BE DEFORMED BARS CONFORMING IN QUALITY TO THE REQUIREMENTS OF ASTM A-615, "SPECIFICATION FOR DEFORMED AND PLAIN CARBON-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.

ALL DETAILING, FABRICATION AND PLACING OF REINFORCING BARS, UNLESS OTHERWISE INDICATED, SHALL BE IN ACCORDANCE WITH CRSI "MANUAL OF STANDARD PRACTICE" LATEST EDITION.

TOLERANCES IN PLACING REINFORCEMENT SHALL BE:

+/- 3/8 INCH FOR MEMBERS WITH DEPTH D </= 8 INCHES

+/- 1/2 INCH FOR MEMBERS WITH DEPTH D > 8 INCHES

ALL CONSTRUCTION JOINTS, SHALL BE ROUGH AND THOROUGHLY CLEANED FOR BOND.

LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.

DOWELS, PIPE, WATERSTOPS AND OTHER INSTALLED MATERIALS AND ACCESSORIES SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.

UNLESS OTHERWISE INDICATED, ASIDE FROM NORMAL ACCESSORIES USED TO HOLD REINFORCING BARS FIRMLY IN POSITION, THE FOLLOWING SHALL BE ADDED:

A) IN SLABS #5 RISER BARS AT 36 INCHES OC MAXIMUM TO SUPPORT TOP REINFORCING BARS.

B) IN WALLS WITH 2 CURTAINS #3 U OR Z SHAPE SPACERS AT 6 FEET OC EACH WAY.

SEALANT SHALL BE PLACED AT THE TOP OF ALL JOINTS RECEIVING EXPANSION JOINT FILLER. SEALANT DEPTH SHALL BE THE JOINT FILL THICKNESS OR 1/2", WHICHEVER IS LESS.

ALL GROUT SHALL BE NON-SHRINK GROUT, UNLESS INDICATED OTHERWISE.

UNLESS OTHERWISE SHOWN CONCRETE WALLS AND SLABS SHALL BE REINFORCED AS FOLLOWS: #4@12" EW, CENTER OF 6" SECTIONS; #5@12" EW, CENTER OF 8" SECTIONS; #4 @ 12" EW EF OF 10" SECTIONS; #5@12" EW EF OF 12" AND THICKER SECTIONS.

DOWELS SHALL BE WIRED OR OTHERWISE HELD IN POSITION. THEY SHALL NOT BE SHOVED INTO FRESHLY PLACED CONCRETE.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, LAPS OF REINFORCEMENT IN CONCRETE SHALL BE AS SHOWN ON DETAIL S-143.

REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY PIPE, PIPE FLANGE OR METAL PARTS EMBEDDED IN CONCRETE, A MINIMUM OF 2 INCHES CLEARANCE SHALL BE PROVIDED AT ALL TIMES.

ALL ITEMS EMBEDDED IN CONCRETE SHALL BE SPACED ON CENTER AT LEAST 4 TIMES THEIR OUTSIDE DIMENSION. THE OUTSIDE DIMENSION SHALL NOT EXCEED ONE THIRD OF THE MEMBER THICKNESS

UNLESS OTHERWISE SHOWN ON THE DRAWINGS CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:

FOR CONCRETE PLACED AGAINST EARTH (SEE CONSTRUCTION JOINT DETAILS FOR THIN SLABS-ON-GRADE. BOTTOM COVER MAY BE LESS THAN 3" IF SO INDICATED) — 3"

FOR SURFACES IN CONTACT WITH WATER OR WEATHER AND FORMED SURFACES IN CONTACT WITH EARTH — 2"

FOR CONCRETE NOT EXPOSED TO WEATHER, OR IN CONTACT WITH WATER OR EARTH — 1 1/2"

UNLESS OTHERWISE NOTED, WALLS AND SLABS SHOWN WITH A SINGLE LAYER OF REINFORCEMENT SHALL HAVE THAT REINFORCEMENT CENTERED

SLABS WITH SLOPING SURFACES SHALL HAVE THE INDICATED SLAB THICKNESS MAINTAINED AS THE MINIMUM. SLAB BOTTOMS MAY EITHER SLOPE WITH THE TOP SURFACE OR BE LEVEL. REINFORCING IN SLABS WITH SLOPING SURFACES SHALL BE PLACED AT THE REQUIRED CLEARANCE FROM THE SLAB SURFACES.

STRUCTURAL STANDARD DETAILS

DETAILS ON GS SHEETS ARE PART OF STANTEC'S STRUCTURAL STANDARD DETAILS.

THESE DETAILS ARE TO BE USED WHEN REFERRED TO OR WHEN NO OTHER MORE RESTRICTIVE OR DIFFERENT DETAILS ARE INDICATED ON THE DRAWINGS.

DESIGN CRITERIA

DESIGN IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, EXISTING BUILDING, 8TH EDITION (2023), (2021 EDITION OF THE INTERNATIONAL BUILDING CODE) EXCEPT WHERE OTHER APPLICABLE CODES OR THE FOLLOWING NOTES ARE MORE RESTRICTIVE. CONSTRUCTION SHALL CONFORM TO FLORIDA BUILDING CODE, BUILDING, 8TH EDITION (2023) AND ASCE 7-22 REQUIREMENTS.

LOADINGS:

FLOOR LIVE LOADS:

UNIFORM LIVE LOAD (PSF): ---------- 200

ROOF LIVE LOADS:

ROOF LIVE LOAD (PSF): ---------- 30

WIND LOADS:

ULTIMATE DESIGN WIND SPEED, V_{ULT} (MPH): ---------- 155
NOMINAL DESIGN WIND SPEED, V_{ASD} (MPH): ---------- 120
WIND IMPORTANCE FACTOR (Iw): ---------- 1.0
RISK CATEGORY: ---------- IV
EXPOSURE CATEGORY: ---------- C
INTERNAL PRESSURE COEFFICIENT: ---------- ±0.18

FOR COMPONENT AND CLADDING DESIGN WIND PRESSURES, REFER TO TABULATION ON THIS DRAWING.

SEISMIC LOADS:

NOT APPLICABLE - EXEMPT PER FBC, 8TH EDITION (2023)

SNOW LOADS:

NOT APPLICABLE - EXEMPT PER FBC, 8TH EDITION (2023)

FLOOD LOADS:

FLOOD DESIGN CLASS:
NOT APPLICABLE. EXISTING STRUCTURE WITH NO SUBSTANTIAL IMPROVEMENT.

MASONRY

CONCRETE BLOCK MASONRY SHALL BE NORMAL WEIGHT, HOLLOW UNITS CONFORMING TO ASTM C 90 "SPECIFICATION FOR LOAD BEARING CONCRETE MASONRY UNITS". SIZE OF UNITS, COLOR AND TEXTURE SHALL BE PER THE SPECIFICATIONS.

GROUT ALL CELLS CONTAINING REINFORCING OF CONCRETE BLOCK MASONRY UNLESS OTHERWISE NOTED ON DRAWINGS.

UNLESS OTHERWISE INDICATED, LAPS OF REINFORCEMENT IN CMU SHALL BE AS SHOWN ON DETAIL S-415.

MORTAR SHALL BE IN ACCORDANCE WITH ASTM C 270 "SPECIFICATION FOR MORTAR FOR UNIT MASONRY", TYPE M OR S.

GROUT SHALL BE IN ACCORDANCE WITH ASTM C 476 "SPECIFICATION FOR GROUT FOR MASONRY", AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.

THE COMBINED MASONRY ASSEMBLAGE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE A MINIMUM OF f'm = 2000 PSI.

REINFORCEMENT SHALL BE TIED OR OTHERWISE SECURED IN POSITION PRIOR TO GROUTING.

ALL HORIZONTAL AND VERTICAL REINFORCEMENT SHALL BE CONTINUOUS OVER THE FULL EXTENT OF THE WALL WITH STANDARD SPLICES LOCATED AS NEEDED. WHERE IT IS NECESSARY TO INTERRUPT AN INDIVIDUAL BAR, AN EQUAL SIZED BAR SHALL BE LOCATED AS CLOSE AS POSSIBLE AND SHALL EXTEND A MINIMUM OF ONE SPLICE LENGTH BEYOND EACH SIDE OF THE INTERRUPTION.

DEFERRED SUBMITTALS:

DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE PROVIDED BY THE CONTRACTOR AND THEREFORE WERE NOT SUBMITTED AT THE TIME OF THE PERMIT APPLICATION, AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY PRIOR TO FABRICATION OR INSTALLATION OF THAT PORTION OF THE WORK. PORTIONS OF THE DESIGN INDICATED AS DEFERRED SUBMITTALS ARE DELEGATED DESIGNS AND SHALL COMPLY WITH THE REQUIREMENTS OF THE FBC FOR DELEGATED DESIGNS.

NO WORK SHALL BE PERFORMED FOR DEFERRED SUBMITTAL ITEMS UNTIL THE PLANS FOR SUCH WORK HAVE BEEN REVIEWED AND FOUND ACCEPTABLE BY THE ENGINEER OF RECORD AND APPROVED BY THE BUILDING OFFICIAL.

DRAWINGS AND CALCULATIONS FOR THESE ITEMS SHALL BE SIGNED AND SEALED BY A LICENSED FLORIDA PROFESSIONAL ENGINEER. NO FABRICATION SHALL COMMENCE UNTIL THE FINAL APPROVAL HAS BEEN ISSUED BY THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.

SPECIFICATION SECTION	ITEM
01613	STRUCTURAL DESIGN, SUPPORT AND ANCHORAGE

VERTICAL PUMP DESIGN CRITERIA

THE FOLLOWING DESIGN CRITERIA IS BASED ON PRELIMINARY MANUFACTURER INFORMATION AS THE DESIGN BASIS FOR THE CONCRETE PUMP PAD. ANY DEVIATION FROM THIS INFORMATION SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER PRIOR TO PROCUREMENT, FABRICATION, OR INSTALLATION OF THE CONCRETE PUMP PAD. DEVIATIONS MAY REQUIRE ALTERATION TO THE DETAILS INCLUDED FOR THE CONCRETE PUMP PAD. REFER TO PROCESS MECHANICAL DRAWINGS FOR RELEVANT CRITERIA AT EACH STATION.

BASIS OF ORIGINAL DESIGN DATA	50 HP PUMP	75 HP PUMP
OPERATING SPEED, RPM	1753	1753
EQUIPMENT WEIGHT, POUNDS	7000	7000
WATER COLUMN WEIGHT, POUNDS	5200	5200
LATERAL ANCHOR FORCE, POUNDS	1000	1000

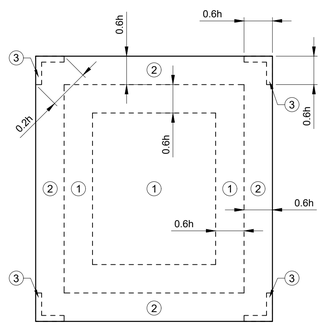
NOTE:
IN ADDITION TO SPECIFIC REPAIRS INDICATED WITHIN THIS DRAWING SET, THE CONTRACTOR SHALL INCLUDE PRICING FOR THE FOLLOWING REPAIR ELEMENTS. REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT SPECIFICATION AND DETAILS. THE REPAIR QUANTITIES ARE AN ESTIMATE FOR BIDDING PURPOSES TO ESTABLISH PRICING TO BE USED AS DIRECTED BY THE ENGINEER.

REPAIR TABLE

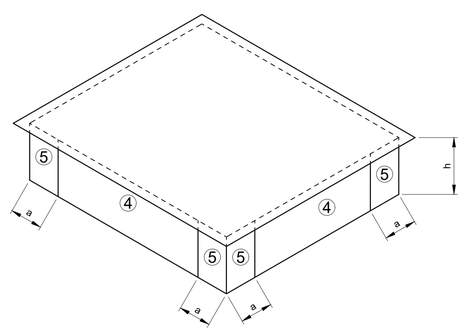
WELL HOUSE	CRACKED VENEER (LF)	CAST-IN-PLACE CONCRETE CRACK (LF)	CMU MORTAR REPAIR (LF)
MBR-150A	--	10	120
MBR-151A	--	10	120
MBR-153A	--	10	120
MBR-154A	--	10	120
MBR-155A	--	10	120
MBR-156A	--	10	120
MBR-158A	--	10	120
MBR-159B	--	10	120
MBR-160B	--	10	120
MBR-164B	60	10	120
MBR-165B	60	10	120
MBR-166B	60	10	120
MBR-167B	60	10	120
MBR-168B	60	10	120
MBR-169B	60	10	120

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PROTECTIVE COATINGS, CLEANING, VENEER REPAIRS, ROOFING REPAIRS, FASCIA REPAIRS, AND DOOR REPLACEMENT.
2. REFER TO PROCESS MECHANICAL DRAWING FOR PIPE LOCATION.
3. DAMAGED CMU BLOCK SHALL BE REPLACED. A QUANTITY OF 6 BLOCKS SHALL BE ASSUMED FOR THE ENTIRE PROJECT.
4. MBR-150A THROUGH MBR-160B ARE SINGLE WYTHE CONCRETE MASONRY WALLS.

WIND PRESSURE ON COMPONENT (PSF) (SEE GENERAL SHEET NOTE 1)								
	WALLS		ROOF				ROOF OVERHANG	
ZONE	4	5	1	1'	2	3	2	3
+/- LOAD	+28.8/-31.3	+28.8/-38.3	+12.8/-50.1	+12.8/-28.8	+12.8/-66.0	+12.8/-90.0	+9.6/-61.2	+9.6/-85.2



ROOF PRESSURE ZONES
a = 3'-0"



WALL WIND PRESSURE ZONES
a = 3'-0"
0.6h = 6'-0"

GENERAL SHEET NOTES

1. COMPONENT WIND PRESSURES ARE PROVIDED FOR THE DESIGN AND INSTALLATION OF COMPONENTS AND CLADDING MATERIALS (DOORS, LOUVERS, ROOFING, ETC). THE CONTRACTOR SHALL FOLLOW THESE PRESSURES UNLESS APPROVED BY THE ENGINEER.

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TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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REV.	DATE	DESCRIPTION	BY
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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: GS-1
DESIGNED BY: CPK
DRAWN BY: EJM
CHECKED BY: CK
APPROVED BY: KB

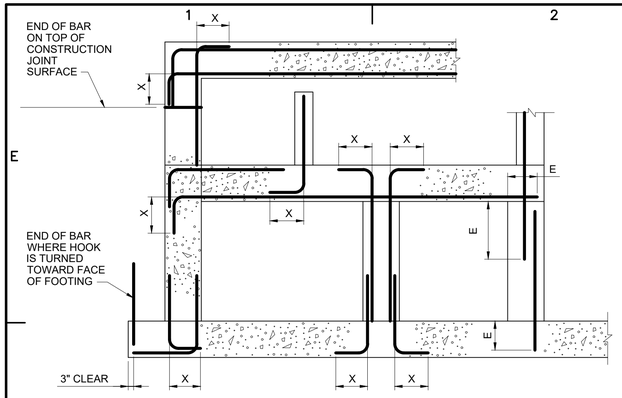
SHEET TITLE
STRUCTURAL GENERAL NOTES - I

SCALE: NO SCALE

SHEET NO: GS-1

SHEET 32 OF 120

User:DBRASSARD Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DBRASSARD\D0154750\GS-1.DWG Scale:1:1 SavedDate:12/4/2024 Time:13:08 Plot Date: Brassard, Dan; 4/30/2025; 08:29 ; Layout:LAYOUT1



SECTION

LENGTH (*)			
BAR SIZE	HOOK X	LAP	EMBEDMENT E
#3	6"	16" (21")	12" (16")
#4	8"	16" (21")	12" (16")
#5	10"	20" (26")	15" (20")
#6	12"	28" (37")	22" (28")
#7	14"	48" (62")	37" (48")
#8	16"	62" (81")	48" (62")
#9	19"	79" (102")	61" (79")
#10	22"	100" (130")	77" (100")
#11	24"	123" (160")	95" (123")

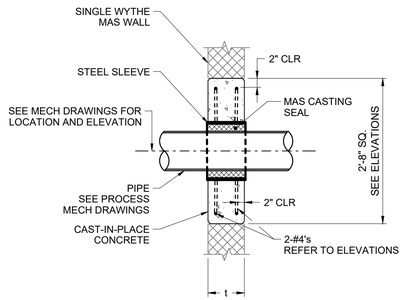
* USE LENGTH IN PARENTHESIS FOR WALL HORIZONTAL REBARS AND SLAB BARS WITH 12" OR MORE OF FRESH CONCRETE UNDERNEATH

NOTES:

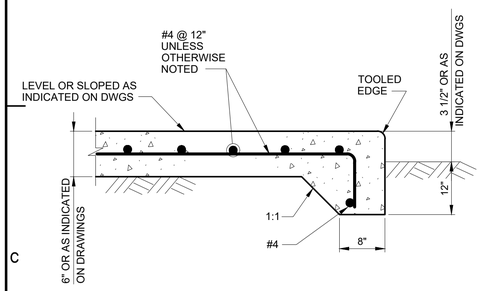
1. USE LAP LENGTHS AS DETERMINED FROM THESE TABLES UNLESS SHOWN OTHERWISE.
2. THE TABLES SHOWN ARE FOR f'c=4000psi, fy=60,000psi, 1.5" MIN CONCRETE COVER AND 3" MIN BAR SPACING.
3. MULTIPLY THE LAP AND E SHOWN IN THESE TABLES BY 1.5 FOR EPOXY COATED REINFORCING.
4. WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, LAP LENGTH SHALL BE THE LARGER OF:

   EMBEDMENT LENGTH OF LARGER BAR
   LAP LENGTH OF SMALLER BAR
5. USE REINFORCING BAR COUPLERS FOR SPLICES OF #11 AND LARGER BARS UNLESS DRAWINGS INDICATE LAP SPLICES SHOWN IN TABLE ARE ACCEPTABLE.
6. ALL DOWEL BARS SHALL EXTEND AN EMBEDMENT LENGTH E INTO ANOTHER MEMBER OR ACROSS A CONSTRUCTION JOINT UNLESS SHOWN TO SPLICE WITH OTHER BARS OR TO EXTEND TO THE FAR FACE OF THE MEMBER AND END WITH A STANDARD HOOK.

S-143 STANDARD 90° BAR HOOKS, EMBEDMENT LENGTHS AND LAP LENGTHS REV 090616



S-903 SLEEVE DETAIL - SINGLE WYTHE WALL REV 103024

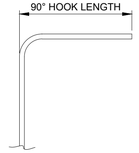


NOTES:

1. USE 2 MATS OF #5 @ 12" EW EF FOR SLABS 10" AND THICKER.
2. USE THIS DETAIL AT REPLACEMENT TRANSFORMER PADS.

S-190 SLAB-ON-GRADE REV 111424

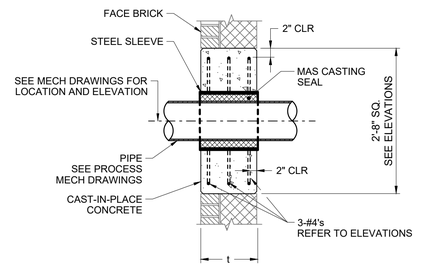
BAR SIZE	8" CMU LAP AND EMBEDMENT LENGTHS (CENTERED)	12" CMU LAP AND EMBEDMENT LENGTHS (CENTERED)	8" OR 12" CMU LAP AND EMBEDMENT LENGTHS (OFF-CENTER) (NOTE 4)	8" OR 12" CMU LAP AND EMBEDMENT LENGTHS FOR DWLS IN CONCRETE (OFF-CENTER) (NOTE 4)	90° HOOK LENGTH (SEE BELOW)	ALLOWABLE HOOK EMBEDMENT LENGTH REDUCTION
#3	12"	12"	13"	17"	6"	4"
#4	13"	12"	22"	30"	8"	6"
#5	20"	13"	35"	46"	10"	8"
#6	38"	25"	64"	72"	12"	9"
#7	52"	33"	84"	84"	14"	11"
#8	80"	50"	96"	96"	16"	13"



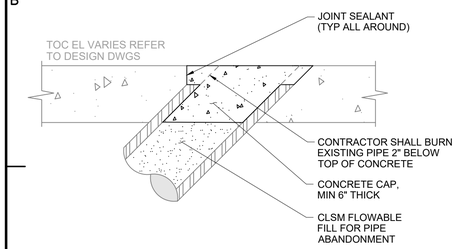
NOTES:

1. THE TABLES SHOWN ARE FOR FBC, 8TH EDITION (2023) AND TMS 402-16 WITH f'm=1900 PSI AND fy=60,000 PSI.
2. USE HOOK, EMBEDMENT AND LAP SPLICE LENGTHS AS DETERMINED FROM THESE TABLES UNLESS INDICATED OTHERWISE.
3. WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, LAP LENGTHS SHALL BE THE LARGER OF THE EMBEDMENT LENGTH OF THE LARGER BAR, OR THE LAP LENGTH OF THE SMALLER BAR.
4. NR DENOTES "NOT RECOMMENDED" BECAUSE LAP LENGTHS ARE IMPRACTICAL
5. HOOK EMBEDMENT LENGTH EQUALS STRAIGHT BAR EMBEDMENT LENGTH MINUS ALLOWABLE HOOK EMBEDMENT LENGTH REDUCTION.
6. MECHANICAL COUPLERS MAY BE SUBSTITUTED FOR LAP SPLICES FOR ANY BAR SIZE. SUBMIT TO ENGINEER FOR APPROVAL.

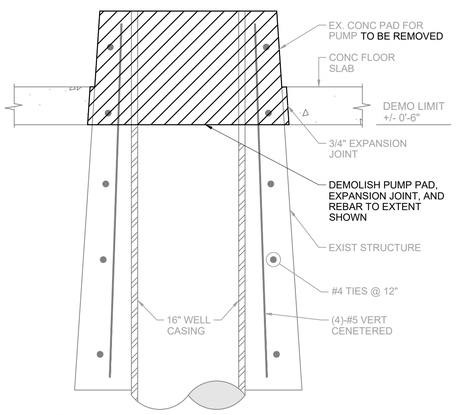
S-415 LAPS, HOOKS AND EMBEDMENTS FOR 8", 12" CMU REV 010119

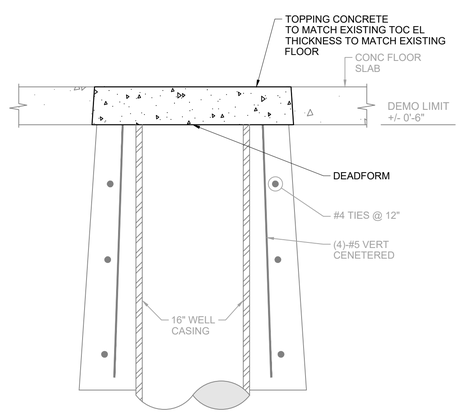


S-904 SLEEVE DETAIL - DOUBLE WYTHE WALL REV 103024



S-901 FLOOR PIPE PENETRATION REPAIR





S-902 ABANDONED WELL CAP REPAIR

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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FILE NAME: GS-2
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APPROVED BY: KB

SHEET TITLE
STRUCTURAL STANDARD DETAILS - I

SCALE: NO SCALE

SHEET NO: GS-2

SHEET 33 OF 120

User:DBRASSARD Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DBRASSARD\D0154750\GS-2.DWG Scale:1:1 SavedDate:12/4/2024 Time:13:09 Plot Date: Brassard, Don; 4/30/2025; 08:30 ; Layout:LAYOUT1

A

A	AIR/ AMPERE
A/C	AIR CONDITIONING
A/R	AIR RELEASE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AB	ANCHOR BOLT
ABAN	ABANDON
ABND	ABANDONED
ABBR	ABBREVIATION
ABS	ABSOLUTE TEMPERATURE
AC	ACTIVATED CARBON/ ASPHALTIC CONC/ ALTERNATING CURRENT
ACI	AMERICAN CONCRETE INTERNATIONAL
ACOUS	ACOUSTIC/ ACOUSTICAL
ACP	ASBESTOS CEMENT PIPE/ ASPHALTIC CONCRETE PAVEMENT
ADD	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONST
ALT	ALTERNATE
ALUM	ALUMINUM/ ALUM
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS INST
API	AMERICAN PETROLEUM INSTITUTE
APPD	APPROVED
APPROX	APPROXIMATE
APPURTS	APPURTENANCES
ARCH	ARCHITECTURE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENG
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TEST & MATERIALS
AT	ACOUSTICAL TILE
ATM	ATMOSPHERE
AV/AR	AIR VACUUM AND AIR RELEASE VALVE
AVE	AVENUE
AWPA	AMERICAN WOOD PRESERVERS ASSOC
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION

B

B&S	BELL AND SPIGOT
B/W	BACK OF WALL/ BACK OF WALK
BC	BEGIN CURVE/ BOLT CIRCLE/ BETWEEN CENTERS/ BACK OF CURVE
BCR	BEGIN CURB RETURN
BD	BOARD
BDRY	BOUNDARY
BF	BLIND FLANGE/ BOTTOM OF FOOTING
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLK	BLACK/ BLOCK
BLKG	BLOCKING
BLVD	BOULEVARD
BM	BEAM/ BENCH MARK
BO	BLOW-OFF ASSEMBLY
BOD	BIOCHEMICAL OXYGEN DEMAND
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BPV	BACK PRESSURE VALVE
BRK	BRICK/ BREAK
BSMT	BASEMENT
BT	BOLT
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BVC	BEGIN VERTICAL CURVE
BWV	BACK WATER VALVE

C

C	CENTIGRADE/ CHANNEL/ CEMENT
C&G	CURB AND GUTTER
CAB	CABINET/ CRUSHED AGGREGATE BASE
CAP	CAPACITY
CATS	CASING TEST STATION
CATV	CABLE TELEVISION
CB	CATCH BASIN/ CHALKBOARD/ CURB
CC	CLOSED CIRCUIT TV/ CENTER TO CENTER
CD	CEILING DIFFUSER
CEM	CEMENT
CF	CURB FACE/ CUBIC FOOT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHG	CHANGE
CHKD	CHECKERED
CI	CAST IRON
CIP	CAST IRON PIPE/ CAST IN PLACE
CIPP	CAST IN PLACE PIPE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CL2	CHLORINE
CLF	CHAIN LINK FENCE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR/ CLEARANCE
CMB	CRUSHED MISCELLANEOUS BASE
CMC	CEMENT MORTAR-COATED
CML	CEMENT MORTAR-LINED
CML&C	CEMENT MORTAR-LINED AND COATED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMM	COMMUNICATIONS CABLE
COMP	COMPRESSOR
CONC	CONCRETE/ CONCENTRIC
COND	CONDENSER/ CONDENSATE
CONN	CONNECTION
CONST	CONSTRUCT/ CONSTRUCTION
CONT	CONTINUED/ CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
COR	CORNER
COTG	CLEANOUT TO GRADE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CS	CAST STEEL
CSP	CORRUGATED STEEL PIPE
CSTS	CURRENT SPAN TEST STATION
CT	CERAMIC TILE
CTR	CENTER
CTS	CORROSION TEST STATION
CTSK	COUNTERSUNK
CU	COPPER/ CUBIC
CULV	CULVERT
CV	CHECK VALVE
CY	CUBIC YARD
CYL	CYLINDER

D

d	PENNY
DAD	DOUBLE ACTING DOOR
DAFT	DISSOLVED AIR FLOTATION THICKENER
DB	DIRECT BURY
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DET	DETAIL
DF	DRINKING FOUNTAIN/ DOUGLAS FIR
DG	DOOR GRILL
DH	DOUBLE HUNG
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIFF	DIFFUSER/ DIFFERENTIAL
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DISP	DISPENSER
DL	DEAD LOAD
DMH	DROP MANHOLE
DN	DOWN
DO	DISSOLVED OXYGEN/ DITTO
DR	DOOR/ DRAIN
DS	DRENCH SHOWER AND EYE WASH
DT	DRAIN TILE
DWG	DRAWING
DWLS	DOWELS
DWY	DRIVEWAY

E

E	EAST
E/O	EAST OF
EA	EACH
EB	EXPANSION BOLT OR ANCHOR
EC	END CURVE
ECC	ECCENTRIC
ECR	END CURB RETURN
EF	EACH FACE/ EXHAUST FAN
EFF	EFFLUENT
EG	EXIST GRADE/ EDGE OF GUTTER/ EXHAUST GRILLE
EGL	ENERGY GRADE LINE
EL	ELEVATION
ELEC	ELECTRICAL/ ELECTRONIC
EN	EDGE NAILING
ENCL	ENCLOSURE
ENG	ENGINE
ENGR	ENGINEER
ENT	ENTRANCE
EP	EDGE OF PAVEMENT
EPT	ETHYLENE PROPYLENE
EQ	EQUAL
EQUIP	EQUIPMENT
ESMT	EASEMENT
ETB	EMULSION TREATED BASE
ETC	ET CETERA
EVAP	EVAPORATOR
EVC	END VERTICAL CURVE
EW	EACH WAY/ EYE WASH
EX	EXISTING
EXC	EXCAVATION
EXH	EXHAUST
EX-HY	EXTRA HEAVY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR/ EXTENSION
EXTR	EXTRUDED

F

F	FAHRENHEIT/ FINISH
F TO F	FACE TO FACE
F&C	FRAME AND COVER
F&I	FURNISH AND INSTALL
FAB	FABRICATE/ FABRICATION/ FABRICATED
FAI	FRESH AIR INTAKE
FB	FLAT BAR/ FLOOR BEAM/ FIELD BOOK
FBC	FLORIDA BUILDING CODE
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDR	FEEDER
FE	FIRE EXTINGUISHER/ FINAL EFFLUENT
FEM	FEMALE (PIPE THREAD)
FF	FLAT FACE/ FAR FACE/ FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT/ FLAT HEAD
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOWLINE/ FLOOR
FLEX	FLEXIBLE
FLG	FLANGE/ FLOORING
FLGD	FLANGED
FLOCC	FLOCCULATOR/ FLOCCULATION
FLR	FLOOR
FLSG	FLASHING
FM	FACTORY MUTUAL (LAB APPRVD)/ FORCE MAIN
FMH	FLEXIBLE METAL HOSE
FN	FIELD NAILING
FND	FOUNDATION
FOC	FACE OF CONCRETE/ FIBER OPTIC CABLE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOW	FACE OF WALL
FPC	FLEXIBLE PIPE COUPLING
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FPTS	FOREIGN PIPE TEST STATION
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FINISHED SURFACE/ FAR SIDE/ FLOOR SINK / FORGED STEEL
FT	FEET/ FOOT
FTG	FOOTING
FUR	FURRING
FUT	FUTURE
FV	FIELD VERIFY
FWD	FORWARD

G

G	GAS
GA	GAGE / GAUGE
GAL	GALLON
GALV	GALVANIZED
GANC	GUY ANCHOR
GB	GRADE BREAK
GEN	GENERAL / GENERATOR
GFA	GROOVED FLANGE ADAPTER
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GL	GLASS / GROUND LINE / GRADE LINE
GLB	GLUE LAMINATED BEAM / GLULAM
GLV	GLOBE VALVE
GM	GAS METER
GP	GUY POLE
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
GRD	GRADE / GROUND
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GYP	GYPSUM

H

H	HIGH / HEIGHT
H&V	HEATING AND VENTILATING
H/B	HOSE BIBB
HC	HOUSE CONNECTION
HDR	HEADER
HDW	HARDWARE
HDWL	HEADWALL
HEX	HEXAGONAL
Hg	MERCURY
HGL	HYDRAULIC GRADE LINE
HGR	HANGER
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HIGH POINT / HORSE POWER / HIGH PRESSURE
HPG	HIGH PRESSURE GAS
HR	HEAT RETURN / HOUR
HSL	HORIZONTALLY SLOTTED
HSS	HOLLOW STRUCTURAL SECTION
HTG	HEATING
HTR	HEATER
HV	HORIZONTAL AND VERTICAL CONTROL POINT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HW	HOT WATER / HEADWORK
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HWO	HANDWHEEL OPERATED
HYD	HYDRAULIC / HYDRANT

I

I/O	INPUT/OUTPUT
I&O	INSIDE AND OUTSIDE
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IF	INSIDE FACE
IJTS	INSULATING JOINT TEST STATION
IN	INCH
INCL	INCLUDE / INCLUDING
INFL	INFLUENT
INSL	INSULATION / INSULATING / INSULATED
INSP	INSPECTION
INST	INSTRUMENT
INT	INTERIOR
INV	INVERT
IP	IRON PIPE
IPS	IRON PIPE SIZE
IRRG	IRRIGATION

J

JAN	JANITOR
JC	JUNCTION CHAMBER
JCT	JUNCTION
JS	JUNCTION STRUCTURE
JSTS	JOISTS
JT	JOINT

K

k	KILO
K	KELVIN/ KARAT
kg	KILOGRAM
km	KILOMETER
kV	KILOVOLT
KVA	KILOVOLT AMPERE
kW	KILOWATT
kWh	KILOWATT HOUR

L

L	LITER/ LENGTH/ ANGLE
LAB	LABORATORY
LAM	LAMINATED
LAT	LATERAL
LAV	LAVATORY
LB	POUND
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LD	LOCAL DEPRESSION
LDG	LANDING
LEV	LEVEL
LF	LINEAR FOOT
LG	LENGTH/ LONG
LH	LAMP HOLE/ LEFT HAND
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LOL	LAYOUT LINE
LONG	LONGITUDINAL
LP	LOW POINT/ LOW PRESSURE/ LAMP POST
LPG	LIQUID PETROLEUM GAS
LT	LEFT/ LIGHT
LTS	LIME TREATED SOIL
LW	LOW WATER
LWL	LOW WATER LEVEL
LWR	LOWER

M

m	METER
M	MALE (PIPE THREAD)
mA	MILLIAMPS
MACH	MACHINE
MAG	MAGNETIC
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MAIL BOX/ MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MCR	MIDDLE OF CURB RETURN
MEAS	MEASURE
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBER
MFR	MANUFACTURER
MFRD	MANUFACTURED
MGD	MILLION GALLONS PER DAY
MH	MANHOLE/ MAINTENANCE HOLE
MHT	MEAN HIGH TIDE
MHW	MEAN HIGH WATER
MI	MALLEABLE IRON/ MILE
MICRON	1/1,000,000 METER
MIL	MILITARY/ 1/1,000TH INCH
MIN	MINIMUM/ MINUTE
MIR	MIRROR
MISC	MISCELLANEOUS
MK	MARK
MLW	MEAN LOW WATER
mm	MILLIMETER
MO	MOTOR OPERATED/ MASONRY OPENING
MOD	MODEL
MON	MONUMENT
MOR	MORTAR
MS	MOP SINK
MSL	MEAN SEA LEVEL
MTC	MECHANICAL-TYPE COUPLING
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTR	MOTOR

N

N	NORTH
NaOCl	SODIUM HYPOCHLORITE
NaOH	SODIUM HYDROXIDE (CAUSTIC SODA)
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NEAR FACE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NG	NATURAL GRADE/ NATURAL GAS
NIC	NOT IN CONTRACT
NO	NUMBER/ NORMALLY OPEN
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NRCP	NON-REINFORCED CONCRETE PIPE
NRS	NON-RISING STEM
NS	NEAR SIDE
NTS	NOT TO SCALE

O

OBJ	OBJECT
OC	ON CENTER/ OVER-CROSSING
OD	OUTSIDE DIAMETER/ OVERALL DIMENSION
OE	OUTER EDGE
OF	OVERFLOW/ OUTSIDE FACE
OFD	OVERFLOW DRAIN
OFF	OFFICE
OH	OVER HEAD
OHW	OVERHEAD WIRES
OPER	OPERATOR/ OPERATING
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OS&Y	OUTSIDE SCREW AND YOKE
OSA	OUTSIDE AIR
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OWG	OIL. WATER. GAS
OZ	OUNCE

P

P	POLE/ PAGE/ PIPE
P/S	POLE AND SHELF
PA	PLANTING AREA
PART	PARTITION
PAVMT	PAVEMENT
PB	POLYBUTYLENE/ PULL BOX
PC	POINT OF CURVATURE/ PRIMARY CLARIFIER/ PORTLAND CEMENT
PCC	PORTLAND CEMENT CONCRETE/ POINT OF COMPOUND CURVE
PCOTG	PRESSURE CLEANOUT TO GRADE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PE	PLANT EFFLUENT/ POLYETHYLENE/ POLYELECTROLYTE POLYMER
PG	PRESSURE GAGE
pH	RECIPROCAL LOG OF HYDROGEN ION CONCENTRATION
PI	PLANT INFLUENT/ POINT OF INTERSECTION
PK	PARKING
PL	PLATE/ PROPERTY LINE/ PLACE
PLAS	PLASTER/ PLASTIC
PLT	PLANT
PLWD	PLYWOOD
PM	PRESSED METAL

P CONT'D

PNEU	PNEUMATIC
PNL	PANEL
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
POT	POINT OF TANGENT
PP	POWER POLE/ POLYPROPYLENE
PPD	POUNDS PER DAY
PPH	POUNDS PER HOUR
PPM	POUNDS PER MINUTE
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRCT	PRECAST
PREFAB	PREFABRICATED
PRESS	PRESSURE
PROF	PROFILE
PRV	PRESSURE REGULATING, RELIEF OR REDUCING VALVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PS	PRESSURE SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT OF TANGENCY/ PAINT/ PRESSURE
PTFE	POLYTETRAFLUOROETHYLENE (TEFLON)
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE (KYNAR)
PW	POTABLE WATER

Q

QT	QUARRY TILE
QTY	QUANTITY
QUAD	QUADRANGLE/ QUADRANT

R

R	RADIUS/ RISER / RATE OF SLOPE
R&O	ROCK AND OIL
R/W	RIGHT OF WAY
RAC	RECYCLED ASPHALT CONCRETE
RAG	RETURN AIR GRILLE
RAP	RECLAIMED ASPHALT PAVEMENT
RAS	RETURN ACTIVATED SLUDGE
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD/ ROOF DRAIN/ ROUND
RED	REDUCER/ REDUCING
REF	REFERENCE/ REFER/ REFRIGERATOR
REG	REGULATING
REINF	REINFORCE/ REINFORCED
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING/ RETURN
REV	REVISION
REW	RECLAIMED WATER
RF	ROOF/ RAISED FOUNDATION/ ROUGH FACE
RFG	ROOFING
RGE	REGISTERED GEOTECHNICAL ENGINEER
RH	REDHEAD / RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RS	RISING STEM
RSL	RAW SLUDGE
RT	RIGHT
RTP	REINFORCED THERMOSETTING PLASTIC
RTU	REMOTE TERMINAL UNIT
RW	REDWOOD
RWL	RAINWATER LEADER

S

S	SOUTH/SCUM/SINK/SECOND/SLOPE
S/O	SOUTH OF
SAM	SAMPLE
SAN	SANITARY
SBR	STYRENE BUTADIENE (RUBBER)
SC	SECONDARY CLARIFIER
SCCP	STEEL CYLINDER CONCRETE PIPE
SCD	SCREWED
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	SANITARY DRAIN/ SMOKE DETECTOR
SDR	STANDARD THERMOPLASTIC PIPE DIMENSION RATIO/STORM DRAIN
SEC	SECONDARY/ SECTION
SER	SERIES
SETT	SETTING
SF	SQUARE FOOT
SH	SHOWER
SHELV	SHELVING
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SL	SLUDGE
SLDG	SLIDING
SLG	SLUICE GATE
SOG	SLAB ON GRADE
SOLN	SOLUTION
SP	STATIC PRESSURE/ SPARE CHEMICAL
SPEC	SPECIFICATION
SPK	SPIKE
SQ	SQUARE
SS	STAINLESS STEEL/ SANITARY SEWER/ SERVICE SINK
SSB	SELECT SUB-BASE
SSPWC	STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION
SSU	SECONDS SAYBOLT UNIVERSAL
ST	STREET/ STATE
STA	STATION
STC	SLEEVE-TYPE COUPLING
STD	STANDARD
STK	STAKE
STL	STEEL
STM	STEAM
STR	STRAIGHT/ STRUCTURAL
SU	STEAM LINE
SUCT	SUCTION
SV	SOLENOID VALVE
SW	SIDEWALK
SWD	SIDEWALK DRAIN
SWGR	SWITCHGEAR
SWR	SIDEWALL REGISTER
SY	SQUARE YARD
SYM	SYMMETRICAL/ SYMBOL
SYS	SYSTEM

T

T	THERMOSTAT/ TREAD OF STAIR/ TANGENT
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TAN	TANGENT
TB	TACK BOARD
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TCV	TEMPERATURE CONTROL VALVE
TEL	TELEPHONE
TEMP	TEMPERATURE/ TEMPORARY
TF	TOP OF FOOTING
TH	TEST HOLE
THK	THICK/ THICKNESS
THR	THRESHOLD
THR'D	THREADED
TK	TANK/ TACK
TL	TRAVERSE LINE
TMS	THE MASONRY SOCIETY
TOC	TOP OF CONCRETE
TOE	THREAD ONE END
TOL	TOILET
TOM	TOP OF MASONRY
TOP	TOP OF PIPE
TOPO	TOPOGRAPHIC
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TELEPHONE POLE
TR	TRACT
TRANS	TRANSMITTER/ TRANSITION /TRANSMISSION
TS	TRAFFIC SIGNAL
TSB	TOP SET BASE
TSC	TRAFFIC SIGNAL CONDUIT
TV	THERMOSTATIC VALVE/ TELEVISION
TW	THERMOMETER WELL /TRAVELED WAY
TYP	TYPICAL

U

UB	UNION BONNET
UBC	UNIFORM BUILDING CODE
UC	UNDER-CROSSING
UG	UNDERGROUND
UGC	UNDERGROUND CONDUIT
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNID	UNIDENTIFIED
UNO	UNLESS NOTED OTHERWISE
UOI	UNLESS OTHERWISE INDICATED
UPS	UNINTERRUPTABLE POWER SUPPLY
UR	URINAL
USA	UNDERGROUND SERVICE ALERT
USGS	UNITED STATES GEOLOGICAL SURVEY
UV	ULTRAVIOLET
UW	UTILITY WATER

V

V	VALVE/ VERTICAL/ VENT/ VOLT/ VOLUME
VAC	VACUUM
VAR	VARIES/ VARIABLE
VB	VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VOL	VOLUME
VPI	VERTICAL POINT OF INTERSECTION
VSL	VERTICALLY SLOTTED
VTC	VENT TO CEILING
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
VWM	VERIFY WITH MANUFACTURE

W

W	WEST/ WASTE/ WIDTH/ WIDE FLANGE/ WATER
W/	WITH
W/O	WEST OF / WITHOUT
WC	WATER COLUMN / WATER CLOSET
WCO	WALL CLEANOUT
WD	WOOD
WDW	WINDOW
WH	WATER HEATER
WI	WROUGHT IRON
WM	WATER METER
WOG	WATER, OIL, OR GAS
WP	WATERPROOFING/ WORKING PRESSURE/ WORK POINT
WPJ	WEAKEN PLANE JOINT
WS	WATER SURFACE
WSTP	WATERSTOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWP	WATER WORKING PRESSURE

X

XCONN	CROSS CONNECTION
XS	EXTRA STRONG
XSEC	CROSS SECTION
XXS	DOUBLE EXTRA STRONG

Y

YD	YARD
YR	YEAR

Z

Z	ZERO/ ZONE
ZN	ZINC
#	POUND
&	AND
@	AT

User:DBRASSARD Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DBRASSARD\D015470\GS-3.DWG Scale:1:1 SavedDate:12/4/2024 Time:13:09 Plot Date: Brassard, Dan: 4/30/2025; 08:33 ; Layout:LAYOUT1

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DATE: SEPT 2025
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FILE NAME: GS-3
DESIGNED BY: CPK
DRAWN BY: EJM
CHECKED BY: CK
APPROVED BY: KB

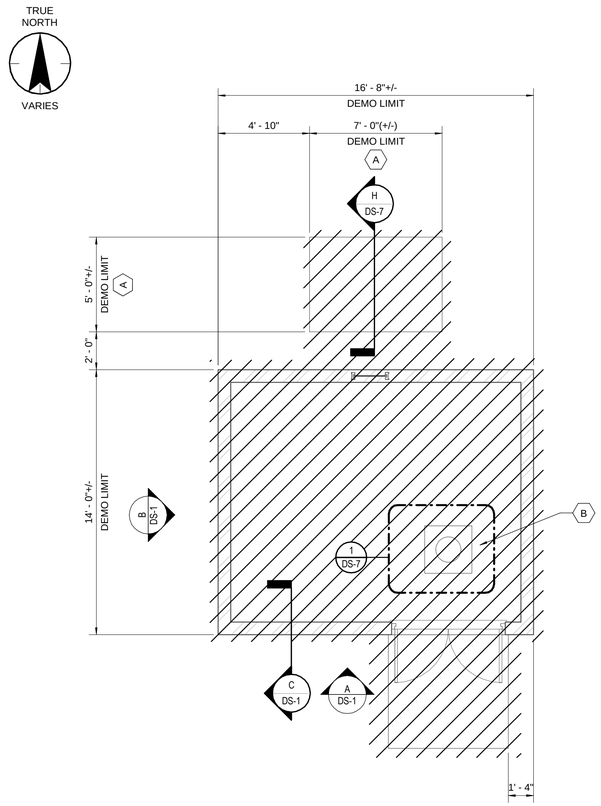
SHEET TITLE

STRUCTURAL ABBREVIATIONS LIST

SCALE: NO SCALE

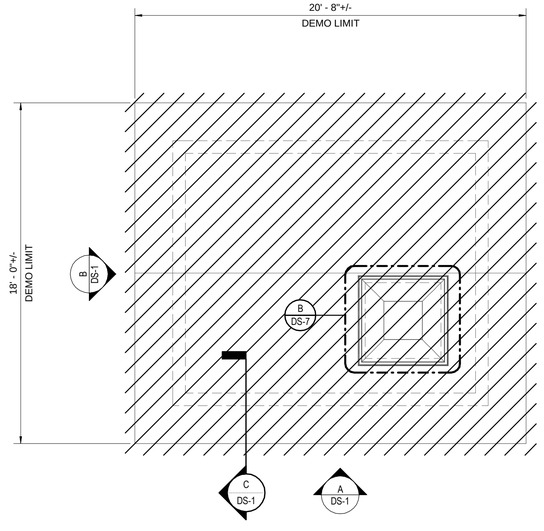
SHEET NO: GS-3

SHEET 34 OF 120



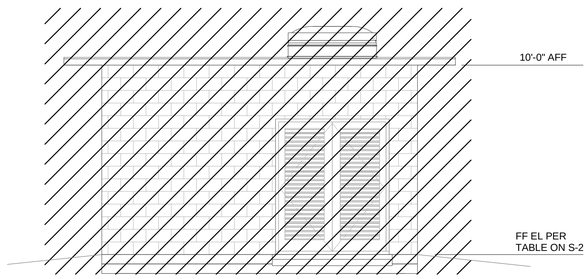
WELLHOUSE TYPE I FLOOR PLAN

1/4" = 1'-0"



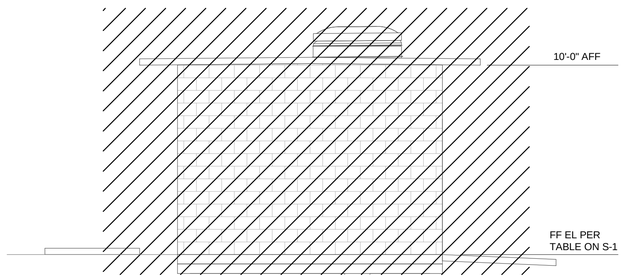
WELLHOUSE TYPE I ROOF PLAN

1/4" = 1'-0"



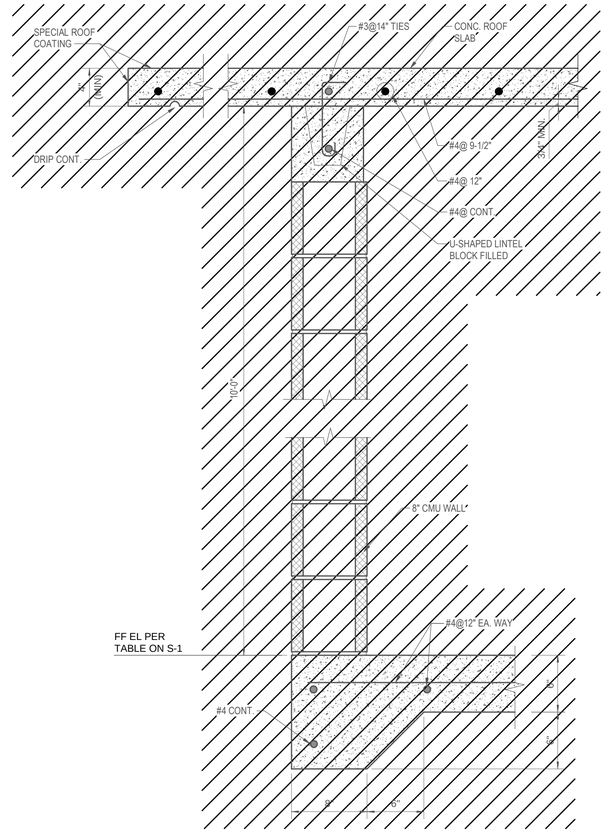
A DS-1 ELEVATION

1/4" = 1'-0"



B DS-1 ELEVATION

1/4" = 1'-0"



C DS-1 WALL SECTION

1 1/2" = 1'-0"

SHEET KEYNOTE

A. EXISTING TRANSFORMER PAD TO BE DEMOLISHED AT 2 ABANDONED WELLS.

B. REFER TO PUMP PAD SECTION E / DS-7 FOR PUMP PAD DEMOLITION EXTENT.

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS SHOWN HERE ARE FOR WELLHOUSE TYPE I. 2 TOTAL EXISTING UNITS TO BE DEMOLISHED:
   - MBR-152A
   - MBR-157A
3. CONTRACTOR TO CAP AND ABANDON 2 TOTAL WELLS AFTER BUILDING DEMOLITION PER APPROVED PERMITS AND DESIGN DOCUMENTS.
4. CONTRACTOR TO GRADE THE SITE TO MATCH EXISTING GRADING ONCE DEMOLITION IS COMPLETED FOR ABANDONED WELLS PER SITE GRADING PLAN.

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FILE NAME: DS-1
DESIGNED BY: CPK
DRAWN BY: EJM
CHECKED BY: CK
APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE I DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-1

SHEET 35 OF 120

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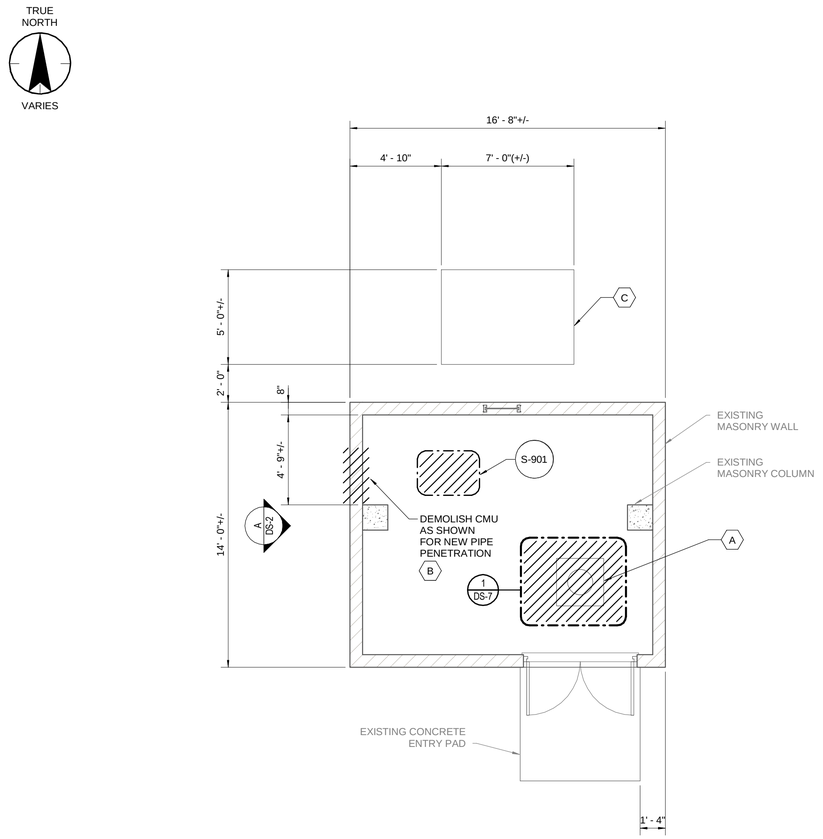
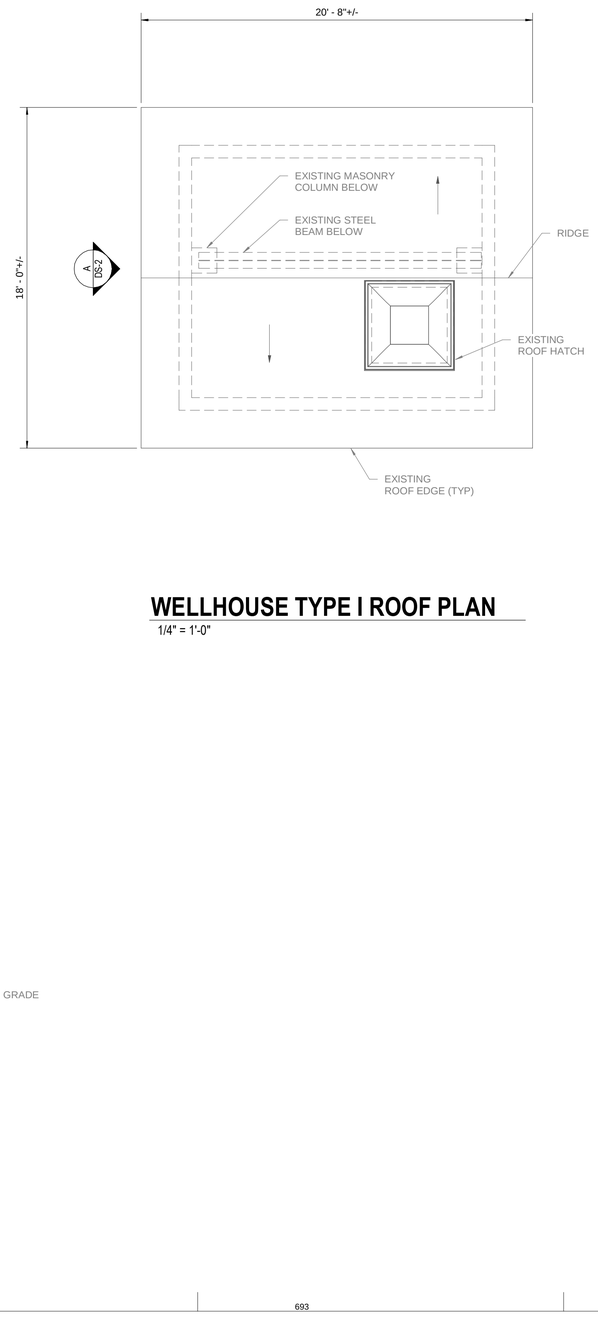
692



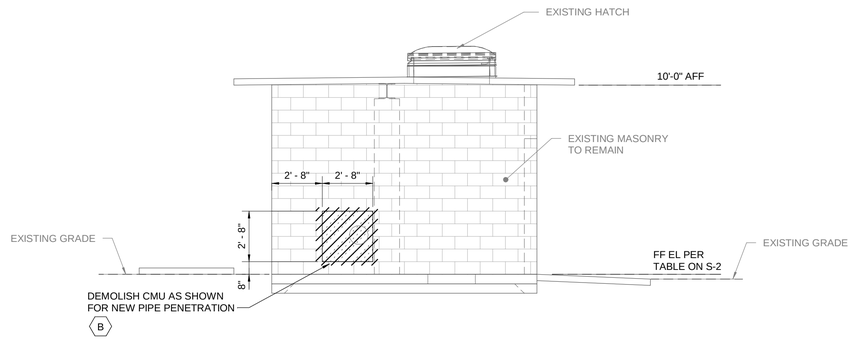
WELLHOUSE TYPE I FLOOR PLAN

1/4" = 1'-0"



WELLHOUSE TYPE I ROOF PLAN

1/4" = 1'-0"



A DS-2 ELEVATION

1/4" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS SHOWN HERE ARE FOR WELLHOUSE TYPE I. DEMOLITION SHOWN TO BE APPLICABLE TO:
   - MBR-151A

SHEET KEYNOTE

A. REFER TO PUMP PAD SECTION E / DS-7 FOR PUMP PAD DEMOLITION EXTENT.

B. DRILL THROUGH HOLE AT EACH CORNER OF WALL DEMOLITION AND SAW CUT AT INTERIOR AND EXTERIOR OF MASONRY WALL. SAW CUT SHALL NOT EXTEND BEYOND CORNERS OF MASONRY DEMOLITION. CONTRACTOR SHALL USE CARE TO NOT DAMAGE EXISTING COLUMN WHILE DEMOLISHING THE EXISTING CMU. THE STRUCTURAL ENGINEER OF RECORD AND/OR PROJECT MANAGEMENT TEAM SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES TO THE INFORMATION PRESENTED ON THIS DRAWING PERTAINING TO THE LOCATION OF THE CMU DEMOLITION REQUIRED AT WELL HOUSE MBR-151A.

C. EXISTING TRANSFORMER PAD TO BE REMAIN FOR RE-USE.

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SHEET TITLE

WELL HOUSE TYPE I DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-2

SHEET 36 OF 120

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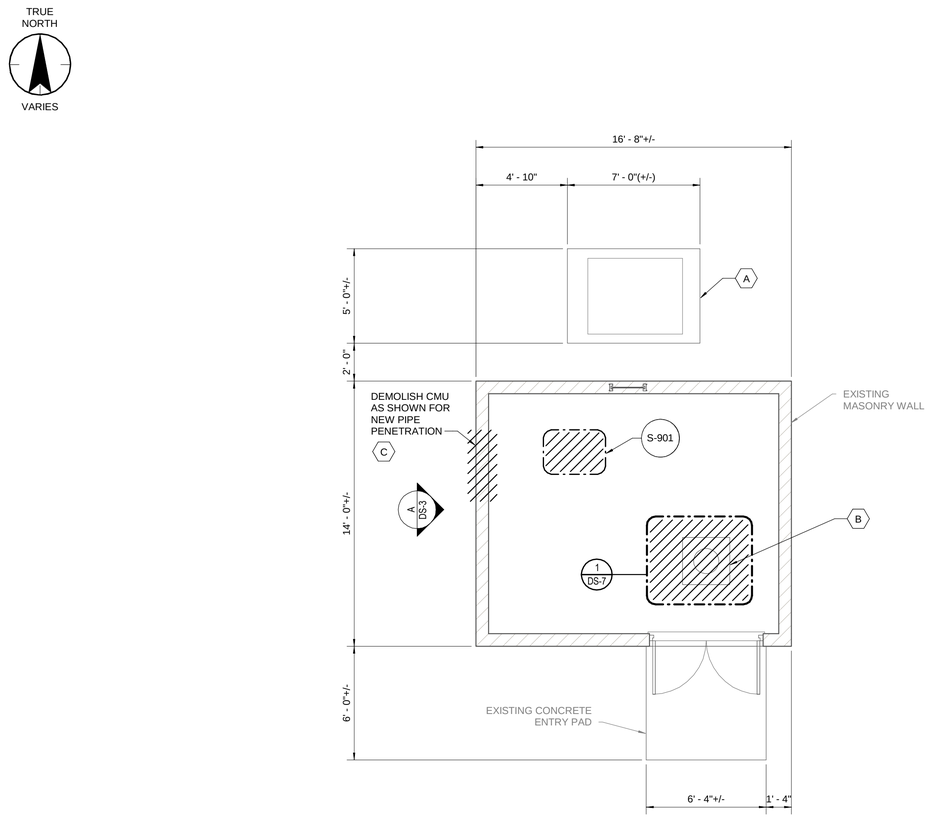
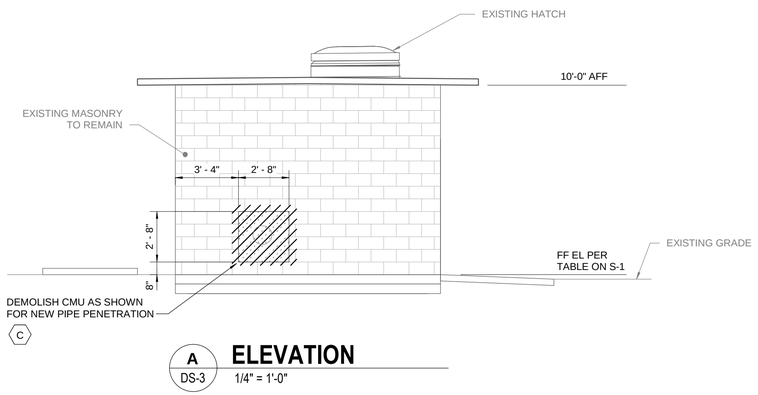


WELLHOUSE TYPE I FLOOR PLAN

1/4" = 1'-0"



A / DS-3 ELEVATION

1/4" = 1'-0"

SHEET KEYNOTE

A. EXISTING TRANSFORMER PAD TO BE REMAIN FOR RE-USE.

B. REFER TO PUMP PAD SECTION E / DS-7 FOR PUMP PAD DEMOLITION EXTENT.

C. DRILL THROUGH HOLE AT EACH CORNER OF WALL DEMOLITION AND SAW CUT AT INTERIOR AND EXTERIOR OF MASONRY WALL. SAW CUT SHALL NOT EXTEND BEYOND CORNERS OF MASONRY DEMOLITION.

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.

2. DETAILS SHOWN HERE ARE FOR WELLHOUSE TYPE I. DEMOLITION SHOWN TO BE APPLICABLE TO UNITS:
   - MBR-150A
   - MBR-153A
   - MBR-154A
   - MBR-155A
   - MBR-156A
   - MBR-158A
   - MBR-159A
   - MBR-160B

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SHEET TITLE

WELL HOUSE TYPE I DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-3

SHEET 37 OF 120

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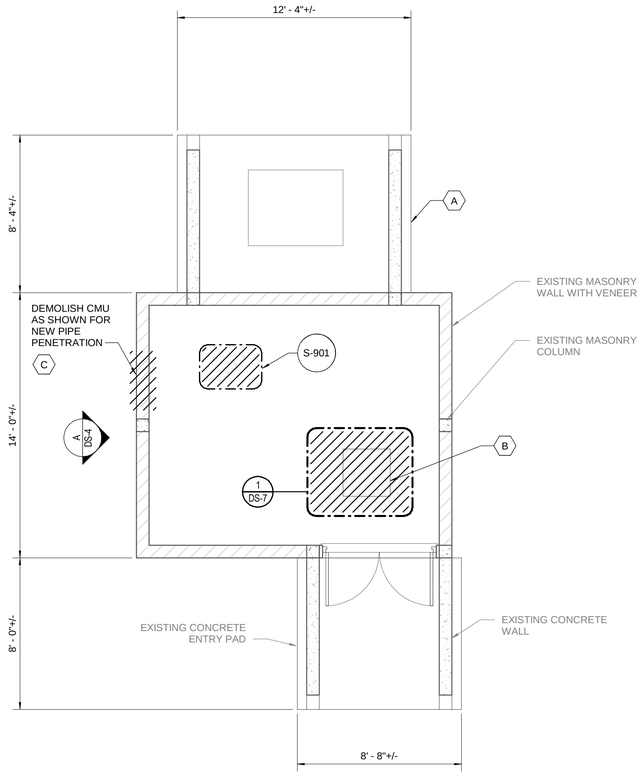
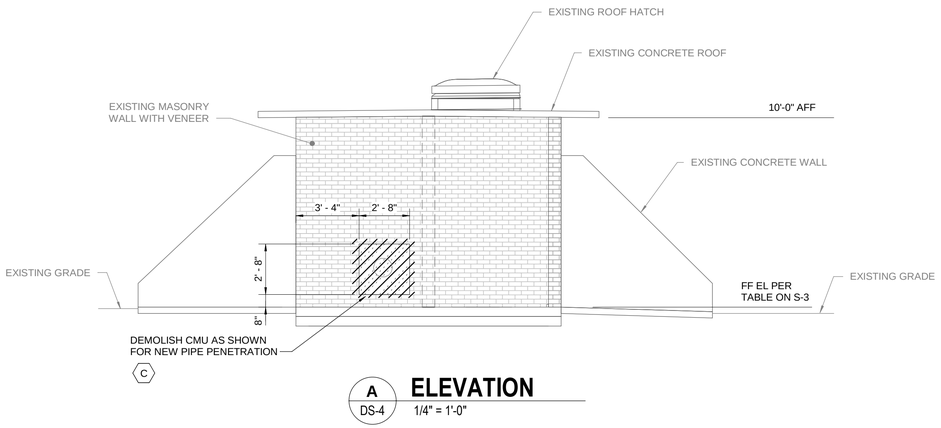
VARIES



WELLHOUSE TYPE II FLOOR PLAN

1/4" = 1'-0"



A DS-4 **ELEVATION**

1/4" = 1'-0"

SHEET KEYNOTE

A. EXISTING TRANSFORMER PAD TO REMAIN FOR REUSE.

B. REFER TO PUMP PAD SECTION E / DS-7 FOR PUMP PAD DEMOLITION EXTENT.

C. DRILL THROUGH HOLE AT EACH CORNER OF WALL DEMOLITION AND SAW CUT AT INTERIOR AND EXTERIOR OF MASONRY WALL. SAW CUT SHALL NOT EXTEND BEYOND CORNERS OF MASONRY DEMOLITION.

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS SHOWN HERE ARE FOR WELLHOUSE TYPE II. DEMOLITION SHOWN TO BE APPLICABLE TO UNITS:
   - MBR-164B
   - MBR-168B

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FILE NAME: DS-4

DESIGNED BY: CPK

DRAWN BY: GM

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE II DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-4

SHEET 38 OF 120

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User:GM

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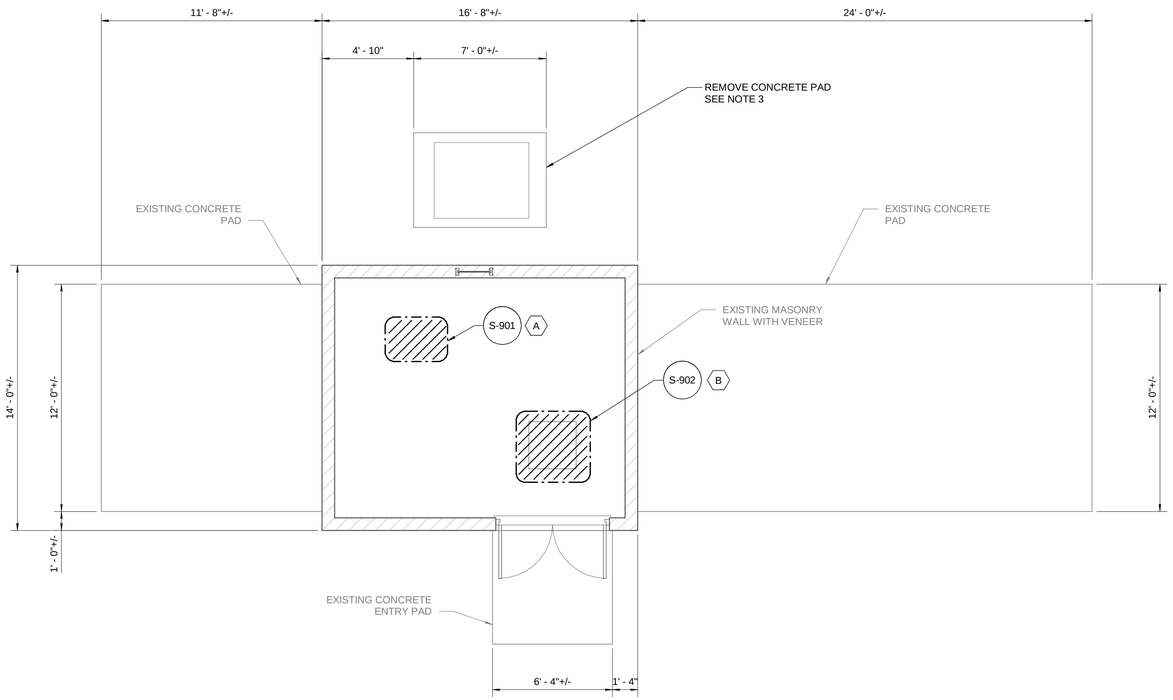
VARIES



WELLHOUSE FLOOR PLAN

1/4" = 1'-0"

SHEET KEYNOTE

A. REFER TO FLOOR PIPE PENETRATION REPAIR DETAIL S-901 ON GS-2 FOR DETAILS AT PIPE FLOOR PENETRATION.

B. REFER TO ABANDONED WELL CAP REPAIR DETAIL S-902 ON GS-2 FOR DETAILS AT WELL PUMP PAD.

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS SHOWN HERE ARE FOR WELLHOUSE MBR-163B. WELLHOUSES MBR-161B AND MBR-162B SHALL HAVE SIMILAR REPAIRS. 3 TOTAL EXISTING UNITS TO BE REPAIRED AS SHOWN:
3. ELECTRICAL TRANSFORMER ALREADY REMOVED. CONTRACTOR TO DEMOLISH THE EXISTING JUNCTION BOX PER ELECTRICAL DRAWINGS AND DEMOLISH THE TRANSFORMER CONCRETE PADS.

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FILE NAME: DS-5

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DRAWN BY: GM

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE III DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-5

SHEET 39 OF 120

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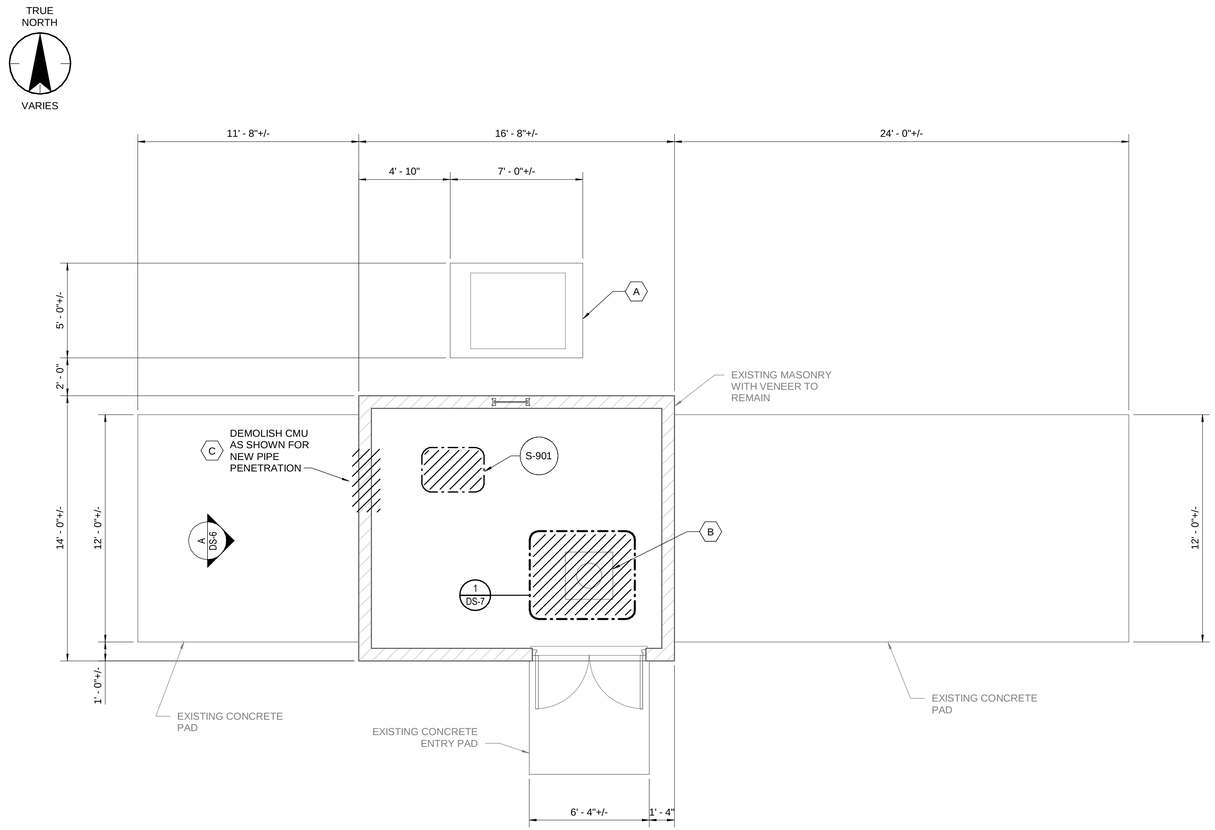
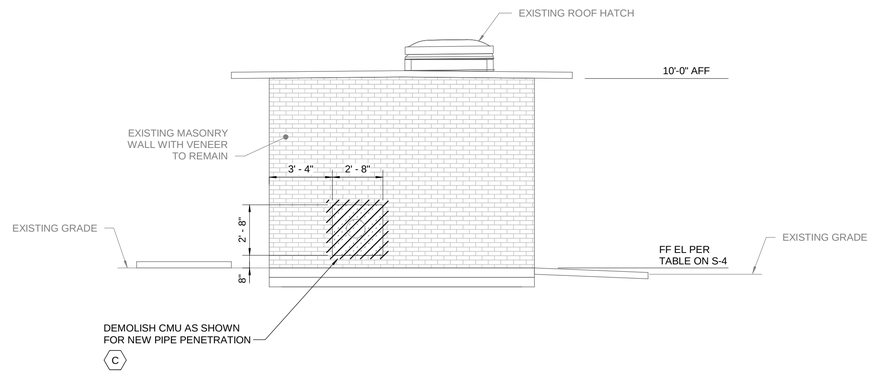


WELLHOUSE TYPE III FLOOR PLAN

1/4" = 1'-0"



A DS-6 **ELEVATION**

1/4" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS SHOWN HERE ARE FOR WELLHOUSE TYPE III. DEMOLITION SHOWN TO BE APPLICABLE TO UNITS:
   - MBR-165B
   - MBR-166B
   - MBR-167B
   - MBR-169B

SHEET KEYNOTE

A. EXISTING TRANSFORMER PAD TO REMAIN FOR RE-USE.

B. REFER TO PUMP PAD SECTION E / DS-7 FOR PUMP PAD DEMOLITION EXTENT.

C. DRILL THROUGH HOLE AT EACH CORNER OF WALL DEMOLITION AND SAW CUT AT INTERIOR AND EXTERIOR OF MASONRY WALL. SAW CUT SHALL NOT EXTEND BEYOND CORNERS OF MASONRY DEMOLITION.

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MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

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DATE: SEPT 2025

PROJECT NO.: 50021

FILE NAME: DS-6

DESIGNED BY: CPK

DRAWN BY: EJM

CHECKED BY: CK

APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE III DEMOLITION PLANS, ELEVATIONS AND SECTION

SCALE: AS SHOWN

SHEET NO: DS-6

SHEET 40 OF 120

4/30/2025 8:22:23 AM
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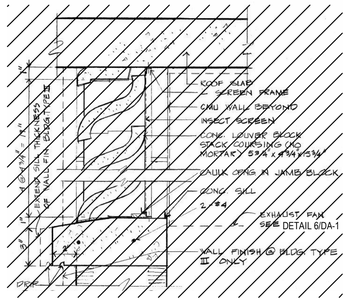
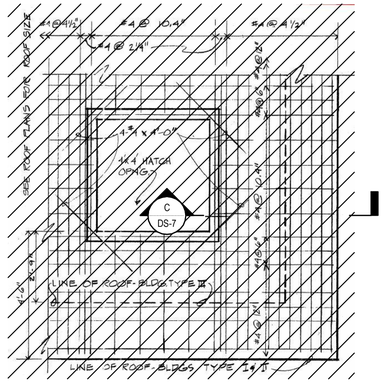
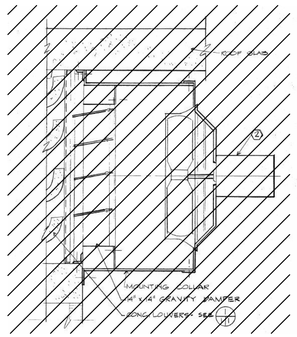
Spec:NAT CADD STD
File:<Pick location in Project Information>
User:EJM



A SECTION-LOUVER
DS-7 NO SCALE



B ROOF REINFORCEMENT
DS-7 NO SCALE

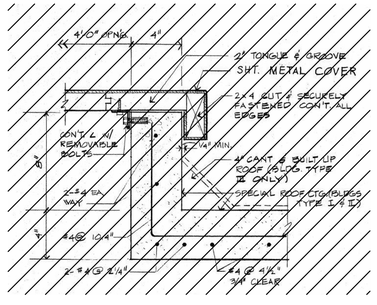


F SECTION - EXHAUST FAN
DS-7 NO SCALE

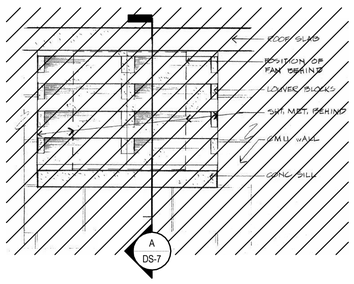
WELL	FLOOR ELEV.
P-150A	43.48
P-151 A	47.35
P-152A	43.55
P-153A	41.05
P-154A	42.75
P-155A	45.26
P-156A	43.75
P-157A	45.25
P-158A	42.61
P-159B	39.97
P-160B	38.25
P-161B	38.25
P-162B	38.25
P-163B	38.17
P-164B	38.34
P-165B	38.17
P-166B	38.17
P-167B	38.17
P-168B	38.34
P-169B	38.17

NOTE:
FINISHED FLOOR ELEVATIONS INDICATED IN THIS TABLE ARE FROM THE RECORD DRAWINGS AND BASED ON NGVD 1929.

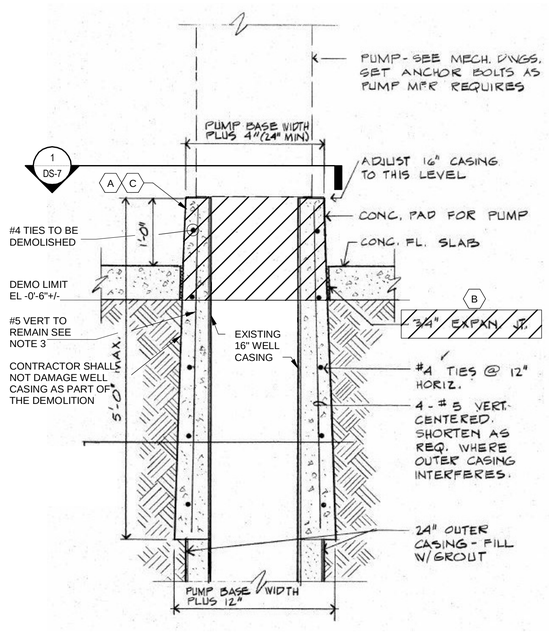
G FLOOR ELEVATIONS
DS-7 NO SCALE



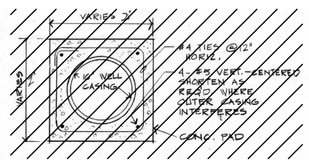
C SECTION - ROOF HATCH
DS-7 NO SCALE



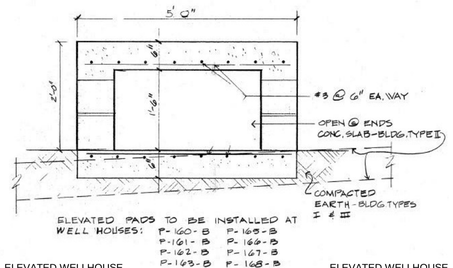
D ELEVATION - LOUVER
DS-7 NO SCALE



E SECTION - PUMP PAD
DS-7 NO SCALE



1 DETAIL - PUMP PAD
DS-7 NO SCALE

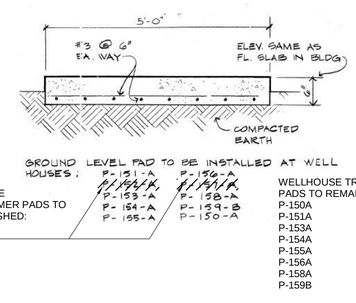


ELEVATED WELLHOUSE TRANSFORMER PADS TO BE REPAIRED AND/OR ABANDONED:
MBR-160B
MBR-161B
MBR-162B
MBR-163B

ELEVATED WELLHOUSE TRANSFORMER PADS TO REMAIN FOR REUSE:
P-160B
P-164B
P-165B
P-166B
P-167B
P-168B
P-169B

TYPE A - ELEVATED TRANSFORMER PAD

ELEVATED PADS WERE INSTALLED AT WELL HOUSES NUMBERED 160 - 169.



WELLHOUSE TRANSFORMER PADS TO BE DEMOLISHED:
MBR-152A
MBR-157A

WELLHOUSE TRANSFORMER PADS TO REMAIN FOR REUSE:
P-150A
P-151A
P-153A
P-154A
P-155A
P-156A
P-158A
P-159B

TYPE B - GROUND LEVEL TRANSFORMER PAD

GROUND LEVEL PADS WERE INSTALLED AT WELL HOUSES NUMBERED 150 - 159.

NOTES:

1. REFER TO DRAWINGS DE-2 THROUGH DE-20 RELATIVE TO REMOVAL, REPLACEMENT, OR LEAVE-IN-PLACE STATUS.
2. EXISTING PADS AT MBR-150, MBR-153, MBR-154, MBR-155, MBR-156, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-169 ARE TO REMAIN. CONFIRM WITH ELECTRICAL PLANS AND SPECIFICATIONS.
3. REPLACEMENT PADS AS INDICATED ON THE ELECTRICAL DRAWINGS CAN BE DETAILED PER DETAIL S-190 ON DRAWING GS-2. THESE MAY BE OF CAST-IN-PLACE OR PRECAST CONCRETE. REFER TO ELECTRICAL DRAWINGS FOR SIZE.
4. DRAWING INFORMATION SHOWN ABOVE TAKEN FROM EXISTING CONTRACT DRAWINGS AND MAY VARY FROM WHAT IS SHOWN.
5. WELL HOUSES MBR-152 AND MBR-157 ARE TO BE COMPLETELY DEMOLISHED, INCLUDING THE TRANSFORMER PADS.

H TRANSFORMER PAD SECTION
DS-7 NO SCALE

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. DETAILS PROVIDED ARE FOR WELLHOUSE TYPE I, II AND III. REFER TO DEMO SHEETS DS-1 THRU DS-5, AND DS-7 FOR WELLHOUSE DEMO PLANS, ELEVATIONS AND SECTIONS. REFER TO DS-6 FOR WELLHOUSE PARTIAL DEMOLITION AND REPAIRS
3. EXISTING REINFORCING PARTIALLY EMBEDDED IN EXISTING CONCRETE PUMP PAD TO REMAIN. REINFORCING SHALL BE MAINTAINED, CLEANED, AND INCORPORATED INTO THE PROPOSED WORK. THE CONTRACTOR SHALL NOT DAMAGE EXISTING REINFORCING.

SHEET KEYNOTE

A. DEMOLISH CONCRETE TO BOTTOM OF EXISTING SLAB. CONTRACTOR SHALL USE CARE TO NOT DAMAGE WELL CASING WHILE DEMOLISHING THE CONCRETE. DEMOLISH EXISTING REINFORCING TO 2" CLEAR FROM TOP OF THE PROPOSED EQUIPMENT PAD. CONTRACTOR SHALL MODIFY WELL CASING AS SHOWN IN THE DESIGN DRAWINGS, CUTTING THE CASING AND INSTALLING PUMP BASE PLATE AS INDICATED IN THE DESIGN DRAWINGS. CONTRACTOR SHALL NOT PERFORM DEMOLITION UNTIL PUMP MANUFACTURER APPROVED SUBMITTALS INDICATING COORDINATION WITH THE PUMP MANUFACTURER REQUIREMENTS FOR PUMP BASE PLATE AND FINAL ELEVATIONS HAVE BEEN COORDINATED.

B. EXISTING 3/4" EXPANSION JOINT TO BE DEMOLISHED. EXISTING CONCRETE SLAB TO BE CLEANED AND CLEARED OF ANY EXISTING EXPANSION JOINT MATERIALS.

C. RETAIN VERTICAL REINFORCEMENT TO PROVIDE ANCHORAGE INTO PROPOSED CONCRETE BASE PER STRUCTURAL DRAWINGS.

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FILE NAME: DS-7
DESIGNED BY: CPK
DRAWN BY: EJM
CHECKED BY: CK
APPROVED BY: KB

SHEET TITLE

WELL HOUSE DEMOLITION DETAILS

SCALE: AS SHOWN

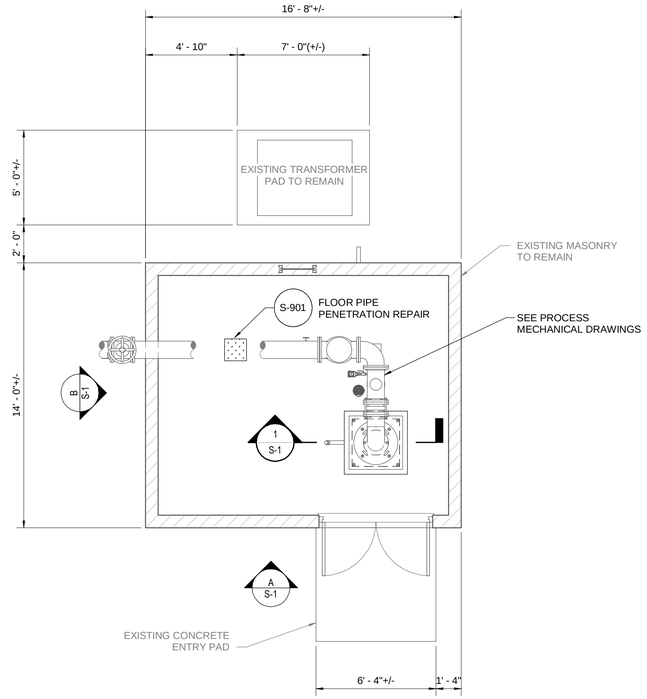
SHEET NO: DS-7

SHEET 41 OF 120

4/30/2025 8:22:24 AM
Scale: 1:1
Stretch to fit
File: <Pick location in Project Information>
Spec: NAT CADD STD
User: EJM

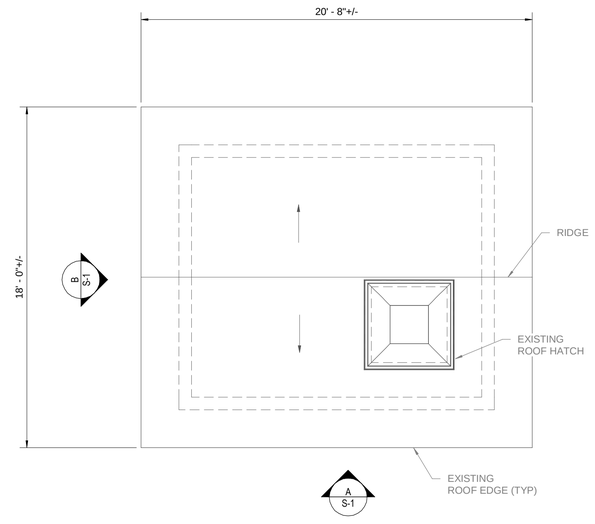
TRUE NORTH

VARIES



WELLHOUSE TYPE I FLOOR PLAN

1/4" = 1'-0"



WELLHOUSE TYPE I ROOF PLAN

1/4" = 1'-0"

SHEET KEYNOTE

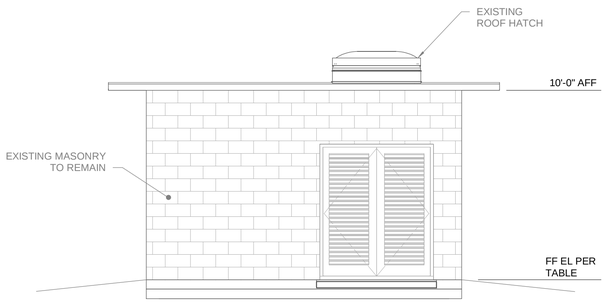
A. CIRCULAR TIE WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF EXISTING WELL CASING PIPE.

B. RECTANGULAR TIES WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF OUTSIDE FACE OF CONCRETE PUMP BASE AND 3" CLEAR FROM TOP OF CONCRETE PUMP BASE.

GENERAL SHEET NOTES

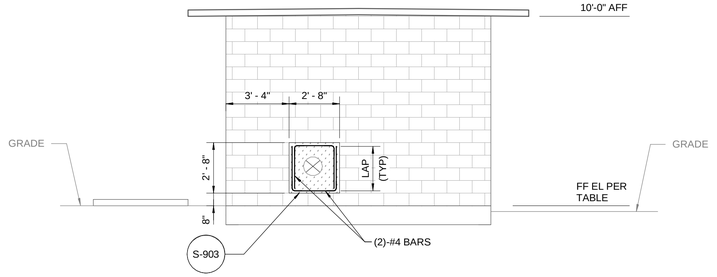
1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. THE FOLLOWING UNITS SHOWN ARE TO REMAIN IN SERVICE:
   - MBR-150A
   - MBR-153A
   - MBR-154A
   - MBR-155A
   - MBR-156A
   - MBR-158A
   - MBR-159B
   - MBR-160B
3. SEE ARCHITECTURAL DRAWINGS FOR GENERAL BUILDING REPAIRS.

WELL	FINISHED FLOOR ELEVATION (NAVD 88)
MBR-150A	42.4
MBR-153A	39.9
MBR-154A	42.6
MBR-155A	45.0
MBR-156A	42.6
MBR-158A	41.5
MBR-159B	38.9
MBR-160B	37.8



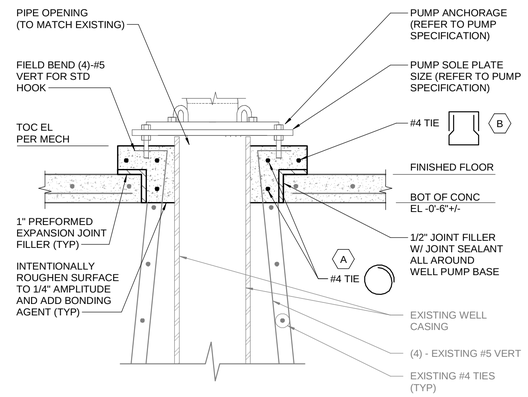
A S-1 ELEVATION

1/4" = 1'-0"



B S-1 ELEVATION

1/4" = 1'-0"



NOTE: FOR OTHER INFORMATION NOT SHOWN HERE, REFER TO WELL PUMP BASE DETAILS ON MECHANICAL DRAWINGS

1 S-1 SECTION

3/4" = 1'-0"

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FILE NAME: S-1
DESIGNED BY: CPK
DRAWN BY: EJM
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APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE I PLANS, ELEVATIONS AND SECTIONS

SCALE: AS SHOWN

SHEET NO: S-1

SHEET 42 OF 120

4/30/2025 8:22:25 AM
Scale:1:1
Spec:NAT CADD STD
File:<Pick location in Project Information>
User:EJM

SHEET KEYNOTE

A. SANDBLAST AND REPAINT EXISTING STEEL BEAM IN ACCORDANCE WITH SPECIFICATION 09940.

B. CIRCULAR TIE WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF EXISTING WELL CASING PIPE.

C. RECTANGULAR TIES WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF OUTSIDE FACE OF CONCRETE PUMP BASE AND 3" CLEAR FROM TOP OF CONCRETE PUMP BASE.

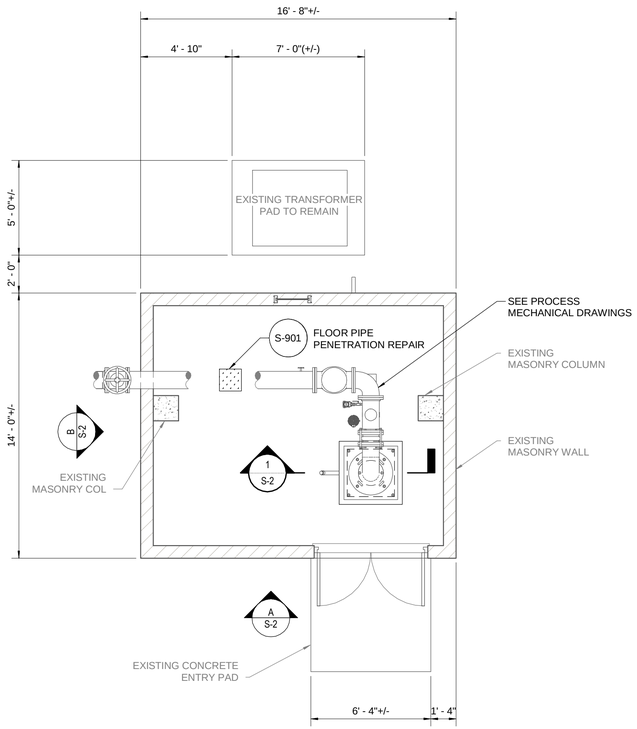
GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. THE FOLLOWING UNITS SHOWN ARE TO REMAIN IN SERVICE:
   - MBR-151A
3. SEE ARCHITECTURAL DRAWINGS FOR GENERAL BUILDING REPAIRS.

WELL	FINISHED FLOOR ELEVATION (NAVD 88)
MBR-151A	46.3

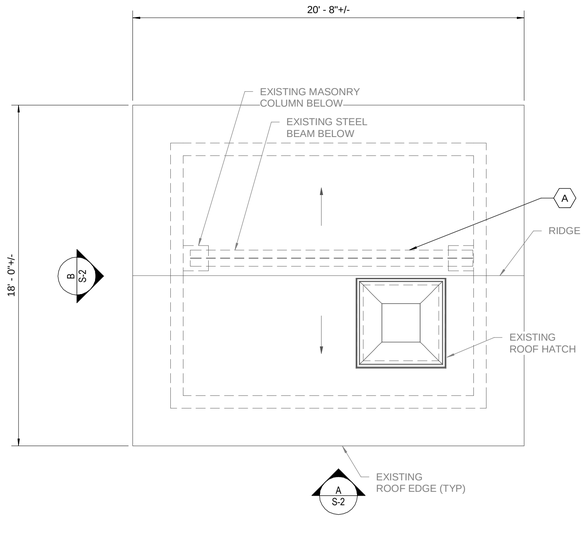
TRUE NORTH

VARIES



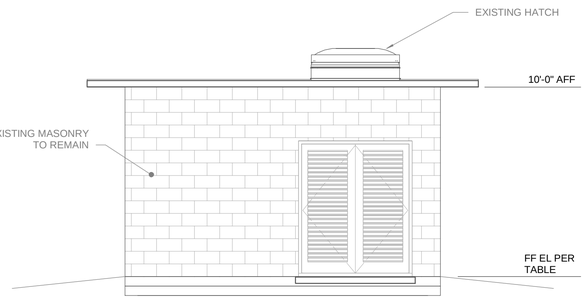
WELLHOUSE TYPE I FLOOR PLAN

1/4" = 1'-0"



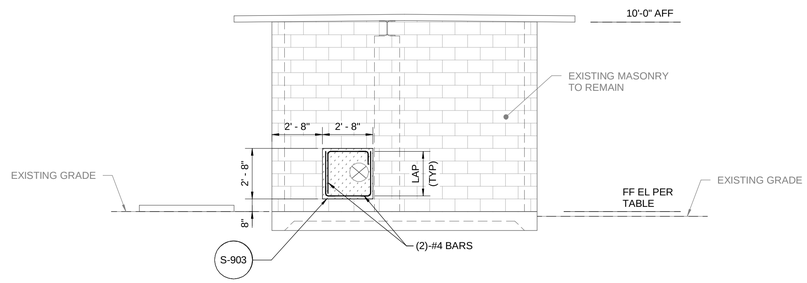
WELLHOUSE TYPE I ROOF PLAN

1/4" = 1'-0"



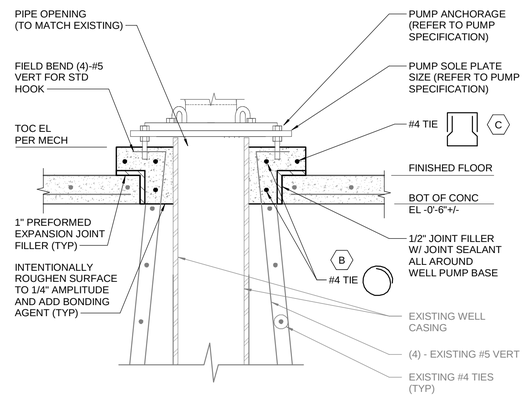
A S-2 **ELEVATION**

1/4" = 1'-0"



B S-2 **ELEVATION**

1/4" = 1'-0"



NOTE: FOR OTHER INFORMATION NOT SHOWN HERE, REFER TO WELL PUMP BASE DETAILS ON MECHANICAL DRAWINGS

1 S-2 **SECTION**

3/4" = 1'-0"

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DATE: SEPT 2025

PROJECT NO.: 50021

FILE NAME: S-2

DESIGNED BY: CPK

DRAWN BY: EJM

CHECKED BY: CK

APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE I PLANS, ELEVATIONS AND SECTIONS

SCALE: AS SHOWN

SHEET NO: S-2

SHEET 43 OF 120

4/30/2025 8:22:25 AM
Scale:1:1
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File:<Pick location in Project information>
Spec:IAAT CADD STD
User:EJM

SHEET KEYNOTE

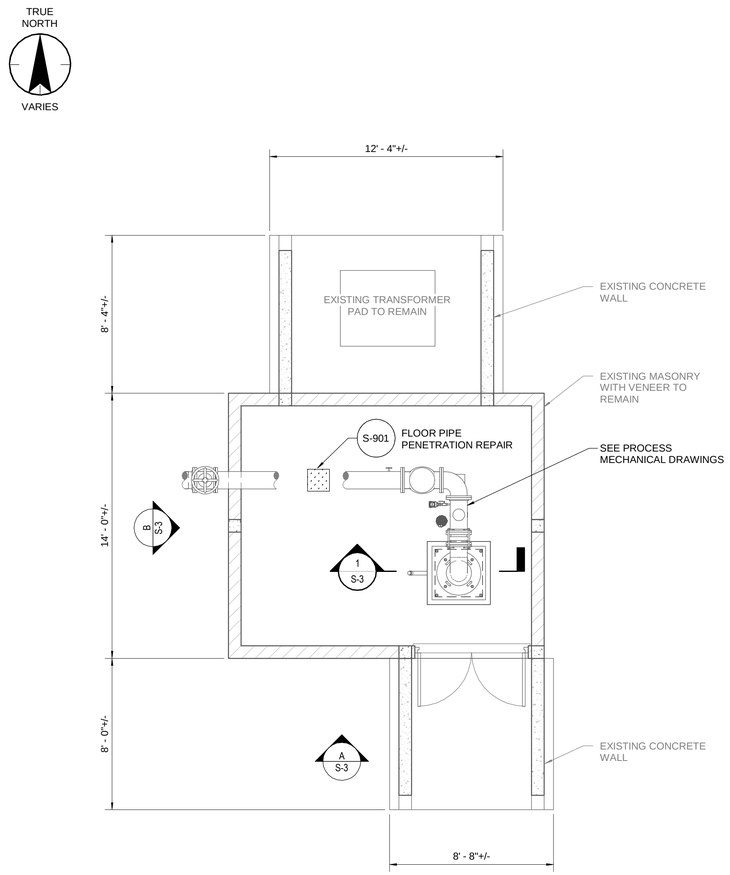
A. CIRCULAR TIE WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF EXISTING WELL CASING PIPE.

B. RECTANGULAR TIES WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF OUTSIDE FACE OF CONCRETE PUMP BASE AND 3" CLEAR FROM TOP OF CONCRETE PUMP BASE.

GENERAL SHEET NOTES

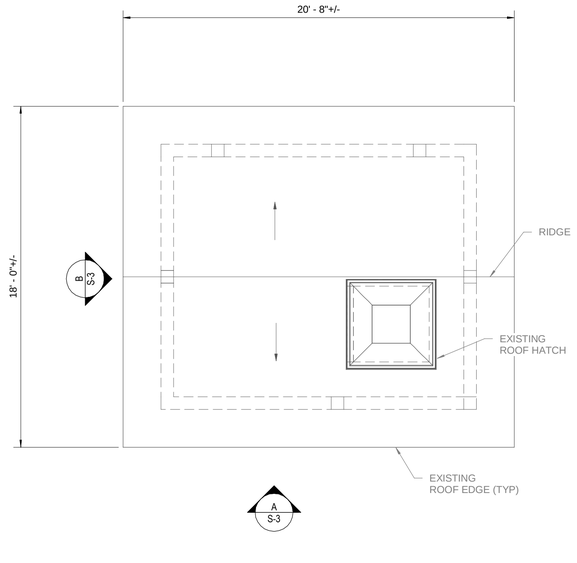
1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. THE FOLLOWING UNITS SHOWN ARE TO REMAIN IN SERVICE:
   - MBR-164B
   - MBR-168B
3. SEE ARCHITECTURAL DRAWINGS FOR GENERAL BUILDING REPAIRS.

WELL	FINISHED FLOOR ELEVATION (NAVD 88)
MBR-164B	38.0
MBR-168B	37.1



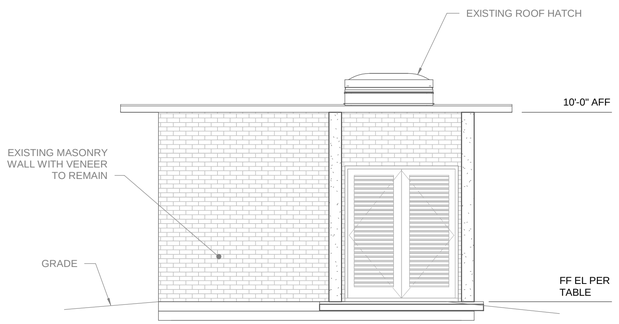
WELLHOUSE TYPE II FLOOR PLAN

1/4" = 1'-0"



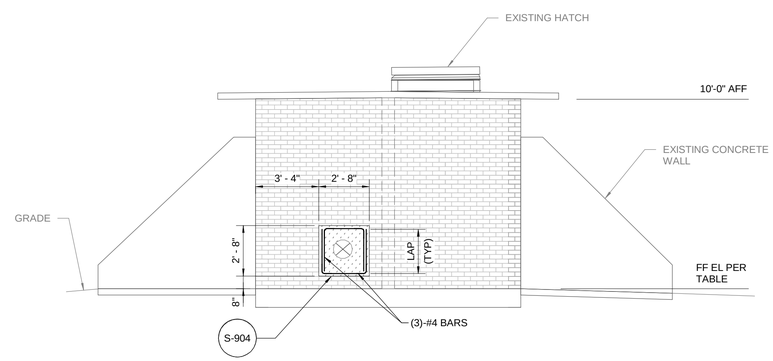
WELLHOUSE TYPE II ROOF PLAN

1/4" = 1'-0"



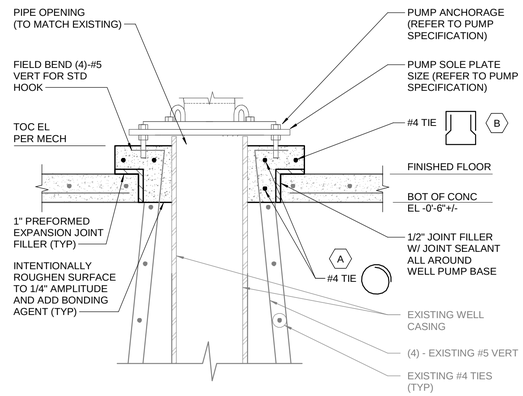
A S-3 **ELEVATION**

1/4" = 1'-0"



B S-3 **ELEVATION**

1/4" = 1'-0"



NOTE: FOR OTHER INFORMATION NOT SHOWN HERE, REFER TO WELL PUMP BASE DETAILS ON MECHANICAL DRAWINGS

1 S-3 **SECTION**

3/4" = 1'-0"

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
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Tampa, Florida, 33602-5729,
Tel: 813 204-3305
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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

ISSUED FOR BID

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0	09/2025	ISSUED FOR BID	PRD

COPYRIGHT:
DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: S-3
DESIGNED BY: CPK
DRAWN BY: EJM
CHECKED BY: CK
APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE II PLANS, ELEVATIONS AND SECTIONS

SCALE: AS SHOWN

SHEET NO: S-3

SHEET 44 OF 120

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File:<Pick location in Project Information>
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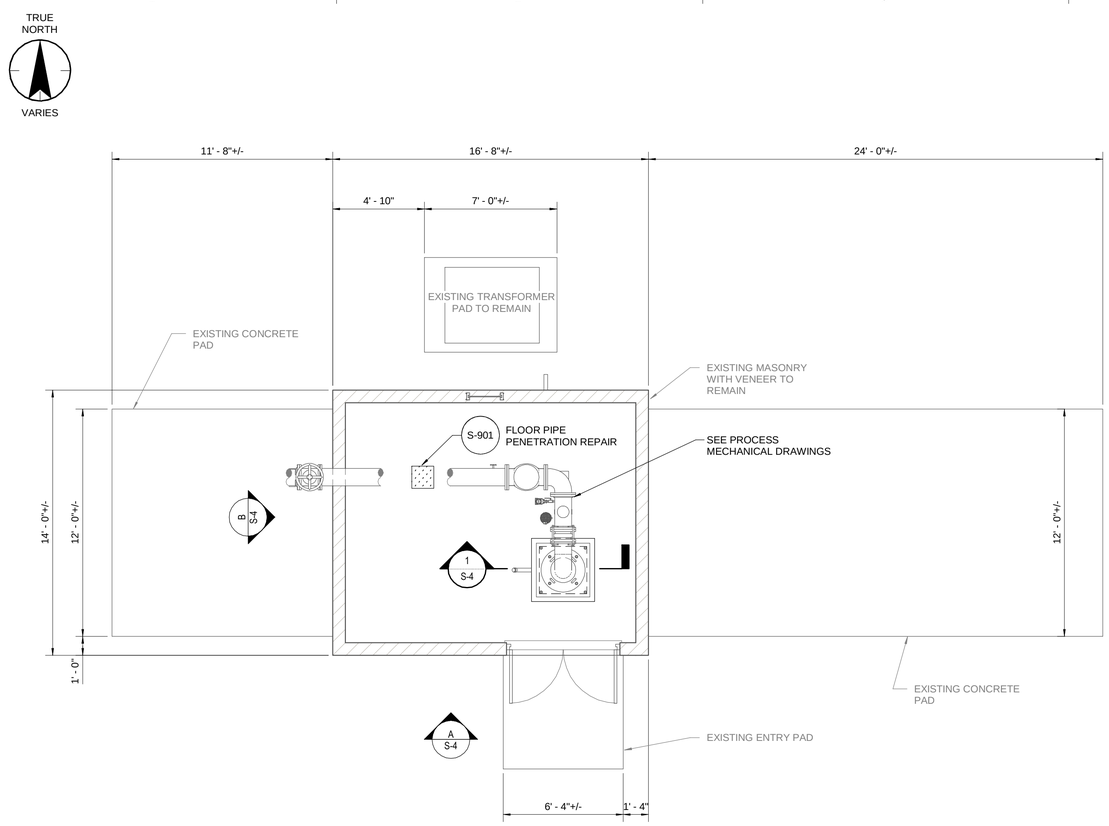
User:EJM



SHEET KEYNOTE

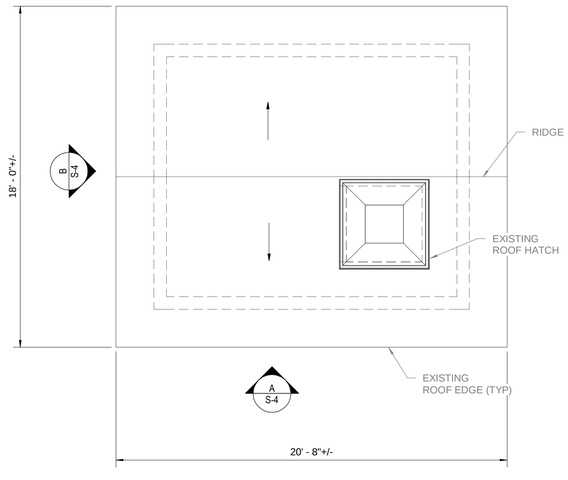
A. CIRCULAR TIE WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF EXISTING WELL CASING PIPE.

B. RECTANGULAR TIES WITH STANDARD LAP. LOCATE BAR 2" CLEAR OF OUTSIDE FACE OF CONCRETE PUMP BASE AND 3" CLEAR FROM TOP OF CONCRETE PUMP BASE.

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
2. THE FOLLOWING UNITS SHOWN ARE TO REMAIN IN SERVICE:
   - MBR-165B
   - MBR-166B
   - MBR-167B
   - MBR-169B
3. SEE ARCHITECTURAL DRAWINGS FOR GENERAL BUILDING REPAIRS.

WELL	FINISHED FLOOR ELEVATION (NAVD 88)
MBR-165B	37.0
MBR-166B	36.9
MBR-167B	36.9
MBR-169B	36.9

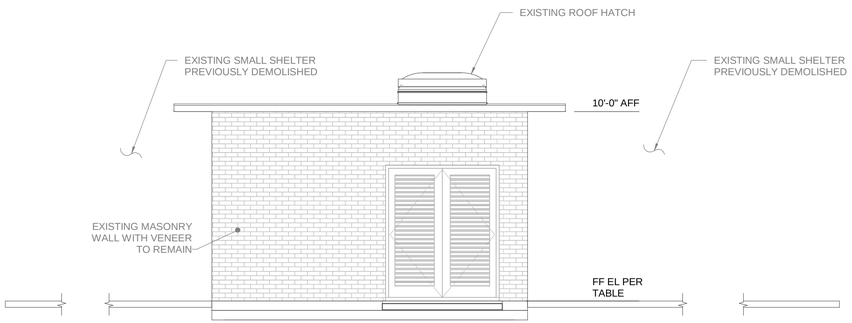


WELLHOUSE TYPE III FLOOR PLAN

1/4" = 1'-0"

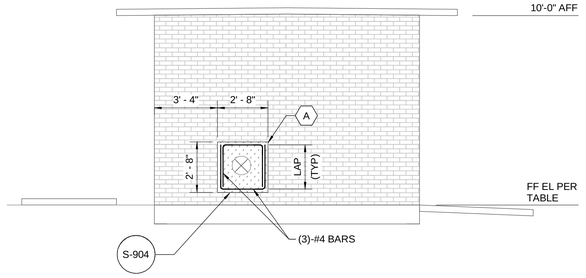
WELLHOUSE TYPE III ROOF PLAN

1/4" = 1'-0"



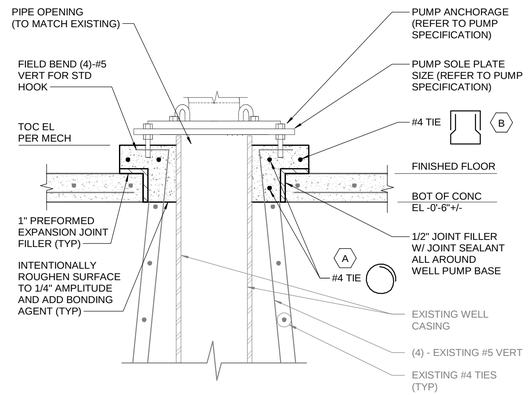
A S-4 **ELEVATION**

1/4" = 1'-0"



B S-4 **ELEVATION**

1/4" = 1'-0"



NOTE: FOR OTHER INFORMATION NOT SHOWN HERE, REFER TO WELL PUMP BASE DETAILS ON MECHANICAL DRAWINGS

1 S-4 **SECTION**

3/4" = 1'-0"

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

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DATE: SEPT 2025

PROJECT NO.: 50021

FILE NAME: S-4

DESIGNED BY: CPK

DRAWN BY: EJM

CHECKED BY: CK

APPROVED BY: KB

SHEET TITLE

WELL HOUSE TYPE III PLANS, ELEVATIONS AND SECTIONS

SCALE: AS SHOWN

SHEET NO: S-4

SHEET 45 OF 120

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Stantec
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Spec:NAT CADD STD
User:EJM

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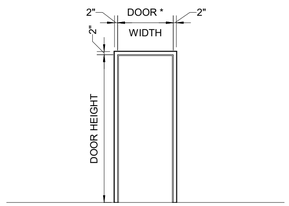
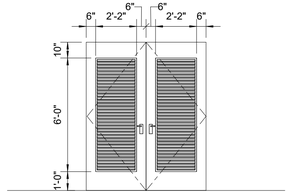


* DOOR TYPE x 2 = PAIR OF EQUAL DOORS

ST

STANDARD

DOOR TYPES



FPx2

FLUSH PANEL

BUILDING CODE SUMMARY

OWNER: TAMPA BAY WATER	DATE: NOVEMBER 2024
PROJECT NAME: MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT	PROJECT NO: 177311389
PROJECT LOCATION: TAMPA, FLORIDA	ARCHITECT: SHANA WYGONIK
AREA/BUILDING: EXISTING WELL HOUSES (15)	LICENSE NO: AR96070
GOVERNING CODES	
BUILDING CODE: 2023 FLORIDA BUILDING CODE, EXISTING BUILDING (FBC)	ENERGY CODE: EXEMPT FROM 2023 FLORIDA BUILDING CODE PER C402.1.2
FIRE CODE: 2023 FLORIDA FIRE CODE (FFC)	OTHERS:
ACCESSIBILITY CODE: 2023 FLORIDA ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION	

GENERAL NOTES

1. NOT ALL EQUIPMENT IS SHOWN FOR CLARITY. REFER TO APPROPRIATE DISCIPLINE DRAWINGS FOR SPECIFIC EQUIPMENT LAYOUT AND OTHER REQUIREMENTS.
2. DO NOT SCALE FROM THESE ARCHITECTURAL DRAWINGS. DRAWING CONFLICTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
3. SEE CIVIL DRAWINGS FOR SIDEWALK AND ROAD PAVING. (UNLESS OTHERWISE INDICATED)
4. SEE STRUCTURAL DRAWINGS FOR SIZE AND LOCATION OF CONCRETE PADS, TRENCHES, VAULTS, SUMPS AND ETC.
5. MASONRY CONTROL JOINTS SHOWN ON THESE ARCHITECTURAL DRAWINGS REFER TO CONTROL JOINTS IN MASONRY VENEER (UNLESS OTHERWISE INDICATED).
6. STRUCTURAL ITEMS SUCH AS GROUTED / FILLED CELLS, BOND BEAMS, PRECAST LINTELS, AND MASONRY REINFORCEMENT SHOWN ON THESE ARCHITECTURAL DRAWINGS ARE FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO STRUCTURAL DRAWINGS AND MASONRY SPECIFICATIONS FOR SPECIFIC LOCATIONS AND DETAILED REQUIREMENTS.
7. NOT ALL MASONRY JOINT REINFORCEMENT, WALL TIES AND ANCHORS ARE SHOWN ON THESE ARCHITECTURAL DRAWINGS, REFER TO MASONRY SPECIFICATIONS AND STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.
8. PROFILE OF DOOR / WINDOW / LOUVER FRAMES MAY VARY DEPENDING ON MODEL SCHEDULED AND SPECIFIED, GLASS THICKNESS MAY ALSO VARY. SEE SCHEDULES AND SPECIFICATIONS.
9. ALL INTERIOR EXPOSED MASONRY SHALL BE FIELD PAINTED (UNLESS OTHERWISE INDICATED).
10. WELL HOUSES SHALL HAVE PRE-CONSTRUCTION PROTECTION AGAINST SUBTERRANEAN TERMITES AS ESTABLISHED BY THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER GOODS. CERTIFICATE OF COMPLIANCE SHALL BE ISSUED.

TO THE BUILDING DEPARTMENT BY THE LICENSED PEST CONTROL COMPANY THAT CONTAINS THE FOLLOWING STATEMENT:

"THE BUILDING HAS RECEIVED A COMPLETE TREATMENT FOR THE PREVENTION OF THE SUBTERRANEAN TERMITES. TREATMENT IS IN ACCORDANCE WITH RULES AND LAWS ESTABLISHED BY THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER GOODS."

INTERIOR FINISH SCHEDULE

ROOM NO	ROOM NAME	FLOOR	FINISH	WALLS	FINISH	CEILING	FINISH	CEILING HEIGHT	KEY NOTES
MBR-150	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-151	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-153	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-154	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-155	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-156	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-158	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-159	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-160	CMU WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-164	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-165	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-166	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-167	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-168	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	
MBR-169	CMU VENEER WELL HOUSE	CONCRETE	EPOXY SEALER	CMU	PAINT	EXISTING CONCRETE	PAINT	EXISTING	

DOOR SCHEDULE

DOOR NO	ROOM NAME	DOOR SIZE		DOOR			FRAME			HARDWARE	DETAILS			FIRE RATING	KEY NOTES
		WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH		HEAD	JAMB	THRESHOLD		
D-150	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-151	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-153	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-154	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-155	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-156	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-158	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-159	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-160	CMU WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9001	A9002	A8100	-	
D-164	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	
D-165	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	
D-166	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	
D-167	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	
D-168	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	
D-169	CMU VENEER WELL HOUSE	PAIR 3' - 0"	6' - 8"	FP x 2	ALUM	PAINT	ST	ALUM	PAINT	ED	A9003	A9004	A8100	-	

ACCESSIBILITY DISCLAIMER

BUILDING'S INTENDED USE:

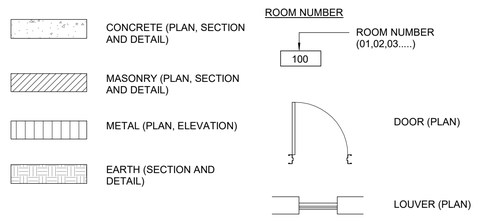
EXCEPT FOR REGULAR MONITORING AND MAINTENANCE OF EQUIPMENT, THIS BUILDING IS NOT INTENDED FOR HUMAN OCCUPANCY FOR EXTENDED PERIODS OF TIME. THIS BUILDING'S PRIMARY PURPOSE IS TO HOUSE EQUIPMENT ASSOCIATED WITH PUBLIC WATER UTILITIES.

HANDICAPPED ACCESSIBILITY:

THIS BUILDING IS EXEMPT FROM CHAPTER 11 OF THE 2023 FBC BASED ON THE FOLLOWING STATEMENT, "SPACES FREQUENTED ONLY BY PERSONNEL FOR MAINTENANCE, REPAIR, OR MONITORING OF EQUIPMENT ARE NOT REQUIRED TO BE ACCESSIBLE. SUCH SPACES INCLUDE, BUT ARE NOT LIMITED TO...MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS, PIPING OR EQUIPMENT CATWALKS, WATER OR SEWAGE TREATMENT PUMP ROOMS AND STATIONS, ELECTRICAL SUBSTATIONS AND TRANSFORMER VAULTS, ETC.

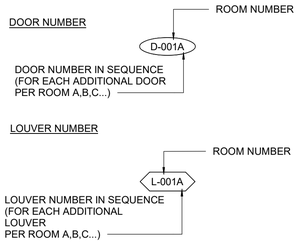
THIS BUILDING IS EXEMPT FROM AMERICANS WITH DISABILITIES ACT (ADA) BASED ON THE FOLLOWING STATEMENT, "GENERAL EXCEPTIONS - EQUIPMENT SPACES: SPACES FREQUENTED ONLY BY PERSONNEL FOR MAINTENANCE, REPAIR OR MONITORING OF EQUIPMENT ARE NOT REQUIRED TO BE ACCESSIBLE. SUCH SPACES INCLUDE, BUT ARE NOT LIMITED TO...WATER OR SEWAGE TREATMENT PUMP ROOMS AND STATIONS." (ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES 4.1.1 (5)(b)(11))

ARCHITECTURAL SYMBOLS



OPENING SYMBOLS

OPENINGS ARE TYPICALLY LABELED IN PLAN VIEW; OPENINGS NOT SHOWN IN PLAN VIEW ARE LABELED ON ELEVATIONS



TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
Stantec Architecture Inc.
777 S. Harbour Island Blvd Suite 600,
Tampa FL 33602-5729 US, Certificate No. 6773
Tel: (000) 000.000

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

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DATE: SEPT 2025

PROJECT NO.: 50021

FILE NAME: A1

DESIGNED BY: SLW

DRAWN BY: DG

CHECKED BY: EWM

APPROVED BY: KB

SHEET TITLE

GENERAL ARCHITECTURAL CODE SUMMARY, GENERAL NOTES & SCHEDULES

SCALE: NO SCALE

SHEET NO: GA-1

SHEET 46 OF 120

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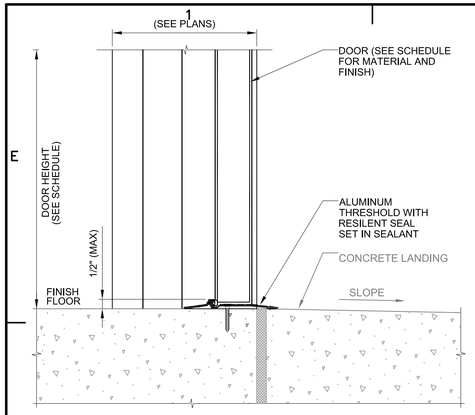
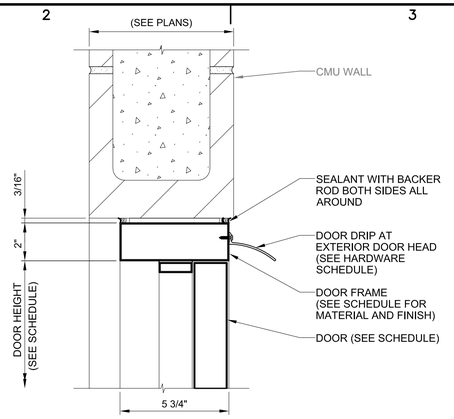
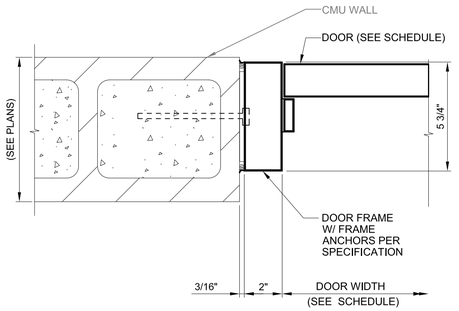


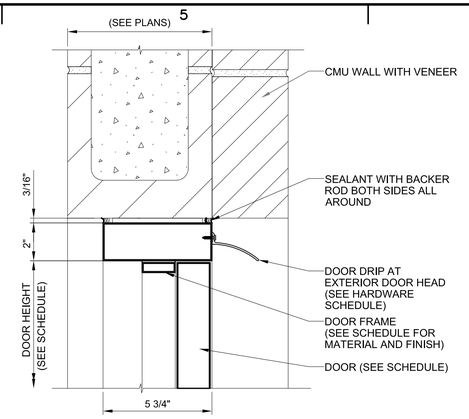
A8100 DOOR THRESHOLD
REV 010119



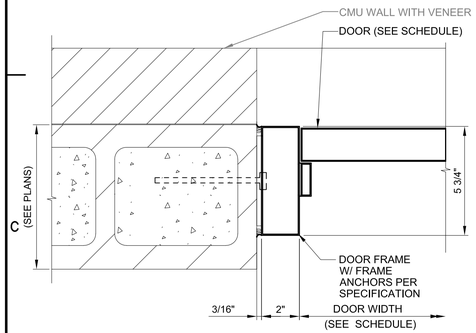
A9001 DOOR HEAD AT EXISTING CMU
REV 12072022



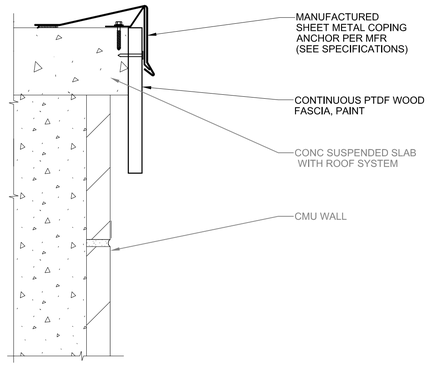
A9002 DOOR JAMB AT EXISTING CMU
REV 12072022



A9003 DOOR HEAD AT EXISTING VENEER
REV 12072022



A9004 DOOR JAMB AT EXISTING VENEER
REV 12072022



A9005 CONCRETE ROOF EDGE

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727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: POST VE 90%

Stantec
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Tampa, Florida, 33602-5729
Tel: 813 204-3305
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SEALS

TAMPA, FLORIDA
MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	SLW

COPYRIGHT:
DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: GA-2.dwg
DESIGNED BY: SLW
DRAWN BY: DG
CHECKED BY: EWM
APPROVED BY: KB

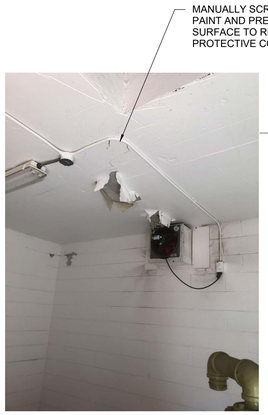
SHEET TITLE
GENERAL ARCHITECTURAL STANDARD DETAILS

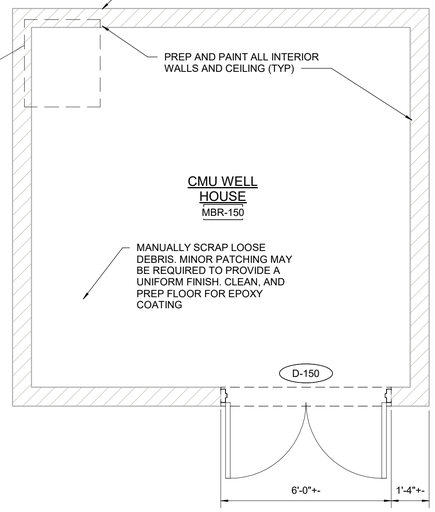
SCALE: NO SCALE

SHEET NO: GA-2

SHEET 47 OF 120

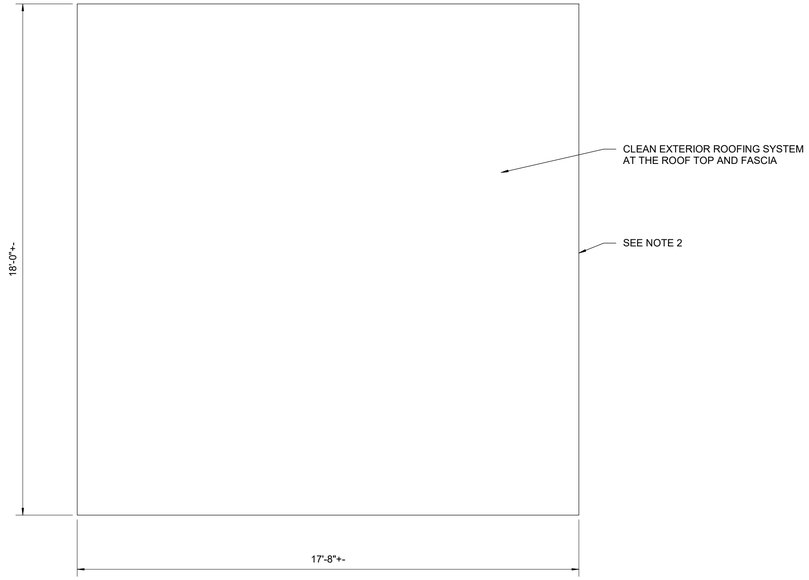
User:SWYGONIK Spec:NAT CADD STD File:C:\PW_WORKING\EXPORT\GA-2.DWG Scale:1:1 SavedDate:5/1/2025 Time:17:13 Plot Date: Wygonik, Shana; 5/1/2025; 20:46 ; Layout:LAYOUT1





TYPICAL CMU WELLHOUSE FLOOR PLAN

SCALE: 3/8" = 1'-0"



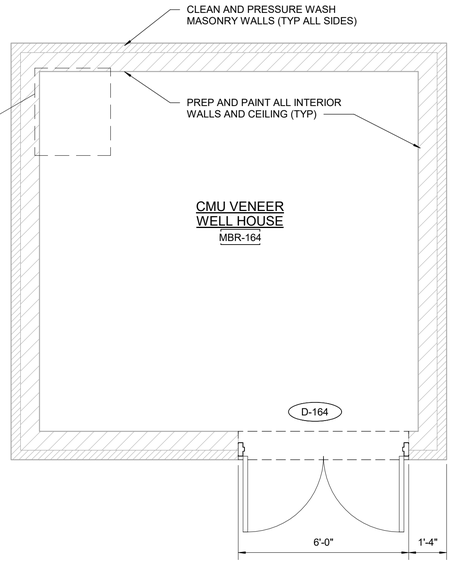
TYPICAL CMU WELLHOUSE ROOF PLAN

SCALE: 3/8" = 1'-0"

GENERAL NOTE

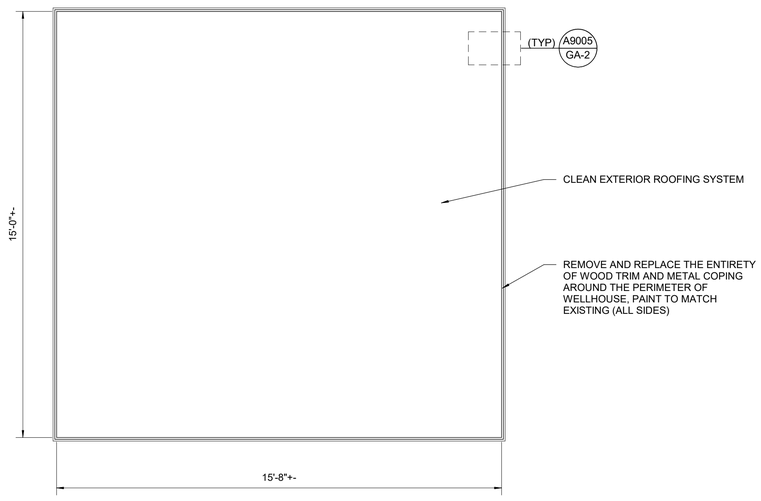
1. CONTRACTOR SHALL FIELD VERIFY DOOR, FRAME, AN D CMU AND VENEER OPENINGS PRIOR TO ORDDERING NEW DOORS AND FRAMES.
2. WELLHOUSE MBR-153: MANUALLY SCRAPE 6 FOOT LONG SECTION OF ROOF FASCIA WHERE COATING IS PEELING. PREPARE SECTION FOR NEW COATING





TYPICAL CMU VENEER WELLHOUSE FLOOR PLAN

SCALE: 3/8" = 1'-0"



TYPICAL CMU VENEER WELLHOUSE ROOF PLAN

SCALE: 3/8" = 1'-0"

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Supplying Water To The Region

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WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

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Tel: (000) 000.000

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TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: A-2
DESIGNED BY: SLW
DRAWN BY: DG
CHECKED BY: EWM
APPROVED BY: KB

SHEET TITLE

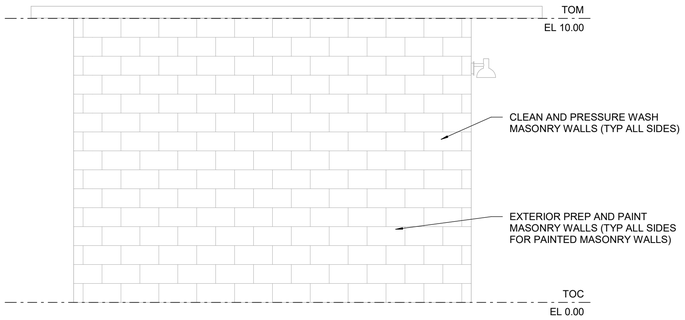
ARCHITECTURAL WELL HOUSE FLOOR PLAN AND ROOF PLAN

SCALE: 3/8"=1'-0"

SHEET NO: A-1

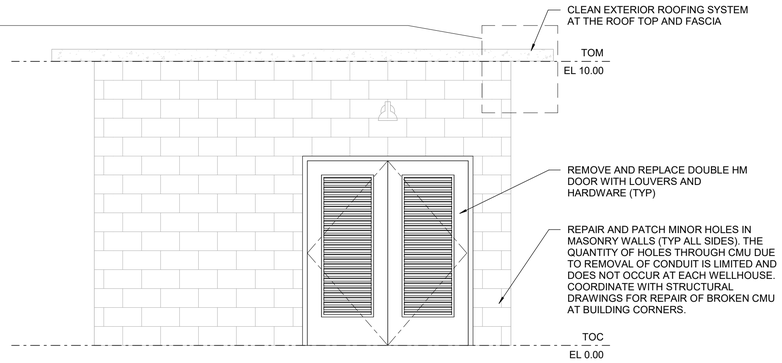
SHEET 48 OF 120

User:DG
Spec:NAT CADD STD
File:<Pick location in Project Information>
Scale:1:1 Size:D/Bat
5/2/2025 11:51:13 AM

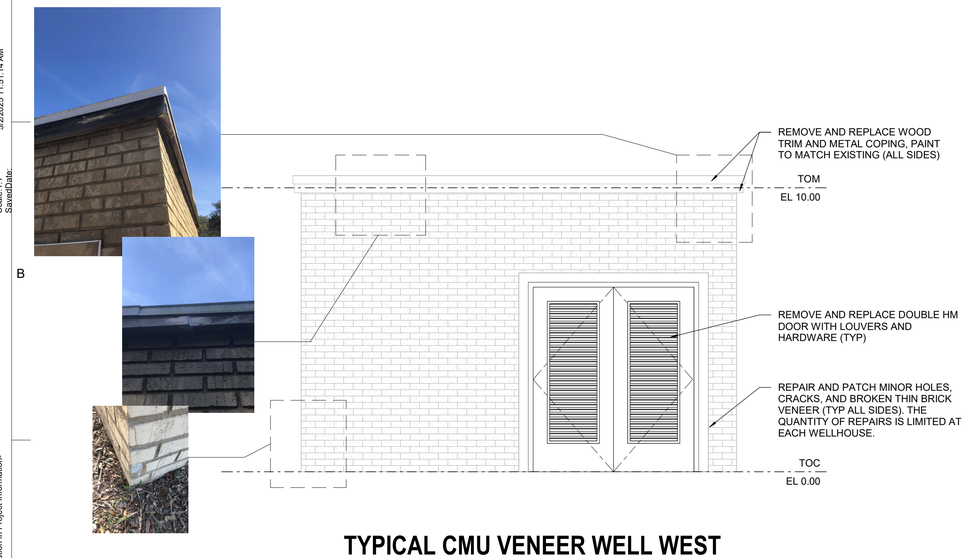


1 / A-2 TYPICAL CMU WELL WEST ELEVATION
3/8" = 1'-0"

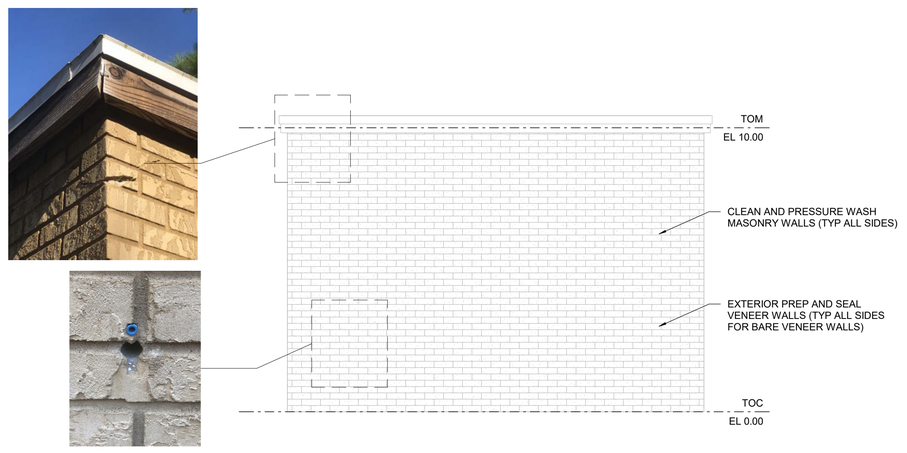




2 / A-2 TYPICAL CMU WELL SOUTH ELEVATION
3/8" = 1'-0"



3 / A-2 TYPICAL CMU VENEER WELL WEST ELEVATION
3/8" = 1'-0"



4 / A-2 TYPICAL CMU VENEER WELL SOUTH ELEVATION
3/8" = 1'-0"

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DRAWN BY: DG
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APPROVED BY: KB

SHEET TITLE

ARCHITECTURAL WELL HOUSE EXTERIOR ELEVATIONS

SCALE: 3/8" = 1'-0"

SHEET NO: A-2

SHEET 49 OF 120

5/2/2025 11:51:14 AM
Scale:1:1
Stantec
Spec:NAT CADD STD
File:<Pick location in Project Information>
User:DG

INSTRUMENT SYMBOLS

	CONTROL ROOM PANEL	FIELD MOUNTED	LOCAL PANEL
DISCRETE INSTRUMENTS	SD		
SHARED DISPLAY SHARED CONTROL eg. DCS = DISTRIBUTED CONTROL SYSTEM			
COMPUTER FUNCTION eg. FLOW METER			
PROGRAMMABLE LOGIC CONTROL (PLC) (RTU)	XXX	XXX	XXX (3, 1, 2, 4, 5, 6)

*SUBSCRIPT ABBREVIATION SPECIFIES INSTRUMENT FUNCTION OR LOCATION.
eg. IP#1 (INSTRUMENT PANEL #1), SD (SHUTDOWN)

FIELD MOUNTED INSTRUMENTS MAY BE POST OR WALL MOUNTED

- STATUS LIGHT SHOW COLOUR INSIDE SYMBOL
- I — SYSTEM LOGIC
- R — MANUAL RESET
- E — EMERGENCY SHUTDOWN LOGIC
- P — PURGE OR FLUSHING DEVICE
- AIR RELEASE VALVE
- M — MOTOR
- CHECK VALVE
- BALL VALVE
- FLEXIBLE JOINT
- GATE VALVE
- REDUCER
- BUTTERYFLY VALVE
- VENTURI FLOW METER
- VCP — LOCAL CONTROL PANEL INDLUDED IN VENDOR PACKAGE
- ACP — AREA CONTROL PANEL
- DIGITAL INPUT
- DIGITAL OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- PULSE INPUT
- MODULATING DIGITAL OUTPUT

INSTRUMENT LINE SYMBOLS

- ELECTRICAL SIGNAL
- CONTROL SYSTEM DATA LINK DEVICENET OR ETHERNET AS NOTED
- DATA LINK OR SYSTEM BUS AND SOFT INTERAL LINK
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED AND NON GUIDED)
- INTERLOCK
- FIBER OPTIC
- PNEUMATIC SIGNAL
- WIRELESS

NOTES:

1. FINAL INTERCONNECTION IS SUBJECT TO PRE-PACKAGED PROCESS EQUIPMENT VENDOR. CONTRACTOR TO PROVIDE ALL POWER, CONTROLS AND SIGNALS REQUIRED TO MEET THE REQUIREMENTS.
2. PANEL MOUNTED EQUIPMENT SHOWN FOR FUTURE FIELD DEVICES SHALL BE PROVIDED.

RELAY FUNCTION DESIGNATORS

≥	ADD	>	HIGH SELECT
△	SUBTRACT	<	LOW SELECT
±	BIAS	A/D	ANALOG TO DIGITAL
%	GAIN OR ATTENUATE	REV	REVERSE
√	EXTRACT SQ ROOT	E/P	POTENTIAL TO PNEUMATIC
÷	DIVIDE	I/P	CURRENT TO PNEUMATIC
X	MULTIPLY	E/I	POTENTIAL TO CURRENT
1:1	BOOST		

INSTRUMENT SUBSCRIPT ABBREVIATIONS

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
ACK	ACKNOWLEDGE	I/P	CURRENT TO PNEUMATIC
ACP	AREA CONTROL PANEL	LCP	LOCAL CONTROL PANEL
A/S	AIR SUPPLY	LEL	LOWER EXPLOSIVE LIMIT
BRG	BEARING	LOR	LOCAL/OFF/REMOTE
CT	CURRENT TRANSFORMER	M/A	MANUAL/AUTO
DIFF	DIFFERENTIAL	OBD	OUTBOARD
DISCH	DISCHARGE	O/C	OPEN/CLOSE
D/P	DIFFERENTIAL PRESSURE	O/L	OVERLOAD
ESO	EMERGENCY SHUTDOWN	O/O	ON/OFF
ETM	ELAPSED TIME METER	PAR	PROCESS ALARM RELAY
FC	FAIL CLOSED	PLC	PROGRAMMABLE LOGIC CONTROL
FO	FAIL OPEN	RESET	RESET
H	HIGH	RIO	REMOTE INPUT/OUTPUT
HH	HIGH HIGH	SP	SET POINT
HMI	HUMAN MACHINE INTERFACE	SW	SELECTOR SWITCH
HOA	HAND/OFF/AUTO	S/S	STOP/START
HORN	ANNUNCIATOR HORN	UPS	UNINTERRUPTABLE POWER SUPPLY
HOR	HAND/OFF/REMOTE	VCP	VENDOR CONTROL PANEL
IBD	INBOARD	VIB	VIBRATION
I/I	CURRENT/CURRENT ISOLATION	WDG	WINDING

IDENTIFICATION LETTERS

	FIRST-LETTER		SUCCEEDING-LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER CHOICE	USER CHOICE	USER CHOICE
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE / EMERGENCY		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	GAUGE		USER CHOICE	USER CHOICE	USER CHOICE
H	HAND OPERATED				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE, INTERMEDIATE
N	VEND. OPT.		USER CHOICE	USER CHOICE	USER CHOICE
O	TORQUE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	UNCLASSIFIED		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION		
V	VISCOSITY			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL		
X	FAILURE / TROUBLE		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT OR PRESENCE			RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION			DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

HAND SWITCH DESIGNATION

ES - EMERGENCY STOP
HOA - HAND-OFF-AUTO
HOR - HAND-OFF-REMOTE
J - JOG
LOR - LOCAL-OFF-REMOTE
LR - LOCAL-REMOTE
OC - OPEN-CLOSE
OO - ON-OFF
POT - POTENTIOMETER
SEL - SELECTOR SWITCH
SS - START / STOP

EQUIPMENT TAG NUMBERS

MBR - 160 - PIT - 101

- 101 — UNIQUE IDENTIFIER
- PIT — INSTRUMENT TYPE
- 160 — WELL NUMBER
- MBR — SITE IDENTIFIER

INSTRUMENT TAG NUMBERS & INDENTIFICATION

FCV / XXXX / XX

- FCV — FUNCTIONAL IDENTIFICATION CODE (SEE ABOVE)
- XXXX — ADDITIONAL IDENTIFICATION (SEE ABBREVIATION LIST)
- XX — SEQUENTIAL LOOP IDENTIFIER UNIQUE NUMBER ASSIGNMENT

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DRAWN BY: FL
CHECKED BY: AA
APPROVED BY: BCB

SHEET TITLE

INSTRUMENTATION ABBREVIATIONS & LEGEND

SCALE: NO SCALE

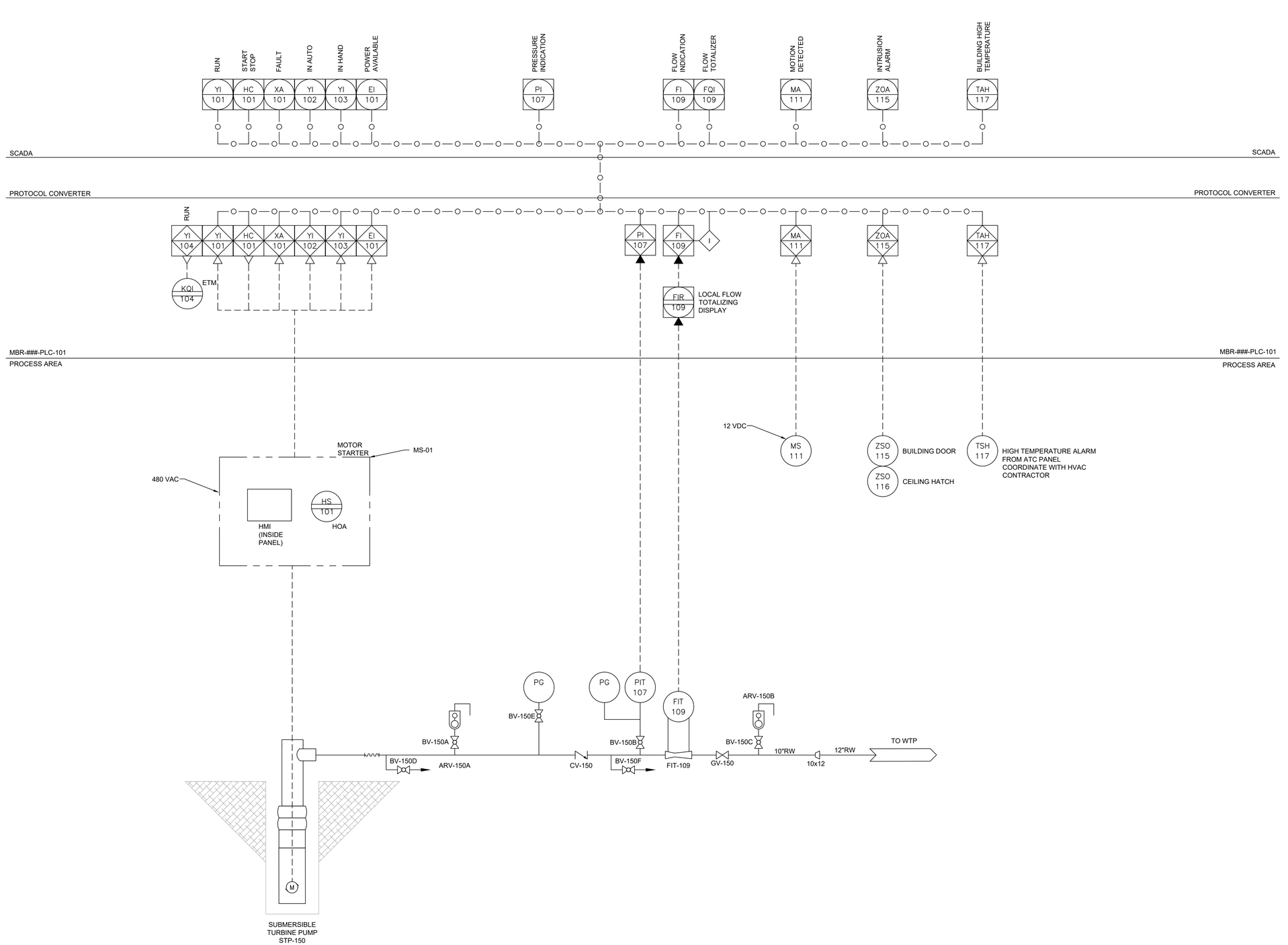
SHEET NO: I-1

SHEET 50 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-1.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:23 Plot Date: Linzer, Francine; 9/5/2025, 13:31 ; Layout:I-1

GENERAL SHEET NOTES

1. ALL P&ID TAG NUMBERS SHALL START WITH MBR-###. (EX: MBR-160-FIT101). "###" SHALL BE REPLACED WITH APPLICABLE WELL/SITE NUMBER.



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FILE NAME: I-2
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SHEET TITLE

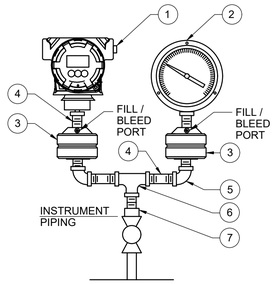
MBR SITE P&ID (TYPICAL)

SCALE: NO SCALE

SHEET NO: I-2

SHEET 51 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WIR\FLINZER\D0154736\I-2.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:23 Plot Date: Linzer, Francine; 9/5/2025; 1



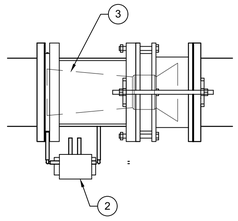
PRESSURE GAUGE AND SWITCH
WITH DIAPHRAGM SEALS

GENERAL NOTES:

1. POTENTIALLY WETTED MATERIALS SHALL BE CHEMICALLY INERT TO THE PROCESS.
2. REFER TO P&IDS FOR PROCESS PIPING SIZE AND MATERIAL.
3. PIPING SIDE ISOLATION VALVES FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/ RATING (WATER / AIR)
1	1	PRESSURE TRANSMITTER ELECTRONIC HOUSING	MANF	EPOXY COATED ALUMINUM
2	1	LIQUID-FILLED PRESSURE GUAGE	MANF	PHENOLIC ENCASED
3	AR	ISOLATION DIAPHRAGM SEAL; SILICONE OIL FILL FLUID	MANF	316 SS
4	AR	1/2" MALE TO MALE NIPPLE	CONT	316 SS
5	2	ELBOW 1/2"	CONT	316 SS
6	1	TEE 1/2"	CONT	316 SS
7	1	HEX REDUING BUSHING 1"x1/2"	CONT	316 SS

A PRESSURE TRANSMITTER AND GAUGE ASSEMBLY



SINGLE MEASUREMENT SYSTEM

GENERAL NOTES:

1. THREE VALVE MANIFOLD PRE-ASSEMBLED ON TRANSMITTER. TRANSMITTER ENCLOSURE SHALL BE INSTALLED BELOW CENTER LINE OF THE PIPE, AND AT CONVENIENT ELEVATION TO SERVICE AND VIEW LCD METER SCREEN. REFER TO SPECIFICATIONS FOR REQUIREMENTS, INCLUDE STATIC TAPS AND VENT CLEANING ASSEMBLIES.
2. REFER TO P&IDS OR PROCESS MECHANICAL DRAWINGS FOR PROCESS PIPING SIZE AND MATERIAL.
3. INSERTION TYPE VENTURI FLOWMETER.
4. TUBING, FITTINGS, ENCLOSURE, SUPPORTS AND MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.
5. SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS.

KEYNOTES:

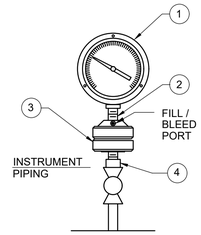
A. WALL OR INSTRUMENT-STAND MOUNT PER DETAIL B ON DRAWING GE-2.

B. 316 STAINLESS STEEL.

C. 1/2" TUBING SHALL BE SUPPORTED / BRACED EVERY 3-FT. THERMALLY INSULATING SPACER MATERIAL SHALL BE APPLIED TO SEPARATE THE TUBING FROM THE SUPPORTS. PIGTAIL LOOP REQUIRED FOR HIGH VIBRATION INSTALLATIONS ONLY.

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/ RATING (WATER / AIR)	MATERIAL/ RATING (CHEMICAL)
1	1	PRESSURE TRANSMITTER ELECTRONIC HOUSING	MANF	EPOXY COATED ALUMINUM	EPOXY COATED ALUMINUM
2	1	3 VALVE MANIFOLD WITH DOWNWARD DRAIN LINE	MANF	316 SS	B
3	AR	IMPULSE TUBING	CONT	316 SS	B

B VENTURI FLOW METER



PRESSURE GAUGE
WITH DIAPHRAGM SEAL

GENERAL NOTES:

1. POTENTIALLY WETTED MATERIALS SHALL BE CHEMICALLY INERT TO THE PROCESS.
2. REFER TO P&IDS AND DATA SHEETS FOR PROCESS PIPING SIZE AND MATERIAL.
3. PIPING SIDE ISOLATION VALVES FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/ RATING (WATER)
1	1	LIQUID-FILLED PRESSURE GAUGE	MANF	PHENOLIC ENCASED
2	1	HEX REDUCING BUSHING 1"x1/2" (25mmx15mm)	CONT	316 SS
3	AR	ISOLATION DIAPHRAGM SEAL; SILICONE OIL FILL FLUID	MANF	316 SS
4	AR	1/2" MALE TO MALE NIPPLE	CONT	316 SS

C PRESSURE GAUGE

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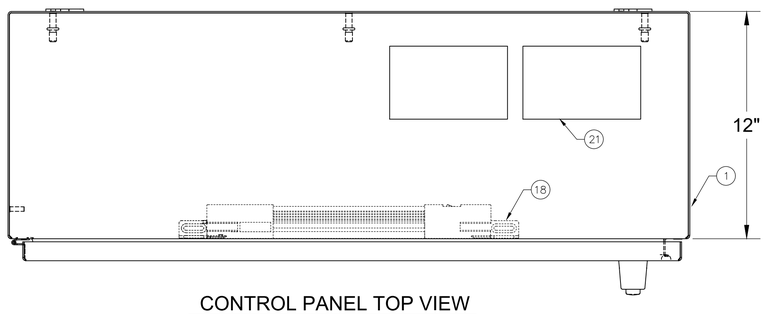
SHEET TITLE
INSTRUMENTATION DETAILS

SCALE: NO SCALE

SHEET NO: I-3

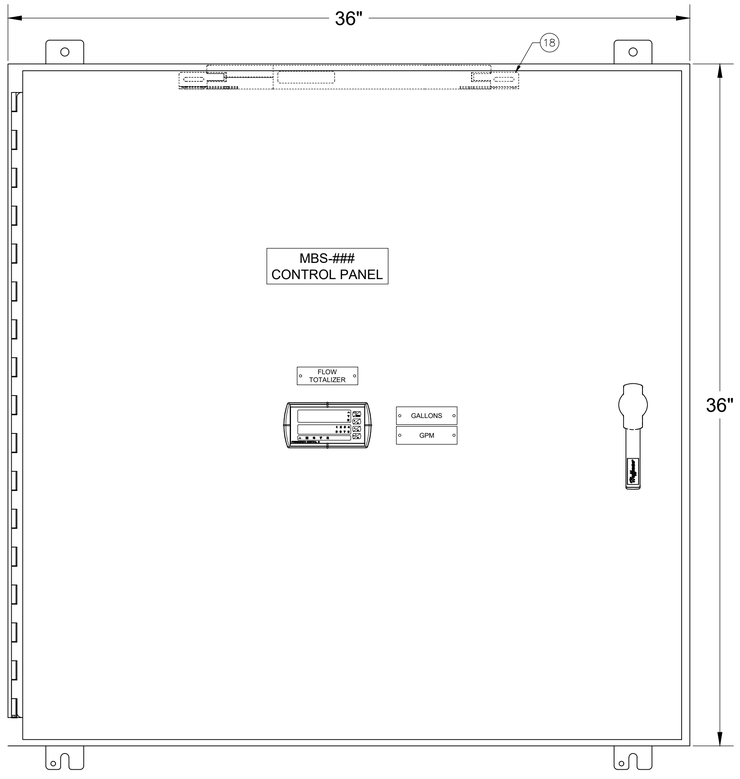
SHEET 52 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-3.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:29 Plot Date: Linzer, Francine; 9/5/2025; 13:31 ; Layout:I-3



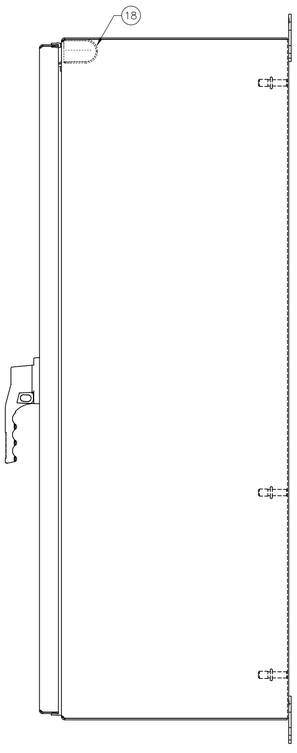
CONTROL PANEL TOP VIEW

3" = 1'-0"



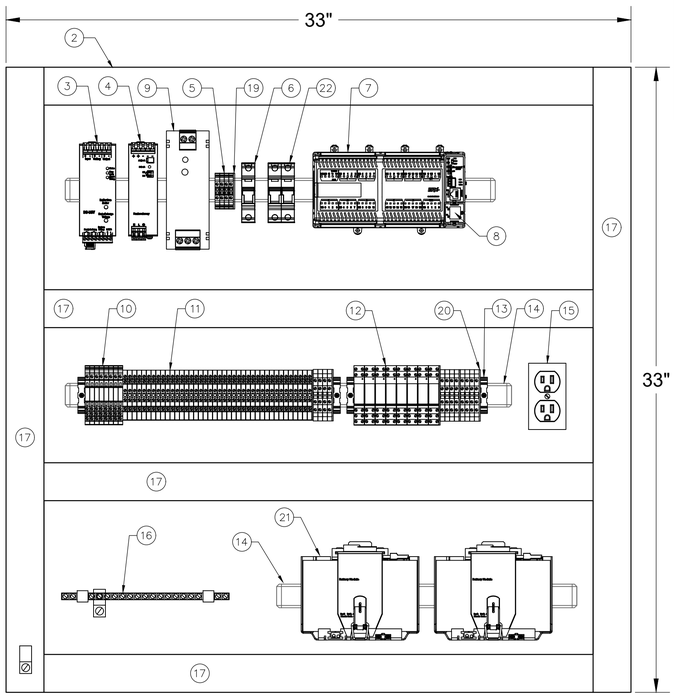
CONTROL PANEL FRONT VIEW

3" = 1'-0"



CONTROL PANEL SIDE VIEW

3" = 1'-0"



CONTROL PANEL INSIDE VIEW

3" = 1'-0"

GENERAL SHEET NOTES

1. THE CONTROL PANEL DETAILS HEREIN ARE DIAGRAMMATIC IN NATURE OF THE PURPOSE OF ILLUSTRATION DESIGN INTENT. CONTROL PANEL VENDOR TO PROVIDE SHOP DRAWINGS ILLUSTRATING ACTUAL LAYOUT AND ORIENTATION OF ALL MAJOR COMPONENTS.
2. THE CONTROL PANEL SHALL BE ASSEMBLED BY A UL- 508A CERTIFIED PANEL SHOP AND BEAR THE UL LABEL.
3. THE BILL OF MATERIALS REPRESENTS A BASIS OF DESIGN FOR MAJOR COMPONENTS AND IS NOT INTENDED TO BE COMPREHENSIVE OF ALL COMPONENTS REQUIRED FOR MANUFACTURE. THE PANEL MANUFACTURER SHALL COORDINATE AND PROVIDE A FINAL BILL OF MATERIALS WHICH INCLUDES ALL APPURTENANCES REQUIRED FOR A COMPLETE SYSTEM AND SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS OR APPROVED EQUAL.
4. CONTROL PANEL ENCLOSURE SHALL BE NEMA 4X STAINLESS STEEL WITH 3 POINT LATCHING MECHANISM.
5. BATTERIES SHALL BE WIRED IN SERIES FOR 24VDC FOR UPS CONTROL POWER.
6. ALL CONDUCTORS SHALL BE SIZED PER THE LATEST ADOPTED NATIONAL ELECTRIC CODE (NEC).
7. ALL ANALOG INPUT AND OUTPUT CIRCUITS SHALL BE PROTECTED AT BOTH THE PANEL AND FIELD ENDS WITH SURGE PROTECTION DEVICES. SURGE PROTECTORS SHALL PROVIDE LINE TO LINE AND LINE TO GROUND PROTECTION. THE SUPPRESSION CIRCUIT SHALL BE A MULTISTAGE HYBRID DEVICE UTILIZING SURGE ARRESTING DIODES AND GAS DISCHARGE TUBES. THE SURGE PROTECTOR SHALL CONSIST OF A DIN RAIL MOUNTED BASE TERMINAL BLOCK AND A REMOVABLE PLUG PROTECTION MODULE. REFER TO SPECIFICATION SECTION 17530.

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION
1	1	HOFFMAN CONTINUOUS ENCLOSURE CAT. NO.: A36H3612SSLP3PT
2	1	HOFFMAN BACK PANEL CAT. NO.: A36P36
3	1	PULS DC UPS CAT. NO.: UB10.245
4	1	PULS 120VAC - 24VDC POWER SUPPLY CAT. NO.: CP10.241-R1
5	AS REQ'D	ALLEN BRADLEY SINGLE LEVEL TERMINAL BLOCK CAT. NO.: 1492-J3
6	AS REQ'D	ALLEN BRADLEY FUSE TERMINAL BLOCK CAT. NO.: 1492-H7
7	1	AUTOMATION DIRECT DIRECTLOGIC PLC CAT. NO.: BX-DM1E-36ER3-D
8	2	AUTOMATION DIRECT USB COMMUNICATION POM MODULE CAT. NO.: BX-P-USB-B
9	1	AUTOMATION DIRECT CAT. NO.: PSP12-DC24-2
10	8	PHOENIX CONTACT SURGE PROTECTION DEVICE CAT. NO.: 2838186
11	AS REQ'D	ALLEN BRADLEY DOUBLE LEVEL TERMINAL BLOCK CAT. NO.: 1492-JD3
12	1	PHOENIX CONTACT DPDT RELAY MODULE CAT. NO.: 2967060
13	AS REQ'D	ALLEN BRADLEY END ANCHOR CAT. NO.: 1492-EAJ35
14	1	ALLEN BRADLEY NORMAL DUTY DIN RAIL CAT. NO.: 199-DR1
15	1	GFI RECEPTACLE
16	1	ALLEN BRADLEY GROUND BAR KIT CAT. NO.: 599-GR4
17	AS REQ'D	PANDUIT WIRE DUCK CAT. NO.: F2X4LG6
18	1	ALLEN BRADLEY PANEL LIGHT BAR CAT. NO.: 855L-NX2
19	AS REQ'D	ALLEN BRADLEY TERMINAL BLOCK END BARRIER CAT. NO.: 1492-EBJ3
20	AS REQ'D	ALLEN BRADLEY TERMINAL BLOCK END BARRIER CAT. NO.: 1492-EBJD3
21	2	PULS BATTERY MODULE CAT. NO.: UZK12.072
22	2	ALLEN BRADLEY MINIATURE CIRCUIT BREAKER 10A CAT. NO.: 1489-M1C100

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TAMPA, FLORIDA

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DRAWN BY: FL
CHECKED BY: AA
APPROVED BY: BCB

SHEET TITLE

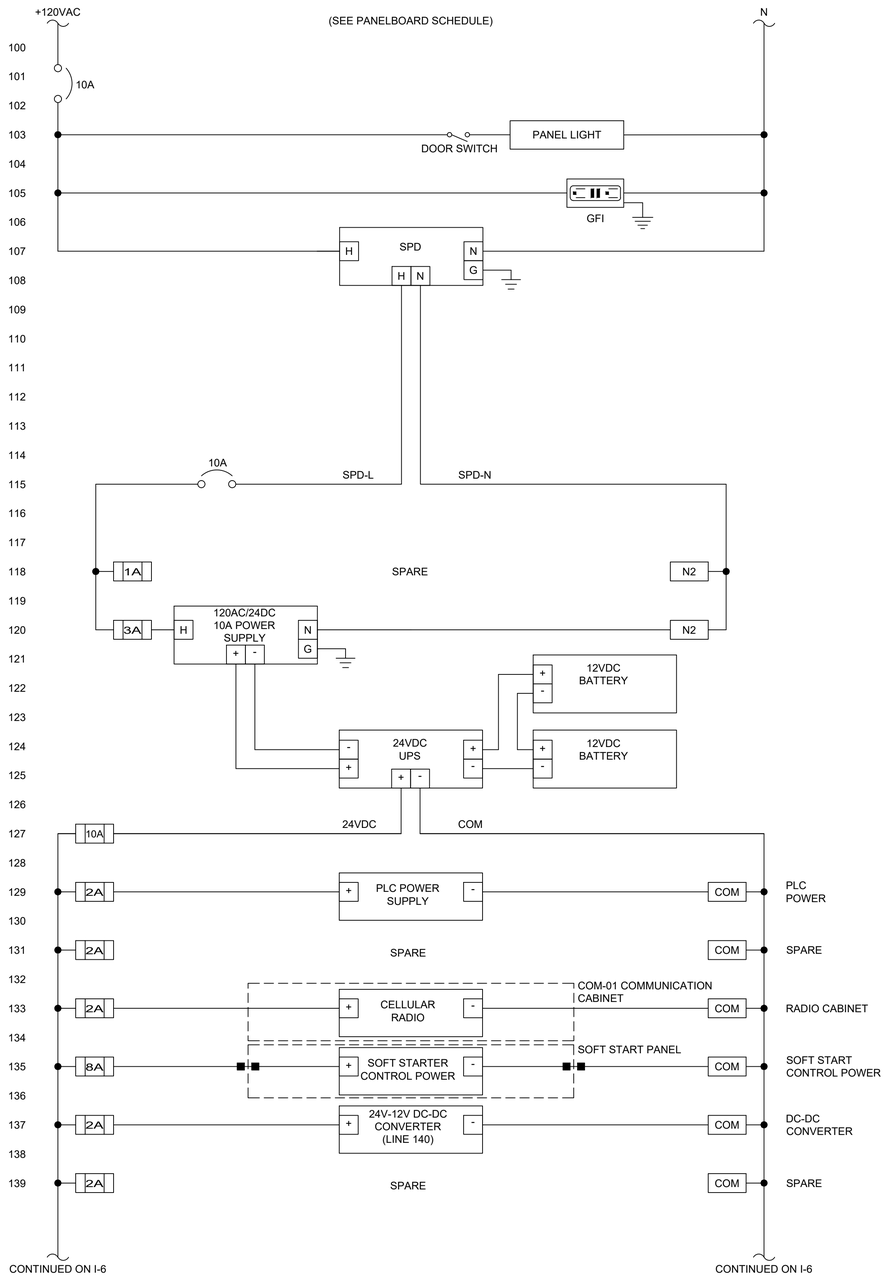
PLC CONTROL PANEL LAYOUT

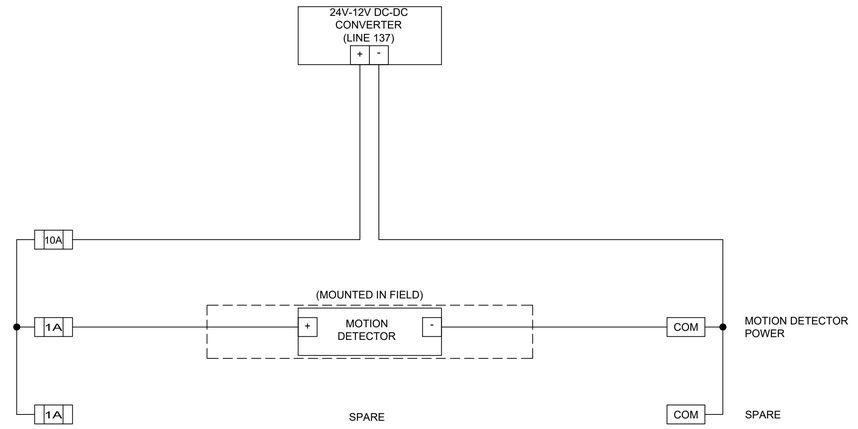
SCALE: 3"=1'-0"

SHEET NO: I-4

SHEET 53 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-4.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:29 Plot Date: Linzer, Francine; 9/5/2025; 13:31 : Layout:I-4





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SHEET TITLE

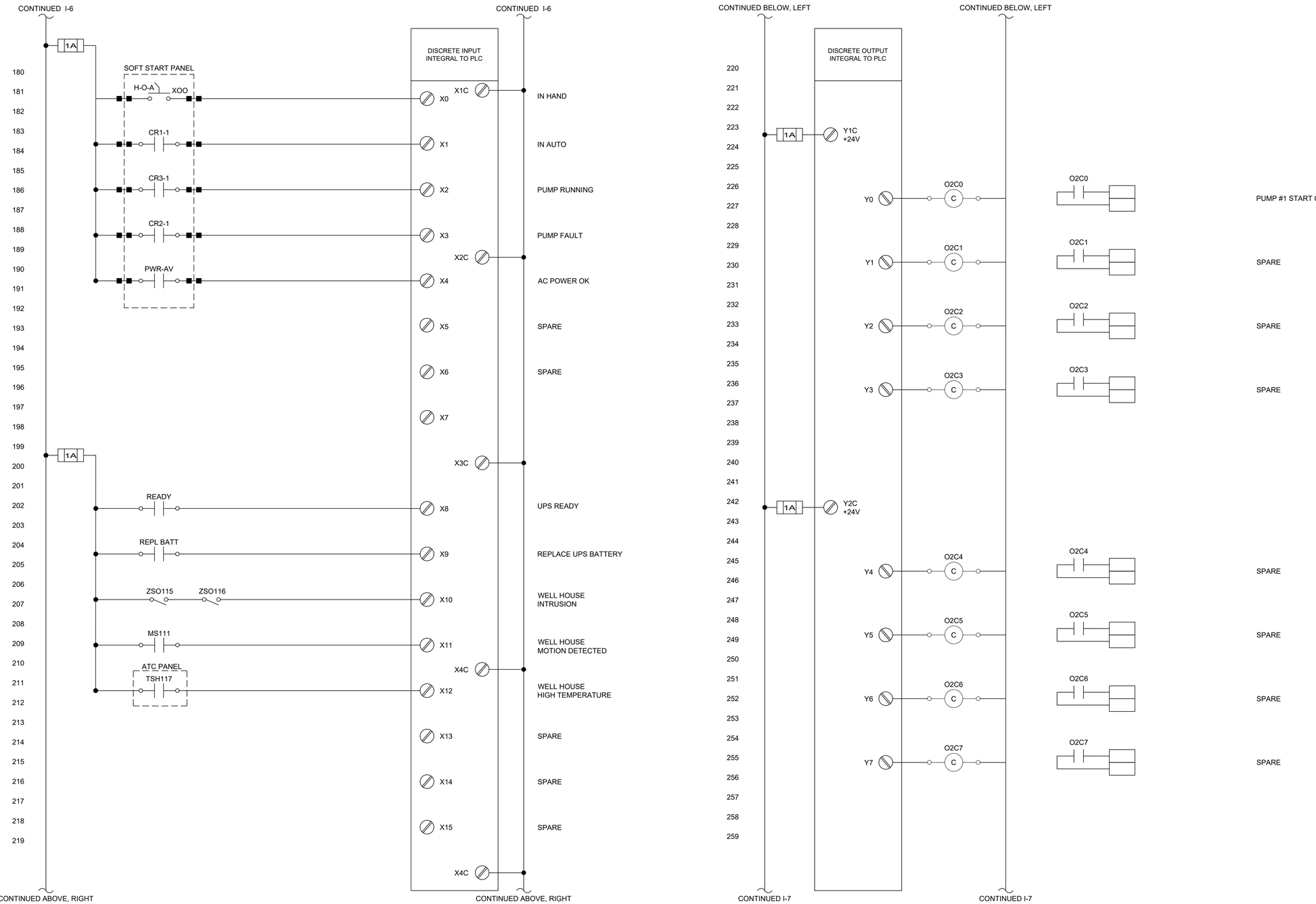
CONTROL PANEL ELEMENTARY SCHEMATIC - I

SCALE: NO SCALE

SHEET NO: I-5

SHEET 54 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-5.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:29 Plot Date: Linzer, Francine; 9/5/2025; 13:31 ; Layout:I-5



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SHEET TITLE

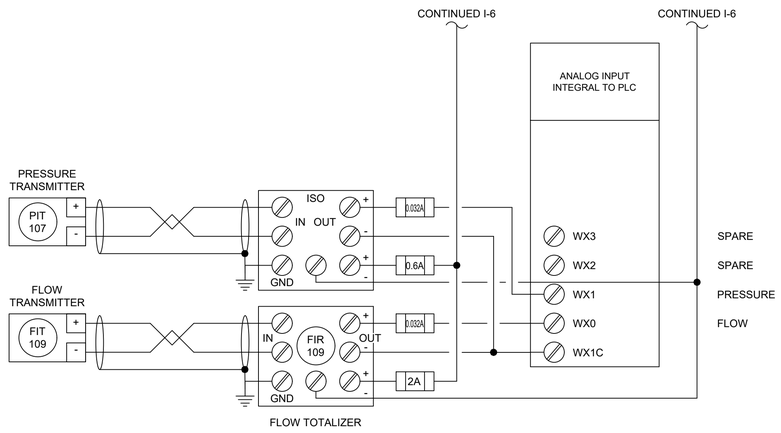
CONTROL PANEL ELEMENTARY SCHEMATIC - II

SCALE: NO SCALE

SHEET NO: I-6

SHEET 55 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-5.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:29 Plot Date: Linzer, Francine; 9/5/2025; 13:31 ; Layout:I-6



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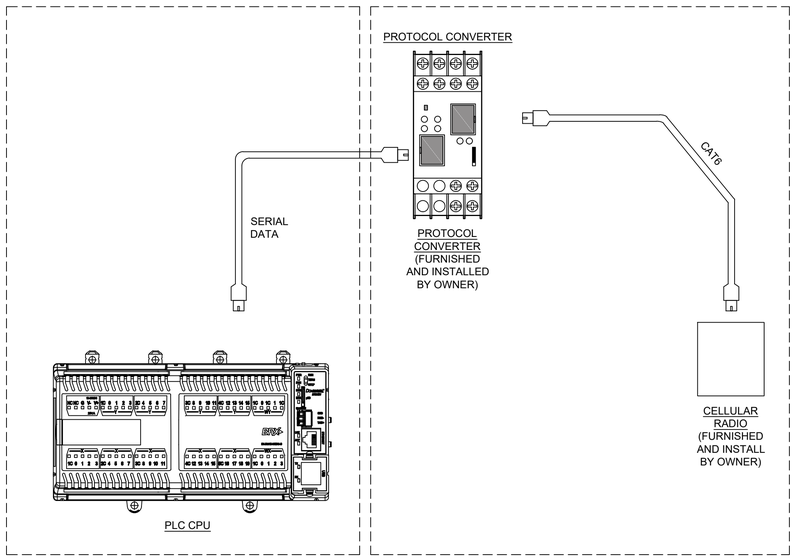
SHEET TITLE

CONTROL PANEL ELEMENTARY SCHEMATIC - III

SCALE: NO SCALE

SHEET NO: I-7

SHEET 56 OF 120



NETWORK DIAGRAM
NO SCALE

GENERAL SHEET NOTES

1. THE SYSTEM INTEGRATOR SHALL COORDINATE WITH THE OWNER TO CONFIGURE THE CONTROL PANEL (PLC AND PROTOCOL CONVERTER) TO COMMUNICATE WITH THE OWNER FURNISHED RADIO.

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SHEET TITLE

NETWORK DIAGRAM

SCALE: NO SCALE

SHEET NO: I-8

SHEET 57 OF 120

User:FLINZER Spec:NAT CADD STD File:C:\PW_WORKING\WTR\FLINZER\D0154736\I-5.DWG Scale:1:1 SavedDate:9/5/2025 Time:13:29 Plot Date: Linzer, Francine; 9/5/2025; 13:31 ; Layout:I-8

GENERAL MECHANICAL NOTES

GENERAL

1. ALL REMOVAL OF EXISTING PIPING AND EQUIPMENT CALLED FOR SHALL INCLUDE REMOVAL AND DISPOSAL OF ALL PIPE, FITTINGS, LOCATION TAPE/WIRE, SUPPORTS, BRACKETS, HARDWARE, AND ACCESSORIES.
2. CONTRACTOR SHALL NOT OPERATE ANY EXISTING VALVES. NECESSARY OPERATION OF EXISTING VALVES SHALL BE COORDINATED WITH OWNER.
3. PIPING SHALL BE INSTALLED WITH A MINIMUM COVER OF 36 INCHES.
4. ALL PIPE AND FITTINGS AND OTHER APPURTENANCES SHALL BE RESTRAINED.
5. ALL PIPING SHALL BE PRESSURE TESTED, AND LEAKAGE TESTED IN ACCORDANCE WITH APPLICABLE AWWA STANDARDS. ALL PIPING SHALL BE FLUSHED AND DISINFECTED IN ACCORDANCE WITH AWWA C-651, LATEST EDITION.

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FILE NAME:	GM-1.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

GENERAL MECHANICAL NOTES

SCALE: NO SCALE

SHEET NO: GM-1

SHEET 58 OF 120

User:NDHANWADE Spec:NAT CADD STD File:C:\PW_WORKING\WTR\NDHANWADE\D0154745\GM-1.DWG Scale:1:1 SavedDate:3/27/2023 Time:16:18 Plot Date: Dhanwade, Nikhil; 9/4/2025; 17:34 ; ; Layout:LAYOUT1

FLUID ABBREVIATION	FUNCTION THIS LIST INCLUDES SOME LINES NOT USED IN THIS PROJECT	PIPING MATERIALS (SEE GENERAL NOTES AT THE RIGHT AND PIPE MATERIAL SHEET)				FIELD TEST REQUIREMENTS Ⓑ Ⓒ		
		EXPOSED PIPING Ⓖ		BURIED PIPING Ⓕ		MINIMUM TEST PRESSURE (PSI)	TEST MEDIUM	LEAKAGE ALLOWANCE Ⓐ
		4" DIA AND SMALLER	6" DIA AND LARGER	4" DIA AND SMALLER	6" DIA AND LARGER			
RW	RAW WATER	DI01, PV01	DI01, PV01	DI01, PV01	DI01	175	WATER --	(A)

TYPICAL PIPE DESIGNATION:



GENERAL SHEET NOTES

1. ALTHOUGH SEVERAL PIPE MATERIAL GROUPS MAY BE LISTED ON THIS SHEET FOR A GIVEN FLUID SERVICE, CONTRACTOR SHALL PROVIDE ONLY THE PIPE MATERIAL GROUP SHOWN ON THE DRAWINGS AND SPECIFIED FOR THAT FLUID SERVICE.
2. CHANGE IN PIPING MATERIAL GROUP NUMBER IS INDICATED THUS: ——◆——

SHEET KEYNOTES

A. LEAKAGE ALLOWANCE IS AS FOLLOWS:

(A) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE.

(B) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE FOR UNBURIED PIPE AND NOT MORE THAN 0.02 GALLON PER HOUR PER INCH DIAMETER PER 100 FEET OF BURIED PIPE.

(C) PIPES SO DESIGNATED SHALL NOT SHOW A LEAKAGE OF MORE THAN 0.15 GALLON PER HOUR PER INCH OF DIAMETER PER 100 FEET OF PIPE

(D) PIPES SO DESIGNATED SHALL NOT SHOW A LOSS OF PRESSURE OF MORE THAN 5 PERCENT

(E) PIPE SO DESIGNATED SHALL NOT SHOW A LOSS OF VACUUM OF MORE THAN 4 INCHES MERCURY COLUMN

B. FOR FIELD TEST PROCEDURES AND ADDITIONAL TEST REQUIREMENTS, SEE PIPING SECTION OF SPECIFICATIONS.

C. NO SUBSTITUTIONS UNLESS ACCEPTED BY THE ENGINEER PER THE SPECIFICATIONS.

D. PIPING GROUP NUMBER SHOWN THUS * SHALL BE INSULATED. SEE PIPING SECTION OF SPECIFICATIONS FOR INSULATING MATERIALS.

E. STATIC WATER TEST WITH SURFACE 5 FEET ABOVE HIGH POINT OF PIPE.

F. FOR PIPE LINING AND COATING, SEE SPECIFICATIONS.

G. EXPOSED PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATIONS. COLORS TO BE SELECTED BY ENGINEER.

PIPING MATERIAL SCHEDULE Ⓑ

GROUP NO	PIPE Ⓓ	FITTINGS	VALVES, 6" AND SMALLER Ⓐ Ⓒ Ⓔ
DI01	DUCTILE IRON, ANSI A21.51, (AWWA C151), ENDS BELL AND SPIGOT, MECHANICAL JOINTS OR 125 PSI FLANGED. (TYPICAL SERVICE - WATER LINES).	DUCTILE IRON AWWA C110, BELL AND SPIGOT JOINTS (RESTRAINED OR NON-RESTRAINED), MECHANICAL COUPLINGS, ASME B16.1 FLANGES, OR MECHANICAL JOINTS.	GATE: AWWA C500, O-RING SEALS, MECHANICAL JOINT ENDS, CLOW F-5065. BUTTERFLY: AWWA. ECCENTRIC PLUG DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: PRATT OR APCO-WILLAMETTE.
PV01	POLYVINYL CHLORIDE (PVC), ASTM D1785, SCH 80, TYPE I.	PVC, SCH 80, TYPE I, SOCKET SOLVENT WELD JOINTS, ASTM D2467. SOLVENT SHALL BE COMPATIBLE WITH FLUID SERVICE.	PVC, BALL, DIAPHRAGM, GATE VALVE, OR LIFT CHECK: NIBCO/CHEMTROL, MCCANNA-MARPAC, OR GEORGE FISCHER SLOANE.

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FILE NAME: GM-2.dwg

DESIGNED BY: SR

DRAWN BY: PS

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

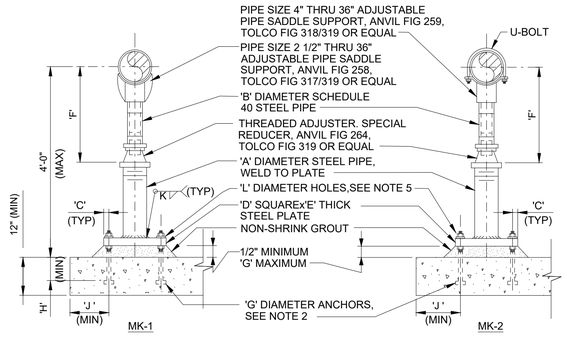
PIPE AND VALVE SCHEDULE

SCALE: NO SCALE

SHEET NO: GM-2

SHEET 59 OF 120

User:NDHANWADE Spec:NAT CADD STD File:C:\PW_WORKING\WTR\NDHANWADE\D0154745\GM-2.DWG Scale:1:1 SavedDate:3/27/2023 Time:16:18 Plot Date: Dhanwade, Nikhil; 9/4/2025; 17:38 ; Layout:LAYOUT1



DIMENSIONS IN INCHES													Sds<0.5	
NOMINAL PIPE DIAMETER	'A' (SCH 40 UNO)	'B'	'C'	'D'	'E'	'F' (APPROX) (MINIMUM)	'F' (APPROX) (MAXIMUM)	'G'	'H'	'J'	'K'	'L'	LOAD MAX (LBS)	'M'
2 1/2	* 2 / 2 1/2	1 1/2	1	8	7/16	7	11 1/2	1/2	4	6	3/8	13/16	1400	500
3	* 2 / 2 1/2	1 1/2	1	8	7/16	7 5/16	11 13/16	1/2	4	6	3/8	13/16	1400	500
3 1/2	* 2 / 2 1/2	1 1/2	1	8	7/16	7 9/16	12 1/16	1/2	4	6	3/8	13/16	1400	500
4	3	* 2 1/2 / 3	1 1/4	10	5/8	10 1/4	14 3/4	5/8	5	8	7/16	1 1/16	2650	1100
6	3	* 2 1/2 / 3	1 1/4	10	5/8	11 9/16	16 1/16	5/8	5	8	7/16	1 1/16	2650	1100
8	3	* 2 1/2 / 3	1 1/4	10	5/8	13 9/16	18 1/16	5/8	5	8	7/16	1 1/16	2650	1100
10	3	* 2 1/2 / 3	1 1/4	10	5/8	14 5/8	19 1/8	5/8	5	8	7/16	1 1/16	2650	1100
12	3	* 2 1/2 / 3	1 1/4	10	5/8	15 5/8	20 1/8	5/8	5	8	7/16	1 1/16	2650	1100
14	4	3	1 3/8	12	3/4	18 7/8	23 3/8	3/4	7	10.5	1/2	1 5/16	4200	2200
16	4	3	1 3/8	12	3/4	19 7/8	24 3/8	3/4	7	10.5	1/2	1 5/16	4200	2200
18	6 (SCH 80)	* 4 / 3 1/2	1 5/8	14	1 1/4	22 1/4	26 3/4	7/8	8	12	11/16	1 9/16	6050	2775
20	6 (SCH 80)	* 4 / 3 1/2	1 5/8	14	1 1/4	23 1/4	27 3/4	7/8	8	12	11/16	1 9/16	6050	2775
24	6 (SCH 80)	4	1 5/8	14	1 1/4	26 1/2	31	7/8	8	12	11/16	1 9/16	6050	2775
30	6 (SCH 80)	4	1 7/8	16	1 1/4	29 5/8	34 1/8	1	8	12	11/16	1 13/16	8150	3100
32	6 (SCH 80)	4	1 7/8	16	1 1/4	30 5/8	35 1/8	1	8	12	11/16	1 13/16	8150	3100
36	6 (SCH 80)	4	1 7/8	16	1 1/4	32 5/8	37 1/8	1	8	12	11/16	1 13/16	8150	3100

* SEE MANUFACTURER

NOTES:

1. HOT DIP GALVANIZE PARTS AFTER FABRICATION, UNO. PROVIDE 316 SS PARTS AND BOLTS IN SUBMERGED OR CORROSIVE CONDITIONS.
2. PROVIDE CAST-IN-PLACE HEAVY HEX HEAD ASTM F1554 GR 36 ANCHORS, UNO.
3. REFER TO TABLE FOR MAXIMUM ALLOWABLE SERVICE LOAD ON EACH SUPPORT.
4. USE MK-2, UNLESS OTHERWISE INDICATED.
5. FOR 3/4" ANCHORS AND LARGER, PROVIDE SQUARE WASHERS PER AISC MANUAL OF STEEL CONSTRUCTION TABLE 14-2 WITH STD HOLES WELDED TO PLATE WITH 3/16" FILLETS. USE 1 3/4" SQx3/16" THICK WASHERS FOR 5/8" ANCHORS.
6. IF ADHESIVE ANCHORS ARE USED (SIMPSON SET XP, OR EQUAL), USE REDUCED MAX LOADS IN COLUMN 'M'. OVERSIZED HOLES AND WASHERS ARE NOT REQUIRED.

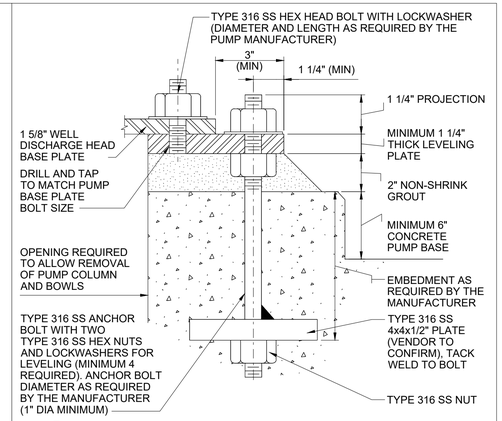
SEISMIC AND WIND COMPLIANT DESIGN CRITERIA

1. THE SUPPORTS ARE ADEQUATE FOR SEISMIC RESPONSE COEFFICIENT (SDS) GIVEN IN THE TABLE. SEISMIC FORCE ASSUMPTIONS (ASCE 7-10, EQN 13.3-1): ap=2.5, Rp=6, Ωo=2.5, Ip=1.0, z/h=1.0.
2. THE SUPPORTS, DESIGNED FOR SEISMIC LOADS, ARE ALSO ADEQUATE FOR A DESIGN WIND SPEED (Vult) OF UP TO 165 MPH WITH A MAXIMUM HEIGHT ABOVE GRADE OF 40'. WIND FORCE ASSUMPTIONS: EXPOSURE CATEGORY C, Kzt=1.0, Kz=1.04, Kd=0.95, G=0.85, Cf=1.2 (DESIGNED PER ASCE 7-10 SECTION 29.5 - OTHER STRUCTURES).

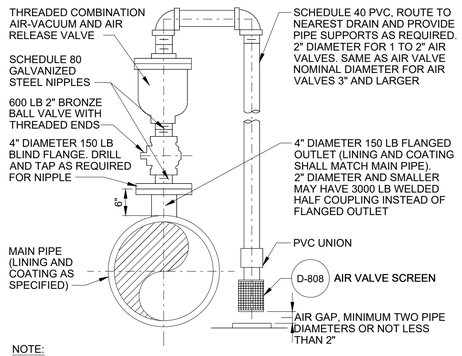
D-108 ADJ PIPE SUPPORT W OR W/O 'U' BOLT

(FOR PIPE 36" DIAMETER AND SMALLER)

REV 010119



D-135 WELL DISCHARGE HEAD MOUNTING BASE



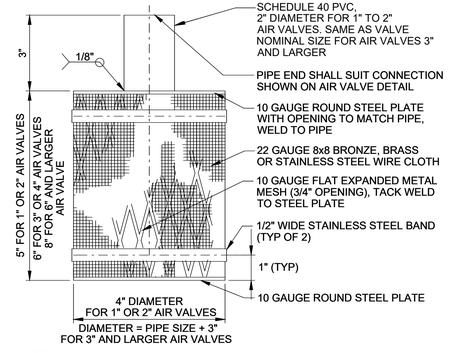
NOTE:

1. ALL COMPONENTS FOR PIPING SYSTEMS WITH SERVICE PRESSURE CLASS GREATER THAN 150 PSI SHALL BE SUITABLE FOR THE HIGHER PRESSURE.
2. PROVIDE INSULATION FITTINGS FOR BRONZE BALL VALVE CONNECTION.

D-804 AIR-VAC AND A/R VALVE ASSEMBLY

(3" AND SMALLER)

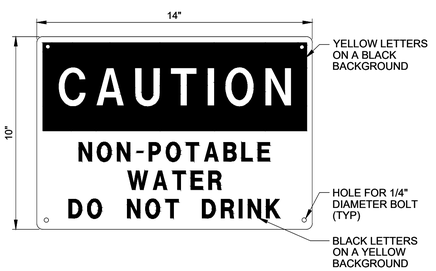
REV 010119



NOTE :

1. AIR VALVE SCREEN ASSEMBLY (EXCEPT WIRE CLOTH AND STAINLESS STEEL BANDS) SHALL BE COATED PER THE REQUIREMENTS OF THE SPECIFICATION 'PROTECTIVE COATING'.

D-808 AIR VALVE SCREEN

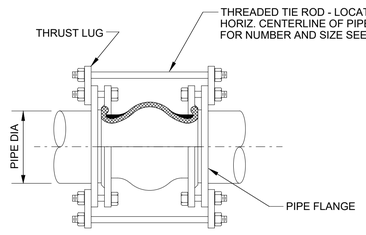


NOTES:

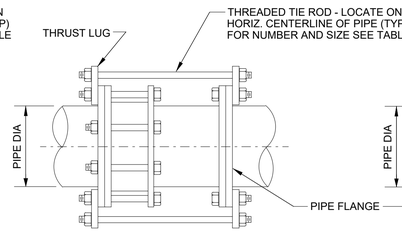
1. PROVIDE SIGN AT ALL HOSE BIBB LOCATIONS WHERE WATER IS NON-POTABLE.
2. SEE SPECIFICATIONS SECTION 'BUILDING SIGNAGE' FOR FURTHER REQUIREMENTS.

D-832 WARNING SIGN FOR NON-POTABLE WATER

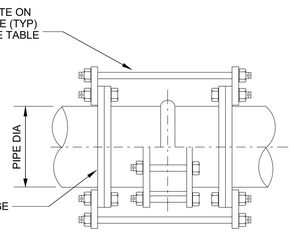
REV 010119



FLEXIBLE EXPANSION COUPLING



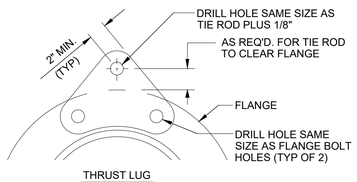
FLANGED COUPLING ADAPTER OR DISMANTLING JOINT



SLEEVE-TYPE OR MECHANICAL COUPLING

NOTES:

1. FABRICATE THRUST LUG FROM STEEL PLATE. MINIMUM THICKNESS TO BE SAME AS FLANGE FOR ALL SIZES.
2. HARNESS SET SHOWN DESIGNED FOR 150 PSI. FOR HIGHER PRESSURES OR LARGER PIPE SIZES, REFER TO AWWA MANUAL M-11.
3. FOR MATERIALS OF CONSTRUCTION REFER TO AWWA MANUAL M-11.



THRUST LUG

TIE ROD DATA		
PIPE DIA.	TIE ROD DIA.	NO. REQ'D.
4"	5/8"	2
6"	5/8"	2
8"	5/8"	2
10"	5/8"	2
12"	3/4"	2
14"	3/4"	2
16"	7/8"	2
18"	1"	2
20"	1"	2
24"	7/8"	4
30"	1 1/8"	4
36"	1 1/4"	4
42"	1 1/2"	4
48"	1 5/8"	4
54"	1 1/2"	6
60"	1 5/8"	6
66"	1 5/8"	8
72"	1 3/4"	8

D-901 HARNESS SET FOR FLANGED PIPE

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DATE:	SEPT 2025
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FILE NAME:	GM-3.dwg
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

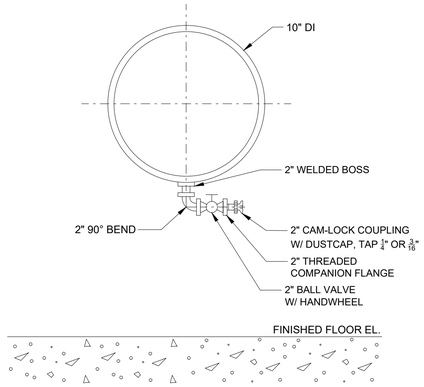
STANDARD DETAILS - I

SCALE: NO SCALE

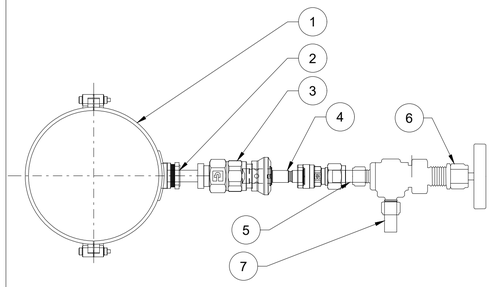
SHEET NO: GM-3

SHEET 60 OF 120

User:NDHANWADE Spec:NAT CADD STD File:C:\PW_WORKING\WTR\NDHANWADE\D0154745\GM-3.DWG Scale:1:1 SavedDate:3/27/2023 Time:16:18 Plot Date: 09/04/2025; 17:40 ; Layout:LAYOUT1

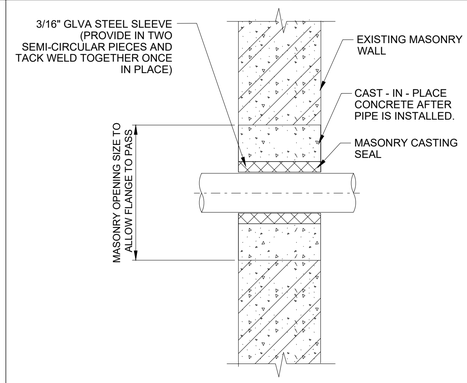


D-902 DRAIN ASSEMBLY DETAIL



D-903 SAMPLE TAP

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL	SIZE (DIA.)
1	1	PIPE SADDLE WITH 1" BUSHING	DUCTILE IRON	AS APPLICABLE
2	1	REDUCING HEX BUSHING 1" MALE TO 3/8" FEMALE	316 SS	1" X 3/8"
3	1	PUSH TO CONNECT VALVED FEMALE COUPLER PARKER PART #: 4M-Q6CY-SSP OR EQUAL	316 SS	3/8"
4	1	PUSH TO CONNECT MALE NIPPLE PARKER PART #: 6A-Q6P-SS OR EQUAL	316 SS	3/8"
5	1	TUBING	316 SS	3/8"
6	1	ANGLE NEEDLE VALVE PARKER PART #: 6A-U12AR-G-SS OR EQUAL	316 SS	3/8"
7	1	TUBING	316 SS	3/8"



D-904 SLEEVED PIPE OPENING WALL PENETRATION

D-905 SPIGOT WITH VACCUM BREAKER

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FILE NAME: GM-4.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

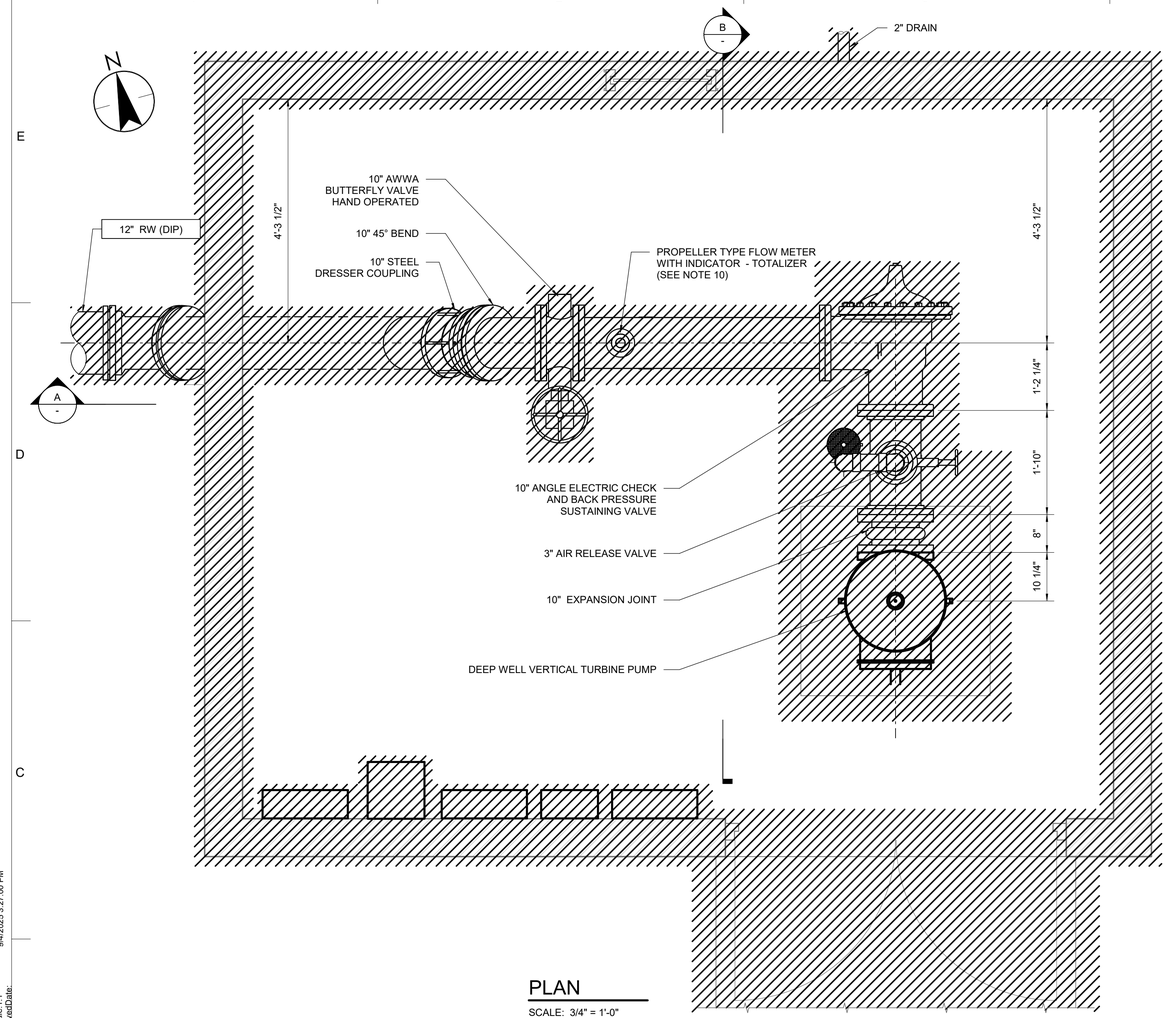
STANDARD
DETAILS - II

SCALE: NO SCALE

SHEET NO: GM-4

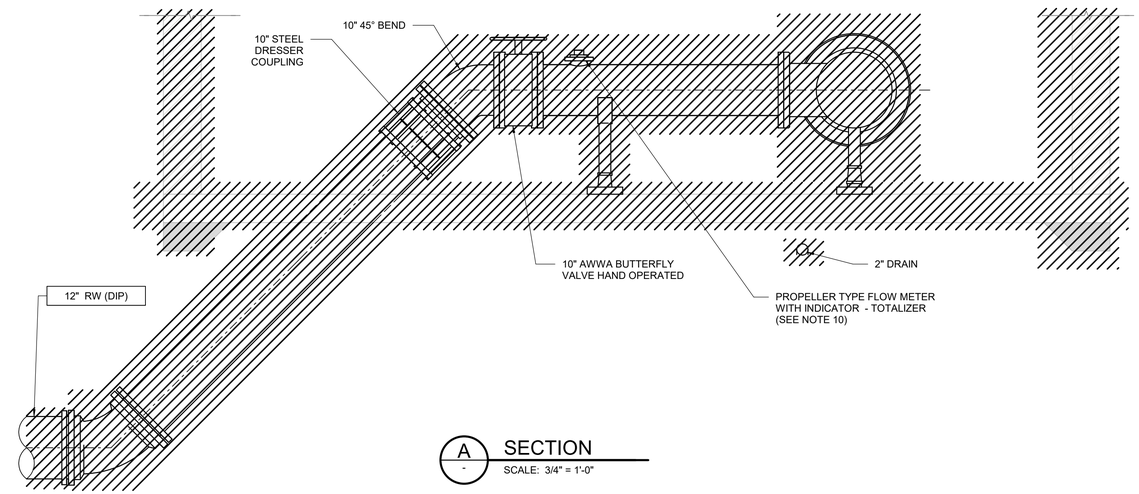
SHEET 61 OF 120

User:NDHANWADE Spec:NAT CADD STD File:C:\PW_WORKING\WTR\NDHANWADE\D0154745\GM-4.DWG Scale:1:1 SavedDate:9/5/2025 Time:14:33 Plot Date: Dhanwade, Nikhil: 9/5/2025; 14:37 ; Layout:LAYOUT1



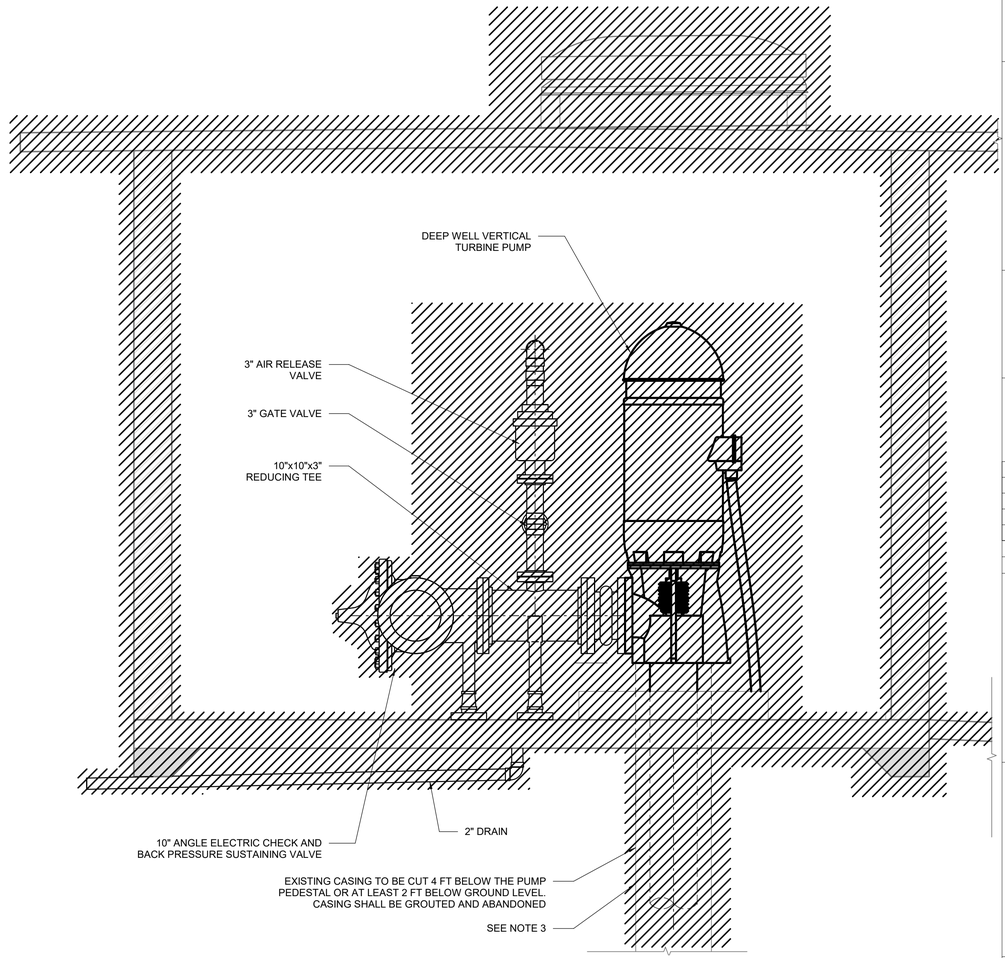
PLAN

SCALE: 3/4" = 1'-0"



A - SECTION

SCALE: 3/4" = 1'-0"



B - SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATIONS ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
3. CONTRACTOR TO GROUT THE WELL AND FORMALLY ABANDON THE WELLS PER APPROVED PERMIT AND DESIGN DOCUMENTS.
4. CONTRACTOR TO DEMOLISH THE ENTIRE WELL HOUSE STRUCTURE.
5. CONTRACTOR TO CLEAR AND GRUB AREA PRIOR TO EXCAVATION.
6. CONTRACTOR SHALL SEGREGATE, STOCKPILE, AND PROTECT FROM CONTAMINATION CLEAN SOILS PRODUCED FROM EXCAVATIONS FOR USE AS BACKFILL.
7. BACKFILL EXCAVATIONS WITH CLEAN FILL AND COMPACT TO 95% MAXIMUM DENSITY.
8. TOP 6 INCHES SHALL BE TOPSOIL WITH BAHIA SOD MATCHING GRADE EXISTING PRIOR TO EXCAVATION.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.
10. EXISTING FLOW METER TOTALIZERS SHALL BE RETURNED TO TAMPA BAY WATER.

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SHEET TITLE

WELL HOUSE MBR-152 DEMOLITION

SCALE: 3/4" = 1'-0"

SHEET NO: DM-1

SHEET 62 OF 120

9/4/2025 3:27:00 PM
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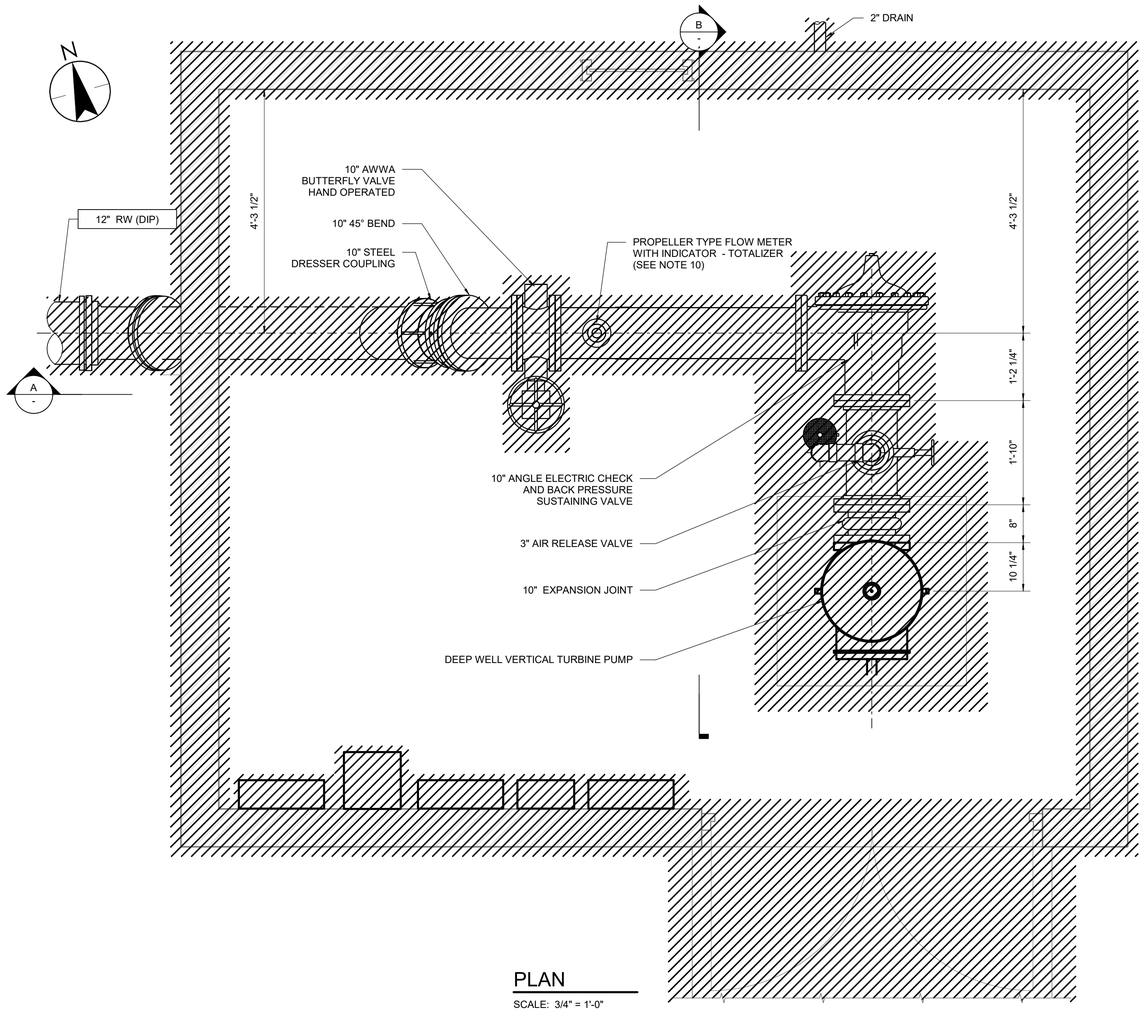
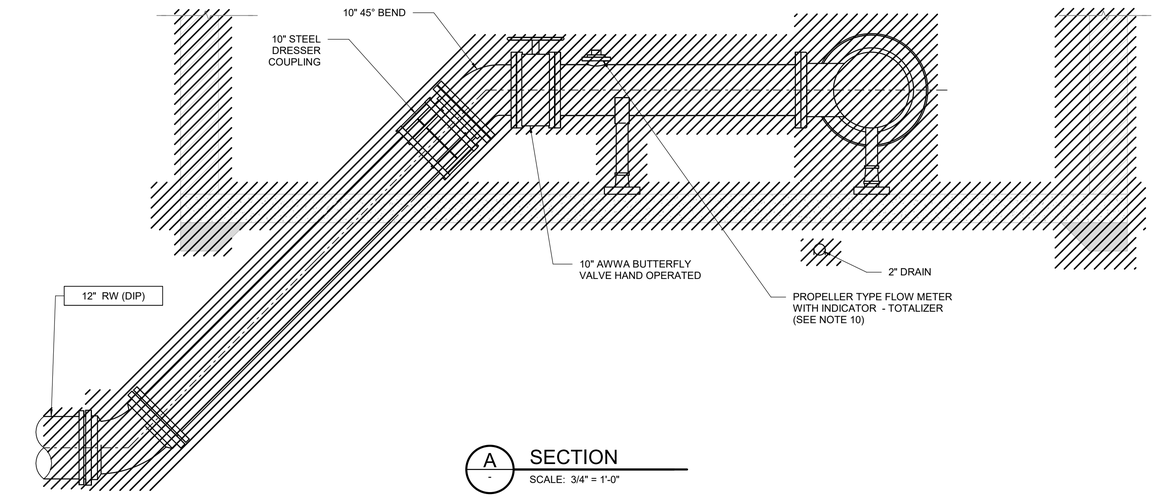
User:PS

719



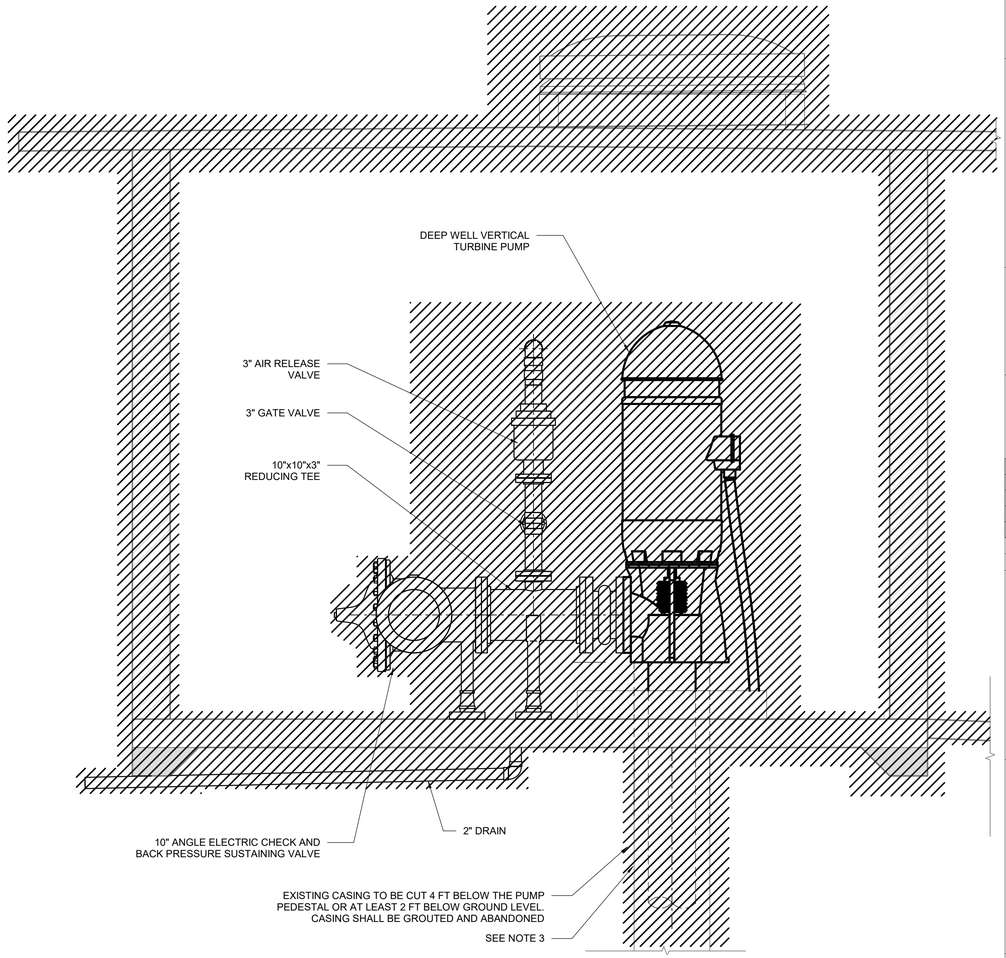
PLAN

SCALE: 3/4" = 1'-0"



A — SECTION

SCALE: 3/4" = 1'-0"



B — SECTION

SCALE: 3/4" = 1'-0"

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DRAWN BY: PS

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-157 DEMOLITION

SCALE: 3/4" = 1'-0"

SHEET NO: DM-2

SHEET 63 OF 120

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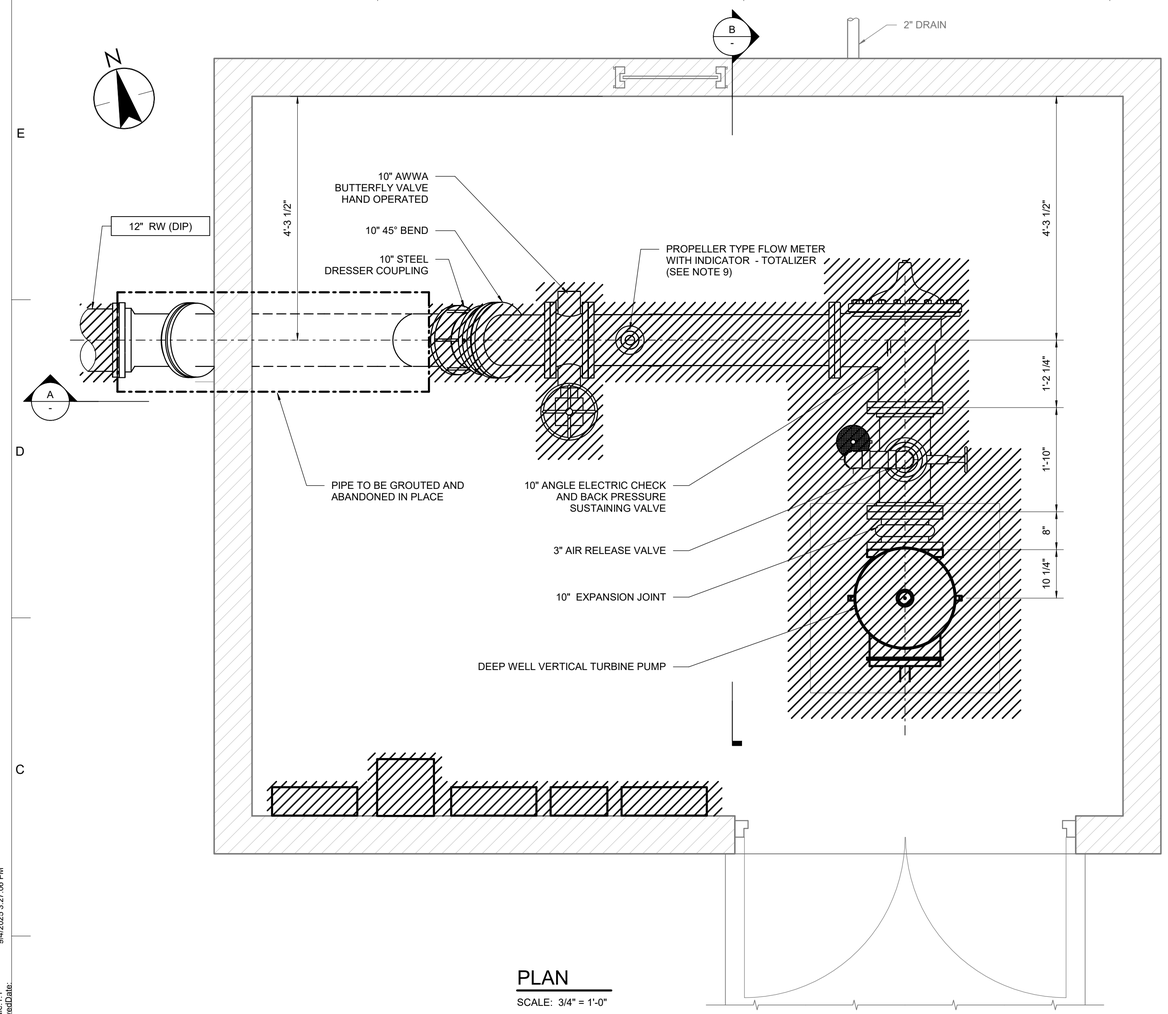
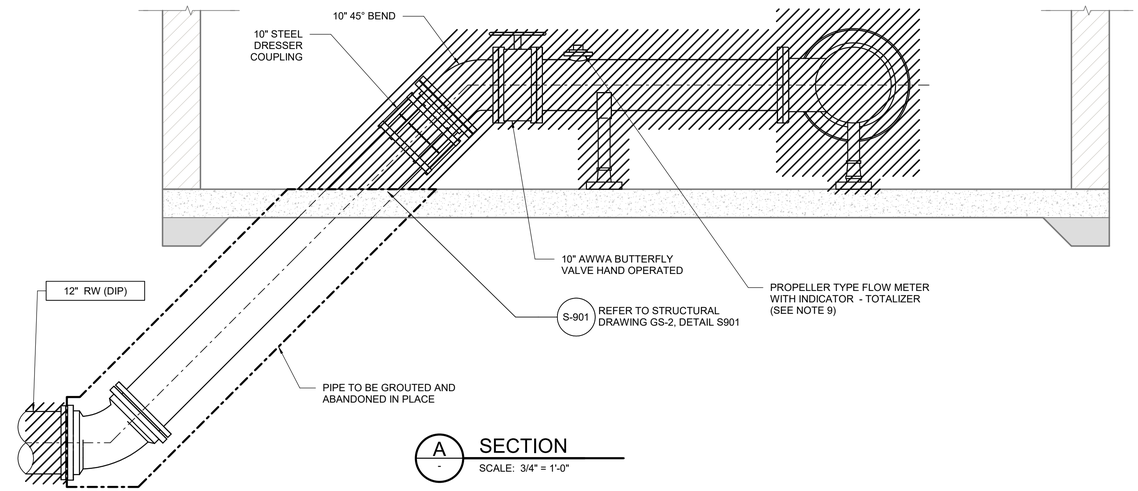
Spec:NAT CADD STD
User:PS

720



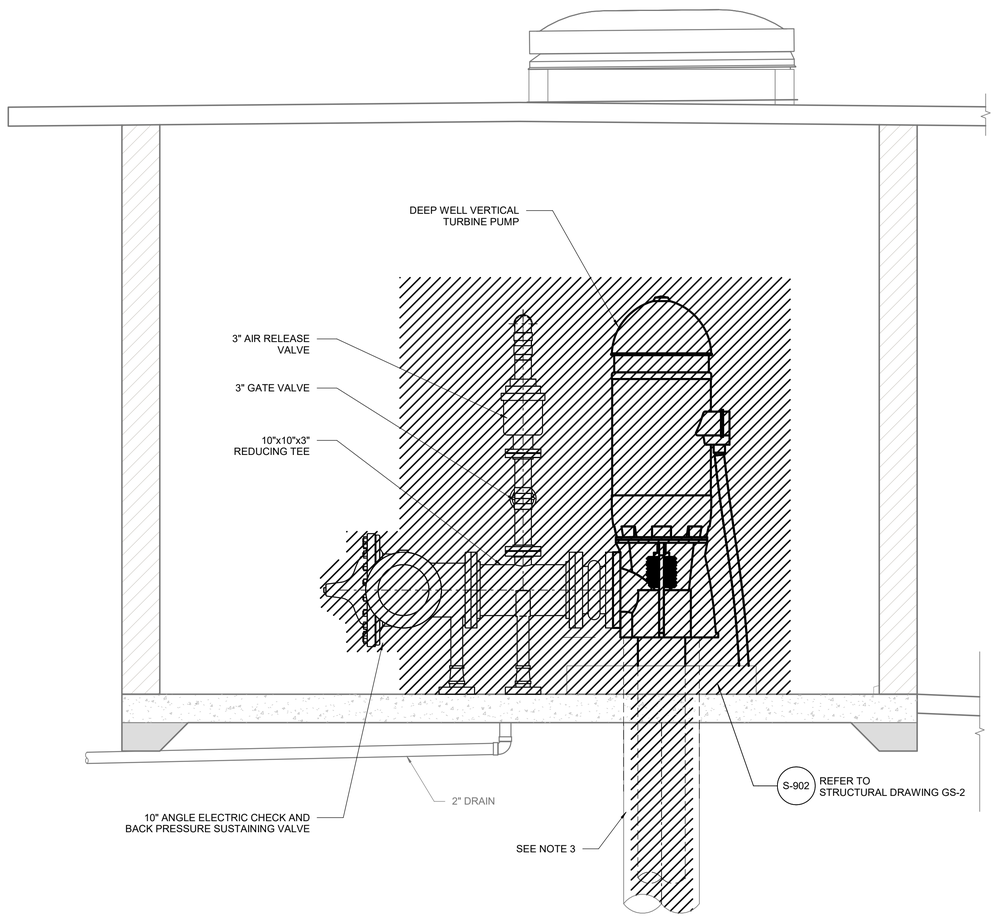
PLAN

SCALE: 3/4" = 1'-0"



A SECTION

SCALE: 3/4" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-161 DEMOLITION

SCALE: 3/4" = 1'-0"

SHEET NO: DM-3

SHEET 64 OF 120

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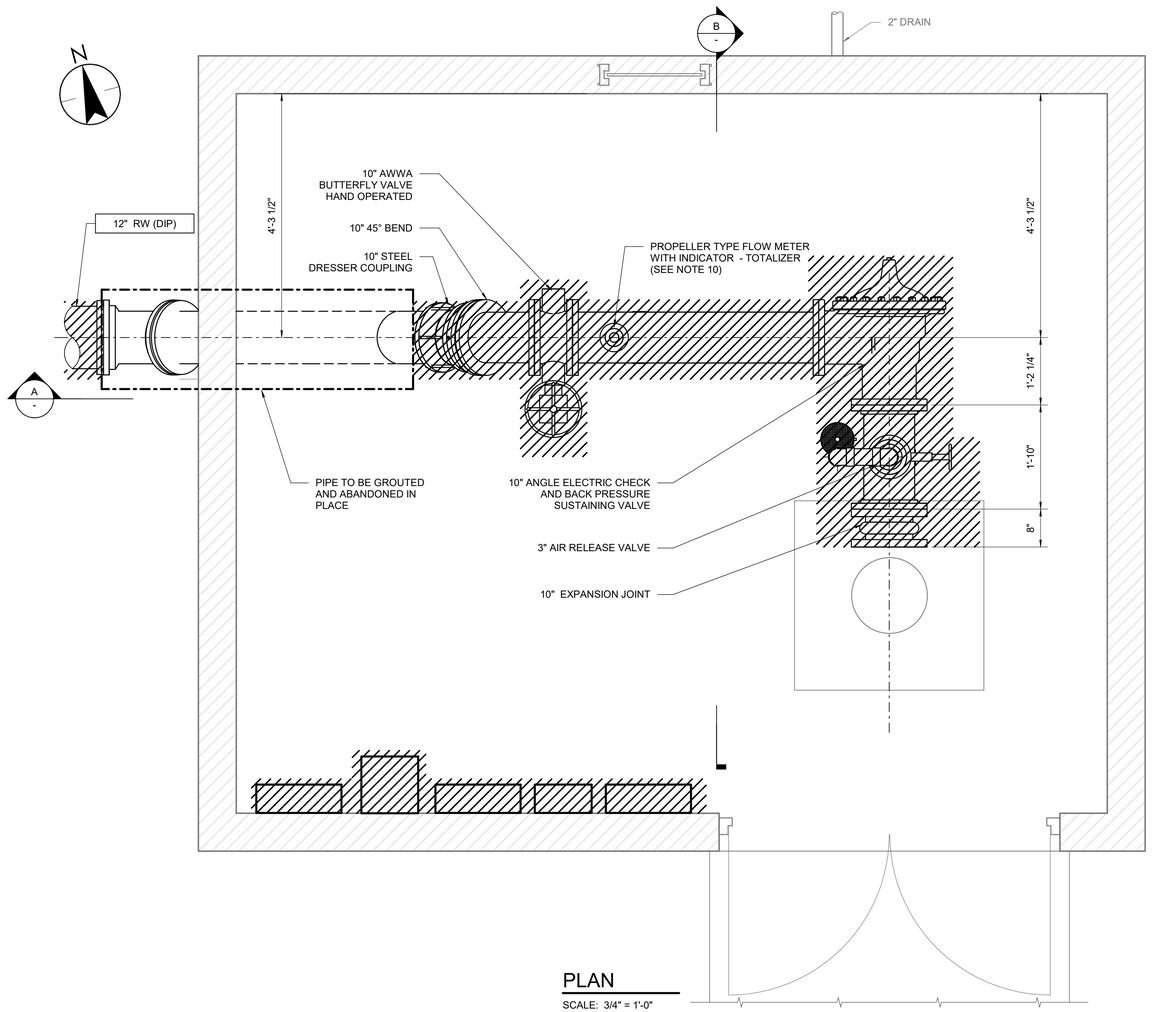
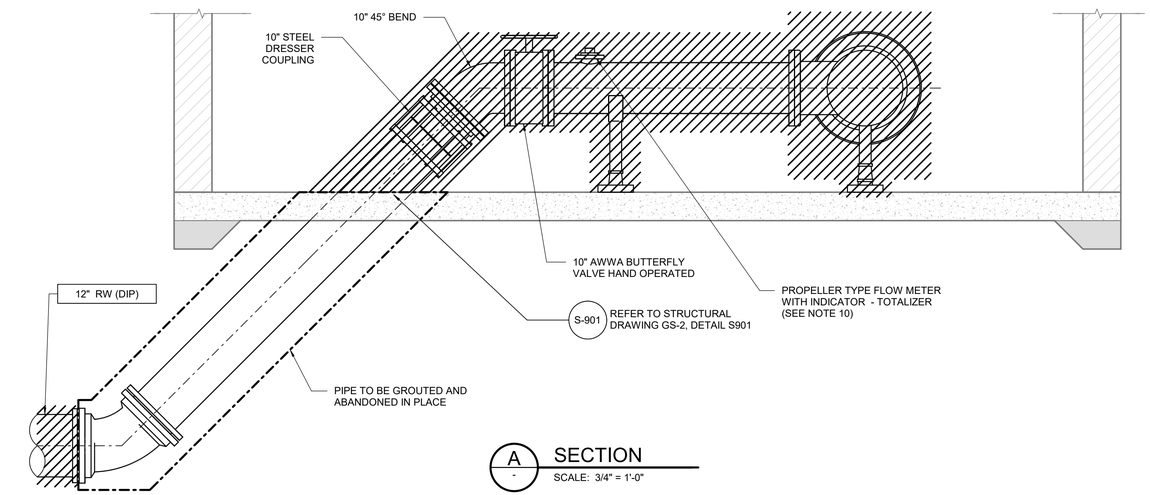
User:PS

721



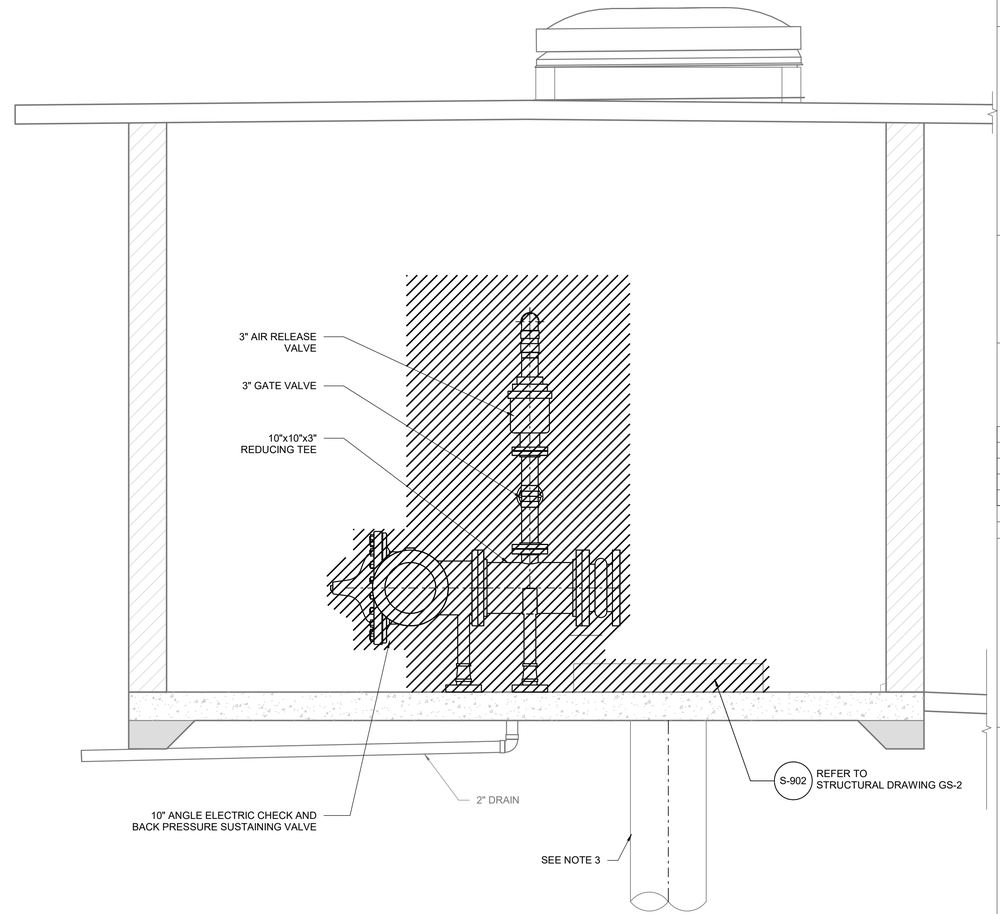
PLAN

SCALE: 3/4" = 1'-0"



A - SECTION

SCALE: 3/4" = 1'-0"



B - SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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7. TOP 6 INCHES SHALL BE TOPSOIL WITH BAHIA SOD MATCHING GRADE EXISTING PRIOR TO EXCAVATION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.
9. THE EXISTING 10" DUCTILE IRON PIPE SHALL BE CUT FLUSH WITH THE CONCRETE SLAB AND GRINDED TO AVOID ANY TRIP HAZARD. CONCRETE SLAB SHALL BE REPAIRED IF IT GETS DAMAGE.
10. EXISTING FLOW METER TOTALIZERS SHALL BE RETURNED TO TAMPA BAY WATER.

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DESIGNED BY: SR

DRAWN BY: PS

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-162 DEMOLITION

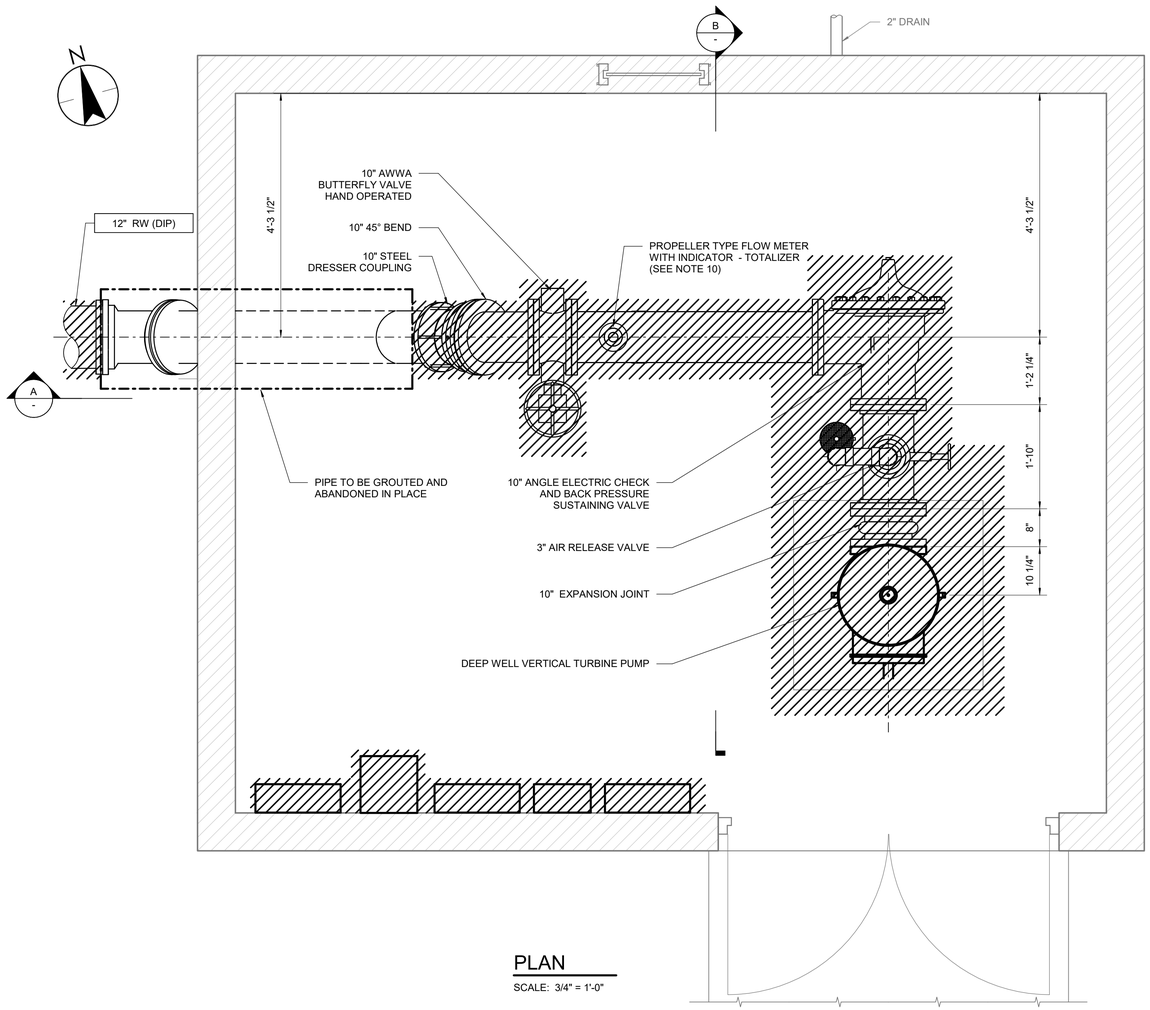
SCALE: 3/4" = 1'-0"

SHEET NO: DM-4

SHEET 65 OF 120

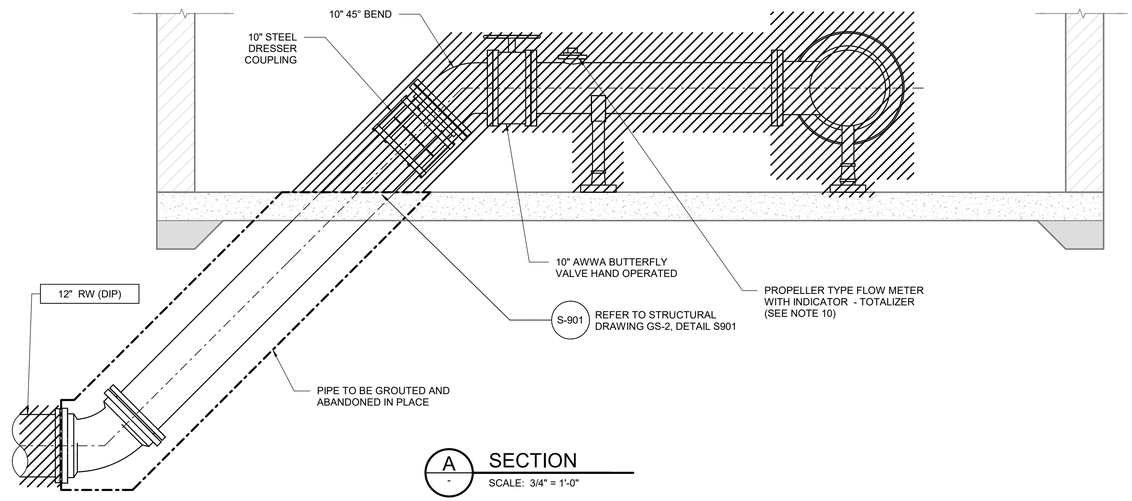
9/4/2025 3:27:07 PM
Scale: 1:1
Stantec
User:PS
Spec:NAT CADD STD

722



PLAN

SCALE: 3/4" = 1'-0"



A - SECTION

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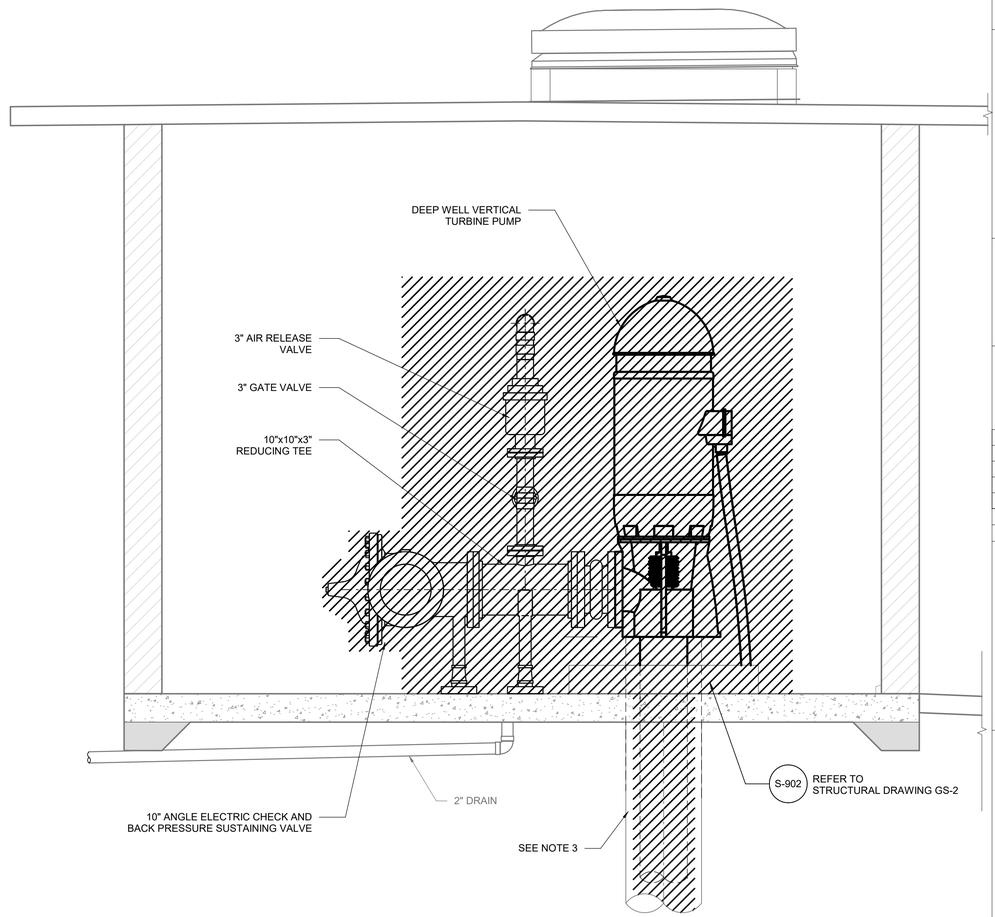

B - SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATIONS ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
3. CONTRACTOR TO GROUT THE WELL AND FORMALLY ABANDON THE WELLS PER APPROVED PERMIT AND DESIGN DOCUMENTS.
4. CONTRACTOR TO CLEAR AND GRUB AREA PRIOR TO EXCAVATION.
5. CONTRACTOR SHALL SEGREGATE, STOCKPILE, AND PROTECT FROM CONTAMINATION CLEAN SOILS PRODUCED FROM EXCAVATIONS FOR USE AS BACKFILL.
6. BACKFILL EXCAVATIONS WITH CLEAN FILL AND COMPACT TO 95% MAXIMUM DENSITY.
7. TOP 6 INCHES SHALL BE TOPSOIL WITH BAHIA SOD MATCHING GRADE EXISTING PRIOR TO EXCAVATION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.
9. HE EXISTING 10" DUCTILE IRON PIPE SHALL BE CUT FLUSH WITH THE CONCRETE SLAB AND GRIND IT TO AVOID ANY TRIP HAZARD. CONCRETE SLAB SHALL BE REPAIRED IF IT GETS DAMAGE.
10. EXISTING FLOW METER TOTALIZERS SHALL BE RETURNED TO TAMPA BAY WATER.

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FILE NAME: 11389-MBR-dd.rvt

DESIGNED BY: SR

DRAWN BY: PS

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-163 DEMOLITION

SCALE: 3/4" = 1'-0"

SHEET NO: DM-5

SHEET 66 OF 120

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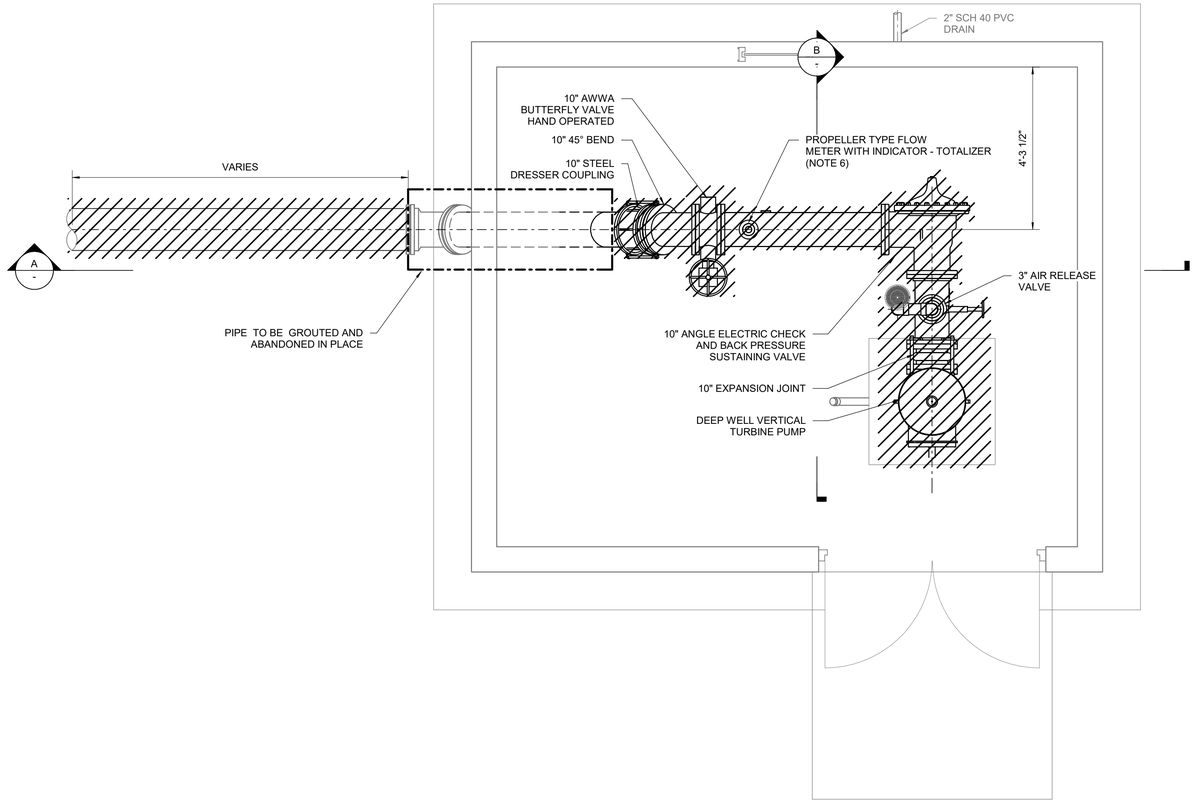
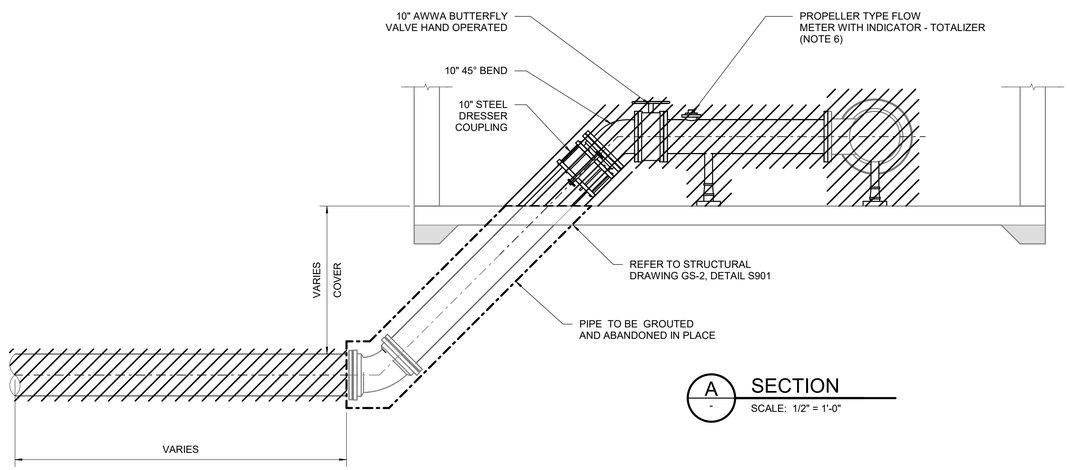
Standards:
Spec:NAT CADD STD
User:PS



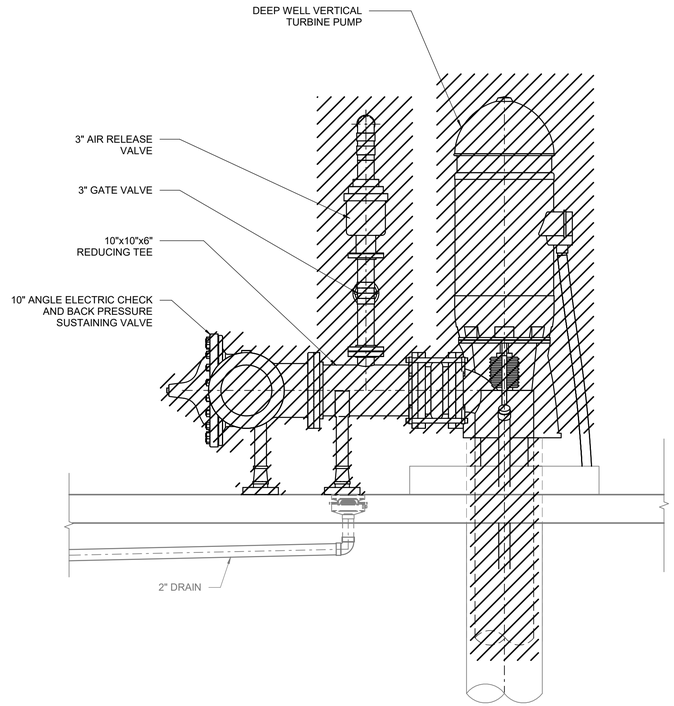
PLAN

SCALE: 1/2" = 1'-0"



A - SECTION

SCALE: 1/2" = 1'-0"



B - SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
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3. BACKFILL EXCAVATIONS WITH CLEAN FILL AND COMPACT TO 95% MAXIMUM DENSITY.
4. TOP 6 INCHES SHALL BE TOPSOIL WITH BAHIA SOD MATCHING GRADE EXISTING PRIOR TO EXCAVATION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.
6. EXISTING FLOW METER TOTALIZERS SHALL BE RETURNED TO TAMPA BAY WATER.
7. REFER TO STRUCTURAL DRAWINGS FOR STRUCTURAL MODIFICATIONS.

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FILE NAME: 11389-MBR-d-151.rvt

DESIGNED BY: SR

DRAWN BY: PS

CHECKED BY: DS

APPROVED BY: KB

SHEET TITLE

TYPICAL WELL HOUSE PUMP AND PIPING DEMOLITION

SCALE: As indicated

SHEET NO: DM-6

SHEET 67 OF 120

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Sheet Date:
Spec:NAT CADD STD
User:PS

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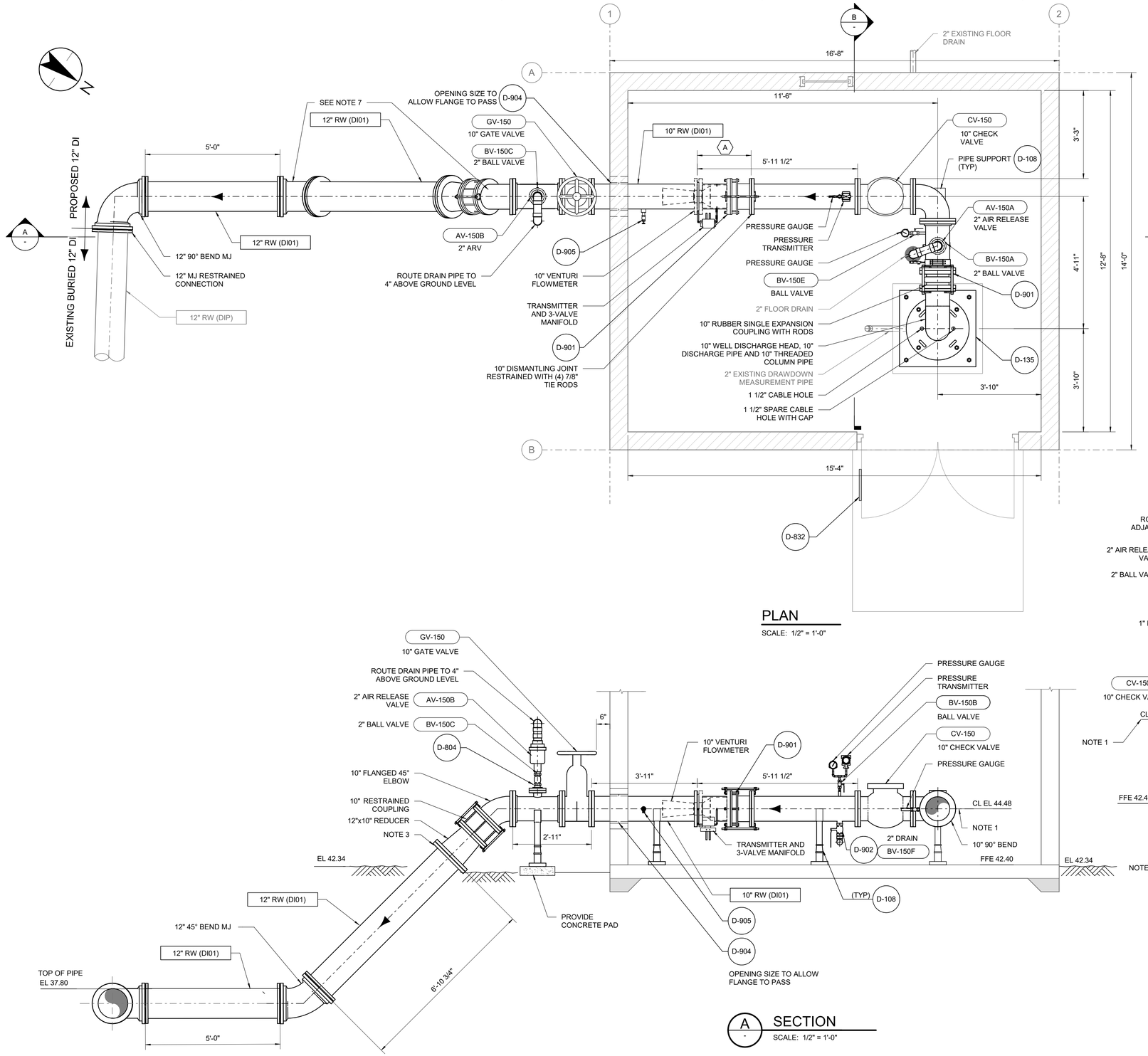

GENERAL SHEET NOTES

1. CENTER LINE ELEVATIONS ARE APPROXIMATE BASED ON EXISTING CONDITIONS. CONTRACTOR TO ADJUST BASED ON APPROVED EQUIPMENT.
2. WELL PUMPS AND MOTORS SHALL BE DEMOLISHED AND REPLACED PER PUMPS AND WELLS DETAILS (M-16) AND IN ACCORDANCE WITH CONTRACT SPECIFICATIONS.
3. ALL DUCTILE IRON PIPE CONNECTIONS SHALL BE FLANGED FOR ABOVE GROUND APPLICATIONS OR PARTIALLY BURIED FLANGES.
4. THE CONTRACTOR SHALL INFORM AND COORDINATE WITH THE CONSTRUCTION MANAGER WHENEVER ANY EXISTING EQUIPMENT MUST BE TEMPORARILY PLACED OUT OF SERVICE AS A RESULT OF DEMOLITION ACTIVITIES.
5. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ANY EXISTING STRUCTURES AND EQUIPMENT NOT SHOWN TO BE REMOVED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
7. PROPOSED 45 DEGREE BENDS MAY NEED TO BE INSTALLED ROTATED TO ALIGN THE PROPOSED PIPE WITH EXISTING UNDERGROUND DISCHARGE PIPING.
8. EXISTING PUMP MOUNTING BASE BOLTS TO BE REPLACED. SIGNED AND SEALED CALCULATIONS TO BE PROVIDED BY THE CONTRACTOR. PUMP SOLE PLATE, PUMP PEDESTAL/PUMP BASE TO BE REPLACED. REFER TO STRUCTURAL DRAWINGS FOR PEDESTAL DETAILS .
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13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.

SHEET KEYNOTES

A. CONTRACTOR TO VERIFY THAT THIS DISTANCE EXCEEDS THE LENGTH OF THE APPROVED VENTURI FLOW METER TO ALLOW PROPER REMOVAL AND INSTALLATION. MIN DISTANCE SHALL BE 24"

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CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-150 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-1

SHEET 68 OF 120

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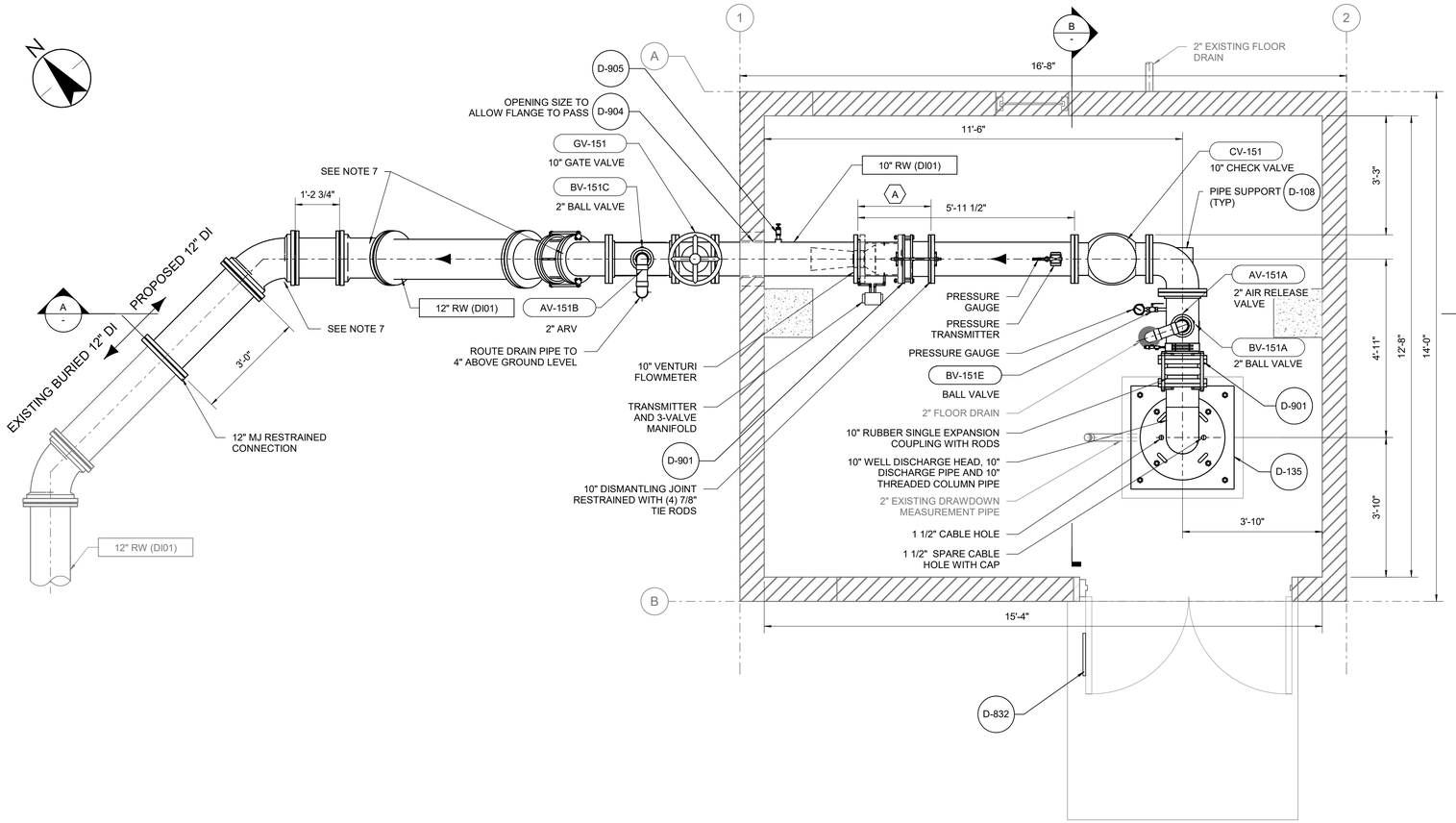
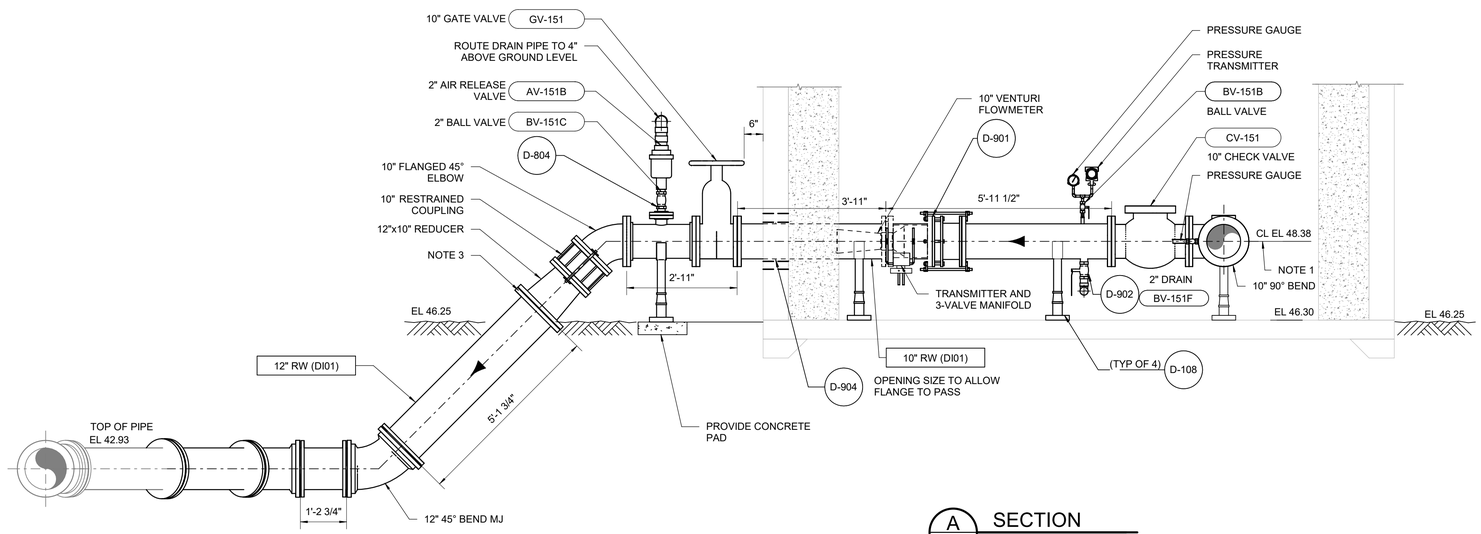


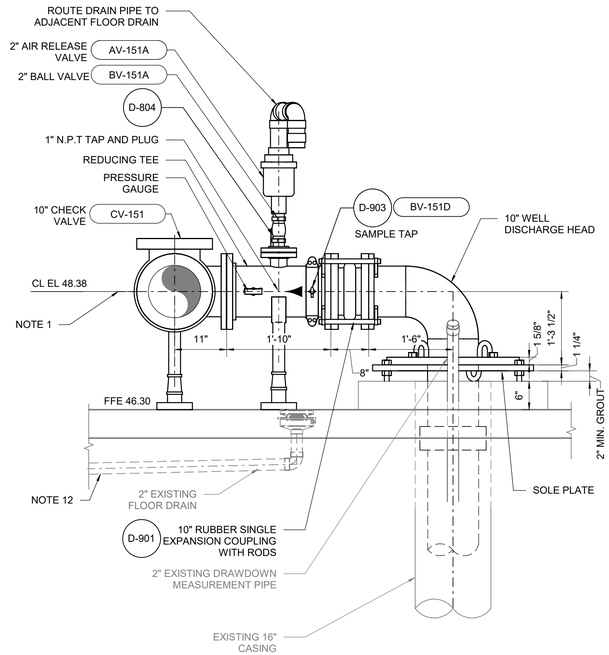
PLAN

SCALE: 1/2" = 1'-0"



A - SECTION

SCALE: 1/2" = 1'-0"



B - SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

1. CENTER LINE ELEVATIONS ARE APPROXIMATE BASED ON EXISTING CONDITIONS. CONTRACTOR TO ADJUST BASED ON APPROVED EQUIPMENT.
2. WELL PUMPS AND MOTORS SHALL BE DEMOLISHED AND REPLACED PER PUMPS AND WELLS DETAILS (M-16) AND IN ACCORDANCE WITH CONTRACT SPECIFICATIONS.
3. ALL DUCTILE IRON PIPE CONNECTIONS SHALL BE FLANGED FOR ABOVE GROUND APPLICATIONS OR PARTIALLY BURIED FLANGES.
4. THE CONTRACTOR SHALL INFORM AND COORDINATE WITH THE CONSTRUCTION MANAGER WHENEVER ANY EXISTING EQUIPMENT MUST BE TEMPORARILY PLACED OUT OF SERVICE AS A RESULT OF DEMOLITION ACTIVITIES.
5. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ANY EXISTING STRUCTURES AND EQUIPMENT NOT SHOWN TO BE REMOVED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
7. PROPOSED 45 DEGREE BENDS MAY NEED TO BE INSTALLED ROTATED TO ALIGN THE PROPOSED PIPE WITH EXISTING UNDERGROUND DISCHARGE PIPING.
8. EXISTING PUMP MOUNTING BASE BOLTS TO BE REPLACED. SIGNED AND SEALED CALCULATIONS TO BE PROVIDED BY THE CONTRACTOR. PUMP SOLE PLATE, PUMP PEDESTAL/PUMP BASE TO BE REPLACED. REFER TO STRUCTURAL DRAWINGS FOR PEDESTAL DETAILS.
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12. FLOOR DRAINS TO BE CLEANED TO ENSURE PROPER DRAINING FROM AIR RELEASE VALVES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF OIL FOR MOTORS REMOVAL.

SHEET KEYNOTES

A. CONTRACTOR TO VERIFY THAT THIS DISTANCE EXCEEDS THE LENGTH OF THE APPROVED VENTURI FLOW METER TO ALLOW PROPER REMOVAL AND INSTALLATION. MIN DISTANCE SHALL BE 24"

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APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-151 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-2

SHEET 69 OF 120

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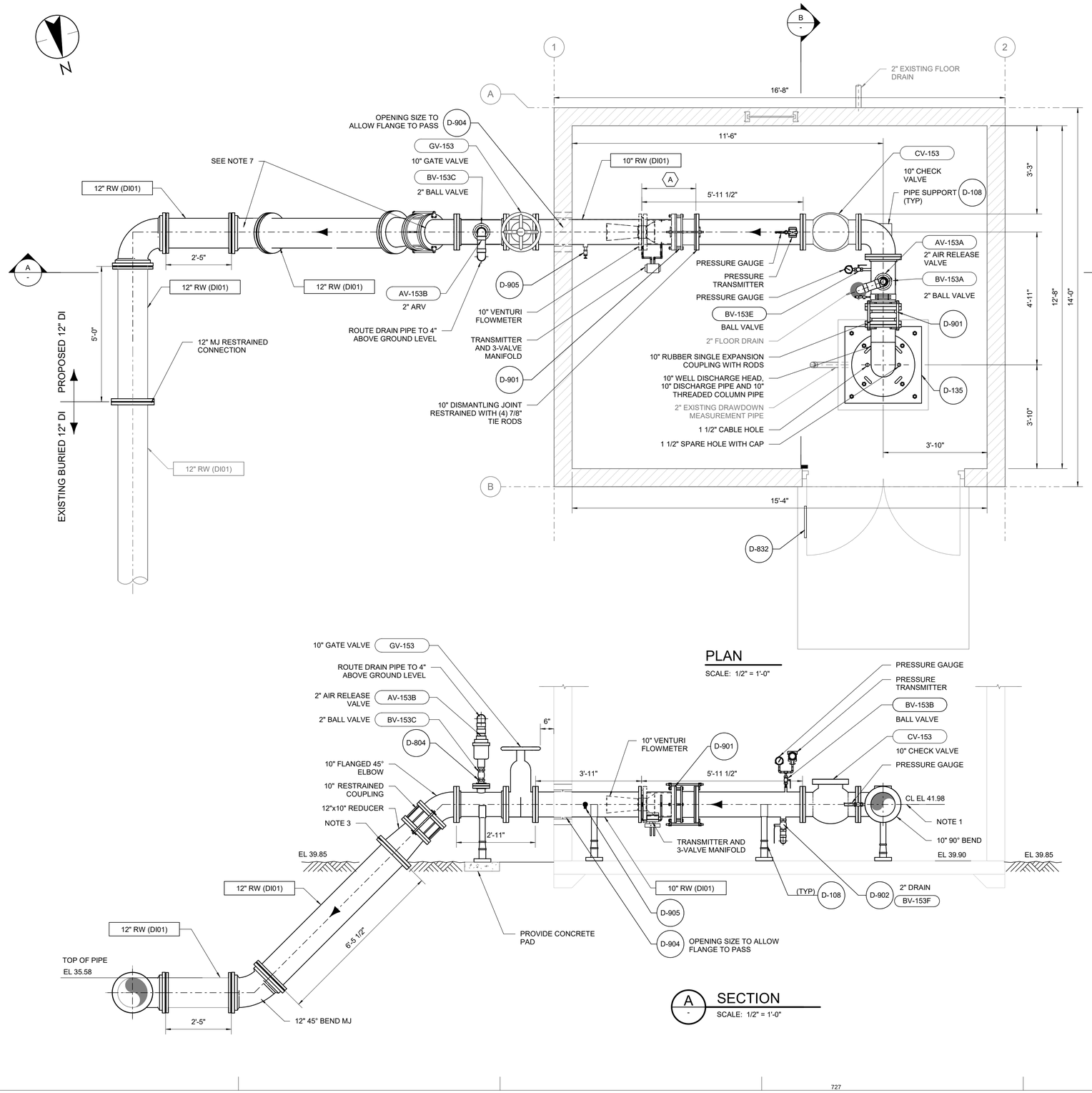
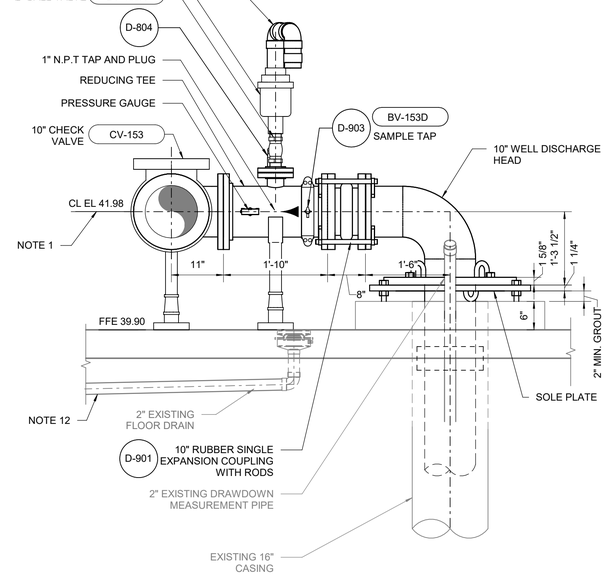


PLAN

SCALE: 1/2" = 1'-0"

A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

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SHEET TITLE

WELL HOUSE MBR-153 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-3

SHEET 70 OF 120

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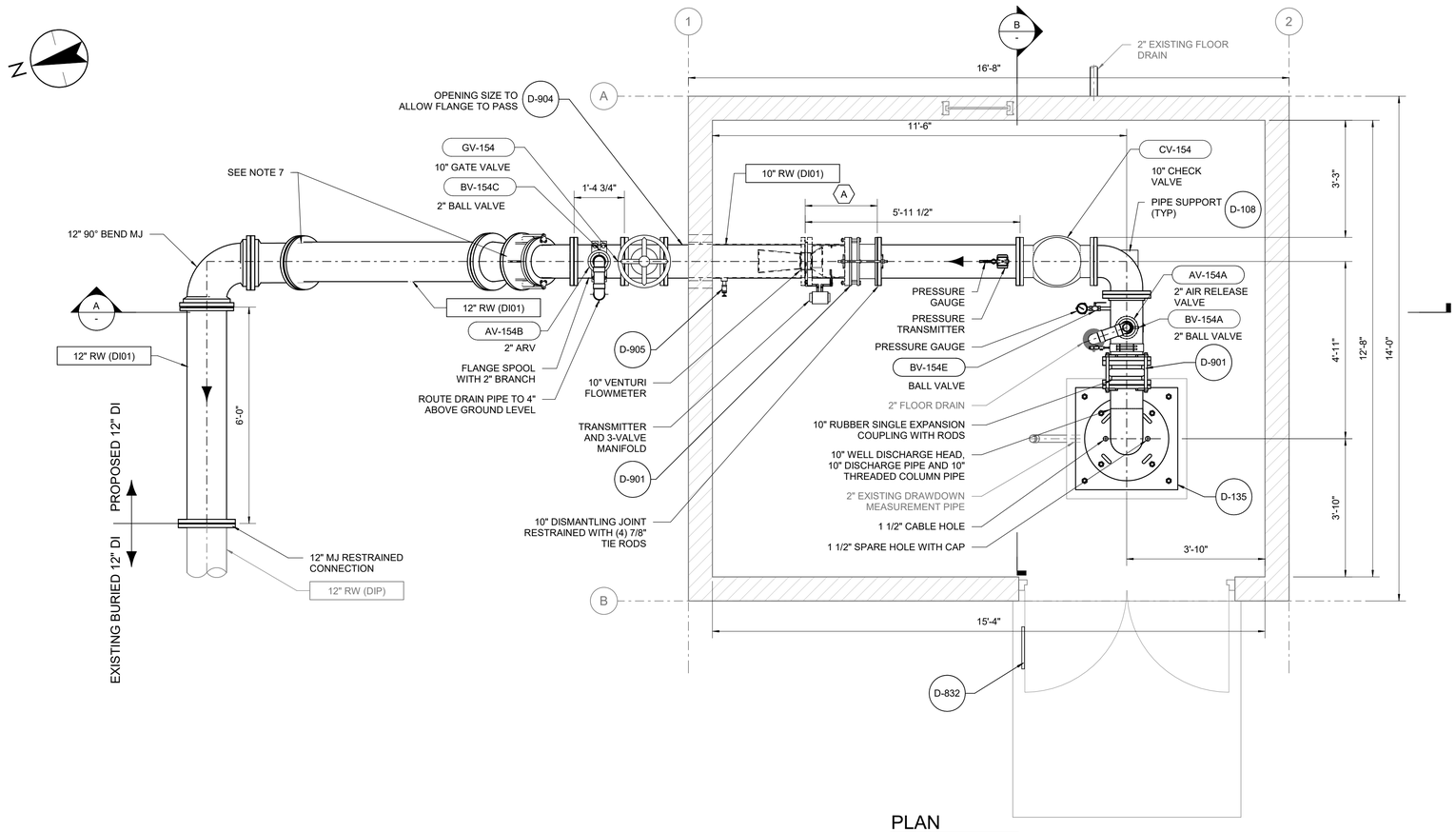
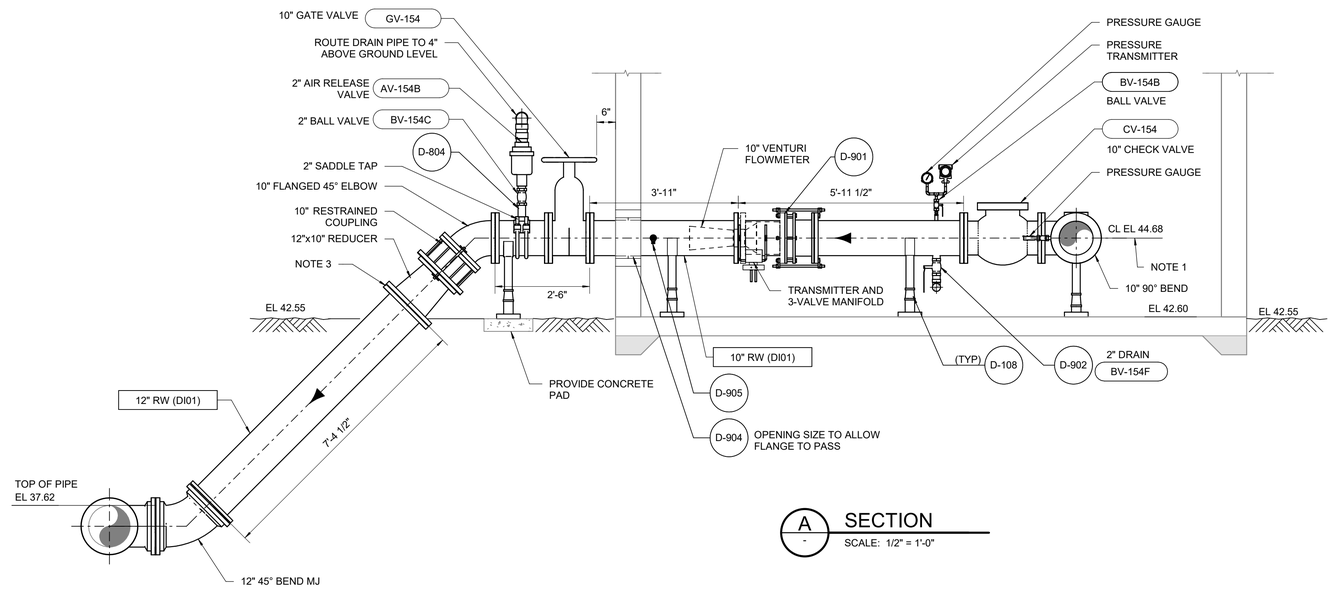


PLAN

SCALE: 1/2" = 1'-0"



A SECTION

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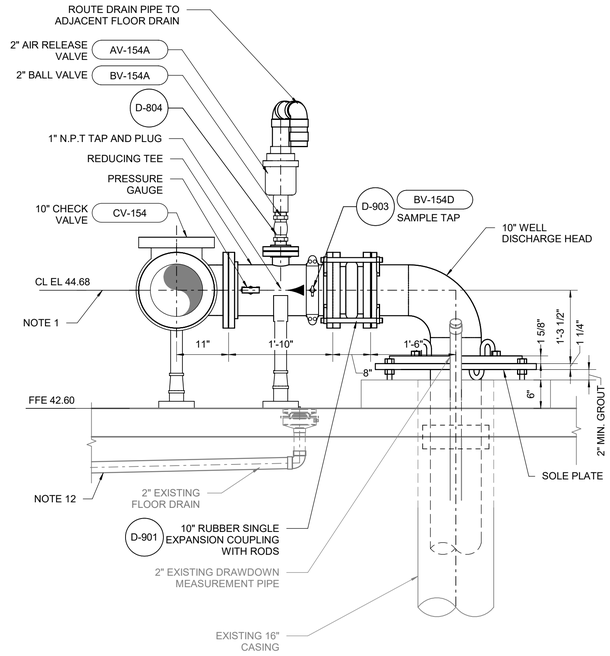

B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

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SHEET TITLE

WELL HOUSE MBR-154 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-4

SHEET 71 OF 120

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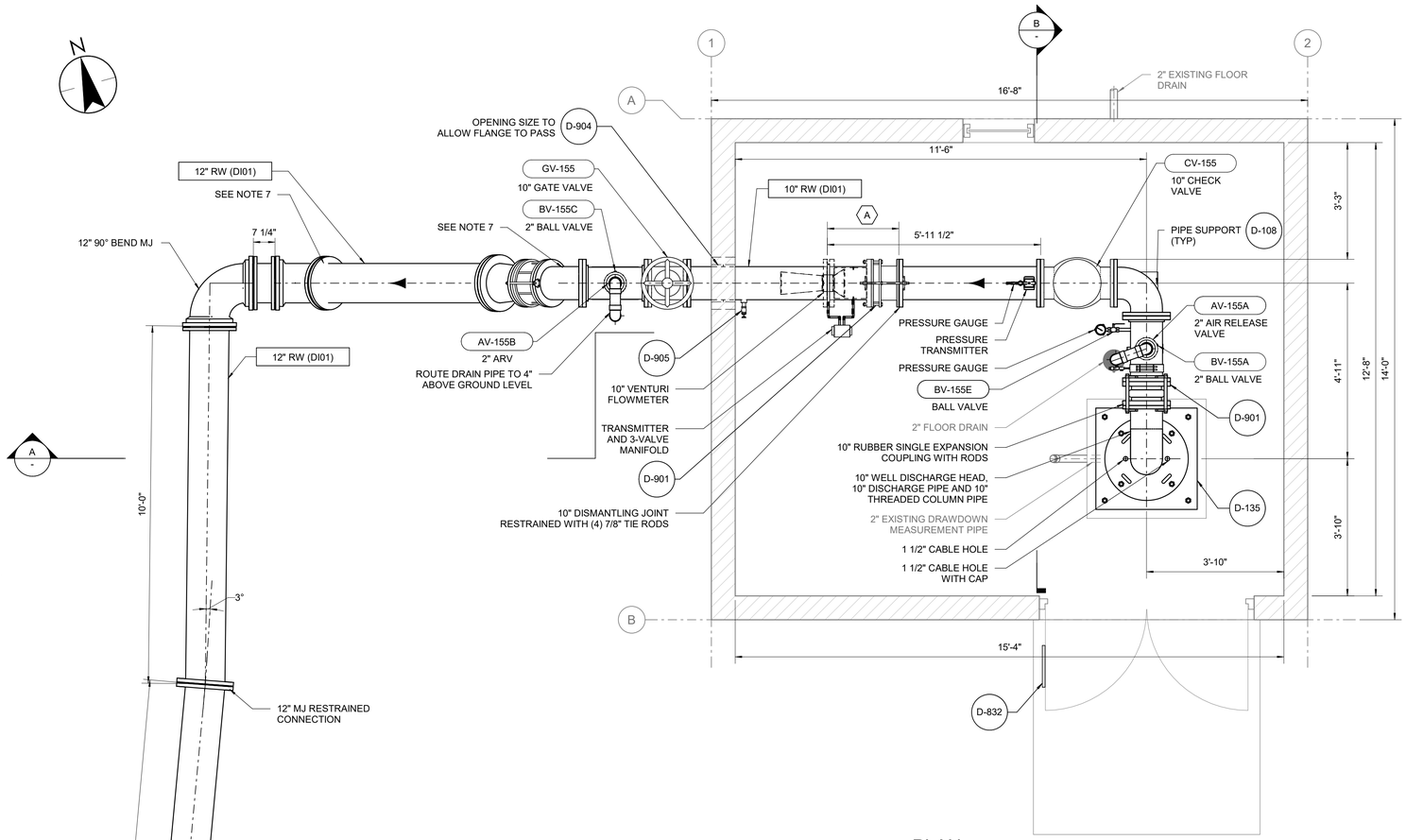

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SHEET KEYNOTES

A. CONTRACTOR TO VERIFY THAT THIS DISTANCE EXCEEDS THE LENGTH OF THE APPROVED VENTURI FLOW METER TO ALLOW PROPER REMOVAL AND INSTALLATION. MIN DISTANCE SHALL BE 24"

TAMPA BAY WATER
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727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

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TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	11389-MBR-d.rvt
DESIGNED BY:	SR
DRAWN BY:	PS
CHECKED BY:	DS
APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-155 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-5

SHEET 72 OF 120

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User:PS

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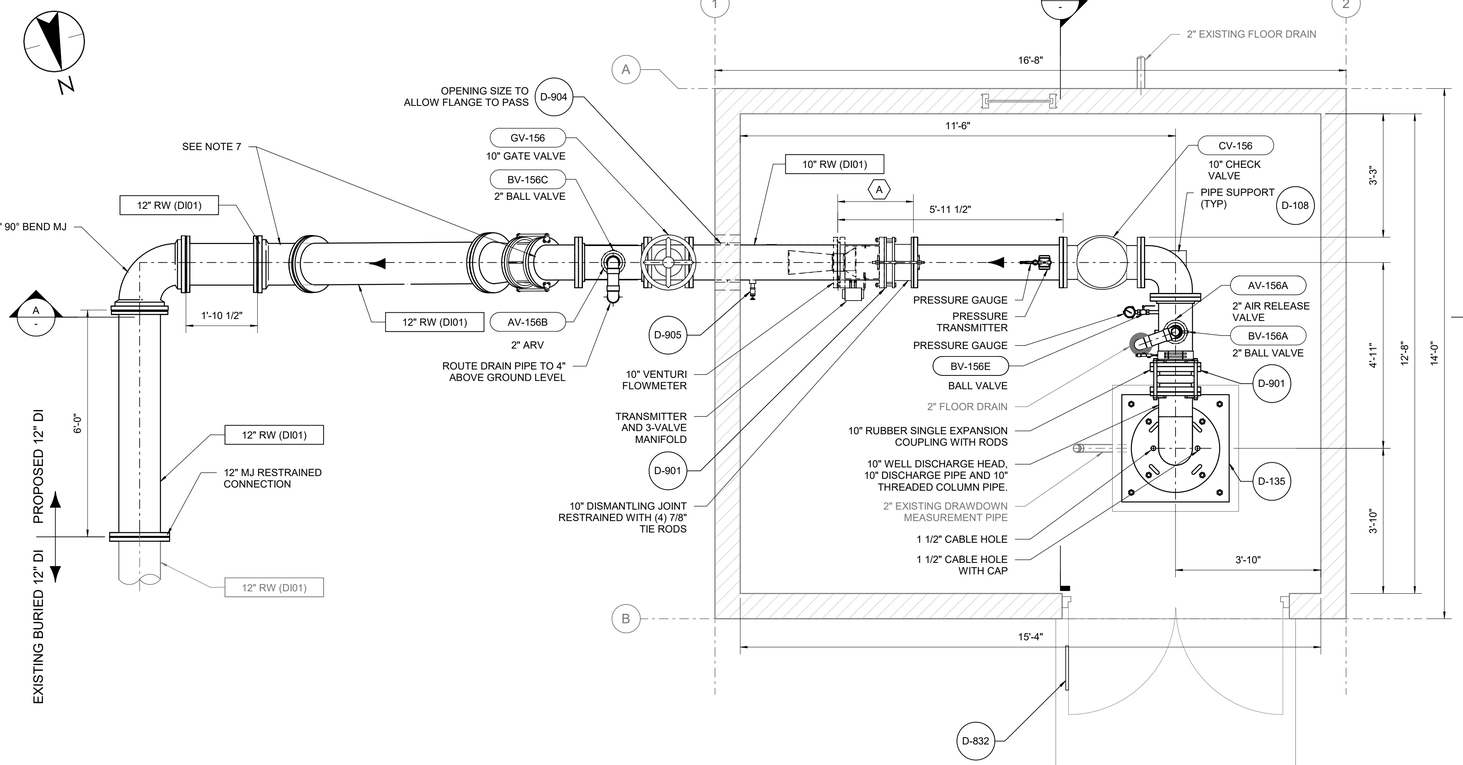
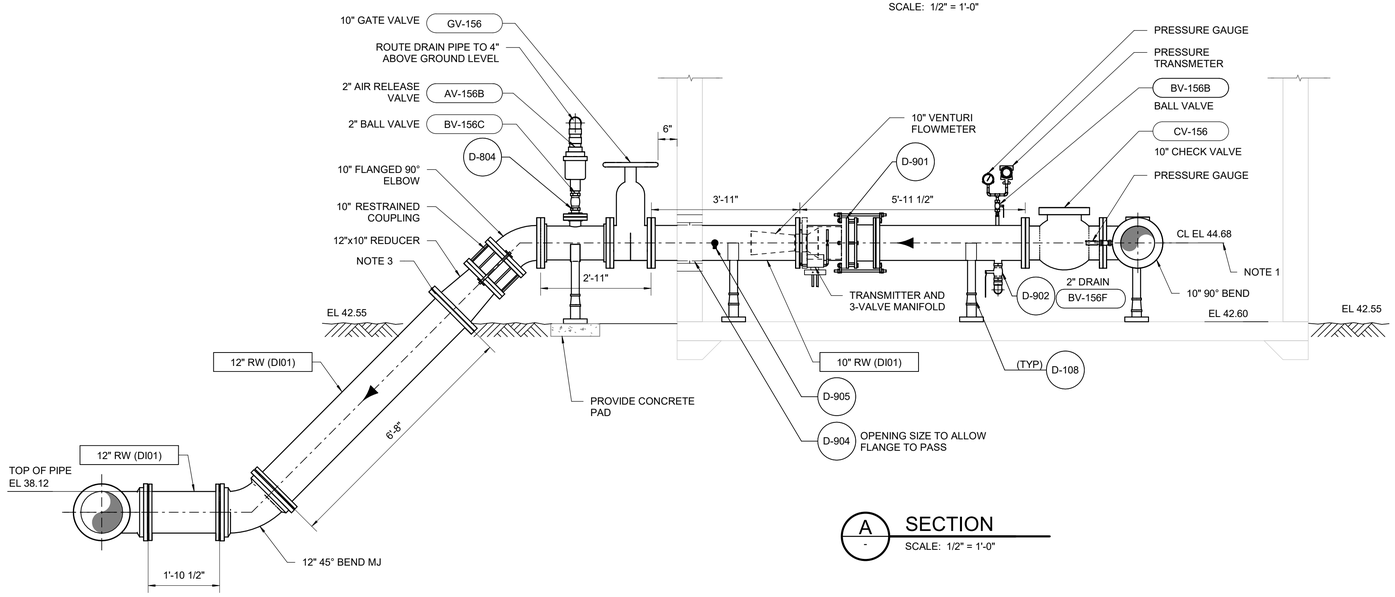


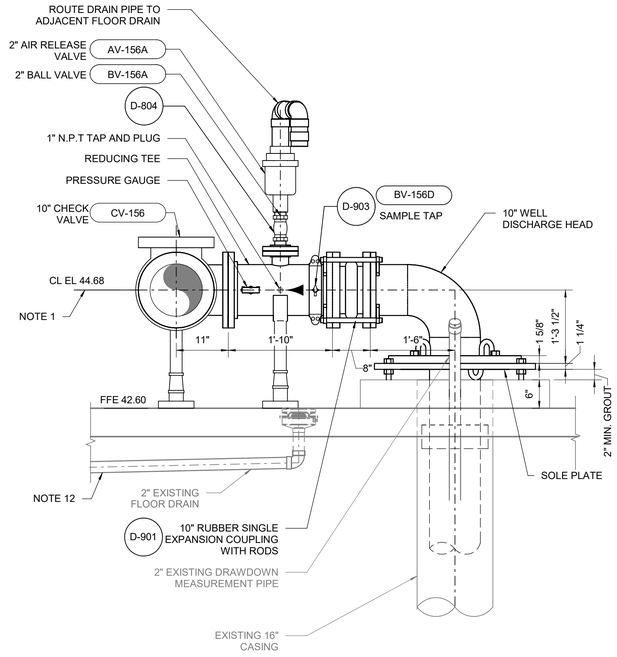
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

1. CENTER LINE ELEVATIONS ARE APPROXIMATE BASED ON EXISTING CONDITIONS. CONTRACTOR TO ADJUST BASED ON APPROVED EQUIPMENT.
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3. ALL DUCTILE IRON PIPE CONNECTIONS SHALL BE FLANGED FOR ABOVE GROUND APPLICATIONS OR PARTIALLY BURIED FLANGES.
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DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-156 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-6

SHEET 73 OF 120

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User:PS

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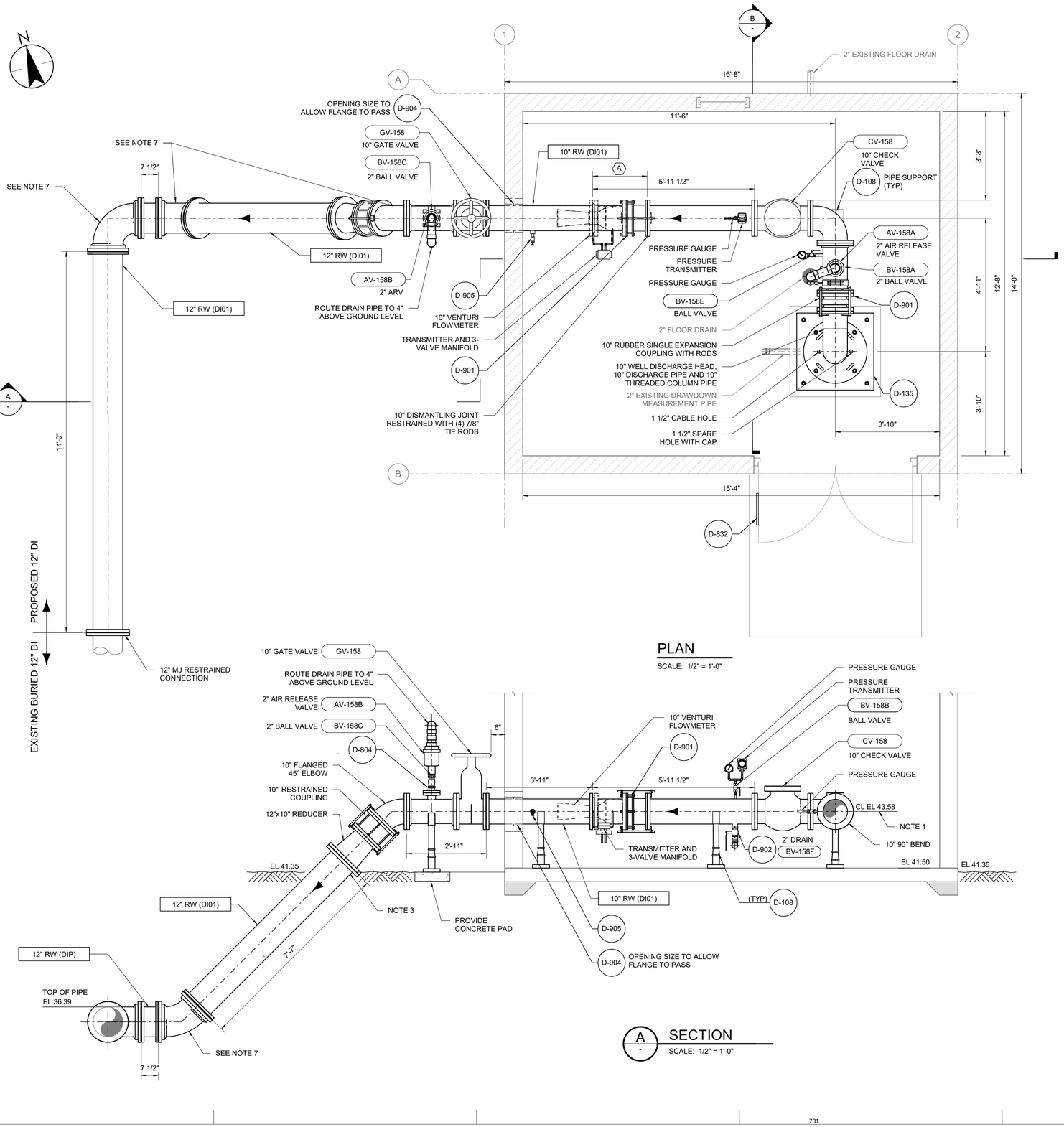

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SHEET TITLE

WELL HOUSE MBR-158 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-7

SHEET 74 OF 120

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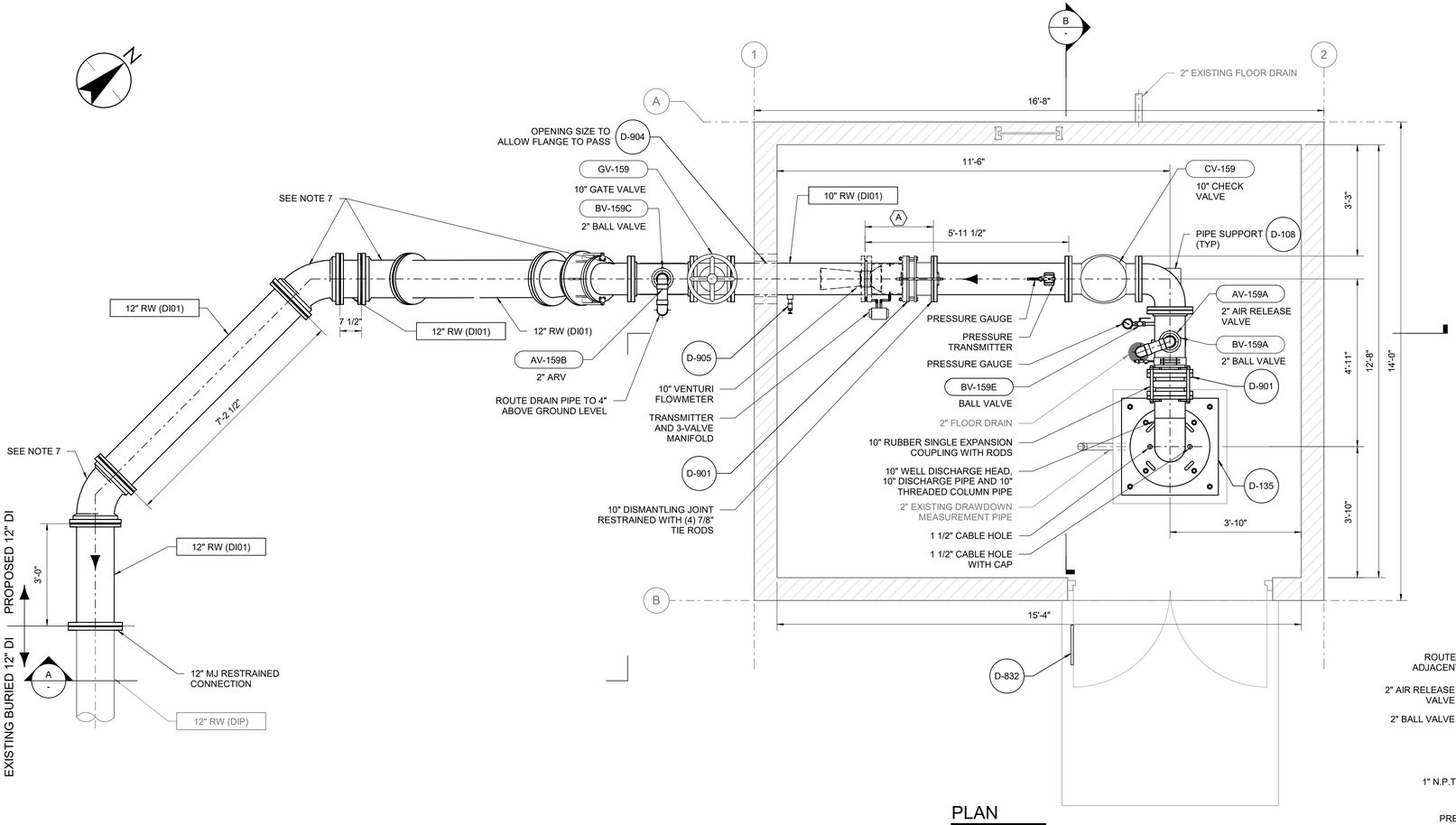
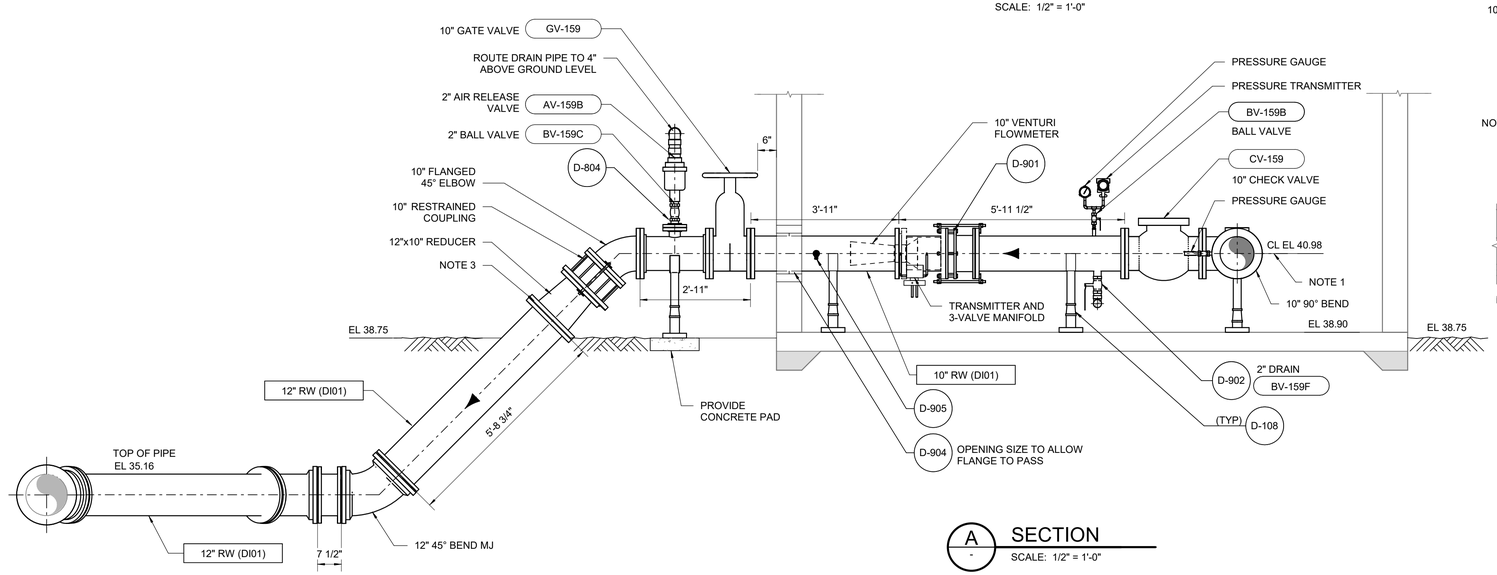
Spec:NAT CADD STD
User:PS

731



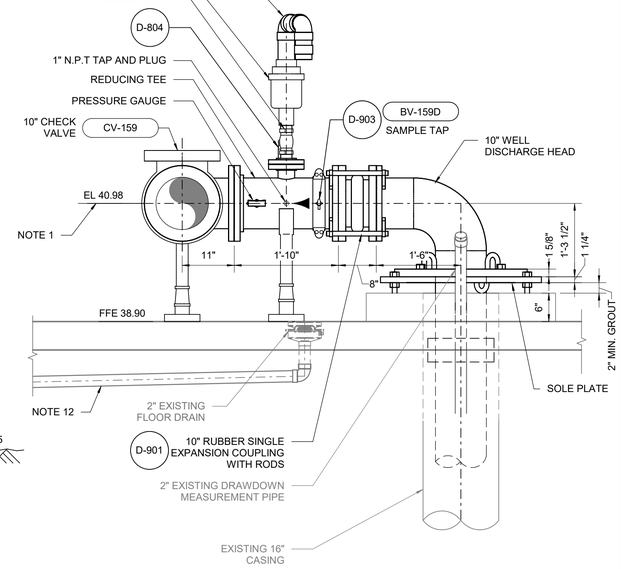
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

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MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

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PROJECT NO.:	50021
FILE NAME:	11389-MBR-d.rvt
DESIGNED BY:	SR
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SHEET TITLE

WELL HOUSE MBR-159 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-8

SHEET 75 OF 120

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Spec:NAT CADD STD
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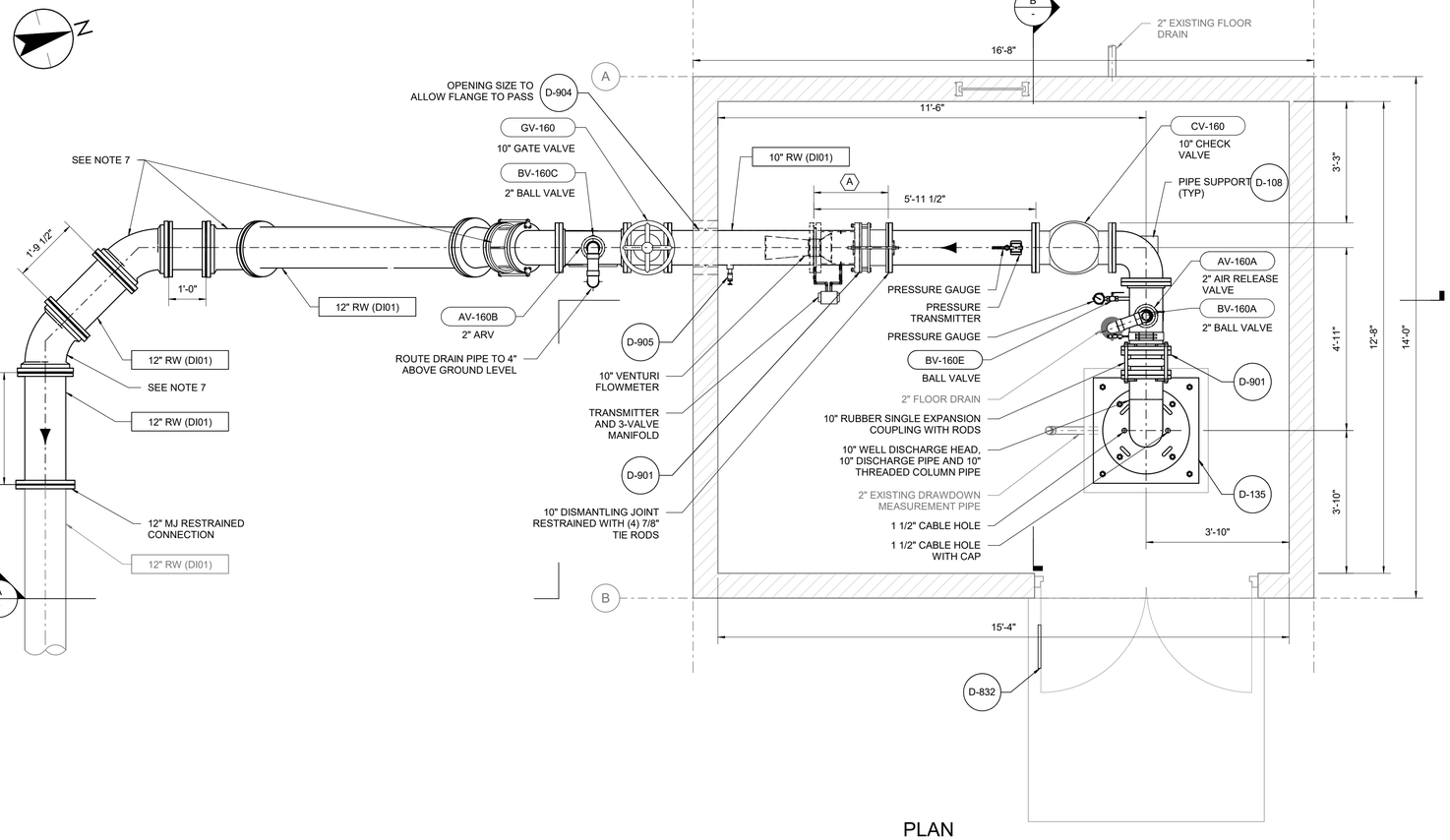
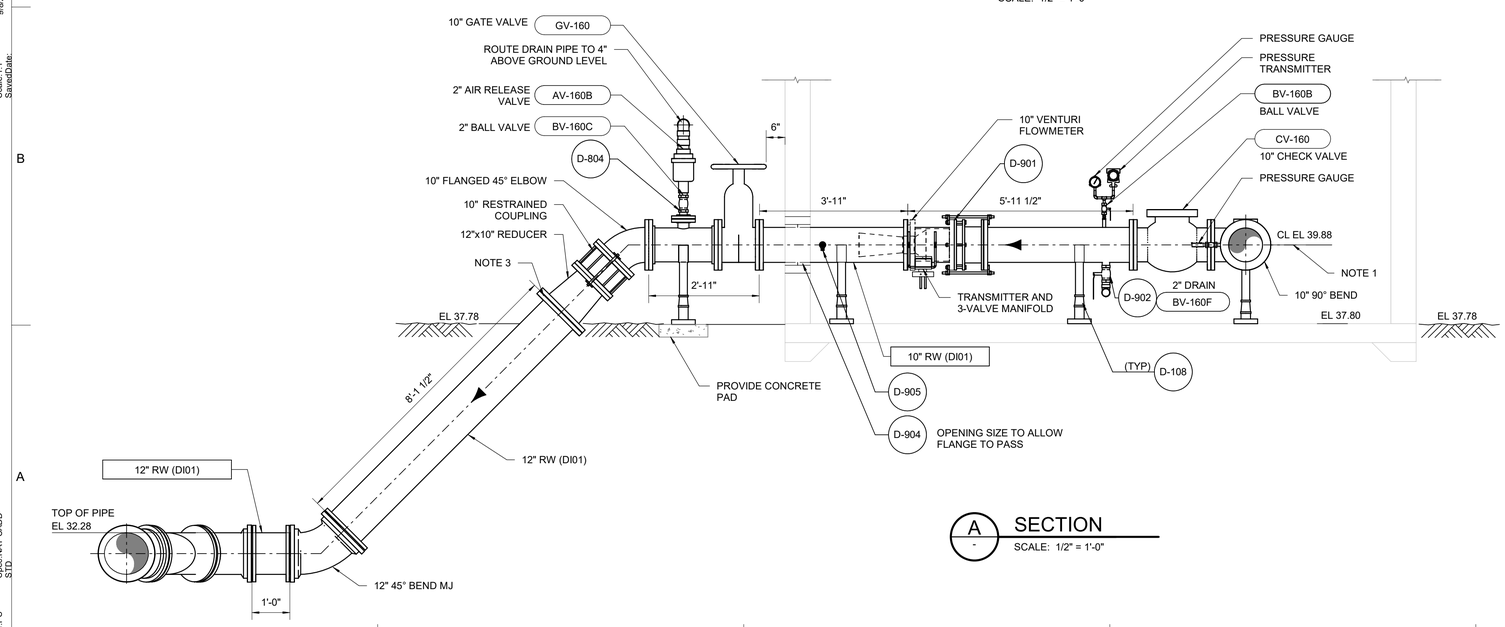
732



PLAN

SCALE: 1/2" = 1'-0"



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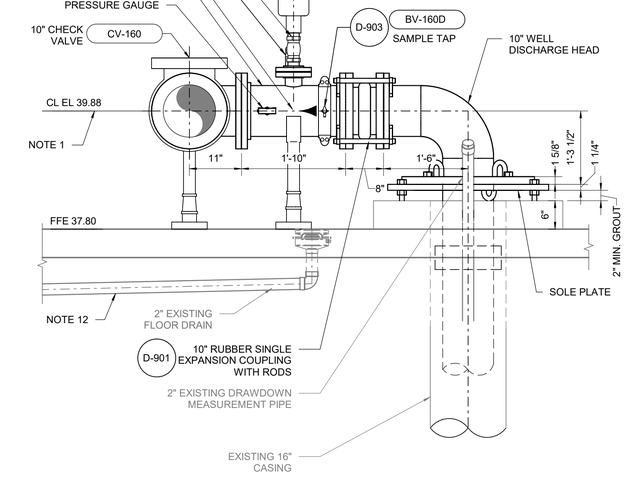

B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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FILE NAME:	11389-MBR-d.rvt
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CHECKED BY:	DS
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SHEET TITLE

WELL HOUSE MBR-160 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-9

SHEET 76 OF 120

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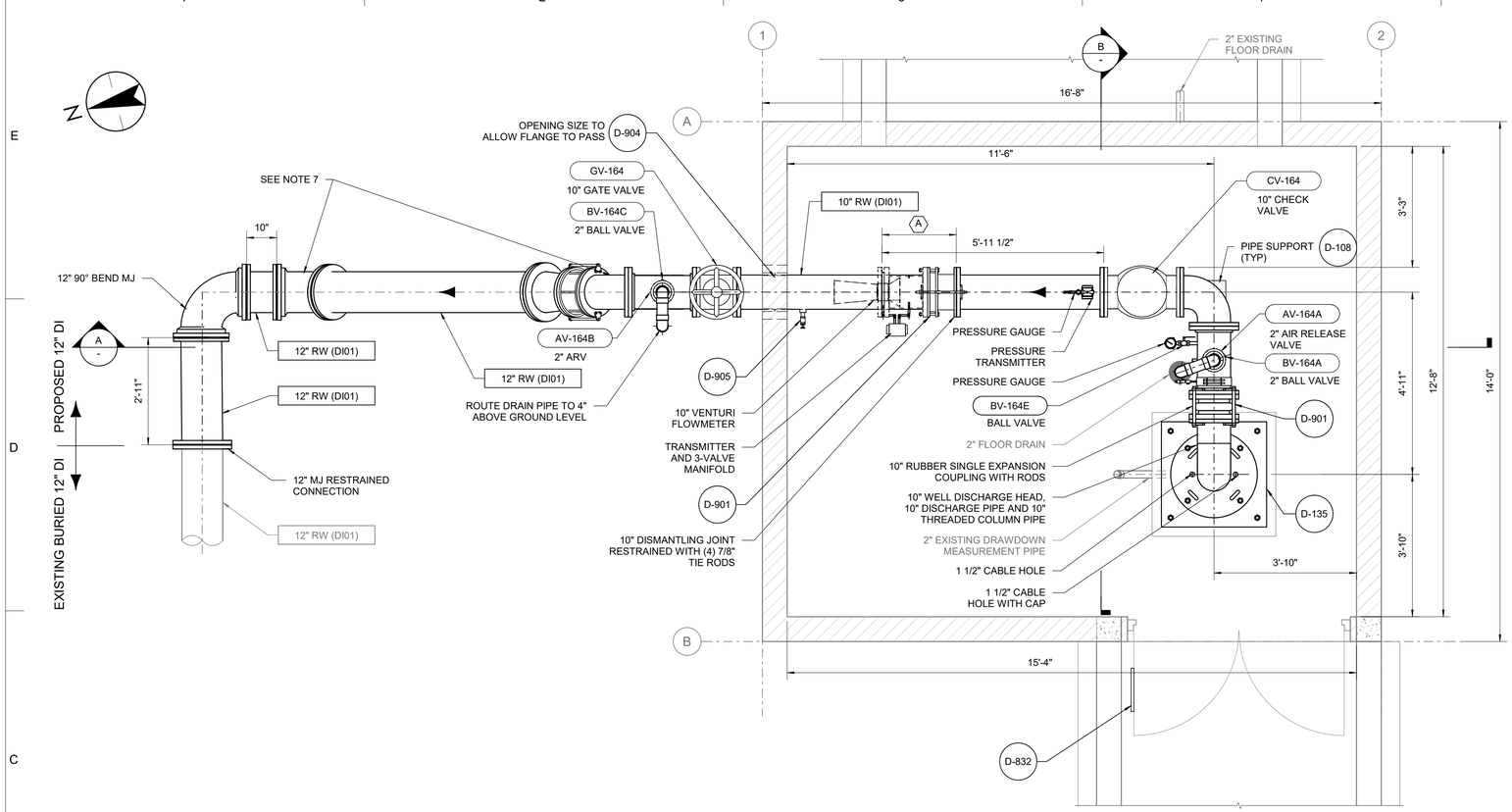
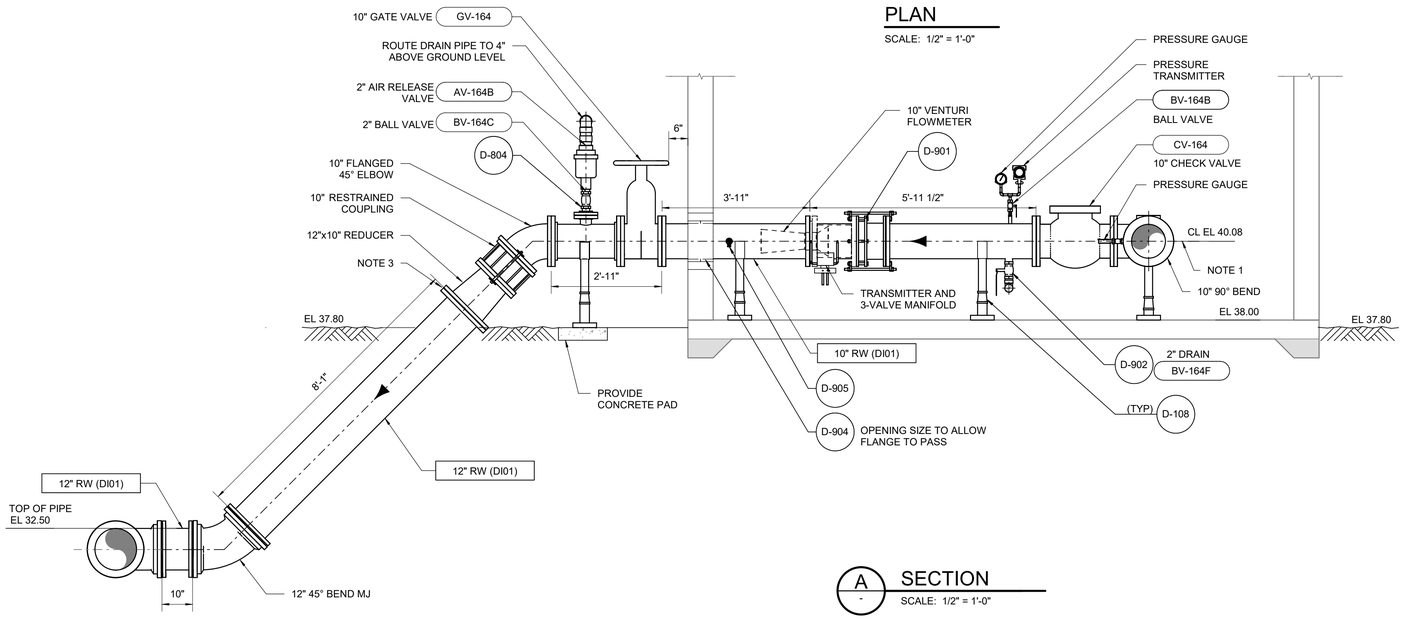
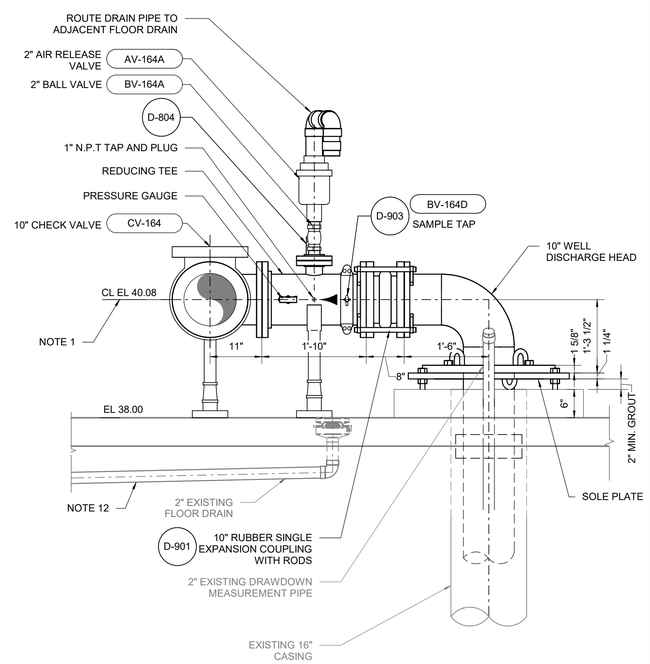




A SECTION
SCALE: 1/2" = 1'-0"



B SECTION
SCALE: 3/4" = 1'-0"

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CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-164 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-10

SHEET 77 OF 120

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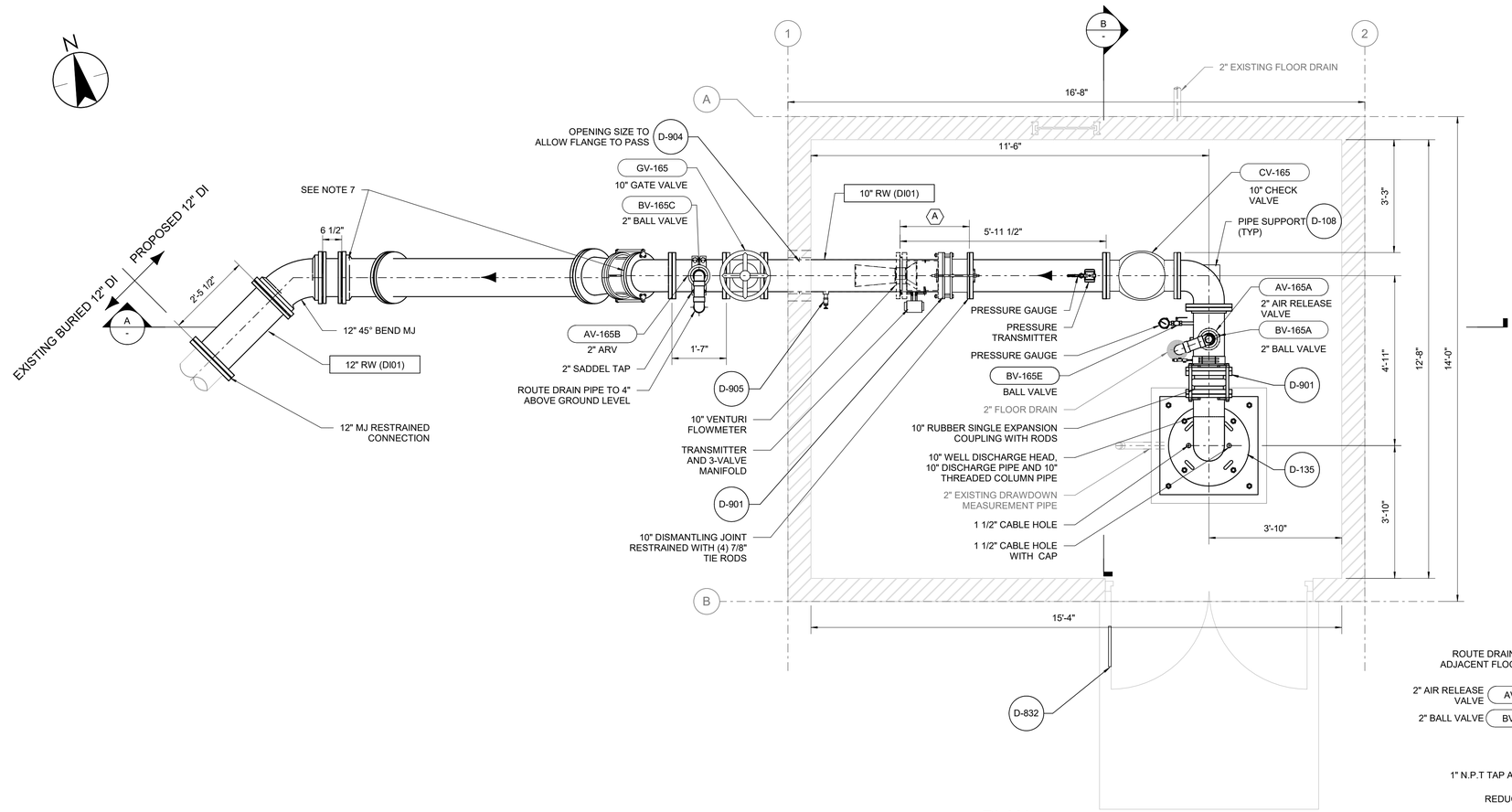
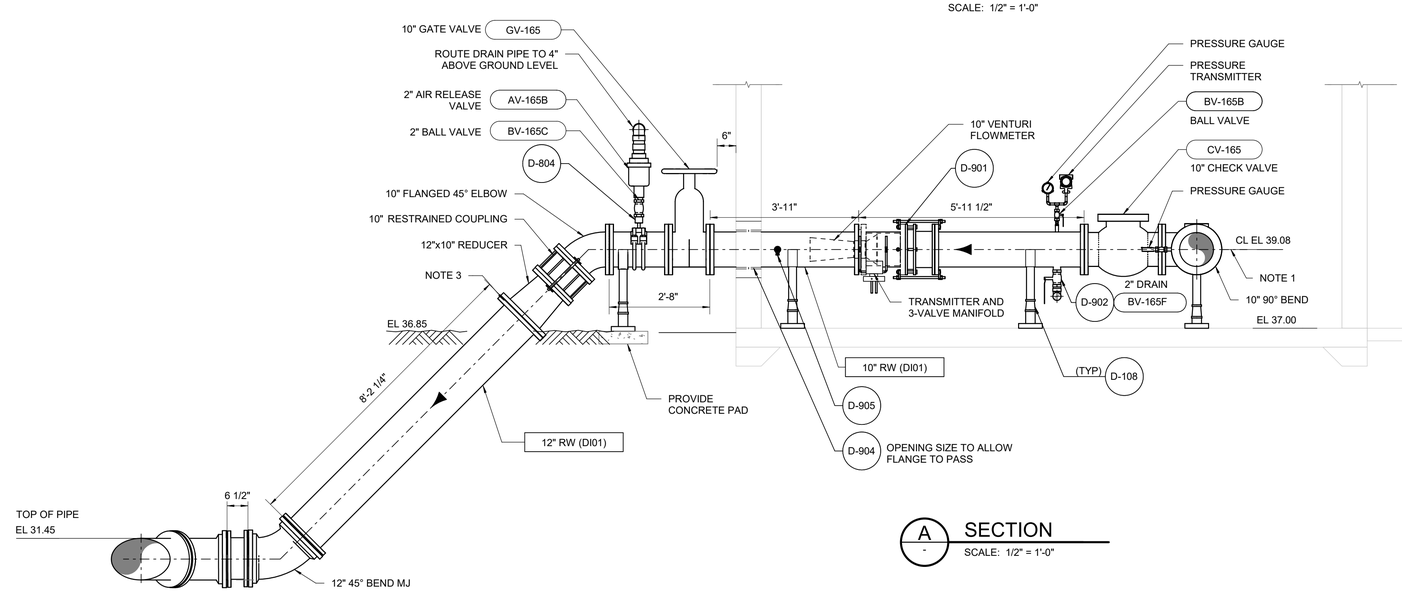


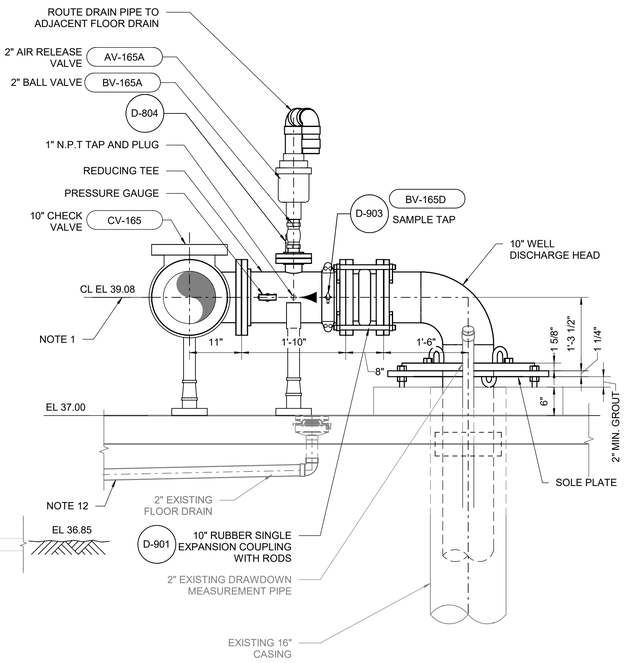
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

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5. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ANY EXISTING STRUCTURES AND EQUIPMENT NOT SHOWN TO BE REMOVED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL DEMOLITION ITEMS FROM THE SITE.
7. PROPOSED 45 DEGREE BENDS MAY NEED TO BE INSTALLED ROTATED TO ALIGN THE PROPOSED PIPE WITH EXISTING UNDERGROUND DISCHARGE PIPING.
8. EXISTING PUMP MOUNTING BASE BOLTS TO BE REPLACED. SIGNED AND SEALED CALCULATIONS TO BE PROVIDED BY THE CONTRACTOR. PUMP SOLE PLATE, PUMP PEDESTAL/PUMP BASE TO BE REPLACED. REFER TO STRUCTURAL DRAWINGS FOR DETAILS ON THE PEDESTAL.
9. CONTRACTOR SHALL SEGREGATE, STOCKPILE, AND PROTECT FROM CONTAMINATION CLEAN SOILS PRODUCED FROM EXCAVATIONS FOR USE AS BACKFILL.
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SHEET KEYNOTES

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APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-165 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-11

SHEET 78 OF 120

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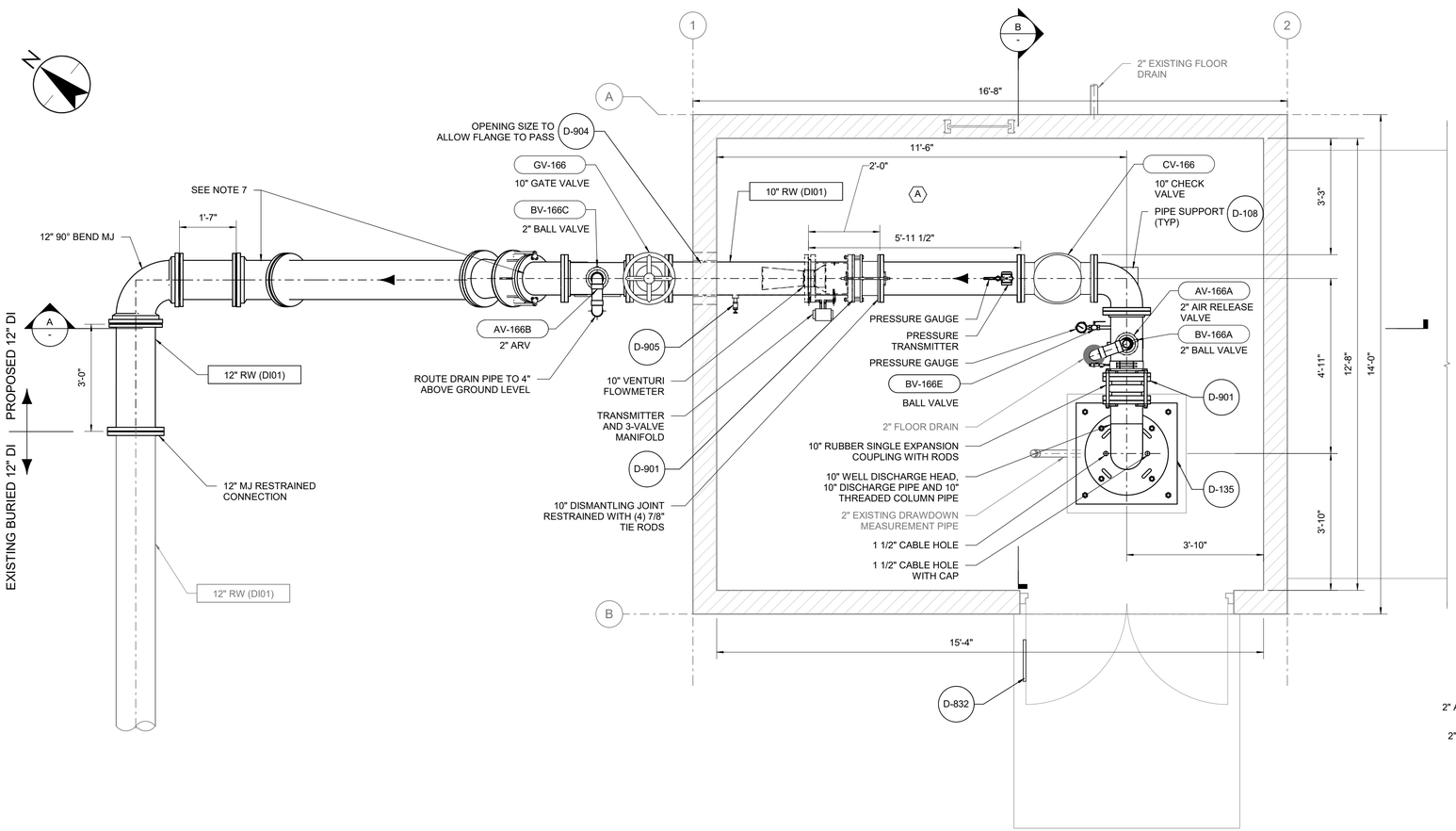
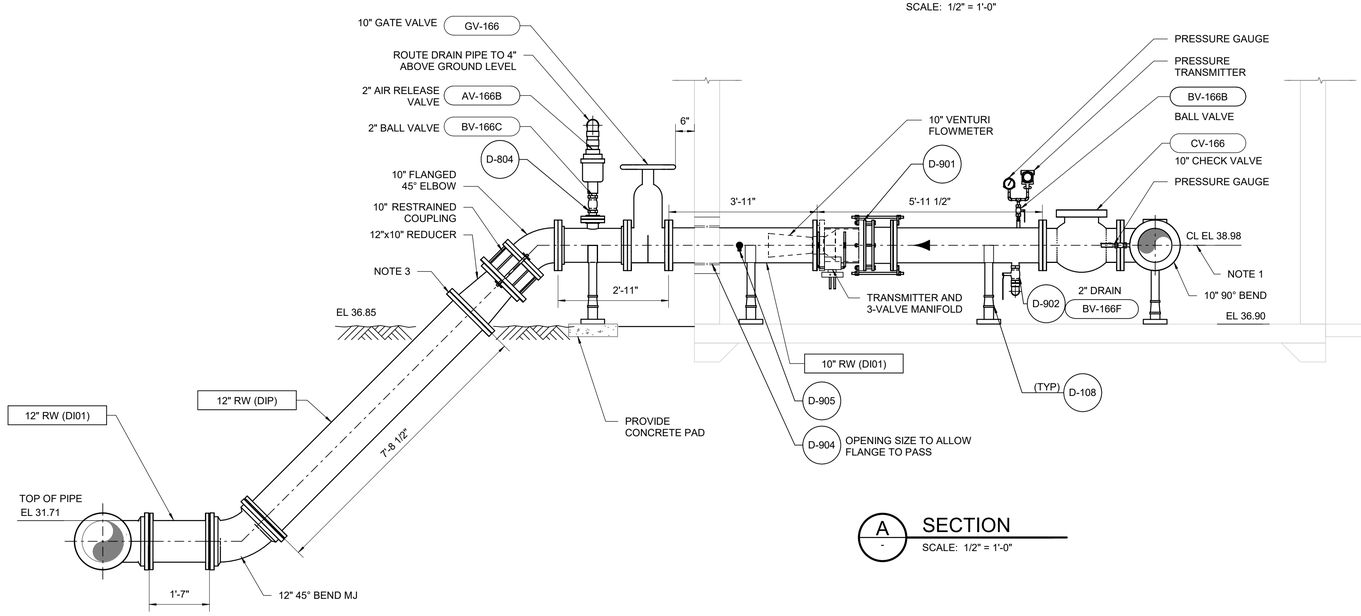
Spec:NAT CADD STD
User:PS

735



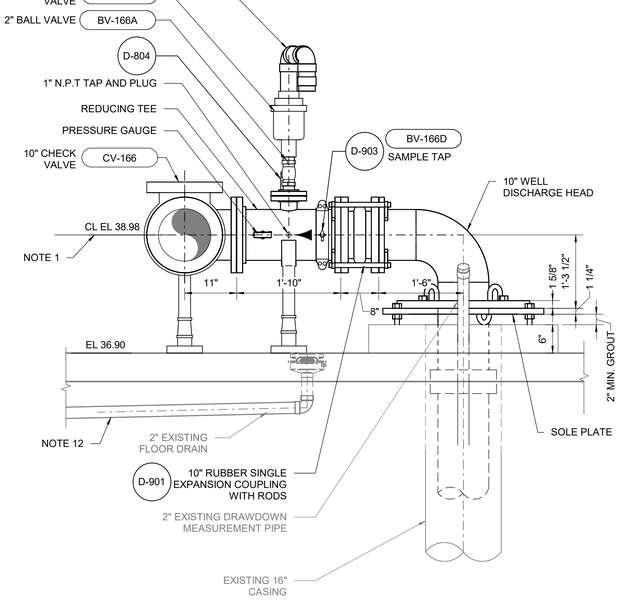
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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SHEET KEYNOTES

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APPROVED BY:	KB

SHEET TITLE

WELL HOUSE MBR-166 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-12

SHEET 79 OF 120

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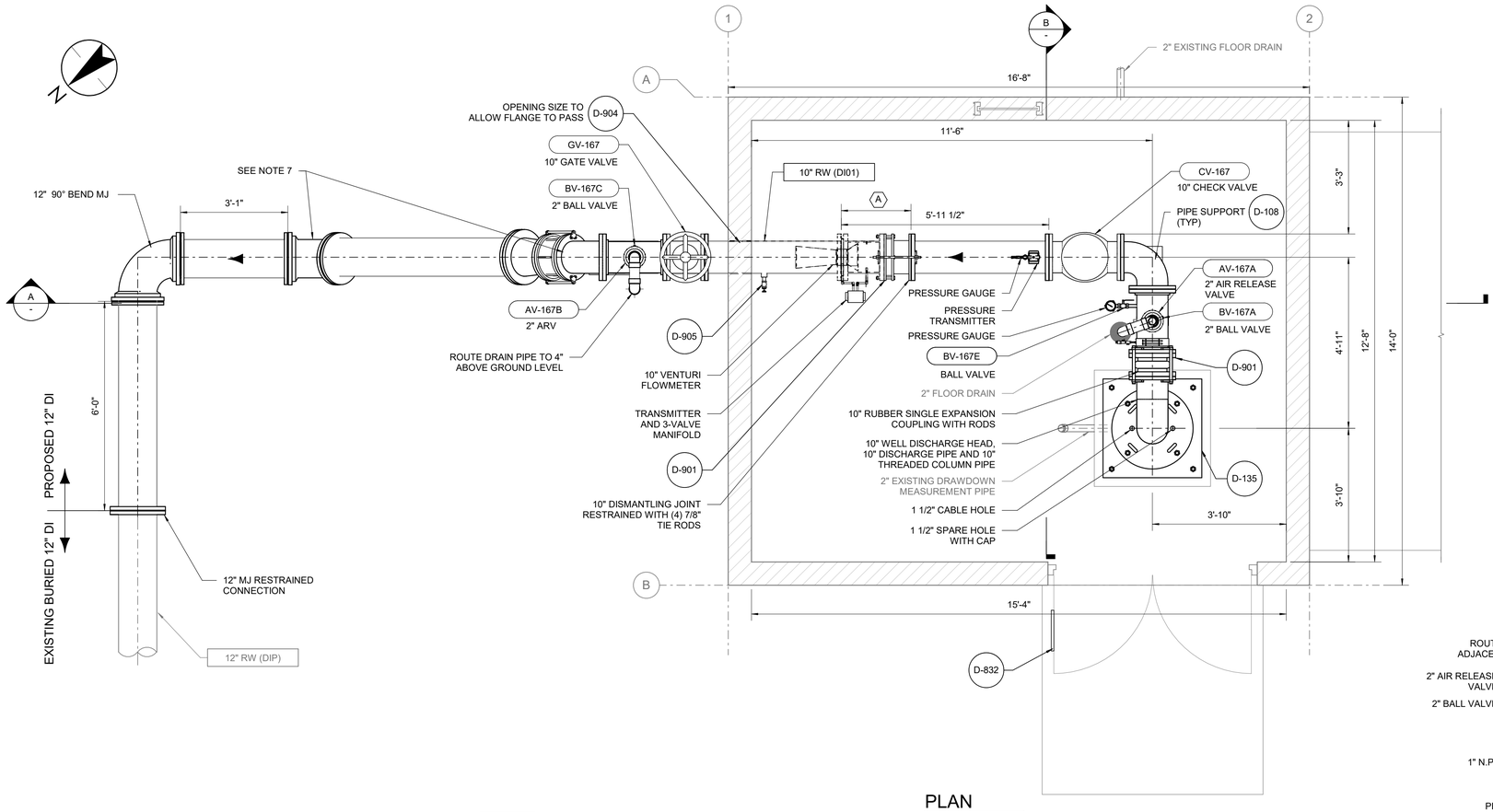
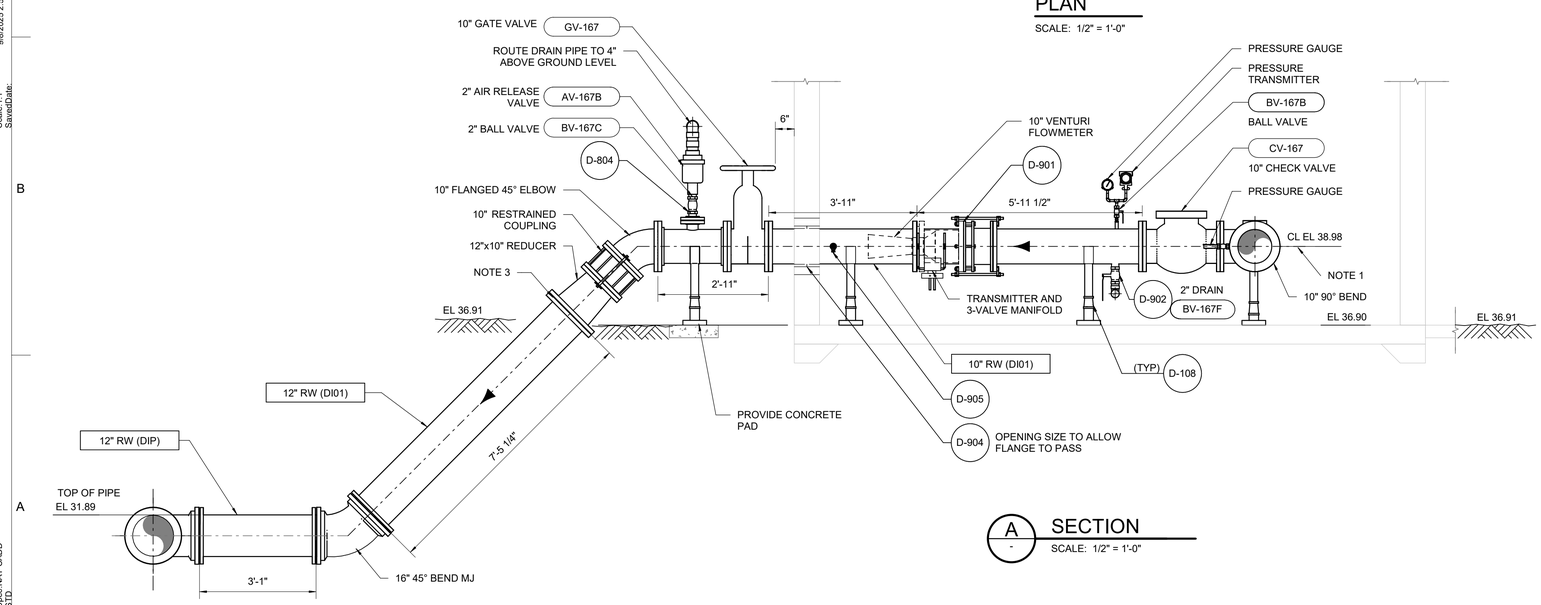
Spec:NAT CADD STD
User:PS

736



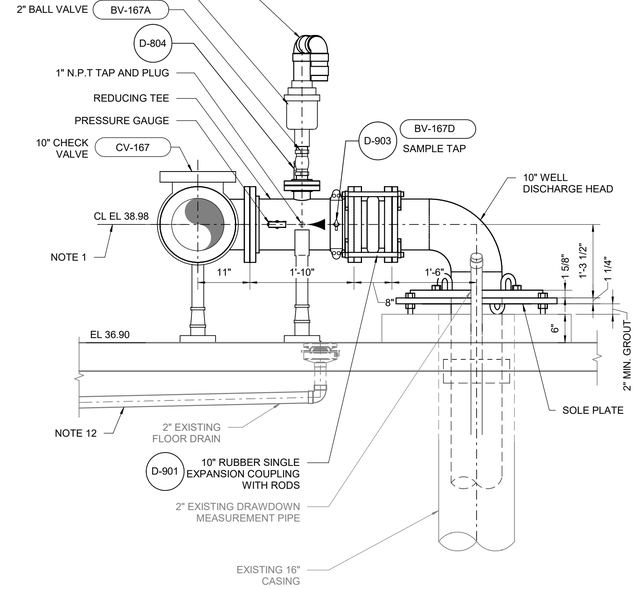
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

GENERAL SHEET NOTES

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FILE NAME: 11389-MBR-d.rvt
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

WELL HOUSE MBR-167 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-13

SHEET 80 OF 120

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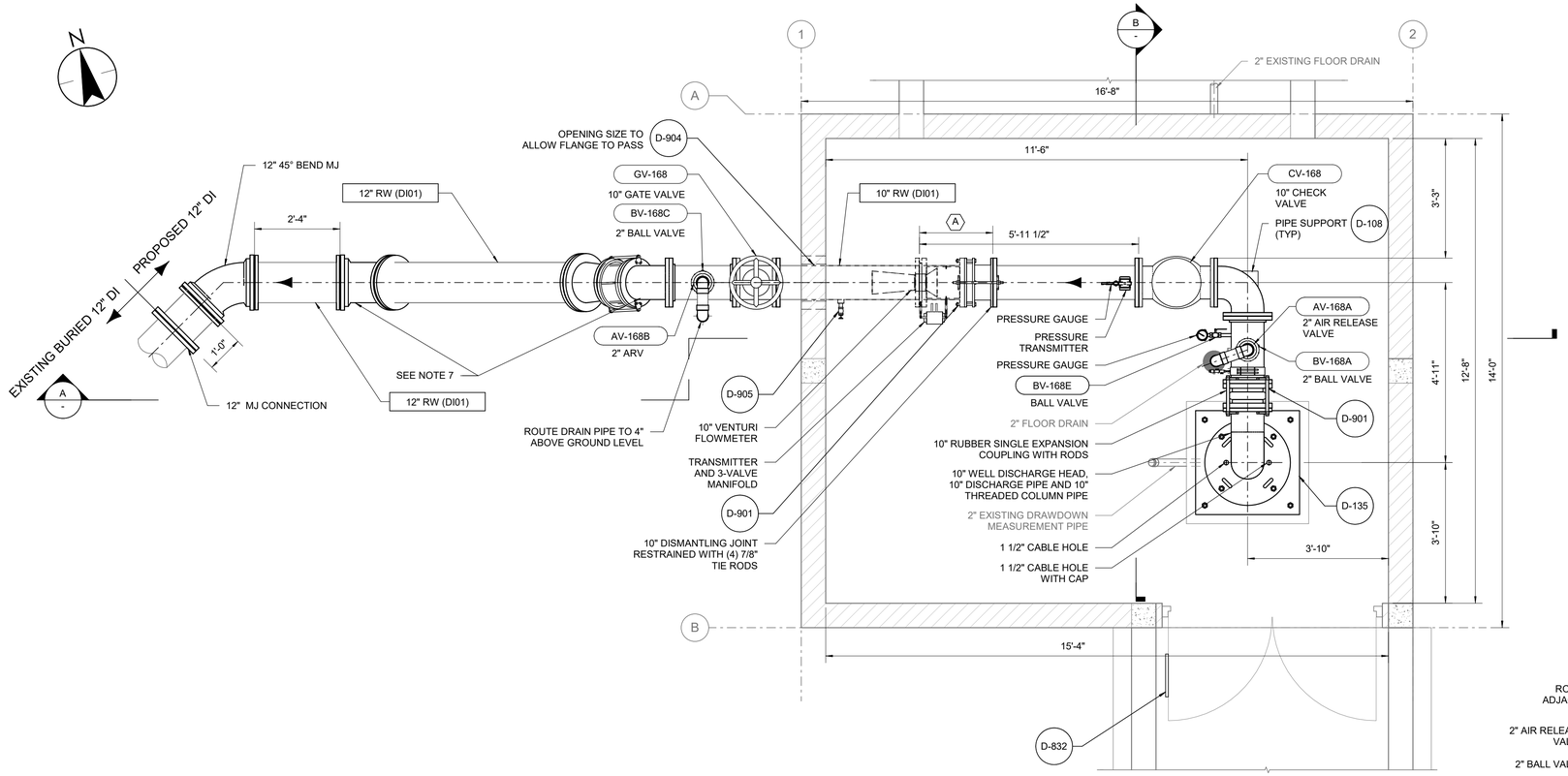
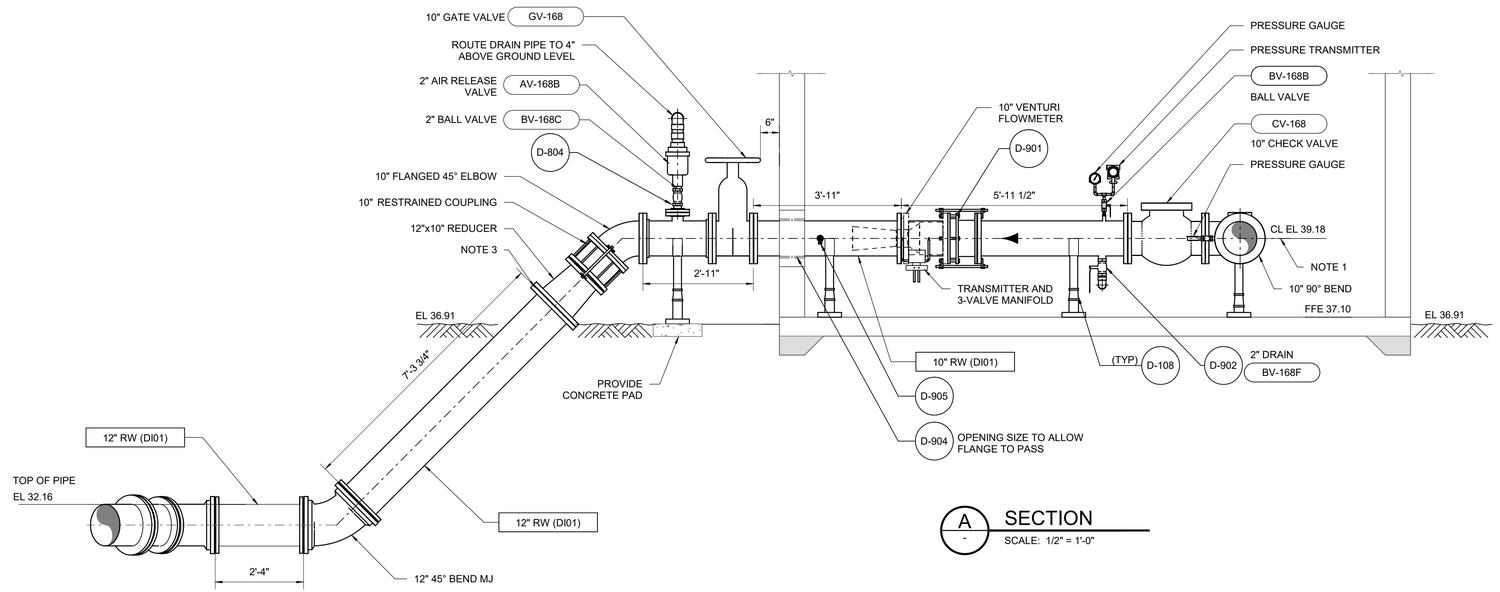


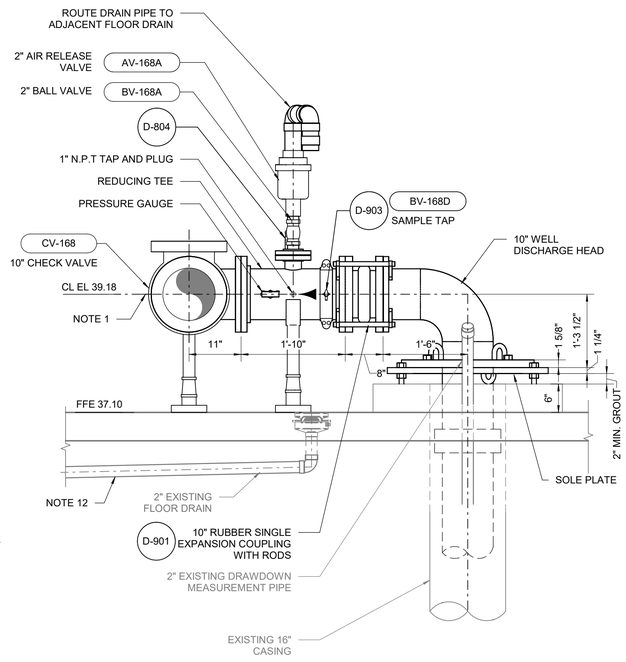
PLAN

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 3/4" = 1'-0"

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SHEET KEYNOTES

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SHEET TITLE

WELL HOUSE MBR-168 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-14

SHEET 81 OF 120

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Spec NAT CADD STD
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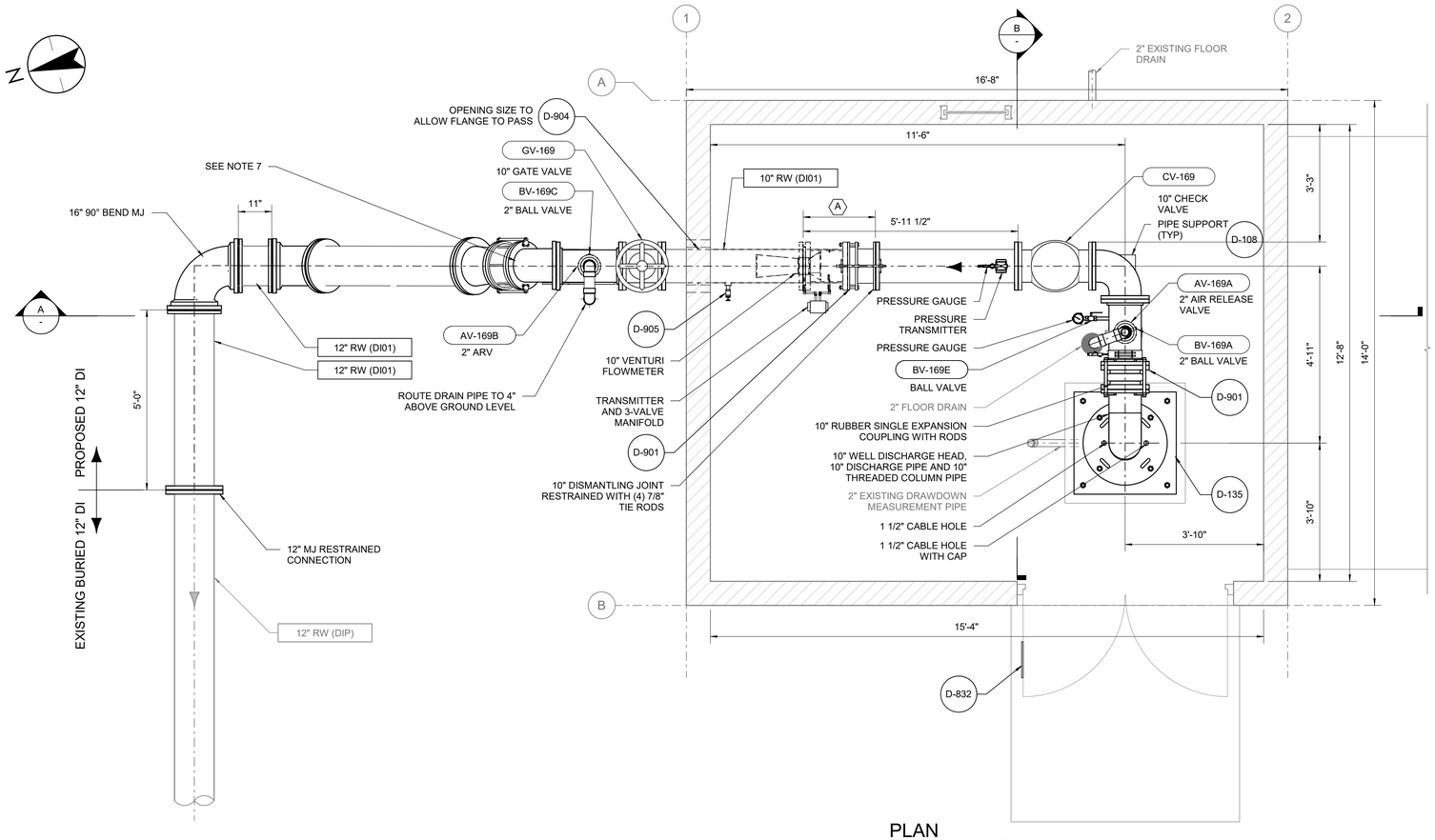

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SHEET TITLE

WELL HOUSE MBR-169 MODIFICATIONS

SCALE: As indicated

SHEET NO: M-15

SHEET 82 OF 120

9/8/2025 3:04:57 PM
Scale:1:1
Spec:NAT CADD STD
User:PS

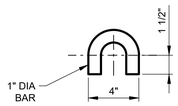
739

PUMP AND WELL DETAILS

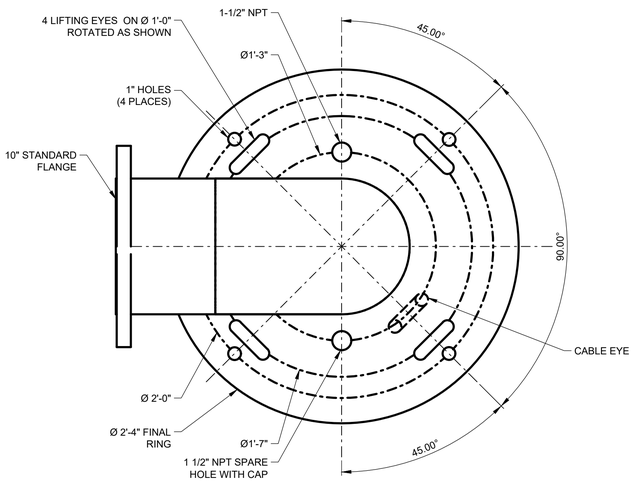
WELL NO.	PUMP TAG NO.	EXISTING CASING SIZE (IN)	PUMP BOWL DEPTH (FT)	RATED FLOW (GPM)	RATED HEAD (FT)	MINIMUM PUMP EFFICIENCY AT RATED HEAD (%)	MAXIMUM PUMP SPEED (RPM)	MINIMUM PUMP COLUMN SIZE (IN)	PUMP DISCHARGE SIZE (IN)	MAXIMUM MOTOR SIZE (HP)
150	VTP-150	16	80	1875	75	75%	1730	10	10	60
151	VTP-151	16	90	2000	100	75%	1730	10	10	75
153	VTP-153	16	80	1750	80	75%	1730	10	10	60
154	VTP-154	16	80	2000	70	75%	1730	10	10	60
155	VTP-155	16	90	1750	80	75%	1730	10	10	60
156	VTP-156	16	70	1750	80	75%	1730	10	10	60
158	VTP-158	16	90	2000	100	75%	1730	10	10	75
159	VTP-159	16	70	2000	70	75%	1730	10	10	60
160	VTP-160	16	70	2125	65	75%	1730	10	10	60
164	VTP-164	16	70	2000	70	75%	1730	10	10	60
165	VTP-165	16	70	2000	70	75%	1730	10	10	60
166	VTP-166	16	80	1750	80	75%	1730	10	10	60
167	VTP-167	16	100	1875	115	75%	1730	10	10	75
168	VTP-168	16	80	2000	107	75%	1730	10	10	75
169	VTP-169	16	110	1600	125	75%	1730	10	10	75

GENERAL NOTES:

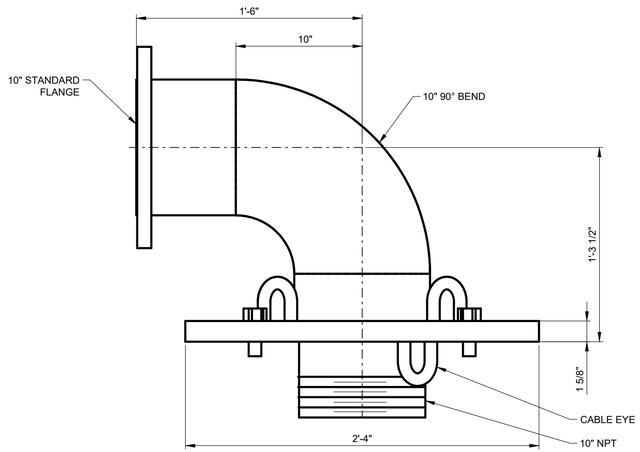
1. PUMPS SHALL NOT BE DESIGNED FOR REVERSE ROTATION. MOTORS SHALL INCLUDE A NON-REVERSE RATCHET.
2. PROVIDE UP TO THREE (3) MOTORS TYPE FOR THE ENTIRE WELLFIELD. MAX MOTOR SIZE SHALL BE 75 HP. MOTORS WITH THE SAME HP SHALL BE THE SAME RPM.
3. THE PUMP BOWLS DEPTHS FOR EACH WELL LISTED IN THE TABLE CORRESPOND TO THE DEPTH MEASURE FROM THE PUMP PEDESTAL.



LIFTING EYE DETAILS

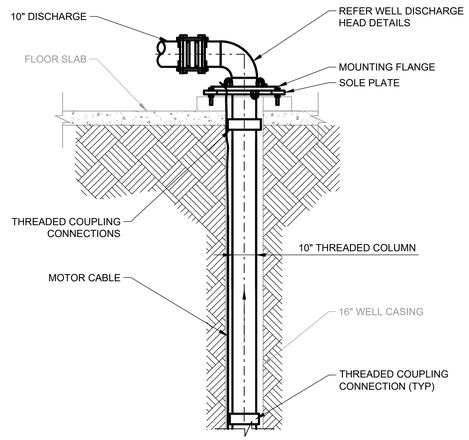


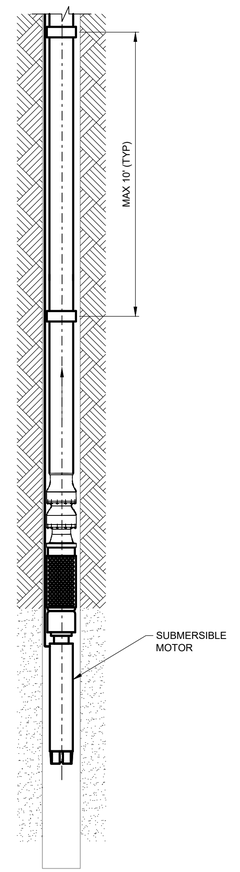
PLAN



ELEVATION

WELL DISCHARGE HEAD DETAILS





1 - TYPICAL PUMP AND MOTOR SECTION
NOT TO SCALE

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TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENTS PROJECT

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
F	02/2023	FINAL DESIGN	DS
E	12/2022	POST VE 90%	DS
D	08/2022	90% DESIGN	DS
C	04/2022	60% DESIGN	DS
B	09/2021	60% DESIGN	DS

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DATE: MAY 2025
PROJECT NO.: 50021
FILE NAME: M-16.dwg
DESIGNED BY: SR
DRAWN BY: PS
CHECKED BY: DS
APPROVED BY: KB

SHEET TITLE

PUMP REPLACEMENT DETAILS

SCALE: NO SCALE

SHEET NO: M-16

SHEET 83 OF 120

User:PKANASE Spec:NAT CADD STD File:C:\PW_WORKING\WTR\PKANASE\D0154745\M-16.DWG Scale:1:1 SavedDate:2/23/2023 Time:10:53 Plot Date: Kanase, Padmakar; 2/23/2023; 18:54 ; Layout:LAYOUT1

ABBREVIATIONS

A
AC AIR CONDITIONING UNIT
AFF ABOVE FINISHED FLOOR
ALT ALTITUDE
AHU AIR HANDLING UNIT
ARCH ARCHITECT(URAL)
AUTO AUTOMATIC
AUX AUXILIARY
ATC AUTOMATIC TEMP CONTROL

B
B BOILER
B/ BOTTOM OF
BHP BRAKE HORSE POWER
BTU BRITISH THERMAL UNIT
BLDG BUILDING

C
CDR CONDENSER WATER RETURN
CDS CONDENSER WATER SUPPLY
CFM CUBIC FEET PER MINUTE
CH CHILLER
CT COOLING TOWER
CU CONDENSING UNIT
CWR CHILLED WATER RETURN
CWS CHILLED WATER SUPPLY
CA COMBUSTION AIR
CC COOLING COIL
COP COEFFICIENT OF PERFORMANCE
CLR CENTERLINE RADIUS
CD CONDENSATE DRAIN

D
DB DRY BULB TEMPERATURE
DIA DIAMETER
DISCH DISCHARGE
DL DOOR LOUVER
DWG DRAWING

E
EA EXHAUST AIR
EAT ENTERING AIR TEMPERATURE
EER ENERGY EFFICIENCY RATIO
EF EXHAUST FAN
EL ELEVATION
ESP EXTERNAL STATIC PRESSURE
EUH ELECTRIC UNIT HEATER
EAT ENTERING AIR TEMPERATURE
EFF EFFICIENCY
ELEC ELECTRIC(AL)
EMS ENERGY MANAGEMENT SYSTEM
EWT ENTERING WATER TEMPERATURE
EXISTING EXIST (E)

F
FCU FAN COIL UNIT
FD FIRE DAMPER
FRP FIBER-REINFORCED PLASTIC
°F DEGREE FAHRENHEIT
FCV FLOW CONTROL VALVE
FD FLOOR DRAIN
FL FLOOR
FLA FULL LOAD AMPS
FP FIRE PROTECTION
FPM FEET PER MINUTE
FT FEET OR FOOT

G
GAL GALLON
GND GROUND
GPM GALLONS PER MINUTE

H
H HUMIDISTAT
HB HOSE BIBB
HP HORSEPOWER
HPU HEAT PUMP UNIT
HWR HOT WATER RETURN
HWS HOT WATER SUPPLY
HZ HERTZ

I
IH INTAKE HOOD
IN INCH
INV INVERT

K
KW KILOWATT

L
LV LOUVER
LAT LEAVING AIR TEMP
LBS POUNDS
LAT LEAVING AIR TEMPERATURE
LWT LEAVING WATER TEMPERATURE

M
MD MOTORIZED DAMPER
MAU MAKE-UP AIR HANDLING UNIT
MBH THOUSAND BTU PER HOUR
MCA MINIMUM CIRCUIT AMPACITY
MTD MOUNTED
MCC MAXIMUM MAX MOTOR CONTROL CENTER
MFR MANUFACTURE(ER)(ED)
MISC MISCELLANEOUS
MPD MEDIUM PRESSURE GAS

N
NC NORMALLY CLOSED
NO NORMALLY OPEN
NTS NOT TO SCALE
N/A NOT APPLICABLE
NEG NEGATIVE
NPSH NET POSITIVE SUCTION HEAD

O
OA OUTSIDE AIR
OAT OUTSIDE AIR TEMPERATURE
OBD OPPOSED BLADE DAMPER
OD OUTDOOR AMBIENT TEMPERATURE
OD AMB OUTSIDE DIAMETER

P
P PUMP
PW POTABLE WATER
PD PRESSURE DROP
PH PHASE
POC POINT OF CONNECTION
PPM PARTS PER MILLION
PRES PRESSURE
PRF PREFILTER
PRV PRESSURE REDUCING VALVE
PSIG POUNDS PER SQUARE INCH GAGE
PVC POLY-VINYL CHLORIDE

Q
QTY QUANTITY

R
RA RETURN AIR
RF RETURN FAN
RPM REVOLUTIONS PER MINUTE
REF REFERENCE
RH RELATIVE HUMIDITY (PERCENT)
RLA RATED LOAD AMPS
RPBP REDUCE. PRESSURE BACKFLOW PREVENTOR

S
SA SUPPLY AIR
SD SMOKE DETECTOR
SEER SEASONAL ENERGY EFFICIENCY RATIO
SEN SENSIBLE HEAT
SF SUPPLY FAN
SS STAINLESS STEEL
SCFM STANDARD CFM
SOV SHUT OFF VALVE
SP STATIC PRESSURE
SQFT SQUARE FEET (OR FOOT)
STD STANDARD

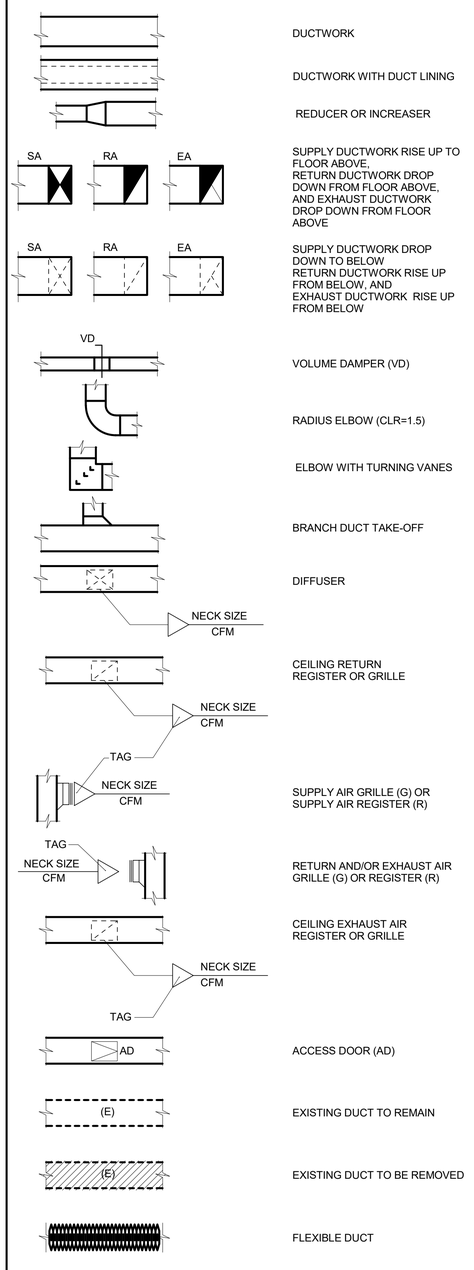
T
T THERMOSTAT
TA TRANSFER AIR
TBD TO BE DETERMINED
TYP TYPICAL

U
UG UNDERGROUND
UTR UP THROUGH ROOF

V
VD VOLUME DAMPER
V-PH-C VOLTS-PHASE-CYCLE
V VOLT(AGE)
VB VACUUM BREAKER
VEL VELOCITY
VTR VENT THROUGH ROOF

W
WB WET BULB
WG WATER GAUGE
WH WATER HEATER
W/ WITH
W/O WITHOUT
WC WATER COLUMN
WT WEIGHT

LEGEND



DUCTWORK

DUCTWORK WITH DUCT LINING

REDUCER OR INCREASER

SUPPLY DUCTWORK RISE UP TO FLOOR ABOVE, RETURN DUCTWORK DROP DOWN FROM FLOOR ABOVE, AND EXHAUST DUCTWORK DROP DOWN FROM FLOOR ABOVE

SUPPLY DUCTWORK DROP DOWN TO BELOW RETURN DUCTWORK RISE UP FROM BELOW, AND EXHAUST DUCTWORK RISE UP FROM BELOW

VOLUME DAMPER (VD)

RADIUS ELBOW (CLR=1.5)

ELBOW WITH TURNING VANES

BRANCH DUCT TAKE-OFF

DIFFUSER

CEILING RETURN REGISTER OR GRILLE

SUPPLY AIR GRILLE (G) OR SUPPLY AIR REGISTER (R)

RETURN AND/OR EXHAUST AIR GRILLE (G) OR REGISTER (R)

CEILING EXHAUST AIR REGISTER OR GRILLE

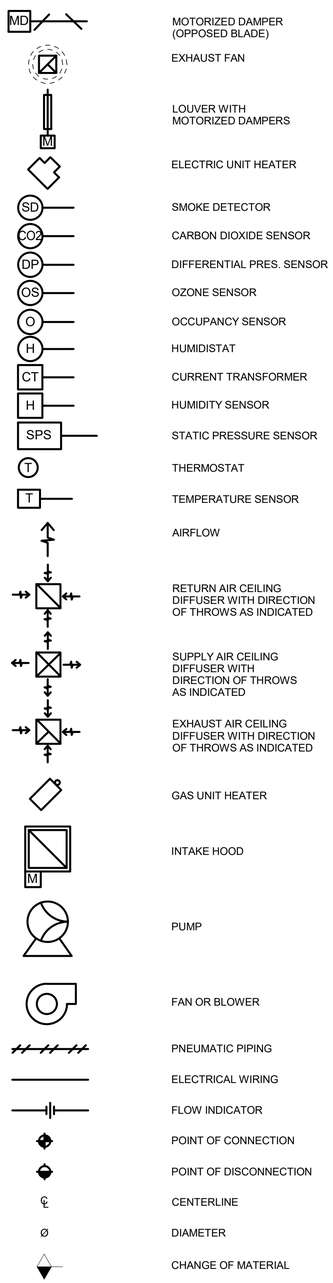
ACCESS DOOR (AD)

EXISTING DUCT TO REMAIN

EXISTING DUCT TO BE REMOVED

FLEXIBLE DUCT

EQUIPMENT SYMBOLS



MOTORIZED DAMPER (OPPOSED BLADE)

EXHAUST FAN

LOUVER WITH MOTORIZED DAMPERS

ELECTRIC UNIT HEATER

SMOKE DETECTOR

CARBON DIOXIDE SENSOR

DIFFERENTIAL PRES. SENSOR

OZONE SENSOR

OCCUPANCY SENSOR

HUMIDISTAT

CURRENT TRANSFORMER

HUMIDITY SENSOR

STATIC PRESSURE SENSOR

THERMOSTAT

TEMPERATURE SENSOR

AIRFLOW

RETURN AIR CEILING DIFFUSER WITH DIRECTION OF THROWS AS INDICATED

SUPPLY AIR CEILING DIFFUSER WITH DIRECTION OF THROWS AS INDICATED

EXHAUST AIR CEILING DIFFUSER WITH DIRECTION OF THROWS AS INDICATED

GAS UNIT HEATER

INTAKE HOOD

PUMP

FAN OR BLOWER

PNEUMATIC PIPING

ELECTRICAL WIRING

FLOW INDICATOR

POINT OF CONNECTION

POINT OF DISCONNECTION

CENTERLINE

DIAMETER

CHANGE OF MATERIAL

DUCTWORK MATERIAL SCHEDULE

LOCATION	MATERIAL	REMARKS
ALL AREAS UNLESS OTHERWISE NOTED	ALUMINUM	-
UNCLASSIFIED PROCESS AREAS	ALUMINUM	-
ELECTRICAL ROOMS	ALUMINUM	-
CHEMICAL STORAGE ROOMS	FRP	-
ALL UNDERGROUND DUCTWORK	FRP OR HDPE	HDPE IN THE STATE OF CA, CONCRETE ENCASEMENT, 1/4" PER FOOT SLOPE
WET WELLS AND NEC CLASSIFIED PROCESS AREAS	FRP	-

NOTES:
1. GALVANIZED SHEETMETAL IS NOT ACCEPTABLE IN ANY AREA

DUCTWORK INSULATION AND LINER

LOCATION	REQUIREMENT	REMARKS
ALL CONCEALED DUCTWORK	INSULATE	-
ALL EXTERIOR DUCTWORK	INSULATE	WITH SS JACKET
OUTSIDE AIR DUCTWORK	INSULATE	-
SUPPLY AIR DUCTWORK	NONE	ONLY IF IN CONDITIONED SPACE
RETURN AIR DUCTWORK	ACOUSTICALLY LINED	FROM AIR HANDLER TO 10' PAST FIRST ELBOW
TRANSFER AIR DUCTWORK	ACOUSTICALLY LINED	-
EXHAUST AIR DUCTWORK	INSULATE	LAST 10'-0" TO EXTERIOR

NOTES:
1. REFER TO SPECIFICATION FOR THICKNESS. MINIMUM R-VALUES SHALL MEET CURRENT IECC AND LOCAL REQUIREMENTS.
2. FREE INSIDE DUCTWORK DIMENSION SHALL BE MAINTAINED ON LINED DUCTWORK

GENERAL HVAC NOTES

1. SCOPE OF WORK
 1.1. THE HVAC CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
 1.2. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL MECHANICAL CODE, ALL LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING THE WORK OF THIS NATURE.
 1.3. BEFORE SUBMITTING ANY PROPOSAL, THE HVAC CONTRACTOR SHALL EXAMINE THE PROPOSED SITE AND SHALL DETERMINE THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE BECAUSE THE HVAC CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
 1.4. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER.THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR AS TO SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS AND PERFORMANCE. ANY ADDITIONAL COSTS EITHER DIRECTLY OR INDIRECTLY CAUSED BY EQUALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR
 1.5. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT, ARRANGEMENT AND EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS SHOP DRAWINGS. THE HVAC CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT AND ENSURE THAT IT WILL FIT IN THE AVAILABLE SPACE. WHERE ALTERNATE ROUTING, OFFSETS AND TRANSITIONS ARE REQUIRED FOR FIELD COORDINATION OF ALL TRADES, THIS CONTRACTOR SHALL MAKE CHANGES WITHOUT ADDITIONAL COSTS.
2. SHOP DRAWINGS
 2.1. REFER TO THE SPECIFICATIONS FOR SHOP DRAWING REQUIREMENTS.
3. DUCTWORK
 3.1. DUCTWORK MATERIAL SHALL BE PER SCHEDULE ON THIS SHEET.
 3.2. DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
 3.3. THE HVAC CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND PANELS IN ALL DUCTWORK THAT PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION. UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
 3.4. ALL BRANCH DUCTS SHALL HAVE VOLUME DAMPERS.
 3.5. WHERE FLOW EXCEEDS 150 CFM, THE CONTRACTOR SHALL USE SMOOTH RADIUS ELBOWS OR TURNING VANES.
 3.6. ALL DUCT JOINTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS AND ACCEPTED GOOD PRACTICE.
 3.7. ALL DUCT DIMENSIONS ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED PROVIDED THAT THE NET FREE AREA IS MAINTAINED.
4. HVAC CONTROLS
 4.1. THE HVAC CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.
5. ELECTRICAL
 5.1. THE HVAC CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR LOCATION OF POWER WIRING TO EACH HVAC UNIT.
6. DUCTWORK AND PIPE SUPPORTS
 6.1. ALL DUCTWORK AND PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAPS TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING SHALL BE SUPPORTED EVERY 4 FEET.
7. MISCELLANEOUS
 7.1. WIND RESISTANCE: EXTERIOR MECHANICAL EQUIPMENT SHALL BE ANCHORED/TIED DOWN TO STRUCTURE OR CONCRETE PADS TO RESIST THE WIND PRESSURES DETERMINED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, AND LOCAL REQUIREMENTS.
 7.2. SEISMIC RESISTANCE: MECHANICAL SYSTEM SUPPORTS SHALL BE DESIGNED AND INSTALLED FOR THE SEISMIC FORCES IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE. RESTRAINTS SHALL BE DESIGN FOR THE PROJECT'S LOCATION'S SEISMIC DESIGN CATEGORY AND SEISMIC RISK CATEGORY.
 7.3. ALL EXTERIOR OPENINGS SHALL BE PROPERLY CAULKED AND SEALED TO PREVENT INFILTRATION OF OUTSIDE AIR INTO THE CONDITIONED SPACE.
 7.4. COORDINATE THE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATIONS.
 7.5. THE HVAC CONTRACTOR SHALL VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.
8. TESTING AND BALANCING
 8.1. THE HVAC SYSTEMS SHALL BE TESTED AND BALANCED PER SPECIFICATION 23 05 00 - HVAC TESTING AND BALANCING.
9. COMMISSIONING
 9.1. THE HVAC SYSTEMS SHALL BE COMMISSIONED PER SPECIFICATION 23 08 00 - HVAC COMMISSIONING
10. GUARANTEE
 10.1. MATERIALS, EQUIPMENT, AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. DEFECTS THAT APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
 10.2. COMPRESSOR SHALL COME WITH MANUFACTURER'S STANDARD 5-YEAR WARRANTY.

REV 01312019

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SEALS

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MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

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APPROVED BY: KB

SHEET TITLE

GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

SCALE:

SHEET NO: GH-1

SHEET 84 OF 120

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Scale:1:1
SheetRole:
File:<Pnk location in Project Information>
Spec:NAT CADD STD
User:AI

741

FAN SCHEDULE

EQUIPMENT NUMBER	LOCATION	DRIVE	(CFM)	FAN (RPM)	ESP (IN W.G.)	MOTOR						RADIATED SOUND		WEIGHT (LBS)	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
						(BHP)	(HP)	(RPM)	VFD RATED	V-PH-CY	ENCL	Lwa	(dBA)				
EF-01	WELL HOUSE	DIRECT	800	1350	0.25	0.06	0.1	1350	NO	115/60/1	TEAO	66	55	61	GREENHECK	SE1-12-436-G	1-7

OPTIONS AND ACCESSORIES:

1. TYPICAL FOR WELL HOUSES: MBR -150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158 MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, MBR-169
2. COATED WITH HI-PRO POLYESTER
3. PROVIDE OSHA MOTOR SIDE GUARD
4. PROVIDE STARTER/DISCONNECT SWITCH
5. PROVIDE THERMOSTAT
6. PROVIDE ALUMINUM DAMPER GUARD
7. UL LISTED POWER VENTILATORS

LOUVER SCHEDULE

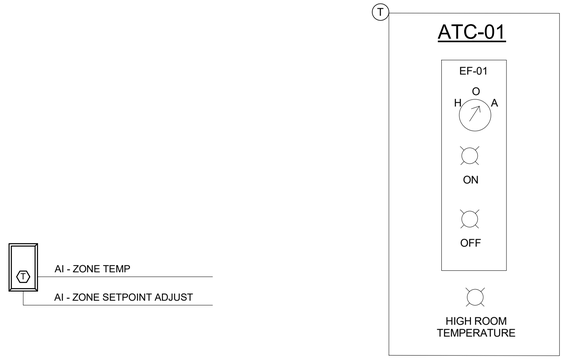
EQUIPMENT NUMBER	SERVICE	LOCATION	SIZE	(CFM)	MINIMUM FREE AREA (SQFT)	MAXIMUM FREE AREA VELOCITY (FPM)	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
LV-01	EXHAUST AIR	WELL HOUSE	14"x14"	1252	0.71	1132	RUSKIN	ELF6375DXD	1-9

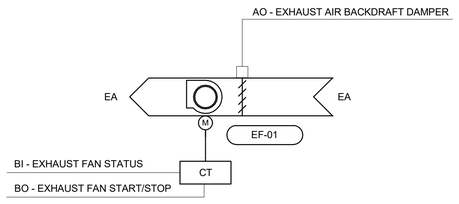
OPTIONS AND ACCESSORIES:

1. TYPICAL FOR WELL HOUSES: MBR -150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158 MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, MBR-169
2. ALUMINUM BIRDSCREEN
3. COLOR BY ARCHITECT
4. PROVIDE INSECT SCREEN
5. PROVIDE INSTALLATION ANGLES
6. PROVIDE UNIVERSAL SLEEVE, EXTENDED SILL
7. 57% FREE AREA
8. MIAMI DADE APPROVAL NOA# 20-1015.06
9. PROVIDE GRAVITY BACKDRAFT DAMPER RUSKIN MODEL CD40

SEQUENCE OF OPERATION FOR EXHAUST FAN EF-01

TYPICAL FOR WELL HOUSES: MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, MBR-169





EF-01 SHALL BE PROVIDED WITH HOA SWITCH AND THERMOSTAT.
EF-01 THERMOSTAT SHALL BE SET TO 90 DEGREES F (ADJ.)

HOA SWITCHES IN "H" POSITION:
WITH THE HOA SWITCH IN THE "H" POSITION THE EF-01 WILL ENERGIZE.

HOA SWITCHES IN "O" POSITION:
WITH THE HOA SWITCH IN THE "O" OFF POSITION EF-01 WILL DE-ENERGIZE.

HOA SWITCHES IN "A" AUTO POSITION:
WITH THE HOA SWITCH IN THE "A" AUTO POSITION THE FAN SHALL OPERATE IF THE PUMP MOTOR STARTS OR IF THE ROOM TEMPERATURE RISES TO 90 DEGREES F (ADJ), WHICHEVER OCCURS FIRST.

A LOCAL AUDIBLE AND VISUAL ALARM SHALL ACTIVATE AND A COMMON ALARM SIGNAL SHALL BE SENT TO THE SCADA FOR THE FOLLOWING EVENT:

A) HIGH ROOM TEMPERATURE: ROOM TEMPERATURE IS ABOVE 104 °F FOR MORE THAN 30 MINUTES (ADJ.)

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SEALS

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EQUIPMENT SCHEDULES AND CONTROLS

SCALE:

SHEET NO: GH-2

SHEET 85 OF 120

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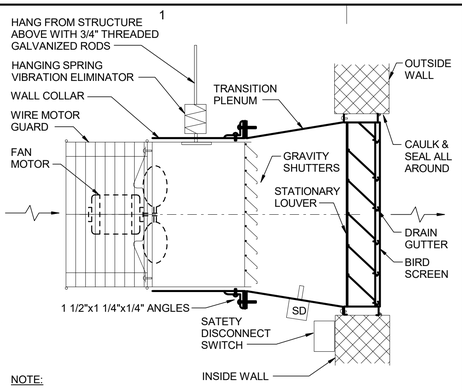
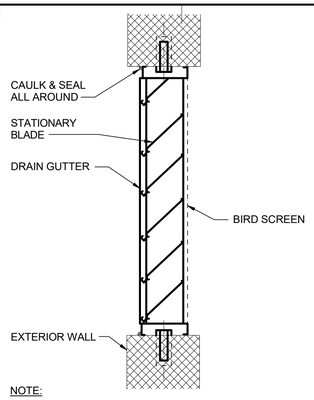


NOTE:

FOR LOUVER INSTALLATION, FOLLOW MANUFACTURER'S RECOMMENDATION.

SIDEWALL EXHAUST FAN
(WITH LOUVER)

H-511



NOTE:

FOR LOUVER INSTALLATION, FOLLOW MANUFACTURER'S RECOMMENDATION.

STATIONARY LOUVER

H-602

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FILE NAME: GH-3.dwg
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STANDARD DETAILS

SCALE:

SHEET NO: GH-3

SHEET 86 OF 120

User:AI
Spec:NAT CADD STD
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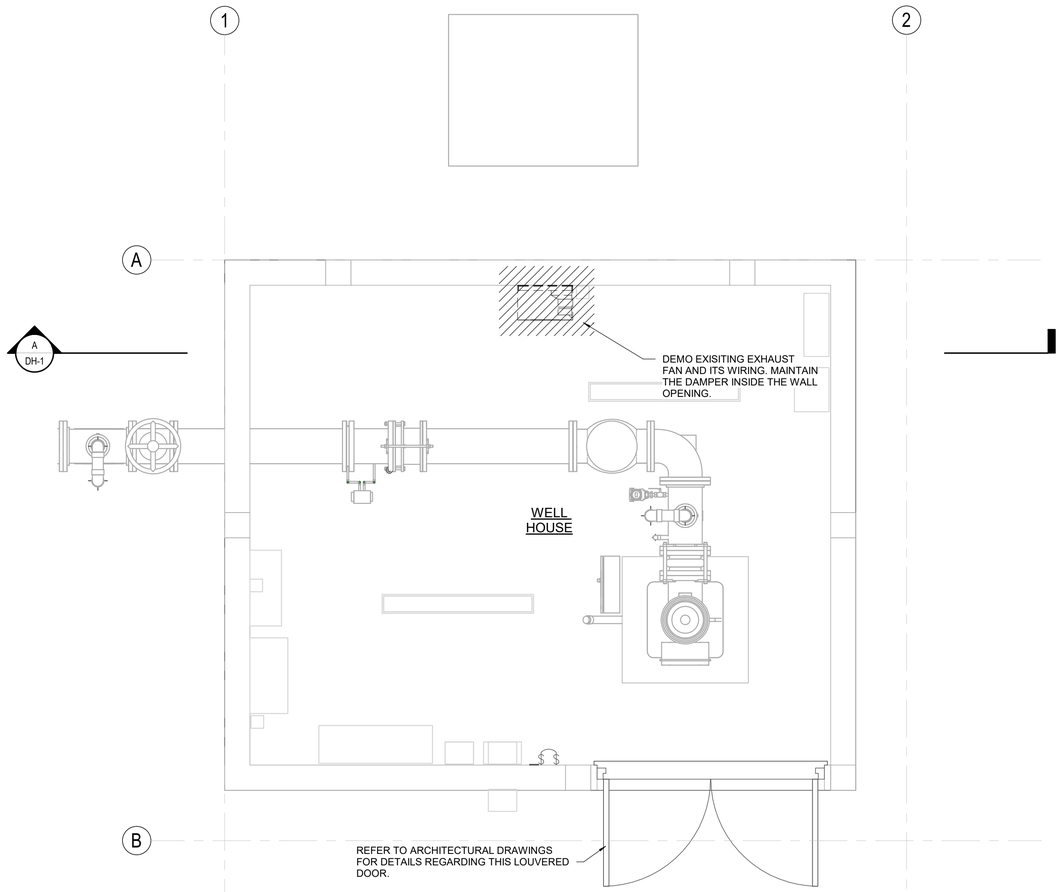
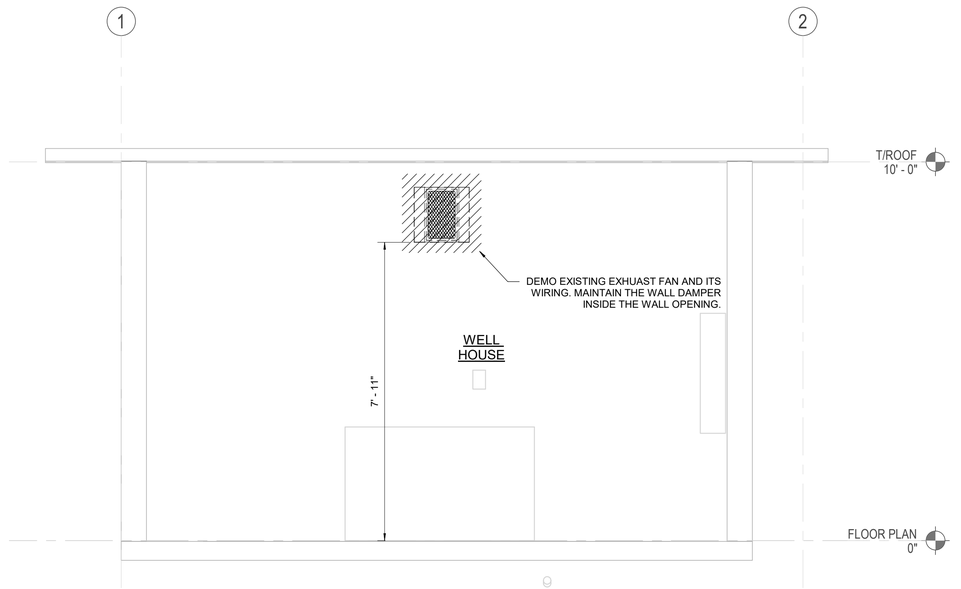
PROJECT NORTH



DEMO PLAN

1/2" = 1'-0"



A DEMO SECTION

A / DH-1

1/2" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS
2. CONTRACTOR SHALL PERFORM REPAIRS PRIOR TO INSTALLATION OF EQUIPMENT AND/OR TEMPORARILY SUPPORT EQUIPMENT SUPPORTED IN AREAS OF REPAIR
3. THE CONTRACTOR SHALL PATCH ALL FINISH SURFACES OF AREAS AFFECTED BY THE DEMOLITION WORK. PATCHING SHALL MATCH FINISH, TEXTURE, AND COLOR OF EXISITING FINISHED SURFACES AND MASONRY
4. CONTRACTOR TO COORDINATE HVAC AND ARCH DRAWINGS FOR DEMO OPENING DIMENSIONS AND LOCATIONS UNLESS NOTED OTHERWISE
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS, DM SHEETS FOR MECHANICAL DEMOLITION DETAILS AND DE SHEETS FOR ELECTRICAL DEMOLITION DETAILS.
6. FOR WELL HOUSES MBR-152 AND MBR-157, DEMOLISH THE FAN, DAMPER AND ITS CONTROL WIRING IN ITS ENTIRETY.
7. THE DESIGN SHOWN ON THIS DRAWING IS TYPICAL FOR WELL HOUSES MBR-161, MBR-162, MBR-163

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENT PROJECT

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	SAS

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DATE: SEPT 2025

PROJECT NO.: 50021

FILE NAME: DH-1.dwg

DESIGNED BY: SAS

DRAWN BY: AI

CHECKED BY: SHS

APPROVED BY: KB

SHEET TITLE

HVAC DEMOLITION PLAN -I

SCALE: 1/2" = 1'-0"

SHEET NO: DH-1

SHEET 87 OF 120

4/30/2025 3:50:05 PM
Scale:1:1
Standard
Spec:NAT CADD STD
File:<Pick location in Project Information>
User:AI

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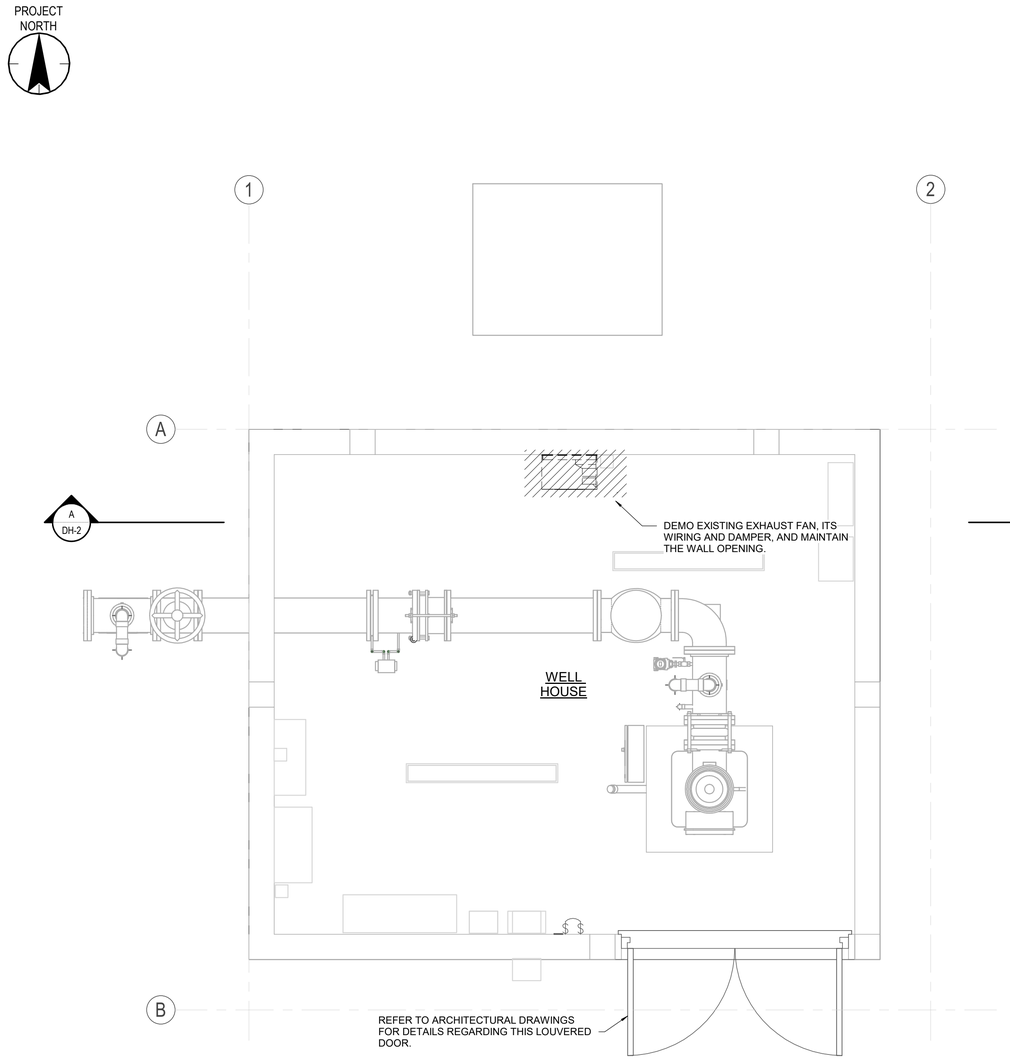
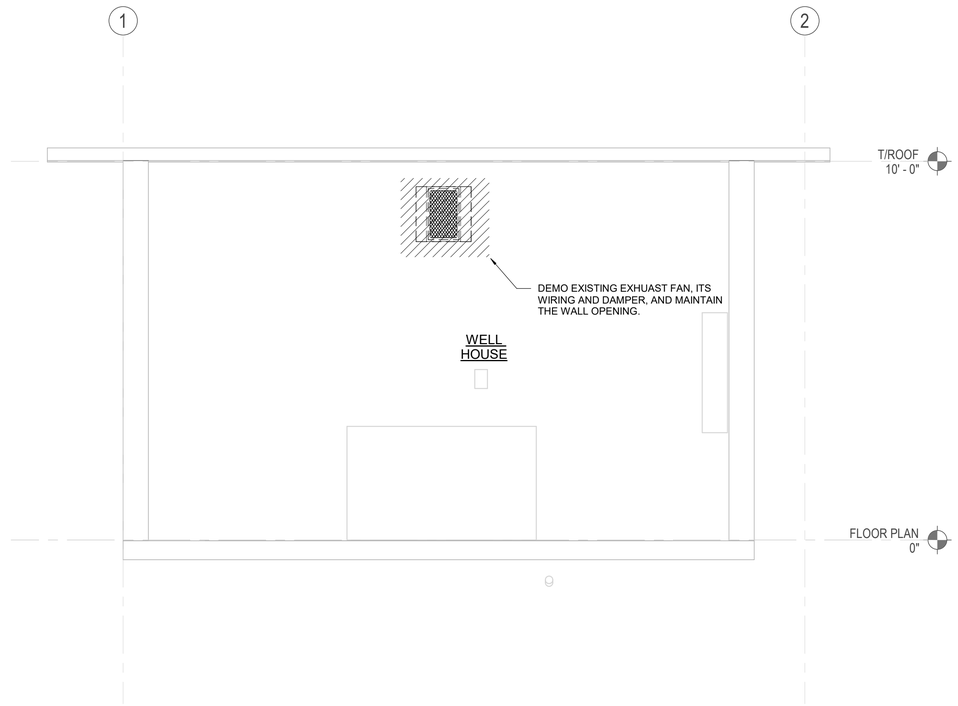


DEMO PLAN II

1/2" = 1'-0"



A DH-2 DEMO SECTION II

1/2" = 1'-0"

GENERAL SHEET NOTES

1. EXISITING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS
2. CONTRACTOR SHALL PERFORM REPAIRS PRIOR TO INSTALLATION OF EQUIPMENT AND/OR TEMPORARILY SUPPORT EQUIPMENT SUPPORTED IN AREAS OF REPAIR
3. THE CONTRACTOR SHALL PATCH ALL FINISH SURFACES OF AREAS AFFECTED BY THE DEMOLITION WORK. PATCHING SHALL MATCH FINISH, TEXTURE, AND COLOR OF EXISITING FINISHED SURFACES AND MASONRY
4. CONTRACTOR TO COORDINATE HVAC AND ARCH DRAWINGS FOR DEMO OPENING DIMENSIONS AND LOCATIONS UNLESS NOTED OTHERWISE
5. SEE DS SHEETS FOR STRUCTURAL DEMOLITION DETAILS, DM SHEETS FOR MECHANICAL DEMOLITION DETAILS AND DE SHEETS FOR ELECTRICAL DEMOLITION DETAILS.
6. FOR WELL HOUSES MBR-152 AND MBR-157, DEMOLISH THE FAN, DAMPER AND ITS CONTROL WIRING IN ITS ENTIRETY.
7. THE DESIGN SHOWN ON THIS DRAWING IS TYPICAL FOR WELL HOUSES MB5-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, MBR-169

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Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
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APPROVED BY: KB

SHEET TITLE

HVAC DEMOLITION PLAN -II

SCALE: 1/2" = 1'-0"

SHEET NO: DH-2

SHEET 88 OF 120

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User:AI

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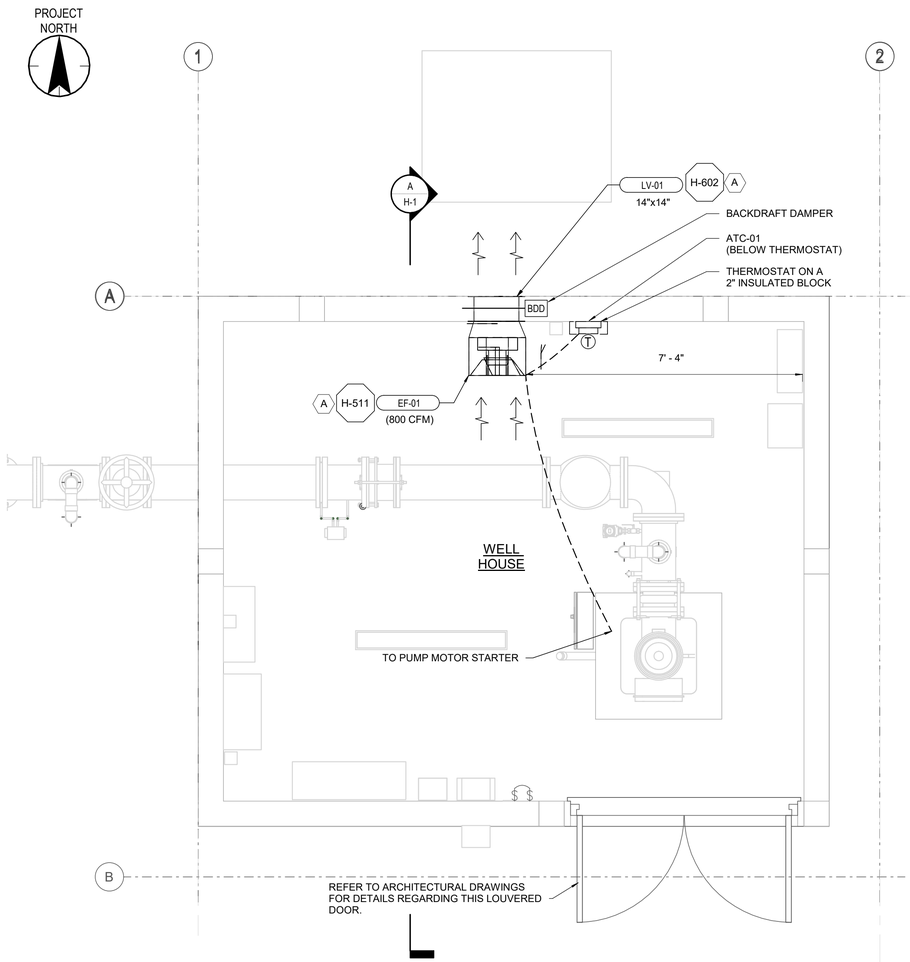
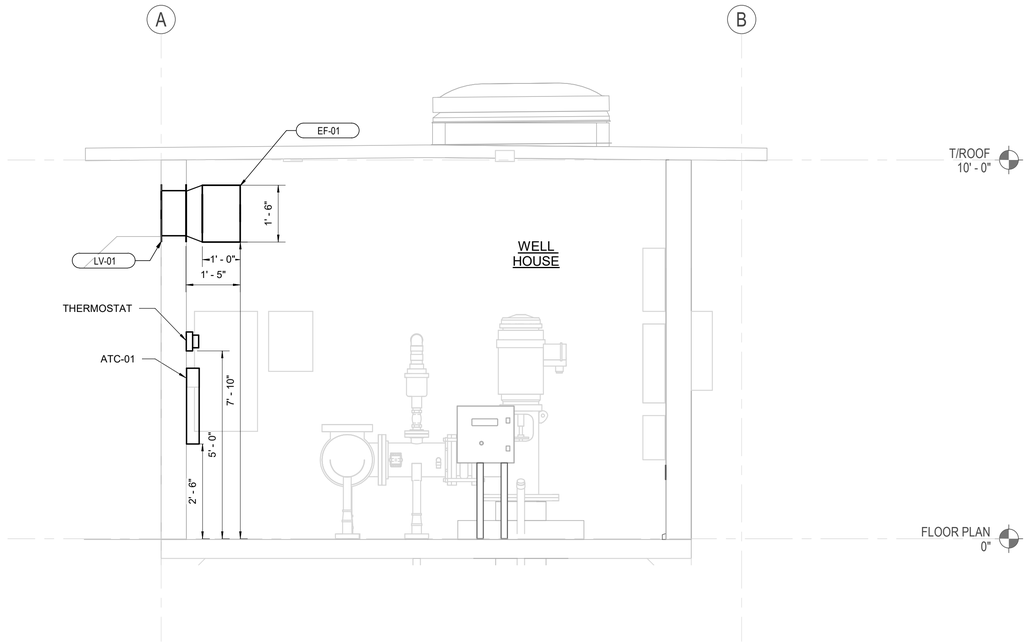


FLOOR PLAN

1/2" = 1'-0"



A H-1 SECTION VIEW

1/2" = 1'-0"

GENERAL SHEET NOTES

1. EXISITING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS
2. CONTRACTOR SHALL PERFORM REPAIRS PRIOR TO INSTALLATION OF EQUIPMENT AND/OR TEMPORARILY SUPPORT EQUIPMENT SUPPORTED IN AREAS OF REPAIR
3. CONTRACTOR TO COORDINATE HVAC AND ARCH DRAWINGS FOR DEMO OPENING DIMENSIONS AND LOCATIONS UNLESS NOTED OTHERWISE
4. THE DESIGN SHOWN ON THIS DRAWING IS TYPICAL FOR WELL HOUSES MBR-150, MBR-151, MBR-153, MBR-154, MBR-155, MBR-156, MBR-158, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166, MBR-167, MBR-168, MBR-169

SHEET KEYNOTES

A. INSTALL THE FAN AND THE LOUVER IN THE EXISTING WALL OPENING.

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SEALS

TAMPA, FLORIDA

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FILE NAME: H-1.dwg
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DRAWN BY: AI
CHECKED BY: SHS
APPROVED BY: KB

SHEET TITLE

HVAC FLOOR PLAN AND SECTION

SCALE: 1/2" = 1'-0"

SHEET NO: H-1

SHEET 89 OF 120

Scale:1:1 Standard
4/30/2025 3:50:06 PM
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Spec:NAT CADD STD
User:AI

GENERAL NOTES

1. ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
3. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS.
4. CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
5. IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
6. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
7. LOCATION OF PULLBOXES ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH MECHANICAL PIPING AND SHALL BE 6 INCHES (MINIMUM) AWAY FROM MECHANICAL PIPING FLOW LINES.
8. ONLY MAJOR PULLBOXES ARE SHOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
9. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
10. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DWGS.
11. ALL PANELBOARDS AND DISCONNECTS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
12. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
13. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT (LIMIT 2' MAX LENGTH)
14. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
15. ALL CONDUIT IN INTERIOR LOCATIONS SHALL BE METALLIC WITH THREADED FITTINGS.
16. ALL MOTOR STARTER CONTROL POWER TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL LOCAL AND REMOTE ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR IN ADDITION TO THE STARTER COIL AND MOTOR HEATERS..
17. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF COVERS.
18. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
19. EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
20. ANY GRASSED OR PAVED AREAS DISTURBED BY THE CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER CONDITION. DISTURBED GRASSED AREAS SHALL BE RE-GRADED AND SODDED.
21. ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED.
22. THE CONTRACTOR SHALL CONFORM TO OSHA REQUIREMENTS DURING THE CONSTRUCTION PHASE OF THIS PROJECT. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL PROVIDE A PROJECT SPECIFIC, OSHA COMPLIANT SITE SAFETY MANUAL INCLUDING ALL MANUFACTURER DATA SHEETS FOR ANY PAINT, GLUE OR SOLVENT THAT HAS ODOR AND PROVIDE TO THE OWNER FOR ITS REVIEW AND APPROVAL.
23. REFER TO ELECTRICAL DRAWINGS FOR DETAILED INFORMATION.
24. IN CASE OF CONFLICT BETWEEN DRAWINGS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
25. IN CASE OF CONFLICT BETWEEN THE CONTRACT DRAWINGS AND THE SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
26. THE CONTRACTOR SHALL VERIFY AND COORDINATE EXISTING CONDITIONS SHOWN ON DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN DRAWINGS, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE ENGINEER PRIOR TO PERFORMING THE WORK.
27. ALL COSTS OF INVESTIGATION AND/OR REDESIGN DUE TO CONTRACTOR IMPROPER INSTALLATION OF THE ELECTRICAL EQUIPMENT OR OTHER ITEMS NOT IN CONFORMANCE WITH THE CONTRACT DOCUMENTS SHALL BE AT THE CONTRACTORS EXPENSE.
28. ALL CONSTRUCTION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE TOWN, COUNTY & STATE AND/OR ANY OTHER GOVERNING BODY STANDARDS.
29. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS. CONTRACTOR SHALL CONDUCT FIELD SURVEY TO VERIFY DIMENSIONS SHOWN ON PLAN PRIOR TO INSTALLATION. IF THERE IS A DISCREPANCY IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE ENGINEER IMMEDIATELY.

GENERAL NOTES (CONTINUED)

30. WIRING DIAGRAMS WERE REFERENCED FROM DRAWINGS PROVIDED BY VENDORS AND FIELD VERIFIED FOR EQUIPMENT LOCATION AND SIZING. THE EXACT WIRING CONFIGURATION, AND ELECTRICAL CONNECTIONS WERE NOT VERIFIED. THE CONTRACTOR SHALL CONDUCT A FIELD SURVEY TO VERIFY WIRING CONFIGURATION AND ELECTRICAL CONNECTIONS PRIOR TO INSTALLATION. IF THERE IS A DISCREPANCY, IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE ENGINEER PRIOR TO PERFORMING THE WORK.
31. CONTRACTOR SHALL TEST SYSTEM PER COMMISSIONING PROCEDURES AS REQUIRED BY THE MANUFACTURER.
32. CONTRACTOR SHALL VALIDATE COMMUNICATION WITH ALL DEVICES DURING COMMISSIONING.
33. TEXT ON ALL LABELS SHALL BE OF ARIAL FONT-IT SHALL BE LEGIBLE AND CLEAR.
34. TEXT SIZE SHALL BE AS SHOWN BUT IN NO CASE TEXT SHALL BE SMALLER THAN 3/8" FOR TITLES (I.E. "WARNING") AND 3/16" HIGH FOR DATA.
35. SUBMIT ALL LABEL STENCILS WITH DIMENSIONS TO ENGINEER PRIOR TO PURCHASE.
36. LABELS SHALL BE EITHER ENGRAVED, MACHINE PRINTED OR ELECTRO-PHOTO PLATED AND BE OF METALLIC OR PLASTIC CONSTRUCTION. SIGNAGE SHALL BE WEATHERPROOF, CORROSION PROOF, UV-STABILZED AND FADE RESISTANT.
37. LABELS SHALL BE SECURELY FASTENED TO SPECIFIED LOCATIONS BY USING A WEATHER PROOF & DURABLE ADHESIVE SUITABLE FOR THE MATERIAL OF THE LABEL & LOCATION.
38. THE LABELS SHALL BE POSTED AT THE LOCATIONS SPECIFIED. IF FOR REASONS OF REDUCED ACCESS OR SPACE, THE LABELS SHALL BE POSTED AT THE CLOSEST LOCATION THAT BEST SERVES THE INTENT OF THE LABEL. NOTIFY THE ENGINEER/SUPERVISOR IN SUCH A CASE BEFORE ATTACHING.
39. ALL LABELS SHALL COMPLY WITH THE FOLLOWING COLOR SCHEMES UNLESS SPECIFICALLY INDICATED:

LABEL	TEXT	BACKGROUND
INFORMATIONAL	BLACK	WHITE
UTILITY/CAUTION	BLACK	YELLOW
WARNING	WHITE	RED

ELECTRICAL DEMOLITION NOTES

1. BIDDING CONTRACTORS SHALL VISIT THE SITE TO ASSESS THE SCOPE OF DEMOLITION, REMOVAL AND MODIFICATION WORK.
2. ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE ALL WIRING PRIOR TO REMOVAL OF EQUIPMENT, DEVICES, MOTORS INSTRUMENTATION, CONTROL PANELS, ETC. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE OWNER.
3. EXPOSED RACEWAYS: REMOVE CONDUIT, WIRES, AND BOXES. PATCH TO MATCH EXISTING. FINISH-ALL OPENINGS IN WALLS AND FLOORS
4. CONCEALED CONDUITS IN THE SLAB: REMOVE EXISTING WIRES TO THE EXTENT POSSIBLE AND ABANDON CONDUITS IN THE SLAB. CUT CONDUIT FLUSH AND PATCH THE FLOOR TO MATCH EXISTING
5. CONTROL PANEL: ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUIT AND WIRE AS DESCRIBED IN DEMOLITION NOTE 2. CONTRACTOR SHALL REMOVE PANELS AS NOTED ON THE CONTRACT DRAWINGS. REFER TO NOTE 4 ABOVE FOR DISPOSITION OF ENCASED CONDUITS.
6. THE CONTRACTOR SHALL DISPOSE OF ALL EQUIPMENT IDENTIFIED FOR DEMOLITION.

LEGEND

- UTILITY POWER SOURCE
- TRANSFORMER
- GENERATOR
- FUSED DISCONNECT SWITCH
- CIRCUIT BREAKER
- ELECTRICAL EQUIPMENT ENCLOSURE
- UTILITY METER (M)
- MOTOR - HP AND FLA AS LISTED (MOTOR)
- ELECTRICAL CABLE CONNECTION

ABBREVIATIONS

#	GAUGE
/C	CONDUCTOR
A	AMPERE (S)
AC	ALTERNATING CURRENT
ACD	AC DISCONNECT SWITCH
AFF	ABOVE FINISHED FLOOR
AF	AMP FRAME
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ARC	ARC FAULT INTERRUPTER
AS	AMPERAGE OF SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
C,CDT	CONDUIT
CB,C/B	CIRCUIT BREAKER
CBX	COMBINER BOX
CKT	CIRCUIT
CLG	CEILING
CNTRL	CONTROL
COL	COLUMN
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DEM	DEMOLISH AND REMOVE
DS	DISCONNECT SWITCH
DWG	DRAWING
EGC	EQUIPMENT GROUNDING CONDUCTOR
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EX	EXISTING TO REMAIN
FL	FLOOR
FLA	FULL LOAD AMPERAGE
FBO	FURNISHED BY OTHERS
FRE	FIBER REINFORCED EPOXY
FT	FOOT, FEET
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
G, GND, GRD	GROUND
HP	HORSEPOWER
HVAC	HEATING VENTILATION AIR CONDITIONING
IG	ISOLATED GROUND
IN	INCHES
kcmil	THOUSAND CIRCULAR MILS
kVA	KILOVOLT-AMPERE
kW	KILOWATT
kWH	KILOWATT HOUR
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUG ONLY
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
OH	OVERHEAD
P	POLE
PBO	PROVIDED BY OTHERS
PNL	PANEL
POI	POINT OF INTERCONNECTION
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE

ABBREVIATIONS CONT.

PVC-RGS	POLYVINYL CHLORIDE COATED RIGID GALVANIZED STEEL
PWA	3-PHASE POWER MONITOR
RAL	RIGID ALUMINUM
REC	RECEPTACLE
REL	REMOVE AND RELOCATE
RGS	RIGID GALVANIZED STEEL
RMC	RIGID METALLIC CONDUIT
SCH	SCHEDULE
SPD	SURGE PROTECTIVE DEVICE
SW	SWITCH(ES)
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
V	VOLT(S)
W	WATT
WP	WEATHERPROOF

NOTE: ALL ABBREVIATIONS MAY NOT BE APPLICABLE FOR THIS PROJECT.

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WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-3305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

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COPYRIGHT:
DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: GE-1
DESIGNED BY: BCB
DRAWN BY: FL
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

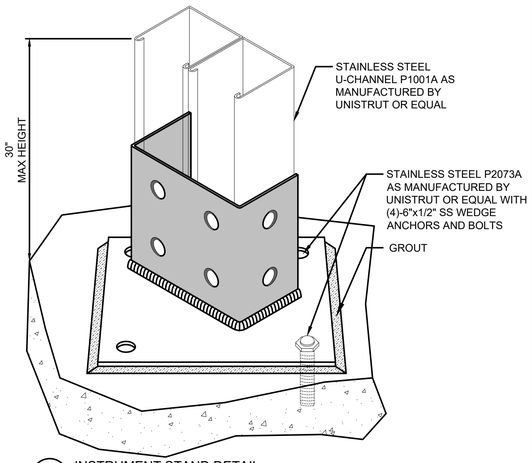
ELECTRICAL NOTES

SCALE: NO SCALE

SHEET NO: GE-1

SHEET 90 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-1.DWG Scale:1:1 SavedDate:11/22/2024 Time:12:09 Plot Date: Santiago, Daisy, 4/30/2025, 10:00 ; Layout:GE-01



B INSTRUMENT STAND DETAIL
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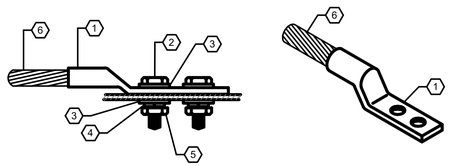
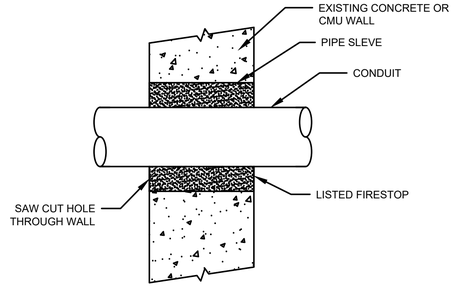


NOTE:
1. CONTRACTOR SHALL SIZE CONNECTOR TO MATCH GROUNDING WIRE.

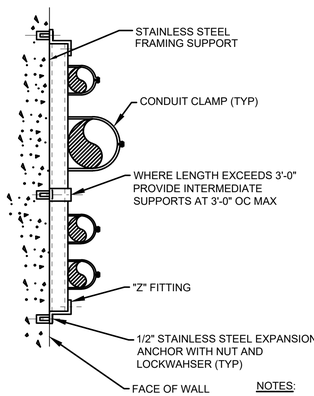
BILL OF MATERIAL		
ITEM	DESCRIPTION	QTY
1	COPPER COMPRESSION CONNECTION, BURNDY, TYPE "YGHA" HYLUG	1
2	HEX HEAD BOLT	2
3	FLAT WASHER	4
4	LOCK WASHER	2
5	HEX HEAD NUT	2
6	GROUND WIRE, SEE PLAN DRAWING	A/R

C GROUNDING LUG CONNECTION
N.T.S.



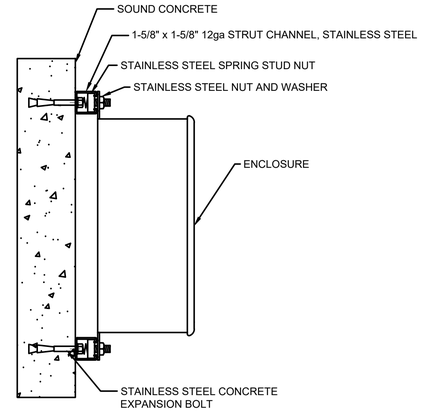
NOTES:
1. ALL CONDUIT RUNS SHALL BE SUPPORTED IN ACCORDANCE WITH THE LATEST NEC CODE.

D CONDUIT PENETRATION THRU WALL ABOVE GRADE
N.T.S.



NOTES:
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL

E CONDUIT SUPPORT FLUSH MOUNT
N.T.S.



F PANEL/BOX WALL MOUNTING
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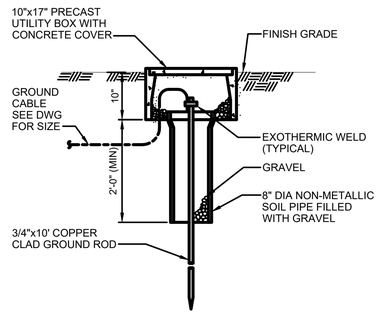
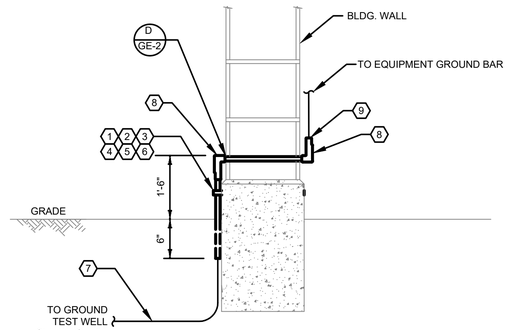


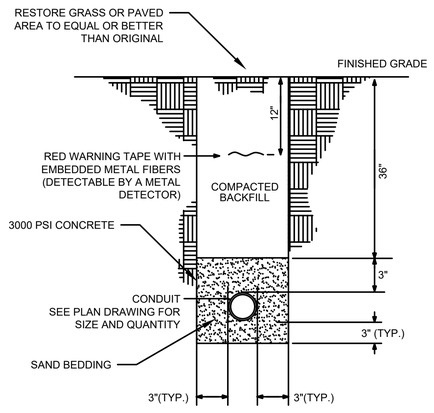
G GROUNDING TEST WELL
N.T.S.



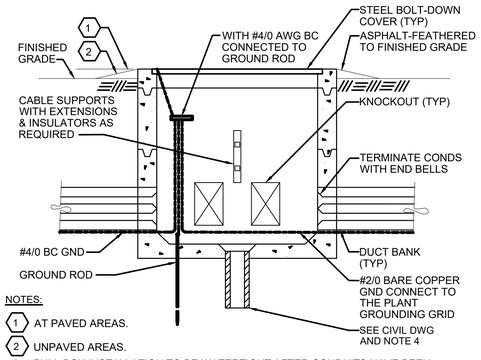
NOTE:
1. WEATHERPROOF ALL PENETRATIONS WITH AN APPROVED SEALANT.

BILL OF MATERIAL		
ITEM	DESCRIPTION	QTY
1	1" SCHEDULE 80 PVC CONDUIT (TYP)	A/R
2	CONDUIT CLAMP, 316 STAINLESS STEEL	A/R
3	EXPANSION ANCHOR, 316 STAINLESS STEEL	A/R
4	BOLT, MACH. 1/4"-20 X 3/4", 316 STAINLESS STEEL	A/R
5	LOCKWASHER, 1/4" 316 STAINLESS STEEL	A/R
6	FLAT WASHER, 1/2" 316 STAINLESS STEEL	A/R
7	GROUND WIRE, SEE PLAN DRAWING	A/R
8	CONDUIT FITTING 1", PVC, TYPE LB	A/R
9	DUCT SEAL	A/R

H GROUND WIRE WALL PENETRATION
N.T.S.



J CONCRETE TRENCH DETAIL
N.T.S.



NOTES:
1. AT PAVED AREAS.
2. UNPAVED AREAS.
3. PULL BOX INSTALLATION TO BE WATERTIGHT AFTER CONDUITS HAVE BEEN INSTALLED BY USING DUCT SEALING.
4. FOR MANHOLE/PULL BOX NOT SHOWN WITH DRAINAGE PIPING ON CIVIL DRAWINGS, PROVIDE A MINIMUM 4" DIAMETER PVC PIPE TO A 3'x3'x3' DRAIN ROCK PIT.

K TYPICAL MANHOLE/PULLBOX
N.T.S.

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

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DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: GE-2
DESIGNED BY: BCB
DRAWN BY: FL
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

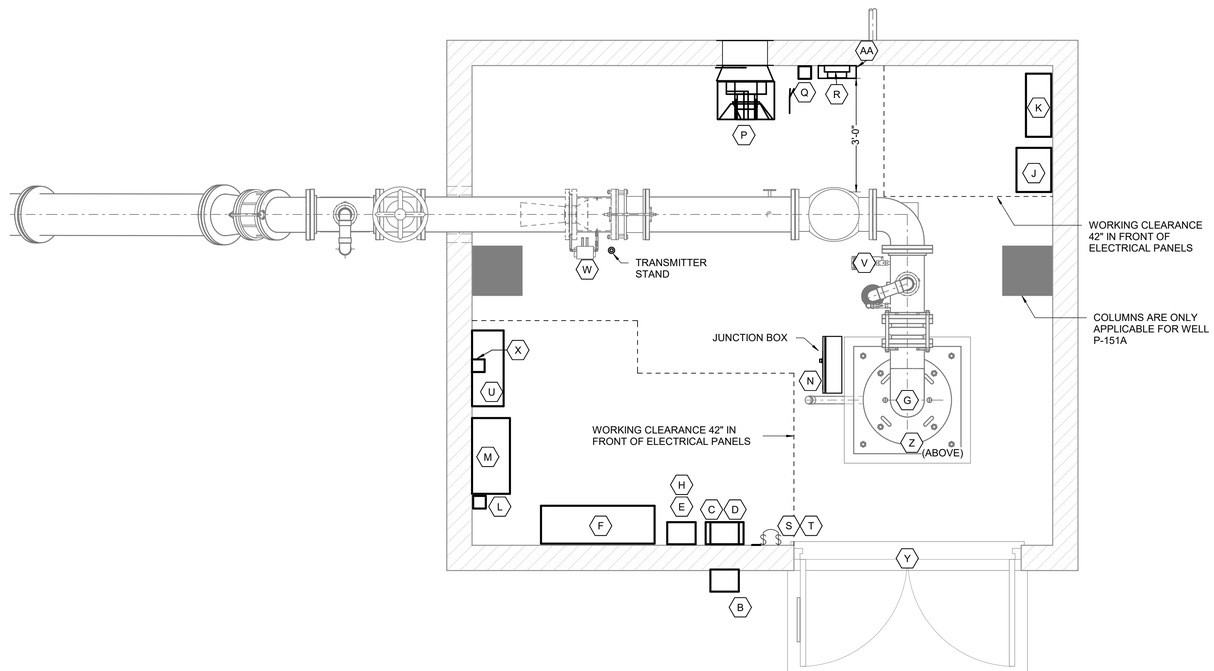
ELECTRICAL DETAILS

SCALE: NONE

SHEET NO: GE-2

SHEET 91 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-2.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:32 Plot Date: Santiago, Daisy, 4/30/2025, 09:55 ; Layout:GE-02



TYPE I PLAN

SCALE: 1/2" = 1'-0"

EQUIPMENT SCHEDULE

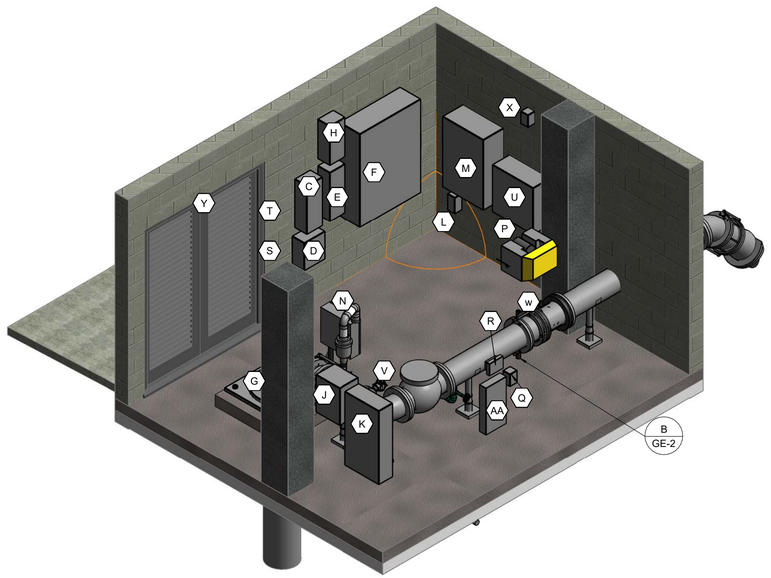
ITEM	TAG#	DISCRIPTION
A	XFM-01	PAD MOUNTED TRANSFORMER (EXISTING)
B	DISC-MN	MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
C	DISC-01	INDOOR MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
D	SPD-01	SURGE PROTECTIVE DEVICE
E	DISC-02	MOTOR SOFT START ENCLOSED CIRCUIT BREAKER DISCONNECT
F	MS-01	WALL MOUNTED ENCLOSED SOFT START W/FULL SPEED BYPASS
G	P-01	PUMP MOTOR (SUBMERSIBLE, IN WELL)
H	DISC-03	TRANSFORMER ENCLOSED CIRCUIT BREAKER DISCONNECT
J	XFM-02	WALL MOUNT DRY TYPE TRANSFORMER
K	LP-01	PANELBOARD
L	VR-01	SOLA CONSTANT VOLTAGE TRANSFORMER
M	PLC-01	PLC CONTROL PANEL
N	TJB-01	PUMP MOTOR TERMINAL JUNCTION BOX
P	EF-01	BUILDING EXHAUST FAN
Q	MS-02	EXHAUST FAN STARTER/DISCONNECT
R	TS-01	THERMOSTAT
S		2 GANG RECEPTACLE, GFCI, 20A, ALUMINUM WEATHER PROOF ENCLOSURE W/ALUMINUM WHILE IN USE COVER, HEAVY DUTY (QTY 2)
T		2 GANG LIGHT SWITCH, 15A, ALUMINUM ENCLOSURE W/COVER, HEAVY DUTY
U	COM-01	COMMUNICATION CABINET , 24"x24"x10" WITH 120V DUPLEX RECEPTICLE INSIDE, (FURNISH AND INSTALL FOR FUTURE USE)
V	PIT-107	PRESSURE INDICATING TRANSMITTER
W	FIT-109	FLOW INDICATING TRANSMITTER
X	MS-111	MOTION DETECTOR MOUNTED WITHIN 1' OF CEILING
Y	ZSO-115	DOOR POSITION SWITCH
Z	ZSO-116	ROOF HATCH POSITION SWITCH
AA	ATC	ATC PANEL (COODINATE WITH HVAC SUPPLIER)

GENERAL SHEET NOTES:

1. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ENERGIZED CIRCUITS.
2. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF LOCAL AND NATIONAL ELECTRICAL CODES, ELECTRICAL SPECIFICATIONS, AND DRAWINGS.
3. REFER TO CABLE BLOCK DIAGRAMS AND ONE-LINES FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
4. REFER TO LIGHTING PLAN FOR LIGHT FIXTURE TYPES AND LOCATIONS.
5. REFER TO GROUNDING PLAN FOR EQUIPMENT GROUNDING AND LIGHTING PROTECTION REQUIREMENT.
6. FOR CLARITY, NOT ALL EQUIPMENT IS REPRESENTED IN EVERY VIEW.
7. TRANSFORMER "A" IS LOCATED WITHIN 10 FEET OF THE WELL HOUSE. TYPICALLY ON OPPOSITE SIDE OF THE BUILDING DOOR. THE CONTRACTOR SHALL ROUTE NEW CONDUIT UNDERGROUND, FROM THE TRANSFORMER, AROUND STRUCTURE, TO MAIN DISCONNECT. REFER TO CIVIL PLANS FOR EXACT LOCATIONS. FOR SITES WITH NEW TRANSFORMERS, THE NEW TRANSFORMER AND PAD SHALL BE PLACED IN THE SAME LOCATION AS THE EXISTING TRANSFORMER BEING REPLACED.
8. TOP OF ELECTRICAL PANELS SHALL NOT EXCEED 6' FROM FINISHED FLOOR.

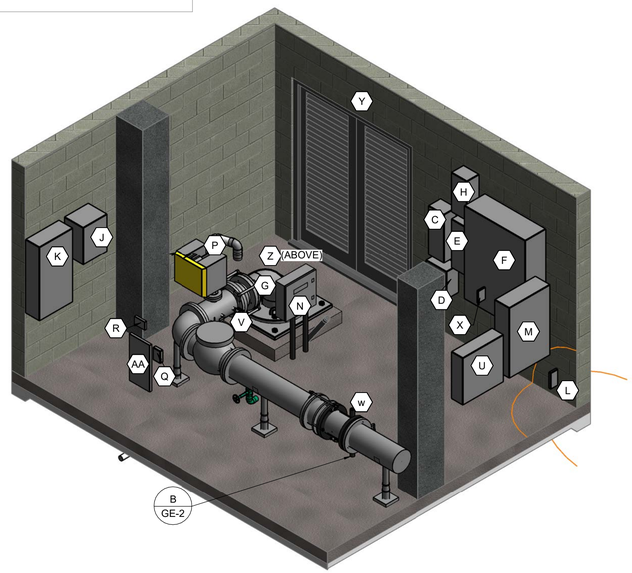
TYPICAL OF STATIONS:

MBR-150, MBR-151, MBR-153,
MBR-154, MBR-155, MBR-156,
MBR-158, MBR-159, MBR-160



VIEW FROM NORTHEAST (TYPE I)

NO SCALE



VIEW FROM NORTHWEST (TYPE I)

NO SCALE

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TAMPA, FLORIDA

MORRIS BRIDGE
WELLFIELD
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DESIGNED BY: BCB
DRAWN BY: NE
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

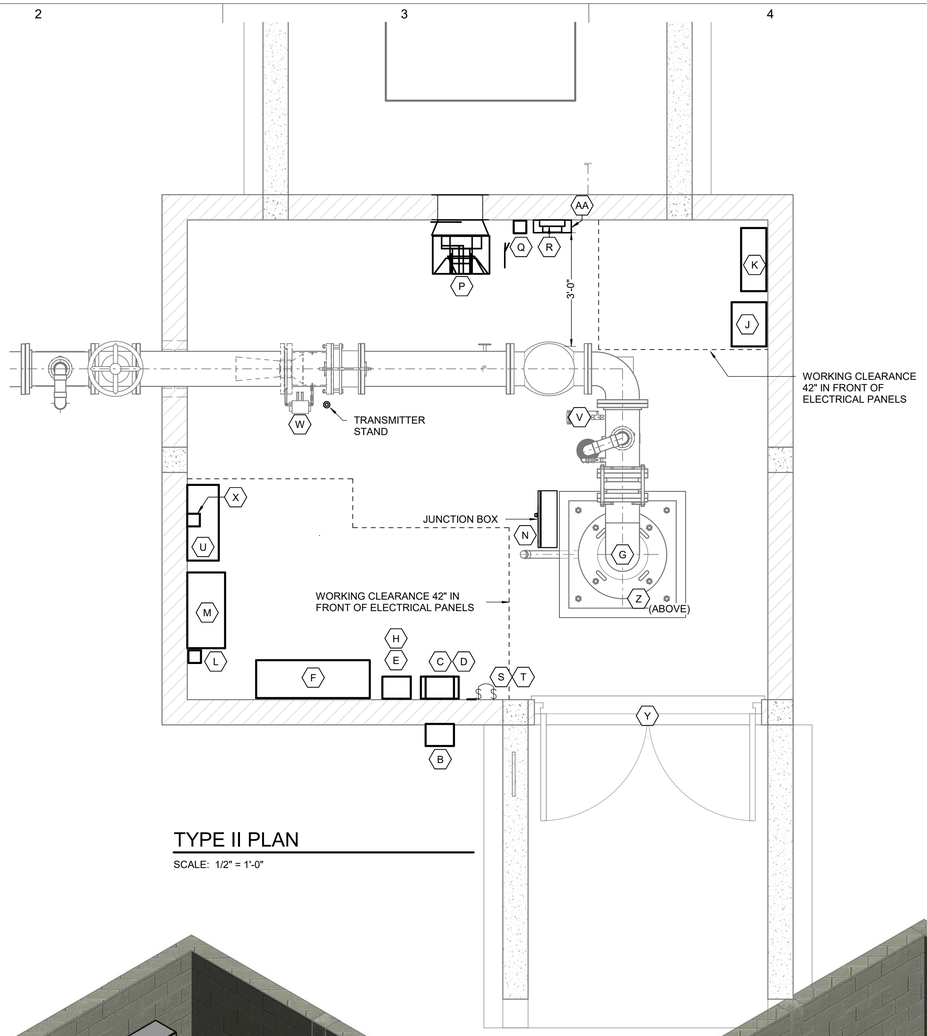
TYPICAL BUILDING LAYOUT TYPE I

SCALE: 1/2" = 1'-0"

SHEET NO: GE-3

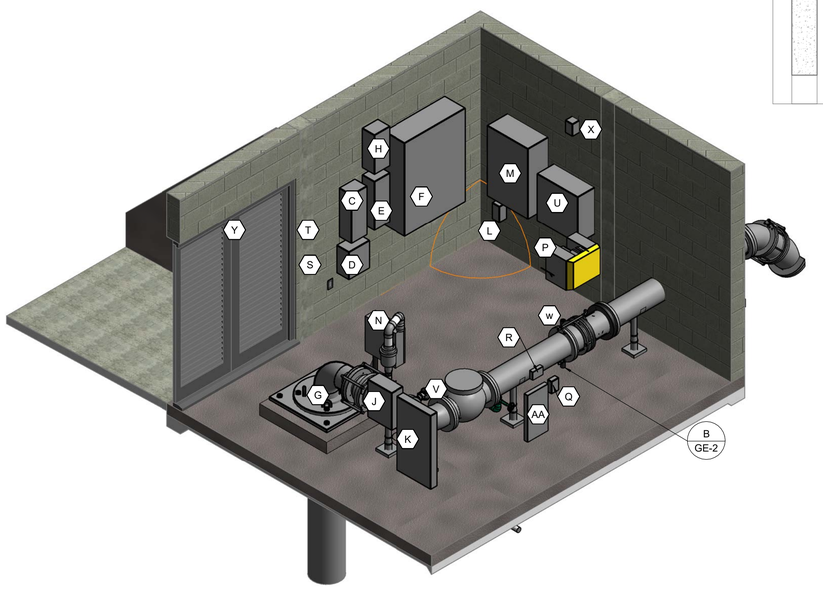
SHEET 92 OF 120

5/5/2025 4:14:57 PM
Scale:1:1
Spec:NAT CADD STD
User:NE



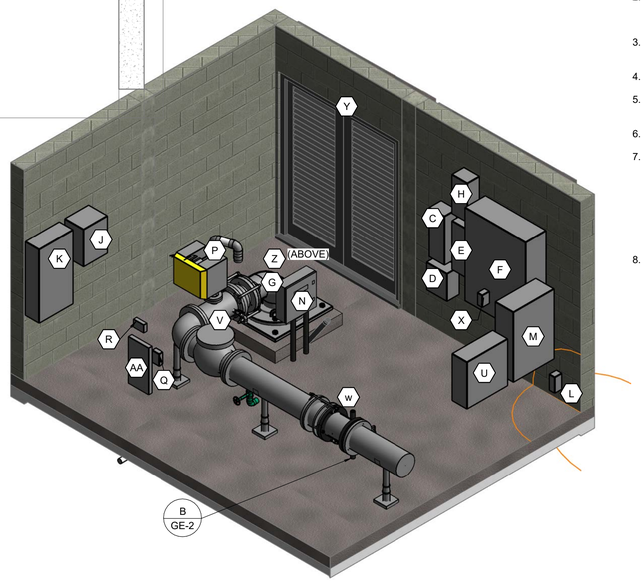
TYPE II PLAN

SCALE: 1/2" = 1'-0"



VIEW FROM NORTHEAST (TYPE II)

NO SCALE



VIEW FROM NORTHWEST (TYPE II)

NO SCALE

EQUIPMENT SCHEDULE

ITEM	TAG#	DISCRIPTION
A	XFM-01	PAD MOUNTED TRANSFORMER (EXISTING)
B	DISC-MN	MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
C	DISC-01	INDOOR MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
D	SPD-01	SURGE PROTECTIVE DEVICE
E	DISC-02	MOTOR SOFT START ENCLOSED CIRCUIT BREAKER DISCONNECT
F	MS-01	WALL MOUNTED ENCLOSED SOFT START W/FULL SPEED BYPASS
G	P-01	PUMP MOTOR (SUBMERSIBLE, IN WELL)
H	DISC-03	TRANSFORMER ENCLOSED CIRCUIT BREAKER DISCONNECT
J	XFM-02	WALL MOUNT DRY TYPE TRANSFORMER
K	LP-01	PANELBOARD
L	VR-01	SOLA CONSTANT VOLTAGE TRANSFORMER
M	PLC-01	PLC CONTROL PANEL
N	TJB-01	PUMP MOTOR TERMINAL JUNCTION BOX
P	EF-01	BUILDING EXHAUST FAN
Q	MS-02	EXHAUST FAN STARTER/DISCONNECT
R	TS-01	THERMOSTAT
S		2 GANG RECEPTACLE, GFCI. 20A, ALUMINUM WEATHER PROOF ENCLOSURE W/ALUMINUM WHILE IN USE COVER, HEAVY DUTY (QTY 2)
T		2 GANG LIGHT SWITCH, 15A, ALUMINUM ENCLOSURE W/COVER, HEAVY DUTY
U	COM-01	COMMUNICATION CABINET , 24"x24"x10" WITH 120V DUPLEX RECEPTICLE INSIDE, (FURNISH AND INSTALL FOR FUTURE USE)
V	PIT-107	PRESSURE INDICATING TRANSMITTER
W	FIT-109	FLOW INDICATING TRANSMITTER
X	MS-111	MOTION DETECTOR MOUNTED WITHIN 1' OF CEILING
Y	ZSO-115	DOOR POSITION SWITCH
Z	ZSO-116	ROOF HATCH POSITION SWITCH
AA	ATC	ATC PANEL (COODINATE WITH HVAC SUPPLIER)

GENERAL SHEET NOTES:

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3. REFER TO CABLE BLOCK DIAGRAMS AND ONE-LINES FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
4. REFER TO LIGHTING PLAN FOR LIGHT FIXTURE TYPES AND LOCATIONS.
5. REFER TO GROUNDING PLAN FOR EQUIPMENT GROUNDING AND LIGHTING PROTECTION REQUIREMENT.
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8. TOP OF ELECTRICAL PANELS SHALL NOT EXCEED 6' FROM FINISHED FLOOR.

TYPICAL OF STATIONS:

MBR-164, MBR-168

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FILE NAME:
DESIGNED BY: BCB
DRAWN BY: NE
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

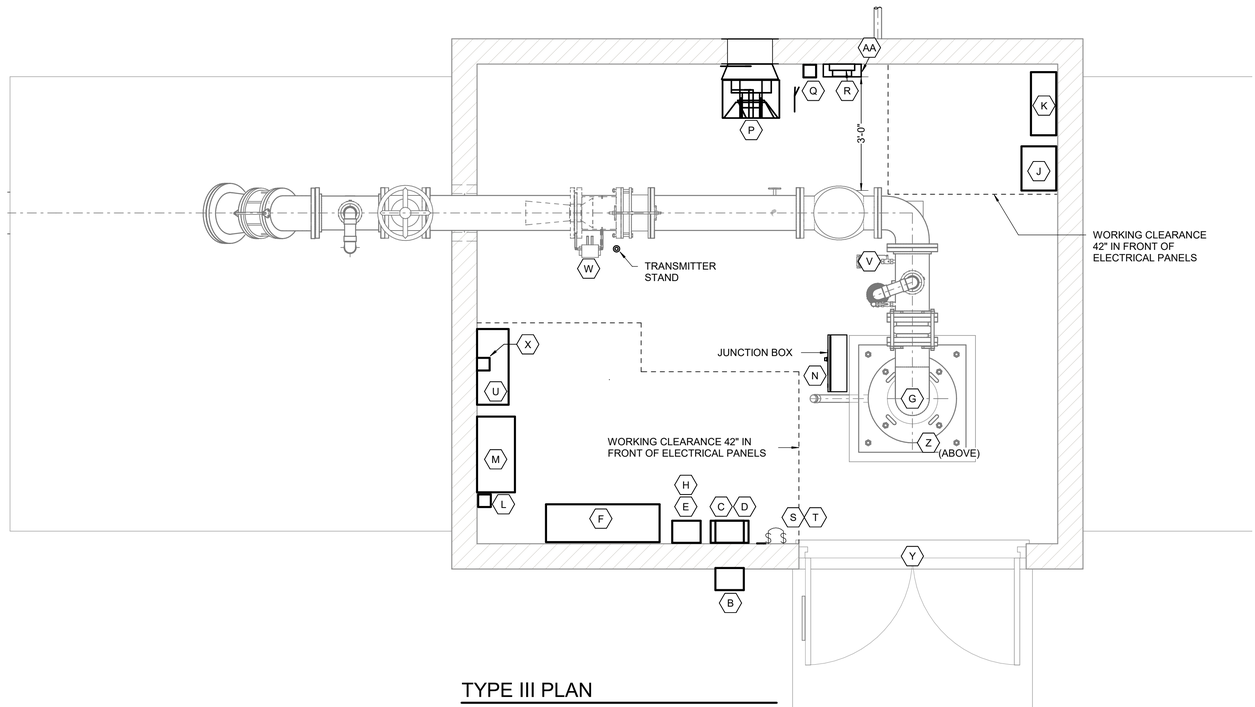
TYPICAL BUILDING LAYOUT TYPE II

SCALE: 1/2" = 1'-0"

SHEET NO: GE-4

SHEET 93 OF 120

5/5/2025 4:15:04 PM
Scale:1:1
Spec:NAT CADD STD
User:NE



TYPE III PLAN

SCALE: 1/2" = 1'-0"

EQUIPMENT SCHEDULE

ITEM	TAG#	DISCRIPTION
A	XFM-01	PAD MOUNTED TRANSFORMER (EXISTING)
B	DISC-MN	MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
C	DISC-01	INDOOR MAIN ENCLOSED CIRCUIT BREAKER DISCONNECT
D	SPD-01	SURGE PROTECTIVE DEVICE
E	DISC-02	MOTOR SOFT START ENCLOSED CIRCUIT BREAKER DISCONNECT
F	MS-01	WALL MOUNTED ENCLOSED SOFT START W/FULL SPEED BYPASS
G	P-01	PUMP MOTOR (SUBMERSIBLE, IN WELL)
H	DISC-03	TRANSFORMER ENCLOSED CIRCUIT BREAKER DISCONNECT
J	XFM-02	WALL MOUNT DRY TYPE TRANSFORMER
K	LP-01	PANELBOARD
L	VR-01	SOLA CONSTANT VOLTAGE TRANSFORMER
M	PLC-01	PLC CONTROL PANEL
N	TJB-01	PUMP MOTOR TERMINAL JUNCTION BOX
P	EF-01	BUILDING EXHAUST FAN
Q	MS-02	EXHAUST FAN STARTER/DISCONNECT
R	TS-01	THERMOSTAT
S		2 GANG RECEPTACLE, GFCI, 20A, ALUMINUM WEATHER PROOF ENCLOSURE W/ALUMINUM WHILE IN USE COVER, HEAVY DUTY (QTY 2)
T		2 GANG LIGHT SWITCH, 15A, ALUMINUM ENCLOSURE W/COVER, HEAVY DUTY
U	COM-01	COMMUNICATION CABINET , 24"x24"x10" WITH 120V DUPLEX RECEPTICLE INSIDE, (FURNISH AND INSTALL FOR FUTURE USE)
V	PIT-107	PRESSURE INDICATING TRANSMITTER
W	FIT-109	FLOW INDICATING TRANSMITTER
X	MS-111	MOTION DETECTOR MOUNTED WITHIN 1' OF CEILING
Y	ZSO-115	DOOR POSITION SWITCH
Z	ZSO-116	ROOF HATCH POSITION SWITCH
AA	ATC	ATC PANEL (COODINATE WITH HVAC SUPPLIER)

GENERAL SHEET NOTES:

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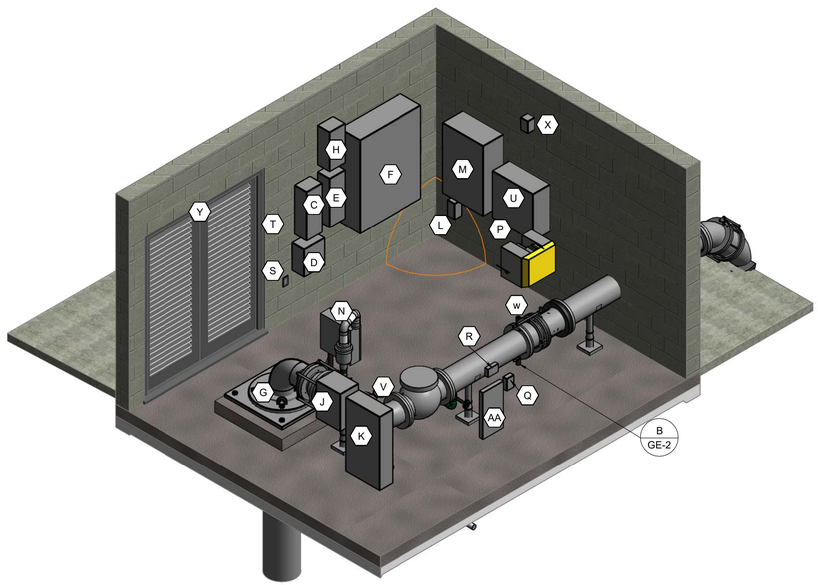
8. TOP OF ELECTRICAL PANELS SHALL NOT EXCEED 6' FROM FINISHED FLOOR.

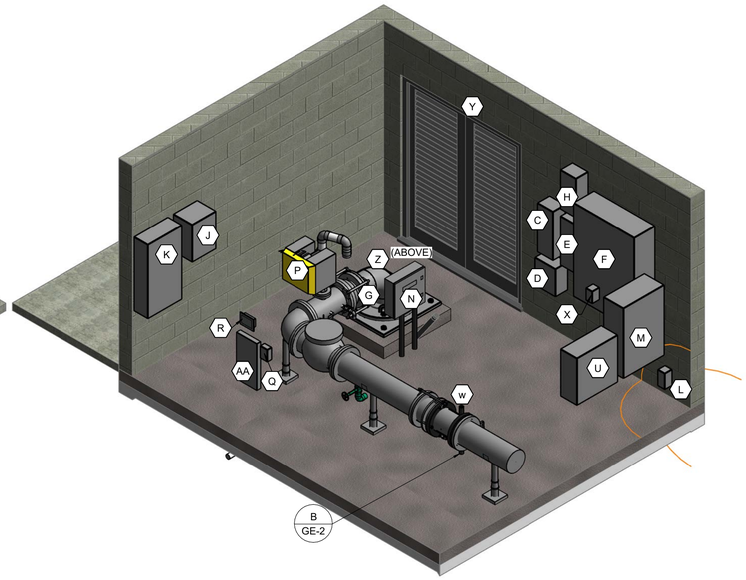
TYPICAL OF STATIONS:

MBR-165, MBR-166, MBR-167, MBR-169



VIEW FROM NORTHEAST (TYPE III)

NO SCALE



VIEW FROM NORTHWEST (TYPE III)

NO SCALE

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TAMPA, FLORIDA

MORRIS BRIDGE WELLFIELD IMPROVEMENTS

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FILE NAME:
DESIGNED BY: BCB
DRAWN BY: NE
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

TYPICAL BUILDING LAYOUT TYPE III

SCALE: 1/2" = 1'-0"

SHEET NO: GE-5

SHEET 94 OF 120

5/5/2025 4:15:10 PM
Scale:1:1
Saved Date:
Sync:NAT CADD STD
User:NE

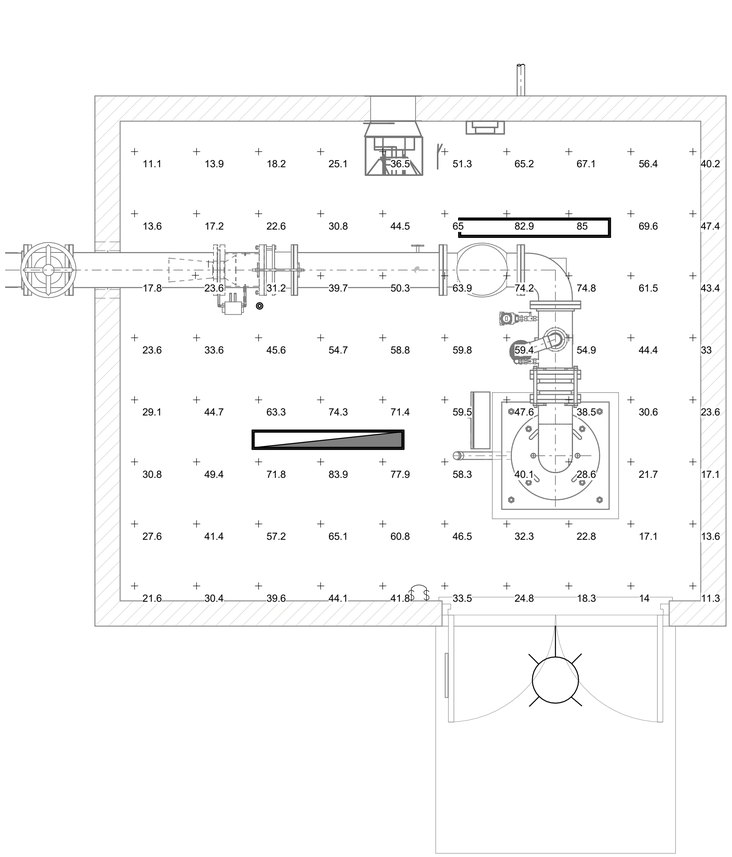
751

GENERAL SHEET NOTES

1. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ENERGIZED CIRCUITS.
2. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF LOCAL AND NATIONAL ELECTRICAL CODES, ELECTRICAL SPECIFICATIONS AND DRAWINGS.

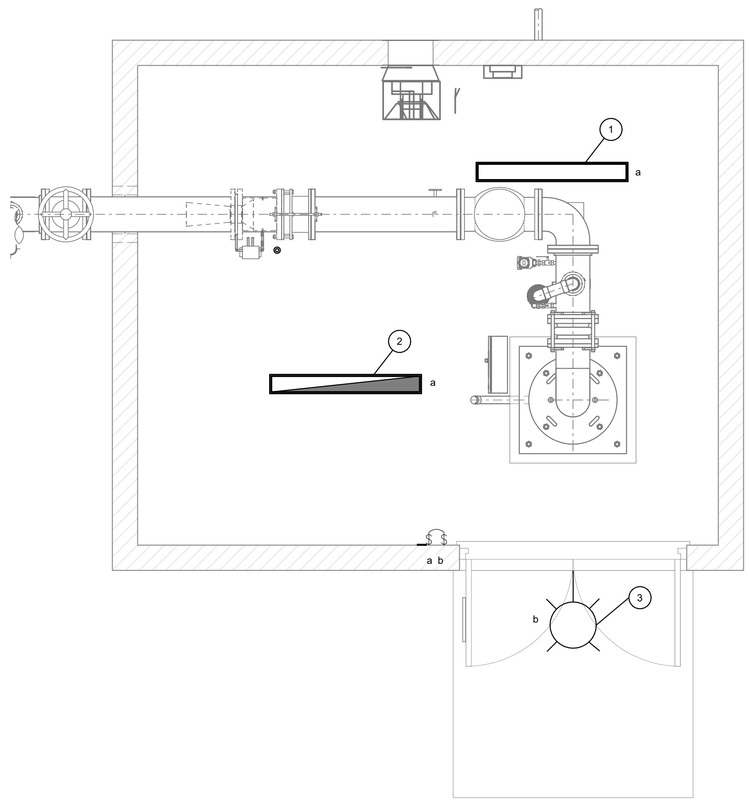
TYPICAL OF STATIONS:

MBR-150, MBR-151, MBR-153,
MBR-154, MBR-155, MBR-156,
MBR-158, MBR-159, MBR-160,
MBR-164, MBR-165, MBR-166,
MBR-167, MBR-168, MBR-169



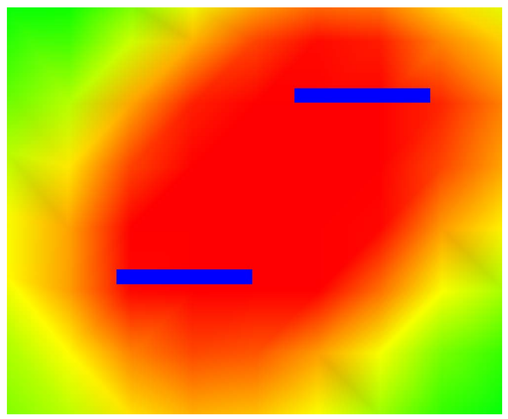
MBR LIGHTING PLAN VIEW

SCALE: 1/2" = 1'-0"



MBR LIGHTING PLAN VIEW

SCALE: 1/2" = 1'-0"



MBR SHADED PLAN VIEW

DESCRIPTION	FC
WORKPLANE HEIGHT	5'-0"
AVERAGE	42.97
MAXIMUM	85.0
MINIMUM	11.1

FOOT CANDLE CALCULATION

BILL OF MATERIAL			
ITEM	QTY	UNIT	DISCRIPTION
1	1	EA	FEM LED 48", 6,000 LUMENS, LOW PROFILE, WIDE DIST., 80 CRI, 5000 K. SURFACE MOUNT TO CEILING 10FT ABOVE FINNISHED FLOOR.
2	1	EA	FEM LED 48", 6,000 LUMENS, LOW PROFILE, WIDE DIST., 80 CRI, 5000 K. SURFACE MOUNT TO CEILING. 10FT ABOVE FINNISHED FLOOR. 90MIN BATTERY BACKUP.
3	1	EA	LITHONIA KAXW LED P2 40K R4 MVOLT PIR DDBXD OUTDOOR LIGHT W/MOTION DETECTOR AND BSW (BIRD-DETERRENT SPIKES). MOUNT 1'-0" ABOVE DOORWAY.

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SEALS

TAMPA, FLORIDA

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DATE: SEPT 2025
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FILE NAME:
DESIGNED BY: NE
DRAWN BY: NE
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

TYPICAL LIGHTING PLAN

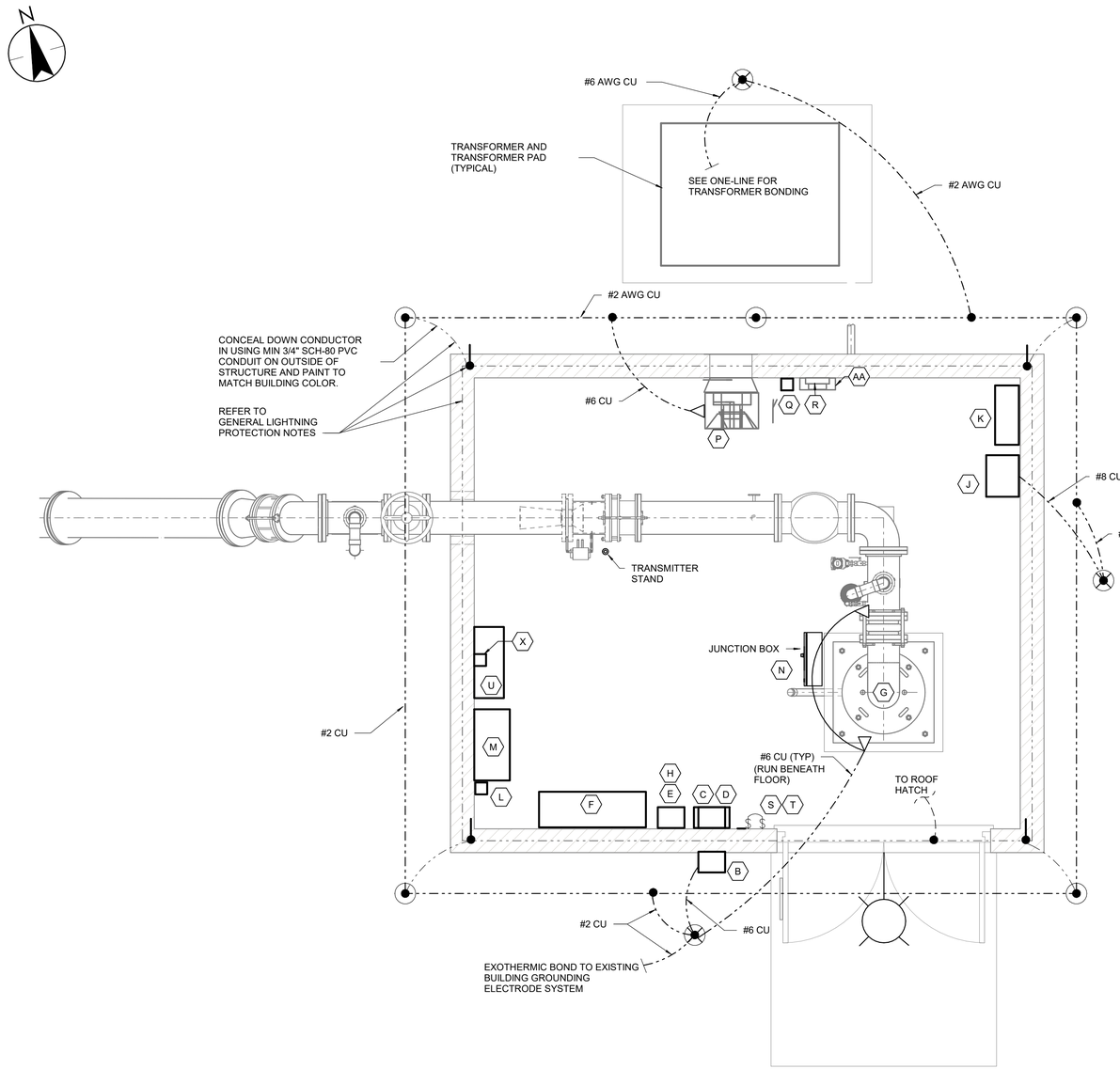
SCALE: 1/2" = 1'-0"

SHEET NO: GE-6

SHEET 95 OF 120

5/5/2025 4:15:14 PM
Scale:1:1
Sheet Size:
Spec:NAT CADD STD
User:NE

752



TYPICAL GROUNDING PLAN

SCALE: 1/2" = 1'-0"

GENERAL SHEET NOTES

1. GROUNDING IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR SHALL AVOID ALL OBSTACLES AS MUCH AS PRACTICAL. EXACT LOCATION AND ROUTING SHALL BE DETERMINED IN THE FIELD AND APPROVED BY OWNER.
2. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF LOCAL AND NATIONAL ELECTRICAL CODES, ELECTRICAL SPECIFICATIONS AND DRAWINGS.
3. GROUND CABLE SHOWN WITHIN THE PUMP BUILDING LIMITS SHALL BE ABOVE GRADE. THE CONTRACTOR SHALL SUPPORT CABLE AS REQUIRED TO PREVENT DAMAGE.
4. GROUND CABLE SHOWN OUTSIDE OF THE BUILDING LIMITS SHALL BE BELOW GRADE. CONTRACTOR SHALL PROTECT GROUND CABLE AT ALL PENETRATIONS.
5. GROUND TEST WELLS ARE GENERALLY SHOWN ON THIS DRAWING. THE CONTRACTOR IS RESPONSIBLE TO FIELD DETERMINE EXACT INSTALLATION LOCATION. THE NEW GROUND TEST WELLS ARE TO BE OFF-SET AT A MINIMUM OF 3'-0" FROM THE BUILDING.
6. THE CONTRACTOR SHALL USE 1/0 BARE CU CONDUCTOR AND AND EXOTHERMIC WELD TO BOND THE NEW GROUND ROD TO THE EXISTING GROUNDING ELECTRODE SYSTEM.
7. CONTRACTOR SHALL BOND ALL EXISTING GROUNDING TO NEW GROUNDING.
8. DRAWING IS TYPICAL FOR ALL MBR WELL HOUSES BEING UPGRADED EXCLUDES: MBR-152, MBR-157, MBR-161, MBR-162, MBR-163
9. REFER TO TYPICAL BUILDING LAYOUT DRAWING FOR EQUIPMENT SCHEDULE AND LOCATIONS.

GENERAL LIGHTNING PROTECTION NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL A SYSTEM OF LIGHTNING PROTECTION. THE ENTIRE LIGHTNING PROTECTION SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH:
   - NFPA DOCUMENT #780
   - UL STANDARD #96A
   - LIGHTNING PROTECTION INSTITUTE (LP1) STD# 175
2. A FIRM SUITABILITY QUALIFIED AND LISTED WITH UL AND LP1 SHALL INSTALL THE SYSTEM AND SHALL FURNISH A UL MASTER LABEL AND LP1 SYSTEM CERTIFICATION UPON COMPLETION OF INSTALL.
3. ALL METAL BODIES WITHIN 6FT OF THE CONDUCTOR SHALL BE BONDED TO THE SYSTEM WITH APPROVED FITTINGS AND CONDUCTORS. CONNECTION BETWEEN DISSIMILAR METALS SHALL BE MADE WITH APPROVED BIMETALLIC CONNECTIONS. PRIMARY BONDS FOR CONDUCTING METAL BODIES SHALL BE BONDED WITH APPROPRIATE FITTINGS AND FULL SIZE CONDUCTORS, AND SHALL CONSIST OF, BUT NOT LIMITED TO THE FOLLOWING: LADDER AND RAIL SYSTEMS, VENTS AND PIPING. ALUMINUM TO COPPER CONNECTIONS SHALL BE MADE WITH BIMETALLIC CONNECTORS.
4. THE LIGHTNING PROTECTION SYSTEM SHALL BE DESIGNED TO PROTECT THE BUILDING AND ALL ROOFTOP EQUIPMENT.
5. DOWN CONDUCTORS SHALL BE PROTECTED.
6. ALUMINUM TO COPPER CONNECTIONS SHALL BE MADE WITH BIMETALLIC CONNECTORS. GROUNDS FOR ELECTRICAL AND LIGHTING PROTECTION SHALL BE TIED TOGETHER TO FORM A COMMON GROUND.
7. MINIMUM SIZE LIGHTNING PROTECTION CONDUCTORS SHALL CONSIST OF U.L. LISTED 29 STRANDS OF 17 GAUGE COPPER WIRE WEIGHING 190 LBS. PER 1000 FEET AND INSTALLED IN ACCORDANCE WITH THE U.L. CODE . (CLASS 1)

REFERENCE DRAWING:

GE-2	ELECTRICAL DETAILS
GE-4	TYPICAL BUILDING LAYOUT

LEGEND:

- GREEN INSULATED CONDUCTOR
- BARE COPPER CONDUCTOR
- BOLTED CONNECTION TO EQUIPMENT OR STEEL
- GROUND ROD AND GROUND WELL
- GROUND ROD (3/4" X 10'-0")
- CABLE TO CABLE EXOTHERMIC WELD GROUND CONNECTION
- LIGHTNING PROTECTION AIR TERMINAL

TYPICAL OF STATIONS:

MBR-150, MBR-151, MBR-153,
MBR-154, MBR-155, MBR-156,
MBR-158, MBR-159, MBR-160,
MBR-164, MBR-165, MBR-166,
MBR-167, MBR-168, MBR-169

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DRAWN BY: NE
CHECKED BY: JL
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SHEET TITLE

TYPICAL GROUNDING PLAN

SCALE: 1/2" = 1'-0"

SHEET NO: GE-7

SHEET 96 OF 120

User:NE
Spec:NAT CADD STD
Scale:1:1
Saved Date: 5/5/2025 4:15:14 PM

753

ITEM	FROM	TO	CABLE/CONDUIT DESCRIPTION	NOTES
1	XFM-01	DISC-MN	3#2/0 + 1#4BND IN 2"C (PVC-RGS)	
2	DISC-MN	DISC-01	3#2/0 + 1#6G IN 2"C (RMC)	
3	DISC-01	SPD-01	3#6 + 1#6G IN 1"C (RMC)	
4	DISC-01	DISC-03	2#10 + 1#10G IN 3/4"C (RMC)	LIMIT 10' LENGTH
5	DISC-01	DISC-02	3#2/0 + 1#6G IN 2"C (RMC)	
6	DISC-02	MS-01	3#2/0 + 1#6G IN 2"C (RMC)	
7	MS-01	TJB-01	3#2 + 1#6G IN 2"C (RMC)	
8	DISC-03	XFM-02	2#10 + 1#10G IN 1"C (PVC-RGS)	
9	XFM-02	LP-01	3#6 + 1#8BND IN 3/4"C (RMC)	
10	LP-01	VR-01	2#12 + 1#12G IN 3/4"C (RMC)	
11	VR-01	PLC-01	2#12 + 1#12G IN 3/4"C (RMC)	
12	LP-01	LIGHTS	2#12 + 1#12G IN 3/4"C (RMC)	
13	LP-01	RECPT	2#12 + 1#12G IN 3/4"C (RMC)	
14	LP-01	EF-01, MS-01 MS-02	2#10 + 1#10G IN 3/4"C (RMC)	
15	LP-01	COM-01	2#12 + 1#12G IN 3/4"C (RMC)	
16	TJB-01	P-01	PUMP MFGR. SUPPLIED CABLES IN 2"C (LTFMC)	

CABLE/CONDUIT SCHEDULE

LP-01

100 AMP | 3 WIRE | 120/240 VOLTS | 1 PHASE | 12 CIRCUIT

L1 L2 50A

EXHAUST FAN EF-01, ATC	1	20A	20A	2	VOLTAGE XFMR/ PLC-01
SPARE	3	15A	20A	4	RECEPTACLES
COM-01 COMMUNICATIONS CABINET	5	20A	15A	6	LIGHTING (CONTINUOUS)
SPACE	7		15A	8	SPARE
SPACE	9			10	SPACE
SPACE	11			12	SPACE

PANEL "LP-01" SCHEDULE

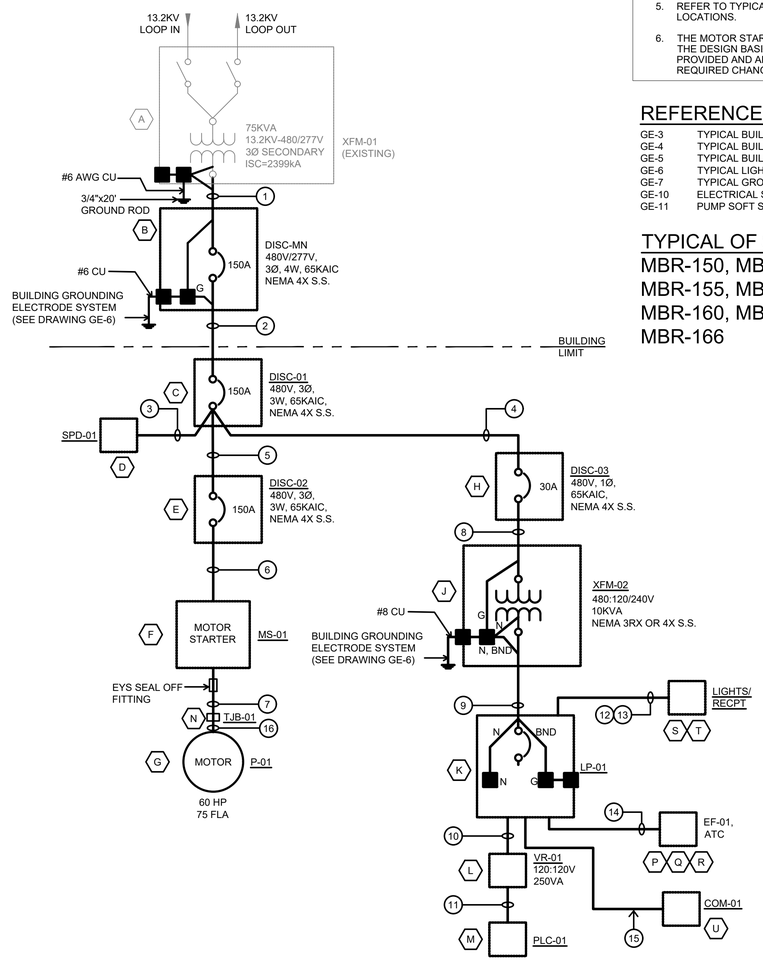
100 AMP - 50A MAIN - 120/240V - 1Ø, 3W, 10KAIC
12 CIRCUIT - NEMA4X ENCLOSURE
PANELBOARD WITH COPPER BUS

DESCRIPTION	HP	KVA
EF-01 EXHAUST FAN	1/2	1.13
LIGHTING	-	0.66
RECEPTACLES	-	0.36
PLC-01 CONTROL PANEL	-	0.24
COM-01 COMMUNICATION CABINET	-	0.50
TOTAL		2.89
25% LARGEST MOTOR		0.28
TOTAL		3.17
AMPS @ 240V = 18A		

PANELBOARD LP-01 LOAD CALCULATION

DESCRIPTION	HP	KVA
PUMP P-01	60	61.4
PANELBOARD LP-01	-	2.89
25% LARGEST MOTOR	-	15.3
TOTAL		79.59
AMPS @ 480V = 96A		

WELL SITE LOAD CALCULATION



ELECTRICAL BLOCK DIAGRAM

GENERAL SHEET NOTES

1. FOR CLARITY OF THE DRAWING ONLY GENERIC EQUIPMENT TAG NUMBERS ARE USED. CONTRACTOR TO OBTAIN ACTUAL EQUIPMENT TAG NUMBERS IN THE FIELD.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. PVC COATED RMC SHALL BE USED FOR BELOW GRADE INSTALLATION. RMC SHALL BE USED FOR ABOVE GRADE INSTALLATION.
4. FOR LIGHTING LAYOUT AND DESIGN SEE TYPICAL LIGHTING PLAN LAYOUT DRAWING.
5. REFER TO TYPICAL BUILDING LAYOUT DRAWING FOR EQUIPMENT SCHEDULE AND LOCATIONS.
6. THE MOTOR STARTER AND POWER DISTRIBUTION EQUIPMENT ARE SIZED TO SUPPORT THE DESIGN BASIS PUMP MOTOR. IF A MOTOR WITH DIFFERENT REQUIREMENTS IS PROVIDED AND APPROVED, THE CONTRACTOR IS RESPONSIBLE TO MAKE ALL REQUIRED CHANGES TO SUPPORT THE LOAD.

REFERENCE DRAWINGS:

GE-3	TYPICAL BUILDING LAYOUT TYPE I
GE-4	TYPICAL BUILDING LAYOUT TYPE II
GE-5	TYPICAL BUILDING LAYOUT TYPE III
GE-6	TYPICAL LIGHTING PLAN LAYOUT
GE-7	TYPICAL GROUNDING PLAN
GE-10	ELECTRICAL SYSTEM BLOCK DIAGRAM (TYPICAL)
GE-11	PUMP SOFT START MOTOR SCHEMATIC (TYPICAL)

TYPICAL OF STATIONS:

MBR-150, MBR-153, MBR-154, MBR-155, MBR-156, MBR-159, MBR-160, MBR-164, MBR-165, MBR-166

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DRAWN BY: FL
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE
TYPICAL ONE-LINE

SCALE: NOTED

SHEET NO: GE-8

SHEET 97 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-8.DWG Scale:1:1 SavedDate:4/30/2025 Time:09:55 Plot Date: Santiago, Daisy; 4/30/2025; 10:01 ; Layout:GE-08

ITEM	FROM	TO	CABLE/CONDUIT DESCRIPTION	NOTES
1	XFM-01	DISC-MN	3#2/0 + 1#4BND IN 2"C (PVC-RGS)	
2	DISC-MN	DISC-01	3#2/0 + 1#6G IN 2"C (RMC)	
3	DISC-01	SPD-01	3#6 + 1#6G IN 1"C (RMC)	
4	DISC-01	DISC-03	2#10 + 1#10G IN 3/4"C (RMC)	LIMIT 10' LENGTH
5	DISC-01	DISC-02	3#2/0 + 1#6G IN 2"C (RMC)	
6	DISC-02	MS-01	3#2/0 + 1#6G IN 2"C (RMC)	
7	MS-01	TJB-01	3#1/0 + 1#6G IN 2"C (RMC)	
8	DISC-03	XFM-02	2#10 + 1#10G IN 1"C (PVC-RGS)	
9	XFM-02	LP-01	3#6 + 1#8BND IN 3/4"C (RMC)	
10	LP-01	VR-01	2#12 + 1#12G IN 3/4"C (RMC)	
11	VR-01	PLC-01	2#12 + 1#12G IN 3/4"C (RMC)	
12	LP-01	LIGHTS	2#12 + 1#12G IN 3/4"C (RMC)	
13	LP-01	RECPT	2#12 + 1#12G IN 3/4"C (RMC)	
14	LP-01	EF-01, MS-01 MS-02	2#10 + 1#10G IN 3/4"C (RMC)	
15	LP-01	COM-01	2#12 + 1#12G IN 3/4"C (RMC)	
16	TJB-01	P-01	PUMP MFGR. SUPPLIED CABLES IN 2"C (LTFMC)	

CABLE/CONDUIT SCHEDULE

DESCRIPTION	HP	KVA
EF-01 EXHAUST FAN	1/2	1.13
LIGHTING	-	0.66
RECEPTACLES	-	0.36
PLC-01 CONTROL PANEL	-	0.24
COM-01 COMMUNICATION CABINET	-	0.50
TOTAL		2.89
25% LARGEST MOTOR		0.28
TOTAL		3.17
AMPS @ 240V = 18A		

PANELBOARD LP-01 LOAD CALCULATION

DESCRIPTION	HP	KVA
PUMP P-01	75	76.5
PANELBOARD LP-01	-	2.89
25% LARGEST MOTOR	-	19.1
TOTAL		98.49
AMPS @ 480V = 118A		

WELL SITE LOAD CALCULATION

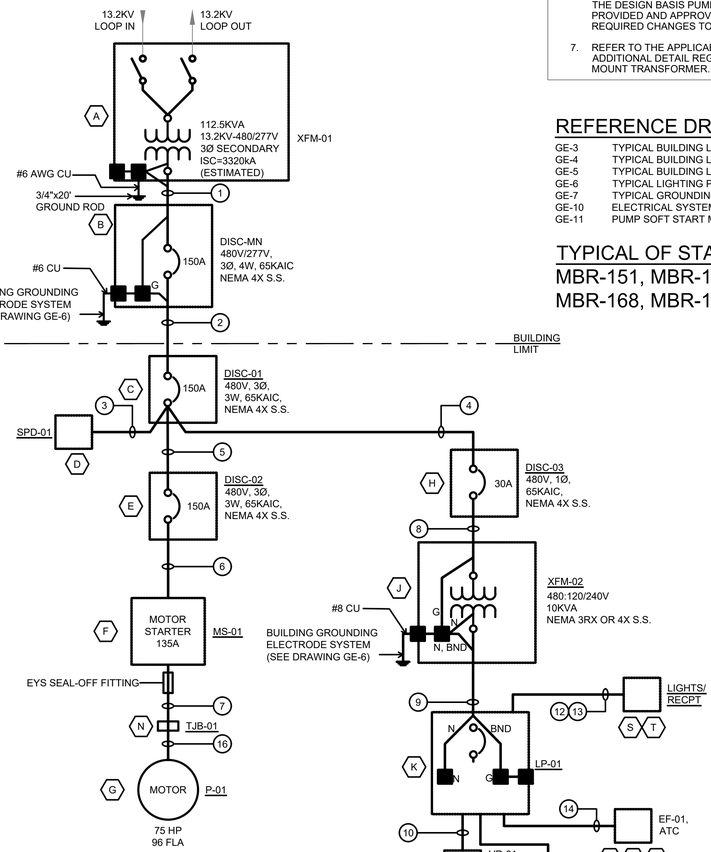
100 AMP — LP-01 — 1 PHASE
3 WIRE — 120/240 VOLTS — 12 CIRCUIT

L1 L2 50A

EXHAUST FAN EF-01, ATC	20A	1	2	VOLTAGE XFMR/ PLC-01
SPARE	15A	3	4	RECEPTACLES
COM-01 COMMUNICATIONS CABINET	20A	5	6	LIGHTING (CONTINUOUS)
SPACE		7	8	SPARE
SPACE		9	10	SPACE
SPACE		11	12	SPACE

PANEL "LP-01" SCHEDULE

100 AMP - 50A MAIN - 120/240V - 1Ø, 3W, 10KAIC
12 CIRCUIT - NEMA4X ENCLOSURE
PANELBOARD WITH COPPER BUS



ELECTRICAL BLOCK DIAGRAM

GENERAL SHEET NOTES

1. FOR CLARITY OF THE DRAWING ONLY GENERIC EQUIPMENT TAG NUMBERS ARE USED. CONTRACTOR TO OBTAIN ACTUAL EQUIPMENT TAG NUMBERS IN THE FIELD.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. PVC COATED RMC SHALL BE USED FOR BELOW GRADE INSTALLATION. RMC SHALL BE USED FOR ABOVE GRADE INSTALLATION.
4. FOR LIGHTING LAYOUT AND DESIGN SEE TYPICAL LIGHTING PLAN LAYOUT DRAWING.
5. REFER TO TYPICAL BUILDING LAYOUT DRAWING FOR EQUIPMENT SCHEDULE AND LOCATIONS.
6. THE MOTOR STARTER AND POWER DISTRIBUTION EQUIPMENT ARE SIZED TO SUPPORT THE DESIGN BASIS PUMP MOTOR. IF A MOTOR WITH DIFFERENT REQUIREMENTS IS PROVIDED AND APPROVED. THE CONTRACTOR IS RESPONSIBLE TO MAKE ALL REQUIRED CHANGES TO SUPPORT THE LOAD.
7. REFER TO THE APPLICABLE SITE-SPECIFIC ELECTRICAL DEMOLITION DRAWING FOR ADDITIONAL DETAIL REGARDING REMOVAL AND REPLACEMENT OF THE EXISTING PAD MOUNT TRANSFORMER.

REFERENCE DRAWINGS:

GE-3	TYPICAL BUILDING LAYOUT TYPE I
GE-4	TYPICAL BUILDING LAYOUT TYPE II
GE-5	TYPICAL BUILDING LAYOUT TYPE III
GE-6	TYPICAL LIGHTING PLAN LAYOUT
GE-7	TYPICAL GROUNDING PLAN
GE-10	ELECTRICAL SYSTEM BLOCK DIAGRAM (TYPICAL)
GE-11	PUMP SOFT START MOTOR SCHEMATIC (TYPICAL)

TYPICAL OF STATIONS:

MBR-151, MBR-158, MBR-167, MBR-168, MBR-169

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SHEET TITLE

TYPICAL ONE-LINE

SCALE: NOTED

SHEET NO: GE-9

SHEET 98 OF 120

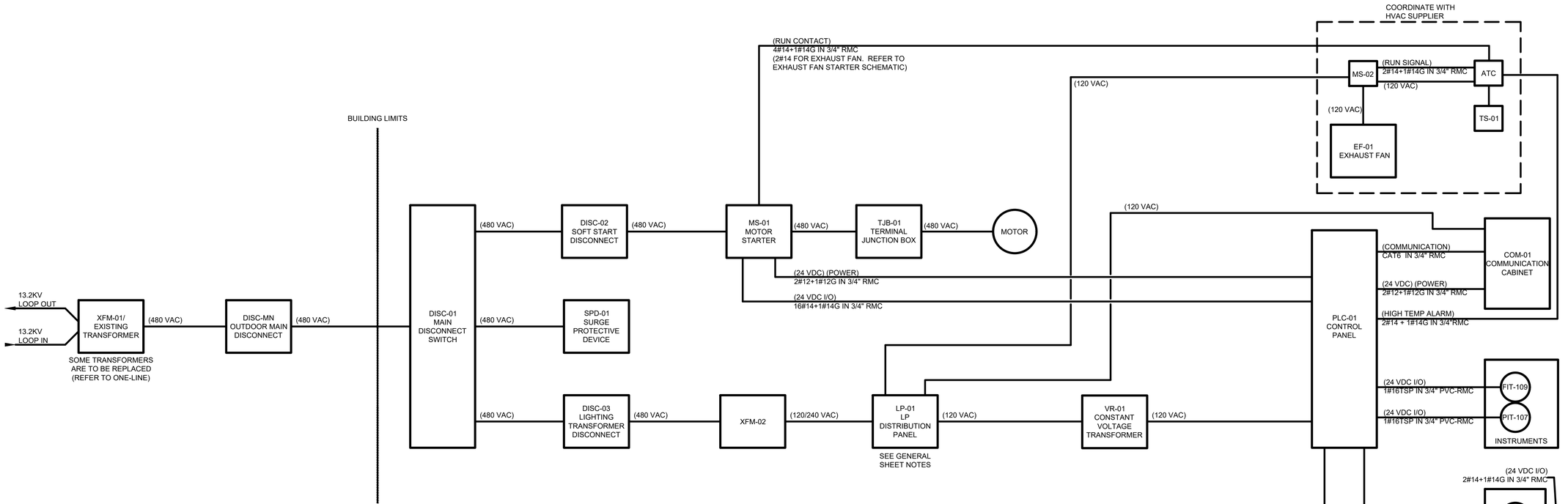
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-9.DWG Scale:1:1 SavedDate:4/30/2025 Time:09:53 Plot Date: Santiago, Daisy; 4/30/2025; 09:54 ; Layout:GE-09

GENERAL SHEET NOTES

1. REFER TO APPLICABLE ONE-LINE DRAWING ON GE-7 OR GE-8 FOR POWER CONDUIT AND CONDUCTOR SIZING.
2. UNUSED CONDUCTORS SHALL BE TIED TOGETHER, MARKED AS SPARE AND COILED ON THE BOTTOM OF EACH PANEL.

REFERENCE DRAWINGS:

GE-8 TYPICAL ONE-LINE
GE-9 TYPICAL ONE-LINE
GE-11 PUMP SOFT START MOTOR SCHEMATIC (TYPICAL)



MBR SITE
TYPICAL BLOCK DIAGRAM

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SHEET TITLE

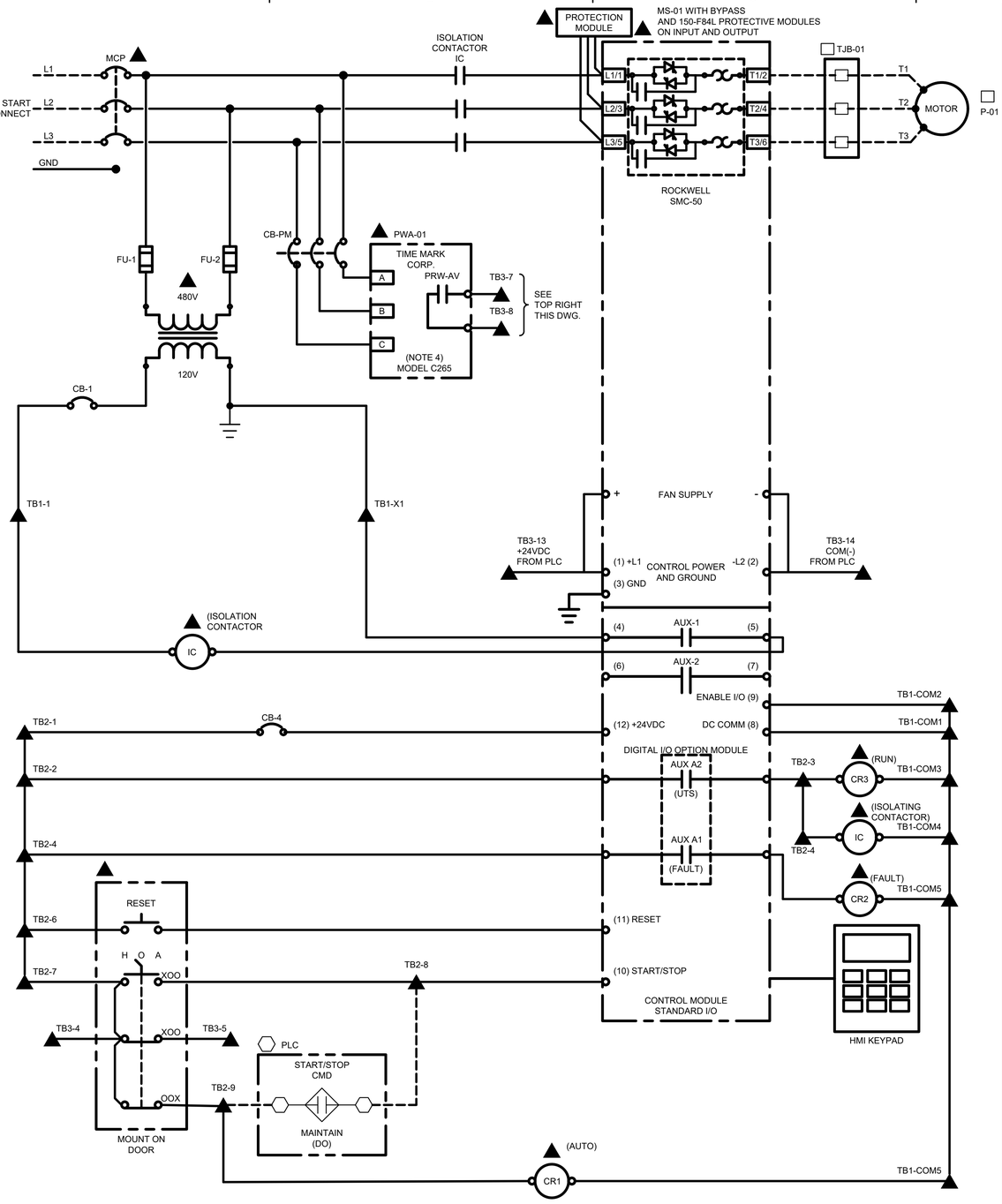
ELECTRICAL SYSTEM BLOCK DIAGRAM (TYPICAL)

SCALE: NO SCALE

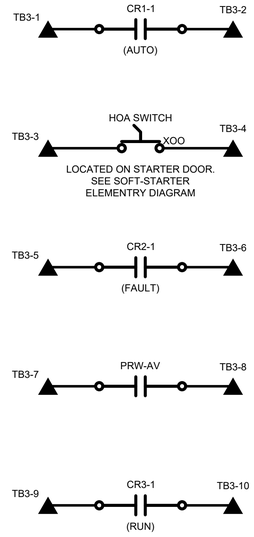
SHEET NO: GE-10

SHEET 99 OF 120

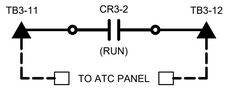
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-10.DWG Scale:1:1 SaveDate:11/22/2024 Time:11:32 Plot Date: Santiago, Daisy, 4/30/2025, 09:53 ; Layout:GE-10



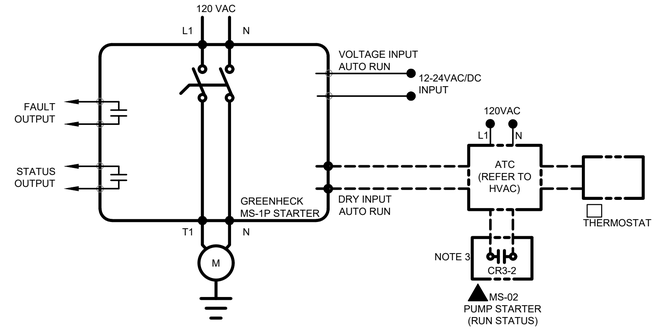
SOFT–STARTER ELEMENTARY DIAGRAM



PLC DIGITAL INPUTS



ATC DIGITAL INPUTS



EXHAUST FAN CIRCUIT

LEGEND:

- FIELD WIRING BY CONTRACTOR
- WIRING BY VENDOR
- DIGITAL OUTPUT
- DIGITAL INPUT
- DEVICE LOCATED IN SOFT START ENCLOSURE
- DEVICE LOCATED IN THE FIELD
- DEVICE LOCATED IN PLC ENCLOSURE
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT

GENERAL SHEET NOTES

1. THE SCHEMATICS PROVIDED HEREIN ARE ELEMENTARY IN NATURE AND ARE INTENDED ONLY TO CONVEY DESIGN INTENT. ACTUAL WIRING DIAGRAMS SHALL BE PROVIDED BY THE SELECTED EQUIPMENT SUPPLIER AND BE SUBMITTED AS PART OF THE SHOP DRAWINGS.
2. MOTOR OVERTEMP SWITCH SHALL INTERLOCK WITH SOFT STARTER AND SELF-RESET UPON NORMAL CONDITION.
3. CONTRACTOR SHALL USE A SEPARATE DRY CONTACT IN STARTER PANEL FOR EXHAUST FAN.
4. PHASE MONITOR INITIAL ALARM SETTINGS TO MATCH PARAMETERS CONFIGURED IN SOFT START.

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DESIGNED BY: BCB
DRAWN BY: FL
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

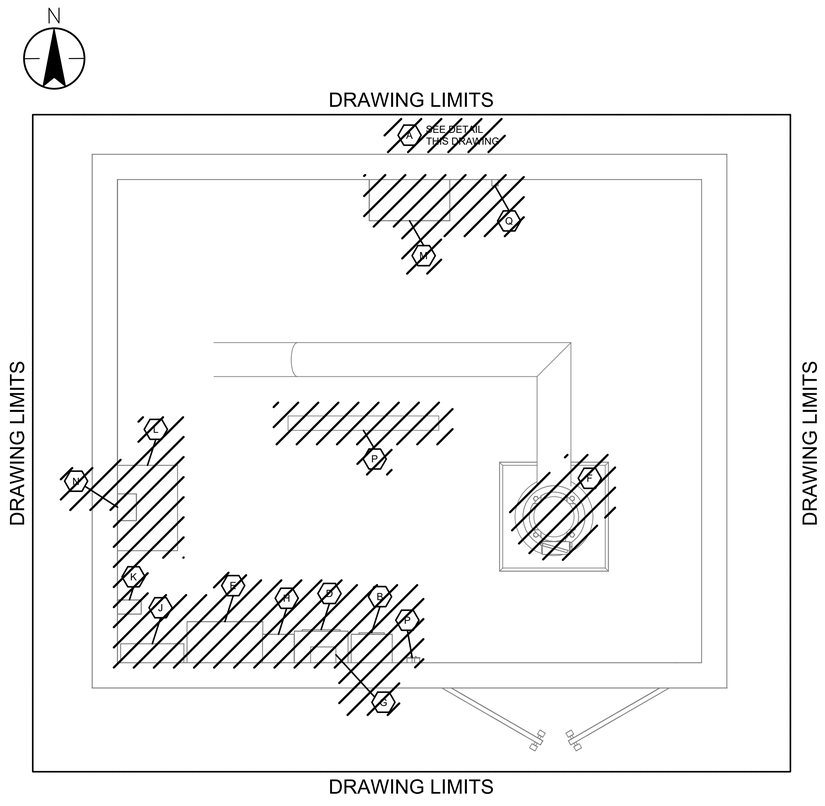
PUMP SOFT START MOTOR SCHEMATIC (TYPICAL)

SCALE: NONE

SHEET NO: GE-11

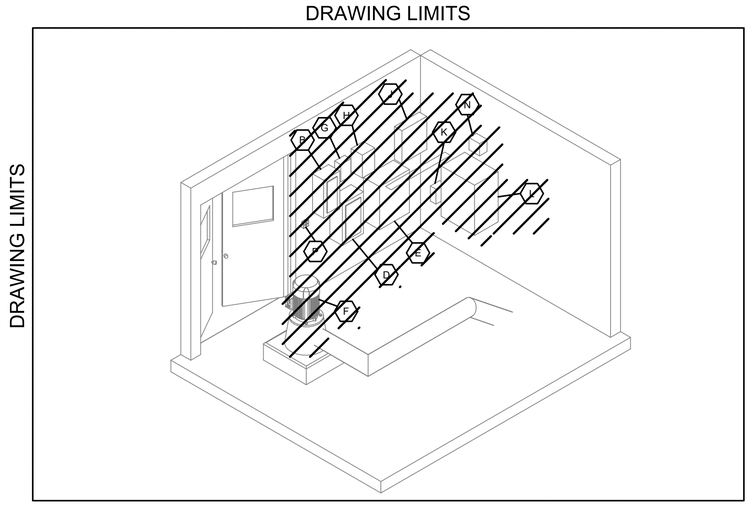
SHEET 100 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\GE-11.DWG Scale:1:1 SavedDate:4/23/2025 Time:08:14 Plot Date: Santiago, Daisy; 4/30/2025; 09:52 ; Layout:GE-11



MBR-152 PLAN VIEW

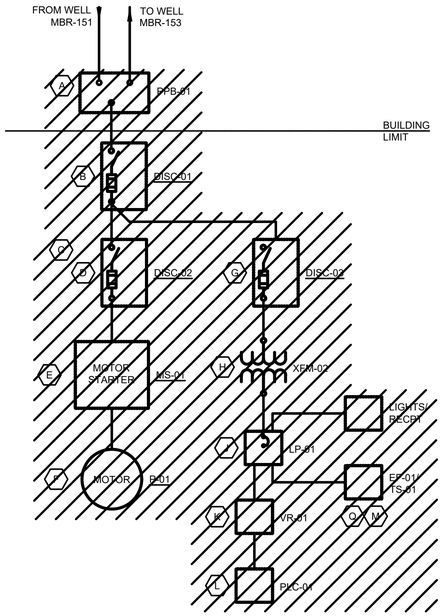
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



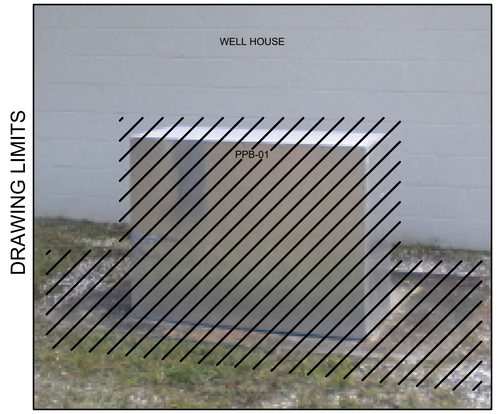


ITEM	TAG #	DESCRIPTION
A	PPB-01	PRIMARY POWER PULLBOX
B	DISC-01	HEAVY DUTY FUSED DISCONNECT
C		NOT USED
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	UV DISCONNECT
H	XFM-02	DRY-TYPE TRANSFORMER, 480-120/240 VAC
J	LP-01	PANELBOARD, 120/240 VAC
K	VT-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	FAN-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS, SWITCHES, AND RECEPTACLES
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. REMOVE ALL ELECTRICAL EQUIPMENT, RACEWAYS, WIRING, JUNCTION BOXES, LIGHT SWITCHES AND FIXTURES, RECEPTACLES, AND THE EXISTING PRIMARY POWER FROM THE PULL BOX.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULL BOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULL BOX SHALL BE WATER-TIGHT.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.



NOTES:

1. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULLBOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULLBOX SHALL BE WATER-TIGHT.

MBR-152-PPB-01

SCALE: NONE

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-1
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

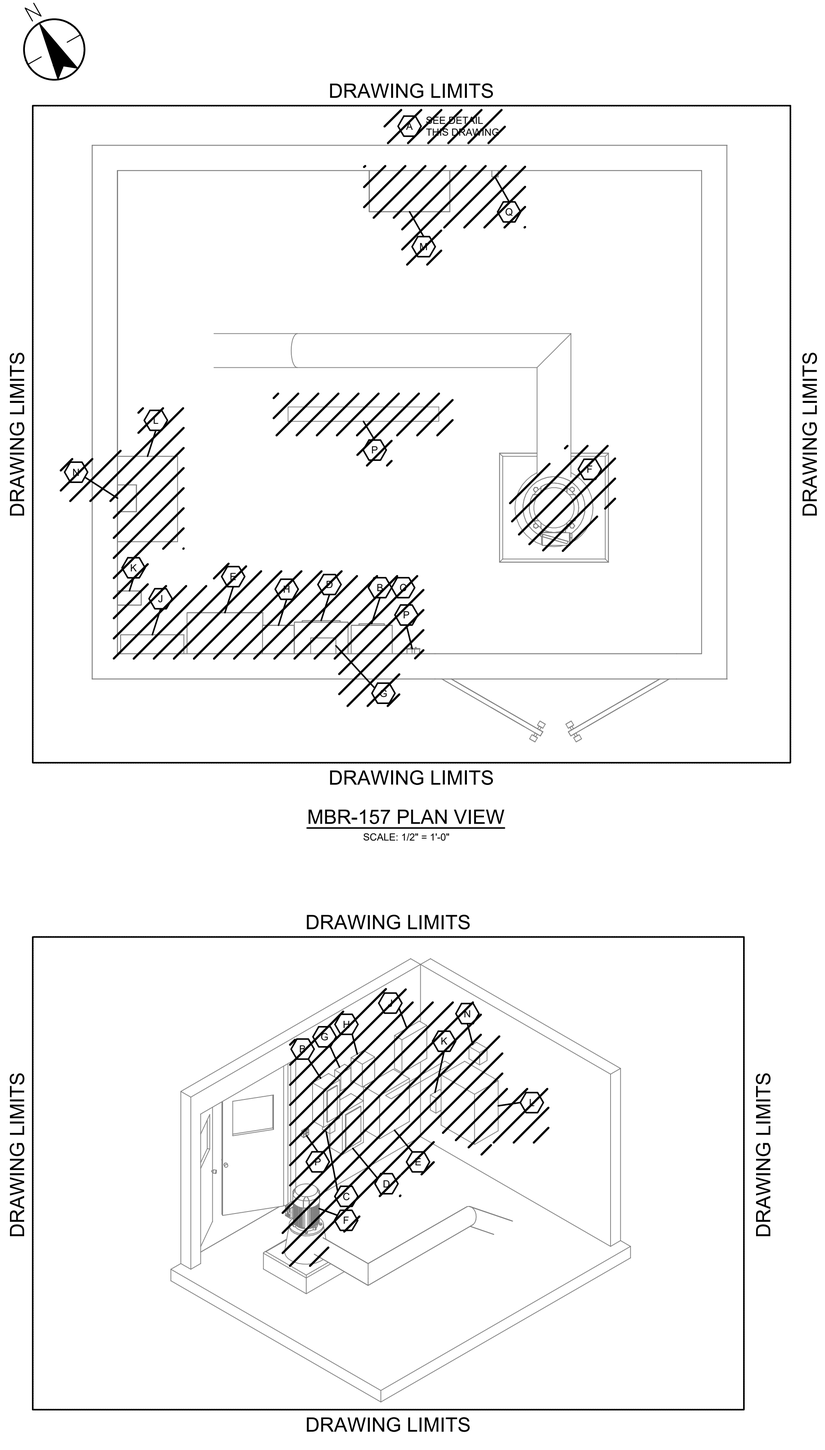
WELL HOUSE MBR-152 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-1

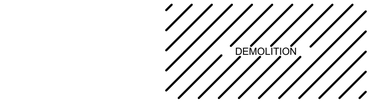
SHEET 101 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-1.DWG Scale:1:1 SaveDate:4/30/2025 Time:08:52 Plot Date: Santiago, Daisy, 4/30/2025; 08:56 ; Layout:DE-01



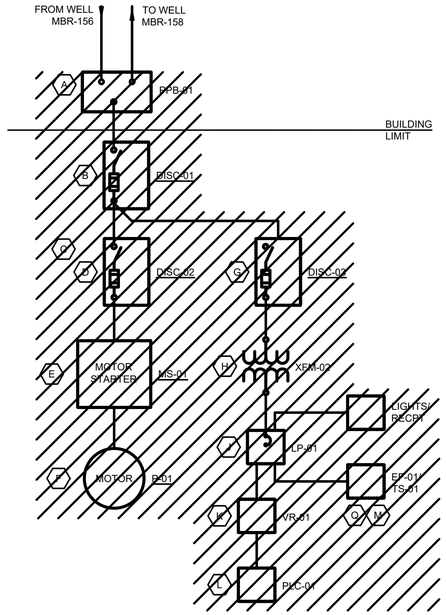
MBR-157 PLAN VIEW

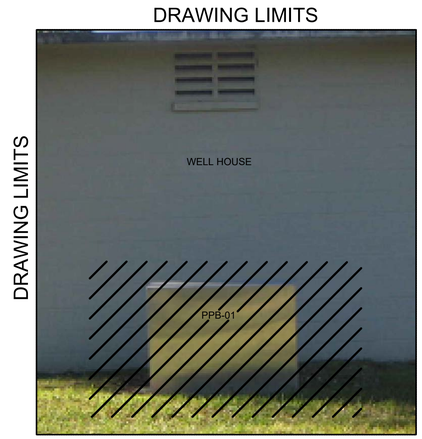
SCALE: 1/2" = 1'-0"



GENERAL SHEET NOTES

1. REMOVE ALL ELECTRICAL EQUIPMENT, RACEWAYS, WIRING, JUNCTION BOXES, LIGHT SWITCHES AND FIXTURES, RECEPTACLES, AND THE EXISTING PRIMARY POWER FROM THE PULL BOX.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULL BOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULL BOX SHALL BE WATER-TIGHT.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.





NOTES:

1. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULLBOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULLBOX SHALL BE WATER-TIGHT.

MBR-157-PPB-01

SCALE: NONE

ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE

ITEM	TAG #	DESCRIPTION
A	PPB-01	PRIMARY POWER PULLBOX
B	DISC-01	HEAVY DUTY FUSED DISCONNECT
C	SPD-01	LEA VOLTAGE SURGE SUPPRESSOR
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP/MOTOR/PUMP
G	DISC-03	LV DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 480-120/240 VAC
J	LP-01	PANELBOARD, 120/240 VAC
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	FAN-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P		LIGHTS, SWITCHES, AND RECEPTACLES
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-2
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

WELL HOUSE MBR-157 DEMOLITION

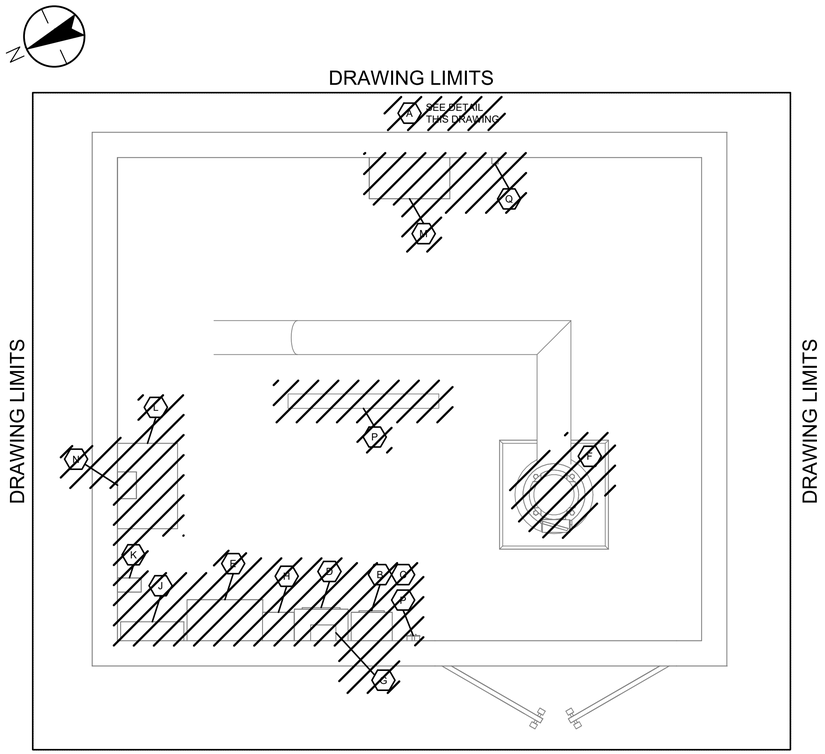
SCALE: ½"=1'-0"

SHEET NO: DE-2

SHEET 102 OF 120

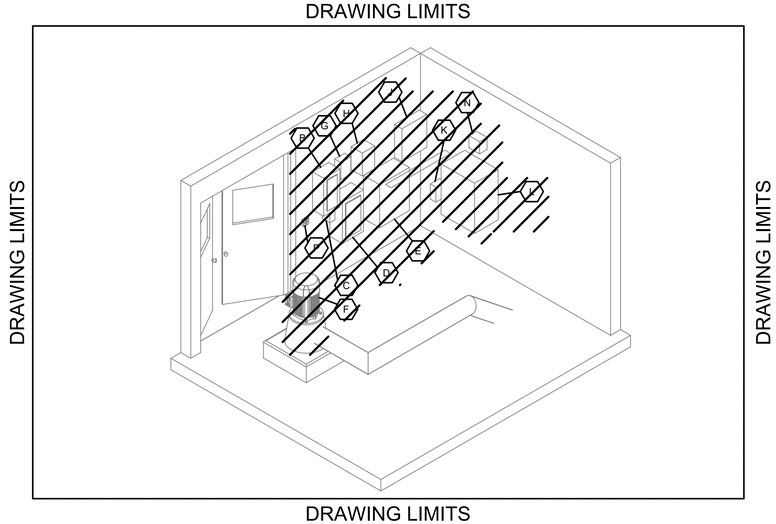
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-2.DWG Scale:1:1 SavedDate:4/30/2025 Time:08:53 Plot Date: Santiago, Daisy; 4/30/2025; 09:03 ; Layout:DE-02

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-3.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:40 Plot Date: Santiago, Daisy, 4/30/2025, 09:04 - Layout:DE-03



MBR-161 PLAN VIEW

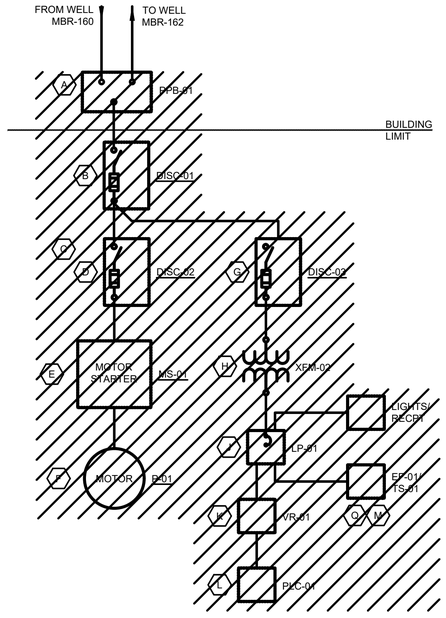
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE

DEMOLITION



ITEM	TAG #	DESCRIPTION
A	PPB-01	PRIMARY POWER PULLBOX
B	DISC-01	HEAVY DUTY FUSED DISCONNECT
C	SPD-01	LOW VOLTAGE SURGE SUPPRESSOR
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP/MOTOR/PUMP
G	DISC-03	UV DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 480-120/240 VAC
J	LP-01	PANELBOARD, 120/240 VAC
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	FAN-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS, SWITCHES, AND RECEPTACLES
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. REMOVE ALL ELECTRICAL EQUIPMENT, RACEWAYS, WIRING, JUNCTION BOXES, LIGHT SWITCHES AND FIXTURES, RECEPTACLES, AND THE EXISTING PRIMARY POWER FROM THE PULL BOX.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULL BOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULL BOX SHALL BE WATER-TIGHT.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

DRAWING LIMITS



NOTES:

1. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULLBOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULLBOX SHALL BE WATER-TIGHT.

MBR-161-PPB-01

SCALE: NONE

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-3
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

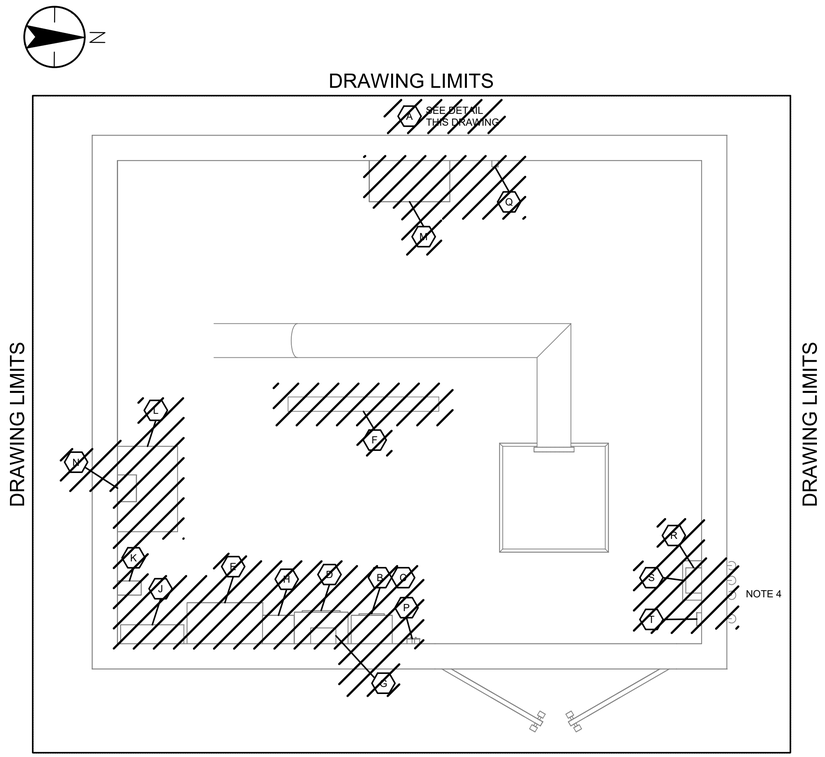
SHEET TITLE

WELL HOUSE MBR-161 DEMOLITION

SCALE: ½"=1'-0"

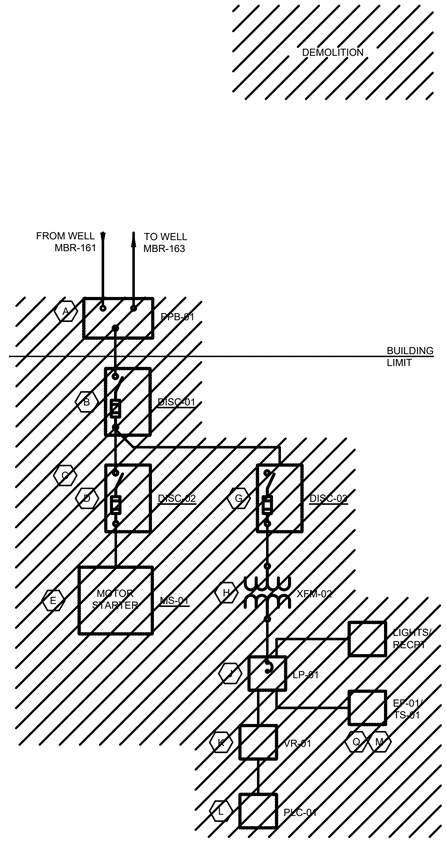
SHEET NO: DE-3

SHEET 103 OF 120



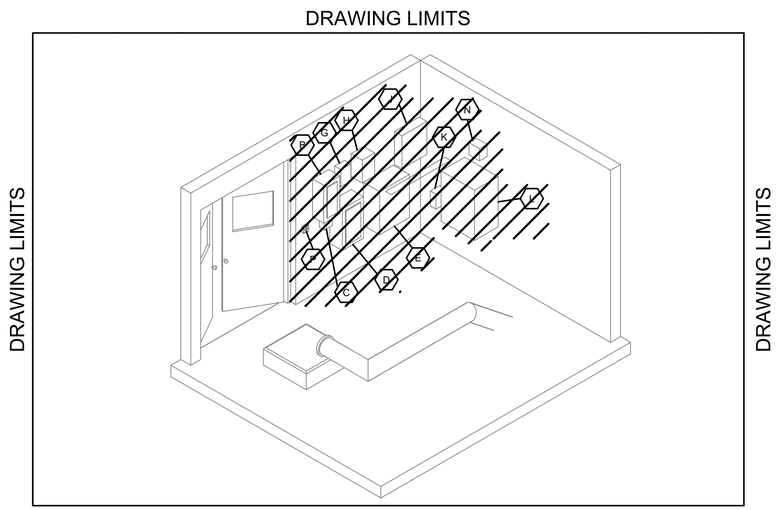
MBR-164 PLAN VIEW

SCALE: 1/2" = 1'-0"



GENERAL SHEET NOTES

1. REMOVE ALL ELECTRICAL EQUIPMENT, RACEWAYS, WIRING, JUNCTION BOXES, LIGHT SWITCHES AND FIXTURES, RECEPTACLES, AND THE EXISTING PRIMARY POWER FROM THE PULL BOX.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULL BOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULL BOX SHALL BE WATER-TIGHT.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

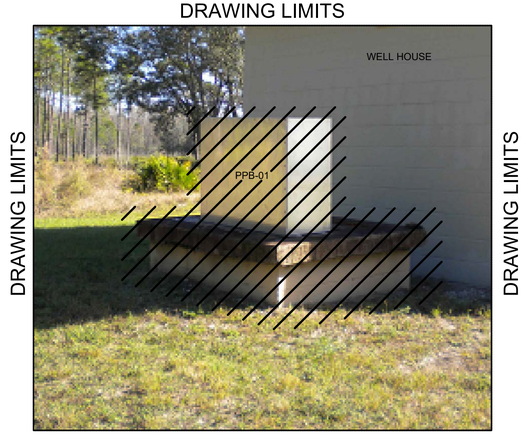


ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE

ITEM	TAG #	DESCRIPTION
A	PPB-01	PRIMARY POWER PULLBOX
B	DISC-01	HEAVY DUTY FUSED DISCONNECT
C	SPD-01	LEA VOLTAGE SURGE SUPPRESSOR
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F		NOT USED
G	DISC-03	LV DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 480-120/240 VAC
J	LP-01	PANELBOARD, 120/240 VAC
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	FAN-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS, SWITCHES, AND RECEPTACLES
Q	TS-01	EXHAUST FAN THERMOSTAT
R	-	480 VAC DISCONNECT
S	-	JUNCTION BOX, 12"x12"
T		ELECTRICAL BOX, 4"x4"

EQUIPMENT SCHEDULE



NOTES:

1. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULLBOX. DEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULLBOX SHALL BE WATER-TIGHT.

MBR-162-PPB-01

SCALE: NONE

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-4
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

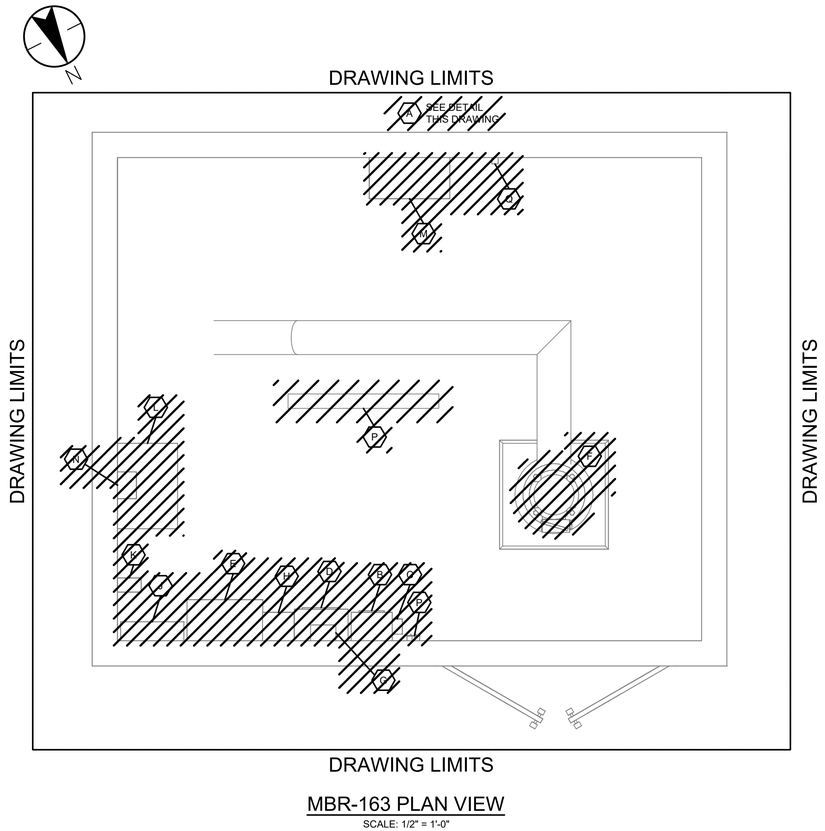
WELL HOUSE MBR-162 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-4

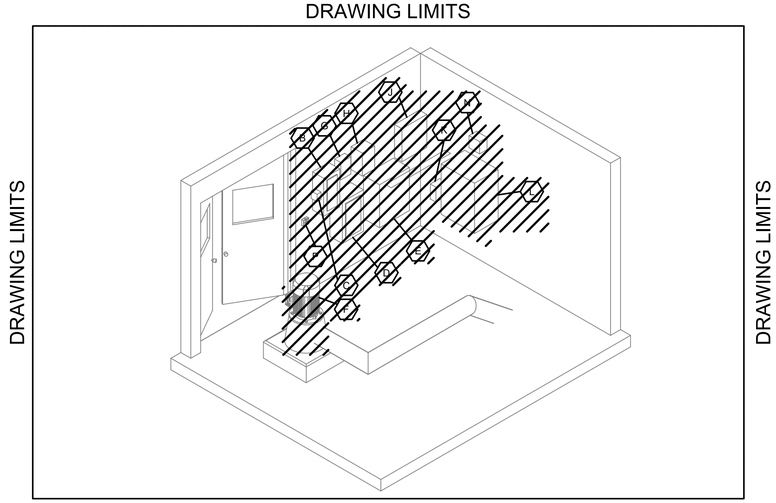
SHEET 104 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-4.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:08 : Layout:DE-04



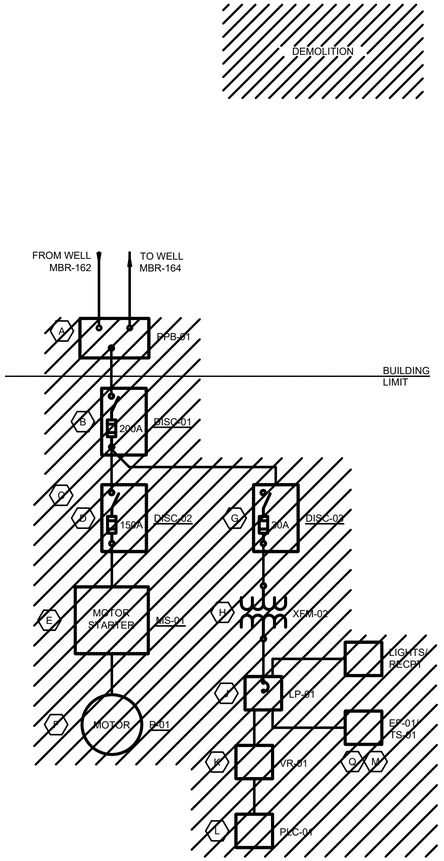
MBR-163 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



ITEM	TAG #	DESCRIPTION
A	PPB-01	PRIMARY POWER PULLBOX
B	DISC-01	HEAVY DUTY FUSED DISCONNECT
C	SPD-01	SQUARE D SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP MOTOR/PUMP
G	DISC-03	LP DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 30D, 120/240 VAC
J	LP-01	PANELBOARD, 208/240 VAC
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	FAN-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P		LIGHTS, SWITCHES, AND RECEPTACLES
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE



NOTES:

1. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULLBOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULLBOX SHALL BE WATER-TIGHT.

MBR-163-PPB-01

SCALE: NONE

GENERAL SHEET NOTES

1. REMOVE ALL ELECTRICAL EQUIPMENT, RACEWAYS, WIRING, JUNCTION BOXES, LIGHT SWITCHES AND FIXTURES, RECEPTACLES, AND THE EXISTING PRIMARY POWER FROM THE PULL BOX.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS. CONTRACTOR SHALL COORDINATE WITH TAMPA BAY WATER FOR PRIMARY POWER LOCKOUT.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. CONTRACTOR SHALL DEMOLISH THE PRIMARY POWER JUNCTION BOX AND INSTALL AN UNDERGROUND PULL BOX. SEE DRAWING GE-2 FOR TYPICAL DETAIL. ALL SPLICES WITHIN PULL BOX SHALL BE WATER-TIGHT.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
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www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-5
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

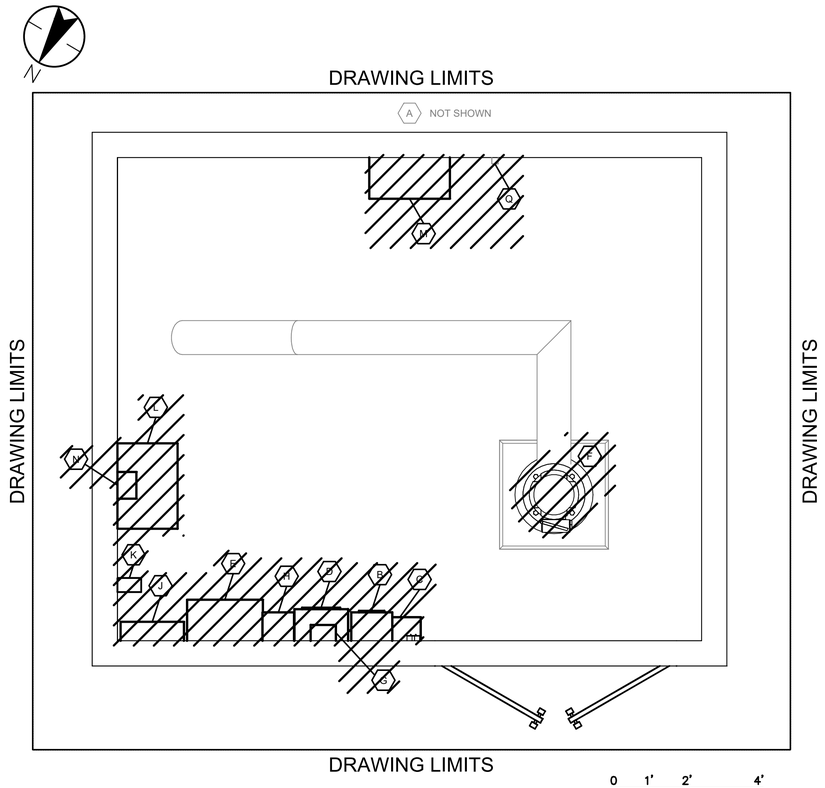
WELL HOUSE MBR-163 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-5

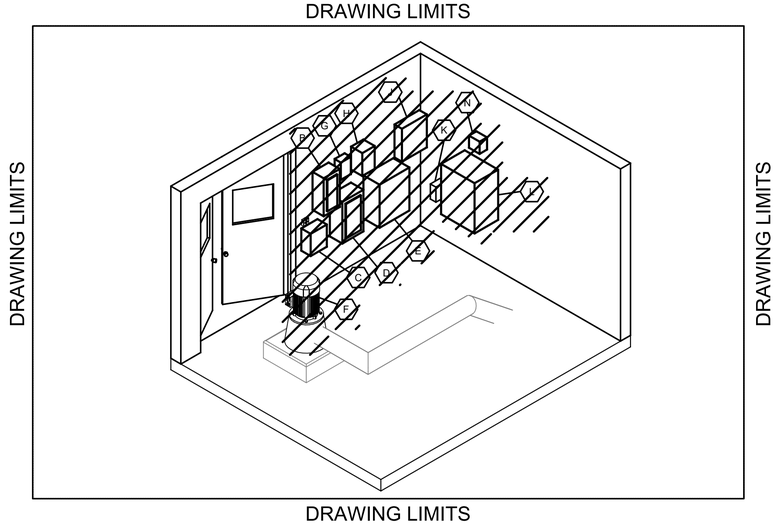
SHEET 105 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-5.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:24 - Layout:DE-05



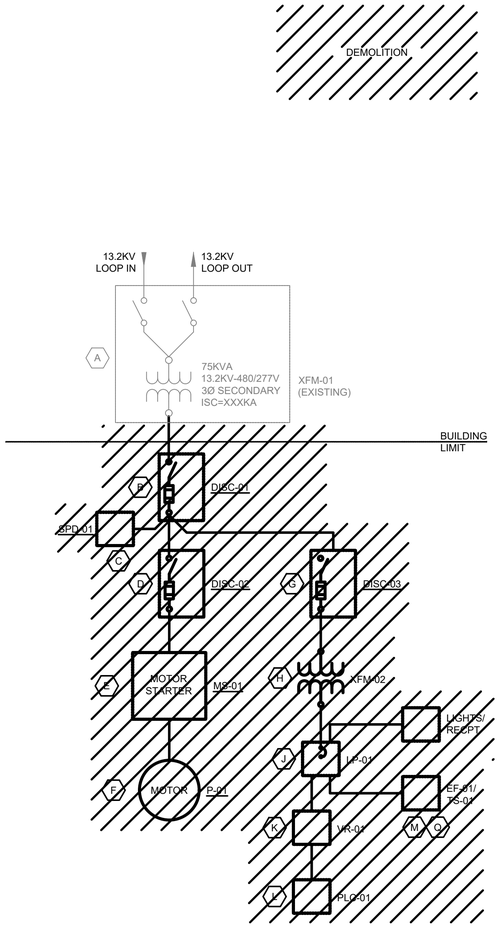
MBR-150 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	100A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LV DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30K MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL EQUIPMENT, PANELS, AND INSTRUMENTATION FROM INSIDE THE WELL HOUSE INCLUDING ALL APPURTENANCES, RACEWAYS, WIRING, JUNCTION BOXES, WIRING, DEVICES, SWITCHES, LIGHTING, RECEPTACLES, INTRUSION SWITCHES, MOTION DETECTORS, AND INCOMING POWER CONDUCTORS. THE EXISTING OUTDOOR TRANSFORMER SHALL REMAIN.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. DEMOLITION SHALL INCLUDE EXISTING CONDUIT AND CABLE TO/FROM EQUIPMENT SHOWN FOR DEMOLITION.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AND THE ROD TO THE RTU INSIDE THE WELL HOUSE. THE RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
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Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-6
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

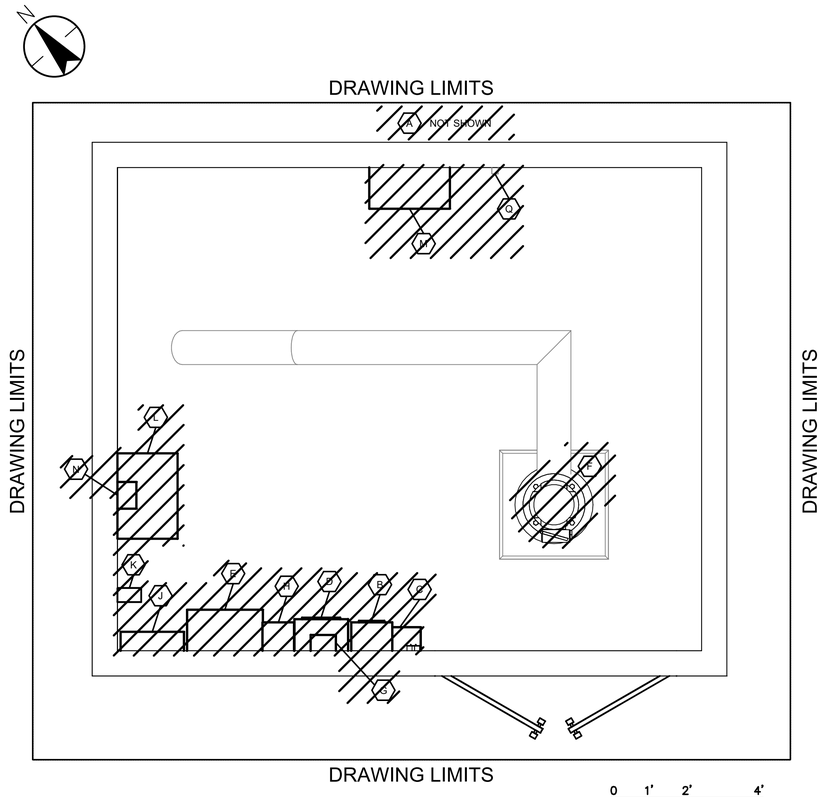
WELL HOUSE MBR-150 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-6

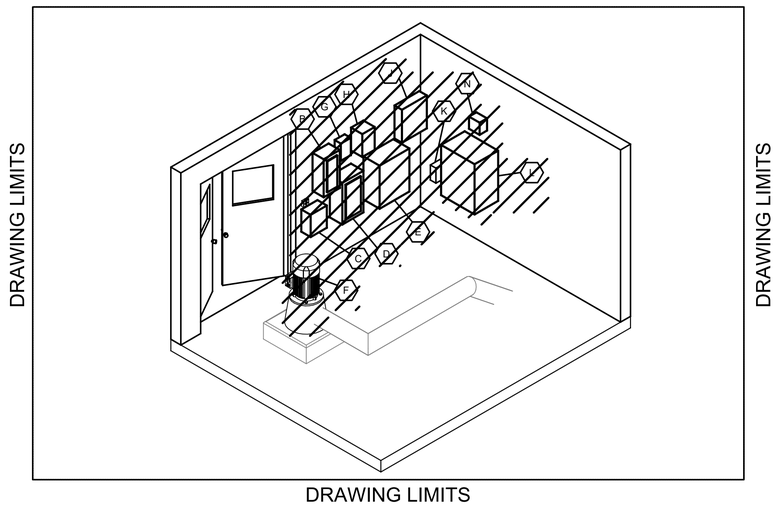
SHEET 106 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-6.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:28 : Layout:DE-06



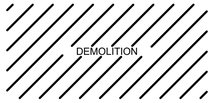
MBR-151 PLAN VIEW

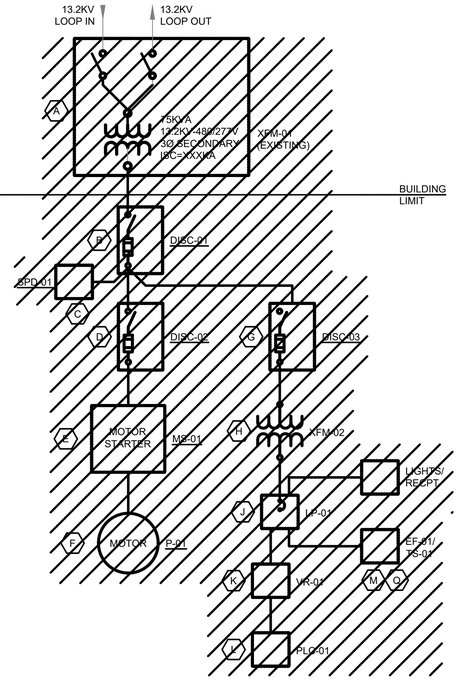
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE





ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LV DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30K MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL EQUIPMENT, PANELS, AND INSTRUMENTATION FROM INSIDE THE WELL HOUSE INCLUDING ALL APPURTENANCES, RACEWAYS, WIRING, JUNCTION BOXES, WIRING DEVICES, SWITCHES, LIGHTING, RECEPTACLES, INTRUSION SWITCHES, MOTION DETECTORS, AND INCOMING POWER CONDUCTORS. THE EXISTING OUTDOOR TRANSFORMER SHALL REMOVED AND REPLACED WITH NEW.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. DEMOLITION SHALL INCLUDE EXISTING CONDUIT AND CABLE TO/FROM EQUIPMENT SHOWN FOR DEMOLITION.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.



NOTES:

1. REMOVE THE EXISTING TRANSFORMER AND TRANSFORMER PAD.
2. FURNISH AND INSTALL NEW TRANSFORMER PAD AND TRANSFORMER AS SHOWN ON ONE-LINE DIAGRAM. TRANSFORMER PAD DIMENSIONS AND OPENINGS SHALL BE RECOMMENDED BY THE MANUFACTURER AND INCLUDED IN THE SHOP DRAWING SUBMITTAL. THE NEW TRANSFORMER PAD TOP OF SLAB SHALL BE NO LESS THAN 3" ABOVE THE SURROUNDING GRADE AND AT LEAST THE SAME ELEVATION AS WELL HOUSE FINISHED FLOOR.
3. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE TRANSFORMER. THE TRANSFORMER SHALL BE NO LESS THAN 3' FROM THE BUILDING.

MBR-151-XFM-01

SCALE: NONE

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ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:	
DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-7
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

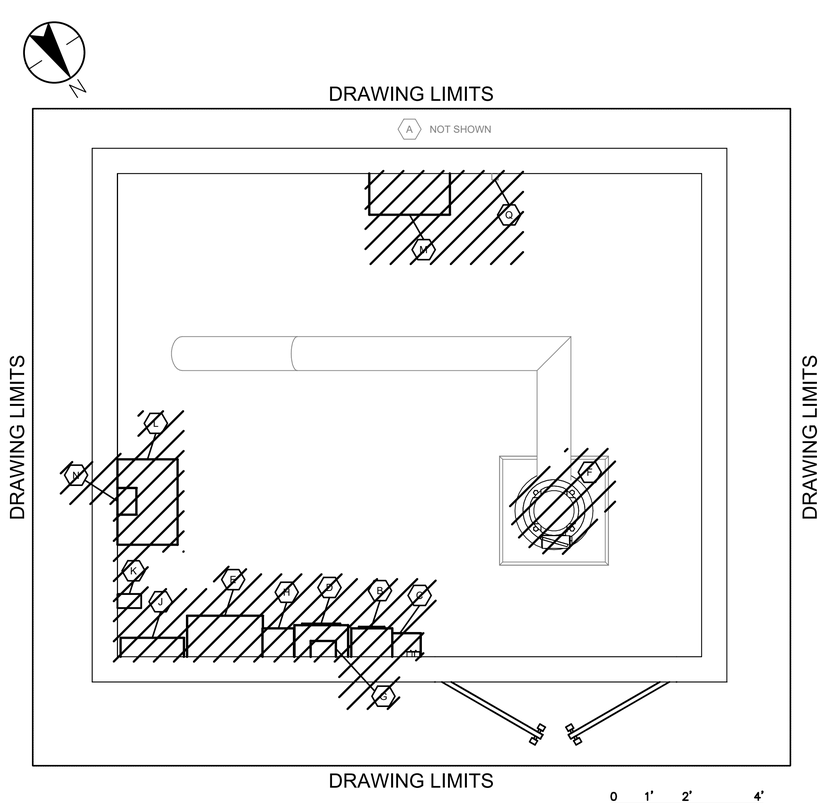
WELL HOUSE MBR-151 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-7

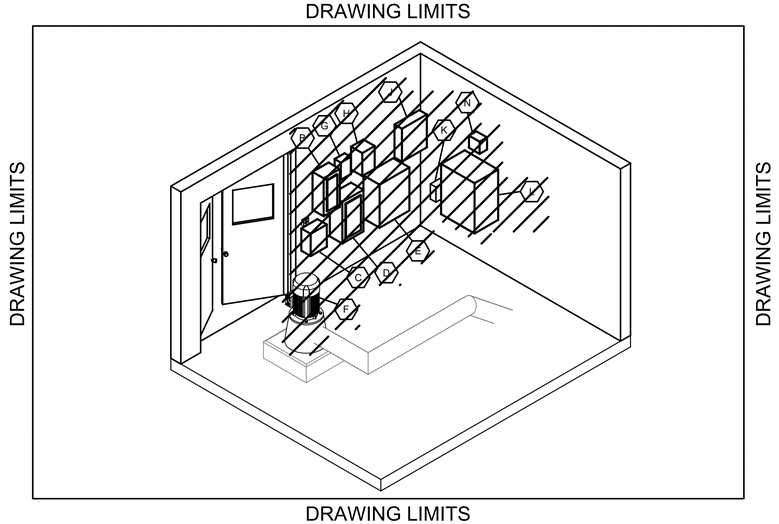
SHEET 107 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-7.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:29 ; Layout:DE-07



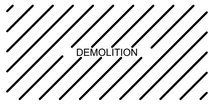
MBR-153 PLAN VIEW

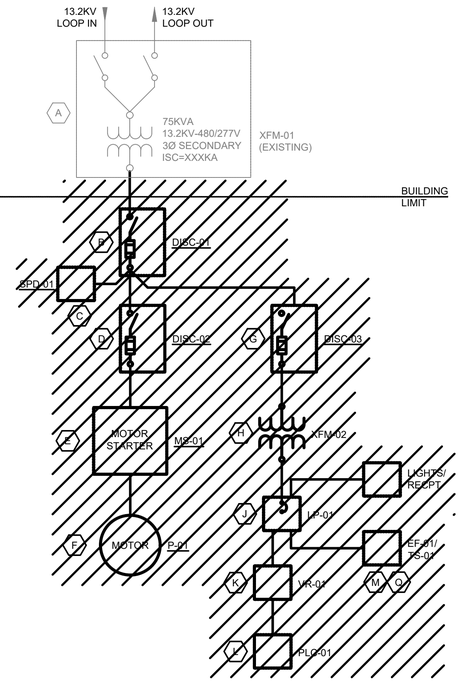
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE





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PROJECT NO.: 50021

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-8
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

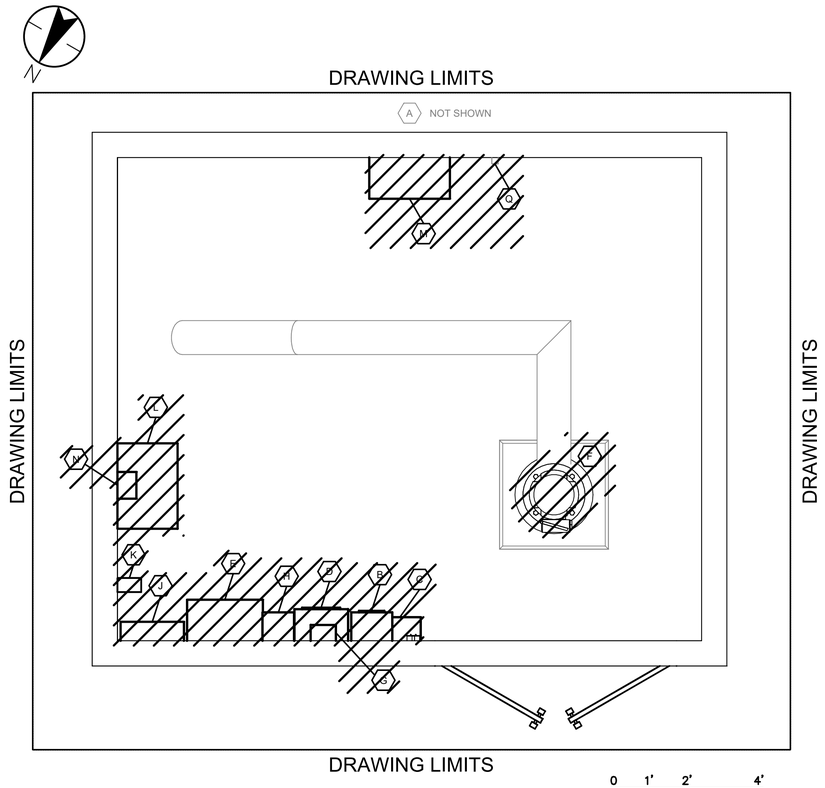
WELL HOUSE MBR-153 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-8

SHEET 108 OF 120

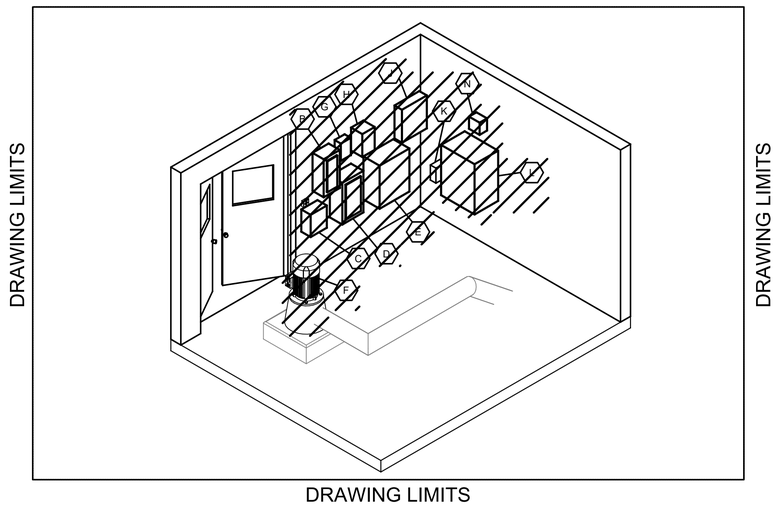
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-8.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:31 ; Layout:DE-08



0 1' 2' 4'

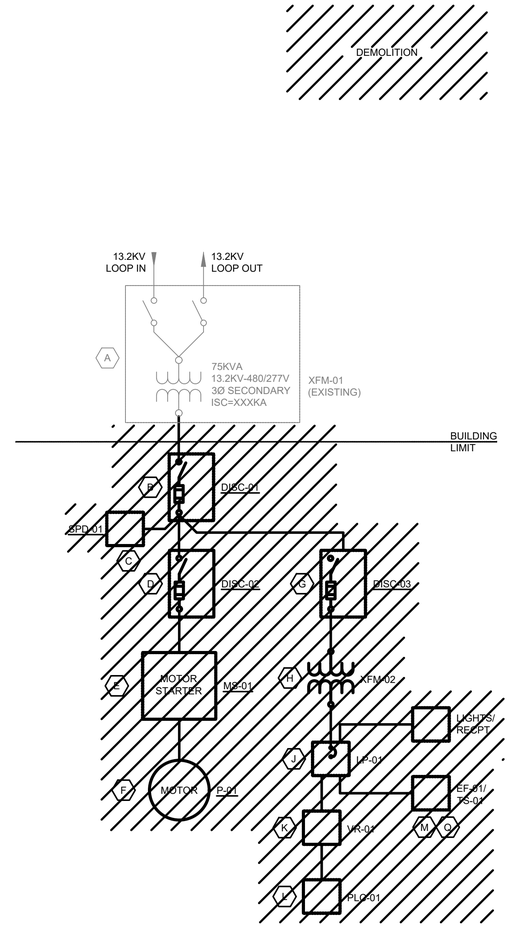
MBR-154 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



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EQUIPMENT SCHEDULE

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PROJECT NO.: 50021

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REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-9
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

WELL HOUSE MBR-154 DEMOLITION

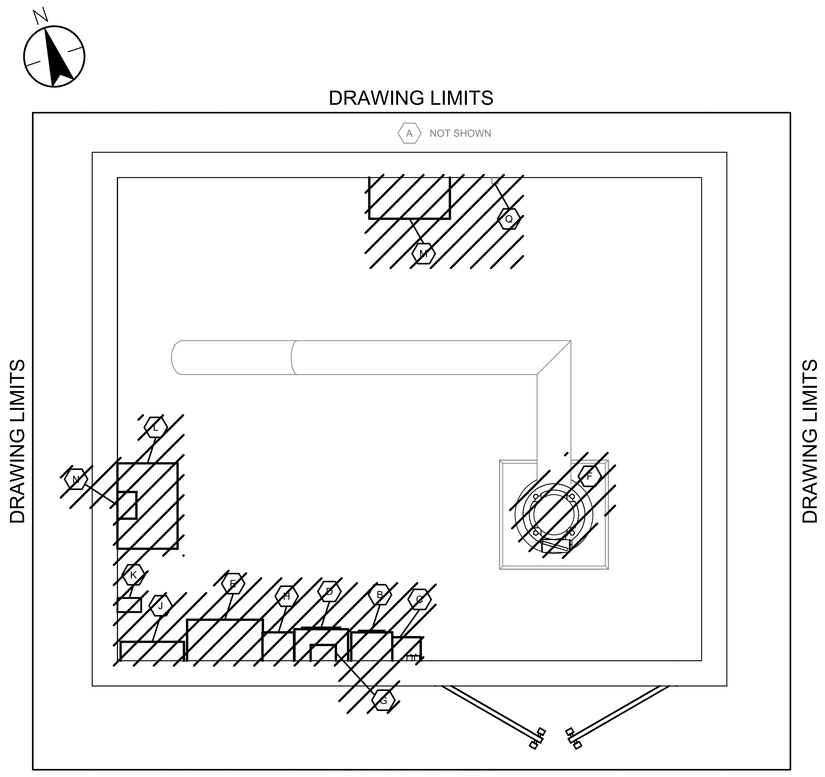
SCALE: ½"=1'-0"

SHEET NO: DE-9

SHEET 109 OF 120

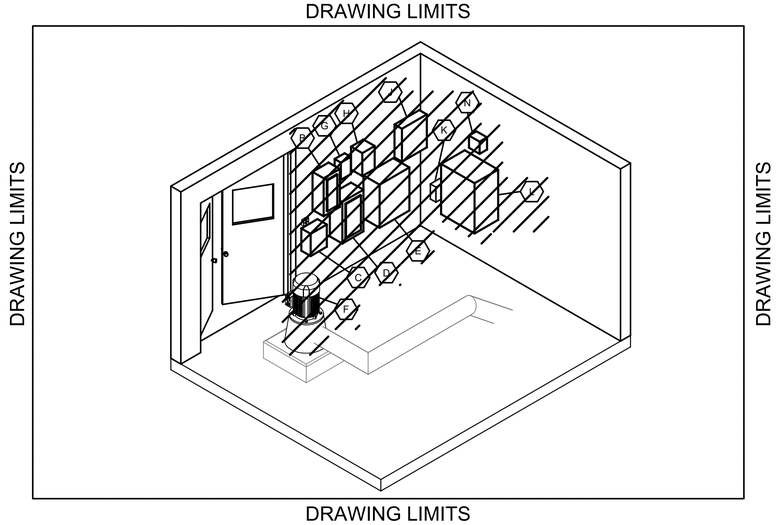
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-9.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:39 Plot Date: Santiago, Daisy: 4/30/2025; 09:32 : Layout:DE-09

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\PWR\DSANTIAGO\D0154729\DE-10.DWG Scale:1:1 SavedDate:11/22/2024 Time:10:38 Plot Date: Santiago, Daisy, 4/30/2025; 09:38 ; Layout:DE-10



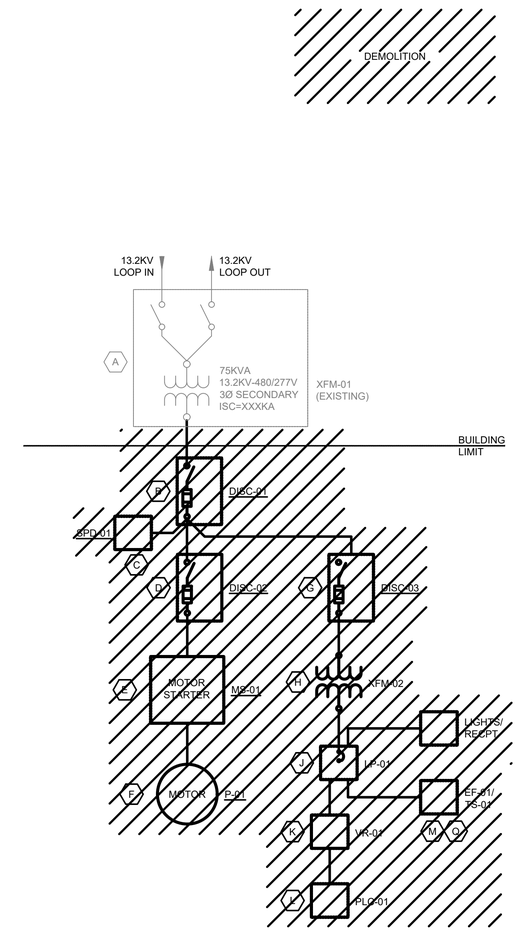
MBR-155 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-10
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

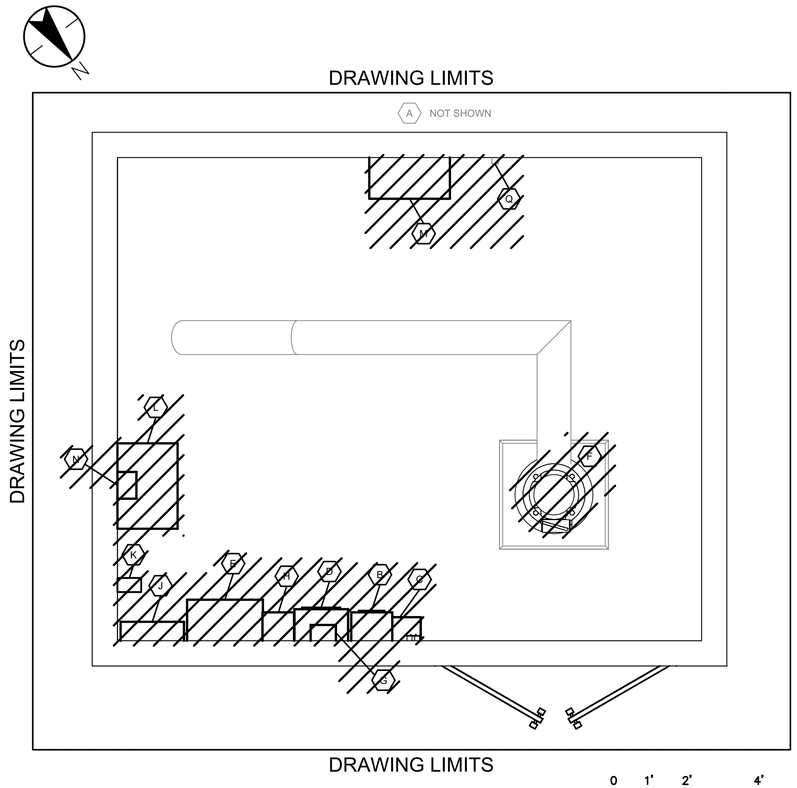
SHEET TITLE

WELL HOUSE MBR-155 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-10

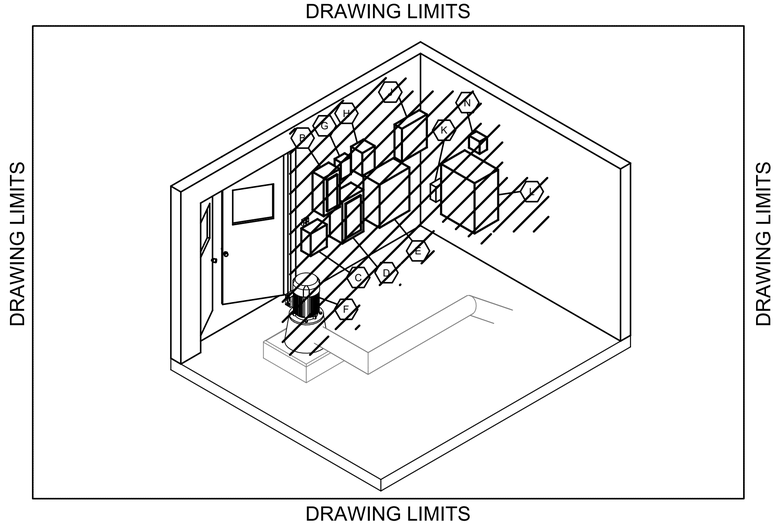
SHEET 110 OF 120



0 1' 2' 4'

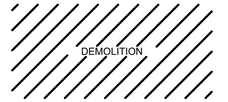
MBR-156 PLAN VIEW

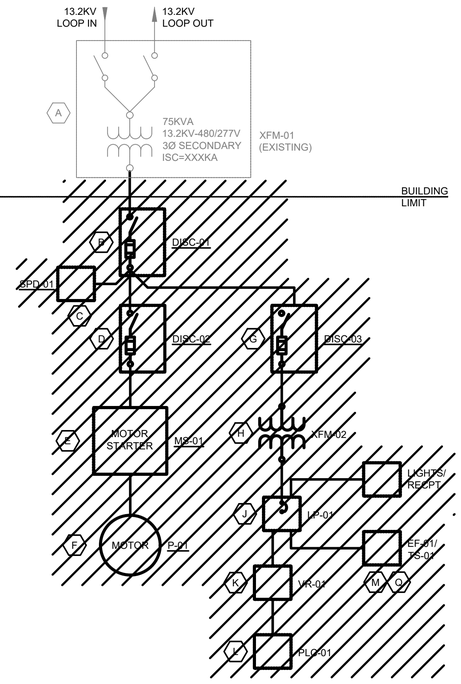
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE





ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LP DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30A MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL EQUIPMENT, PANELS, AND INSTRUMENTATION FROM INSIDE THE WELL HOUSE INCLUDING ALL APPURTENANCES, RACEWAYS, WIRING, JUNCTION BOXES, WIRING, DEVICES, SWITCHES, LIGHTING, RECEPTACLES, INTRUSION SWITCHES, MOTION DETECTORS, AND INCOMING POWER CONDUCTORS. THE EXISTING OUTDOOR TRANSFORMER SHALL REMAIN.
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5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AND THE ROD TO THE RTU INSIDE THE WELL HOUSE. THE RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

TAMPA BAY WATER
Supplying Water To The Region
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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE
WELL FIELD
IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-11
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

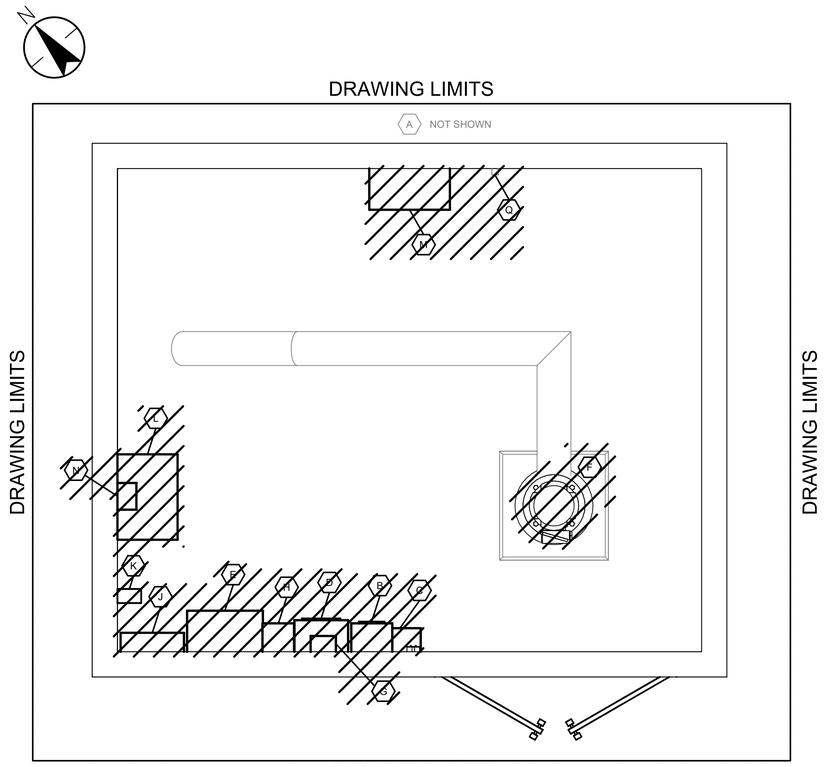
WELL HOUSE
MBR-156
DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-11

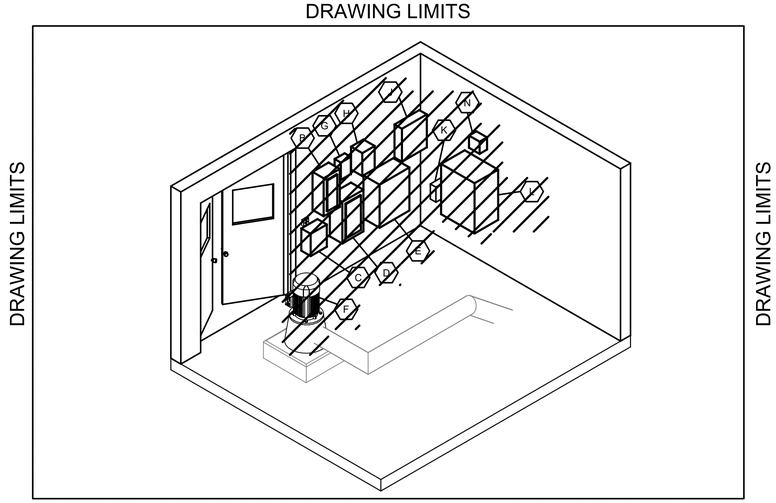
SHEET 111 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\FW_WORKING\WTR\DSANTIAGO\D0154729\DE-11.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:32 Plot Date: Santiago, Dolsy, 4/30/2025, 09:39 ; Layout:DE-11



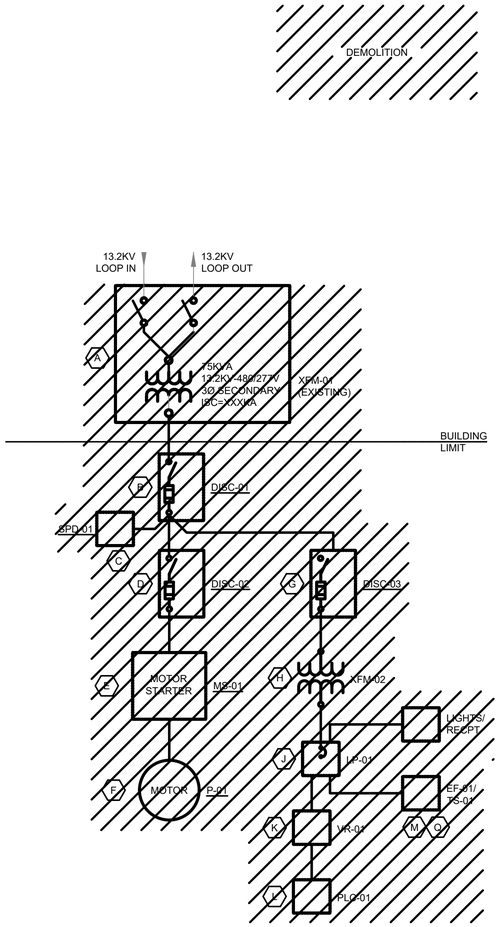
MBR-158 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



EQUIPMENT SCHEDULE

ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A I.V. DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5KVA 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30A MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

GENERAL SHEET NOTES

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2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. DEMOLITION SHALL INCLUDE EXISTING CONDUIT AND CABLE TO/FROM EQUIPMENT SHOWN FOR DEMOLITION.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.



NOTES:

1. REMOVE THE EXISTING TRANSFORMER AND TRANSFORMER PAD.
2. FURNISH AND INSTALL NEW TRANSFORMER PAD AND TRANSFORMER AS SHOWN ON ONE-LINE DIAGRAM. TRANSFORMER PAD DIMENSIONS AND OPENINGS SHALL BE RECOMMENDED BY THE MANUFACTURER AND INCLUDED IN THE SHOP DRAWING SUBMITTAL. THE NEW TRANSFORMER PAD TOP OF SLAB SHALL BE NO LESS THAN 3" ABOVE THE SURROUNDING GRADE AND AT LEAST THE SAME ELEVATION AS WELL HOUSE FINISHED FLOOR.
3. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE TRANSFORMER. THE TRANSFORMER SHALL BE NO LESS THAN 3' FROM THE BUILDING.

MBR-158-XFM-01

SCALE: NONE

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

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REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-12
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

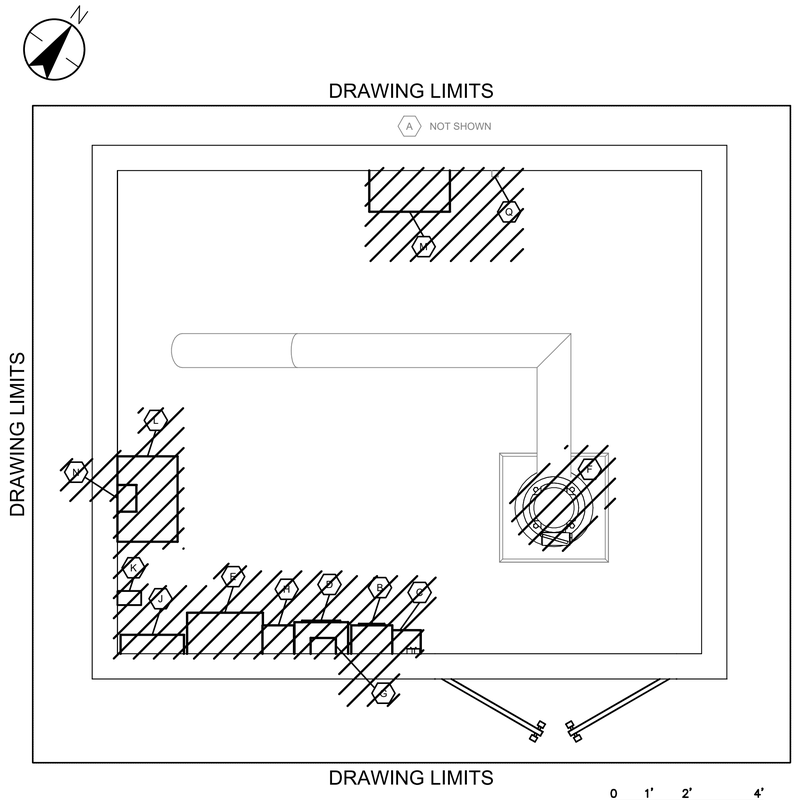
WELL HOUSE MBR-158 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-12

SHEET 112 OF 120

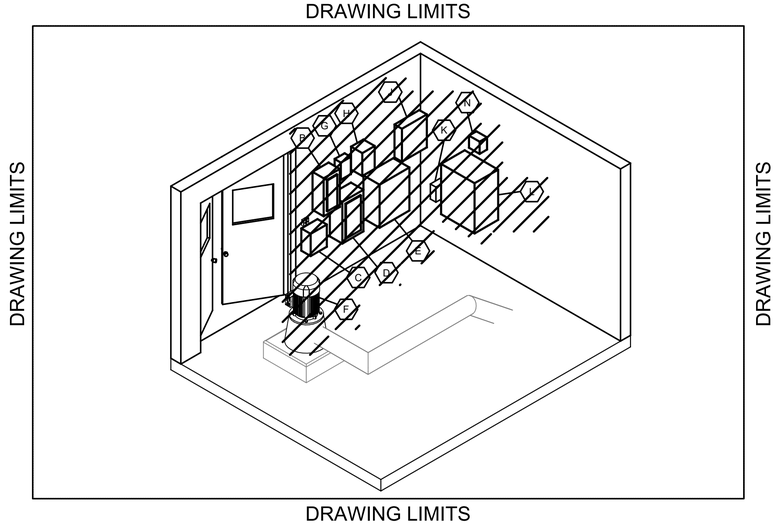
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-12.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy, 4/30/2025, 09:39 ; Layout:DE-12



MBR-159 PLAN VIEW

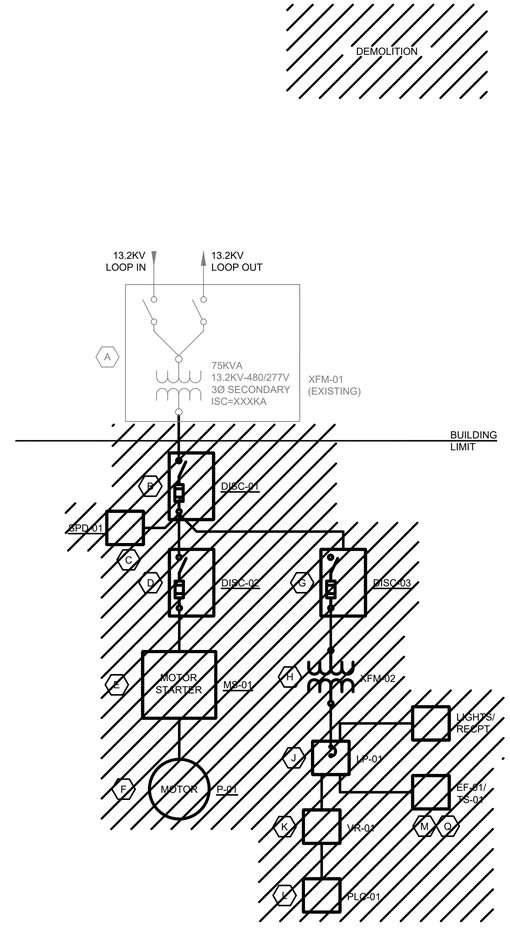
SCALE: 1/2" = 1'-0"

0 1' 2' 4'



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



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C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
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E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LP DISCONNECT
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L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
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P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

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PROJECT NO.: 50021

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-13
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

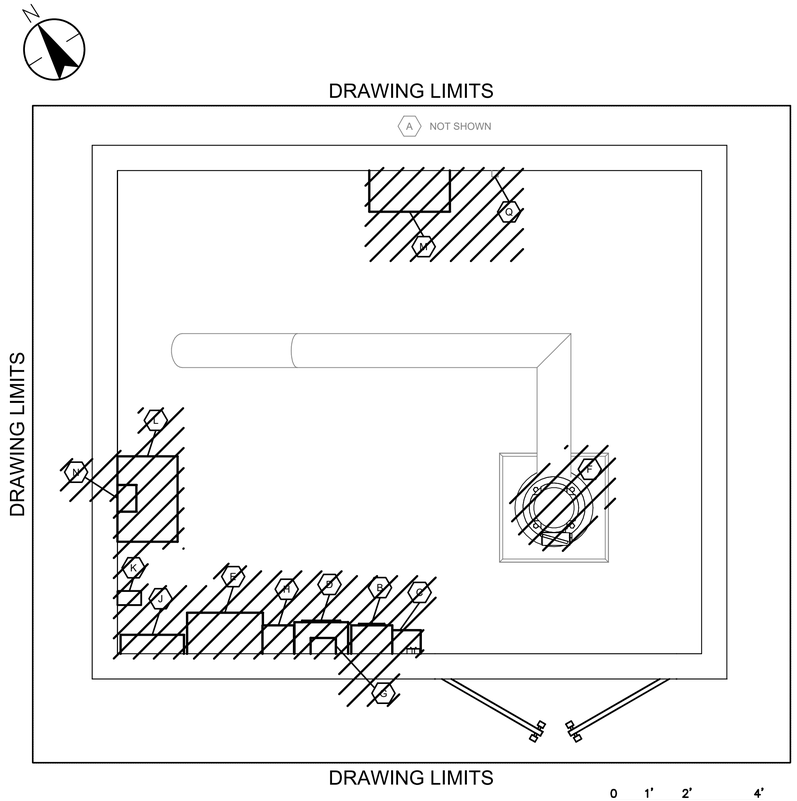
WELL HOUSE MBR-159 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-13

SHEET 113 OF 120

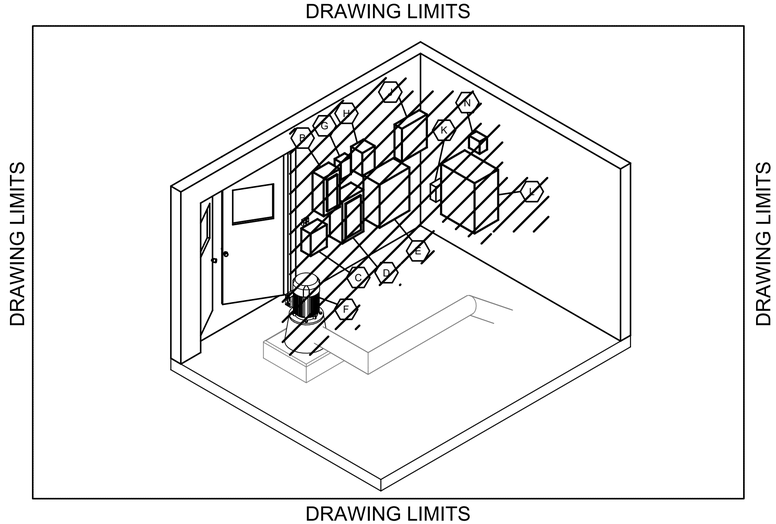
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-13.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy: 4/30/2025, 09:41 ; Layout:DE-13



MBR-160 PLAN VIEW

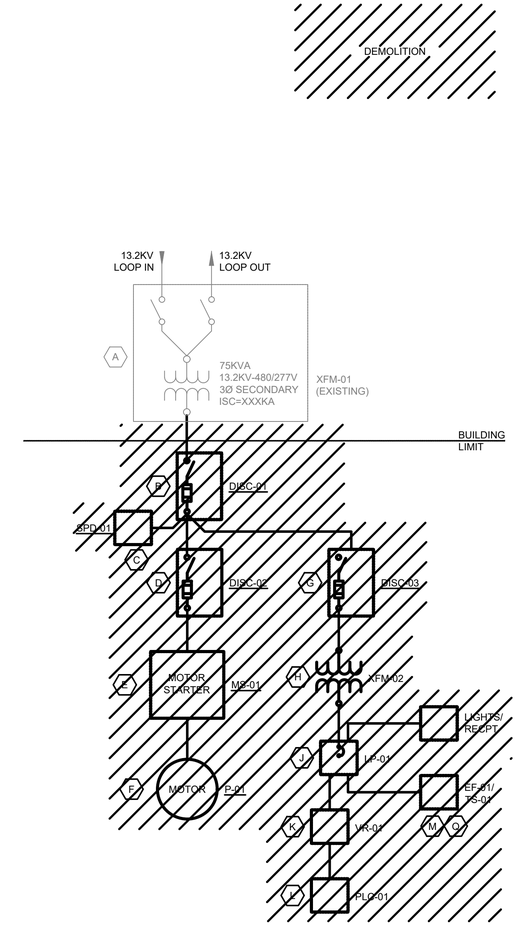
SCALE: 1/2" = 1'-0"

0 1' 2' 4'



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



ITEM	TAG #	DESCRIPTION
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B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
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E	MS-01	PUMP STARTER
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J	LP-01	100A PANELBOARD, 120/240 VAC, 30K MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
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P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

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PROJECT NO.:	50021
FILE NAME:	DE-14
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

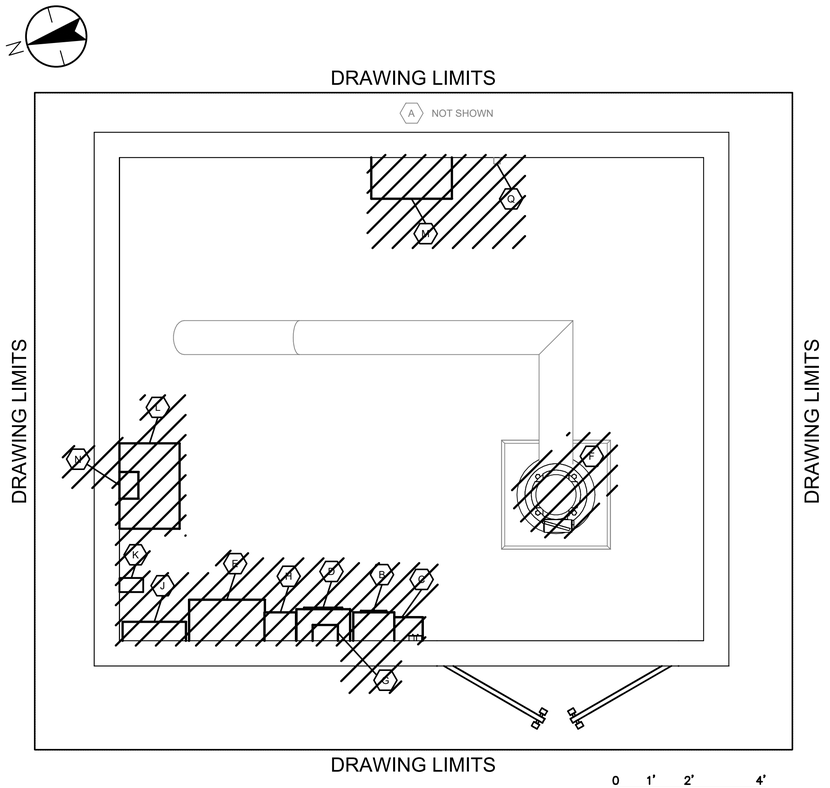
WELL HOUSE MBR-160 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-14

SHEET 114 OF 120

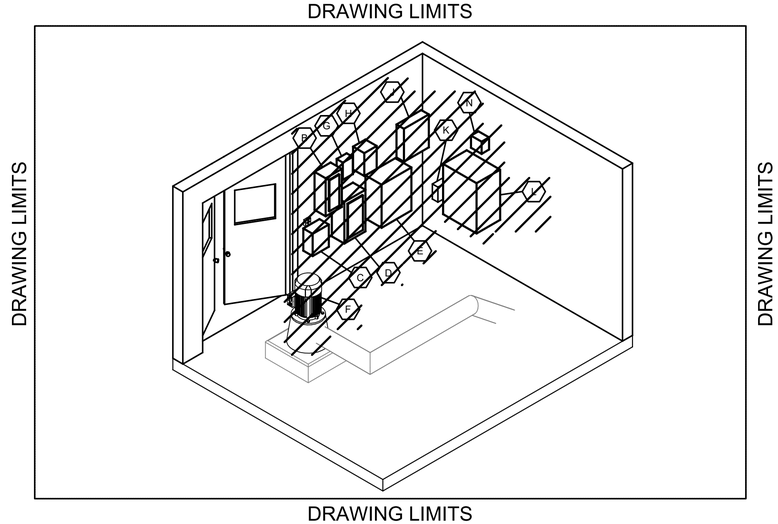
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-14.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy: 4/30/2025, 09:41 ; Layout:DE-14



MBR-164 PLAN VIEW

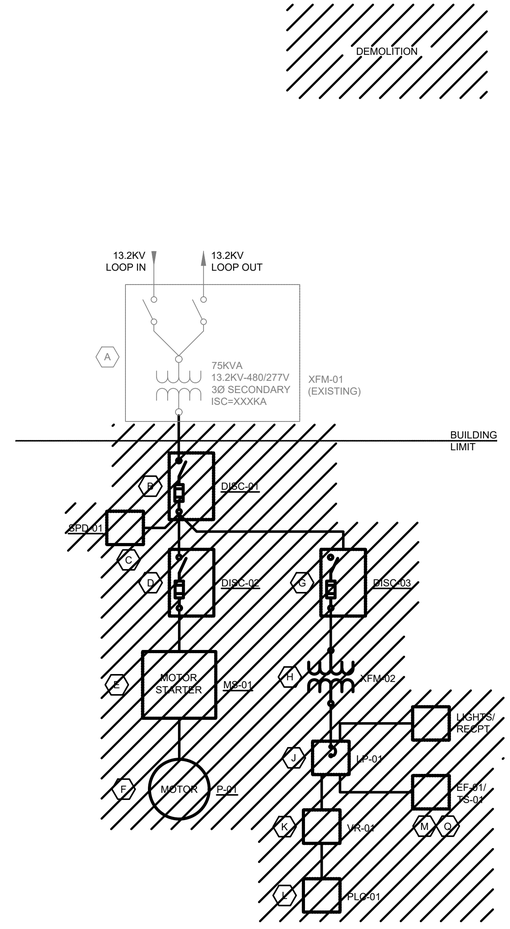
SCALE: 1/2" = 1'-0"

0 1' 2' 4'



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



ITEM	TAG #	DESCRIPTION
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Q	TS-01	EXHAUST FAN THERMOSTAT

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-15
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

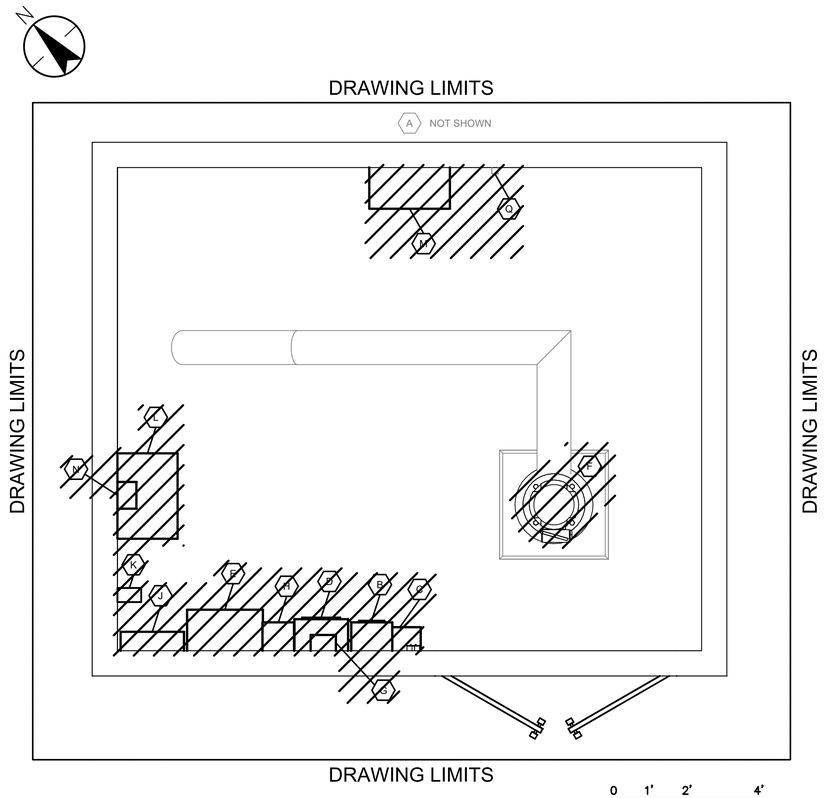
WELL HOUSE MBR-164 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-15

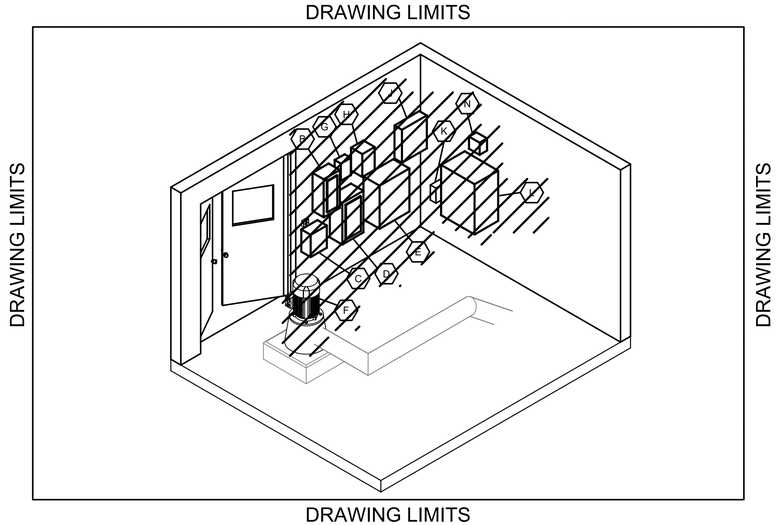
SHEET 115 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-15.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy, 4/30/2025, 09:42 ; Layout:DE-15



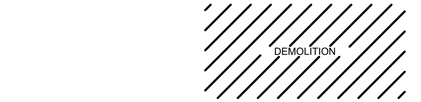
MBR-165 PLAN VIEW

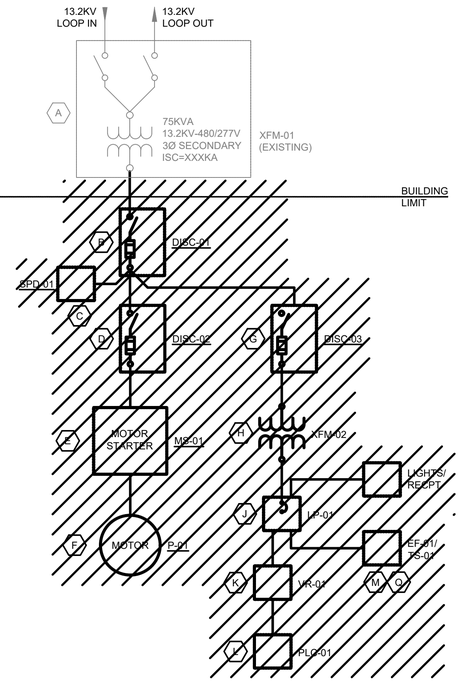
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE





ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LP DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30A MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL REMOVE ALL ELECTRICAL EQUIPMENT, PANELS, AND INSTRUMENTATION FROM INSIDE THE WELL HOUSE INCLUDING ALL APPURTENANCES, RACEWAYS, WIRING, JUNCTION BOXES, WIRING, DEVICES, SWITCHES, LIGHTING, RECEPTACLES, INTRUSION SWITCHES, MOTION DETECTORS, AND INCOMING POWER CONDUCTORS. THE EXISTING OUTDOOR TRANSFORMER SHALL REMAIN.
2. FOLLOW ALL ON-SITE LOCK-OUT/TAG-OUT AND SAFETY PROCEDURES PRIOR TO WORKING ON ANY ELECTRICAL CIRCUITS.
3. CONTRACTOR SHALL DISPOSE OF ALL REMOVED DEVICES. EXCEPT THE FLOWMETER TOTALIZERS WHICH SHALL BE TURNED OVER TO TAMPA BAY WATER.
4. DEMOLITION SHALL INCLUDE EXISTING CONDUIT AND CABLE TO/FROM EQUIPMENT SHOWN FOR DEMOLITION.
5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AND THE ROD TO THE RTU INSIDE THE WELL HOUSE. THE RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.

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CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

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Tampa, Florida, 33602-5729
Tel: 813 204-5305
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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-16
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

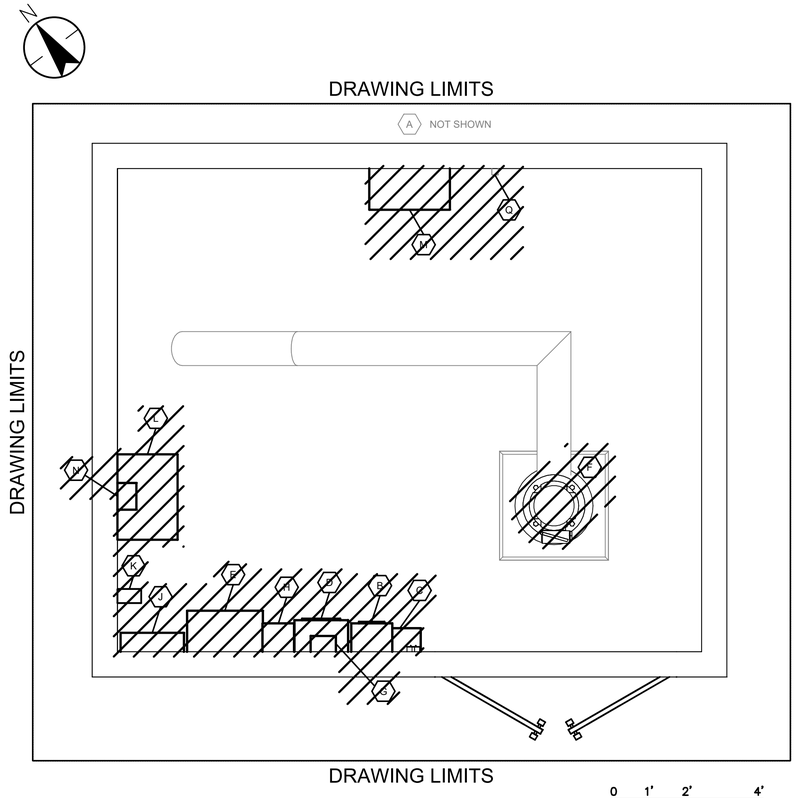
WELL HOUSE MBR-165 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-16

SHEET 116 OF 120

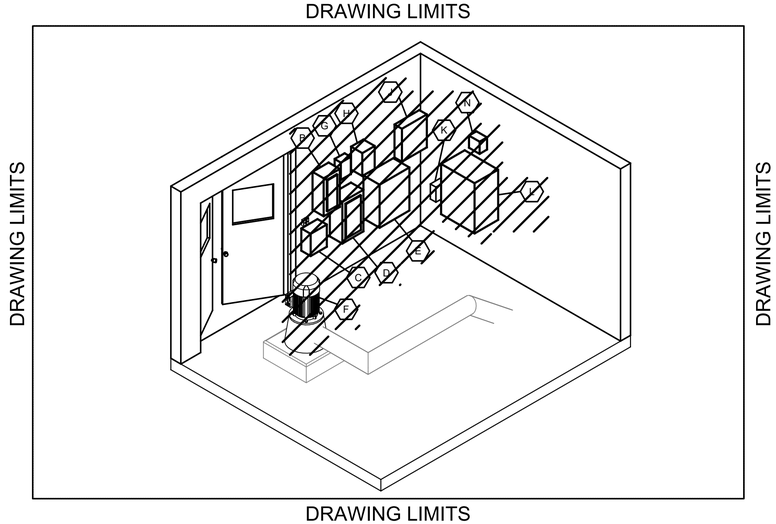
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-16.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy, 4/30/2025, 09:43 ; Layout:DE-16



0 1' 2' 4'

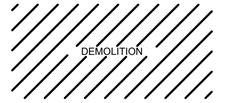
MBR-166 PLAN VIEW

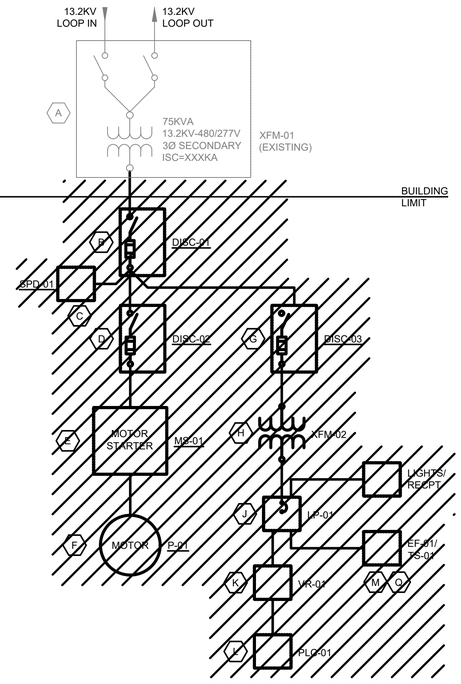
SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE





ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
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E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LP DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30K MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-17
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

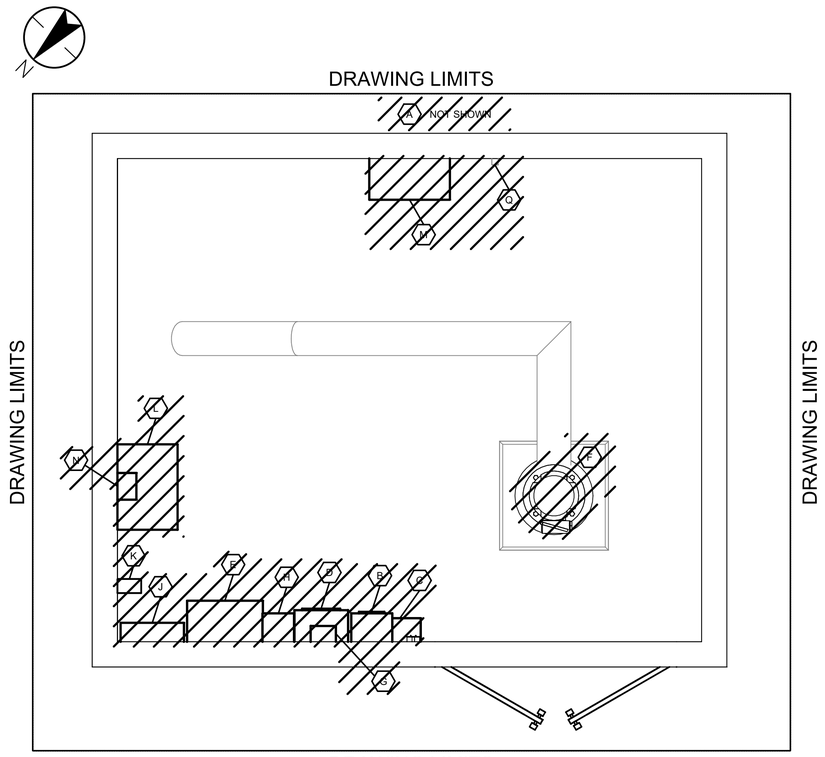
WELL HOUSE MBR-166 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-17

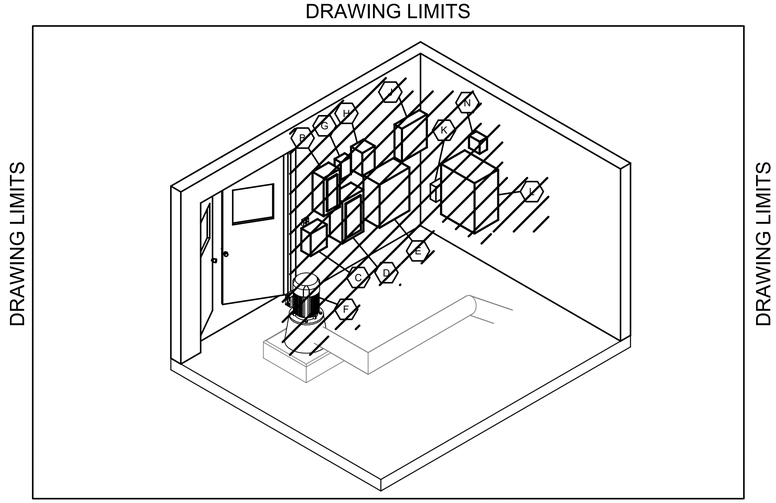
SHEET 117 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\FW_WORKING\WTR\DSANTIAGO\D0154729\DE-17.DWG Scale:1:1 SavedDate:11/22/2024 Time:11:31 Plot Date: Santiago, Dolsy, 4/30/2025, 09:44 ; Layout:DE-17



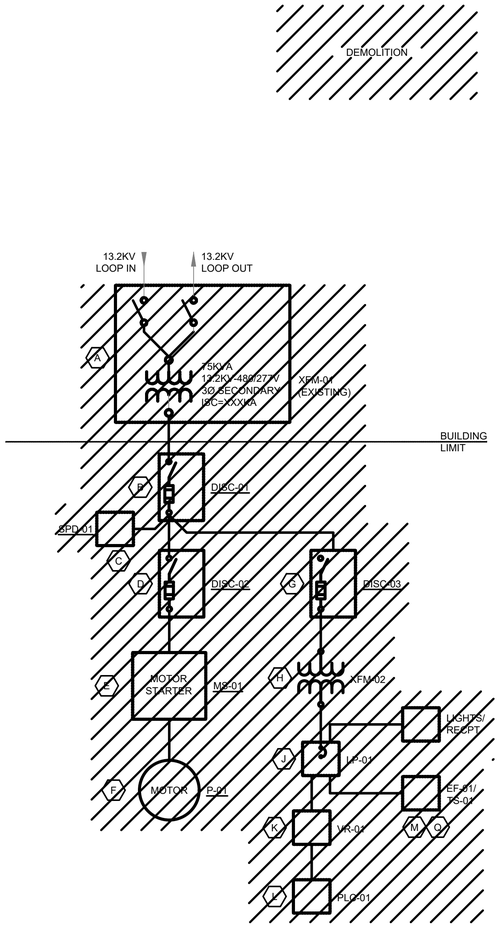
MBR-167 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



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B	DISC-01	200A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
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E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LV DISCONNECT
H	XFM-02	DRY-TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30A MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P		LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

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NOTES:

1. REMOVE THE EXISTING TRANSFORMER AND TRANSFORMER PAD.
2. FURNISH AND INSTALL NEW TRANSFORMER PAD AND TRANSFORMER AS SHOWN ON ONE-LINE DIAGRAM. TRANSFORMER PAD DIMENSIONS AND OPENINGS SHALL BE RECOMMENDED BY THE MANUFACTURER AND INCLUDED IN THE SHOP DRAWING SUBMITTAL. THE NEW TRANSFORMER PAD TOP OF SLAB SHALL BE NO LESS THAN 3" ABOVE THE SURROUNDING GRADE AND AT LEAST THE SAME ELEVATION AS WELL HOUSE FINISHED FLOOR.
3. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE TRANSFORMER. THE TRANSFORMER SHALL BE NO LESS THAN 3' FROM THE BUILDING.

MBR-167-XFM-01

SCALE: NONE

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PROJECT NO.: 50021

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777 S Harbour Island Boulevard Suite 600
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Tel: 813 204-5305
www.stantec.com

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

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DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-18
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

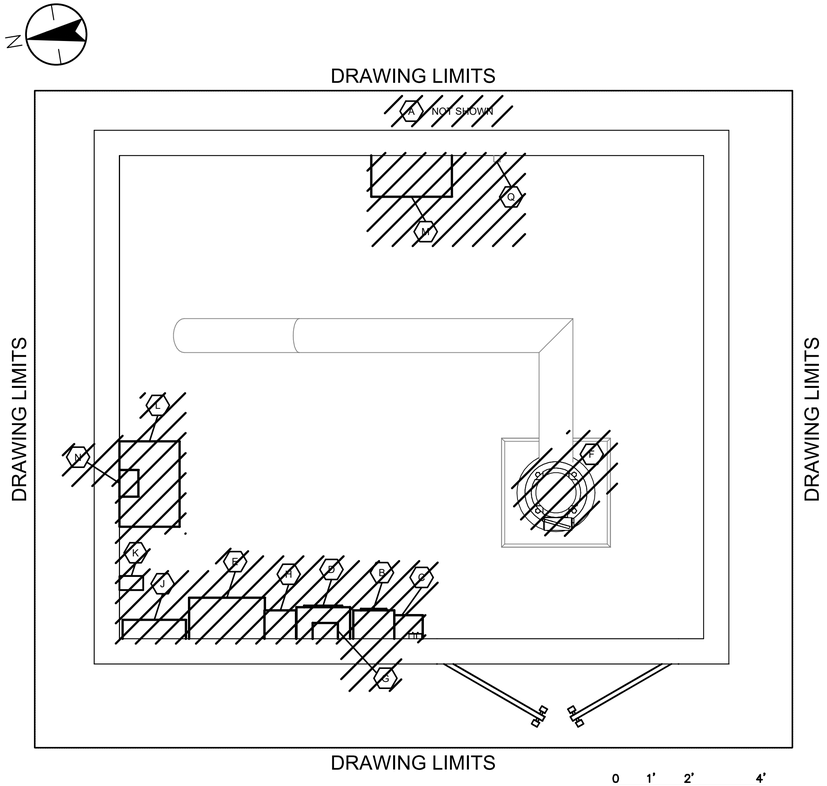
WELL HOUSE MBR-167 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-18

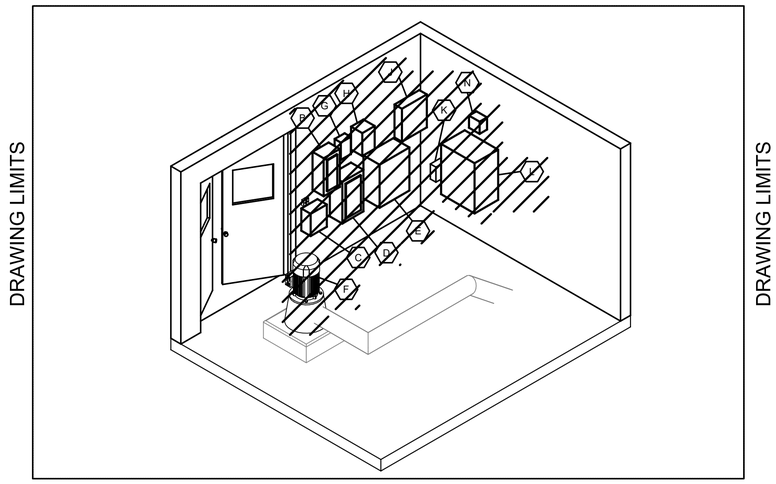
SHEET 118 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\PTR\DSANTIAGO\D0154729\DE-18.DWG Scale:1:1 SavedDate:4/30/2025 Time:09:53 Plot Date: Santiago, Daisy, 4/30/2025, 09:58 ; Layout:DE-18



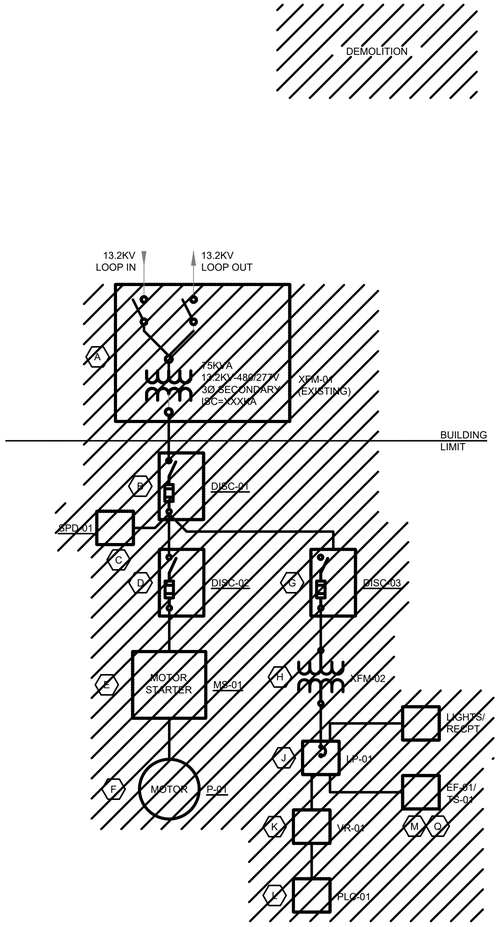
MBR-168 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



ITEM	TAG #	DESCRIPTION
A	XFM-01	UTILITY PAD MOUNTED TRANSFORMER
B	DISC-01	100A HEAVY DUTY FUSED DISCONNECT
C	SPD-01	ASCO 400 SERIES SURGE PROTECTIVE DEVICE
D	DISC-02	PUMP STARTER DISCONNECT
E	MS-01	PUMP STARTER
F	P-01	PUMP-MOTOR-PUMP
G	DISC-03	30A LP DISCONNECT
H	XFM-02	DRY TYPE TRANSFORMER, 5 KVA, 480-120/240 VAC
J	LP-01	100A PANELBOARD, 120/240 VAC, 30K MAIN
K	VR-01	CONSTANT VOLTAGE TRANSFORMER
L	PLC-01	PLC CONTROL PANEL
M	EF-01	BUILDING VENT FAN
N	JB-01	JUNCTION BOX
P	-	LIGHTS AND RECEPTACLES (NOT SHOWN)
Q	TS-01	EXHAUST FAN THERMOSTAT

EQUIPMENT SCHEDULE

GENERAL SHEET NOTES

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5. EACH WELL SITE HAS AN EXISTING, UNUSED CONTROL CABLE, WHICH RUNS FROM A PULL BOX AT THE ROD TO THE RTU INSIDE THE WELL HOUSE. THIS RACEWAY SHALL BE CUT BACK, CAPPED UNDERGROUND AND ABANDONED IN PLACE.



NOTES:

1. REMOVE THE EXISTING TRANSFORMER AND TRANSFORMER PAD.
2. FURNISH AND INSTALL NEW TRANSFORMER PAD AND TRANSFORMER AS SHOWN ON ONE-LINE DIAGRAM. TRANSFORMER PAD DIMENSIONS AND OPENINGS SHALL BE RECOMMENDED BY THE MANUFACTURER AND INCLUDED IN THE SHOP DRAWING SUBMITTAL. THE NEW TRANSFORMER PAD TOP OF SLAB SHALL BE NO LESS THAN 3" ABOVE THE SURROUNDING GRADE AND AT LEAST THE SAME ELEVATION AS WELL HOUSE FINISHED FLOOR.
3. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE TRANSFORMER. THE TRANSFORMER SHALL BE NO LESS THAN 3' FROM THE BUILDING.

MBR-168-XFM-01

SCALE: NONE

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PROJECT NO.: 50021

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SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:

DATE:	SEPT 2025
PROJECT NO.:	50021
FILE NAME:	DE-19
DESIGNED BY:	BCB
DRAWN BY:	FL
CHECKED BY:	JL
APPROVED BY:	BCB

SHEET TITLE

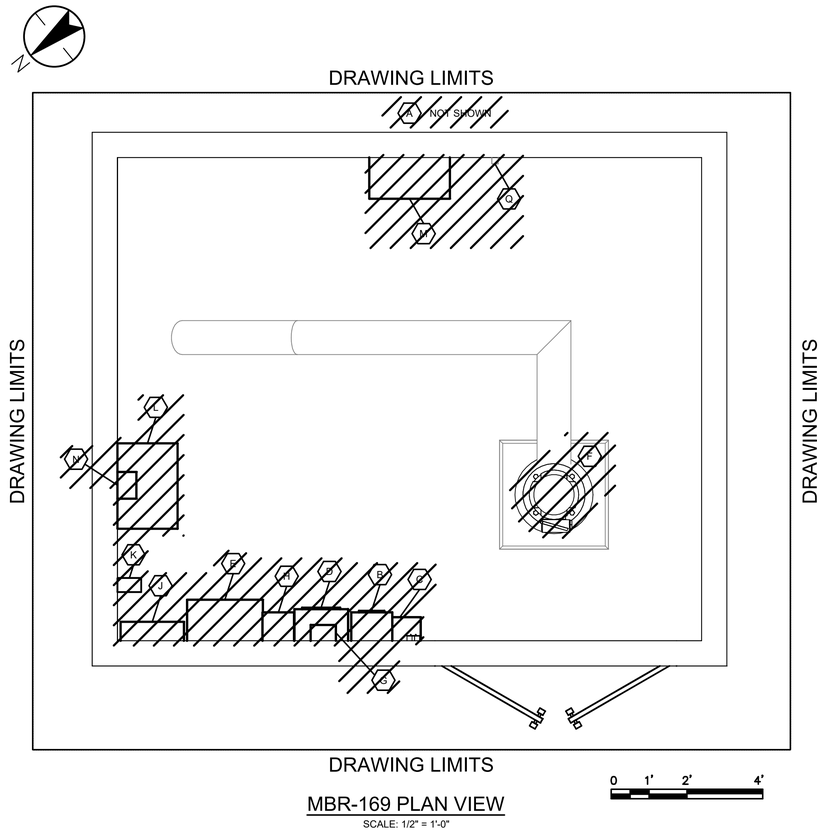
WELL HOUSE MBR-168 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-19

SHEET 119 OF 120

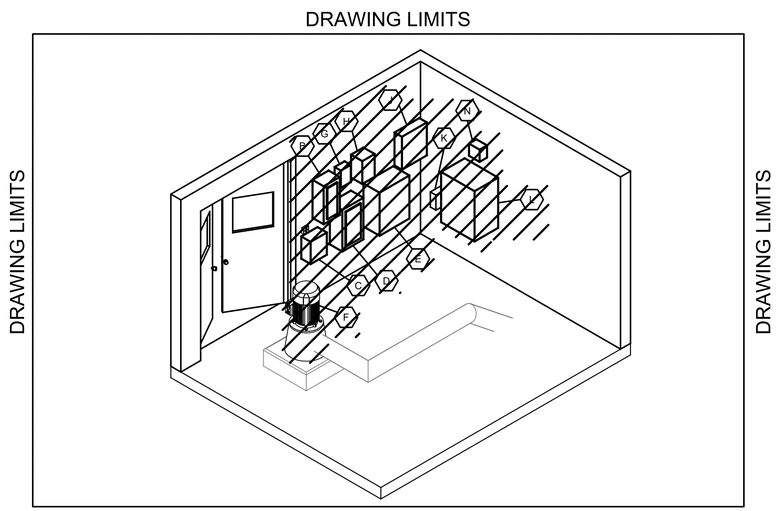
User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-19.DWG Scale:1:1 SavedDate:4/30/2025 Time:09:53 Plot Date: Santiago, Dolsy, 4/30/2025, 09:58 ; Layout:DE-19



0 1' 2' 4'

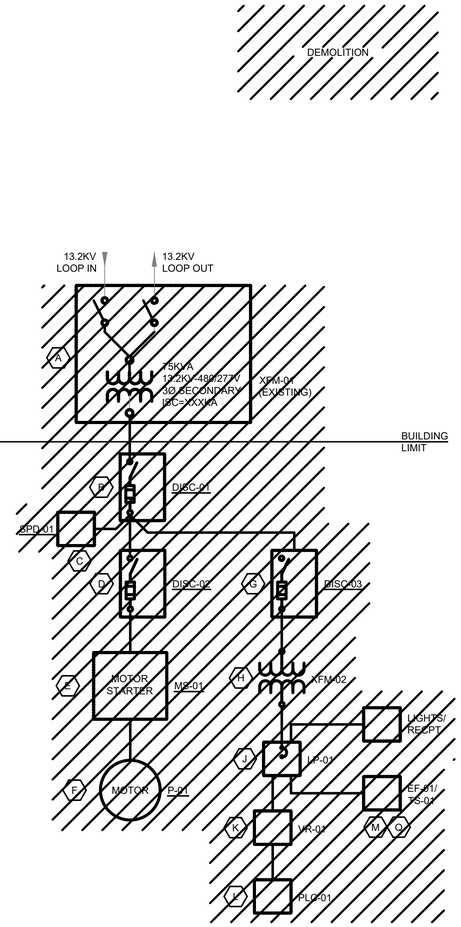
MBR-169 PLAN VIEW

SCALE: 1/2" = 1'-0"



ELECTRICAL EQUIPMENT ROOM ISOMETRIC VIEW

SCALE: NONE



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1. REMOVE THE EXISTING TRANSFORMER AND TRANSFORMER PAD.
2. FURNISH AND INSTALL NEW TRANSFORMER PAD AND TRANSFORMER AS SHOWN ON ONE-LINE DIAGRAM. TRANSFORMER PAD DIMENSIONS AND OPENINGS SHALL BE RECOMMENDED BY THE MANUFACTURER AND INCLUDED IN THE SHOP DRAWING SUBMITTAL. THE NEW TRANSFORMER PAD TOP OF SLAB SHALL BE NO LESS THAN 3" ABOVE THE SURROUNDING GRADE AND AT LEAST THE SAME ELEVATION AS WELL HOUSE FINISHED FLOOR.
3. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE TRANSFORMER. THE TRANSFORMER SHALL BE NO LESS THAN 3' FROM THE BUILDING.

MBR-169-XFM-01

SCALE: NONE

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

PROJECT NO.: 50021

Stantec
777 S Harbour Island Boulevard Suite 600
Tampa, Florida, 33602-5729
Tel: 813 204-5305
www.stantec.com

Unless otherwise noted, this drawing is the property of Stantec. The recipient is responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The copyrights to all designs and drawings are the property of Stantec. Reproduction or use for any purpose other than those authorized by Stantec is forbidden.

SEALS

TAMPA, FLORIDA

MORRIS BRIDGE WELL FIELD IMPROVEMENTS

ISSUED FOR BID

REV.	DATE	DESCRIPTION	BY
0	09/2025	ISSUED FOR BID	BCB

COPYRIGHT:
DATE: SEPT 2025
PROJECT NO.: 50021
FILE NAME: DE-20
DESIGNED BY: BCB
DRAWN BY: FL
CHECKED BY: JL
APPROVED BY: BCB

SHEET TITLE

WELL HOUSE MBR-169 DEMOLITION

SCALE: ½"=1'-0"

SHEET NO: DE-20

SHEET 120 OF 120

User:DSANTIAGO Spec:NAT CADD STD File:C:\PW_WORKING\WTR\DSANTIAGO\D0154729\DE-20.DWG Scale:1:1 SavedDate:4/30/2025 Time:09:53 Plot Date: Santiago, Daisy, 4/30/2025, 09:59 ; Layout:DE-20

12.0 SITE PHOTOGRAPHS


Park Hours
7:00 a.m. - 8:00 p.m.


PARK CLOSES
AT 8:00 PM


Park Closes at 8:00 pm
The Y Water Station






WELL HOUSE NO.P-166-B
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
US CODE Title 42, Section 300i-1
REPORT SUSPICIOUS ACTIVITY TO:
813-929-4500




WARNING
FEDERAL
OFFENSE!


WELL HOUSE NO.P-163-B


162




WARNING!
FEDERAL
OFFENSE!


WELL HOUSE NO.P-162-B
WARNING
RABIES VECTOR
Do Not Touch
Questions? Call 1-866-487-3297
USDA, WILDLIFE SERVICES
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
US CODE Title 42, Section 300i-1
REPORT SUSPICIOUS ACTIVITY TO:
813-929-4500


161






WELL HOUSE NO. P-161-B
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
813-929-4500


WELL HOUSE NO. P-161-B
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
US CODE Title 42, Section 300i-1
REPORT SUSPICIOUS ACTIVITY TO:
813-929-4500




WELL HOUSE NO.P-159-S
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
813-929-4500


WELL HOUSE NO. P-159-B
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
US CODE Title 42, Section 300i-1
REPORT SUSPICIOUS ACTIVITY TO:
813-929-4500




WELL HOUSE NO.P-153-A


152








WELL HOUSE NO.P-152-A
WARNING!
TAMPERING WITH THIS FACILITY IS A
FEDERAL OFFENSE!
US CODE Title 42, Section 300i-1
REPORT SUSPICIOUS ACTIVITY TO:
813-929-4500








WELL HOUSE NO.P-157-A


ENTRANCE
GATE LOCKS
AT 800 PM


Flatwoods Loop .6 mi.
Bruce B Downs 6.5 mi.








WARNING!
FEDERAL
OFFENSE!


WELL HOUSE NO.P-167-B

EXHIBIT B
BIDDER'S RESPONSE FORMS

1. BID FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

OFFER

TO: Tampa Bay Water

The undersigned hereby offers and agrees to furnish the goods and/or services in compliance with all terms, scope of work, conditions, specifications, and addenda in this Invitation for Bids.

INVESTIGATION:

The undersigned, by submission of this Bid Form, certifies it has thoroughly examined all ITB documents, including any Existing Condition Documents and Project site in order to familiarize itself with all existing conditions. This may include the physical condition on the ground including, but not limited to, the soil borings and has satisfied itself that the number of borings and their locations are adequate or has made any additional soil tests or borings if they feel the number, type, or location of those provided by Tampa Bay Water are inadequate or incomplete.

OBLIGATION:

The undersigned, by submission of this Bid Form, hereby agrees to be obligated, if selected as the Contractor, to provide the stated goods and/or services to Tampa Bay Water for the term as stated herein, and to enter into a Contract with Tampa Bay Water, in accordance with all documents herein, together with any written addenda.

BID PRICE:

The undersigned agrees to abide by the pricing contained on the Price Form.

ADDENDA:

The Bidder acknowledges receipt of the addenda noted below and has incorporated the content of Addenda into this Bid:

#1 01/21/26 #2 01/29/26 #3 02/09/26 #_____

CONTRACTOR CONTRACT:

The Bidder agrees to the terms and conditions in the draft Contract included with this ITB **(initial one below)**:

X "As is" with no modifications.

____ With the changes requested in the attached document (attach to this form) and understands that Tampa Bay Water reserves the right to reject the change requests.

LITIGATION:

The Bidder understands it must disclose any past, pending or threatened litigation or regulatory action involving construction services provided by the Bidder **(initial one below):**

X None are known to exist.

____ Action exists, and a full explanation has been attached to this form.

CONFLICTS OF INTEREST:
The Bidder understands it must disclose any potential conflict of interest which would adversely affect the Bidder's ability to provide fair, loyal, and competitive services to Tampa Bay Water. Such disclosures shall include, but not be limited to, the Bidder's contractual obligations, property interests or clientele relationship or the property interests, contractual obligations or relationships of the Bidder's principals, officers, directors, employees or agents which are directly or indirectly related to Tampa Bay Water and its operations, its Agency Representative, the Southwest Florida Water Management District (SWFWMD), the Florida Department of Environmental Protection (FDEP), or any of our member governments **(initial one below):**

X___ None are known to exist.

____ Potential or apparent conflict exists, and a full explanation has been attached to this form.

COMPLIANCE WITH LAWS/PERMITS:
The Bidder certifies it is not currently in violation of any regulatory rules and regulations that may have an impact on the firm's operations, and it agrees to comply with all local, State, and Federal statutes, regulations, directives and orders as applicable to the services provided and offered to Tampa Bay Water. The Bidder further agrees it has not been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List; nor has it engaged in a boycott of Israel and has no business operations in Cuba or Syria. (Per Section 287.135(5), Florida Statutes). Additionally, the Bidder certifies (pursuant to Subsection 287.134(2)(a), Florida Statutes) it has not been placed on the discriminatory vendor list.

NONCOLLUSION:
The undersigned, hereinafter called Bidder, declares and certifies that (i) all principals with an interest in this Bid have been named herein; (ii) this Bid is, in all respects, fair and without fraud; (iii) this Bid is made without collusion with any official of Tampa Bay Water or Engineer; and (iv) the Bid is made without any connection or collusion with any person submitting another Bid for the work.

CONTRACT EXECUTION:
The undersigned Bidder proposes and agrees that if this Bid is accepted, it shall enter into a Contract with Tampa Bay Water in the form included with the Contract documents and perform and furnish all work as specified or indicated in this ITB at the price bid and within the time specified, and in accordance with the other terms and conditions of the Contract documents.

CONTRACT MODIFICATION PRICING:
Bidder acknowledges and agrees that the separate prices on this Bid, where they are applicable and deemed acceptable by Tampa Bay Water, will be used by Tampa Bay Water and Bidder, if awarded the Contract documents, whenever similar work is added or deducted from the Contract documents.

PROJECT UNDERSTANDING:
Bidder represents that before making its Bid, Bidder has familiarized itself with the nature and extent of the Contract documents (as defined in the General Conditions), work, Project site, locality, and all local conditions and laws and regulations that may in any manner affect cost, schedule, progress, performance, or furnishing of the work.
Further, Bidder has read and studied carefully: reports of explorations and tests of surface and subsurface conditions; and those drawings of physical conditions in or relating to existing surface or

subsurface structures or underground utilities; and accepts the determinations established in 6.0 Supplemental Information for Bidders to the extent of the technical data contained in those reports and drawings upon which Bidder may rely, which in any manner affect cost, schedule, progress, performance, and furnishing of the work.
Further, Bidder has read and studied all information and data shown or indicated in the Contract documents about other work under separate Contracts at or near the Project site and assumes responsibility for all conditions and consequences which may result from other work and which in any manner affect cost, schedule, progress, performance, and furnishing of the work.
Further, Bidder has correlated the results of the activities, examinations, and studies as noted above, with the terms and conditions of the Contract documents and has exercised its own independent judgement in the interpretation of this information.

NOTICE OF ERRORS:
Bidder has given Tampa Bay Water notice of all conflicts, ambiguities, errors, or omissions, if any that Bidder has discovered in the ITB.

FIRM OFFER:
Bidder has read the Contract documents and accepts all of the terms and conditions of the Contract documents, including without limitation those dealing with the disposition of Bid Security. Bidder acknowledges all Bids shall remain firm for One-Hundred Twenty (120) days or as otherwise required by this ITB.

REQUIREMENTS IN EFFECT:
Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws and Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specifications, manual, code, or Laws and Regulations in effect on the date of the receipt of Bids, except as may be otherwise specifically stated.

PUBLIC RECORDS:
Each Bidder, by submitting a Bid, acknowledges the agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Bidder establishes its right to a public records exception. It is the responsibility of the Bidder alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Bidder or any other party as a result of disclosing any such information or materials.

TRENCH SAFETY ACT:
Bidder acknowledges and agrees that the trench safety standards in effect at the time of this Bid and at the time(s) of performing the work shall be adhered to and compliance is the complete and sole responsibility of Bidder. The price on the Price Form includes Bidder's total cost for compliance with the Florida Trench Safety Act.

SUPPLIERS:
Bidder certifies that all suppliers, if acceptable to Tampa Bay Water, shall be supplying the material or equipment for the portions of the work identified in the list in the event Bidder is awarded the Contract.

I certify, under penalty of perjury, that I have the legal authorization to bind the firm hereunder: The individual signing this form certifies, under penalty of perjury, that (s)he has the authority to sign on behalf of the firm. (If signature is by an agent, other than an officer of the corporation or a member of a partnership, a notarized power-of-attorney must accompany the Bid.) The following is certified by the signing of this form:

BID CONTACT INFORMATION AND PRIMARY SIGNATURE

Southeast Drilling Services, Inc.
Firm Name

10614 East US Hwy 92, Tampa Florida 33610
Firm Address

W.B. Ziegler
Printed Name

813/968-7277
Phone Number

Bart.Ziegler@southeastdrilling.net
Email Address

CGC 053516 WWCL 9078
Firm Business License Number

General Contractor 08/31/26 WWLC 07/31/27
License Classification Renewal Date

Is license active? Yes

This Bid is submitted on this 18 **day of** February **, 20**26**.**

2. AUTHORIZED SIGNATURES

Failure to fully complete one of the following forms SHALL result in the Bidder being deemed NONRESPONSIVE.

This Bid Form must be signed in the legal name of the company and by an officer or partner having authority to bind the company or firm by his or her signature. Electronic signatures are acceptable. Complete the applicable section below based on firm type:

If Bidder is an individual:

Name of Individual: NA

Title: _____

By _____
(if other than individual, Attach Power of Attorney)

Doing Business As: _____

Business Address: _____

Telephone: _____

If Bidder is a Partnership:

By:_____
(True Name of Partnership)

_____
Name of General or Limited Partner(s) Authorized to Sign

By:_____
(Attach evidence of authority to sign)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

Business Address: _____

Telephone: _____

If Bidder is a Corporation:

By: Southeast Drilling Services, Inc.
(Legal Corporation Name)

Name: W.B. Ziegler

Title: President , Secretary, Treasurer

By: _____
(attach evidence of authority to sign)

Name and Title and Signature of Official Attesting:

Name: Beatrice M Brood

Title: Office Manager / Notary Public

By: Beatrice M. Brood

Business Address: 10614 East US Hwy 92 Tampa Florida 33610

Telephone: 813/968-7277

State of Incorporation: Florida

If Bidder is a Joint Venture: NA

Each joint venturer shall be identified below and shall sign the Bid. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the same manner as is indicated above.

Joint Venture Partners:

_____

_____

_____

_____

3. PRICE FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Tampa Bay Water
Morris Bridge Wellfield Improvements Project
No. 50021
Bid Form

Item No.	Brief Description	Unit	Est Qty (a)	Unit Price (b)	Total Amount (c) (a)x(b)=(c)
1	Mobilization and Demobilization	Lump Sum	1	$ 700,000.00	$ 700,000.00
2	MBR-150 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
3	MBR-151 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
4	MBR-152 Well Site Work	Lump Sum	1	$ 500,000.00	$ 500,000.00
5	MBR-153 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
6	MBR-154 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
7	MBR-155 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
8	MBR-156 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
9	MBR-157 Well Site Work	Lump Sum	1	$ 500,000.00	$ 500,000.00
10	MBR-158 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
11	MBR-159 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
12	MBR-160 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
13	MBR-161 Well Site Work	Lump Sum	1	$ 430,000.00	$ 430,000.00
14	MBR-162 Well Site Work	Lump Sum	1	$ 430,000.00	$ 430,000.00
15	MBR-163 Well Site Work	Lump Sum	1	$ 250,000.00	$ 250,000.00
16	MBR-164 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
17	MBR-165 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
18	MBR-166 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
19	MBR-167 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
20	MBR-168 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
21	MBR-169 Well Site Work	Lump Sum	1	$ 810,000.00	$ 810,000.00
22	Contract Record and Close Out Documentation	Lump Sum	1	$ 32,000.00	$ 32,000.00
23	Well pre-construction/replacement specific capacity testing (1 per active well)	EA	15	$ 9,500.00	$ 142,500.00
24	Well pre-construction/replacement geophysical (video) log inspection (1 per active well)	EA	15	$ 12,500.00	$ 187,500.00
25	Post-construction Specific Capacity Testing (1 per active well)	EA	15	$ 5,500.00	$ 82,500.00
	TOTAL SUM OF LINE (BID PRICE) ITEMS 1 THRU 25				$ 15,404,500.00

Fifteen Million Four Hundred Four Thousand Five Hundred Dollars No Cents

(Bid Price Amount Written in Words)

This project provides an Owner's Allowance in the amount of $875,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

This project provides a Permit Allowance in the amount of $20,000.00 which is not included in the Price Form above.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

4. FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", Southeast Drilling Services, Inc., a corporation X, individual ____, partnership ____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", Western Surety Company, a corporation of the state of South Dakota, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of 5% of Total Bid Dollars ($5% of Bid), lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total Contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Morris Bridge Wellfield Improvements, Project No.: 50021, Contract No. 2026020 covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

5. CERTIFICATE OF PRINCIPAL

I, William B Ziegler, certify that I am the Secretary of the Corporation X, or a General Partner _____ or Managing Partner _____ of the partnership, named as the Bidder in the attached Bid Bond; that William B Ziegler who signed the Bid Bond on behalf of the Bidder, was then President/ Sectretary/Treasurer of that organization X or partnership _____; that I know his/her signature, and on the Bid Bond is genuine; and that the Bid Bond was duly signed, sealed, and attested for and on behalf of that organization X or partnership _____ by authority of its governing body _____ or partners _____.

_____

Signed by Secretary of the Corporation or
By General or Managing Partner Authorized to Sign

Southeast Drilling Services, Inc.

Name of the Corporation or True Name of the Partnership

(Corporate Seal)

Verification

State of Florida
County of Hillsborough

Before me, a Notary Public duly commissioned, qualified and acting, by means of ☑ physical presence or ☐ online notarization, personally appeared William B Ziegler who is personally known to me or who has produced _____ as identification, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for Southeast Drilling Services named Bidder in favor of the Tampa Bay Water.

Subscribed and sworn before me this 3 day of February, 20 26.

_____

Notary Public Beatrice M. Brood
My Commission Expires: _____

NOTARY PUBLIC STATE OF FLORIDA
BEATRICE M. BROOD
Commission # HH 421423
Expires November 13, 2027

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Michael Wayne Rogers, Sharon Elaine Taylor, Jennifer A Monbarren, Individually

of Temple Terrace, FL, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law and Resolutions printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 16th day of May, 2023.

WESTERN SURETY COMPANY

Larry Kasten, Vice President

State of South Dakota
County of Minnehaha } ss

On this 16th day of May, 2023, before me personally came Larry Kasten, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
March 2, 2026

M. BENT NOTARY PUBLIC SOUTH DAKOTA

M. Bent, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law and Resolutions of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this day of , .

WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Form F4280-4-2023

Go to www.cnasurety.com > Owner / Obligee Services > Validate Bond Coverage, if you want to verify bond authenticity.

Authorizing By-Laws and Resolutions

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

This Power of Attorney is signed by Larry Kasten, Vice President, who has been authorized pursuant to the above Bylaw to execute power of attorneys on behalf of Western Surety Company.

This Power of Attorney may be signed by digital signature and sealed by a digital or otherwise electronic-formatted corporate seal under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 27th day of April, 2022:

"RESOLVED: That it is in the best interest of the Company to periodically ratify and confirm any corporate documents signed by digital signatures and to ratify and confirm the use of a digital or otherwise electronic-formatted corporate seal, each to be considered the act and deed of the Company."

6. **TAMPA BAY WATER**
CONSULTANT AFFIDAVIT

STATE OF Florida
COUNTY OF Hillsborough

BEFORE ME, the undersigned authority, appeared W.B. Ziegler, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the President/ Sectretary/Treasurer of Southeast Drilling Services, Inc. (the "Consultant").
4. I am authorized by Southeast Drilling Services, Inc. to make this Affidavit on behalf of Consultant.

E-Verify

1. Consultant acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Consultant acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a Contract unless each party to the Contract registers and uses E-Verify.
3. Consultant is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Consultant understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any Contract with Tampa Bay Water.
5. Consultant's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Consultant shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Consultant nor any subcontractor of Consultant has had a Contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Consultant or any subcontractor of Consultant has a Contract terminated by a public employer for any such violation during the term of any Contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.
B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply

on a Contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a Contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a Contract with an agency for goods or services of $1 million or more. At the time of submission of a proposal for a Contract or Contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any Contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any Contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a Contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or agency under the significant control of such Foreign Country of Concern.

Signature of Affiant
on behalf of Consultant

By: W.B. Ziegler
As its: President/ Sectretary/Treasurer
Dated: 02/18/2026

Sworn to (or affirmed) and subscribed before me by means of ☑ physical presence or ☐ online notarization, this 18 day of February, 2026, by W.B. Ziegler, on behalf of Southeast Drilling Services, Inc., who is personally known to me or who has produced _____ as identification.

BEATRICE M. BROOD
Commission # HH 421423
Expires November 13, 2027

Beatrice M. Brood

Print Name: Beatrice M Brood
Notary Public of the State of Florida

My Commission Expires:

7. NON-COLLUSION AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Stantec Consulting
Project Name: Morris Bridge Wellfield Improvements
Project No.: 50021

Affiant, . W.B. Ziegler, being first duly sworn, deposes and says that: Affiant is (Title) President/ Sectretary/Treasurer of Southeast Drilling Services, Inc, ("Bidder"). Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.

Bidder has submitted to Tampa Bay Water, a Bid ("Bid") to construct the above referenced Project, also referred to in this Affidavit as the "work".

This Non-Collusion Affidavit is executed by Affiant for inclusion with the submission to Tampa Bay Water of the Bid and may be relied upon by Tampa Bay Water in considering the Bid.

Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid; has not entered into any illegal Contract, combination, conspiracy or other unlawful act; and the Bid is genuine and is not a collusive or sham Bid.

Neither Bidder nor any of its officers, partners, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix a price or prices (including any overhead, profit or other cost elements) for the Bid; or have made any Contract, or given or promised any consideration to induce any other person not to submit a Bid for the work, or to submit a Bid at a specified price; or have secured or intended to secure through any Contract an unlawful advantage against Tampa Bay Water, or any other person interested in the work.

The Bid is not intended to secure an unfair advantage or benefit from Tampa Bay Water or in favor of any person interested in the proposed work.

The prices proposed are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and neither Bidder nor any of its officers, partners, owners agents, representatives, employees, or parties in interest, including this Affiant, have divulged information regarding the Bid or any data about the Bid to any other person.

By: _____
Print Name: W.B. Ziegler
Title: President/ Sectretary/Treasurer

8. LITIGATION HISTORY

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

List all litigation and arbitration from the past 5 years, regardless of results or current status.

Project Name	Parties to Dispute	Nature of Dispute	Resolution of Dispute
NONE			

[Attach Additional Pages If Necessary]

10. MAJOR EQUIPMENT MANUFACTURERS

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Line Item	Description	Equipment Type/Material	Manufacturer	Distributor or Supplier
	Pumps	Pumps	Peerless	~~Carter Jet, Plank, Hydra Service, Procarva~~ Hydra Service
	I&C	I&C	Rocha Controls	
	Mechanical Piping	Mechanical Piping		Core & Main
	Electrical Gear	Eelctrical Gear	ABB	

[Attach Additional Pages If Necessary]

11. SUBCONTRACTORS LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Bidder shall perform (with Bidder's own employees) not less than fifty percent (50%) of the labor (total Contract price less the cost of materials for the Project). For all remaining work, list each Subcontractor to whom Bidder intends to award a sub-contract in excess of two percent (2%) of the Total Price on the Price Form. These Subcontractors, if acceptable to Tampa Bay Water, shall be awarded subcontracts for the portions of the work identified in the list, in the event Bidder is awarded the Contract.

Work To Be Performed	Name/Address	Percent of Total Bid Price
Instrumentation and Controls	Rocha Controls 4939 Cross Bayou Blvd. New Port Richey, Fl 34652	7.3%
Electrical	Lavendera Electric Co 4701 N Hesperides St Tampa, Fl 33614	15%
Underground Piping	Blackhorse Underground 2409 Sands Rd Lakeland Fl 33810	22%

12. QUESTIONNAIRE

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Stantec Consulting
Project Name: Morris Bridge Wellfield Improvements
Project No.: 50021

The undersigned warrants that all statements and answers to questions hereinafter made are current, accurate, and complete as of the date indicated below.

Respond to the items below with sufficient information to show the Bidder has sufficient qualifications to perform the required work. (See 3.3 Minimum Qualifications)

1. How many years has your organization been in business as a licensed general contractor under your present business name? 32 Years .
2. Attach to this Form a list of all Contracts comparable to this project that your organization has performed during the last five years. For each Contract listed, include the owner's Contract number, Contract title, brief project description, original Contract Price, final Contract Price, substantial completion date or percent complete (if not completed), and the name, address and phone number of an individual from the owner to which your organization may refer.
3. Are there any current federal, state, or local tax liens filed on your organization? ___Yes _X_No
   If yes, attach a list of all current tax liens and an explanation for each.
4. Has your organization failed to complete work awarded to it in the last five years? X___Yes ____No
   If yes, attach an explanation, including description of the project, identification of the owner, contract award date, and reason work was not completed.
5. Has your organization ever had a Contract terminated for default in the last five years? ___Yes X___No
   If yes, attach an explanation, including description of the project, identification of the owner, Contract termination date, and reason for each termination for default.
6. Has your organization ever had significant accidents or OSHA violations in the last five years? ___Yes _X___No
   If yes, attach a list of each significant accident or OSHA violation, including a description and date of each event, and an explanation for each.
7. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction project? No .
   If so, state name of individual, organization and reason therefore.
   _____
   _____
   _____
8. Does your organization or its key personnel now hold valid certificates of competency or licenses for which a specific license is required? Yes .
   If so, attach copies of all licenses covering the work under the Contract Documents together with the specific political jurisdiction issuing said licenses.
   Attachment 6, consisting of 5 pages. CGC, WWL (2) , Eng. Lic., BTR Hills Cty.
9. Is your organization owned, controlled or organized under the law of a Foreign County of Concern as identified in Section 287.138, Florida Statutes? No

By: _____
Print Name: W.B. Ziegler
Title: President, Secretary, Treasurer

Southeast Drilling Services, Inc.

References

Projects 1- SHARE THREE WELL SITES

Name of Project: South Hillsborough Aquifer Recharge Project (SHARE)
Site 2: 6274 S 78th St, Tpa, 33619
Site 6: 699 Teco Rd, Ruskin / 786 Cypress Village Blvd, Ruskin
Site 4: 6131 Covington Gardens DR Apollo Beach
Contract Amount: $2,916,950.00 03-07-2019 CO 1-4 $ 6,694,939.00
Changes Site 6 to 4 / New Site 5 added Rev Contract: $9,611,889.00

Project Superintendent: Bart Ziegler **Supervisor / Lead Driller**: Brian Ziegler

Owner / Engineer: Hillsborough County **Completed:** 100% Complete June 2024
601 E Kennedy Blvd # 18, Tampa, FL 33602

Contact: David Page 813-853- 1056 PageDa@hillsboroughcounty.org

Percentage Completed by SED: 90%

Description of Work: Construction of two (2) 5.0 mil gal per day recharge wells, one (1) recharge zone monitor well 16'' 1,000 ft (16" 500 wall casing to 700 & 900 ft and TD of 1,000 ft and 1200 ft, resp), two (2) Suwannee limestone monitor wells, twelve (12) pad monitor wells. Logging, coring, acidization, specific capacity test, casing pressure tests, packer testing (single and straddle) APTs, final pump, controls and electrical installation

- Additional Site added same scope work.

Project 2:
Name of Project: North Hillsborough Aquifer Recharge Project (NHARP)
8305 Montaque St, Tampa Fl

Contract Amount: $ 2,538,150.00 07-10-2017 **Final Cost:** $2,722,166.50 07/09/2019

Project Management : Bart Ziegler **Supervisor / Lead Driller**: Brian Ziegler

Owner / Engineer Hillsborough County BOCC \
601 East Kennedy Blvd., #18 Tampa, Fl 33602

Contact: Michael Townsel
813-663-3222
TownselM@HCFLGov.net

Percentage Completed by SED: 85%

Description of Work: Well Construction - The WORK of this contract includes the construction and outfitting of one (1) Recharge Well (NRW-1) (700 ft 500 wall casing TD

1200 ft) one (1) Recharge Zone Monitor Well (NRZMW-1) 16'', eight (8) temporary pad monitoring wells (PMW-1 through 8), and wellhead additions or modifications to two (2) existing monitoring wells (Suwannee Limestone Monitoring Well [SZMW-1] and Shallow Zone Monitoring Well [NSMW-1]), along with all appurtenant work including, logging, coring, acidization, specific capacity test, casing pressure tests, APTs, final pump, controls and electrical installation

Project 3:
Name of Project: Manatee SWWRF ASR Well (Well) Rehabilitation

Contract Amount: $ 2,018,025 **Final Cost: $2,185,786**

Project Superintendent: Bart Ziegler **Supervisor / Lead Driller: Brian Ziegler**

Owner / Engineer Manatee County/CH2M Hill/ASRrUS Completed: Aug. 2020

Contact: **Mark McNeal 813/765-7942, Mmcneal@asrus.net**

Neil Postlethwait 239/707-0883, Niel.Postlethwait@Jacobs.com

Percentage Completed by SED: 90%

Description of Work:

SWWRF ASR Well (Well) Rehabilitation
Construction to include rehabilitation of existing aquifer storage and recovery (ASR) well equipment to continue cycle testing and operation of the Well. This will include a Well video survey, geophysical logging, recovery pump replacement, pipe replacements, connection to high service pump station piping and to the reject lake, flow meter, pressure recorder, water level instrumentation, and associated electrical work. Also, monitor Well piping replacement.

Project4:
Name of Project: Hillsborough County Maintenance Contract
Well Drilling, Abandonment, Parts & Service.

Contract Amount: $ 3,662,528.00 **On Going thru July 21, 2024**

Project Superintendent: Bart Ziegler **Supervisor /Lead Driller: Brian Ziegler**

Owner / Engineer Hillsborough County BOCC
Contact: Michael Townsel 813-663-3222 TownselM@HCFLGov.net

Description of Work: As needed wellfield services and installation (26" by 6" FRP (700 ft) single zone monitor well to 850 ft, plugging and abandonment, acidization of existing 16" Recharge wells, testing, logging, pump repair, acidization, liner installation and new monitor wells – SHARP Work Order Acidification of Recharge Injection Well - RW-1 Apollo
The County requests to properly conduct acidification of the recharge well and Avon Park limestone to reduce the chemical precipitation of calcium carbonate within the fractures of the formation which is the primary cause of the reduced injection capacity of RW-1.

DESCRIPTION	VEHICLE/EQUIPMENT	MODEL YEAR
Backhoe/Loader	JCB 4CX	2007
Backhoe/Loader	JCB 4CX -14	2014
Compressor	750 CFM "Sullair	
Compressor	375H CFM "Sullair"	1999
Compressor	375 CFM "Sullair"	2000
Compressor	Emglo Tank Mounted	1999
Compressor	Ingersol Rand XHP1170WCAT -	
Crane	18 Ton Grove RT60S 4x4	1981
Crane	35 Ton Terex	2007
Crane / Volvo	Manitex Crane / Volvo	1998
Drill	SS-15IIICF • Peterbilt	1988/trk
Drill	Taylor RT 5000 Drill Rig	2003
Drill	Versa Drill V2000 2004 KME TK	2004
Drill Pipe	1000' 3.5 IF	1998
Generator	125KW, John Deere Engine,	2005
Generator	256KW, John Deere Engine,	2005
Generator	45KW Terex / Boss	
Generator	250KW, Stamford UCD 274	
Greyline Flow Meter	PTFM 1.0 A-1 Flow Meter/ Greyline Instruments	
Hoist	Pump Hoist No. 1 G&R 2000 • Ford F-450	2003
Mud Cleaning System	Tango 350	2002
Mud Cleaning System	8,000 Gallon, Charge Pump/Double Life -	
Pump	Test Pump VLS	2012
Pump	Test Pump Sub 6CY-5	2010
Pump	Test, Mc Propeller Meter M0306	2013
Pump	Trash Pump, Flygt NS 3153 HT on Mud System#92	2014
Pump	Trash, Ford 6" , Gorman Rupp 10 Series	
Pump	Cement Pumper	2015
Road Tractor	Volvo WG64T	1996
Road Tractor	Int'l 9400	2004
Tank	Small Fuel (200 gal) -	
Tank	Large Fuel (500 gal) -	
Tanker	Tanker Trailer / 7800 Gal / Mose	1987
Tanker	Fruehauf semi Tank Trailer	1981
Trailer	Phoenix Drop Deck	1989
Trailer	Champion / John Deere	2000
Trailer	Witzco Lowboy RG 35	2005
Trailer	Champion Gooseneck, Model GN-25-2	2006
Trailer	Transcraft - Flatbed	2006
Trailer	Big Tex Dump Trailer	2009
Trailer	Big Tex Dump Trailer	2011
Trailer	Champion Trailer #2 (2014)	2014
Transducer	100 PSIG PT2X Smart Sensor -	
Transducer	100 PSIG PT2X Smart Sensor -	
Transducer	030 PSIG PT2X Smart Sensor -	
Truck	Ford F-350 Flatbed	1997
Truck	Int'l F-2375 Tandum Water Truck	1988
Truck	Ford Super Duty F-350 DRW 1 TON	2006
Tubing Hydril –		

General Company Information

- Firm Name: Southeast Drilling Services, Inc.
  10614 East US Hwy., 92
  Tampa Florida 33610

- Contact Person: W.B. Ziegler, P.E.
- Telephone Number: 813/968-7277
- Email Address: Wbz@southeastdrilling.net
- Business Classification: Water Well Construction
- Florida Corporation: P94000051306 -June 24th, 1994
- Corporate Officers

  William B. Ziegler, P.E., President/Secretary
  William C. Ziegler, Vice President
  John Brian Ziegler, Vice President
  Sonya P. Ziegler Ass. Secretary

- 30 Years in operation as Southeast Drilling Services, Inc.
- IRS EIN: 59-3252801
- DUNS: 83-632-6801
- Licenses: Water Well Contractor
  General Contractor
  Civil Engineer

Project Management:
Bart Ziegler, PE

Project Supervisor / Lead Driller
Brian Ziegler

Project Contract Administration:
Marie Brood

Company History and Services

Southeast Drilling Services, Inc. (Southeast) was formed in 1994 based in Tampa with an office in West Palm Beach, Florida. Southeast provides services in General Construction, Water Well Construction, Water Supply, Irrigation.

The firm has over 70 years of combined experience in construction and design of water resource and environmental projects. The overall company is versatile, mobile and can readily adapt to your project specific needs anywhere in the southeast.

The Water Well Construction division specializes in complete wellfield expansion projects, general water well construction, mechanical, pumping stations, acidization, and well rehabilitation. We provide services for aquifer performance testing, mechanical integrity testing, water plant maintenance, and well abandonment.

We structure our project teams to provide the technical and project experience required to efficiently execute your job specific needs. We have technicians and engineers registered in the state of Florida on staff and on call ready to assist with design, estimating and project execution.

Services

Southeast provides an array of diversified construction, drilling and mechanical services. Areas of specialization are as follows:

Wellfield Expansions

- *General Construction*
- *Production Wells (Surfical and Floridan)*
- *Pumping and Supply Systems*
- *Pipelines*
- *Electrical Services*
- *Instrumentation and Controls*

Southeast has performed overall construction and management services for wellfield expansion projects, which increased raw water capacity up to 22 million gallons per day.

General Well Construction

- *Cement Grouted (Rotary) and Driven (Cable Tool) Wells*
- *Public Supply Wells*
- *Well Rehabilitation*
  - *Acidization and Chlorination*
  - *Irrigation Supply*
- *Private and Municipal Supply*
- *Monitor Wells (OSHA Health and Safety Certifications)*



Well size range from 4-inch diameter to 30-inch and from 100 to over 2,000 feet below land surface.

Mechanical



- *Submersible/Vertical Turbine Pump Design, Installation, and Repair*
- *Mechanical and Wellhead Piping*
- *Pump Stations with Automated and Automatic Controls*
- *Chlorination and Chemical Feed Systems*
- *Generator and emergency standby equipment*

Specialty Services

- *Aquifer Performance Testing*
- *Mechanical Integrity Testing*
- *Aquifer Storage and Recovery Wells*
- *Water Plant Maintenance*
- *Well Abandonment*
- *Environmental Groundwater Screening*
- *Water Quality Sampling and Analysis*
- *Deep Injection Well Mechanical Integrity Testing*

Certifications

- *General Contractor License*
- *Licensed Water Well Contractor*
- *Licensed and Registered Professional Engineer*

BART ZIEGLER, P.E.
Water Resource Engineer

Education

B.S., Civil Engineering, University of Florida

Experience

Mr. Ziegler is the President of Southeast Drilling Services, Inc. (SED), a water well construction and environmental drilling company with over 133 combined years of experience. SED currently provides services throughout the state of Florida

Mr. Ziegler is also a Water Resources Engineer. He provides expertise in general civil engineering, hydrogeology, and groundwater projects for water supply and effluent disposal. His project experience includes water supply systems, deep injection wells, groundwater monitoring studies, toxic and hazardous waste investigations, park design, and regulatory permitting.

Mr. Ziegler was the Program Site Coordinator for an initial remedial investigation Hartford, CN. He was responsible for coordination of all subcontractors associated with the program which include engineering and construction services. He was also responsible for overseeing a successful innovative technology (Screening/Micro Wells) was used to delineate groundwater contamination prior to installation of permit monitoring of recovery wells.

He was the Project Manager/Project Engineer on the City of Boynton Beach Aquifer Storage and Recovery Project. The system was designed to store potable water in the Floridan Aquifer and recovery for distribution when plant capacity is insufficient to meet peak demands. Mr. Ziegler's responsibilities included permitting, design, communication with state and federal regulators, and inspection and testing during construction. He was also the Lead Engineer/Assistant Project Manager for the concentrate disposal well at the Boynton Beach Membrane Water Softening Facility at the West Water Treatment Plant.

Mr. Ziegler was the Project Manager for the successful mechanical integrity testing and operating permit renewal for Palm Beach County System No. 9(N) and No. 3 and Royal Palm Beach Deep Injection Wells. During the project, he was responsible for specification preparation and inspection of testing performed on the wells. Mr. Ziegler was also the project engineer during mechanical integrity testing of the four deep injection wells which provide effluent disposal at the G.T. Lohmeyer Wastewater Treatment Plant in Fort Lauderdale, Florida.

Mr. Ziegler was the project manager for permitting the regulatory communication for seven Floridan aquifer monitor wells and plugging of a boulder zone monitor well at Miami-Dade South District Wastewater Treatment Plant. He was also the program manager for an exploratory injection well in Tracy, California, which was designed for disposal of brines. Mr. Ziegler was the assistant project manager and project engineer for the installation of 30-mgd deep injection well system at the Palm Beach County Southern Region Wastewater Treatment

Plant. He was responsible for project management, design, and inspection during construction. He was also the project manager in the rehabilitation of one of the disposal wells at the facility.

He was the assistant project manager and project engineer for the City of Coconut Creek, Florida, Winston Park Nature Center. This park/sports complex is located in an environmentally sensitive area which required special consideration in developing the facilities. One such structure is a 750-foot boardwalk through an adjacent wetland area. Mr. Ziegler reduced the design for the park and provided inspection services during construction of the project.

For the City of Cooper City, Florida, Mr. Ziegler oversaw the construction of a well designed for groundwater monitoring and recovery. In related work, he supervised the construction of Floridan aquifer production well.

As the lead engineer on the deep injection well for Villages of Royal Palm Beach, Florida, he was responsible for inspection services throughout all phases of the construction. He also prepared the engineering report and operation and maintenance manual for the system.

Mr. Ziegler has participated in several contamination assessment projects in Florida for Dade County Aviation Department, The Port Everglades Environmental Company (PEECO), Northern Telecom Electronics, and the City of Cooper City. These projects determined the extent of toxic and hazardous waste contamination of groundwater at a site. Mr. Ziegler was active in project management, groundwater sampling, data tabulation and analysis, design work, preparation of plans and specifications, construction management, and preparation of engineering reports.

Prior to his employment with SED, Mr. Ziegler was employed by CH2M Hill, an international environmental consulting firm. He performed as a Client Coordinator in addition to the design and construction of general water resource projects.

More recent Project Management and Supervision as President of Southeast Drilling Service, Inc specific to the requirements for the Collier County Well Maintenance Program are listed in the attachments.

Professional Registration

Professional Engineer, Florida
Licensed Water Well Contractor, Florida

Other Registrations

Licensed Private Pilot
CPR Training and Certification
First Aid Training and Certification
Certified Site Safety Coordinator

Membership in Professional Organizations

American Society of Civil Engineers
Florida Engineering Society
Florida Water Well Association

Publications

With Albert Muniz. Aquifer Storage and Recovery in the Floridan Aquifer System of South Florida. American Society of Civil Engineers-Water Resource Planning and Management Conference. Denver, CO. Man 1994

With Albert Muniz, J.I.Garcia-Bengochea, and R. David Pyne. Water Management in the 21st Centruy. *Proceedings of the Florida Water Management Districts*. Florida Department of Environmental Protection-International Dialogue of Water Management. Miami, FL. October 1993.

J. BRIAN ZIEGLER
Project Supervisor and Lead Driller

Education

Chamberlain High School 1981

Experience

Mr. Ziegler is currently Southeast Drilling Services, Inc.'s lead drilling and project supervisor, in addition to site safety coordinator for surficial, Floridan aquifer wells, and Deep Injection Well construction projects throughout the state. He also supervises and manages mechanical projects including underground and above ground piping, submersible and vertical turbine pump installation and general site civil construction.

He played a key role in the development and implementation of Southeast's Groundwater Screening Program that has been used throughout the southeast to identify and determine the extent of toxic and hazardous waste contamination in groundwater .

Prior to joining Southeast, Mr. Ziegler was employed by Drilling Consultants Inc. in Tampa, Florida. He served as the lead for drilling operations throughout the state. He was responsible for monitor well: public supply systems, irrigation wells, private well construction and primary and secondary drinking water sampling on public supply systems.

Mr. Ziegler started drilling in 1989 and obtained his Water Well Contractors license in 2011. He has been responsible for the construction of numerous production, monitor, Floridan, ASR, and dual zone monitor wells ranging in size from 2-inch to 30-inch and depths up to 1,900-feet. He has also been the lead on Deep Injection Well construction and Rehabilitation projects, including tubing and packer installation at depths up to 2,900-feet.

Registrations and Certifications

Licensed Water Well Contractor, Florida
40 Hour OSHA Certification for Health and Safety (29 CFR 1910.120)
8 Hour-Refresher Courses (29 CFR 1910.120)
American Red Cross certified for emergency care
CPR certified
Certified Crane Operator
Certified Welder

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

WASHBURN, JOHN SCOTT

SOUTHEAST DRILLING SERVICES, INC.
10614 EAST U.S. HWY, 92
TAMPA FL 33610

LICENSE NUMBER: CGC053516

EXPIRATION DATE: AUGUST 31, 2026

Always verify licenses online at MyFloridaLicense.com

ISSUED: 07/01/2025

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

State of Florida License
Water Well Contractor

Southwest Florida Water Management District

Certifies That

William B. Ziegler

HAS BEEN DULY LICENSED AS A WATER WELL CONTRACTOR IN THE STATE OF FLORIDA
LICENSE NUMBER
9078

July 31, 2027
Expiration Date

Well Construction Section
Water Use Permit Bureau

State of Florida License
Water Well Contractor

Southwest Florida Water Management District

Certifies That

John B. Ziegler

HAS BEEN DULY LICENSED AS A WATER WELL CONTRACTOR IN THE STATE OF FLORIDA

LICENSE NUMBER

9451

July 31, 2027
Expiration Date

Well Construction Section
Water Use Permit Bureau

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

FBPE
FLORIDA BOARD OF PROFESSIONAL ENGINEERS

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE
PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

ZIEGLER, WILLIAM BART

14309 BELLMONT PLACE
TAMPA FL 33624-0000

LICENSE NUMBER: PE45438

EXPIRATION DATE: FEBRUARY 28, 2027

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

2025 - 2026 HILLSBOROUGH COUNTY BUSINESS TAX RECEIPT

EXPIRES SEPTEMBER 30, 2026

ACCOUNT NO. 259014

RENEWAL

OCC. CODE

090.000024 WELL DRILLING, BORING, DIGGING,

8 Employees

Receipt Fee	18.00
Hazardous Waste Surcharge	40.00
Law Library Fee	0.00

BUSINESS SOUTHEAST DRILLING SERVICES INC
10614 E US 92 HWY
TAMPA, FL 33610

2025 - 2026

NAME SOUTHEAST DRILLING SERVICES INC
MAILING ADDRESS 10614 E US HWY 92
TAMPA, FL 33610

Paid 24-0-582362
07/23/2025 58.00

BUSINESS TAX RECEIPT

HAS HEREBY PAID A PRIVILEGE TAX TO ENGAGE
IN BUSINESS, PROFESSION, OR OCCUPATION SPECIFIED HEREON

NANCY C MILLAN, TAX COLLECTOR
813-635-5200
THIS BECOMES A TAX RECEIPT WHEN VALIDATED

RESOLUTION

BOARD OF DIRECTORS
OF
SOUTHEAST DRILLING SERVICES, INC.
10614 East US Hwy 92, Tampa Fl 33610
813-968-7277

August 1, 2012

The Board of Directors of Southeast Drilling Services, Inc. have resolved on this day August 1, 2012, at the annual meeting of the Board of Directors that, William Bart Ziegler, President and Board member, has been deemed authority to represent the Corporation and to execute Bids, Bonds, Contracts and agreements on behalf of the corporation as appropriate.

Sonya P. Ziegler, Secretary
Dated 08-01-2012

William B. Ziegler, President
Dated 08-01-2012

State of Florida
Department of State

I certify from the records of this office that SOUTHEAST DRILLING SERVICES, INC. is a corporation organized under the laws of the State of Florida, filed on June 27, 1994, effective June 24, 1994.

The document number of this corporation is P94000051306.

I further certify that said corporation has paid all fees due this office through December 31, 2026, that its most recent annual report/uniform business report was filed on January 6, 2026, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Sixth day of January, 2026

Secretary of State

Tracking Number: 3782885815CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

2026 FLORIDA PROFIT CORPORATION ANNUAL REPORT

FILED
Jan 06, 2026
Secretary of State
3782885815CC

DOCUMENT# P94000051306

Entity Name: SOUTHEAST DRILLING SERVICES, INC.

Current Principal Place of Business:

10614 E US HIGHWAY 92
TAMPA, FL 33610-5972

Current Mailing Address:

10614 E US HIGHWAY 92
TAMPA, FL 33610-5972 US

FEI Number: 59-3252801

Certificate of Status Desired: Yes

Name and Address of Current Registered Agent:

ZIEGLER, WILLIAM BPRES
10614 E US HIGHWAY 92
TAMPA, FL 33610-5972 US

The above named entity submits this statement for the purpose of changing its registered office or registered agent, or both, in the State of Florida.

SIGNATURE:

Electronic Signature of Registered Agent — Date

Officer/Director Detail :

Title	PRESIDENT, SECRETARY, TREASURER, CM
Name	ZIEGLER, WILLIAM B
Address	10614 E US HIGHWAY 92
City-State-Zip:	TAMPA FL 33610-5972

Title	VD
Name	ZIEGLER, JOHN B
Address	10614 E US HIGHWAY 92
City-State-Zip:	TAMPA FL 33610-5972

Title	ASST. SECRETARY
Name	ZIEGLER, SONYA P
Address	10614 E US HIGHWAY 92
City-State-Zip:	TAMPA FL 33610-5972

Title	VD
Name	ZIEGLER, WILLIAM C
Address	10614 E US HIGHWAY 92
City-State-Zip:	TAMPA FL 33610-5972

I hereby certify that the information indicated on this report or supplemental report is true and accurate and that my electronic signature shall have the same legal effect as if made under oath; that I am an officer or director of the corporation or the receiver or trustee empowered to execute this report as required by Chapter 607, Florida Statutes; and that my name appears above, or on an attachment with all other like empowered.

SIGNATURE: SONYA P ZIEGLER — ASST. SECRETARY — 01/06/2026

Electronic Signature of Signing Officer/Director Detail — Date

EXHIBIT C
PAYMENT AND PERFORMANCE BONDS

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for the **Morris Bridge Wellfield Improvements, Project No.: 50021, Contract No. 2026020** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and
2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and
3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.
4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.
5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

   (a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in sub-paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ___ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Witness

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for the **Morris Bridge Wellfield Improvements, Project No.: 50021, Contract No. 2026020** in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

Witness as to Surety

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

_____

Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

EXHIBIT D
CERTIFICATE OF INSURANCE

Tampa Bay Water
General Insurance Requirements Matrix

Contract Type	Up to $100,000	$100,001 to $1,000,000	$1,000,001 & Over
Agreement for Professional Services	Tier 1	Tier 2	Tier 3
As-Needed Professional Services	Tier 1	Tier 2	Tier 3
Goods & Services Contract	Tier 1	Tier 2	Tier 3
Construction Contract	Tier 1	Tier 2	Tier 3

Insurance Type	Tier 1	Tier 2	Tier 3
General Liability	$1,000,000	$2,000,000	$5,000,000
Automobile	$300,000	$500,000	$1,000,000
Workers Compensation	Statutory	Statutory	Statutory
Umbrella/Excess	Up to GL	Up to GL	Up to GL
Professional Liability	$1,000,000	$1,000,000	$1,000,000

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

Issue Date:

Producer:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to Tampa Bay Water by certified mail.

Re: Project/Contract Number: _____

Insured:

COMPANIES AFFORDING COVERAGE	BEST RATING/CLASS
A.	
B.	
C.	
D.	
E.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Company Letter	8. TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS ALL LIMITS IN THOUSANDS		
	9. GENERAL LIABILITY ❑ Commercial Form ❑ Occurrence ❑ Claims Made ❑ Comprehensive Form ❑ Premises-Operations ❑ Explosion, Collapse, Underground Hazard ❑ Products/Completed Operations Hazard ❑ Contractual Insurance ❑ Broad Form Property Damage ❑ Independent Contractor ❑ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water	X	$
	AUTOMOBILE LIABILITY ❑ Any Auto ❑ All Owned Autos ❑ Scheduled Autos ❑ Hired Autos ❑ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Bodily Injury (Per Accident)		
					Property Damage		
	UMBRELLA/EXCESS LIABILITY ❑ Umbrella Form ❑ Excess Form ❑ Following Form Coverage				Each Occurrence		
					Aggregate		
	WORKERS' COMPENSATION AND EMPLYERS' LIABILITY				☒ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease – Policy Limit		$
					EL Disease – Each Employee		$
	PROFESSIONAL LIABILITY ❑ Claims Made ❑ Occurrences Retro Date _____					$	$
	BUILDER'S RISK ❑ All Risk ❑ Permission to Occupy ❑ All Owners', Contractors', Subcontractors' Interests Covered ❑ Installation Floater				$		X
	FIDELITY ❑ Employee Dishonesty ❑ Covers Loss to Tampa Bay Water				$		X
	OTHER						

Description of Operations/Locations/Vehicle/Special Items:

***** Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____

(Signature Required)

Address _____

_____

Telephone # _____ Facsimile # _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided, if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD CERTIFICATE OF LIABILITY INSURANC

Clear | Save | DATE (MM/DD/YYYY)

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
Your Insurance Agent	INSURERS AFFORDING COVERAGE	NAIC #
INSURED	INSURER A: Company Name	
Company Name Street City, State, Zip Code	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	Policy Number	effective	expires	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
	X	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
	X	EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE DISEASE - POLICY LIMIT	$ 100,000 $ 100,000 $ 500,000
		OTHER					

Sample

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER	CANCELLATION
Tampa Bay Water 2575 Enterprise Road Clearwater, FL 33763-1102	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL XXXXXXX 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. XXXXXX

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

3. PRICE FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Tampa Bay Water
Morris Bridge Wellfield Improvements Project
No. 50021
Bid Form

Item No.	Brief Description	Unit	Est Qty (a)	Unit Price (b)	Total Amount (c) (a)x(b)=(c)
1	Mobilization and Demobilization	Lump Sum	1	$700,000.00	$700,000.00
2	MBR-150 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
3	MBR-151 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
4	MBR-152 Well Site Work	Lump Sum	1	$500,000.00	$500,000.00
5	MBR-153 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
6	MBR-154 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
7	MBR-155 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
8	MBR-156 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
9	MBR-157 Well Site Work	Lump Sum	1	$500,000.00	$500,000.00
10	MBR-158 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
11	MBR-159 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
12	MBR-160 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
13	MBR-161 Well Site Work	Lump Sum	1	$430,000.00	$430,000.00
14	MBR-162 Well Site Work	Lump Sum	1	$430,000.00	$430,000.00
15	MBR-163 Well Site Work	Lump Sum	1	$250,000.00	$250,000.00
16	MBR-164 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
17	MBR-165 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
18	MBR-166 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
19	MBR-167 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
20	MBR-168 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
21	MBR-169 Well Site Work	Lump Sum	1	$810,000.00	$810,000.00
22	Contract Record and Close Out Documentation	Lump Sum	1	$ 32,000.00	$ 32,000.00
23	Well pre-construction/replacement specific capacity testing (1 per active well)	EA	15	$ 9,500.00	$ 142,500.00
24	Well pre-construction/replacement geophysical (video) log inspection (1 per active well)	EA	15	$ 12,500.00	$ 187,500.00
25	Post-construction Specific Capacity Testing (1 per active well)	EA	15	$ 5,500.00	$ 82,500.00
	TOTAL SUM OF LINE (BID PRICE) ITEMS 1 THRU 25				$ 15,404,500.00

Fifteen Million Four Hundred Four Thousand Five Hundred Dollars No Cents

(Bid Price Amount Written in Words)

This project provides an Owner's Allowance in the amount of $875,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

This project provides a Permit Allowance in the amount of $20,000.00 which is not included in the Price Form above.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Reference: Bid Evaluation and Recommendation

To:	Nicole Thomas, PE - Project Manager, Tampa Bay Water	**From:**	Ivan Tamayo, PE
Ref:	Tampa Bay Water Project No. 50021 – Morris Bridge Wellfield Improvements ITB Contract No. 2026020	**Date:**	March 12, 2026
Subject:	Bid Evaluation and Recommendation		

Summary

The bid opening for ITB Contract No. 2026020 Morris Bridge Wellfield Improvements took place on February 18th at 2:30PM at the office of Tampa Bay Water. There were two bidders: Southeast Drilling Services, Inc and C&T Contracting Services. Refer to table 1 for a summary of their bid results. Tampa Bay Water intends to select Southeast Drilling Services, Inc as the apparent lowest, responsive bidder with a base bid of $15,404,500.00 and provided Southeast Drilling Services, Inc's bid proposal to Stantec to be further evaluated.

Table 1. Bid Tabulation Summary and Analysis

Description	CIP Estimate	Southeast Drilling Services, Inc	C&T Contracting Services, LLC
Base Bid	**$14,861,000.00**	**$15,404,500.00**	**$19,248,540.00**
Bid Percent Difference from CIP Estimate	**-**	**3.66% higher**	**29.52% higher**

Stantec reviewed the information provided in Southeast Drilling Services, Inc's bid proposal including the bid schedule, acknowledgment of addenda, non-collusion affidavit, litigation history, consultant affidavit, major equipment list, major equipment manufacturers, subcontractors list, questionnaire, well contractor license, proposed superintendent and project manager resumes, Florida Bid Bond, and Consultant Affidavit.

Analysis

Stantec has reviewed the proposal from Southeast Drilling Services, Inc. and found no mathematical errors in their calculations. Based on the bid tabulation provided by Tampa Bay Water, the low bid is 19.97% less than the 2nd low bid. Both bid numbers shown above exclude Owner's Allowance, Permit Allowance, and Indemnification. The difference between 1st and 2nd low bid is $3,844,040.00.

The estimated capital improvement project (CIP) budget for this project is $14,861,000.00. Southeast Drilling Services, Inc's base bid price of $15,404,500.00 is $543,500.00 or 3.66% higher than the estimated CIP estimate.

Review of Qualifications

As part of the bid documents, Southeast Drilling Services, Inc submitted a list of contracts over $2,000,000.00 that their organization has performed during the last 7 years, the most recent one being a $9,611,899.00 project in 2024. Stantec

Reference: Bid Evaluation and Recommendation

has reviewed this information and confirmed that Southeast Drilling Services, Inc. possesses the appropriate experience and is capable of performing the work required for this project.

Licensing information provided indicates Southeast Drilling Services, Inc possesses a General Certified Contractor, and Water Well Contractor license that are both active and in good standing. Subcontractor information provided indicates that the electrical work will be furnished and installed by a single certified electrical subcontractor (Lavandera Electric Co). Similarly, subcontractor information indicates that the underground piping will be furnished and installed by a single certified underground utility and excavation subcontractor. (Blackhorse Underground, Inc). Based on the information provided, both subcontractors are certified with the required previous experience.

Additionally, based on the information provided, both the proposed project manager and superintendent meet the minimum requirements of having served in the same role in at least one project of similar scope in the past 5 years.

Review of Certified Public Accountant's copies of Southeast Drilling Services, Inc's most recent financial statements has been deemed outside Stantec's scope of work. Tampa Bay Water has confirmed review and approval of their financial performance.

Recommendation

Stantec recommends that Tampa Bay Water awards a contract in the amount of $16,299,600.00 (which includes the $895,100 Owner's Allowance) to Southeast Drilling Services, Inc for the Morris Bridge Wellfield Improvements Project.

Regards,

Stantec Consulting Services Inc.

Digitally signed by Tamayo Arteaga, Ivan
Date: 2026.03.13 17:09:21-04'00'

Ivan Tamayo PE*, PMP, Assoc DBIA
Project Manager
Phone: (813) 242-0296
ivan.tamayoarteaga@stantec.com

stantec.com

Cc:

Nicole Thomas, PE – Tampa Bay Water
Justin Fox, PE – Tampa Bay Water
Anthony Feria-Pereira, PE – Tampa Bay Water
Rick Menzies, PE – Tampa Bay Water
David Socha, PE – Stantec
Jarah Parke – PE – Stantec

Morris Bridge Wellfield Improvements Project Contract 2026-020

Agenda Item C.4
April 20, 2026

Nicole Thomas, PE, PMP
Senior Professional Engineer IV
Tampa Bay Water

Project's Purpose

- Installation of 15 new pumps and motors
- Refurbishment of 15 wellhouse buildings
- Properly abandoning and taking out of service 5 wells
- Donating 3 wellhouses to Hillsborough County Parks & Recreation Department



Contract Pricing

- Adjusted design/project approach to rehabilitation instead of new buildings/structures
- Owner Direct Purchase Program for tax savings
- Awarded EPA Grant Funding

Description	Total
Construction and Material Costs	$15,404,500
Owner's Allowance & Contingency	$895,100
Total	**$16,299,600***

* Sales taxes (~$300,000) will be deducted from the contract after implementation of ODP Program.

** EPA Grant (~$1,000,000) will be deducted from contract, if received.

Recommendation

Staff recommends that Contract 2026-020 be awarded to Southeast Drilling Services, Inc., in the amount of $16,299,600, inclusive of $895,100 Owner's Allowance.

TAMPA BAY WATER

Q&A

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM C.5

DATE: March 30, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Maribel Medina, Planning and Projects Director

SUBJECT: Cross Bar Ranch Wellfield Transmission Main Utility Conflict, (Project No. 07153), Contract No. 2026-017 with JDS Inc., dba JDS Pipe Inc. - *Approve*

SUMMARY

An Invitation to Bid for Contract No. 2026-017 was conducted to obtain construction services for the Cross Bar Ranch Wellfield Transmission Main Utility Conflict, Project No. 07153. JDS Inc., dba JDS Pipe Inc., was determined to be the lowest responsive, responsible bidder.

SUGGESTED ACTION

Approve Contract No. 2026-017 to the lowest responsive, responsible bidder, JDS Inc., dba JDS Pipe Inc., in the amount of $6,169,901 inclusive of $246,000 of Owner's Allowance and $100 Indemnification.

COST/FUNDING SOURCE

$6,169,901/Renewal and Replacement and Florida Department of Transportation Reimbursement Funds

DISCUSSION

On January 16, 2026, Tampa Bay Water posted an Invitation for Sealed Bids (ITB) for the Cross Bar Wellfield Transmission Main Utility Conflict, Project No. 07153, Contract No. 2026-017. Contractors were notified through advertisement on Euna Procurement (EUNA) and Tampa Bay Water's website. Tampa Bay Water added nine (9) known firms as supplemental contractors and forty-three (43) contractors downloaded the bid plans. A non-mandatory pre-bid conference meeting and site visit was conducted on February 18, 2026, with thirteen (13) contractors in attendance.

On March 17, 2026, five (5) sealed bids were received. Four (4) submittals were from Bidders new to Tampa Bay Water. The bids were publicly opened with results as follows:

Contractor	**Total Bid***
JDS Inc., dba JDS Pipe Inc.	$6,169,901
Garney Companies, Inc.	$6,194,848
Ric-Man Construction Florida (RMCF), Inc.	$6,994,637
Morgan Contracting, Inc.	$7,202,400
Midsouth Inc.	$7,831,920

*Total Bid amount includes a $246,000 Owner's Allowance and $100 indemnification.

Tampa Bay Water staff and the design engineering consultant, Wade Trim, reviewed and evaluated the bids and determined JDS Inc., dba JDS Pipe Inc., to be the lowest responsive, responsible bidder.

Staff recommends Contract No. 2026-017 be awarded to JDS Inc., dba JDS Pipe Inc., in the amount of $6,169,901, inclusive of an owner's allowance of $246,000 and indemnification of $100. This contract shall remain effective through the completion of this project.

The proposed contract is attached and has been reviewed and approved as to form by Tampa Bay Water's General Counsel. The Bid Price form and Wade Trim's recommendation letter are attached.

BACKGROUND

The Cross Bar Ranch Wellfield Transmission Main Utility Conflict, Project No. 07153, is included in the Capital Improvements Program and is the result of a utility conflict with the Florida Department of Transportation (FDOT) Financial Project ID 256334-1-56-02. The FDOT project proposes improvements to State Road 52 (SR-52) in Pasco County including road widening and drainage improvements which conflict with Tampa Bay Water's existing 60-inch Cross Bar Ranch Wellfield Transmission Main. Approximately 500 linear feet of Tampa Bay Water's wellfield transmission requires relocation to avoid conflict with FDOT's proposed 42-inch stormwater drainage components.

A portion of Tampa Bay Water's transmission main is located within an existing 50-foot-wide permanent easement, therefore, FDOT has agreed to reimburse Tampa Bay Water for approximately $4 million of the construction costs.

Attachments (3)

JDS Inc., dba JDS Pipe, Inc. Bid Price Form
Engineer's Bid Recommendation
Contract 2026017 Cross Bar Ranch Wellfield Transmission Main-Utility Conflict, Project No. 07153
C.5 Cross Bar Ranch Wellfield TM Utility Conflict, Contract Award

Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict (Project 07153), Contract No. 2026017

JDS Inc.

#	FDOT Pay Item No. (b)	Description (c)	Unit (d)	Estimated Quantity (e)	Unit Price (f)	Total Price ($) (g) (e)x(f)=(g)
#0-1	**Misc.**	General Conditions, Bonds and Insurance (2%)	Lump Sum	1	$ 115,000.00	$ 115,000.00
#0-2	**T & E**	Mobilization, and Demobilization (not to exceed 5% of the bid)	Lump Sum	1	$ 295,000.00	$ 295,000.00
#0-3	**1050 61260**	Furnish and Install 60-inch Steel Water Main by Open Cut	Linear Foot	301	$ 4,751.00	$ 1,430,051.00
#0-4	**1050 61160**	Furnish and Install 60-inch Steel Water Main by Microtunneling	Linear Foot	167	$ 19,700.00	$ 3,289,900.00
#0-5	**1050 61236**	Furnish and Install 36-inch Steel Water Main by Open Cut	Linear Foot	15	$ 2,670.00	$ 40,050.00
#0-6	**1055 61160**	Furnish and Install 60-inch Steel Fittings	Each	6	$ 20,300.00	$ 121,800.00
#0-7	**1055 61136**	Furnish and Install 36-inch Steel Fittings	Each	2	$ 7,200.00	$ 14,400.00
#0-8	**1080 26102**	Furnish and Install Air Release Valve	Each	2	$ 22,700.00	$ 45,400.00
#0-9	**1080 24160**	Furnish and Install 60-inch Butter Valve	Each	2	$ 167,000.00	$ 334,000.00
#0-10	**1080 24136**	Furnish and Install 36-Inch Butterfly Valve	Each	1	$ 56,000.00	$ 56,000.00
#0-11	**0400 - 603**	Cathodic Protection	Lump Sum	1	$ 59,000.00	$ 59,000.00
#0-12	**E574 1**	Sod Restoration	Square Yard	3800	$ 13.00	$ 49,400.00
#0-13	**0430830**	Place Existing Pipe Out of Service by Grouting	Cubic Yard	70	$ 590.00	$ 41,300.00
#0-14	**1050 16006**	Place Existing Pipe Out of Service by Removing	Linear Foot	250	$ 130.00	$ 32,500.00
						$ 5,923,801.00

					$ 770,054.00	**$ 5,923,801.00**

FL LA6667249

Wade Trim, Inc.
One Tampa City Center • 201 N. Franklin Street, Suite 1350 • Tampa, FL 33602
813.882.4373 • www.wadetrim.com

March 30, 2026

Tampa Bay Water
2575 Enterprise Road
Clearwater, FL 33763

Attention: Dear Mrs. Keirsey, PMP
Senior Project Manager

Re: Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict, Project No. 07153
Letter of Bid Recommendation for Contract No. 2026017

Dear Mrs. Keirsey:

Wade Trim has received the bid tabulation for this project and evaluated the apparent lowest bidder's response, along with supplemental information provided to Tampa Bay Water. Our findings are summarized below:

There were five bidders for this solicitation. Bid proposals are summarized below:

Bidder	Total Bid Price
JDS Inc., dba JDS Pipe, Inc.	$6,169,901.00
Garney Companies, Inc.	$6,194,848.00
Ric-Man Construction Florida (RMCF), Inc.	$6,994,637.00
Morgan Contracting, Inc.	$7,202,400.00
Midsouth Inc.	$7,831,920.00

The lowest responsive bidder is JDS Inc., dba JDS Pipe, Inc. (JDS). Based on our review of available licensing records and the dual-license requirement (General Contractor [GC] and Underground Utility Contractor [UGC]) stated in the Invitation to Bid Documents and Addendum No. 1 (response to Question Q1), JDS and affiliated organizations appear to hold both a GC and UGC license. The lowest bidder's response meets the United States-produced iron and steel products (US-produced) requirements. Considering marketplace conditions and incorporating US-produced costs, we evaluated that the bid results are acceptable.

We recommend Tampa Bay Water proceed with awarding this Contract to JDS, the lowest apparent bidder.

Regards,
Wade Trim, Inc.



Nita Sharma, PE
Project Manager



TAMPA BAY WATER
A Regional Water Supply Authority
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763-1102

CONTRACT DOCUMENTS

FOR

CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN-UTILITY CONFLICT

CONTRACT NO.: 2026017
PROJECT NO.: 07153

JDS INC.
d/b/a
JDS PIPE INC.

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CONTRACT

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CONTRACT

This Contract, made and entered into as of the _____day of _____, 2026, by and between Tampa Bay Water, A Regional Water Supply Authority ("Tampa Bay Water") and JDS Inc, d/b/a JDS Pipe Inc., a corporation of the State of Georgia, or other business entity authorized to do business in the State of Florida ("Contractor"), with respect to that certain Project consisting of the Work to be performed in accordance with the Contract Documents, supplementary conditions, general conditions, invitation to bid documents, bid price form, technical specifications and all issued addenda for Tampa Bay Water's Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, (Project 07153)

W I T N E S S E T H:

Tampa Bay Water and the Contractor in consideration of the mutual covenants and obligations contained herein, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, agree as follows:

1.0 Work

1.1 The Contractor shall perform all of the Work in accordance with the Contract Documents (as that term is defined in the General Conditions which are attached to and made a part of this Contract).

1.2 Contractor shall perform the Work in accordance with generally accepted construction practice under the same or similar circumstances at the same time and in the same locality. Contractor shall have exclusive responsibility for all construction means, methods, techniques, sequences, and procedures necessary or desirable for the correct, prompt, and orderly prosecution and completion of the Work as required by this Contract and the Contract Documents.

1.3 The responsibility to provide the construction means, methods, techniques, sequences and procedures shall include, but not be limited to, the obligation of the Contractor to provide the following construction requirements, as applicable: temporary power and light; temporary offices and construction trailers; required design certifications; required approvals; weather protection; site clean-up and housekeeping; construction trade management; temporary parking; a construction safety plan; safety and first aid facilities; correction of or compensation for defective work or equipment; Subcontractors' insurance certificates; storage areas; workshops and warehouses; temporary fire protection; site security; temporary Utilities; including without limitations; potable water and water for use in performing the Work (in all cases, including a backflow preventer meeting ANSI A40.6); phone; sanitary; gas or fuel; Subcontractor and Supplier qualification; equipment and materials procurement and expediting; receipt and unloading and proper storage of delivered materials and equipment; erection rigging; temporary supports; submittal and shop drawings review and orderly filing system; construction and procurement critical path scheduling; construction coordination; and cooperation with Tampa Bay Water in implementation of Tampa Bay Water's owner's direct purchase sales tax savings program.

1.4 During the progress of the Work, Contractor shall at all times during normal working hours afford Tampa Bay Water and Engineer every reasonable opportunity for observing all Work. During any such observation, all representatives of Tampa Bay Water and Engineer shall comply with all safety and other rules and regulations applicable to presence in or at the Work site.

1.5 Contractor shall have full responsibility, to the extent applicable, for locating all underground Utilities in advance of excavation; scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting underground

Utilities; repairing any damage done to the satisfaction of Tampa Bay Water and Engineer and the owners of those underground Utilities; promptly notifying Tampa Bay Water and Engineer of any newly discovered underground Utility; and the safety, protection and repairing of any damage done to any affected Work. Al1 costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.6 Contractor shall use care and diligence, and shall take all appropriate precautions, to protect the Work and the Work site and the property of other persons (including any materials, equipment, or other items furnished by Tampa Bay Water) from damage due to the nature of the Work, the natural elements, carelessness of others, and from any cause, until final completion of the Work; and for such purpose, Contractor shall provide fencing, protective features (such as tarpaulins, boards, boxing, frames, canvas guards, and fireproofing), and other safeguards to the extent Contractor reasonably determines such are necessary and proper in the performance of the Work.

1.7 Contractor shall ensure that each employee, representative, Subcontractor, Supplier, and others acting for the Contractor use designated access roads and parking areas. Contractor shall employ watchmen on the Work site when necessary and shall also erect and maintain such strong and suitable barriers and such lights as shall effectively prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the Work site. Contractor shall employ any additional temporary fencing and gates to adequately protect the Work.

1.8 Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Contractor shall be responsible for protecting all stored materials and the Work site safe from theft and vandalism.

1.9 All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.10 Contractor shall notify owners of adjacent property (including underground Utility owners) not less than forty-eight (48) hours, or the time period required by Laws and Regulations, whichever period is longer, prior to commencing the Work, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. At least five (5) days prior to providing such notice to adjacent property owners, Contractor shall submit its proposed written notice to Tampa Bay Water for review and approval. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at Contractor's expense, which shall be considered to have been included in the Contract Price.

1.11 In case of damage or destruction to the Work, the Work site or adjacent properties resulting from any cause, and regardless of the extent thereof or the estimated cost of repair, replacement or restoration, and whether or not any insurance proceeds are sufficient or available for the purpose, Contractor shall immediately undertake and complete the repair, replacement and restoration of the damage or destruction to the character and condition existing immediately prior to the damage or destruction, all at Contractor's sole cost and expense, which shall be considered to have been included in the Contract Price, except in the event that such damage or destruction is caused by Tampa Bay Water, its employees, agents, representatives, including Engineer, or is the result of an Uncontrollable Circumstance.

1.12 Contractor shall notify Tampa Bay Water immediately of any damage or destruction to the Work, the Work site or any adjacent properties including, but not limited to, hazardous substance spills, damage to sensitive areas, permit or approval violations, fires and injuries. Additionally, Contractor shall notify the required Insurance carriers and Sureties of any damage or destruction to the Work, the Work site, or adjacent properties, or any accidents on the Work site, as promptly as possible after Contractor learns of any such damage, destruction

or accidents. As soon as practicable after learning of any such occurrence, Contractor shall submit a full and complete written report to Tampa Bay Water.

1.13 In case of an emergency which threatens loss or injury to persons or property, Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and shall immediately provide Notice to Tampa Bay Water and Engineer of its action. Any claim for compensation by Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the amount of compensation if any, shall be determined by mutual contract, subject to cost substantiation.

2.0 Contract Time

2.1 Tampa Bay Water and the Contractor recognize that time is of the essence with respect to Contractor's performance of its obligation under the Contract Documents, and Tampa Bay Water shall suffer financial loss if Substantial Completion and Final Completion of the Work is not achieved within the Contract Time specified in Paragraph 2.2 below, or if the Well Collection Main Out-of-Service Period specified in Paragraph 1.5.A.9., of Section 01100, Special Project Procedures (the "Well Collection Main Out-of-Service Period") is exceeded. Accordingly, if the Contractor fails to achieve Substantial Completion or Final Completion of the Work within the Contract Time, or exceeds the Well Collection Main Out-Of-Service Period, it shall pay Tampa Bay Water Liquidated Damages in accordance with the terms stated below in Section 3, Liquidated Damages.

2.2 The Contractor shall commence the Work within ten (10) days after the date specified for the commencement of the Work in the Notice to Proceed and shall complete all Work hereunder as follows:

a. The Well Collection Main Out-Of-Service Period is fourteen (14) calendar days, as specified in Paragraph 1.5.A.9., of Section 01100, Special Project Procedures.
b. All facilities shall be manually operational to provide Tampa Bay Water at its option the full time use of the Project as intended by the Contract Documents and the Contractor shall perform the Work to achieve Substantial Completion within three-hundred seventy-eight (378) calendar days of issuance of Notice to Proceed as the commencement date of the Contract Time.
c. The Contractor shall perform the Work to achieve Final Completion within four hundred twenty-seven (427) calendar days of issuance of Notice to Proceed as the date of commencement of the Contract Time.

2.3 The completion deadlines in this Section 2 are subject to adjustment in accordance with the General Conditions.

3.0 Liquidated Damages

3.1 If the Contractor fails to achieve Substantial Completion or Final Completion of the Work within the Contract Time, or exceeds the Well Collection Main Out-of-Service Period, as said time periods may be adjusted pursuant to the terms of the Contract Documents, Contractor shall pay Tampa Bay Water Liquidated Damages in accordance with the following:

a. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount of Two Thousand Dollars and 00/cents ($2,000.00) for each day that exceeds the Well Collection Main Out-of-Service Period. These Liquidated Damages are Tampa Bay Water's sole and exclusive Well Collection Main Out-of-Service Period delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event the Well Collection Main Out-of-Service Period is exceeded. The Contractor agrees that these Well Collection Main Out-of-Service Period Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Well Collection Main Out-of-Service Period Liquidated Damages are independent

of the Substantial Completion and Final Completion Liquidated Damages noted in Paragraphs 3.1.b. and c. below.

b. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount One Thousand Dollars and 00/cents ($1,000.00) for each day that expires after the Contract Time specified above in Paragraph 2.2.b for Substantial Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Substantial Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Substantial Completion of the Work is delayed. The Contractor agrees that these Substantial Completion Liquidated Damages do not constitute a penalty or forfeiture.

c. The Contractor shall pay Tampa Bay Water as Liquidated Damages and not as a penalty, the amount of Five Hundred Dollars and 00 cents ($500.00) for each day that expires after the time specified in Paragraph 2.2.c for Final Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Final Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Final Completion of the Work is delayed. The Contractor agrees that these Final Completion Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Final Completion Liquidated Damages are in addition to, and not duplicative of, the Substantial Completion Liquidated Damages noted in Paragraph 3.1.b above.

4.0 Contract Price

4.1 Tampa Bay Water hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of all of the Contractor's obligations under the Contract Documents, and the Contractor agrees to accept in full payment the Contract Price of: Six Million One Hundred Sixty-Nine Thousand Nine Hundred One Dollars and No Cents ($6,169,901.00), (total price is inclusive of bid price of $5,923,801.00, Owner's Allowance of $246,000.00 and Indemnification of $100.00) and subject to the conditions governing payments to the Contractor in the Contract Documents. If the Contract Price includes any Unit Price amounts and the actual quantity of Unit Price items installed is different than the estimated quantity, then the Contract Price shall be adjusted in accordance with the Contract Documents. The Contract Price includes, if applicable, only those Alternates accepted by Tampa Bay Water, as identified in Paragraph 4.3 below. The Contract Price includes, if applicable, only those Allowances established by Tampa Bay Water, as identified in Paragraph 4.4 below.

4.2 The Unit Prices and associated estimated quantities included within the Contract Price are attached hereto and made a part hereof as Schedule A.

4.3 The following Bid Options have been accepted by Tampa Bay Water and are included within the Contract Price:

ALTERNATE	Price
None	$0.00

4.4 The following Allowances have been established by Tampa Bay Water and are included within the Contract Price:

ALLOWANCE	Price
Owner's Allowance	$246,000.00

Payment of Allowances shall only be authorized by issuance of Change Authorization signed by Tampa Bay Water in accordance with Article 7.2.1 of the General Conditions.

5.0 Payment

Payment procedures are outlined in the General Conditions, Article 7 Payment. All monies not paid when due shall bear interest at a rate not to exceed the interest rate allowed by law to be paid by governmental entities in Florida, provided that this does not exceed six percent per year simple interest.

Tampa Bay Water's payment to Contractor of any progress or final payment shall not release the Contractor of any liability and shall not be deemed evidence of performance or be construed as an acceptance of defective or improper Work, or Work that does not comply with the requirements of the Contract Documents.

6.0 Miscellaneous

6.1 All Contract Documents are hereby incorporated into and made a part of this Contract by this reference. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents. The Contract Documents represent the final and entire integrated Contract between the parties with respect to the Work. The Contract Documents supersede all prior oral or written Contracts, if any, between the parties, and any statement, representation, promise or inducement not set forth in the Contract Documents is null and void and not binding on Tampa Bay Water or the Contractor. Except for the warranty and third party beneficiary rights of Tampa Bay Water set forth herein, the Contract Documents shall not in any way create a relationship of any kind between the Engineer and the Contractor or between Tampa Bay Water and a Subcontractor or Supplier, or between Tampa Bay Water and any other person. If any provision(s) of the Contract Document is/are invalid, illegal, or unenforceable such provision(s) shall be considered divisible, and all other provisions of the Contract Documents shall nevertheless remain in full force and effect.

6.2 The Contractor shall not sell, assign, transfer or otherwise convey any of its rights and shall not delegate any of its duties under the Contract Documents without the prior and expressed written consent of Tampa Bay Water and the Surety. Any attempted sale, assignment, transfer, conveyance or delegation of the Contractor's rights under this Contract or the other Contract Documents in violation of the terms of this paragraph shall be void and shall relieve Tampa Bay Water of any further liability under the Contract Documents but shall not relieve the Contractor or the Contractor's Surety(ies) of any liability. If Tampa Bay Water consents in writing to an assignment, unless specifically stated to the contrary in the consent, the assignment shall not release or discharge the Contractor from any duty, responsibility or obligation set forth in the Contract Documents, and shall not release or discharge the Surety(ies) under the bonds required by the Contract Documents.

6.3 This Contract shall be binding on Tampa Bay Water, the Contractor, and all of their respective successors, heirs, legal representatives and, if Tampa Bay Water has consented to an assignment or delegation as provided in the previous paragraph, assigns and delegates.

6.4 Any waiver by Tampa Bay Water of any provision of the Contract Documents must be specific and in writing and shall apply only to the particular matter concerned and not to other similar or dissimilar matters. Any waiver of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach. Neither the failure of Tampa Bay Water to exercise any power given to Tampa Bay Water under the Contract Documents or to insist upon compliance by the Contractor with Contractor's obligations under the Contract Documents, nor any custom or practice of Tampa Bay Water and Contractor at variance with the terms of the Contract Documents, shall constitute a waiver of Tampa Bay Water's right to demand full and complete compliance by the Contractor with the terms and provisions of the Contract Documents.

6.5 Nothing contained in the Contract Documents shall in any manner authorize, empower or constitute the Contractor, its Subcontractors or Suppliers as agent(s) of Tampa Bay Water; authorize or empower the Contractor, its Subcontractors or Suppliers to assume or create any obligation or responsibility whatsoever, express or implied, on behalf of or in the name of

Tampa Bay Water; or authorize or empower the Contractor, its Subcontractors or Suppliers to bind Tampa Bay Water in any manner or make any representation, warranty, covenant, contract or commitment on behalf of Tampa Bay Water. The Contractor shall perform all Work under the Contract Documents as an independent contractor. This Contract does not create, and shall not be construed as creating, any rights enforceable by any person not a party to the Contract.

6.6 This Contract and the Contract Documents shall be governed by and construed in accordance with the Laws and Regulations of the State of Florida without giving effect to any rules governing conflict of laws.

6.7 The parties agree that for any litigation arising under the Contract Documents, venue shall be only in the state courts in and for Pinellas County, Florida.

6.8 All documents prepared or produced by Contractor or any of its Subcontractors pursuant to this Contract are the property of and belong to Tampa Bay Water, provided that Contractor is allowed to reuse such documents with the approval of Tampa Bay Water. If Contractor claims that any such document is proprietary or protected by trade secret or otherwise, Contractor has the burden to establish the basis of any such protection but until judicially declared otherwise, Tampa Bay Water shall have all rights of ownership and use of such documents.

6.9 In no event shall Tampa Bay Water be liable to Contractor, nor shall Contractor be liable to Tampa Bay Water, for any incidental, consequential, or punitive damages based upon claims arising out of or in connection with the performance or non-performance of a party's obligations under this Contract, or the material inaccuracy of any representation made by a party in this Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory. Contractor acknowledges and agrees, however, that claims, which are brought by third parties against Tampa Bay Water and for which, but for the application of this paragraph, Contractor would otherwise have an indemnification obligation under this Contract, shall not be considered consequential damages under this paragraph.

6.10 All express representations, indemnifications, or limitations of liability made in or given in this Contract will survive its completion or termination for any reason.

6.11 To the extent permitted by applicable law, contractor and Tampa Bay Water hereby acknowledge and agree that any and all claims arising out of, connected with, or relating to this Contract or the relationship created hereby are matters which, if adjudicated, should be adjudicated by a court without a jury. Therefore, the parties hereby waive a trial by a jury. Neither Tampa Bay Water nor contractor or any successor thereof shall seek a trial by jury in any action or proceeding (whether at law or in equity, whether direct or collateral, whether in contract or in tort) arising out of or related to this Contract or the relationship created hereby. Neither Tampa Bay Water nor Contractor shall seek to consolidate any action or proceeding in which trial by jury has been waived with any other action or proceeding in which a jury trial cannot be or has not been waived. The provisions of this paragraph cannot be and have not been waived. The provisions of this paragraph have been fully discussed by the parties and their respective attorneys and the provisions hereof shall be subject to no exceptions. Tampa Bay Water and contractor acknowledge and agree that no one, including, without limitation, Tampa Bay Water's agents or contractors, has represented that the provisions of this paragraph or of any other paragraph of this Contract will not be fully enforced.

6.12 Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Contract and that Contractor has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for Contractor any fee, commission, percentage, gift or other consideration contingent upon or resulting from the award or making of this Contract.

7.0 Public Records and Audit Rights

7.1 Contractor shall keep all books, records, files, drawings, plans and other documentation, including all electronically stored items, which concern or relate to the services required hereunder (collectively referred to as "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract, or as otherwise required by any applicable law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to order, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy the Records shall include all of the Records of the Subconsultants.

7.2 If the Contractor has questions regarding the application of Chapter 119, Florida statutes, to the Contractor's duty to provide public records relating to this contract, contact Tampa Bay Water's custodian of public records via phone (727) 796-2355 x 2401; email records@tampabaywater.org; or mail at 2575 Enterprise Road, Clearwater, Florida 33763-1102.

7.3 Contractor must keep and maintain all public records required by the Agency in order to perform services under this Contract.

7.4 Upon request from the Agency's custodian of public records, Contractor shall provide the Agency with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.

7.5 Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the Agency.

7.6 Upon completion of the contract, Contractor shall transfer, at no cost, to the Agency all public records in the possession of the Contractor or keep and maintain public records required by the Agency to perform the service under this contract. If the Contractor transfers all public records to the Agency upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Agency, upon request from the Agency's custodian of public records, in a format that is compatible with the information technology systems of the Agency.

8.0 Definitions

Defined terms used in this Contract have the intent and meanings assigned to them in the General Conditions, Article 1, Definitions.

9.0 Engineer

Tampa Bay Water has retained the firm of Wade Trim, Inc., to act as the Engineer, assume all of the duties and responsibilities and have the rights and authority assigned to the Engineer in the Contract Documents with respect to completion of the Work in accordance with the Contract Documents.

10.0 Public Entity Crime Statement

10.1 Pursuant to subsections 287.133(2) and (3), Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or

repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO, for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

10.2 Contractor hereby certifies and warrants that it has not been placed on any convicted vendor list for the past thirty-six (36) months and is in full compliance with the requirements of subsections 287.133(2) and (3), Florida Statutes.

11.0 Discrimination

Pursuant to Subsection 287.134(2)(a), Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity. Contractor hereby certifies and warrants that it has not been placed on any discriminatory vendor list and is in full compliance with the requirements of subsections 287.134(2)(a), Florida Statutes.

12.0 Drawings and Specifications

The Drawings consist of the following:

Sheet No.	Sheet Description
G-1	Cover Sheet
G-2	Drawing Index, Notes & Abbreviations
G-3	Legend & Survey Control
G-4	Existing Conditions
C-1	Tree Removal and Limits of Disturbance
C-2	Plan Sheet
C-3	Profile Sheet
CP-1	Cathodic Protection Details
CP-2	Cathodic Protection Details
CP-3	Cathodic Protection Details
CP-4	Cathodic Protection Details
D-1	Tampa Bay Water Standard Details
D-2	Condensed Profile
D-3	Condensed Profile

The Specifications consist of the following:

Section	**Description**
01010	Summary of Work
01025	Measurement and Payment
01027	Payment Applications
01040	Project Coordination
01050	Field Engineering

Section	Description
01065	Permits and Easements
01100	Special Project Procedures
01300	Contractor Submittals
01310	Construction Progress Schedules
01313	Construction and Schedule Constraints
01410	Testing and Quality Control
01720	Contract Record and Close Out Documentation
02075	Microtunneling
02100	Demolitions
02220	Excavating, Backfilling, and Compacting
02270	Erosion and Sedimentation Control
02410	Shaft Excavation and Support
02431	Contact and Void Repair Grouting
02665	Carrier Pipe Installation and Backfill
02922	Sodding
03000	Concrete
03600	Grout
09940	Protective Coatings
134713	Cathodic Protection System
15065	Steel Pipe
15101	AWWA Butterfly Valves
15104	Resilient-Seated Gate Valves

13.0 Scrutinized Companies and Foreign Countries of Concern

13.1 Contractor certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an Agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of $1 million or more if the awarded Contractor:

a. Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or
b. Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or
c. Has been engaged in business operations in Cuba or Syria.

13.3 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor has been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

13.4 Foreign Countries of Concern. Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying

information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or Agency under the significant control of such Foreign County of Concern. Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor is in violation of Section 287.138, Florida Statutes

14.0 Employee Verification

In accordance with Section 448.095 Florida Statutes, the Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the contract for the services specified in the contract. The Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term. If the Contractor enters into a contract with a subcontractor, the subcontractor must provide the Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the Contract. If Tampa Bay Water has a good faith belief that the Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Contractor, and the Contractor may not be awarded a Contract with Tampa Bay Water for at least 1 year after the date on which the Contract was terminated. The Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Contractor and order the Contractor to immediately terminate the award/contract with the subcontractor.

15.0 Anti-Human Trafficking

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

IN WITNESS WHEREOF, Tampa Bay Water and Contractor have signed two (2) copies of this Contract, and all parts of the Contract Documents have been identified by Owner and Contractor. This Contract will be effective on the _____day of _____, 2026 (which is the Effective Date of the Contract).

This Contract may be signed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

ATTEST

_____
Charles H. Carden, General Manager

TAMPA BAY WATER
A Regional Water Supply Authority

By: _____

Name: _____

Its: Chair_____

Date:_____

Approved as to form:

(SEAL)

_____
General Counsel

JDS Inc., d/b/a JDS Pipe Inc.

By: _____

Name:_____

Title:_____

(CORPORATE SEAL)

[Version 2025]

Address for giving notice to:

Tampa Bay Water, A Regional Water Supply Authority:
Tampa Bay Water, A Regional Water Supply Authority
2575 Enterprise Road
Clearwater, Florida 33763-1102
Attn: Stacy Gundry, Purchasing & Warehouse Manager

The Engineer:
Wade Trim, Inc.
201 N. Franklin Street, Suite 1350
Tampa, FL 33602
Attn: Nita Sharma, P.E.

The Contractor:
JDS Inc. d/b/a JDS Pipe Inc.
3258 Parkside Center Circle
Tampa, FL 33619
Attn: Eric Malvin, Vice President

End of Contract

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of **Six Million One Hundred Sixty-Nine Thousand Nine Hundred One Dollars and No Cents** (**$6,169,901.00**), (**total price is inclusive of bid price of $5,923,801.00, Owner's Allowance of $246,000.00 and Indemnification of $100.00**), **($6,169,901.00)**, for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 2026, with Obligee for Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017 in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and

3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.

3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.

4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.

5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

(a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in Sub-Paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Witness

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of **Six Million One Hundred Sixty-Nine Thousand Nine Hundred One Dollars and No Cents** (**$6,169,901.00**), (**total price is inclusive of bid price of $5,923,801.00, Owner's Allowance of $246,000.00 and Indemnification of $100.00**), **($6,169,901.00)**, for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 2026, with Obligee for Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017 in accordance with Drawings and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under Paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

_____

Witness as to Surety

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this __ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

_____

Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

Issue Date:

Producer:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to Tampa Bay Water by certified mail.

Re: Project/Contract Number: _____

Insured:

COMPANIES AFFORDING COVERAGE	BEST RATING/CLASS
A.	
B.	
C.	
D.	
E.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Company Letter	2. TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS ALL LIMITS IN THOUSANDS		
	3. GENERAL LIABILITY ❑ Commercial Form ❑ Occurrence ❑ Claims Made ❑ Comprehensive Form ❑ Premises-Operations ❑ Explosion, Collapse, Underground Hazard ❑ Products/Completed Operations Hazard ❑ Contractual Insurance ❑ Broad Form Property Damage ❑ Independent Contractor ❑ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water		$
	AUTOMOBILE LIABILITY ❑ Any Auto ❑ All Owned Autos ❑ Scheduled Autos ❑ Hired Autos ❑ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Bodily Injury (Per Accident)		
					Property Damage		
	UMBRELLA/EXCESS LIABILITY ❑ Umbrella Form ❑ Excess Form ❑ Following Form Coverage				Each Occurrence		
					Aggregate		
	WORKERS' COMPENSATION AND EMPLYERS' LIABILITY				☒ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease – Policy Limit		$
					EL Disease – Each Employee		$
	PROFESSIONAL LIABILITY ❑ Claims Made ❑ Occurrences Retro Date _____					$	$
	BUILDER'S RISK ❑ All Risk ❑ Permission to Occupy ❑ All Owners', Contractors', Subcontractors' Interests Covered ❑ Installation Floater				$		
	FIDELITY ❑ Employee Dishonesty ❑ Covers Loss to Tampa Bay Water				$		
	OTHER						

Description of Operations/Locations/Vehicle/Special Items:

***** Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____

(Signature Required)

Address _____

Telephone # _____ Facsimile # _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided, if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD CERTIFICATE OF LIABILITY INSURANC

Clear | Save

DATE (MM/DD/YYYY)

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
Your Insurance Agent	INSURERS AFFORDING COVERAGE	NAIC #
INSURED	INSURER A: Company Name	
Company Name Street City, State, Zip Code	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC	Policy Number	effective	expires	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
	X	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
	X	EXCESS/UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	[X] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 100,000 $ 100,000 $ 500,000
		OTHER					

Sample

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER	CANCELLATION
Tampa Bay Water 2575 Enterprise Road Clearwater, FL 33763-1102	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL XXXXXXX 30 DAYS WRITTEN XXXXXXXXXXXXXX NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR XXXXXXXXXX REPRESENTATIVES. AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

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IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

SUPPLEMENTARY CONDITIONS

Supplementary Conditions to the General Conditions, Article 4, The Contractor and Its Employees.

The limits of liability for the following insurance required by the General Conditions, Article 4, The Contractor and Its Employees, as amended in the Supplementary Conditions, shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Commercial General Liability. The coverage(s) shall be no less than:
   (a) Minimum limits of $1,000,000 per occurrence combined single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

   (b) Minimum limits of $2,000,000 Aggregate single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

2. Business Automobile Liability. The coverage shall be no less than:
   (a) Minimum limits of $1,000,000 combined single limit for all liability must be provided.

3. Umbrella/Excess Liability. The coverage shall be no less than:
   (a) Minimum limits of $2,000,000 per occurrence must be provided.

   (b) Aggregate limits of $5,000,000 must be provided.

4. Worker's Compensation and Employer's Liability. The coverage shall include:
   (a) Coverage A:
   State: Statutory limits under the Laws of the State of Florida.
   Federal: Statutory limits under the Laws of the United State of America (e.g., Longshoremen's, etc.)

   (b) Coverage B:
   Employer's Liability, bodily injury, occupational sickness or disease, or death of Contractor's employees shall be no less than:
   1) $500,000 Each Accident
   2) $1,000,000 Each Disease
   3) $500,000 Each Employee

Tampa Bay Water requires Contractor employers to purchase workers compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires the Contractor to purchase said coverage.

5. Builder's Risk "All Risk" or Installation Floater Insurance. Coverage shall be no less than the full insurable replacement value of the Work, including completed Work, Work in progress and all insurable building materials, structures, fences, lights, equipment, pumps, electrical components, and similar insurable property. Exceptions to insurable property include underground property (after installation), site work and road work.

6. Additional Requirements:
   (a). Tampa Bay Water must be listed as an Additional Insured on General Liability, Auto Liability and Excess policies;

   (b). Excess/Umbrella policies shall be written as "follow form";

   (c.) The insurance provided for Tampa Bay Water as Additional Insured shall apply as primary and non-contributory insurance;

   (d). The Additional Insured Endorsement utilized for General Liability must be form CG 20 10 (07/04) and CG 20 37 (07/04) or broader wording in Tampa Bay Water's favor as approved by Tampa Bay Water;

   (e). Contractor shall maintain General Liability coverage for itself and all Additional Insureds for the duration of the Work and maintain completed operations coverage for itself and Additional Insureds for five (5) years after completion of the Work;

   (f). All Contractor insurance policies will include a Waiver of Subrogation in favor of Tampa Bay Water;

   (g). Each of Contractor's insurance policies shall be endorsed to provide Tampa Bay Water with at least thirty (30) days written notice prior to any material change or cancellation of the policy, to the fullest extent commercially available;

   (h). Deductible amounts on Contractor policies shall not exceed $25,000 and shall require approval from Tampa Bay Water; and

   (i). In the event Contractor breaches any provision of the Insurance Requirements of the Contract, Tampa Bay Water may deduct the cost of any insurance from any funds Payable to Contractor under the Contract Documents.

General Conditions

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GENERAL CONDITIONS

1. Definitions

Wherever in the Contract Documents the following terms are used, the intent and meaning shall be as follows:

1.1. Addenda: Instruments issued by Engineer for Tampa Bay Water prior to the advertised time for receipt of Bids that modify the Contract Documents by additions, deletions, clarifications, corrections, or other revisions.

1.2. Contract: The written Contract between Tampa Bay Water and the Contractor covering the Work to be performed.

1.3. Allowances: A specified sum included in the Contract Price to be utilized only at the discretion of Tampa Bay Water.

1.4. Alternates: A specified portion of the Work listed on the Bid which has been added to or deducted from the Base Bid, at Tampa Bay Water's discretion, as identified in the Contract.

1.5. As Approved: The words "As Approved," unless otherwise qualified, shall be understood to be for conformance with the Contract Documents.

1.6. As-Built Contract Documents: A set of the Contract Documents marked up by the Contractor to show the Work as constructed with all modifications from the original Contract Document.

1.7. Base Bid: The sum total of the combined Unit Prices, Lump Sum Prices and Allowances in the Bid, excluding all Alternates.

1.8. Bidder: The person(s), partnership, firm or corporation submitting a Bid for the Work.

1.9. Bid Documents: The "Bid Documents" consist of the Instruction of Bidders, Information to Bidders, Request for Bids, Bid and the Contract Documents.

1.10. Bid Security: The Bid Bond, certified check or cashier's check provided pursuant to this ITB to protect Tampa Bay Water from the unauthorized withdrawal of Bid or refusal to execute the Contract Documents. Electronic Bids received through Euna must be accompanied by a copy of a certified check, or cashier's check drawn on a bank in good standing, or the Florida Bid Bond included herein. The Bid Bond must be issued by a surety authorized to issue such bonds in the State of Florida, in the amount of Five percent (5%) of the proposed total Contract Price of the Bid submitted. The Florida Bid Bond included herein shall be given as a guarantee that the Bidder will not withdraw its Bid for a period of ninety (90) days after the opening of Bids.

When submitting the electronic bid, a copy of the Bid Bond should be submitted in the electronic package. The original Bid Bond must be delivered to Tampa Bay Water physically via mail, delivery service or in-person. If submitting electronically, banking information may be redacted on copies of checks. Original checks must be delivered physically and unaltered.

1.11. Business Day: The term Business Day means each day occurring Monday through Friday.

1.12. Change Authorization: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water, authorizes and directs the Contractor to perform changes in the Work as described in the Change Authorization, and/or gives the basis, if any, for a subsequent adjustment in Contract Price or Contract Time. Upon receipt of a Change Authorization, the Contractor is authorized and required to perform the subject changes in the Work.

1.13. Change Order: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water and the Contractor, amends the Contract Documents to provide for changes in the Work, and/or Contract Price, and/or Contract Time.

1.14. Construction Directive: A written instrument issued by the Engineer pursuant to Paragraph 7.2.9.

1.15. Contract Documents: The "Contract Documents" consist of the Contract, Addenda, Supplementary Conditions, General Conditions, Specifications, Drawings, Change Order, Change Authorizations, and all other documents expressly incorporated by specific reference thereto. The Contract Documents are sometimes collectively referred to as the "Contract".

1.16. Contractor: The person(s), partnership, firm, or corporation that entered into and is (are) identified in the Contract.

1.17. Contractor's Representative: The Contractor's superintendent, project manager or other person at the location of Work authorized to direct the Work and receive communications from Tampa Bay Water or Engineer.

1.18. Contract Price: The total compensation payable by Tampa Bay Water to the Contractor for the performance of the Work by the Contractor in accordance with the requirements of the Contract Documents, as stated in the Contract and adjusted by all Change Order and Change Authorizations.

1.19. Contract Time: Unless otherwise specified, the Contract Time for all or a designated part of the Work is the period of time allowed, subject to Change Order and Change Authorizations, for completion of a specified part of the Work. The first Day of Contract Time shall be that date as specified on the Notice to Proceed as the date the Contract Time shall commence.

1.20. Correction Period: The period of time established in Paragraph 4.20.2 hereafter for the correction of Defective Work.

1.21. Day: Unless otherwise specifically stated, the term Day shall be understood to mean calendar day.

1.22. Defective: A term used to refer to Work that is faulty, unsatisfactory, deficient, damaged or does not conform to the requirements of the Contract Documents and all applicable Laws and Regulations.

1.23. Drawings: The term Drawings refers to the various drawings, profiles, cross sections, elevations, details, plans and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, details of the Work to be performed, all as identified in the Contract. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

1.24. Engineer: The person or organization identified as such in the Contract that provided the technical design. The term "Engineer" means the Engineer or its authorized representatives.

1.25. Final Completion: The completion of all the Work in accordance with the Contract Documents.

1.26. Laws And Regulations: Federal, State, and Local Statutes, Judicial and Administrative Decisions, Laws, By-Laws, Codes, Rules, Regulations, Resolutions, Ordinances, and/or Orders applicable to the Project.

1.27. Lump Sum Price: The price paid for a specified quantity of Work, which when performed, is paid for on the basis of an agreed price for the completed Work.

1.28. Notice: The term "Notice" or the requirement to notify, as used in the Contract Documents or applicable Laws and Regulations, shall signify a written communication delivered in person; or by certified or registered mail, return receipt requested, to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended.

1.29. Notice Of Award: The written notice of acceptance of the Bid by Tampa Bay Water to the successful Bidder stating that upon compliance by the Bidder, within the time specified, with the requisite conditions stated in this ITB, Tampa Bay Water will deliver the Contract to the successful Bidder for its execution.

1.30. Notice to Proceed: The written Notice issued by Tampa Bay Water to the Contractor, authorizing it to proceed with the Work in accordance with the Contract Documents, and fixing the date for which the Contract Time shall commence.

1.31. Or Equal: The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the named product in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer.

1.32. Partial Utilization: Use by Tampa Bay Water of a portion of the Work (as designated by Tampa Bay Water) before reaching Substantial Completion for all the Work.

1.33. Payment Application: The forms provided by Tampa Bay Water which shall be used by the Contractor in requesting partial or final payment.

1.34. Permit Allowance: The Permit Allowance is for Tampa Bay Water's use in reimbursing the Contractor for the actual cost of permit fees required by Laws and Regulations necessary to perform the Work. This is a pass-through cost and no mark-ups are allowed on the Permit Allowance.

1.35. Progress Report: A written report(s) indicating progress of the Work, estimated date for delivery of materials, and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule.

1.36. Progress Schedule: Schedule which shows the timing and sequence of Contractor's proposed execution of the Work and all subsequently issued updates thereto, after said updates have been reviewed and accepted by Tampa Bay Water.

1.37. Project : The name of the Project is as identified in the Contract.

1.38. Project Allowance: The Project Allowance is solely for Tampa Bay Water's use in the payment for changes in the Work, where such changes have been approved pursuant to the Contract Documents.

1.39. Project Representative: The authorized representative(s) of the Engineer who is (are) assigned to the Project or any part thereof.

1.40. Record Drawings: Drawings that are prepared by the Engineer reflecting as-built information provided by the Contractor on Contractor's As-Built Contract Documents.

1.41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some part of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other data prepared by a Supplier and submitted by the Contractor to illustrate items of material or equipment.

1.42. Specifications: The term "Specifications" refers to those written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, all as identified in the Contract. Where standard Specifications, common to the construction industry and to standard engineering practice, are referenced to or are otherwise applicable, the applicable portions of the most current versions of such standard Specifications shall become a part of these Contract Documents. If referenced standard Specifications conflict with Specifications contained herein, the requirements contained herein shall control unless contrary to Laws and Regulations.

1.43. Subcontractor: An entity having a Contract with the Contractor for performing labor on the Work on the Project, or for performing both labor on the Project and furnishing materials or equipment.

1.44. Submittal: The term Submittal includes shop drawings, tests, samples, Progress Schedules and other schedules, Progress Reports and other reports, and any other documents required for submission by the Contract Documents.

1.45. Substantial Completion: Substantial Completion shall be that degree of completion of the Work or specified portion of the Work in accordance with the Contract Documents, as specified in the General Conditions, Article 2, Contract Time of the Contract, certified by the Engineer and approved by Tampa Bay Water as evidenced by the Engineer's issuance of a Certificate of Substantial Completion, sufficient to provide Tampa Bay Water, at its discretion, the full-time use of the Work or Partial Utilization of a specified portion of the Work for the purposes for which it was intended.

1.46. Supplier: A manufacturer, fabricator, distributor, material man, or vendor having an Contract with the Contractor for furnishing materials or equipment for the Project. Tampa Bay Water, A Regional Water Supply Authority/Owner: Tampa Bay Water, A Regional Water Supply Authority, is the Owner of the Work described in the Contract Documents. The term "Owner" and "Tampa Bay Water" are interchangeable. The Work shall be deemed substanitally complete after the new pipeline is fully operational and has successfully passed all testing and the old out of service pipeline has been removed and/or grouted in place, as noted on the drawings and in the specifications.

1.47. Uncontrollable Circumstance: Any act, event or condition affecting the Project, Contractor or Tampa Bay Water to the extent that it materially and adversely affects: (i) the ability of either party to perform any obligation hereunder (except for payment obligations); or (ii) the cost of such party's performance, if such act, event or condition is beyond the reasonable control and is not also the result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the party relying thereon as justification for not performing an obligation or complying with any condition required of such party under this Contract;

(1) *Inclusions*. Subject to the foregoing, such acts or events include the following:

(a) an act of God, hurricane, landslide, lightning, earthquake, fire, flood, plague, tornadoes, (but not including reasonably anticipated weather conditions for the geographic area of the Work site), explosion, sabotage or similar occurrence, acts of a public enemy, extortion, war, blockade or insurrection, riot or civil disturbance;

(b) a Change in Law;

(c) the failure of any appropriate governmental body or private utility having operational jurisdiction in the area in which the Project is located to provide and maintain Utilities to the Work site;

(d) any failure of title to the Work site or any enforcement of any encumbrance on the site or on any improvements thereon not consented to in writing by, or arising out of any action or Contract entered into by, the party adversely affected thereby;

(e) the preemption of materials or services by a governmental body in connection with a public emergency or any condemnation or other taking by eminent domain of any portion of the Project or Work site;

(f) the presence at the Work site of (i) subsurface structures, materials or conditions having archaeological significance; (ii) any habitat of endangered or similarly protected species; (iii) functioning subsurface structures at the site (to the extent not identified by Tampa Bay Water to Contractor); and (iv) subsurface conditions of which Contractor, through the exercise of reasonable diligence, could not reasonably be expected to have notice;

(g) strikes by an organized union of the Contractor's Subcontractors;

(h) the failure of Tampa Bay Water to obtain any permit or approval which is Tampa Bay Water's responsibility to obtain, on or prior to the dates set forth in the Project Schedule.

(2) *Exclusions*. It is specifically understood that none of the following acts or conditions shall constitute Uncontrollable Circumstances:

(a) general economic conditions, interest or inflation rates, or currency fluctuations or exchange rates;

(b) changes in the financial condition of Tampa Bay Water, Contractor or any Subcontractor affecting the ability to perform their respective obligations;

(c) the consequences of error, neglect or omissions by the parties and any Subcontractor in the performance of any Work or responsibilities under this Contract;

(d) any increase for any reason in premiums charged by the Contractor's insurers or the insurance markets generally for the required Insurance;

(e) the failure of Contractor to secure any patents or licenses in connection with the technology necessary to perform its obligations hereunder;

(f) the failure of any Subcontractor or Supplier to furnish labor, materials, services or equipment for any reason other than for acts or events specifically included herein as Uncontrollable Circumstances;

(g) equipment failure except when due to acts or events specifically enumerated herein as Uncontrollable Circumstances; or

(h) any Change in Law with respect to the issuance of any permit or approval, the enactment of any statute, or the promulgation of any regulation affecting the standards or requirements of performance, the terms and conditions of which do not impose more stringent or burdensome requirements on the Project or Contractor than in effect on the Effective Date of the Contract.

1.48 Unit Price: The price paid for units of Work which, when performed, is measured and paid for on the basis of units.

1.49 Work: The word "Work" within these Contract Documents shall include all material, labor, services, documentation, tools, equipment, fuel, utilities, temporary facilities and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Project in accordance with the Contract Documents, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described in the Contract Documents or indicated and as required by good practice to provide a complete and satisfactory system(s) or structure(s).

1.50 Working Hours: Working Hours shall mean the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday, excluding legal holidays. Maintenance of equipment will be allowed outside of Working Hours.

1.51 Other terms not defined herein shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in the Florida Statutes.

2. Contract Documents

2.1 Intent of Contract Documents

2.1.1. The Contract Documents comprise the entire Contract between Tampa Bay Water and the Contractor concerning the Work. The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the indicated result shall be supplied whether or not specifically called for, with no increase in the Contract Price or extension of the Contract Time. When words which have a customary technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning, unless a contrary definition appears in the Contract Documents, in which case the Contract Documents shall control.

2.1.2. Whenever the terms "as ordered", "as directed", "as required", "as allowed", "As Approved", or terms of like effect, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory", or adjectives of similar effect, are used to describe a requirement, direction, review, or judgment of the Engineer or Tampa Bay Water as to the Work, it is intended that the requirement, direction, review, or judgment will be to evaluate the Work for compliance with the Contract Documents.

2.1.3. No use of any provision of any standard Specifications, manual, or code (whether or not expressly incorporated by reference in the Contract Documents), or Suppliers' instructions, shall be effective to (a) change the duties and responsibilities of the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or employees from those assigned in the Contract Documents; or (b) to assign to the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or Tampa Bay Water employees, any duty or authority to supervise or direct the execution of the Work or to assume responsibility contrary to the provisions of the Contract Documents.

2.2 Priority of the Contract Documents

2.2.1. In resolving inconsistencies or apparent conflicts among the Contract Documents, the first listed below shall take precedence and control over those following:

a. *Contract*
b. Supplementary Conditions
c. General Conditions
d. Specifications / Drawings
e. Front-Ends

2.2.2. In resolving inconsistencies between Drawings and Specifications, Contractor shall be obligated to comply with the more costly or stringent requirement, as determined by Tampa Bay Water. Figure dimensions on Drawings shall take precedence over scale dimensions. Detailed Drawings shall take precedence over general Drawings.

2.3 Examination and Verification of Contract Documents

2.3.1. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents with each other, check and verify pertinent figures and all applicable field measurements, and compare and coordinate related requirements for Work (i.e. location, dimensions, fit, completeness, consistency, etc.).

2.3.2. The Contractor shall, immediately upon discovery, report in writing to the Engineer any conflict, error, omission, or ambiguity in the Contract Documents which the Contractor discovers, whether prior to or while performing the Work, and shall obtain a written interpretation or clarification from the Engineer before proceeding with any affected Work. The Engineer shall promptly investigate the matter and until such interpretation or clarification is obtained from the Engineer, any Work done by the Contractor which is directly or indirectly affected by same, will be at the Contractor's risk and the Contractor shall bear all resultant costs and delays.

2.4 Documents to be kept on the Project Site

The Contractor shall keep at least one copy of the Contract Documents on the Project site in good order, available to Tampa Bay Water and its representatives. The Contractor shall maintain on a daily basis at the Project site, and make available to the Engineer on request, one current set of As-Built Contract Documents which have been accurately marked by Contractor to indicate all modifications in the completed Work that differ from the original Contract Documents. As a condition precedent to Final Completion of the Work, the Contractor shall give the Engineer one complete set of these As-Built Contract Documents.

2.5 Additional Contract Documents

The Engineer shall furnish to the Contractor one (1) set of sealed Drawings (24 X 36) hard copy, one PDF copy and one AutoCAD electronic copy; sets of sealed Drawings and one (1) reproducible set of the Contract Documents.

2.6 Ownership of Contract Documents

All portions of the Contract Documents, and copies thereof furnished by the Engineer are the property of Tampa Bay Water. They are not to be used on other work and are to be returned to the Engineer at the completion of the Work with the exception of the Contractor's record set. Any reuse or adaptation of these materials by Contractor without specific written permission by Tampa Bay Water is expressly prohibited and shall be at the risk of the Contractor and without liability or legal expense to Tampa Bay Water or Engineer. The Contractor shall hold Tampa Bay Water and Engineer harmless from any and all damages and claims, including reasonable attorneys' fees and legal assistants' fees, for such unauthorized use.

3. The Engineer

3.1 Authority of the Engineer

The Engineer shall be a representative of Tampa Bay Water during the Contract Time for performance of the Work. The Engineer shall have authority to reject Work which does not conform to the Contract Documents. However, the Engineer's authority shall not affect the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

3.2 Duties and Responsibility of the Engineer

3.2.1. The Engineer shall make visits to the Project site at intervals appropriate to the various stages of construction to observe the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Visits and observations made by the Engineer are solely for the benefit of Tampa Bay Water and shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligations to conduct comprehensive inspections of the Work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.2. The Engineer shall respond, in writing, within 21 days of receipt (unless more time is reasonably required for response), to all claims by Tampa Bay Water or the Contractor required for performance of the Work and requests for clarification or interpretation of the Contract Documents. The Engineer's response shall be of factual and/or technical nature, and shall not include the legal interpretation of the Contract Documents.

3.2.3. The Engineer may assign one or more Project Representatives to observe the Work. It is understood that such Project Representatives shall have authority to issue Notices of non-conformance and make decisions within the limitations of authority of the Engineer. The Contractor shall furnish all reasonable assistance required by the Engineer or Project Representative for proper observation of the Work. Observations by the Project Representative shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligation to conduct comprehensive inspections of the Work and to furnish materials and perform work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.4. On-site observations by the Engineer, Project Representatives and other assistants shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents, nor constitute acceptance of Defective Work, nor give rise to any duty on their part to make the observations for the benefit of the Contractor.

3.2.5. The Engineer shall review Submittals within the times specified in the General Requirements, or if not specified, within 21 days of receipt (unless more time is reasonably required for review) for conformance with the design of the Project and for compliance with the Contract Documents. The Engineer's review shall not extend to means, methods, techniques, sequences, nor to procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents), nor to safety precautions or programs incident thereto.

3.3 Rejected Work

3.3.1. The Engineer shall have authority to disapprove or reject Work at any time during the performance of the Work, which the Engineer believes to be Defective; or to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. The Engineer's authority does not relieve the Contractor from its responsibility to perform in accordance with the Contract Documents. When the Contractor is notified by the Engineer of rejection of Defective Work, the Contractor shall take immediate action to correct same.

3.3.2. All Defective Work, whether discovered before or after Final Completion, shall be removed and replaced by the Contractor, without cost to Tampa Bay Water, with Work which shall conform to the Contract Documents. Failure on the part of the Engineer to condemn or reject Defective Work shall not be construed to imply acceptance of such Work. Tampa Bay Water shall reserve and retain all of its rights and remedies at law or equity against the Contractor and its Surety for correction of or damages arising from any and all Defective Work.

3.4 Lines and Grades

Lines and grades shall be established as provided in the Drawings or the Supplementary Conditions. All information, stakes or marks shall be carefully preserved by the Contractor, and if the information, stakes or marks are destroyed or removed, all such information, stakes or marks shall be replaced at the Contractor's expense.

3.5 Detail Drawings and Instructions

If required, the Engineer shall furnish within 21 days (unless more time is reasonably required), in writing, additional instructions by means of Drawings or otherwise, as required for the proper execution of the Work. All such Drawings and instructions shall be in writing and consistent with the Contract Documents.

4. The Contractor and Its Employees

4.1 Contractor

4.1.1. The Contractor shall independently perform all Work included in the Contract Documents and shall not be considered an agent of Tampa Bay Water or of the Engineer, nor shall the Contractor's Subcontractors, Suppliers, or employees be agents of Tampa Bay Water or of the Engineer.

4.1.2. The Contractor shall provide competent, suitably qualified and reliable personnel, Subcontractors, and Suppliers to survey and lay-out the Work and furnish and perform the Work in accordance with the Contract Documents.

4.2 Subcontractors and Suppliers

4.2.1. The Contractor shall be responsible and liable to Tampa Bay Water for the acts and omissions of Contractor's employees, agents, and Subcontractors and Suppliers and their respective employees.

4.2.2. The Contractor shall list each Subcontractor or Supplier whom the Contractor intends to award a subcontract, other than those Subcontractors or Suppliers previously listed in the Bid,

by submitting to Tampa Bay Water in writing, for each additional Subcontractor and Supplier, the same information required to be set forth in the Bid.

4.2.3. Work performed by a Subcontractor or Supplier shall be through an appropriate written subcontract which expressly binds the Subcontractor or Supplier to the terms and conditions of the Contract Documents for the express benefit of Tampa Bay Water, and requires each of them to assume toward the Contractor all of the obligations which the Contractor assumes toward Tampa Bay Water.

4.2.4. The Contractor shall deliver to Tampa Bay Water a copy of each subcontract with a Subcontractor or Supplier within fifteen (15) Days after receiving the Notice to Proceed or the execution of the subcontract, as applicable.

4.2.5. The Contractor shall perform (with the Contractor's own employees) not less than fifty-one percent (51%) of the difference between the Contract Price minus the cost of materials for the Project.

4.2.6. Nothing contained in the Contract Documents or any subcontract shall create any contractual relationship between any Subcontractor or Supplier and Tampa Bay Water or Engineer. Provided, however, Tampa Bay Water shall be named an intended third party beneficiary under all such subcontracts.

4.3 Equal Opportunity

4.3.1. At all times during the performance of the Work, Contractor shall comply with Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act of 1992. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, handicap, or marital status. The Contractor shall take affirmative action to ensure that employment applications are used and that employees are treated without regard to their race, color, religion, sex, national origin, age, handicap or marital status for employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

4.3.2. The Contractor shall state in all solicitations or advertisements for employment placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, handicap, or marital status.

4.4 Indemnity

4.4.1. In consideration of One Hundred Dollars ($100.00) separately allocated from the first consideration paid hereunder, and other good and valuable consideration, including Tampa Bay Water's execution of the Contract, the sufficiency of which is hereby acknowledged by Contractor, Contractor shall indemnify and hold harmless Tampa Bay Water, its officers, employees, agents, representatives and consultants from and against all liabilities, costs, losses, and damages (including, but not limited to, all reasonable attorney's fees to the extent caused by the negligence, recklessness or intentional wrongful conduct of Contractor, any Subcontractor, or any individual or entity directly or indirectly employed or utilized by Contractor in the performance of the Work under this Contract. This indemnification shall also include all liabilities, damages, losses and costs including, but not be limited to, reasonable attorneys' fees arising out of any infringement of patents or copyrights incident to performing the Work by the Contractor, any Subcontractor or any person or organization employed by

Contractor to perform or furnish any of the Work, or anyone for whose acts any of them may be liable.

4.4.2. With respect to all claims against Tampa Bay Water or the Engineer by any employee of the Contractor, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor (or any Subcontractor or Supplier) under workers' compensation, disability benefit or other employee benefit acts.

4.4.3. The separate consideration recited in Paragraph 4.4.1 above is in consideration of the indemnification obligation set forth in this Paragraph 4.4, as well as any other indemnification provided by Contractor under the Contract Documents.

4.4.4 Contractor acknowledges and agrees its indemnification obligations under Paragraph 4.4.1 shall be effective and fully enforceable even if any party indemnified hereunder is partially at fault or responsible for the claim; provided, however, Contractor shall not be liable or responsible for indemnifying any claim which is the result of the sole negligence of Tampa Bay Water, Engineer or any other party indemnified under Paragraph 4.4.1.

4.5 Bonds and Insurance

A. Performance Bonds, Payment Bonds and Other Bonds

4.5.1. The Contractor shall furnish Performance Bonds and Payment Bonds, each in an amount at least equal to the Contract Price, in accordance with the requirements of Sections 255.05, Florida Statutes, as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall be in the forms specified in the Contract Documents. The Contractor shall also furnish any other bonds required in the Supplementary Conditions. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-Fact who sign Bonds shall attach a certified copy of their Power of Attorney.

B. The Contractor's Insurance – General

4.5.2. The Contractor shall purchase and maintain the coverage specified in this Article and the Supplementary Conditions, and shall be written for not less than the limits of coverage specified in the Supplementary Conditions. The Contractor shall submit certificates to Tampa Bay Water itemizing the policies issued, limits of coverage, expiration dates and endorsements provided, using the form provided in the Contract Documents.

4.5.3. The Contractor shall not start or continue to perform any Work unless it has in full force and effect all required insurance as per the Contract Documents. The Contractor shall submit the insurance certificates provided with these Contract Documents for review by Tampa Bay Water prior to performing any Work. All Subcontractors and Suppliers performing Work on the Project shall provide the same types and limits of insurance as is required of the Contractor hereunder, unless otherwise expressly waived in writing by Tampa Bay Water.

4.5.4. Insurance shall be provided by insurance companies authorized to transact business and which have an agent for service of process in the State of Florida, having at least an "A-" Best's Rating and a Class VIII or better financial size category in accordance with the most current A.M. Best Company rating.

4.5.5. All the policies of insurance shall be endorsed to provide that any failure of the Contractor to comply with any provisions will not prejudice coverage for Tampa Bay Water. Deductible amounts shall be reduced or eliminated upon Tampa Bay Water's written request in which case Contractor shall be entitled to payment of any additional costs for such reduction or

elimination of deductibles in accordance with Paragraph 7.2 of these General Conditions. The insurer's costs of providing the insured(s) a defense at trial in bankruptcy proceedings, and/or appeal, including attorneys' fees, and legal assistants' fees, shall not be included within the limits of the policy coverage, but shall remain the insurer's separate responsibility.

4.5.6. To the fullest extent commercially available, all the policies of insurance shall be endorsed to provide that the coverage afforded will not be cancelled, adversely changed or renewal refused until at least thirty (30) Days' prior written Notice has been given to Tampa Bay Water and the Engineer by certified mail, return receipt requested. Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed prior to its expiration, and certificate filed with Tampa Bay Water at least thirty (30) Days prior to expiration. Tampa Bay Water and Engineer, their officers, agents, and employees shall be named as Additional Insured(s) on the Contractor's and any Subcontractor's commercial general liability, comprehensive automobile liability insurance, umbrella/excess liability and builder's risk policies for any claims arising out of work performed under the Contract Documents.

4.5.7. In case of the breach of any provision of this Article, Tampa Bay Water, at its option, may take out and maintain, at the expense of the Contractor, such insurance as Tampa Bay Water may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under the Contract Documents.

4.5.8. In carrying out any of the provisions of the Contract Documents or in exercising any authority granted by the Contract Documents, there will be no personal liability upon any board member, officer, employee or agent of Tampa Bay Water.

C. The Contractor's Liability Insurance

4.5.9. The Contractor shall purchase and maintain commercial general liability and other insurance appropriate for the Work, in the limits of at least those specified in the Supplementary Conditions, and which shall provide protection from claims itemized below which may arise out of or result from the Contractor's performance and furnishing of the Work and the Contractor's other obligations under the Contract Documents, whether the Work and the obligations be performed or furnished by the Contractor, Subcontractor or any Supplier, to wit:

a. Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees; claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees; claims for damages insured by personal injury liability coverage sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason; claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use; claims arising by operation of Laws and Regulations for damages because of bodily injury or death of any person or for damage to property; and

c. Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use of loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.

4.5.10. The Contractor's liability insurance shall include contractual liability coverage sufficient to cover the Contractor's indemnification obligations under the Contract Documents. The

Contractor agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by the Contractor's obligations under the indemnification provisions.

4.5.11. The Contractor's liability insurance shall be endorsed to include as additional insured: Tampa Bay Water, the Engineer, their consultants, any subsidiaries or affiliates, and each of their directors, officers, shareholders, agents, or employees. The insurance afforded to these additional insured shall be primary insurance, and neither the coverage nor the amount of insurance provided under the Contractor's policies shall be reduced or prorated by the existence of any other insurance applicable to any loss they may have sustained. If the Subcontractors and Suppliers do not purchase and maintain the coverage specified in this Article or the Supplementary Conditions, they shall be included in the Contractor's policies as additional insured.

4.5.12. The Contractor's liability insurance shall remain in effect until three (3) years after Final Completion and at all times after that when the Contractor may be correcting or removing and replacing Defective Work. Evidence of insurance shall be furnished to Tampa Bay Water yearly.

4.5.13. These requirements shall not be construed to limit the liability of the Contractor or its insurers. Tampa Bay Water does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

D. Property Insurance

4.5.14. The Contractor shall purchase and maintain builder's risk "all risk" completed value insurance coverage for physical loss or damage upon the Work at the Project site to its full insurable value, including completed Work and Work in progress. This insurance shall list Tampa Bay Water as an additional insured and shall include the interests of the Contractor, Subcontractors and Suppliers, the Engineer, and Tampa Bay Water's and the Engineer's consultants in the Work, all of whom shall be listed as additional insured. At a minimum, and not by way of limitation, it shall insure against extended coverage, perils of fire, lightning, windstorm, flood, rain, hail, explosions, riot, tornado, hurricane, sink holes, theft, vandalism and malicious mischief, collapse and water damage and shall include damages, losses and expenses arising out of or resulting from any insured loss incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, the Contractor shall purchase and maintain similar property insurance on parts of the Work stored on and off the Project site or in transit whether or not such Work is included in a Payment Application. The policy shall be endorsed to permit use or occupancy by Tampa Bay Water prior to Final Completion. The property insurance may have a deductible amount, which shall be borne by the Contractor, not exceeding $25,000.00. The property insurance shall comply with the requirements of this Article.

E. Waiver of Subrogation Rights

4.5.15. Tampa Bay Water and the Contractor intend that all policies of insurance shall protect Tampa Bay Water, the Contractor, and the Engineer, provide primary coverage for all losses and damages caused by the perils covered. Accordingly, all such policies shall be endorsed to provide that in the event of payment of any loss or damage the insurer shall have no rights of subrogation or other recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by the Engineer or Tampa Bay Water's and the Engineer's consultants, Tampa Bay Water will obtain separate waiver forms, and if such forms are required of any Subcontractor or Supplier, the Contractor will so obtain them.

4.6 Taxes and Charges

The Contractor shall pay any and all sales and use taxes and all withholding taxes, whether State or Federal, and pay all Social Security charges and also all State Unemployment Compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees, or sums whatsoever, which are now required to be paid or withheld under any laws, unless otherwise modified in the Supplementary Conditions.

4.6.2. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to the Project. In such event, Contractor shall cooperate and assist Tampa Bay Water, at no additional cost, with respect to the implementation of that sales tax savings program. Tampa Bay Water and Contractor shall work together to identify particular pieces of equipment and material that are suitable for direct purchase by Tampa Bay Water. As such items are identified, Tampa Bay Water shall issue purchase orders, in accordance with a schedule mutually acceptable to Tampa Bay Water and Contractor, to the appropriate Suppliers of such items for the direct purchase of those items by Tampa Bay Water. Tampa Bay Water shall pay the Supplier of such items directly and the title for such items shall pass directly from the Supplier to Tampa Bay Water. Notwithstanding the foregoing, Contractor shall remain responsible for the ordering, scheduling, coordinating, insuring, delivery, unloading, storage, installation, operation, and warranties of all such direct purchase items, as if Contractor had purchased the items itself for incorporation into the Work. In that regard, Tampa Bay Water shall assign to Contractor all contract and warranty rights Tampa Bay Water may have against any such Supplier, so as to permit Contractor to assert warranty or other contract claims for defective or nonconforming materials or equipment directly against the Supplier. As Tampa Bay Water issues purchase orders to the Suppliers of such items, Tampa Bay Water and Contractor shall execute a Change Order which deducts from the Contract Price the amount being paid by Tampa Bay Water, plus the amount of sales tax that otherwise would have been paid on such items. As an inducement to Contractor to more fully cooperate and facilitate this sales tax savings program, Contractor shall receive as a bonus, at the time final payment is to be made hereunder, a sum equal to ten percent (10%) of the total amount of sales tax saved by Tampa Bay Water as a result of these direct purchases.

4.7 Codes, Ordinances, Permits, and Licenses

4.7.1. The Contractor shall keep itself fully informed of all applicable Laws and Regulations, which in any manner affect the Work. All permits, licenses, inspection fees, impact fees, and other costs necessary for performance of, compliance with, and/or completion of the Work shall be obtained and paid for by the Contractor, unless otherwise modified in the Supplementary Conditions.

4.7.2. If Tampa Bay Water has obtained and paid for any permits or licenses applicable to the Work, the Contractor shall meet all requirements of those permits and licenses. The Contractor shall bear all costs arising from the Contractor's responsibilities under this Article.

4.7.3 All Work is to be performed by Contractor in accordance with the most current applicable Laws and Regulations. Provided, however, in the event of any changes to any applicable Laws and Regulations that take effect after the date Contractor submitted its Bid to Tampa Bay Water, and under the circumstances it is not reasonable to assume that Contractor was or should have been aware of such changes, and Contractor provides Notice to Engineer of the changes and Engineer thereupon directs Contractor in writing to perform the Work in accordance with such changes, and such changes impact the time and/or cost of Contractor's performance of the Work, a Change Order or Change Authorization shall be issued with respect to such changes.

4.8 Superintendence

4.8.1. The Contractor shall keep at the Project site supervisory personnel who shall direct the Work in a competent manner, applying the skills, expertise and attention necessary to perform the Work in accordance with the Contract Documents. The Contractor shall designate, in writing before starting Work, a competent Project superintendent who shall be an employee of the Contractor and shall have complete authority to represent and to act for the Contractor. The Contractor shall notify Tampa Bay Water and Engineer in writing prior to any change in superintendent assignment. If Tampa Bay Water objects to the Contractor's superintendent, the Contractor shall submit a replacement superintendent at no increase in Contract Price nor extension in Contract Time. The Contractor shall be responsible for all construction means, methods, techniques, sequences, and procedures, and for providing adequate safety precautions and coordinating all portions of the Work.

4.8.2. If Tampa Bay Water or the Engineer object to any of the Contractor's personnel, by reason of being unfit, incompetent, unskilled, disorderly, intemperate, or otherwise hindering the Work, the Contractor shall promptly correct the problem and, if required by Tampa Bay Water or the Engineer, remove such personnel from the Work. Failure to comply with this provision shall constitute a material breach of the Contract and be grounds for withholding payment.

4.9 Reception of Engineer's Communications

4.9.1. The Contractor's Representative at the Project site shall have authority to act on behalf of and contractually bind the Contractor. All communications given to the Contractor's Representative shall be deemed given to the Contractor. Communications of major importance will be confirmed in writing upon request from the Contractor.

4.9.2. The Engineer may schedule Project meetings for the purposes of discussing and resolving matters concerning the various elements of the Work. The time and place for these meetings and the names of persons required to be present shall be determined by Tampa Bay Water and the Engineer. The Contractor shall comply with these attendance requirements and shall also require its Subcontractors and Suppliers to comply.

4.10 Safety

4.10.1. The Contractor shall be solely responsible for the condition of the Project site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal Working Hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable Laws and Regulations, as well as all applicable safety rules and regulations promulgated by Tampa Bay Water from time to time. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from compliance with the obligations and penalties set forth therein

4.10.2. The Contractor shall develop and maintain for the duration of this Project a safety program, and a written safety plan specific to the Project that will effectively incorporate and implement all safety provisions required by any Laws and Regulations. The Contractor shall appoint an employee assigned to the Work who shall be responsible to supervise and enforce compliance with the safety program.

4.10.3. The Contractor, as a part of its safety program, shall maintain at its office or other prominent place at the Project site, the written safety plan and safety equipment applicable to the Work as prescribed by the aforementioned authorities and all Articles necessary for giving first aid to the injured. The written safety plan shall establish the procedures for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the Project site.

4.10.4. The Contractor must give Tampa Bay Water and the Engineer prompt Notice of all accidents or injuries whatsoever arising out of, or in connection with, the performance of the Work, whether on or adjacent to the Project site, giving full details in writing, including statements of witnesses. The prompt Notice required hereunder shall be given within 24 hours with respect to any injuries, and within two (2) working days as to all other accidents.

4.10.5. If a claim is made by anyone against the Contractor or any Subcontractor for any reason including, but not limited to, any accident, the Contractor shall give Tampa Bay Water and the Engineer prompt Notice, giving full details of the claim.

4.11 Protection of Work and Property

4.11.1. The Contractor shall have full responsibility for locating all underground utilities in advance of excavation (whether they are indicated on the Contract Documents or indicated by visible markers); scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting the underground utilities; repairing any damage done to the satisfaction of Tampa Bay Water or the owners of those underground utilities; giving prompt Notice to Tampa Bay Water and the Engineer of any newly discovered underground utility; and the safety, protection and repairing of any damage done to any affected Work. All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price and in the Progress Schedule for performing the Work within the Contract Time; except that in the case of newly-discovered underground utilities, those costs and times shall, upon proper documentation, be considered pursuant to the General Conditions, Article 6.8. Differing Site Conditions, for adjustment of the Contract Price and/or the Contract Time.

4.11.2. The Contractor shall at all times safely guard and protect from damage Tampa Bay Water's property, property on which the Project is located if not owned by Tampa Bay Water, adjacent property, and its own Work from injury or loss. The Contractor shall provide all facilities required for protection of the Work according to all Laws and Regulations and local conditions.

4.11.3. The Contractor shall protect its Work and materials from damage due to the nature of the Work, the natural elements, carelessness of others, or from any cause, until Final Completion of the Work.

4.11.4. The Contractor shall notify owners of adjacent property (including underground utility owners) not less than 48 hours, or the time period required by Laws and Regulations, whichever period is longer, prior to the Work affecting the property, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by the Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at the Contractor's expense. The Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to the Project site.

4.12 Responsibility of Contractor to Act in Emergency

In case of an emergency which threatens loss or injury to persons or property, the Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and immediately provide Notice to Tampa Bay Water and the Engineer of its action. Any claim for compensation by the Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the Engineer and the amount of compensation if any, shall be determined by mutual Contract.

4.13 Materials and Appliances

4.13.1. Unless otherwise modified in the Supplementary Conditions, all materials to be incorporated into the Work shall be new. The Contractor shall furnish satisfactory evidence to the Engineer as to the kind and quality of materials.

4.13.2. In selecting and/or approving equipment and materials for installation in the Project, neither Tampa Bay Water nor the Engineer shall be responsible for injuries or claims resulting from failure of the equipment or material to comply with Laws and Regulations and applicable federal, state, and local safety codes or requirements, or other applicable safety requirements, or failure due to the Work being Defective.

4.14 Contractors' and Manufacturers' Compliance with State Safety Laws and Regulations, OSHA, and Other Code Requirements

The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar safety items required by the state and federal (OSHA) industrial authorities and other Laws and Regulations. Further, any features of the Work subject to such safety regulations shall be fabricated, furnished, and installed (including installation of Tampa Bay Water-furnished equipment) in compliance with these requirements. Subcontractors and Suppliers shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all Suppliers and Subcontractors of the provisions of this Article.

4.15 Submittals

4.15.1. After checking and verifying all field measurements and after complying with all applicable procedures, Contractor shall submit to the Engineer for its review all Submittals, which shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to Submittals. All Submittals shall be promptly submitted by Contractor so as to cause no delay to the completion of the Work. All Submittals shall be identified as Engineer may require. The data shown shall be complete with respect to quantities, dimensions, specified performance, and design criteria, materials, and similar data sufficient to enable Engineer to review the information.

4.15.2. All Submittals shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which it is intended. The Contractor shall review all Submittals prior to submission, for compliance with the Contract Documents and shall provide specific written certification of compliance.

4.15.3. Before each submission, the Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and for compliance with the Contract Documents. At the time of each submission, Contractor shall provide specific written Notice of each variation from the requirements of the Contract Documents, and in addition, shall cause a specific notation of each such variation to be made on each Submittal submitted for review and approval. In the absence of such notification, the approval of a Submittal shall not waive or alter the original requirements of the Contract Documents.

4.15.4. The Contractor shall make all corrections required by Engineer, and shall resubmit the required number of corrected copies of Submittals and new samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous Submittals.

4.15.5. Where a Submittal or sample is required by the Contract Documents, any related Work performed prior to the Engineer's review and approval of the pertinent Submittal shall be at the Contractor's sole expense and responsibility.

4.15.6. Submittals are to demonstrate how the Contractor intends to conform with the design of the Project and the information given in the Contract Documents.

4.15.7. All costs incurred by Tampa Bay Water and the Engineer for the review of a particular Submittal after the Engineer's second review shall be borne by the Contractor, and shall be reimbursed by the Contractor to Tampa Bay Water. Tampa Bay Water may withhold such costs from payments to the Contractor.

4.15.8. The Contractor shall not be entitled to any claim for additional time or compensation caused by the review of any resubmittals.

4.16 Substitution of Materials

4.16.1. Whenever materials, equipment, type of construction, or process are described in the Contract Documents by using a brand name, make, manufacturer, supplier, patent, catalog number, or technique, the naming or Specifications of the item is intended to denote the standard of quality and essential characteristics of the item or process required by Tampa Bay Water. Unless words indicating that no substitution is permitted are used, items from prospective suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor in its written application for the substitution to allow the Engineer to determine whether the material or equipment proposed (1) will perform at least equally well, function, and achieve the results called for by the design, (2) is at least of equal materials of construction, quality and necessary essential design features, (3) is suited to the same use as that named or specified, (4) conforms to the desired detailed requirements for that item including, but not limited to, durability, strength, appearance, dimensions, aesthetics (where aesthetics are essential), safety, service, comparable usefulness, reliability, economy of operation, and ease of maintenance, (5) evidences a proven record of performance, and (6) will not extend the Contract Time or increase the Contract Price. Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Tampa Bay Water's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work.

4.16.2. Each application for a substitution shall certify that the proposed substitute will meet each of the six criteria itemized in Paragraph 4.16.1., and that the evaluation and acceptance by the Engineer of the proposed substitute will not prejudice completion of the Work within the Contract Time. All variations of the substitute from the item named or specified shall be identified (operation, materials or construction finish, thickness or gauge of material dimensions, loads, tolerances, deleted/added features, etc.), and information regarding available maintenance, repair, and replacement service shall be indicated. The Contractor is solely responsible for verifying that substitutes are in accordance with the Contract Documents, and that dimensions, arrangement, design, and construction details, and all other features of substitutes are suited to the specified purpose.

4.16.3. A proposed substitute will be accepted as equivalent or "Or-Equal" to that named or specified if, in the Engineer's judgement, it meets the criteria in Paragraph 4.16.1. No substitute shall be utilized, ordered, or installed without the Engineer's prior written acceptance.

4.17 Tests, Samples, and Observations

4.17.1. The Contractor shall furnish, with no increase in Contract Price, the necessary test pieces and samples, including facilities and labor for obtaining the same, as required by the Contract Documents or requested by the Engineer. When required by the Contract Documents or requested by the Engineer, the Contractor shall furnish certificates of any designated tests of materials and equipment.

4.17.2. The Contractor shall establish a quality control system to ensure sufficient supervision, inspection and testing of all items of Work, including those of the Subcontractors and Suppliers, and to ensure conformance to the applicable Contract Documents with respect to products, workmanship, construction, maintenance, finish, functional performance, and identification. The Contractor's quality control system shall include checking, approval, and coordination of Submittals and the surveillance of all specified tests.

4.17.3. Tampa Bay Water, the Engineer, authorized government agents and their representatives shall at all times be provided safe access to the Work whenever it is in preparation or progress, and the Contractor shall provide facilities for such access and for observations, including maintenance of temporary and permanent access.

4.17.4. If the Contract Documents, Laws and Regulations or any public authority requires any Work to be specially tested or approved, the Contractor shall give timely Notice to the Engineer of its readiness for testing or approval.

4.17.5. If any testing, inspection, or approval reveals failure of any part of the Work to conform to the Contract Documents, the Contractor shall not recover any costs made necessary by that failure, and shall reimburse Tampa Bay Water for all direct, indirect, and consequential costs made necessary by that failure including those of repeated procedures, and compensation for the Engineer's services. Such reimbursement may be withheld from payment to the Contractor.

4.17.6. If a portion of the Work is covered contrary to the Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required by the Engineer, be uncovered for the Engineer's examination and be recovered at the Contractor's expense without change to the Contract Time or Contract Price. If any Work should be covered up without approval or consent of the Engineer, re-examination of questioned Work may be ordered by the Engineer, and if so ordered, the Work shall be uncovered by the Contractor. If it is found that such Work is Defective, Contractor shall bear all direct, indirect, and consequential costs of such uncovering, exposure, observation, inspection, correction of the Defective Work, and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and Tampa Bay Water shall be entitled to reimbursement or to deduct the costs from payment to the Contractor. If it is found that such Work is not Defective, Tampa Bay Water shall reimburse Contractor for the cost of uncovering, inspecting, and recovering such Work.

4.18 Royalties and Patents

The Contractor shall pay all royalty and patent fees unless otherwise specified. Pursuant to the indemnity provisions of the General Conditions, Article 4.4, Indemnity, the Contractor shall defend all suits or claims for infringement of any patent rights and shall save Tampa Bay Water and the Engineer harmless from any and all loss, including reasonable attorneys' fees and legal assistants' fees on account thereof.

4.19 Contractor's Right to Terminate Contract

If the Work is stopped under an order of any court or other public authority for a period of more than 3 months, through no act or fault of the Contractor, its Subcontractors, or their respective employees, or if Tampa Bay Water should fail to pay the Contractor within forty-five (45) Days after the time specified in the General Conditions, Article 7.1. Partial Payments, any sum recommended by the Engineer and approved by Tampa Bay Water, then the Contractor may, upon fifteen (15) Days written Notice to Tampa Bay Water and the Engineer, suspend Work. If Tampa Bay Water fails to correct the conditions, which under this Article justify the Contractor's suspension of the Work, the Contractor may, after fifteen (15) Days additional written Notice to Tampa Bay Water and the Engineer, terminate the Contract.

Upon termination, the Contractor's sole and exclusive remedy shall be the same as and limited to those rights set forth in Paragraph 6.6.6 hereafter. Contractor shall not be entitled to any additional rights or remedies against Tampa Bay Water, including loss profits and other damages, all such other remedies being expressly waived by Contractor.

4.20 Warranty and Guarantee; Correction of Defective Work During Correction Period

4.20.1. The Contractor warrants and guarantees to Tampa Bay Water that all Work will be in accordance with the Contract Documents and will not be Defective, including all Work performed or furnished by any Subcontractor or Supplier. This warranty and guarantee is in addition to and shall survive the Contractor's obligations under the Correction Period set forth in this Article.

4.20.2. The Contractor shall make, at its own expense, all repairs or replacements necessitated by Defective Work, and pay for any damage (whether to the Work itself or other property), including routine repairs resulting from such Defective Work, which becomes evident within the one (1) year after the date of Substantial Completion established by the Engineer for the entire Work or for specified items of Work, or within one (1) year after the date of Final Completion of the Work if Tampa Bay Water did not operate or use the entire facility between the Substantial Completion date and Final Completion, or within such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee required by the Contract Documents ("Correction Period"). After the Correction Period, Contractor shall remain liable to Tampa Bay Water, and its successors, for Defective Work and damage resulting from such Defective Work, but such liability shall not include an obligation to make routine repairs, unless otherwise agreed to in writing.

4.20.3. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all other materials and equipment used in the Project which have a cost of more than $1,000.00 shall require an express warranty from the manufacturer(s) and the Supplier(s) to Tampa Bay Water that the materials (1) are new, (2) have been manufactured and supplied in accordance with the requirements of the Contract Documents, and (3) are not Defective. Such express warranty shall be for a period of not less than the Correction Period.

4.20.4. Defective Work identified for correction during the Correction Period but remaining Defective after its expiration shall be considered as part of the obligations of the warranty or guarantee.

4.20.5. The Contractor agrees to defend, indemnify and hold Tampa Bay Water and the Engineer harmless from liability of any kind arising from damage due to Defective Work. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from Tampa Bay Water or the Engineer. If the Contractor fails to make the repairs and replacements promptly, or in an emergency, where delay would cause serious risk, loss, or damage, Tampa Bay Water may have the Defective Work corrected or the rejected Work removed and replaced, and the Contractor and its Surety shall be liable for the cost thereof.

4.20.6. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all materials shall permit the Contractor to assign to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S). Contractor hereby assigns to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S) of all materials used in the Work.

4.20.7. The specified warranties and guarantees and the Contractor's obligations for correction of Work specified in this Article are in addition to and not in limitation of any other specific remedies provided in the Contract Documents or by Laws and Regulations.

4.20.8. Tests, inspections or approvals shall not in any way relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents, or to warrant and guarantee the Work as provided in the Contract Documents.

4.20.9. These provisions shall not be construed to prohibit Tampa Bay Water from seeking damages or any remedy at law or equity against Contractor for breach of the Contract, Defective Work or the warranties provided herein.

4.21 Allowances

Contractor shall not proceed with any Allowance item unless and until it has received express written authorization from Tampa Bay Water. The Contract Price shall be adjusted by Change Order or Change Authorization based upon the actual cost of the Allowance items authorized in writing by Tampa Bay Water.

4.22 Contractor's Representations:

4.22.1. Contractor has examined and carefully studied the Contract and Contract Documents.

4.22.2. Contractor has visited the Work Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

4.22.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.22.4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions (if any) at or contiguous to the Work site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Work site which have been identified or made available by Tampa Bay Water; and (2) reports and drawings of Hazardous Environmental Conditions (if any) at the Work site which have been identified or made available by Tampa Bay Water.

4.22.5. Contractor is aware of the general nature of Work to be performed by Tampa Bay Water and others at the Work site that relates to the Work to the extent indicated in the Contract Documents.

4.22.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

4.22.7. Contractor has given Tampa Bay Water written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Tampa Bay Water is acceptable to Contractor.

4.22.8. The Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

4.22.9. Contractor's execution of this Contract is not based upon their reliance upon any representation, understanding or Contract not expressly set forth herein. Tampa Bay Water has not made any representation to Contractor except as expressly set forth herein.

4.22.10. Contractor is organized and exists under the laws of the State of Georgia and is in good standing in the State of Georgia and is authorized to do business in the State of Florida.

4.22.11. Contractor has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein and therein, all of which have been duly authorized by all proper and necessary action of the governing body of the Contractor.

Contractor is in compliance with all laws and regulatory requirements to which they are subject.

4.22.12 Contractor executes this Contract as a free and voluntary act, without any duress, coercion, or undue influence exerted by or on behalf of Tampa Bay Water or any other party.

4.22.13 This Contract is a valid, binding and enforceable obligation of Contractor, and does not violate any law, rule, regulation, contract or Contract otherwise enforceable by or against Contractor, except as the same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

5. Tampa Bay Water/Owner

5.1 General Provision

5.1.1. Written communications from Tampa Bay Water to the Contractor shall in general be issued through the Engineer, but if issued directly by Tampa Bay Water, a copy shall be provided to the Engineer.

5.1.2. Tampa Bay Water may issue without negotiation, and at its discretion, Change Authorizations, as provided in the Contract Documents. Only Tampa Bay Water is empowered under the Contract Documents to order changes in the Work that affect Contract Time or Contract Price or quality.

5.1.3. If the Work is Defective, or the Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in a way that the completed Work will conform to the Contract Documents, Tampa Bay Water may order the Contractor to stop the Work, or any portion of the Work in question, until the cause for the stop order has been eliminated; however, this right of Tampa Bay Water to stop the Work shall not give rise to any duty on the part of Tampa Bay Water to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not be allowed to recover any costs resulting from an order to stop the Work, and the Contractor shall reimburse Tampa Bay Water for all direct, indirect, or consequential costs attributable to an order to stop the Work; those costs to be documented as to reasonableness, and Tampa Bay Water shall be entitled to an appropriate decrease in Contract Price, or to withhold such decrease against any amounts recommended for payment. The Contractor shall remain responsible for maintaining and performing in accordance with the Progress Schedule and shall not be entitled to any extension in Contract Time or any increase in Contract Price.

5.1.4. Neither Tampa Bay Water, the Engineer, nor Tampa Bay Water's consultants will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions, and programs related to safety, and neither Tampa Bay Water nor Engineer or any of their consultants shall be responsible for the Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

6. Progress of the Work

6.1 Beginning of the Work

6.1.1. Prior to starting the Work, the Contractor shall prepare and submit to the Engineer, a Progress Schedule and a schedule for Submittals in a format acceptable to Tampa Bay Water and the Engineer and as specified in the General Requirements showing the dates on which each part or division of the Work is expected to be started and completed, and a schedule for Submittals.

6.1.2. No sooner than ten (10) Days before the Notice to Proceed is issued, a pre-construction conference shall be held to review the steps undertaken by the Contractor to comply with the schedule requirements; review the qualifications of the Contractor's on-site personnel; review

the Contractor's plans for lay-down and staging areas, construction traffic, and access to the Project site, parking, communications, procedures, and other similar matters.

6.2 Schedules and Progress Reports

6.2.1. The Progress Schedule or schedule recovery actions, once reviewed and accepted by Tampa Bay Water and Engineer, shall be utilized to report progress or schedule recovery actions, and to evaluate the Contractor's Payment Applications. The Contractor shall be required to keep Tampa Bay Water informed of the progress of the Work by delivering updated Progress Schedules prior to the seventh (7th) day of each month for Tampa Bay Water and Engineer' review and acceptance. Contractor's Submittal of acceptable monthly updates to the Progress Schedules is a condition precedent to Tampa Bay Water's obligation to make payments to Contractor hereunder. Notwithstanding anything in the Contract Documents to the contrary, it is expressly acknowledged and agreed that no review or acceptance of any Progress Schedule by Tampa Bay Water or Engineer shall be construed as an admission or acknowledgement by Tampa Bay Water or Engineer that any such Progress Schedule was either reasonable or achievable.

6.2.2. Prior to the seventh (7th) day of each month, the Contractor shall submit to the Engineer, an itemized Progress Report of the delivery status of purchased equipment and material, Shop Drawings and the status of shop and field fabricated Work. These Progress Reports shall indicate, but shall not be limited to, the dates of the purchase orders, the estimated delivery dates of any material and/or equipment, and cause(s) of delays, if any.

6.2.3. In addition to retainage, Tampa Bay Water shall have the right to withhold all or any portion of Progress Payments for the Work if the Contractor fails to update and submit the Progress Schedule(S) and Progress Reports as specified.

6.2.4. Neither Tampa Bay Water's nor the Engineer's review of the Contractor's Progress Schedule, or Tampa Bay Water's decision to raise or not to raise any objections about the Contractor's Progress Schedule, shall impose on Tampa Bay Water or the Engineer any responsibility for the timing, planning, scheduling, or execution of the Work, nor relieve Contractor of its obligation to complete the Work in a timely manner.

6.3 Prosecution of the Work

6.3.1. Tampa Bay Water and the Contractor agree that time is the essence with respect to Contractor's performance under the Contract Documents. The Contractor shall perform the Work at such time, and in or on such part(s) of the Project site as may be required to complete the Work as required by the Contract Documents.

6.3.2. If the Contractor desires to carry on Work at night or otherwise outside of the Working Hours, it shall give timely Notice to Tampa Bay Water and Engineer to allow satisfactory arrangements to be made for observing the Work in progress. The Contractor shall reimburse Tampa Bay Water for all of Tampa Bay Water's expenses associated with the Work performed outside of normal Working Hours.

6.3.3. The Contractor shall carry on the Work and adhere to the most recent approved Progress Schedule during all disputes or disagreements with Tampa Bay Water. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. Upon receipt of a written order from the Engineer or Tampa Bay Water, the Contractor will immediately proceed with the Work regardless of whether a Change Order or Change Authorization has or has not been issued.

6.4 Tampa Bay Water's Right to Retain Imperfect Work

If any part or portion of the Work completed under the Contract Documents shall prove Defective, Tampa Bay Water shall have the right in its sole discretion, to retain such Work and may make such deductions in the payment due the Contractor as may be just and reasonable.

6.5 Tampa Bay Water's Right to do Work

Should the Contractor neglect to prosecute the Work in conformance with the Contract Documents or neglect or refuse at its own cost to remove and replace Work as shall have been rejected by the Engineer, then Tampa Bay Water may notify the Contractor and its Surety of the condition, and after seven (7) Days written Notice to the Contractor and its Surety, or without Notice if an emergency or danger to the Work or public exists, and without prejudice to any other right which Tampa Bay Water may have under the Contract Documents, take over that portion of the Work which has been improperly executed, and correct the deficiencies and deduct the cost thereof from the payments then or thereafter due the Contractor.

6.6 Tampa Bay Water's Right to Terminate

6.6.1. At any time, Tampa Bay Water may request the Contractor to provide adequate assurances of its ability to complete the Work in the manner and times designated in the Contract Documents. The types of adequate assurances shall be designated by Tampa Bay Water and shall consist of reasonable means for the Contractor to prove its ability to perform.

A. Termination for Cause

6.6.2. Tampa Bay Water, shall have full power and authority to terminate the services of the Contractor seven (7) Days after providing Notice to the Contractor and its Surety, or sooner if safety to persons or property is in question, because:

a. the Contractor refuses or fails to prosecute the Work, or separable part of the Work, with the diligence that will cause its completion within the corresponding Contract Time, including any authorized adjustments; supply sufficient skilled workers, materials or equipment in adherence with the Progress Schedule; or comply with the Progress Schedule requirements; or

b. the Contractor fails to complete the Work, or any separable part, within the corresponding Contract Time, including any authorized adjustments; or

c. the Contractor refuses or fails to make prompt payment to Subcontractors, disregards Laws and Regulations; refuses or fails to perform the Work in conformance with the Contract Documents; or violates any provision of the Contract Documents; or

d. the Contractor fails to provide Tampa Bay Water with adequate assurances in accordance with this Article, that the Contractor can complete the Work in accordance with the Contract Documents.

6.6.3. If, after the furnishing of said Notice, the Contractor and the Surety fail to cure or correct the default, Tampa Bay Water may terminate Contractor's right to perform the Work and take possession of the Project site and of all materials, tools, and appliances thereon, and require Contractor to assign to Tampa Bay Water any or all of Contractor's subcontracts with Subcontractors or Suppliers, as directed by Tampa Bay Water, and finish the Work by whatever method it may deem expedient and charge the cost thereof to the Contractor and Surety. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finally completed. If the expense of completing the Work exceeds such unpaid balance of the Contract Price, the Contractor and its Surety shall pay the difference to Tampa Bay Water.

6.6.4. Where the Contractor's rights to perform the Work have been so terminated by Tampa Bay Water, the termination shall not affect any rights or remedies of Tampa Bay Water against the Contractor then existing or which may accrue after termination. Any retention or payment of monies due the Contractor by Tampa Bay Water shall not release the Contractor from its contractual liability or any other liability.

B. Termination for Convenience

6.6.5. Upon seven (7) Days written Notice to the Contractor and its Surety, Tampa Bay Water may, without cause and without prejudice to any other right or remedy, elect to terminate the Contractor's services under the Contract Documents in whole or in part. Upon receipt of such Notice, the Contractor shall immediately proceed in accordance with any specific provisions or instructions, to protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination.

6.6.6. In any such termination for the convenience of Tampa Bay Water, the Contractor, as its sole and exclusive remedy, shall be entitled to payment for that portion of the Contract Price attributable to the Work completed, prior to receipt of the Notice of termination, in accordance with the Contract Documents, together with Contractor's reasonable and direct out-of-pocket termination expenses; provided, however, Contractor shall not be entitled to any further or additional recovery against Tampa Bay Water including, but not limited to, any lost profit on Work not performed or any other damages however categorized.

6.6.7. If, after Notice of termination for cause as provided in Paragraph 6.6.A above, it is determined the Contractor was not in default or that Tampa Bay Water was not entitled to the remedies set forth therein, the termination shall be deemed to have been for the convenience of Tampa Bay Water and Contractor's rights and remedies shall be the same as and limited to those set forth in Paragraph 6.6.6 above.

6.6.8. No waiver, express or implied, of any covenant, provision, right or remedy herein shall at any time thereafter be held to be a waiver of the terms and conditions of this Article.

6.7 Delays and Extensions of Time

6.7.1. If the Contractor is delayed in the progress of the Work by any act or neglect of Tampa Bay Water or the Engineer, or by any other contractor retained by Tampa Bay Water, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature, or any other cause beyond the fault and neglect of the Contractor, within 48 hours of the start of the occurrence, the Contractor shall provide Notice to Tampa Bay Water. Within seven (7) Days after the event which caused the delay has ended, the Contractor must provide full documentation of the impact of the delay. The Contract Time may be extended by Change Order or Change Authorization for such reasonable time as the Engineer and Tampa Bay Water determine. No extension of time will be granted to the Contractor for delays occurring to parts of the Work that have no measurable impact on the completion of the total Work. No extension of Contract Time will be considered for weather conditions reasonably anticipated for the area in which the Work is being performed. Reasonably anticipated weather conditions will be based on official records of monthly precipitation and other historical data. Adverse weather conditions, if determined by the Engineer to be of a severity that would impact progress of the Work, may be considered as cause for an extension of Contract Time. No request by the Contractor for an equitable adjustment to the Contract Time under this Article will be allowed, unless the Contractor has given the Notice and documentation within the times required.

6.7.2. Delays in delivery of equipment or material purchased by the Contractor or its Subcontractors or Suppliers shall not be considered as a cause for delay. The Contractor shall be fully

responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

6.7.3. Within 21 days (unless a longer period of time is reasonably required) after the Contractor submits to Tampa Bay Water and the Engineer a written request for an extension of time, the Engineer will present its written opinion to Tampa Bay Water as to whether an extension of time is justified and, if so, its recommendation as to the number of Days for time extension. Tampa Bay Water shall make the final decision on all requests for extensions to Contract Time.

6.7.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

6.7.5. Notwithstanding anything in the Contract Documents to the contrary, no interruption, interference, inefficiency, suspension or delay in the commencement or the progress of the Work for any cause whatever, including those for which Tampa Bay Water or Engineer may be responsible, in whole or in part, shall relieve Contractor of its duty to perform or give rise to any right to damages or additional compensation from Tampa Bay Water. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Tampa Bay Water will be the right to seek an extension to the Contract Time, in accordance with the procedures set forth in this Article 6.7; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage for Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion. Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Tampa Bay Water or Engineer, and such delays have a cumulative total of more than 30 calendar days, Contractor may make a claim, in accordance with the procedures set forth in Article 7.3, for its actual and direct delay damages accruing after said 30 calendar days.

6.8 Differing Site Conditions

6.8.1. The Contractor shall promptly, and before the conditions are disturbed, provide Notice to Tampa Bay Water and the Engineer of:

a. any subsurface or latent physical conditions at the Project site which differ materially from those (i) observed by Contractor prior to the Submittal of its Bid or (ii) indicated in the Contract Documents or the Existing Condition Documents referenced in the Information to Bidders,

or

b. any unknown physical conditions at the Project site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

6.8.2. The Engineer shall investigate the reported conditions promptly after receiving the Notice from the Contractor. If the conditions do materially differ and cause an increase or decrease in the Contractor's cost or time for performance of the work, an equitable adjustment shall be made in accordance with the procedures set forth in Articles 6.7 and 7.3 herein. Notwithstanding the provisions of this paragraph, if the reported condition in question would have been revealed by a thorough on-site inspection, Tampa Bay Water in its sole discretion shall have the right to deny any such claim for an adjustment in the Contract Price or Contract Time.

6.8.3. No request by the Contractor for an equitable adjustment to the Contract Price or Contract Time for differing site conditions will be allowed if made after the time periods set forth in Articles 6.7 or 7.3, or Final Completion, whichever first occurs.

6.9 Liquidated Damages

Should the Contractor fail to achieve Substantial Completion of the Work within the Contract Time, as that time may be adjusted pursuant to the terms of the Contract Documents, the Contractor shall pay to Tampa Bay Water the liquidated damages as set forth in the Contract. Tampa Bay Water shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Contractor. If an insufficient amount of the Contract Price remains, the amount of liquidated damages shall be due and collectible from the Contractor and its Surety, jointly and severally.

6.10 Other Contracts

6.10.1. Tampa Bay Water reserves the right to let other contracts in connection with the Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their equipment and materials for the execution of their work and shall properly interface and coordinate its Work with theirs.

6.10.2. If the execution of any part of the Work depends on the performance of any other contractor, utility service company or Tampa Bay Water, the Contractor shall promptly provide Notice to the Engineer of any defects or deficiencies that render it incompatible with the intended results of these Contract Documents. The Contractor's failure to provide the required Notice shall constitute an acceptance of the work by others as being fit and proper for integration with the Work.

6.11 Use of Premises

6.11.1. The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to the areas shown on the Contract Documents or indicated by Laws and Regulations, permits, easements, licenses or directions of Tampa Bay Water or the Engineer. The Contractor shall provide, at its own expense, any rights-of-way or access to the Work which it may require outside the limits of Tampa Bay Water's property interests or easements and shall furnish Tampa Bay Water and the Engineer copies of permits and Contracts for use of property outside that provided by Tampa Bay Water prior to entering said properties.

6.11.2. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.11.3. The Contractor shall take all precautions to minimize inconvenience to residents living adjacent to the Project site by maintaining access to driveways and providing dust control for the Project site and noise control devices for dewatering equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work.

6.12 Substantial and Final Completion Dates

6.12.1. When the Contractor considers that the entire Work or designated portion thereof has progressed to the point where it is sufficiently complete in accordance with the Contract Documents, and it has been proven to be ready for its intended use, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work or designated portion thereof, Substantially Complete (except for listed items to be completed or corrected prior to Final Completion). The Contractor shall prepare an initial list of items of Work to be corrected or completed for Final Completion and attach that list to the above

referenced Notice. Within a reasonable time after that, Tampa Bay Water, the Contractor, and the Engineer shall make an inspection to determine the status of completion.

6.12.2. If Tampa Bay Water and Engineer agree that Substantial Completion of the Work has been achieved, the Engineer shall issue a Certificate of Substantial Completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that Tampa Bay Water shall assume the cost of operating such equipment. Said Certificate shall not be considered as Final Completion of any portion of the Work or relieve the Contractor from completing the remaining Work within the specified time and in compliance with the Contract Documents. The Engineer shall review and supplement the Contractor's initial list of items of Work to be corrected or completed for Final Completion and such revised and supplemental list shall be attached to the Certificate of Substantial Completion. Provided, however, the failure to include any incomplete or Defective Work on said list shall not relieve or excuse the Contractor from completing all of the Work in accordance with the requirements of the Contract Documents.

6.12.3. When the Contractor considers the entire Work has progressed to the point where it is complete in accordance with the Contract Documents, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work to have reached Final Completion.

6.13 Performance Testing

Operating equipment and systems shall be performance tested in accordance with the General Requirements and in the presence of the Engineer to demonstrate compliance with the Contract Documents. The Contractor shall schedule such testing with the Engineer at least one (1) week in advance of the planned date for testing.

6.14 Tampa Bay Water's Use of Portions of the Work

Following issuance of the Notice of Substantial Completion, Tampa Bay Water may occupy and operate the Work. Such occupancy and operation shall not be considered as Final Completion of any portion of the Work, nor shall such occupancy or use be considered as cause for an extension of the Contract Time.

6.15 Cutting, Patching, or Fitting

The Contractor shall do all cutting, patching, or fitting of its Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown in or reasonably implied by the Contract Documents.

6.16 Cleaning Up

The Contractor shall, at all times, keep property on which Work is in progress and the adjacent property free from accumulations of waste material or rubbish caused by employees or by the Work. Upon completion of the construction, the Contractor shall remove all temporary structures, rubbish caused by employees, Suppliers, Subcontractors, or the Work, and waste materials resulting from its operations.

6.17 Intoxicants

The Contractor and persons under its employ shall not bring onto, possess, sell, or use alcohol, narcotics, drugs (other than prescription drugs, provided the person in possession of the drug has a valid prescription in his or her name, or over-the-counter drugs which may be purchased legally by the person), or controlled substances while on the Project site, including parking lots, at any time, including all breaks and lunch periods. The Contractor and persons under its employ shall not report to, or commence, or continue to work while under the influence of alcohol or any drugs, regardless of whether those drugs were legally or illegally taken. The Contractor and persons under its employ shall not undertake any activities at the Project site

which create a nuisance or improperly disturbs or interferes with Tampa Bay Water's operations at the Project site or the use and enjoyment of any adjacent properties by their respective owners. Gambling on the Project site is prohibited.

7. Payment

7.1 Partial Payments

A. General

7.1.1. Within ten (10) days after commencing the Work, but in any event prior to the Submittal of its first Payment Application, Contractor shall submit to Engineer, for Engineer's and Tampa Bay Water's review and approval, a proposed schedule of values which distributes the Contract Price among the various items and categories of Work to be performed. Said schedule of values shall be in such form and contain such detail as may be required by Engineer and Tampa Bay Water. The final approved schedule of values shall serve as the basis for partial payments and shall be incorporated into the Payment Application form provided by Tampa Bay Water. Nothing contained in this Article shall be construed to affect the right of Tampa Bay Water or Engineer to reject, the whole or any part of the Work, should such Work be found to be Defective. All estimated quantities of Work for which partial payments have been made are subject to review and correction on the final Payment Application. Payment by Tampa Bay Water and acceptance by the Contractor of partial payments based on Unit Price Work, shall not in any way constitute acceptance of the estimated Unit Price Work by Tampa Bay Water.

7.1.2. The Contractor shall provide Tampa Bay Water with copies of its written daily reports at weekly intervals. Refusal of the Contractor to provide its daily reports shall be cause for Tampa Bay Water to withhold payments until the Contractor's daily reports have been provided.

B. Estimate

7.1.3. The Contractor shall not submit more than one Payment Application per month with respect to the Work. Within twenty-five (25) Business Days following submission of a complete and accurate Payment Application to the Engineer, approved by the Engineer, and acceptable to Tampa Bay Water, Tampa Bay Water shall make partial payments to the Contractor on the basis of Work performed during the preceding calendar month by the Contractor. The final working day of each month shall be used as the day for measurement of Work performed.

7.1.4. The Engineer shall, within twenty-five (25) Business Days after receipt of each Payment Application for payment, provide Notice to Tampa Bay Water recommending payment to the Contractor, or return the request to the Contractor providing Notice of the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the request. Payment shall be made by Tampa Bay Water within ten (10) Business Days after a corrected payment request is received.

7.1.5. The Engineer may refuse to recommend and Tampa Bay Water may refuse to pay the whole or any part of any payment, if in the Engineer's or Tampa Bay Water's opinion, the Contractor is not entitled to any such payment. The Engineer may also refuse to recommend and Tampa Bay Water may refuse to pay any payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests of any Work, retract any previous recommendation or payment to such extent necessary in the Engineer's or Tampa Bay Water's opinion to protect Tampa Bay Water from loss for reasons not limited to:

a. The Work is Defective, or completed Work has been damaged requiring correction or replacement;

b. The Contract Price has been reduced because of Change Order;

c. Tampa Bay Water has been required to correct Defective Work or complete all or portions of the Work;

d. The Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents;

e. Written claims have been made against Tampa Bay Water or liens have been filed in connection with the Work;

f. The Contractor's failure to make payment to Subcontractors OR Suppliers for labor, materials, or equipment;

g. Amounts owed by Contractor to Tampa Bay Water as Liquidated Damages; or

h. Any other amounts which may be owed to Tampa Bay Water by Contractor pursuant to the terms of the Contract Documents.

C. Deduction from Estimate

7.1.6. Unless modified in the Supplementary Conditions, Tampa Bay Water shall withhold from each partial payment, five percent (5%) of the amount earned for Work completed. A deduction and retainage of five percent (5%) shall be made on the estimated amount earned for approved items of material delivered to and properly stored at the Project site but not incorporated into the Work. The retainage is to be withheld by Tampa Bay Water until all Work has been performed in accordance with the Contract Documents and until such Work has been accepted by Tampa Bay Water.

7.1.7. Tampa Bay Water may deduct from each Payment Application an amount equal to Tampa Bay Water's estimate of the amount of Liquidated Damages then due, or which may become due.

D. Reimbursement

7.1.8. For Tampa Bay Water's expenses as defined in the General Conditions, Article 4.15. Submittals, and for testing that is performed by Tampa Bay Water or the Engineer which indicates Work is Defective, or for any other cost for which Tampa Bay Water is entitled to reimbursement from Contractor under the Contract Documents, at Tampa Bay Water's election, such reimbursement shall be deducted from the Contractor's monthly partial payments or shall be paid by Contractor within 30 days after Tampa Bay Water makes demand for same upon Contractor.

E. Qualification for Partial Payment for Materials Delivered

7.1.9. Partial payments for materials delivered but not yet incorporated into the Work shall be as described below:

a. Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200.00 for any one item.

b. To receive partial payment for materials delivered to the Project site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials with the Payment Application, the utilization of Tampa Bay Water provided forms is required. At its sole discretion, Tampa Bay Water, with the Engineer's advice, may approve items for which partial payment is to be made. Partial payments shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the Supplier. Proper storage and protection shall be provided by the Contractor, As Approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and upon acceptance of the Work, all materials remaining for which partial payments had been made

shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

c. Contractor warrants and guarantees that title to all items of Work requested in any Payment Application, whether incorporated in the Project or not, shall pass to Tampa Bay Water at the time of payment for such items, free and clear of all liens, claims, security interests, and encumbrances.

d. If requested by the Engineer, the Contractor shall provide, with subsequent Payment Applications, invoices receipted by the Subcontractor or Supplier showing payment in full has been made.

F. Payment

7.1.10. The amount of partial payment due the Contractor shall be equal to the current value of the Contract Price earned, less, any retainage, less any amounts previously paid, and any deductions for reimbursement as required by the Contract Documents.

7.2 Payment for Change Orders

7.2.1. Tampa Bay Water, without Notice to the Sureties, shall have the right to order changes to the Work. If the parties agree upon the terms for the change, including any appropriate adjustments to the Contract Price or Contract Time, a Change Order shall be issued. If the parties cannot agree upon the terms for the change, a Change Authorization may be issued by Tampa Bay Water. The terms of the Change Authorization shall be final and binding upon Contractor, unless Contractor makes a claim, within twenty-one (21) days of its receipt of the Change Authorization, challenging those terms it takes objection to, giving full details and supporting documentation for its specific objections. Any terms not specifically objected to within that twenty-one (21) day period shall be deemed final and accepted by Contractor. Regardless of whether or not Contractor files a timely claim with respect to any of the terms of the Change Authorization, Contractor shall proceed with the change to the Work, as set forth in the Change Authorization, as directed by Tampa Bay Water or Engineer.

7.2.2. At Tampa Bay Water's option, payment or credit for any changes covered by a Change Order or a Change Authorization, whether additive or deductive, shall be determined by one or a combination of the methods set forth in A, B, or C, below, as applicable:

A. Unit Prices

Those Unit Prices stipulated in the Contract shall be utilized where they are applicable. In the event the Change Order or Change Authorization results in a change in excess of twenty-five percent (25%) of the original Contract quantity, and the total dollar change in value of that item exceeds twenty-five percent (25%), Tampa Bay Water will review the Unit Price to determine if a new Unit Price shall be negotiated. Unit Prices for new unit items not listed in the Contract shall be negotiated and mutually agreed upon.

B. Lump Sum

A total lump sum amount for the Work negotiated and mutually acceptable to the Contractor and Tampa Bay Water. Lump Sum Price quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor and Subcontractor costs, including labor, material, rentals, approved services, overhead, and profit, all calculated as specified under "C" below.

C. Cost Reimbursement Work

The term "cost reimbursement work" shall be for changes to be compensated for on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of direct cost as required for the change.

Tampa Bay Water, at its sole discretion, may direct the change to be accomplished on a cost reimbursement work basis, in which event the change will be priced based upon the labor, materials, equipment and other costs hereafter noted associated with such change. The cost items for cost reimbursement work shall be limited to the following items:

1. Labor, including superintendent and foremen, for those hours associated with the cost reimbursement work (actual payroll cost, including wages, fringe benefits as established by negotiated labor agreements, contracts, labor insurance and labor taxes as established by law). Expressly excluded from this item are all labor costs associated with negotiating the subject change. No other fixed labor burdens will be considered, unless approved in writing by Tampa Bay Water.
2. Material associated with the change, including sales tax, if paid for by the Contractor or its Subcontractor.
3. Rental, or equivalent rental cost of equipment, including necessary transportation for items having a rental value in excess of $100.00.
   Rental or equivalent rental cost shall be allowed for only those Days or hours during which the equipment is (or would have been for deductive changes) in actual use. Rental and transportation allowances shall not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment shall, in all cases, be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances shall be made for those items, unless specific Contract to that effect is made.
4. Additional bond as required and approved by Tampa Bay Water.
5. Additional insurance (other than labor insurance) as required and approved by Tampa Bay Water.
6. To the costs noted above, for net additive changes, there shall be added the following fixed fees for the Contractor or Subcontractor actually performing the change:

A. A fixed fee of twenty-five percent (25%) of the cost of item 1 above. For costs incurred for Work performed by Subcontractors, the Contractor's fee shall not exceed ten percent (10%) and the Subcontractor's fee shall be the same as for the Contractor; and

B. A fixed fee of ten percent (10%) added to the cost of items 2 and 3.

7.2.3. The fixed fees noted above in the previous paragraph shall be considered to be the full compensation for all cost of general supervision, overhead, profit, and any other general expense.

7.2.4. The Contractor's records shall make clear distinction between the direct costs of Work paid for on a cost reimbursement work basis and the costs of other Work. The Contractor shall furnish the Engineer report sheets in duplicate of each day's cost reimbursement work no later than the working day following the performance of said Work. The report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The report sheets shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated.

7.2.5. Material charges shall be substantiated by valid copies of vendors' invoices. Such invoices shall be submitted with the daily reports or, if not available, they shall be submitted with subsequent daily report. Said daily report shall be signed by the Contractor or Contractor's Representative.

7.2.6. Tampa Bay Water reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor shall have no claim for profit or added fees on the cost of such materials and equipment.

7.2.7. To receive partial payments and final payment for cost reimbursement work, the Contractor shall submit to the Engineer, in a manner approved by the Engineer and Tampa Bay Water, detailed and complete documented verification of the Contractor's and any of its Subcontractors' actual costs involved in the cost reimbursement work. Such costs shall be submitted within seven (7) Days after said Work has been performed.

7.2.8. Except for Change Authorizations and Change Order, no other written or oral order from Tampa Bay Water or the Engineer shall be treated as a change in the Work or entitle the Contractor to an adjustment to the Contract Price or Contract Time.

7.2.9. The Engineer, by issuing a Construction Directive, may order minor changes in the Work not involving extra cost, or additional times and not inconsistent with the purpose of the Project, but otherwise, except in an emergency endangering life or property, additions or deductions from the Work shall be performed only in pursuance of an approved Change Authorization or Change Order.

7.2.10. Any compensation paid in conjunction with the terms of a Change Order shall comprise the total compensation due the Contractor for the change defined in the Change Order. By signing the Change Order, the Contractor acknowledges that the stipulated compensation adjustment includes payment for alteration of the Work, payment for the interruption of schedules, extended overhead, delay, or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional adjustment to compensation or time in respect to the subject Change Order.

7.2.11. Tampa Bay Water hereby delegates authority to its General Manager (and his/her designee) to approve any and all Change Order and Change Authorizations in its name, so long as each such Change Order or Change Authorization does not exceed $246,000.00, and further as long as the cumulative total of all Change Order or Change Authorizations does not exceed $246,000.00, unless otherwise approved by the Tampa Bay Water's Board. Each Change Order or Change Authorization over $246,000.00 or which cumulatively exceeds $246,000.00 must be expressly approved by Tampa Bay Water's Board before it shall be binding upon Tampa Bay Water.

7.3 Claims for Additional Compensation

7.3.1. In any case where the Contractor may seek additional compensation, except for an emergency threatening imminent property damage or personal injury, the Contractor shall provide Notice to Tampa Bay Water and the Engineer of its intent to make a claim for such compensation before it begins the Work on which it bases the claim, in order that such matter may be settled or other appropriate action promptly taken. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping an accurate account of actual costs, the Contractor shall be deemed to have waived its claim for additional compensation.

7.3.2. The Contractor's written Notice, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

7.3.3. Claims for additional compensation shall be made in itemized detail and submitted in writing to Tampa Bay Water and Engineer within seven (7) Days following completion of that portion of the Work for which the Contractor bases its claim. If the claim is found to be acceptable by Tampa Bay Water and the Engineer, the Contractor shall be paid as provided in the General Conditions, Article 7.2. Payment for Change Orders. No request by the Contractor for an equitable adjustment to the Contract Price under this Article shall be allowed, unless the Contractor has given Notice within the times required.

7.3.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's final determination shall be final

and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

7.4 Release of Liens or Claims

The Contractor shall indemnify and hold harmless Tampa Bay Water and the Engineer from all claims for labor and materials furnished under the Contract Documents. Prior to the final payment, the Contractor shall furnish to Tampa Bay Water, as part of its final Payment Application, a certification that all of the Contractor's obligations on the Project have been satisfied and that all monetary claims and indebtedness have been paid. The Contractor shall furnish releases or waivers, satisfactory to Tampa Bay Water, from all Subcontractors and Suppliers and of all liens and notices arising out of or filed in connection with the Work. Tampa Bay Water may reduce the amount of retainage withheld upon receipt of an affidavit from Contractor identifying any amounts in dispute with Subcontractor or Suppliers, and provided the amount of retainage withheld continues to exceed the amount in dispute.

7.5 Final Payment

7.5.1. Upon completion of all of the Work, the Contractor shall provide Notice to the Engineer that it has completed its Work and shall request final payment. Upon receipt of such Notice, the Engineer, together with Tampa Bay Water, will inspect and, if acceptable, the Engineer will submit to Tampa Bay Water its recommendation as to acceptance of the Work and as to the final Payment Application of the Contractor. Within sixty (60) Days after the Contractor has submitted its final Payment Application, together with the Sureties' consent to final payment, and upon approval of this Payment Application request by Tampa Bay Water and compliance by the Contractor with provisions in the General Conditions, Article 7.4. Release of Liens or Claims, and all other provisions of the Contract Documents as may be applicable, Tampa Bay Water shall pay to the Contractor all monies due it under the provisions of these Contract Documents. Final payment is further subject to Tampa Bay Water's receipt from Contractor of all as-built DRAWINGs, certifications, maintenance manuals, operating instructions, written guarantees and warranties, and bonds relating to the Work, and assignment of all guarantees and warranties from Subcontractors, vendors, Suppliers or manufacturers, all as required by the Contract Documents.

7.5.2. Contractor and Tampa Bay Water agree that project closeout and release of retainage shall be in accordance with Chapters 218 and 255, Florida Statutes, as amended by Chapter 2023-134, Laws of Florida. Specifically, Contractor shall cooperate with Tampa Bay Water to prepare a punch-list with estimated costs of items to complete the Work. Within 20 business days of completion of said punch-list, Tampa Bay Water shall pay Contractor the remaining contract balance, including retainage previously withheld, less an amount equal to 150% of the estimated cost to complete the items on the punch-list, and also less any amounts that are subject to a good faith dispute made in writing to the Contractor by Tampa Bay Water.

7.6 No Waiver of Rights

Neither the inspection by Tampa Bay Water or the Engineer, nor any payment for or acceptance of the whole or any part of the Work by Tampa Bay Water or Engineer, nor any extension of time, nor any possession taken by Tampa Bay Water, shall operate as a waiver of any provision of the Contract Documents, or any right to damages, nor shall such waive any subsequent breach. Acceptance of final payment shall not release Contractor of any liability under the Contract Documents or otherwise, and shall not be deemed evidence of performance or be construed as acceptance of Defective or improper Work.

7.7 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the final payment shall release Tampa Bay Water and the Engineer from all claims and all liability to the Contractor for all things done or furnished in

connection with the Work, and every act of Tampa Bay Water and others relating to or arising out of the Work except claims previously made in writing and identified by Contractor in its final Payment Application as still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or its Sureties from obligations under the Contract Documents and the Performance Bonds, Payment Bonds, and other bonds and warranties, as herein provided.

7.8 Record Maintenance and Auditing Rights

Contractor shall keep all books, records, files and other documentation, including all electronically stored items, which concern or relate to the Work hereunder (collectively referred to herein as the "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract or the date of Final Completion or as otherwise required by law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy Contractor's Records shall include all of the Records of the Subcontractors and Suppliers.

7.9 Hazardous Materials

If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum-related products, or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) report such condition to Tampa Bay Water in writing. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time as appropriate. If no hazardous material is found after the Work has stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by the Contractor, or any of its employees, agents, Subcontractors or Suppliers, no Change Order will be required for an adjustment in the Contract Time, and Contractor shall indemnify Tampa Bay Water for any costs incurred by Tampa Bay Water with respect to such hazardous material.

* * * * * *

End of General Conditions

EXHIBIT A-1

ADDENDUM ONE

TAMPA BAY WATER
Supplying Water To The Region

Board of Directors
Harry Cohen
Lisset Hanewicz
Chopper Davis
Dave Eggers
Jack Mariano
Charlie Miranda
Ron Oakley
Kathleen Peters
Joshua Wostal

General Manager
Charles H. Carden

General Counsel
Kelly M. Fernandez
Persson, Cohen, Mooney, Fernandez & Jackson, P.A.

ADDENDUM NUMBER ONE

TO

REQUEST FOR PROPOSAL

FOR

CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN-UTILITY CONFLICT
CONTRACT NO. 2026017

RE: REMINDERS, CHANGES & QUESTIONS

This Addendum One consists of four (4) pages; accompanied by Revised Price Form Addendum One – Attachment "1" consisting of one (1) page; Revised Specification 01025 Measurement and Payment Addendum One – Attachment "2" consisting of nine (9) pages; and Revised Plan Sheets G-2, G-4, C-1, C-2 and C-3 Addendum One – Attachment "3" consisting of five (5) pages.

The following changes, additions, deletions, reminders, and/or inquiry responses are hereby made a part of the Request for Proposals for Tampa Bay Water's Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Contract No. 2026017, as fully and completely as if the same were fully set forth therein.

REMINDERS: SUBMITTAL DUE DATE & TIME: **March 17, 2026, 2:00 p.m. (EDT)**.

CHANGES:

1) The Request for Proposal, Section 8.0 Bid Submittal Forms, #3. Price Form, on page 25, was revised in EUNA Procurement (EUNA) due to an error in the Estimated Quantity in Column E, for Item Nos. 3, 4, 5, 6, 9, 12, and 13. The Price Form has been revised in EUNA, however, if you previously downloaded the Price Form, please now use Revised Addendum One - Attachment "1" which has been updated in EUNA's electronic Price Form for the Project when you are submitting your Proposal.
2) ADDED "**Furnishing and installing 18 linear feet of 72-inch diameter casing pipe by open cut and casing spacers as shown on the drawings."** to Revised Addendum Attachment "2" Section 01025 Measurement and Payment, C. Item No. 3 Furnish and Install 60-inch Steel Water Main by Open Cut.
3) See Revised Addendum Attachment "3" Plan Sheets G-2, G-4, C-1, C-2 and C-3. Revisions are shown by clouded text and strikethroughs.

QUESTIONS:

Q1: Will the Owner allow award to a bidder holding only an active Florida General Contractor license, given that the scope of work does not appear to require an Underground Utilities

Contractor license and similar projects have historically been completed successfully under a GC license alone?

A1: No. Due to the nature of the work, Tampa Bay Water is requiring the contractor to hold both a General Contractor and Underground Utilities Contractor License in the State of Florida.

Q2 Are thrust blocks acceptable or will we need to bell restraint on the existing pipe?

A2: Existing pipe is shown to be replaced in place on both north and south connections to waive requirements of external bell restraints or thrust blocks. There is no need for thrust blocks or external bell restraints

Q3: Can the existing main be shut off with valves during tie-ins?

A3: Yes. The valve locations are shown on the condensed profiles on plan sheets D-2 and D-3. The valve closure will need to be coordinated with Tampa Bay Water prior to tie-in schedule. The pipe will need to be dewatered after the valves are closed, and the estimated volume of water is noted in the sequence of construction in Specification Section 01100.

Q4: Can tie ins be performed during the day or will it have to be night work?

A4: Tie-ins can be performed during the day. The existing pipeline shutdown period cannot exceed more than 14-days as indicated in Specification Section 01100.

Q5: Does this project have any minority goals/requirements?

A5: No.

Q6: Does this project have any Davis Bacon requirements?

A6: No.

Q7: Does this project have any Build by America requirements?

A7: This project does not include Build by America requirements. But in accordance with the requirements of Section 255.0993, Florida Statutes, any iron or steel product permanently incorporated in the project shall be produced in the United States. Bidders shall account for this requirement in preparing their Bid. In addition, this requirement will be stated in the final contract with the selected Bidder.

Q8: Does this project require a full time superintendent?

A8: Yes.

Q9: Will there be a link provided to watch the public bid opening online or will it only be in-person?

A9: The public bid opening will only be available "in-person". However, bidders are not required to attend in-person unless they choose to do so. A Bid Tabulation will be posted and available in EUNA for bidders to view by the end of the day.

Q10: Do contractors need to remove the existing water main?

A10: Existing water main is shown to be removed outside the existing FDOT roadway limits, as shown on plan sheet C-2. Approximately 95 LF of existing water main shall be filled with excavatable flowable fill, as shown on plan sheet C-2.

Q11: Will there be any owner direct purchase for valves or fittings on this project?
A11: Currently, there is no plan to use the Owner Direct Purchase (ODP) for this project. However, Tampa Bay Water reserves the right to implement ODP with respect to this project at later date. For all Bid submittals, please include all state and local sales and use taxes, as required by all laws and regulations, to be included in the unit pricing on the Price Form.

Q12: Can the casing size be reduced to 72" as this is more common size for MTBM equipment?
A12: Yes. The casing size is reduced to 72". Please refer to revised plan sheets.

Q13: Can the MTBM Crossing be lowered to gain additional cover between the top of casing and the existing utilities?
A13: The current plan provides approximately 24-inches between the deepest existing utility and top of casing pipe. Lowering of the microtunnel crossing may result in deeper shafts, additional dewatering and potential encroachment in the limestone layer. Any risks or costs borne by changes to the design will be responsibility of the Contractor.

Q14: For the butterfly valves required, are we to follow Section 2-3.01.01, Rubber-Seated Butterfly Valves 25 to 150 PSI Service (AWWA)? Or Section 2-3.01.02, Rubber-Seated Butterfly Valves 250 PSI Services (AWWA)?
A14: Follow Section 2-3.01.01, Rubber-Seated Butterfly Valves 25 to 150 PSI Service (AWWA).

Q15: What is the minimum thickness for the 78" steel casing installed by micro tunneling?
A15: Minimum thickness for the 72-inch steel casing pipe is 1-inch.

Q16: May Hobas Pipe USA be considered as a superior alternative to the currently specified 60" steel pipe for the project?
A16: Hobas Pipe is not considered as an alternative to the steel pipe for this project.

Q17: What are the allowed work hours of the project?
A17: Allowable work hours are Monday through Friday 7:00 AM through 6:00 PM. The microtunneling operation shall include continuous installation of the casing pipe until completed and shall be coordinated with Tampa Bay Water in advance. For the shutdown period, Tampa Bay Water may allow work outside the standard hours, however, this shall be coordinated with Tampa Bay Water in advance.

Q18: Can the owner provide details/drawings so we can account for the required materials and services needed to build the micro tunnel shaft properly?

A18: Contractor is expected to design the micro-tunnel shaft and shoring methods required for this project. Shaft construction is unique to micro-tunneling equipment and this is Contractor's means and methods. Refer to Specification Section 020410 Shaft Excavation and Support.

Q19: Given that the existing SR 52 is only about 40ft wide, and the widening of the road is supposed to start after the completion of this project, what is the reason 167ft of micro tunneling is required? Would installation of the 60" WM inside of the 78" casing pipe via open cut be possible on the south side of the road to save the owner cost?

A19: The project is currently permitted as a trenchless crossing with FDOT. The trenchless crossing was extended to 167 LF to avoid deep open cut excavation close to FDOT's current roadway and close to Tampa Bay Water's existing pipeline.

Q20: Is there a specific design reason why micro-tunneling is required for this project compared to another method such as jack & bore? From our experience and after careful review of the geo-tech report, it does not seem like any of the current conditions would deem micro-tunneling as necessary.

A20: A geotechnical investigation was performed for this project. The groundwater table in this area is high and the soil interface throughout the bore length is varying. Micro-tunneling is required for this project to mitigate risks and maintain accurate line and grade.

Q21: There appears to be an issue with the scaling of sheet C-2. The callouts for the different LF's of pipe items are not accurate to the lengths when take off. (ie., stationing scale is correct and then the callouts and the pipe lengths are not the same.) However, the LF callouts match sheet C-3. Can you confirm the callouts are correct and that the scale is incorrect, or vice-versa?

A21: The scaling is correct on the plan sheets. Please refer to revised plan sheets for all callouts.

Q22: No details or drawings are provided in the plans for the proper construction of the micro tunnel shafts. Can the owner provide details/drawings so we can account for the required materials and services needed to build the micro-tunnel shaft properly? (i.e., concrete thrust pads, shoring, etc.)

A22: Contractor is expected to design the micro-tunnel shaft and shoring methods required for this project. Shaft construction is unique to micro-tunneling equipment and this is Contractor's means and methods. Refer to Specification Section 020410 Shaft Excavation and Support.

END OF ADDENDUM ONE

TAMPA BAY WATER
Supplying Water To The Region

REVISED ADDENDUM ONE – ATTACHMENT "1"

3. PRICE FORM - CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN -UTILITY CONFLICT (Project #07153)

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Item No. (a)	FDOT Pay Item No. (b)	Description (c)	Unit (d)	Estimated Quantity (e)	Unit Price ($) (f)	Total Estimated Price ($) (e)x(f)=(g) (g)
1	Misc.	General Conditions, Bonds and Insurance (2%)	Lump Sum	1	$_____	$_____
2	T&E	Mobilization, and Demobilization (not to exceed 5% of the bid)	Lump Sum	1	$_____	$_____
3	1050 61260	Furnish and Install 60-inch Steel Water Main by Open Cut	Linear Foot	301	$_____	$_____
4	1050 61160	Furnish and Install 60-inch Steel Water Main by Microtunneling	Linear Foot	167	$_____	$_____
5	1050 61236	Furnish and Install 36-inch Steel Water Main by Open Cut	Linear Foot	15	$_____	$_____
6a	1055 61160	Furnish and Install 60-inch Steel Fittings	Each	6	$_____	$_____
7	1055 61136	Furnish and Install 36-inch Steel Fittings	Each	2	$_____	$_____
8	1080 26102	Furnish and Install Air Release Valves	Each	2	$_____	$_____
9	1080 24160	Furnish and Install 60-inch Butterfly Valve	Each	2	$_____	$_____
10	1080 24136	Furnish and Install 36-Inch Butterfly Valve	Each	1	$_____	$_____
11	0400-603	Cathodic Protection	Lump Sum	1	$_____	$_____
12	E574 1	Sod Restoration	Square Yard	3,800	$_____	$_____
13	0430830	Place Existing Pipe Out of Service by Grouting	Cubic Yard	70	$_____	$_____
14	1050 16006	Place Existing Pipe Out of Service by Removing	Linear Foot	250	$_____	$_____
TOTAL BID PRICE: (TOTAL OF ITEMS 1-14 IN COLUMN (G) FOR BASIS OF AWARD)						$_____

REVISED ADDENDUM ONE -ATTACHMENT "2"

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

A. The CONTRACTOR shall receive and accept the compensation provided in the PROPOSAL and the AGREEMENT as full payment for furnishing all materials, labor, tools and equipment, for performing all operations necessary to complete the WORK and also as full payment for loss or damages arising from the nature of the WORK, or from any discrepancy between the actual quantities of WORK and quantities herein estimated by the ENGINEER, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the WORK until FINAL COMPLETION.

B. The prices stated in the PROPOSAL include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the WORK. The basis of payment for UNIT PRICE WORK shown in the PROPOSAL shall be in accordance with the description of the respective items in this Section.

C. The CONTRACTOR'S attention is called to the fact that the prices for the various items of work are intended to establish a total price for completing the WORK in its entirety. Should the CONTRACTOR feel that the cost for any item of WORK has not been established by the PROPOSAL form, the cost for that work shall be included in some other applicable PROPOSAL item, so that the PROPOSAL for the PROJECT does reflect the CONTRACTOR'S total price for completing the WORK in its entirety.

D. Unless specifically listed as a Bid Item, no separate payment will be made for the following items and the cost of such work shall be included in the applicable contract pay items of work.

1. Clearing and grubbing.
2. Excavation, including necessary pavement/slab removal.
3. Shoring and sheeting.
4. Dewatering and disposal of surplus water including well point dewatering as directed by Engineer.
5. Backfilling.
6. Grading.
7. Replacement or restoration of paved or unpaved roadways, grass and shrubbery plots outside of established pay limits.
8. Replacement or restoration of curbing, gutter, sidewalk, and site restoration of any areas damaged during construction activities.
9. Temporary facilities and controls during construction such as water/sanitary facilities,

traffic control and environmental protection, unless specifically provided for in a pay item.

10. Removing and disposing of waste material due to construction.
11. Cleanup.
12. Refill materials, except as hereinafter specified.
13. Testing and placing system in operation.
14. Any material or equipment required installed and/or used for the tests.
15. Maintaining the existing quality of service during construction.
16. Repair of sanitary sewer house laterals damaged during construction.
17. Repair and/or cleaning of storm sewers, inlets & catch basins damaged or filled with sediment during construction.
18. Color audio-video construction record.
19. Providing the services of an Independent Testing Laboratory for materials and compaction testing.
20. Providing the services of a professional land surveyor, licensed in the State of Florida, to establish horizontal and vertical control, layout the work, and assist with the preparation of record drawings.
21. Cost to reproduce drawings, specifications, shop drawings, and reports for the Contractor's use and for submissions to the OWNER
22. Temporary fencing.
23. Dust Control.
24. Noise suppression measures.
25. Removing, relocating, resetting existing street signage to facilitate construction.
26. Removing, relocating, resetting mailboxes to facilitate construction.
27. Utility notification and location and exploratory pits; and
28. All other appurtenant work as required for a complete and operable system.

1.2 MEASUREMENT

A. The quantities shown are approximate and are only given as a basis of calculation upon which the award of the CONTRACT is to be made. The OWNER does not assume any responsibility for the final quantities, nor shall the CONTRACTOR claim misunderstanding because of such estimate of quantities. The quantities for payment shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the OWNER, in accordance with the applicable method of measurement therefore contained herein. Representatives of the CONTRACTOR and the ENGINEER shall witness all field measurements.

1.3 WORK OUTSIDE AUTHORIZED LIMITS

A. No payment will be made for WORK constructed outside the authorized limits of work.

1.4 MEASUREMENT STANDARDS

A. Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally or vertically.

1.5 PROPOSAL ITEM DESCRIPTIONS

Detailed descriptions for each PROPOSAL item follow:

A. Item No. 1 – GENERAL CONDITIONS, BONDS AND INSURANCE

The bid price for General Conditions, Bonds and Insurance shall be a lump sum amount included in the bid. This bid item shall include obtaining all permits, insurance, and bonds; providing a color audio-videotape of existing conditions of the construction site or route; and complying with all of the general conditions of the Contract as required for the proper performance and completion of the work.

Bid price for General Conditions, Bonds and Insurance shall not exceed 2% of the bid subtotal for installed items and Mobilization.

Payment for Bid Item #1 shall be made successfully upon successfully obtaining bonds, insurance and completing audio-video tape of preexisting conditions for the project.

Contractor shall submit original signed copies of bonds, provide copies of proof of insurance and an electronic copy of the audio-videotape of existing conditions prior to beginning any other construction activity on the projects and prior to invoicing for this bid item.

B. Item No. 2 – MOBILIZATION AND DEMOBILIZATION

The bid price for mobilization and demobilization shall be a lump sum amount calculated as a percentage of the subtotal of the bid items to be installed. This bid item shall include securing a staging area in proximity to the work if public lands are insufficient; moving onto the site all materials and equipment; furnishing and erecting temporary buildings, access roads and other items as necessary to complete the work; providing field trailers, sanitary facilities and potable water facilities as required for the proper performance and completion of the work.

Bid price for mobilization shall not exceed 5% of the bid subtotal for installed items.

Payment for mobilization will be on an incremental basis in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Item
5	15
10	25
25	50
50	75
75	85
100	100

C. Item No. 3 – FDOT PAY ITEM – 1050 61260 - FURNISH AND INSTALL 60-INCH STEEL WATER MAIN BY OPEN CUT

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 60-inch diameter steel pipe via open cut trench. The installation of pipe shall include, but may not be limited to:

1. Performing all evaluations and calculations necessary for the proper implementation of the installation.
2. Furnishing, installing and maintaining all necessary Maintenance of Traffic measures;
3. Furnishing, installing and maintaining all necessary erosion control measures including but not limited to artificial coverings, mowing, sandbagging, slope drains,

sediment basins, hay bales, straw, floating silt barrier, staked silt barrier and seeding;

4. Maintaining the trench, which shall include dewatering, barricading, sheeting, shoring, containment, and berming as required or as directed by the Engineer;
5. Protecting existing utilities in place, including coordinating with third party to support poles where needed.
6. Installing the pipe;
7. Joining the pipe as required;
8. Furnishing and installing MJ adapters as necessary to connect steel pipe to other pipe materials, fittings, and valves;
9. Backfilling and compaction of trench;
10. Hydrostatic pressure testing and cleaning the pipe;
11. Disinfection, sampling and laboratory testing for bacteria;
12. All steel pipe joint testing by an independent third-party laboratory;
13. Cleaning up the job site which shall include removing excess materials and debris and re-grading the terrain;
14. Connecting piping to existing piping and/or structures; and
15. All other ancillary materials, equipment, labor, water, and power required for the complete installation of the piping.
16. **Furnishing and installing 18 linear feet of 72-inch diameter casing pipe by open cut and casing spacers as shown on the drawings.**

All work shall be in accordance with the Technical Specifications.

Payment for installing 60-inch steel pipe by open cut shall be based on the horizontal distance in linear feet of pipe measured along the top centerline of the installed, in place, complete and acceptable to the OWNER'S REPRESENTATIVE.

D. Item No. 4 – FDOT PAY ITEM – 1050 61160 - FURNISH AND INSTALL 60-INCH STEEL WATER MAIN BY MICROTUNNELING

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 60-inch diameter steel pipe via microtunelling including the launch and receiving shafts. The installation shall include, but may not be limited to:

1. Furnishing, cutting and joining the steel casing pipe.
2. Microtunnel installation of the steel casing pipe.
3. Furnishing and installing the "casing spacers" on the carrier pipe.
4. Furnishing and installing the carrier pipe.
5. Furnishing and installing bulkheads or end seals to seal the annular space.
6. Furnishing and installing cement-fly ash slurry mix to grout the annular space.
7. Excavating the entrance and recovery shafts, including rock and muck excavation and removal;
8. Maintaining the entrance and recovery shafts including dewatering, sheeting, shoring and bracing as required;
9. Ground treatment to soften earth to allow installation of sheeting.
10. Conveyance of soil dewatering and initial and weekly testing.
11. Installation and removal of erosion control devices and control of runoff from the site;
12. Removal and replacement of fence and gates;
13. Removal and protection of trees as indicated on the CONTRACT DRAWINGS;

14. Backfilling and compaction of entrance and recovery shafts, including flowable fill cradle up to the springline of the lower bends in the shafts.
15. Settlement monitoring.
16. All surface restoration within limits of construction including mulching, seeding and appurtenant work.

Payment for 60-inch steel water main by microtunneling shall be based on actual linear feet of the casing pipe measured along the centerline of the pipe in place complete and acceptable to the OWNER'S REPRESENTATIVE.

E. Item No. 5 – FDOT PAY ITEM – 1050 61236 - FURNISH AND INSTALL 36-INCH STEEL WATER MAIN BY OPEN CUT

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 36-inch diameter steel pipe via open cut. The installation of pipe shall include, but may not be limited to:

1. Performing all evaluations and calculations necessary for the proper implementation of the installation.
2. Furnishing, installing and maintaining all necessary Maintenance of Traffic measures;
3. Furnishing, installing and maintaining all necessary erosion control measures including but not limited to artificial coverings, mowing, sandbagging, slope drains, sediment basins, hay bales, straw, floating silt barrier, staked silt barrier and seeding;
4. Maintaining the trench, which shall include dewatering, barricading, sheeting, shoring, containment, and berming as required or as directed by the OWNER'S REPRESENTATIVE;
5. Protecting existing utilities in place, including coordinating with third party to support poles where needed.
6. Installing the pipe;
7. Joining the pipe as required;
8. Furnishing and installing MJ adapters as necessary to connect steel pipe to other pipe materials, fittings, and valves;
9. Backfilling and compaction of trench;
10. Hydrostatic pressure testing and cleaning the pipe;
11. Disinfection, sampling and laboratory testing for bacteria;
12. All steel pipe joint testing by an independent third-party laboratory;
13. Cleaning up the job site which shall include removing excess materials and debris and re-grading the terrain;
14. Connecting piping to existing piping and/or structures; and
15. All other ancillary materials, equipment, labor, water, and power required for the complete installation of the piping.

All work shall be in accordance with the Technical Specifications.

Payment for installing 36-inch steel pipe by open cut shall be based on the horizontal distance in linear feet of pipe measured along the top centerline of the installed, in place, complete and acceptable to the OWNER'S REPRESENTATIVE.

F. Item No. 6a – FDOT PAY ITEM – 1055 61160 - FURNISH AND INSTALL 60-INCH STEEL FITTINGS

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all steel fittings via open cut trench. The installation of fittings shall include, but may not be limited to:

1. Furnishing and installing appropriate fittings including tees and bends.
2. Performing all evaluations and calculations necessary for the proper implementation of the installation.
3. Joining fitting to the pipeline.

Payment for installation of 60-inch fittings shall be based on each fitting furnished and installed.

G. Item No. 6b – FDOT PAY ITEM – 1055 61136 - FURNISH AND INSTALL 36-INCH STEEL FITTINGS

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all steel fittings via open cut trench. The installation of fittings shall include, but may not be limited to:

1. Furnishing and installing appropriate fittings including tees and bends.
2. Performing all evaluations and calculations necessary for the proper implementation of the installation.
3. Joining fitting to the pipeline.

Payment for installation of 36-inch fittings shall be based on each fitting furnished and installed.

H. Item No. 7 – FDOT PAY ITEM – 1080 26102 - FURNISH AND INSTALL AIR RELEASE VALVES

The CONTRACTOR shall provide all labor, equipment, and materials to furnish and install the air release valve assembly of the size and type specified. The unit price shall include the cost of jointing materials, including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, concrete valve box pad with bronze disc, air valve box, air valve lateral, and vent pipe.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

I. Item No. 8a – FDOT PAY ITEM – 1080 24160 - FURNISH AND INSTALL 60-INCH BUTTERFLY VALVES

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install the valves of the size and type specified. The unit price shall include the cost of jointing materials, including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, and concrete valve box pad with bronze disc, where required, and extension stems and adjustment of valve boxes to existing grade.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

J. Item No. 8b – FDOT PAY ITEM – 1080 24136 - FURNISH AND INSTALL 36-INCH BUTTERFLY VALVES

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install the valves of the size and type specified. The unit price shall include the cost of jointing materials,

including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, and concrete valve box pad with bronze disc, where required, and extension stems and adjustment of valve boxes to existing grade.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

K. Item No. 9 – FDOT PAY ITEM – 0400-603 - CATHODIC PROTECTION

Contractor shall furnish and provide labor, equipment and materials to install cathodic protection system for the steel pipelines as shown in the Contract Drawings and as indicated in the specifications and shall include, but is not limited to, installation of test stations, dielectric gaskets, anode beds, test station housing and terminal boards, welding, and testing complete, all necessary excavation, sheeting and bracing, shoring, dewatering, backfilling, disposal of excess excavated material, restraints, painting to OWNER'S standards, testing, restoration, cleanup, and all other items necessary to complete the job, whether specifically mentioned or implied.

Payment for installing cathodic protection shall be based on lump sum basis for all of the installed cathodic protection system, in place, tested, complete and acceptable to the Engineer.

L. Item No. 10 - FDOT PAY ITEM – E574 1 -SOD RESTORATION

Contractor shall furnish all labor, equipment, and materials to replace and maintain all sodded areas as specified and as shown on the Contract Drawings and as directed by the OWNER'S REPRESENTATIVE.

The quantity of lawn area, in square yards, to be measured for payment will be the actual area of sodded areas, placed within the limits of construction shown on the DRAWINGS except for the temporary construction easement, specified or as directed. Temporary construction easement shall be seeded and mulched.

Payment: Payment for sod restoration shall be made at the unit price bid per square yard.

M. Item No. 11 – FDOT PAY ITEM 0430830 - PLACE EXISTING PIPE OUT OF SERVICE BY GROUTING

The CONTRACTOR shall furnish all labor, equipment and materials to place existing pipe out of service by grouting it as designated, shown, specified or directed by the OWNER'S REPRESENTATIVE. The work also includes furnishing all labor and equipment for grouting existing pipe as shown.

Payment for grouting existing pipe shall be made per cubic yard of grout installed.

N. Item No. 12 – FDOT PAY ITEM 1050 16006 - PLACE EXISTING PIPE OUT OF SERVICE BY REMOVING

The CONTRACTOR shall furnish all labor, equipment and materials to remove pipe and appurtenances as designated, shown, specified or directed by the OWNER'S REPRESENTATIVE. The work also includes plugging the open ends of existing pipe to remain and be grouted, transporting the removed pipe

and appurtenances, without delay, to the CONTRACTOR's own place for proper disposal. The work includes disposal, excavation, backfill, compaction and restoration.

Payment for removal of existing pipe shall be based on actual linear feet of the pipe removed measured along the centerline of the pipe in place complete and acceptable to the OWNER'S REPRESENTATIVE.

O. Item No. 13 – INDEMNIFICATION

Payment for indemnification shall be made at the lump sum price ($100), which price and payment shall be full compensation for providing indemnification in accordance with the General Conditions, Article 4.4; Indemnity. Payment shall be included in the first payment request submitted.

P. Item No. 14 – PROJECT ALLOWANCE

Measurement for this item will be made for in accordance with the CHANGE ORDER authorized by the OWNER. The allowance is for payment of permit fees and extra work specifically authorized by the OWNER, the compensation for which shall be determined in accordance with the CHANGE ORDER provisions of the General Conditions. Said compensation shall be deducted from the allowance at the time the CHANGE ORDER is authorized by the OWNER.

Payment for permit fees will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required FDEP Notice of Intent to Discharge Stormwater from Construction Activities.

Payment will not be made for:

1. Contractor premiums or markups.
2. Fees incurred due to Contractor's negligence.
3. Permits required for items for the Contractor's convenience but not required by the Contract Documents or the Engineer.
4. Fees and costs associated with utility services to temporary construction trailers and electricity required by the Contractor during construction.

Payment from the project allowance shall be made on either a lump sum or unit price basis, per the CHANGE ORDER, only after authorization from the OWNER, and then in accordance with the CHANGE ORDER provisions of the General Conditions.

END OF SECTION

REVISED ADDENDUM ONE -ATTACHMENT "3"

REVISED PLAN SHEETS G-2, G-4. C1, C-2 AND C-3

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ON THE DRAWINGS AND IN THE SURVEY NOTES ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988. STATE PLANE COORDINATES ARE REFERENCED TO NORTH AMERICAN DATUM OF 1983/90 (NAD 28/90).

2. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL OBTAIN THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION.

3. LAND SURVEY WAS OBTAINED FROM FDOT FPID 25633415201 PLANS DATED MARCH 2021.

4. UTILITIES AND STRUCTURES THAT ARE NOT SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL BE PROTECTED IN PLACE AND UTILITY SERVICE SHALL BE MAINTAINED. WHERE TEMPORARY CONFLICTS OCCUR BETWEEN EXISTING UTILITIES AND THE NEW CONSTRUCTION, PROTECT IN PLACE OR RELOCATE THE UTILITIES AND MAINTAIN UTILITY SERVICE ALL TO THE SATISFACTION OF THE UTILITY COMPANY. UTILITIES AND STRUCTURES SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE TECHNICAL SPECIFICATIONS.

1 ~~5. PROVIDE ADEQUATE, TEMPORARY THRUST RESTRAINT AT BENDS AND TEES IN EXISTING WATER MAINS AND OTHER PRESSURIZED CONDUITS IN PROXIMITY TO EXCAVATIONS AS REQUIRED TO PREVENT DISLODGEMENT, SEPARATION OR LEAKAGE OF THESE FACILITIES.~~

6. DISCHARGE OF ANY NON-CONTAMINATED WATER FROM SOIL DEWATERING OPERATIONS TO SURFACE WATERS, IF ANY, SHALL CONFORM TO THE FDEP GENERAL PERMIT REQUIREMENTS.

7. PROVIDE AT LEAST 48 HOURS NOTICE TO THE VARIOUS UTILITY COMPANIES IN ORDER TO PERMIT THE LOCATION OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION. NOTIFY THE VARIOUS UTILITY COMPANIES BY CALLING THE SUNSHINE ONE CALL CENTER (1-800-432-4770) OR IF NECESSARY, BY CONTACTING THE UTILITY COMPANIES INDIVIDUALLY.

8. CONFIRM UTILITY TO UTILITY CLEARANCES, HORIZONTAL AND VERTICAL, AND PIPE JOINT LOCATIONS IN ACCORDANCE WITH FLORIDA ADMINISTRATIVE CODE 62-555.314 AND 62-604.400.

9. THE HORIZONTAL ALIGNMENT OF THE REPLACEMENT WATER MAIN SHALL BE AS DIMENSIONED TO THE SURVEY BASELINE ON THE DRAWINGS. THE CONTRACTOR SHALL OBTAIN A COPY OF THE SURVEY AND LOCATE THE SURVEY BASELINE IN THE FIELD PRIOR TO CONSTRUCTION.

10. PIPE LAYING, LEAKAGE TESTING AND AS-BUILT DRAWINGS SHALL CONFORM TO ALL INFORMATION INDICATED ON THE PLANS AND DETAILS OR PROJECT TECHNICAL SPECIFICATIONS.

11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL TREES WITHIN THE VICINITY OF THE PROPOSED CONSTRUCTION IN ACCORDANCE WITH PASCO COUNTY PROTECTION STANDARDS UNLESS OTHERWISE INDICATED FOR REMOVAL. PRUNING OF BRANCHES IS NOT AUTHORIZED WITHOUT PRIOR APPROVAL FROM THE COUNTY, AND SHALL BE COMPLETED BY A CERTIFIED ARBORIST.

12. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS TO PROVIDE SUPPORT DURING CONSTRUCTION. UTILITY POLE OWNERS REPRESENTATIVE TO APPROVE SUPPORT METHOD PRIOR TO BEGINNING EXCAVATION AROUND UTILITY POLES. ONCE WORK IN THE AREA HAS BEEN COMPLETED, UTILITY REPRESENTATIVE SHALL INSPECT AND APPROVE FINAL GRADING PRIOR TO SUPPORT BEING REMOVED.

13. REFER TO GENERAL REQUIREMENTS SECTION OF TECHNICAL SPECIFICATIONS FOR PERMIT AGENCY COMMENTS.

14. ALL EXCAVATION AND BACKFILLING SHALL BE IN STRICT CONFORMANCE WITH TAMPA BAY WATER AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

15. WHERE CONSTRUCTION ACTIVITIES OCCUR WITHIN THE DRIP LINES OF EXISTING TREES, TREES ARE TO BE PROTECTED PER PASCO COUNTY NATURAL RESOURCES DIVISION REQUIREMENTS. ANY ROOT OR CANOPY TRIMMING TO FACILITATE CONSTRUCTION OF PROPOSED FACILITIES IS TO BE PERFORMED AT THE DIRECTION OF A CERTIFIED ARBORIST.

1 16. ANY AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED TO THE ORIGINAL GRADE AND ~~SEEDED~~ SODDED AND MULCHED.

17. ADD TEMPORARY 1" THICK STEEL PLATES TO ACT AS SHOCK PADS OVER EXISTING 60" PIPE WITHIN PROJECT LIMITS TO PROTECT DURING CONSTRUCTION.

18. CONTACT INFORMATION:

    TAMPA BAY WATER
    NAME: DANIELLE KEIRSEY, PROJECT MANAGER
    PHONE: (727) 791-2377

19. TAMPA BAY WATER WILL CONTINUE TO MAINTAIN OWNERSHIP OF THE GROUTED, OUT-OF-SERVICE 60" WATER TRANSMISSION MAIN UNTIL ROADWAY PROJECT 256334-3-52-01 IS LET, WHERE IT WILL BE REMOVED DURING ROADWAY CONSTRUCTION, BY THE UAO.

TREE REMOVAL TABLE

NORTHING	EASTING	SIZE	DESCRIPTION
1,450,055.0483'	513,108.5036'	23"	OAK
1,449,864.4522'	513,193.9677'	20"	OAK
1,449,862.5740'	513,209.7399'	9"	OAK
1,449,844.5240'	513,175.6765'	10"	PINE
1,449,845.4685'	513,179.6216'	9"	PINE
1,449,842.5842'	513,212.8580'	8"	OAK
1,449,836.3626'	513,199.2597'	6"	OAK
1,449,833.4797'	513,206.0446'	11"	OAK
1,449,833.2359'	513,218.5170'	15"	OAK
1,449,820.3176'	513,199.4656'	8"	OAK
1,449,819.9008'	513,232.1982'	4"	OAK
1,449,819.9008'	513,241.3715'	5"	OAK
1,449,811.6703'	513,223.2333'	10"	OAK
1,449,810.4778'	513,237.2867'	10"	PINE
1,449,806.3107'	513,232.4499'	9"	PINE
1,449,801.3590'	513,241.9987'	8"	PINE
1,449,849.5840'	513,114.2410'	7"	OAK
1,449,851.6820'	513,110.5290'	8"	PINE
1,449,848.2500'	513,103.5910'	14"	PINE
1,449,884.0290'	513,155.0570'	13"	OAK
1,449,876.8190'	513,147.6910'	10"	OAK
1,449,878.1520'	513,139.5010'	6"	OAK
1,449,893.2080'	513,128.3550'	15"	PINE
1,449,888.4180'	513,103.3360'	8"	OAK
1,449,889.6960'	513,085.7470'	7"	OAK

DRAWING INDEX

SHEET NO.	DESCRIPTION
G-1	COVER SHEET
G-2	DRAWING INDEX, NOTES & ABBREVIATIONS
G-3	LEGEND & SURVEY CONTROL
G-4	EXISTING CONDITIONS
C-1	TREE REMOVAL AND LIMITS OF DISTURBANCE
C-2	PLAN SHEET
C-3	PROFILE SHEET
CP-1	CATHODIC PROTECTION DETAILS
CP-2	CATHODIC PROTECTION DETAILS
CP-3	CATHODIC PROTECTION DETAILS
CP-4	CATHODIC PROTECTION DETAILS
D-1	TAMPA BAY WATER STANDARD DETAILS
D-2	CONDENSED PROFILE
D-3	CONDENSED PROFILE

TEST HOLE POINTS

TH	UTILITY OWNER	UTILITY TYPE	SIZE	MATERIAL	EXISTING GROUND ELEVATION	TOP ELEVATION
1	TAMPA BAY WATER	RWM	60"	PCCP		73.30'
2	TAMPA BAY WATER	RWM	60"	PCCP		72.13'
3	TAMPA BAY WATER	RWM	60"	PCCP		71.95'
4	UNKNOWN	DB COMM FOC	1/2"	PVC		76.86'
137	PASCO COUNTY	RECLAIM	36"	DIP	77.89'	70.02'
138	PURPLE	UNKNOWN	2-2"	PVC	78.29'	74.81'
139	TAMPA BAY WATER	RWM	60"	DIP	78.39'	73.38'
140	PURPLE	UNKNOWN	2-2"	PVC	77.30'	74.79'
141	TAMPA BAY WATER	RWM	60"	DIP	77.46'	73.11'
142	PASCO COUNTY	FOC	2"	HDPE	78.21'	74.91'
143	PASCO COUNTY	RECLAIM	36"	DIP	78.06'	71.84'
383	VERIZON	TELECOM	1"	DBC	78.01'	75.53'

FDOT NOTES:

1. CONTACT FDOT JAMES MEYER 48 HOURS BEFORE WORKING IN FDOT R/W 352-848-2600 TO ACTIVATE PERMIT.
2. SIDEWALKS SHOULD NOT BE CLOSED FOR MORE THAN 2 WEEKS FOR THE DURATION OF THE PERMIT. THE CONTRACTOR WILL NEED TO PROVIDE ACCOMMODATION FOR PEDESTRIANS.
3. RESTORE FDOT R/W WITH SOD ONLY.
4. CONTACT SCOTT BROWN PASCO COUNTY FOR LOCATES OF LIGHTING FIBER AND SIGNAL CONDUITS: PASCO COUNTY 727-849-6845
5. FOR MICROTUNNELS UNDER FDOT ROADWAYS THERE MUST BE A CONTINGENCY PLAN AND DEWATERING PLAN. CONTINGENCY SHOULD HAVE AN EMERGENCY ON CALL MOT/TTC CONTRACTOR AND AN EMERGENCY ASPHALT CONTRACTOR TO RESTORE THE ROADWAY IF SOMETHING SHOULD HAPPEN TO THE MICROTUNNEL.
6. FDOT RECOMMENDS GPR BE PERFORMED ALONG PATH OF MICROTUNNEL MINIMUM OF 10' ON EITHER SIDE OF THE CASING PIPE PRIOR TO PRE-DRILL MEETING WITH FDOT INSPECTOR WHICH IS REQUIRED.

1 7. CONTRACTOR SHALL NOT LEAVE ANYTHING IN THE CLEAR ZONE WHEN IT'S AN INACTIVE WORK ZONE.
8. ALL EROSION AND CONTROL DEVICES SHALL BE MAINTAINED DURING CONSTRUCTION.
9. COORDINATE WITH FDOT TO PLACE SIGNS OR MAINTAIN TEMPORARY TRAFFIC CONTROL PLAN FOR TRUCKS ENTERING AND EXITING THE HIGHWAY.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JH.HORTON\D1402567\GCS-PLTS-NOTE-SHEET.DWG - G-2 - PLOTTED: 3/2/2026 2:14 PM BY: HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

GENERAL NOTES AND INDEX

REV	DESCRIPTION	BY	DATE
1	ADDENDUM NUMBER 1	NNS	2/21/26

File Name: GCS-PLTS-NOTE-SHEET.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153

Sheet Designation: G-2

Sheet No.: 2 OF 14

078

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

SHADING DENOTES EXISTING PAVEMENT.

1 PREVIOUS ~~EXIST.~~ FDOT R/W

EX. 2-2" PVC UNK

EX. 1" DBC BURIED TELEPHONE

EX. 60" PCCP WATER MAIN

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

EX. 1/2" PVC BURIED TELEPHONE/FIBER OPTIC

EX. 2" HDPE BURIED FIBER OPTIC

EX. 36" DIP RECLAIMED WATER MAIN

1 EXIST. ~~PROP.~~ FDOT R/W

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

CENTERLINE OF EXISTING STORMWATER SWALE

PREVIOUS FDOT R/W

EXISTING TRAIL

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

WOOD SIGN

DUMPSTER W/ 6' WOOD FENCE

4' WOOD SRF

GATE

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

VCW

WOOD SIGN

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

EXIST. FDOT R/W

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-EXIST-SURVEY.DWG - G-4 - PLOTTED 2/23/2026 11:20 AM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY.

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
EXISTING CONDITIONS
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE
1	ADDENDUM NUMBER 1	NNS	2/21/26

File Name: CUP-PLTS-Exist-Survey.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: G-4
Sheet No.: 4 OF 14

079

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

SHADING DENOTES EXISTING PAVEMENT.

1 REMOVE AND REPLACE APPROX. 155 LF OF EXISTING FENCE

150 LF OF 60" STEEL TRANSMISSION MAIN

1 APPROX. 430 LF OF PROPOSED TEMPORARY FDOT FENCE TYPE A

APPROX. LIMITS OF DISTURBANCE/ SILT FENCE

1 PREVIOUS ~~EXIST.~~ FDOT R/W

42" PIPE (BY FDOT CONTRACTOR)

10' SHLDR. 8' SHLDR. PAVT.

℄ DRIVEWAY 750+14.00, 67.00' LT.

GRADED DRWY. PER FDOT INDEX 330-001

749+95.67, 132.00' LT. MATCH EXIST.

749+83.11, 132.00' LT. MATCH EXIST.

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

1 EXIST ~~PROP.~~ FDOT R/W

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

SUMP

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

10' SHLDR. 5' SHLDR. PAVT. 12' SHARED USE PATH

WB SR 52 (SCHRADER HWY.)

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE E C & G

℄ MEDIAN OPENING STA. 751+34.89

WOOD SIGN

DUMPSTER W/ 6' WOOD FENCE

ASPHALT

8" RCP

MES

EX. 36" OUTLET

VCW

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

BOR #B-1

BOR #B-2

167 LF OF 60" STEEL TRANSMISSION MAIN IN 72" CASING PIPE (1" THICK) BY MICROTUNNEL

18 LF OF 60" STEEL TRANSMISSION MAIN IN 72" CASING PIPE (1" THICK) VIA OPEN CUT

8' SHLDR.

8' SHLDR. 4' SHLDR. PAVT.

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

PREVIOUS FDOT R/W

TYPE E C & G

10' SHLDR. 8' SHLDR. PAVT.

EB SR 52 (SCHRADER HWY.)

6" CONC. DRWY. PER FDOT INDEX 330-001

751+46.07, 128.00' RT. MATCH EXIST.

751+67.43, 128.00' RT. MATCH EXIST.

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

PROPOSED INLET PROTECTION (TYP)

℄ DRIVEWAY 751+05.21, 97.00' RT.

4" WOOD

4" WOOD SRF.

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

PRIVATE DRIVE

50' TAMPA BAY WATER EASEMENT

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

FUTURE WREC TRANSMISSION POLE

APPX. WETLAND LINE

APPROX. LIMITS OF DISTURBANCE/DOUBLE SILT FENCE

15 LF OF 36" STEEL TRANSMISSION MAIN

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

LEGEND

- TREE REMOVAL
- TREE PROTECTION
- SILT FENCE / LIMITS OF DISTURBANCE
- INLET PROTECTION

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-LOD.DWG - C-1 LIMITS - PLOTTED: 3/3/2026 10:02 AM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
TREE REMOVAL AND LIMITS OF DISTURBANCE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE
1	ADDENDUM NUMBER 1	NNS	2/21/26

File Name: CUP-PLTS-LOD.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: C-1
Sheet No.: 5 OF 14

080

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

APPROX. 110 LF 60" WATER MAIN TO BE REMOVED

APPROX. MICROTUNNEL SHAFT

STA 11+30
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG

150 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT
STA 10+88.0
60" 22.5° BEND

STA 10+47.0
OFFSET: 7.0' R
AIR RELEASE VALVE

STA 10+27.0
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 152+71± SEE NOTE 1

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

STA 11+58.0
60" 45° BEND
(ROLLED 4°55.8')

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

STA 11+65.9
60" 45° BEND
(ROLLED 5°04')

1 EXIST. ~~PROP.~~ FDOT R/W

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

SUMP

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)
10' SHLDR.
5' SHLDR. PAVT.
12' SHARED USE PATH

42" PIPE (BY FDOT CONTRACTOR)

1 PREVIOUS ~~EXIST.~~ FDOT R/W

10' SHLDR.
8' SHLDR. PAVT.

℄ DRIVEWAY
750+14.06, 67.00' LT.

GRADED DRWY. PER

749+95.67, 132.00' LT.
MATCH EXIST.

749+83.11, 132.00' LT.
MATCH EXIST.

1 APPROX. 95 LF 60" WATER MAIN TO BE FILLED WITH EXCAVATABLE FLOWABLE FILL (STRENGTH 100 PSI) IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 121

WB SR 52 (SCHRADER HWY.)

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE F C & G

℄ MEDIAN OPENING STA. 751+34.89

WOOD SIGN

DUMPSTER W/ WOOD FENCE

ASPHALT

8" RCP

MES

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

EX. 36" OUTLET

VCW

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

TH1 TH2 TH3 TH4 TH135 TH136 TH137 TH138 TH140 TH141 TH142 TH143

S-267 S-268 S-269 S-270

S-265

BOR #B-1

BOR #B-2

APPROX. 131 LF 60" WATER MAIN TO BE REMOVED

PREVIOUS FDOT R/W

10' SHLDR.
8' SHLDR. PAVT.

6" CONC. DRWY. PER FDOT INDEX 330-001

751+46.07, 128.00' RT.
MATCH EXIST.

751+67.43, 128.00' RT.
MATCH EXIST.

EB SR 52 (SCHRADER HWY.)

4' WOOD

℄ DRIVEWAY
751+05.21, 87.00' RT.

PRIVATE DRIVE

4' WOOD SRF.

STA 14+02
60"X36" TEE
LEAKAGE TEST PLUG

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

STA 14+34.9
29°36' 60" BEND

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

50' TAMPA BAY WATER EASEMENT

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

FUTURE WRC TRANSMISSION POLE

STA 14+06.2
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG
15 LF OF 36" STEEL TRANSMISSION MAIN VIA OPEN CUT

STA 14+02, 7.70' RT
36" BUTTERFLY VALVE
36" CAP

STA 13+97.4
60" 13°25'12" BEND
VPI Δ=13°25'12"

STA 14+94.9
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 157+71± SEE NOTE 1

STA 14+81.6
OFFSET: 7.0' R
AIR RELEASE VALVE

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

APPROX. MICROTUNNEL SHAFT

STA 13+82.5
60" 46°32'24" BEND
HPI Δ=45°
VPI Δ=13°25'12"

PIPE ℄
STA 12+58.7=
℄ CONST. SR52
STA 749+90.1

1 167 LF OF 60" STEEL TRANSMISSION MAIN IN 72" CASING PIPE (1" THICK) BY MICROTUNNEL

APPX. WETLAND LINE

1 18 LF OF 60" STEEL TRANSMISSION MAIN IN 72" CASING PIPE (1" THICK) VIA OPEN CUT

EXIST. FDOT R/W

10' SHLDR.
8' SHLDR. PAVT.

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

8' SHLDR.
4' SHLDR. PAVT.

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

NOTE 1. LOCATE SUITABLE EXISTING PIPE JOINT FOR CONNECTION. CAREFULLY DISASSEMBLE JOINT WITHOUT DAMAGING PIPE TO REMAIN IN SERVICE.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-PLAN.DWG - C-2 PLAN - PLOTTED: 3/3/2026 10:04 AM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PLAN
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE
1	ADDENDUM NUMBER 1	NNS	2/21/26

File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: C-2
Sheet No.: 6 OF 14

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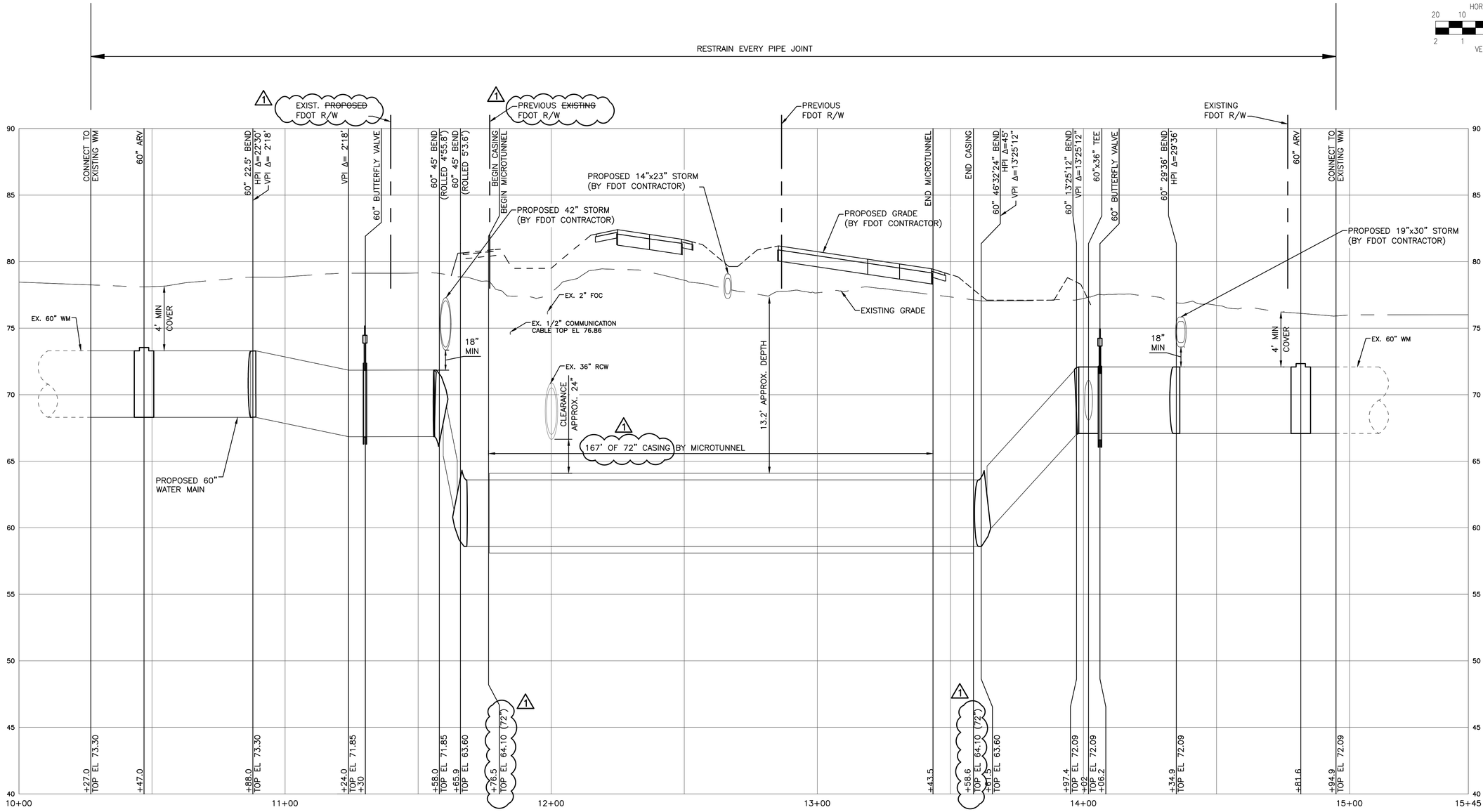
HORIZONTAL SCALE IN FEET
20 10 0 20 40
2 1 0 1 4
VERTICAL SCALE IN FEET

HORIZ. SCALE: 1"=20'
VERT. SCALE: 1"=4'



NOTE 1. CONTRACTOR SHALL USE SUITABLE EXCAVATED MATERIALS TO COMPACT AND BACKFILL SHAFT AND PIPE EXCAVATIONS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02220, 3.4 A. IN ADDITION, ALL EXCAVATIONS LOCATED UNDER OR WITHIN CLOSE PROXIMITY TO THE FUTURE FDOT ROADWAY PAVEMENT AND ROADWAY SHOULDERS AS SHOWN IN PROFILE VIEW ON THIS PLAN SHEET SHALL MEET FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PARTICULARLY SECTIONS 120 AND 125, AND OTHER RELATED STANDARDS IN REGARDS TO COMPACTION AND BACKFILLING. FLOWABLE FILL CAN BE USED AS A BACKFILL ALTERNATIVE IN CERTAIN SITUATIONS, FOLLOWING THE REQUIREMENTS IN SECTION 121 OF FDOT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-PLAN.DWG - C-3 PROFILE - PLOTTED 3/2/2026 3:41 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM

201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PROFILE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE
1	ADDENDUM NUMBER 1	NNS	2/21/26

File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: C-3
Sheet No.: 7 OF 14

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EXHIBIT A-2

INVITATION TO BID

INVITATION TO BID (ITB)
FINANCE & ADMINISTRATION DIVISION
CHRISTINA SACKETT, CFO
PURCHASING DEPARTMENT
PURCHASING REPRESENTATIVE: REGINA KAVANAGH
E-MAIL: purchasing@tampabaywater.org
WEBSITE: http://www.tampabaywater.org
2575 ENTERPRISE ROAD, CLEARWATER, FLORIDA 33763-1102

Contract No.: 2026017

Project No.: 07153

Title: CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN-UTILITY CONFLICT

Issue Date:	January 16, 2026 (EST)
Pre-Bid Conference & Site Visit	February 18, 2025, at 10:00 AM (EST) Cypress Creek Pump Station 8865 Pump Station Road, Land O'Lakes, FL 34639)
Inquiry Deadline:	February 27, 2026, at 5:00 p.m. (EST)
Addendum Posting:	March 6, 2026, at 5:00 p.m. (EST)
Submittal Due Date:	March 17, 2026, at 2:00 p.m. (EDT)
Public Bid Opening Date:	March 17, 2026, at 2:30 p.m. (EDT) Tampa Bay Water 2575 Enterprise Road Clearwater, Florida 33763

Description: Tampa Bay Water, a Regional Water Supply Authority, is soliciting formal bids for the construction of its Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict.

Important Notice: Tampa Bay Water issues its solicitations electronically through its contracted vendor, Euna Procurement ("Euna"). All Addenda to such solicitations will be issued exclusively through Euna. If you have obtained this solicitation from a source other than Euna, you will not be listed on the plan holders list and may not receive notification of any Addenda issued. Failure to receive any issued Addenda shall not relieve the Bidder from any obligation(s) contained in the Addenda. To access Tampa Bay Water solicitations, any resulting Addenda and Bid results, go to: https://tampabaywater.bonfirehub.com. If you need assistance in registering with Euna send an email to: Support@GoBonfire.com or visit Euna's help forum at https://vendorsupport.gobonfire.com/hc/en-us.

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Invitation to Bid (ITB) is to solicit Bids from qualified firms or individuals to provide construction services to Tampa Bay Water's Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No. 07153, under Contract #2026017 ("the Project"). The Project is located in Pasco County. The estimated construction budget for this project is $2,700,000.00.

1.2 SCOPE

The scope of the Work contemplated consists of all materials, labors, tools and equipment necessary to construct approximately 500 linear feet (LF) of 60-inch steel pipe for the transmission of raw groundwater under/across State Road (SR) 52 with open cut and micro-tunneling methods as indicated on the drawings and specifications. The existing pipe crossing SR 52 will be placed out of service and the new crossing will be connected to Tampa Bay Water's existing transmission main and placed into service. Portions of the out-of-service pipeline will be removed as shown on the drawings.

1.3 GENERAL INFORMATION

1.3.1 Tampa Bay Water is Florida's largest provider of wholesale drinking water. Our mission is to reliably provide clean, safe water to the Tampa Bay region now and for future generations. We are a regional Agency created by an inter-local agreement among our member governments through state enabling legislation. We have a nine-member Board of Directors made up of representatives from the three counties and three cities we serve: Hillsborough County, Pasco County, Pinellas County, New Port Richey, St. Petersburg, and Tampa.

1.3.2 Bidders can familiarize themselves with our Agency at www.tampabaywater.org. Tampa Bay Water was recreated in 1998 as the outgrowth of a two-year negotiation process that changed the name, structure, and operations of the West Coast Regional Water Supply Authority. Our predecessor, the West Coast Regional Water Supply Authority, was created in 1974. Tampa Bay Water is now a multi-source provider of drinking water including groundwater, surface water, and desalinated seawater. Tampa Bay Water is a non-profit governmental Agency funded through wholesale water rates by its member governments. Our member governments serve more than 2.5 million residents in the Tampa Bay area.

1.3.3 Tampa Bay Water has retained Wade Trim, Inc. ("Engineer") as its Agency Representative for this Project. Wade Trim, Inc., has responsibility for coordinating all activities associated with the design, construction, and commissioning of the Project. Tampa Bay Water and Wade Trim are working cooperatively to manage the ITB process, evaluate Bids, and support the negotiations of the Contract. Wade Trim, Inc., shall also provide Project oversight, including reviews for contract compliance, construction monitoring, start-up assistance, and environmental compliance oversight.

1.4 DEFINITIONS

All definitions are either listed below or are included in the General Conditions in the attached Contract.

1.4.1 **Agency** is used interchangeably with Tampa Bay Water.

1.4.2 **Agreement** or **Contract** are used interchangeably and refer to the document, along with any amendments, that constitutes authorization for, and commitment by the Contractor to provide construction services to Tampa Bay Water.

1.4.3 **Base Bid** is the sum stated in the Bid for which Bidders offer to perform the Work described in the Bidding Documents, to which work may be added or deleted by sums stated in Alternate Bids.

1.4.4 **Bid** refers to a Bidder's response to the requirements of this ITB.

1.4.5 **Bid Option** means a specified portion of the Work identified in the scope of work that may be added to or deducted from the Base Bid at Tampa Bay Water's discretion and identified in the Contract. If required, Bid Options shall be evaluated along with the Base Bid and may be used at the discretion of Tampa Bay Water to determine the lowest bid.

1.4.6 **Bidder** means a business that responds to this solicitation. If Bidder is a consortium, partnership, joint venture, or other organization, this definition shall include all partners, members, or participants.

1.4.7 **Contractor** means the Bidder who enters into a contract to provide construction services for this Project.

1.4.8 **Engineer** is the licensed design professional of record responsible for designing the Project.

1.4.9 **Project Site** is Tampa Bay Water's Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict located in Pasco County where the pipeline crosses under SR 52, as shown below.



2.0 BID PROCESS INFORMATION

2.1 PRE-BID CONFERENCE AND SITE VISIT

A Pre-Bid Conference and Site Visit will be held for this ITB at the date, time and location on the cover of this document. The Pre-Bid Conference and Site Visit are not mandatory; however, firms are highly encouraged to attend. This will be the only site visit/tour to be offered. Bidders are welcome to have suppliers/subcontractors in attendance. Bidders will need to drive to the location in their own vehicles and should dress in appropriate comfortable field tour attire (long pants and closed toe shoes). Tampa Bay Water reserves the right to cancel the site visit if inclement weather or wet/muddy road conditions warrant cancellation.

2.2 INQUIRIES AND ADDENDA

Tampa Bay Water is committed to a fair, open process for interested parties to receive information about the Project and the competitive procurement process that Tampa Bay Water is using for selection of a Contractor and award of the Contract. Inquiries for additional information or clarifications must be submitted on Euna's project page for this ITB at https://tampabaywater.bonfirehub.com or via email to purchasing@tampabaywater.org no later than the Inquiry Deadline on the cover of this ITB. Any general inquiries may be responded to directly. Any substantive inquiries resulting in information and changes deemed material to the ITB shall be provided in the form of a written addendum which will be published at least five (5) days prior to the Submittal Due Date on Euna and via link at Tampa Bay Water's web site at www.tampabaywater.org. Failure of any firm to receive any such addendum or interpretation shall not relieve said Bidders from any obligation contained therein.

2.3 BID SUBMISSION

2.3.1 Tampa Bay Water prefers and strongly encourages electronic submission of Bids through our EUNA e-procurement portal at https://tampabaywater.bonfirehub.com. **Bidders should allow sufficient time and at least one (1) day before the Submittal Due Date to begin the uploading process and finalize submissions.** To submit responses electronically, Bidders must register with Euna and follow the instructions in the portal. Minimum system requirements are Microsoft Edge, Google Chrome, Safari, or Mozilla Firefox. JavaScript and browser cookies must be enabled. Maximum upload file size is 1000 MB. Documents should not be embedded within uploaded files as the embedded files will not be accessible. Bidders will have the ability to modify their submissions up to the Submittal Due Date in Euna. Tampa Bay Water is not responsible for any technical problems with the electronic transmission and/or delay in receipt due to technical problems. Such electronic transmittal errors will not alter or affect the deadline date and time for receipt of Responses. If you require assistance, please contact Euna at Support@GoBonfire.com.

2.3.2 Bidders unable to submit electronically must deliver sealed Bids to the address provided on the cover of this document no later than the above-referenced Submittal Due Date. Include one clearly marked original and one digital copy on a flash drive enclosed in a sealed envelope or carton clearly marked with the name and contract number and delivered in person, by carrier or messenger, or by certified U.S. Mail.

2.3.3 Late Bids will not be considered. No Bid can be withdrawn after the Submittal Due Date without the written permission of Tampa Bay Water.

2.4 BID WITHDRAWAL OR RESUBMISSION

Bidders may withdraw their Bids by notifying Tampa Bay Water in writing at any time prior to the Submittal Due Date. Such notice shall be in writing over the signature of the Bidder, and it shall be so worded as not to reveal the amount of the original Bid. Bids not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of one-hundred twenty (120) calendar days to provide the services set forth in this solicitation, unless extended by mutual agreement. Failure to agree to an extension shall not constitute grounds for forfeiting any bid bond or other security. Withdrawal of a Bid, as prescribed in this paragraph, shall not prejudice the right of a Bidder to resubmit a Bid prior to the Submittal Due Date indicated on the cover of this ITB.

2.5 RIGHT OF REJECTION

Tampa Bay Water reserves the right to reject any or all Bids.

2.6 IN-PERSON PUBLIC BID OPENING

Bids will be publicly opened at Tampa Bay Water's Administrative Offices located at 2575 Enterprise Road, Clearwater, FL 33763, on the date of the Bid Submittal Deadline, at 2:30 p.m. (EDT).

3.0 BID PREPARATION

3.1 PROJECT UNDERSTANDING

3.1.1 Beginning on the Issue Date on the cover of this ITB, complete sets of the ITB documents may be obtained through our Euna e-procurement portal at https://tampabaywater.bonfirehub.com. Any addenda shall be provided here as well. Prior to submission of its Bid, each Bidder must ascertain that it has received a complete and accurate set of ITB documents, including all addenda issued.

3.1.2 Bidders are expected to read and understand this ITB and associated documents in their entirety and inspect the project site to inform itself of the conditions related to the execution of the Work. Failure to do so will not relieve a successful Bidder of its obligations to furnish the services necessary to carry out all the requirements and provisions set forth in the contract. Bidders must be able to fully perform the tasks outlined herein, and in the timeline required.

3.1.3 Bidders shall, upon discovery of any conflict, ambiguity, error or omission in the ITB, the Project site or any other general, local or prevailing conditions, make a written request for interpretation or clarification in accordance with the inquiry process provided in the prior section.

3.1.4 If requested by a Bidder in writing within a reasonable time in advance of the date of the opening of the Bids, Tampa Bay Water will make a good faith attempt to provide or obtain access to the project site to allow the Bidder to conduct those reasonable explorations and tests the Bidder deems necessary for submission of a Bid (subject to a review by Tampa Bay Water and the Engineer). If access is granted, the Bidder shall clean up and restore any disturbed area to its former condition upon completion of such explorations and tests.

In consideration of Tampa Bay Water arranging and permitting access to the project site, Bidder acknowledges that by entering the project site, Bidder shall defend, indemnify and hold Tampa Bay Water, Engineer and their consultants harmless from any loss, expense, damage, injury, claim or suit arising out of or relating to Bidder's entry, exploration and testing upon the project site. As a condition to any Bidder being provided access to the project site, that Bidder shall execute and deliver to Tampa Bay Water a Release and Indemnification Agreement, which is available upon request.

3.1.5 Each Bidder shall have the responsibility to inform itself of, and if awarded the contract shall comply with, all laws and regulations. Examples of such laws and regulations include, but are not limited to, those relating to minimum wages, nondiscrimination in employment, protection of public and employee safety and health, environmental protection, building codes, fire protection, airport operation and safety, grading and drainage, use of explosives, vehicular traffic, access to streets and highways, restoration of lands and property under the control of the State or a Political Subdivision, nuisance control, taxes, permits, licensing, and fees.

3.1.6 Any oral statement, interpretation, clarification, correction, addition or deletion to the ITB documents will be binding only if issued as a written Addendum. Failure to read or reference the addenda in its Bid will not relieve a Contractor of its obligations to comply with the addenda.

3.2 BID CONTENTS: Include the following items:

- All forms in Section 8.0
- Bid Security detailed in Section 3.5
- Evidence that the Bidder is qualified and capable to complete the Work
- Any other information called for in this ITB.

3.3 QUALIFICATION OF BIDDER

3.3.1 Bidder and its key personnel to be assigned to the Work must meet the following minimum qualifications:

- Firm must hold an active license in the State of Florida as a General Contractor and Firm must hold an active license in the State of Florida as a Underground Utilities Contractor and shall provide said proof of licenses in its bid submittal;
- Firm must have performed one previous project of similar scope within the past five (5) years.
- Project Superintendent must have served as a Project Superintendent on at least one previous project of similar scope within the past five (5) years.
- Project Manager must have served as a Project Manager on at least one previous project of similar scope within the past five (5) years.

3.3.2 The Bidder must have the authority to perform the type of work in this ITB in accordance with laws and regulations applicable to the Project and local, county and municipal licensing requirements, or the Bidder must provide a covenant describing specific licenses or permits to be obtained prior to award of the Contract.

3.4 RESPONSIVENESS AND RESPONSIBILITY

3.4.1 If any information required by these Bid Documents is missing or incomplete, the Tampa Bay Water Purchasing Department, in its sole discretion, may deem the Bidder non-responsive and reject the Bid, or may waive immaterial or minor deviations or request clarifications that do not alter the substance of the Bid and do not provide competitive advantage to a Bidder.

3.4.2 The Bidder shall provide all information, sufficient to Tampa Bay Water, to evidence its qualifications to perform the work for the price included on the Price Form, within the time stated within this ITB, and in accordance with the requirements of this ITB. The Tampa Bay Water Purchasing Department may request and consider any further information to make a responsibility determination that a Bidder can satisfactorily perform the work.

3.4.3 Failure to deliver information for responsiveness and responsibility required in this ITB or as requested by Tampa Bay Water, within the required period (or within a reasonable time thereafter if agreed to by Tampa Bay Water), may result in the rejection of that Bidder's Bid as either non-responsive or non-responsible and shall constitute proof that the Bidder has relinquished its rights and interests in the award.

3.5 BID COMPLETION

3.5.1 Any Bid may be deemed non-responsive which contains omissions, erasures, alterations, or additions of any kind, or prices not requested, or which may be obviously unbalanced, or which in any manner shall fail to conform to the requirements of this ITB.

3.5.2 Only one Bid from any individual, firm, partner, partnership, or corporation, under the same or different names, shall be considered. If any Bidder has an interest in more than one Bid for the work contemplated, as determined by Tampa Bay Water, all Bids in which such Bidder has an interest shall be rejected.

3.6 BID SECURITY

Bids must be accompanied by a certified check, or cashier's check drawn on a bank in good standing, or a Bid Bond issued by a Surety authorized to issue such bonds in the State of Florida, in the amount of five percent (5%) of the proposed total contract price of the Bid submitted. This bid security shall be given as a guarantee that the Bidder will not withdraw its Bid for the period of time specified in 2.4 Bid Withdrawal or Resubmission, and if awarded the Contract, shall execute the Contract and comply with all its requirements. If the Bidder elects to furnish a Bid Bond, it shall use the Bid Bond form provided in this ITB. The Attorney-in-Fact who executes these bonds on behalf of the Surety must attach a notarized copy of its power-of-attorney as evidence of its authority to bind the Surety on the date of execution of the bonds. Where laws and regulations require certification by a resident agent, it shall also be provided.

3.7 BID PRICING

3.7.1 Bidders must submit either unit prices or fixed prices or a combination of such, as required by the Price Form herein. All items required to complete the Work, but not specifically included in the Price Form, shall be considered incidental and no additional costs for such items will be recognized or paid for by Tampa Bay Water.

3.7.2 Conflicts or Discrepancies found in bid prices stated both numerically and alphabetically shall have the alphabetical representation of the bid price take precedence over the numerical representation unless it is determined, at the sole discretion of Tampa Bay Water, that the conflict has led to a clearly erroneous or unreasonable result; in which case the amount stated numerically shall govern. However, in a case of a discrepancy between unit prices and extended totals, unit prices shall govern.

3.7.3 The estimate of quantities of items which are to be provided on a unit price basis are stated in the Price Form with as much accuracy as possible and is an approximation that shall be the basis for fair comparison of bids and upon which the award of the Contract shall be made. Payment to the Contractor for unit price work shall be made on the basis of units actually provided by the Contractor and accepted by Tampa Bay Water.

3.7.4 The Contractor shall pay all state and local sales and use taxes, as required by all laws and regulations. Tampa Bay Water reserves the right to implement an Owner's Director Purchase sales tax savings program with respect to this Project.

3.8 SUBCONTRACTORS AND SUPPLIERS

3.8.1 Each Bidder shall list, on the Subcontractor Form included in this ITB, the Subcontractors and Suppliers to whom that Bidder intends to award a subcontract in an amount of two percent (2%) or more of the total price on the Price Form. For each Subcontractor and Supplier identified, the Bidder shall provide all the information required by the forms.

3.8.2 If Tampa Bay Water has reasonable objection to any listed Subcontractor or Supplier, Tampa Bay Water may, after giving its intended Notice of Award, request the Bidder remove or replace that Subcontractor or Supplier, in which case that Bidder shall either perform the associated part of the work itself, if it holds a valid license for that classification and is so qualified, or nominate a substitute Subcontractor or Supplier, within the time period its Bid is to remain open, and without an increase in its price or time required to complete the work. If that Bidder declines, it shall not be awarded the Contract and its Bid shall be deemed withdrawn, but its declining to make the substitution will not constitute grounds for forfeiting its bid security. No Bidder shall be required to employ any Subcontractor or Supplier against whom it has reasonable objection.

3.9 TRADE SECRETS

Tampa Bay Water is subject to the Florida Public Records and Sunshine Laws. Each Bidder may clearly mark each page of the Bid that contains trade secrets or other confidential commercial or financial information which the Bidder believes should not be disclosed outside of the Agency. Disclosure of requested information will be determined in accordance with Florida laws, rules and regulations.

4.0 EVALUATION AND AWARD PROCESS INFORMATION

4.1 EVALUATION

All Bids received will be reviewed and tabulated by Tampa Bay Water. The tabulation will be posted on Euna and on Tampa Bay Water's website.

During the Bid review, Tampa Bay Water reserves the right to seek additional relevant information and clarification regarding any Bidder's qualifications to perform the work and to determine whether a Bidder is deemed responsive and responsible based on that information.

4.2 BID SUPPLEMENTS

After receipt of Bids, Tampa Bay Water shall notify the apparent low Bidder that it must, within two (2) days following notification, provide the following to Tampa Bay Water:

- A preliminary progress schedule, without specific dates, that will be used to track the Work;
- Bidder's three (3) most recent and current financial statements, certified by a Certified Public Accountant;
- Resumes for Bidder's project superintendent and other key personnel;
- Five references for recent and similar work performed by bidder; and
- Any additional information requested by Tampa Bay Water.

4.3 BASIS OF AWARD

4.3.1 The Notice of Award will be issued, if at all, by Tampa Bay Water on the basis of the Total Evaluated Bid Cost provided by the lowest responsive, responsible Bidder. The Total Evaluated Bid Cost is the adjusted amount of the Bidder's proposed total contract price, as determined by Tampa Bay Water, based upon such line items within the Bid which Tampa Bay Water elects to include in the Work.

4.3.2 In accordance with Section 287.05701, Florida Statutes, Tampa Bay Water may not consider a Bidder's social, political or ideological interest when determining if the Bidder is responsible.

4.3.3 Tampa Bay Water's Project Allowance and all other Allowances, as well as all Options as specified in the Bid, must be included in the total price on the Price Form.

4.4 AWARD OF CONTRACT

4.4.1 Tampa Bay Water shall have the right to investigate, among other things, the financial condition, experience record, and the equipment of each Bidder, and to determine to its satisfaction the competency of each to undertake the Project. Tampa Bay Water may request further and supplemental documentation from a Bidder. A Bidder's refusal to provide such documentation may result in the disqualification of its Bid. Tampa Bay Water shall have the sole discretion to determine which factors it deems significant.

4.4.2 The acceptance, if any, of a Bid will be by written Notice of Intent to Award which shall be posted in Euna project file. In the event of failure of the lowest responsive, responsible Bidder to sign the Contract and provide acceptable Performance Bonds and Payment Bonds, Tampa Bay Water may award the Contract to the next lowest responsive, responsible Bidder. Such an award, if made, will be made promptly after the failure of the first Bidder to comply with the award requirements.

4.4.3 Tampa Bay Water reserves the right to accept or reject all bids and to delay or cancel the Project prior to acceptance of any bid in the event Tampa Bay Water has failed to secure all the property or permits necessary for the Project. In addition, Tampa Bay Water reserves the right to include or exclude any Bid Options, and to waive any informalities or irregularities in Bids. Tampa Bay Water further reserves the right to seek clarification from any Bidder after the opening of the Bids and to award the Contract based on updated information obtained.

4.5 NOTIFICATION OF AWARD

Tampa Bay Water will select the lowest, qualified, responsive, responsible Bidder meeting the criteria and Specifications established herein to provide the services under this ITB. The awarded Contractor must be registered to do business in the State of Florida. Information regarding registration can be found at the Florida Department of State, Division of Corporations website at https://dos.myflorida.com/sunbiz. Notification of Tampa Bay Water's decision regarding this solicitation will be posted on Euna and via the link on Tampa Bay Water's website.

4.6 EXECUTION OF CONTRACT

The Notice of Award to a Bidder will be accompanied by two (2) unexecuted sets of the Contract documents. The successful Bidder shall within ten (10) days after receiving Notice of Award, sign and return to Tampa Bay Water the two (2) sets of Contract documents together with the Certificate of Insurance, Performance Bonds and Payment Bonds as required by the Contract documents. Within thirty (30) days after receiving the signed Contract documents including acceptable Performance Bonds and Payment Bonds from the successful Bidder, Tampa Bay Water's authorized agent will sign the Contract, whereupon Tampa Bay Water shall send the successful Bidder one fully executed copy of the Contract documents. Signature by both parties binds both parties to the Contract documents.

4.7 RIGHT TO PROTEST

Any person who is adversely affected by a Tampa Bay Water decision or intended decision may file a notice of protest in writing within 72 hours after the posting of the notice of decision or intended decision. The formal written protest shall be filed with the Purchasing Manager within ten (10) days after the date of the notice of protest is filed. Failure to file a timely notice of protest or failure to file a timely formal written protest shall constitute a waiver of proceedings. The formal written protest shall state with particularity the facts and law upon which the protest is based.

Failure to file a protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post a bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes. This includes, but is not limited to, any objection to or protest of this ITB, Notice of Award, and/or the actions of Tampa Bay Water.

4.8 NOTICE TO PROCEED

The Contract time shall begin on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the date the Contract is executed by Tampa Bay Water. The Contractor shall begin the Work no later than ten (10) days after the date specified for commencement of the Work in the Notice to Proceed.

4.9 PERFORMANCE BONDS AND PAYMENT BONDS

The successful Bidder shall deliver to Tampa Bay Water a Performance Bond and a Payment Bond each on the forms set forth in this ITB. Each Bond shall be in the full amount of the total price on the Contract and in accordance with the requirements of Florida Statutes Section 255.05, as security for the faithful performance of the Contractor, and the payment of all persons supplying labor and/or materials for the construction of the Work, and to cover all guarantees against defective workmanship or materials, or both, during the warranty period following the date of final completion of the Work. The surety or sureties furnishing these bonds shall have a sound financial standing and a record of service satisfactory to Tampa Bay Water, shall be authorized to do business in the State of Florida, and shall be listed on the

current U.S. Department of Treasury Circular Number 570, or amendments thereto in the Federal Register, of acceptable Sureties for Federal Projects.

4.10 RETURN OF BID SECURITY

Within fifteen (15) days after the opening of the Bids, Tampa Bay Water will return the bid security to each Bidder whose Bid is not to be considered further in the award of the Contract. Retained bid securities shall be held until the Contract has been fully executed, after which time all bid securities other than those which have been forfeited, shall be returned to the respective Bidders.

5.0 SPECIAL TERMS AND CONDITIONS

5.1 SUBSTITUTES

The Contract shall be awarded, if at all, on the basis that the Bidder awarded the Contract shall furnish only items of material and equipment named or specified in the Contract documents. Each Bidder shall list the manufacturer and Supplier as required on the Major Equipment Manufacturers Form showing whom that Bidder intends to award a subcontract for furnishing each selected named or specified item. Substitutes shall not be considered until after the Notice of Award.

5.2 CHANGES IN QUANTITIES

Tampa Bay Water reserves the right to increase or decrease the quantity of any unit price work item shown in the bid that it may deem necessary, except that such increases or decreases in quantities of each item of unit price work awarded shall not affect the stated unit price rate if the quantity adjustment is not more than twenty-five percent (25%) of the total quantity shown on the bid for such item of unit price work. If the quantity is adjusted by more than twenty-five percent (25%), the unit price may be equitably adjusted by an appropriately issued change authorization or change order.

5.3 EMPLOYEE VERIFICATION

In accordance with Section 448.095, Florida Statutes, the Awardee/Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Awardee/Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Awardee/Contractor enters into a contract with a subcontractor, the subcontractor must provide the Awardee/Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Awardee/Contractor shall maintain a copy of such affidavit for the duration of the award/contract. If Tampa Bay Water has a good faith belief that the Awardee/Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Awardee/Contractor, and the Contractor may not be awarded a contract with Tampa Bay Water for at least 1 year after the date on which the award/contract was terminated. The Awardee/Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Awardee/Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Awardee/Contractor and order the Awardee/Contractor to immediately terminate the award/contract with the subcontractor.

5.4 FOREGIN COUNTRIES OF CONCERN

Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the :People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or Agency under the significant control of such Foreign Country of Concern.

5.5 ANTI-HUMAN TRAFFICKING

In accordance with Section s.787.06, Florida Statutes, the CONTRACTOR must provide TAMPA BAY WATER with an affidavit regarding Human Trafficking. A Consultant Affidavit included herein must be completed by CONTRACTOR to attest, under penalty of perjury, that CONTRACTOR does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

6.0 SUPPLEMENTAL INFORMATION FOR BIDDERS

6.1 The various reports, drawings and other documents listed in this section shall be collectively referred to as the "Existing Condition Documents". The Existing Condition Documents are made available solely to assist Bidders to make their own assessment of the Project. It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Existing Condition Documents thoroughly; (b) visit the Project site to become familiar with general, local and prevailing conditions; (c) familiarize itself with and consider all laws and regulations covering the Work; (d) study and carefully correlate the Bidder's observations with this package of ITB documents; and (e) request written interpretations or clarifications promptly after discovering any conflicts, ambiguities, errors or omissions in the ITB documents or Existing Condition Documents.

6.2 The Property Stipulation/Schedule Summary in this section contains information pertaining to scheduling of construction in easements acquired by Tampa Bay Water for this Project.

6.3 Tampa Bay Water and Engineer make no representation or warranty about the accuracy, correctness, or completeness of the Existing Condition Documents. Also, neither Tampa Bay Water nor the Engineer warrants or assumes any responsibility for the accuracy, correctness, reliability or completeness of information or data relating to surface or subsurface conditions, contained in any reports not prepared by Tampa Bay Water, the Engineer or their consultants, including information about underground utilities owned by others at or contiguous to the Project site furnished by the owners of those underground utilities or others.

6.4 Finally, neither Tampa Bay Water nor Engineer assumes any responsibility for any conclusions or interpretations made by any Bidder based on the data, non-technical data, interpretations or opinions contained in the Existing Condition Documents. Notwithstanding the foregoing, Bidders should refer to the Contract documents (especially Paragraph 6.8 of the General Conditions) for provisions concerning changes that may be permitted due to materially different site conditions.

6.5 EXISTING CONDITION DOCUMENTS (Identified Documents to be uploaded separately into Tampa Bay Water's Euna)

SURFACE AND SUBSURFACE STRUCTURES AND UNDERGROUND UTILITIES

Structure/Utility Owner	**Type/Description**	**Method of Identification**
Not Applicable		

TECHNICAL DATA, GEOPHYSICAL REPORTS AND TESTS

Author	**Report Identification**
Tierra, Inc. Pasco	Report of Geotechnical Engineering Services, dated January 3, 2024 (ITB Attachment 3)

PERMITS

FDOT Utility Permit Package	Permit No. 2025-H-798-00264 Dated 12/14/2016 (ITB Attachment 4-1)

Environmental Resource Permit (ERP) Pasco County	Permit No. 51-0459255-002-EI Permit Issuance Date: 12/19/2025 (ITB Attachment 4-2)
Public Water System (PWS) Pasco County	ID # 651-2230 DEP File No. 0030575-028-WC-M1 Permit Issuance Date: 11/12/2025 (ITB Attachment 4-3)

PROPERTY STIPULATION/SCHEDULE SUMMARY

Property Owner	**Summary Performance Stipulations for Time Constraints**
Not Applicable	

7.0 PRE-BID CONFERENCE

Pre-Bid Meeting to be held on February 18, 2026 at 10:00 a.m. (EST)
Location: Tampa Bay Water's Cypress Creek Pump Station (Map shown below)
8865 Pump Station Road, Land O'Lakes, FL 34639



Enter at Guard Station and proceed to IEM Building, Magnolia Room for Pre-Bid Meeting

8.0 BID SUBMITTAL FORMS

1. BID FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

OFFER

TO: Tampa Bay Water

The undersigned hereby offers and agrees to furnish the goods and/or services in compliance with all terms, scope of work, conditions, specifications, and addenda in this Invitation for Bids.

INVESTIGATION:

The undersigned, by submission of this Bid Form, certifies it has thoroughly examined all ITB documents, including any Existing Condition Documents and Project site in order to familiarize itself with all existing conditions. This may include the physical condition on the ground including, but not limited to, the soil borings and has satisfied itself that the number of borings and their locations are adequate or has made any additional soil tests or borings if they feel the number, type, or location of those provided by Tampa Bay Water are inadequate or incomplete.

OBLIGATION:

The undersigned, by submission of this Bid Form, hereby agrees to be obligated, if selected as the Contractor, to provide the stated goods and/or services to Tampa Bay Water for the term as stated herein, and to enter into a Contract with Tampa Bay Water, in accordance with all documents herein, together with any written addenda.

BID PRICE:

The undersigned agrees to abide by the pricing contained on the Price Form.

ADDENDA:

The Bidder acknowledges receipt of the addenda noted below and has incorporated the content of Addenda into this Bid:

#_____ #_____ #_____ #_____

CONTRACTOR CONTRACT:

The Bidder agrees to the terms and conditions in the draft Contract included with this ITB **(initial one below)**:

____ "As is" with no modifications.

____ With the changes requested in the attached document (attach to this form) and understands that Tampa Bay Water reserves the right to reject the change requests.

LITIGATION:

The Bidder understands it must disclose any past, pending or threatened litigation or regulatory action involving construction services provided by the Bidder **(initial one below):**

____ None are known to exist.

____ Action exists, and a full explanation has been attached to this form.

CONFLICTS OF INTEREST:

The Bidder understands it must disclose any potential conflict of interest which would adversely affect the Bidder's ability to provide fair, loyal, and competitive services to Tampa Bay Water. Such disclosures shall include, but not be limited to, the Bidder's contractual obligations, property interests or clientele relationship or the property interests, contractual obligations or relationships of the Bidder's principals, officers, directors, employees or agents which are directly or indirectly related to Tampa Bay Water and its operations, its Agency Representative, the Southwest Florida Water Management District (SWFWMD), the Florida Department of Environmental Protection (FDEP), or any of our member governments **(initial one below):**

____ None are known to exist.

____ Potential or apparent conflict exists, and a full explanation has been attached to this form.

COMPLIANCE WITH LAWS/PERMITS:
The Bidder certifies it is not currently in violation of any regulatory rules and regulations that may have an impact on the firm's operations, and it agrees to comply with all local, State, and Federal statutes, regulations, directives and orders as applicable to the services provided and offered to Tampa Bay Water. The Bidder further agrees it has not been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List; nor has it engaged in a boycott of Israel and has no business operations in Cuba or Syria. (Per Section 287.135(5), Florida Statutes). Additionally, the Bidder certifies (pursuant to Subsection 287.134(2)(a), Florida Statutes) it has not been placed on the discriminatory vendor list.

NONCOLLUSION:
The undersigned, hereinafter called Bidder, declares and certifies that (i) all principals with an interest in this Bid have been named herein; (ii) this Bid is, in all respects, fair and without fraud; (iii) this Bid is made without collusion with any official of Tampa Bay Water or Engineer; and (iv) the Bid is made without any connection or collusion with any person submitting another Bid for the Work.

CONTRACT EXECUTION:
The undersigned Bidder proposes and agrees that if this Bid is accepted, it shall enter into a contract with Tampa Bay Water in the form included with the Contract documents and perform and furnish all Work as specified or indicated in this ITB at the price bid and within the time specified, and in accordance with the other terms and conditions of the Contract documents.

CONTRACT MODIFICATION PRICING:
Bidder acknowledges and agrees that the separate prices on this Bid, where they are applicable and deemed acceptable by Tampa Bay Water, will be used by Tampa Bay Water and Bidder, if awarded the Contract documents, whenever similar work is added or deducted from the Contract documents.

PROJECT UNDERSTANDING:
Bidder represents that before making its Bid, Bidder has familiarized itself with the nature and extent of the Contract documents (as defined in the General Conditions), Work, Project site, locality, and all local conditions and laws and regulations that may in any manner affect cost, schedule, progress, performance, or furnishing of the Work.
Further, Bidder has read and studied carefully: reports of explorations and tests of surface and subsurface conditions; and those drawings of physical conditions in or relating to existing surface or subsurface structures or underground utilities; and accepts the determinations established in 6.0

Supplemental Information for Bidders to the extent of the technical data contained in those reports and drawings upon which Bidder may rely, which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has read and studied all information and data shown or indicated in the Contract documents about other work under separate contracts at or near the Project site and assumes responsibility for all conditions and consequences which may result from other work and which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has correlated the results of the activities, examinations, and studies as noted above, with the terms and conditions of the Contract documents and has exercised its own independent judgement in the interpretation of this information.

NOTICE OF ERRORS:
Bidder has given Tampa Bay Water notice of all conflicts, ambiguities, errors, or omissions, if any that Bidder has discovered in the ITB.

FIRM OFFER:
Bidder has read the Contract documents and accepts all of the terms and conditions of the Contract documents, including without limitation those dealing with the disposition of Bid Security. Bidder acknowledges all Bids shall remain firm for 90 days or as otherwise required by this ITB.

REQUIREMENTS IN EFFECT:
Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws and Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specifications, manual, code, or Laws and Regulations in effect on the date of the receipt of Bids, except as may be otherwise specifically stated.

PUBLIC RECORDS:
Each Bidder, by submitting a Bid, acknowledges the Agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Bidder establishes its right to a public records exception. It is the responsibility of the Bidder alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Bidder or any other party as a result of disclosing any such information or materials.

TRENCH SAFETY ACT:
Bidder acknowledges and agrees that the trench safety standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of Bidder. The price on the Price Form includes Bidder's total cost for compliance with the Florida Trench Safety Act.

SUPPLIERS:
Bidder certifies that all suppliers, if acceptable to Tampa Bay Water, shall be supplying the material or equipment for the portions of the Work identified in the list in the event Bidder is awarded the Contract.

I certify, under penalty of perjury, that I have the legal authorization to bind the firm hereunder: The individual signing this form certifies, under penalty of perjury, that (s)he has the authority to sign on behalf of the firm. (If signature is by an agent, other than an officer of the corporation or a member of a partnership, a notarized power-of-attorney must accompany the Bid.) The following is certified by the signing of this form:

BID CONTACT INFORMATION AND PRIMARY SIGNATURE

Firm Name

Firm Address

Printed Name

Phone Number

Email Address

Firm Business License Number

License Classification Renewal Date

Is license active? _____

This Bid is submitted on this ____ day of _____ , 20____.

2. AUTHORIZED SIGNATURES

This Bid Form must be signed in the legal name of the company and by an officer or partner having authority to bind the company or firm by his or her signature. Electronic signatures are acceptable. Complete the applicable section below based on firm type:

If Bidder is an individual:

Name of Individual: _____

Title: _____

By _____
(if other than individual, Attach Power of Attorney)

Doing Business As: _____

Business Address: _____

Telephone: _____

If Bidder is a Partnership:

By:_____
(True Name of Partnership)

_____
Name of General or Limited Partner(s) Authorized to Sign

By:_____
(Attach evidence of authority to sign)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

Business Address: _____

Telephone: _____

If Bidder is a Corporation:

By: _____
(Legal Corporation Name)

Name: _____

Title: _____

By: _____
(attach evidence of authority to sign)

Name and Title and Signature of Official Attesting:

Name: _____

Title: _____

By: _____

Business Address: _____

Telephone: _____

State of Incorporation: _____

If Bidder is a Joint Venture:

Each joint venturer shall be identified below and shall sign the Bid. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the same manner as is indicated above.

Joint Venture Partners:

_____

_____

_____

_____

3. PRICE FORM - CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN - UTILITY CONFLICT (Project #07153)

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Item No. (a)	FDOT Pay Item No. (b)	Description (c)	Unit (d)	Estimated Quantity (e)	Unit Price ($) (f)	Total Estimated Price ($) (e)x(f)=(g) (g)
1	Misc.	General Conditions, Bonds and Insurance (2%)	Lump Sum	1	$_____	$_____
2	T&E	Mobilization, and Demobilization (not to exceed 5% of the bid)	Lump Sum	1	$_____	$_____
3	1050 61260	Furnish and Install 60-inch Steel Water Main by Open Cut	Linear Foot	306	$_____	$_____
4	1050 61160	Furnish and Install 60-inch Steel Water Main by Microtunneling	Linear Foot	195	$_____	$_____
5	1050 61236	Furnish and Install 36-inch Steel Water Main by Open Cut	Linear Foot	10	$_____	$_____
6	1055 61160	Furnish and Install 60-inch Steel Fittings	Each	7	$_____	$_____
7	1055 61136	Furnish and Install 36-inch Steel Fittings	Each	2	$_____	$_____
8	1080 26102	Furnish and Install Air Release Valves	Each	2	$_____	$_____
9	1080 24160	Furnish and Install 60-inch Butterfly Valve	Each	2	$_____	$_____
10	1080 24136	Furnish and Install 36-Inch Butterfly Valve	Each	1	$_____	$_____
11	0400-603	Cathodic Protection	Lump Sum	1	$_____	$_____
12	E574 1	Sod Restoration	Square Yard	3,186	$_____	$_____
13	0430830	Place Existing Pipe Out of Service by Grouting	Cubic Yard	120	$_____	$_____
14	1050 16006	Place Existing Pipe Out of Service by Removing	Linear Foot	250	$_____	$_____
TOTAL BID PRICE: (TOTAL OF ITEMS 1-14 IN COLUMN (G) FOR BASIS OF AWARD)						$_____

This project provides an Owner's Allowance in the amount of $246,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

4. FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", _____, a corporation _____, individual ____, partnership _____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", _____, a corporation of the state of _____, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of _____ _____ Dollars ($_____), lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017, covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

IMPORTANT: Sureties executing this Bid Bond shall be currently authorized to do business in the State of Florida as surety and, except as otherwise provided by the Florida Statutes, be on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies. Bonds cannot be in excess of the amount indicated as approved by that list.

_____
(Name of Surety)

_____
(Address)

_____
(Telephone Number)

_____
(Name of Duly Authorized Florida Agent)

_____
(Address)

_____
(Telephone Number)

Signed and sealed this _____ day of _____, 20_____.

Bidder/Principal

Witness

_____ By:_____

_____
Name and Title

Surety

Witness

_____ By:_____

_____
Name and Title

By Attorney-In-Fact: _____
(Attach Certified Copy of Power of Attorney

5. CERTIFICATE OF PRINCIPAL

I, _____, certify that I am the Secretary of the Corporation _____, or a General Partner _____ or Managing Partner _____ of the partnership, named as the Bidder in the attached Bid Bond; that _____ who signed the Bid Bond on behalf of the Bidder, was then _____ of that organization _____ or partnership _____; that I know his/her signature, and on the Bid Bond is genuine; and that the Bid Bond was duly signed, sealed, and attested for and on behalf of that organization _____ or partnership _____ by authority of its governing body _____ or partners _____.

_____

Signed by Secretary of the Corporation or
By General or Managing Partner Authorized to Sign

_____

Name of the Corporation or True Name of the Partnership

(Corporate Seal)

Verification

State of _____

County of _____

Before me, a Notary Public duly commissioned, qualified and acting, by means of ☐ physical presence or ☐ online notarization, personally appeared _____ who is personally known to me or who has produced _____ as identification, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for _____ named Bidder in favor of the Tampa Bay Water.

Subscribed and sworn before me this _____ day of _____, 20 ____.

_____

Notary Public

My Commission Expires: _____

6. CONTRACTOR AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

STATE OF _____
COUNTY OF _____

BEFORE ME, the undersigned authority, appeared _____, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the _____ of _____ (the "Contractor").
4. I am authorized by _____ to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor, nor any subcontractor of Contractor, has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor or any subcontractor of Contractor has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.
C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an Agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.
D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.
E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or Agency under the significant control of such Foreign Country of Concern.

_____
Signature of Affiant
on behalf of Contractor/

By: _____
As its: _____
Dated: _____

Sworn to (or affirmed) and subscribed before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20___, by _____, on behalf of _____, who is personally known to me or who has produced _____ as identification.

_____
Print Name: _____
Notary Public of the State of Florida

My Commission Expires:

7. NON-COLLUSION AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Wade Trim, Inc.
Project Name: Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict
Project No.: 07153

Affiant, _____, being first duly sworn, deposes and says that:

Affiant is (Title) _____ of _____, ("Bidder"). Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.

Bidder has submitted to Tampa Bay Water, a Bid ("Bid") to construct the above referenced Project, also referred to in this Affidavit as the "Work".

This Non-Collusion Affidavit is executed by Affiant for inclusion with the submission to Tampa Bay Water of the Bid and may be relied upon by Tampa Bay Water in considering the Bid.

Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid; has not entered into any illegal contract, combination, conspiracy or other unlawful act; and the Bid is genuine and is not a collusive or sham Bid.

Neither Bidder nor any of its officers, partners, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix a price or prices (including any overhead, profit or other cost elements) for the Bid; or have made any Contract, or given or promised any consideration to induce any other person not to submit a Bid for the Work, or to submit a Bid at a specified price; or have secured or intended to secure through any Contract an unlawful advantage against Tampa Bay Water, or any other person interested in the Work.

The Bid is not intended to secure an unfair advantage or benefit from Tampa Bay Water or in favor of any person interested in the proposed Work.

The prices proposed are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and neither Bidder nor any of its officers, partners, owners agents, representatives, employees, or parties in interest, including this Affiant, have divulged information regarding the Bid or any data about the Bid to any other person.

By: _____
Print Name: _____
Title: _____

8. LITIGATION HISTORY

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

List all litigation and arbitration from the past 5 years, regardless of results or current status.

Project Name	Parties to Dispute	Nature of Dispute	Resolution of Dispute

[Attach Additional Pages If Necessary]

9. MAJOR EQUIPMENT LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

To enable Tampa Bay Water to evaluate Bidder's qualifications to perform the Work, Bidder shall list all of the equipment it proposes to use in performing the Work.

Make/Model	Year	Owned or Leased	Condition	Availability for this Project

[Attach Additional Pages if Necessary]

10. MAJOR EQUIPMENT MANUFACTURERS

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Line Item	Description	Equipment Type/Material	Manufacturer	Distributor or Supplier

[Attach Additional Pages If Necessary]

11. SUBCONTRACTORS LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Bidder shall perform (with Bidder's own employees) not less than fifty-one percent (51%) of the labor (total contract price less the cost of materials for the Project). For all remaining work, list each Subcontractor to whom Bidder intends to award a sub-contract in excess of two percent (2%) of the Total Price on the Price Form. These Subcontractors, if acceptable to Tampa Bay Water, shall be awarded subcontracts for the portions of the Work identified in the list, in the event Bidder is awarded the Contract.

Work To Be Performed	Name/Address	Percent of Total Bid Price

12. QUESTIONNAIRE

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Wade Trim, Inc.
Project Name: Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict
Project No.: 07153

The undersigned warrants that all statements and answers to questions hereinafter made are current, accurate, and complete as of the date indicated below.

Respond to the items below with sufficient information to show the Bidder has sufficient qualifications to perform the required Work. (See 3.2 Minimum Qualifications)

1. How many years has your organization been in business as a licensed general contractor under your present business name? _____.
2. Attach to this Form a list of all contracts comparable to this project that your organization has performed during the last five years. For each contract listed, include the owner's contract number, contract title, brief project description, original Contract Price, final Contract Price, substantial completion date or percent complete (if not completed), and the name, address and phone number of an individual from the owner to which your organization may refer.
3. Are there any current federal, state, or local tax liens filed on your organization? ___Yes ___No
   If yes, attach a list of all current tax liens and an explanation for each.
4. Has your organization failed to complete work awarded to it in the last five years? ____Yes ____No
   If yes, attach an explanation, including description of the project, identification of the owner, contract award date, and reason work was not completed.
5. Has your organization ever had a contract terminated for default in the last five years? ___Yes ____No
   If yes, attach an explanation, including description of the project, identification of the owner, contract termination date, and reason for each termination for default.
6. Has your organization ever had significant accidents or OSHA violations in the last five years? ___Yes ____No
   If yes, attach a list of each significant accident or OSHA violation, including a description and date of each event, and an explanation for each.
7. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction project? _____.
   If so, state name of individual, organization and reason therefore.
   _____
   _____
   _____
8. Does your organization or its key personnel now hold valid certificates of competency or licenses for which a specific license is required? _____.
   If so, attach copies of all licenses covering the Work under the Contract Documents together with the specific political jurisdiction issuing said licenses.
   Attachment _____, consisting of _____ pages.
9. Is your organization owned, controlled or organized under the law of a Foreign County of Concern as identified in Section 287.138, Florida Statutes? _____

By: _____
Print Name: _____
Title: _____

9.0 SAMPLE CONTRACT

CONTRACT
Construction
Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict (Project No. 07153)
Contract No. 2026017

Bid and Contract Documents

Contract Form	
Exhibits	
Exhibit A – Tampa Bay Water Documents	
A-1 Addendum(s) (to be added after award)	
A-2 Invitation to Bid (to be added after award)	
A-3 Technical Specifications (see ITB Attachment 1 in EUNA)	
A-4 Drawings (see ITB Attachment 2 in EUNA)	
A-5 Geotechnical Report (see ITB Attachment 3 in EUNA)	
A-6 Permits (see ITB Attachments 4-1; 4-2; & 4-3 in EUNA)	
Exhibit B – Bidder's Response Forms (to be added after award)	
Bid Submittal & Bid Price Form (to be added after award)	

CONTRACT

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CONTRACT

This Contract, made and entered into as of the _____day of _____, 2026, by and between Tampa Bay Water, A Regional Water Supply Authority ("Tampa Bay Water") and _____, a corporation of the State of _____, or other business entity authorized to do business in the State of Florida ("Contractor"), with respect to that certain Project consisting of the Work to be performed in accordance with the Contract Documents, supplementary conditions, general conditions, invitation to bid documents, bid price form, technical specifications and all issued addenda for Tampa Bay Water's Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, (Project 07153)

W I T N E S S E T H:

Tampa Bay Water and the Contractor in consideration of the mutual covenants and obligations contained herein, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, agree as follows:

Work

1.1 The Contractor shall perform all of the Work in accordance with the Contract Documents (as that term is defined in the General Conditions which are attached to and made a part of this Contract).

1.2 Contractor shall perform the Work in accordance with generally accepted construction practice under the same or similar circumstances at the same time and in the same locality. Contractor shall have exclusive responsibility for all construction means, methods, techniques, sequences, and procedures necessary or desirable for the correct, prompt, and orderly prosecution and completion of the Work as required by this Contract and the Contract Documents.

1.3 The responsibility to provide the construction means, methods, techniques, sequences and procedures shall include, but not be limited to, the obligation of the Contractor to provide the following construction requirements, as applicable: temporary power and light; temporary offices and construction trailers; required design certifications; required approvals; weather protection; site clean-up and housekeeping; construction trade management; temporary parking; a construction safety plan; safety and first aid facilities; correction of or compensation for defective work or equipment; Subcontractors' insurance certificates; storage areas; workshops and warehouses; temporary fire protection; site security; temporary Utilities; including without limitations; potable water and water for use in performing the Work (in all cases, including a backflow preventer meeting ANSI A40.6); phone; sanitary; gas or fuel; Subcontractor and Supplier qualification; equipment and materials procurement and expediting; receipt and unloading and proper storage of delivered materials and equipment; erection rigging; temporary supports; submittal and shop drawings review and orderly filing system; construction and procurement critical path scheduling; construction coordination; and cooperation with Tampa Bay Water in implementation of Tampa Bay Water's owner's direct purchase sales tax savings program.

1.4 During the progress of the Work, Contractor shall at all times during normal working hours afford Tampa Bay Water and Engineer every reasonable opportunity for observing all Work. During any such observation, all representatives of Tampa Bay Water and Engineer shall comply with all safety and other rules and regulations applicable to presence in or at the Work site.

1.5 Contractor shall have full responsibility, to the extent applicable, for locating all underground Utilities in advance of excavation; scheduling excavation and uncovering in advance, unless it

conflicts with Work already uncovered; shoring, blocking, and protecting underground Utilities; repairing any damage done to the satisfaction of Tampa Bay Water and Engineer and the owners of those underground Utilities; promptly notifying Tampa Bay Water and Engineer of any newly discovered underground Utility; and the safety, protection and repairing of any damage done to any affected Work. Al1 costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.6 Contractor shall use care and diligence, and shall take all appropriate precautions, to protect the Work and the Work site and the property of other persons (including any materials, equipment, or other items furnished by Tampa Bay Water) from damage due to the nature of the Work, the natural elements, carelessness of others, and from any cause, until final completion of the Work; and for such purpose, Contractor shall provide fencing, protective features (such as tarpaulins, boards, boxing, frames, canvas guards, and fireproofing), and other safeguards to the extent Contractor reasonably determines such are necessary and proper in the performance of the Work.

1.7 Contractor shall ensure that each employee, representative, Subcontractor, Supplier, and others acting for the Contractor use designated access roads and parking areas. Contractor shall employ watchmen on the Work site when necessary and shall also erect and maintain such strong and suitable barriers and such lights as shall effectively prevent the happening of any accident to health or to property or to any partially completed Work or to any materials stored on or adjacent to the Work site. Contractor shall employ any additional temporary fencing and gates to adequately protect the Work.

1.8 Stored materials shall be kept in a neat and orderly manner. Materials that are subject to deterioration by exposure to the sun, rain or other elements shall be kept adequately covered and protected. Contractor shall be responsible for protecting all stored materials and the Work site safe from theft and vandalism.

1.9 All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price.

1.10 Contractor shall notify owners of adjacent property (including underground Utility owners) not less than forty-eight (48) hours, or the time period required by Laws and Regulations, whichever period is longer, prior to commencing the Work, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. At least five (5) days prior to providing such notice to adjacent property owners, Contractor shall submit its proposed written notice to Tampa Bay Water for review and approval. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at Contractor's expense, which shall be considered to have been included in the Contract Price.

1.11 In case of damage or destruction to the Work, the Work site or adjacent properties resulting from any cause, and regardless of the extent thereof or the estimated cost of repair, replacement or restoration, and whether or not any insurance proceeds are sufficient or available for the purpose, Contractor shall immediately undertake and complete the repair, replacement and restoration of the damage or destruction to the character and condition existing immediately prior to the damage or destruction, all at Contractor's sole cost and expense, which shall be considered to have been included in the Contract Price, except in the event that such damage or destruction is caused by Tampa Bay Water, its employees, agents, representatives, including Engineer, or is the result of an Uncontrollable Circumstance.

1.12 Contractor shall notify Tampa Bay Water immediately of any damage or destruction to the Work, the Work site or any adjacent properties including, but not limited to, hazardous substance spills, damage to sensitive areas, permit or approval violations, fires and injuries. Additionally, Contractor shall notify the required Insurance carriers and Sureties of any

damage or destruction to the Work, the Work site, or adjacent properties, or any accidents on the Work site, as promptly as possible after Contractor learns of any such damage, destruction or accidents. As soon as practicable after learning of any such occurrence, Contractor shall submit a full and complete written report to Tampa Bay Water.

1.13 In case of an emergency which threatens loss or injury to persons or property, Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and shall immediately provide Notice to Tampa Bay Water and Engineer of its action. Any claim for compensation by Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the amount of compensation if any, shall be determined by mutual contract, subject to cost substantiation.

Contract Time

2.1 Tampa Bay Water and the Contractor recognize that time is of the essence with respect to Contractor's performance of its obligation under the Contract Documents, and Tampa Bay Water shall suffer financial loss if Substantial Completion and Final Completion of the Work is not achieved within the Contract Time specified in paragraph 2.2 below, or if the Well Collection Main Out-of-Service Period specified in Paragraph 1.5.A.9., of Section 01100, Special Project Procedures (the "Well Collection Main Out-of-Service Period") is exceeded. Accordingly, if the Contractor fails to achieve Substantial Completion or Final Completion of the Work within the Contract Time, or exceeds the Well Collection Main Out-Of-Service Period, it shall pay Tampa Bay Water Liquidated Damages in accordance with the terms stated below in *Article III, Liquidated Damages*.

2.2 The Contractor shall commence the Work within ten (10) days after the date specified for the commencement of the Work in the Notice to Proceed and shall complete all Work hereunder as follows:

a. The Well Collection Main Out-Of-Service Period is fourteen (14) calendar days, as specified in Paragraph 1.5.A.9., of Section 01100, Special Project Procedures.

b. All facilities shall be manually operational to provide Tampa Bay Water at its option the full time use of the Project as intended by the Contract Documents and the Contractor shall perform the Work to achieve Substantial Completion within three-hundred seventy-eight (378) calendar days of issuance of Notice to Proceed as the commencement date of the Contract Time.

c. The Contractor shall perform the Work to achieve Final Completion within four hundred twenty-seven (427) calendar days of issuance of Notice to Proceed as the date of commencement of the Contract Time.

2.3 The completion deadlines in this Section 2 are subject to adjustment in accordance with the General Conditions.

3.0 Liquidated Damages

3.1 If the Contractor fails to achieve Substantial Completion or Final Completion of the Work within the Contract Time, or exceeds the Well Collection Main Out-of-Service Period, as said time periods may be adjusted pursuant to the terms of the Contract Documents, Contractor shall pay Tampa Bay Water Liquidated Damages in accordance with the following:

a. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount of Two Thousand Dollars and 00/cents ($2,000.00) for each day that exceeds the Well Collection Main Out-of-Service Period. These Liquidated Damages are Tampa Bay Water's sole and exclusive Well Collection Main Out-of-Service Period delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event the Well Collection Main Out-of-Service Period is exceeded. The Contractor agrees that these Well Collection Main Out-

of-Service Period Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Well Collection Main Out-of-Service Period Liquidated Damages are independent of the Substantial Completion and Final Completion Liquidated Damages noted in Paragraphs 3.1.b. and c. below.

b. The Contractor shall pay Tampa Bay Water as Liquidated Damages, and not as a penalty, the amount One Thousand Dollars and 00/cents ($1,000.00) for each day that expires after the Contract Time specified above in paragraph 2.2.b for Substantial Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Substantial Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Substantial Completion of the Work is delayed. The Contractor agrees that these Substantial Completion Liquidated Damages do not constitute a penalty or forfeiture.

c. The Contractor shall pay Tampa Bay Water as Liquidated Damages and not as a penalty, the amount of Five Hundred Dollars and 00 cents ($500.00) for each day that expires after the time specified in Paragraph 2.2.c for Final Completion. These Liquidated Damages are Tampa Bay Water's sole and exclusive Final Completion delay related damages and represent a reasonable estimate of Tampa Bay Water's damages in the event Final Completion of the Work is delayed. The Contractor agrees that these Final Completion Liquidated Damages do not constitute a penalty or forfeiture. Also, Contractor agrees these Final Completion Liquidated Damages are in addition to, and not duplicative of, the Substantial Completion Liquidated Damages noted in Paragraph 3.1.b above.

4.0 Contract Price

4.1 Tampa Bay Water hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of all of the Contractor's obligations under the Contract Documents, and the Contractor agrees to accept in full payment the Contract Price of: _____ Dollars and _____Cents ($_____), (*contract price will be inserted upon award of contract*) subject to the conditions governing payments to the Contractor in the Contract Documents. If the Contract Price includes any Unit Price amounts and the actual quantity of Unit Price items installed is different than the estimated quantity, then the Contract Price shall be adjusted in accordance with the Contract Documents. The Contract Price includes, if applicable, only those Alternates accepted by Tampa Bay Water, as identified in paragraph 4.3 below. The Contract Price includes, if applicable, only those Allowances established by Tampa Bay Water, as identified in paragraph 4.4 below.

4.2 The Unit Prices and associated estimated quantities included within the Contract Price are attached hereto and made a part hereof as Schedule A.

4.3 The following Bid Options have been accepted by Tampa Bay Water and are included within the Contract Price:

ALTERNATE	Price

4.4 The following Allowances have been established by Tampa Bay Water and are included within the Contract Price:

ALLOWANCE	Price
Owner's Allowance	$246,000.00

Payment of Allowances shall only be authorized by issuance of Change Authorization signed by Tampa Bay Water in accordance with Section 7.2.1 of the General Conditions.

5.0 Payment

Payment procedures are outlined in the General Conditions, Article VII Payment. All monies not paid when due shall bear interest at a rate not to exceed the interest rate allowed by law to be paid by governmental entities in Florida, provided that this does not exceed six percent per year simple interest.

Tampa Bay Water's payment to Contractor of any progress or final payment shall not release the Contractor of any liability and shall not be deemed evidence of performance or be construed as an acceptance of defective or improper Work, or Work that does not comply with the requirements of the Contract Documents.

6.0 Miscellaneous

6.1 All Contract Documents are hereby incorporated into and made a part of this Contract by this reference. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract Documents. The Contract Documents represent the final and entire integrated Contract between the parties with respect to the Work. The Contract Documents supersede all prior oral or written Contracts, if any, between the parties, and any statement, representation, promise or inducement not set forth in the Contract Documents is null and void and not binding on Tampa Bay Water or the Contractor. Except for the warranty and third party beneficiary rights of Tampa Bay Water set forth herein, the Contract Documents shall not in any way create a relationship of any kind between the Engineer and the Contractor or between Tampa Bay Water and a Subcontractor or Supplier, or between Tampa Bay Water and any other person. If any provision(s) of the Contract Document is/are invalid, illegal, or unenforceable such provision(s) shall be considered divisible, and all other provisions of the Contract Documents shall nevertheless remain in full force and effect.

6.2 The Contractor shall not sell, assign, transfer or otherwise convey any of its rights and shall not delegate any of its duties under the Contract Documents without the prior and expressed written consent of Tampa Bay Water and the Surety. Any attempted sale, assignment, transfer, conveyance or delegation of the Contractor's rights under this Contract or the other Contract Documents in violation of the terms of this paragraph shall be void and shall relieve Tampa Bay Water of any further liability under the Contract Documents but shall not relieve the Contractor or the Contractor's Surety(ies) of any liability. If Tampa Bay Water consents in writing to an assignment, unless specifically stated to the contrary in the consent, the assignment shall not release or discharge the Contractor from any duty, responsibility or obligation set forth in the Contract Documents, and shall not release or discharge the Surety(ies) under the bonds required by the Contract Documents.

6.3 This Contract shall be binding on Tampa Bay Water, the Contractor, and all of their respective successors, heirs, legal representatives and, if Tampa Bay Water has consented to an assignment or delegation as provided in the previous paragraph, assigns and delegates.

6.4 Any waiver by Tampa Bay Water of any provision of the Contract Documents must be specific and in writing and shall apply only to the particular matter concerned and not to other similar or dissimilar matters. Any waiver of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach. Neither the failure of Tampa Bay Water to

exercise any power given to Tampa Bay Water under the Contract Documents or to insist upon compliance by the Contractor with Contractor's obligations under the Contract Documents, nor any custom or practice of Tampa Bay Water and Contractor at variance with the terms of the Contract Documents, shall constitute a waiver of Tampa Bay Water's right to demand full and complete compliance by the Contractor with the terms and provisions of the Contract Documents.

6.5 Nothing contained in the Contract Documents shall in any manner authorize, empower or constitute the Contractor, its Subcontractors or Suppliers as agent(s) of Tampa Bay Water; authorize or empower the Contractor, its Subcontractors or Suppliers to assume or create any obligation or responsibility whatsoever, express or implied, on behalf of or in the name of Tampa Bay Water; or authorize or empower the Contractor, its Subcontractors or Suppliers to bind Tampa Bay Water in any manner or make any representation, warranty, covenant, contract or commitment on behalf of Tampa Bay Water. The Contractor shall perform all Work under the Contract Documents as an independent contractor. This Contract does not create, and shall not be construed as creating, any rights enforceable by any person not a party to the Contract.

6.6 This Contract and the Contract Documents shall be governed by and construed in accordance with the Laws and Regulations of the State of Florida without giving effect to any rules governing conflict of laws.

6.7 The parties agree that for any litigation arising under the Contract Documents, venue shall be only in the state courts in and for Pinellas County, Florida.

6.8 All documents prepared or produced by Contractor or any of its Subcontractors pursuant to this Contract are the property of and belong to Tampa Bay Water, provided that Contractor is allowed to reuse such documents with the approval of Tampa Bay Water. If Contractor claims that any such document is proprietary or protected by trade secret or otherwise, Contractor has the burden to establish the basis of any such protection but until judicially declared otherwise, Tampa Bay Water shall have all rights of ownership and use of such documents.

6.9 In no event shall Tampa Bay Water be liable to Contractor, nor shall Contractor be liable to Tampa Bay Water, for any incidental, consequential, or punitive damages based upon claims arising out of or in connection with the performance or non-performance of a party's obligations under this Contract, or the material inaccuracy of any representation made by a party in this Contract, whether such claims are based upon contract, tort, negligence, warranty or other legal theory. Contractor acknowledges and agrees, however, that claims, which are brought by third parties against Tampa Bay Water and for which, but for the application of this paragraph, Contractor would otherwise have an indemnification obligation under this Contract, shall not be considered consequential damages under this paragraph.

6.10 All express representations, indemnifications, or limitations of liability made in or given in this Contract will survive its completion or termination for any reason.

6.11 To the extent permitted by applicable law, contractor and Tampa Bay Water hereby acknowledge and agree that any and all claims arising out of, connected with, or relating to this Contract or the relationship created hereby are matters which, if adjudicated, should be adjudicated by a court without a jury. Therefore, the parties hereby waive a trial by a jury. Neither Tampa Bay Water nor contractor or any successor thereof shall seek a trial by jury in any action or proceeding (whether at law or in equity, whether direct or collateral, whether in contract or in tort) arising out of or related to this Contract or the relationship created hereby. Neither Tampa Bay Water nor Contractor shall seek to consolidate any action or proceeding in which trial by jury has been waived with any other action or proceeding in which a jury trial cannot be or has not been waived. The provisions of this paragraph cannot be and have not been waived. The provisions of this paragraph have been fully discussed by the parties and their respective attorneys and the provisions hereof shall be subject to no exceptions. Tampa

Bay Water and contractor acknowledge and agree that no one, including, without limitation, Tampa Bay Water's agents or contractors, has represented that the provisions of this paragraph or of any other paragraph of this Contract will not be fully enforced.

6.12 Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor to solicit or secure this Contract and that Contractor has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for Contractor any fee, commission, percentage, gift or other consideration contingent upon or resulting from the award or making of this Contract.

7.0 Public Records and Audit Rights

7.1 Contractor shall keep all books, records, files, drawings, plans and other documentation, including all electronically stored items, which concern or relate to the services required hereunder (collectively referred to as "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract, or as otherwise required by any applicable law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to order, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy the Records shall include all of the Records of the Subconsultants.

7.2 If the Contractor has questions regarding the application of Chapter 119, Florida statutes, to the Contractor's duty to provide public records relating to this contract, contact Tampa Bay Water's custodian of public records via phone (727) 796-2355 x 2401; email records@tampabaywater.org; or mail at 2575 Enterprise Road, Clearwater, Florida 33763-1102.

7.3 Contractor must keep and maintain all public records required by the Agency in order to perform services under this Contract.

7.4 Upon request from the Agency's custodian of public records, Contractor shall provide the Agency with a copy of the requested public records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provide in Chapter 119, Florida Statutes, or as otherwise provided by law.

7.5 Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the Agency.

7.6 Upon completion of the contract, Contractor shall transfer, at no cost, to the Agency all public records in the possession of the Contractor or keep and maintain public records required by the Agency to perform the service under this contract. If the Contractor transfers all public records to the Agency upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Agency, upon request from the Agency's custodian of public records, in a format that is compatible with the information technology systems of the Agency.

8.0 Definitions

Defined terms used in this Contract have the intent and meanings assigned to them in the General Conditions, *Article I, Definitions.*

9.0 Engineer

Tampa Bay Water has retained the firm of Wade Trim, Inc., to act as the Engineer, assume all of the duties and responsibilities and have the rights and authority assigned to the Engineer in the Contract Documents with respect to completion of the Work in accordance with the Contract Documents.

10.0 Public Entity Crime Statement

10.1 Pursuant to subsections 287.133(2) and (3), Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO, for a period of thirty-six (36) months following the date of being placed on the convicted vendor list.

10.2 Contractor hereby certifies and warrants that it has not been placed on any convicted vendor list for the past thirty-six (36) months and is in full compliance with the requirements of subsections 287.133(2) and (3), Florida Statutes.

11.0 Discrimination

Pursuant to Subsection 287.134(2)(a), Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity. Contractor hereby certifies and warrants that it has not been placed on any discriminatory vendor list and is in full compliance with the requirements of subsections 287.134(2)(a), Florida Statutes.

12.0 Drawings and Specifications

The Drawings consist of the following:

Sheet No.	Sheet Description
G-1	Cover Sheet
G-2	Drawing Index, Notes & Abbreviations
G-3	Legend & Survey Control
G-4	Existing Conditions
C-1	Tree Removal and Limits of Disturbance
C-2	Plan Sheet
C-3	Profile Sheet
CP-1	Cathodic Protection Details
CP-2	Cathodic Protection Details
CP-3	Cathodic Protection Details
CP-4	Cathodic Protection Details
D-1	Tampa Bay Water Standard Details

D-2	Condensed Profile
D-3	Condensed Profile

The Specifications consist of the following:

Section	Description
01010	Summary of Work
01025	Measurement and Payment
01027	Payment Applications
01040	Project Coordination
01050	Field Engineering
01065	Permits and Easements
01100	Special Project Procedures
01300	Contractor Submittals
01310	Construction Progress Schedules
01313	Construction and Schedule Constraints
01410	Testing and Quality Control
01720	Contract Record and Close Out Documentation
02075	Microtunneling
02100	Demolitions
02220	Excavating, Backfilling, and Compacting
02270	Erosion and Sedimentation Control
02410	Shaft Excavation and Support
02431	Contact and Void Repair Grouting
02665	Carrier Pipe Installation and Backfill
02922	Sodding
03000	Concrete
03600	Grout
09940	Protective Coatings
134713	Cathodic Protection System
15065	Steel Pipe
15101	AWWA Butterfly Valves
15104	Resilient-Seated Gate Valves

13.0 Scrutinized Companies and Foreign Countries of Concern

13.1 Contractor certifies that it is in compliance with Section 287.135, Florida Statutes, which provides that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; the Scrutinized Companies that Boycott Israel List or is engaged in a Boycott of Israel is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an Agency for goods or services of $1 million or more. At the time of submission of a bid or proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it

is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

13.2 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of $1 million or more if the awarded Contractor:

a. Has been found to have submitted a false Scrutinized Vendor List certification as provided under Section 287.135 subsection (5); or
b. Has been placed on the Scrutinized Companies Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or
c. Has been engaged in business operations in Cuba or Syria.

13.3 Pursuant to Section 287.135, Florida Statutes, Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor has been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

13.4 Foreign Countries of Concern. Pursuant to Section 287.138, Florida Statutes, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign County of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or Agency under the significant control of such Foreign County of Concern. Tampa Bay Water reserves the right to terminate any contract for goods or services of any amount if the awarded Contractor is in violation of Section 287.138, Florida Statutes

14.0 Employee Verification

In accordance with Section 448.095 Florida Statutes, the Awardee/Contractor agrees to register with and utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired during the term of the award/contract for the services specified in the award/contract. The Awardee/Contractor must also include a requirement in subcontracts that the subcontractor must register with and utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the award/contract term. If the Awardee/Contractor enters into a contract with a subcontractor, the subcontractor must provide the Awardee/Contractor with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Awardee/Contractor shall maintain a copy of such affidavit for the duration of the award/Contract. If Tampa Bay Water has a good faith belief that the Awardee/Contractor has knowingly violated Section 448.09(1), Florida Statutes, Tampa Bay Water shall terminate the Contract with the Awardee/Contractor, and the Contractor may not be awarded a Contract with Tampa Bay Water for at least 1 year after the date on which the award/Contract was terminated. The Awardee/Contractor is liable for any additional costs incurred by Tampa Bay Water as a result of the termination of the award/contract. If Tampa Bay Water has a good faith belief that a subcontractor knowingly violated the law, but the Awardee/Contractor has otherwise complied with the law, Tampa Bay Water shall promptly notify the Awardee/Contractor and order the Awardee/Contractor to immediately terminate the award/contract with the subcontractor.

15.0 Anti-Human Trafficking

In accordance with Section s.787.06, Florida Statutes, the Contractor must provide Tampa Bay Water with an affidavit regarding Human Trafficking. Affidavit included herein must be completed by Contractor to attest, under penalty of perjury, that Contractor does not use coercion for labor or services as defined in s. 787.06, Florida Statutes.

IN WITNESS WHEREOF, Tampa Bay Water and Contractor have signed two (2) copies of this Contract, and all parts of the Contract Documents have been identified by Owner and Contractor. This Contract will be effective on _____, 2026 (which is the Effective Date of the Contract).

This Contract may be signed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

ATTEST

_____
Charles H. Carden, General Manager

TAMPA BAY WATER
A Regional Water Supply Authority

By: _____

Name: _____

Its: Chair _____

Date: _____

Approved as to form:

(SEAL)

_____
General Counsel

(CONTRACTOR)

By: _____

Name: _____

Title: _____

(CORPORATE SEAL)

[Version 2025]

Address for giving notice to:

Tampa Bay Water, A Regional Water Supply Authority:
Tampa Bay Water, A Regional Water Supply Authority
2575 Enterprise Road
Clearwater, Florida 33763-1102
Attn: Stacy Gundry, Purchasing & Warehouse Manager

The Engineer:
Wade Trim, Inc.
201 N. Franklin Street, Suite 1350
Tampa, FL 33602
Attn: Nita Sharma, P.E.

The Contractor:
_____
_____
_____
_____

End of Contract

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017 in accordance with DRAWINGs and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract including, but not limited to, all delay damages, whether liquidated or actual, suffered by Obligee; and

3. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.

3. This Performance Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05; however, it is intended to exceed the minimal coverage requirements established by that statute. The Notice and time limitations of Florida Statute 255.05 (2) are also, to the extent applicable, if any, incorporated herein by reference and made a part hereof.

4. In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond regardless of the number of suits that may be filed by Obligee.

5. Whenever the Contractor shall be, and is declared by Tampa Bay Water to be in default under the Contract, Tampa Bay Water having performed Tampa Bay Water's obligations thereunder, the SURETY shall promptly remedy the default, as set forth below and at the sole option of Tampa Bay Water, by promptly:

(a) Completing the Contract in accordance with its terms and conditions and paying Tampa Bay Water all of its losses, damages, costs and attorneys' and legal assistants' fees, whether at trial, on appeal or in bankruptcy, that Tampa Bay Water sustains because of any default by Principal under

the Contract including, but not limited to, all delay damages, whether liquidated or actual. In the event Surety takes over and completes the Contract, then in such event it shall be entitled to receive the balance of the Contract Price, as defined in sub-paragraph 2 below; or

(b) Indemnifying Tampa Bay Water for all of its damages, expenses, costs, delay damages, attorneys' and legal assistant's fees, including appellate and bankruptcy proceedings, that Tampa Bay Water has incurred, suffered or sustained as a result of Tampa Bay Water's completion of the Contract or the Principal's default under the Contract, less the remaining unpaid balance of the Contract Price, if any. The term "balance of the Contract Price," as used in this Performance Bond, shall mean the total amount payable by Tampa Bay Water to the Contractor under the Contract and any amendments thereto, less the amount previously paid by Tampa Bay Water to the Contractor.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

_____ By: _____

Witnesses as to Principal

Name: _____

Its: _____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

ATTEST:

SURETY:

_____
(Printed Name)

_____
Witness as to Surety

_____
_____
_____
(Business Address)

_____
(Authorized Signature)

_____
(Printed Name)

OR

_____

_____
Witness

_____
Florida Resident Agent and As Attorney in Fact
(Attach Power of Attorney)

_____
_____
_____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____
Notary Public Signature

(AFFIX NOTARY SEAL)

_____
Print Name

My Commission Expires:

PUBLIC PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, located at _____ (Business Address) and _____ as Surety, located at _____ (Business Address) are held and firmly bound to the Tampa Bay Water, A Regional Water Supply Authority as Obligee in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

Whereas, Principal has entered into a contract dated as of the _____ day of _____, 20__, with Obligee for Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017 in accordance with Drawings and Specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract; and
2. Pays Obligee all losses, damages, expenses, costs, and attorneys' fees, including appellate proceedings that Obligee sustains because of default by the Principal under paragraph 1 of this bond; then this bond is void; otherwise, it remains in full force.

BE IT FURTHER KNOWN:

1. Any changes, regardless of scope or amount, in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.
2. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or other work to be performed hereunder, or the Specifications referred to therein shall in anyway affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to work or to the Specifications.
3. This Payment Bond is a statutory payment bond and is not intended to be a common law Payment Bond. This Payment Bond is issued in compliance with the terms and conditions set forth in Florida Statute 255.05. The Notice and time limitations of Florida Statute 255.05 (2) are also expressly incorporated herein by reference and made a part hereof. Any action instituted by a claimant under this bond must be in accordance with the Notice and Time limitations contained in Florida Statute 255.05 (2).

In no event shall the Surety be liable in the aggregate to claimants for more than the penal sum of this Payment Bond, regardless of the number of suits that may be filed by such claimants.

IN WITNESS WHEREOF, the above parties have executed this instrument this _____ day of _____, 20__, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

PRINCIPAL:

_____ _____

Witnesses as to Principal

By:_____

Name: _____

Its:_____

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _ _____ day of _____, 20____, by _____, as ____ _____ of _____, a _____ _____corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

(AFFIX NOTARY SEAL)

_____

Print Name

My Commission Expires:

ATTEST:

SURETY:

_____ _____

(Printed Name)

_____ _____

Witness as to Surety

_____

_____

(Business Address)

_____

(Authorized Signature)

_____

(Printed Name)

OR

_____ _____

Florida Resident Agent and As Attorney in Fact

_____ (Attach Power of Attorney)

Witness _____

_____

_____

(Business Address)

_____

(Printed Name)

_____

(Telephone Number)

STATE OF _____
COUNTY OF _____

Subscribed and sworn before me by means of ☐ physical presence or ☐ online notarization, this _____ day of _____, 20____, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me **OR** has produced _____ as identification and did (did not) take an oath.

_____

Notary Public Signature

_____

Print Name

My Commission Expires: (AFFIX NOTARY SEAL)

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY CERTIFICATE OF INSURANCE FORM or APPROVED ACORD FORM

Issue Date:

Producer:

CANCELLATION: Should any of the below described policies be cancelled, non-renewed or adversely changed before the expiration date thereof, the issuing company will provide 30 days written notice to Tampa Bay Water by certified mail.

Re: Project/Contract Number: _____

Insured:

COMPANIES AFFORDING COVERAGE	BEST RATING/CLASS
A.	
B.	
C.	
D.	
E.	

COVERAGES: This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated.

Company Letter	13. TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS ALL LIMITS IN THOUSANDS		
	14. GENERAL LIABILITY ❑ Commercial Form ❑ Occurrence ❑ Claims Made ❑ Comprehensive Form ❑ Premises-Operations ❑ Explosion, Collapse, Underground Hazard ❑ Products/Completed Operations Hazard ❑ Contractual Insurance ❑ Broad Form Property Damage ❑ Independent Contractor ❑ Personal Injury					EACH OCCURRENCE	AGGREGATE
					BI & PD Combined	$	$
					Bodily Injury	$	$
					Property Damage	$	$
					Products Comp/OP	$	$
					Personal & Adv. Injury	$	$
					* Separate Project Agg. For Tampa Bay Water		$
	AUTOMOBILE LIABILITY ❑ Any Auto ❑ All Owned Autos ❑ Scheduled Autos ❑ Hired Autos ❑ Non-Owned Autos				Combined Single Limit		
					Bodily Injury (Per Person)		
					Bodily Injury (Per Accident)		
					Property Damage		
	UMBRELLA/EXCESS LIABILITY ❑ Umbrella Form ❑ Excess Form ❑ Following Form Coverage				Each Occurrence		
					Aggregate		
	WORKERS' COMPENSATION AND EMPLYERS' LIABILITY				☒ Statutory Coverage Limit		$
					EL Each Accident		$
					EL Disease – Policy Limit		$
					EL Disease – Each Employee		$
	PROFESSIONAL LIABILITY ❑ Claims Made ❑ Occurrences Retro Date _____					$	$
	BUILDER'S RISK ❑ All Risk ❑ Permission to Occupy ❑ All Owners', Contractors', Subcontractors' Interests Covered ❑ Installation Floater				$		
	FIDELITY ❑ Employee Dishonesty ❑ Covers Loss to Tampa Bay Water				$		
	OTHER						

Description of Operations/Locations/Vehicle/Special Items:

* Specific Project or Location:

CERTIFICATE HOLDER and ADDITIONAL INSURED

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers.

Authorized Representative: _____
(Signature Required)

Address _____

Telephone # _____ Facsimile # _____

THIS IS TO FURTHER CERTIFY THAT:

1. The company issuing the General Liability Coverage hereby agrees to waive any right of subrogation it may acquire against Tampa Bay Water, its engineers, its consultants, and all other parties named as insured by reason of any payment made on account of personal injury, bodily injury, including death resulting therefrom, sustained by any employee of the insured or property damage arising out of the performance or furnishing of work under the above referenced Contract.

2. Each of the above-described policies contains a provision or endorsement that the coverage afforded will not be canceled, adversely changed or non-renewed until at least thirty (30) days prior written notice has been given to Tampa Bay Water by certified mail.

3. Each of the above listed companies hereby agrees to deliver to Tampa Bay Water new Certificate of Insurance at least fifteen (15) days prior to coverage renewals or binder within such period and a certificate within fifteen (15) days thereafter.

4. If requested, each of the above-listed companies hereby agrees to deliver two (2) copies of the policies purchased by the Agent to Tampa Bay Water.

5. Each of the above listed companies is authorized to do business and has an agent for service of process in Florida and has an "A" policy holders rating and a financial rating of at least Class VIII in accordance with the most current Best's rating. For self-insurance funds, financial statements are to be provided, if requested by Tampa Bay Water. (At Tampa Bay Water's option, a Best's rating or financial information regarding any self-insurance funds may be waived.)

ACORD CERTIFICATE OF LIABILITY INSURANC

Clear | Save

DATE (MM/DD/YYYY)

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
Your Insurance Agent	INSURERS AFFORDING COVERAGE	NAIC #
INSURED	INSURER A: Company Name	
Company Name Street City, State, Zip Code	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	Policy Number	effective	expires	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
	X	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	Policy Number	effective	expires	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
	X	EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $	Policy Number	effective	expires	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000 $ $ $
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below NO	Policy Number	effective	expires	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 100,000 $ 100,000 $ 500,000
		OTHER					

Sample

Sample

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Re: Job Name/Number

Tampa Bay Water, Its Engineers, Architects, Consultants, Subsidiaries or Affiliates and each of the Tampa Bay Water Directors, Officers, Employees, Representatives, Agents or Volunteers shall be named as additional insured under the GL Policy per CG 20 10 (07/04) AND CG 20 37 (07/04) or equivalent, and the Automobile Liability policy. Waiver of Subrogation is provided in favor of Tampa Bay Water on all policies. The insurance evidenced by this Certificate is primary and non-contributory to any insurance maintained by Tampa Bay Water.

CERTIFICATE HOLDER	CANCELLATION
Tampa Bay Water 2575 Enterprise Road Clearwater, FL 33763-1102	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL XXXXXXX 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. XXXXXX

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD 25 (2001/08)

SUPPLEMENTARY CONDITIONS

Supplementary Conditions to the General Conditions, *Article IV, The Contractor and Its Employees*.

The limits of liability for the following insurance required by the General Conditions, *Article IV, The Contractor and Its Employees*, as amended in the Supplementary Conditions, shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Commercial General Liability. The coverage(s) shall be no less than:
   (a) Minimum limits of $1,000,000 per occurrence combined single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

   (b) Minimum limits of $2,000,000 Aggregate single limit for all liability must be provided, with umbrella insurance making up the difference between the policy limits of underlying policies and the total amount of coverage required. The referenced limit shall be provided as a separate aggregate for the Work (Project Aggregate).

2. Business Automobile Liability. The coverage shall be no less than:
   (a) Minimum limits of $1,000,000 combined single limit for all liability must be provided.

3. Umbrella/Excess Liability. The coverage shall be no less than:
   (a) Minimum limits of $2,000,000 per occurrence must be provided.

   (b) Aggregate limits of $5,000,000 must be provided.

4. Worker's Compensation and Employer's Liability. The coverage shall include:
   (a) Coverage A:
   State: Statutory limits under the Laws of the State of Florida.
   Federal: Statutory limits under the Laws of the United State of America (e.g., Longshoremen's, etc.)

   (b) Coverage B:
   Employer's Liability, bodily injury, occupational sickness or disease, or death of Contractor's employees shall be no less than:
   1) $500,000 Each Accident
   2) $1,000,000 Each Disease
   3) $500,000 Each Employee

Tampa Bay Water requires Contractor employers to purchase workers compensation insurance for all their employees regardless of the number of employees they have and regardless of any other exemptions. Florida law permits employers who may be exempt from purchase of coverage to waive their exemptions and purchase the coverage. Tampa Bay Water requires the Contractor to purchase said coverage.

5. Builder's Risk "All Risk" or Installation Floater Insurance. Coverage shall be no less than the full insurable replacement value of the Work, including completed Work, Work in progress and all insurable building materials, structures, fences, lights, equipment, pumps, electrical components, and similar insurable property. Exceptions to insurable property include underground property (after installation), site work and road work.

6. Additional Requirements:
   (a). Tampa Bay Water must be listed as an Additional Insured on General Liability, Auto Liability and Excess policies;

   (b). Excess/Umbrella policies shall be written as "follow form";

   (c.) The insurance provided for Tampa Bay Water as Additional Insured shall apply as primary and non-contributory insurance;

   (d). The Additional Insured Endorsement utilized for General Liability must be form CG 20 10 (07/04) and CG 20 37 (07/04) or broader wording in Tampa Bay Water's favor as approved by Tampa Bay Water;

   (e). Contractor shall maintain General Liability coverage for itself and all Additional Insureds for the duration of the Work and maintain completed operations coverage for itself and Additional Insureds for five (5) years after completion of the Work;

   (f). All Contractor insurance policies will include a Waiver of Subrogation in favor of Tampa Bay Water;

   (g). Each of Contractor's insurance policies shall be endorsed to provide Tampa Bay Water with at least thirty (30) days written notice prior to any material change or cancellation of the policy, to the fullest extent commercially available;

   (h). Deductible amounts on Contractor policies shall not exceed $25,000 and shall require approval from Tampa Bay Water; and

   (i). In the event Contractor breaches any provision of the Insurance Requirements of the Contract, Tampa Bay Water may deduct the cost of any insurance from any funds Payable to Contractor under the Contract Documents.

General Conditions

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GENERAL CONDITIONS

1. Definitions

Wherever in the Contract Documents the following terms are used, the intent and meaning shall be as follows:

1.1. Addenda: Instruments issued by Engineer for Tampa Bay Water prior to the advertised time for receipt of Bids that modify the Contract Documents by additions, deletions, clarifications, corrections, or other revisions.

1.2. Contract: The written Contract between Tampa Bay Water and the Contractor covering the Work to be performed.

1.3. Allowances: A specified sum included in the Contract Price to be utilized only at the discretion of Tampa Bay Water.

1.4. Alternates: A specified portion of the Work listed on the Bid which has been added to or deducted from the Base Bid, at Tampa Bay Water's discretion, as identified in the Contract.

1.5. As Approved: The words "As Approved," unless otherwise qualified, shall be understood to be for conformance with the Contract Documents.

1.6. As-Built Contract Documents: A set of the Contract Documents marked up by the Contractor to show the Work as constructed with all modifications from the original Contract Document.

1.7. Base Bid: The sum total of the combined Unit Prices, Lump Sum Prices and Allowances in the Bid, excluding all Alternates.

1.8. Bidder: The person(s), partnership, firm or corporation submitting a Bid for the Work.

1.9. Bid Documents: The "Bid Documents" consist of the Instruction of Bidders, Information to Bidders, Request for Bids, Bid and the Contract Documents.

1.10. Bid Security: The Bid Bond, certified check or cashier's check provided pursuant to this ITB to protect Tampa Bay Water from the unauthorized withdrawal of Bid or refusal to execute the Contract Documents. Electronic Bids received through Euna must be accompanied by a copy of a certified check, or cashier's check drawn on a bank in good standing, or the Florida Bid Bond included herein. The Bid Bond must be issued by a surety authorized to issue such bonds in the State of Florida, in the amount of Five percent (5%) of the proposed total Contract Price of the Bid submitted. The Florida Bid Bond included herein shall be given as a guarantee that the Bidder will not withdraw its Bid for a period of ninety (90) days after the opening of Bids.

When submitting the electronic bid, a copy of the Bid Bond should be submitted in the electronic package. The original Bid Bond must be delivered to Tampa Bay Water physically via mail, delivery service or in-person. If submitting electronically, banking information may be redacted on copies of checks. Original checks must be delivered physically and unaltered.

1.11. Business Day: The term Business Day means each day occurring Monday through Friday.

1.12. Change Authorization: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water, authorizes and directs the Contractor to perform changes in the Work as described in the Change Authorization, and/or gives the basis, if any, for a subsequent adjustment in Contract Price or Contract Time. Upon receipt of a Change Authorization, the Contractor is authorized and required to perform the subject changes in the Work.

1.13. Change Order: A written instrument which, when recommended by the Engineer and signed by Tampa Bay Water and the Contractor, amends the Contract Documents to provide for changes in the Work, and/or Contract Price, and/or Contract Time.

1.14. Construction Directive: A written instrument issued by the Engineer pursuant to Paragraph 7.2.9.

1.15. Contract Documents: The "Contract Documents" consist of the Contract, Addenda, Supplementary Conditions, General Conditions, Specifications, Drawings, Change Order, Change Authorizations, and all other documents expressly incorporated by specific reference thereto. The Contract Documents are sometimes collectively referred to as the "Contract".

1.16. Contractor: The person(s), partnership, firm, or corporation that entered into and is (are) identified in the Contract.

1.17. Contractor's Representative: The Contractor's superintendent, project manager or other person at the location of Work authorized to direct the Work and receive communications from Tampa Bay Water or Engineer.

1.18. Contract Price: The total compensation payable by Tampa Bay Water to the Contractor for the performance of the Work by the Contractor in accordance with the requirements of the Contract Documents, as stated in the Contract and adjusted by all Change Order and Change Authorizations.

1.19. Contract Time: Unless otherwise specified, the Contract Time for all or a designated part of the Work is the period of time allowed, subject to Change Order and Change Authorizations, for completion of a specified part of the Work. The first Day of Contract Time shall be that date as specified on the Notice to Proceed as the date the Contract Time shall commence.

1.20. Correction Period: The period of time established in paragraph 4.20.2 hereafter for the correction of Defective Work.

1.21. Day: Unless otherwise specifically stated, the term Day shall be understood to mean calendar day.

1.22. Defective: A term used to refer to Work that is faulty, unsatisfactory, deficient, damaged or does not conform to the requirements of the Contract Documents and all applicable Laws and Regulations.

1.23. Drawings: The term Drawings refers to the various drawings, profiles, cross sections, elevations, details, plans and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, details of the Work to be performed, all as identified in the Contract. Drawings may either be bound in the same book as the balance of the Contract Documents or bound in separate sets, and are a part of the Contract Documents, regardless of the method of binding.

1.24. Engineer: The person or organization identified as such in the Contract that provided the technical design. The term "Engineer" means the Engineer or its authorized representatives.

1.25. Final Completion: The completion of all the Work in accordance with the Contract Documents.

1.26. Laws And Regulations: Federal, State, and Local Statutes, Judicial and Administrative Decisions, Laws, By-Laws, Codes, Rules, Regulations, Resolutions, Ordinances, and/or Orders applicable to the Project.

1.27. Lump Sum Price: The price paid for a specified quantity of Work, which when performed, is paid for on the basis of an agreed price for the completed Work.

1.28. Notice: The term "Notice" or the requirement to notify, as used in the Contract Documents or applicable Laws and Regulations, shall signify a written communication delivered in person; or by certified or registered mail, return receipt requested, to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended.

1.29. Notice Of Award: The written notice of acceptance of the Bid by Tampa Bay Water to the successful Bidder stating that upon compliance by the Bidder, within the time specified, with the requisite conditions stated in this ITB, Tampa Bay Water will deliver the Contract to the successful Bidder for its execution.

1.30. Notice to Proceed: The written Notice issued by Tampa Bay Water to the Contractor, authorizing it to proceed with the Work in accordance with the Contract Documents, and fixing the date for which the Contract Time shall commence.

1.31. Or Equal: The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the named product in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer.

1.32. Partial Utilization: Use by Tampa Bay Water of a portion of the Work (as designated by Tampa Bay Water) before reaching Substantial Completion for all the Work.

1.33. Payment Application: The forms provided by Tampa Bay Water which shall be used by the Contractor in requesting partial or final payment.

1.34. Permit Allowance: The Permit Allowance is for Tampa Bay Water's use in reimbursing the Contractor for the actual cost of permit fees required by Laws and Regulations necessary to perform the Work. This is a pass-through cost and no mark-ups are allowed on the Permit Allowance.

1.35. Progress Report: A written report(s) indicating progress of the Work, estimated date for delivery of materials, and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule and proposed plan for recovery of any delays to the timing and sequence of Work set forth in the Progress Schedule.

1.36. Progress Schedule: Schedule which shows the timing and sequence of Contractor's proposed execution of the Work and all subsequently issued updates thereto, after said updates have been reviewed and accepted by Tampa Bay Water.

1.37. Project : The name of the Project is as identified in the Contract.

1.38. Project Allowance: The Project Allowance is solely for Tampa Bay Water's use in the payment for changes in the Work, where such changes have been approved pursuant to the Contract Documents.

1.39. Project Representative: The authorized representative(s) of the Engineer who is (are) assigned to the Project or any part thereof.

1.40. Record Drawings: Drawings that are prepared by the Engineer reflecting as-built information provided by the Contractor on Contractor's As-Built Contract Documents.

1.41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data prepared by or for the Contractor to illustrate some part of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other data prepared by a Supplier and submitted by the Contractor to illustrate items of material or equipment.

1.42. Specifications: The term "Specifications" refers to those written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work, and certain administrative details applicable thereto, all as identified in the Contract. Where standard Specifications, common to the construction industry and to standard engineering practice, are referenced to or are otherwise applicable, the applicable portions of the most current versions of such standard Specifications shall become a part of these Contract Documents. If referenced standard Specifications conflict with Specifications contained herein, the requirements contained herein shall control unless contrary to Laws and Regulations.

1.43. Subcontractor: An entity having a Contract with the Contractor for performing labor on the Work on the Project, or for performing both labor on the Project and furnishing materials or equipment.

1.44. Submittal: The term Submittal includes shop drawings, tests, samples, Progress Schedules and other schedules, Progress Reports and other reports, and any other documents required for submission by the Contract Documents.

1.45. Substantial Completion: Substantial Completion shall be that degree of completion of the Work or specified portion of the Work in accordance with the Contract Documents, as specified in the General Conditions, *Article II, Contract Time* of the Contract, certified by the Engineer and approved by Tampa Bay Water as evidenced by the Engineer's issuance of a Certificate of Substantial Completion, sufficient to provide Tampa Bay Water, at its discretion, the full-time use of the Work or Partial Utilization of a specified portion of the Work for the purposes for which it was intended.

1.46. Supplier: A manufacturer, fabricator, distributor, material man, or vendor having an Contract with the Contractor for furnishing materials or equipment for the Project. Tampa Bay Water, A Regional Water Supply Authority/Owner: Tampa Bay Water, A Regional Water Supply Authority, is the Owner of the Work described in the Contract Documents. The term "Owner" and "Tampa Bay Water" are interchangeable. The Work shall be deemed substanitally complete after the new pipeline is fully operational and has successfully passed all testing and the old out of service pipeline has been removed and/or grouted in place, as noted on the drawings and in the specifications.

1.47. Uncontrollable Circumstance: Any act, event or condition affecting the Project, Contractor or Tampa Bay Water to the extent that it materially and adversely affects: (i) the ability of either party to perform any obligation hereunder (except for payment obligations); or (ii) the cost of such party's performance, if such act, event or condition is beyond the reasonable control and is not also the result of the willful or negligent act, error or omission or failure to exercise reasonable diligence on the party relying thereon as justification for not performing an obligation or complying with any condition required of such party under this Contract;

(1) *Inclusions*. Subject to the foregoing, such acts or events include the following:

(a) an act of God, hurricane, landslide, lightning, earthquake, fire, flood, plague, tornadoes, (but not including reasonably anticipated weather conditions for the geographic area of the Work site), explosion, sabotage or similar occurrence, acts of a public enemy, extortion, war, blockade or insurrection, riot or civil disturbance;

(b) a Change in Law;

(c) the failure of any appropriate governmental body or private utility having operational jurisdiction in the area in which the Project is located to provide and maintain Utilities to the Work site;

(d) any failure of title to the Work site or any enforcement of any encumbrance on the site or on any improvements thereon not consented to in writing by, or arising out of any action or Contract entered into by, the party adversely affected thereby;

(e) the preemption of materials or services by a governmental body in connection with a public emergency or any condemnation or other taking by eminent domain of any portion of the Project or Work site;

(f) the presence at the Work site of (i) subsurface structures, materials or conditions having archaeological significance; (ii) any habitat of endangered or similarly protected species; (iii) functioning subsurface structures at the site (to the extent not identified by Tampa Bay Water to Contractor); and (iv) subsurface conditions of which Contractor, through the exercise of reasonable diligence, could not reasonably be expected to have notice;

(g) strikes by an organized union of the Contractor's Subcontractors;

(h) the failure of Tampa Bay Water to obtain any permit or approval which is Tampa Bay Water's responsibility to obtain, on or prior to the dates set forth in the Project Schedule.

(2) *Exclusions*. It is specifically understood that none of the following acts or conditions shall constitute Uncontrollable Circumstances:

(a) general economic conditions, interest or inflation rates, or currency fluctuations or exchange rates;
(b) changes in the financial condition of Tampa Bay Water, Contractor or any Subcontractor affecting the ability to perform their respective obligations;
(c) the consequences of error, neglect or omissions by the parties and any Subcontractor in the performance of any Work or responsibilities under this Contract;
(d) any increase for any reason in premiums charged by the Contractor's insurers or the insurance markets generally for the required Insurance;
(e) the failure of Contractor to secure any patents or licenses in connection with the technology necessary to perform its obligations hereunder;
(f) the failure of any Subcontractor or Supplier to furnish labor, materials, services or equipment for any reason other than for acts or events specifically included herein as Uncontrollable Circumstances;
(g) equipment failure except when due to acts or events specifically enumerated herein as Uncontrollable Circumstances; or
(h) any Change in Law with respect to the issuance of any permit or approval, the enactment of any statute, or the promulgation of any regulation affecting the standards or requirements of performance, the terms and conditions of which do not impose more stringent or burdensome requirements on the Project or Contractor than in effect on the Effective Date of the Contract.

1.48 Unit Price: The price paid for units of Work which, when performed, is measured and paid for on the basis of units.

1.49 Work: The word "Work" within these Contract Documents shall include all material, labor, services, documentation, tools, equipment, fuel, utilities, temporary facilities and all appliances, machinery, transportation, and appurtenances necessary to perform and complete the Project in accordance with the Contract Documents, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described in the Contract Documents or indicated and as required by good practice to provide a complete and satisfactory system(s) or structure(s).

1.50 Working Hours: Working Hours shall mean the hours between 7:00 a.m. and 6:00 p.m., Monday through Friday, excluding legal holidays. Maintenance of equipment will be allowed outside of Working Hours.

1.51 Other terms not defined herein shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in the Florida Statutes.

2. Contract Documents

2.1 Intent of Contract Documents

2.1.1. The Contract Documents comprise the entire Contract between Tampa Bay Water and the Contractor concerning the Work. The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the indicated result shall be supplied whether or not specifically called for, with no increase in the Contract Price or extension of the Contract Time. When words which have a customary technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning, unless a contrary definition appears in the Contract Documents, in which case the Contract Documents shall control.

2.1.2. Whenever the terms "as ordered", "as directed", "as required", "as allowed", "As Approved", or terms of like effect, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory", or adjectives of similar effect, are used to describe a requirement, direction, review, or judgment of the Engineer or Tampa Bay Water as to the Work, it is intended that the requirement, direction, review, or judgment will be to evaluate the Work for compliance with the Contract Documents.

2.1.3. No use of any provision of any standard Specifications, manual, or code (whether or not expressly incorporated by reference in the Contract Documents), or Suppliers' instructions, shall be effective to (a) change the duties and responsibilities of the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or employees from those assigned in the Contract Documents; or (b) to assign to the Contractor, Tampa Bay Water, or Engineer, or any of their consultants, agents, or Tampa Bay Water employees, any duty or authority to supervise or direct the execution of the Work or to assume responsibility contrary to the provisions of the Contract Documents.

2.2 Priority of the Contract Documents

2.2.1. In resolving inconsistencies or apparent conflicts among the Contract Documents, the first listed below shall take precedence and control over those following:

a. *Contract*
b. Supplementary Conditions
c. General Conditions
d. Specifications / Drawings
e. Front-Ends

2.2.2. In resolving inconsistencies between Drawings and Specifications, Contractor shall be obligated to comply with the more costly or stringent requirement, as determined by Tampa Bay Water. Figure dimensions on Drawings shall take precedence over scale dimensions. Detailed Drawings shall take precedence over general Drawings.

2.3 Examination and Verification of Contract Documents

2.3.1. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents with each other, check and verify pertinent figures and all applicable field measurements, and compare and coordinate related requirements for Work (i.e. location, dimensions, fit, completeness, consistency, etc.).

2.3.2. The Contractor shall, immediately upon discovery, report in writing to the Engineer any conflict, error, omission, or ambiguity in the Contract Documents which the Contractor discovers, whether prior to or while performing the Work, and shall obtain a written interpretation or clarification from the Engineer before proceeding with any affected Work. The Engineer shall promptly investigate the matter and until such interpretation or clarification is obtained from the Engineer, any Work done by the Contractor which is directly or indirectly affected by same, will be at the Contractor's risk and the Contractor shall bear all resultant costs and delays.

2.4 Documents to be kept on the Project Site

The Contractor shall keep at least one copy of the Contract Documents on the Project site in good order, available to Tampa Bay Water and its representatives. The Contractor shall maintain on a daily basis at the Project site, and make available to the Engineer on request, one current set of As-Built Contract Documents which have been accurately marked by Contractor to indicate all modifications in the completed Work that differ from the original Contract Documents. As a condition precedent to Final Completion of the Work, the Contractor shall give the Engineer one complete set of these As-Built Contract Documents.

2.5 Additional Contract Documents

The Engineer shall furnish to the Contractor one (1) set of sealed Drawings (24 X 36) hard copy, one PDF copy and one AutoCAD electronic copy; sets of sealed Drawings and one (1) reproducible set of the Contract Documents.

2.6 Ownership of Contract Documents

All portions of the Contract Documents, and copies thereof furnished by the Engineer are the property of Tampa Bay Water. They are not to be used on other work and are to be returned to the Engineer at the completion of the Work with the exception of the Contractor's record set. Any reuse or adaptation of these materials by Contractor without specific written permission by Tampa Bay Water is expressly prohibited and shall be at the risk of the Contractor and without liability or legal expense to Tampa Bay Water or Engineer. The Contractor shall hold Tampa Bay Water and Engineer harmless from any and all damages and claims, including reasonable attorneys' fees and legal assistants' fees, for such unauthorized use.

3. The Engineer

3.1 Authority of the Engineer

The Engineer shall be a representative of Tampa Bay Water during the Contract Time for performance of the Work. The Engineer shall have authority to reject Work which does not conform to the Contract Documents. However, the Engineer's authority shall not affect the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

3.2 Duties and Responsibility of the Engineer

3.2.1. The Engineer shall make visits to the Project site at intervals appropriate to the various stages of construction to observe the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Visits and observations made by the Engineer are solely for the benefit of Tampa Bay Water and shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligations to conduct comprehensive inspections of the Work and to furnish materials and perform acceptable work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.2. The Engineer shall respond, in writing, within 21 days of receipt (unless more time is reasonably required for response), to all claims by Tampa Bay Water or the Contractor required for performance of the Work and requests for clarification or interpretation of the Contract Documents. The Engineer's response shall be of factual and/or technical nature, and shall not include the legal interpretation of the Contract Documents.

3.2.3. The Engineer may assign one or more Project Representatives to observe the Work. It is understood that such Project Representatives shall have authority to issue Notices of non-conformance and make decisions within the limitations of authority of the Engineer. The Contractor shall furnish all reasonable assistance required by the Engineer or Project Representative for proper observation of the Work. Observations by the Project Representative shall not relieve the Contractor of its obligations including, but not limited to, the Contractor's obligation to conduct comprehensive inspections of the Work and to furnish materials and perform work, and to provide adequate safety precautions, all in accordance with the Contract Documents.

3.2.4. On-site observations by the Engineer, Project Representatives and other assistants shall not relieve the Contractor from its obligation to perform the Work in accordance with the Contract Documents, nor constitute acceptance of Defective Work, nor give rise to any duty on their part to make the observations for the benefit of the Contractor.

3.2.5. The Engineer shall review Submittals within the times specified in the General Requirements, or if not specified, within 21 days of receipt (unless more time is reasonably required for review) for conformance with the design of the Project and for compliance with the Contract Documents. The Engineer's review shall not extend to means, methods, techniques, sequences, nor to procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents), nor to safety precautions or programs incident thereto.

3.3 Rejected Work

3.3.1. The Engineer shall have authority to disapprove or reject Work at any time during the performance of the Work, which the Engineer believes to be Defective; or to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed. The Engineer's authority does not relieve the Contractor from its responsibility to perform in accordance with the Contract Documents. When the Contractor is notified by the Engineer of rejection of Defective Work, the Contractor shall take immediate action to correct same.

3.3.2. All Defective Work, whether discovered before or after Final Completion, shall be removed and replaced by the Contractor, without cost to Tampa Bay Water, with Work which shall conform to the Contract Documents. Failure on the part of the Engineer to condemn or reject Defective Work shall not be construed to imply acceptance of such Work. Tampa Bay Water shall reserve and retain all of its rights and remedies at law or equity against the Contractor and its Surety for correction of or damages arising from any and all Defective Work.

3.4 Lines and Grades

Lines and grades shall be established as provided in the Drawings or the Supplementary Conditions. All information, stakes or marks shall be carefully preserved by the Contractor, and if the information, stakes or marks are destroyed or removed, all such information, stakes or marks shall be replaced at the Contractor's expense.

3.5 Detail Drawings and Instructions

If required, the Engineer shall furnish within 21 days (unless more time is reasonably required), in writing, additional instructions by means of Drawings or otherwise, as required for the proper execution of the Work. All such Drawings and instructions shall be in writing and consistent with the Contract Documents.

4. The Contractor and Its Employees

4.1 Contractor

4.1.1. The Contractor shall independently perform all Work included in the Contract Documents and shall not be considered an agent of Tampa Bay Water or of the Engineer, nor shall the Contractor's Subcontractors, Suppliers, or employees be agents of Tampa Bay Water or of the Engineer.

4.1.2. The Contractor shall provide competent, suitably qualified and reliable personnel, Subcontractors, and Suppliers to survey and lay-out the Work and furnish and perform the Work in accordance with the Contract Documents.

4.2 Subcontractors and Suppliers

4.2.1. The Contractor shall be responsible and liable to Tampa Bay Water for the acts and omissions of Contractor's employees, agents, and Subcontractors and Suppliers and their respective employees.

4.2.2. The Contractor shall list each Subcontractor or Supplier whom the Contractor intends to award a subcontract, other than those Subcontractors or Suppliers previously listed in the Bid,

by submitting to Tampa Bay Water in writing, for each additional Subcontractor and Supplier, the same information required to be set forth in the Bid.

4.2.3. Work performed by a Subcontractor or Supplier shall be through an appropriate written subcontract which expressly binds the Subcontractor or Supplier to the terms and conditions of the Contract Documents for the express benefit of Tampa Bay Water, and requires each of them to assume toward the Contractor all of the obligations which the Contractor assumes toward Tampa Bay Water.

4.2.4. The Contractor shall deliver to Tampa Bay Water a copy of each subcontract with a Subcontractor or Supplier within fifteen (15) Days after receiving the Notice to Proceed or the execution of the subcontract, as applicable.

4.2.5. The Contractor shall perform (with the Contractor's own employees) not less than fifty-one percent (51%) of the difference between the Contract Price minus the cost of materials for the Project.

4.2.6. Nothing contained in the Contract Documents or any subcontract shall create any contractual relationship between any Subcontractor or Supplier and Tampa Bay Water or Engineer. Provided, however, Tampa Bay Water shall be named an intended third party beneficiary under all such subcontracts.

4.3 Equal Opportunity

4.3.1. At all times during the performance of the Work, Contractor shall comply with Title VII of the Civil Rights Act of 1964 and the Florida Civil Rights Act of 1992. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, handicap, or marital status. The Contractor shall take affirmative action to ensure that employment applications are used and that employees are treated without regard to their race, color, religion, sex, national origin, age, handicap or marital status for employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay, or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

4.3.2. The Contractor shall state in all solicitations or advertisements for employment placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, handicap, or marital status.

4.4 Indemnity

4.4.1. In consideration of One Hundred Dollars ($100.00) separately allocated from the first consideration paid hereunder, and other good and valuable consideration, including Tampa Bay Water's execution of the Contract, the sufficiency of which is hereby acknowledged by Contractor, Contractor shall indemnify and hold harmless Tampa Bay Water, its officers, employees, agents, representatives and consultants from and against all liabilities, costs, losses, and damages (including, but not limited to, all reasonable attorney's fees to the extent caused by the negligence, recklessness or intentional wrongful conduct of Contractor, any Subcontractor, or any individual or entity directly or indirectly employed or utilized by Contractor in the performance of the Work under this Contract. This indemnification shall also include all liabilities, damages, losses and costs including, but not be limited to, reasonable attorneys' fees arising out of any infringement of patents or copyrights incident to performing the Work by the Contractor, any Subcontractor or any person or organization employed by

Contractor to perform or furnish any of the Work, or anyone for whose acts any of them may be liable.

4.4.2. With respect to all claims against Tampa Bay Water or the Engineer by any employee of the Contractor, the indemnification obligation under this Article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor (or any Subcontractor or Supplier) under workers' compensation, disability benefit or other employee benefit acts.

4.4.3. The separate consideration recited in paragraph 4.4.1 above is in consideration of the indemnification obligation set forth in this Article 4.4, as well as any other indemnification provided by Contractor under the Contract Documents.

4.4.4 Contractor acknowledges and agrees its indemnification obligations under paragraph 4.4.1 shall be effective and fully enforceable even if any party indemnified hereunder is partially at fault or responsible for the claim; provided, however, Contractor shall not be liable or responsible for indemnifying any claim which is the result of the sole negligence of Tampa Bay Water, Engineer or any other party indemnified under paragraph 4.4.1.

4.5 Bonds and Insurance

A. Performance Bonds, Payment Bonds and Other Bonds

4.5.1. The Contractor shall furnish Performance Bonds and Payment Bonds, each in an amount at least equal to the Contract Price, in accordance with the requirements of Sections 255.05, Florida Statutes, as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall be in the forms specified in the Contract Documents. The Contractor shall also furnish any other bonds required in the Supplementary Conditions. All bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-in-Fact who sign Bonds shall attach a certified copy of their Power of Attorney.

B. The Contractor's Insurance – General

4.5.2. The Contractor shall purchase and maintain the coverage specified in this Article and the Supplementary Conditions, and shall be written for not less than the limits of coverage specified in the Supplementary Conditions. The Contractor shall submit certificates to Tampa Bay Water itemizing the policies issued, limits of coverage, expiration dates and endorsements provided, using the form provided in the Contract Documents.

4.5.3. The Contractor shall not start or continue to perform any Work unless it has in full force and effect all required insurance as per the Contract Documents. The Contractor shall submit the insurance certificates provided with these Contract Documents for review by Tampa Bay Water prior to performing any Work. All Subcontractors and Suppliers performing Work on the Project shall provide the same types and limits of insurance as is required of the Contractor hereunder, unless otherwise expressly waived in writing by Tampa Bay Water.

4.5.4. Insurance shall be provided by insurance companies authorized to transact business and which have an agent for service of process in the State of Florida, having at least an "A-" Best's Rating and a Class VIII or better financial size category in accordance with the most current A.M. Best Company rating.

4.5.5. All the policies of insurance shall be endorsed to provide that any failure of the Contractor to comply with any provisions will not prejudice coverage for Tampa Bay Water. Deductible amounts shall be reduced or eliminated upon Tampa Bay Water's written request in which case Contractor shall be entitled to payment of any additional costs for such reduction or

elimination of deductibles in accordance with paragraph 7.2 of these General Conditions. The insurer's costs of providing the insured(s) a defense at trial in bankruptcy proceedings, and/or appeal, including attorneys' fees, and legal assistants' fees, shall not be included within the limits of the policy coverage, but shall remain the insurer's separate responsibility.

4.5.6. To the fullest extent commercially available, all the policies of insurance shall be endorsed to provide that the coverage afforded will not be cancelled, adversely changed or renewal refused until at least thirty (30) Days' prior written Notice has been given to Tampa Bay Water and the Engineer by certified mail, return receipt requested. Should any coverage approach expiration during the period in which it is to remain in full force and effect, it shall be renewed prior to its expiration, and certificate filed with Tampa Bay Water at least thirty (30) Days prior to expiration. Tampa Bay Water and Engineer, their officers, agents, and employees shall be named as Additional Insured(s) on the Contractor's and any Subcontractor's commercial general liability, comprehensive automobile liability insurance, umbrella/excess liability and builder's risk policies for any claims arising out of work performed under the Contract Documents.

4.5.7. In case of the breach of any provision of this Article, Tampa Bay Water, at its option, may take out and maintain, at the expense of the Contractor, such insurance as Tampa Bay Water may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under the Contract Documents.

4.5.8. In carrying out any of the provisions of the Contract Documents or in exercising any authority granted by the Contract Documents, there will be no personal liability upon any board member, officer, employee or agent of Tampa Bay Water.

C. The Contractor's Liability Insurance

4.5.9. The Contractor shall purchase and maintain commercial general liability and other insurance appropriate for the Work, in the limits of at least those specified in the Supplementary Conditions, and which shall provide protection from claims itemized below which may arise out of or result from the Contractor's performance and furnishing of the Work and the Contractor's other obligations under the Contract Documents, whether the Work and the obligations be performed or furnished by the Contractor, Subcontractor or any Supplier, to wit:

a. Claims under workers' compensation, disability benefits, and other applicable similar employee benefits acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees; claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees; claims for damages insured by personal injury liability coverage sustained by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or by any other person for any other reason; claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use; claims arising by operation of Laws and Regulations for damages because of bodily injury or death of any person or for damage to property; and

c. Claims for damages because of bodily injury or death of any person, or property damage arising out of ownership, maintenance, operation, use of loading and unloading of any owned, hired or non-owned motor vehicle used in the Work, including employee non-ownership use.

4.5.10. The Contractor's liability insurance shall include contractual liability coverage sufficient to cover the Contractor's indemnification obligations under the Contract Documents. The

Contractor agrees to pay on behalf of Tampa Bay Water, and to provide and pay for a defense for all claims covered by the Contractor's obligations under the indemnification provisions.

4.5.11. The Contractor's liability insurance shall be endorsed to include as additional insured: Tampa Bay Water, the Engineer, their consultants, any subsidiaries or affiliates, and each of their directors, officers, shareholders, agents, or employees. The insurance afforded to these additional insured shall be primary insurance, and neither the coverage nor the amount of insurance provided under the Contractor's policies shall be reduced or prorated by the existence of any other insurance applicable to any loss they may have sustained. If the Subcontractors and Suppliers do not purchase and maintain the coverage specified in this Article or the Supplementary Conditions, they shall be included in the Contractor's policies as additional insured.

4.5.12. The Contractor's liability insurance shall remain in effect until three (3) years after Final Completion and at all times after that when the Contractor may be correcting or removing and replacing Defective Work. Evidence of insurance shall be furnished to Tampa Bay Water yearly.

4.5.13. These requirements shall not be construed to limit the liability of the Contractor or its insurers. Tampa Bay Water does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

D. Property Insurance

4.5.14. The Contractor shall purchase and maintain builder's risk "all risk" completed value insurance coverage for physical loss or damage upon the Work at the Project site to its full insurable value, including completed Work and Work in progress. This insurance shall list Tampa Bay Water as an additional insured and shall include the interests of the Contractor, Subcontractors and Suppliers, the Engineer, and Tampa Bay Water's and the Engineer's consultants in the Work, all of whom shall be listed as additional insured. At a minimum, and not by way of limitation, it shall insure against extended coverage, perils of fire, lightning, windstorm, flood, rain, hail, explosions, riot, tornado, hurricane, sink holes, theft, vandalism and malicious mischief, collapse and water damage and shall include damages, losses and expenses arising out of or resulting from any insured loss incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, the Contractor shall purchase and maintain similar property insurance on parts of the Work stored on and off the Project site or in transit whether or not such Work is included in a Payment Application. The policy shall be endorsed to permit use or occupancy by Tampa Bay Water prior to Final Completion. The property insurance may have a deductible amount, which shall be borne by the Contractor, not exceeding $25,000.00. The property insurance shall comply with the requirements of this Article.

E. Waiver of Subrogation Rights

4.5.15. Tampa Bay Water and the Contractor intend that all policies of insurance shall protect Tampa Bay Water, the Contractor, and the Engineer, provide primary coverage for all losses and damages caused by the perils covered. Accordingly, all such policies shall be endorsed to provide that in the event of payment of any loss or damage the insurer shall have no rights of subrogation or other recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by the Engineer or Tampa Bay Water's and the Engineer's consultants, Tampa Bay Water will obtain separate waiver forms, and if such forms are required of any Subcontractor or Supplier, the Contractor will so obtain them.

4.6 Taxes and Charges

The Contractor shall pay any and all sales and use taxes and all withholding taxes, whether State or Federal, and pay all Social Security charges and also all State Unemployment Compensation charges, and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees, or sums whatsoever, which are now required to be paid or withheld under any laws, unless otherwise modified in the Supplementary Conditions.

4.6.2. Tampa Bay Water reserves the right to implement an Owner's Direct Purchase sales tax savings program with respect to the Project. In such event, Contractor shall cooperate and assist Tampa Bay Water, at no additional cost, with respect to the implementation of that sales tax savings program. Tampa Bay Water and Contractor shall work together to identify particular pieces of equipment and material that are suitable for direct purchase by Tampa Bay Water. As such items are identified, Tampa Bay Water shall issue purchase orders, in accordance with a schedule mutually acceptable to Tampa Bay Water and Contractor, to the appropriate Suppliers of such items for the direct purchase of those items by Tampa Bay Water. Tampa Bay Water shall pay the Supplier of such items directly and the title for such items shall pass directly from the Supplier to Tampa Bay Water. Notwithstanding the foregoing, Contractor shall remain responsible for the ordering, scheduling, coordinating, insuring, delivery, unloading, storage, installation, operation, and warranties of all such direct purchase items, as if Contractor had purchased the items itself for incorporation into the Work. In that regard, Tampa Bay Water shall assign to Contractor all contract and warranty rights Tampa Bay Water may have against any such Supplier, so as to permit Contractor to assert warranty or other contract claims for defective or nonconforming materials or equipment directly against the Supplier. As Tampa Bay Water issues purchase orders to the Suppliers of such items, Tampa Bay Water and Contractor shall execute a Change Order which deducts from the Contract Price the amount being paid by Tampa Bay Water, plus the amount of sales tax that otherwise would have been paid on such items. As an inducement to Contractor to more fully cooperate and facilitate this sales tax savings program, Contractor shall receive as a bonus, at the time final payment is to be made hereunder, a sum equal to ten percent (10%) of the total amount of sales tax saved by Tampa Bay Water as a result of these direct purchases.

4.7 Codes, Ordinances, Permits, and Licenses

4.7.1. The Contractor shall keep itself fully informed of all applicable Laws and Regulations, which in any manner affect the Work. All permits, licenses, inspection fees, impact fees, and other costs necessary for performance of, compliance with, and/or completion of the Work shall be obtained and paid for by the Contractor, unless otherwise modified in the Supplementary Conditions.

4.7.2. If Tampa Bay Water has obtained and paid for any permits or licenses applicable to the Work, the Contractor shall meet all requirements of those permits and licenses. The Contractor shall bear all costs arising from the Contractor's responsibilities under this Article.

4.7.3 All Work is to be performed by Contractor in accordance with the most current applicable Laws and Regulations. Provided, however, in the event of any changes to any applicable Laws and Regulations that take effect after the date Contractor submitted its Bid to Tampa Bay Water, and under the circumstances it is not reasonable to assume that Contractor was or should have been aware of such changes, and Contractor provides Notice to Engineer of the changes and Engineer thereupon directs Contractor in writing to perform the Work in accordance with such changes, and such changes impact the time and/or cost of Contractor's performance of the Work, a Change Order or Change Authorization shall be issued with respect to such changes.

4.8 Superintendence

4.8.1. The Contractor shall keep at the Project site supervisory personnel who shall direct the Work in a competent manner, applying the skills, expertise and attention necessary to perform the Work in accordance with the Contract Documents. The Contractor shall designate, in writing before starting Work, a competent Project superintendent who shall be an employee of the Contractor and shall have complete authority to represent and to act for the Contractor. The Contractor shall notify Tampa Bay Water and Engineer in writing prior to any change in superintendent assignment. If Tampa Bay Water objects to the Contractor's superintendent, the Contractor shall submit a replacement superintendent at no increase in Contract Price nor extension in Contract Time. The Contractor shall be responsible for all construction means, methods, techniques, sequences, and procedures, and for providing adequate safety precautions and coordinating all portions of the Work.

4.8.2. If Tampa Bay Water or the Engineer object to any of the Contractor's personnel, by reason of being unfit, incompetent, unskilled, disorderly, intemperate, or otherwise hindering the Work, the Contractor shall promptly correct the problem and, if required by Tampa Bay Water or the Engineer, remove such personnel from the Work. Failure to comply with this provision shall constitute a material breach of the Contract and be grounds for withholding payment.

4.9 Reception of Engineer's Communications

4.9.1. The Contractor's Representative at the Project site shall have authority to act on behalf of and contractually bind the Contractor. All communications given to the Contractor's Representative shall be deemed given to the Contractor. Communications of major importance will be confirmed in writing upon request from the Contractor.

4.9.2. The Engineer may schedule Project meetings for the purposes of discussing and resolving matters concerning the various elements of the Work. The time and place for these meetings and the names of persons required to be present shall be determined by Tampa Bay Water and the Engineer. The Contractor shall comply with these attendance requirements and shall also require its Subcontractors and Suppliers to comply.

4.10 Safety

4.10.1. The Contractor shall be solely responsible for the condition of the Project site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal Working Hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable Laws and Regulations, as well as all applicable safety rules and regulations promulgated by Tampa Bay Water from time to time. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from compliance with the obligations and penalties set forth therein

4.10.2. The Contractor shall develop and maintain for the duration of this Project a safety program, and a written safety plan specific to the Project that will effectively incorporate and implement all safety provisions required by any Laws and Regulations. The Contractor shall appoint an employee assigned to the Work who shall be responsible to supervise and enforce compliance with the safety program.

4.10.3. The Contractor, as a part of its safety program, shall maintain at its office or other prominent place at the Project site, the written safety plan and safety equipment applicable to the Work as prescribed by the aforementioned authorities and all articles necessary for giving first aid to the injured. The written safety plan shall establish the procedures for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the Project site.

4.10.4. The Contractor must give Tampa Bay Water and the Engineer prompt Notice of all accidents or injuries whatsoever arising out of, or in connection with, the performance of the Work, whether on or adjacent to the Project site, giving full details in writing, including statements of witnesses. The prompt Notice required hereunder shall be given within 24 hours with respect to any injuries, and within two (2) working days as to all other accidents.

4.10.5. If a claim is made by anyone against the Contractor or any Subcontractor for any reason including, but not limited to, any accident, the Contractor shall give Tampa Bay Water and the Engineer prompt Notice, giving full details of the claim.

4.11 Protection of Work and Property

4.11.1. The Contractor shall have full responsibility for locating all underground utilities in advance of excavation (whether they are indicated on the Contract Documents or indicated by visible markers); scheduling excavation and uncovering in advance, unless it conflicts with Work already uncovered; shoring, blocking, and protecting the underground utilities; repairing any damage done to the satisfaction of Tampa Bay Water or the owners of those underground utilities; giving prompt Notice to Tampa Bay Water and the Engineer of any newly discovered underground utility; and the safety, protection and repairing of any damage done to any affected Work. All costs involved and time required to perform these responsibilities shall be considered as having been included in the Contract Price and in the Progress Schedule for performing the Work within the Contract Time; except that in the case of newly-discovered underground utilities, those costs and times shall, upon proper documentation, be considered pursuant to the General Conditions, *Article 6.8. Differing Site Conditions*, for adjustment of the Contract Price and/or the Contract Time.

4.11.2. The Contractor shall at all times safely guard and protect from damage Tampa Bay Water's property, property on which the Project is located if not owned by Tampa Bay Water, adjacent property, and its own Work from injury or loss. The Contractor shall provide all facilities required for protection of the Work according to all Laws and Regulations and local conditions.

4.11.3. The Contractor shall protect its Work and materials from damage due to the nature of the Work, the natural elements, carelessness of others, or from any cause, until Final Completion of the Work.

4.11.4. The Contractor shall notify owners of adjacent property (including underground utility owners) not less than 48 hours, or the time period required by Laws and Regulations, whichever period is longer, prior to the Work affecting the property, and shall coordinate and cooperate with them in the location, protection, removal, relocation, and/or replacement of their property. All damage, injury or loss to property caused, directly or indirectly, in whole or part, by the Contractor, any Subcontractor or Supplier or anyone for whose acts any of them may be liable, shall be remedied at the Contractor's expense. The Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to the Project site.

4.12 Responsibility of Contractor to Act in Emergency

In case of an emergency which threatens loss or injury to persons or property, the Contractor shall take appropriate remedial action, without previous instructions from Tampa Bay Water or Engineer, as the situation may warrant, and immediately provide Notice to Tampa Bay Water and the Engineer of its action. Any claim for compensation by the Contractor, together with substantiating documentation in regard to expense caused by emergency acts, shall be submitted to Tampa Bay Water and the Engineer and the amount of compensation if any, shall be determined by mutual Contract.

4.13 Materials and Appliances

4.13.1. Unless otherwise modified in the Supplementary Conditions, all materials to be incorporated into the Work shall be new. The Contractor shall furnish satisfactory evidence to the Engineer as to the kind and quality of materials.

4.13.2. In selecting and/or approving equipment and materials for installation in the Project, neither Tampa Bay Water nor the Engineer shall be responsible for injuries or claims resulting from failure of the equipment or material to comply with Laws and Regulations and applicable federal, state, and local safety codes or requirements, or other applicable safety requirements, or failure due to the Work being Defective.

4.14 Contractors' and Manufacturers' Compliance with State Safety Laws and Regulations, OSHA, and Other Code Requirements

The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar safety items required by the state and federal (OSHA) industrial authorities and other Laws and Regulations. Further, any features of the Work subject to such safety regulations shall be fabricated, furnished, and installed (including installation of Tampa Bay Water-furnished equipment) in compliance with these requirements. Subcontractors and Suppliers shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all Suppliers and Subcontractors of the provisions of this Article.

4.15 Submittals

4.15.1. After checking and verifying all field measurements and after complying with all applicable procedures, Contractor shall submit to the Engineer for its review all Submittals, which shall bear a stamp or specific written indication that the Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to Submittals. All Submittals shall be promptly submitted by Contractor so as to cause no delay to the completion of the Work. All Submittals shall be identified as Engineer may require. The data shown shall be complete with respect to quantities, dimensions, specified performance, and design criteria, materials, and similar data sufficient to enable Engineer to review the information.

4.15.2. All Submittals shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which it is intended. The Contractor shall review all Submittals prior to submission, for compliance with the Contract Documents and shall provide specific written certification of compliance.

4.15.3. Before each submission, the Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and for compliance with the Contract Documents. At the time of each submission, Contractor shall provide specific written Notice of each variation from the requirements of the Contract Documents, and in addition, shall cause a specific notation of each such variation to be made on each Submittal submitted for review and approval. In the absence of such notification, the approval of a Submittal shall not waive or alter the original requirements of the Contract Documents.

4.15.4. The Contractor shall make all corrections required by Engineer, and shall resubmit the required number of corrected copies of Submittals and new samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on previous Submittals.

4.15.5. Where a Submittal or sample is required by the Contract Documents, any related Work performed prior to the Engineer's review and approval of the pertinent Submittal shall be at the Contractor's sole expense and responsibility.

4.15.6. Submittals are to demonstrate how the Contractor intends to conform with the design of the Project and the information given in the Contract Documents.

4.15.7. All costs incurred by Tampa Bay Water and the Engineer for the review of a particular Submittal after the Engineer's second review shall be borne by the Contractor, and shall be reimbursed by the Contractor to Tampa Bay Water. Tampa Bay Water may withhold such costs from payments to the Contractor.

4.15.8. The Contractor shall not be entitled to any claim for additional time or compensation caused by the review of any resubmittals.

4.16 Substitution of Materials

4.16.1. Whenever materials, equipment, type of construction, or process are described in the Contract Documents by using a brand name, make, manufacturer, supplier, patent, catalog number, or technique, the naming or Specifications of the item is intended to denote the standard of quality and essential characteristics of the item or process required by Tampa Bay Water. Unless words indicating that no substitution is permitted are used, items from prospective suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor in its written application for the substitution to allow the Engineer to determine whether the material or equipment proposed (1) will perform at least equally well, function, and achieve the results called for by the design, (2) is at least of equal materials of construction, quality and necessary essential design features, (3) is suited to the same use as that named or specified, (4) conforms to the desired detailed requirements for that item including, but not limited to, durability, strength, appearance, dimensions, aesthetics (where aesthetics are essential), safety, service, comparable usefulness, reliability, economy of operation, and ease of maintenance, (5) evidences a proven record of performance, and (6) will not extend the Contract Time or increase the Contract Price. Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Tampa Bay Water's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work.

4.16.2. Each application for a substitution shall certify that the proposed substitute will meet each of the six criteria itemized in paragraph 4.16.1., and that the evaluation and acceptance by the Engineer of the proposed substitute will not prejudice completion of the Work within the Contract Time. All variations of the substitute from the item named or specified shall be identified (operation, materials or construction finish, thickness or gauge of material dimensions, loads, tolerances, deleted/added features, etc.), and information regarding available maintenance, repair, and replacement service shall be indicated. The Contractor is solely responsible for verifying that substitutes are in accordance with the Contract Documents, and that dimensions, arrangement, design, and construction details, and all other features of substitutes are suited to the specified purpose.

4.16.3. A proposed substitute will be accepted as equivalent or "Or-Equal" to that named or specified if, in the Engineer's judgement, it meets the criteria in paragraph 4.16.1. No substitute shall be utilized, ordered, or installed without the Engineer's prior written acceptance.

4.17 Tests, Samples, and Observations

4.17.1. The Contractor shall furnish, with no increase in Contract Price, the necessary test pieces and samples, including facilities and labor for obtaining the same, as required by the Contract Documents or requested by the Engineer. When required by the Contract Documents or requested by the Engineer, the Contractor shall furnish certificates of any designated tests of materials and equipment.

4.17.2. The Contractor shall establish a quality control system to ensure sufficient supervision, inspection and testing of all items of Work, including those of the Subcontractors and Suppliers, and to ensure conformance to the applicable Contract Documents with respect to products, workmanship, construction, maintenance, finish, functional performance, and identification. The Contractor's quality control system shall include checking, approval, and coordination of Submittals and the surveillance of all specified tests.

4.17.3. Tampa Bay Water, the Engineer, authorized government agents and their representatives shall at all times be provided safe access to the Work whenever it is in preparation or progress, and the Contractor shall provide facilities for such access and for observations, including maintenance of temporary and permanent access.

4.17.4. If the Contract Documents, Laws and Regulations or any public authority requires any Work to be specially tested or approved, the Contractor shall give timely Notice to the Engineer of its readiness for testing or approval.

4.17.5. If any testing, inspection, or approval reveals failure of any part of the Work to conform to the Contract Documents, the Contractor shall not recover any costs made necessary by that failure, and shall reimburse Tampa Bay Water for all direct, indirect, and consequential costs made necessary by that failure including those of repeated procedures, and compensation for the Engineer's services. Such reimbursement may be withheld from payment to the Contractor.

4.17.6. If a portion of the Work is covered contrary to the Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required by the Engineer, be uncovered for the Engineer's examination and be recovered at the Contractor's expense without change to the Contract Time or Contract Price. If any Work should be covered up without approval or consent of the Engineer, re-examination of questioned Work may be ordered by the Engineer, and if so ordered, the Work shall be uncovered by the Contractor. If it is found that such Work is Defective, Contractor shall bear all direct, indirect, and consequential costs of such uncovering, exposure, observation, inspection, correction of the Defective Work, and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) and Tampa Bay Water shall be entitled to reimbursement or to deduct the costs from payment to the Contractor. If it is found that such Work is not Defective, Tampa Bay Water shall reimburse Contractor for the cost of uncovering, inspecting, and recovering such Work.

4.18 Royalties and Patents

The Contractor shall pay all royalty and patent fees unless otherwise specified. Pursuant to the indemnity provisions of the General Conditions, *Article 4.4, Indemnity,* the Contractor shall defend all suits or claims for infringement of any patent rights and shall save Tampa Bay Water and the Engineer harmless from any and all loss, including reasonable attorneys' fees and legal assistants' fees on account thereof.

4.19 Contractor's Right to Terminate Contract

If the Work is stopped under an order of any court or other public authority for a period of more than 3 months, through no act or fault of the Contractor, its Subcontractors, or their respective employees, or if Tampa Bay Water should fail to pay the Contractor within forty-five (45) Days after the time specified in the General Conditions, *Article 7.1. Partial Payments,* any sum recommended by the Engineer and approved by Tampa Bay Water, then the Contractor may, upon fifteen (15) Days written Notice to Tampa Bay Water and the Engineer, suspend Work. If Tampa Bay Water fails to correct the conditions, which under this Article justify the Contractor's suspension of the Work, the Contractor may, after fifteen (15) Days additional written Notice to Tampa Bay Water and the Engineer, terminate the Contract.

Upon termination, the Contractor's sole and exclusive remedy shall be the same as and limited to those rights set forth in paragraph 6.6.6 hereafter. Contractor shall not be entitled to any additional rights or remedies against Tampa Bay Water, including loss profits and other damages, all such other remedies being expressly waived by Contractor.

4.20 Warranty and Guarantee; Correction of Defective Work During Correction Period

4.20.1. The Contractor warrants and guarantees to Tampa Bay Water that all Work will be in accordance with the Contract Documents and will not be Defective, including all Work performed or furnished by any Subcontractor or Supplier. This warranty and guarantee is in addition to and shall survive the Contractor's obligations under the Correction Period set forth in this Article.

4.20.2. The Contractor shall make, at its own expense, all repairs or replacements necessitated by Defective Work, and pay for any damage (whether to the Work itself or other property), including routine repairs resulting from such Defective Work, which becomes evident within the one (1) year after the date of Substantial Completion established by the Engineer for the entire Work or for specified items of Work, or within one (1) year after the date of Final Completion of the Work if Tampa Bay Water did not operate or use the entire facility between the Substantial Completion date and Final Completion, or within such longer period of time as may be prescribed by Laws and Regulations or by the terms of any applicable special guarantee required by the Contract Documents ("Correction Period"). After the Correction Period, Contractor shall remain liable to Tampa Bay Water, and its successors, for Defective Work and damage resulting from such Defective Work, but such liability shall not include an obligation to make routine repairs, unless otherwise agreed to in writing.

4.20.3. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all other materials and equipment used in the Project which have a cost of more than $1,000.00 shall require an express warranty from the manufacturer(s) and the Supplier(s) to Tampa Bay Water that the materials (1) are new, (2) have been manufactured and supplied in accordance with the requirements of the Contract Documents, and (3) are not Defective. Such express warranty shall be for a period of not less than the Correction Period.

4.20.4. Defective Work identified for correction during the Correction Period but remaining Defective after its expiration shall be considered as part of the obligations of the warranty or guarantee.

4.20.5. The Contractor agrees to defend, indemnify and hold Tampa Bay Water and the Engineer harmless from liability of any kind arising from damage due to Defective Work. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from Tampa Bay Water or the Engineer. If the Contractor fails to make the repairs and replacements promptly, or in an emergency, where delay would cause serious risk, loss, or damage, Tampa Bay Water may have the Defective Work corrected or the rejected Work removed and replaced, and the Contractor and its Surety shall be liable for the cost thereof.

4.20.6. Contractor's subcontracts with its manufacturer(s) and the Supplier(s) of all materials shall permit the Contractor to assign to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S). Contractor hereby assigns to Tampa Bay Water all express and implied warranties from the manufacturer(s) and the Supplier(S) of all materials used in the Work.

4.20.7. The specified warranties and guarantees and the Contractor's obligations for correction of Work specified in this Article are in addition to and not in limitation of any other specific remedies provided in the Contract Documents or by Laws and Regulations.

4.20.8. Tests, inspections or approvals shall not in any way relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents, or to warrant and guarantee the Work as provided in the Contract Documents.

4.20.9. These provisions shall not be construed to prohibit Tampa Bay Water from seeking damages or any remedy at law or equity against Contractor for breach of the Contract, Defective Work or the warranties provided herein.

4.21 Allowances

Contractor shall not proceed with any Allowance item unless and until it has received express written authorization from Tampa Bay Water. The Contract Price shall be adjusted by Change Order or Change Authorization based upon the actual cost of the Allowance items authorized in writing by Tampa Bay Water.

4.22 Contractor's Representations:

4.22.1. Contractor has examined and carefully studied the Contract and Contract Documents.

4.22.2. Contractor has visited the Work Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

4.22.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.22.4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions (if any) at or contiguous to the Work site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Work site which have been identified or made available by Tampa Bay Water; and (2) reports and drawings of Hazardous Environmental Conditions (if any) at the Work site which have been identified or made available by Tampa Bay Water.

4.22.5. Contractor is aware of the general nature of Work to be performed by Tampa Bay Water and others at the Work site that relates to the Work to the extent indicated in the Contract Documents.

4.22.6. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

4.22.7. Contractor has given Tampa Bay Water written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Tampa Bay Water is acceptable to Contractor.

4.22.8. The Contract Documents are sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

4.22.9. Contractor's execution of this Contract is not based upon their reliance upon any representation, understanding or Contract not expressly set forth herein. Tampa Bay Water has not made any representation to Contractor except as expressly set forth herein.

4.22.10. Contractor is organized and exists under the laws of the State of _____ and is in good standing in the State of _____ and is authorized to do business in the State of Florida.

4.22.11. Contractor has the full power and authority to execute and deliver this Contract and to incur and perform the obligations provided for herein and therein, all of which have been duly authorized by all proper and necessary action of the governing body of the Contractor.

Contractor is in compliance with all laws and regulatory requirements to which they are subject.

4.22.12 Contractor executes this Contract as a free and voluntary act, without any duress, coercion, or undue influence exerted by or on behalf of Tampa Bay Water or any other party.

4.22.13 This Contract is a valid, binding and enforceable obligation of Contractor, and does not violate any law, rule, regulation, contract or Contract otherwise enforceable by or against Contractor, except as the same may be limited by bankruptcy, insolvency, reorganization or other similar laws affecting the rights of creditors generally.

5. Tampa Bay Water/Owner

5.1 General Provision

5.1.1. Written communications from Tampa Bay Water to the Contractor shall in general be issued through the Engineer, but if issued directly by Tampa Bay Water, a copy shall be provided to the Engineer.

5.1.2. Tampa Bay Water may issue without negotiation, and at its discretion, Change Authorizations, as provided in the Contract Documents. Only Tampa Bay Water is empowered under the Contract Documents to order changes in the Work that affect Contract Time or Contract Price or quality.

5.1.3. If the Work is Defective, or the Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in a way that the completed Work will conform to the Contract Documents, Tampa Bay Water may order the Contractor to stop the Work, or any portion of the Work in question, until the cause for the stop order has been eliminated; however, this right of Tampa Bay Water to stop the Work shall not give rise to any duty on the part of Tampa Bay Water to exercise this right for the benefit of the Contractor or any other party. The Contractor shall not be allowed to recover any costs resulting from an order to stop the Work, and the Contractor shall reimburse Tampa Bay Water for all direct, indirect, or consequential costs attributable to an order to stop the Work; those costs to be documented as to reasonableness, and Tampa Bay Water shall be entitled to an appropriate decrease in Contract Price, or to withhold such decrease against any amounts recommended for payment. The Contractor shall remain responsible for maintaining and performing in accordance with the Progress Schedule and shall not be entitled to any extension in Contract Time or any increase in Contract Price.

5.1.4. Neither Tampa Bay Water, the Engineer, nor Tampa Bay Water's consultants will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions, and programs related to safety, and neither Tampa Bay Water nor Engineer or any of their consultants shall be responsible for the Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

6. Progress of the Work

6.1 Beginning of the Work

6.1.1. Prior to starting the Work, the Contractor shall prepare and submit to the Engineer, a Progress Schedule and a schedule for Submittals in a format acceptable to Tampa Bay Water and the Engineer and as specified in the General Requirements showing the dates on which each part or division of the Work is expected to be started and completed, and a schedule for Submittals.

6.1.2. No sooner than ten (10) Days before the Notice to Proceed is issued, a pre-construction conference shall be held to review the steps undertaken by the Contractor to comply with the schedule requirements; review the qualifications of the Contractor's on-site personnel; review

the Contractor's plans for lay-down and staging areas, construction traffic, and access to the Project site, parking, communications, procedures, and other similar matters.

6.2 Schedules and Progress Reports

6.2.1. The Progress Schedule or schedule recovery actions, once reviewed and accepted by Tampa Bay Water and Engineer, shall be utilized to report progress or schedule recovery actions, and to evaluate the Contractor's Payment Applications. The Contractor shall be required to keep Tampa Bay Water informed of the progress of the Work by delivering updated Progress Schedules prior to the seventh (7th) day of each month for Tampa Bay Water and Engineer' review and acceptance. Contractor's Submittal of acceptable monthly updates to the Progress Schedules is a condition precedent to Tampa Bay Water's obligation to make payments to Contractor hereunder. Notwithstanding anything in the Contract Documents to the contrary, it is expressly acknowledged and agreed that no review or acceptance of any Progress Schedule by Tampa Bay Water or Engineer shall be construed as an admission or acknowledgement by Tampa Bay Water or Engineer that any such Progress Schedule was either reasonable or achievable.

6.2.2. Prior to the seventh (7th) day of each month, the Contractor shall submit to the Engineer, an itemized Progress Report of the delivery status of purchased equipment and material, Shop Drawings and the status of shop and field fabricated Work. These Progress Reports shall indicate, but shall not be limited to, the dates of the purchase orders, the estimated delivery dates of any material and/or equipment, and cause(s) of delays, if any.

6.2.3. In addition to retainage, Tampa Bay Water shall have the right to withhold all or any portion of Progress Payments for the Work if the Contractor fails to update and submit the Progress Schedule(S) and Progress Reports as specified.

6.2.4. Neither Tampa Bay Water's nor the Engineer's review of the Contractor's Progress Schedule, or Tampa Bay Water's decision to raise or not to raise any objections about the Contractor's Progress Schedule, shall impose on Tampa Bay Water or the Engineer any responsibility for the timing, planning, scheduling, or execution of the Work, nor relieve Contractor of its obligation to complete the Work in a timely manner.

6.3 Prosecution of the Work

6.3.1. Tampa Bay Water and the Contractor agree that time is the essence with respect to Contractor's performance under the Contract Documents. The Contractor shall perform the Work at such time, and in or on such part(s) of the Project site as may be required to complete the Work as required by the Contract Documents.

6.3.2. If the Contractor desires to carry on Work at night or otherwise outside of the Working Hours, it shall give timely Notice to Tampa Bay Water and Engineer to allow satisfactory arrangements to be made for observing the Work in progress. The Contractor shall reimburse Tampa Bay Water for all of Tampa Bay Water's expenses associated with the Work performed outside of normal Working Hours.

6.3.3. The Contractor shall carry on the Work and adhere to the most recent approved Progress Schedule during all disputes or disagreements with Tampa Bay Water. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. Upon receipt of a written order from the Engineer or Tampa Bay Water, the Contractor will immediately proceed with the Work regardless of whether a Change Order or Change Authorization has or has not been issued.

6.4 Tampa Bay Water's Right to Retain Imperfect Work

If any part or portion of the Work completed under the Contract Documents shall prove Defective, Tampa Bay Water shall have the right in its sole discretion, to retain such Work and may make such deductions in the payment due the Contractor as may be just and reasonable.

6.5 Tampa Bay Water's Right to do Work

Should the Contractor neglect to prosecute the Work in conformance with the Contract Documents or neglect or refuse at its own cost to remove and replace Work as shall have been rejected by the Engineer, then Tampa Bay Water may notify the Contractor and its Surety of the condition, and after seven (7) Days written Notice to the Contractor and its Surety, or without Notice if an emergency or danger to the Work or public exists, and without prejudice to any other right which Tampa Bay Water may have under the Contract Documents, take over that portion of the Work which has been improperly executed, and correct the deficiencies and deduct the cost thereof from the payments then or thereafter due the Contractor.

6.6 Tampa Bay Water's Right to Terminate

6.6.1. At any time, Tampa Bay Water may request the Contractor to provide adequate assurances of its ability to complete the Work in the manner and times designated in the Contract Documents. The types of adequate assurances shall be designated by Tampa Bay Water and shall consist of reasonable means for the Contractor to prove its ability to perform.

A. Termination for Cause

6.6.2. Tampa Bay Water, shall have full power and authority to terminate the services of the Contractor seven (7) Days after providing Notice to the Contractor and its Surety, or sooner if safety to persons or property is in question, because:

a. the Contractor refuses or fails to prosecute the Work, or separable part of the Work, with the diligence that will cause its completion within the corresponding Contract Time, including any authorized adjustments; supply sufficient skilled workers, materials or equipment in adherence with the Progress Schedule; or comply with the Progress Schedule requirements; or

b. the Contractor fails to complete the Work, or any separable part, within the corresponding Contract Time, including any authorized adjustments; or

c. the Contractor refuses or fails to make prompt payment to Subcontractors, disregards Laws and Regulations; refuses or fails to perform the Work in conformance with the Contract Documents; or violates any provision of the Contract Documents; or

d. the Contractor fails to provide Tampa Bay Water with adequate assurances in accordance with this Article, that the Contractor can complete the Work in accordance with the Contract Documents.

6.6.3. If, after the furnishing of said Notice, the Contractor and the Surety fail to cure or correct the default, Tampa Bay Water may terminate Contractor's right to perform the Work and take possession of the Project site and of all materials, tools, and appliances thereon, and require Contractor to assign to Tampa Bay Water any or all of Contractor's subcontracts with Subcontractors or Suppliers, as directed by Tampa Bay Water, and finish the Work by whatever method it may deem expedient and charge the cost thereof to the Contractor and Surety. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finally completed. If the expense of completing the Work exceeds such unpaid balance of the Contract Price, the Contractor and its Surety shall pay the difference to Tampa Bay Water.

6.6.4. Where the Contractor's rights to perform the Work have been so terminated by Tampa Bay Water, the termination shall not affect any rights or remedies of Tampa Bay Water against the Contractor then existing or which may accrue after termination. Any retention or payment of monies due the Contractor by Tampa Bay Water shall not release the Contractor from its contractual liability or any other liability.

B. Termination for Convenience

6.6.5. Upon seven (7) Days written Notice to the Contractor and its Surety, Tampa Bay Water may, without cause and without prejudice to any other right or remedy, elect to terminate the Contractor's services under the Contract Documents in whole or in part. Upon receipt of such Notice, the Contractor shall immediately proceed in accordance with any specific provisions or instructions, to protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination.

6.6.6. In any such termination for the convenience of Tampa Bay Water, the Contractor, as its sole and exclusive remedy, shall be entitled to payment for that portion of the Contract Price attributable to the Work completed, prior to receipt of the Notice of termination, in accordance with the Contract Documents, together with Contractor's reasonable and direct out-of-pocket termination expenses; provided, however, Contractor shall not be entitled to any further or additional recovery against Tampa Bay Water including, but not limited to, any lost profit on Work not performed or any other damages however categorized.

6.6.7. If, after Notice of termination for cause as provided in paragraph 6.6.A above, it is determined the Contractor was not in default or that Tampa Bay Water was not entitled to the remedies set forth therein, the termination shall be deemed to have been for the convenience of Tampa Bay Water and Contractor's rights and remedies shall be the same as and limited to those set forth in paragraph 6.6.6 above.

6.6.8. No waiver, express or implied, of any covenant, provision, right or remedy herein shall at any time thereafter be held to be a waiver of the terms and conditions of this Article.

6.7 Delays and Extensions of Time

6.7.1. If the Contractor is delayed in the progress of the Work by any act or neglect of Tampa Bay Water or the Engineer, or by any other contractor retained by Tampa Bay Water, or by strikes, lockouts, fire, adverse weather conditions not reasonably anticipated, or acts of nature, or any other cause beyond the fault and neglect of the Contractor, within 48 hours of the start of the occurrence, the Contractor shall provide Notice to Tampa Bay Water. Within seven (7) Days after the event which caused the delay has ended, the Contractor must provide full documentation of the impact of the delay. The Contract Time may be extended by Change Order or Change Authorization for such reasonable time as the Engineer and Tampa Bay Water determine. No extension of time will be granted to the Contractor for delays occurring to parts of the Work that have no measurable impact on the completion of the total Work. No extension of Contract Time will be considered for weather conditions reasonably anticipated for the area in which the Work is being performed. Reasonably anticipated weather conditions will be based on official records of monthly precipitation and other historical data. Adverse weather conditions, if determined by the Engineer to be of a severity that would impact progress of the Work, may be considered as cause for an extension of Contract Time. No request by the Contractor for an equitable adjustment to the Contract Time under this Article will be allowed, unless the Contractor has given the Notice and documentation within the times required.

6.7.2. Delays in delivery of equipment or material purchased by the Contractor or its Subcontractors or Suppliers shall not be considered as a cause for delay. The Contractor shall be fully

responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

6.7.3. Within 21 days (unless a longer period of time is reasonably required) after the Contractor submits to Tampa Bay Water and the Engineer a written request for an extension of time, the Engineer will present its written opinion to Tampa Bay Water as to whether an extension of time is justified and, if so, its recommendation as to the number of Days for time extension. Tampa Bay Water shall make the final decision on all requests for extensions to Contract Time.

6.7.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's determination shall be final and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

6.7.5. Notwithstanding anything in the Contract Documents to the contrary, no interruption, interference, inefficiency, suspension or delay in the commencement or the progress of the Work for any cause whatever, including those for which Tampa Bay Water or Engineer may be responsible, in whole or in part, shall relieve Contractor of its duty to perform or give rise to any right to damages or additional compensation from Tampa Bay Water. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against Tampa Bay Water will be the right to seek an extension to the Contract Time, in accordance with the procedures set forth in this Article 6.7; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned "No Damage for Delay" provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion. Notwithstanding the foregoing, if the Work is delayed due to the fault or neglect of Tampa Bay Water or Engineer, and such delays have a cumulative total of more than 30 calendar days, Contractor may make a claim, in accordance with the procedures set forth in Article 7.3, for its actual and direct delay damages accruing after said 30 calendar days.

6.8 Differing Site Conditions

6.8.1. The Contractor shall promptly, and before the conditions are disturbed, provide Notice to Tampa Bay Water and the Engineer of:

a. any subsurface or latent physical conditions at the Project site which differ materially from those (i) observed by Contractor prior to the Submittal of its Bid or (ii) indicated in the Contract Documents or the Existing Condition Documents referenced in the Information to Bidders,

or

b. any unknown physical conditions at the Project site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

6.8.2. The Engineer shall investigate the reported conditions promptly after receiving the Notice from the Contractor. If the conditions do materially differ and cause an increase or decrease in the Contractor's cost or time for performance of the work, an equitable adjustment shall be made in accordance with the procedures set forth in Articles 6.7 and 7.3 herein. Notwithstanding the provisions of this paragraph, if the reported condition in question would have been revealed by a thorough on-site inspection, Tampa Bay Water in its sole discretion shall have the right to deny any such claim for an adjustment in the Contract Price or Contract Time.

6.8.3. No request by the Contractor for an equitable adjustment to the Contract Price or Contract Time for differing site conditions will be allowed if made after the time periods set forth in Articles 6.7 or 7.3, or Final Completion, whichever first occurs.

6.9 Liquidated Damages

Should the Contractor fail to achieve Substantial Completion of the Work within the Contract Time, as that time may be adjusted pursuant to the terms of the Contract Documents, the Contractor shall pay to Tampa Bay Water the liquidated damages as set forth in the Contract. Tampa Bay Water shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Contractor. If an insufficient amount of the Contract Price remains, the amount of liquidated damages shall be due and collectible from the Contractor and its Surety, jointly and severally.

6.10 Other Contracts

6.10.1. Tampa Bay Water reserves the right to let other contracts in connection with the Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their equipment and materials for the execution of their work and shall properly interface and coordinate its Work with theirs.

6.10.2. If the execution of any part of the Work depends on the performance of any other contractor, utility service company or Tampa Bay Water, the Contractor shall promptly provide Notice to the Engineer of any defects or deficiencies that render it incompatible with the intended results of these Contract Documents. The Contractor's failure to provide the required Notice shall constitute an acceptance of the work by others as being fit and proper for integration with the Work.

6.11 Use of Premises

6.11.1. The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to the areas shown on the Contract Documents or indicated by Laws and Regulations, permits, easements, licenses or directions of Tampa Bay Water or the Engineer. The Contractor shall provide, at its own expense, any rights-of-way or access to the Work which it may require outside the limits of Tampa Bay Water's property interests or easements and shall furnish Tampa Bay Water and the Engineer copies of permits and Contracts for use of property outside that provided by Tampa Bay Water prior to entering said properties.

6.11.2. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.11.3. The Contractor shall take all precautions to minimize inconvenience to residents living adjacent to the Project site by maintaining access to driveways and providing dust control for the Project site and noise control devices for dewatering equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work.

6.12 Substantial and Final Completion Dates

6.12.1. When the Contractor considers that the entire Work or designated portion thereof has progressed to the point where it is sufficiently complete in accordance with the Contract Documents, and it has been proven to be ready for its intended use, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work or designated portion thereof, Substantially Complete (except for listed items to be completed or corrected prior to Final Completion). The Contractor shall prepare an initial list of items of Work to be corrected or completed for Final Completion and attach that list to the above

referenced Notice. Within a reasonable time after that, Tampa Bay Water, the Contractor, and the Engineer shall make an inspection to determine the status of completion.

6.12.2. If Tampa Bay Water and Engineer agree that Substantial Completion of the Work has been achieved, the Engineer shall issue a Certificate of Substantial Completion for the purpose of establishing the starting date for specific equipment warranties, and to establish the date that Tampa Bay Water shall assume the cost of operating such equipment. Said Certificate shall not be considered as Final Completion of any portion of the Work or relieve the Contractor from completing the remaining Work within the specified time and in compliance with the Contract Documents. The Engineer shall review and supplement the Contractor's initial list of items of Work to be corrected or completed for Final Completion and such revised and supplemental list shall be attached to the Certificate of Substantial Completion. Provided, however, the failure to include any incomplete or Defective Work on said list shall not relieve or excuse the Contractor from completing all of the Work in accordance with the requirements of the Contract Documents.

6.12.3. When the Contractor considers the entire Work has progressed to the point where it is complete in accordance with the Contract Documents, the Contractor shall provide Notice to Tampa Bay Water and the Engineer that the Contractor considers the Work to have reached Final Completion.

6.13 Performance Testing

Operating equipment and systems shall be performance tested in accordance with the General Requirements and in the presence of the Engineer to demonstrate compliance with the Contract Documents. The Contractor shall schedule such testing with the Engineer at least one (1) week in advance of the planned date for testing.

6.14 Tampa Bay Water's Use of Portions of the Work

Following issuance of the Notice of Substantial Completion, Tampa Bay Water may occupy and operate the Work. Such occupancy and operation shall not be considered as Final Completion of any portion of the Work, nor shall such occupancy or use be considered as cause for an extension of the Contract Time.

6.15 Cutting, Patching, or Fitting

The Contractor shall do all cutting, patching, or fitting of its Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors shown in or reasonably implied by the Contract Documents.

6.16 Cleaning Up

The Contractor shall, at all times, keep property on which Work is in progress and the adjacent property free from accumulations of waste material or rubbish caused by employees or by the Work. Upon completion of the construction, the Contractor shall remove all temporary structures, rubbish caused by employees, Suppliers, Subcontractors, or the Work, and waste materials resulting from its operations.

6.17 Intoxicants

The Contractor and persons under its employ shall not bring onto, possess, sell, or use alcohol, narcotics, drugs (other than prescription drugs, provided the person in possession of the drug has a valid prescription in his or her name, or over-the-counter drugs which may be purchased legally by the person), or controlled substances while on the Project site, including parking lots, at any time, including all breaks and lunch periods. The Contractor and persons under its employ shall not report to, or commence, or continue to work while under the influence of alcohol or any drugs, regardless of whether those drugs were legally or illegally taken. The Contractor and persons under its employ shall not undertake any activities at the Project site

which create a nuisance or improperly disturbs or interferes with Tampa Bay Water's operations at the Project site or the use and enjoyment of any adjacent properties by their respective owners. Gambling on the Project site is prohibited.

7. Payment

7.1 Partial Payments

A. General

7.1.1. Within ten (10) days after commencing the Work, but in any event prior to the Submittal of its first Payment Application, Contractor shall submit to Engineer, for Engineer's and Tampa Bay Water's review and approval, a proposed schedule of values which distributes the Contract Price among the various items and categories of Work to be performed. Said schedule of values shall be in such form and contain such detail as may be required by Engineer and Tampa Bay Water. The final approved schedule of values shall serve as the basis for partial payments and shall be incorporated into the Payment Application form provided by Tampa Bay Water. Nothing contained in this Article shall be construed to affect the right of Tampa Bay Water or Engineer to reject, the whole or any part of the Work, should such Work be found to be Defective. All estimated quantities of Work for which partial payments have been made are subject to review and correction on the final Payment Application. Payment by Tampa Bay Water and acceptance by the Contractor of partial payments based on Unit Price Work, shall not in any way constitute acceptance of the estimated Unit Price Work by Tampa Bay Water.

7.1.2. The Contractor shall provide Tampa Bay Water with copies of its written daily reports at weekly intervals. Refusal of the Contractor to provide its daily reports shall be cause for Tampa Bay Water to withhold payments until the Contractor's daily reports have been provided.

B. Estimate

7.1.3. The Contractor shall not submit more than one Payment Application per month with respect to the Work. Within twenty-five (25) Business Days following submission of a complete and accurate Payment Application to the Engineer, approved by the Engineer, and acceptable to Tampa Bay Water, Tampa Bay Water shall make partial payments to the Contractor on the basis of Work performed during the preceding calendar month by the Contractor. The final working day of each month shall be used as the day for measurement of Work performed.

7.1.4. The Engineer shall, within twenty-five (25) Business Days after receipt of each Payment Application for payment, provide Notice to Tampa Bay Water recommending payment to the Contractor, or return the request to the Contractor providing Notice of the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the request. Payment shall be made by Tampa Bay Water within ten (10) Business Days after a corrected payment request is received.

7.1.5. The Engineer may refuse to recommend and Tampa Bay Water may refuse to pay the whole or any part of any payment, if in the Engineer's or Tampa Bay Water's opinion, the Contractor is not entitled to any such payment. The Engineer may also refuse to recommend and Tampa Bay Water may refuse to pay any payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests of any Work, retract any previous recommendation or payment to such extent necessary in the Engineer's or Tampa Bay Water's opinion to protect Tampa Bay Water from loss for reasons not limited to:

a. The Work is Defective, or completed Work has been damaged requiring correction or replacement;

b. The Contract Price has been reduced because of Change Order;

c. Tampa Bay Water has been required to correct Defective Work or complete all or portions of the Work;

d. The Contractor's unsatisfactory prosecution of the Work in accordance with the Contract Documents;

e. Written claims have been made against Tampa Bay Water or liens have been filed in connection with the Work;

f. The Contractor's failure to make payment to Subcontractors OR Suppliers for labor, materials, or equipment;

g. Amounts owed by Contractor to Tampa Bay Water as Liquidated Damages; or

h. Any other amounts which may be owed to Tampa Bay Water by Contractor pursuant to the terms of the Contract Documents.

C. Deduction from Estimate

7.1.6. Unless modified in the Supplementary Conditions, Tampa Bay Water shall withhold from each partial payment, five percent (5%) of the amount earned for Work completed. A deduction and retainage of five percent (5%) shall be made on the estimated amount earned for approved items of material delivered to and properly stored at the Project site but not incorporated into the Work. The retainage is to be withheld by Tampa Bay Water until all Work has been performed in accordance with the Contract Documents and until such Work has been accepted by Tampa Bay Water.

7.1.7. Tampa Bay Water may deduct from each Payment Application an amount equal to Tampa Bay Water's estimate of the amount of Liquidated Damages then due, or which may become due.

D. Reimbursement

7.1.8. For Tampa Bay Water's expenses as defined in the General Conditions, *Article 4.15. Submittals*, and for testing that is performed by Tampa Bay Water or the Engineer which indicates Work is Defective, or for any other cost for which Tampa Bay Water is entitled to reimbursement from Contractor under the Contract Documents, at Tampa Bay Water's election, such reimbursement shall be deducted from the Contractor's monthly partial payments or shall be paid by Contractor within 30 days after Tampa Bay Water makes demand for same upon Contractor.

E. Qualification for Partial Payment for Materials Delivered

7.1.9. Partial payments for materials delivered but not yet incorporated into the Work shall be as described below:

a. Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200.00 for any one item.

b. To receive partial payment for materials delivered to the Project site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials with the Payment Application, the utilization of Tampa Bay Water provided forms is required. At its sole discretion, Tampa Bay Water, with the Engineer's advice, may approve items for which partial payment is to be made. Partial payments shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the Supplier. Proper storage and protection shall be provided by the Contractor, As Approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and upon acceptance of the Work, all materials remaining for which partial payments had been made

shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

c. Contractor warrants and guarantees that title to all items of Work requested in any Payment Application, whether incorporated in the Project or not, shall pass to Tampa Bay Water at the time of payment for such items, free and clear of all liens, claims, security interests, and encumbrances.

d. If requested by the Engineer, the Contractor shall provide, with subsequent Payment Applications, invoices receipted by the Subcontractor or Supplier showing payment in full has been made.

F. Payment

7.1.10. The amount of partial payment due the Contractor shall be equal to the current value of the Contract Price earned, less, any retainage, less any amounts previously paid, and any deductions for reimbursement as required by the Contract Documents.

7.2 Payment for Change Orders

7.2.1. Tampa Bay Water, without Notice to the Sureties, shall have the right to order changes to the Work. If the parties agree upon the terms for the change, including any appropriate adjustments to the Contract Price or Contract Time, a Change Order shall be issued. If the parties cannot agree upon the terms for the change, a Change Authorization may be issued by Tampa Bay Water. The terms of the Change Authorization shall be final and binding upon Contractor, unless Contractor makes a claim, within twenty-one (21) days of its receipt of the Change Authorization, challenging those terms it takes objection to, giving full details and supporting documentation for its specific objections. Any terms not specifically objected to within that twenty-one (21) day period shall be deemed final and accepted by Contractor. Regardless of whether or not Contractor files a timely claim with respect to any of the terms of the Change Authorization, Contractor shall proceed with the change to the Work, as set forth in the Change Authorization, as directed by Tampa Bay Water or Engineer.

7.2.2. At Tampa Bay Water's option, payment or credit for any changes covered by a Change Order or a Change Authorization, whether additive or deductive, shall be determined by one or a combination of the methods set forth in A, B, or C, below, as applicable:

A. Unit Prices

Those Unit Prices stipulated in the Contract shall be utilized where they are applicable. In the event the Change Order or Change Authorization results in a change in excess of twenty-five percent (25%) of the original Contract quantity, and the total dollar change in value of that item exceeds twenty-five percent (25%), Tampa Bay Water will review the Unit Price to determine if a new Unit Price shall be negotiated. Unit Prices for new unit items not listed in the Contract shall be negotiated and mutually agreed upon.

B. Lump Sum

A total lump sum amount for the Work negotiated and mutually acceptable to the Contractor and Tampa Bay Water. Lump Sum Price quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor and Subcontractor costs, including labor, material, rentals, approved services, overhead, and profit, all calculated as specified under "C" below.

C. Cost Reimbursement Work

The term "cost reimbursement work" shall be for changes to be compensated for on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of direct cost as required for the change.

Tampa Bay Water, at its sole discretion, may direct the change to be accomplished on a cost reimbursement work basis, in which event the change will be priced based upon the labor, materials, equipment and other costs hereafter noted associated with such change. The cost items for cost reimbursement work shall be limited to the following items:

1. Labor, including superintendent and foremen, for those hours associated with the cost reimbursement work (actual payroll cost, including wages, fringe benefits as established by negotiated labor agreements, contracts, labor insurance and labor taxes as established by law). Expressly excluded from this item are all labor costs associated with negotiating the subject change. No other fixed labor burdens will be considered, unless approved in writing by Tampa Bay Water.
2. Material associated with the change, including sales tax, if paid for by the Contractor or its Subcontractor.
3. Rental, or equivalent rental cost of equipment, including necessary transportation for items having a rental value in excess of $100.00.
   Rental or equivalent rental cost shall be allowed for only those Days or hours during which the equipment is (or would have been for deductive changes) in actual use. Rental and transportation allowances shall not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment shall, in all cases, be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances shall be made for those items, unless specific Contract to that effect is made.
4. Additional bond as required and approved by Tampa Bay Water.
5. Additional insurance (other than labor insurance) as required and approved by Tampa Bay Water.
6. To the costs noted above, for net additive changes, there shall be added the following fixed fees for the Contractor or Subcontractor actually performing the change:

A. A fixed fee of twenty-five percent (25%) of the cost of item 1 above. For costs incurred for Work performed by Subcontractors, the Contractor's fee shall not exceed ten percent (10%) and the Subcontractor's fee shall be the same as for the Contractor; and

B. A fixed fee of ten percent (10%) added to the cost of items 2 and 3.

7.2.3. The fixed fees noted above in the previous paragraph shall be considered to be the full compensation for all cost of general supervision, overhead, profit, and any other general expense.

7.2.4. The Contractor's records shall make clear distinction between the direct costs of Work paid for on a cost reimbursement work basis and the costs of other Work. The Contractor shall furnish the Engineer report sheets in duplicate of each day's cost reimbursement work no later than the working day following the performance of said Work. The report sheets shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The report sheets shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated.

7.2.5. Material charges shall be substantiated by valid copies of vendors' invoices. Such invoices shall be submitted with the daily reports or, if not available, they shall be submitted with subsequent daily report. Said daily report shall be signed by the Contractor or Contractor's Representative.

7.2.6. Tampa Bay Water reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor shall have no claim for profit or added fees on the cost of such materials and equipment.

7.2.7. To receive partial payments and final payment for cost reimbursement work, the Contractor shall submit to the Engineer, in a manner approved by the Engineer and Tampa Bay Water, detailed and complete documented verification of the Contractor's and any of its Subcontractors' actual costs involved in the cost reimbursement work. Such costs shall be submitted within seven (7) Days after said Work has been performed.

7.2.8. Except for Change Authorizations and Change Order, no other written or oral order from Tampa Bay Water or the Engineer shall be treated as a change in the Work or entitle the Contractor to an adjustment to the Contract Price or Contract Time.

7.2.9. The Engineer, by issuing a Construction Directive, may order minor changes in the Work not involving extra cost, or additional times and not inconsistent with the purpose of the Project, but otherwise, except in an emergency endangering life or property, additions or deductions from the Work shall be performed only in pursuance of an approved Change Authorization or Change Order.

7.2.10. Any compensation paid in conjunction with the terms of a Change Order shall comprise the total compensation due the Contractor for the change defined in the Change Order. By signing the Change Order, the Contractor acknowledges that the stipulated compensation adjustment includes payment for alteration of the Work, payment for the interruption of schedules, extended overhead, delay, or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional adjustment to compensation or time in respect to the subject Change Order.

7.2.11. Tampa Bay Water hereby delegates authority to its General Manager (and his/her designee) to approve any and all Change Order and Change Authorizations in its name, so long as each such Change Order or Change Authorization does not exceed $246,000.00, and further as long as the cumulative total of all Change Order or Change Authorizations does not exceed $246,000.00, unless otherwise approved by the Tampa Bay Water's Board. Each Change Order or Change Authorization over $246,000.00 or which cumulatively exceeds $246,000.00 must be expressly approved by Tampa Bay Water's Board before it shall be binding upon Tampa Bay Water.

7.3 Claims for Additional Compensation

7.3.1. In any case where the Contractor may seek additional compensation, except for an emergency threatening imminent property damage or personal injury, the Contractor shall provide Notice to Tampa Bay Water and the Engineer of its intent to make a claim for such compensation before it begins the Work on which it bases the claim, in order that such matter may be settled or other appropriate action promptly taken. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping an accurate account of actual costs, the Contractor shall be deemed to have waived its claim for additional compensation.

7.3.2. The Contractor's written Notice, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

7.3.3. Claims for additional compensation shall be made in itemized detail and submitted in writing to Tampa Bay Water and Engineer within seven (7) Days following completion of that portion of the Work for which the Contractor bases its claim. If the claim is found to be acceptable by Tampa Bay Water and the Engineer, the Contractor shall be paid as provided in the General Conditions, *Article 7.2. Payment for Change Orders.* No request by the Contractor for an equitable adjustment to the Contract Price under this Article shall be allowed, unless the Contractor has given Notice within the times required.

7.3.4. The Contractor waives its right to file claims unless the claims are filed within the times specified in the Contract Documents. Tampa Bay Water's final determination shall be final

and binding on the Contractor unless the Contractor files suit within thirty (30) days after receipt of Tampa Bay Water's decision.

7.4 Release of Liens or Claims

The Contractor shall indemnify and hold harmless Tampa Bay Water and the Engineer from all claims for labor and materials furnished under the Contract Documents. Prior to the final payment, the Contractor shall furnish to Tampa Bay Water, as part of its final Payment Application, a certification that all of the Contractor's obligations on the Project have been satisfied and that all monetary claims and indebtedness have been paid. The Contractor shall furnish releases or waivers, satisfactory to Tampa Bay Water, from all Subcontractors and Suppliers and of all liens and notices arising out of or filed in connection with the Work. Tampa Bay Water may reduce the amount of retainage withheld upon receipt of an affidavit from Contractor identifying any amounts in dispute with Subcontractor or Suppliers, and provided the amount of retainage withheld continues to exceed the amount in dispute.

7.5 Final Payment

7.5.1. Upon completion of all of the Work, the Contractor shall provide Notice to the Engineer that it has completed its Work and shall request final payment. Upon receipt of such Notice, the Engineer, together with Tampa Bay Water, will inspect and, if acceptable, the Engineer will submit to Tampa Bay Water its recommendation as to acceptance of the Work and as to the final Payment Application of the Contractor. Within sixty (60) Days after the Contractor has submitted its final Payment Application, together with the Sureties' consent to final payment, and upon approval of this Payment Application request by Tampa Bay Water and compliance by the Contractor with provisions in the General Conditions, *Article 7.4. Release of Liens or Claims*, and all other provisions of the Contract Documents as may be applicable, Tampa Bay Water shall pay to the Contractor all monies due it under the provisions of these Contract Documents. Final payment is further subject to Tampa Bay Water's receipt from Contractor of all as-built DRAWINGs, certifications, maintenance manuals, operating instructions, written guarantees and warranties, and bonds relating to the Work, and assignment of all guarantees and warranties from Subcontractors, vendors, Suppliers or manufacturers, all as required by the Contract Documents.

7.5.2. Contractor and Tampa Bay Water agree that project closeout and release of retainage shall be in accordance with Chapters 218 and 255, Florida Statutes, as amended by Chapter 2023-134, Laws of Florida. Specifically, Contractor shall cooperate with Tampa Bay Water to prepare a punch-list with estimated costs of items to complete the Work. Within 20 business days of completion of said punch-list, Tampa Bay Water shall pay Contractor the remaining contract balance, including retainage previously withheld, less an amount equal to 150% of the estimated cost to complete the items on the punch-list, and also less any amounts that are subject to a good faith dispute made in writing to the Contractor by Tampa Bay Water.

7.6 No Waiver of Rights

Neither the inspection by Tampa Bay Water or the Engineer, nor any payment for or acceptance of the whole or any part of the Work by Tampa Bay Water or Engineer, nor any extension of time, nor any possession taken by Tampa Bay Water, shall operate as a waiver of any provision of the Contract Documents, or any right to damages, nor shall such waive any subsequent breach. Acceptance of final payment shall not release Contractor of any liability under the Contract Documents or otherwise, and shall not be deemed evidence of performance or be construed as acceptance of Defective or improper Work.

7.7 Acceptance of Final Payment Constitutes Release

The acceptance by the Contractor of the final payment shall release Tampa Bay Water and the Engineer from all claims and all liability to the Contractor for all things done or furnished in

connection with the Work, and every act of Tampa Bay Water and others relating to or arising out of the Work except claims previously made in writing and identified by Contractor in its final Payment Application as still unsettled. No payment, however, final or otherwise, shall operate to release the Contractor or its Sureties from obligations under the Contract Documents and the Performance Bonds, Payment Bonds, and other bonds and warranties, as herein provided.

7.8 Record Maintenance and Auditing Rights

Contractor shall keep all books, records, files and other documentation, including all electronically stored items, which concern or relate to the Work hereunder (collectively referred to herein as the "Records"), for a minimum of three (3) years from the date of expiration or termination of this Contract or the date of Final Completion or as otherwise required by law, whichever date is later. Tampa Bay Water, or any duly authorized agents or representatives of Tampa Bay Water, shall have the right to audit, inspect and copy all such Records as often as they deem necessary during any such period of time. This right to audit, inspect and copy Contractor's Records shall include all of the Records of the Subcontractors and Suppliers.

7.9 Hazardous Materials

If Contractor encounters on the Project site any materials reasonably believed by Contractor to be petroleum or petroleum-related products, or other hazardous or toxic substances which have not been rendered harmless, Contractor immediately shall (i) stop Work in the area affected and (ii) report such condition to Tampa Bay Water in writing. If the Work is so stopped and hazardous material is found, the Work in the affected area shall not thereafter be resumed except by Change Order. Any such Change Order shall include, but not be limited to, an adjustment to the Contract Time as appropriate. If no hazardous material is found after the Work has stopped, no Change Order is required to resume the Work in the affected area. Further, if the hazardous material was generated or caused by the Contractor, or any of its employees, agents, Subcontractors or Suppliers, no Change Order will be required for an adjustment in the Contract Time, and Contractor shall indemnify Tampa Bay Water for any costs incurred by Tampa Bay Water with respect to such hazardous material.

* * * * * *

End of General Conditions

EXHIBIT A-3

TECHNICAL SPECIFICATIONS

TAMPA BAY WATER

Project No. 07153
Cross Bar Ranch Wellfield Water Transmission Main - Utility Conflict

100% Specifications

Prepared by Wade Trim, Inc

December 2025

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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 PROJECT DESCRIPTION

A. The WORK described herein consists of the construction of approximately 500 LF of 60-inch replacement raw water transmission main across State Road 52 with open cut and microtunneling methods as indicated on the DRAWINGS and specified herein. The existing crossing will be placed out of service and the new crossing connected and placed into service as shown and specified.

B. The project is located as shown in the Contract Documents.

1.2 WORK DESCRIPTION

A. The WORK of this PROJECT consists of:

1. Furnish all materials, labor, tools, equipment, and incidentals necessary for the complete and proper construction of the WORK as shown on the construction DRAWINGS and specified herein.

B. All materials, equipment, skills, tools and labor which are necessary and incidental for the proper completion of the WORK, shall be furnished and installed by the CONTRACTOR at no additional cost to the OWNER, whether specifically indicated in the CONTRACT DOCUMENTS or not.

C. In carrying out the WORK, comply with all applicable basic materials and construction requirements specified in the CONTRACT DOCUMENTS.

1.3 CONTRACT PRICE

A. Construct the WORK based on the PROPOSAL. The CONTRACTOR's compensation for all construction, materials, equipment, and installation shown on the DRAWINGS and included in the SPECIFICATIONS will be deemed to be included in the unit Bid Schedule.

1.4 SUBSTANTIAL AND FINAL COMPLETION

A. Before substantial completion, inspect and take all necessary remedial measures of every portion of the WORK, whether remedial work was identified by the CONTRACTOR, ENGINEER or OWNER, to ensure the overall performance is in compliance with the terms of the CONTRACT DOCUMENTS.

B. The WORK shall be complete including all incidental mechanical, electrical, testing and

calibration, and disinfection and ready for the OWNER to assume operations.

C. SUBSTANTIAL and FINAL COMPLETION of the WORK shall be completed, tested and ready for operation in accordance with the dates as contained in the CONTRACT DOCUMENTS.

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

A. The CONTRACTOR shall receive and accept the compensation provided in the PROPOSAL and the AGREEMENT as full payment for furnishing all materials, labor, tools and equipment, for performing all operations necessary to complete the WORK and also as full payment for loss or damages arising from the nature of the WORK, or from any discrepancy between the actual quantities of WORK and quantities herein estimated by the ENGINEER, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the WORK until FINAL COMPLETION.

B. The prices stated in the PROPOSAL include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the WORK. The basis of payment for UNIT PRICE WORK shown in the PROPOSAL shall be in accordance with the description of the respective items in this Section.

C. The CONTRACTOR'S attention is called to the fact that the prices for the various items of work are intended to establish a total price for completing the WORK in its entirety. Should the CONTRACTOR feel that the cost for any item of WORK has not been established by the PROPOSAL form, the cost for that work shall be included in some other applicable PROPOSAL item, so that the PROPOSAL for the PROJECT does reflect the CONTRACTOR'S total price for completing the WORK in its entirety.

D. Unless specifically listed as a Bid Item, no separate payment will be made for the following items and the cost of such work shall be included in the applicable contract pay items of work.
   1. Clearing and grubbing.
   2. Excavation, including necessary pavement/slab removal.
   3. Shoring and sheeting.
   4. Dewatering and disposal of surplus water including well point dewatering as directed by Engineer.
   5. Backfilling.
   6. Grading.
   7. Replacement or restoration of paved or unpaved roadways, grass and shrubbery plots outside of established pay limits.
   8. Replacement or restoration of curbing, gutter, sidewalk, and site restoration of any areas damaged during construction activities.

9. Temporary facilities and controls during construction such as water/sanitary facilities, traffic control and environmental protection, unless specifically provided for in a pay item.
10. Removing and disposing of waste material due to construction.
11. Cleanup.
12. Refill materials, except as hereinafter specified.
13. Testing and placing system in operation.
14. Any material or equipment required installed and/or used for the tests.
15. Maintaining the existing quality of service during construction.
16. Repair of sanitary sewer house laterals damaged during construction.
17. Repair and/or cleaning of storm sewers, inlets & catch basins damaged or filled with sediment during construction.
18. Color audio-video construction record.
19. Providing the services of an Independent Testing Laboratory for materials and compaction testing.
20. Providing the services of a professional land surveyor, licensed in the State of Florida, to establish horizontal and vertical control, layout the work, and assist with the preparation of record drawings.
21. Cost to reproduce drawings, specifications, shop drawings, and reports for the Contractor's use and for submissions to the OWNER
22. Temporary fencing.
23. Dust Control.
24. Noise suppression measures.
25. Removing, relocating, resetting existing street signage to facilitate construction.
26. Removing, relocating, resetting mailboxes to facilitate construction.
27. Utility notification and location and exploratory pits; and
28. All other appurtenant work as required for a complete and operable system.

1.2 MEASUREMENT

A. The quantities shown are approximate and are only given as a basis of calculation upon which the award of the CONTRACT is to be made. The OWNER does not assume any responsibility for the final quantities, nor shall the CONTRACTOR claim misunderstanding because of such estimate of quantities. The quantities for payment shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the OWNER, in accordance with the applicable method of measurement therefore contained herein. Representatives of the CONTRACTOR and the ENGINEER shall witness all field measurements.

1.3 WORK OUTSIDE AUTHORIZED LIMITS

A. No payment will be made for WORK constructed outside the authorized limits of work.

1.4 MEASUREMENT STANDARDS

A. Unless otherwise specified for the particular items involved, all measurements of distance

shall be taken horizontally or vertically.

1.5 PROPOSAL ITEM DESCRIPTIONS

Detailed descriptions for each PROPOSAL item follow:

A. Item No. 1 – GENERAL CONDITIONS, BONDS AND INSURANCE

The bid price for General Conditions, Bonds and Insurance shall be a lump sum amount included in the bid. This bid item shall include obtaining all permits, insurance, and bonds; providing a color audio-videotape of existing conditions of the construction site or route; and complying with all of the general conditions of the Contract as required for the proper performance and completion of the work.

Bid price for General Conditions, Bonds and Insurance shall not exceed 2% of the bid subtotal for installed items and Mobilization.

Payment for Bid Item #1 shall be made successfully upon successfully obtaining bonds, insurance and completing audio-video tape of preexisting conditions for the project.

Contractor shall submit original signed copies of bonds, provide copies of proof of insurance and an electronic copy of the audio-videotape of existing conditions prior to beginning any other construction activity on the projects and prior to invoicing for this bid item.

B. Item No. 2 – MOBILIZATION AND DEMOBILIZATION

The bid price for mobilization and demobilization shall be a lump sum amount calculated as a percentage of the subtotal of the bid items to be installed. This bid item shall include securing a staging area in proximity to the work if public lands are insufficient; moving onto the site all materials and equipment; furnishing and erecting temporary buildings, access roads and other items as necessary to complete the work; providing field trailers, sanitary facilities and potable water facilities as required for the proper performance and completion of the work.

Bid price for mobilization shall not exceed 5% of the bid subtotal for installed items.

Payment for mobilization will be on an incremental basis in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Item
5	15
10	25
25	50
50	75
75	85
100	100

C. Item No. 3 – FDOT PAY ITEM – 1050 61260 - FURNISH AND INSTALL 60-INCH STEEL WATER MAIN BY OPEN CUT

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 60-inch diameter steel pipe via open cut trench. The installation of pipe shall include, but may not be limited to:

1. Performing all evaluations and calculations necessary for the proper implementation of the installation.
2. Furnishing, installing and maintaining all necessary Maintenance of Traffic measures;
3. Furnishing, installing and maintaining all necessary erosion control measures including but not limited to artificial coverings, mowing, sandbagging, slope drains, sediment basins, hay bales, straw, floating silt barrier, staked silt barrier and seeding;
4. Maintaining the trench, which shall include dewatering, barricading, sheeting, shoring, containment, and berming as required or as directed by the Engineer;
5. Protecting existing utilities in place, including coordinating with third party to support poles where needed.
6. Installing the pipe;
7. Joining the pipe as required;
8. Furnishing and installing MJ adapters as necessary to connect steel pipe to other pipe materials, fittings, and valves;
9. Backfilling and compaction of trench;
10. Hydrostatic pressure testing and cleaning the pipe;
11. Disinfection, sampling and laboratory testing for bacteria;
12. All steel pipe joint testing by an independent third-party laboratory;
13. Cleaning up the job site which shall include removing excess materials and debris and re-grading the terrain;
14. Connecting piping to existing piping and/or structures; and
15. All other ancillary materials, equipment, labor, water, and power required for the complete installation of the piping.

All work shall be in accordance with the Technical Specifications.

Payment for installing 60-inch steel pipe by open cut shall be based on the horizontal distance in linear feet of pipe measured along the top centerline of the installed, in place, complete and acceptable to the OWNER'S REPRESENTATIVE.

D. Item No. 4 – FDOT PAY ITEM – 1050 61160 - FURNISH AND INSTALL 60-INCH STEEL WATER MAIN BY MICROTUNNELING

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 60-inch diameter steel pipe via microtunelling including the launch and receiving shafts. The installation shall include, but may not be limited to:

1. Furnishing, cutting and joining the steel casing pipe.
2. Microtunnel installation of the steel casing pipe.
3. Furnishing and installing the "casing spacers" on the carrier pipe.
4. Furnishing and installing the carrier pipe.
5. Furnishing and installing bulkheads or end seals to seal the annular space.
6. Furnishing and installing cement-fly ash slurry mix to grout the annular space.
7. Excavating the entrance and recovery shafts, including rock and muck excavation and removal;
8. Maintaining the entrance and recovery shafts including dewatering, sheeting, shoring and bracing as required;
9. Ground treatment to soften earth to allow installation of sheeting.
10. Conveyance of soil dewatering and initial and weekly testing.
11. Installation and removal of erosion control devices and control of runoff from the site;
12. Removal and replacement of fence and gates;
13. Removal and protection of trees as indicated on the CONTRACT DRAWINGS;
14. Backfilling and compaction of entrance and recovery shafts, including flowable fill cradle up to the springline of the lower bends in the shafts.
15. Settlement monitoring.
16. All surface restoration within limits of construction including mulching, seeding and appurtenant work.

Payment for 60-inch steel water main by microtunneling shall be based on actual linear feet of the casing pipe measured along the centerline of the pipe in place complete and acceptable to the OWNER'S REPRESENTATIVE.

E. Item No. 5 – FDOT PAY ITEM – 1050 61236 - FURNISH AND INSTALL 36-INCH STEEL WATER MAIN BY OPEN CUT

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all 36-inch diameter steel pipe via open cut. The installation of pipe shall include, but may not be limited to:

1. Performing all evaluations and calculations necessary for the proper implementation of the installation.
2. Furnishing, installing and maintaining all necessary Maintenance of Traffic measures;
3. Furnishing, installing and maintaining all necessary erosion control measures including but not limited to artificial coverings, mowing, sandbagging, slope drains, sediment basins, hay bales, straw, floating silt barrier, staked silt barrier and seeding;
4. Maintaining the trench, which shall include dewatering, barricading, sheeting, shoring, containment, and berming as required or as directed by the OWNER'S REPRESENTATIVE;
5. Protecting existing utilities in place, including coordinating with third party to support poles where needed.
6. Installing the pipe;
7. Joining the pipe as required;
8. Furnishing and installing MJ adapters as necessary to connect steel pipe to other pipe

materials, fittings, and valves;
9. Backfilling and compaction of trench;
10. Hydrostatic pressure testing and cleaning the pipe;
11. Disinfection, sampling and laboratory testing for bacteria;
12. All steel pipe joint testing by an independent third-party laboratory;
13. Cleaning up the job site which shall include removing excess materials and debris and re-grading the terrain;
14. Connecting piping to existing piping and/or structures; and
15. All other ancillary materials, equipment, labor, water, and power required for the complete installation of the piping.

All work shall be in accordance with the Technical Specifications.

Payment for installing 36-inch steel pipe by open cut shall be based on the horizontal distance in linear feet of pipe measured along the top centerline of the installed, in place, complete and acceptable to the OWNER'S REPRESENTATIVE.

F. Item No. 6 – FDOT PAY ITEM – 1055 61160 - FURNISH AND INSTALL 60-INCH STEEL FITTINGS

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all steel fittings via open cut trench. The installation of fittings shall include, but may not be limited to:

1. Furnishing and installing appropriate fittings including tees and bends.
2. Performing all evaluations and calculations necessary for the proper implementation of the installation.
3. Joining fitting to the pipeline.

Payment for installation of 60-inch fittings shall be based on each fitting furnished and installed.

G. Item No. 7 – FDOT PAY ITEM – 1055 61136 - FURNISH AND INSTALL 36-INCH STEEL FITTINGS

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install all steel fittings via open cut trench. The installation of fittings shall include, but may not be limited to:

1. Furnishing and installing appropriate fittings including tees and bends.
2. Performing all evaluations and calculations necessary for the proper implementation of the installation.
3. Joining fitting to the pipeline.

Payment for installation of 36-inch fittings shall be based on each fitting furnished and installed.

H. Item No. 8 – FDOT PAY ITEM – 1080 26102 - FURNISH AND INSTALL AIR RELEASE VALVES

The CONTRACTOR shall provide all labor, equipment, and materials to furnish and install the air release valve assembly of the size and type specified. The unit price shall include the cost of jointing materials, including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, concrete valve box pad with bronze disc, air valve box, air valve lateral, and vent pipe.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

I. Item No. 9 – FDOT PAY ITEM – 1080 24160 - FURNISH AND INSTALL 60-INCH BUTTERFLY VALVES

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install the valves of the size and type specified. The unit price shall include the cost of jointing materials, including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, and concrete valve box pad with bronze disc, where required, and extension stems and adjustment of valve boxes to existing grade.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

J. Item No. 10 – FDOT PAY ITEM – 1080 24136 - FURNISH AND INSTALL 36-INCH BUTTERFLY VALVES

The CONTRACTOR shall provide all labor, equipment and materials to furnish and install the valves of the size and type specified. The unit price shall include the cost of jointing materials, including rings, reducer(s), joint restraining, polyethylene wrap, bolts and gaskets, installation costs, concrete support, and concrete valve box pad with bronze disc, where required, and extension stems and adjustment of valve boxes to existing grade.

The quantities for payment shall be the actual number of valves of each size and type specified herein, completed and accepted.

The quantities determined as specified above shall be paid at the unit price bid for each valve.

K. Item No. 11 – FDOT PAY ITEM – 0400-603 - CATHODIC PROTECTION

Contractor shall furnish and provide labor, equipment and materials to install cathodic protection system for the steel pipelines as shown in the Contract Drawings and as indicated in the specifications and shall include, but is not limited to, installation of test stations, dielectric gaskets, anode beds, test station housing and terminal boards, welding, and testing complete, all necessary excavation, sheeting and bracing, shoring, dewatering, backfilling, disposal of excess excavated material, restraints, painting to OWNER'S standards, testing, restoration, cleanup, and all other items necessary to complete the job, whether specifically mentioned or implied.

Payment for installing cathodic protection shall be based on lump sum basis for all of the installed cathodic protection system, in place, tested, complete and acceptable to the Engineer.

L. Item No. 12 - FDOT PAY ITEM – E574 1 -SOD RESTORATION

Contractor shall furnish all labor, equipment, and materials to replace and maintain all sodded areas as specified and as shown on the Contract Drawings and as directed by the OWNER'S REPRESENTATIVE.

The quantity of lawn area, in square yards, to be measured for payment will be the actual area of sodded areas, placed within the limits of construction shown on the DRAWINGS except for the temporary construction easement, specified or as directed. Temporary construction easement shall be seeded and mulched.

Payment: Payment for sod restoration shall be made at the unit price bid per square yard.

M. Item No. 13 – FDOT PAY ITEM 0430830 - PLACE EXISTING PIPE OUT OF SERVICE BY GROUTING

The CONTRACTOR shall furnish all labor, equipment and materials to place existing pipe out of service by grouting it as designated, shown, specified or directed by the OWNER'S REPRESENTATIVE. The work also includes furnishing all labor and equipment for grouting existing pipe as shown.

Payment for grouting existing pipe shall be made per cubic yard of grout installed.

N. Item No. 14 – FDOT PAY ITEM 1050 16006 - PLACE EXISTING PIPE OUT OF SERVICE BY REMOVING

The CONTRACTOR shall furnish all labor, equipment and materials to remove pipe and appurtenances as designated, shown, specified or directed by the OWNER'S REPRESENTATIVE. The work also includes plugging the open ends of existing pipe to remain and be grouted, transporting the removed pipe and appurtenances, without delay, to the CONTRACTOR's own place for proper disposal. The work includes disposal, excavation, backfill, compaction and restoration.

Payment for removal of existing pipe shall be based on actual linear feet of the pipe removed

measured along the centerline of the pipe in place complete and acceptable to the OWNER'S REPRESENTATIVE.

O. Item No. 15 – INDEMNIFICATION

Payment for indemnification shall be made at the lump sum price ($100), which price and payment shall be full compensation for providing indemnification in accordance with the General Conditions, Article 4.4; Indemnity. Payment shall be included in the first payment request submitted.

P. Item No. 16 – PROJECT ALLOWANCE

Measurement for this item will be made for in accordance with the CHANGE ORDER authorized by the OWNER. The allowance is for payment of permit fees and extra work specifically authorized by the OWNER, the compensation for which shall be determined in accordance with the CHANGE ORDER provisions of the General Conditions. Said compensation shall be deducted from the allowance at the time the CHANGE ORDER is authorized by the OWNER.

Payment for permit fees will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required FDEP Notice of Intent to Discharge Stormwater from Construction Activities.

Payment will not be made for:

1. Contractor premiums or markups.
2. Fees incurred due to Contractor's negligence.
3. Permits required for items for the Contractor's convenience but not required by the Contract Documents or the Engineer.
4. Fees and costs associated with utility services to temporary construction trailers and electricity required by the Contractor during construction.

Payment from the project allowance shall be made on either a lump sum or unit price basis, per the CHANGE ORDER, only after authorization from the OWNER, and then in accordance with the CHANGE ORDER provisions of the General Conditions.

END OF SECTION

SECTION 01027

PAYMENT APPLICATIONS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall submit PAYMENT APPLICATIONS to the OWNER or OWNER'S REPRESENTATIVE/ENGINEER in accordance with the schedule established in the General Conditions of the CONTRACT DOCUMENTS.

1.2 FORMAT AND DATA REQUIRED

A. The CONTRACTOR shall submit applications electronically into OWNER's Masterworks project management software.

B. The CONTRACTOR shall provide itemized data, including, line items and values, and any other supporting documentation required for processing in Masterworks software.

1.3 PREPARATION OF EACH PAYMENT APPLICATION

A. Application Form:

1. Complete required information, including that for CHANGE ORDERS executed prior to date of submittal of application. Pay applications are executed in two steps, Items Posting per Masterworks MW-SOP-21 which is reviewed and approved by the OWNER or designee and Pay Estimate step per MW-SOP-22 requirements.

2. Complete summary of dollar values to agree with respective totals indicated on continuation sheets.

3. By submitting a payment application into the Masterworks project management software, the CONTRATOR is certifying the payment application is correct and all subcontractor and suppliers have been paid to date. Submittal of payment application shall be per Masterworks MW-SOP-22 requirements.

B. Continuation Sheets:

1. Complete total list of all scheduled component items of work, with item number and dollar value for each item as specified in the finalized schedule of values as approved by the OWNER, as indicated in Masterworks MW-SOP-21 and -22 requirements.

2. Complete dollar value in each column for each scheduled line item when work has been performed or products stored on site.

3. List each CHANGE ORDER executed prior to date of submission, at the end of the continuation sheets. List by CHANGE ORDER Number, and description, as for an original component item of work.
4. Payment on component material stored on site shall be in accordance with the General Conditions.

1.4 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the OWNER requires substantiating data, the CONTRACTOR shall submit suitable information, with a cover letter identifying:

1. PROJECT

2. PAYMENT APPLICATION number and date.

3. Detailed list of enclosures.

4. For stored products: In accordance with the General Conditions.

B. The CONTRACTOR shall maintain an updated set of AS-BUILT DRAWINGS in accordance with Section 01720. As a prerequisite for monthly progress payments, the CONTRACTOR shall exhibit the updated AS-BUILT DRAWINGS for review by the OWNER or the ENGINEER.

1.5 SUBMITTAL PROCEDURE

A. The CONTRACTOR shall submit the PAYMENT APPLICATION to the OWNER at the time stipulated in the General Conditions. Pay applications are executed in two steps, Items Posting per Masterworks MW-SOP-21 which is reviewed and approved by the OWNER or designee and Pay Estimate step per MW-SOP-22 requirements.

B. The OWNER's ENGINEER shall perform the initial review of the PAYMENT APPLICATION and make recommendation to the OWNER for approval.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01040

PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project Coordination including, but not limited to:

1. Coordination;
2. Administrative and supervisory personnel;
3. General installation provisions; and,
4. Cleaning and protection.

B. Requirements for the CONTRACTOR'S Construction Schedule are included in Section 01300, Submittals.

1.2 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications and CONTRACT DOCUMENTS to assure efficient and orderly installation of each part of the WORK. Coordinate construction operation included under different Sections of these Specifications and CONTRACT DOCUMENTS that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the WORK is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain the greatest results possible.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures:

1. CONTRACTOR shall be responsible for training its staff as needed for proficiency in the OWNER's Masterworks program. A contact list of Masterworks users shall be provided to the OWNER

2. Coordinate scheduling and timing of required administrative procedures with

other construction activities to avoid conflicts and ensure orderly progress of the WORK. Such administrative activities include, but not limited to, the following:

a) Preparation of schedules;
b) Installation and removal of temporary facilities/structures;
c) Delivery and processing of submittals;
d) Progress meetings; and,
e) Project close-out activities.

1.3 COORDINATION WITH OWNER AND OTHER CONTRACTORS

A. It may be necessary for the CONTRACTOR to plan the WORK and coordinate with other contractors insofar as possible to prevent any interference and delay.

B. The CONTRACTOR shall at all times be required to coordinate two weeks in advance with the OWNER's staff for the CONTRACTOR's WORK onsite, to prevent any interference and delay.

1.4 SUBMITTALS

A. Comply with requirements contained in Section 01300, Submittals.

1. Staff Names: Within 15 days of Notice to Proceed, submit a list of the CONTRACTOR'S principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses, email and telephone numbers.

2. Provide a list of subcontractors with addresses, email and telephone numbers.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: The CONTRACTOR and/or subcontractors of each major component shall inspect the conditions under which the work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: The CONTRACTOR shall comply with the manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in CONTRACT DOCUMENTS.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Recheck measurements and dimensions, before starting each installation

E. Install each component during weather conditions and PROJECT status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

F. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall provide and pay for field engineering services for the PROJECT including:

1. Survey work required in execution of the PROJECT.

2. Civil, structural or other professional engineering services specified or required to execute CONTRACTOR'S construction methods.

B. The CONTRACTOR shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and maintain an as-built survey during construction.

1.2 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified professional land surveyor, currently licensed in the State of Florida, acceptable to the OWNER.

B. Registered professional engineer of the discipline required for the specific service on the PROJECT, currently licensed in the State of Florida, acceptable to the OWNER.

1.3 SURVEY REFERENCE POINTS

The CONTRACTOR shall locate and protect control points prior to starting WORK, and preserve all permanent reference points during construction.

1.4 RECORDS

The CONTRACTOR shall maintain a complete, accurate log of all control and survey work as it progresses.

1.5 SUBMITTALS

A. Prior to commencing WORK, the CONTRACTOR shall submit the names and addresses of the Professional Land Surveyor and/or Professional Engineer to the OWNER for approval.

B. On request of the OWNER, the CONTRACTOR shall submit documentation to verify accuracy of field engineering work.

C. Prior to FINAL COMPLETION, the CONTRACTOR shall submit three (3) certificates signed by the approved registered land surveyor certifying that locations of improvements are in conformance, or non-conformance, with CONTRACT DOCUMENTS.

D. Prior to FINAL COMPLETION, the CONTRACTOR shall submit three (3) certified copies of a survey at the same scale as the ENGINEER'S line drawings indicating as-built locations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01065

PERMITS AND EASEMENTS

PART 1 - GENERAL

A. The CONTRACTOR shall obtain and pay for all permits and licenses related to their WORK as provided in the General Conditions excepted as otherwise provided herein. Copies of all permits obtained by the CONTRACTOR shall be submitted to the OWNER in electronic PDF format along with copies of the permit applications. During PROJECT closeout, CONTRACTOR to provide documentation the permit has been closed.

B. WORK shall be conducted and shall result in construction of improvements of this PROJECT in full accordance with the conditions of the permits granted for the PROJECT.

C. Following permits will be obtained by the OWNER: Florida Department of Environmental Protection (FDEP) Specific Permit for Water Main Extensions, Florida Department of Transportation (FDOT) Utility Permit, and FDEP ERP Individual Permit.

D. Following permits will be obtained by the CONTRACTOR: FDOT Maintenance of Traffic Permit (if applicable), EPA National Pollutant Discharge Elimination System (NPDES) Permit and other permits as required for construction of the WORK complete.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01100

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 PUBLIC NUISANCE

A. The CONTRACTOR shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, odors, flooding of adjacent lands, or excessive noise. It is the CONTRACTOR's responsibility to adhere to and be aware of local ordinances, and to bear the burden of all such violations.

B. No claims shall be made for time lost or costs incurred due to work stoppage by the OWNER resulting from the creation of a public nuisance.

1.2 SUSPENSION OF WORK DUE TO WEATHER

A. During inclement weather, all WORK which might be damaged or rendered inferior by such weather conditions may be suspended by the OWNER. The orders and decisions of the OWNER as to suspensions shall be final and binding. During suspension of the WORK for any cause, the WORK shall be suitably covered and protected so as to preserve it from injury by the weather or otherwise; and, if the OWNER shall so direct, the rubbish and surplus materials shall be removed. If in the opinion of the OWNER, any component or function of the WORK or materials has been damaged by reason of failure on the part of the CONTRACTOR to so protect the WORK, such WORK and materials shall be removed and replaced with new materials and WORK at no additional cost to the OWNER.

1.3 TOOLS

A. Any special tools which may be necessary for the adjustment, operation, and maintenance of any equipment shall be furnished by the CONTRACTOR.

1.4 SPECIAL REQUIREMENTS

A. The following requirements shall govern:

1. No additional payment or time extension shall be made for pumping or other difficulties encountered due to groundwater or stormwater or pumping out residual water or wastewater liquids or sludges which may be required to complete the Work.

2. The CONTRACTOR shall, prior to interrupting operations, contact the OWNER and make arrangements for the interruption which shall be satisfactory to the OWNER.

3. All material delivered to the job site shall be properly protected from dirt, dust,

dampness, water, sunlight and any other condition detrimental to the life of the material from the date of delivery to the time that the material is installed and the OWNER assumes responsibility for it in writing.

1.5 SEQUENCE OF CONSTRUCTION

A. The CONTRACTOR shall be responsible to follow the following General sequence of the Work:

4. Set up best management practices for pollution and erosion control for the site. Establish maintenance of traffic controls.
5. Construct both tunnel shafts, stage microtunnel (MT) equipment and perform microtunnel to set 78-inch steel casing pipe. Snap fit casing pipe joints are acceptable if treated to minimize weep.
6. String 60-inch pipe in MT casing and construct additional 60-inch steel water main in open-cut trench up to both leakage test bulkheads. All new pipe shall have welded, restrained joints. Pipe trenches may be backfilled except at bulkheads.
7. Obtain water from existing 60-inch well collection main to fill and hydrostatically pressure test the new pipeline work. Water can be acquired from the existing 36-inch outlet or a newly tapped service outlet while this main remains in service. Alternatively, the existing main can be removed from service and accessed by cutting a hole in the crown and dropping in a centrifugal pump.
8. Successfully hydrostatically pressure test new pipeline work. Proceed to disinfect the new pipe. Contractor will collect bacteriological samples from each test bulkhead on consecutive days 24-hours apart and to an independent laboratory to provide analysis of samples. Upon receipt of successful laboratory results, grout the annulus of the tunnel with cement slurry and assemble end treatments and test stations. Confirm electrical isolation of casing pipe from carrier pipe.
9. During hydrostatic and disinfection tasks, simultaneously dewater contents of existing 60-inch water main. Analysis of the profile of the pipeline indicates that approximately 1.75 million gallons will require disposal. The existing grassed swale drainage system along State Road 52 should have enough capacity to convey at least 0.5 cubic feet per second or 250 gpm toward Cypress Creek. At this rate it would take approximately 5 days to dewater the pipeline to allow construction of connections to the new pipeline work. **Limit well collection main out-of-service period to no more than 14 days.**
10. Construct connections. Upon successful certified welding inspection of joints partially backfill trenches to leave the upper 45 degrees of pipe exposed (2 feet wide). Tampa Bay Water will slowly return the main to service. Observe new connection joints under full pressure for 2 hours. Correct any visible leaks. Complete backfilling.
11. Finish and successfully test cathodic protection system. Make repairs as necessary.
12. Complete all surface restoration and demobilize from the site.

1.6 RELOCATIONS

A. The CONTRACTOR shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the WORK. The cost of all such relocations shall be included in the PROPOSAL. The CONTRACTOR shall install any test pits required to identify potential

points of interference.

1.7 SALVAGE

A. OWNER shall be entitled to retain ownership of any existing equipment or material including, but not limited to pipes, fittings, couplings, etc., which are to be removed or replaced as a result of the WORK and identified as such in the Contract Documents. CONTRACTOR shall carefully remove salvaged equipment and deliver undamaged to OWNER's facilities identified in the Contract Documents.

B. Any existing equipment or material which OWNER has not elected to keep as salvage shall become the property of the CONTRACTOR and shall be disposed of in a legal manner by the CONTRACTOR at a suitable off site location at no additional cost to the OWNER. CONTRACTOR shall provide OWNER notice and opportunity in writing that there are materials to be reviewed for salvage prior to CONTRACTOR removing them.

C. Any existing equipment or material marked for salvage which is damaged by the Contractor's actions during removal or transport shall be replaced with a new equivalent item at the Contractor's expense.

1.8 UTILITY CROSSING

A. Wherever existing utilities such as water, electrical or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction or existing utilities unless otherwise indicated on the DRAWINGS. However, when, in the opinion of the OWNER or ENGINEER this procedure is not feasible or allowed, the CONTRACTOR may be directed by the OWNER or ENGINEER to use fittings for a utility crossing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 SCOPE

A. This SECTION includes definitions, descriptions, transmittal, and review of "Compliance" and "Miscellaneous" Submittals.

B. Within 10 days after the NOTICE OF AWARD, but prior to the pre-construction meeting, the CONTRACTOR shall submit the following items to the OWNER'S construction manager for review.

1. A preliminary schedule of SHOP DRAWING SUBMITTALS and Materials Submittals.

2. A list of all permits and licenses the CONTRACTOR shall obtain indicating the permitting agency, the type of permit, the expected date of application for the permit, required date for receipt of the permit, and permit fee.

C. Contractor shall use Masterworks for submittal review and approvals.

1.02 GENERAL INFORMATION

A. Definitions:

1. Compliance Submittals include Shop Drawings, product data, and samples which are prepared by the CONTRACTOR, Subcontractor, MANUFACTURER, or Supplier and submitted by the CONTRACTOR to the OWNER as a basis for approval of the use of Equipment and Materials proposed for incorporation in the WORK or needed to describe installation, operation, maintenance, or technical properties. CONTRACTOR to submit all submittals to OWNER via Masterworks.

a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.

b. Product data includes standard printed information on materials, products and systems not custom-prepared for this Project, other than the designation of selections from available choices.

c. Samples include both fabricated and unfabricated physical examples of materials, products, and WORK; both as complete units and as smaller portions of units of WORK; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of samples which are too large to be handled in the specified manner for transmittal of sample Submittals.

2. Miscellaneous Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as Shop Drawings, product data, or samples.

a. Technical reports include laboratory reports, tests, technical procedures, technical records, CONTRACTOR's design analysis and CONTRACTOR's survey field notes for construction staking, before cross-sections and after cross-sections.

b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, workmanship bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, as-constructed data, security/protection/safety data, and similar type Submittals.

c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the MANUFACTURER or Supplier is called for in the Specifications.

d. Reports as required by Contract describing CONTRACTOR's means and methods for items such as dewatering, earth and water retaining, erosion/turbidity control, and safety plans.

3. Refer to ARTICLE 1.03 and 1.04 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. Submittals such as Shop Drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducible shall be useable for further reproduction to yield legible hard copy.

2. Documents submitted to the OWNER that do not conform to these requirements shall be subject to rejection by the OWNER, and upon request by OWNER, CONTRACTOR shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. CONTRACTOR's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve CONTRACTOR (or his Subcontractors) from meeting the required schedule for Submittal of Shop Drawings and product data.

C. Language and Dimensions:

1. All words and dimensional units shall be in the English language.

2. Metric dimensional unit equivalents may be stated in addition to the English units.

D. Submittal Completeness:

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable the OWNER to review the information effectively.

2. Where standard drawings are furnished which cover a number of variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers"

is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.

3. Reproduction or copies of Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The CONTRACTOR may use a reproduction of the OWNER-prepared Contract Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the Drawings are revised to show this additional CONTRACTOR information, the OWNER's title block shall be replaced with a CONTRACTOR's title block and the OWNER's professional seal shall be removed from the Drawing. The CONTRACTOR shall revise these erection drawings for subsequent OWNER revisions to the Contract Drawings.

E. Cover Sheet:

1. Each submittal, must include a cover page to indicate at least:
    a. Name of the project
    b. Owner
    c. Design Engineer
    d. Submittal number
    e. Submittal Revision number
    f. Submittal Description
    g. Specification Section
    h. Drawing Sheet
    i. Submittal Date
    j. Contractor's Certification Statement
    k. Responses to the owner's comments/questions (if applicable)

1.03 COMPLIANCE SUBMITTALS

A. Items shall include, but not be limited to, the following:

1. MANUFACTURER's specifications
2. Catalogs, or parts thereof, of manufactured equipment
3. Material lists or schedules
4. Flowable Fill mix design information
5. All drawings, calculations, catalogs or parts thereof, MANUFACTURER's specifications and data, samples, instructions, and other information specified or necessary:
    a. For OWNER to determine that the Equipment and Materials conform to the design concept and comply with the intent of the Contract Documents.

B. Compliance Submittal Action Stamps:

1. The OWNER's review action stamp or designation, appropriately completed, will appear on all Compliance Submittals of CONTRACTOR when returned by the OWNER. Review status designations listed on OWNER's action stamp are defined as follows:

    a. "NO EXCEPTIONS TAKEN": Signifies Equipment or Material represented by the Submittal conforms to the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK.

    b. "MAKE CORRECTIONS AS NOTED": Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the WORK subject to the condition that as constructed it shall be in accordance with all notations and/or corrections indicated. CONTRACTOR is to proceed with fabrication or procurement of the items and with related WORK in accordance with OWNER's notations. Contractor shall provide a final copy of the submittal with responses to all OWNER's notations and/or corrections in the cover page. The responses must reference the page number and/or place in the submittal where the modifications have been incorporated.

    c. "REVISE AND RESUBMIT": Means that deviations from the requirements of the Contract Documents exist in the Submittal. CONTRACTOR is to resubmit revised information responsive to OWNER's annotations on the returned Submittal or written in the letter of transmittal. The responses must reference the page number and/or place in the submittal where the modifications have been incorporated. Fabrication or procurement of items represented by the Submittal and related WORK is not to proceed until the Submittal is approved.

    d. "REJECTED": Signifies Equipment and Material represented by the Submittal does not conform to the design concept or comply with the intent of the Contract Documents and is disapproved for use in the WORK. CONTRACTOR is to resubmit Compliance Submittals responsive to the Contract Documents.

    e. "FOR INFORMATION ONLY": Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to the OWNER in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. The OWNER reviews such Submittals for general content but not for substance.

C. Transmittal of Compliance Submittals:

1. All Compliance Submittals of Equipment and Materials furnished by Subcontractors, MANUFACTURERs, and Suppliers shall be submitted to the OWNER by CONTRACTOR in electronic and hard copy format as indicated below.

2. After checking and verifying all field measurements, transmit all Compliance Submittals to the OWNER for acceptance as follows:

a. Identify each Compliance Submittal by Submittal Number, Project name and number, Contract title and number, and the Specification SECTION and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

b. Check and stamp Compliance Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the OWNER. CONTRACTOR's stamp of approval shall constitute a representation to the OWNER that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the WORK and the Contract Documents.

c. At the time of each submission, call to the attention of OWNER in the letter of transmittal any deviations from the requirements of the Contract Documents.

d. Provide all Submittals in electronic format, compatible with Adobe Professional, Version 8 (or higher), and submitted as a single file, using PDF bookmarks and/or chapters to identify divisions within the Submittal package.

e. The electronic Submittal shall include the required transmittal sheet and written confirmation by the CONTRACTOR that the electronic Submittal is complete. Note that the Submittal receipt date will be the date that the submittal is received by the OWNER via Masterworks or other web-based document control program.

f. Submittals with file sizes greater than ten (10) megabyte (MB) shall be transferred to an existing OWNER File Transfer Protocol (FTP) site, coupled with an electronic notification to the OWNER of the transfer. The FTP address, and associated password information, will be provided by the OWNER Project Manager.

g. Make all modifications noted or indicated by OWNER and return revised prints, copies, or samples until accepted. Revised Submittals must be complete and conformed, including all pages/sheets with the required revisions and any additional or replacement pages/sheets. The submittal shall include in the cover page responses to all the OWNER's comments from the previous submittal. The responses must reference the page number and/or place in the submittal where the modification has been incorporated. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the OWNER on previous Submittals. Subsequent review cycles for returned or revised Submittals shall replicate the process described in items d. through f. above.

h. If the OWNER's review action is "ACCEPTED AS NOTED", the Submittal will be stamped as such, and electronically transmitted back to the CONTRACTOR. Upon receipt of this notification from the OWNER, The CONTRACTOR shall resubmit one (1) conformed hard copy with an electronic PDF file format to the OWNER for final distribution. The submittal shall include in the cover page responses to all the OWNER's comments from the previous submittal. The responses must reference the page number and/or place in the submittal where the modification has been incorporated. If the Submittal is required to be signed

and sealed by a Professional Engineer registered in the State of Florida, it shall be signed and sealed at this time. Submittal will not be considered final until all copies have been received by the OWNER. Prints of accepted Submittals transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

i. Following completion of the WORK and prior to final payment, furnish those drawings necessary to indicate "AS CONSTRUCTED" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS BUILT DRAWING."

j. WORK requiring a Compliance Submittal shall not be commenced or shipped until the Submittal has been stamped "ACCEPTED AS SUBMITTED" or "ACCEPTED AS NOTED" by the OWNER.

k. Keep a copy or sample of each Compliance Submittal in good order at the Site.

3. Copies of the equipment CONTRACTOR's erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate Contract for installation under this Contract will be transmitted to CONTRACTOR by the OWNER in the final distribution of such Submittals.

4. Information to MANUFACTURER's District Office: MANUFACTURERS and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the MANUFACTURER's district office servicing the OWNER. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

D. OWNER's Review:

1. The OWNER will review and return Compliance Submittals to CONTRACTOR with appropriate notations within ten (10) business days of receiving. Instruction books and similar Submittals will be reviewed by the OWNER for general content but not for substance.

2. The OWNER's acceptance of Compliance Submittals will not relieve CONTRACTOR from his responsibility as stated in the Contract General Terms and Conditions.

1.04 MISCELLANEOUS SUBMITTALS

A. Miscellaneous Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the WORK, but do not require OWNER's approval prior to proceeding with the WORK. Miscellaneous Submittals may include but are not limited to (at OWNER's discretion):

1. Dewatering plan

2. Field test reports

3. Concrete cylinder test reports

4. Soil test reports
5. Shipping or packing lists
6. Job progress schedules
7. Equipment and Material delivery schedules
8. Progress photographs
9. Warranties and guarantees
10. Surveying field notes, preliminary and final Surveyor's Reports
11. Written Certificates and Guarantees

B. Transmittal of Miscellaneous Submittals:

1. All Miscellaneous Submittals furnished by Subcontractors, MANUFACTURERS, and Suppliers shall be submitted to the OWNER by the CONTRACTOR in the form of an electronic PDF file format, in accordance with Part 2 of this SECTION.

    a. Identify each miscellaneous Submittal by Project name and number, Contract title and number, and the specification section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

    b. Check and stamp Miscellaneous Submittals of Subcontractors, Suppliers, and MANUFACTURERS with CONTRACTOR's approval prior to transmitting them to the OWNER. CONTRACTOR's stamp of approval shall constitute a representation to the OWNER that CONTRACTOR has either determined and verified all information, or he assumes full responsibility for doing so, and that he has coordinated Miscellaneous Submittal with the requirements of the WORK and the Contract Documents.

    c. At the time of each submission, call to the attention of the OWNER in the letter of transmittal any deviations from the requirements of the Contract Documents.

    d. Make all modifications noted or indicated by OWNER and return revised prints, or copies until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the OWNER on previous Submittals. After Submittals have been accepted, submit copies thereof for final distribution.

2. Test Reports:

    a. Responsibilities of CONTRACTOR and OWNER regarding tests and inspections of Equipment and Materials and completed WORK are set forth elsewhere in these Contract Documents.

    b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports in the form of one (1) hard copy with an electronic PDF file format to the following parties:

        i. OWNER

ii. Project Representative

iii. CONTRACTOR

iv. MANUFACTURER or supplier

C. OWNER'S Review:

1. OWNER will review Miscellaneous Submittals for indications of WORK or material deficiencies within ten (10) working days in OWNER's office for original Submittals and five (5) working days for reviewing resubmittals.

2. OWNER will respond to CONTRACTOR on those Miscellaneous Submittals which indicate WORK or material deficiency.

1.05 AS-BUILT DRAWINGS

A. AS-BUILT DRAWINGS shall be maintained by the CONTRACTOR in strict accordance with the GENERAL CONDITIONS.

B. PAYMENT APPLICATIONS will not be approved if the AS-BUILT DRAWINGS are not kept current and will not be approved until the AS-BUILT DRAWINGS show completely all information required and are current.

C. The final PAYMENT APPLICATION shall not be accepted by the OWNER until the AS-BUILT DRAWINGS are approved for conformance to the minimum requirements. The OWNER'S acceptance of the CONTRACTOR'S AS-BUILT DRAWINGS does not relieve the CONTRACTOR of the sole responsibility for the accuracy or completeness of the AS-BUILT DRAWINGS.

D. On AS-BUILT DRAWINGS the CONTRACTOR shall, at a minimum, note the limits, location, and depth of electrical conduits located by GPS coordinates.

F. All deviations shall be highlighted on the AS-BUILT DRAWINGS using a "cloud". If any revisions to the original plans required a CHANGE ORDER, the "cloud" shall include the CHANGE ORDER number.

G. The CONTRACTOR shall submit all AS-BUILT DRAWINGS after review and approval by the OWNER and ENGINEER in digital electronic format.

F. The OWNER will provide an AutoCAD latest version file of the conformed drawings for the CONTRACTOR to add his as-built information.

PART 2 - PRODUCTS

2.01 REQUIREMENTS FOR ELECTRONIC FILES

A. For all documents except Conformed Construction Record Drawings, each electronic copy shall be delivered via link to FTP site in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated and any extra blank pages removed.

B. Scanned images must be at a readable resolution. For most documents, they will be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

C. One PDF document (PDF file) shall be created for each manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

D. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

E. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page

2. Magnification: Fit In Window

3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

PART 3 - EXECUTION

3.01 SUBMITTAL LOG

A. CONTRACTOR shall maintain an accurate Submittal Log and a Distribution List for the duration of the WORK, showing current status of all Submittals and Distributees at all times in a form acceptable to the OWNER. CONTRACTOR shall make the Submittal Log available to the OWNER for its review on request, and shall bring a copy of the Submittal Log to all Progress Meetings.

END OF SECTION

SECTION 01310

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope of Work

The CONTRACTOR shall prepare and submit to the ENGINEER a PROGRESS SCHEDULE demonstrating complete fulfillment of all CONTRACT DOCUMENTS requirements to coordinate, plan, schedule and perform the WORK under this contract (including activities of SUBCONTRACTORS).

The PROGRESS SCHEDULE shall be used to control the WORK and to provide a definitive basis for determining project progress. The PROGRESS SCHEDULE shall be prepared, maintained and updated by the CONTRACTOR and historical dates agreed monthly with the ENGINEER. The CONTRACTOR shall submit a preliminary PROGRESS SCHEDULE and a PROGRESS SCHEDULE for acceptance by the OWNER and ENGINEER. These schedules shall be the CONTRACTOR's working schedules and shall be used to plan, organize and execute the WORK, record and report actual performance and progress, and show how the CONTRACTOR plans to complete all remaining WORK as of the end of each progress report period.

B. The PROGRESS SCHEDULE shall provide sufficient detail and clarity to reflect the intricacies and interdependencies of activities so the CONTRACTOR can plan, schedule, monitor, control and report on the progress of his work. In addition, it shall provide the ENGINEER and OWNER a tool to monitor and follow the progress for all phases of the WORK.

1.2 SUBMITTAL PROCEDURES

SUBMITTAL requirements shall include:

Narrative description of the logic and reasoning of the schedule.
Submittal Schedule
Procurement schedule outlining items with lead times longer than 2 weeks
Schedule for permit submittal and review
Individual construction activities with time phased logic schedule of WORK
Milestones
Shutdown and Startup Schedule
Electronic schedule files to be uploaded into Masterworks in .PDF, native file format and MS Project (if applicable).

1.3 PRELIMINARY PROGRESS SCHEDULE.

Within ten (10) calendar days after NOTICE TO PROCEED, the CONTRACTOR shall submit a preliminary PROGRESS SCHEDULE for review by the OWNER and ENGINEER. The preliminary PROGRESS SCHEDULE shall show detailed construction-related activities for the 30 days of the project. The remainder of the Contract activities shall be shown as summary bars within the Milestones of the Work. The OWNER shall complete its review of the proposed plan and schedule within five (5) days after receipt of diagram/schedule and state its acceptance or rejection of the schedule. Within five (5) days after the conclusion of the OWNER'S review, the CONTRACTOR shall revise the schedule as required and resubmit the tabulated schedule produced there from. The revised tabulated schedule shall be reviewed and accepted or rejected by the OWNER within five (5) days after receipt. The revised tabulated schedule shall be reviewed and accepted or rejected by the OWNER within five (5) days after receipt. No progress payments will be made during the period specified above for the preliminary PROGRESS SCHEDULE until the preliminary PROGRESS SCHEDULE has been accepted by the ENGINEER. The tabulated schedule when accepted by the OWNER shall constitute the PROGRESS SCHEDULE unless a revised PROGRESS SCHEDULE is required due to substantial changes in the WORK or a change in CONTRACT TIME(S), delinquency by CONTRACTOR requiring a recovery schedule, or as otherwise provided for herein below. Activities not occurring as scheduled are delinquent if they begin after late start or they finish after late finish.

A. The preliminary PROGRESS SCHEDULE shall:

1. Describe the activities to be accomplished during the WORK and their dependency relationships (predecessor/successor) and a tabulated schedule as herein defined.
2. Illustrate a feasible schedule for completion of the Work within the time and Milestones specified.
3. The schedule produced and submitted shall indicate interim milestone and SUBSTANTIAL and FINAL COMPLETION dates identical to the milestone and completion dates specified elsewhere herein.
4. Provide an elementary example of the schedule in the format to be used for the PROGRESS SCHEDULE.
5. Include the activity code structure as described in paragraph 19 of this specification.

C. Preliminary PROGRESS SCHEDULE Submittal Format

1. CONTRACTOR shall electronically submit a PDF and native file of the preliminary PROGRESS SCHEDULE. A brief narrative shall accompany the submittal, describing CONTRACTOR's scheduling approach to the project. The narrative shall include a description of the Contract Milestones, approach for construction activities during the period of the preliminary PROGRESS SCHEDULE, description of the general approach of the activities for the work beyond the preliminary PROGRESS SCHEDULE period, a description of the project's critical path, identification of critical long-lead submittals, and planned outages. The narrative shall also incorporate activity codes, calendars, weather days, Milestone constraints, and work breakdown structure in accordance with the requirements specified herein.

1.4 PROGRESS SCHEDULE

A. The PROGRESS SCHEDULE comprises all the construction-related activities for the Work and shall show the order in which the CONTRACTOR proposes to carry out the work. CONTRACTOR shall include Milestones, coordination necessitated by limited access and available work areas, and the availability and use of manpower, material and equipment. When the tabulated schedule has been accepted, the CONTRACTOR shall add calendar dates to the schedule corresponding to days from NOTICE TO PROCEED and shall submit to the OWNER an electronic, tabulated schedule in which the activities have been sequenced by activity numbers. The CONTRACTOR shall use the PROGRESS SCHEDULE to plan, schedule and coordinate the Work including activities of subcontractors, equipment vendors, and suppliers.

The ENGINEER'S review and acceptance of the CONTRACTOR'S PROGRESS SCHEDULE is for conformance to the requirements of the CONTRACT DOCUMENTS only. Review and acceptance by the OWNER of the CONTRACTOR'S PROGRESS SCHEDULE shall not relieve the CONTRACTOR of any of its responsibility whatsoever for the accuracy or feasibility of the PROGRESS SCHEDULE, or of the CONTRACTOR'S ability to meet the interim milestone date and the FINAL COMPLETION date, nor does such review and acceptance expressly or implicitly warrant, acknowledge or admit the reasonableness of the logic, durations, manpower or equipment loading of the CONTRACTOR'S PROGRESS SCHEDULE.

B. The PROGRESS SCHEDULE shall be to the level of detail acceptable to the ENGINEER, and shall include the following:

1. Organization and structural breakdown of the PROJECT;
2. Milestones and completion dates;
3. Type of work to be performed and the labor trades involved;
4. Purchase, manufacture and delivery activities for major materials and equipment;
5. Preparation, submittal, and acceptance of shop drawings and material samples;
6. Deliveries of owner-furnished equipment and/or materials;
7. Acceptances required by regulatory agencies and/or other third parties;
8. Access requirements to work areas;
9. Identification of interfaces and dependencies with preceding, concurrent and follow-on Contractors;
10. Tests, submittal of test reports and acceptance of test results;
11. Planning for phased or total acceptance by OWNER; including start up and commissioning;
12. Sequence of construction to maintain plant operations;
13. Planned outages.

C. The activities included in the PROGRESS SCHEDULE shall be defined in workdays. Durations shall be based on the labor (crafts), equipment, and materials required to perform each activity on a normal workday basis. Activity durations shall be 20 working days or less except in the case of non-construction activities such as procurement of materials, delivery of equipment, and concrete curing. All durations shall be the result of definitive manpower and

resource planning by CONTRACTOR to perform the Work, in consideration of contractually defined on-site work conditions and CONTRACTOR's planned means and methods.

D. Revised PROGRESS SCHEDULE: The CONTRACTOR, if requested by the ENGINEER, shall provide a revised PROGRESS SCHEDULE if, at any time, the ENGINEER considers the completion date to be in jeopardy because of "delinquent activities" or for other valid reasons. "Delinquent activities" are all activities behind schedule in the accepted PROGRESS SCHEDULE regardless of the existence of positive float on the activity. The revised PROGRESS SCHEDULE shall include a new tabulated schedule designed to show how the CONTRACTOR intends to accomplish the WORK to meet the completion dates or milestones. The form and method employed by the CONTRACTOR to modify the PROGRESS SCHEDULE shall be the same as the originally approved PROGRESS SCHEDULE.

   The updated PROGRESS SCHEDULE shall also show changes occurring since the previous submission of schedule, including:
   1. Major changes in scope.
   2. Activities modified since previous submission.
   3. Revised projections or progress and completion.
   4. Other identifiable changes approved by the ENGINEER.

E. When the PROGRESS SCHEDULE is accepted by the ENGINEER, the ENGINEER will save a copy of the PROGRESS SCHEDULE as the baseline schedule and will use it for analysis of CONTRACTOR's progress.

F. The CONTRACTOR shall update the PROGRESS SCHEDULE monthly.

1.6. CONSTRUCTION PROGRESS SCHEDULES

A. A copy of the PROGRESS SCHEDULE, shall be submitted monthly with that month's PROGRESS REPORT (in strict accordance with the General Conditions) or at the request of the ENGINEER.
B. With each PAYMENT APPLICATION, the CONTRACTOR shall submit a copy of the PROGRESS REPORT and the PROGRESS SCHEDULE marked to show the activities completed and partially completed, for which payment is requested.

1.5 ELECTRONIC PROGRESS SCHEDULE FORMAT AND REPORTING.

A. The PROGRESS SCHEDULE shall be created using software of choice. CONTRACTOR shall use ENGINEER's file-naming format throughout the project.
B. Native files shall be submitted with the baseline and with each progress update.

1.6 SUBMITTALS

A. The PROGRESS SCHEDULE and associated reports shall be submitted to the ENGINEER for acceptance within the period of the preliminary PROGRESS SCHEDULE specified herein. If the PROGRESS SCHEDULE is not submitted, no progress payments will be made after the due date until the PROGRESS SCHEDULE has been submitted.

B. Printouts and electronic layouts required as part of the PROGRESS SCHEDULE submittal and monthly updates are as follows:

1. Summary Schedule: one page milestone and summary schedule, sorted by total float, early-start, early-finish;
2. Detailed Project Schedule: organized by Work Breakdown Structure (WBS) or area of work; sorted by total float, early-start, early-finish;
3. Critical Path Schedule: sorted based on the total float, early-start, early-finish;
4. 60-Day Look Ahead Schedule: sorted by total float, early-start, early-finish;
   Activities in Progress: organized by WBS or area of work; sorted by total float, early-start, early-finish;
5. Out-of-sequence Report: tabular report showing work performed out-of-sequence.

C. CONTRACTOR shall submit additional layouts if directed by ENGINEER.

D. The submittal shall include the following:

1. Narrative report summarizing the contract milestones, critical path, project approach including phasing or use of crews, significant submittal and fabrication items, coordination or interface requirements, OWNER-provided items, and list of subcontractors and vendors.

2. Graphic reports including critical path report (longest path), summary schedule report, total float report by early-start early-finish, look-ahead report grouped by work breakdown structure or project phasing.

E. The PROGRESS SCHEDULE file shall be submitted in an executable format.

F. The narrative and graphic reports shall be provided on 8”x11” paper and E-size plots respectively.

1.7 MONTHLY SCHEDULE UPDATES.

Monthly PROGRESS SCHEDULE updates shall be submitted for the duration of the Contract on a date agreed to by the OWNER, ENGINEER, and CONTRACTOR. If monthly PROGRESS SCHEDULE updates are not submitted by the due date, progress payments will be withheld until the required information is submitted.

A. The updated schedule shall be reviewed each month in a meeting with ENGINEER to verify:

1. Actual start dates,
2. Actual completion dates,
3. Activity percent completion,
4. Revised logic (as-built and projected) and changes in activity durations, cost assigned,
5. Cost influence of change orders, if any,
6. Revisions due to extension of time.

B. Prior to each meeting, CONTRACTOR shall prepare a complete and accurate report of current procurement and construction progress through the end of the update period, and a depiction of how CONTRACTOR plans to continue the Work to meet all contract completion dates. All network changes and status data agreed to during each update meeting shall be considered as accepted by both parties unless written notice of any exceptions is given within five calendar days after the meeting.

C. For major network changes that cannot be agreed to during an updating meeting, CONTRACTOR shall submit the proposed changes for ENGINEER's acceptance prior to inserting such changes into the network. Submittals may be in the form of marked-up networks, fragnets, or schedule abstracts, provided they are submitted with a letter of transmittal. A fragnet is defined as a sequence of new activities and/or activity revisions that are proposed to be added to the existing schedule to demonstrate how project events have an impact on the schedule.

1.8 DATA

A. The data date is the re-settable date that serves as the end of a reporting period. The reporting period will be recorded on a monthly basis, e.g., January 1st through January 31st with the 31st as the data date. If required for coordination purposes by the OWNER, the ENGINEER will provide specific data dates to be used by the CONTRACTOR.

1.11 REVIEW PROCESS

A. ENGINEER will review CONTRACTOR's preliminary PROGRESS SCHEDULE and full PROGRESS SCHEDULE submittals within 20 calendar days after receipt of all required information.

B. At the request of OWNER or ENGINEER, CONTRACTOR shall participate in any meetings necessary to reach a mutual agreement and acceptance of the preliminary PROGRESS SCHEDULE, PROGRESS SCHEDULES, or Cash Flow Projections.

C. If any of the required submittals are returned to CONTRACTOR for corrections or revisions, they shall be resubmitted within ten calendar days after the return mailing date. Resubmittals shall include all information and media included in the first submittal. Review and response by ENGINEER will be given within 10 calendar days after receipt of each resubmittal.

D. Schedules shall show contract completion of the Work on the Contract completion date and with zero or positive total float even if the CONTRACTOR plans to finish early. In no event

shall acceptance of the schedule be a basis for a claim for delay against OWNER or ENGINEER by CONTRACTOR for an early finish. A PROGRESS SCHEDULE containing activities with negative float or that extend beyond the Contract completion date will not be acceptable.

E. Review and acceptance of the PROGRESS SCHEDULE by the OWNER or ENGINEER does not relieve CONTRACTOR of responsibility for the accuracy or feasibility of the PROGRESS SCHEDULE or of the CONTRACTOR'S ability to meet the interim milestone date and the FINAL COMPLETION date. Omissions and errors in the accepted PROGRESS SCHEDULE shall not relieve the CONTRACTOR of obligations under the Contract. Acceptance by ENGINEER in no way makes ENGINEER or OWNER an ensurer of the Schedule's success or liable for time or cost overruns. ENGINEER and OWNER hereby disclaim any obligation or liability by reason of acceptance of the PROGRESS SCHEDULE by the ENGINEER.

1.12 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

A. Whenever it becomes apparent from the current PROGRESS SCHEDULE that the critical path is delayed and the contract completion date will not be met, CONTRACTOR shall mitigate the delay by taking some or all of the following actions at no additional cost to OWNER.

1. Increase construction manpower in such quantities and crafts as will bring the project back on schedule within the completion dates and milestones.

2. Increase the number of working hours per shift, shifts per day, working days per week, and the amount of construction equipment, or any combination of the foregoing, to substantially eliminate the backlog of work.

3. Re-schedule activities to achieve maximum practical concurrence of activities and to comply with the schedule date(s).

B. Within ten calendar days of the ENGINEER's request, CONTRACTOR shall submit a recovery schedule and written statement of the steps intended to remove or arrest the delay to the critical path in the schedule. If the CONTRACTOR fails to submit the required information or should fail to take measures acceptable to the ENGINEER, the ENGINEER with OWNER concurrence may direct CONTRACTOR to increase manpower, equipment and scheduled work hours to remove or arrest the delay to the critical path and the CONTRACTOR shall promptly provide such level of effort at no additional cost to OWNER.

C. In the event CONTRACTOR fails to follow the updated or revised recovery schedule, OWNER may elect to withhold progress payments until CONTRACTOR complies with the revised schedule.

D. Should CONTRACTOR's efforts not remove or arrest the delay to the critical path of the accepted schedule, then OWNER shall be entitled to supplement CONTRACTOR's workforce and equipment to remove and arrest any delay and shall be entitled to deduct all costs and

expenses associated therewith from payments due to the CONTRACTOR. If insufficient Contract funds remain, OWNER may recover such funds from CONTRACTOR and its Surety.

1.13 CHANGE ORDERS, DELAYS, AND EXTENSIONS OF TIME

A. When change orders or delays are experienced by CONTRACTOR and CONTRACTOR requests an extension of time, CONTRACTOR shall submit a written time impact analysis to the ENGINEER illustrating the influence of each change or delay to the current Contract Schedule completion date. Each time impact analysis shall include a fragnet incorporating the change order or delay into the PROGRESS SCHEDULE to demonstrate how CONTRACTOR was delayed.

B. Each time impact analysis shall demonstrate the estimated time impact based on the events of the change or the delay; the date the change was given to CONTRACTOR, or the delay incurred, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest update of the PROGRESS SCHEDULE or as adjusted for the events of delay.

C. Three copies of the time impact analysis and an electronic copy on compact disk shall be submitted within seven calendar days of delay occurrence or direction to proceed with a change is given to CONTRACTOR. No time extensions will be considered if the time impact analysis is not submitted within the specified time.

D. The ENGINEER will review CONTRACTOR's time impact analysis. CONTRACTOR shall furnish such justification and supporting evidence as the ENGINEER deems necessary to determine whether CONTRACTOR is entitled to an extension of time. ENGINEER's review of each time impact analysis will be made within 5 working days of receipt of the time impact analysis and additional information as required by the ENGINEER, unless subsequent meetings and negotiations are necessary.

E. The Contract completion time will be adjusted only for causes specified in paragraph 15. Time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the critical path at the time of actual delay. Delays in activities which are not on the critical path and do not affect Contract completion dates, will not be considered for an extension of time.

Upon approval of a CHANGE ORDER, the approved change shall be reflected in the next PROGRESS SCHEDULE submitted by the CONTRACTOR.

1.14 CAUSES FOR EXTENSIONS OF TIME

A. Additional positive total float in the PROGRESS SCHEDULE generated by efficiencies of OWNER or CONTRACTOR is a shared commodity to be reasonably used by either party, and

belongs exclusively to the PROJECT. The CONTRACTOR is not entitled to any additional compensation for completion of the project prior to expiration of the Contract Times.

1. OWNER-Initiated Changes

B. OWNER initiated changes to the Contract work that absorb float time will not be considered for an extension of time. OWNER-initiated changes that affect the critical path of the PROGRESS SCHEDULE shall be grounds for extending or shortening completion dates. Use of float time for CONTRACTOR initiated changes will require OWNER's concurrence. CONTRACTOR's changes, however, shall give way to OWNER-initiated changes competing for the same float time.

1. Outside CONTRACTOR's Control

C. Events outside of the CONTRACTOR's control that affect the critical path of the PROGRESS SCHEDULE will be considered for an extension or reduction of the Contract Times.

1. Weather Delays

D. ENGINEER will obtain weather data during construction from a reputable source and will maintain weather records.

E. Any weather-related extension of Contract time shall be non-compensable. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather days is less than expected, shall contribute to the project float and shall not affect the Contract Times.

F. Application for a weather-related extension of time shall be submitted to the ENGINEER and shall state the extension requested and be supported by the relevant weather data.

1.15. AS-BUILT SCHEDULE

A. As a condition precedent to release of final payment, the last update to the PROGRESS SCHEDULE submitted shall be identified by the CONTRACTOR as the "As-Built Schedule". The "As-Built Schedule" shall reflect the exact manner in which the project was actually constructed (including actual start and completion dates, activities, sequences, and logic) and shall be signed and certified by the CONTRACTOR's project manager.

1.16. SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS

A. The following shall apply unless otherwise directed by the ENGINEER.

1. Schedule Options:

i. Shall be defined only to "Use expected finish dates";

ii. Scheduling progressed activities to be set to "Use only retained logic", not progress override option;

iii. Critical Path activities defined as Total Float less than or equal to zero;

iv. Calculating start-to-start lag from "early start" dates; and computing total float as "finish float = late finish – early finish";

v. Calendar to be set for scheduling relationship lag as "Predecessor Activity Calendar."

2. Activity progress shall be shown using Remaining Duration. Date format shall be DDMMYY.

3. Default activity type shall be set to "Independent Task".

4. Date/time activity constraint(s), other than those required by the Contract, will not be allowed unless accepted by ENGINEER. CONTRACTOR shall identify proposed constraints and explain the constraint purpose in the Narrative Report.

5. Lags shall not be used in the creation of an activity that will perform the same function, e.g., concrete cure time. Lag durations contained in the project schedule shall not have a negative value. CONTRACTOR shall identify any lag proposed and explain the purpose of the lag in the Narrative Report.

6. Actual Start and Finish dates shall not be automatically updated by default mechanism that may be included in the CPM scheduling software system. Actual Start and Actual Finish dates on the CPM schedule shall be updated by actual work progression.

1.17 ACTIVITY CODES

A. The work breakdown structure (WBS) to be confirmed or revised by the ENGINEER are listed below. Confirmation or revision of the activity codes and WBS will be provided to the CONTRACTOR within three workdays of the Effective Date of the Agreement. Use of the ENGINEER prescribed activity codes and WBS is mandatory.

B. "Project Codes" are reserved for the OWNER. Only "Activity Codes" at Project Level will be permitted for CONTRACTOR use.

Activity Code	Code Value	Description
Phase	0005	Construction Phase
Construction Phase	A	Milestones
	BC	Administrative
	D	Submittals
	E	Construction Activities
		Closeout Phase
Submittals	SUB	Submittals
	R&A	Review & Approve
	F&D	Fabricate & deliver

Other Codes to be prescribed by ENGINEER or requested by CONTRACTOR for project specific criteria.

1.18. ACTIVITY RELATIONSHIPS

A. Relationships between activities shall be identified with the following information:

1. Predecessor and successor activity ID.

2. Relationship types:

i. FS - Finish to start

ii. SS - Start to start

iii. FF - Finish to finish

iv. SF - Start to finish – This relationship is not allowed, unless authorized by ENGINEER.

1.19. PROJECT CALENDARS

A. Project Calendars shall use workdays and calendar days as the planning unit for the schedule. Use of Global Calendars is reserved for OWNER. Each calendar shall be set to start on Mondays with holidays in accordance with OWNER policy. The following calendars shall be used for each activity except as otherwise accepted by ENGINEER:

1. 5-Day x 8 Hour Workweek (with holidays) shall be used for 5-day 40-hour workweek activities: Monday through Friday. All holidays and non-workdays shall be assigned to this

calendar. This calendar shall be used for all normal work activities, submittals, and fabricate and delivery activities. This calendar shall be the default calendar for the project unless otherwise specified.

2. 5-Day x 10-Hour Workweek (with holidays) shall be used for 5-day 50-hour workweek activities: Monday through Friday. All holidays and non-workdays shall be assigned to this calendar.

3. 6-Day x 10-Hour Workweek (with holidays) shall be used for 6-day 60-hour workweek activities. Monday through Saturday. All holiday and non-workdays shall be assigned to this calendar.

4. 7-Day Calendar (no holidays) shall be used for 7-day workweek activities. No non-workdays shall be entered into this calendar.

5. Additional Calendars may be assigned depending on need. However, CONTRACTOR shall consult with the ENGINEER before other calendars are entered and/or used in the Project schedule.

B. The workday to calendar day correlation shall be based on a single shift and 5-day work week with adequate allowance for holidays, adverse weather and all other special requirements of the Work. CONTRACTOR may, at his option, propose alternate baseline calendars to allow a second shift and/or a single shift on Saturdays subject to the concurrence and acceptance of OWNER. Under no circumstances will a schedule be accepted which allows regularly scheduled work on Sundays.

C. The holidays observed by the OWNER are as follows:

New Year's Day
Martin Luther King Jr. Day
Memorial Day
Juneteenth
Independence Day
Labor Day
Thanksgiving Day
Friday after Thanksgiving Day
Christmas Eve
Christmas Day

1.2. FLOAT

A. CONTRACTOR shall not use float suppression techniques, including preferential sequencing (arranging critical path through activities more susceptible to OWNER caused delay); lag logic restraints; zero total or free float constraints; extended activity times; or imposing constraint

dates other than as required by the Contract. Float suppression will be cause for rejection of the preliminary PROGRESS SCHEDULE or full PROGRESS SCHEDULE and its updates.

1.21. MANDATORY MILESTONES.

A. The Contract duration shall be equal to the time period between the Notice to Proceed and the completion Milestone. The following milestones are mandatory.

1. PROJECT Award

2. Notice to Proceed

3. Substantial Completion as established in the Bid Documents

4. Completion as established in the Bid Documents

B. The following additional milestones are to be considered and incorporated into the PROGRESS SCHEDULE in accordance with the Contract terms, if applicable.

1. Permit constraints

2. Facility shut down or outage milestone requirements

3. Applicable phasing milestones

4. Other milestones deemed appropriate by the ENGINEER

1.22. PROGRESS MEETINGS

A. For all progress meetings, the CONTRACTOR shall submit a three (3) week schedule showing all activities in progress, uncompleted or scheduled to be worked during the three weeks. The three-week schedule shall include the current week plus the next two. The three-week schedule shall list all activities which are scheduled for work during the period, which are currently planned to be worked even if out of sequence and work which is unfinished but scheduled to be finished. The schedule shall also show the planned resources and any deviations from that plan.

End of Section

SECTION 01313

CONSTRUCTION AND SCHEDULE CONSTRAINTS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. WORK shall be scheduled, sequenced, and performed in a manner which minimizes disruption to the operation and maintenance of the existing facility.

B. The CONTRACTOR shall incorporate the construction and schedule constraints of this Section in preparing the construction schedules required under Section 01310 – Construction Schedules and under Section 01100 – Special Project Procedures.

1.2 EXISTING FACILITY

A. The WORK shall be executed while the existing facility is in operation. Operation of the existing facility shall not be jeopardized nor shall the efficiency as a result of the execution of the WORK.

B. Unless indicated otherwise, temporary pumping, piping, power, lighting, controls, instrumentation, alarms, security devices, and safety devices shall be provided by the CONTRACTOR whenever its activity or interruption due to its activity affects the existing facility.

C. The construction constraints in this Section do not include every item affecting the completion of the WORK but are intended to describe the sequence of critical events necessary to minimize disruption to the existing facility operation. It shall be understood and agreed by the CONTRACTOR that the critical events described are not inclusive and that additional items of WORK not included may be required to minimize disruption and ensure compliance. Deviation from or modification of these suggested sequences is permitted if techniques and methods known to the CONTRACTOR will result in less disruption, and if deviation is approved in advance by the ENGINEER.

1.3 OPERATION OF EQUIPMENT

A. Operational functions or shutdown required to facilitate CONTRACTOR's operation will be done by the OWNER's personnel only.

B. The OWNER’s operation and maintenance personnel will cooperate in every way that is practical in order to facilitate CONTRACTOR's operation. However, certain shutdowns and connections may only be permissible at times other than normal working hours such as nights or weekends. No additional payment will be made to the CONTRACTOR for any night, weekend, or holiday premium or overtime payments.

C. If it becomes necessary for the proper operation or maintenance of portions of the facility, the OWNER may require the CONTRACTOR to reschedule an approved shutdown. The CONTRACTOR shall then reschedule its operations so there shall be no conflict with necessary operations or maintenance of the facility. The CONTRACTOR shall, within two days of notice by the OWNER that a rescheduled shutdown is necessary, furnish the ENGINEER a revised outage request and a plan for rescheduling the shutdown in accordance with the requirements of the construction schedule.

1.4 OUTAGE REQUESTS

A. Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require the temporary outage of existing facilities. In such cases, the CONTRACTOR shall coordinate WORK with the OWNER as described below. The CONTRACTOR shall submit a detailed outage plan and time schedule for construction activities which will make it necessary to remove a pipeline, electrical circuit, equipment, structure, road, or other facilities from service.

B. The outage plans shall be submitted to the OWNER for acceptance a minimum of two weeks in advance of the time that such outages are required. The outage plans shall be coordinated with the construction schedule and shall meet the restrictions and conditions of this Section. The outage plan shall describe the length of time required to complete the operation; any necessary temporary power, controls, instrumentation, or alarms required to maintain control and monitoring, the amount of manpower, and equipment which the CONTRACTOR shall provide in order to ensure proper operation of associated treatment units. Costs for preparing and implementing the outage plans shall be the responsibility of the CONTRACTOR as part of the WORK.

C. The CONTRACTOR shall not begin an alteration affecting existing facilities until specific written approval has been granted by the OWNER in each case.

D. The ENGINEER will coordinate the CONTRACTOR's planned procedure with the OWNER's personnel. The OWNER has the authority to modify any proposed shutdown procedures if such procedures would adversely impact the OWNER's operations.

E. The OWNER shall be notified in writing at least one week in advance of the required outage if the schedule for performing the WORK has changed or if revisions to the outage plan are required. The CONTRACTOR shall provide written confirmation of the shutdown date and time two days prior to the actual shutdown.

1.5 TEMPORARY CONNECTIONS

A. Making connections to existing facilities shall be thoroughly planned in advance, and required equipment, materials, and labor shall be on hand at the time of undertaking the connections. WORK shall be completed as quickly as possible and with as little delay as possible and shall proceed continuously (24 hours a day and seven days a

week), if necessary, to complete modifications and/or connections in the minimum time.

B. The cost of any temporary facilities and night, weekend, or holiday activity and overtime payments required during process interruptions shall be included in the WORK.

C. Temporary facilities and piping shall be located to minimize interference with CONTRACTOR's construction facilities and OWNER's operation and maintenance of the existing facilities. Unless otherwise indicated, each temporary pipeline shall be of the same size as its connection to the existing or permanent facility at the downstream end of the pipeline. Piping materials shall be suitable for the material being conveyed and be as required in the Contract Specifications.

D. When temporary electrical power, controls, instrumentation, or alarms are required for routine continuous operations of existing or new equipment, the CONTRACTOR shall provide the necessary equipment and appurtenances. Prior to installing said equipment and appurtenances, CONTRACTOR shall furnish a submittal on the proposed components and installation for ENGINEER's review and approval.

E. A plan showing the size and location of the temporary facilities and piping shall be submitted to the ENGINEER at the same time as the outage plan required under this Section. Costs for design, provision, operation, and removal of temporary facilities and piping shall be part of the WORK.

1.6 CONSTRUCTION SEQUENCING

A. Construction activities shall be scheduled and sequenced to ensure continuous operation of the existing facilities, unless otherwise noted in these CONTRACT DOCUMENTS. The CONTRACTOR's scheduling shall develop construction sequencing so that the WORK will not adversely impact OWNER's operations. The CONTRACTOR shall be responsible for development of the construction sequencing. In implementing the construction sequencing, the CONTRACTOR shall maintain the existing facilities in service until new facilities are constructed and are operational to supplement the existing capacity. When new facilities are operational and accepted by the OWNER, the existing facilities may be taken out of service. The following general guidelines shall be used by the CONTRACTOR in planning the sequence of construction.

1. Safe working conditions for personnel shall be maintained during rehabilitation, modification, and demolition WORK. The foregoing includes at least proper trench excavation, the provision of temporary equipment guards, supports, warning signs, walkways, covers over openings, handrailing, and protection of electrical equipment and power supply.

2. Temporary facilities shall be constructed in accordance with applicable codes and regulations to operate safely and properly.

3. Valves to be temporarily shut off during the WORK shall be tagged as such and shall be wired shut with a crimped lead seal and padlocked.

4. Electrical and mechanical equipment shall be similarly shut down.

B. Construction Restrictions: Project specific.

1. All proposed shut downs of OWNER'S facilities shall be submitted and approved in advance per Section 01010. The OWNER will have the sole authority as to when (seasonally and time of day) this work will be accomplished.

2. Existing raw water well collection main must be removed from service to dewater contents and construct connections. **There is a strict limit on how many calendar days the pipeline can be out of service. See section 01100**. This shut down is not to be scheduled during the rainy season (June 1 through September 30) and shall be coordinated in advance with the OWNER.

1.7 PERMITS

A. The CONTRACTOR shall abide by the conditions of permits and shall obtain proof of satisfaction of conditions from issuers of permits prior to acceptance of the WORK by the OWNER.

B. CONTRACTOR must comply with all permit conditions, but not limited to, in the following permits. Copies of the permit conditions are contained in the permit notebook available for review and on file at the offices of the ENGINEER.

1.8 SCHEDULE CONSTRAINTS

General: It is the CONTRACTOR's responsibility to coordinate and plan the construction activities to integrate each schedule constraint into performance of the overall WORK.

- END OF SECTION -

SECTION 01410

TESTING AND QUALITY CONTROL

PART 1 - GENERAL

1.1 SCOPE

A. Summary of Work:

1. The CONTRACTOR shall establish and implement a Quality Control Plan to perform sufficient inspection of all items of the WORK, including that of Subcontractors, to ensure conformance to the Technical Specifications and the Drawings with respect to the materials, workmanship, construction, equipment performance, and identification.

2. The CONTRACTOR's job supervisory staff may be used for quality control, supplemented as necessary by additional personnel for surveillance or special technicians to provide capability for the controls required by the Technical Specifications. The CONTRACTOR's Quality Control Plan must clearly identify the quality control leader and personnel organizational system. The leader must have the authority to direct the removal and replacement of defective work.

3. After the Contract is awarded and before the construction begins, the CONTRACTOR shall meet with the OWNER or its representative to discuss quality control requirements. The meeting shall develop mutual understanding relative to the details of the Quality Control Plan, including the appropriate forms to be used for recording the quality control operations, inspections, administration of the Quality Control Plan, and the interrelationship of the CONTRACTOR and the OWNER inspection.

4. The CONTRACTOR shall submit his written Quality Control Plan for review at or before the preconstruction meeting, describing the activities and listing those inspections and testing activities that the CONTRACTOR will perform prior to beginning the WORK. The CONTRACTOR's Quality Control Plan shall describe how he will communicate timely notification to allow for inspection activities performed by the OWNER, or its representatives, for on and off-site construction activities

5. All compliance inspections shall be recorded on the appropriate forms, including but not limited to the specific items required in each SECTION of the Technical Specifications. The completed forms, including record of corrective actions taken, shall be furnished to the OWNER. The OWNER's quality control representative will maintain a list of all deficiencies which are not corrected the same day as they are discovered.

6. Should recurring deficiencies in an item or items indicate that the Quality Control Plan is not adequate, the CONTRACTOR shall take corrective actions as directed by the OWNER to update the Quality Control Plan, to satisfactorily address and resolve any reoccurring deficiencies.

B. Related Work Specified Elsewhere:

SECTION 01300 – Submittals

1.2 TESTING LABORATORY SERVICES

All tests which require the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the OWNER. The laboratory shall be staffed with experienced technicians, and shall be properly equipped, ACI certified, and fully qualified to perform the tests in accordance with the specified standards.

1.3 TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

A. All testing required in connection with the performance of the WORK (which are identified as the CONTRACTOR's responsibility in the Contract Documents) shall be performed and paid for by the CONTRACTOR, and a certified copy of the results will be furnished to the OWNER within five (5) days of the test.

B. The CONTRACTOR is also responsible for all testing and inspection services required to achieve an effective Quality Control Program, to assure that the WORK strictly complies with the Contract requirements. The CONTRACTOR shall pay all costs for such services.

1.4 TRANSMITTAL OF TEST REPORTS

Written reports of test and engineering data furnished by the CONTRACTOR shall be submitted as specified in SECTION 01300, Submittals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01720

CONTRACT RECORD AND CLOSE OUT DOCUMENTATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section addresses documentation items that are required to be delivered through the OWNER'S REPRESENTATIVE to the OWNER prior to final payment and close out of the CONTRACT. The CONTRACTOR will assist, as directed by the OWNER'S REPRESENTATIVE, in acquiring the material necessary to assemble and deliver the various documentation items. Requirements set forth in other sections of these specifications shall be coordinated with this Section so that all documentation items required to close out the CONTRACT are delivered to the OWNER after it is reviewed and in the case of item 1.6, approved by the OWNER'S REPRESENTATIVE.

B. CONTRACT close out documentation items include:

- Major Equipment Shop Drawings (as designated by the OWNER'S REPRESENTATIVE), Pipe Laying Schedules, and Surveying Manual
- Operation and Maintenance Manual
- Warranties, Guarantees, and Certificates Manual
- Construction Photographs
- Conformed to Construction Records Drawings
- Permit Notebook
- Property Notebook

The requirements for these CONTRACT close out documentation items are described in this Section.

1.2 MAJOR EQUIPMENT SHOP DRAWINGS, PIPE LAYING SCHEDULES, AND SURVEYING MANUAL

A. This manual shall contain a copy of the accepted shop drawings for the major materials and equipment associated with the project. The manual shall be divided into sections with each section dedicated to a particular specification section. The manual shall contain CONTRACTOR redlines showing any associated changes from the CONSTRUCTION DOCUMENTS.

B. One electronic file copy is to be delivered to the OWNER.

1.3 OPERATION AND MAINTENANCE MANUAL

A. Operation and Maintenance Data shall be furnished as specified in Section 01730.

1.4 WARRANTIES, GUARANTEES, BONDS, AND CERTIFICATES MANUAL

A. This manual shall contain all warranties, guarantees, bonds, certificates, and similar documents, including those customarily provided by manufacturers and suppliers which cover a period greater than the one-year Contractor's correction period. Show OWNER as beneficiary on these documents. One electronic file copy is to be delivered to the OWNER.

1.5 CONSTRUCTION PHOTOGRAPHS

A. This manual shall contain construction photographs obtained from the CONTRACTOR, ENGINEER, and OWNER. All photographs are to be color digital compiled digitally and provided with a descriptive index of images with dates.

B. Electronic file copy to be delivered to the OWNER.

1.6 CONFORMED TO CONSTRUCTION RECORD DRAWINGS

A. As identified in General Conditions Article 2.4.1., the CONTRACTOR is to maintain on a daily basis at the PROJECT site one current set of AS-BUILT CONTRACT DOCUMENTS. The CONTRACTOR is to give the set of AS-BUILT CONTRACT DOCUMENTS to the OWNER'S REPRESENTATIVE who in turn will produce Conformed to Construction Record drawings.

One electronic file of each drawing in Windows based - AutoCAD latest version format and one electronic file of each drawing signed and sealed (seal must be inked) shall be scanned and saved as Win. OS - Tif 6.0 files with a resolution of 300 dpi, shall be provided to the OWNER in the most logical format listed by judging the size of the project. The files should be labeled by drawing title and page number and submitted electronically into Masterworks.

1.7 REQUIREMENTS FOR MANUAL HARD COPIES

All manuals to be provided in digital pdf format.

1.8 REQUIREMENTS FOR ELECTRONIC FILES

A. For all documents except Conformed to Construction Records Drawings, each electronic copy shall be delivered digitally in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated and any extra blank pages removed.

B. Scanned images must be at a readable resolution. For most documents, they will be scanned at

300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

C. One PDF document (PDF file) shall be created for each manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

D. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

E. The opening view for each PDF document shall be as follows:

1. Initial View: Bookmarks and Page

2. Magnification: Fit In Window

3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

A. The PDF documents shall be uploaded to Masterworks in the appropriate project folder.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02075

MICROTUNNELING

02075.01 GENERAL

A. Scope: Provide all labor, materials, equipment, supervision and incidentals required to excavate, dewater, protect existing structures and furnish and install casing pipe as shown on the Plans and specified utilizing the microtunneling method generally defined as follows:

1. Microtunneling (MT) - a remotely controlled, guided pipe jacking process that provides continuous support to the excavated face. The guidance system usually consists of a laser mounted in the drive shaft communicating a reference line to a target mounted inside the articulated steering head of the MT boring machine (MTBM). The MT process provides ability to control excavation face stability by applying mechanical and/or fluid pressure to counterbalance the earth and hydrostatic pressures.

2. Non-interlocked steel sheeting will not be permitted for shaft construction.

This Section also includes the provision for pipe support structures, access shafts, grout, construction bulkheads, disposal of waste material and the installation of the water carrier pipe.

Provide all items and temporary means, including but not limited to spoil transportation and separation, hoisting, lifting, safety and control equipment, needed to prevent discharge of sediment to drainage courses or structures from dewatering systems or other construction operations.

B. Intent: This Specification is intended to define in general terms the Work to be accomplished. CONTRACTOR assumes full responsibility for the selection of the means and methods, subject to review by the ENGINEER. Demonstrate to the ENGINEER that the proposed means and methods will complete the Work in accordance with the Specifications, this Section, applicable codes, permitting agency requirements and the Construction Schedule.

C. Special Caution: The Work of this Section involves the installation of access shafts and casing pipe support systems in or under critical and sensitive transportation facilities. Details of the soil borings and laboratory test results on samples taken can be found in the geotechnical information made available to perspective bidders. Conduct additional geotechnical investigations as deemed necessary. Assume full responsibility to judge how the geotechnical conditions and depth of cover will affect the means, methods, and progress of the work. Schedule continuous installation of the casing pipe at roadway crossings until completed, however 24 hours per day for 7 days per week work is not required. Be prepared to advance the support system in such a manner that at all times the stability of the excavation face

is maintained and undesirable ground loss is avoided. Include soil stabilization, if required, by grouting or other means ahead of the machine.

D. Materials to be Excavated: No classification of excavated material will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof. Construction, regardless of materials encountered, will be measured for payment in accordance with the appropriate GMP Pay Item for microtunneling. Where rock is encountered during microtunneling, it will not be measured for separate payment under another GMP Pay Item. Any acceptable fill material the CONTRACTOR brings on to the site is at no additional cost to the OWNER.

02075.02 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM A 36/36M - Specification for Carbon Structural Steel
2. ASTM A 139 - Specification for Electric-Fusion (Arc) - Welded Steel Pipe (NPS in 4 in. and Over)
3. OSHA PL-91-596 - Occupational Safety Health Act of 1970 Public Law 91-596

02075.03 SPECIALIST SUBCONTRACTORS

A. Utilize Specialist Subcontractors for all crossings requiring microtunneling construction techniques described in this Section. Provide names of Specialist Subcontractor proposed for this Work with the Bid Documents. Provide the following submittals within 10 working days of the Notice of Award:

a. Cover Sheet: List date, company name, address, telephone/telefax/e-mail, contact person , etc.

b. Summary sheet of previous projects performed: Submit selected projects that demonstrate expertise and experience with the means and methods selected for this project.

c. Three separate named projects completed using Microtunneling (MT) where the installation was successfully completed in similar ground conditions below surface features similar to this project.

For each of the named projects, provide the following detailed information:

- Full name of project
- Project location
- Owners name and address
- Owners contact person and telephone number
- Clients name and address

- Clients contact person and telephone number
- Any other references
- Employees in charge of the work at both the site and home office
- Description of the relevant work successfully completed, including site conditions and features under which pipe passed. Add additional information as necessary.

d. Resumes of key personnel: Submit resumes of key managerial, supervisory, and operational personnel who are expected to be available to perform the trenchless construction work. If operational personnel are expected to be supplied by the equipment manufacturer, provide details of their responsibility and resumes.

e. List of specialized equipment:
Provide details of owned or rented MT systems which have been used to install casing pipe of the sizes required for this Contract. Information shall at least include make, model number and age of base equipment.

f. General company data (Specialist Subcontractor):
   i. List all litigation, within the past five years, to which your company has been a party. For each instance, please provide the following information for each incident:
      1. Name of parties involved
      2. Explain result or status
      3. Briefly explain facts of the case

   ii. Has your company failed to complete any work awarded? If the answer to this question is Yes, please provide full details and circumstances.

   iii. Has your company ever had to utilize a performance and/or payment bond (or similar instrument) for a project to be completed? If the answer to this question is Yes, please provide full details and circumstances.

   iv. Provide company history, brochures and any other information you feel is relevant.

02075.04 SUBMITTALS

A. Review: Provide all required submittals as specified herein, in accordance with the General Conditions. All submittals will be reviewed for compliance with the requirements of this Section and the other contract documents and Drawings. Such review does not relieve the CONTRACTOR in any way of his responsibilities under the contract. No work shall commence on any Section requiring a prior submission until such submittals has been reviewed and accepted by the ENGINEER. All submitted calculations shall be stamped and signed by a professional engineer licensed in the State of Florida.

B. Design Criteria:

1. An intermediate jacking station will be installed if the calculated jacking forces reach or exceed 70 percent of the manufacturer's recommended safe design capacity of the jacking pipe, IJS pipe, jacking frame, or thrust block, whichever is lowest. Design intermediate jacking stations (IJS) using a continuous steel casing fabricated to the same outside diameter as the pipe. Use special recessed pipes to accommodate the IJS. Seal each side of the IJS with a double rubber gasketed joint to provide a watertight pipe joint. Design the IJS to distribute the jacking force uniformly to the ends of the adjacent pipe section. Design IJS to provide a watertight joint during operation and after removal. Design IJS to allow pipe joint to fully close and seal. IJS joint shall as a minimum have an equal level of protection as provided by jacking pipe joints.

2. Thrust reaction backstop shall be designed to support the maximum anticipated jacking load with a minimum factor of safety of 1.5. The thrust reaction backstop shall be square with the proposed pipe alignment and remain square throughout the jacking operation.

3. Steel pipe shall be designed based on the criteria herein. The safe jacking capacity of the pipe shall be determined by the ultimate jacking capacity divided by a safety factor of 2.5.

4. Control of Line and Grade:

- The CONTRACTOR shall establish the baseline and benchmarks indicated on the plans. Check these baselines and benchmarks at the beginning of the contract period and report any error or discrepancies to the ENGINEER.
- Horizontal Alignment: plus or minus four (4) inches from theoretical alignment at any point along the alignment shown on the Drawings.
- Vertical Alignment: plus or minus four (4) inches from theoretical alignment at any point along the alignment shown on the Drawings.
- When the excavation is off line or grade, return to the plan line and/or grade at a rate of not more than one (1) inch per

25 feet of tunnel advancement.

C. Submit the following for review:

1. Personnel - List names of all key personnel to be employed in the execution of this Work including managerial, supervisory, and operational personnel.

2. Equipment - Supply full details of the MT systems to be utilized including but not limited to:
   - Make, type and model number of whole system if from a single source or separate details for each element of the system if not from a single source.
   - Dates of manufacture
   - Cutter head details
   - System of alignment monitoring and steering control and activation
   - Spoil separation method for slurry systems

3. Methods - Supply full details of the procedures and resources which will be employed to carry out the Work including method and sequence of:
   - System set-up at the surface
   - Establishment of alignment and grade controls at the base of the shaft
   - System set-up in the access shaft including establishment of the jacking reaction backstop for MT systems
   - Spoil separation and disposal for slurry MT systems
   - Lubrication mixing and injection
   - Emergency/contingency procedures addressing the following:
     - A work plan/method statement for removal of obstructions.
     - Frictional jacking forces reaching the design capacity of the jacking pipe, jacking frame, or thrust wall.
     - Thrust block deforming excessively under jacking loads due to inadequate ground support behind the thrust block.
     - Damage to jacking pipe.

4. Materials - Supply full details of the following materials
   - Slurry additives if MT system is utilized
   - Lubricants additives

5. Shop Drawings
   - Layout Drawings showing the complete jacking/tunneling equipment set-up in the access shaft.

6. Information defining the proposed jacking system including:
   - Capacity, number, and arrangement of main jacks.
   - Details of thrust ring, jacking controls, pressure gages, and calibration data for jacks indicating pressure vs. load relationship. Procedure for

calibrating jacks prior to beginning the drive.

- Calculations of the maximum jacking force expected to be required to complete the drive and a comparison with the safe jacking load of the pipe, the capacity of the main jacks, and the intermediate jacking station (IJS) capacity. Use this information to plan intermediate jacking station placement locations, if required by 02075.04 B. 1. of this Section, and these calculations. Provide a layout of planned IJS locations. Provide calculations demonstrating that the proposed jacking pipe is capable of supporting the maximum stresses to be imposed during jacking. The calculations shall take into account earth and hydrostatic loads, jacking forces, external loads such as live loads due to traffic, and any other loads that may be reasonably anticipated during jacking. All loads shall be shown and described. Jacking force calculations shall account for both face pressures and frictional resistance along the pipe string. Calculations shall be stamped and signed by a professional engineer in the State of Florida.
- Provide calculations for the thrust resistance of the shaft wall and calculated shaft wall deflection at maximum thrust. Coordinate with shaft design and related shaft submittals. Calculations should demonstrate that the soils behind the thrust block can transfer the maximum jacking forces exerted by the main jacks to the ground during pipe installation with a factor of safety of at least 1.5, without excessive deflection or displacement.
- Calculations to show the push-back force on the machine when the jacks are retracted and the need for pipe restraint to prevent movement of the machine into the shaft during stoppages and main jack retractions.

7. If required by 02075.04 B. 1. and 02075.05 C. 6. of this Section, include details of intermediate jacking stations indicating:
   - Method of operation.
   - Procedures for installation and removal.
   - Drawings showing the size, location, capacity of all elements, pressure gages, and calibration data for jacks indicating pressure versus load relationship.
   - Design details including dimensions, shell materials, seals, load transfer, proposed spacing, and method of abandonment and final seal configuration.

8. Jacking Pipe: Submit details on the steel jacking pipe including the following:
   - Manufacturer's literature showing yield strength and end preparation
   - Calculations of the wall thickness, ultimate and safe jacking capacity
   - Details on intermediate jacking station pipes, including allowable loading
   - Details on manufacturing tolerances showing that the tolerances meet the requirements set forth herein.

9. Casing Spacers: Submit details on the casing spacers that will be used for the installation of the carrier pipe within the steel casing pipe installed by microtunneling. Provide manufacturer's literature, planned location of the casing spacers, and procedures for installation of the pipe with the casing spacers. Provide the number of runners as recommended by the manufacturer. Provide calculations prepared by the manufacturer, or a Florida Licensed Professional Engineer, indicating the structural adequacy to support the specified intended loads.

D. Submit for record purposes only:

1. Daily logs - Maintain a daily activity log during the MT operations and any associated delays. Submit the log to the ENGINEER on a daily basis. Log and submit the following information and activities:

- Start and finish time of advancement of each pipe section including the machine/shield sections.
- Total distance jacked/installed at the end of each pipe section.
- Horizontal alignment and vertical grade deviation from the datum of the machine/shield at not greater than three-foot intervals.
- Maximum jacking force exerted during the installation of each pipe section.
- The slurry feed and return flows during system operation and pipe advancement.
- Cutter head torque.
- General description for each discernable ground condition mined.
- Details and perceived reasons for delays greater than one hour other than normal breaks and shift changes.
- Details of any unusual conditions or events.
- Settlement monitoring readings.

02075.05 RECORD DRAWINGS

A. Maintain at the construction site a complete set of the field drawings for the recording of as-built conditions. Mark or note thereon all field information, properly dated, recording up-to-date as-built conditions.

02075.06 QUALITY ASSURANCE

A. Supervision: Each shift shall be supervised by at least one person with previous experience of the Work.

B. Operation: Utilize system operators that are experienced personnel with prior knowledge and ability in the proper operation of the systems being employed.

C. Sample: Take a sample of soil at intervals of not greater than 30 feet or when material type retrieved visibly changes. Clearly mark each sample bag with the

station position from where the sample was taken.

D. Drive start-up: Prior to the commencement of any drive, conduct a test run on the complete system with equipment set-up demonstrating that the required set-up procedures are complete, the system has been thoroughly checked, and all required materials are available. Do not commence drive until its reception shaft has been completed.

E. Operation: Operate all systems in accordance with manufacturer's instructions. Where applicable provide digital or hardcopy versions of operation manuals available to operational personnel on site at all times.

02075.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all products and materials as specified in the General Conditions.

02075.08 CRITERIA FOR DETERMINING CONSTRUCTION LOADS

A. Take into account for the criteria in determining construction loads as a minimum, construction phase earth and hydrostatic loads; construction loads including jacking forces and forces resulting in eccentric loading of a deviated pipeline; loads from handling and storage and loads from jacking operations including face loads and frictional forces along the pipeline.

B. Compatibility – Utilize MT techniques fully compatible with ground stabilization and ground water control methods. Utilize methods fully compatible with the ground conditions as found in the geotechnical information.

02075.09 JOB CONDITIONS

A. Submit an emergency/contingency plan that includes, but is not limited to, the following requirements:

1. A work plan/method statement for removal of obstructions.

2. Frictional jacking forces reaching the design capacity of the jacking pipe, jacking frame, or thrust wall.

3. Thrust block deforming excessively under jacking loads due to inadequate ground support behind the thrust block.

4. Damage to jacking pipe.

B. Safety requirements:

1. Perform work in a manner to maximize safety and avoid exposure of workers and equipment to hazardous and potentially hazardous conditions.

2. Whenever there is an emergency or stoppage of work which may potentially endanger surface facilities such as roads and utilities, water crossings, or adjacent structures, operate a full work force for 24 hours a day, including weekends and holidays, without intermission until the emergency or potentially hazardous conditions no longer jeopardize the stability and safety of the Work.

3. Perform MT operations in a manner that will minimize the movement of ground in front of and surrounding the pipeline. Minimize settlement of the surface. Prevent damage to structures and utilities above and in the vicinity of the underground operations.

4. Support the ground continuously in a manner to prevent loss of ground and keep the perimeters and face of the tunnel and the shaft bases stable.

C. Air quality:

Conduct operations by methods and with equipment that will positively control dust, fumes, vapors, gases, or other atmospheric impurities in accordance with OSHA, Federal, State, County and City requirements.

D. Ground conditions:

Review all available geotechnical and other data to enable proper design of the works by the construction technique selected to the alignments and locations shown on the Drawings and all other requirements of the Contract Documents. Where necessary, make additional investigations to ensure that to the maximum extent possible the selected techniques will satisfactorily complete the works of this Contract. Assume full responsibility to judge the geotechnical conditions and how such conditions will affect the means, methods and progress of the work.

02075.10 MATERIALS

A. Steel Casing Pipe:

1. Provide steel pipe for jacked casing pipe meeting the requirements of ASTM A 53, Grade B or ASTM A 139, Grade B.

2. Casing pipe to be of leak resistant construction capable of withstanding the jacking loads in combination with loads caused by two passing HS-20 trucks for highway crossings. Provide seamless pipe or pipe having not more than one longitudinal weld and meeting the following dimensional tolerances:

- Roundness – Maximum acceptable difference between the inside diameters at any point along a length of casing is 1/2 percent of the nominal diameter.

- Circumference – The outside circumference at any point in length of the pipe is one percent of the nominal circumference or within 1/2 inch, whichever is less.
- Straightness – The maximum allowable straightness deviation is 1/8 inch for any length of pipe.
- End of pipe – When measured with a straight edge and square along the end of the pipe, the pipe shall be within 1/16 inch per foot of diameter with a maximum deviation of 1/4 inch.

3. Design the minimum wall thickness based on the construction loads, criteria and all other applicable loads. Provide pipe with minimum wall thickness for highway crossings in accordance with the Florida Department of Transportation (FDOT). In no case provide casing with wall thickness less than is shown on the plans.

4. Provide casing pipe with outside diameter as shown on the Plans.

5. Connect adjacent pieces of steel pipe during MT operations by a machined integral press fit connection such as Permalok or equal, as long as loading and installation design criteria are met. Provide field buttwelding joints with full penetration single-vee groove, butt type welds around the entire circumference of the pipe only where such welding will not interfere with the continuous advancement of the cutter head while under roadway pavement. Press fit connections must be installed in accordance with the manufacturer's recommendations. If using machined integral press fit connections with radial bending joints, provide a layout drawing that identifies each piece of casing pipe, and mark each pipe segment with a unique ID that identifies the location of the pipe per the layout drawing.

6. Drill an adequate number of 2-inch diameter holes at not greater than 5-feet on center alternating 30-degrees with a vertical plane through the casing pipe, before installation to check for voids after the casing pipe is installed. Tap the holes for plugs. Furnish and install plugs.

B. Bentonite – Provide neat bentonite that is high quality Wyoming bentonite or equal.

C. Polymers – Provide non-toxic polymers when used as pipe lubricants or additives to the bentonite.

D. The use of slurry additives other than bentonite or polymers will require the approval of the ENGINEER.

02075.11 EQUIPMENT

A. Microtunneling (MT) Equipment

1. Provide a closed face capable of providing positive supporting pressure to the

full excavated area (face) at all times that must have the capability of controlling and measuring the pressure at the face. Achieve the balancing of earth and groundwater pressures by the use of slurry pressure, auger earth pressure balance or a combination of the two. Utilize a system capable of any adjustment required to maintain face stability for anticipated ground conditions. For equipment that uses slurry spoil transportation, control the earth and groundwater pressure at the face by the use of variable flow slurry pumps, pressure control valves and a minimum of two flow meters, one on the feed side and one on the return side.

2. Have sufficient power and ability in normal operation to cut or crush material of sizes up to one-third the internal diameter of the casing pipe and up to 20,000 psi compressive strength.

3. Have ability to control axial rotation to within +/- 3-degrees of normal operating datum.

4. Have the ability to articulate and steer to correct vertical and horizontal deviation from alignment datum by the remote activation of at least two steering jacks and a fixed link or three steering jacks.

5. Have a means to inject lubricant over the lead casing pipe.

6. Have a spoil transportation system that has the capacity for removal of spoil in balance with the excavation and advance.

7. If a slurry system is utilized, have a spoil separation system with sufficient capacity to remove solids from the flow while the system is excavating spoil, and operates in such a manner that recirculated or excess fluid can be discharged safely and with negligible remaining fines.

8. Have a guidance control system which accurately observes the boring machines vertical and horizontal displacement from a laser beam datum which has been accurately set to the required alignment and grade of the pipeline being installed.

9. Have a main jacking station at the driving shaft capable of exerting uniform load to the pipe ring and at a speed commensurate with the speed of excavation advance. Set the jacking hydraulic circuit to relieve pressure at the maximum safe working capacity of the casing pipe as established by the casing pipe manufacturer.

10. Provide intermediate jacking stations (IJS):
    - When the maximum anticipated jacking force exceeds 70 percent of the maximum allowable jacking force.
    - When the main jacks do not exceed the maximum anticipated jacking force by at least 20 percent.

- Capable of withstanding the maximum jacking force and construction load with a minimum Factor of Safety of 2.0.
- For drives over 500 feet, provide a minimum of two IJS on-site and ready for use at all times during the drive. Mount one of the two IJSs provided directly behind the machine.

02075.12 PREPARATION

A. Select means and methods for MT operations to ensure safety of the work, CONTRACTOR'S employees, ENGINEER, OWNER, the public, and adjacent property, whether public or private.

B. Maintain clean working conditions in the work zone and remove spoil, debris, equipment, and other material not required for the operation.

C. For construction below railroads, highways and utilities, perform the installation so as to prevent interference or disruption with the normal operation of these facilities.

D. Provide power generation equipment and any other equipment operating on or with fuel or lubrication oils with suitable barriers and safeguards to ensure no loss of oils to drains or watercourses or to contaminate the ground.

E. Locate shafts as required for the direction of MT shown on the Plans. Assume sole responsibility for selection of additional shaft sites for the CONTRACTOR'S convenience.

E. Make the size of the shaft such that adequate room is provided to meet operational requirements for the MT construction process, pipe installation and for backfilling

02075.13 INSTALLATION

A. Tolerances

1. Install casing pipe to within +/- 3 inches of the vertical and horizontal alignment shown on the contract Drawings.

2. Steering corrections made to the pipeline shall be carried out in such a manner that the joint to joint angle of any two adjacent pipes does not exceed 0.5 degrees.

3. If the jacked casing/support system is off design line or grade by an amount that requires redesign of the pipeline or associated structures, do so at no additional cost.

B. Obstructions

1. Define obstructions as an object or feature, larger than 30% of the outer diameter of the shield or cutter head (whichever is larger), that lies completely or partially within the cross-sectional area excavated by the machine and prevents forward movement of the microtunneling machine after all diligent efforts to break up the object and to advance past the object by the CONTRACTOR have failed.

2. If the microtunneling operations should encounter an object or condition that impedes the forward progress of the machine, the CONTRACTOR shall notify the ENGINEER immediately. The CONTRACTOR shall submit a plan to correct the condition, and remove, clear, or otherwise make it possible for the microtunneling machine and jacked pipe to advance past any and all objects or obstructions that impede forward progress of the machine. Upon written notification of the ENGINEER, the CONTRACTOR shall immediately proceed with removal of the object or obstruction by means of an obstruction removal shaft or by other approved methods, as submitted by the CONTRACTOR. The CONTRACTOR will receive compensation for removal of obstructions. Obstructions are as defined in Paragraph 02075.13 B. 2. Payment will be negotiated with the CONTRACTOR by the ENGINEER on a case-by-case basis. However, any removal process that does not allow direct inspection of the nature and position of the obstruction will not be considered for payment. The CONTRACTOR will receive no additional compensation for removing, clearing, or otherwise making it possible for the microtunneling machine to advance past objects consisting of cobbles, boulders, wood, non-reinforced concrete, and other nonmetallic objects or debris with maximum lateral dimensions less than 30% of the outer diameter of the shield or cutterhead, whichever is larger.

3. Allow ENGINEER visual access to verify object(s).

C. Alignment Establishment

1. The baseline and benchmarks are shown on the Plans. Check the baseline and benchmark at the beginning of the work and report any errors or discrepancies to the ENGINEER.

2. Use baselines and benchmarks to develop and maintain the reference control lines and grades for the installation of the casing pipe.

3. Establish and be responsible for accuracy of control for all aspects of the work at all times.

4. Establish construction control points sufficiently far from the operation not to be affected by ground movement.

D. Grouting

1. Within one week of completion of jacking operations for each drive, and with the pipe in its final position, fill under pressure any remaining annulus void around the periphery of the pipe with a cement-based grout in accordance with Section 02431 – Contact Grouting. Place grout, even when the annulus is known to contain bentonite or polymer lubricant. Inject grout through ports, around the pipe along the entire length of the alignment.

E. Installation of Carrier Pipe

1. Install water main in new casing pipe as shown on the Plans and as specified and in accordance with the manufacturer's recommendations and approved shop drawings.

2. Secure casing spacers to the carrier pipe at 6-foot intervals, or as required by the casing spacer manufacturer, inside the casing pipe. Arrange the supports to provide support for and to prevent floatation or shifting of the carrier pipe.

3. Provide casing spacers comprised of a shell of 14-gauge (minimum) Type 304 stainless steel with runners of ultra high molecular weight polymer as manufactured by Cascade Waterworks Manufacturing Company, Yorkville, IL, or equal. Line the shell with isolation material such as rubber or PVC and support the runners with Type 304 stainless steel risers. Provide the number of runners as recommended by the manufacturer. Provide calculations prepared by the manufacturer, or a Florida Licensed Professional Engineer, indicating the structural adequacy to support the specified intended loads. Fill the annular space between the casing and carrier pipe with grout in accordance with Section 02665 – Carrier Pipe Installation and Backfill.

F. Electrical Work: Comply with latest NEC, National Electrical Safety Code, ANSI, State and local Codes.

1. Use electrical power of 480 volts or less in shafts and tunnels

2. Properly ground electrical equipment

G. Lighting: Use lighting fixtures in all shafts and stairwells with fixtures, wattages, and guards meeting OSHA standards.

1. Furnish and install floodlights of an approved make for the illumination of the yards and ground adjacent to shafts meeting OSHA standards.

F. Shaft construction:

1. Install seal slab immediately following excavation to full shaft depth. Construct shaft seal slab in dewatered conditions to provide a homogeneous impermeable slab. Keep shafts dewatered until the seal slab has gained sufficient strength to counteract all forces that may act upon it. Provide drainage of the shaft bottom, including any under drains, as required by the encountered conditions. Install structural seal slab, as designed by CONTRACTOR's Professional Engineer. Design and install shaft break-outs and break-ins for temporary support of the MTBM during shaft exit and entry.

2. Grout any voids or seepage paths around shafts and adjoining tunnels immediately upon detection. Grout shaft linings sunk by the caisson method immediately following completion of sinking operations.

3. Thrust Block: Incorporate thrust blocks or suitable reactions needed for jacking equipment.

4. Surface Water Control. Divert surface water runoff from the shaft and protect the shafts from infiltration or flooding by surface water, including discharge from any dewatering operation.

5. Construct a suitable guardrail barrier around the periphery of the shaft, meeting applicable safety standards. Properly maintain the barrier throughout the period the shaft remains open. Repair broken boards, supports, and structural members. In addition, provide a full cover or other security barrier for each access shaft in which there is no construction activity or which is unattended by the CONTRACTOR's personnel.

6. Security fencing is required for all sites.

02075.14 GROUND/STRUCTURE MOVEMENT MONITORING

A. General requirements.

1. Carry out operations to minimize settlement and/or heave of the ground and nearby buildings and structures and be responsible for all damage due to settlement consolidation or heave from and construction induced activities.

2. Submit a settlement surveying and monitoring plan for review prior to construction. Identify the location of settlement monitoring points, reference benchmarks, and procedures and reporting formats.

3. Utilize surface monitoring points established at the ground surface suitably guarded and capable of withstanding HS-20 truck loading.

4. Establish benchmarks sufficiently removed from the construction to avoid errors in readings due to ground movement

5. Conduct the work in a manner such that settlements do not exceed 0.50 inches. In the event of objectionable movement (in excess of 0.5 inches) of the ground surface, structure or utility being monitored, stop, notify ENGINEER and secure the work. Before proceeding, provide corrective action plan to the ENGINEER within 24 hours and implement corrective action plan at CONTRACTOR's own expense. In the event of objectionable movement (in excess of 0.75 inches) of the ground surface, structure or utility being monitored, investigate damage that may have occurred and restore utility to original line and grade to mitigate damage, at the CONTRACTOR's own expense.

B. Surveying

1. Monitor the following minimum survey points at crossings:
   - Any Road Being Crossed by Microtunneling - Both edges of travel lanes being crossed and the center of road.
   - Any Railway Being Crossed by Microtunneling – Both edges of CSX property and if required by CSX monitoring of actual tracks.

2. Commence taking readings when the MT operation commences. Take readings daily. Continue monitoring for at least 1 week after completion of any drive section.

3. Immediately report to the ENGINEER any movement in excess of 0.10-inch, cracking, or settlement which is detected and take immediate remedial action in accordance with 02075.14 A. 5. above. Assume full responsibility for any damage caused.

END OF SECTION

SECTION 02100

DEMOLITIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required for demolitions, removal and disposal WORK.

2. Included, but not limited to, are demolition and removals of existing materials, equipment, or work necessary to install the WORK as shown and specified and to connect same with existing work in an approved manner.

3. Demolitions and removals, which may be specified under other Sections, shall conform to requirements of this Section.

4. CONTRACTOR shall pay for all disposal fees.

B. Related Sections:

1. Section 02220, Excavating, Backfilling, and Compacting.

1.2 SUBMITTALS

A. Schedule:

1. Submit proposed methods, equipment and operating sequences. Including, but not limited to, coordination for shut-off and start-up.

1.3 JOB CONDITIONS

A. Protection:

1. Perform all demolition and removal WORK to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

2. Closing or obstructing of roadways, sidewalks, and passageways adjacent to the WORK by the placement or storage of materials will not

be permitted, and all operations shall be conducted with a minimum interference to traffic on these ways.

3. Erect and maintain barriers, lights, sidewalk sheds and other necessary protective devices.

4. Repair damage to facilities to remain, or to any property belonging to the OWNER.

B. Scheduling:

1. Carry out operations so as to avoid interference with OWNER operations and work in the existing facilities.

C. Notification:

1. At least 48 hours prior to commencement of a demolition or removal, notify ENGINEER, in writing, of proposed schedule thereof. OWNER will inspect the existing equipment and mark for identification those items, which are to remain the property of the OWNER. Do not start removals without the permission of the ENGINEER.

D. Explosives:

1. Do not bring explosives on site nor use explosives without written consent of authorities having jurisdiction. Such written consent will not relieve CONTRACTOR of total responsibility for injury or damage caused by CONTRACTOR'S blasting operations.

2. Perform all blasting, if permitted, in compliance with applicable governing regulations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. All materials and equipment removed from existing work shall become the property of CONTRACTOR, except for those which the OWNER has identified and marked for their use. All materials and equipment marked by the OWNER to remain the property of the OWNER shall be carefully removed by CONTRACTOR so as not to be damaged, and shall be cleaned and stored on or adjacent to the Site in a protected location specified by the ENGINEER or loaded onto trucks provided by the OWNER.

B. CONTRACTOR shall dispose of all demolition materials, equipment, debris, and all other items not marked by the OWNER to remain, off the Site and in conformance with all existing applicable laws and regulations.

C. Surfaces of walls, floors, ceilings, or other areas which are exposed by any of the removals specified herein, and which will remain as architecturally finished surfaces shall be repaired and re-finished by CONTRACTOR with the same or matching materials as the existing adjacent surface or as may be otherwise approved by the ENGINEER.

D. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.

2. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the WORK.

3.2 STRUCTURAL REMOVALS

A. Remove structures to the lines and grades shown, unless otherwise directed by the ENGINEER. Where no limits are shown, the limits shall be 4-inches outside the item to be installed. The removal of masonry beyond these limits shall be at CONTRACTOR'S expense and these excess removals shall be reconstructed to the satisfaction of the ENGINEER, with no additional compensation to CONTRACTOR.

B. All concrete, brick, tile, concrete block, roofing materials, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the Site, unless otherwise approved by the ENGINEER. Demolished items shall not be used in backfill adjacent to structures or in pipeline trenches.

C. After removal of parts or all of masonry walls, slabs and like work which tie into the WORK or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and surface exposed.

D. The jambs, sills and heads of any windows, passageways, doors, or other openings cut into the WORK or existing work shall be dressed with masonry, concrete or metal to provide a smooth, finished appearance.

E. Where anchoring materials including bolts, nuts, hangers, welds and reinforcing steel, are required to attach the WORK to the existing work they shall be included under this Section, except where specified elsewhere.

3.3 MECHANICAL REMOVALS

A. Mechanical removals shall consist of dismantling and removing of existing piping, pumps, motors, equipment and other appurtenances as specified, shown, or required for the completion of the WORK. Mechanical removals shall include cutting, capping, and plugging as required.

B. When underground piping is to be altered or removed, the remaining piping shall be properly capped. Abandoned underground piping may be left in place, unless it interferes with the WORK or is shown or specified to be removed.

3.4 ELECTRICAL REMOVALS

A. Electrical removals shall consist of the removal of existing transformers, distribution switchboards, control panels, motors, conduits and wires, panelboards, and miscellaneous electrical equipment all as shown, specified, or required to perform the WORK.

B. All existing electrical equipment and fixtures to be removed shall be removed with such care as may be required to prevent unnecessary damage, to keep existing systems in operation and to keep the integrity of the grounding systems.

C. Motors shall be disconnected and removed where shown or specified. Motors not designated by the OWNER to be salvaged shall be removed from the Site. Motors or other electrical gear designated for reuse shall be stored in enclosed, climate controlled storage.

D. Conduits and wires shall be abandoned or removed where shown. All wires in abandoned conduits shall be removed, salvaged, and stored. The wire shall be removed back to the power source or control panel. Abandoned conduits concealed in floor or ceiling slabs, or in walls, shall be cut flush with the slab or wall at the point of entrance. The conduits shall be suitably plugged and the area repaired in a flush, smooth manner approved by the ENGINEER. Exposed conduits, junction boxes and other appurtenances and their supports shall be disassembled and removed from the Site. Repair all areas of the WORK to prevent rust spots on exposed surfaces.

E. Where shown or otherwise required, wiring in the underground duct system shall be removed. All such wiring shall be salvaged and stored as specified. CONTRACTOR shall verify the function of all wiring before disconnecting and removing it. Ducts that are not to be reused shall be plugged where they enter buildings and made watertight.

F. Where shown, direct-burial cable shall be removed. All such wiring shall be salvaged and stored, as specified. CONTRACTOR shall verify the function

of all wiring before disconnecting and removing it. All openings in buildings for entrance of direct-burial cable shall be patched and made watertight.

G. Existing panelboards, where shown, shall be removed and disposed of off the Site. Where shown or specified, they shall be replaced with panelboards at the same or adjacent locations. All cutting and patching necessary for the removal and replacement of panelboards shall be performed.

H. Other miscellaneous electrical equipment shall be removed and disposed of off the Site, as required. Care shall be taken in removing all equipment so as to minimize damage to architectural and structural members. Any damage incurred shall be repaired.

3.5 ALTERATIONS AND CLOSURES

A. Alterations shall conform to the CONTRACT DOCUMENTS and the directions and approvals of the ENGINEER.

B. Where alterations require cutting or drilling into existing floors, walls, and roofs, the holes shall be repaired in a manner acceptable to the ENGINEER. CONTRACTOR shall repair such openings with the same or matching materials as the existing floor, wall, or roof or as otherwise approved by the ENGINEER. All repairs shall be smoothly finished, unless otherwise approved by the ENGINEER.

C. Openings in existing concrete slabs, ceilings, masonry walls, floors and partitions shall be closed and sealed as shown or otherwise directed by the ENGINEER. The WORK shall be keyed into the existing work in a manner acceptable to the ENGINEER. Reinforcing steel shall be welded to the existing reinforcing. Welding shall conform to AWS D12.1, Reinforcing Steel Welding Code. In general, use the same or matching materials as the existing adjacent surface. The finished closure shall be a smooth, tight, sealed, permanent closure acceptable to the ENGINEER.

3.6 CLEAN-UP

A. CONTRACTOR shall remove from the Site all debris resulting from the demolition operations as it accumulates. Upon completion of the WORK, all materials, equipment, waste, and debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION

SECTION 02220

EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall perform all excavating, grading and backfilling as required for construction as shown on the DRAWINGS, latest FDOT guidelines and specified herein. The CONTRACTOR shall furnish all additional, approved fill material required in accordance with the SPECIFICATIONS.

B. Definitions:

1. Maximum Dry Density: Maximum dry weight in pounds per cubic foot of a specific material.
2. Optimum Moisture: Percentage of water in a specific material at maximum dry density.
3. Rock Excavation: Excavation of any hard natural substance which requires the use of special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.
4. Suitable Materials: Suitable materials for fills shall be a non-cohesive, non-plastic granular local sand and shall be free from vegetation, organic material, marl, clay, silt, muck and deleterious debris. Hydric soils within wetland impact areas will be considered suitable material for the top 12-inches of backfill within the wetland impact areas.
5. Unsuitable Materials: Unsuitable materials are highly organic soil (peat or muck) classified as A-8 in accordance with AASHTO Designation M 145; clayey sands (Unified Soil Classification SC); plastic clays (United Soil Classification CL/CH); and organic debris. (This provision does not apply to the replacement of hydric soils in wetland impact areas.)

C. Plan For Earthwork: The CONTRACTOR shall be responsible for having determined the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the WORK, the general and local conditions and all other matters which can in any way affect the WORK. The CONTRACTOR shall consider, and the plan for earthwork shall reflect, the equipment and methods to be employed in the excavation, backfilling and compaction operations. No claims for extras based on soil or rock sub-strata or groundwater table conditions shall be allowed.

D. Trench Safety Act: The CONTRACTOR shall be responsible for complying with the Trench Safety Act (90-96, Florida Law) and OSHA Safety Standards for trench excavations, at a minimum.

1.2 QUALITY ASSURANCE

A. A Testing Laboratory shall be employed by the CONTRACTOR. The CONTRACTOR shall schedule the WORK so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of the progress. Costs for soil testing and re- testing shall be paid by the CONTRACTOR.

1.3 PROTECTION

A. Trench Cut Slopes: Trench cuts shall be sloped to guard against sidewall sloughing or collapse.

B. Pumping and Drainage:

1. The CONTRACTOR shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. All fill material shall be subject to the approval of the ENGINEER.
2. All fill material shall be free of organic material, trash, deleterious debris, roots, clay balls, rubble or other objectionable material (except for hydric soils as detailed here-in).
3. Excess or unsuitable material shall be removed from the job site by the CONTRACTOR at no additional cost to the OWNER.

B. Common Fill: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than one-half (½) inch in diameter. It shall have physical properties which allow it to be easily spread and compacted. Additionally, common fill shall have no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

C. Select Fill: Select fill shall be as specified above for common fill, except that the material shall contain no stones larger than ¼ inch in largest dimension, and shall be no more than 12 percent by weight finer than the U.S. No. 200 mesh sieve.

D. Crushed Stone: Crushed stone shall be FDOT #57 washed and graded stone.

PART 3 - EXECUTION

3.01 EXCAVATION

A. Excavating for Roadways/Structures/Utilities:

1. Excavation shall be made to such dimensions as shall give suitable room for maintenance of traffic, building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.

a. Pipeline: Excavation shall be to the design elevation as shown on the DRAWINGS unless unsuitable subgrade materials are encountered at the bottom of the pipeline excavation, in which case these unsuitable materials shall be undercut and removed a minimum of 24-inches below the bottom of the pipeline and shall be replaced with compacted approved select fill or crushed stone before placing the pipe. All organic laden sands or debris beneath the pipe bottom level shall be completely removed from beneath the pipe and replaced with compacted approved select fill or crushed stone.

b. Excavation for precast or prefabricated structures other than pipeline shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the bedding material. Prior to placing the bedding material, the excavation shall be sounded, if not dewatered, using a rigid pole to indicate to the satisfaction of the ENGINEER that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

c. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation is leveled and left ready to receive the WORK. Material disturbed below the foundation elevation in dewatered excavations shall be replaced with Class B concrete.

d. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

2. The CONTRACTOR shall immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of the WORK.

3. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the DRAWINGS and shall anticipate the encounter of unknown obstructions during the course of the WORK.

4. Encounters with subsurface obstructions shall be hand excavated and immediately brought to the attention of the ENGINEER.

5. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. Subgrade soils which become soft, loose, "quick" or otherwise unsatisfactory for support of pipes or structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced with crushed stone as required by the ENGINEER at the CONTRACTOR'S expense.

6. All pavements shall be cut prior to removal, with saws or power tools approved by the ENGINEER.

7. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

8. All locations and elevations as required herein shall be permanently documented by the CONTRACTOR, on the AS-BUILT DRAWINGS.

9. Hydric soils within designated wetland impact areas shall be segregated and stockpiled separately during excavation. Excavation and stockpiling of hydric soils shall be in accordance with all appropriate permits.

3.3 UNDERCUT

A. If the bottom of any excavation is below that shown on the DRAWINGS or specified because of CONTRACTOR error, convenience, or unsuitable natural bedding material or subgrade due the CONTRACTOR'S excavation or dewatering methods, the excavation shall be refilled to the specified bottom of excavation grade with compacted approved select fill or crushed stone at no cost to the OWNER. Compaction method shall be as approved by the ENGINEER.

3.4 FILL AND COMPACTION

A. The CONTRACTOR shall compact and backfill excavations and construct embankment according to the following schedule. (Proctor Requirement shall be ASTM D-1557, modified Proctor):

Area	Material	Compaction
1. Pipe Bedding	Common Fill or Crushed Stone	95% of maximum dry density by modified Proctor method (in 12" loose lifts if additional bedding material is required).
2. Pipe Trench Backfill	Common Fill	12" loose lifts, 95% of maximum dry density by modified Proctor method

			(98% under roadways and drives). Note: Above the top of the pipe only, backfill material with a maximum fines content of 20% may be used.
3.	Bedding Beneath Structures(other than pipeline) and Beneath Buried Valves	Common Fill or Crushed Stone	12" loose lifts, compacted to 98 % of maximum dry density by modified Proctor method. Fill shall not be placed over any in-place soils until those deposits have been compacted to 98% modified Proctor.
4.	Backfill Around Structures	Common Fill	8" loose lifts, 98% of (other than pipeline) maximum dry density by modified Proctor method.

B. Excavations shall be backfilled to the original grade or as indicated on the DRAWINGS. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all LAWS AND REGULATIONS and in such a manner that it does not create a nuisance or safety hazard. Care shall be used in operating compaction equipment to avoid damage to pipe or structures. Pipe bedding and trench backfill shall be firmly tamped under the pipe haunches along both sides of the pipe at the same time, taking care not to lift up the pipe off its bed. Backfilling shall continue by bringing the fill up equally on each side of the pipe to avoid displacing the pipe laterally.

C. After the pipe bedding has been compacted to the required density, tested and accepted by the ENGINEER; and prior to pipe placement, the pipe bedding materials shall be scarified or loosened (by a method and to a depth approved by the ENGINEER) to a depth of 6-9 inches for the entire width and length of the pipe to allow the pipe to be saddled by the loosened bedding. After the loosening method has been approved by the ENGINEER during initial pipe placement, the CONTRACTOR shall proceed with this approved procedure for the entire length of the pipeline, unless otherwise determined unacceptable by the ENGINEER.

D. Embankments shall be constructed true to lines, grades and cross sections shown on the DRAWINGS or ordered by the ENGINEER. Embankments shall be placed in successive layers of not more than 8 inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the WORK during the construction phase shall be distributed so as to cover the maximum surface area of each layer.

E. If the CONTRACTOR requests approval to backfill utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the ENGINEER. Approval will be considered only after the CONTRACTOR has performed tests, at the CONTRACTOR'S expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The ENGINEER'S approval shall be in writing.

F. Hydric soils stockpiled during excavation shall be replaced within the top 12-inches of wetland impact areas and in accordance with all applicable permits.

3.5 DISPOSAL

A. The CONTRACTOR shall properly dispose of all excess or unsuitable material at no additional expense to the OWNER.

END OF SECTION

SECTION 02270

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. The CONTRACTOR shall furnish all necessary labor, equipment, material and transportation necessary to provide temporary and permanent erosion and sediment control, stormwater pollution prevention and associated inspection, maintenance and reporting, all as required by appropriate government agency permits, the DRAWINGS and this SPECIFICATION.

1.2 SUBMITTALS

A. The CONTRACTOR shall submit a site-specific erosion control plan at least fifteen (15) DAYS prior to commencing the WORK for review by the ENGINEER.

B. Prior to commencing the WORK, the CONTRACTOR shall provide a detailed PROGRESS SCHEDULE to indicate dates of major grading activities and determine sequencing of soil disturbing activities on all portions of the site.

PART 2 - PRODUCTS

2.01 STABILIZATION CONTROLS

A. Stabilization shall consist of seeding and mulch, in accordance with the appropriate sections of the SPECIFICATIONS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The CONTRACTOR shall install temporary erosion and sediment control items in the area where construction activities are to commence prior to WORK in said area.

B. No disturbed area shall be denuded for more than thirty (30) calendar days unless otherwise authorized by the ENGINEER or OWNER. During construction, denuded areas shall be covered by mulches such as straw, hay, filter fabric, seed and mulch, sod, or other permanent vegetation.

C. The CONTRACTOR shall install temporary or permanent stabilization as soon as possible for areas of the site where construction activities have ceased, but in no case shall the time be greater than fourteen (14) calendar days after the construction activity has temporarily or permanently ceased.

D. Off-site runoff shall be diverted away or through the construction area.

E. Stabilized Construction Entrance: The CONTRACTOR shall provide a stabilized construction entrance for vehicles entering or exiting onto public roads. Stabilized construction entrances shall be provided for both on site and off site locations of stockpiled material. The CONTRACTOR shall be responsible for monitoring the system and modifying the system or procedures as needed, with the written approval of the OWNER.

F. Dewatering: Installation of the pipeline may require temporary dewatering prior to construction. The CONTRACTOR shall be responsible for discharging the dewatering flow to a temporary settling basin such as areas created by staked hay bales in dry grassed swales or other similar settling areas, however at no time shall the CONTRACTOR discharge dewatering flow directly to wetland areas.

G. Protection and Stabilization of Soil Stockpiles: Fill material stockpiles shall be protected at all times by on-site drainage controls which prevent erosion of the stockpiled material. Control of dust from such stockpiles shall be required.

H. Sediment Trapping Measures: Sediment basins and traps, perimeter berms, filter fences, berms, sediment barriers (hay bales), vegetative buffers and other measures intended to trap sediment and/or prevent the transportation of sediment onto adjacent properties, or into existing water bodies; shall be installed prior to commencement of construction.

3.2 MAINTENANCE AND REPAIRS OF CONTROLS

A. The CONTRACTOR shall be responsible for maintenance and repairs of erosion and sediment control devices, and removal of erosion and sediment control devices after SUBSTANTIAL COMPLETION of the WORK.

B. Maintenance and repair of the controls for abatement of erosion and water pollution shall be included in the CONTRACT PRICE.

C. All control measures shall be maintained daily by the CONTRACTOR. All measures shall be maintained in good working order. If a repair is necessary, it shall be initiated within 24 hours.

D. Built-up sediment shall be removed from silt fences and staked turbidity barriers should it reach one-third the height of the fence.

E. Temporary and permanent seeding and planting shall be inspected for bare spots, washouts, and healthy growth.

F. Stabilized construction entrances shall be maintained to prevent clogging of rock bedding which may impede the usefulness of the structure.

3.3 OTHER CONTROLS

A. Waste Disposal: The CONTRACTOR shall provide litter control and collection during construction activities. Litter and waste shall be cleaned daily from the construction area. All fertilizer, hydrocarbon, or other chemical containers shall be disposed of by the CONTRACTOR according to EPA's standard practices as detailed by the manufacturer. No solid materials including building and construction materials shall be discharged to wetlands or buried on-site.

B. Off-Site Vehicle Tracking: The CONTRACTOR shall control off-site vehicle tracking by covering loaded haul trucks with tarpaulins, removing excess dirt on roads daily and maintaining the stabilized construction accesses.

C. Sanitary Waste: The CONTRACTOR shall be responsible for all sanitary waste to be collected from portable units by a licensed sanitary waste management contractor as required by LAWS AND REGULATIONS.

3.4 INSPECTION

A. All erosion and water pollution abatement and control measures shall be inspected daily by the CONTRACTOR and make any necessary maintenance or repairs.

B. The cost of the CONTRACTOR'S inspections and reporting required for the control and abatement of erosion and water pollution shall be included in the proposed CONTRACT PRICE.

3.5 TRACKING AND REPORTING

A. The CONTRACTOR shall submit with the PROGRESS REPORT a report to the OWNER and the ENGINEER documenting the daily inspections, maintenance or repairs to the erosion and sediment control devices.

END OF SECTION

SECTION 02410

SHAFT EXCAVATION AND SUPPORT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall design, furnish, install, and maintain a system of temporary supports, including all bracing and associated items, to retain excavations in a safe manner, to control ground movements and to control groundwater inflows. Upon completion of the required excavation and pipe installation, the CONTRACTOR shall remove the support system and backfill the excavations, as specified. Certain types of shoring may be cut off below grade and left in place below a specified depth. This section covers requirements for all shafts to be constructed under this Contract.

B. The CONTRACTOR shall have sole responsibility for sizing the shaft excavations to accommodate shoring, bracing, pipe and pipe installation to the specified lines, grades and tolerances to meet the CONTRACTOR's means and methods. The shafts shall also be sized to facilitate construction of connections, valves, vaults, manholes, and other permanent structures shown on the Plans.

C. The work shall include site grading; temporary access road construction; fencing and signage; construction staging areas; design and construction of shaft excavations and excavation support systems; material disposal; control and disposal of infiltrating groundwater, surface water, and construction water; backfilling and abandoning shafts; and site restoration.

D. Groundwater is anticipated above the elevation of the shaft floor, acceptable shaft types include drilled secant piles, drilled shafts, slurry panel walls, cutter soil mixing walls, sunken caissons, and interlocking sheet piles. The following shaft construction methods shall not be allowed: soldier piles and lagging, trench boxes, speed shores, or sloped open excavations in soil.

1.02 RELATED SECTIONS

A. SECTION 02075, MICROTUNNELING

B. SECTION 02665, CARRIER PIPE INSTALLATION AND BACKFILL

C. SECTION 02431, CONTACT AND VOID REPAIR GROUTING

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. ANSI/AWS D1.1 - Structural Welding Code.

B. ASCE/CI 36-15 – Standard Design and Construction Guidelines for Microtunneling

C. ASTM A 36 - Standard Specification for Carbon Structural Steel.

D. ASTM A 328 - Standard Specification for Steel Sheet Piling.

E. Florida Department of Transportation Standard Specifications for Road and Bridge Construction

1.04 SUBMITTALS

A. Submittals shall be made in accordance with Section 01300, SUBMITTALS AND SUBSTITUTIONS.

B. CONTRACTOR Qualifications and Experience: The CONTRACTOR performing the work specified herein shall have successfully completed at least three (3) shafts using the proposed shaft construction methods of similar size, depth, and complexity, and in similar ground conditions, within the past five (5) years.

C. The following submittals are required at least 30 days prior to the start of shaft excavation:

1. Shaft construction is a specialized type of construction. The CONTRACTOR shall provide proof of successful experience with shaft construction at the depths required, in the ground and groundwater conditions expected, with the shaft wall support/lining systems proposed, and with the equipment to be used.
2. The CONTRACTOR shall provide proof that the assigned shaft construction superintendent shall have had at least five (5) years of shaft and excavation construction experience and shall have worked on at least two (2) similar projects within the past five (5) years using similar types of equipment required for this WORK and in similar ground and groundwater conditions.
3. Name and qualifications of Civil Engineer, registered in the State of Florida, responsible for the design of the excavation support system. The Civil Engineer responsible for the design shall have a minimum of 15 years of experience in the design of similar structures for support of excavation of shafts and for launching and receiving a microtunnel machine as appropriate for the shaft. All designs and shop drawings shall be signed and sealed by the approved design engineer meeting these qualifications.

D. The following submittals and shop drawing information shall be submitted, complete, for each shaft or support system, at least 30 days prior to the start of shaft excavation:

1. Proposed schedules and methods of construction, equipment, facilities, method for removal of spoil from shaft excavation, and any other pertinent details.
2. For each shaft excavation, provide scaled drawings (plan and section views with dimensions and sizes) showing the proposed shaft support elements including connection details and installation sequence in relation to the excavation; groundwater control provisions; adjacent and nearby existing structures and utilities; details of all pipe penetrations; work areas for all shaft construction operations such as sheet pile storage, drilling fluid tanks, and/or caisson form storage at each site.
3. Details of procedures for preloading bracing members.
4. Methods and sequencing of excavation and installation of staged excavation support including a schedule with major milestones for shaft excavation and support such as driving of sheets, drilling secant piles, installation of reinforcement and placement of structural concrete in the caisson or secant pile, pouring of concrete working slab or plug in the base of the shaft, grouting, and dewatering of the shaft interior, etc.
5. Layout of the jacking thrust block and its reaction transfer connection details the shaft temporary support and base slab.
6. Methods and sequencing of launch/retrieval of the microtunnel boring machine through the shaft wall. Describe in detail the steps that will be taken to ensure the ground is stable and groundwater is controlled prior to boring through/removal of the shaft wall. The CONTRACTOR shall submit ground improvement methods and details of construction that will be used if necessary to stabilize soil encountered at the launch/retrieval locations to prevent inflow of ground and groundwater into the shaft.
7. An entry/ exit seal is required at each entry/ exit location. The CONTRACTOR shall also include details and drawings of the tunnel entry and exit seals that will be implemented at the launch and retrieval shafts for preventing loss of ground and groundwater inflow into the shafts.
8. Procedures for checking and maintaining plumbness of the shaft and ensuring proper elevation is reached.
9. Concrete mix information and placement procedures for the tremie plug and/or working slab. See SECTION 03300, CAST-IN-PLACE CONCRETE.
10. Contingency Plan for anticipated difficulties and proposed resolutions, including unfavorable performance of the selected construction method, excessive movement of shaft elements, tilting, flooding, settlement, and bottom heave.
11. Work Plan for backfilling of voids as required to minimize ground movement and protect adjacent property.
12. Describe procedure for control of groundwater inflows, method of maintaining bottom stability, and protection of subgrade.
13. Details for handrails and protective barriers, fences, and covers at each shaft location.
14. Method for establishing survey control and transferring line and grade to shaft entry and exit locations.

15. Plans and procedures for backfilling and removal of shaft wall components upon completion of all relevant work in the launch and retrieval shafts.
16. Procedures for disposal of excavated materials at an approved disposal site.

E. Design assumptions and calculations for each shaft or support system prepared, at least 30 days prior to starting shaft excavation, and sealed and signed by a Civil Engineer registered in the State of Florida including:

1. Calculations for the shaft support elements and all bracing, indicating it can withstand all earth and groundwater pressures, thrust forces, equipment, applicable traffic, and construction loads and other surcharge loads in accordance with the site conditions, and any other requirements described in the Contract Documents. The design shall include all elements of the support of the shaft excavations including maximum depths of excavation prior to installation of support as well as the design calculations of the thrust reaction block and the capacity of shaft wall to resist the reaction thrust if the thrust is transferred to the shaft wall.

2. Calculations for the structural design of the tremie plug and/or working slab, and uplift resistance of the shaft. Confirm that tremie plug and/or working slab weight, structural connection to shaft walls, weight of casing, determination of shaft wall embedment depth below bottom of excavation and any frictional resistance assumed along sidewalls of the shaft are adequate to resist uplift and that assumptions are reasonable and appropriate. Confirm that an adequate factor of safety against uplift of at least 1.5 is achieved under the most extreme loading conditions.

3. Estimated ground settlement and lateral deflection of each wall face and groundwater drawdown.

4. Calculations for shaft covers outside of the roadways.

F. Additional Considerations for Steel Sheet Pile Shafts for submittal at least 30 days prior to shaft excavation:

1. Describe construction sequence to be used to construct the sheet pile shafts.
2. Describe procedure for installing and sealing corners.
3. Describe procedure for installing concrete tremie plug and/or working slab to the required thickness and at the correct elevation.
4. Describe procedure for maintaining internal water head to balance external groundwater head where required based on anticipated ground and groundwater conditions and planned ground support system.
5. Describe procedures for providing control of groundwater inflows and soil inflows at launch/retrieval locations.

G. Additional Considerations for Concrete Caisson Shafts for submittal at least 30 days prior to shaft excavation:

1. Describe construction sequence and procedures to be used to construct the concrete caisson shafts including excavation, installation of steel reinforcement and placement of structural concrete. Steel reinforcement will not be permitted within the tunnel eye. If reinforcement is used at tunnel eyes it shall be Glass reinforced plastic (GRP) reinforcement.
2. Provide details for cutting shoe design on the leading caisson ring.
3. Describe procedure for installing and verifying elevation and thicknesses of tremie plug and working slab.
4. Describe procedures for providing control of groundwater and soil at launch/retrieval locations.
5. Concrete mix design whether using precast concrete segments or cast-in-place concrete segments.
6. Describe method of monitoring deviation of rings and proposed corrective measures to be implemented if necessary.

H. Additional Considerations for Drilled Shafts for submittal at least 30 days prior to shaft excavation:

1. Describe equipment to be used including cranes, drills, augers, bailing buckets, final cleaning equipment, desanding equipment, slurry pumps, core sampling equipment, triemies or concrete pumps, and shaft casing. Steel reinforcement will not be permitted within the tunnel eye. If reinforcement is used at tunnel eyes it shall be Glass reinforced plastic (GRP) reinforcement.
2. Details of overall construction operation sequence and the sequence of shaft construction in bents or groups.
3. When the use of slurry is anticipated, details of the mix design and its suitability for the subsurface conditions at the construction site, mixing and storage methods, maintenance methods, and disposal procedures.
4. Details of methods to clean the shaft excavation.
5. Details of reinforcement placement, including support and centralization methods.
6. Details of concrete placement, including proposed operational procedures for free fall, tremie or pumping methods.
7. Details of casing installation and removal methods.
8. Describe procedure for installing and verifying elevation and thicknesses of tremie plug and working slab.
9. Describe procedures for providing control of groundwater and soil at launch/retrieval locations.
10. Describe method of monitoring deviation of shaft from plumb and proposed corrective measures to be implemented if necessary.

I. Additional Considerations for Drilled Secant Pile Shafts for submittal at least 30 days prior to shaft excavation:

1. Description construction sequence and procedures to be used to construct the drilled secant pile shafts including excavation, installation of steel reinforcement and placement of structural concrete. Steel reinforcement shall not be permitted within the tunnel eye. If reinforcement is used at tunnel eyes it shall be Glass reinforced plastic (GRP) reinforcement.
2. Describe procedure for installing and backfilling the shafts, including sequence of operations and grout mixture.
3. Describe procedure for installing tremie plug and working slab to required thickness and at correct elevation.
4. Describe the procedure used to tie the shaft to the temporary support system for the adjacent riser sections of pipe, if utilized.
5. Describe procedures for providing control of groundwater and soil at launch/retrieval locations.

J. Construction Records: The CONTRACTOR shall submit the following to the ENGINEER at the times indicated.

1. Written daily progress reports shall be submitted during shaft construction. The progress reports shall have field logs recorded at intervals of five feet or less during excavation and shall be submitted to the ENGINEER within one working day of the shift for which the excavation occurred. As a minimum, the logs shall include:

    a. The date, starting time, and finish time.
    b. Equipment used and personnel on site.
    c. Actual quantities and descriptions of excavated material including soil/ rock types and presence of groundwater if encountered.
    d. Any unusual conditions, breakdowns, and delays, including problems with support, bottom instability and obstructions.
    e. Detailed description of the support installed, including sizes, lengths, spacing, and elevations relative to excavation elevation.
    f. Pumping rates from shafts and inflow conditions for all shafts or flooding levels for shafts excavated "in the wet."
    g. Deformation monitoring results, and record of action taken by the designer of record and the CONTRACTOR if deflections are excessive.

2. Results of all material and field tests shall be submitted at the end of each shift, and results of lab tests within one week of sampling.

K. Post-Construction: Within 15 days of backfill of excavations, the CONTRACTOR shall submit a detailed as-built location plan of all remaining buried shoring members including size, location, and cutoff elevation.

L. Reports and Records: The following shall be submitted daily:

1. Excavation monitoring data of horizontal and vertical deflections of shaft supports.
2. Settlement and deformation monitoring data associated with each shaft.

1.05 QUALITY CONTROL, TESTS, AND INSPECTIONS

A. The CONTRACTOR's design engineer shall provide quality control, testing, and inspection of their designs and in accordance with accepted submittals. The CONTRACTOR's design engineer shall visit the site to observe the shaft construction work in progress on at least a weekly basis or more frequently, if required by the ENGINEER, and provide an assessment of their inspection on the installation of the design engineer's approved drawings.

B. The CONTRACTOR shall coordinate with the ENGINEER regarding additional quality assurance testing to be provided at the OWNER's discretion. The CONTRACTOR shall permit free access during construction of shoring systems for the OWNER's testing staff and the ENGINEER. The CONTRACTOR shall allow access to the ENGINEER and shall furnish necessary assistance and cooperation to aid the ENGINEER in observations and data and sample collection at all times and at no additional cost to the OWNER.

C. All work shall be performed in the presence of the ENGINEER, unless the ENGINEER has granted prior approval in writing to perform such work in his absence.

D. The CONTRACTOR shall notify the ENGINEER, in writing, within 24 hours when any problems are encountered with equipment or materials, or if the CONTRACTOR believes the conditions encountered are materially and significantly different than those represented within the Contract Documents.

1.06 DESIGN CRITERIA

A. The type and design of shaft construction methods that meet the specification requirements herein are the CONTRACTOR's responsibility and shall be of a size large enough to facilitate all the necessary groundwater control, construction operations, pipeline equipment and operations, pipe jacking and tunneling or other trenchless operations, and to accommodate indicated connections to other reaches of the project. Shaft design is subject to review and approval by the ENGINEER. Allowable shaft construction options include:

1. Drilled Secant Pile Shafts
2. Drilled Shafts
3. Slurry Panel Wall Shafts
4. Cutter Soil Mixing Wall Shafts
5. Sunken Caisson
6. Sheet Piles

B. In all areas, excavation support systems shall be designed by the CONTRACTOR's design engineer to support earth pressure, unrelieved hydrostatic pressures, bottom heave, overall buoyancy, utility loads, equipment, applicable traffic loads, maximum safe jacking loads, and other surcharge loads in such manner as will allow safe construction and will prevent damage to adjacent structures (including existing highways, pipelines and utilities) and injury to workers and the public.

C. Shaft excavation support systems shall be designed to be compatible with the geologic conditions described in the geotechnical borings, including any adjacent slope support structures. Design support systems using pressures no lower than those shown on the lateral earth pressure diagrams presented in the design drawings, and a minimum factor of safety of 2.0 for lateral loads.

D. The support system shall be designed to protect adjacent utilities from damage and to limit movements to less than damaging values for deformation and groundwater variations.

E. Materials:

1. Structural Steel: ASTM A36 or better, unless approved otherwise.
2. Steel Sheet Piles: ASTM A328.
3. Concrete for cast-in-place secant piles shall be in accordance with the requirements for concrete as stated in Section 3300 CAST-IN-PLACE CONCRETE.
4. Concrete for precast caisson segments shall be in accordance with the requirements for concrete as stated in Section 3400 PRECAST CONCRETE.

F. The invert slab at each jacking or receiving shaft excavation where groundwater is above the invert of the shaft shall be designed to protect the excavation invert in accordance with these minimum design criteria:

1. Have a finished concrete tremie plug and working slab to seal the shaft from groundwater inflows and to resist uplift of the completed shaft. The tremie plug and working slab reinforcing shall be designed to structurally tie the slab to the shaft walls to take advantage of the shaft dead weight and sidewall friction in resisting uplift due to buoyancy. The minimum 28-day compressive strength of the concrete shall be 4,000 psi.
2. Be capable of resisting maximum hydrostatic uplift with an adequate safety factor, or equipped with a groundwater/pressure relief system to assure an adequate safety factor for reduced hydrostatic uplift pressures.
3. Be capable of supporting such combined dead and live loads as are required by the CONTRACTOR's means and methods.

G. Provide positive groundwater control for these shafts. Contractor is responsible for dewatering activities, monitoring and permit compliance. Contractor shall have a copy of the dewatering plan onsite.

H. Shaft support systems shall be constructed within 1% of vertical plumbness, i.e., within 1 foot in 100 feet.

I. The strength of the grout mixture used to fill the annulus between the sheet piles, or other support and the excavation shall be selected to allow the tunneling machine to excavate or advance through the grouted annulus during both launch and retrieval.

J. Interlocking Sheet Pile Shafts: Additional design criteria specific to sheet pile shafts are:

1. All corners shall be made watertight. Interlocks shall be fully engaged, or sealed by welding to prevent inflows.
2. Stability of entry and exit opening shall be confirmed by making incremental openings prior to full-size opening being cut in sheets.
3. Constructed sheet pile walls shall be designed to accommodate the maximum planned jacking forces exerted by the thrust block to the sheet pile wall without causing excessive deflection or separation of sheet piles during loading.
4. Sheet piles shall be driven or vibrated into place. Sheet piles shall be Pre-drilled as necessary to be installed.

K. Concrete Caisson Shafts: Additional design criteria specific to sheet pile shafts are:

1. A cutting shoe shall be utilized on the bottom ring of the concrete caisson to aid in sinking the ring after soil excavation.
2. If precast concrete segments are to be used for ring building, rubber gaskets shall be used between each segment and between each ring to control the inflow of groundwater.
3. Install caisson to the shaft tip elevations shown on the drawings.
4. Constructed concrete caisson walls shall be designed to accommodate the maximum planned jacking forces exerted by the thrust block to the caisson wall without causing excessive deflection or failure of caisson during loading.

L. Drilled Secant Pile Shafts: Additional design criteria specific to sheet pile shafts are:

1. The polymer or bentonite used to support the excavation shall have adequate viscosity, gel strength, and density to safely support earth and groundwater loads described in the Geotechnical Report.

2. The secant pile system shall be designed to resist lateral earth pressures and maximum groundwater pressures shown on the drawings.
3. The excavation shall be safely supported at all times during and after construction using polymer or bentonite, or any other approved means necessary.
4. Polymer or bentonite shall be disposed off site by CONTRACTOR, at CONTRACTOR's expense at an approved disposal facility.

M. Drilled Shafts: Additional design criteria specific to sheet pile shafts are:

1. The polymer or bentonite used to support the excavation shall have adequate viscosity, gel strength, and density to safely support earth and groundwater loads described in the Geotechnical Report.
2. The casing to be installed shall be designed to resist lateral earth pressures and maximum groundwater pressures shown on the drawings.
3. The excavation shall be safely supported at all times during and after construction using polymer or bentonite, or any other approved means necessary.
4. Polymer or bentonite shall be disposed off site by CONTRACTOR, at CONTRACTOR's expense at an approved disposal facility.

1.07 WARRANTY

A. The CONTRACTOR shall be solely responsible for, and bear the sole burden of cost for any and all damages resulting from improper shaft support.

B. The safety of workers, the protection of adjacent structures, property and utilities, and the installation of adequate supports for all excavations shall be the sole responsibility of the CONTRACTOR.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Shaft excavations and site development shall commence only after approval of applicable submittals by the ENGINEER. Install excavation support systems in accordance with approved submittals.

B. Before beginning excavation, instrumentation shall be completely installed, adequately protect existing structures, utilities, trees, shrubs, and other existing facilities. The CONTRACTOR shall repair damage to existing facilities at no cost to the OWNER.

C. Excavation shall be performed in accordance with the requirements of SECTION 2220, Excavating, Backfilling, and Compacting and in sequence

with installation of shaft excavation and support in a manner that limits settlement of surrounding ground and adjacent utilities, vaults, structures, or roads and to offer no hazard to building movement or occupancy, train, truck, or automobile operations.

D. The CONTRACTOR shall notify the ENGINEER not less than 15 days before beginning any shaft excavation.

E. The CONTRACTOR shall conduct all excavation, shoring, shaft support, temporary facilities, materials storage, and construction traffic within construction easements established for this project. All work shall be in accordance with applicable permits.

F. All welding shall conform to the applicable provisions of ANSI/AWS D1.1.

G. Shaft staging areas shall be completely fenced in to prevent unauthorized access at all times.

H. Any correction of shaft deviation, and any construction and associated costs resulting from relocation of appurtenances inside the shaft, including pipe connections and the launch and retrieval seals, caused by the shaft's deviation from plumb or other deficiencies in workmanship shall be accomplished at the CONTRACTOR's expense and shall not be cause for schedule extension.

I. All excavated spoils, polymers, drilling fluids, or other materials used during shaft construction shall be completely contained when stockpiled on site.

J. Pumping from shaft sumps shall not result in boils, softening of the ground, or loss of fines. Sumps shall use suitable filters or screens so that fines are not removed from the formation.

K. Tunneling shall not begin until the CONTRACTOR has pre-grouted the soils at all entry and exit locations for the planned drive and behind thrust blocks or elements where necessary and as directed by the ENGINEER to stabilize weak, running or flowing soils, in accordance with this section and accepted submittals. The CONTRACTOR has confirmed that the ground has been improved to the extent that ground will remain stable without movement of soil or water while the entry/exit location shoring is removed for break-in and break-out and while the TBM or shield is being launched or received into a shaft or during jacking operations. The progressive steps identified below shall be used to confirm suitable ground improvements for all shaft types and entry/exit locations:
    1. After the CONTRACTOR believes that they have improved the ground sufficiently outside a given shaft seal, the CONTRACTOR shall demonstrate the suitability of the improvements by cutting a 2-inch diameter hole in the shoring wall near the center of the bore. If no obvious soil and less than 5 gpm of water enters the shaft, the

CONTRACTOR may progress to the next demonstration step. If any soil or greater than 5 gpm of water enters the shaft, the CONTRACTOR shall seal the demonstration hole and improve the ground before repeating the demonstration step.

2. After successful completion of the first demonstration step, the CONTRACTOR shall demonstrate the suitability of the ground improvements by cutting a 12-inch diameter hole in the shoring wall at the location of previous demonstration hole. If no soil and less than 5 gpm of water enters, the CONTRACTOR may progress to the next demonstration step. If any soil or greater than 5 gpm of water enters the shaft, the CONTRACTOR shall seal the demonstration hole and further improve the ground before repeating the demonstration step.
3. After successful completion of the first two demonstration steps, and if the CONTRACTOR believes the ground improvements are sufficient, the CONTRACTOR may proceed with remainder of the shaft wall penetration procedures.

3.02 STEEL SHEET PILING INSTALLATION

A. Steel sheet piling shall be used to the full depth of penetration required, and to proper alignment and plumbness, without damage to the sheet piling or rupture of its interlocks.

B. Sheet piles shall be pre-drilled as necessary to be installed.

C. Sheet piles shall be driven in plumb position with each sheet pile interlocked with adjoining piles for its entire length to form a continuous diaphragm throughout the length of each run of wall, bearing tightly against original ground. Sheet piles shall be driven to the depth indicated on the approved shop drawings. Care shall be exercised in driving so that interlocking members can be extracted without damaging adjacent structures or utilities. The methods of driving, cutting, and splicing shall conform to the approved shop drawings.

D. Sheet pile corners shall be installed with interlocks properly engaged for full depth of sheet piles. If interlocks cannot be properly engaged for full depth, corner connections shall be welded continuously to seal all cracks and avoid inflows of groundwater and soils.

E. Internal supports, including wales, struts, and corner braces, shall be installed sequentially as the shaft is excavated. At no time shall the unsupported excavation depth exceed the design spacing plus two (2) feet of horizontal support members as shown on approved submittals. All internal supports shall be installed within +/- 3 inches of design locations shown on approved submittals.

F. The sheet piles shall be flush with ground surface where traffic plates are required. The sheet piles may extend not more than 5 feet above ground surface where shafts are not within traffic lanes or shoulders.

G. Safety rails shall be installed in accordance with applicable safety regulations.

3.03 INTERNAL BRACING SUPPORT SYSTEM

A. The internal bracing support system for sheet pile shafts shall include wales, struts, and/or shores where necessary.

1. Struts with intermediate bracing shall be provided to enable sheet piles to carry maximum design loads without distortion or buckling.
2. Web stiffeners, plates, or angles shall be included as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.
3. All bracing support members shall be installed and maintained in tight contact with each other and with the surface being supported.
4. Bracing members shall be preloaded by jacking struts, if necessary, to control shoring movement. Bracing members shall be preloaded in accordance with methods, procedures, and sequence as described in the submittals. Excavation work shall be coordinated with installation of bracing and preloading. Steel shims and steel wedges shall be welded or bolted in place to maintain the preloading force in the bracing after release of the jacking equipment pressure. Support and preload shall be installed immediately after installation and prior to continuing excavation.
5. Procedures that produce uniform loading of bracing member shall be used without eccentricities or overstressing and distortion of members of the system.

3.04 SECANT PILE SHAFT INSTALLATION

A. At all times during drilling, reaming, and installation of reinforcement, the drilling mud/ polymer used to support the excavation shall be maintained at or above the ground surface to safely support the excavation and resist caving and sloughing. The polymer used shall have adequate viscosity, gel strength, and density to safely support earth and groundwater conditions described in the Geotechnical Report.

B. If groundwater is present in the drilled shaft holes, the hole shall be dewatered prior to placing concrete or concrete shall be placed using tremie methods. If temporary casing is used, care shall be taken to avoid the creation of voids in the completed shaft by withdrawing the casing during concrete placement while maintaining the concrete level above the bottom of the casing.

C. Overlap of adjacent secant pile shafts shall be sufficient to prevent soil and groundwater movement into the completed Work.

D. Care should be exercised during excavation to avoid damaging the concrete shafts.

E. Any voids in the completed shaft detected during excavation shall be immediately repaired to the satisfaction of the secant pile shaft designer before excavation progresses.

3.05 CONCRETE CAISSON SHAFTS:

A. Excavate a pit to a depth not exceeding the depth of the first caisson ring plus the depth of the cutting shoe in order to set and level the first caisson ring with cutting shoe attached into the excavation.
B. Once set and level, excavate soil below the ring to begin sinking the first caisson until top of the caisson is near ground level.
C. Install the next caisson ring on top of the leading ring and repeat the soil excavation process below the rings to continue sinking subsequently installed rings.

3.06 SHAFT WALL PENETRATION

A. Shaft entry and exit seals are required to be installed completely prior to initiating penetration through the shaft wall. The CONTRACTOR shall improve the ground outside the shaft seals as necessary to ensure stability, and as specified, to facilitate launching or receiving from a shaft. Ground shall be improved to the extent that the ground will remain stable without inflow of soil or water into the shaft while the machine is being launched or received.

B. Successful completion of shaft wall penetrations and related activities necessary to demonstrate such shall be at the CONTRACTOR's sole expense.

3.07 REMOVAL OF SUPPORT SYSTEM

A. Excavation support shall not be removed until support can be removed without damage to existing facilities, completed work, or adjacent property.

B. As a minimum, excavation support shall be removed from the existing adjacent surface grade to a depth of 5 feet. As-built drawings shall be prepared showing location of temporary shoring and bracing that remains in place.

C. The design, planning, installation and removal of all supports shall be accomplished in such a manner as to maintain stability of the required excavation and prevent movement of soil that may cause damage to adjacent shoring systems, structures and utilities, damage or delay the work, or endanger life and health.

D. Excavation support shall be removed in a manner that will maintain support as excavation is backfilled and will not leave voids in backfill. Removal of the support system shall be performed in a manner that will not disturb the pipeline, the compacted backfill, or adjacent construction or facilities.

E. Any void left by shoring system or voids created by the removal of the shoring system shall be filled with lean concrete, or cement grout, as approved by the ENGINEER to provide soil support between backfill zone and the native soil.

F. Sheet piling removal shall be performed in a manner that will avoid "vibro-consolidation" of sandy or granular material below the excavation that could lead to settlement of the pipeline or other works of construction.

G. The support system removed from the excavation shall remain the property of the CONTRACTOR and shall be removed from the site.

3.08 CLEANUP

A. The CONTRACTOR shall remove all construction debris, spoil, drilling fluid, oil, grease, and other materials from shafts, pipelines, and all surface work areas upon completion of construction to the satisfaction of the ENGINEER. Cleanup will be incidental to the construction. No separate payment shall be made for the cleanup.

END OF SECTION

SECTION 02431

CONTACT AND VOID REPAIR GROUTING

PART 1 - - GENERAL

1.01 SCOPE

A. The work described in this Section covers mix design requirements, testing, furnishing and production of grout for:

1. Filling exterior space between the initial tunnel support system or jacking pipe and the ground.

2. Filling voids in ground resulting from overbreak, overexcavation, or loss of ground.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02075 – Microtunneling

1.03 DEFINITIONS

A. Contact Grouting: Final exterior grouting used to fill the space between the initial tunnel support system or jacking pipe and the ground following completion of tunnel excavation.

B. Void Repair Grouting: Grout injected outside of the initial tunnel support or jacking pipe for immediate filling of voids as tunnel excavation is advancing.

C. Low-Strength Grout Mix: Mixes with strengths in compliance with 2.03B.1.

D. High-Strength Grout Mix: Mixes with strengths in compliance with 2.03B.2.

E. Cellular Concrete: A cementitious material that is mixed with preformed foaming agents to produce a stable air-cell structure and reduce the as-cast density of the concrete.

F. Neat Cement Grout: A grout consisting of cementitious materials and water.

G. Sand Cement Grout: A grout consisting of cementitious materials, sand, and water.

H. Bentonite Cement Grout: A grout consisting of cementitious materials, bentonite, and water.

I. Mix Design Acceptability Testing: Independent commercial laboratory testing performed to confirm that the selected products and mix designs will produce grouts that have the characteristics, qualities, and strength at prescribed maturity required per

the Contract.

J. Field Quality Control Testing: Independent commercial laboratory testing performed to confirm the material properties and strength of specimens obtained on-site during execution of the Work.

K. As-cast density: The final wet slurry density of a grout or cellular concrete, as measured at the time and point of placement.

1.04 REFERENCE STANDARDS

A. American Concrete Association (ACI):

1. ACI 523.1R – Guide for Cast-in-Place Low-Density Cellular Concrete

2. ACI 523.3R – Guide for Cellular Concretes above 50 pcf.

B. American Society for Testing and Materials (ASTM):

1. ASTM C39: Standard Test Method for compressive Strength of Cylindrical Concrete Specimens.

2. ASTM C138: Standard Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete.

3. ASTM C144: Standard Specification for Masonry Mortar.

4. ASTM C150: Standard Specification for Portland Cement.

5. ASTM C494: Standard Specification for Chemical Admixtures for Concrete.

6. ASTM C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

7. ASTM C937: Standard Specification for Grout Fluidifier for Preplaced-Aggregate Concrete.

8. ASTM C939: Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete.

9. ASTM C940: Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.

10. ASTM C942: Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory.

11. ASTM C953: Standard Test Method for Time of Setting of Grouts for Preplaced-Aggregate Concrete in the Laboratory.

12. ASTM C1017: Standard Specification for Chemical Admixtures for use in Producing Flowing Concrete.

13. U.S. Army Corps of Engineers CRD-C 621, Specification for Non-Shrink Grout.

1.05 SUBMITTALS

A. Conform to Section 01300 – Submittals.

B. Grout Work Plan

1. For each type of grouting operation, provide working drawings of proposed grouting systems detailing type and location of equipment, operational procedures, location of injection points, means of measuring grout pressures and volumes, method of venting, location of flowlines, grouting sequence, and schedule.

C. Grout Mix Design Report

1. Application.

2. Mix constituents and proportions, including materials by weight and volume.

3. Mix properties including as-cast density, initial set time, flow, bleed and compressive strength.

D. Mix Design Acceptability Testing Report

1. Provide mix design acceptability testing data in accordance with 3.01 of this section.

2. If previous acceptability testing is not available for the selected mix design, CONTRACTOR shall employ an independent commercial laboratory to perform the testing as prescribed herein.

E. Field Quality Control Testing

1. Provide field quality control testing data in accordance with 3.01 of this section.

F. Recordkeeping

G. Provide logs of grouting operations indicating location, wet density, pressure, and volume pumped for each grout placement, as part of the required Daily Reports.

PART 2 - - PRODUCTS

2.01 APPLICATIONS AND REQUIRED MIXES

A. Contact Grouting: Use high-strength grout mix.

B. Void Repair Grouting: Use high-strength or low-strength grout mix.

C. Low-strength grout mix:

1. Shall be sand-cement grout, neat cement grout, bentonite-cement grout, or cellular concrete.

2. Shall have a minimum compressive strength of 100 psi attained within 3 days, and 200 psi attained within 28 days.

D. High-strength grout mix:

1. Shall be sand-cement grout or neat cement grout.

2. High-strength grout mix shall have a minimum 28-day compressive strength of 1,000 psi.

3. Unit weight (as-cast density) shall be a minimum of 75 pounds per cubic foot.

2.02 MATERIALS

A. Cement:

1. Low Density Cellular concrete: ASTM C150, Type I or II.

2. All other grout mixes: ASTM C150 Type II.

B. Bentonite: Finely ground (200-mesh), premium-grade, high-yielding Wyoming sodium bentonite.

C. Fly ash: ASTM C618, Type F.

D. Foaming Agent: Foaming agent shall comply with ASTM C869 when tested in accordance with ASTM C796.

1. Type and Manufacturer: Mearl Geofoam Liquid Concentrate manufactured by Aerix Industries, Golden, CO; Foam Liquid Concentrate manufactured by Cellufoam Concrete Systems; Rheocell 30 manufactured by BASF Construction Chemicals, LLC of Cleveland, OH; Elastizell EF by Elastizell Corporation of America of Ann Arbor, MI; or approved equal.

E. Admixtures shall conform to the following:

1. ASTM C494 and/or ASTM C1017, as required to improve pumpability, to control set time, to hold sand in suspension and to reduce segregation and bleeding.

2. No calcium chloride or admixture containing chloride or other impurities from admixture ingredients will be acceptable.

3. Do not use admixtures that promote steel corrosion.

4. Ensure that admixtures used in any mix are compatible. Provide written confirmation from the admixture manufacturers of their compatibility.

5. If foaming agent is used, admixtures may only be used when specifically approved by foaming agent supplier in writing.

F. Water: Clean, fresh potable water free from deleterious amounts of alkali, acid, and organic materials which would adversely affect the setting time or strength of the grout.

2.03 MIX DESIGNS

A. General: Develop grout mixes based on the following criteria as applicable:

1. Volume of void between initial tunnel support or jacking pipe and the surrounding ground.

2. Pumping distances and characteristics, including pumpability, pot life and retardation.

3. Presence of groundwater.

B. Cellular concrete mixes shall be designed in accordance with the requirements of ACI 523.1R and/or ACI 523.3R and the additional requirements specified herein.

2.04 EQUIPMENT

A. For each type of grout, use equipment for mixing and injecting which is designed for the particular grout. Provide batching, mixing and pumping equipment that is compatible and of sufficient size and capacity to place the grout to the distances and volumes proposed by the CONTRACTOR.

B. Grouting equipment shall be capable of mixing grout to a homogeneous consistency and delivering grout to injection points at steady pressures. Equipment shall be configured to provide means of accurately measuring grout component quantities and accurately measuring pumping pressures.

C. Maintain equipment in good operating condition, capable of satisfactorily mixing, agitating, and forcing grout into injection ports at a uniform flow rate under the required constant pressure.

D. Grouting equipment shall be configured so flushing can be accomplished with grout intake valves closed, with water supply valve open, and with grout pump running at full speed.

E. An adequate inventory of spare parts or backup equipment shall be provided to ensure that operable backfill grouting equipment is available at all times during the work. Maintain sufficient quantities of spare pressure gauges, stop valves, and other wear parts on site.

F. Batch system shall provide graphical or digital printout records of batch scale readings, accurate to one (1) pound, of the dry mix ingredients before delivery to mixer.

G. At the point of injection, suitable valves and calibrated pressure gauges shall be provided so that the pressure and grout flow at the grout hole may be regulated and monitored. At or very near the point of injection, provide a system of valves in the line transporting the grout that will allow easy access for collection of test specimens. Provide an automatic bypass valve set to the maximum pressure specified. Provide suitable stop valves at the injection point for use in maintaining pressure, as required, until grout has set. Use hoses or pipes of proper type and diameter to withstand maximum injection pressures used.

PART 3 - - EXECUTION

3.01 TESTING

A. Testing: Employ an independent commercial testing laboratory, acceptable to the ENGINEER, to prepare and test each specimen. Testing for each specimen shall be as follows:

1. Unit weight (as-cast density):

    a. Determine the as-cast density of each cellular concrete specimen in accordance with ASTM C796.

    b. Determine the as-cast density of each grout specimen in accordance with ASTM C138

2. Compressive strength:

    a. Grout test specimens shall be made, cured, stored, and tested in accordance with ASTM C39.

    b. Cellular concrete test specimens shall be made, cured, stored, and tested in accordance with ASTM C495 and ASTM C796.

    c. Five sets of compression test cylinders (3 inches by 6 inches), three cylinders per set, shall be tested, one at each of the following ages:

i. 3 days

ii. 7 days

iii. 14 days

iv. 28 days

v. 56 days

B. Mix Design Acceptability Testing

1. General: Mix design acceptability testing shall be required prior to acceptance of CONTRACTOR'S selected mix design. These results will be compared with field test results to confirm consistent properties are obtained in the field.

2. Unit weight (as-cast density):

a. Unit weight tests shall be made:

i. After a change in mix design

ii. From each batch of grout from which compression test cylinders are made

b. Unit weight shall not be more than 5 pounds per cubic foot below the minimum unit weight specified. Adjust mix as required to meet the minimum specified as-cast density and compressive strength requirements.

3. Compressive Strength:

a. For Mix Design Acceptability Testing, compressive strength of grout shall be considered satisfactory if at 28-days both of the following requirements are met:

i. An average of three consecutive compressive strength tests equal or exceed the specified unconfined compressive strength.

ii. No individual compressive strength test is below the specified unconfined compressive strength by more than 20 percent.

C. Field Quality Control Testing

1. General: Field quality control testing shall be performed during application of contact grout. These results will be compared with Mix Design Acceptability Testing results to confirm consistent properties are obtained in the field.

a. The frequency specified herein for each field control test is approximate. A greater or lesser number of tests may be made, as required by the ENGINEER.

b. Test specimens shall be collected within the tunnel at or near the connection where the grout is being injected.

c. Supply all materials necessary for fabricating the test cylinders.

2. Unit Weight (as-cast density):

a. Unit weight tests shall be made:

i. From the first batch mixed each day

ii. After a change in mix design

iii. From each batch of grout from which compression test cylinders are made.

b. Unit weight at the point of placement shall be within plus or minus 5 pounds per cubic foot of the unit weight specified herein. Adjust the mix as required to obtain the specified as-cast density and compressive strength.

3. Compressive Strength:

a. One set of (15) compressive test cylinders shall be made at the beginning of each shift when grout is placed. One additional set of (15) test cylinders shall be made from each additional 20 cubic yards of grout placed in any one shift.

i. Test cylinders shall be made in the field, cured and stored in the laboratory, and tested.

ii. Each set of compression test cylinders shall be marked or tagged with a unique ID, the date and time of day the cylinders were made, the location (station) in the work where the grout represented by the cylinder was placed, batch number, and unit weight (as-cast density).

b. Compressive strength of grout shall be considered satisfactory at each age specified if both of the following requirements are met:

i. An average of three consecutive compressive strength tests equal or exceed the specified unconfined compressive strength.

ii. No individual compressive strength test is below the specified

unconfined compressive strength by more than 20 percent.

3.02 PREPARATION

A. CONTRACTOR shall submit grout mix design and acceptability testing for mix that meets the requirements of this section sufficiently in advance to modify mix design and perform additional acceptability testing as needed to gain compliance.

B. Notify ENGINEER at least 24 hours in advance of beginning any grouting operation.

C. Select and operate grouting equipment to avoid damage to new or existing underground utilities and structures.

D. In developing plan for grout placement, consider impacts to grout flow hydraulics and pressures. This shall include, but not be limited to: depth from surface, initial tunnel support or jacking pipe material, pumping capabilities, volume to be filled, external groundwater pressure, and volume of concrete to be grouted between grout ports.

E. Operate dewatering systems until the grouting operations are complete.

3.03 FINAL EXTERIOR GROUTING

A. Pump structural sand-cement grout to fill the exterior space between initial tunnel support or jacking pipe and the ground.

3.04 CONTACT GROUTING

A. Grouting shall be performed from inside the initial tunnel support or jacking pipe through grout ports. Grouting shall start in the ports at the lowest elevation and shall proceed until grout begins to flow from the ports at higher elevation. Lubricant shall be displaced by the grout. Displaced lubricant shall be disposed of off-site in accordance with applicable regulations and codes of all Federal, State, and local agencies.

B. Pump high-strength grout to completely fill the space between the initial tunnel support or jacking pipe and the ground.

1. Liquid grout pressure shall not exceed one-half of the existing overburden pressure.

C. CONTRACTOR shall open each port and inject grout. After initial set, CONTRACTOR shall remove each valve and observe each grout port. If flowing water is observed at a grout port, then the CONTRACTOR shall replace the valve and reapply grout to fill all voids. CONTRACTOR shall repeat this process until no flowing water is observed.

1. Removal of the valve and observation of the grout port shall occur in the presence of the ENGINEER.

2. Payment for the grouting will not be given until all grout ports can be opened and no flowing water is observed.

D. After grouting is complete, pressure shall be maintained by means of stopcocks or other suitable devices until the grout has set sufficiently in the judgment of the ENGINEER, or for a minimum of 24 hours, whichever is longer. If the tunnel is a two-pass installation, then after the grout is set, the grout ports shall be completely filled with high-strength grout and finished neatly without evidence of voids or projections. If the tunnel is a single pass tunnel, the grout ports through the jacking pipe shall be plugged in accordance with pipe manufacturer's recommendations.

3.05 VOID REPAIR GROUTING

A. Fill voids outside the limits of excavation caused by overexcavation, overbreak, or loss of ground. Such voids can be the result of boulder or obstruction removal, an existing void, or collapse of ground. Pump grout to temporarily fill all voids until tunnel shield has advanced beyond void repair area and initial tunnel support or jacking pipe is installed. Following completion of excavation, fill all voids in accordance with the requirements for contact grouting.

B. Placement of cellular concrete shall conform to ACI 523.1R and ACI 523.3R.

- END OF SECTION -

SECTION 02665
CARRIER PIPE INSTALLATION AND BACKFILL

PART 1 GENERAL

1.01 WORK INCLUDED

A. Section covers requirements for installation of the Carrier Pipe in the tunnel and backfilling the annulus between the Carrier Pipe and Initial Support with Backfill Grout.

B. Requirements in this Section apply to all tunnels on the project. Required submittal information must be provided for each type of tunnel separately.

1.02 RELATED WORK

A. Related Documents and Specification Sections include but are not necessarily limited to:

1. 02075 – Microtunneling
2. 02431 – Contact and Void Repair Grouting

1.03 DEFINITIONS

A. BULKHEAD: Material placed between the Carrier Pipe and the Initial Support to contain Backfill Grout. Bulkheads are typically required at both ends of a tunnel and may also be located at intermediate locations within a tunnel to contain the Backfill Grout in the annular space between the Carrier Pipe and Initial Support.

B. BACKFILL: Filling of the annular space between the Carrier Pipe and Initial Support.

C. BACKFILL GROUT: flowable material to be used in the Backfill operations; can be Cellular Grout.

D. CELLULAR GROUT: A low density, lightweight, cementitious material that contains stable air or gas cells as preformed foam uniformly distributed throughout the mixture.

E. CONTACT GROUTING: As defined in Section 02431 – Contact and Void Repair Grouting.

F. FLYASH GROUT: A self-leveling and self-compacting, cementitious material using pozzolanic flyash as the primary cementitious material.

1.04 REFERENCE STANDARDS

A. ASTM International (ASTM):

1. C495 – Standard Test Method for compressive strength of lightweight insulating concrete.
2. C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
3. C796 – Standard Test Method for foaming agents for use in producing Cellular Grout using preformed foam.
4. C869 – Standard Specification for foaming agents used in making

preformed foam for Cellular Grout.

5. C939 – Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
6. D4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material Test Cylinders
7. D5971 – Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material
8. D6023 – Standard Test Method for Density (Unit Weight), Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low-Strength Material
9. D6103 – Standard Test Method for Flow Consistency of Controlled Low Strength Material

1.05 GENERAL REQUIREMENTS

A. Perform design, construction, and execution of the pipe installation and pipe backfill.

B. Minimum design requirements are presented herein. It is the CONTRACTOR's responsibility to develop and implement the design to fulfill the specified design requirements determined by the CONTRACTOR which are necessary for completion of the work.

C. Requirements
   1. Install Carrier Pipe without damage and to the grades shown and specified.
   2. Restrain Carrier Pipe from movement due to buoyant and other forces during Backfill Grouting.
   3. Backfill annulus outside Carrier Pipe fully with Backfill Grout.
   4. Where determined necessary by the CONTRACTOR, introduce Backfill Grout into the annulus outside the Carrier Pipe using grout lines (slick lines) secured to the Carrier Pipe or Initial Support or directly from the shafts. Grout ports through the Carrier Pipe are not allowed.
   5. Provide testing of materials and verification of material properties as required herein.
   6. Notification.
      a. Provide the OWNER's Designated Representative with a schedule of Carrier Pipe installation and Backfill Grouting activities at least two (2) weeks before beginning pipe installation, and update weekly.
      b. Notify the OWNER's Designated Representative at least 24 hours in advance of schedule changes.

D. Pipe Installation Methods
   1. Install Carrier Pipe in the tunnel either incrementally (by carrier or cart) or by jacking or pulling a pre-assembled pipe string as determined by the CONTRACTOR.
   2. Utilize casing spacers or other approved blocking method on the Carrier Pipe to prevent pipe movement.
   3. Utilize joint restraint methods or devices to prevent pull-out or over-assembling of Carrier Pipe joints.

1.06 QUALIFICATIONS

A. The CONTRACTOR shall be experienced in the installation of pipe in tunnels and backfilling annular spaces using methods, materials, and equipment comparable to this project.

B. Designate Installation and Backfill Grouting Experts. The Installation and Backfill Grouting Experts may be the same person. The Experts shall:
   1. Be thoroughly knowledgeable about the transportation, placement, and securement of prefabricated pipe in tunnels.
   2. Successfully have completed at least two (2) similar projects in which the pipe was placed in the Initial Support using the same methods as proposed for this project.
   3. Successfully have completed at least two (2) similar projects in which the pipe annulus in a tunnel was backfilled with Flyash Grout or Cellular Grout as applicable.
   4. Be thoroughly knowledgeable about mixing, pumping and placement of Backfill Grout, including Flyash Grout or Cellular Grout as applicable, in tunnels.

1.07 SUBMITTALS

A. Preconstruction:

   1. Qualifications of pipe Installation and Backfill Grouting Experts (may be the same person).
   2. Descriptions and shop drawings describing and illustrating methods and equipment proposed for installation of the Carrier Pipe in the tunnel. The submittal shall address, as a minimum, pipe:
      a. Transportation,
      b. Section joining,
      c. Line and grade surveying, and
      d. Line and grade control.
   3. Methods, procedures, and equipment for monitoring, controlling, and adjusting the alignment of the Carrier Pipe in the tunnel prior to Backfill Grouting.
   4. Descriptions, Shop Drawings, and calculations for securing the pipe during Backfill Grouting. Submit calculations which evaluate:
      a. Theoretical annulus volume for actual Initial Support ID and Carrier Pipe OD with adjustments for bells and spacers.
      b. Buoyant force(s) generated during backfilling of each stage.
      c. Loads and deflections of spacers.
      d. Maximum allowable backfill injection and head pressure (if a pump is used)
      e. The calculations shall be prepared, stamped, and signed by a Professional Engineer registered in the State of Florida.
   5. Description of equipment and methods proposed to mix Backfill Grout including:
      a. Mix design and results of preconstruction tests for the Backfill Grout. Results of tests on trial batches conducted as part of grout mix design and pre-grouting verification testing.

b. Mixing equipment
c. Quantity controls
d. Instrumentation
e. Description of trial batches, trial batch testing and proof of acceptable delivery and placement of Backfill Grout in the tunnel.

6. Description of injection methods for Backfill Grout including:
   a. Pumping equipment
   b. Delivery equipment (hoses, valves)
   c. Pumping distances and delivery points
   d. Flow rates
   e. Pressures
   f. Bulkhead details
   g. Proposed orientation of all grout and ventilation pipes.
   h. Methods and description of instrumentation to monitor and control placement of the backfill, and procedures to be used to verify backfill volumes.
   i. Method and procedures to handle excessive flowing water if criteria in Section 3.07 L. herein, are met.
7. Trial batch results demonstrating the same mix design that includes:
   a. Date of mix performed and reported
   b. Mix number
   c. Materials
   d. Sources
   e. Physical properties
   f. Compressive strength results

B. Construction: Submit the following to the ENGINEER during construction within the specified time restrictions:
   1. Survey results. Surveys shall be conducted and submitted as specified herein.
   2. Daily Field Reports.
   3. Field installation logs having as a minimum, stations and length of Carrier Pipe installed and volume of Backfill Grout delivered; Submit logs daily. Provide copies of reports as required by public authorities to the OWNER or Designated Representative within 72 hours following preparation and submittal to third party authority. These reports will be allowed for use as needed and for record purposes.

C. Postconstruction Submittals:
   1. Survey of the line and grade of the Carrier Pipe in the tunnel.
   2. Compressive strength results of Backfill Grout.

PART 2 EQUIPMENT, PRODUCTS AND MATERIALS

2.01 MATERIALS

A. Carrier Pipe: as shown on the Contract Drawings and as specified in the Contract Documents.

B. Backfill Grout shall have the following properties:

1. Flowable through delivery lines and in tunnel annulus
2. Have a heat of hydration that will not weaken or otherwise harm pipe materials
3. Viscosity shall be low enough to allow grout to completely fill all voids in the annulus between the Carrier Pipe and the ground.
    a. Efflux time through a Flow Cone per ASTM C939 shall be no greater than 22 seconds.
4. Average 28-day compressive strength of 100 psi. Test in accordance with ASTM C495.
5. Minimum wet density of 30 pcf, or per the direction of the ENGINEER.
6. Additives may be used only with review per approval of the OWNER or direction of the OWNER or Designated Representative.
7. Non-shrink mix.
8. Grout shall be a mix of water and cement and/or flyash or foamed Cellular Grout. No aggregates are allowed.
    a. Cellular Grout:
        1) Cement: Portland Type I/II.
        2) Foaming agent for Cellular Grout: in accordance with ASTM C869. a) Test in accordance with ASTM C796.
    b. Flyash Grout:
        1) Flyash Grout shall be composed of:
            a) Type C Flyash, water, and a set retarder, or
            b) Type F Flyash, cement, water, and a set retarder. Cement to Flyash ratio shall not be greater than 0.25:1 by weight.

C. Pipe Securement: secure pipe using prefabricated spacers or other approved bracing.

1. Spacers:

    a. Specifically designed for placing Carrier Pipe in tunnels and as skids for the pipe to ride on during installation.

    b. Design to have sufficient contact points with the Carrier Pipe and the tunnel Initial Support to resist damage/deformation to carrier from buoyancy caused by Backfill Grouting.
        1) Pre-fabricated units that provide necessary separation between carrier pipe and initial support (casing) while not allowing electrical contact or connection between the two structures.
        a) Spacers shall be supplied by a company specializing in manufacturing of tunnel or casing spacers and specifically designed for placing pipe in tunnels and as skids for the pipe to ride on during installation.
        b) Spacers shall be non-conducting material that is rigid under the imposed loads and does not damage the initial support.
        c) The spacers shall cathodically isolate the carrier pipe from the casing pipe with resistive material.

2. Bracing: Bracing with other materials is not allowed. However, wood blocking is allowed for carrier installation for the long microtunnel with horizontal curve.

D. Bulkhead Closure:

1. Provide Bulkheads at the ends of the pipe to prevent spillout of the Backfill Grout and not damage or degrade the Initial Support or Carrier Pipe during installation or over the life of the structure.
2. Provide venting at the crown of the annulus between Carrier Pipe and Initial Support at the highest elevation to ensure the tunnel is fully evacuated of water/air and filled with grout. Use drain line at the invert to drain any entrapped water.
3. Shall be brick and mortar or ENGINEER approved equivalent.

PART 3 EXECUTION

3.01 GENERAL

A. The Carrier Pipe shall have internal bracing, if necessary, to protect the pipe and control deflections including out-of-round distortions during transportation, handling, installation, and Backfill Grouting.

B. Pipe installation and Backfill Grouting shall be conducted under the direct supervision of the Installation and Backfill Grouting Expert(s).

3.02 PREPARATION

A. Do not commence with pipe installation until the tunnel is prepared for pipe installation in accordance with the following requirements:

1. The tunnel excavation has been stabilized and Contact Grouting has been completed outside the Initial Support as specified in Section 02431 – Contact and Void Repair Grouting.
2. The alignment of the tunnel has been surveyed and has been verified to allow for installation of the Carrier Pipe to the specified tolerances and clearances.
3. The tunnel has been cleaned as specified herein.

3.03 SURVEYS

A. Surveys shall be at intervals not exceeding 20 feet and shall be for both line and grade to an accuracy of 0.01 feet or better.

B. Conduct the following surveys:

1. Completed tunnel Initial Support prior to installation of the Carrier Pipe.
2. Carrier Pipe invert prior to Backfill Grouting.
3. Carrier Pipe invert after Backfill Grouting.

3.04 QUALITY CONTROL

A. Test methods shall be in accordance with ASTM C495.

1. Cast the specimens into cylinders at least 3 inches in diameter and 6 inches tall.
2. Separate and remove the specimens for testing by cutting and trimming the forming material surrounding the cylinders.

B. Backfill Grout Mix Design:

1. Two sets of compression test specimens shall be made.
2. Test one set of specimens at an age of 7 days and the other set at an age of 28 days.
3. Test mix for unit weight at the time of cylinder casting.

C. Index Testing of Backfill Grout:

1. Conduct set of index tests from the first batch of Backfill Grout mixed each day, after a change in mix design, and from each batch of Backfill Grout from which compression test specimens are made.
2. Conduct index tests at a frequency of one test per day of 25 CY and one additional test from each additional 50 cubic yards, or major fraction thereof, placed in any one day, but no more than three tests for each day.
3. Include as a minimum the following index tests at the time of placement:
   a. Wet unit weight (wet density)
   b. Ambient temperature
   c. Grout temperature
   d. Efflux time through Flow Cone

D. Compression Testing of Backfill Grout:

1. Make a minimum of one set of 5 specimens each day when up to 25 cubic yards of Backfill Grout is placed.
2. Make at least one additional set of specimens from each additional 50 cubic yards, or major fraction thereof, placed in any one day, but no more than three sets of specimens for each day.
3. Test two specimens of each set at an age of 7 days and 2 specimens at an age of 28 days.
   a. Hold one specimen in storage.

3.05 TOLERANCES AND CLEARANCES

A. The Carrier Pipe shall be installed to the line and grade specified in the Technical Specifications and Drawings.

B. The Carrier Pipe shall have a clearance of at least 3 inches between the outside of the pipe and the closest point of the Initial Support system in all directions.

C. Changes in Carrier Pipe alignment and grade shall be made gradually such that pipe joints are mated within the pipe manufacturer's specifications, fully functional, and not compromised in any way.

D. Reverse grades will not be allowed.

E. If the Carrier Pipe is off line and/or grade by more than the tolerances specified in 3.05 B., the CONTRACTOR shall make adjustments, repairs and changes as necessary to achieve the specified tolerances.

F. If the Carrier Pipe is off line and/or grade by an amount that requires, in the opinion of the ENGINEER, re-design of any structure, the CONTRACTOR shall be responsible for all redesign costs.

3.06 INSTALLATION METHODS

A. Install the pipe into the tunnels by sliding an assembled pipe string into the tunnels by jacking or pulling, or both. Alternatively, individual sections of pipe may be carried into the tunnel and mated in place.

B. Complete each joint by mating per the manufacturer's requirements and the Contract Documents.

C. Adjust the position of the Carrier Pipe within the spacers as necessary to achieve proper line and grade when the pipe is at the final position.

D. Securing: Ensure that the pipe and each pipe segment is firmly secured to prevent flotation, settlement, lateral and axial movement, and pipe deflection during Backfill Grouting.

3.07 BACKFILLING METHODS

A. Demonstrate the ability to pump the Backfill Grout mix the distances proposed without loss of Backfill Grout quality; may be based on previous projects.

B. Completely backfill the annulus between the Carrier Pipe and the Initial Support with Backfill Grout. Placement methods shall completely fill the spaces below the Carrier Pipe and around the Carrier Pipe support system components.

C. Place Backfill Grout in multiple lifts to prevent pipe flotation unless the use of stiffeners or pipe supports, appropriately designed casing spacers, and closely spaced blocking of sufficient structural rigidity or other approved submitted method are provided to prevent pipe flotation, movement, or damage to the pipe. Lift thickness required to prevent flotation and damage to the pipe shall be determined by the CONTRACTOR as represented in the required submittal calculations.

D. Backfill grout shall not be subject to free fall greater than 10 feet.

E. The pressure of the backfill against the Carrier Pipe shall not exceed manufacturer limitations at any time and at any location.

F. The CONTRACTOR may elect to inject Backfill Grout into the tunnel at the shaft(s). On long tunnels, grout may be injected from ground level through a slick line in the tunnel to bulkheads located within the tunnel not at the end of each tunnel.

G. Backfill grout shall be injected from the top of the shafts or pumped from the base of the shaft.

1. Vertical drop holes along the tunnel length will not be allowed.

H. If the complete filling of the annulus and voids is not verified during backfilling, conduct a secondary grouting program to fill the remaining annulus and voids.

I. Maintain supply of swabs the capability to use compressed air at the tunnel at the location of the backfilling operations or the bulkhead as appropriate to facilitate cleaning of

injection lines or outlets, as necessary.

J. To prevent contamination of the Backfill Grout, do not introduce water into the tunnel through injection lines.

K. Flowing Water - If water is inflowing from the ground into the tunnel at a rate greater than one gallon per minute at any location, that location shall be sealed and the flow reduced to less than one gallon per minute.

3.08 CONSTRUCTION RECORDS

A. The CONTRACTOR shall maintain Daily Field Reports for pipe installation and annular sealing. The Field Reports shall be signed by the site superintendent or shift foreman and shall contain the following:

1. Crews and subcontractors onsite with their personnel and equipment, and the work performed. The reports shall be broken down into work time and down/standby time for each crew and subcontractor;
2. Record of pipe installed;
3. Quantity of Backfill installed;
4. Materials testing agency including index testing and specimens;
5. Problems or unusual conditions encountered and actions taken to address these situations.

END OF SECTION

SECTION 02922

SODDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall furnish all labor, materials, equipment, incidentals necessary and place loam to finish grade, sod, and maintain all sodded areas as specified herein including all areas disturbed by the CONTRACTOR'S operations.

1.2 SUBMITTALS

A. A certification of seed quality shall be delivered to the ENGINEER ten days prior to use.

1.3 GUARANTEE

A. All restoration and revegetation work shall be subject to the one-year CORRECTION PERIOD as specified in the CONTRACT DOCUMENTS.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fertilizer shall be complete commercial fertilizer, 6-6-6 grade. It shall be delivered to the site in the original unopened containers each showing the SUPPLIER'S (manufacturers) guarantee analysis.

B. Sod shall be Sod shall be of the same type as the surrounding grassed areas (unless specified otherwise), be free of weeds, and have well matted roots. The sod shall be live, fresh, and uninjured at the time of placing. Materials for sodding shall meet the applicable requirements of Sections 575 and 981 of the FDOT Standard Specifications, or the requirements of the governing permitting agency. Except as required to match surrounding grassed areas, sod may be St. Augustine, Bahia, or other varieties as selected by the OWNER.

C. Mulch shall be clean small-grain straw.

PART 3 - EXECUTION

3.1 APPLICATION RATES

A. Fertilizer shall be applied at the rate of 800 pounds per acre.

B. Sod shall be installed.

C. Mulch shall be applied at rate of 1-1/2 to 2 tons per acre.

D. Asphalt emulsion shall be applied at a rate of 300 gallons per acre. Asphalt

emulsion shall be applied uniformly to tack the mulch. Mechanical tacking will be considered on a case-by-case basis AS APPROVED by the OWNER and ENGINEER.

3.2 GROUND PREPARATION

A. The subgrade of all areas to be sodded shall be raked and all rubbish, sticks, roots, and stones larger than 2 inches shall be removed. Loam shall be spread and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and thoroughly incorporated with loam. Lime shall be added in sufficient quantity to provide a soil pH of 6 to 7. The loam shall then be lightly compacted to finished grade. Compacted loam shall not be less than the depth specified. No loam shall be spread in water or while muddy.

3.3 APPLICATION OF FERTILIZER, SOD AND MULCH

A. The CONTRACTOR shall provide sodding, mulching and water as soon as possible for areas of the site where construction has temporarily ceased, but in no case shall the time be greater than fourteen (14) days.

B. Fertilizer shall be uniformly spread and immediately mixed with the upper 2 inches of topsoil.

C. Immediately following the seed shall be uniformly applied and lightly raked into the surface. Lightly roll the surface and water with fine spray.

D. All sodded areas shall be mulched.

3.4 WATERING AND MAINTENANCE

A. The CONTRACTOR shall keep all sodded areas watered and in good condition, resodding if and when necessary, until a good, healthy, uniform growth is established over the entire area sodded, and shall maintain these areas in an approved condition until FINAL COMPLETION.

B. On slopes, the CONTRACTOR shall provide against washouts. Any washout which occurs shall be regraded and resodded at the CONTRACTOR's expense until good sod is established.

C. The CONTRACTOR shall maintain the areas in grass in a neat manner by watering, mowing, raking clippings and leaves, and other appropriate measures until the WORK is completed.

END OF SECTION

SECTION 03000

CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The WORK included under this section consists of furnishing all materials, forms, transportation and equipment, and performing all necessary labor to do all the plain and reinforced concrete WORK shown on the DRAWINGS, or incidental to the proper execution of the WORK, or as herein specified.

B. Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water, so proportioned and mixed as to produce a plastic workable mixture in accordance with all requirements under this section suitable to the specific conditions of placement.

1.2 SUBMITTALS

A. All materials specified shall be certified by the producer or SUPPLIER (manufacturer) that the furnished material meets the specific requirements of the SPECIFICATIONS.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement:

1. Cement: Cement for all concrete shall be domestic Portland cement that conforms to the requirements of ASTM Designation C 150, Type I, Type II or Type III. Type III cement for high early strength concrete shall be used only for special locations and only with the approval of the ENGINEER.

2. Only one brand of cement shall be used in any individual structure unless approved by the ENGINEER. Cement which has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container which contains such cement will be rejected. No salvaged or reclaimed cement shall be used.

B. Fine Aggregate: Fine aggregate shall conform to the requirements of the current edition of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction."

C. Coarse Aggregate: Coarse aggregate shall conform to the requirements of the current edition of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction," except that slag shall not be used and the gradation shall be Grade 57 AS APPROVED by the ENGINEER.

D. Water: Water shall be taken from a potable water supply and shall be fresh, clean and free from injurious amounts of oil, acid, alkali or organic matter.

E. Admixtures: No admixtures shall be used except by specific approval of the ENGINEER. Fly ash is not acceptable. When approved, admixtures shall meet the following minimum standards.

1. Air entraining agent: ASTM C 260.

2. Water Reducing and Retarding Admixture: ASTM C 494, Type D and free of chlorides.

F. Membrane Curing Compound: Membrane curing compound shall conform to the requirements of AASHTO Designation M 148, Type 1-clear, or Type 2-white pigmented.

G. Membrane: Membrane shall be a 6-mil polyethylene film.

H. Reinforcing Steel:

1. Reinforcing steel shall conform to the requirements of ASTM Designation A 615, Deformed Grade 60, except where otherwise indicated.

   a. The name of the SUPPLIER of the reinforcing steel shall be called out in the SHOP DRAWINGS together with a sketch showing the pattern of the deformation, including the mill mark.

   b. Bar reinforcement shall be accurately fabricated in accordance with the latest CRSI Manual of Standard Practice. The CONTRACTOR shall have prepared and shall submit to the ENGINEER necessary SHOP DRAWINGS and bar lists. The CONTRACTOR shall be responsible for errors made in SHOP DRAWINGS even though approved by the ENGINEER.

2. Bar Supports:

   a. Bar supports for reinforcing steel shall conform to the requirements of CRSI Manual of Standard Practice and shall be of a height to furnish the concrete cover called for on DRAWINGS. High chairs shall be furnished for bent or top bars in solid slabs. Bar supports to be in contact with exterior surfaces of concrete shall be Class C with plastic caps at least 1 inch in length on the leg tips, or Class E with stainless steel legs. Bar supports shall be spaced not more than 100 times the diameter of the

bars to be supported, with not more than 1/4 spacing from the end of the supported bars to the first chair.

b. Bar supports for slabs on grade shall be plain concrete blocks, 3 inches high by 4 inches square with tie wires embedded in support. Concrete strength shall be at 3,000 psi at time of use.

I. Forms: Forms shall be of wood, steel or other approved materials. The sheeting for all exposed surfaces shall be 5-ply plywood, unless otherwise specifically authorized. Forms of like character shall be used for similarly exposed surfaces in order to produce a uniform appearance. Forming for exposed exterior concrete from 1 foot below finished exterior grade to top of structure shall be carefully fabricated so as to provide a smooth finish without defects. The type, size, shape, quality and strength of all materials of which the forms are made shall be subject to the approval of the ENGINEER. If it is the ENGINEER's opinion that the interior surfaces of the forms are too irregular to produce the specified finish, they shall be lined with smooth, dense, moisture resistant hardboard or other material of which the ENGINEER approves.

2.2 CLASSIFICATION AND STRENGTH OF CONCRETE

A. Class and minimum strength requirements for concrete shall be as tabulated below. Unless otherwise specified, Class B concrete shall be used.

B. Strength Requirements: Concrete class and strength shall meet the minimum compressive strength requirements at the age of 7 and 28 days as shown in the following table. The compressive strengths shall be as determined by standard laboratory cylinder tests in accordance with the procedure set forth in ASTM Designation C 31 and C 39. (See Article 3.03 of this Section for testing of cylinders.)

Minimum Compressive Strength In Pounds Per Square Inch					
		3 Consecutive Cylinder Average		**Low Cylinder**	
Class	**For Design Purposes**	**7 Days**	**28 Days**	**7 days**	**28 Days**
A	4000	2950	4250	2600	3750
B	3000	2100	3520	1850	2800
Flowable Fill	50-150	---	---	50-150	50-150

2.3 PROPERTIES AND DESIGN OF CONCRETE MIX

A. Tests And Design Mix:

1. The CONTRACTOR shall submit for approval by the ENGINEER the proposed sources of the materials, or ready-mixed concrete, which the CONTRACTOR intends to use in the WORK. A design mix which has been used by the concrete SUPPLIER before may be submitted for approval provided the proportions and strengths meet the requirements of these SPECIFICATIONS.

2. The source and SUPPLIER of material after once having been approved shall not be changed by the CONTRACTOR, except AS APPROVED by the ENGINEER, and additional laboratory tests may be required by the ENGINEER to prove conformance with specification requirements.

3. If during the progress of the WORK, tests indicate that concrete is not being produced in accordance with these SPECIFICATIONS, the ENGINEER may order changes in the materials or their proportions so as to secure concrete as specified.

B. Slump: Slumps shall be as low as possible consistent with proper placing. Low slump concrete shall be used for footing and slabs on grade. Medium slump concrete shall be used for walls, columns and suspended slabs. Concrete shall conform to the limits specified in the following schedule:

Class of Concrete	Medium Slump	Low Slump
A	4 to 5 inch	2 to 3 inch
B	4 to 5 inch	2 to 3 inch

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete Mixing:

1. Equipment: The concrete shall be ready-mixed and the equipment shall conform to the applicable requirements of ASTM Designation C 94.

2. Measurement: Equipment necessary to positively determine and control the actual amounts of all materials entering the concrete shall be provided by the CONTRACTOR to the ENGINEER. All materials shall be measured by weight, except that water may be measured by volume.

3.2 INSTALLATION

A. Forms:

1. Construction:

a. Forms shall be built true to line and grade, and shall be mortar tight and sufficiently rigid to prevent displacement or sagging between supports. Particular attention shall be given to adequacy of supports and shoring, which is the CONTRACTOR'S responsibility. The surfaces of forms used for permanently exposed surfaces shall be smooth and free from irregularities, dents, sags, or holes. Forms for surfaces to receive stucco finish shall be suitable for its application. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal is at least 1 1/2 inch from any concrete surface. Form ties shall be removed immediately after removal of forms, and holes shall be thoroughly plugged with grout within 24 hours after form removal and kept damp for 4 days to prevent shrinking.

b. Wire ties will not be permitted. All forms shall be so constructed that they can be removed without hammering or prying against the concrete. Unless otherwise indicated, suitable moldings shall be placed to bevel or round exposed edges at expansion joints or at any other corners that are to remain. Beams below grade shall have forms at both sides.

2. Coating: Prior to the placing of steel reinforcement or concrete, forms for exposed surfaces shall be coated with a nonstaining paraffin base oil or mineral oil. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete.

3. Removal: Forms and/or form supports shall not be removed from any concrete until it has obtained sufficient strength to support itself and any live loads it may be subjected to, and then only with the approval of the ENGINEER.

B. Reinforcing Steel: When placed in the forms, reinforcement shall be clean and free of all rust, scale, dust, dirt, paint, oil or other foreign material and shall be accurately and securely positioned in the forms as shown on the DRAWINGS before the placing of concrete. Reinforcing steel shall be wired or otherwise fastened together at intersections and shall be supported by concrete or metal supports, spacers or hangers. Bar supports, where adjacent to the ground, shall be set on precast concrete pads compressed into the subgrade. The CONTRACTOR shall obtain the ENGINEER's approval before fastening reinforcing steel at intersections by welding methods.

1. Splicing of reinforcement shall be held to a minimum and shall be placed at points of minimum stress. Bars shall be lapped at splices a minimum of 24 bar

diameters unless otherwise shown on the DRAWINGS or directed by the ENGINEER, and shall be rigidly wired or clamped.

2. Wire fabric shall be straightened before placing and shall overlap one full space of mesh at ends and edges and shall be securely fastened. Fabric shall be supported so as to occupy its proper location in the concrete as shown on the DRAWINGS. Fabric shall not cross any expansion joints.

C. Embedded Items: In addition to steel reinforcement, pipes, inserts and other metal objects as shown, specified or ordered shall be built into, set in, or attached to, the concrete. All necessary precautions shall be taken to prevent these objects from being displaced, broken or deformed. Embedded items shall be thoroughly clean and free from paint or other coating, rust, scale, oil, or any foreign matter. No wood shall be embedded in concrete. The concrete shall be packed tightly around pipes and other metal work to prevent leakage and to secure perfect adhesion. Drains shall be adequately protected from intrusion of concrete. Before concrete is placed, care shall be taken to determine that all embedded parts are firmly and securely fastened in place as indicated.

D. Concrete:

1. General: Reinforcement shall be secured in position, inspected and approved before placing concrete. Runways for transporting concrete shall not rest on reinforcing steel. Concrete not placed within 90 minutes from the time mixing is started will be rejected and shall be removed from the job by the CONTRACTOR. Concrete shall be deposited as nearly as practicable in final position. Concrete shall not be allowed to drop freely more than six feet. All concrete shall be placed in daylight and (excepting seal concrete) shall be placed in the dry unless otherwise authorized by the ENGINEER in writing.

2. Slabs Placed On Subgrade: Slab concrete placed on earth or fill subgrade shall be separated from direct contact with the subgrade by 6-mil polyethylene film or other approved membrane material. Sidewalks and walkways will not require a separation membrane. The membrane shall be lapped 4 inches on sides and 12 inches on ends.

3. Compaction: Concrete shall be compacted by internal vibrating equipment, supplemented by hand rodding and tamping as required. Vibrators shall in no case be used to move the concrete laterally inside the forms. Internal vibrators shall maintain a speed of at least 5000 impulses per minute when submerged in concrete. (At least one spare vibrator in working condition shall be maintained at the site during concrete placing operations.) Duration of vibration shall be limited to time necessary to produce satisfactory consolidation without causing segregation. Vibrator shall be moved constantly and placed in each specific spot only once.

4. Bonding: Before depositing new concrete on or against concrete that has set, the surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate and be free of laitance, coatings, foreign matter and loose particles. Forms shall be retightened. The cleaned surfaces shall be dampened, but not saturated, and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete. The grout shall be as thick as possible on vertical surfaces and at least 1/2 inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained its initial set.

5. Protection: Rainwater shall not be allowed to increase the ratio of mixing water nor to damage the surface finish. Concrete shall be protected from disfigurement, damage, vibration, internal fractures and construction overloads.

E. Curing:

1. All concrete, including gunite, shall be water cured by covering with a double thickness of clean burlap, cotton mats, or other approved material kept thoroughly saturated with water. The forms shall be kept wet until removed and upon removal, the curing specified herein shall be started immediately. Concrete shall be cured for a period of 7 days for normal Portland cement or 4 days for high early strength cement. Concrete poured in the dry shall not be submerged until it has attained sufficient strength to adequately sustain the stress involved nor shall it be subjected to flowing water across its surface until it has cured 4 days. Curing of gunite shall be started as soon as possible without damaging surface and not later than 2 hours after placing.

2. In lieu of wet burlap or cotton mats as specified above, concrete slabs may be covered with wet sand and kept moist for the specified curing period. The initial curing period of not less than 24 hours shall consist of the wet burlap or cotton mat method, then the wet sand method may be utilized until the end of the curing period.

3. Concrete surfaces which are not to be coated, painted, plastered, stuccoed, covered with tile or floor covering or require a bonding surface may be cured by means of a membrane curing compound in lieu of the wet cure method. The curing compound shall be applied immediately after a satisfactory surface finish has been completed or forms have been removed. The rate of application of membrane curing compound shall be at least one gallon to every 200 square feet of exposed surface to be cured. The membrane curing compound and impervious covering shall be continuous and without defects and shall retain the required moisture in the concrete. Membrane curing compound that becomes damaged by rain, foot traffic or other conditions within 5 days of application shall be reapplied.

F. Finishes:

1. As soon as forms can safely be removed, all irregular projections shall be chipped off flush with the concrete surfaces. All voids produced by spacers or any honeycombing shall be pointed up with grout and troweled flush with the concrete surface immediately after removal of forms and water cured to prevent shrinkage. Honeycombing shall be cut out to expose a sound concrete surface prior to pointing. The use of mortar pointing or patching shall be confined to the repair of small defects in relatively green concrete. Where in the opinion of the ENGINEER substantial repairs are required, the defective concrete shall be cut out to sound concrete and repaired with gunite or the concrete shall be removed and reconstructed as directed.

2. Concrete surfaces that are not exposed in the completed work shall require no special finish other than such pointing up and rubbing as is necessary to leave them smooth and impervious.

3. Other surfaces which will be exposed in the completed work shall be finished by being rubbed smooth with a float and water or a carborundum brick. The final surface shall be smooth and dense, without pits, irregularities, blow holes or bubbles.

3.3 FIELD QUALITY CONTROL

A. General: The quality of the concrete as to conformance to the SPECIFICATIONS is the entire responsibility of the CONTRACTOR until it is accepted in place in the structure and verified by the final cylinder tests made by the laboratory. Arrangements and costs for field testing shall be made by the CONTRACTOR.

B. Compressive Tests: Standard laboratory compressive test cylinders shall be obtained by the laboratory when concrete is discharged from the mixer at the site of the WORK. A set of 6 cylinders shall be obtained for each 60 cubic yards or fraction thereof placed each day, for each type of concrete. The cylinders shall be cured under laboratory conditions and shall be tested in two groups of three at 7 and 28 days of age, respectively.

C. Slump Tests:. Slump tests shall be made for each 25 cubic yards or "pour" of concrete placed. Slump tests may be made on any batch and failure to meet specified slump requirements shall be sufficient cause for rejection of that batch.

D. Reports: Proper reports of all tests performed by the laboratory shall be prepared by the laboratory and submitted promptly to the ENGINEER and OWNER. Such reports shall be properly labeled so as to identify the portions of the project into which the materials have been placed.

END OF SECTION

SECTION 03600

GROUT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

1.2 RELATED WORK

A. Section 03000, Concrete

1.3 SUBMITTALS

A. Submit manufacturer's literature for review on the following items:

1. Nonshrink grout data including grout properties, mixing, surface preparation and installation instructions.

1.4 DELIVERY AND STORAGE

A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Grout for filling decommissioned pipelines to remain in place in buried applications shall be in accordance with FDOT Standard Specifications Section 121 Flowable Fill, Excavatable.

B. Nonshrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or equal.

C. Nonshrink, Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or equal.

D. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean all bonding surfaces of dust and oil.

3.2 INSTALLATION

A. Nonshrink Grout:

1. Use nonshrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates.

2. Mix and place nonshrink grout as recommended by the manufacturer.

3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.

4. Cure nonshrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound applied immediately after grout placement.

5. Do not operate machinery set on grout pads until the grout has cured for at least 24 hours.

END OF SECTION

SECTION 09940

PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 SCOPE

A. This Section covers field applied protective coatings, including surface preparation, protection of surfaces, inspection, and other appurtenant work for equipment and surfaces designated to be coated with heavy-duty maintenance coatings. Regardless of the number of coats previously applied, at least two field coats in addition to any shop coats or field prime coats shall be applied to all surfaces unless otherwise specified.

1.2 GENERAL

A. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirements, Contractor shall comply with the manufacturer's minimum recommendations. When equivalent products are acceptable to Engineer, Contractor shall comply with this specification and the coating manufacturer's recommendations.

B. Governing Standards

1. All cleaning, surface preparation, coating application, thickness, testing, and coating materials (where available) shall be in accordance with the referenced standards of the following AWWA, ANSI, NACE, SSPC, NSF, and ASTM.

C. Delivery and Storage

1. All coating products shall be received and stored in accordance with the coating manufacturer's recommendations.

1.3 SUBMITTALS

A. Contractor shall submit color cards for all coatings proposed for use, together with complete descriptive specifications and the completed Coating System Data Sheets, to Engineer for review and color selection. Requests for review submitted directly to Engineer by coating suppliers will not be considered.

B. When the proposed products will be in contact with treated or raw water in potable water treatment facilities, Contractor shall submit certifications that the proposed systems are in compliance with ANSI/NSF 61.

C. Contractor shall submit a Coating System Data Sheet for each separately identified surface in the Coating Schedule that will be used in the project, using the appropriate Coating

System Data Sheet forms (Figures 1-09940 and 2- 09940) at the end of this section. Each field coating system shall be acceptable to the coating material manufacturer. Each Coating System Data Sheet shall include application temperature limits including recoat time requirements for the ambient conditions at the site, including temperatures up to 130℉ [54℃]. Temperature requirements shall be specified by the coating manufacturer.

D. Each proposed coating system shall be assigned a unique number with a prefix letter based on the following:

Prefix	Surfaces	Figure
A	Iron and steel	2
C	Concrete and concrete block	1
E	Equipment - submerged nonsubmerged	1 2
F	Nonferrous metal	1
G	Galvanized	1
H	High temperature	1
P	PVC and FRP	1

E. Each coating system that will be applied entirely in the field shall be assigned only a prefix letter and no suffix letter. When appropriate under the indicated conditions, the following suffix shall be added to the coating system numbers:

-F Each shop-applied coating system that includes a finish coat applied in the field.

F. A separate Coating System Data Sheet shall be developed and submitted for each variation or change in a coating system or surface to be coated.

G. The manufacturer's standard colors will be acceptable for all coatings.

1.4 QUALITY ASSURANCE

A. Coating System Data Sheet Certifications

1. The coating applicator and coating manufacturer shall review and approve in writing the coating manufacturer's written recommendations for the coating system and the intended service. Any variations from the specifications or the coating manufacturers published recommendations shall be submitted in

writing and approved by the coating manufacturer. The coating manufacturer shall observe the surface preparation, mixing, and application of the coating systems and submit a written report of his observations and any additional recommendations.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Alternative Manufacturers

1. In addition to the coatings listed herein, equivalent products of the following manufacturers will also be acceptable:

    - PPG
    - Sigma
    - Rust-Oleum

B. Equivalent Coatings

1. Whenever a coating is specified by the name of a proprietary product or of a particular manufacturer or vendor, it shall be understood as establishing the desired type and quality of coating. Other manufacturers' coatings will be accepted, provided that sufficient information is submitted to enable Engineer to determine that the proposed coatings are equivalent to those named. Information on proposed coatings shall be submitted for review in accordance with the Submittals section. Requests for review of equivalency will be accepted only from Contractor, and will be considered only after the contract has been awarded.

2.2 MATERIALS

A. All coatings shall be delivered to the job in original, unopened containers, with labels intact. Coatings shall be stored indoors and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the coating formulation shall be added to the coating for any purpose.

B. All coatings shall conform to the air quality regulations applicable at the location of use. Coating materials that cannot be guaranteed by the manufacturer to conform, whether or not specified by product designation, shall not be used.

C. The coatings specified have been selected on the basis of the manufacturer's statement that the VOC content of the product is 2.8 lbs per gallon or less; however, it shall be the Contractor's responsibility to use only coating materials that are in compliance with the requirements of all regulatory agencies. Local

regulations may require some coatings to have a lower VOC content than specified herein. The coatings specified may meet the VOC limits in the unthinned (as shipped) condition, but may exceed the limits if thinned according to the manufacturer's recommendations. In such case, the coatings shall not be thinned beyond the 2.8 lbs per gallon limit, and if the product cannot be thinned to suit the application method or temperature limits, another manufacturer's coating shall be used, subject to acceptance by Engineer.

D. Contractor shall be responsible for ensuring the compatibility of field coatings with each other or with any previously applied coatings. Coatings used in successive field coats shall be produced by the same manufacturer. The first field coat over shop coated or previously coated surfaces shall cause no wrinkling, lifting, or other damage to underlying coats.

E. All coatings used on surfaces that will be in contact with potable or treated water shall be certified as being in compliance with ANSI/NSF 61. Coatings that cannot be so certified, whether or not specified by manufacturer and by product designation, shall not be used.

F. Primers

Universal Primer	Ameron "Amercoat 385 Epoxy", Carboline "Rustbond", ICI Devoe "Devran 224HS", Tnemec "Series 27 F.C. Typoxy", or Sherwin-Williams "Macropoxy 646".
Epoxy Concrete Block Filler	Ameron "Amerlock 400BF Epoxy Block Filler", Carboline "Sanitile 600", ICI Devoe "Blox Filler 4000", Tnemec "Series 54-660", or Sherwin-Williams "Kem Cati-Coat HS".
Epoxy Concrete Filler and Surfacer	Tnemec "Series 63-1500", Ameron NuKlad 114A, or Carboline "Carboguard 510".

G. Intermediate and Finish Coatings

Epoxy Enamel (NSF certified systems)

Ferrous Metal Surfaces and Concrete Surfaces in Contact with Treated or Raw Water in Potable Water Facilities	Ameron "Amerlock 400 High-Solids Epoxy Coating", Carboline in "Carboguard 891", ICI Devoe "Bar-Potable Water Facilities Rust 233H" Tnemec "Series N140 Pota-Pox Plus", or Sherwin-Williams "Macropoxy 646NSF"; immersion service.

Epoxy Enamel

Concrete Floors	Ameron "Amerlock 400", Carboline "Carboguard 890", ICI Devoe "Devran 224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Armorseal 1000HS"; nonskid.
Ferrous Metal Surfaces and Masonry or Concrete Surfaces Other Than Floors	Ameron "Amercoat 385 Epoxy", Carboline "Carboguard 890", ICI Devoe Devran "224HS", Tnemec "Series N69 Hi-Build Epoxoline II", or Sherwin-Williams "Macropoxy 646".
Aliphatic Polyurethane	Ameron "Amercoat 450H", Carboline "Carbothane 134HG", ICI Devoe "Devthane 379H" Tnemec "Series 1074 Endura- Shield II", or Sherwin-Williams "Acrolon 218HS".
Coal Tar Epoxy	High-build coal tar epoxy; Ameron "Amercoat 78HB Coal Tar Epoxy", Carboline "Bitumastic 300 M", Tnemec "46H-413 Hi-Build Tneme-Tar", or Sherwin-Williams "Hi-Mil Sher-Tar Epoxy".
Medium Consistency Coal Tar	Carboline "Bitumastic 50" or Tnemec "46-465 H.B. Tnemecol".

Vinyl Ester	Tnemec "Series 120 Vinester" Carboline "Plasite 4110" or Sherwin-Williams "Magnalux 304FF".
Heat-Resistant	Suitable for temperatures up to 400°F [207°C]; Ameron "Amerlock 400", Carboline "Thermaline 450", Tnemec "43-36 Chrome Aluminum", or Sherwin-Williams "Silver-Brite Aluminum".
High Heat-Resistant	Suitable for temperatures up to 1000°F [537°C]; Ameron " Amercoat 878", Carboline "Thermaline 4700 VOC", Tnemec "Series 39 Silicone Aluminum" or Sherwin-Williams "Silver-Brite Hi-Heat Silicone Aluminum".

H. Vinyl Ester With Graphite Filler Coating System

1. The corrosion protection system shall be a two component, 100 percent solids, solvent-free, vinyl ester resin, graphite filled, high-build protective and waterproofing coating, Dudick "Protecto-Coat 805". Concrete surface primer shall be a catalyzed vinyl ester resin containing conductive fillers, 100 percent solids, Dudick "Primer 27C". Finish coats shall be a two component, 100 percent solids, solvent-free, graphite filled vinyl ester resin.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. All surfaces to be coated shall be clean and dry and shall meet the recommendations of the coating manufacturer for surface preparation. Freshly coated surfaces shall be protected from dust and other contaminants. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. The gloss on previously coated surfaces shall be dulled if necessary for proper adhesion of topcoats.

B. Surfaces shall be free of cracks, pits, projections, or other imperfections that would interfere with the formation of a smooth, unbroken coating film, except for

concrete block construction where a rough surface is an inherent characteristic.

C. When applying touchup coating or repairing previously coated surfaces, the surfaces to be coated shall be cleaned as recommended by the coating manufacturer, and the edges of the repaired area shall be feathered by sanding or wire brushing to produce a smooth transition that will not be noticeable after the coating is applied. All coatings made brittle or otherwise damaged by heat of welding shall be completely removed.

D. Galvanized Surfaces

1. Galvanized surfaces shall be prepared for coating according to the instructions of the manufacturer of the epoxy enamel. Any chemical treatment of galvanized surfaces shall be followed by thorough rinsing with clean water.

E. Ferrous Metal Surfaces

1. Ungalvanized ferrous metal surfaces shall be prepared for coating by using one or more of the following cleaning procedures as specified: solvents (SSPC-SP1); blasting (SSPC-SP5, -SP6, -SP7, or -SP10); power tools (SSPC-SP3 or -SP11); or hand tools (SSPC-SP2). Oil and grease shall be completely removed in accordance with SSPC-SP1 before beginning any other cleaning method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used.

2. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible after installation shall have the surfaces prepared and coated before installation. Motors, drive trains, and bearings shall be protected during surface preparation in accordance with the equipment manufacturer's recommendations.

3. All cut or sheared edges shall be ground smooth to a 1/8 inch minimum radius for all material 1/4 inch thickness and larger. For material thickness less than 1/4 inch all cut or sheared edges shall be ground smooth to a radius equal to 1/2 the material thickness. Grinding of rolled edges on standard shapes with a minimum radius of the 1/16 inch will not be required.

4. All ferrous metal surfaces shall have all welds ground smooth and free of all defects in accordance with NACE Standard RPO178, Appendix C, Designation C and sharp edges ground smooth, if not previously prepared in the shop. Instead of blending of the weld with the base metal as required by the NACE standard, it will be acceptable to furnish a welded joint that has a smooth transition of the weld to the base metal. All welds shall be ground smooth to ensure satisfactory adhesion of paint.

5. The cleaning methods and surface profiles specified herein are minimums, and if the requirements printed in the coating manufacturer's data sheets exceed the limits specified, the value printed on the data sheets shall become the minimum requirement.

F. Ferrous Metal Surfaces – Non-immersion Service

1. Ferrous metal surfaces, including fabricated equipment, in non-immersion service shall be cleaned to the degree recommended by the coating manufacturer for surfaces to be coated with coal tar epoxy, epoxy enamel, and heat-resistant coatings, except galvanized surfaces. Blast cleaning to at least SSPC-SP6 shall be used where recommended by the coating manufacturer, and may be used elsewhere at the option of Contractor, provided that no dust is permitted to settle on adjacent wet coating. Surface profile shall be as recommended by coating manufacturer, but not less than 2 mils.

G. Ferrous Metal Surfaces - Immersion Service

1. Surface preparation of ferrous metal surfaces in immersion service shall consist of blast cleaning to at least SSPC-SP10 and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 3.5 mils.

H. Concrete Surfaces

1. All concrete surfaces shall be free of objectionable substances and shall meet the coating manufacturer's recommendations for surface preparation. Any other surface preparation recommended by the coating material manufacturer shall be brought to Engineer's attention and may be incorporated into the work if acceptable to Engineer.

2. All concrete surfaces shall be dry when coated and free from dirt, dust, sand, mud, oil, grease, and other objectionable substances. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started.

3. New concrete shall have cured for at least 4 weeks before coating is applied as recommended by the material manufacturer. Concrete surfaces shall be tested for capillary moisture in accordance with ASTM D4263. There shall be no capillary moisture when coatings are applied on concrete.

4. All surfaces to be coated shall be cleaned in accordance with ASTM D4258 and abraded in accordance with ASTM D4259. Surface profile shall be at least 25 percent of the dry film thickness specified for the coating system.

Prior to application of the coating, the surfaces shall be thoroughly washed or cleaned by air blasting to remove all dust and residue. Spalled areas, voids, and cracks shall be repaired in accordance with the Concrete section and as acceptable to the Engineer. Fins and other surface projections shall be removed to provide a flush surface before application of coating.

5. Except where epoxy enamel is applied as damp-proofing, the concrete surfaces, including those with bug holes less than 1 inch in any dimension, shall be prepared when required and as recommended by the manufacturer, using an epoxy concrete filler and surfacer. Where coating with a vinyl ester the concrete filler and surfacer shall be as recommended by the manufacturer to be compatible with vinyl ester.

I. Concrete Block Surfaces

1. Voids and openings in concrete block surfaces shall be pointed. All exposed exterior surfaces and surfaces to be coated with epoxy enamel, including the joints, shall be filled so that a continuous unbroken coating film is obtained.

J. Copper Tubing

1. All flux residue shall be removed from joints in copper tubing. Immediately before coating is started, tubing shall be wiped with a clean rag soaked in xylol.

K. Plastic Surfaces

1. All wax and oil shall be removed from plastic surfaces that are to be coated, including PVC and FRP, by wiping with a solvent compatible with the specified coating.

L. Hardware

1. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to coating if there is no evidence of dirt, corrosion, or foreign material.

M. Aluminum

1. When a coating system is required, remove all oil or deleterious substance with neutral detergent or emulsion cleaner or blast lightly with fine abrasive.

N. Stainless Steel

1. When a coating system is required, surface preparation shall conform to the coating manufacturer's recommendations.

3.2 MIXING AND THINNING

A. Coating shall be thoroughly mixed each time any is withdrawn from the container. Coating containers shall be kept tightly closed except while coating is being withdrawn.

B. Coating shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied coating be reduced, by addition of coating thinner or otherwise, below the thickness recommended by the coating manufacturer. Thinning shall be done in compliance with all applicable air quality regulations.

3.3 APPLICATION

A. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be thoroughly dry and hard before the next coat is applied. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer.

B. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.

C. Priming

1. Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) of primer before application of the primer coat. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating.

2. Abraded and otherwise damaged portions of shop-applied coating shall be cleaned and recoated as recommended by the manufacturer of the finish coating. Welded seams and other uncoated surfaces, heads and nuts of field-installed bolts, and surfaces where coating has been damaged by heat shall be given a brush coat of the specified primer. Before the specified spot or touchup coating of metal surfaces, edges, corners, crevices, welds, and bolts in the area of the spot or touchup coating shall be given a brush coat of primer. This patch, spot, or touchup coating shall be completed, and the paint film shall be dry and hard, before additional coating is applied.

D. Epoxy Enamel

1. When used, epoxy enamel shall be applied in accordance with the coating manufacturer's recommendations, including temperature limitations and

protection from sunlight until top-coated.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

3. When applying high build epoxy coatings with a roller or brush and where a dry film thickness of at least 4-6 mils per coat is required, two or more coats shall be applied to achieve the recommended dry film thickness equal to a spray applied coating.

E. Coal Tar Epoxy

1. When used, the application of coal tar epoxy, including time limits for recoating, shall conform to the recommendations of the coating manufacturer.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

F. Vinyl Ester

1. When used, the application of vinyl ester coating system, including time limits for recoating and temperature requirements of the materials, shall conform to the recommendations of the coating manufacturer.

G. Film Thickness

1. The total coating film thickness including intermediate coats and finish coat, shall be not less than the following:

Type of Coating	Minimum Dry Film Thickness
Medium consistency coal tar	20 mils.
Coal tar epoxy (two coats)	20 mils.
Epoxy enamel	
Floors	5 mils.
Surfaces with first coat of epoxy enamel and final coat of aliphatic polyurethane	7 mils (5 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Surfaces with first and second coat of epoxy enamel and final coat of aliphatic polyurethane	12 mils (10 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Other surfaces (two coats)	10 mils.
Immersion service (three coats)	15 mils.

Type of Coating (cont.)	Minimum Dry Film Thickness (cont.)
Vinyl ester	30 mils.
Heat-resistant (silicone)	3 mils.
High heat-resistant (silicone)	3 mils.
Other surfaces (one coat)	5 mils.
Other surfaces (two coats)	10 mils.

H. Weather Conditions

1. Coatings shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied coating.

2. Coatings shall not be applied at temperatures lower than the minimum temperature recommended by the coating manufacturer, or to metal surfaces such as tanks or pipe containing cold water, regardless of the air temperature, when metal conditions are likely to cause condensation. When necessary for proper application, a temporary enclosure shall be erected and kept heated until the coating has fully cured.

3. Coatings shall not be applied at temperatures higher than the maximum temperature recommended by the coating manufacturer. Where coatings are applied during periods of elevated ambient temperatures, Contractor and the coatings manufacturer shall be jointly responsible to ensure that proper application is performed including adherence to all re-coat window requirements. Precautions shall be taken to reduce the temperature of the surface application, especially for metal, at elevated temperatures above 100℉ [38℃] including shading application area from direct sunlight, applying coating in the evening or at night, and ventilating the area to reduce the humidity and temperature,

4. Vinyl ester coating materials, when required, shall be maintained during transportation, storage, mixing, and application at the temperature required by the coating manufacturer, 35℉ [2℃] to 90℉ [32℃].

3.4 REPAIRING FACTORY FINISHED SURFACES

A. Factory finished surfaces damaged prior to acceptance by Owner shall be spot primed and recoated with materials equivalent to the original coatings. If, in the opinion of Engineer, spot repair of the damaged area is not satisfactory, the entire surface or item shall be recoated.

3.5 PROTECTION OF SURFACES

A. Throughout the work Contractor shall use drop cloths, masking tape, and other

suitable measures to protect adjacent surfaces. Contractor shall be responsible for correcting and repairing any damage resulting from its or its subcontractors' operations. Coatings spilled or spattered on adjacent surfaces which are not being coated at the time shall be immediately removed. Exposed concrete or masonry not specified to be coated which is damaged by coatings shall be either removed and rebuilt or, where authorized by Owner, coated with two coats of masonry coating.

3.6 FIELD QUALITY CONTROL

A. The following inspection and testing shall be performed: surface profile, visual inspection, and wet and dry film thickness testing. All inspection and testing shall be witnessed by ENGINEER.

1. Surface Profile Testing. The surface profile for ferrous metal surfaces shall be measured for compliance with the specified minimum profile. The surface profile for concrete shall comply with SSPC 13/NACE 6 Table 1 for severe service.

2. Visual Inspection. The surface of the protective coatings shall be visually inspected.

3. Film Thickness. Coating film thickness shall be verified by measuring the film thickness of each coat as it is applied and the dry film thickness of the entire system. Wet film thickness shall be measured with a gauge that will measure the wet film thickness within an accuracy of ±0.5 mil. Dry film thickness shall be measured in accordance with SSPC-PA 2.

3.7 FIELD PRIMING SCHEDULE

A. In general, steel and cast iron surfaces of equipment are specified to be shop primed. Any such surfaces which have not been shop primed shall be field primed. Damaged or failed shop coatings which have been determined unsuitable by Engineer shall be removed and the surfaces shall be field coated, including prime coat (if any). Galvanized, aluminum, stainless steel, and insulated surfaces shall be field primed. Primers used for field priming, unless otherwise required for repair of shop primers, shall be:

Surface To Be Primed	Material
Equipment, surfaces to be coated with	
Aliphatic polyurethane	Universal primer.
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.
Vinyl ester	Same as finish coats.
Steel and cast iron, surfaces to be coated with	
Epoxy enamel	Same as finish coats.
Coal tar coating	Same as finish coats.
Aluminum	Epoxy enamel.
Galvanized	Epoxy enamel.
Copper	Epoxy enamel.
Stainless steel	Epoxy enamel.
Plastic surfaces, including PVC and FRP	Same as finish coats.
Insulated piping	As recommended by manufacturer of finish coats.
Concrete, surfaces to be coated with epoxy enamel	
For damp-proofing	Epoxy enamel.
For all other surfaces	Epoxy concrete filler and surfacer.
Concrete block exposed in exterior locations	Epoxy concrete block filler.
Concrete block to be coated with epoxy enamel	Epoxy concrete block filler.

B. Unless otherwise recommended by the coating manufacturer or specified herein, priming will not be required on concrete, or concrete block, nor on metal surfaces specified to be coated with epoxy enamel, coal tar epoxy, and heat-resistant coatings. Concrete surfaces to be coated with epoxy enamel shall be filled with epoxy concrete filler and surfacer so that a continuous film is obtained, except where concrete is damp-proofed with epoxy enamel.

3.8 FINISH COATING SYSTEMS

A. The following schedule lists coatings systems and coating system designations.

No.	Finish Coating Systems	Coating System Designation						
		A	C	E	F	G	H	P
1.	Epoxy enamel – One coat	x			x	x		
2.	Epoxy enamel – Two coats	x	x	x	x	x		x
3.	Epoxy enamel / NSF – Two coats		x	x				
4.	Epoxy enamel – Three coats	x	x	x				
5.	Epoxy enamel / NSF – Three coats		x	x				
6.	Epoxy enamel – First coat Aliphatic polyurethane – Finish coat	x	x	x	x	x		x
7.	Epoxy enamel – First and second coat Aliphatic polyurethane – Finish coat			x	x	x		
8.	Universal primer – First coat Aliphatic polyurethane – Finish coat	x		x				
9.	Medium consistency coal tar – Two coats	x	x	x				
10.	Coal tar epoxy – Two coats	x	x	x				
11.	Vinyl ester – Two coats			x				
12.	Heat resistant – Two coats						x	
13.	High heat resistant – Two coats						x	

B. Surfaces Not To Be Coated. Unless otherwise specified, the following surfaces shall be left uncoated:

1. Exposed aluminum, except ductwork.
2. Polished or finished stainless steel. Unfinished stainless steel, except flashings and counter flashings, shall be coated.
3. Nickel or chromium.
4. Galvanized surfaces, except piping, conduit, ductwork, and other items specifically noted.
5. Rubber and plastics, except as specified.
6. Exterior concrete.
7. Surfaces specified to be factory finished.

C. Shop Finishing. Items to be shop finished include the following. Shop finishing shall be in accordance with the coating schedule and the manufacturer's recommendations.

1. Other surfaces where blast cleaning cannot be or is not recommended to be performed in the field.
2. Other items as otherwise specified.

D. Field Coating. Items to be field coated include the following. Field coating shall be in accordance with the field priming schedule, the coating schedule, and the manufacturer's recommendations.

1. Surfaces not indicated to be shop finished and surfaces where blast cleaning can be performed in the field.
2. All interior ferrous metal surfaces.
3. Other items as otherwise specified.

3.9 METAL SURFACES COATING SCHEDULE

Surface To Be Coated	Finish Coating System
Non-galvanized structural and miscellaneous steel exposed to view or to the elements in exterior locations.	A6
Non-galvanized structural and miscellaneous steel exposed to view inside buildings.	A2
Unless otherwise specified, pumps, motors, speed reducers, and other machines and equipment exposed to view.	E8
Heating and air conditioning units, convector covers, electrical equipment cabinets, and similar items and equipment (unless factory finished) exposed to view.	E8
Cast Iron and steel piping inside buildings, including valves, fittings, flanges, bolts, supports, and accessories, and galvanized surfaces after proper priming.	A2
Supports and miscellaneous metal for equipment handling corrosive chemicals.	Indoor - A2
Aluminum in contact with concrete.	F1
Aluminum and galvanized ductwork and conduit indoors.	F2 or G2
Aluminum and galvanized ductwork and conduit exposed to elements outdoors.	F7 or G7

Surface To Be Coated	Finish Coating System
Ductile iron piping, fittings, supports, valves, bolts, and accessories exposed above grade	A8

3.10 CONCRETE AND MASONRY SURFACES COATING SCHEDULE

Surface To Be Coated	Finish Coating System
Concrete adjacent to corrosive chemical storage and feed equipment.	Vinyl Ester With Graphite Filler

3.11. PIPING IDENTIFICATION SCHEDULE

A. Exposed piping and piping in accessible chases shall be identified with lettering or tags designating the service of each piping system, marked with flow directional arrows, and color coded.

B. Piping scheduled to be color coded shall be completely coated with the indicated colors, except surfaces specified to remain uncoated shall include sufficiently long segments of the specified color to accommodate the lettering and arrows. All other piping shall be coated to match adjacent surfaces, unless otherwise directed by ENGINEER.

C. Location.

1. Lettering and flow direction arrows shall be provided on pipe near the equipment served, adjacent to valves, on both sides of wall and floor penetrations, at each branch or tee, and at least every 50 feet in straight runs of pipe. If, in the opinion of Engineer, this requirement will result in an excessive number of labels or arrows, the number required shall be reduced as directed.

D. Lettering

1. Lettering shall be a vinyl label on piping or shall be applied as snap-on markers. Snap-on markers shall be plastic sleeves, Brady "Bradysnap-On B- 915" or Seton "Setmark". Letter size shall be as follows:

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5/8 inch and smaller	Metal tags -1/4 inch
3/4 to 4 inches	3/4 inch
5 inches and larger	2 inches

E. Color Coding and Lettering.

1. All piping for the following services shall be color coded. Bands shall be 6 inches wide spaced along the pipe at 5 foot intervals. For services not listed, the color coding and lettering shall be as directed by the ENGINEER.

Piping Identification		
Service	**Color of Pipe**	**Color of Letters**
Ammonia	White	Black
Chlorine (solution)	Yellow	Black
Drain	Dark gray	White
Fire Protection Water	Red	White
Nonpotable or Raw Water	Clover (Tenemic)	Black
Plumbing Vents	Dark gray	White
Potable Water (hot or cold)	Safety blue	Black
Sample	Safety blue	Black
Service Water	Safety blue	Black
Caustic	Yellow with green bands	Black

2. Electrical conduit (with the exception of galvanized) shall be coated to match adjacent ceiling or wall surfaces as directed by ENGINEER. Vent lines shall be coated to match surfaces they adjoin.

3. Numerals at least 2 inches high shall be painted on or adjacent to all accessible valves, pumps, flowmeters, and other items of equipment which are identified on the drawings or in the specifications by number.

END OF SECTION

SECTION 15065

STEEL PIPE

PART 1 – GENERAL

1.01 WORK INCLUDED

A. The CONTRACTOR shall furnish lined and coated welded steel pipe, all in accordance with the requirements of these SPECIFICATIONS and the CONTRACT DOCUMENTS.

B. The CONTRACTOR shall furnish cement mortar lined and polyurethane coated steel pipe, fittings, and specials that conform to ANSI/AWWA C200, C205, and/or C222, subject to the requirements of these SPECIFICATIONS. Cement mortar lined taped coated steel pipe, fittings, and specials shall only be furnished as specified in the CONTRACT DOCUMENTS or as directed by the ENGINEER for field repairs of existing pipe or connections.

C. The pipe shall be of the diameter and meet the internal pressure and external load specified, shall be furnished complete with welded joints, as indicated in these SPECIFICATIONS, and all specials and fittings shall be provided as required under the CONTRACT DOCUMENTS.

D. The CONTRACTOR shall furnish all the materials, tools, labor, supervision, and appliances for and properly install, connect, adjust, test, disinfect, and place in continuous satisfactory service all welded steel pipe and fittings at the locations and to the elevations indicated on the DRAWINGS, specified or required for the proper completion of the WORK.

E. Wherever the WORK disturbs existing conditions or WORK already completed, the CONTRACTOR shall restore the same to its original condition in every detail. All such replacement and repair shall meet with the approval of the ENGINEER.

F. Welded steel pipe and fittings are not necessarily completely indicated or detailed on the DRAWINGS. The DRAWINGS are schematic only, and indicate pipe and fittings in a general way. The CONTRACTOR shall furnish all materials, pipe, and fittings required, and shall conform to all applicable LAWS AND REGULATIONS.

G. The CONTRACTOR shall provide an installation, complete in every detail, whether or not indicated on the DRAWINGS, or specified herein. The CONTRACTOR shall be responsible for all details, devices, accessories, and special construction necessary to properly furnish, install, adjust, test, disinfect, and place in continuous satisfactory service, and complete the WORK in an acceptable manner.

H. Full responsibility for designing, fabricating, and installing the steel pipe and fittings, for selecting materials of construction only from accepted alternative materials, and for demonstrating compliance with specified performance requirements shall rest with the CONTRACTOR and, through the CONTRACTOR, the SUPPLIER. SUPPLIER shall mean the pipe manufacturer,

unless otherwise noted. CONTRACTOR shall field verify all SUPPLIER furnished pipe dimensions upon delivery to the project site.

I. The ENGINEER'S acceptance of 1) the manufacture and installation of the welded steel pipe and fittings; 2) the use of materials included in these SPECIFICATIONS; and 3) alternative materials offered by the CONTRACTOR shall not relieve the CONTRACTOR and SUPPLIER of full responsibility for meeting all performance requirements and guarantees.

J. CONTRACTOR shall maintain an inventory of spare steel butt straps, pipe shorts, fittings, and specials for use in the event that adjustments must be made in the pipeline alignment during construction. These items shall have the interior and exterior coated as indicated in the Protective Coatings section for extended outside storage.

K. Welding Procedure Specification (WPS):
1. Qualified by testing in accordance with ASME BPVC SEC IX for shop welds and AWS D1.1/D1.1M for field welds.
2. PQRs conducted on unlisted base metal to be production welded as required in the referenced welding Code shall be traceable to heat lots.
3. Written WPS required for welds, both shop and field.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of these SPECIFICATIONS, all WORK specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following documents to the extent that the requirements therein are not in conflict with the provisions of this Section.

1. Commercial Standards: (Latest Revision)

ANSI/ASME	B16.5	Pipe Flanges and Flanged Fittings and Other Special Alloys
ANSI/ASME	B16.9	Factory-Made Wrought Buttwelding Fitting
ANSI/ASME	B36.10 Welded and Seamless Wrought Steel Pipe	
ANSI/ASTM	A139	Specification for Electric Fusion Arc – Welded Steel Pipe (Sizes 4-in. and Over)
ANSI/ASTM	E165	Methods for Liquid Penetrant Inspection
ASNT	SNTTC1A	Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing
ANSI/AWS	D1.1	Structural Welding Code-Steel

ANSI/AWWA	C200	Steel Water Pipe 6 IN. and Larger
ANSI/AWWA	C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe – 4 IN. and Larger - Shop Applied
ANSI/AWWA	C206	Field Welding of Steel Water Pipe
ANSI/AWWA	C207	Steel Pipe Flanges for Waterworks Service Sizes 4-IN. through 144 IN.
ANSI/AWWA	C208	Dimensions for Fabricated Steel Water Pipe Fittings
ANSI/AWWA	C209	Cold-Applied Tape Coatings for Steel Water Pipe, Special Sections, Connections, and Fittings
ANSI/AWWA	C210	Liquid Epoxy Coatings and Linings for Steel Water Pipe and Fittings
ANSI/AWWA	C216	Heat-Shrinkable Cross-Linked Polyolefin Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines
ANSI/AWWA	C219	Bolted, Sleeve-Type Couplings for Plain-End Pipe
ANSI/AWWA	C222	Polyurethane Coating Systems for the Interior and Exterior of Steel Water Pipe and Fittings
ANSI/AWWA	C602	Cement Mortar Linings In Place
ANSI/AWWA	C604	Installation of Buried Steel Water Pipe – 4 In. (100mm) and Larger
ANSI/AWWA	C606	Grooved and Shouldered Joints
ASTM	A36	Specification for Structural Steel
ASTM	A181	Specification for Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for General Service

ASTM	A283	Specification for Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes, and Bars
ASTM	A285	Specification for Pressure Vessel Plates, Carbon Steel, Low and Intermediate-Tensile Strength
ASTM	A307	Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners
ASTM	A325	Specification for High Strength Bolts for Structural Steel Joints
ASTM	A568	Specification for General Requirements for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled
ASTM	A572	Specification for High Strength Low Alloy Columbium-Vanadium Steels of Structural Quality
ASTM	A1011	Standard Specification for Steel, Sheet and Strip, Hot-Rolled Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
ASTM	C150	Specification for Portland Cement
ASTM	E329	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
ASTM	E709	Standard Guide for Magnetic Particle Testing
ASTM	E1255	Standard Practice for Radioscopy.
ANSI	B1.1	Unified Inch Screw Threads (UN and UNR Thread Form)
ANSI/ASME	B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800
ANSI	B18.2.1	Square and Hex Bolts and Screws, Including Askew Head Bolts, Hex Cap Screws, and Lag Screws

ANSI	B18.2.2	Square and Hex Nuts
ASME	BPVC	Boiler and Pressure Vessel Code, Section VIII
ASME	BPVC	Welding and Brazing Qualifications, Section IX
ANSI/ASTM	E709	Standard Guide for Magnetic Particle Testing
AWS	D1.1/D1.1M	Structural Welding Code – Steel
AWS	B2.1	Specification for Welding Procedure and Performance Qualifications
AWS	QC 1	Standard for AWS Certification of Welding Inspectors
AWWA	M-11	Steel Water Pipe – A Guide for Design and Installation
NSF	60	Drinking Water Treatment Chemicals – Health Effects
NSF	61	Drinking Water System Components – Health Effects

2. DEFINITIONS

A. Fittings: Including, but not limited to fittings, closure pieces, bends, reducers, tees, wyes, bifurcations, crosses, outlets, manifolds, nozzles, wall sleeves, bulkheads, and other piping and appurtenances fabricated from steel plate, sheet, or coils as required to provide the Work, complete. Fittings shall include piping above ground or inside structures.

B. Acronyms:
   1. CJP: Complete Joint Penetration.
   2. CWI: Certified Welding Inspector.
   3. MT: Magnetic Particle Testing.
   4. NDE: Nondestructive Examination.
   5. NDT: Nondestructive Testing.
   6. PJP: Partial Joint Penetration.
   7. PQR: Procedure Qualification Record.
   8. PT: Liquid Penetrant Testing.
   9. RT: Radiographic Testing.
   10. UT: Ultrasonic Testing.

11. VT: Visual Testing.
12. WPQ: Welder/Welding Operator Performance Qualification.
13. WPS: Welding Procedure Specification.

1.03 SUBMITTALS

A. Plant Certification: The CONTRACTOR shall provide the ENGINEER with evidence that the SUPPLIER and the proposed manufacturing plant have either received ISO 9000 Certification, or have been certified by the Steel Plate Fabricators Association as a quality steel pipe producer and facility before the start of manufacture of the pipe required for this PROJECT.

B. SHOP DRAWINGS: The CONTRACTOR shall submit SHOP DRAWINGS of pipe, fittings, specials, joints, interior linings, and coatings in accordance with the requirements of the CONTRACT DOCUMENTS, the requirements of AWWA M11 and ANSI/AWWA C200, C208, C205, C214, and C222 and the following supplemental requirements as applicable:

1. Certified dimensional drawings of all pipe, specials, and fittings.

2. Joint and pipe/fitting wall construction details that indicate the type and thickness of the steel wall; manufacturing tolerances; and all other pertinent information required for the manufacture and performance history of the product.

3. All fittings and specials shall be properly reinforced to withstand the internal pressure both circumferential and longitudinal, and the external loading conditions as indicated in the CONTRACT DOCUMENTS.

4. Design calculations, signed and sealed by a Registered Professional Engineer licensed to practice in the State of Florida, of each section of pipe wall, joint reinforcing, girth joints, and specials; all sufficient to ascertain conformance of pipe and fittings with these SPECIFICATIONS.

5. Laying schedule and marking diagrams that indicate the specific number (identifying number) of each pipe, fitting and special, and the location and direction of lay of each pipe and fitting in the completed line. The laying schedule shall be prepared based on the alignment survey provided by the CONTRACTOR's registered land surveyor. In addition, the laying schedule shall include: the pipe station and invert elevation at all changes in grade or horizontal alignment; the station and invert elevation to which the bell end of each pipe will be laid; all elements of curves and bends, both in horizontal and vertical alignment; and the limits of each reach of restrained and/or welded joints, or of concrete encasement.

6. Laying schedules shall be prepared based on the alignment survey provided by the CONTRACTOR's registered land surveyor and shall be submitted at a scale of not less than 1 inch equal to 40 feet. Drawings of special details such as reinforcement, cathodic protection system elements, testing stations, joint bonding, etc. shall be at a scale that clearly depicts the item being detailed and in general shall not be at a scale less than 1/8 inch equal to 1 foot.

7. Within ten (10) days after receipt of the NOTICE OF AWARD, the CONTRACTOR shall submit the proposed proof of design testing dates and production schedules of all materials to be used in the PROJECT. The actual testing and production dates shall be confirmed by the CONTRACTOR in writing to the ENGINEER not less than fourteen (14) days prior to the start of a test or production run.

8. Steel pipe and fittings shop spiral weld ultrasonic test reports as specified in Section 1.08.B.

9. Steel fittings manually welded ultrasonic tests as specified in Section 1.08.B.

10. Detailed drawings of joint bonds, corrosion test stations, and all corrosion protection systems required for the PROJECT.

11. The SUPPLIER shall submit through the CONTRACTOR an affidavit that the pipe, fittings and other products or materials furnished for this PROJECT comply with all applicable provisions of these SPECIFICATIONS.

12. Material lists and steel reinforcement schedules that include and describe all materials to be utilized.

13. Full and complete information regarding location, type, size, and extent of all welds shall be shown on the SHOP DRAWINGS. The SHOP DRAWINGS shall distinguish between shop and field welds. SHOP DRAWINGS shall indicate by welding symbols or sketches the details of the welded joints, and the preparation of parent metal required to make them. Joints or groups of joints in which welding sequence or technique are especially important shall be carefully controlled to minimize shrinkage stresses and distortion.

14. Certified mill test reports of all materials used in the manufacture and/or installation of the pipe.

15. The CONTRACTOR shall furnish lists, in duplicate, of all pieces of pipe and fittings in each shipment received, and these lists shall give the identifying number, weight, class, size, and description of each item received at the PROJECT site.

16 The CONTRACTOR's inventory of spare steel pipe shorts, fittings, and adapters shall be included in these lists.

17. Details of the stulling assembly.

18. A complete field pressure testing, flushing, and disinfection (if applicable) plan for review and approval prior to the performance of any of these activities.

C. Certifications: The SUPPLIER shall submit through the CONTRACTOR to the ENGINEER certified copies of the following supplemental data for all pipe, fittings, and specials:

1. Certified mill test reports (Section 1.03.B.14).

2. All Proof of Design Tests listed in Section 1.06.

3. Hydrostatic Test Reports listed in Section 1.07.B.

4. Certification of calibration of testing and measuring equipment as specified in Section 1.07.A.

5. Results of production and shop tests listed in Section 1.07.

6. Welders and welding methods.

7. All quality control check sheets used during the inspection and testing of pipe and fittings produced for this PROJECT.

8. The results of all shop and/or field repairs made to any pipe, fittings, lining or coating.

9. Results of shop holiday testing of coatings on all pipe, fittings and specials listed in Section 1.07.G.

10. Certification of installation observations by SUPPLIER'S field representative as specified in Section 3.15.

11. The SUPPLIER shall submit through the CONTRACTOR six (6) copies of the SUPPLIER'S sworn certificate of inspection and testing of all steel pipe and fittings used on the WORK. All pipe and fittings will be subject to inspection and acceptance by the ENGINEER during production and after delivery of material to PROJECT site. No broken, cracked, misshaped, imperfectly coated, damaged or otherwise unsatisfactory pipe or fittings shall be used. Such inspection by the ENGINEER shall not relieve the CONTRACTOR of full responsibility for the materials furnished and installed.

12. Certification of polyurethane applicators as specified in Section 3.07.A.

D. Design Report: The SUPPLIER shall submit through the CONTRACTOR a design report to the ENGINEER for acceptance prior to the start of fabrication of the pipe. This report shall contain sketches and calculations in sufficient detail to show that the applicable design limitations are satisfied under design conditions and that the design is in accordance with these SPECIFICATIONS. Design drawings shall be included showing all dimensions necessary to verify the design, including but not limited to:

1. Steel pipe thickness.

2. Grades of steel to be used in the fabrication of the pipe.

3. Design mixes for use for the cement mortar lining including sources of the materials.

4. SUPPLIER'S maximum recommended joint deflection.

5. Catalog cuts of proposed coating materials and application methods.

Specifications of the material to be used in the fabrication that vary from materials specified herein shall be included in the report with data and/or tests substantiating acceptability for use in the PROJECT and in sufficient detail to permit verification by the ENGINEER. Materials shall not be used until accepted by the ENGINEER. The design report shall be signed and sealed by a Registered Professional Engineer licensed to practice in the State of Florida.

E. All expenses incurred in making samples for certification of tests and in the preparation of the design report shall be borne by the CONTRACTOR.

1.04 QUALITY ASSURANCE

A. Materials and workmanship: The CONTRACTOR shall furnish materials under these SPECIFICATIONS that are new, unused, and as specified, or if not specified herein, which are the best of their respective kind, free of defects and imperfections, and suitable for the service intended, subject to the acceptance of the ENGINEER.

The CONTRACTOR shall provide workmanship that is first class in every respect and have installation performed by workers thoroughly experienced in such work. The finished WORK shall have an appearance in accordance with these SPECIFICATIONS and acceptable to the OWNER.

The CONTRACTOR shall perform the WORK in accordance with all applicable LAWS AND REGULATIONS.

B. General: The welded steel pipe furnished under these SPECIFICATIONS shall comply with ANSI/AWWA C200 except as it may be modified herein.

Welders and welding methods shall be certified to a nationally recognized welding specification for the type of steel and weld used to manufacture the pipe and fittings.

All test equipment used in activities affecting quality control shall be calibrated and certified at no longer than annual intervals unless otherwise specified or required.

All pipe shall be clean, sound, and without defects. If the pipe is determined by the ENGINEER not to be in compliance with this SPECIFICATION and repairs to the pipe are required, no manner of repair will be accepted unless otherwise specified or accepted by the ENGINEER.

The ENGINEER shall have the right to determine the rejection of pipe as defined in ANSI/AWWA C200 Section 5.1.3. "Rejection of Pipe".

1.05 SUPPLIER'S QUALIFICATIONS

A. All pipe, fittings, and specials shall be manufactured, fabricated, coated and lined by a single qualified SUPPLIER per Section 1.01. Fittings may be fabricated at a site other than where the pipe is manufactured; however, all testing and application of linings and coatings shall be performed where the pipe or fitting is manufactured and shall be subject to inspection by the OWNER and/or the ENGINEER. The SUPPLIER shall have at least five years' experience in supplying pipe, fittings, and specials greater than 36 inches in diameter. The SUPPLIER shall be required to show experience in supplying pipe in environments similar to those expected to exist on this PROJECT and that the pipe supplied in those environments has functioned satisfactorily.

B. The SUPPLIER(s) supplying pipe, fittings, and specials shall submit the following with the CONTRACTOR'S bid for review by the OWNER prior to award:

1. A list of 5 similar projects successfully installed and in operation for the last 5 years including: pipe diameters and length; project environment (to the extent available): project name and location; consulting engineer's name, address, phone number and reference contact; installation contractor's name, address, phone number and reference contact; owner's name, address, phone number and reference contact.

2. A quality assurance manual showing the existence and structure of an internal quality assurance program operating independently of production management, with check points and procedures to identify materials received and products manufactured, all as conforming to these Specifications.

3. Name of Supplier and evidence of plant and equipment capacity to perform the required pipe production, testing, fabrication, lining and coating, showing that all materials can be fabricated and installed within the Contract Time.

1.06 PROOF OF DESIGN TESTS

A. Proof of Design Tests (or previously performed Proof of Design Tests that were witnessed and certified by an independent testing laboratory for pipe of the diameter and joint design used on the PROJECT) shall be required for each joint configuration of each diameter of pipe to be supplied for the PROJECT except for butt weld and double-welded lap joints. Pipe to be tested shall be mortar lined and shall be representative in every way of the pipe to be supplied under these SPECIFICATIONS.

B. Testing, if performed, shall be witnessed and accepted by the ENGINEER or its designee. No production pipe shall be manufactured and no pipe shall be shipped to the PROJECT except at the CONTRACTOR'S sole risk until pipe Proof of Design Tests have been completed and accepted by the ENGINEER. The CONTRACTOR shall provide a minimum of fourteen (14) DAYS NOTICE to the ENGINEER prior to conducting the Proof of Design Tests.

C. Straight lengths of test pipe shall be a full length of pipe as that to be used on the PROJECT. Pipe that is used in and successfully passes the Proof of Design Tests can be supplied for use as pipe on the PROJECT if acceptable to the ENGINEER.

D. Joints shall be designed to resist thrust for the pressures and conditions specified or shown on the DRAWINGS. Proof of Design Tests shall be performed that show the restrained joint's ability to perform as indicated in these SPECIFICATIONS and that stresses in the pipe will not exceed those specified.

E. During the Proof of Design Test, no leaks, joint seepage, cracks (greater than 0.003 inches wide nor longer than 12 inches in length) in the mortar lining or disbonding of the lining shall occur.

F. Hydrostatic Proof of Design Test: Hydrostatic tests shall include at least 2 lengths of pipe. Pipe to be hydrostatically tested may be pre-wetted by maintaining a hydrostatic pressure of not more than the PROJECT working pressure for a period not to exceed 48 hours. Pipe shall be filled with water and suitably bulkheaded or, if prewetted, water shall be added. Pressure shall be increased to the Quality Assurance (QA) test pressure indicated in these SPECIFICATIONS. Test period shall start 5 minutes after pipe has reached QA test pressure. Pipe shall be hydrostatically tested and kept under the QA test pressure for at least 20 minutes. During the test period no leak or joint seepage shall occur.

G. Failing Proof of Design Tests: Any diameter of pipe or joint configuration failing any Proof of Design Test shall be redesigned by the SUPPLIER and retested until all tests are passed. The costs of any observation of retests by the OWNER or the ENGINEER shall be paid by the CONTRACTOR.

1.07 SHOP TESTS ON PRODUCTION PIPE

A. General: All tests required by ANSI/AWWA C200, C205, C208, C209, C210, C214, and C222 and as required herein shall be performed by the SUPPLIER and records of all tests shall be provided to the OWNER. Shop tests shall be subject to witness by the ENGINEER and/or OWNER and certified test reports shall be submitted by the SUPPLIER through the CONTRACTOR to the ENGINEER for acceptance. No lot of pipe shall be shipped to the site of the WORK until all required shop tests are completed and approved by the ENGINEER ..

The CONTRACTOR shall perform or have performed material tests at no additional cost to the OWNER. The OWNER and/or the ENGINEER shall have the right to witness all testing conducted by the CONTRACTOR; provided that, the CONTRACTOR'S schedule is not delayed for the convenience of the OWNER. It shall be the responsibility of the CONTRACTOR to provide NOTICE to the ENGINEER of proposed tests in accordance with this Section and the CONTRACT DOCUMENTS.

Tests and examinations to verify the quality of work shall be performed by persons other than those engaged in the activity being examined. Such persons shall not report directly to the production supervisor responsible for the manufacture of the pipe.

All instruments, gauges, and other testing and measuring equipment used in activities affecting quality shall be of proper range, type, and accuracy to verify conformance with SPECIFICATION requirements. Procedures shall be in effect to assure that all gauges and other testing and measuring equipment are calibrated and certified at no longer than annual intervals. Calibration shall be against measurement standards that have known relationship to national standards where

such exist. Gauges must be calibrated and certified for the piece of equipment of which they are a part and must remain on the piece of equipment following certification. The SUPPLIER shall submit through the CONTRACTOR to the ENGINEER certification of equipment calibration. Materials and items including products previously checked or manufactured with equipment found to be out of calibration or adjustment shall be considered unacceptable until it can be determined that all applicable requirements have been met.

The SUPPLIER's records of required tests and inspections shall include records of materials, manufacturing, examination, repairs, and test data taken before and during fabrication. The ENGINEER reserves the right to request that specific data be included in the records that may not otherwise be included. Whenever tests and examinations are performed on a pipe element or pipe, the appropriate pipe identification number shall be shown on the report. Copies of all records of tests conducted by the SUPPLIER, independent laboratory, or material manufacturers shall be submitted by the SUPPLIER through the CONTRACTOR to the ENGINEER in such form as to be appropriate for permanent records.

The ENGINEER shall have access to all records of tests and inspections related to pipe manufactured for use in the WORK.

In addition to those tests specifically required, the OWNER may request additional samples for testing by the OWNER. The cost for these additional samples shall be borne by the OWNER at no additional cost to the CONTRACTOR.

B. Hydrostatic Test: After the joint configuration is completed, and prior to lining or coating, each length of pipe and each fitting shall be hydrostatically shop tested and certified to a pressure that will induce a stress of not less than 75 percent of the specified minimum yield strength of the steel used in the manufacture of the pipe or fitting. Fittings fabricated from previously hydrostatically tested pipe need have only the new welds tested by a method acceptable to the ENGINEER.

C. Material Tests: Each heat of steel shall be tested for conformance to AWWA C200 for the following:
- tensile strength
- elongation
- yield strength
- thickness

D. Cement Mortar Lining: The cement mortar lining shall be non-destructively tested for thickness. The thickness shall be measured between 24 and 36 inches from each end at eight locations equally spaced around the circumference (45-degree arcs). The arithmetic mean value of the readings shall not be less than 94% of the nominal specified thickness, and no individual reading shall be less than 80% of the nominal specified thickness. Pipe with mortar lining that does not meet these criteria shall be cleaned and relined.

E. Inspection : No visible crack wider than allowed by ANSI/AWWA C205 shall be permitted in the lining of finished pipe. Loose areas of cement mortar linings in a pipe, fitting or special shall not be accepted.

F. Coating: The batch sampling, testing procedure, and basis of rejection for the polyurethane materials shall be in accordance with ANSI/AWWA C222, except that all tests will be conducted by the polyurethane SUPPLIER and shall be subject to witness by the ENGINEER and/or the OWNER at their discretion.

A certified report on test results for all coating material tests shall be submitted by the polyurethane SUPPLIER through the CONTRACTOR to the ENGINEER for acceptance prior to the onset of the coating application process. This report and the test data shall be generated by the coating SUPPLIER. Computer printouts on test data shall be sent to the coating applicator and shall be made available for review.

G. Holiday Testing: Each coated pipe, fitting, and special shall be electrically tested for flaws in the coating with a suitable holiday detector acceptable to the ENGINEER. Reference shall be made to ANSI/AWWA C222

All holidays detected, due to flaws or mislaps, shall be immediately repaired. The flawed or mislapped area shall be cleared of all affected material and coating repaired if necessary. The area shall then be rechecked with a holiday detector.

1.08 INSPECTION

A. General: The ENGINEER shall have the right to order any pipe, which in the ENGINEER'S opinion does not meet these SPECIFICATIONS, to be rejected and not shipped to the PROJECT site or returned from the PROJECT site at no cost to the OWNER.

The OWNER reserves the right to witness the testing of materials by the SUPPLIER or have same performed by an independent testing service. If the independent test results are found to meet the requirements of the SPECIFICATIONS, the costs for such testing shall be paid for by the OWNER. If the independent test results show that the pipe manufactured does not meet the requirements of these SPECIFICATIONS, the CONTRACTOR shall pay for all testing and retesting costs. The SUPPLIER shall make all plant laboratory facilities available to the OWNER and/or the ENGINEER and shall notify the ENGINEER at least fourteen (14) DAYS prior to start of production of the pipeline materials for the PROJECT.

B. Welding Procedures, Welder Qualifications, and Testing:

All welders shall be, as a minimum, qualified in positions as described in AWS B2.1. All welding procedures, welders, welding operators and tackers shall be qualified in accordance with ASME Section IX and AWS D1.1 and as defined in ANSI/AWWA C200

Prequalified welding procedures shall be required for, but not necessarily limited to, longitudinal and girth or spiral welds for pipe cylinders, reinforcing plates, ring flange welds, and plates for lug connections. Weld seam tolerances shall be in accordance with ANSI/AWWA C200.

Shop spiral welds on 100 percent of steel pipe lengths selected for testing through a random process, all shop spiral welds on fittings, and coil splice welds shall be ultrasonically tested by qualified and certified operators employed by the fabricator. Shop ultrasonic weld tests shall be in accordance with the latest edition of API 5L. All costs for ultrasonic shop testing shall be paid by the CONTRACTOR. The CONTRACTOR and the ENGINEER shall each be furnished a copy of all ultrasonic test reports.

All shop welds other than spiral welds shall be visually inspected and tested by ultrasonic or magnetic particle methods.

Personnel performing visual inspection of welds shall be qualified and currently certified as Certified Welding Inspectors (CWI) in accordance with AWS QC1, Standard for Qualification and Certification of Welding Inspectors. Personnel performing nondestructive tests shall be qualified and certified to the requirements of SNT-TC-1A.

Nondestructive examination procedures shall be submitted in accordance with the submittals section at the time welding procedures are submitted. Records of inspection, nondestructive examination, and material certification shall be furnished to the ENGINEER.

All costs for inspection of shop welds shall be paid by the CONTRACTOR.

PART 2 – PRODUCTS

2.01 GENERAL

A. Cement mortar lined and polyurethane coated steel pipe, fittings, and specials shall conform to ANSI/AWWA C200, C205, C214, and/or C222, subject to the following supplemental requirements. The pipe shall be of the diameter and pressure class specified, shall be furnished complete with welded joints, as indicated in these SPECIFICATIONS, and all specials and fittings shall be provided as required under the CONTRACT DOCUMENTS.

B. Markings: The CONTRACTOR shall legibly mark all pipe, fittings, and specials in accordance with the laying schedule. Each pipe shall be numbered in sequence and said number shall appear on the laying schedule in its proper location for installation. All special pipe sections and fittings shall be marked at each end with field top. The markings on each pipe shall be such that the OWNER can track the pipe through the entire manufacturing and installation process.

C. Handling: The pipe and fittings shall be handled by use of belt slings, padded cradles, or other devices, designed and constructed to prevent damage to the pipe, coating or lining. The use of chains, cables, hooks, or other equipment that might injure the pipe, coating or lining will not be permitted.

D. Damaged Materials: The CONTRACTOR shall be fully liable for the cost of replacement or repair of pipe that in the opinion of the ENGINEER is damaged.

E. Storage: Stockpiled pipe shall be stored on pallets, skids, sand or rock free berms, sand bags, old tires or other suitable means so that the coating will not be damaged. The pipe shall not be rolled, pushed, or slid into place and shall be secured to prevent accidental rolling.

F. Stulling: Adequate stulling, per the SUPPLIER'S recommendations, shall be provided on all specials, fittings, and straight pipe so as to maintain roundness and to avoid damage to the pipe and fittings during handling, storage, hauling and installation.

G. Laying Length: Maximum pipe laying lengths shall be 50 feet with shorter lengths provided as required by the DRAWINGS or to complete the WORK.

H. Lining: Shop cement-mortar lined pipe shall have smooth dense interior surfaces and shall be free from fractures, disbonding, excessive interior surface crazing and roughness.

I. Bonding and Electrical Conductivity: All unwelded pipe joints shall be bonded for electrical conductivity in accordance with these SPECIFICATIONS and the details shown on the DRAWINGS.

J. Closures and Correction Pieces: Closures and correction pieces shall be provided as required so that closures may be made due to different headings in the pipe laying operation and so that corrections may be made to adjust the pipe laying to conform to pipe stationing shown on the DRAWINGS.

K. Conformance with NSF Standards: All materials that may come in contact with the water being conveyed (linings, gaskets, lubricants, grout, disinfection agents, etc.) shall be in accordance with and approved by the appropriate NSF Standard 60 or 61.

2.02 DESIGN CRITERIA

A. General: The pipe furnished under this section shall be steel pipe, cement mortar lined and polyurethane coated, with field welded joints. The pipe shall consist of a steel wall, shop lined with cement mortar and an exterior coating of polyurethane. The finished inside diameter of the pipe shall be the inside diameter after the specified lining has been installed.

B. The pipe shall be designed per AWWA M11, manufactured, tested, inspected, and marked according to applicable measurements stated herein and, except as modified, shall conform to ASNI/AWWA C200.

C. Where shown on the DRAWINGS, or where required to meet the conditions shown on the DRAWINGS, the thickness of the pipe, fittings, and specials shall be as required to meet the following parameters:

		Pipeline Identification
Di	Finished Inside Dia. (in)	60
Pw	Working Pressure (PSI)	50
Pt	Surge Allowance (PSI)	50
Pw+Pt	QA Test Pressure (PSI)	100
Pf	Field Test Pressure (PSI)	100
Pv	Vacuum Pressure (PSI)	Full vacuum
Dx	Maximum Deflection	2% inside diameter of finished pipe
Wd	Dead Load	wHcBc. See Note (1)
Ww	Live Load	2 AASHTO H-20 Trucks Passing
E′	Maximum Soil Modulus	1,000 for standard bedding conditions.
D_1	Deflection Lag Factor	1.0
Hc	Height of fill over top of pipe (feet)	5 ft. to 10 ft. See Note (1)
w	Weight of Soil (lb/ft^3)	120 lb/ft^3
	Bedding Angle (Central)	90 Degrees
K	Bedding Constant	0.096
R	Mean Radius of Pipe Shell (inch)	Dependent upon Pipe Size, Ty, and Mortar Lining Thickness
EI	Pipe Wall Stiffness ($lb\text{-}in^2$)	See Note (2)
Ty	Wall Thickness (inch)	As calculated in Section 2.03

Dy or Bc	Outside Diameter (inch) (min)	Di + 2 (Ty+Mortar Lining Thickness)
Fy	Minimum Yield of Steel (psi)	In accordance with these SPECIFICATIONS
F	Impact Factor	1.5

Note (1): All pipe and fittings shall be designed for a single condition: the worst possible combination of internal pressure, dead load (Wd), and live load (Ww). The dead load shall be computed assuming soil weight of 120#/ft^3 and prism load condition. The determination of live load shall be as recommended by AASHTO in "Standard Specifications for Highway Bridges." The design shall utilize two AASHTO H-20 trucks passing each other.

Note (2): EI shall be based on the sum of the pipe wall stiffness, for the shop applied mortar lining and steel wall assuming it acts as a two-part laminar ring that considers no bond between the steel wall and the applied lining. The term "pipe wall stiffness" as used herein is defined as EI, where "E" is the modulus of elasticity (E=30,000,000 psi for steel and E=4,000,000 psi for mortar) and "I" is the transverse moment of inertia per unit length of pipe wall, the factors in the foregoing expression to be dimensionally compatible.

2.03 PIPE DESIGN

A. General: Steel pipe and fittings shall be designed to perform under the most critical situation of internal pressure, external loads, buckling, and handling as determined by the design procedures per AWWA M-11 and the provisions of these SPECIFICATIONS. Notwithstanding the minimum wall thickness as designated in subparagraph "E" the installed pipe shall be designed to withstand the conditions of subparagraphs "B", "C", and "D" below.

B. Steel Wall Thickness for Internal Pressure: For resistance to internal pressure, the thickness of the steel wall shall be greatest of that determined by the following three formulas:

$$1)\ Ty=\frac{(Pw)Dy}{2(0.5Fy)}$$

$$2)\ \mathrm{Ty}=\frac{(Pw+Pt)Dy}{2(0.75Fy)}$$

$$3)\ Ty=\frac{(Pf)Dy}{2(0.75Fy)}$$

C. External Load Design: Upon determination of the steel wall thickness as calculated for internal pressure, deflection of the pipe shall be checked by the following formula:

$$D=\frac{KR^3(D_1Wd+Ww)}{EI+0.0614E'R^3}$$

Should the calculated deflection exceed the maximum allowable as stated herein, the wall thickness shall be increased or E' increased to limit the calculated deflection to the maximum allowable. When computing pipe deflection, do not consider the effect of the cement mortar lining in the calculation of EI.

D. Buckling Design: Buckling shall be evaluated in accordance with AWWA M-11 and the wall thickness increased as necessary to prevent the pipe from buckling. The effect of the cement mortar lining may be taken into account in the calculation of EI when evaluating buckling conditions due to vacuum. Groundwater table shall be assumed to be at grade when calculating buckling design.

E. Minimum Thickness: The maximum allowable diameter over thickness ratio (Dy/Ty) for pipe supplied under these Specifications shall be 175.

The minimum wall thickness for any steel pipe shall not be less than that calculated for the worse conditions as described herein, ANSI/AWWA C200, AWWA M11 or the following table whichever is greater.

MINIMUM THICKNESS

Pipe Diameter (Inside)	Minimum Wall Thickness (inches)
60 inch	0.34375

(Note Tampa Bay Water minimum wall thicknesses exceed M11 minimum wall thickness $t=D/240$ for cement mortar lining as well as the first test $t=pD_0/(2S)$

2.04 MATERIALS

A. Steel for Pipe and Fittings: Pipe manufactured under ANSI/AWWA C200 shall be fabricated from sheet or coil conforming to the requirements of ASTM A36, or ASTM A1018, Grades 40 or 45, or from plate in coil form conforming to the requirements of ASTM A572, Grade 42, or coil conforming to the requirements of ASTM A139, Grades C or D. Steel used in the manufacture of pipe and fitting under these SPECIFICATIONS shall be produced by the continuous casting

method and shall be of domestic manufacture. All longitudinal and girth seams, whether straight or spiral, shall be full penetration butt welded using an electric-fusion weld process. Weld beads shall not exceed more than one-eighth (1/8) of an inch in height above the outside of the pipe wall. Care shall be taken to not grind the parent metal.

B. Steel for Small Diameter Outlets: Outlet pipes 24 inches in diameter or smaller shall be fabricated in compliance with the requirements of AWWA C200 Section 4.10.

C. Carbon Content/Elongation: All steel used for the fabrication of pipe shall have a maximum carbon content of 0.25 percent and shall have a minimum elongation of 20 percent in an 8-inch gauge length.

D. Tolerance of the Steel Wall: Plate and sheet shall be the thickness as determined considering the worse combination of all design factors described herein and in ANSI/AWWA C200 and AWWA M-11. Cement: Cement for mortar shall conform to the requirements of ANSI/AWWA C205;

F. Epoxy Bonding Agent: For the field repair of shop-applied cement mortar lining an epoxy bonding agent conforming to ASTM C881, Type II shall be used. The epoxy bonding agent shall be moisture insensitive and suitable for the service conditions.

G. Latex Admixtures: For the field repair of shop-applied cement mortar lining a latex admixture shall be used. The latex admixture shall be Euclid "Euco Flex-Con" or Sika "Sika Latex".

2.05 FITTINGS

A. General: Fittings shall be fabricated in accordance with ANSI/AWWA C200 from pipe conforming to these SPECIFICATIONS. Fittings fabricated from previously hydrostatically tested straight pipe shall require testing of only those welded seams that were not previously hydrostatically tested in the straight pipe. Spiral welds of fittings shall be ultrasonically tested. All butt welds made after hydrostatic or ultrasonic testing of straight pipe shall be magnetic particle tested in accordance with ASTM E709. Acceptance criteria shall be in accordance with ASME Code for magnetic particle testing.

B. Dimensions: Fittings shall conform to the dimensions of ANSI/AWWA C208 or may be fabricated into standard or special pipe lengths. Elbows 0 degrees through 22-1/2 degrees shall be two-piece, 23 degrees through 45 degrees shall be three piece, over 45 degrees through 67-1/2 degrees shall be 4 piece and over 67-1/2 degrees through 90 degrees shall be five piece. Elbows shall have a minimum centerline radius of 2-1/2 times the pipe O.D.

C. Reinforcing: All tees, laterals and outlets shall be reinforced in accordance with ASME Pressure Vessel Code, Section VIII Paragraph G-37 or AWWA M-11, whichever is more stringent.

2.06 JOINTS

A. General: The standard field joint for steel pipe shall be a single welded lap joint on the inside of the pipe. Restrained joints shall be welded joints as described in these SPECIFICATIONS. Mechanically coupled or flanged joints shall be required where shown on the DRAWINGS. Butt

strap joints shall be used where required for closures or where shown on the DRAWINGS. The joints furnished shall have the same or higher pressure rating as the abutting pipe.

B. Single Welded Lap Joints: Lap joints prepared for field welding shall be in accordance with ANSI/AWWA C200. Bell ends shall be formed by an expanding press in such a manner as to stretch the steel plate beyond its elastic limit to form a truly round bell of suitable diameter and shape. No process will be permitted in which the bell is formed by rolling. Preformed welded bell and spigot joints (carnegie shapes) shall not be allowed. Facing surfaces of the bell and spigot shall be essentially parallel, but in no case shall the bell slope vary more than 2 degrees from the longitudinal axis of the pipe. The bell for field welded lap joints shall provide a minimum deflected joint lap of three times the thickness of the belled pipe or 1 inch, whichever is larger. The maximum allowable joint pull shall be ¾-inch.

C. Joints in Tunnels, Casings, or Shafts: A double full fillet weld (full fillet weld on outside of the pipe and a full fillet weld on the inside of the pipe) shall be provided where steel pipe is installed in casing pipe, shafts, or tunnels, or otherwise noted on the DRAWINGS. Where double full fillet welds are used in tunnels, casings, or shafts, a threaded outlet shall be provided by the SUPPLIER to allow an air test of the joint by the CONTRACTOR. The threaded outlet shall be plugged following the successful air test in accordance with ANSI/AWWA C206.

D. Restrained Joints1: Where required near fittings and valves or bulkheads, restrained joints shall be field welded joints. In reaches of pipe with high longitudinal stresses (800 Kips +), special welded joints are required and single welded lap joints are not acceptable. Special welded joints shall be double full fillet welded lap joints or full penetration butt-joints at the CONTRACTOR'S option.

Where harnesses are required for flexible sleeve-type couplings, they shall be in accordance with the requirements of AWWA M-11.

E. Where connections are required to pipe made of other materials, the Contractor shall submit transition fitting for Engineer's approval in accordance with 1.03 Submittals.

2.07 INTERIOR LINING

A. General: All welded steel pipe, specials and fittings shall be furnished with shop applied cement mortar lining.

B. Cement Mortar Lining: The interior surfaces of all steel pipe, fittings, and specials shall be cleaned and lined in the shop with cement mortar applied by the centrifugally spinning method in conformance with ANSI/AWWA C205. During the lining operation and thereafter, the pipe shall be maintained in a round condition by suitable bracing or stulling. The lining machines shall be of a type that have been used successfully for similar work. Every precaution shall be taken to prevent damage to the lining.

1. The pipe and fittings shall be bare where field joints occur. Ends of the linings shall be square and uniform. Feathered or uneven edges shall not be allowed to be shipped to the PROJECT.

2. Cement mortar lining shall be held back per SUPPLIER'S recommendations on bell ends.

3. Protection of Pipe Lining: All pipe and fittings with cement mortar linings, shall be provided with a polyethylene or other suitable bulkhead, as acceptable to the ENGINEER, on the ends of the pipe and on all openings to prevent drying out of the lining. All bulkheads shall be substantial enough to remain intact during shipping and storage until the pipe is installed.

C. Reinforcement: Wire fabric reinforcement shall be used in the lining of all bends, reducers, fittings, and specials in accordance with ANSI/AWWA C205, Section 4.4. Wire fabric shall be a minimum 18-gauge wire in accordance with ASTM A82.

D. Lining Thickness: The lining thickness shall be as follows:

Pipe Diameter (inch)	Nominal Thickness (inch)	Tolerance (inch)
48-96	1/2	-1/32, +3/16

A thicker lining may be provided where conditions require, however, the specified finished inside diameter shall be maintained.

Where the mortar lining is included as a component in the calculation of the pipe wall stiffness (EI), the minimum mortar lining thickness shall be used in the calculation.

2.08 EXTERIOR COATING –Polyurethane

A. Exterior Coating of Exposed Piping: The exterior surfaces of pipe that will be exposed to the atmosphere inside structures or above ground shall be thoroughly cleaned and then given a shop coat of rust inhibitive primer conforming to the requirements of painting or protective coatings section of these SPECIFICATIONS.

B. Exterior Coating of Straight Pipe and Fittings: Polyurethane coating of straight pipe and fittings be applied in accordance with ANSI/AWWA C222 as modified below:

1. Coating Layers: The polyurethane coating shall be blue, or other color specified by the ENGINEER and shall have a total dry film thickness of at least 25 mils thick or the minimum dry film thickness required by the manufacturer to meet the requirements of ANSI/AWWA C222, whichever is greater. The coating may be applied as a single layer system.

2. Physical Properties: The overall impact resistance for the pipe coating system shall have a minimum average value of 75 in.-lbs. per ASTM G14 test. Other physical requirements of the polyurethane coating system shall equal or exceed the minimum physical property requirements tabulated in AWWA C222.

C. Application of Polyurethane Coating System

1. General:

a. The pipe coating system shall consist of, but not be limited to: pipe cleaning, surface blasting, coating application, and curing.

b. The application procedure for the pipe coating shall comply with the requirements of ANSI/AWWA C222.

c. The coating application shall be continuous, automated operation starting with 1) a properly prepared pipe surface and proceeding with 2) application of the polyurethane coating system directly over the pipe, 4) curing of the coating system, and 5) holiday testing and inspection of the cured pipe.

Note: If any coating repairs are required after testing and inspection, the pipe shall be reinspected for electrical continuity. The final pipe shall be holiday-free.

2. Pipe Preparation:

a. Prior to sand or shot blasting, the weld bead shall be ground down on the outside wall of the pipe a minimum distance to not interfere with jointing. The weld bead shall not exceed one-eighth (1/8) inch in height above the outside of the pipe wall prior to start of sandblasting. The entire weld bead height shall be checked using a weld reinforcement gauge. Any areas in excess of 1/8-inch shall be ground to meet tolerance.

b. After drying and removal of all loose foreign material the pipe surface shall be cleaned by blasting with sand, grit or shot to achieve a surface anchor pattern of at least the specified minimum defined in SSPC-SP-10, the pattern shall be a minimum of 2.5 mils deep.

c. For consistent surface finish, a stabilized abrasive working mix shall be maintained in abrasive recycling blasting machines by frequent small additions of new grit, shot or sand. All abrasive working mix in abrasive recycling blasting machines shall be maintained and clean of contaminants by continuous effective operation of blasting machine scalping and air wash separators. All blast material shall be removed from the interior of the pipe after it has been shop blasted. Blast material shall not be allowed to become trapped between the polyurethane coating and the pipe surface. If this should occur, the coating shall be removed, the surface cleaned, and the pipe re-coated.

d. The cleaned exterior pipe surface shall be inspected for adequate surface preparation. Surface imperfections such as slivers, scabs, burrs, weld spatter, and gouges shall be removed by hand filing or grinding if necessary

to prevent holidays to the coating during application.

e. Blast-cleaned pipe surfaces shall be protected from conditions of high humidity, rainfall, or surface moisture. No pipe shall be allowed to flash rust before coating. Pipe shall be free of moisture prior to coating application.

3. Coating Application:

a. The coating shall be applied directly onto the pipe surface, with the approved application equipment designed especially for this system.

b. Over coating shall only be permitted when using the same formulation of the previous coat. If the maximum recoat time of the previous layer has been exceeded, the surface must be brush blasted or thoroughly abraded to provide adequate mechanical bonding of the new coating layer.

c. The SUPPLIER shall use a data acquisition system that shall continuously monitor and record the line speed, roll body temperature of each layer at the point of application, the pipe temperature and the holiday detection. Complete records compiled by the data acquisition system shall be provided to the Owner.

D. Polyurethane Coating for Fabricated Fittings in the Shop: Surface preparation and priming procedures for polyurethane coating application of fabricated fittings shall comply with the applicable requirement of ANSI/AWWA C222, and the coating SUPPLIER's instructions. Pipe preparation shall include cleaning and blasting of fittings. Following the cleaning and inspection of these surfaces, they shall be with a SUPPLIER approved application system accepted by the Engineer. After application of coating, the fittings shall be electrically holiday tested using a minimum of 6,000 volts. Any holidays detected shall be repaired to the satisfaction of the Engineer.

E. Inspection Prior to Shipping: Prior to shipping, the pipe shall be visually inspected by the SUPPLIER for any damage, disbonding, or bubbling of the coating. Any areas that appear to be damaged, disbonded, or bubbled shall be given an electrical holiday test of a minimum of 6,000 volts per mil of dry film thickness. Damaged, disbonded, or bubbled areas shall be repaired as described in AWWA C222.

2.09 PIPE APPURTENANCES

A. Flanges: Steel used in the manufacture of flanges shall be of domestic manufacture. Where the working pressure is 150 psi or less and the working plus surge is 225 psi or less, flanges shall conform to ANSI/AWWA C207 Class D. Where the working plus surge pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to ANSI/AWWA C207 Class E. Flanges shall have serrated faces and shall be attached with bolt holes straddling the field vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of ANSI/AWWA C207.

Flanges shall be of the slip-on type, except that welding-neck or slip- on flanges welded to short lengths of pipe shall be used where installation of flanges in the field is permitted or required by ENGINEER and/or OWNER. Welding- neck flanges shall be manufactured conforming to the specifications of ASME B16.5 from material conforming to ASTM A105.

Ends to be fitted with slip-on flanges shall have the longitudinal or spiral welds ground flush to accommodate the type of flanges provided.

Flange faces shall be normal to the pipe axis with a maximum tolerance of 0.005 inch per foot of flange diameter. Angular deflection (or layback) of the flange face shall not exceed 0.75 degree from a plane surface and shall be uniform within 0.010 inch. All flanges, after welding to the pipe, shall be measured and shall be refaced, if necessary, to bring them within the specified tolerances.

The CONTRACTOR shall coordinate dimensions and drilling of flanges furnished with the flanges for the valves, or other appurtenances to be installed and shall be responsible for the proper fit of all flanges.

Blind flanges shall conform in diameter, drilling, and thickness to the flanges to which they attach and shall be reinforced as required to produce a watertight joint under the specified test pressure. Blind flanges shall be in accordance with ANSI/AWWA C207.

The machined faces of all flanges shall be shop coated with rust-preventive compound, Houghton "Rust-Veto 344" or Rust-Oleum "R-9." Edges and back faces of attached flanges shall be shop coated per AWWA C222 or with Carboline Carbo-Coat 150. The inside of blind flanges shall be cement mortar coated, the thickness to be the same as the cement mortar lining for pipe as stated herein. As an alternate for the lining and coating of blind flanges, ANSI/AWWA C210 epoxy or ANSI/AWWA C222 polyurethane may be used.

Refer to the Insulated Flanges Specification section for requirements regarding flange bolt holes and bolt length for insulated flanges.

B. Bolts and Nuts: The ends of all bolts shall be finished to the standard radius in an acceptable manner. All screw threads shall be "American Standard, Coarse Thread (N.C.)." Stud bolts shall be hexagonal, cold pressed semi-finished and made of medium open hearth steel. All dimensions shall be in accordance with "American Standard, Heavy." Bolts and nuts shall be cadmium or zinc plated at the point of manufacture by an approved process with a plating thickness of 0.0003

to 0.0005 inches. All bolts and nuts furnished shall be delivered to the field free from grease, rust, and dirt.

C. Gaskets: Gaskets shall be in accordance with ANSI/AWWA C207 and shall conform to Section 4.1.5, except as modified herein.

For working pressure plus surge pressure up to 150 psi, gaskets shall be manufactured of EPDM rubber material, ring type, and 1/8-inch thick. Rubber gaskets shall be hardness (Shore A) 80 ± 5, suitable for water service temperature to 200 degrees F with gasket yield pressure of 200 psi minimum to 1,200 psi maximum, conforming to ASTM D1330 grades I and II.

For working pressure plus surge pressure up to and including 275 psi, gaskets shall be manufactured of compressed fiber material, ring type, and 1/8-inch thick. The gasket shall be manufactured of a blend of synthetic fibers, fillers, and elastomeric binders suitable for potable water service and temperatures to 700 degrees F. Gaskets shall be have a minimum yield pressure of 4,800 psi. Gaskets shall be suitable for a maximum seating pressure of 15,000 psi.

Ring-gasket diameter shall be as follows: inside diameter (ID) = flange ID, and outside diameter (OD) = ID of bolt-hole circle less 1/16-inch.

Gaskets shall be suitable for service in potable water with a chloramines concentration of up to 5.0 ppm.

2.10 COMPRESSION SLEEVE COUPLINGS

A. General: The CONTRACTOR shall furnish and install where shown on the DRAWINGS manufactured compression sleeve couplings for steel pipe which conform to ANSI/AWWA C219. The compression couplings shall consist of two (2) steel follower flanges, one (1) steel middle ring with pipe stops removed, and sufficient rolled thread, track-head bolts to properly compress the gaskets. After fabrication, the middle and follower rings shall be cold expanded to size and dimension. The length of each middle ring shall not be less than 10 inches. Thickness of the middle ring shall be suitable for the pressures specified, and shall in no case be less than one-half (1/2) inch.

B. Rated Pressure: The entire compression sleeve coupling unit shall be rated for working pressure plus surge pressure as a minimum.

C. Coatings: All surfaces of middle rings of all compression sleeve couplings, including bolts, nuts and washers shall be coated with NSF 61 approved epoxy in accordance with ANSI/AWWA C210.

D. Deflections: Small deflections in steel pipe alignment may be made at compression type coupling joints, but such deflections shall not exceed three (3) degrees between any two (2) adjacent pipe sections. Where changes in line and grade in excess of three (3) degrees is required, the deflections shall be made by deflecting multiple joints or with steel pipe fittings acceptable to the ENGINEER. Joint deflections shall not exceed 75 percent of that allowed by ANSI/AWWA C219 and in no case shall exceed three (3) degrees.

PART 3 – EXECUTION

3.01 INSTALLATION OF PIPE

A. General: The CONTRACTOR shall transport, deliver, and distribute along the line of the WORK, the pipe, specials, and appurtenances.

B. Shipping: Pipe shall be loaded for shipment upon suitable cars or trucks that shall be provided with padded bunks with nylon belt tie-down straps or padded banding located approximately where pipe material is stulled. All steel water main pipe straights, fittings, and specials shall be stulled as required to maintain roundness of approximately one (1) percent during shipping and handling. In loading and unloading the pipe, care shall be taken to prevent any injury to the pipe, ends, coatings and protuberant steel connections. Such work shall be done slowly with the pipe at all times under control, and under no condition shall the pipe be dropped. Field repair of damaged pipe shall not be allowed, except for linings and coatings.

C. Handling: All pipe, fittings, etc., shall be carefully handled and protected against damage to the lining and coating/interior and exterior surfaces, impact shocks, and free fall. All pipe handling equipment shall be acceptable to the ENGINEER. Pipe handling equipment shall consist of wide belt slings, padded cradles, or other devices designed and constructed to prevent damage to the pipe or coatings. The use of chains, hooks, or other equipment that may damage the pipe or its coating shall not be allowed.

D. Stringing Pipe/Storage: In distributing the pipe in the field, each pipe shall be placed as nearly as possible to the point where it is to be laid, and facing in the proper direction. Pipe shall not be placed directly on rough ground but shall be supported in a manner that will protect the pipe against injury wherever stored at the trench site or elsewhere. Coated pipe shall be stored on padded skids, sand or dirt berm, sand bags, or other suitable means so that coating will not be damaged. Buried pipe fitting and specials shall not be exposed to sunlight for more than a total 6 months before it is buried. Pipe, fittings, and specials, which are placed in storage, streets or drives must be so arranged as not to cause undue inconvenience to traffic and must be protected sufficiently to prevent any damage. Pipe that has been improperly distributed and that must be moved longitudinally along the trench shall be reloaded on a suitable car or truck or lifted and swung by a derrick or moved by such means as may be satisfactory to the ENGINEER; sliding, dragging, or rolling of the pipe shall not be allowed.

E. Damaged Pipe: If in the process of manufacture, transportation, or handling, any steel pipe, fitting, or special receives any indentation or deformation to the pipe wall, steel ends or connections, such pipe, fitting, or special shall be rejected and replaced at the CONTRACTOR'S expense.

F. Inspection: In the presence of the ENGINEER, the CONTRACTOR shall verify all SUPPLIER furnished pipe dimensions upon delivery and inspect all pipe, fittings, and specials and mark as "rejected" all pipe lengths and fittings or specials exhibiting signs of damage to the exterior coating, interior cement mortar linings, joint ends, or pipe wall and CONTRACTOR shall at the CONTRACTOR'S expense immediately remove the same from the job site, or repair to the

ENGINEER'S satisfaction. Any pipe, fittings, or special deemed not suitable for installation shall be replaced in kind by the CONTRACTOR at the CONTRACTOR'S expense.

The CONTRACTOR shall inspect each pipe and fitting to ensure that there are no damaged portions of the pipe. If any defective pipe is discovered after having been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner, by the CONTRACTOR at the CONTRACTOR'S own expense.

G. Pipe Cleaning: The CONTRACTOR shall thoroughly clean each pipe or fitting of any foreign substance that may have collected on or in it prior to the pipe or fitting being placed in the trench. The openings of all pipes and fittings in the trench shall be closed during any interruption of the WORK. As pipe laying progresses, the CONTRACTOR shall keep the pipe interior free of all debris. The CONTRACTOR shall completely clean the interior of the pipe of all sand, dirt, mortar splatter, and any other debris following completion of pipe laying, pointing of joints and any necessary interior repairs prior to testing and disinfecting the completed pipeline.

H. Pipe Laying: Pipe laid in trench shall be laid to a firm and even bearing for its full length. Precautions shall be taken against flotation. Pipe embedment and backfilling shall closely follow the installation and jointing of steel pipe in the trench to prevent flotation of the pipe by water and longitudinal movement caused by thermal expansion or contraction of the pipe. Not more than 160 feet of restrained joint pipe shall ever be exposed ahead of the backfilling in any section of trench. The backfill adjacent to field joints may be temporarily omitted to provide adequate space for field coating the joints. Closure welds on restrained joint pipe shall be made during the cool part of the day. Pipe shall be laid only after the trench has been excavated as described in the CONTRACT DOCUMENTS.

Pipe shall be laid directly on the bedding material. The bedding shall be such that it forms a continuous and uniform support for the full length of the pipe except that the grade may be disturbed for the removal of lifting tackle. Bell holes shall be formed at the ends of the pipe to prevent point loading at the bells or couplings. Excavation shall be made as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coatings on field joints.

Each section of pipe shall be laid in the order and position shown on the laying schedule. In laying pipe, it shall be laid to the set line and grade, within plus or minus one inch.

Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the ENGINEER may change the alignment and/or the grades. Such change shall be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed 75% of the maximum deflection recommended by the pipe SUPPLIER.

Except for short runs that may be permitted by the ENGINEER, pipe shall be laid uphill on grades exceeding 10 percent. Pipe that is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement.

I. Bedding and Backfilling: Bedding and Backfilling shall be in accordance with the CONTRACT DOCUMENTS.

Bedding shall be carefully worked into the area between the trench bottom and the pipe wall to keep it round. Fill shall not be deposited on top of the pipe, but alongside it, and in such a way that it rises evenly on both sides.

Pipe stulls shall be left in place until the bedding and backfilling operations have been completed. After the backfill has been placed, the stulls shall be removed and shall remain the property of the CONTRACTOR.

J. Flanged Connections: Care shall be taken in bolting flanged joints so that there is no restraint on the opposite end of one piece that would induce stresses in the pipe or fitting or prevent pressure from being evenly and uniformly applied upon the gasket. The pipe or fitting shall be free to move in any direction while bolting. Bolts shall be gradually tightened in a criss-cross pattern, to ensure a uniform rate of gasket compression around the entire flange.

All nuts and bolts that come in contact with water or are buried underground shall be painted in accordance with Specification Section 09940 Protective Coating.

K. Wrapper Plates: Length adjustments due to mill tolerances or caused by thermal length changes, shall be made in the field as necessary by making cuts or by use of wrapper plates (butt plates) in making closures. Wrapper plates, if used, shall be of the same thickness as the pipe, shall have full strength fillet welds both inside and outside, and shall provide a lap on each pipe end of not less than 3 inches, the space between pipe ends being not less than 3 inches.

L. Cold Weather Protection: No pipe shall be installed upon a foundation into which frost has penetrated or at any time that there is danger of the formation of ice or penetration of frost at the bottom of the excavation. No pipe shall be laid unless it can be established that the trench will be backfilled before the formation of ice and frost occurs.

M. Welded Closures: Welded closures for exterior lap welded pipe and restrained joints shall be delayed until the backfill has been completed to as near as practicable to the pipe ends and the pipe temperature has had time to stabilize. In order to minimize longitudinal movement of the pipe ends, closures shall be welded early in the morning when the air and pipe are coolest. Alternative methods of making closures shall be subject to the acceptance of the ENGINEER.

N. Inspection: Careful inspection shall be made of every joint to insure a smooth continuous interior surface. The interior of the pipe shall be thoroughly cleaned and any obstructions that may reduce the pipe's carrying capacity shall be removed.

P. Field Lining Patches: Patching of lining shall be required for any crack that exceeds the allowable crack and will be limited to areas not exceeding 100 square inches and that has no dimensions greater than 12 inches. In general, there shall not be more than two patches on the lining of any joint of pipe exclusive of the last three inches on each end of a joint of pipe.

Wherever necessary to patch the pipe, patch material shall be made with a mortar of one part Portland Cement and two parts clean, sharp sand; all measurements to be by weight. No pipe requiring the lining to be patched shall be installed until the patch is placed. Pipe thus patched shall not be installed until the patch has been properly and adequately cured and determined acceptable for laying by the ENGINEER.

3.02 FLANGED JOINTS

A. Positioning and Cleaning of Flanges: Bolt holes of flanges shall straddle the field horizontal and field vertical centerlines of the pipe. The CONTRACTOR shall clean flanges by wire brushing before installing flanged fittings, and clean flange bolts and nuts by wire brushing.

B. Assembly: The CONTRACTOR shall insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension. The CONTRACTOR shall execute care when tightening joints to prevent any strain upon valves, pumps and other equipment. After tightening all bolts the stulls shall be removed from the interior of the pipe if it is not to be buried.

C. Connecting to Pumping Equipment: Special care shall be taken when connecting piping to pumping equipment to ensure that piping stresses are not transmitted to the pump flanges. All connecting pipe shall be permanently supported so that accurate matching of bolt holes and uniform contact over the entire surface of flanges are obtained before any bolts are installed in the flanges. In addition, pump connection piping shall be free to move parallel to its longitudinal center line while the bolts are being tightened.

Each pump shall be leveled, aligned, and wedged into position which will fit the connecting pipe, but shall not be grouted until the initial fitting and alignment of the pipe so that the pump may be shifted on its foundation if necessary to properly install the connecting pipe. Each pump shall, however, be grouted before final bolting of the connecting piping.

After final alignment and bolting, the pump connections shall be tested for applied piping stresses by loosening the flange bolts which, if the piping is properly installed, should result in no movement of the piping relative to the pump or opening of the pump connection joints. If any movement is observed, the piping shall be loosened and re-aligned as required and then the flanges bolted back together. The flange bolts then shall be loosened and the process repeated until no movement is observed.

D. Testing: If flanges leak under pressure testing, the CONTRACTOR shall loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Flanged joints shall be watertight.

3.03 FIELD WELDS

A. General: All welding procedures and welder certifications shall be submitted through the CONTRACTOR to the ENGINEER prior to beginning the WORK.

Fourteen days prior to commencing field welding of pipe joints, the CONTRACTOR shall submit in writing to the ENGINEER for acceptance all proposed welding procedures, and materials and equipment proposed for use. Welding shall not begin until these procedures have been accepted by the ENGINEER.

An Affidavit of Compliance shall be submitted by the CONTRACTOR to the ENGINEER that states that field welding procedures and welder and welder operator qualifications comply with all applicable provisions of the governing LAWS AND REGULATIONS and these CONTRACT DOCUMENTS.

Exterior welding shall not be permitted when weather conditions are unsatisfactory and would impair the quality of welds. No welding shall be done in high winds, rain, dust or sand storms, unless authorized by the ENGINEER.

All welding shall be done using the procedures established as set forth in ANSI/AWWA C206. The CONTRACTOR shall provide the ENGINEER access to the WORK to be inspected, and shall provide reasonable facilities and space for inspecting, testing, and obtaining information related to the materials used and the progress and condition of the WORK. The CONTRACTOR shall be responsible for performing visual inspection and non-destructive testing of all welded joints in accordance with ANSI/AWWA C206 and these SPECIFICATIONS. Testing of the joints shall be by qualified personnel and shall be subject to witness by the ENGINEER. The CONTRACTOR shall provide weld inspection test reports that refer to the mark number on the laying schedule. Field lap welds shall be inspected by magnetic particle.

Field weld test specimens shall be furnished to the ENGINEER for testing by an independent testing laboratory whenever, in the judgement of the ENGINEER, a satisfactory weld is not being made. Test specimens shall also be furnished when the ENGINEER desires. All costs for this testing will be paid by the OWNER unless the welds are found to be defective, in which case, all costs for this testing will be paid by the CONTRACTOR.

Full and complete information regarding location, types, size and extent of all welds shall be clearly shown on the SHOP DRAWINGS. The SHOP DRAWINGS shall clearly distinguish between shop and field welds. Joints or groups of joints in which welding sequence is especially important or where technique is to be carefully controlled to minimize shrinkage stresses and distortion shall be so noted on the SHOP DRAWINGS. The SHOP DRAWINGS shall specify the groove depths applicable for the effective throat required for the welding process. The SHOP DRAWINGS shall clearly indicate by welding symbols or sketches the details of the welded joints and the preparation of parent metal required to make them. Joints meeting requirements of AWS Standard D1.1 Section 2, shall be so noted on SHOP DRAWINGS. Joints not meeting this requirement shall be qualified as outlined in AWS Standard D1.1, Section 5.

Welding equipment shall be maintained in such condition as to insure acceptable welds and continuity of operations. Any equipment that does not meet the requirements shall be repaired or replaced immediately. Welding electrodes shall be kept dry at all times.

B. Safety:

1. Qualification Site Safety: Welders shall demonstrate safe welding practices at all times, with special attention paid to the use of welding screens, grinders and ground clamps.

2. Combustible Gas Indication: Prior to welding in or around a structure or area containing gas, a thorough check shall be made with gas detection equipment to determine if a combustible gas mixture is present. A combustible gas indicator shall be used to sample the atmosphere above and below grade. Welding shall begin only when safe conditions are indicated.

3. Fire Extinguisher: Each welder shall be provided and have readily available during any welding operation a fire extinguisher meeting the requirement of the applicable LAWS AND REGULATIONS.

4. Welding on an Impressed Current (Rectified) Line: Care shall be taken when welding on an impressed current (rectified) line to assure that no short exists between the rectifier and the pipeline.

5. Welding Screens: An arc welding screen shall be used at all times when welding in business and residential areas or when directed by the ENGINEER. The screen shall be of sufficient size (3 ft. to 4 ft. by 4 ft. opening sections) and density to shield the weld arc and prevent possible damage to the eyes of persons in or about the welding area.

6. Grinders: Hand grinders used in the field shall be equipped with an instant trigger release or device that will shut off the current when the machine is released from the operator's hands. All personnel in the immediate grinding area shall wear protective eye covering. Ground fault interrupters shall be used with field grinders.

7. Clean-up: Welding rod and wire stubs shall be placed in a container during and after the welding operation. No equipment (rod containers, grinding disc, etc.), used in welding shall remain in the pipe or excavation upon completion of the welding operation.

8. Gas Cylinders: Gas cylinders (oxygen, acetylene, CO_2, etc.), shall be placed with valve end up when in use. The cylinders shall at all times be in a rack made for the purpose and secured by a chain or clamp. The cylinder valve-protection cap shall always be in place and hand tight when the cylinder is not in use.

    a) Gas shut-off device: Regulation diaphragms and torch valves shall not be used as a gas shut-off device when the gas is not being used.

    b) Non-return shut-off valve: When more than two cylinders of acetylene are connected to a manifold, the system shall contain a non-return type shut-off valve.

    c) Check valves: Check valves shall be used in all cutting torch units and shall be installed permanently in the oxygen and acetylene regulators. Teflon tape shall be used when installing check valves. Use of pipe dope sticks or liquid pipe dope for installation will not be permitted. Check valve shall be checked daily prior to the start of work or as needed.

d) Flashback arresters: Flashback arresters shall be used on oxygen and acetylene regulators in both cylinder and manifold applications. Teflon tape shall be used when installing flashback arresters. Use of pipe dope sticks or liquid pipe dope for installation will not be permitted. Flashback arresters shall be tested daily prior to the start of WORK.

9. Ground Clamps: External pressure type ground clamps shall be used when performing all welding functions. Ground clamps shall be fitted with copper or brass contact tips to prevent arc burn on the pipe surface. Should a welder tack the ground clamp or lead to a pipe or appurtenance, that welder shall be removed from the WORK immediately and shall not be allowed to perform additional welds.

C. Qualification of Welders and Welding Procedure: All welding shall be done by skilled welders, welding operators, and tackers who have had adequate experience in the methods and materials to be used. All welding procedures, welders, welding operators, and tackers shall be qualified under the provisions of ANSI/AWS D1.1 and as defined in ANSI/AWWA C206 not more than six months prior to commencing work on the pipeline. All qualifications shall be in accordance with all-position pipe tests as defined in Section 5 of AWS D1.1. Machines and electrodes similar to those used in the WORK shall be used in qualification tests. All welding tests for qualification shall be done in the presence of the testing agency or in the presence of a certified welding inspector appointed by the testing agency. The CONTRACTOR shall furnish all materials and bear the expense of qualifying welders.

Each welder employed by the CONTRACTOR shall be required to satisfactorily pass a welding test before being allowed to weld on the line. The welder qualification testing for field welding shall be conducted at the project site. Results of previous qualification tests will not be accepted. The CONTRACTOR shall provide the services of an independent testing laboratory to perform the welder qualification. Copies of all test data and certifications shall be submitted to the ENGINEER. All costs of welder qualification testing shall be paid by the CONTRACTOR.

Each welder shall be required to make a position weld on a pipe nipple of the same diameter and specification as the pipe in the line. Each test weld will be inspected and tested, using an accepted and approved testing method subject to the ENGINEER'S acceptance, administered by an independent testing laboratory retained by the CONTRACTOR. The independent testing laboratory shall be accepted by the ENGINEER prior to any welding test being performed.

After each welder has qualified in the preliminary tests referred to above, random and periodic inspections will be made of joints in the line. Any welder making defective welds shall not be allowed to continue to weld on the PROJECT.

The CONTRACTOR shall furnish each welder employed a steel stencil for marking the welds, so that the work of each welder may be identified. Each welder shall stencil the pipe adjacent to the weld at both spring lines with the stencil assigned. In the event any welder leaves the job, the welder's assigned stencil shall be voided and not duplicated if another welder is employed.

The quality of the welding and procedures shall be determined by testing the welder's ability to make sound welds under standard working conditions with the equipment to be used in the WORK on this PROJECT. All welds shall be in conformance with AWS D1.1. All welding procedures used to install pipe shall be prequalified under provisions of AWS Standard D1.1. Welding procedures shall be required for field attachments and field welded joints.

D. Tackwelds: Tackwelds used to secure alignment shall either be removed completely or their stopping and starting ends shall be properly prepared by grinding or other ENGINEER accepted means so that they may be satisfactorily incorporated into the final weld. Tackwelds, whether removed or left in place, shall be made using a weld procedure qualified in accordance with these SPECIFICATIONS. Tackwelds to be left in place shall be made by welders qualified in accordance with these SPECIFICATIONS and such welds shall be examined visually for defects, and if found to be defective shall be removed.

E. Preheating: All joints to be field welded shall be preheated in accordance with the requirements of ANSI/AWWA C206, and as required herein.

1. Preheat Requirements: Materials to be welded shall be preheated prior to welding if:

a) the ambient or material temperature is below 40 degrees Fahrenheit;

b) moisture is evident on the material;

c) additional metal is to be deposited on an uncompleted weld; or

d) additional metal is to be deposited on a repaired weld.

2. Preheat Equipment: Preheating of material shall be done by a torch equipped with a "preheating" top to allow the materials to reach and to maintain the proper temperature more evenly throughout the welding area.

3. Preheat Indicators: A temperature indicating crayon, "tempilstik" or equivalent, shall be used in determining proper temperature. The crayon of appropriate temperature designation shall be rubbed on the material a distance of three (3) inches from the ends to be welded. Heat shall be applied to the area of the weld until the crayon melts indicating the designated temperature has been reached.

F. Position Welding:

1. Horizontal Fixed Position Welding: Horizontal fixed position welding shall be used for all field welds, including bell hole welding, where the pipe or appurtenance is stationary and parallel to the ground, and the direction of welding is perpendicular to the pipe axis. The pipe joints shall not be moved until the hot pass (second bead) is completed.

2. Vertical fixed position welding: Vertical fixed position welding shall be avoided in the field whenever practicable and occurs where the pipe or appurtenance is stationary and perpendicular to the ground and the direction of welding is parallel to the ground.

3. When two or more welders are working on the same weld, they shall start to weld on opposite quadrants.

G. Welded Joints: All exposed ends of joint surfaces shall be wire brushed clean. The Spigot end of the pipe shall be inserted into the expanded bell end and pushed home then retracted up to the allowable limits to provide a minimum overlap of 1-1/2 inches at all points around the entire joint circumference.

Where bell and spigot field welded joints are required to be welded they shall provide for a 2-1/4-inches lap with a ¾-inch allowable pull (joint opening) for the required 1-1/2-inch minimum lap. Shop applied exterior coating shall be held back approximately 4-1/4-inches from the end of each pipe end of the joint to be welded. The interior cement mortar lining shall also be held back if so recommended by the SUPPLIER.

Where exterior welds are called for, adequate space shall be provided for welding and inspection of the joint.

In laying welded steel pipe with wrapper plates or lap joints, pipe deflection shall be limited to that which will produce a minimum lap of 1-1/2 inches and which will not cause a weld to be closer than ¾-inch to the nearest tangent of a bell radius. The pipe ends shall be cut straight on joints where wrapper plates are used for realignment, adjustment or deflection, and fillet welds shall be made as specified or required.

Any annular space between the facing surfaces of the bell and spigot shall be limited as defined in AWWA C206.

Where more than one pass is required, each pass except the first and the final one, shall be peened to relieve shrinkage stresses; and all dirt, slag and flux shall be removed before the succeeding bead is applied.

If the ends of the pipe are laminated, split or damaged to the extent that satisfactory welding contact cannot be obtained, the pipe shall be removed from the line, and inspected more thoroughly to determine the extent of damage. If necessary in the opinion of the ENGINEER, the joint of pipe shall be returned to the SUPPLIER for necessary repairs to be made. If such repairs are made, the ENGINEER shall approve the repair before the joint of pipe is used. The expense of such repairs shall be borne by the CONTRACTOR.

The pipe shall be backfilled to at least one foot above the top of the previously laid pipe except for the last 100 feet, the joints of which shall be left open for subsequent field welding and coating.

H. Visual Inspection and Testing: Field welds will be randomly inspected and tested by an independent testing laboratory as directed by the ENGINEER. Field lap welds will be inspected by magnetic particle. Field butt welds will be inspected by the radiographic method and in accordance with the acceptance criteria of API 1104. The CONTRACTOR shall inform the ENGINEER before welded joints are to be backfilled so that the joint may be inspected. The CONTRACTOR shall assume all costs of exposing joints that were backfilled before inspection.

CONTRACTOR shall randomly test approximately 10% of field welded joints. This percentage may increase if performance concerns arise from rejected welds.

Personnel performing visual inspection of welds shall be qualified and currently certified as Certified Welding Inspectors (CWI) in accordance with AWS QC1, Standard for Qualification and Certification of Welding Inspectors. Personnel performing nondestructive tests shall be qualified and certified to the requirements of SNT-TC-1A.

The ENGINEER may also order nondestructive testing by an independent testing laboratory in addition to any testing specified herein.

All costs for inspection and testing of field welds by the independent testing laboratory will be paid by the OWNER. If the weld is defective, the inspection costs shall be paid by the CONTRACTOR. Defective welds shall be repaired and retested at the CONTRACTOR's expense.

Test reports of all laboratory tests shall be submitted as provided for in the submittals section.

I. Rejection of Welds: A weld may be rejected as a result of visual inspection for one of the following causes:

1. the procedures, as specified in these SPECIFICATIONS are not complied with;

2. the weld shows evidence of poor workmanship;

3. the weld does not meet the requirements of Section 6, of the latest accepted edition of API Standard 1104 or with the ANSI/AWWA Standard C206;

4. the weld contains a crack;

5. the material being welded contains visible defects such as lamination, laps, or dimensional irregularities;

6. an arc burn is present;

7. a dent exists; or;

8. any weld whose history cannot be established and that has not been radiographed.

J. Repair of Weld Defects: Each weld that is unacceptable must be repaired in accordance with these SPECIFICATIONS or as accepted by the ENGINEER. Costs for repair of the defects and defective welds shall be at the expense of the CONTRACTOR.

All welds containing cracks regardless of location shall be rejected and repaired. No field weld repair of welds containing cracks will be permitted without the ENGINEER'S acceptance.

Each weld that is to be repaired shall have the defect removed down to clean metal. Each weld to be repaired shall be preheated in accordance with these SPECIFICATIONS. The repair shall be made with the same welding process as was originally used. No repair will be permitted in a previously repaired area.

Repaired welds shall be inspected by the same means, and to the same standards, as the original weld.

When a lamination, split end, or a cracked seam occurs in a joint length, the entire length shall be removed. When pipe defects are cut out, the defective section shall have a minimum of eight (8) inches of acceptable metal on each side of the defect. When pipe defects occur in the welding area, the ENGINEER shall be notified.

All arc burns shall be repaired as herein specified. Arc burn repairs shall not be permitted unless the resulting wall thickness after repair is equal to or greater than the normal pipe wall thickness. The CONTRACTOR shall submit a written request for repair to the ENGINEER. The ENGINEER will then determine if the repair is appropriate. If accepted, the repair shall be made in the following manner:

1. Remove arc burn by grinding of filing;

2. Remove all sharp edges to a smooth, overall contour;

3. Swab a 20% ammonium persulfate solution over the notched area to determine if additional grinding or filing is necessary;

4. Confirm that the remaining wall thickness is equal to or greater than the nominal wall thickness utilizing an appropriate gauge, or other means acceptable to the ENGINEER;

5. All unrepaired or unsatisfactorily repaired arc burns shall be cut from the pipeline as a cylinder.

3.04 COMPRESSION SLEEVE COUPLINGS

A. Cleaning: Thoroughly clean with a wire brush all surfaces that will be in contact with the gaskets.

B. Assembly: Slip the follower rings over the pipe ends, then slip the gaskets that have been lubricated with an approved vegetable based lubricant over the pipe ends. Place the middle ring over the previously laid pipe then insert the end of the joining pipe into the middle ring. Position both gaskets evenly in the middle ring gasket grooves. Insert bolts in bolt holes of follower rings. Tighten nuts in the sequence and the torque requirements of the coupling SUPPLIER (manufacturer). After tightening all bolts the stulls shall be removed from the interior of the pipe if it is not to be buried.

All nuts and bolts that come in contact with water or are buried underground shall be painted with two (2) heavy coats of an approved coal tar epoxy, in accordance with the painting or protective coatings section of these SPECIFICATIONS.

3.05 OUTLETS

Where shown on the DRAWINGS or where required, steel pipe, fittings or specials shall be welded to receive drainage outlets, air relief outlets, or other pipe or plugs for pressure testing or chlorination. Welded outlets shall be provided in the shop. Holes shall be drilled accurately and at right angles to the axis of the pipe or fitting.

Where size of the outlet pipe to be connected is such as to require reinforcement saddles for making the connection, the CONTRACTOR shall furnish such outlet connections with welded reinforcement saddles welded as indicated on the DRAWINGS or as acceptable to the ENGINEER.

3.06 CLOSURE PIECES

Where closures are required in the field for steel pipe the CONTRACTOR shall be required to make all measurements for the same and shall be responsible for the correctness of the steel pipe sections needed to complete the WORK. Where steel pipe closures are cut with acetylene torch or by a similar method the burned ends of the cut ends of pipe shall be ground and made smooth before completing the joints. Pipe coatings damaged in the cutting off of the ends of closure pieces shall be repaired in accordance with ANSI/AWWA C214, to the satisfaction of the ENGINEER.

3.07 JOINT COATING AND LINING

A. General: The interior and exterior joint recesses shall be thoroughly wiped clean of all water, loose scale, dirt, and other foreign material.

B. Coating applicators shall be trained and certified by the coating system SUPPLIER.

D. Field Application of Heat Shrink Sleeve: Heat shrink sleeves shall be furnished and installed in accordance with ANSI/AWWA C216 where lap joints are to be welded on the inside after the pipe has been bedded and backfilled. The heat shrink sleeve coating system shall be compatible with, and of the same color as the specified pipe coating system.

1. Provide heat shrink sleeve with a cross-linked polyolefin wrap or sleeve with a mastic sealant. Sleeve shall be a minimum of 85 mils recovered total thickness. Sleeve shall completely enclose pipe or fitting with no gaps or voids. Canusa Aqua- Shield Aqua-Sleeve, High Shrink Type (75 mil) or approved equal.

2. Heat shrink sleeve shall provide a minimum adhesion of 40- pounds per inch width.

3. Provide suitable primer type if recommended by heat shrink sleeve manufacturer.

4. Provide primer and heat shrink sleeve type suitable for pipeline operating temperature and burial conditions.

5. Provide filler bar or filler tape, skirting, or other step-down materials as recommended by heat shrink sleeve manufacturer suitable for joints with heat shrink sleeves. Step-down material type and size shall be as recommended by heat shrink sleeve manufacturer for each specific type of pipe and joint.

6. For high soil stress conditions such as swelling clays, provide high adhesive type and heat as recommended by heat shrink sleeve manufacturer for type of pipe and joint.

7. Provide high-recovery sleeve material for high profile type joints (flexible couplings, etc.) as recommended by heat shrink sleeve manufacturer with minimum of 40 percent recovery.

8. Provide high-recovery sleeve material for large size pipe (equal to or greater than 60-inch diameter) as recommended by heat shrink sleeve manufacturer with minimum of 40 percent recovery.

9. Provide only propane torches or wrap-around heaters for pipeline shrink sleeves as recommended by heat shrink sleeve manufacturer.

10. Provide safety equipment (heat resistant gloves, heat resistant pads, safety glasses, hard hat, flame retardant clothing, etc.) as recommended by heat shrink sleeve manufacturer.

11. Provide rolling tools (weld bead or seam roller, flat or profiled roller, etc.) as recommended by heat shrink sleeve manufacturer.

Store, handle, and apply field heat shrink sleeve coating system per AWWA C216, and the sleeve manufacturer's written directions. The joint coating shall cover all pipe surfaces not coated by the existing pipe coating system.

Provide sleeve length so as to provide a minimum of 4-inches overlap of installed sleeve onto intact pipe coating. Contact sleeve manufacturer for correct sleeve model, thickness, length, and size required for the specific type of joint and pipe. Recommended sleeve length and width shall take into account installed sleeve shrinkage due to installation procedure and joint profile.

D. Holiday Testing: All polyurethane, or sleeve coated joints shall be tested with an electrical flaw detector capable of at least a 12,000 volt output. The tests shall be made using a voltage of as recommended in the AWWA standard for the coating being tested. Any holidays found shall be repaired by the CONTRACTOR at no expense to the OWNER. Heat shrink sleeves shall be test after installation and prior to backfill and compaction of joint.

E. Field Repairs of Exterior Polyurethane Coating System:

Repairing damage to the polyurethane coating shall be in accordance with AWWA C222. Damaged or improperly applied coating shall be removed by scraping or abrasive blasting. Any uncured coating shall be removed until only the well-adhered coating remains.

The substrate shall be clean, dry, free of dust, loose residues and other materials interfacing with adhesion. The repair area shall be prepared as recommended by the manufacturer.

Only materials compatible with the originally applied coating shall be used for repairs. Repair materials shall be applied as recommended by the manufacturer. The repaired materials shall be applied to the same thickness or greater as originally specified for the coating being repaired but shall not exceed the thickness recommended by the manufacturer.

All repaired areas shall be inspected for electrical continuity per these SPECIFICATIONS.

F. Field Repair of Shop-Applied Cement Mortar Lining: Upon completion of backfill and all cleanup of the pipe trench, the stulls shall be removed. Any dirt, or trash that has collected in the joint shall be cleaned out and the mortar surfaces of the joint space shall be moistened by spraying or brushing with a wet brush.

Field repair of interior joint surfaces of field-welded joints shall be done in accordance with ANSI/AWWA C205, except that an epoxy bonding agent and latex admixture shall be used in conjunction with the sand and cement mortar. The addition of lime, pozzolan or fly ash will not be permitted. All materials that may come in contact with the water being conveyed (linings, gaskets, lubricants, grout, disinfection agents, etc.) shall be in accordance with and approved by the appropriate NSF Standard 60 or 61.

The exposed steel shall be thoroughly cleaned and all grease shall be removed. A coat of epoxy bonding agent shall be applied over the area to be lined in accordance with the manufacturer's recommendations. A soupy mixture of cement and water shall be applied over the epoxy after it becomes tacky.

Cement mortar to which the latex admixture has been added shall then be packed into the area to be patched and screeded off level with the adjacent cement mortar lining. The patched area shall be given an initial floating with a wood float, followed by a steel trowel finish.

Defective or damaged shop-applied cement mortar linings shall be removed, the surfaces cleaned, and the lining repaired as specified above for joint repair.

Cement shall be Type II or Type III with the modification that the cement shall contain not more than five percent (5%) tricalcium aluminate. Cement shall comply with ASTM C-150 and sand shall conform to ASTM C-150 OR C3544.

3.08 PIPE DEFLECTION

After completion of backfilling, removal of stulls, and before acceptance of the Work, all pipe shall be tested for excessive deflection by measuring the actual inside vertical diameter. Deflection measurements will be made by the ENGINEER. Pipe with diametral deflection exceeding 2 percent of the normal inside diameter shall be uncovered and the bedding and backfill replaced as required to prevent excessive deflection. After replacing bedding and backfill, the pipe shall be retested.

3.09 FINAL INSPECTION BEFORE BACKFILLING

All phases of the installation shall be done in such a manner so as to prevent any damage to the pipe coating. Prior to backfilling any section of the pipeline, these surfaces shall receive a final visual inspection, and an overall electrical flaw inspection using an approved "holiday detector." Any defects noted shall be repaired and the surfaces retested until satisfactory results are obtained.

3.10 JOINT BONDING

Joint Bonding: Except where otherwise specified, all joints except for welded joints and dielectric joints shall be electrically bonded and cathodically protected in accordance with the details shown on the DRAWINGS and Section 134713 of these SPECIFICATIONS. The pipe shall be cleaned to bare bright metal at the point where the bond is installed.

3.11 FIELD PAINTING

The CONTRACTOR shall perform all painting of exposed pipe and fittings as specified under the painting or protective coatings section of these SPECIFICATIONS.

The CONTRACTOR shall remove all debris, dirt, grease, mortar, and other foreign material by the use of soap and water or other solvent as may be required.

3.12 WATER FOR USE IN TESTING AND DISINFECTION

A. The OWNER will provide the water required for pressure testing and preliminary disinfection required by the CONTRACTOR for the entire pipeline PROJECT. For quantities of water required by the CONTRACTOR for retests, the CONTRACTOR shall pay to the OWNER the actual cost incurred to produce the water as determined by the OWNER.

B. The CONTRACTOR shall prepare and provide to the ENGINEER a testing and disinfection plan that will provide for: the conservation of water; that will meet the testing and disinfection requirements; and that will indicate how the CONTRACTOR will manage the disposal of testing and disinfection water so that there will be no adverse impacts to the environment and to the public.

3.13 TESTING

The CONTRACTOR shall perform pressure and leakage tests between valves on all pipe installed under this CONTRACT. The CONTRACTOR shall furnish all necessary testing equipment and material, make all taps, and provide all closure pieces in the pipe as required. The PROJECT REPRESENTATIVE shall monitor the tests.

The CONTRACTOR shall furnish the following equipment and materials for the tests:

2 Approved graduated containers

2 Pressure gauges
1 Hydraulic force pump acceptable to the PROJECT REPRESENTATIVE with suitable hose and suction pipe as required.

The CONTRACTOR shall backfill all pipe, fittings, and specials and provide all thrust blocking, whether permanent or temporary, before hydrostatic testing. The PROJECT REPRESENTATIVE may direct the CONTRACTOR to leave certain joints and connections uncovered until testing has been completed.

After the pipe has been backfilled or partially backfilled as hereinbefore specified, the CONTRACTOR shall fill the pipe section or segment with water and expel all air. The CONTRACTOR shall control the filling operation to prevent the static or transient pressure from exceeding 100% of the specified test pressure. The test pressure shall be measured at the low point in the pipeline, and the CONTRACTOR shall furnish all required taps and gauges for measuring this pressure. Installed blow-offs may be used for pressure measurement provided they are at the low point of the line being tested.

The pipe shall be slowly filled with water by the CONTRACTOR and allowed to stand for 48 hours under slight pressure to allow the cement-mortar lining to absorb water. The specified test pressure shall be applied, by continuous pumping for the entire test period if necessary, and measured at the lowest elevation, or where specified by the ENGINEER.

The pump shall take its suction from a barrel or other calibrated container, or metered in a manner approved by the PROJECT REPRESENTATIVE, so that the amount of water required to maintain these test pressures may be measured accurately.

The hydrostatic test shall be performed in accordance with AWWA C600 in as much as it applies. A low pressure hydrostatic test shall be performed to a pressure of approximately 50% of the PROJECT working pressure for four hours. The allowable leakage shall be one-half of the lesser amount as determined by the equations of AWWA C600. Upon successful completion of the low pressure test the pipe segment shall be tested to the full Field Test Pressure in accordance with AWWA C600. The observed leakage under full Field Test Pressure shall not exceed one-half of the lesser amount as determined by the equations of AWWA C600.

Should any test of installed pipe indicate the leakage exceeds the allowable limits the CONTRACTOR shall locate, install, repair and retest the defective joints or pipe until the leakage form subsequent testing is within the specified allowance.

All exposed areas of pipelines will be inspected by the PROJECT REPRESENTATIVE for visible leakage under test pressure. Visible leaks shall be repaired by the CONTRACTOR at no additional cost to the OWNER.

Every precaution must be taken to remove, valve-off or otherwise protect delicate control equipment in or attached to pipe lines, to prevent damage or injury thereto.

3.14 DISINFECTION

The required disinfection work shall be performed by a SUBCONTRACTOR specializing in such work or, with the permission of ENGINEER, CONTRACTOR may provide the necessary equipment and do the work with his own employees. In either case, all work shall be done under the direct superintendence and authority of a competent and experienced specialist in such work.

Personnel performing the disinfection shall demonstrate a minimum of 5 years' experience in the chlorination and dechlorination of similar pipelines.

Unless otherwise specified, not less than 14 days prior to starting any cleaning and disinfection work, the CONTRACTOR shall submit to the ENGINEER a detailed cleaning and disinfection plan. The plan shall cover the method and procedure proposed, necessary coordination, qualifications of personnel performing the disinfection work, testing schedule, sequence of operations, the limits of the pipeline to be cleaned and disinfected, the location of temporary bulkheads, equipment to be used, the manner of filling and flushing of lines, chlorine injection points, sampling points, potable water sources, neutralization and disposal of wasted water, and all other methods and procedures to be followed in performing the cleaning and disinfection work.

After waterlines are tested hydrostatically and immediately prior to being accepted for SUBSTANTIAL COMPLETION, the CONTRACTOR shall disinfect pipes in accordance with ANSI/AWWA C651 except as modified herein and the requirements of the CONTRACT DOCUMENTS. Disinfection shall be done using calcium hypochlorite solution, or chlorine solution of strength to achieve not less than 50 parts per million of free chlorine in the pipeline. The CONTRACTOR shall fill the line with water and maintain line under pressure of not less than ten (10) pounds per square inch for not less than 48 hours. As an alternative the CONTRACTOR may utilize the slug method in accordance with AWWA C651. During this period, while the line is under pressure, the CONTRACTOR shall open and close all valves within the section being disinfected as required to affect disinfection of valve working parts. Following this period, flush the line clean for biological testing.

Any remaining super chlorinated water shall be neutralized in accordance with AWWA C651 using sodium thiosulfate or other acceptable neutralizing agent before allowing controlled flushing to surface ditches. Discharges shall be controlled in accordance with the permitted stormwater pollution prevention plan requirements with turbidity barriers, monitoring and other acceptable measures. After flushing bacteriological sampling will then be performed by the OWNER.

Repeat the disinfection process if biological testing shows unsatisfactory samples. All procedures shall be in conformance with Division 1 - General Requirements. No cross-connection between the water mains and any pipe that has not been disinfected, shall be permitted. The CONTRACTOR shall furnish and install blind flanges or shall otherwise plug outlets for disinfection purposes.

3.15 SUPPLIER'S FIELD SERVICE

The CONTRACTOR shall, at no additional cost to the OWNER, arrange for a SUPPLIER'S field representative to be on-site to provide instruction to each crew working on the installation of a minimum of four welded joints. The SUPPLIER'S field representative shall verify that the

installations observed were satisfactorily completed and all pipe installation crews were familiar with the proper methods and procedures for the pipeline installations.

END OF SECTION

SECTION 15101

AWWA BUTTERFLY VALVES

PART 1 – GENERAL.

1-1. SCOPE. This section covers furnishing AWWA butterfly valves for cold water service in sizes 14 inches and larger and as indicated in the AWWA Butterfly Valve Schedule. AWWA butterfly valves shall be furnished complete with actuators and accessories as specified herein, as indicated in the schedule, and as specified in the Valve Actuator section.

1-2. GENERAL. Equipment provided under this section shall be fabricated and assembled in full conformity with DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of one of the manufacturers specified in this section.

1-2.01. Governing Standard. Except as modified or supplemented herein, all butterfly valves and manual actuators shall conform to the applicable requirements of ANSI/AWWA C504 or ANSI/AWWA C516.

1-2.02. Marking. Supplementing the requirements of Section 6.1 of the governing standard, the country of origin of all castings and an identifying serial number shall be stamped on a corrosion-resistant plate attached to the valve body.

1-2.03. Permanent Number Plates. All buried AWWA butterfly valves shall be provided with a permanent TAMPA BAY WATER standard bronze identification plate. The location of identification plates shall be as indicated on the DRAWINGS.

1-3. SUBMITTALS. Complete DRAWINGS, details, torque calculations and SPECIFICATIONS covering the valves and their appurtenances shall be submitted in accordance with the SUBMITTALS section. Included in the SUBMITTAL shall be DRAWINGS by the valve manufacturer to indicate the position of the valve actuator and valve shaft. CONTRACTOR shall review and confirm the actuator orientation and handwheel clearances. SUBMITTAL DRAWINGS shall clearly indicate the country of origin of all cast gray iron and ductile iron valve components.

DRAWINGS shall include separate wiring diagrams for each electrically operated or controlled valve and the electrical control equipment. Each DRAWING shall be identified with the valve number or name as specified in this section.

Certified copies of test results for tests described in Section 4.1.3 Tests, 4.2.8.6.12, 4.2.8.6.14, 5.1.1 Performance tests, 5.1.2 Leakage tests, 5.1.3 Hydrostatic test, and 5.1.4 Proof-of-design tests of the governing standard, shall be submitted to ENGINEER before the valves are shipped. An affidavit of compliance with the governing standard for valves 72 inches and smaller shall be provided as indicated in Section 6.3 of ANSI/AWWA C504. For valves 78 inches and larger provide an affidavit of compliance that the valves provided comply with the applicable provisions of the governing standard ANSI/AWWA C516, including proof-of-design testing.

PART 2 – PRODUCTS.

2-1. ACCEPTABLE PRODUCTS. Butterfly valves shall be limited to the following manufacturers. Butterfly valves by other manufacturers will not be acceptable.

Manufacturer

De Zurik
M&H
Pratt (Mueller)
Val-Matic

2-2. MATERIALS. Except as modified or supplemented herein, materials used in the manufacture of butterfly valves shall be suitable for chloramines service and shall conform to the requirements of the governing standard.

Acceptable shop coatings are listed in the following table.

Epoxy (NSF Certified)	PPG Amercoat "Amerlockt 400 High Solids Epoxy", Carboline "Carboguard 891", Sherwin-Williams "Macropoxy 646NSF" or Tnemec "Series N140 Pota-Pox Plus".
Rust-Preventive Compound	As recommended by manufacturer.

2-3. VALVE CONSTRUCTION.

2-3.01. Valve Bodies. Valves shall be short-body type. The use of a stop or lug cast integrally with or mechanically secured to the body for the purpose of limiting disc travel by means of direct contact or interference with the valve disc (in either the open or closed position) will not be acceptable.

2-3.01.01. Rubber-Seated Butterfly Valves 25 to 150 PSI Service (AWWA). Butterfly valves for steady-state water working pressures and steady-state differential pressure up to 150 psi shall conform to ANSI/AWWA C504 or ANSI/AWWA C516 and shall be Class 150B with actuator sized for Class 150B.

2-3.01.02. Rubber-Seated Butterfly Valves 250 PSI Service (AWWA). Butterfly valves for sizes 14 inches through 48 inches and for steady-state water working pressures and steady-state differential pressures up to 250 psi shall be designed and manufactured in accordance with ANSI/AWWA C504 Class 250B. Butterfly valves for sizes greater than 48 inches and for steady-state water working pressures and steady-state differential pressures up to 250 psi shall be designed and manufactured in accordance with the intent of ANSI/AWWA C504 except valves shall be suitable for 250 psi pressure service.

2-3.02. Flanges. Flanges shall be finished to true plane surfaces within a tolerance limit of 0.005 inch. The finished face shall be normal to the longitudinal valve axis within a maximum angular variation tolerance of 0.002 inch per foot (0.017 percent) of flange diameter. Flanges for all Class 150B and Class 250B valves shall have diameter and drilling in accordance with ANSI B16.1 Class 125. Valves shall be rated for buried service.

2-3.03 Mechanical Joint Ends. Mechanical joint ends shall be either mechanical joint or push-on ends conforming to ANSI/AWWA C111/A21.11.

2-3.04. Valve Shafts. Valve shafts for Class 150B valves shall be fabricated of AISI Type 304 or 316 stainless steel. Valve shafts for Class 250B valves shall be fabricated of ASTM A564 Type 630, UNS Designation S17400, condition H1150. The use of shafts having a hexagonal cross section will not be acceptable. The connection between shaft and disc shall be in accordance with the governing standard.

The connection between the shaft and the disc shall be mechanically secured by means of solid, smooth sided, stainless steel or monel taper pins or dowel pins. Each taper pin or dowel pin shall extend through or shall wedge against the side of the shaft and shall be mechanically secured in place. The use of set screws, knurled or fluted dowel pins, expansion pins, roll pins, tension pins, spring pins, or other devices instead of the pins specified herein will not be acceptable.

2-3.05. Valve Seats. Valve seats shall be EPDM. Acceptable seating surfaces mating with EPDM are AISI Type 304 or 316 stainless steel, monel, or plasma-applied nickel-chrome overlay for all valves; bronze for 20 inch and smaller valves; and alloy cast iron for 20 inch and smaller manually operated valves.

Table 15101-1

Butterfly Valve Seat Information		
BFV Size (in.)	**Seat Location**	**Type of Seat Retaining Methods Allowed**
14 inches Through 42 inches	In Valve Body or On Disc	• Molded Seat Bonded to the Valve Body or Disc • Seat Retained Within a Dovetail Groove and Locked in Place by an Epoxy Wedge • Seat Retaining Rings with Cap Screws
48 inches And Larger	In Valve Body or On Disc	• Seat Retaining Rings with Cap Screws

Valve seat configurations which rely on the mating pipe flange to hold the seat in position in the valve body will not be acceptable.

2-3.06. Shaft Seals. Shaft seals shall be of the chevron type.

2-3.07. Thrust Bearings. Each valve shall be provided with one or more thrust bearings in accordance with the governing standard. Thrust bearings which are directly exposed to line liquid and which consist of a metal bearing surface in rubbing contact with an opposing metal bearing surface will not be acceptable.

2-3.08. Rotation. The direction of rotation of the handwheel or the wrench nut to open the valve shall be to the left (counterclockwise).

2-4. VALVE ACTUATORS. Valve actuators shall be manual actuators with square operating nut with spur gears and shall be rated for buried service. .

If valves with an AWWA class designation higher than specified are furnished, actuator torque capabilities shall be increased accordingly and be acceptable to ENGINEER.

Actuators shall be installed at the factory by the valve manufacturer using the heaviest available grade of material.

2-4.01. Valve Actuator Sizing. The valve manufacturer shall size the actuator in accordance with the governing standard, the operating conditions and requirements indicated in the AWWA Butterfly Valve Schedule, and the valve manufacturer's requirements.

Unless otherwise indicated or specified, actuator torque requirements shall be based on a maximum differential pressure across the valve equal to the maximum pressure associated with the valve class and a maximum velocity through the valve of 16 feet per second or a safety factor of 1.5 to the required torque at the stated differential pressure, whichever is greater.

Valves with operating stands shall have the maximum actuator torques increased by 25 percent. Actuator torques determined by the above requirements shall be increased by any design factors required by paragraph 4.2.8 of ANSI/AWWA C504 for valves 72 inches and smaller, or paragraph 4.3.7 of ANSI/AWWA C516 for valves 78 inches and larger or as specified herein.

The valve manufacturer shall provide torque calculations showing dynamic torque at maximum flow conditions, with valve seat on the correct side of flow direction and prove that actuators are sized correctly with the required safety factors.

2-5. SHOP PAINTING. All interior and exterior ferrous metal surfaces, except finished surfaces, bearing surfaces, and stainless steel components, of valves and accessories shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting. Epoxy coatings shall be ANSI/NSF 61 certified.

Surfaces shall be painted as follows:

Unfinished Surfaces	
Interior Surfaces	Epoxy.
Exterior Surfaces of Buried Valves	Epoxy.
Exterior Surfaces of Valves to be Submerged	Epoxy.
Exterior Surfaces of All Other Valves	Universal Primer.
Polished or Machined Surfaces	
Flange Faces	Rust-preventive Compound.
Other Surfaces	Epoxy.

Interior coatings shall comply with ANSI/AWWA C550 and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils
Universal Primer	3 mils

2-6. ACCESSORIES. Requirements for extension stems and stem guides, position indicators, floor boxes, operating stands, torque tubes, valve boxes, and extension bonnets shall be as indicated in the AWWA Butterfly Valve Schedule and as specified in the Valve Actuators section.

PART 3 – EXECUTION.

3-1. FACTORY LEAKAGE TESTS. Regarding Section 5 of the governing standard, valves shall be tested on both sides.

3-2. WITNESSING OF FACTORY TESTS. For valves 48 inches and larger, TAMPA BAY WATER or a designated representative reserves the right to witness the tests specified in Section 5 of the governing standard.

3-1. INSTALLATION. Butterfly valves shall be installed with the shaft horizontal unless otherwise necessary for proper operation or as acceptable to ENGINEER.

Butterfly valves shall be installed with the flat face/adjustment side of the disc on the downstream side of the valve.

Whenever an actuator must be removed to permit installation of a valve, the actuator shall be promptly reinstalled and shall be inspected and readjusted by a representative of the valve manufacturer.

End of Section

SECTION 15104

RESILIENT-SEATED GATE VALVES

PART 1 - GENERAL

1.01. SCOPE

A. This section covers furnishing resilient-seated non-rising stem AWWA gate valves for clear water service and as indicated in the Resilient-Seated Gate Valve Schedule. Resilient-seated gate valves shall be furnished complete with actuators and accessories as specified herein and as specified in the Valve Actuator section.

B. The minimum design working water pressure shall be 200 psig.

1.02. GENERAL

A. Equipment provided under this section shall be fabricated and assembled in full conformity with the DRAWINGS, SPECIFICATIONS, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by ENGINEER.

B. Valves shall be furnished with all necessary parts and accessories indicated on the DRAWINGS, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

C. Governing Standard. Except as modified or supplemented herein, all resilient-seated gate valves shall conform to the applicable requirements of ANSI/AWWA C509.

1.03. SUBMITTALS.

A. Complete DRAWINGS, details, and SPECIFICATIONS covering the valves and their appurtenances shall be submitted in accordance with the Submittals Procedures section.

B. All valves shall be tested in accordance with Section 5 of the governing standard. Certified copies of the results of all tests, together with an affidavit of compliance as indicated in Section 6.3 of the governing standard, shall be submitted to ENGINEER before the valves are shipped.

PART 2 - PRODUCTS

2.01. MATERIALS

A. Except as modified or supplemented herein, materials used in the manufacture of resilient-seated gate valves shall conform to the requirements of the governing standard.

B. Bronze Components. All bronze valve components in contact with liquid shall contain less than 16 percent zinc. All aluminum bronze components in contact with liquid shall not contain less than 79 percent copper.

C. Gaskets. Gaskets shall be free of asbestos and corrosive ingredients.

D. Shop Coatings.

Epoxy

For Raw or Treated Water Service in potable water facilities (NSF certified systems)	PPG Amercoat "Amerlock 400 High-Solids Epoxy ", Carboline "Carboguard 891", Sherwin-Williams "Dura Plate 235 NSF" or Tnemec "Series N140 Pota-Pox Plus".
Rust-Preventive Compound	As recommended by manufacturer.
Universal Primer	As recommended by manufacturer.

2.02. VALVE CONSTRUCTION.

A. Ends. Valve ends shall be compatible with connecting piping. Buried valves shall be flanged or mechanical joint ends and as indicated in the Resilient-Seated Gate Valve Schedule. Above grade valves shall be flanged ends. Except as modified or supplemented herein, the ends shall conform to the applicable requirements of the governing standard.

B. Stem Seals. Valve stem shall be the non-rising type. O-ring stem seals shall be provided for all gate valves.

C. Rotation. The direction of rotation of the hand wheel or the wrench nut to open the valve shall be to the left (counterclockwise).

D. Shop Coatings. All interior and exterior ferrous metal surfaces of valves and accessories shall be shop coated for corrosion protection. The valve manufacturer's standard fusion-bonded coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field coating.

Surfaces shall be coated as follows:

Unfinished Surfaces

Interior Surfaces	Epoxy
Exterior Surfaces of Valves to	

be Buried	Epoxy
Exterior Surfaces of Valves to be Submerged	Epoxy
Exterior Surfaces of All Other Valves	Universal Primer.
Polished or Machined Surfaces	
Flange Faces	Rust-preventive compound.
Other Surfaces	Epoxy.

The interior surfaces of each valve shall be subjected to a nondestructive holiday test in accordance with ASTM G62, Method A, and shall be electrically void-free.

Interior coatings shall comply with ANSI/AWWA C550 and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils.
Universal Primer	3 mils.

2.03. VALVE ACTUATORS.

A. Requirements for valve actuators shall be as specified in the Valve Actuator section and as indicated in the Resilient-Seated Gate Valve Schedule.

2.04. ACCESSORIES.

A. When the DRAWINGS or the Resilient-Seated Gate Valve Schedule indicate the need for extension stems, stem guides, position indicators, floor boxes, valve boxes, or operating stands, refer to the Valve Actuator section.

PART 3 - EXECUTION

3.01. INSPECTION.

A. All valves and accessories shall be inspected for damage and cleanliness before being installed. Any material damaged or contaminated in handling on the job shall not be used unless it is repaired and re-cleaned to the original requirements by CONTRACTOR. Such material shall be segregated from the clean material and shall be inspected and approved by TAMPA BAY WATER or its representative before its use.

3.02. INSTALLATION.

A. Valves shall be installed with sufficient clearance for proper operation of any external mechanisms, and with sufficient clearance to dismantle the valve for in-place maintenance. Installation shall be in accordance with the valve manufacturer's recommendations.

B. Unless otherwise indicated on the DRAWINGS, all valves installed in horizontal runs of pipe having centerline elevations 3 feet 6 inches or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs of piping having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and operating hand wheel shall be installed above the valve horizontal centerline as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as reviewed by ENGINEER.

C. Installation Checks. An installation check by an authorized representative of the manufacturer is not required.

3.03. FIELD QUALITY CONTROL.

A. Field Testing. After Installation, all valves shall be tested in accordance with the Pipeline Pressure and Leakage Testing Section.

1. Pressure Tests. Pressure testing shall be in accordance with the Pipeline Pressure and Leakage Testing section.

2. Leakage Tests. All installed valves shall be free from leaks. Each leak that is discovered within the CORRECTION PERIOD stipulated in the General Conditions shall be repaired by and at the expense of CONTRACTOR. This requirement applies whether pressure testing is required or not.

End of Section

SECTION 13 47 13
CATHODIC PROTECTION SYSTEM

PART 1 - GENERAL

1.1 THIS SECTION INCLUDES

A. The WORK of this Section includes providing a complete galvanic cathodic protection (CP) system for the following structures as outlined in this Section and on the Drawings:

1. The pipeline consists of approximately 500 feet of 60-inch diameter polyurethane-coated welded steel pipe.

B. Electrical isolation of the pipelines from adjacent metallic structures, steel reinforced concrete structures, casings, structures of dissimilar metal or dissimilar coatings, conduits, and all other metallic components that may impact the operation of the CP system.

C. Electrical bonding of all non-insulated, non-welded pipe joints and mechanical joints to provide electrical continuity.

D. Installation of galvanic anodes, insulating joints, test stations, other components associated with the CP system, and all other work described herein and on the Drawings.

E. Testing of CP system during installation.

F. Cleanup and restoration of work site.

G. System Commissioning: Testing of CP system after installation and backfilling.

1.2 REQUIREMENTS

A. If the products installed as part of this Section are found to be defective or damaged or if the WORK of this Section is not in conformance with these Specifications, then the products and WORK shall be corrected at the CONTRACTOR's expense.

B. Any retesting required due to inadequate installation, failure to meet performance or acceptance criteria, or due to defective materials shall be paid for by the CONTRACTOR at no additional cost to the owner.

C. The WORK also requires that one Supplier or Subcontractor accept responsibility for the WORK, as indicated, but without altering or modifying the CONTRACTOR's responsibilities under the Contract Documents.

D. The WORK also requires coordination of assembly, installation, and testing between the pipeline contractor and any CP material supplier or subcontractor.

E. All electrical WORK shall be in accordance with NEC and local requirements.

1.3 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. 02220 – Excavation, Trenching, Backfilling, and Compacting
2. 03000 – Concrete
3. 03600 – Grout
4. 09940 – Protective Coatings
5. 15065 – Steel Pipe

1.4 REFERENCED SPECIFICATIONS, CODES AND STANDARDS

A. The WORK of this Section shall comply with the current editions of the codes and standards referenced in this specification, including the following:

1. AASHTO — American Association of State Highway and Transportation Officials
   a. H20 — Specification for Highway Bridges
2. ACI — American Concrete Institute
   a. 523.1 — Guide for Cast-in-Place Low Density Cellular Concrete
   b. 523.3R — Guide for Cellular Concretes above 50 pcf
3. ASTM — ASTM International
   a. A123 — Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   b. A615 — Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   c. B3 — Standard Specification for Soft or Annealed Copper Wire
   d. B8 — Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
   e. B80 — Standard Specification for Magnesium-Alloy Sand Castings
   f. B187 — Standard Specification for Copper, Bus Bar, Rod, and Shapes and General Purpose Rod, Bar, and Shapes

g. B843 Standard Specification for Magnesium Alloy Anodes for Cathodic Protection

h. C94 Standard Specification for Ready-Mixed Concrete

i. D1000 Standard Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications

j. D1248 Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

k. D1785 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

l. D2220 Standard Specification for Poly (Vinyl Chloride) Insulation for Wire and Cable, 75°C Operation

m. D3005 Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape

n. D4388 Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes

o. D6386 Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting

p. G97 Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications

4. AWWA American Water Works Association

a. C217 Petrolatum and Petroleum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines

5. NSF National Sanitation Foundation

a. NSF 61 Drinking Water System Components

6. NACE International, the Corrosion Society

a. SP0375 Field-Applied Underground Wax Coating Systems for Underground Pipelines: Application, Performance, and Quality Control

b. SP0169 Control of External Corrosion on Underground or Submerged Metallic Piping Systems

c. SP0286 Electrical Insulation of Cathodically Protected Pipelines

d. TM0497 Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems

7. NEMA National Electrical Manufacturers Association

a. TC2 Electrical Polyvinyl Chloride (PVC) Tubing and Conduit

b. TC3 PVC Fittings for Use with Rigid PVC Conduit and Tubing

8. NFPA National Fire Protection Association

a. NFPA 70 National Electric Code (NEC)

9. UL Underwriters Laboratories

a. 6 Rigid Metal Conduits

b. 467 Grounding and Bonding Equipment

c. 489 Molded Case Circuit Breakers, Molded Case Switches and Circuit Breaker Enclosures

d. 506 Standard for Specialty Transformers

e. 514B Fittings for Cable and Conduit

B. Whenever the Drawings or these Specifications require a higher degree of workmanship or better quality of material than indicated in the above codes and standards, these Drawings and Specifications shall prevail.

1.5 PERMITS AND JOB ACCESS

A. Prior to the start of construction, the CONTRACTOR shall apply to the required authorities for permits required for installation of the CP system.

B. The CONTRACTOR shall contact Sunshine 811 prior to commencing construction to locate existing utilities in the area of construction. Existing utilities include, but are not limited to, water lines, gas lines, telephones, streetlights, sewer and storm drains, and overhead and underground electric utilities.

C. If traffic control is necessary, it shall satisfy the requirements of the governing locality.

1.6 QUALITY ASSURANCE

A. Installation of the CP equipment shall be performed by individuals having at least five years of experience in the installation of the CP equipment described herein.

B. All testing required to be performed by a "Corrosion Technician" shall be performed by a NACE certified Corrosion Technician under the supervision of a Corrosion Engineer. A Corrosion Technician is a minimum of a NACE CP2 (CP Technician). A Corrosion Engineer is a Registered Professional Corrosion Engineer or a NACE CP4 (CP Specialist).

1.7 SUBMITTALS

A. The following shall be submitted to the ENGINEER prior to any equipment installation.

1. A copy of this specification section, with addenda updates, with each paragraph check marked to show specification compliance or marked to show deviations.

2. Catalog cuts, bulletins, brochures, or data sheets for all materials specified herein.

3. Statement that the equipment and materials proposed meet the Specifications and the intent of the Specifications.

4. Statement of installation and testing experience required.

5. Schedule, including the expected start date and planned completion date.

6. Copy of well drilling or surface disturbance permits if permits are required by local jurisdiction.

7. Description of power system to be provided for rectifiers, including cut sheets, meter sizing, power company requirements, and copy of permits.

8. Manufacturer's anode connection resistance test results.

9. CONTRACTOR's System Commissioning Test Plan and Procedures. The test plan shall outline the organization, schedule, allocation of resources, and documentation requirements associated with the commissioning tests.

B. The following shall be submitted to the ENGINEER after completion of the WORK.

1. Wire connection testing.

2. Insulating joint testing, before and after backfilling.

3. Electrical isolation testing from structures or rebar.

4. Casing insulator testing, before and after backfilling.

5. Joint bond testing, before and after backfilling.

6. System Commissioning Report documenting all test results. The test report shall include the findings, results, and comments derived from the commissioning tests.

7. Record Drawings shall be submitted to and approved by the ENGINEER before the WORK is considered complete.

1.8 INTERFERENCE AND EXACT LOCATIONS

A. The locations of CP equipment, test stations, devices, outlets, and appurtenances, as indicated, are approximate only. Exact locations shall be determined by the CONTRACTOR in the field subject to the approval of the ENGINEER.

B. The CONTRACTOR shall field-verify all data and final locations of work done under other Sections of the Specifications required for placing of the electrical work.

C. In case of interference with other work, foreign pipeline, or erroneous locations with respect to equipment or structures, the CONTRACTOR shall furnish all labor and materials necessary to complete the WORK in an acceptable manner to the OWNER. Deviations from the Drawings and Specifications shall be submitted to the OWNER for approval.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials installed must be new. All equipment and materials supplied shall be similar to that which has been in satisfactory service for at least 5 years.

B. All materials in contact with potable water shall be NSF 61 approved.

2.2 GALVANIC ANODES

A. High-potential magnesium anodes: Cast magnesium anodes shall conform to ASTM B843 Type M1C. Anodes shall have an open circuit potential of −1.70 volts or more electronegative and a current efficiency of at least 48% when tested in accordance with ASTM G97. Anodes shall have the following size, form, and shape. Anodes shall be supplied by Farwest, Corrpro, Mesa, Matcor, or an approved equivalent.

Ingot				**Packaged**		
Weight (lb)	**Width (inch)**	**Height (inch)**	**Length (inch)**	**Weight (lb)**	**Diameter (inch)**	**Length (inch)**
60	4 to 5	4	60	126 to 130	6 to 7	64

B. Galvanic anodes shall be pre-packaged in a cloth bag containing backfill of the following composition: 75% gypsum, 20% bentonite, and 5% sodium sulfate. The anodes shall be of the size indicated on the Drawings and placed where indicated on the Drawings.

C. Anode lead wire:

1. The wire attached to the anodes shall be of the size and type indicated on the Drawings. The anode lead wire shall conform to the specifications given for "Wires" in this specification.

2. Connection of wire to the anode shall have a pulling strength that exceeds the wire's tensile strength.

3. Anode lead wires shall be of one continuous length, without splices, unless otherwise indicated on the Drawings, from the anode connection to the test station.

2.3 READY-MIXED CONCRETE

A. Ready-mixed concrete shall be in accordance with ASTM C94, permit requirements, and the Specification section for cast-in-place concrete.

2.4 REINFORCING STEEL

A. Reinforcing steel shall be in accordance with ASTM A615, permit requirements, and the Specification section for reinforcing steel.

2.5 FLUSH-MOUNTED TEST STATION

A. Flush-mounted test station boxes shall be traffic boxes rated to withstand AASHTO H20 traffic loading.

B. The traffic boxes shall be G05 Utility Boxes, as manufactured by Christy Concrete Products, Inc.; No. 3RT Traffic Valve Box, as manufactured by Brooks Products; or an approved equivalent.

C. Traffic box covers for test stations shall be cast iron with welded bead legend and labeled "CP TEST" or "ANODE," as required.

2.6 TERMINAL BOARDS

A. Terminal boards shall be made of 1/4-inch thick phenolic plastic and sized as indicated on the Drawings.

B. Connection hardware shall be brass or bronze. All connections shall be double nutted bolts with serrated lock washers.

C. Copper bus bar shall be 1/8-inch thick and sized to fit. The copper bus bar shall be per ASTM B187 with 98% conductivity.

2.7 MECHANICAL LUGS

A. Mechanical lugs shall be brass or copper with a brass, copper, or stainless steel set screw. Tin plating on the lugs is optional. Aluminum lugs shall not be permitted. Zinc-plated steel set screws shall not be permitted. The lug shall be listed per UL 467, suitable for direct burial, and appropriately sized for the incoming wires. The lug shall be ILSCO Type XT-6DB, Burndy GKA8C, or an approved equivalent.

2.8 SHUNTS

A. Shunts shall be selected by the size indicated on the Drawings.

B. 0.01-ohm, 6-amp shunts shall be manganin wire type, as indicated. Shunts shall be Type RS, as manufactured by Holloway, or an approved equivalent.

2.9 CONDUIT AND FITTINGS

A. The minimum conduit size shall be 1 inch unless otherwise indicated. Refer to NFPA 70 (NEC) for additional conduit size requirements.

B. Conduit and fittings placed below grade shall be Schedule 80 PVC in accordance with NEMA TC2 and NEMA TC3.

C. Conduit and fittings placed above grade shall be rigid steel. Rigid Steel conduit shall be galvanized and conform to UL 6.

D. Conduit clamps shall be galvanized steel, 304 stainless steel, or 316 stainless steel.

E. Fittings for use with rigid steel conduit shall be galvanized cast ferrous metal, with gasketed covers, Crouse Hinds Condulets, Appleton Unilets, or an approved equivalent. Rigid metallic conduit fittings shall be galvanized, conform to NEMA FB 1, and listed to UL 514B.

F. Union couplings for conduit shall be Erickson or Appleton Type EC, 0-Z Gedney 3-piece Series 4, or an approved equivalent.

G. Non-metallic insulating end bushings shall be used at conduit terminations regardless of the conduit material used and shall conform to NFPA 70 (NEC). Insulating bushings shall be Emerson Type A for threaded ended conduits, Arlington fit-in for non-threaded conduits, or approved equivalents.

2.10 CAUTION TAPE

A. The caution tape shall be an inert plastic film designed for prolonged underground use. The caution tape shall be a minimum of 3 inches wide and a minimum of 4 mils thick.

B. The caution tape shall be continuously printed over the entire length with the wording "CAUTION: CATHODIC PROTECTION CABLE BURIED BELOW."

C. The wording shall be printed using bold black letters. The color of the tape shall be red.

2.11 WIRES

A. Conductors shall consist of stranded copper of the gauge indicated on the Drawings. Wire sizes shall be based on American Wire Gauge (AWG). Copper wire shall be in conformance with ASTM B3 and ASTM B8.

B. Insulation Type and Colors: As shown on the Drawings.

1. High molecular weight polyethylene (HMWPE) wires shall be rated for 600 volts and shall conform to ASTM D1248, Type 1, Class C, Grade 5.

2.12 WIRE IDENTIFICATION TAGS

A. Wire identification tags shall be the wrap-around type with a high resistance to oils, solvents, and mild acids. Wrap-around markers shall fully encircle the wire with imprinted alpha-numeric characters for pipe identification. The height of the letters and numbers shall be 3/16 inch at a minimum.

2.13 GALVANIC ANODE HEADER WIRE-TO-ANODE LEAD WIRE SPLICES

A. The anode header wire shall be connected to the anode lead wire using a split bolt encased in resin. Splice kit shall be a resin splice kit that completely encapsulates the wire and splice connection and shall be designed for CP splices. Splice kit shall be Scotchcast Wye Resin Splice Kit 82-B1, as manufactured by 3M, or an approved equivalent.

2.14 EXOTHERMIC WELDS

A. Exothermic welds shall be in accordance with the manufacturer's recommendations. Exothermic welds shall be Cadweld manufactured by Erico, Thermoweld manufactured by Burndy, or an approved equivalent.

B. Prevent molten weld metal from leaking out of the mold, where necessary, by using Duxseal packing manufactured by Johns-Manville, Thermoweld packing material manufactured by Burndy, Cadweld T403 Mold Sealer manufactured by Erico, or an approved equivalent.

C. The shape and charge of the exothermic weld shall be chosen based on the following parameters and based on manufacturer recommendations:

1. Pipe material
2. Pipe size
3. Wire size and requirement for sleeves
4. Number of wires to be welded
5. Orientation of weld (vertical or horizontal)

2.15 EXOTHERMIC WELD COATING

A. After exothermic welding, repair coatings and linings in accordance with the coating and lining manufacturer's recommendation.

B. For dielectrically coated steel pipe, weld caps with integrated primer shall be used to cover the exothermic weld connecting the wire to the pipe. The weld cap shall be a 10-mil thick durable plastic sheet that has a dome filled with a moldable compound to assure complete encapsulation of the exothermic weld and a layer of elastomeric adhesive with integrated primer. The adhesive and primer shall be compatible with the pipe material and pipe coating material. Adhesion to steel shall be at least 10 lb/in per ASTM D1000. Weld cap with integrated primer shall be Handy Cap IP manufactured by Royston or an approved equivalent for wire size up to 8 AWG and Handy Cap XL IP manufactured by Royston or an approved equivalent for wire size up to 2 AWG.

2.16 DIELECTRIC INSULATING FLANGE KITS

A. Insulating flange kits shall include full-faced gaskets, insulating sleeves and washers, and 316 stainless steel bolts, nuts, and washers. The complete assembly shall have a pressure rating equal to or greater than the flanges between which it is installed. Sleeves, gaskets, and insulating washers shall have a minimum dielectric constant of 300 volts per mil. Stainless steel washers shall fit well within the bolt facing on the flange. Insulating washers shall fit within the bolt facing the flange over the outside diameter of the sleeve.

1. Insulating gasket shall be full-faced, Type E, and 1/8-inch thick. Acceptable gasket materials include nitrile faced phenolic, G-10, or a material with approved equivalent or increased performance. Acceptable seal materials include EPDM, PTFE, or a material with approved equivalent or increased performance. When used in potable water systems, gasket and seal shall be NSF 61 approved.

2. Insulating sleeves shall be 1/32-inch thick and equal the number of bolts on the flange. Acceptable materials include Mylar, G-10, or a material with approved equivalent or increased performance.

3. Insulating washers shall be 1/8-inch thick and equal to twice the number of bolts on the flange. Acceptable materials include phenolic, G-10, or a material with approved equivalent or increased performance.

B. Dielectric insulating flange kits shall be manufactured by Pipeline Seal and Insulator, Inc., Advance Products & Systems Inc., GPT Industries, or an approved equivalent.

C. For bell and spigot pipe, provide electrical isolation through the installation of the following materials:

1. Flange connection to lock joint bell adapter.

2. Flange connection to lock joint spigot adapter.

2.17 MONOLITHIC INSULATING JOINTS

A. Monolithic insulating joints shall be designed to provide for the electrical isolation of piping sections and shall be completely factory assembled. Monolithic insulating joints shall be designed so that they are welded into the field piping during installation.

B. Monolithic insulating joints shall have the same or better pressure rating and hydrostatic performance as the pipeline where it will be installed.

C. The electrical resistance in dry air shall be greater than or equal to 5 MΩ at 1000 V_{DC}. The breakdown voltage in dry air shall be at least 3 kV_{AC} at 50 Hz for 1 minute.

D. When used in potable water systems, the internal coating shall be NSF approved.

E. Monolithic insulating joints shall be manufactured by Advance Products & Systems Inc., GPT Industries, or an approved equivalent.

2.18 CASING SPACERS

A. The following are minimum requirements for effective electrical isolation between the pipeline and its casing. Refer to the pipeline specification for additional requirements:

1. For piping installed in tunnels or cased crossings, install insulating casing spacers between the piping and the casing or tunnel liner to provide electrical isolation.

2. Inside diameter of the casing or tunnel liner must be at least 4 inches greater in diameter than the outside diameter of the piping. In the case of mechanically coupled piping, the casing must be a minimum of 4 inches greater in diameter than the outside diameter of the coupling at its largest point.

3. Use 12-inch wide steel insulators with 2-inch wide glass reinforced runners, Model Ranger II as manufactured by GPT Industries, Model C12G-2 as manufactured by Pipeline Seal and Insulator, Inc., Model SI as manufactured by Advance Products and Systems, or an approved equivalent.

2.19 CASING END SEAL

A. Casing end seal shall seal the annular space between the carrier pipe and casing. A casing end seal shall be installed on each end of the casing. The casing end seal shall be designed to last the life of the piping system.

B. Casing end seal shall be at least 1/8-inch thick neoprene, nitrile, or EPDM. The seal shall be secured with 316 stainless steel banding straps.

C. In addition to casing end seals, link-seals should be installed to seal the annular space. Link-seals shall be installed on each end of the casing and shall be designed to last the life of the piping system.

D. Link-seal insulators shall be made with a non-conductive elastomer, such as EPDM, nitrile, or silicone.

E. Link-seal metallic components shall be 316 stainless steel. No metallic components shall be in direct contact with the pipeline or the casing.

2.20 GROUT

A. Dielectric grout shall be in accordance with the Specification section for grouts. An acceptable dielectric grout mix shall be composed of closed-cell, low-density cellular grout and conform with ACI 523.1 and ACI 523.3. Use of any other type of grout shall be approved by the ENGINEER.

2.21 PETROLATUM WAX TAPE

A. Petrolatum wax tape shall meet or exceed the requirements of AWWA C217 and shall consist of three parts: Surface primer, wax tape, and outer covering. All three parts shall be the product of a single manufacturer and suitable for their operating environment.

B. The primer shall be a blend of petrolatums, plasticizers, and corrosion inhibitors having a paste-like consistency. Primer shall be Wax-Tape Primer manufactured by Trenton, Denso Paste manufactured by Denso, or an approved equivalent.

C. The wax tape shall be synthetic-fiber felt, 45 to 90 mils thick, saturated with a blend of micro-crystalline wax, petrolatums, plasticizers, and corrosion inhibitors that are capable of easy conformability over irregular surfaces. Wax tape shall be #1 Wax-Tape manufactured by Trenton, Denso Tape manufactured by Denso, or an approved equivalent.

D. The outer covering shall be a plastic wrap consisting of one 150-gauge sheet or three 50-gauge sheets wound together as a single sheet, clear polyvinylidene chloride, shrink wrap that is flexible enough to conform to irregular surfaces. Outer wrapping shall be Poly-Ply by Trenton, Poly-Wrap by Denso, or an approved equivalent.

PART 3 - EXECUTION

3.1 MATERIAL AND EQUIPMENT STORAGE

A. All materials and equipment to be used in construction shall be stored in such a manner to be protected from detrimental effects from the elements. If warehouse storage cannot be provided, materials and equipment shall be stacked well above ground level and protected from the elements with plastic sheeting or another method, as appropriate.

3.2 EXCAVATION AND BACKFILL

A. Buried wires shall have a minimum cover of 30 inches.

B. Caution tape shall be installed above the buried wire. Caution tape shall be installed a minimum of 6 inches above underground wires and conduits.

C. Wire identification tags shall be placed on the wires prior to placing the wire in conduit or backfilling.

3.3 SURFACE GROUND BED FOR GALVANIC ANODES

A. Prepackaged anodes shall be installed at the locations indicated on the Drawings.

B. Plastic or paper wrapping shall be removed from the anode prior to lowering the anode into the hole. Anodes shall not be suspended by the lead wires. Damage to the canvas bag, anode-to-wire connection, copper wire, or wire insulation before or during installation will require replacement of the entire anode assembly. Anodes shall be inspected and approved prior to backfilling.

C. Anodes shall be backfilled with native soil. Backfilling with native soil shall proceed in 6-inch lifts, compacting the soil around the anode during each lift, until the backfill has reached grade. Upon completion of compaction of backfill to the top of the anode, and prior to filling the hole and compacting the backfill to the surface, a minimum of 10 gallons of fresh water shall be poured into the hole to saturate the prepackaged anode backfill and surrounding soil.

D. Anode lead wires shall be routed and terminated on the panel board as shown in the Drawings.

3.4 TEST STATIONS

A. Test stations shall be installed at the approximate locations shown on the Drawings. The CONTRACTOR shall field verify all final locations, subject to acceptance by the ENGINEER. Test stations shall be located within the pipeline easement. Test stations shall be located in areas not subject to vehicular traffic, such as sidewalks, unless otherwise approved by the ENGINEER.

B. For flush-mounted test stations, place the bottom of the test box on native soil. Do not place rock, gravel, sand, or debris in the box. Install 4,000 psi concrete collar with reinforcement after placement of the test box to finished grade. Provide sufficient sloping in the concrete pad or surrounding pavement to provide drainage away from the test box.

C. Connect wires to the terminal board as shown on the Drawings. Provide sufficient slack in wires (12 inches at minimum) to allow for pipe settlement, removal of the terminal board for testing, and future maintenance. Each wire shall be identified with a permanent wire identifier within 4 inches of the termination. After installation, all wire connections in the test station shall be tested by the Contractor to ensure they meet the requirements herein.

D. The CONTRACTOR shall provide global positioning system (GPS) coordinates for each test station location with a minimum accuracy of 1 meter or 3 feet. The CONTRACTOR shall submit the GPS coordinates of the test stations to the ENGINEER after installation.

3.5 WIRES

A. Buried wires shall be laid straight without kinks. Each wire run shall be continuous in length and free of joints or splices, unless otherwise indicated. Care shall be taken during installation to avoid punctures, cuts, or other damage to the wire insulation. Damage to insulation shall require replacement of the entire length of wire at the CONTRACTOR's expense.

B. Wire shall not be bent into a radius of less than eight times the overall wire diameter.

C. The wire conduits must be of sufficient diameter to accommodate the wires. This shall be determined by the number and size of wires in accordance with the applicable codes and standards.

D. Conduit shall be installed to a minimum depth of 30 inches below grade.

E. Install caution tape a minimum of 6 inches above buried wire and conduits. Every 3 feet, double over the tape for a distance of 8 inches to increase the apparent flexibility of the tape.

F. Use PVC conduit underground and galvanized rigid steel conduit above grade. The portion of galvanized steel conduit that is underground before it transitions to PVC shall be primed and tape wrapped along the entire length with half-lap, 10-mil polyethylene tape.

3.6 WIRE IDENTIFICATION TAGS

A. All wires shall be coded with wire identification tags within 4 inches of the wire end indicating diameter and type of pipe, structure, anode type and size, or reference electrode.

B. Wire identification tags shall be placed on all wires prior to backfilling and installation of test stations.

3.7 GALVANIC ANODE HEADER WIRE-TO-ANODE LEAD WIRE SPLICES

A. Install split bolt according to manufacturer's instructions, including torque specifications.

B. Install the splice kits in accordance with the manufacturer's instructions.

3.8 JOINT BONDS

A. Joint bonding shall be provided across flexible couplings and all non-welded joints to ensure electrical continuity, except where insulating joints have been installed to provide electrical isolation. Joint bonds shall be of the type, size, length, and number shown on the Drawings and installed as indicated.

B. Bonding wires shall allow at least 2 inches of movement in the pipe joint. The wire shall be attached by exothermic welding. At least 2 bond wires shall be provided between all discontinuous joints.

C. For ductile iron pipe, the CONTRACTOR may, at his or her own expense, provide weld plates that are installed by the pipe manufacturer at the spigot end of the pipe. Provision of the weld plates does not relieve the CONTRACTOR from responsibility for repair of damage to the coating or lining as a result of exothermic welding of the pipe. Coating repairs shall be performed in accordance with the coating manufacturer's recommendations.

3.9 EXOTHERMIC WELD CONNECTIONS

A. Exothermic weld connections shall be installed in the manner and at the locations indicated. Exothermic welds shall be spaced at least 6 inches apart from other exothermic welds, fittings, and circumferential welds.

B. Coating materials shall be removed from the surface over an area of sufficient size to make the connection and as indicated on the Drawings. The surface shall be cleaned to bare metal per SSPC SP11 prior to welding the conductor. The use of resin-impregnated grinding wheels will not be allowed.

C. Only enough insulation shall be removed such that the copper conductor can be placed in the welding mold. If the wire conductor diameter is not the same as the opening in the mold, then a copper adapter sleeve shall be fitted over the conductor.

D. The CONTRACTOR shall be responsible for testing all test lead and bond wire welds. The ENGINEER, at his or her discretion, shall witness these tests. After the weld has cooled, all slag shall be removed and the metallurgical bond shall be tested for adherence by the CONTRACTOR. A 22-ounce hammer shall be used for adherence testing by striking a blow to the weld. A weld that can be removed or compromised by the hammer blow shall be rejected. Care shall be taken to avoid hitting the wires. All defective welds shall be removed and replaced in a new location at least 6 inches away from the original weld location.

E. All exposed surfaces of the copper and steel shall be covered with insulating materials.

1. For dielectrically coated or polyethylene encased pipes, a plastic weld cap with integrated primer shall cover the exothermic weld and surrounding area. All surfaces must be clean, dry, and free of oil, dirt, loose particles, and all other foreign materials prior to application of the weld cap.

F. The CONTRACTOR shall inspect both the interior and exterior of the pipe to confirm that all coatings and linings removed or damaged as a result of the welding have been repaired. The CONTRACTOR shall furnish all materials, clean surfaces, and repair protective coatings and linings damaged as a result of the welding. Repair of any coating or lining damaged during welding shall be performed in accordance with the coating or lining manufacturer's recommendations.

G. After backfilling the pipe, all test lead pairs shall be tested for broken welds using a standard ohmmeter. The resistance shall not exceed 150% of the theoretical wire resistance, as determined from published wire data.

3.10 DIELECTRIC INSULATING FLANGE KITS

A. All insulating components of the insulating flanged gasket set, and mating surfaces shall be cleaned of dirt, grease, oil, and other foreign materials immediately prior to assembly. If moisture, soil, or other foreign matter contacts any portion of these surfaces, disassemble the entire joint and clean with a suitable solvent. Dry the entire joint. Once completely dry, reassemble the joint.

B. Care shall be taken to prevent any excessive bending or flexing of the gasket. Creased or damaged gaskets shall be rejected and removed from the job site at the CONTRACTOR's expense.

C. Bolt holes in mating flanges shall be properly aligned at the time bolts and insulating sleeves are inserted to prevent damage to the insulation. Follow the manufacturer's recommended bolt tightening sequence. Center the bolt insulating sleeves within the insulation washers so that the insulating sleeve is not compressed and damaged.

D. After flanged bolts have been tightened, each insulating washer shall be inspected for cracks or other damage. All damaged washers shall be replaced.

E. When the flange is determined to be properly functioning to the full satisfaction of the OWNER, approval will be granted to proceed with the installation. Do not proceed with coating, lining, or backfilling the insulating joint prior to gaining approval to proceed. If the coating or lining is applied prior to gaining approval to proceed, the coating or lining shall be completely removed and replaced to the satisfaction of the OWNER at the CONTRACTOR's expense. If the insulating joint is backfilled prior to gaining approval from the OWNER, the CONTRACTOR shall completely excavate the insulating joint at the CONTRACTOR's expense.

F. After testing and acceptance by the OWNER, coat the exterior of the insulating flange with the petrolatum wax tape system specified herein for a minimum of three feet beyond the gasket with a minimum of six inches of overlap with the factory-applied coating on the pipeline.

G. After testing and acceptance by the OWNER, line the interior of the insulating flange with the lining system that is compatible with the existing factory lining and recommended by the existing lining manufacturer. The coating shall comply with NSF 61. Follow the manufacturer's surface preparation and application procedures.

3.11 MONOLITHIC INSULATING JOINTS

A. Install monolithic insulating joints in accordance with the manufacturer's instructions. Do not attempt to disassemble the joint at any time.

B. Before installation, inspect the bore for foreign particles and clean if necessary. When lifting and moving the monolithic insulating joint, support with strapping on both sides of the hub. Do not lift the monolithic insulating joint by the ends.

C. Install by butt-welding each end of the factory assembled joint to attaching pipe or fitting. When welding, equipment shall be grounded on the side of the joint being welded.

D. Do not remove the original coating with solvent or abrasion. This may damage the insulating gaskets or create a residue that is conductive.

3.12 CASING SPACERS

A. Assemble and securely fasten casing spacers to the pipeline to be installed in casings or tunnels.

B. Avoid inadvertent metallic contact between casing and carrier pipe. Place spacers close enough to ensure that the pipe is adequately supported throughout its length, particularly at the ends, to offset settling and possible electrical shorting. The end spacer must be within 6 inches of the end of the casing pipe, regardless of the size of casing and pipe or type of spacer used.

C. Grade the bottom of the trench adjacent to each end of the casing to provide a firm, uniform, and continuous support for the pipe. If the trench requires some backfill to establish the final trench bottom grade, place the backfill material in 6-inch lifts and compact each layer.

D. After the casing or tunnel liner has been placed, pump and maintain a dry trench until the casing spacers and end seals are installed.

E. Install the casing spacers in accordance with the manufacturer's instructions, these Specifications, and as shown on the Drawings. Correctly assemble, evenly tighten, and prevent damage during tightening of the insulators and pipe insertion.

F. Insulator Spacing:

1. Insulators shall be spaced in accordance with the manufacturer's recommendations, these Specifications, and as shown on the Drawings, but in no case shall the distance between spacers be greater than 10 feet for 4- to 12-inch diameter pipe and 8 feet for 16-inch diameter pipe.

2. If the casing or pipe is angled or bent, reduce the distance between spacers.

3.13 CASING END SEAL

A. Assemble hard elastomeric Link-Seals around the pipe and slide into the annular space between the pipe and casing. Evenly tighten the bolts to provide a positive seal, as applicable.

B. Place pull-on synthetic rubber end seals on the pipe and pull over the end of the casing. Securely fasten stainless steel bands, as applicable.

3.14 GROUT

A. The annular space between the carrier pipe and casing shall be filled with dielectric grout in accordance with the specification section for grout.

3.15 PETROLATUM WAX TAPE

A. Petrolatum wax tape systems shall be applied on the 60-inch Steel pipe sections connecting to the existing 60-inch PCCP, joints, and non-cathodically protected metallic appurtenances and fittings, regardless of whether they are bare or factory coated, as indicated in the Drawings. Extend the petrolatum wax tape coating system over any adjacent pipe coating by a minimum of 12-inches. Petrolatum wax tape systems shall be applied in accordance with NACE SP0375, AWWA C217, these Specifications, and the Manufacturer's recommendations.

B. Surfaces shall be cleaned of all dirt, grease, oil, and other foreign materials immediately prior to coating. Loose rust, loose paint, and other foreign matter shall be removed in accordance with SSPC SP2 or SP3.

C. A prime coating shall be applied in a uniform coating over the entire surface to be wrapped. A liberal coating shall be applied to threads, cavities, shoulders, pits, and other irregularities. A filler putty or profiling mastic may be used for complex fittings to produce an acceptable surface for the application of the wax tape system.

D. Petrolatum wax tape shall be applied immediately after applying the primer using a 1-inch overlap. A spiral wrap shall be used, and slight tension shall be applied to ensure that there are no air pockets or voids. For bolts, nuts, and other irregular shapes, cut strips of wax tape and apply them by gloved hand so that there are no voids or spaces under the tape. Apply a sufficient amount of tape to completely encapsulate all exposed steel surfaces. After applying the tape, the applicator shall firmly press and smooth out all lap seams and crevice areas. The tape shall be in tight intimate contact with all surfaces. The minimum wax tape thickness shall be 70 mils over smooth surfaces and 140 mils over sharp and irregular surfaces, or more as required to fill all voids.

E. Apply two layers of outer covering over the wax tape coating by tightly wrapping it around the pipe such that it adheres and conforms to the wax tape. Secure the outer covering to the pipe with adhesive tape.

3.16 CONTINUITY TESTING

A. Continuity testing of joint bonds shall be performed by the CONTRACTOR's qualified corrosion technician as defined in this section after backfilling. The electrical continuity test may additionally be performed before backfilling at the CONTRACTOR's option.

B. The pipe shall be tested for electrical continuity. Continuity shall be verified using the linear resistance method. The pipe should be tested in spans that are no less than 250 feet, unless the pipe is shorter than 250 feet, and no more than 1,000 feet, if test station locations are available. Each test span shall have two test leads connected to the pipe at each end. Existing test stations can be used. A direct current shall be applied through the pipe using two of four test leads. The potential across the test span shall be measured using the other two test leads. The current applied and voltage drop shall be recorded for a minimum of three different current levels.

C. The theoretical resistance of the pipe shall be calculated. It shall include the pipe wall thickness, material, and joint bonds.

D. The average measured resistance shall be compared to the theoretical resistance of the pipe and bond wires. If the measured resistance is greater than 125% of the theoretical resistance, then the joint bonds shall be considered deficient and shall be repaired and retested at the CONTRACTOR's expense. If the measured resistance is less than 100% of the theoretical resistance, then the test and/or calculated theoretical resistance shall be considered deficient and the test span shall be retested and/or recalculated at the CONTRACTOR's expense. If the piping forms a loop, which allows current to flow both in and out of the test span, then consideration shall be made for current circulating through both the loop and the test span.

E. Alternative continuity testing methods can be submitted to the ENGINEER for consideration and approval.

3.17 ISOLATION TESTING

A. The CONTRACTOR shall test the performance of insulating joints, insulating corporation stops, and casing insulators before and after backfilling. Insulating joints are used to electrically isolate two segments of the pipeline. Insulating corporation stops are used to electrically isolate the main pipeline from copper service laterals. Casing insulators are used to electrically isolate the carrier pipe from the casing.

B. Before backfilling, the CONTRACTOR shall test the integrity of the insulators using an above-ground insulator tester. Acceptable above-ground insulator testers are Gas Electronics Model No. 601 Insulation Checker, Miller Insulation Checker (M.I.C.) by M.C. Miller, Model RF-IT by Tinker & Rasor, or an approved equivalent. If the testing results indicate less than 100% insulation, then the insulators shall be repaired and retested at the CONTRACTOR's expense.

C. After backfilling, testing shall be performed by measurement of native pipe-to-soil potentials on both sides of the insulator. If the difference in native pipe-to-soil potentials is greater than 100 mV, then the insulator shall be considered effective. If the difference in native pipe-to-soil potentials between pipe and casing is less than 100 mV, then additional testing shall be performed, as follows. Temporary CP current shall be applied to one side of the insulator. "On" and "Instant Off" pipe-to-soil potentials shall be measured on both sides of the insulator. If the "Instant Off" potential of the opposing side is more electronegative than its native potential, then the insulator is not effective and shall be repaired and retested at the CONTRACTOR's expense.

3.18 SYSTEM COMMISSIONING

A. Upon completion of the installation, the CONTRACTOR shall provide testing of the completed system by a Corrosion Technician, and the data shall be reviewed by a Corrosion Engineer to ensure conformance with the Contract Documents, NACE SP0169, and NACE SP0286.

B. The testing described herein shall be in addition to and not a substitution for any required testing of individual items at the manufacturer's plant and during installation.

C. Testing shall be performed at all test leads of all test stations, junction boxes, and locations of the exposed pipe as soon as possible after installation of the CP system.

D. Testing shall include the following and shall be conducted in accordance with NACE TM0497:

1. Measure and record native pipe-to-soil, casing-to-soil, and anode-to-soil potentials at all test locations BEFORE the cathodic protection system is energized.

2. Verify electrical isolation at all insulating joints, casing insulators, and insulating corporation stops per NACE SP0286.

3. Confirm electrical continuity of the cathodically protected pipeline in accordance with this Section.

4. Measure and record the "On" and "Instant Off" structure-to-soil potentials at each location after the pipeline has been given adequate time to polarize.

5. Measure the induced AC pipe-to-soil potential at each test location after CP system activation. Notify the Corrosion Engineer immediately if measured potentials are 15 V_{AC} or higher as this poses a safety hazard condition. AC potentials shall be measured with AC mitigation system in place and activated.

6. Measure and record the current output of each anode when the CP system is initially turned on and again after it has been given adequate time to polarize.

E. Test results shall be analyzed to determine compliance with NACE SP0169.

F. Test results shall be analyzed to determine if stray current interference is present. Stray current interference is defined as a ±50 mV shift in a pipeline's pipe-to-soil potential that is caused by a foreign current source. Stray current interference shall be tested on the project pipeline and foreign pipelines that have a reasonable chance of being affected by stray currents. Cooperative interference testing shall be coordinated with foreign pipeline and structure owners.

G. The CONTRACTOR shall provide a written report, prepared by the Corrosion Engineer, documenting the results of the testing and recommending corrective work, as required to comply with the Contract Documents. Any deficiencies of systems tested shall be repaired and re-tested by the CONTRACTOR at no additional cost to the OWNER.

** END OF SECTION **

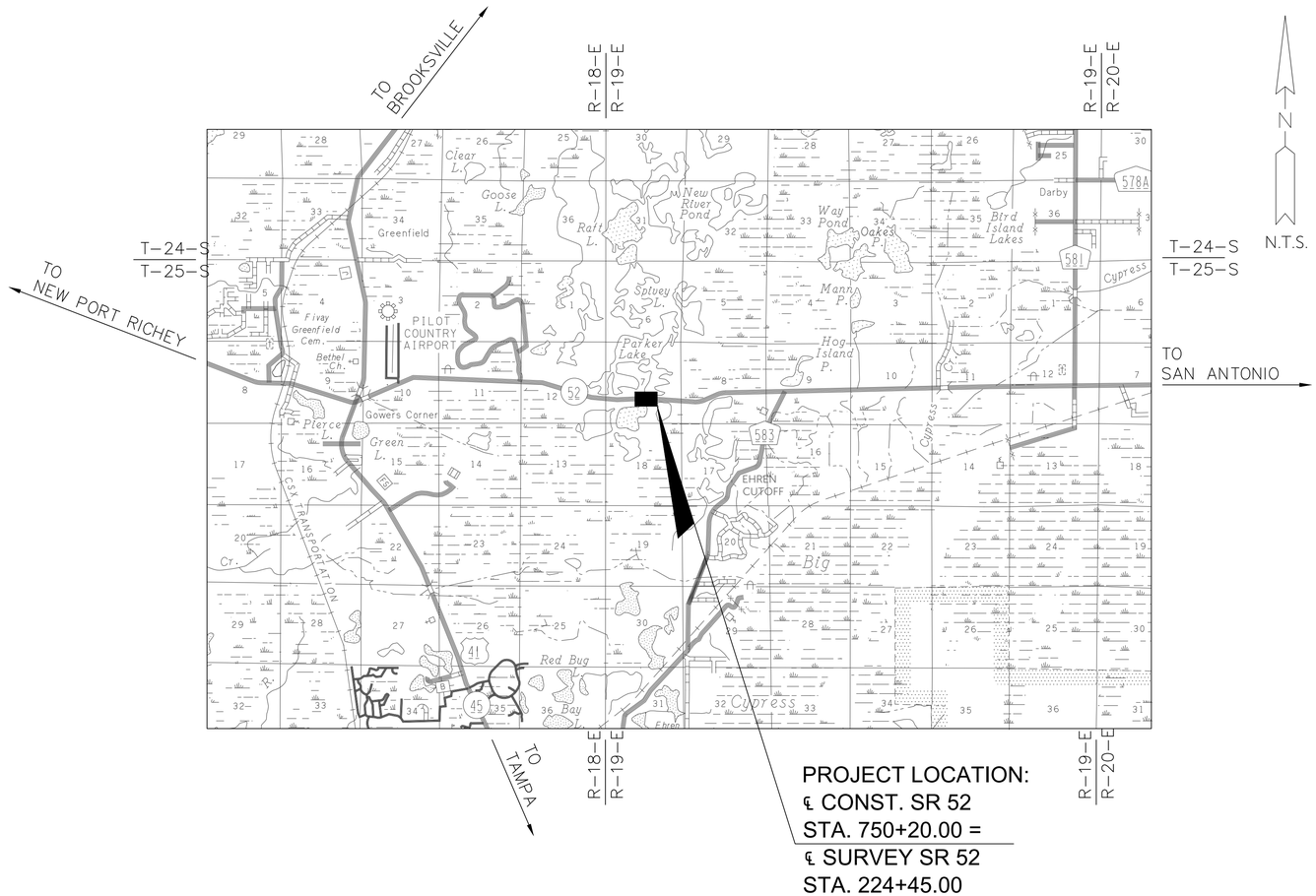
EXHIBIT A-4

DRAWINGS

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN - UTILITY CONFLICT

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road
Clearwater, Florida 33763
Ph: 727.796.2355
www.tampabaywater.org



PROJECT LOCATION

FINAL SUBMITTAL - SEPTEMBER 10, 2025

ISSUED FOR BIDDING

WADE TRIM

201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY NITA N. SHARMA ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

DATE: 06/12/2025

NITA NAIK SHARMA, P.E.

79670
LICENSE NO.

The Individual above shall be responsible individual for following sheets included herein:
G-1, G-2, G-3, G-4
C-1, C-2, C-3,
D-1, D-2, D-3,

GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER

The Individual above shall be responsible individual for following sheets included herein:
CP-1, CP-2, CP-3, CP-4

TAMPA BAY WATER PROJECT No.: 07153
DRAWING SET No.: G-1

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GCS-PLTS-COVERSHEET.DWG - G-1 - PLOTTED 12/30/2025 1:25 PM BY HORTON, JAYNA

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ON THE DRAWINGS AND IN THE SURVEY NOTES ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988. STATE PLANE COORDINATES ARE REFERENCED TO NORTH AMERICAN DATUM OF 1983/90 (NAD 28/90).
2. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL OBTAIN THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION.
3. LAND SURVEY WAS OBTAINED FROM FDOT FPID 25633415201 PLANS DATED MARCH 2021.
4. UTILITIES AND STRUCTURES THAT ARE NOT SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL BE PROTECTED IN PLACE AND UTILITY SERVICE SHALL BE MAINTAINED. WHERE TEMPORARY CONFLICTS OCCUR BETWEEN EXISTING UTILITIES AND THE NEW CONSTRUCTION, PROTECT IN PLACE OR RELOCATE THE UTILITIES AND MAINTAIN UTILITY SERVICE ALL TO THE SATISFACTION OF THE UTILITY COMPANY. UTILITIES AND STRUCTURES SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE TECHNICAL SPECIFICATIONS.
5. PROVIDE ADEQUATE, TEMPORARY THRUST RESTRAINT AT BENDS AND TEES IN EXISTING WATER MAINS AND OTHER PRESSURIZED CONDUITS IN PROXIMITY TO EXCAVATIONS AS REQUIRED TO PREVENT DISLODGEMENT, SEPARATION OR LEAKAGE OF THESE FACILITIES.
6. DISCHARGE OF ANY NON-CONTAMINATED WATER FROM SOIL DEWATERING OPERATIONS TO SURFACE WATERS, IF ANY, SHALL CONFORM TO THE FDEP GENERAL PERMIT REQUIREMENTS.
7. PROVIDE AT LEAST 48 HOURS NOTICE TO THE VARIOUS UTILITY COMPANIES IN ORDER TO PERMIT THE LOCATION OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION. NOTIFY THE VARIOUS UTILITY COMPANIES BY CALLING THE SUNSHINE ONE CALL CENTER (1-800-432-4770) OR IF NECESSARY, BY CONTACTING THE UTILITY COMPANIES INDIVIDUALLY.
8. CONFIRM UTILITY TO UTILITY CLEARANCES, HORIZONTAL AND VERTICAL, AND PIPE JOINT LOCATIONS IN ACCORDANCE WITH FLORIDA ADMINISTRATIVE CODE 62-555.314 AND 62-604.400.
9. THE HORIZONTAL ALIGNMENT OF THE REPLACEMENT WATER MAIN SHALL BE AS DIMENSIONED TO THE SURVEY BASELINE ON THE DRAWINGS. THE CONTRACTOR SHALL OBTAIN A COPY OF THE SURVEY AND LOCATE THE SURVEY BASELINE IN THE FIELD PRIOR TO CONSTRUCTION.
10. PIPE LAYING, LEAKAGE TESTING AND AS-BUILT DRAWINGS SHALL CONFORM TO ALL INFORMATION INDICATED ON THE PLANS AND DETAILS OR PROJECT TECHNICAL SPECIFICATIONS.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL TREES WITHIN THE VICINITY OF THE PROPOSED CONSTRUCTION IN ACCORDANCE WITH PASCO COUNTY PROTECTION STANDARDS UNLESS OTHERWISE INDICATED FOR REMOVAL. PRUNING OF BRANCHES IS NOT AUTHORIZED WITHOUT PRIOR APPROVAL FROM THE COUNTY, AND SHALL BE COMPLETED BY A CERTIFIED ARBORIST.
12. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS TO PROVIDE SUPPORT DURING CONSTRUCTION. UTILITY POLE OWNERS REPRESENTATIVE TO APPROVE SUPPORT METHOD PRIOR TO BEGINNING EXCAVATION AROUND UTILITY POLES. ONCE WORK IN THE AREA HAS BEEN COMPLETED, UTILITY REPRESENTATIVE SHALL INSPECT AND APPROVE FINAL GRADING PRIOR TO SUPPORT BEING REMOVED.
13. REFER TO GENERAL REQUIREMENTS SECTION OF TECHNICAL SPECIFICATIONS FOR PERMIT AGENCY COMMENTS.
14. ALL EXCAVATION AND BACKFILLING SHALL BE IN STRICT CONFORMANCE WITH TAMPA BAY WATER AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
15. WHERE CONSTRUCTION ACTIVITIES OCCUR WITHIN THE DRIP LINES OF EXISTING TREES, TREES ARE TO BE PROTECTED PER PASCO COUNTY NATURAL RESOURCES DIVISION REQUIREMENTS. ANY ROOT OR CANOPY TRIMMING TO FACILITATE CONSTRUCTION OF PROPOSED FACILITIES IS TO BE PERFORMED AT THE DIRECTION OF A CERTIFIED ARBORIST.
16. ANY AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED TO THE ORIGINAL GRADE AND SEEDED AND MULCHED.
17. ADD TEMPORARY 1" THICK STEEL PLATES TO ACT AS SHOCK PADS OVER EXISTING 60" PIPE WITHIN PROJECT LIMITS TO PROTECT DURING CONSTRUCTION.
18. CONTACT INFORMATION:

    TAMPA BAY WATER
    NAME: DANIELLE KEIRSEY, PROJECT MANAGER
    PHONE: (727) 791-2377
19. TAMPA BAY WATER WILL CONTINUE TO MAINTAIN OWNERSHIP OF THE GROUTED, OUT-OF-SERVICE 60" WATER TRANSMISSION MAIN UNTIL ROADWAY PROJECT 256334-3-52-01 IS LET, WHERE IT WILL BE REMOVED DURING ROADWAY CONSTRUCTION, BY THE UAO.

TREE REMOVAL TABLE

NORTHING	EASTING	SIZE	DESCRIPTION
1,450,055.0483'	513,108.5036'	23"	OAK
1,449,864.4522'	513,193.9677'	20"	OAK
1,449,862.5740'	513,209.7399'	9"	OAK
1,449,844.5240'	513,175.6765'	10"	PINE
1,449,845.4685'	513,179.6216'	9"	PINE
1,449,842.5842'	513,212.8580'	8"	OAK
1,449,836.3626'	513,199.2597'	6"	OAK
1,449,833.4797'	513,206.0446'	11"	OAK
1,449,833.2359'	513,218.5170'	15"	OAK
1,449,820.3176'	513,199.4656'	8"	OAK
1,449,819.9008'	513,232.1982'	4"	OAK
1,449,819.9008'	513,241.3715'	5"	OAK
1,449,811.6703'	513,223.2333'	10"	OAK
1,449,810.4778'	513,237.2867'	10"	PINE
1,449,806.3107'	513,232.4499'	9"	PINE
1,449,801.3590'	513,241.9987'	8"	PINE
1,449,849.5840'	513,114.2410'	7"	OAK
1,449,851.6820'	513,110.5290'	8"	PINE
1,449,848.2500'	513,103.5910'	14"	PINE
1,449,884.0290'	513,155.0570'	13"	OAK
1,449,876.8190'	513,147.6910'	10"	OAK
1,449,878.1520'	513,139.5010'	6"	OAK
1,449,893.2080'	513,128.3550'	15"	PINE
1,449,888.4180'	513,103.3360'	8"	OAK
1,449,889.6960'	513,085.7470'	7"	OAK

DRAWING INDEX

SHEET NO.	DESCRIPTION
G-1	COVER SHEET
G-2	DRAWING INDEX, NOTES & ABBREVIATIONS
G-3	LEGEND & SURVEY CONTROL
G-4	EXISTING CONDITIONS
C-1	TREE REMOVAL AND LIMITS OF DISTURBANCE
C-2	PLAN SHEET
C-3	PROFILE SHEET
CP-1	CATHODIC PROTECTION DETAILS
CP-2	CATHODIC PROTECTION DETAILS
CP-3	CATHODIC PROTECTION DETAILS
CP-4	CATHODIC PROTECTION DETAILS
D-1	TAMPA BAY WATER STANDARD DETAILS
D-2	CONDENSED PROFILE
D-3	CONDENSED PROFILE

TEST HOLE POINTS

TH	UTILITY OWNER	UTILITY TYPE	SIZE	MATERIAL	EXISTING GROUND ELEVATION	TOP ELEVATION
1	TAMPA BAY WATER	RWM	60"	PCCP		73.30'
2	TAMPA BAY WATER	RWM	60"	PCCP		72.13'
3	TAMPA BAY WATER	RWM	60"	PCCP		71.95'
4	UNKNOWN	DB COMM FOC	1/2"	PVC		76.86'
137	PASCO COUNTY	RECLAIM	36"	DIP	77.89'	70.02'
138	PURPLE	UNKNOWN	2-2"	PVC	78.29'	74.81'
139	TAMPA BAY WATER	RWM	60"	DIP	78.39'	73.38'
140	PURPLE	UNKNOWN	2-2"	PVC	77.30'	74.79'
141	TAMPA BAY WATER	RWM	60"	DIP	77.46'	73.11'
142	PASCO COUNTY	FOC	2"	HDPE	78.21'	74.91'
143	PASCO COUNTY	RECLAIM	36"	DIP	78.06'	71.84'
383	VERIZON	TELECOM	1"	DBC	78.01'	75.53'

FDOT NOTES:

1. CONTACT FDOT JAMES MEYER 48 HOURS BEFORE WORKING IN FDOT R/W 352-848-2600 TO ACTIVATE PERMIT.
2. SIDEWALKS SHOULD NOT BE CLOSED FOR MORE THAN 2 WEEKS FOR THE DURATION OF THE PERMIT. THE CONTRACTOR WILL NEED TO PROVIDE ACCOMMODATION FOR PEDESTRIANS.
3. RESTORE FDOT R/W WITH SOD ONLY.
4. CONTACT SCOTT BROWN PASCO COUNTY FOR LOCATES OF LIGHTING FIBER AND SIGNAL CONDUITS: PASCO COUNTY 727-849-6845
5. FOR MICROTUNNELS UNDER FDOT ROADWAYS THERE MUST BE A CONTINGENCY PLAN AND DEWATERING PLAN. CONTINGENCY SHOULD HAVE AN EMERGENCY ON CALL MOT/TTC CONTRACTOR AND AN EMERGENCY ASPHALT CONTRACTOR TO RESTORE THE ROADWAY IF SOMETHING SHOULD HAPPEN TO THE MICROTUNNEL.
6. FDOT RECOMMENDS GPR BE PERFORMED ALONG PATH OF MICROTUNNEL MINIMUM OF 10' ON EITHER SIDE OF THE CASING PIPE PRIOR TO PRE-DRILL MEETING WITH FDOT INSPECTOR WHICH IS REQUIRED.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JH.HORTON\D1402567\GCS-PLTS-NOTE-SHEET.DWG - G-2 - PLOTTED: 9/11/2025 11:39 AM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

GENERAL NOTES AND INDEX

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-NOTE-SHEET.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153

Sheet Designation: G-2

Sheet No.: 2 OF 14

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LEGEND

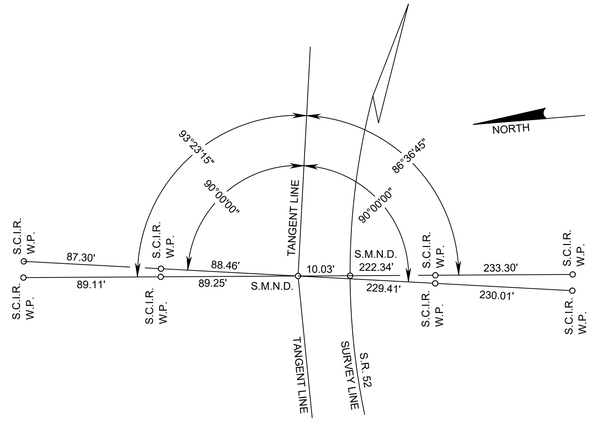
	EXISTING	PROPOSED	PREVIOUS
WATER MAIN	W W		
WATER MAIN & CASING PIPE	W W		
RECLAIMED WATER MAIN	REC		
OVERHEAD ELECTRIC	E E		
UNDERGROUND ELECTRIC	UE UE		
BURIED TELEPHONE	UT UT		
BURIED FIBER OPTIC	FO FO		
STORM MAIN		ST ST	
FENCE	X X X		
FDOT RIGHT OF WAY	R/W	R/W	R/W
PIPE/FENCE TO BE REMOVED		XXXXXXXXXXXXX	
LIMITS OF DISTURBANCE			

	EXISTING	PROPOSED
TEST HOLE	TH14Ø	
WATER CONTROL VALVE	WATER	
UTILITY POLE		
STORM MANHOLE	SD	
STORM STRUCTURE AND MES		
CONCRETE SLAB AND POST		
SOIL BORING		
BUTTERFLY VALVE		
CAP		
TREE		
TREE REMOVAL		

ABBREVIATIONS

B.O.S. = BEGINNING OF SURVEY
BWF = BARBED WIRE FENCE
E.O.S. = END OF SURVEY
EXIST. = EXISTING
F.C.I.R. = FOUND CAPPED IRON ROD
FDOT = FLORIDA DEPARTMENT OF TRANSPORTATION
F.I.P. = FOUND IRON PIPE
F.I.R. = FOUND IRON ROD
FND. N&D = FOUND NAIL AND DISK
F.M.N.D. = FOUND MAG NAIL & DISK
F.P.K.N.D. = FOUND PARKER-KALON NAIL & DISK
F.R.R.S. = FOUND RAIL ROAD SPIKE
ID. = IDENTIFICATION
LB = LICENSED BUSINESS
LF = LINEAR FOOT (FEET)
MES = MITERED END SECTION
M.O.C. = MIDDLE OF CURVE
PAVT. = PAVEMENT
P.C. = POINT OF CURVATURE
P.I. = POINT OF INTERSECTION
P.O.T. = POINT ON TANGENT
PT. = POINT
P.T. = POINT OF TANGENCY
RCP = REINFORCED CONCRETE PIPE
REF. = REFERENCE
RPS = REVOLUTION PROFESSIONAL SERVICES
S.C.I.R. = SET CAPPED IRON ROD 1/2" (RPS LB 7889)
S.C.I.R. W.P. = SET CAPPED IRON ROD 1/2" (RPSWITNES LB 7889)
SHLDR = SHOULDER
SMF = STORMATER MANAGEMENT FACILITY
S.M.N.D. = SET MAG NAIL & DISK (RPS LB 7889)
S.R. = STATE ROAD
STA. = STATION
TH = TEST HOLE
NTS = NOT TO SCALE

SURVEY CONTROL



P.I. STA. 224+03.81
S.M.N.D.
& M.O.C. STA. 224+03.41
S.M.N.D.

PROJECT MANAGER: NITA M. NAIK, P.E.
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TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
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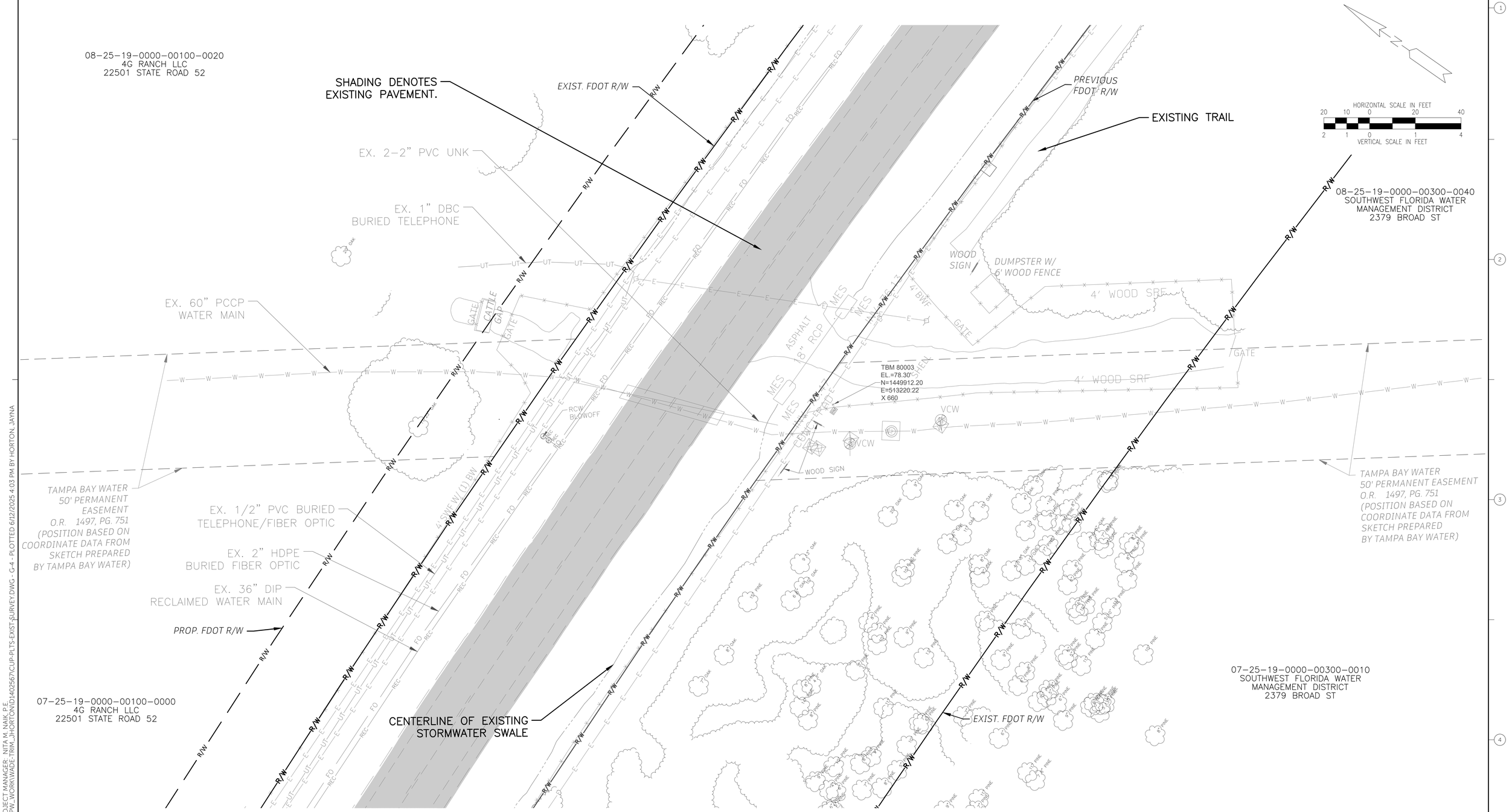
TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

LEGEND, ABBREVIATIONS AND SURVEY CONTROL

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-LEGEND.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: G-3
Sheet No.: 3 OF 14



PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JHORTON\D1402567\CLIP-PLTS-EXIST-SURVEY.DWG - G-4 - PLOTTED 6/12/2025 4:03 PM BY HORTON, JAYNA

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SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
EXISTING CONDITIONS
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

File Name: CUP-PLTS-Exist-Survey.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: G-4
Sheet No.: 4 OF 14

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08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

SHADING DENOTES EXISTING PAVEMENT.

REMOVE AND REPLACE APPROX. 61 LF OF EXISTING FENCE

150 LF OF 60" STEEL TRANSMISSION MAIN

APPROX. 370 LF OF PROPOSED TEMPORARY FDOT FENCE TYPE A

APPROX. LIMITS OF DISTURBANCE/ SILT FENCE

42" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

℄ DRIVEWAY 750+14.00, 67.00' LT.

GRADED DRWY. PER FDOT INDEX 330-001

749+95.67, 132.00' LT. MATCH EXIST.

749+83.11, 132.00' LT. MATCH EXIST.

WB SR 52 (SCHRADER HWY.)

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE E C & G

℄ MEDIAN OPENING STA. 751+34.89

PROPOSED INLET PROTECTION (TYP)

EB SR 52 (SCHRADER HWY.)

PREVIOUS FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

6" CONC. DRWY. PER FDOT INDEX 330-001

751+46.07, 128.00' RT. MATCH EXIST.

751+67.43, 128.00' RT. MATCH EXIST.

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

PRIVATE DRIVE

℄ DRIVEWAY 751+05.21, 97.00' RT.

4" WOOD SIGN

4' WOOD SIGN

DUMPSTER W/ 6' WOOD FENCE

ASPHALT

8" RCP

MES

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

EX. 36" OUTLET

VCW

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

FUTURE WRCC TRANSMISSION POLE

BOR #B-1

BOR #B-2

TH1 TH2 TH3 TH4 TH135 TH136 TH137 TH141 TH142 TH143

S-265 S-267 S-268 S-269 S-270

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

APPX. WETLAND LINE

APPROX. LIMITS OF DISTURBANCE/DOUBLE SILT FENCE

167 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE BY MICROTUNNEL

15 LF OF 36" STEEL TRANSMISSION MAIN

PROP. FDOT R/W

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

SUMP

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

10' SHLDR. 5' SHLDR. PAVT. 12' SHARED USE PATH

18 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE VIA OPEN CUT

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

LEGEND

- TREE REMOVAL
- TREE PROTECTION
- SILT FENCE / LIMITS OF DISTURBANCE
- INLET PROTECTION

PROJECT MANAGER: NITA M. NAIK, P.E.
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TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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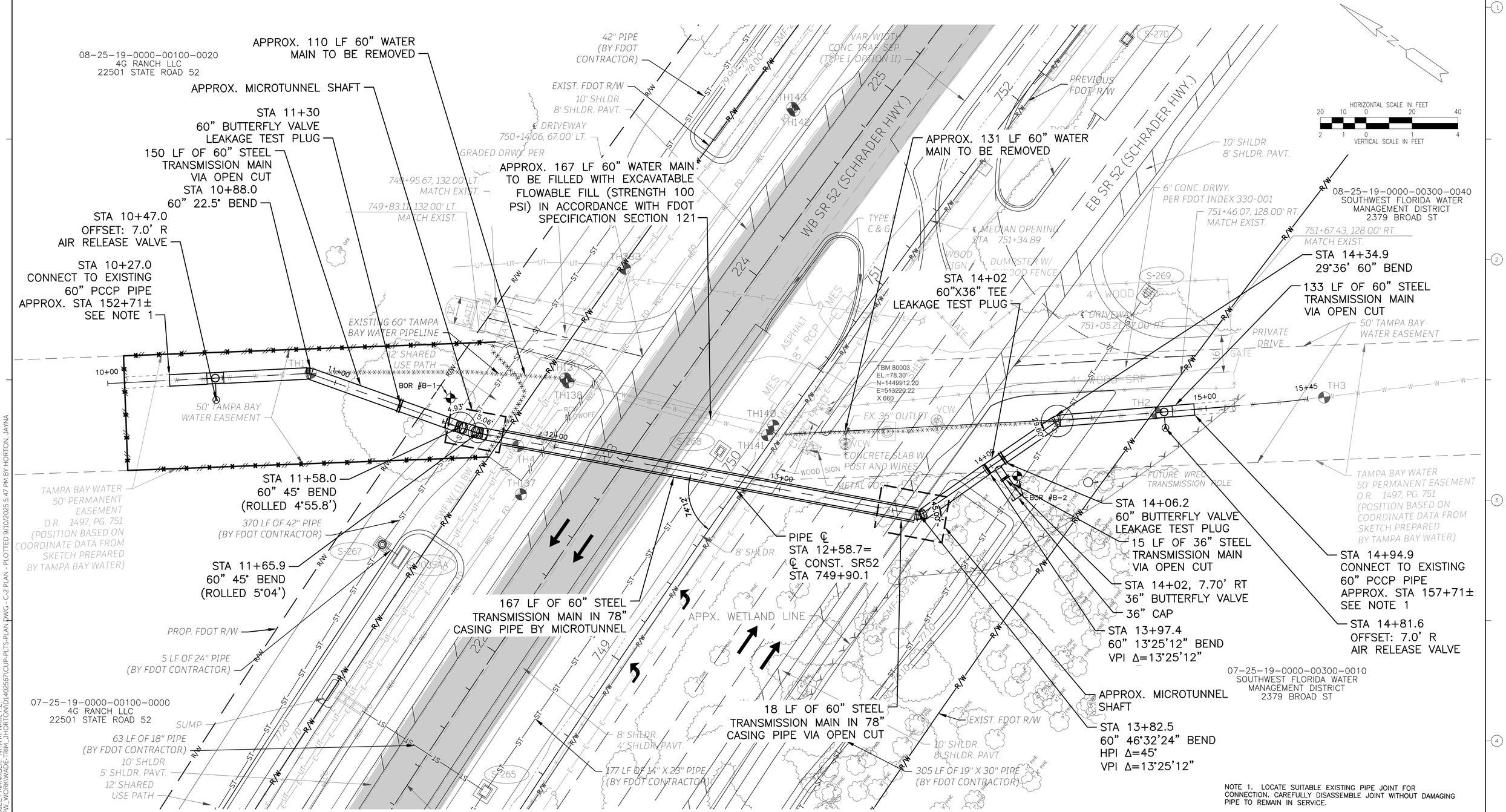
TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
TREE REMOVAL AND LIMITS OF DISTURBANCE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: C-1
File Name: CUP-PLTS-LOD.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No.: 5 OF 14

413



NOTE 1. LOCATE SUITABLE EXISTING PIPE JOINT FOR CONNECTION. CAREFULLY DISASSEMBLE JOINT WITHOUT DAMAGING PIPE TO REMAIN IN SERVICE.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-PLAN.DWG - C-2 PLAN - PLOTTED: 9/10/2025 5:47 PM BY HORTON, JAYNA

TAMPA BAY WATER
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SEAL
NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PLAN
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: C-2
File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No.: 6 OF 14

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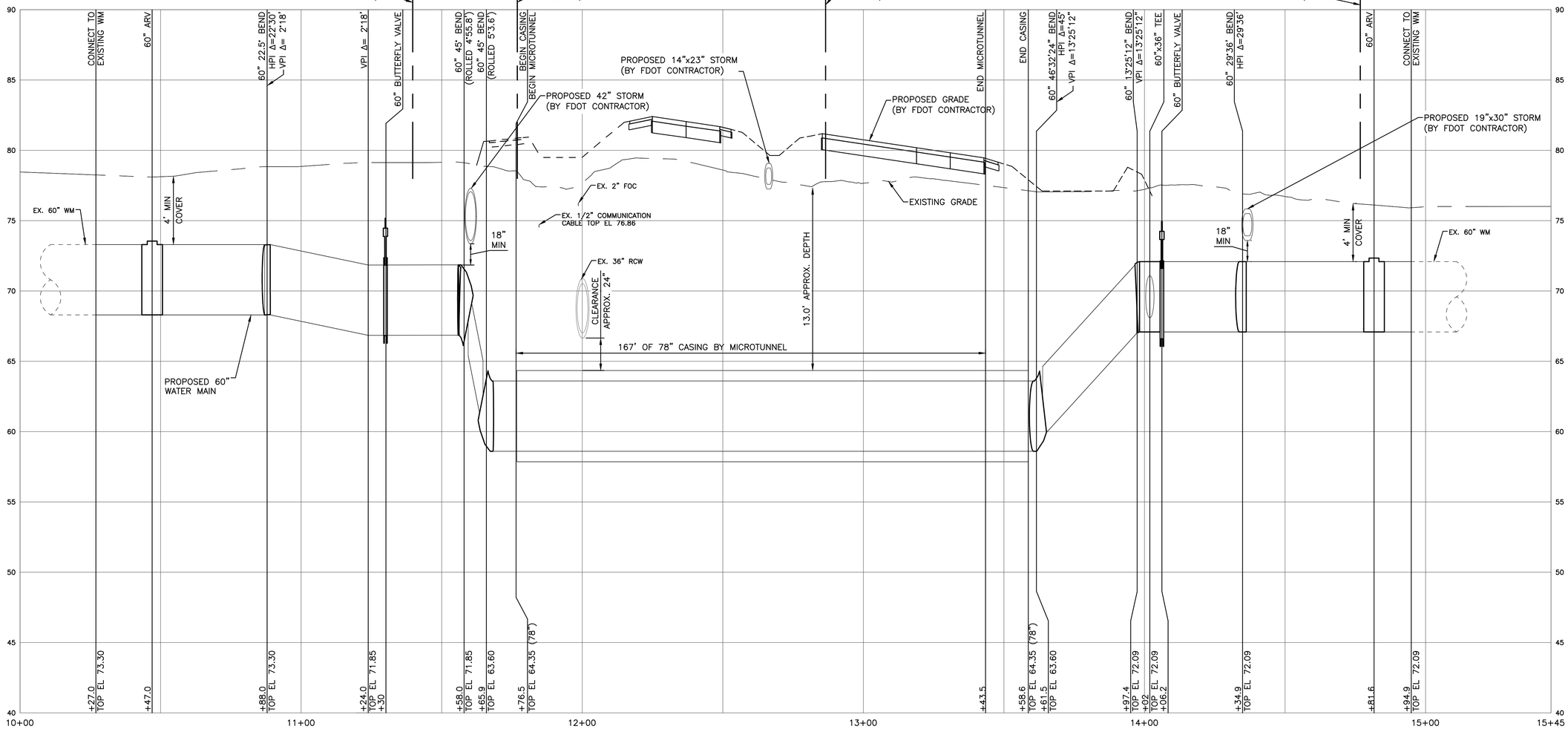
HORIZONTAL SCALE IN FEET
20 10 0 20 40
2 1 0 1 4
VERTICAL SCALE IN FEET

HORIZ. SCALE: 1"=20'
VERT. SCALE: 1"=4'

RESTRAIN EVERY PIPE JOINT



NOTE 1. CONTRACTOR SHALL USE SUITABLE EXCAVATED MATERIALS TO COMPACT AND BACKFILL SHAFT AND PIPE EXCAVATIONS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02220, 3.4 A. IN ADDITION, ALL EXCAVATIONS LOCATED UNDER OR WITHIN CLOSE PROXIMITY TO THE FUTURE FDOT ROADWAY PAVEMENT AND ROADWAY SHOULDERS AS SHOWN IN PROFILE VIEW ON THIS PLAN SHEET SHALL MEET FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PARTICULARLY SECTIONS 120 AND 125, AND OTHER RELATED STANDARDS IN REGARDS TO COMPACTION AND BACKFILLING. FLOWABLE FILL CAN BE USED AS A BACKFILL ALTERNATIVE IN CERTAIN SITUATIONS, FOLLOWING THE REQUIREMENTS IN SECTION 121 OF FDOT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\C\UP-PLTS-PLAN.DWG - C-3 PROFILE - PLOTTED: 9/12/2025 11:39 AM BY HORTON, JAYNA

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Supplying Water To The Region

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NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
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Tampa, FL 33602
813.882.4373
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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PROFILE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: C-3

File Name: CUP-PLTS-PLAN.DWG

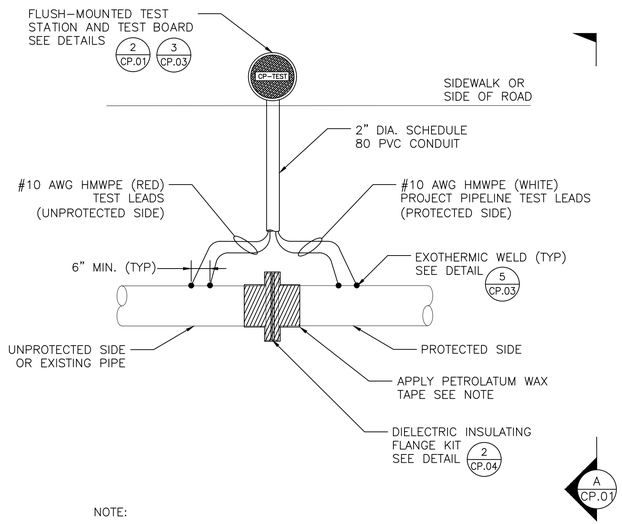
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

Sheet No.: 7 OF 14

TEST STATION SCHEDULE							
NO.	PIPELINE/STREET NAME	STATION	TEST STATION TYPE	NUMBER OF ANODES	TYPE OF ANODES	NOTES	REFERENCE DETAILS
1	60" STEEL TRANSMISSION MAIN	10+27	UTS	N/A	N/A	BEGINNING OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02
2	60" STEEL TRANSMISSION MAIN	10+60	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
3	60" STEEL TRANSMISSION MAIN	11+77	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND BEGINNING OF 195' CASING	1/CP.03, 2/CP.03
4	60" STEEL TRANSMISSION MAIN	13+71	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND END OF 195' CASING	1/CP.03, 2/CP.03
5	60" STEEL TRANSMISSION MAIN	14+80	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
6	60" STEEL TRANSMISSION MAIN	14+94	UTS	N/A	N/A	END OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02

NOTES:

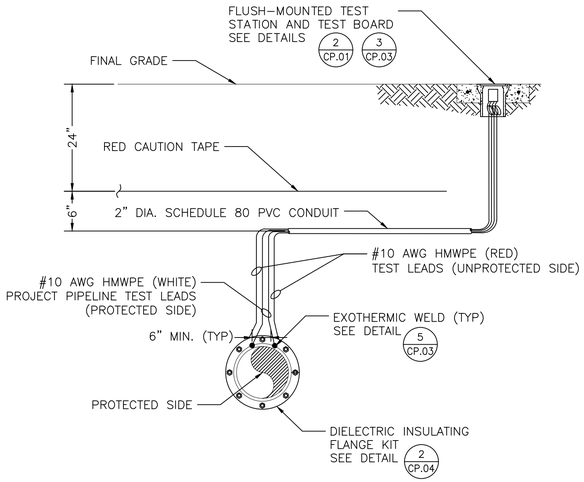
1. CONTRACTOR HAS THE OPTION AND MUST CHOOSE BETWEEN USING A DIELECTRIC INSULATING FLANGED JOINT OR A MONOLITHIC INSULATING JOINT FOR THE PROJECT PIPELINE TO ACHIEVE ISOLATION FROM METALLIC CONNECTIONS. BOTH OPTIONS HAVE BEEN PRESENTED IN THIS PACKAGE.
2. ALL VALVES AND NON WELDED JOINTS MUST FEATURE A MIN. OF TWO #2 AWG HMWPE (BLACK) JOINT BOND WIRES TO ACHIEVE ELECTRICAL CONTINUITY WITH THE PROJECT PIPELINE.



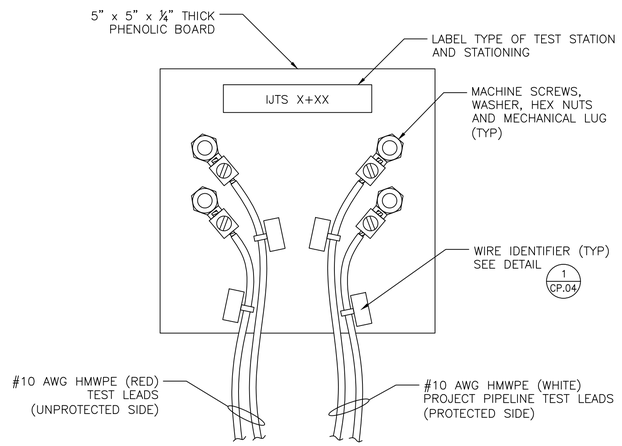
NOTE:

COAT THE EXTERIOR OF THE INSULATING FLANGE WITH PETROLATUM WAX TAPE FOR A MINIMUM OF 3 FEET BEYOND THE GASKET WITH A MINIMUM OF 6 INCHES OF OVERLAP WITH THE FACTORY-APPLIED COATING ON THE PIPELINE.

INSULATING JOINT TEST STATION (IJTS)
PLAN VIEW
SCALE: NTS
1 CP.01



INSULATING JOINT TEST STATION (IJTS)
SECTION VIEW
SCALE: NTS
A CP.01



INSULATING JOINT TEST STATION (IJTS)
TERMINAL BOARD DETAIL
SCALE: NTS
2 CP.01

PROJECT MANAGER: NITA M. NAIK, P.E.
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SEAL
GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER
2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
Checked By: XXX Date: X/X/XX
GLENN WILLSON Date: 6/2025
APPROVED BY:

V&A
V&A Consulting Engineers, Inc.
8600 Hidden River Pkwy, Suite 550
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Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

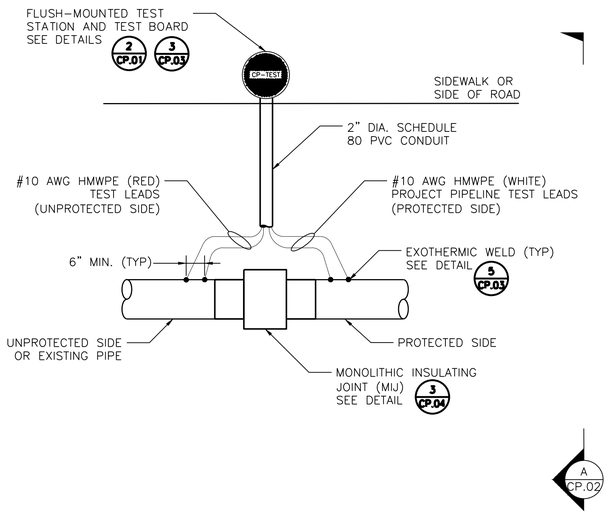
CATHODIC PROTECTION DETAILS
FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

File Name: 23-0096 CP DETAILS.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: CP-1
Sheet No.: 8 OF 14

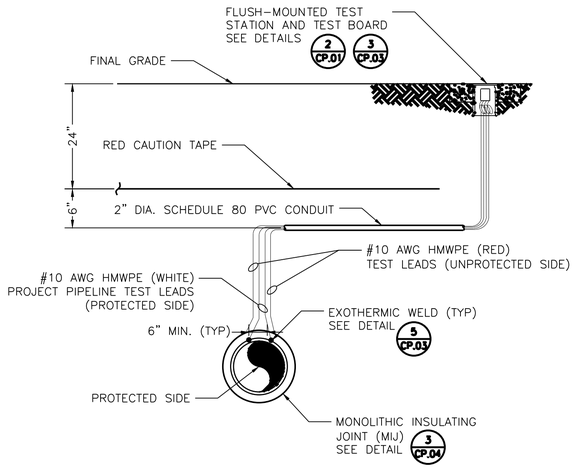
416



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) PLAN VIEW

1 CP.02

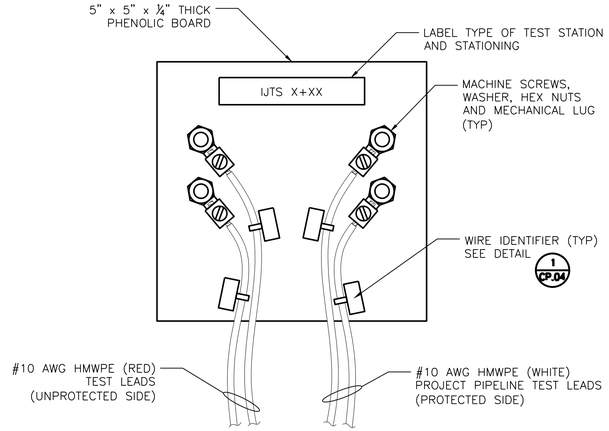
SCALE: NTS



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) SECTION VIEW

A CP.02

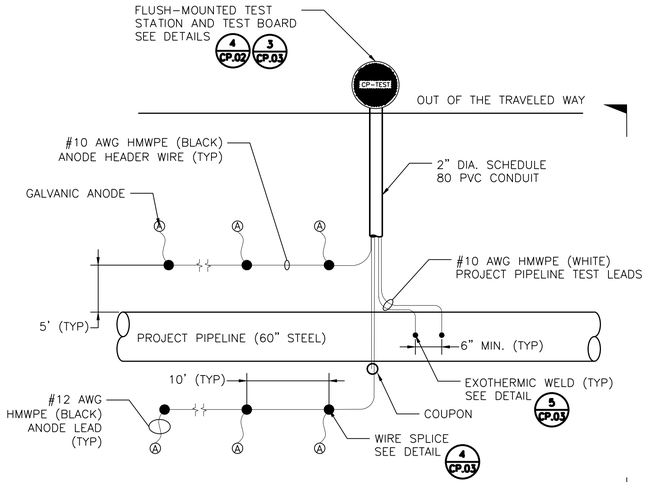
SCALE: NTS



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) TERMINAL BOARD DETAIL

2 CP.02

SCALE: NTS

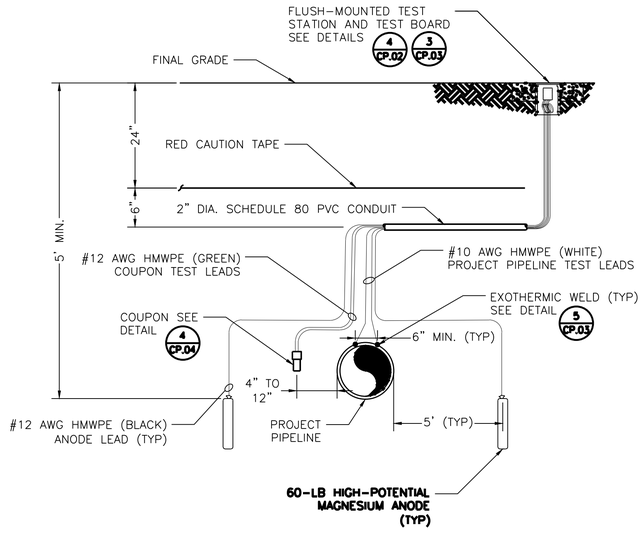


NOTE:
1. THE SIZE, TYPE, AND NUMBER OF ANODES PER ANODE BED SHALL BE AS SHOWN ON THE TEST STATION SCHEDULE.
2. ANODES MAY HAVE TO BE INSTALLED POST BACKFILL DUE TO LIMITED SPACING.
3. ANODES ARE TO BE INSTALLED ALONGSIDE THE PROJECT PIPELINE, 60" STEEL.

ANODE TEST STATION (ATS) PLAN VIEW

3 CP.02

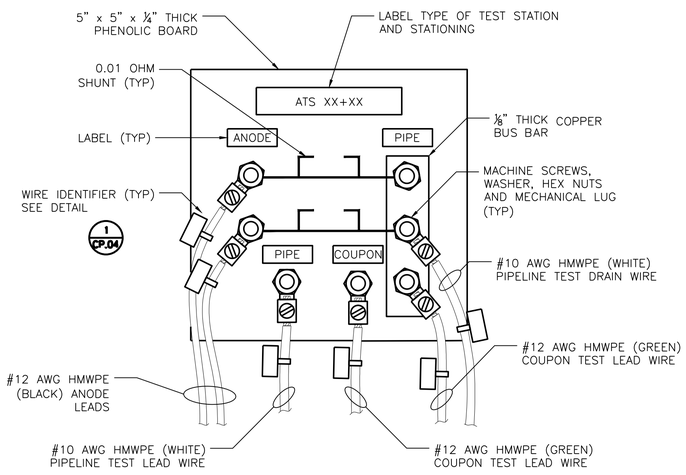
SCALE: NTS



ANODE TEST STATION (ATS) SECTION VIEW

B CP.02

SCALE: NTS



ANODE TEST STATION (ATS) TERMINAL BOARD DETAIL

4 CP.02

SCALE: NTS

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GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER
2/28/2027

Design By: AV	Date: 12/2024	
Drawn By: AV	Date: 12/2024	
Checked By: XXX	Date: X/X/XX	
GLENN WILLSON (APPROVED BY)	Date: 6/2025	

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Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

CATHODIC PROTECTION DETAILS FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

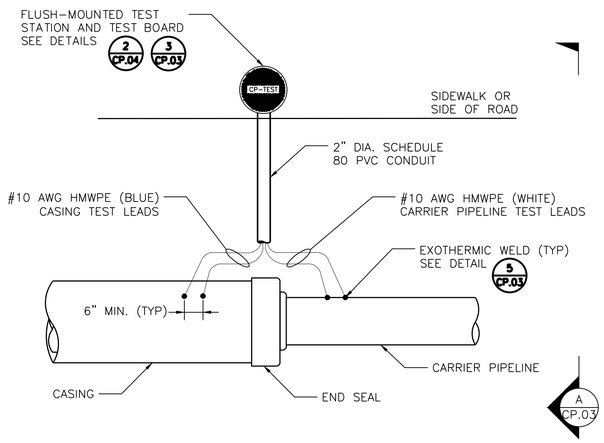
TBW Project No.: 07153

Sheet Designation: CP-2

File Name: 23-0096 CP DETAILS.DWG

Scale: NTS

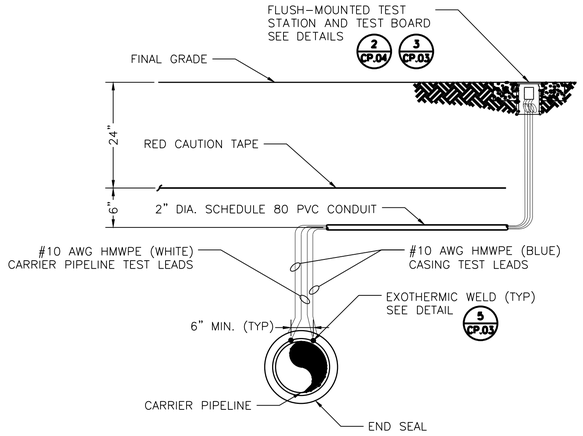
Sheet No.: 9 OF 14



CASING TEST STATION (CTS) PLAN VIEW

SCALE: NTS

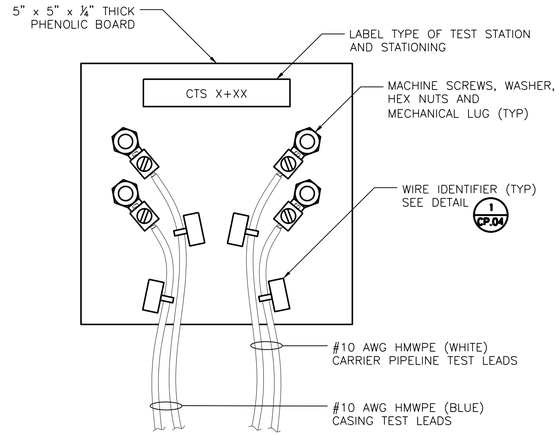
1 CP.03



CASING TEST STATION (CTS) SECTION VIEW

SCALE: NTS

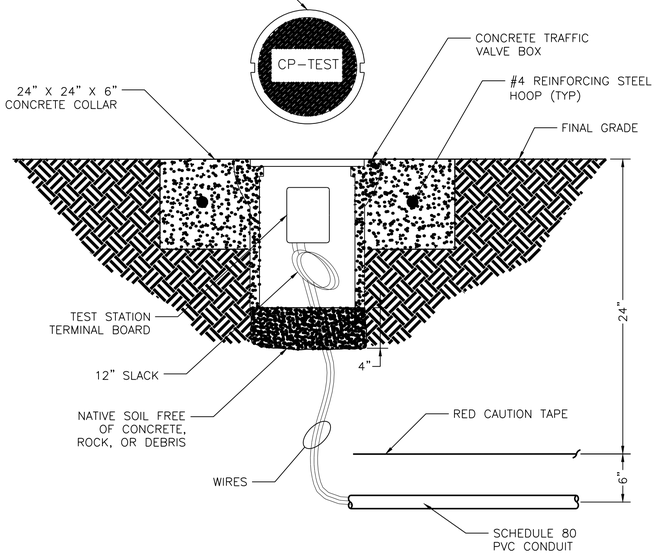
A CP.03



CASING TEST STATION (CTS) TERMINAL BOARD DETAIL

SCALE: NTS

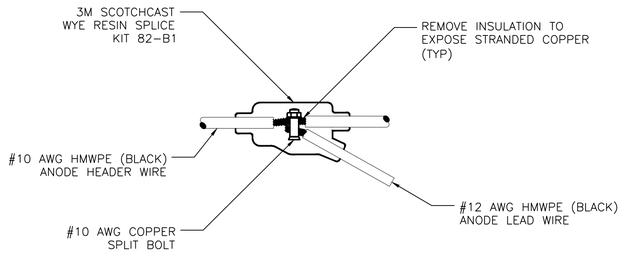
2 CP.03



FLUSH-MOUNTED TEST STATION DETAIL

SCALE: NTS

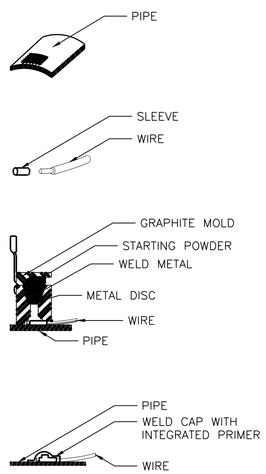
3 CP.03



WYE WIRE SPLICE DETAIL

SCALE: NTS

4 CP.03



1. ALL WELDS SHALL BE 6" APART AT MINIMUM.
2. GRIND PIPE TO BARE METAL AND CLEAN SURFACE. GROUND AREA SHALL BE LARGE ENOUGH FOR EXOTHERMIC WELD AND SMALL ENOUGH TO BE COMPLETELY COVERED BY WELD CAP.
3. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
4. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN. REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER. TEST WELD WITH 22 OZ HAMMER.
5. COVER CONNECTION WITH WELD CAP WITH INTEGRATED PRIMER. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH COATING AND LINING MANUFACTURER'S RECOMMENDATIONS.

EXOTHERMIC WELD DETAIL FOR STEEL PIPE

SCALE: NTS

5 CP.03

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GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER
2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
Checked By: XXX Date: X/X/XX
GLENN WILLSON APPROVED BY Date: 6/2025

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Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

CATHODIC PROTECTION DETAILS FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: CP-3

File Name: 23-0096 CP DETAILS.DWG

Scale: NTS

Sheet No.: 10 OF 14

PROJECT MANAGER: NITA M. NAIK, P.E.
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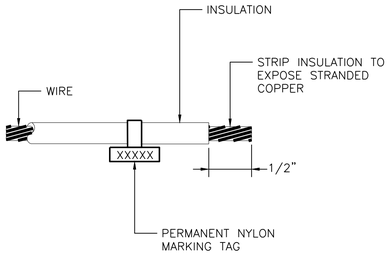
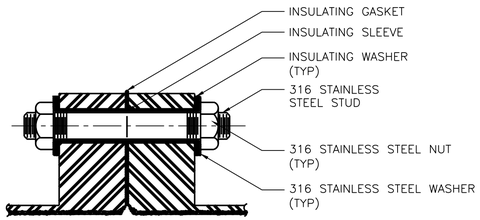
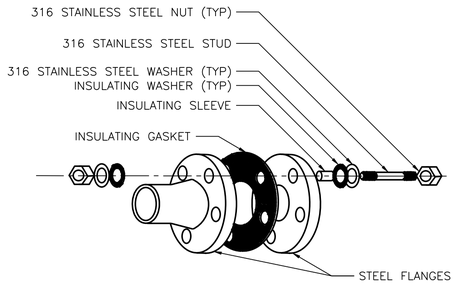


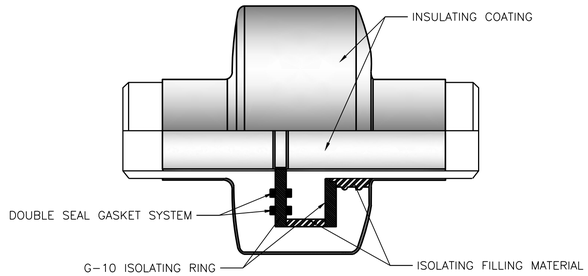
WIRE IDENTIFIER SCHEDULE	
STRUCTURE	LABEL
60" WELLFIELD TRANSMISSION MAIN	60" WTM
60" PCCP CONNECTION	60" PCCP
GALVANIC ANODE	ANODE

WIRE IDENTIFIER DETAIL (1 / CP.04)
SCALE: NTS

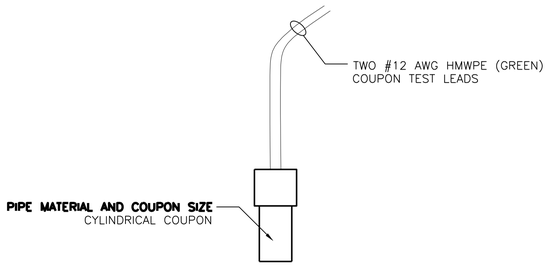




DIELECTRIC INSULATING FLANGE KIT DETAIL WITH SECTION VIEW (2 / CP.04)
SCALE: NTS



MONOLITHIC INSULATING JOINT DETAIL (3 / CP.04)
SCALE: NTS



COUPON DETAIL (4 / CP.04)
SCALE: NTS

PROJECT MANAGER: NITA M. NAIK, P.E.
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2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
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GLENN WILLSON Date: 6/2025
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CATHODIC PROTECTION DETAILS
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TBW Project No.: 07153
Sheet Designation: CP-4
File Name: 23-0096 CP DETAILS.DWG
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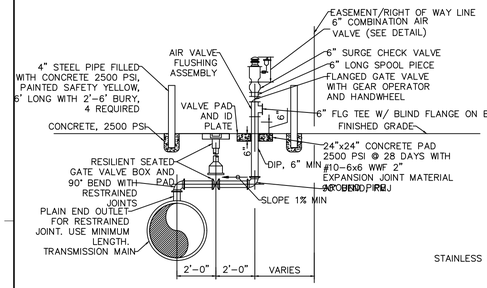
Sheet No.: 11 OF 14



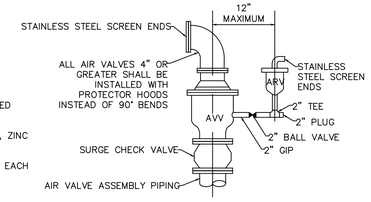
NOTES:

1. ALL UNDERGROUND PIPING AND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT, UNLESS OTHERWISE NOTED.
2. ALL NUTS AND BOLTS SHALL BE HEAVY HEAD HEX, CADMIUM, ZINC COATED, OR GALVANIZED GRADE B CARBON STEEL.
3. CONTRACTOR SHALL SUPPLY A DETAILED PIPING LAYOUT FOR EACH AIR VALVE INSTALLATION FOR THE ENGINEER'S REVIEW.
4. ALL FLUSHING TEES SHALL BE INSTALLED AT 90° AWAY FROM ISOLATION VALVE TO EACH ASSEMBLY.

TYPE I

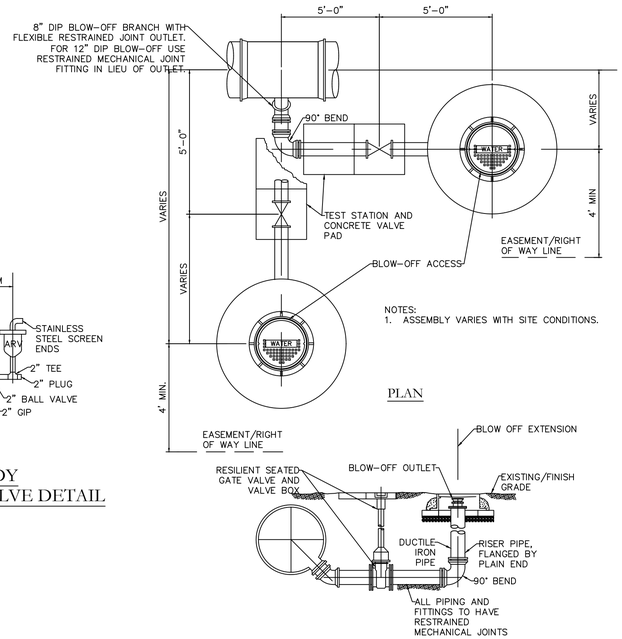
AIR VALVE ASSEMBLY DETAIL

NO SCALE



DUPLEX BODY COMBINATION AIR VALVE DETAIL

NO SCALE



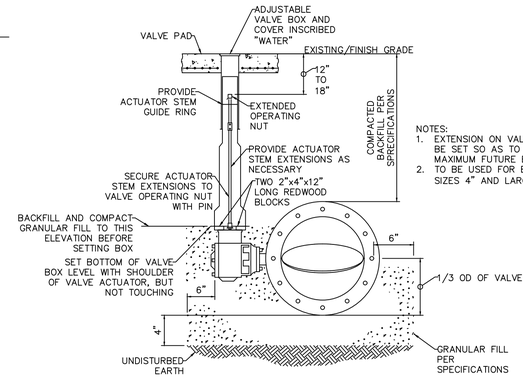
NOTES:
1. ASSEMBLY VARIES WITH SITE CONDITIONS.

PLAN

WATER MAINS

BLOW-OFF ASSEMBLY DETAILS

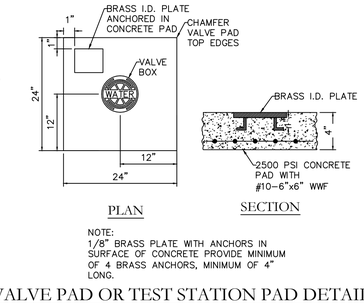
NO SCALE



NOTES:
1. EXTENSION ON VALVE BOX SHALL BE SET SO AS TO ALLOW FOR MAXIMUM FUTURE EXTENSION.
2. TO BE USED FOR BURIED VALVES, SIZES 4" AND LARGER.

BUTTERFLY VALVE DETAIL

NO SCALE

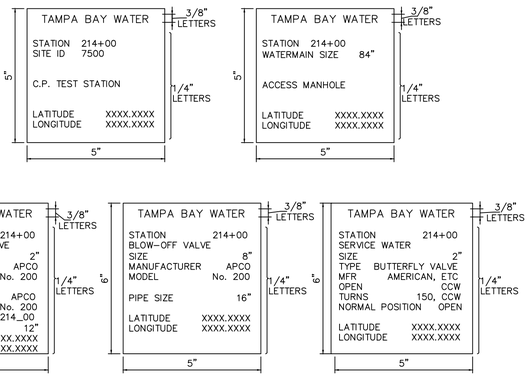


PLAN SECTION

NOTE:
1/8" BRASS PLATE WITH ANCHORS IN SURFACE OF CONCRETE PROVIDE MINIMUM OF 4 BRASS ANCHORS, MINIMUM OF 4" LONG.

VALVE PAD OR TEST STATION PAD DETAILS

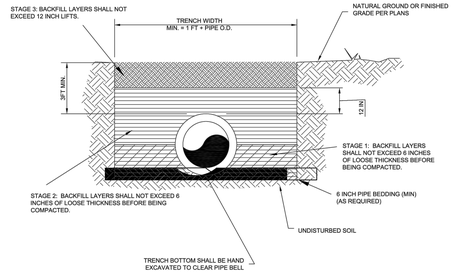
NO SCALE



NOTE:
DETAILS SHOW TYPICAL EXAMPLES. ACCURATE PROJECT SPECIFIC INFORMATION SHALL BE PROVIDED AT EACH LOCATION. PROVIDE LAT/LON IN DEGREES, MINUTES AND DECIMAL SECONDS.

I.D. PLATE DETAILS

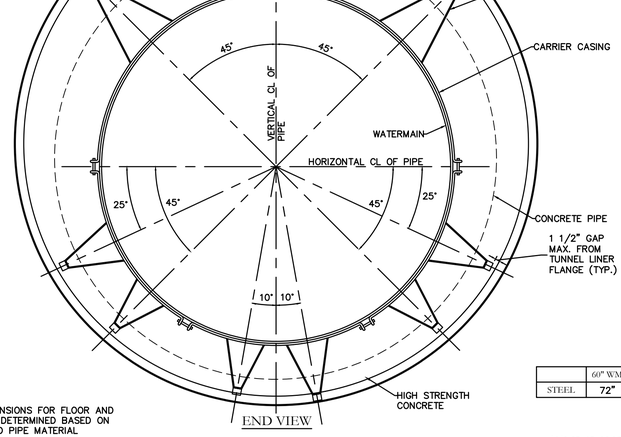
NO SCALE



NOTES:
1. BEDDING: 6 INCHES BEDDING (MIN) AS REQUIRED. IN THE EVENT UNSUITABLE OR UNSTABLE SOIL IS ENCOUNTERED, REMOVE IT AND REPLACE WITH MATERIAL MEETING AASHTO SOIL CLASSIFICATION A-1, A-2, OR A-3.
2. STAGE 1: ADEQUATE COMPACTED FILL SHALL BE PLACED ABOVE THE BEDDING MATERIAL AND BENEATH THE HAUNCHES OF THE PIPE. BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED.
3. STAGE 2: BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) TO A POINT 1 FT ABOVE THE PIPE (OR AS STATED IN THE SPECIFICATION).
4. STAGE 3: BACKFILL LAYERS SHALL NOT EXCEED 12-INCH LIFTS. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) OR AS STATED IN THE SPECIFICATION

TRENCH DETAIL BACKFILL & COMPACTION

NO SCALE



END VIEW

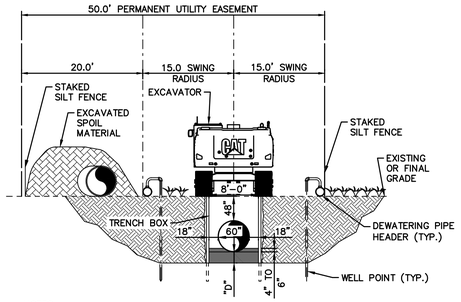
NOTES:
1. SPACING AND DIMENSIONS FOR FLOOR AND SKID RISER TO BE DETERMINED BASED ON PIPE DIAMETER AND PIPE MATERIAL INSTALLED.
2. PROVIDE ANNULAR SPACE GROUTING BETWEEN TUNNEL LINER AND CARRIER PIPE PER SPECIFICATIONS.
3. PROVIDE CONTACT GROUTING EXTERNAL TO TUNNEL LINER PER SPECIFICATIONS.

TUNNEL LINER INSTALLATION WITH CASING INSULATORS

NO SCALE

	60" WM	54" WM	42" WM
STEEL	72"	66"	54"

TUNNEL/CASING LINER SCHEDULE



NOTES:
1. EXCAVATED SPOIL MATERIAL WILL BE TEMPORARY. MATERIAL WILL BE USED FOR BACKFILL MATERIAL IN TRENCH OR REMOVED FROM THE SITE.
2. ALL DISTURBED AREAS WILL BE RESTORED TO EXISTING GRADE.

TYPICAL TRENCH SECTION A

NO SCALE

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GDT-PLTS-DETAIL-SHEET.DWG - D-1 - PLOTTED: 6/12/2025 4:03 PM BY: HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

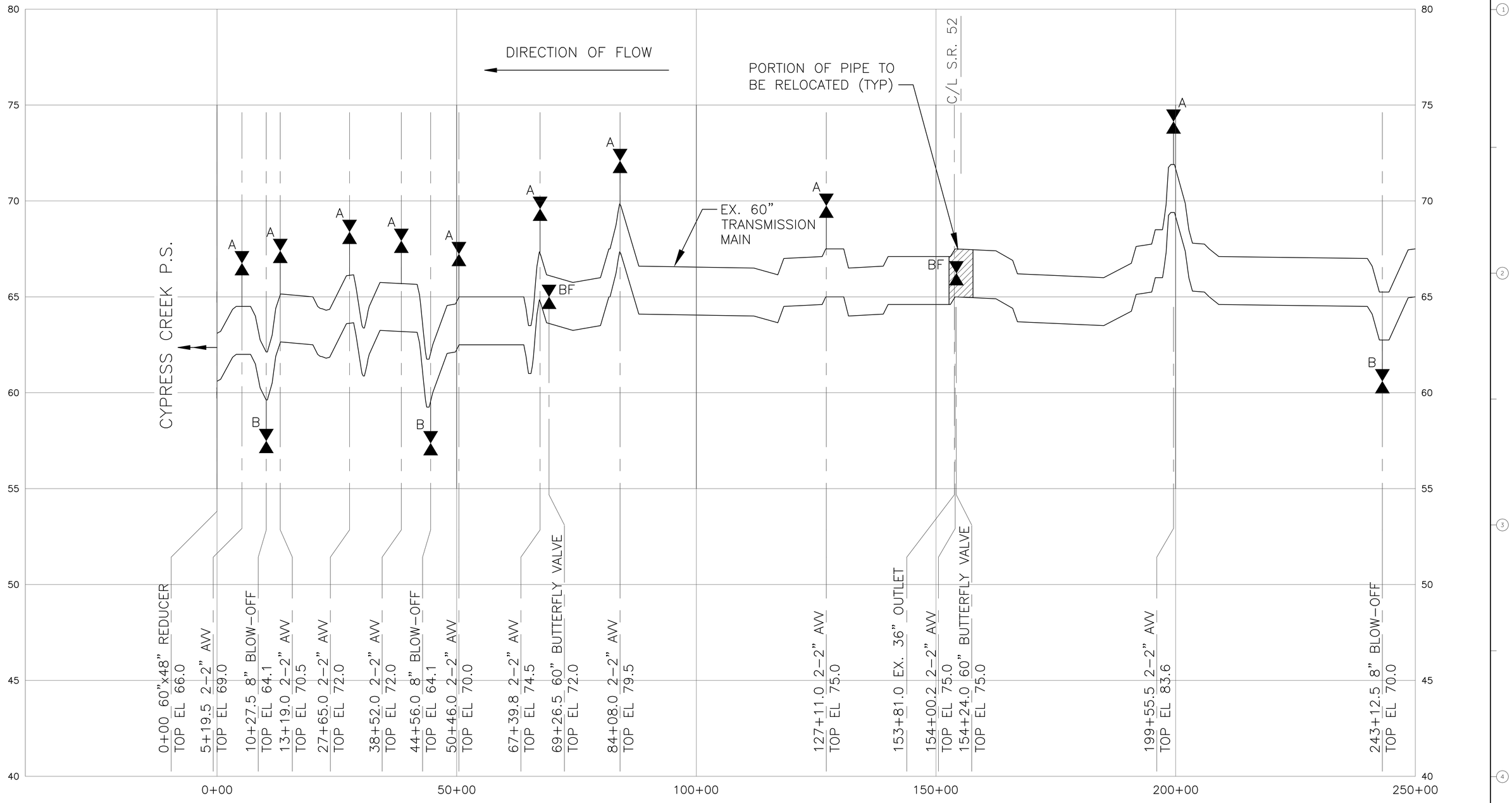
TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

TAMPA BAY WATER STANDARD DETAILS

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: D-1
File Name: GDT-PLTS-DETAIL-SHEET.DWG
Scale: NTS
Sheet No.: 12 OF 14

420



NOTE:

1. THIS PROFILE IS INTENDED FOR SHOWING THE APPROXIMATE LOCATIONS OF EXISTING APPURTENANCES AS RELATED TO REMOVAL OF WATER FROM WITHIN THE PIPE DURING CONSTRUCTION. THE ELEVATIONS OF THE 60" WATER TRANSMISSION MAIN FOR TAMPA BAY WATER WAS BASED ON THE FOLLOWING RECORD DRAWINGS: PROJECT NO. 404-78-0153 PREPARED BY CDM (5-19-81).
2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
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SEAL

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PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

File Name: GDT-PLTS-DETAIL-SHEET.DWG

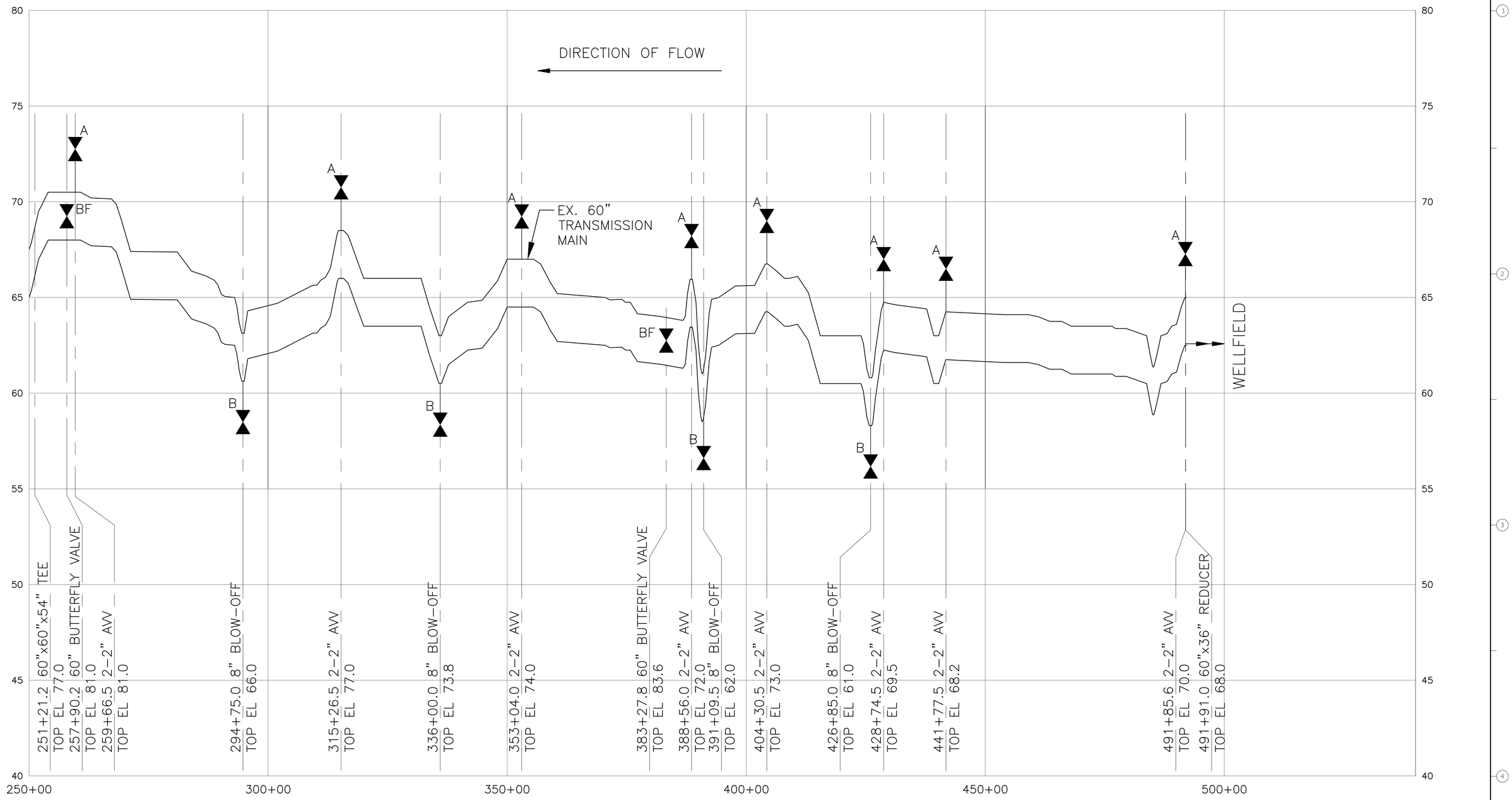
Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

TBW Project No.: 07153

Sheet Designation: D-2

Sheet No.: 13 OF 14

421



NOTE:

1. THIS PROFILE IS INTENDED FOR SHOWING THE APPROXIMATE LOCATIONS OF EXISTING APPURTENANCES AS RELATED TO REMOVAL OF WATER FROM WITHIN THE PIPE DURING CONSTRUCTION. THE ELEVATIONS OF THE 60" WATER TRANSMISSION MAIN FOR TAMPA BAY WATER WAS BASED ON THE FOLLOWING RECORD DRAWINGS: PROJECT NO. 404-78-0153 PREPARED BY CDM (5-19-81).
2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GDT-PLTS-DETAIL-SHEET.DWG - D-3 - PLOTTED: 6/12/2025 4:03 PM BY HORTON, JAYNA

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SEAL

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: D-3

File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

Sheet No.: 14 OF 14

EXHIBIT A-5

GEOTECHNICAL REPORT

TIERRA

January 3, 2024

Wade Trim, Inc.
201 N. Franklin St., Suite 1350
Tampa, Florida 33602

Attn: Ms. Nita Naik, P.E.

RE: Report of Geotechnical Engineering Services
Tampa Bay Water: SR 52 Water Main Relocation
Pasco County, Florida
Tierra Project No.: 6511-21-295-001

Ms. Naik:

Tierra, Inc. (Tierra) has completed the geotechnical engineering study for the above referenced project. The results of the study are provided herein.

Should there be any questions regarding this report, please do not hesitate to contact our office at (813) 989-1354. Tierra would be pleased to continue providing geotechnical services throughout the implementation of the project. We look forward to working with you and your organization on this and future projects.

Respectfully Submitted,

TIERRA, INC.

Sarah E. Strackbein, E.I.
Geotechnical Engineering Intern

Joseph R. Antinori, P.E.
Senior Geotechnical Engineer
Florida License No. 73176

7351 Temple Terrace Highway • Tampa, FL 33637
Phone (813) 989-1354 • Fax (813) 989-1355

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Report of Core Borings Sheet
Summary of Laboratory Test Results for Environmental Classification
Soil Parameters

1.0 PROJECT DESCRIPTION

Project Information

The project, as we understand it, consists of relocating a portion of Tampa Bay Water's collection main to new casing beneath SR 52. The new pipeline will cross SR 52 between Secretariat Road and Philips Highway based on information provided by Wade Trim, Inc.

The geotechnical services herein provide subsurface soil conditions at selected locations along the project alignment and relevant geotechnical engineering information as they pertain to the proposed water main relocation.

Scope of Services

The objective of our study was to identify existing soils and groundwater conditions at selected test locations along the proposed water main relocation alignment. Geotechnical services were provided as follows:

1. Reviewed soil information from the "Soil Survey of Pasco County, Florida" published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Reviewed potentiometric and topographic information published by the United States Geological Survey (USGS).

2. Performed two (2) Standard Penetration Test (SPT) borings to a depth of approximately 30 feet below grade.

3. Classified and stratified the soil samples encountered in accordance with the American Association of State and Highway Traffic Officials (AASHTO).

4. Conducted laboratory testing on select soil samples to confirm the visual classification.

5. Prepared this geotechnical report that summarizes the course of study pursued, the field data generated, laboratory test results, subsurface conditions encountered and geotechnical considerations.

The scope of our services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, groundwater, or air, on or below or around this site. The scope of our services did not include determination of the potential for sinkhole activity. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of our client.

2.0 REVIEW OF PUBLISHED DATA

2.1 USGS Quadrangle Maps

Based on a review of the "Ehren, Florida" USGS Quadrangle Map, it appears that the natural elevation in the vicinity of the project site is on the order of approximately +80 to +90 feet National Geodetic Vertical Datum of 1929 (NGVD 29).

2.2 Potentiometric Surface Maps

Based on a review of the "Potentiometric Surface Elevation of the Upper Floridan Aquifer" map published by the USGS, the potentiometric surface elevation of the upper Floridan Aquifer in the project vicinity is on the order of approximately +70 to +80 feet, NGVD 29.

2.3 Pasco County Soil Survey

The Pasco County Soil Survey published by the USDA NRCS was reviewed for the project site. Three (3) soil mapping units were identified. The published soil information is provided in the following paragraphs and table:

Smyrna fine Sand (Map Unit 21): The Smyrna, non-hydric component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded, nor is it ponded. The seasonal zone of water saturation is at 12 inches during June, July, August, and September. Organic matter content in the surface horizon is about 3 percent.

Basinger fine sand (Map Unit 23): The Basinger, depressional component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions, coastal plains. The parent material consists of sandy marine deposits. The depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded; however it is frequently ponded. The seasonal zone of water saturation is at 0 inches during January, February, May, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 5 percent.

Narcoossee fine sand (Map Unit 26): The Narcoossee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. The depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. The seasonal zone of water saturation is at 33 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 4 percent.

SUMMARY OF USDA SOIL SURVEY PASCO COUNTY, FLORIDA							
USDA Map Symbol and Soil Name	**Depth (in)**	**Soil Classification**		**Permeability (in/hr)**	**pH**	**Seasonal High Water Table**	
		USCS	**AASHTO**			**Depth (feet)**	**Months**
(21) Smyrna - Smyrna, hydric	0-5	SP-SM, SP	A-2-4, A-3	6.0 - 20.0	3.5-5.0	0.5-1.5	Jun-Sep
	5-13	SP-SM, SP	A-2-4, A-3	6.0 - 20.0	3.5-5.0		
	13-25	SP-SM, SM	A-2-4, A-3	0.6 - 6.0	3.5-5.0		
	25-80	SP-SM, SP	A-3	6.0 - 20.0	3.5-5.0		
	0-5	SP-SM, SP	A-2-4, A-3	6.0 - 20.0	3.5-5.0	0.0-0.5	Jun-Sep
	5-13	SP-SM, SP	A-2-4, A-3	6.0 - 20.0	3.5-5.0		
	13-25	SP-SM, SM	A-2-4, A-3	0.6 - 6.0	3.5-5.0		
	25-80	SP-SM, SM	A-3	6.0 - 20.0	3.5-5.0		
(23) Basinger Depressional	0-3	SP-SM	A-2-4	6.0 - 50.0	3.5-7.3	+2.0-0.0	Jan-Feb, May-Dec
	3-8	SP-SM, SP	A-3, A-2-4	6.0 - 50.0	3.5-7.3		
	8-24	SP-SM, SP	A-3, A-2-4	6.0 - 50.0	3.5-7.3		
	24-80	SP-SM, SP	A-3	6.0 - 50.0	3.5-7.3		
(26) Narcoossee	0-5	SP-SM, SM	A-2-4	6.0 - 20.0	3.5-6.0	2.0-3.5	Jun-Nov
	5-22	SP-SM, SM	A-2-4	6.0 - 20.0	3.5-6.0		
	22-26	SP-SM, SM	A-2-4, A-3	2.0 - 6.0	3.5-6.0		
	26-36	SP-SM, SM	A-2-4	6.0 - 20.0	3.5-6.0		
	36-80	SP-SM, SM	A-2-4	6.0 - 20.0	3.5-6.0		

It should be noted that information contained in the USDA/NRCS Soil Survey may not be reflective of current subsurface conditions, particularly if recent development in the project vicinity has modified existing soils or surface/subsurface drainage.

3.0 LABORATORY TESTING

Representative soil samples collected from the borings were classified and stratified based on the AASHTO Soil Classification Systems. Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included fines content, Atterberg Limits series, natural moisture content, organic content, environmental corrosion testing, and Limerock Bearing Ratio Tests. The following list summarizes the laboratory tests performed and respective test methods utilized.

Fines Content Analyses – The fines content analyses were conducted in general accordance with AASHTO test designation T-088 (ASTM test designation D-1140).

Atterberg Limits – The liquid limit and the plastic limit tests ("Atterberg Limits") were conducted in general accordance with the AASHTO test designations T-089 and T-090, respectively (ASTM test designation D-4318).

Natural Moisture Content – The laboratory moisture content tests were conducted in general accordance with the AASHTO test designation T-265 (ASTM test designation D-2216).

Environmental Corrosion – The environmental corrosion tests were conducted in general accordance with the FDOT test designations FM 5-550, FM 5-551, FM 5-552, and FM 5-553.

The laboratory test results are presented on the **Report of Core Borings** and **Summary of Laboratory Test Results for Environmental Classification** table in the **Appendix**.

4.0 SUBSURFACE EXPLORATION

4.1 Soil Borings

Tierra performed two (2) SPT borings at selected locations to depths of approximately 30 feet below the existing ground surface to evaluate the subsurface conditions in the vicinity of the pipe alignment.

The borings were located in the field using hand-held Garmin Global Positioning System (GPS) equipment with a reported accuracy of ±10 feet. The approximate boring locations are presented on the **Report of Core Borings** sheet in the **Appendix**. The SPT borings were performed with the use of a drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586. The initial 6 feet were manually hand augered to verify utility clearance. SPT resistance N-values were then recorded continuously to the boring termination depth. The soil samples were classified in the field and transported to our laboratory for review and stratification. The soil strata encountered in the SPT borings performed at the project site are summarized in the following table:

Stratum Number	Soil Description	AASHTO Symbol
1	Dark Brown to Brown Sand to Sand with Silt	A-3
2	Light Brown to Gray Silty Sand	A-2-4
3	Gray Clayey Sand	A-2-4/A-2-6
4	Green to Gray Silt	A-7-5
5	Weathered Limestone	---(1)
(1) AASHTO does not provide a symbol for weathered limestone.		

The subsurface soil stratification is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The soil profiles included in the **Appendix** on the **Report of Core Boring** sheet should be reviewed for specific information at the boring locations. The profile includes soil description, stratification, and penetration resistances, when applicable. The stratifications shown on the boring profiles represent the conditions only at the actual boring location. Variations did occur and should be expected within the project area. The stratification represents the approximate boundary between subsurface soils and the actual transition may be gradual.

4.2 Groundwater Information

At the time of our field exploration, the groundwater levels were measured within the SPT borings at depths ranging from 3 feet to 4½ feet. The measured groundwater levels are depicted adjacent to the respective soil profile on the attached **Report of Core Borings** sheet.

It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. Groundwater levels along the proposed force main alignment may be affected by tidal influences. A seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons.

5.0 RECOMMENDATIONS AND CONSIDERATIONS

5.1 General

Tierra recommends utilizing the current FDOT Standard Specifications and applicable Pasco County Specifications (if applicable) as guidelines for construction of the proposed pipeline. All earthwork activities including the site preparation, clearing and grubbing, removal and utilization/placement of soils, compaction of subgrade soils and selection of fill materials should be accomplished in accordance with the project plans and FDOT Specifications for Road and Bridge Construction (SSRBC) including Section 125 - Excavation for Structures and Pipes.

5.2 Soil Parameters

The results of the borings performed are presented on the **Report of Core Borings** sheet in the **Appendix**. A **Soil Parameters** table is also included in the **Appendix**. The contractor should review the soil profiles and evaluate the soil types as they relate to their installation methods for the project. The profiles represent the conditions only at the actual boring location. Variations did occur and should be expected within the project area.

5.3 Soil Suitability

The suitability for utilization/placement of soils, compaction of subgrade soils and selection of fill materials should be accomplished in accordance with the project plans and FDOT SSRBC and FDOT Standard Plans Index 120. The following are general considerations for the soils encountered within the borings.

In general, the soils of Stratum 1 (A-3) may be moved and used for pipe backfill, provided it is free of organic materials, clay, debris or any other material deemed unsuitable for construction.

Stratum 2 soils (A-2-4) will retain excess moisture and may be difficult to dry and compact. They should be used above the water level existing at the time of construction.

Strata 3 (A-2-4/A-2-6) and 4 (A-7-5) are plastic materials. If encountered during construction, this material will be difficult to dry and compact and may yield if disturbed or saturated. If this becomes the case, the plastic soils should be over excavated a minimum of 1 foot and replaced with compacted granular fill.

Stratum 5 is natural limestone formation. Variations in the depth and strength of this material should be anticipated. Specialized equipment and/or methods may be required to excavate and/or dewater this material. Tierra recommends the following note be included in the plans:

> *Weathered limestone (Stratum 5) was encountered within the borings. This material is rock. Excavations into and/or through limestone will be difficult and will require non-conventional construction techniques and specialized equipment. Limestone is also porous and difficult to dewater. Utilize construction methods capable of excavating and dewatering materials encountered during construction at no additional cost to the owner.*

5.3 Potentiometric Surface

Based on a review of the "Potentiometric Surface Elevation of the Upper Floridan Aquifer" map and the "Ehren, Florida" quadrangle map published by the USGS, Tierra recommends the following note be included in the plans:

> *Based on a review of the "Potentiometric Surface Elevation of the Upper Floridan Aquifer" map published by the USGS, the potentiometric surface elevation of the upper Floridan Aquifer at the project site is on the order of +70 to +80 feet, NGVD 29. The natural ground elevation at the project site ranges from approximately +80 to +90 feet, NGVD 29. Utilize construction methods capable of handling potentiometric surface levels up to +80 feet, NGVD 29, at no additional cost to the owner.*

5.4 Dewatering

The contractor's means and methods for dewatering should be sufficient to achieve compaction at the lowest levels of the excavation and pipe bedding (i.e. maintain a dry working condition). Tierra anticipates the required dewatering depth will be a minimum of 1 foot below the lowest excavation elevation. However, the actual dewatering depth required may be deeper in order to obtain the required compaction.

5.5 Environmental Classification

Environmental corrosion tests were performed on soil samples obtained from the borings performed. Environmental corrosion tests were conducted in accordance with the FDOT test designations FM 5-550, FM 5-551, FM 5-552, and FM 5-553. Environmental corrosion tests measure parameters including pH, resistivity, sulfate content and chloride content. The test results are presented in the **Summary of Laboratory Test Results for Environmental Classification** in the **Appendix**.

5.6 Excavations

Excavations and temporary side slopes should comply with the Occupational Safety and Health Administration's (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA's referenced standard adopted by the Department of Labor and Employment Security and Florida's Trench Safety Act, Section 553.62, Florida Statutes.

We are providing this information solely as a service to our client. Tierra does not assume responsibility for construction site safety or the contractor's or other party's compliance with local, state, and federal safety or other regulations.

REPORT LIMITATIONS

The information contained in this report are opinions based on the site conditions and project layout described herein and further assume that the conditions observed in the exploratory borings are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions elsewhere on the site are the same as those disclosed by the borings. If, during construction, subsurface conditions different from those encountered in the exploratory boring are observed or appear to be present beneath excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse in time between the submittal of this report and the start of work at the site, or if conditions or project layout are changed due to natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of conclusions and recommendations considering the changed conditions and time lapse.

This report was prepared for the exclusive use of Wade Trim, Inc., and their client for evaluating the design of the project as it relates to the geotechnical aspects discussed herein. It should be made available to prospective contractors for information on factual data only and not as a warranty of subsurface conditions included in this report. Unanticipated soil conditions may require that additional expense be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

APPENDIX

Report of Core Borings Sheet

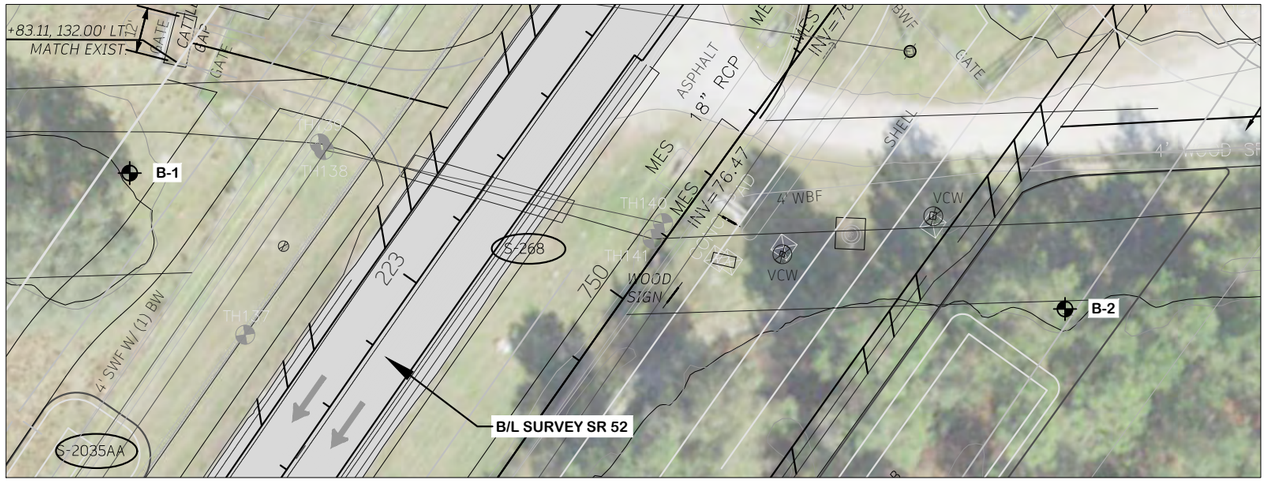
Summary of Laboratory Test Results for Environmental Classification

Soil Parameters

BORING LOCATION PLAN

0 40'

PLAN SCALE

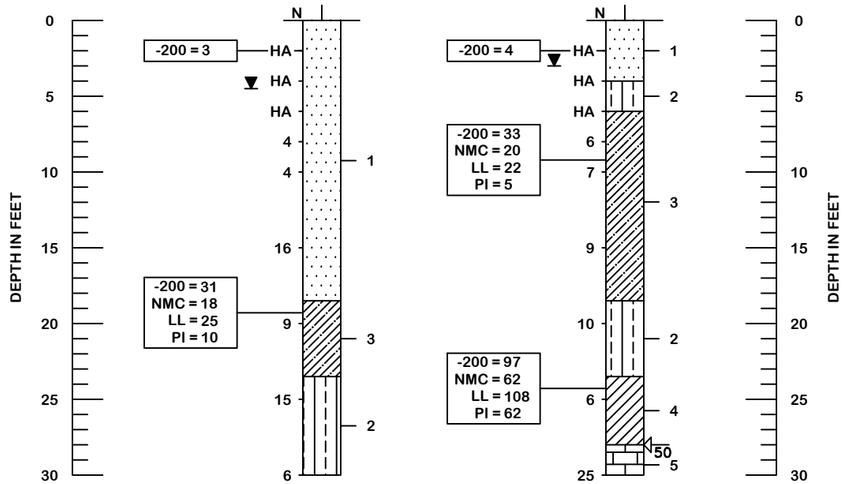


NOTE:
BASED ON A REVIEW OF THE "POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN AQUIFER" MAP PUBLISHED BY THE USGS, THE POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN AQUIFER AT THE PROJECT SITE IS ON THE ORDER OF +70 TO +80 FEET, NGVD 29. THE NATURAL GROUND ELEVATION AT THE PROJECT SITE RANGES FROM APPROXIMATELY +80 TO +90 FEET, NGVD 29. UTILIZE CONSTRUCTION METHODS CAPABLE OF HANDLING POTENTIOMETRIC SURFACE LEVELS UP TO +80 FEET, NGVD 29, AT NO ADDITIONAL COST TO THE OWNER.
WEATHERED LIMESTONE (STRATUM 5) WAS ENCOUNTERED WITHIN THE BORINGS. THIS MATERIAL IS ROCK. EXCAVATIONS INTO AND/OR THROUGH LIMESTONE WILL BE DIFFICULT AND WILL REQUIRE NON-CONVENTIONAL CONSTRUCTION TECHNIQUES AND SPECIALIZED EQUIPMENT. LIMESTONE IS ALSO POROUS AND DIFFICULT TO DEWATER. UTILIZE CONSTRUCTION METHODS CAPABLE OF EXCAVATING AND DEWATERING MATERIALS ENCOUNTERED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

SOIL PROFILES

BOR #	B-1
EASTING	513128
NORTHING	1450049
DATE	12/19/2023
DRILLER	J. BOOTH
HAMMER	AUTOMATIC
RIG	D-25

BOR #	B-2
EASTING	513242
NORTHING	1449827
DATE	12/20/2023
DRILLER	J. BOOTH
HAMMER	AUTOMATIC
RIG	D-25



RECOMMENDED ENVIRONMENTAL CLASSIFICATION:
SUBSTRUCTURE CONCRETE: MODERATELY AGGRESSIVE (RESISIVITY=18,000 OHM-CM, pH=5.1)
SUBSTRUCTURE STEEL: EXTREMELY AGGRESSIVE (pH=5.1)

SOIL TEST RESULTS:

RESISTIVITY	7,700 TO 18,000 OHM-CM
CHLORIDES	15 TO 30 PPM
SULFATES	<5 PPM
pH	5.1 TO 7.2

LEGEND

1 DARK BROWN T0 GRAY SAND TO SAND WITH SILT (A-3/A-2-4)

2 LIGHT BROWN TO GRAY SILTY SAND (A-2-4)

3 GRAY CLAYEY SAND (A-2-4/A-2-6)

4 GREEN TO GRAY SILT (A-7-5)

5 WEATHERED LIMESTONE

APPROXIMATE LOCATION OF SPT BORING

GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION

N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW

HA HAND AUGERED TO VERIFY UTILITY CLEARANCES

100 LOSS OF CIRCULATION OF DRILLING FLUID (100%)

-200 PERCENT PASSING #200 SIEVE

NMC NATURAL MOISTURE CONTENT (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

EASTING EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET

NORTHING NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET

AUTOMATIC HAMMER	
GRANULAR MATERIALS-RELATIVE DENSITY	SPT (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 TO 3
FIRM	3 TO 6
STIFF	6 TO 12
VERY STIFF	12 TO 24
HARD	GREATER THAN 24

DRAWN BY: SW
CHECKED BY: SS
APPROVED BY: JRA
DATE: JAN 2024
ENGINEER OF RECORD: JOSEPH R. ANTINORI, P.E.
FLORIDA LICENSE NO.: 73176

TIERRA
7351 Temple Terrace Highway
Tampa, Florida 33637
Phone: 813-989-1354 Fax: 813-989-1355

SCALE: NOTED
PROJECT NUMBER: 6511-21-295-001

GEOTECHNICAL ENGINEERING SERVICES
SR 52 WATER MAIN RELOCATION
PASCO COUNTY, FLORIDA

SHEET 1

Summary of Laboratory Test Results for Environmental Classification
Tampa Bay Water: SR 52 Water Main Relocation
Pasco County, Florida
Tierra Project No.: 6511-21-295-001

Boring Number	Depth (feet)	Stratum Number	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification[1]	
							Steel	Concrete
B-1	0.0 - 4.0	1	7.2	7,700	15	<5	Slightly Aggressive	Slightly Aggressive
B-2	0.0 - 4.0	1	5.1	18,000	30	<5	Extremely Aggressive	Moderately Aggressive

[1] As per FDOT Structures Design Guidelines

Soil Parameters
Tampa Bay Water: SR 52 Water Main Relocation
Pasco County, Florida
Tierra Project No.: 6511-21-295-001

Soil Description	Approximate Depth (feet)		Soil Unit Weight (pcf)		Cohesion (psf)	Internal Friction Angle
	From	To	Saturated/ Total	Effective		
SPT Boring: B-1						
Loose Sand to Sand With Silt	0	13	105	42.6	0	29°
Medium Dense Sand to Sand With Silt	13	18	112	49.6	0	30°
Medium Dense Clayey Sand	18	23	115	52.6	900	29°
Medium Dense Silty Sand	23	30	112	49.6	0	30°
SPT Boring: B-2						
Loose Sand to Sand With Silt to Silty Sand	0	6	105	42.6	0	29°
Loose Clayey Sand	6	18	115	52.6	700	29°
Medium Dense Silty Sand	18	23	112	49.6	0	30°
Firm to Stiff Clay	23	28	115	52.6	930	0°
Soft Weathered Limestone	28	30	120	57.6	4,000	0°

EXHIBIT A-6

PERMITS

FDOT Utility Permit Package Consisting of 43 pages	Permit No. 2025-H-798-00264 Dated 12/14/2016
Environmental Resource Permit (ERP) Pasco County Consisting of 41 pages	Permit No. 51-0459255-002-EI Permit Issuance Date: 12/19/2025
Public Water System (PWS) Pasco County Consisting of 10 pages	ID # 651-2230 DEP File No. 0030575-028-WC-M1 Permit Issuance Date: 11/12/2025

FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT

PERMIT NO: 2025-H-798-00264

STATE ROAD INFORMATION

County:	Section:	State Road No:	Beginning Mile Post:	Ending Mile Post:
Pasco	14120000	SR 52	15.784	16.695

APPLICANT INFORMATION

The Utility Agency Owner (UAO) shall be identified in this Applicant Information Box. When the UAO is a City or County and desires to have the Utility Builder make a joint permit applicant, as prescribed in Section 2.1(4) of the 2017 Utility Accommodation Manual (UAM), the Utility Builder shall also be identified in this Applicant Information Box. A Utility Builder alone cannot apply for a utility permit without the City or County adding them as a joint applicant.

Utility Agency/Owner (UAO)

Name: Tampa Bay Water
Contact Person: Tampa Bay Water
Address: 2575 Enterprise Road
City: Clearwater
State: Florida
Zip: 33763
Telephone: (727) 796-2355 ext. _____
Email: permitting@tampabaywater.org

Utility Builder (only applicable when the UAO is a City or County)

Name: _____
Contact Person: _____
Address: _____
City: _____
State: _____
Zip: _____
Telephone: _____
Email: _____

WORK DESCRIPTION

The Applicant(s) requests permission from the Florida Department of Transportation (FDOT) to construct, operate, and maintain the utilities as described below and as depicted in the incorporated documentation.

Tampa Bay Water Project No. 07153 Cross Bar Ranch Wellfield Water Transmission Main project includes relocation of approximately 500 LF of existing 60-inch diameter raw water transmission main across SR 52. The project is needed due to FDOT roadway expansion and proposed conflicts with FDOT utilities. The project consists of 194 LF of trenchless construction across proposed SR 52 roadway improvements along with remaining pipeline to be constructed via open cut installation ... (see work description cont. page)

Utility Work No:

Additional sheets are attached and are incorporated into this permit Yes ☑ No ☐

For FDEP certification, the FDOT agency report is attached in accordance with UAM Section 2.4.1 (13) Yes ☐ No ☑

TRAFFIC CONTROL (TCP)

☑ The TCP will comply with the following 600 series index(es) 601, 602

☐ A TCP has been attached and incorporated into this permit application in compliance with UAM Section 2.4.2.

MOT Technician's contact information (may be supplied at the two (2) business day notification to FDOT):

Name: _____ Telephone _____ Email: _____

COMMENCEMENT OF WORK

The UAO and/or Utility Builder shall commence actual construction in good faith within sixty (60) calendar days after approval of the permit application. If the beginning date is more than sixty (60) calendar days from the date of approval, the UAO and/or Utility Builder must review the permit with the FDOT Approving Engineer listed to make sure no changes have occurred to the transportation facility that would affect the permit's continued approval. The UAO and/or Utility Builder shall make good faith efforts to expedite the work and complete the work within the calendar days indicated.

Anticipated Start Date: 1/1/2026

Calendar days needed to completed: 300

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

Florida Department of Transportation

UTILITY PERMIT

PERMIT NO: 2025-H-798-00264

APPLICANT SIGNATURE

By the below signature(s) the UAO and/or Utility Builder agree(s) to construct, operate, and maintain the work as noted in the above Work Description, shown in plans and incorporated documents, in compliance with the UAM, all instructions noted in the FDOT Special Instructions Box, and special instructions incorporated into this permit. The UAO and/or Utility Builder declares, the location of all existing utilities that it owns or has an interest in, both aerial and underground, are accurately shown on the plans of the work areas. In accordance with UAM Section 2.8, the UAO and/or Utility Builder further declares that a letter of notification was delivered to the owners of other facilities within the work areas and that those listed below are the only facility owners known to be involved or potentially impacted by the proposed work.

Date Notified:	Name of other facility owners (attach additional sheets if necessary).
1/18/2024	Withlacoochee River Electric Cooperative
1/18/2024	Frontier Communications
1/18/2024	Pasco County Utilities
6/9/2025	Withlacoochee River Electric Cooperative
6/9/2025	Pasco County Utilities

Utility Agency/Owner	Utility Builder (when applicable)
Signature: JAYNA HORTON (digital signature) Date: 10/8/2025	Signature: _____ Date: _____
Name (printed): JAYNA HORTON	Name (printed): _____
Title: _____	Title: _____

FDOT PROJECT INFORMATION

Pursuant to UAM Section 2.1(10), the utility work is within FDOT projects listed below and must have a Utility Work Schedule for each project approved prior to commencement of work within the FDOT project limits:

FDOT construction is proposed or underway. Refer to Financial Project Id: FDOT Project #256334-3-52-01

TBW will construct their proposed pipe, then grout-fill the existing pipe, prior to FDOT construction. FDOT Brooksville Ops has agreed that FDOT will remove the grouted pipe and will absorb the cost for that removal, during FDOT construction.

FDOT SPECIAL INSTRUCTIONS

In accordance with UAM Section 2.7, FDOT incorporates the below and attached special instructions into this permit.

Contact FDOT James Meyer 48 hours before working in FDOT R/W 352-848-2600, to activate permit.

Provide MOT Technician "Name, Phone Number, Certification, Email Address". and schedule Pre-Construction Meeting.

The UAO shall have a complete copy of the approved permit at the jobsite when

Additional FDOT Special Instructions are attached and incorporated into this permit. Yes ☑ No ☐

PERMIT APPROVAL

By signature below, FDOT gives permission to the UAO and /or Utility Builder to construct, operate, and maintain the utilities indicated in this Utility Permit in compliance with the UAM, all incorporated documents, and special instructions. Any changes to the approved work must be approved by the FDOT's Approving Engineer and attached and incorporated into this permit in accordance with UAM Section 2.11.

Approving Engineer: James A. Meyer (digital signature) Date: 10/8/2025

Name: James A. Meyer

Title: MAINTENANCE MANAGER/PERMITS

Notification of Utility Work to be provided to: Telephone (352) 848-2600 ext. 2610 or Email: james.meyer@dot.state.fl.us

An FDOT Representative is required to be present on the worksite prior to commencement of work. Yes ☑ No ☐

Rep. Name: Michael G. Mcclurg Telephone 3528482611 Email: michael.mcclurg@dot.state.fl.us

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

Florida Department of Transportation

UTILITY PERMIT

PERMIT NO: 2025-H-798-00264

CERTIFICATION

I, the undersigned UAO and/or Utility Builder, hereby CERTIFY that the utilities were constructed and inspected in compliance with the UAM all incorporated documents, and special instructions. Pursuant to UAM Section 2.11, all changes have been approved by the FDOT's Approving Engineer and incorporated into this permit along with all other material certifications, test results, bore logs, approved plans changes, as-built plans or other required documentation.

I also CERTIFY that work began on _____ and was completed on _____ and that the area was left in as good or better condition than when the work began.

Utility Agency/Owner	Utility Builder (when applicable)
Signature: _____ Date _____	Signature:_____ Date _____
Name (printed): _____	Name (printed): _____
Title: _____	Title: _____

FINAL INSPECTION OF WORK

☐ The work was inspected and found to be in non-compliance as noted below:

☐ All issues of non-compliance listed above have been brought into compliance and/or FDOT has no outstanding issues that need to be addressed by the UAO and/or Utility Builder. However, this final inspection does not release the UAO and/or Utility Builder of their continuing responsibilities pursuant to Rule 14-46.001, the UAM, all incorporated documents, and special instructions.

FDOT Inspector: _____ Date: _____

Name: _____

Title: _____

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

PERMIT NO.: 2025-H-798-00264

The complete Work Description could not fit in the space allotted on Page 1 of the Utility Permit so it is displayed below.

Work Description

Tampa Bay Water Project No. 07153 Cross Bar Ranch Wellfield Water Transmission Main project includes relocation of approximately 500 LF of existing 60-inch diameter raw water transmission main across SR 52. The project is needed due to FDOT roadway expansion and proposed conflicts with FDOT utilities. The project consists of 194 LF of trenchless construction across proposed SR 52 roadway improvements along with remaining pipeline to be constructed via open cut installation. Exhibit A includes the project drawings and Exhibit B includes site photos. Microtunnel shafts are proposed to be located 31 LF on the north side and 105 LF on the south side of existing pavement.

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

PERMIT NO.: 2025-H-798-00264

STATE ROAD INFORMATION:

NAME OF OTHER FACILITY OWNERS / DATE NOTIFIED:
Facility Name: Frontier Communications, Date Notified: 6/9/2025

FDOT PROJECT INFORMATION:
FDOT construction is proposed or underway. Refer to Financial Project Id: FDOT Project #256334-3-52-01

TBW will construct their proposed pipe, then grout-fill the existing pipe, prior to FDOT construction. FDOT Brooksville Ops has agreed that FDOT will remove the grouted pipe and will absorb the cost for that removal, during FDOT construction. Removal pay items would be included in the Roadway plans.
This work is NOT related to an approved Utility Work Schedule.

THE WORK WAS INSPECTED AND FOUND TO BE IN NON-COMPLIANCE AS NOTED BELOW:

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

PERMIT NO.: 2025-H-798-00264

The complete special instructions could not fit in the space allotted on Page 2 of the Utility Permit so they are displayed below.

Special FDOT Instructions

Contact FDOT James Meyer 48 hours before working in FDOT R/W 352-848-2600, to activate permit.

Provide MOT Technician “Name, Phone Number, Certification, Email Address”.
and schedule Pre-Construction Meeting.

The UAO shall have a complete copy of the approved permit at the jobsite when crews are present. 2017 UAM 2.1 (3) (DW)

Restore FDOT R/W with Sod only.

Contact Scott Brown Pasco County for locates of lighting fiber and signal conduits Pasco County
727-849-6845.

For microtunnels under FDOT roadways there must be a contingency plan and dewatering plan. Contingency should have an emergency on call MOT/TTC contractor and an emergency Asphalt contractor to restore the roadway if something should happen to the microtunnel.

Provide Contingency Plan and Dewatering Plan before starting work in FDOT R/W.

FDOT recommends GPR be performed along path of microtunnel minimum of 10' on either side of the casing pipe prior to pre-drill meeting with FDOT inspector which is required.

FDOT Project #256334-3-52-01

TBW will construct their proposed pipe, then grout-fill the existing pipe, prior to FDOT construction. FDOT Brooksville Ops has agreed that FDOT will remove the grouted pipe and will absorb the cost for that removal, during FDOT construction. Removal pay items would be included in the Roadway plans.

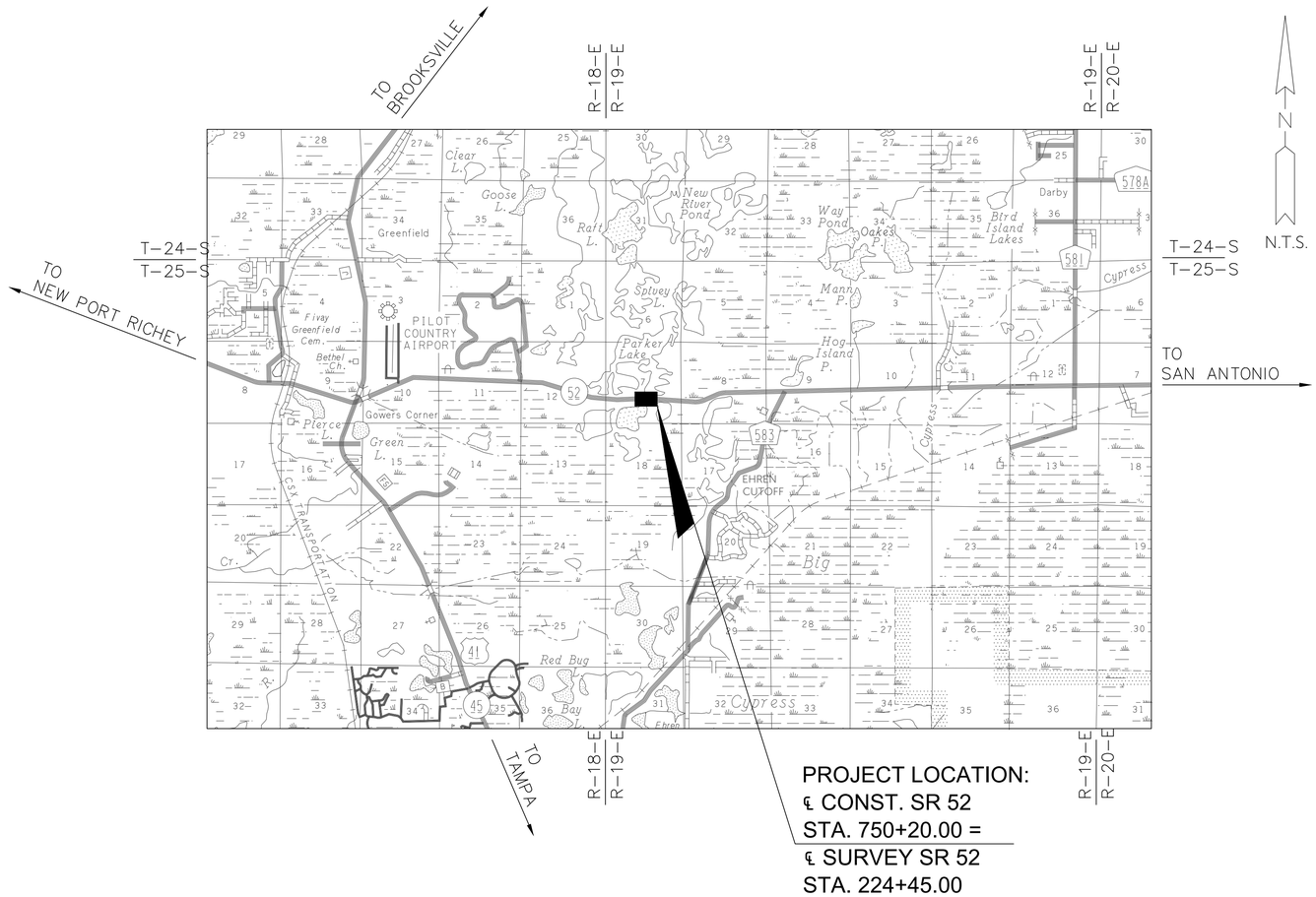
Enter in the FDOT’s One Stop Permitting – “Certify Construction Complete” or provide, original signed copy of Permit Application (pg. 3 of 3) and As-builts. Once construction is completed for permit close out.

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN RELOCATION

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road
Clearwater, Florida 33763
Ph: 727.796.2355
www.tampabaywater.org



PROJECT LOCATION

FINAL SUBMITTAL - SEPTEMBER 10, 2025

NOT FOR CONSTRUCTION

PERMIT SET

WADE TRIM

201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY NITA N. SHARMA ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

DATE: 06/12/2025

NITA NAIK SHARMA, P.E.

79670
LICENSE NO.

The Individual above shall be responsible individual for following sheets included herein:
G-1, G-2, G-3, G-4
C-1, C-2, C-3,
D-1, D-2, D-3,

The Individual above shall be responsible individual for following sheets included herein:
CP-1, CP-2, CP-3, CP-4

TAMPA BAY WATER PROJECT No.: 07153
DRAWING SET No.: G-1

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

444

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GCS-PLTS-COVERSHEET.DWG - G-1 - PLOTTED 9/10/2025 11:08 AM BY HORTON, JAYNA

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ON THE DRAWINGS AND IN THE SURVEY NOTES ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988. STATE PLANE COORDINATES ARE REFERENCED TO NORTH AMERICAN DATUM OF 1983/90 (NAD 28/90).
2. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL OBTAIN THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION.
3. LAND SURVEY WAS OBTAINED FROM FDOT FPID 25633415201 PLANS DATED MARCH 2021.
4. UTILITIES AND STRUCTURES THAT ARE NOT SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL BE PROTECTED IN PLACE AND UTILITY SERVICE SHALL BE MAINTAINED. WHERE TEMPORARY CONFLICTS OCCUR BETWEEN EXISTING UTILITIES AND THE NEW CONSTRUCTION, PROTECT IN PLACE OR RELOCATE THE UTILITIES AND MAINTAIN UTILITY SERVICE ALL TO THE SATISFACTION OF THE UTILITY COMPANY. UTILITIES AND STRUCTURES SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE TECHNICAL SPECIFICATIONS.
5. PROVIDE ADEQUATE, TEMPORARY THRUST RESTRAINT AT BENDS AND TEES IN EXISTING WATER MAINS AND OTHER PRESSURIZED CONDUITS IN PROXIMITY TO EXCAVATIONS AS REQUIRED TO PREVENT DISLODGEMENT, SEPARATION OR LEAKAGE OF THESE FACILITIES.
6. DISCHARGE OF ANY NON-CONTAMINATED WATER FROM SOIL DEWATERING OPERATIONS TO SURFACE WATERS, IF ANY, SHALL CONFORM TO THE FDEP GENERAL PERMIT REQUIREMENTS.
7. PROVIDE AT LEAST 48 HOURS NOTICE TO THE VARIOUS UTILITY COMPANIES IN ORDER TO PERMIT THE LOCATION OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION. NOTIFY THE VARIOUS UTILITY COMPANIES BY CALLING THE SUNSHINE ONE CALL CENTER (1-800-432-4770) OR IF NECESSARY, BY CONTACTING THE UTILITY COMPANIES INDIVIDUALLY.
8. CONFIRM UTILITY TO UTILITY CLEARANCES, HORIZONTAL AND VERTICAL, AND PIPE JOINT LOCATIONS IN ACCORDANCE WITH FLORIDA ADMINISTRATIVE CODE 62-555.314 AND 62-604.400.
9. THE HORIZONTAL ALIGNMENT OF THE REPLACEMENT WATER MAIN SHALL BE AS DIMENSIONED TO THE SURVEY BASELINE ON THE DRAWINGS. THE CONTRACTOR SHALL OBTAIN A COPY OF THE SURVEY AND LOCATE THE SURVEY BASELINE IN THE FIELD PRIOR TO CONSTRUCTION.
10. PIPE LAYING, LEAKAGE TESTING AND AS-BUILT DRAWINGS SHALL CONFORM TO ALL INFORMATION INDICATED ON THE PLANS AND DETAILS OR PROJECT TECHNICAL SPECIFICATIONS.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL TREES WITHIN THE VICINITY OF THE PROPOSED CONSTRUCTION IN ACCORDANCE WITH PASCO COUNTY PROTECTION STANDARDS UNLESS OTHERWISE INDICATED FOR REMOVAL. PRUNING OF BRANCHES IS NOT AUTHORIZED WITHOUT PRIOR APPROVAL FROM THE COUNTY, AND SHALL BE COMPLETED BY A CERTIFIED ARBORIST.
12. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS TO PROVIDE SUPPORT DURING CONSTRUCTION. UTILITY POLE OWNERS REPRESENTATIVE TO APPROVE SUPPORT METHOD PRIOR TO BEGINNING EXCAVATION AROUND UTILITY POLES. ONCE WORK IN THE AREA HAS BEEN COMPLETED, UTILITY REPRESENTATIVE SHALL INSPECT AND APPROVE FINAL GRADING PRIOR TO SUPPORT BEING REMOVED.
13. REFER TO GENERAL REQUIREMENTS SECTION OF TECHNICAL SPECIFICATIONS FOR PERMIT AGENCY COMMENTS.
14. ALL EXCAVATION AND BACKFILLING SHALL BE IN STRICT CONFORMANCE WITH TAMPA BAY WATER AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
15. WHERE CONSTRUCTION ACTIVITIES OCCUR WITHIN THE DRIP LINES OF EXISTING TREES, TREES ARE TO BE PROTECTED PER PASCO COUNTY NATURAL RESOURCES DIVISION REQUIREMENTS. ANY ROOT OR CANOPY TRIMMING TO FACILITATE CONSTRUCTION OF PROPOSED FACILITIES IS TO BE PERFORMED AT THE DIRECTION OF A CERTIFIED ARBORIST.
16. ANY AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED TO THE ORIGINAL GRADE AND SEEDED AND MULCHED.
17. ADD TEMPORARY 1" THICK STEEL PLATES TO ACT AS SHOCK PADS OVER EXISTING 60" PIPE WITHIN PROJECT LIMITS TO PROTECT DURING CONSTRUCTION.
18. CONTACT INFORMATION:

    TAMPA BAY WATER
    NAME: DANIELLE KEIRSEY, PROJECT MANAGER
    PHONE: (727) 791-2377
19. TAMPA BAY WATER WILL CONTINUE TO MAINTAIN OWNERSHIP OF THE GROUTED, OUT-OF-SERVICE 60" WATER TRANSMISSION MAIN UNTIL ROADWAY PROJECT 256334-3-52-01 IS LET, WHERE IT WILL BE REMOVED DURING ROADWAY CONSTRUCTION, BY THE UAO.

TREE REMOVAL TABLE

NORTHING	EASTING	SIZE	DESCRIPTION
1,450,055.0483'	513,108.5036'	23"	OAK
1,449,864.4522'	513,193.9677'	20"	OAK
1,449,862.5740'	513,209.7399'	9"	OAK
1,449,844.5240'	513,175.6765'	10"	PINE
1,449,845.4685'	513,179.6216'	9"	PINE
1,449,842.5842'	513,212.8580'	8"	OAK
1,449,836.3626'	513,199.2597'	6"	OAK
1,449,833.4797'	513,206.0446'	11"	OAK
1,449,833.2359'	513,218.5170'	15"	OAK
1,449,820.3176'	513,199.4656'	8"	OAK
1,449,819.9008'	513,232.1982'	4"	OAK
1,449,819.9008'	513,241.3715'	5"	OAK
1,449,811.6703'	513,223.2333'	10"	OAK
1,449,810.4778'	513,237.2867'	10"	PINE
1,449,806.3107'	513,232.4499'	9"	PINE
1,449,801.3590'	513,241.9987'	8"	PINE
1,449,849.5840'	513,114.2410'	7"	OAK
1,449,851.6820'	513,110.5290'	8"	PINE
1,449,848.2500'	513,103.5910'	14"	PINE
1,449,884.0290'	513,155.0570'	13"	OAK
1,449,876.8190'	513,147.6910'	10"	OAK
1,449,878.1520'	513,139.5010'	6"	OAK
1,449,893.2080'	513,128.3550'	15"	PINE
1,449,888.4180'	513,103.3360'	8"	OAK
1,449,889.6960'	513,085.7470'	7"	OAK

FDOT NOTES:

1. CONTACT FDOT JAMES MEYER 48 HOURS BEFORE WORKING IN FDOT R/W 352-848-2600 TO ACTIVATE PERMIT.
2. SIDEWALKS SHOULD NOT BE CLOSED FOR MORE THAN 2 WEEKS FOR THE DURATION OF THE PERMIT. THE CONTRACTOR WILL NEED TO PROVIDE ACCOMMODATION FOR PEDESTRIANS.
3. RESTORE FDOT R/W WITH SOD ONLY.
4. CONTACT SCOTT BROWN PASCO COUNTY FOR LOCATES OF LIGHTING FIBER AND SIGNAL CONDUITS: PASCO COUNTY 727-849-6845
5. FOR MICROTUNNELS UNDER FDOT ROADWAYS THERE MUST BE A CONTINGENCY PLAN AND DEWATERING PLAN. CONTINGENCY SHOULD HAVE AN EMERGENCY ON CALL MOT/TTC CONTRACTOR AND AN EMERGENCY ASPHALT CONTRACTOR TO RESTORE THE ROADWAY IF SOMETHING SHOULD HAPPEN TO THE MICROTUNNEL.
6. FDOT RECOMMENDS GPR BE PERFORMED ALONG PATH OF MICROTUNNEL MINIMUM OF 10' ON EITHER SIDE OF THE CASING PIPE PRIOR TO PRE-DRILL MEETING WITH FDOT INSPECTOR WHICH IS REQUIRED.

DRAWING INDEX

SHEET NO.	DESCRIPTION
G-1	COVER SHEET
G-2	DRAWING INDEX, NOTES & ABBREVIATIONS
G-3	LEGEND & SURVEY CONTROL
G-4	EXISTING CONDITIONS
C-1	TREE REMOVAL AND LIMITS OF DISTURBANCE
C-2	PLAN SHEET
C-3	PROFILE SHEET
CP-1	CATHODIC PROTECTION DETAILS
CP-2	CATHODIC PROTECTION DETAILS
CP-3	CATHODIC PROTECTION DETAILS
CP-4	CATHODIC PROTECTION DETAILS
D-1	TAMPA BAY WATER STANDARD DETAILS
D-2	CONDENSED PROFILE
D-3	CONDENSED PROFILE

TEST HOLE POINTS

TH	UTILITY OWNER	UTILITY TYPE	SIZE	MATERIAL	EXISTING GROUND ELEVATION	TOP ELEVATION
1	TAMPA BAY WATER	RWM	60"	PCCP		73.30'
2	TAMPA BAY WATER	RWM	60"	PCCP		72.13'
3	TAMPA BAY WATER	RWM	60"	PCCP		71.95'
4	UNKNOWN	DB COMM FOC	1/2"	PVC		76.86'
137	PASCO COUNTY	RECLAIM	36"	DIP	77.89'	70.02'
138	PURPLE	UNKNOWN	2-2"	PVC	78.29'	74.81'
139	TAMPA BAY WATER	RWM	60"	DIP	78.39'	73.38'
140	PURPLE	UNKNOWN	2-2"	PVC	77.30'	74.79'
141	TAMPA BAY WATER	RWM	60"	DIP	77.46'	73.11'
142	PASCO COUNTY	FOC	2"	HDPE	78.21'	74.91'
143	PASCO COUNTY	RECLAIM	36"	DIP	78.06'	71.84'
383	VERIZON	TELECOM	1"	DBC	78.01'	75.53'

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

GENERAL NOTES AND INDEX

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-NOTE-SHEET.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153

Sheet Designation: G-2

Sheet No.: 2 OF 14

445

Approved
Thomas A. Thayer
10/8/2025

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JH.HORTON\D1402567\GCS-PLTS-NOTE-SHEET.DWG - G-2 - PLOTTED: 9/11/2025 11:39 AM BY HORTON, JAYNA

LEGEND

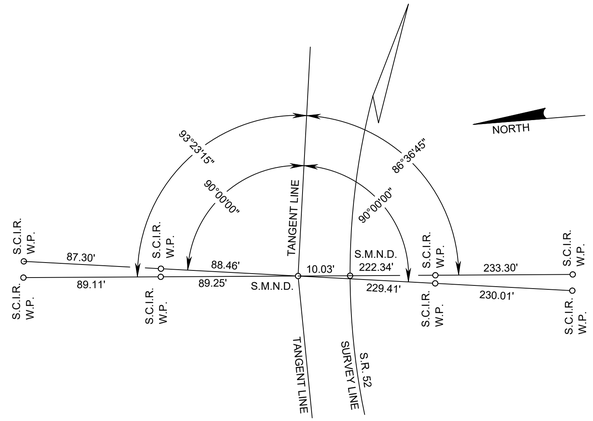
	EXISTING	PROPOSED	PREVIOUS
WATER MAIN	W W		
WATER MAIN & CASING PIPE	W W		
RECLAIMED WATER MAIN	REC		
OVERHEAD ELECTRIC	E E		
UNDERGROUND ELECTRIC	UE UE		
BURIED TELEPHONE	UT UT		
BURIED FIBER OPTIC	FO FO		
STORM MAIN		ST ST	
FENCE	X X X		
FDOT RIGHT OF WAY	R/W	R/W	R/W
PIPE/FENCE TO BE REMOVED		XXXXXXXXXXXXX	
LIMITS OF DISTURBANCE			

	EXISTING	PROPOSED
TEST HOLE	TH14Ø	
WATER CONTROL VALVE	WCV	
UTILITY POLE		
STORM MANHOLE	SD	
STORM STRUCTURE AND MES		
CONCRETE SLAB AND POST		
SOIL BORING		
BUTTERFLY VALVE		
CAP		
TREE		
TREE REMOVAL		

ABBREVIATIONS

B.O.S. = BEGINNING OF SURVEY
BWF = BARBED WIRE FENCE
E.O.S. = END OF SURVEY
EXIST. = EXISTING
F.C.I.R. = FOUND CAPPED IRON ROD
FDOT = FLORIDA DEPARTMENT OF TRANSPORTATION
F.I.P. = FOUND IRON PIPE
F.I.R. = FOUND IRON ROD
FND. N&D = FOUND NAIL AND DISK
F.M.N.D. = FOUND MAG NAIL & DISK
F.P.K.N.D. = FOUND PARKER-KALON NAIL & DISK
F.R.R.S. = FOUND RAIL ROAD SPIKE
ID. = IDENTIFICATION
LB = LICENSED BUSINESS
LF = LINEAR FOOT (FEET)
MES = MITERED END SECTION
M.O.C. = MIDDLE OF CURVE
PAVT. = PAVEMENT
P.C. = POINT OF CURVATURE
P.I. = POINT OF INTERSECTION
P.O.T. = POINT ON TANGENT
PT. = POINT
P.T. = POINT OF TANGENCY
RCP = REINFORCED CONCRETE PIPE
REF. = REFERENCE
RPS = REVOLUTION PROFESSIONAL SERVICES
S.C.I.R. = SET CAPPED IRON ROD 1/2" (RPS LB 7889)
S.C.I.R. W.P. = SET CAPPED IRON ROD 1/2" (RPSWITNES LB 7889)
SHLDR = SHOULDER
SMF = STORMATER MANAGEMENT FACILITY
S.M.N.D. = SET MAG NAIL & DISK (RPS LB 7889)
S.R. = STATE ROAD
STA. = STATION
TH = TEST HOLE
NTS = NOT TO SCALE

SURVEY CONTROL



P.I. STA. 224+03.81
S.M.N.D.
& M.O.C. STA. 224+03.41
S.M.N.D.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GCS-PLTS-LEGEND.DWG - G-3 - PLOTTED 6/12/2025 4:03 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

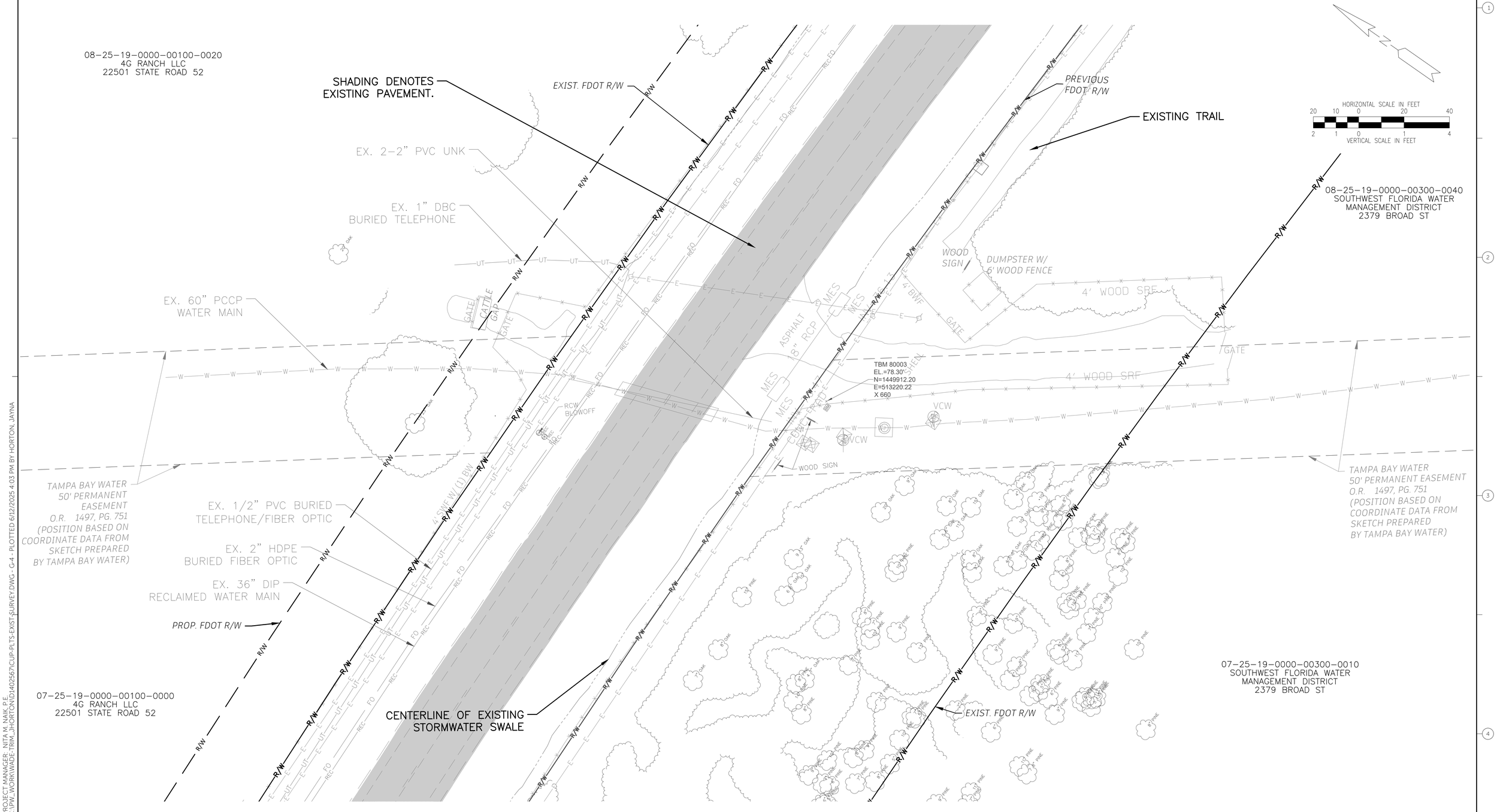
LEGEND, ABBREVIATIONS AND SURVEY CONTROL

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-LEGEND.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: G-3
Sheet No. 3 OF 14

Approved
E84-H-798-00264
Thomas A. Mayer
10/8/2025



PROJECT MANAGER: NITA M. NAIK, P.E.
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SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
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NITA SHARMA Date: 06/12/25
APPROVED BY.

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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
EXISTING CONDITIONS
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

File Name: CUP-PLTS-Exist-Survey.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153

Sheet Designation: G-4

Sheet No. 4 OF 14

Approved
Nita M. Naik, P.E. 79670
Tampa Bay Water
10/8/2025

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

SHADING DENOTES EXISTING PAVEMENT.

REMOVE AND REPLACE APPROX. 61 LF OF EXISTING FENCE

150 LF OF 60" STEEL TRANSMISSION MAIN

APPROX. 370 LF OF PROPOSED TEMPORARY FDOT FENCE TYPE A

APPROX. LIMITS OF DISTURBANCE/ SILT FENCE

42" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

℄ DRIVEWAY 750+14.00, 67.00' LT.

GRADED DRWY. PER FDOT INDEX 330-001

749+95.67, 132.00' LT. MATCH EXIST.

749+83.11, 132.00' LT. MATCH EXIST.

WB SR 52 (SCHRADER HWY.)

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE E C & G

℄ MEDIAN OPENING STA. 751+34.89

WOOD SIGN

DUMPSTER W/ 6' WOOD FENCE

PROPOSED INLET PROTECTION (TYP)

EB SR 52 (SCHRADER HWY.)

PREVIOUS FDOT R/W

TYPE E C& G

10' SHLDR. 8' SHLDR. PAVT.

6" CONC. DRWY. PER FDOT INDEX 330-001

751+46.07, 128.00' RT. MATCH EXIST.

751+67.43, 128.00' RT. MATCH EXIST.

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

PRIVATE DRIVE

℄ DRIVEWAY 751+05.21, 97.00' RT.

4" WOOD SIGN

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

BOR #B-1

BOR #B-2

EX. 36" OUTLET

VCW

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

FUTURE WREC TRANSMISSION POLE

APPX. WETLAND LINE

APPROX. LIMITS OF DISTURBANCE/DOUBLE SILT FENCE

15 LF OF 36" STEEL TRANSMISSION MAIN

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

167 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE BY MICROTUNNEL

18 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE VIA OPEN CUT

PROP. FDOT R/W

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

SUMP

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

10' SHLDR. 5' SHLDR. PAVT. 12' SHARED USE PATH

8' SHLDR. 4' SHLDR. PAVT.

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

LEGEND

- TREE REMOVAL
- TREE PROTECTION
- SILT FENCE / LIMITS OF DISTURBANCE
- INLET PROTECTION

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-LOD.DWG - C-1 LIMITS - PLOTTED: 9/10/2025 5:48 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
TREE REMOVAL AND LIMITS OF DISTURBANCE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: C-1
File Name: CUP-PLTS-LOD.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No. 5 OF 14

Approved
Contract #H-798-00264
10/8/2025

APPROX. 110 LF 60" WATER MAIN TO BE REMOVED

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

APPROX. MICROTUNNEL SHAFT

STA 11+30
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG

150 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT
STA 10+88.0
60" 22.5° BEND

STA 10+47.0
OFFSET: 7.0' R
AIR RELEASE VALVE

STA 10+27.0
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 152+71± SEE NOTE 1

APPROX. 167 LF 60" WATER MAIN TO BE FILLED WITH EXCAVATABLE FLOWABLE FILL (STRENGTH 100 PSI) IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 121

APPROX. 131 LF 60" WATER MAIN TO BE REMOVED

STA 14+02
60"X36" TEE
LEAKAGE TEST PLUG

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

STA 14+34.9
29°36' 60" BEND

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

STA 11+58.0
60" 45° BEND
(ROLLED 4°55.8')

STA 11+65.9
60" 45° BEND
(ROLLED 5°04')

PIPE ℄
STA 12+58.7=
℄ CONST. SR52
STA 749+90.1

STA 14+06.2
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG

15 LF OF 36" STEEL TRANSMISSION MAIN VIA OPEN CUT

STA 14+02, 7.70' RT
36" BUTTERFLY VALVE
36" CAP

STA 13+97.4
60" 13°25'12" BEND
VPI Δ=13°25'12"

APPROX. MICROTUNNEL SHAFT

STA 13+82.5
60" 46°32'24" BEND
HPI Δ=45°
VPI Δ=13°25'12"

STA 14+94.9
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 157+71± SEE NOTE 1

STA 14+81.6
OFFSET: 7.0' R
AIR RELEASE VALVE

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

167 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE BY MICROTUNNEL

18 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE VIA OPEN CUT

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

NOTE 1. LOCATE SUITABLE EXISTING PIPE JOINT FOR CONNECTION. CAREFULLY DISASSEMBLE JOINT WITHOUT DAMAGING PIPE TO REMAIN IN SERVICE.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-PLAN.DWG - C-2 PLAN - PLOTTED: 9/10/2025 5:47 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
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Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PLAN
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

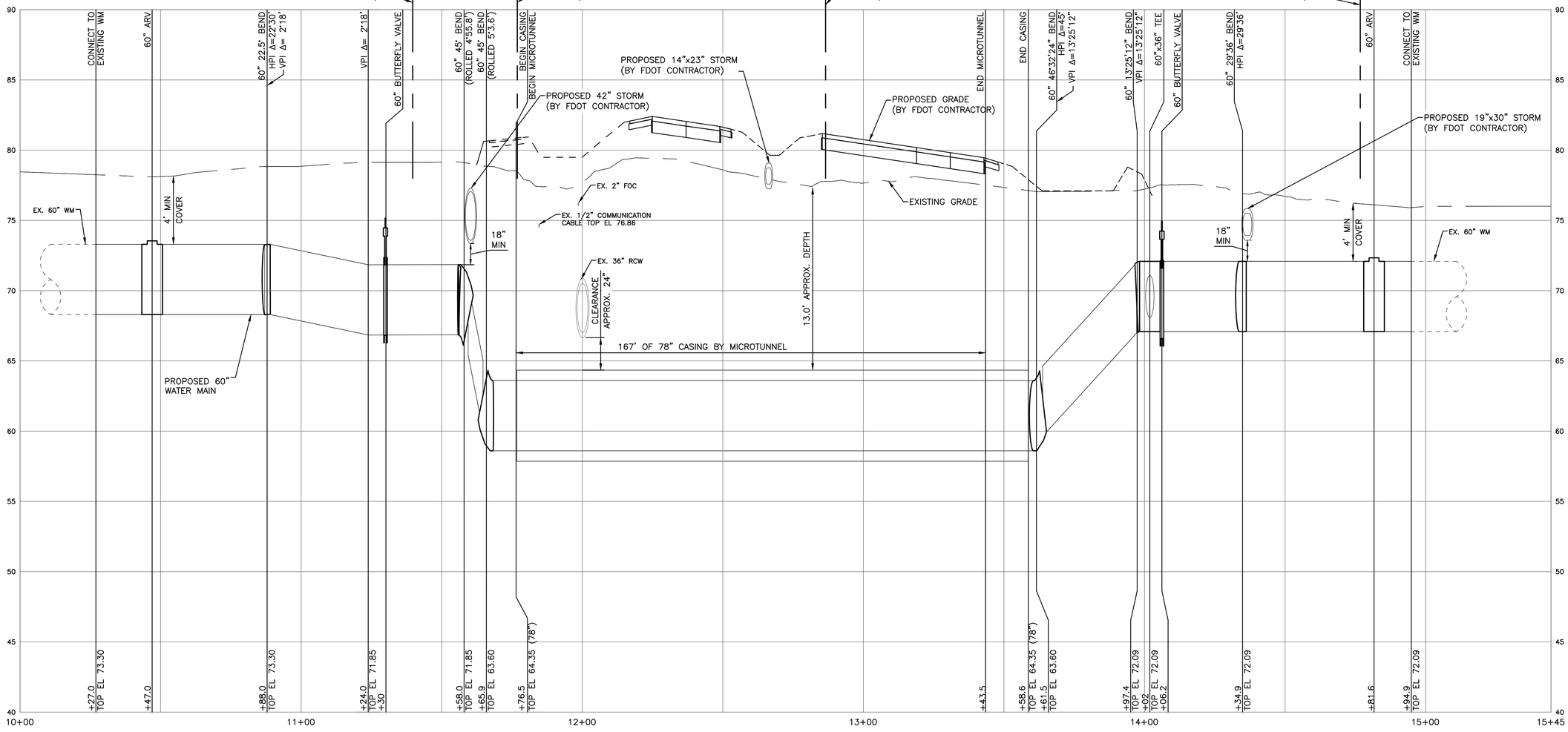
TBW Project No.: 07153
Sheet Designation: C-2
File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No. 6 OF 14

Approved
SWFWMD H-798-00264
10/8/2025

HORIZONTAL SCALE IN FEET
20 10 0 20 40
2 1 0 1 4
VERTICAL SCALE IN FEET

HORIZ. SCALE: 1"=20'
VERT. SCALE: 1"=4'

RESTRAIN EVERY PIPE JOINT



NOTE 1. CONTRACTOR SHALL USE SUITABLE EXCAVATED MATERIALS TO COMPACT AND BACKFILL SHAFT AND PIPE EXCAVATIONS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02220, 3.4 A. IN ADDITION, ALL EXCAVATIONS LOCATED UNDER OR WITHIN CLOSE PROXIMITY TO THE FUTURE FDOT ROADWAY PAVEMENT AND ROADWAY SHOULDERS AS SHOWN IN PROFILE VIEW ON THIS PLAN SHEET SHALL MEET FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PARTICULARLY SECTIONS 120 AND 125, AND OTHER RELATED STANDARDS IN REGARDS TO COMPACTION AND BACKFILLING. FLOWABLE FILL CAN BE USED AS A BACKFILL ALTERNATIVE IN CERTAIN SITUATIONS, FOLLOWING THE REQUIREMENTS IN SECTION 121 OF FDOT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\C\UP-PLTS-PLAN.DWG - C-3 PROFILE - PLOTTED: 9/12/2025 11:39 AM BY HORTON, JAYNA

TAMPA BAY WATER
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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PROFILE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

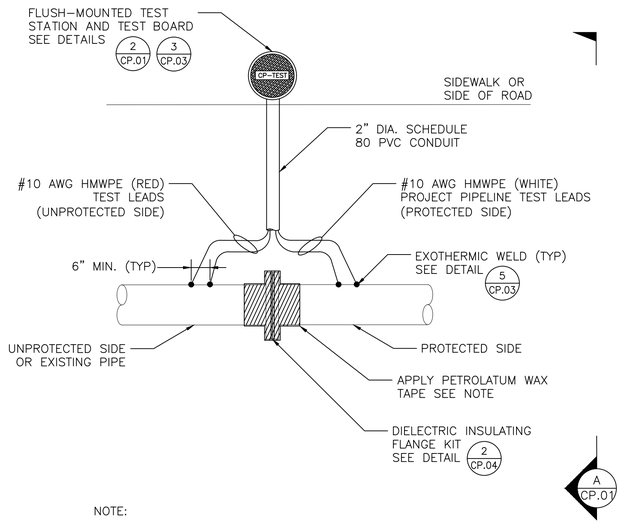
TBW Project No.: 07153
Sheet Designation: C-3
File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No. 7 OF 14

Approved
James A. Mayer
10/8/2025

TEST STATION SCHEDULE							
NO.	PIPELINE/STREET NAME	STATION	TEST STATION TYPE	NUMBER OF ANODES	TYPE OF ANODES	NOTES	REFERENCE DETAILS
1	60" STEEL TRANSMISSION MAIN	10+27	UTS	N/A	N/A	BEGINNING OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02
2	60" STEEL TRANSMISSION MAIN	10+60	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
3	60" STEEL TRANSMISSION MAIN	11+77	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND BEGINNING OF 195' CASING	1/CP.03, 2/CP.03
4	60" STEEL TRANSMISSION MAIN	13+71	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND END OF 195' CASING	1/CP.03, 2/CP.03
5	60" STEEL TRANSMISSION MAIN	14+80	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
6	60" STEEL TRANSMISSION MAIN	14+94	UTS	N/A	N/A	END OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02

NOTES:

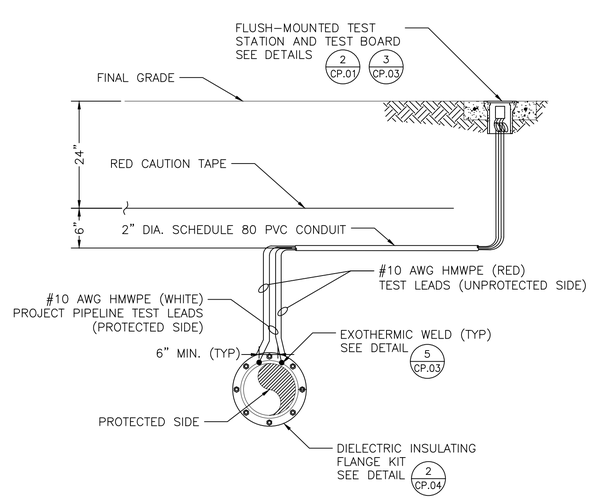
1. CONTRACTOR HAS THE OPTION AND MUST CHOOSE BETWEEN USING A DIELECTRIC INSULATING FLANGED JOINT OR A MONOLITHIC INSULATING JOINT FOR THE PROJECT PIPELINE TO ACHIEVE ISOLATION FROM METALLIC CONNECTIONS. BOTH OPTIONS HAVE BEEN PRESENTED IN THIS PACKAGE.
2. ALL VALVES AND NON WELDED JOINTS MUST FEATURE A MIN. OF TWO #2 AWG HMWPE (BLACK) JOINT BOND WIRES TO ACHIEVE ELECTRICAL CONTINUITY WITH THE PROJECT PIPELINE.



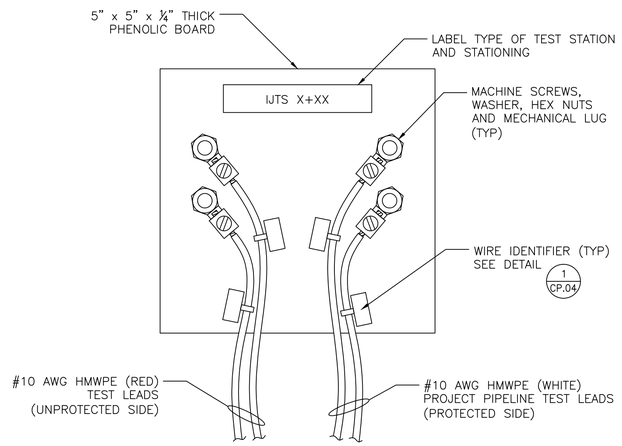
NOTE:

COAT THE EXTERIOR OF THE INSULATING FLANGE WITH PETROLATUM WAX TAPE FOR A MINIMUM OF 3 FEET BEYOND THE GASKET WITH A MINIMUM OF 6 INCHES OF OVERLAP WITH THE FACTORY-APPLIED COATING ON THE PIPELINE.

INSULATING JOINT TEST STATION (IJTS)
PLAN VIEW
SCALE: NTS
1 CP.01



INSULATING JOINT TEST STATION (IJTS)
SECTION VIEW
SCALE: NTS
A CP.01



INSULATING JOINT TEST STATION (IJTS)
TERMINAL BOARD DETAIL
SCALE: NTS
2 CP.01

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2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
Checked By: XXX Date: X/X/XX
GLENN WILLSON Date: 6/2025
APPROVED BY:

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Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

CATHODIC PROTECTION DETAILS
FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

File Name: 23-0096 CP DETAILS.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: CP-1
Sheet No.: 8 OF 14

Approved
Date: 11-798-00264
James A. Meyer
10/8/2025

PROJECT MANAGER: NITA M. NAIK, P.E.
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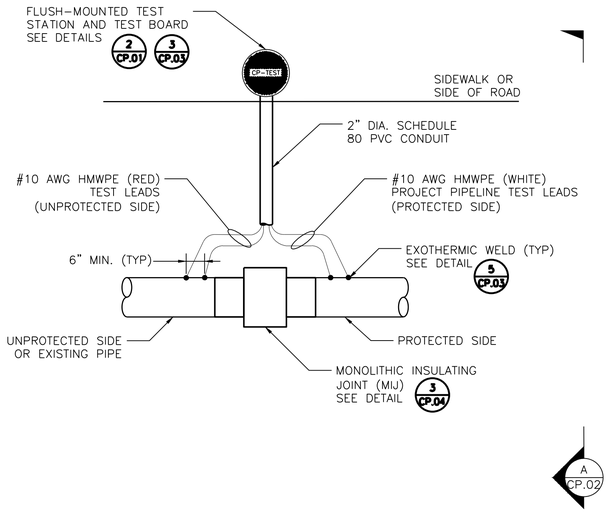
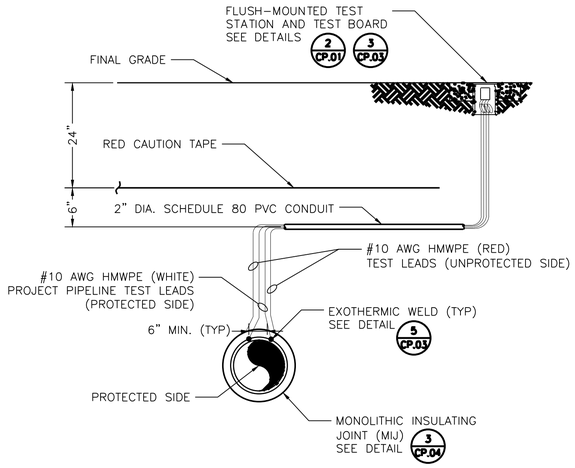
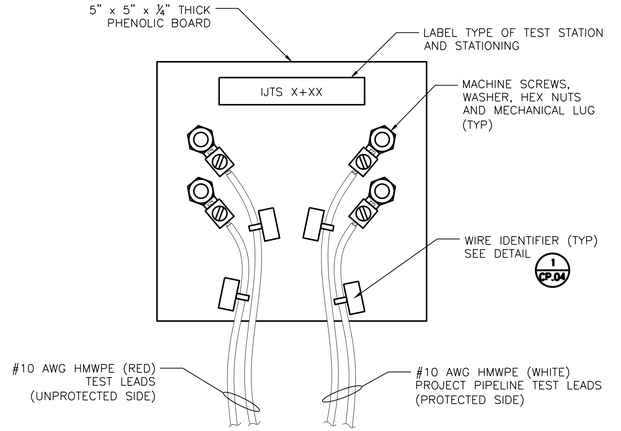


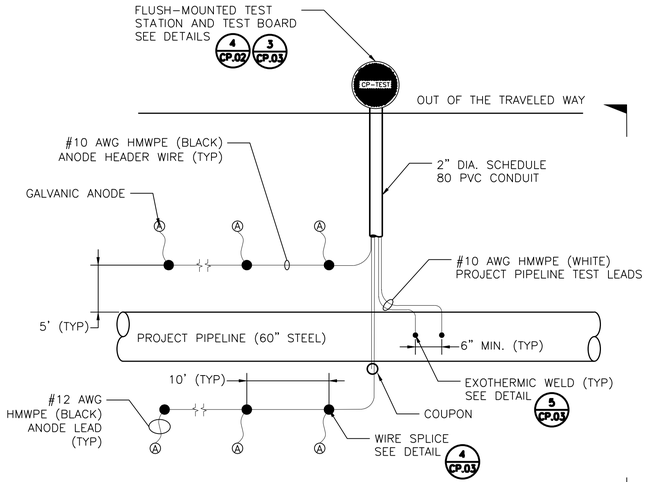
MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) PLAN VIEW (1 CP.02)
SCALE: NTS



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) SECTION VIEW (A CP.02)
SCALE: NTS

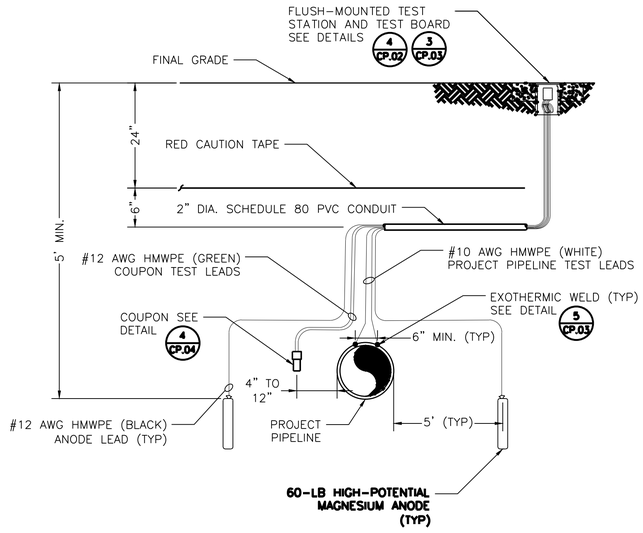


MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) TERMINAL BOARD DETAIL (2 CP.02)
SCALE: NTS



NOTE:
1. THE SIZE, TYPE, AND NUMBER OF ANODES PER ANODE BED SHALL BE AS SHOWN ON THE TEST STATION SCHEDULE.
2. ANODES MAY HAVE TO BE INSTALLED POST BACKFILL DUE TO LIMITED SPACING.
3. ANODES ARE TO BE INSTALLED ALONGSIDE THE PROJECT PIPELINE, 60" STEEL.

ANODE TEST STATION (ATS) PLAN VIEW (3 CP.02)
SCALE: NTS



ANODE TEST STATION (ATS) SECTION VIEW (B CP.02)
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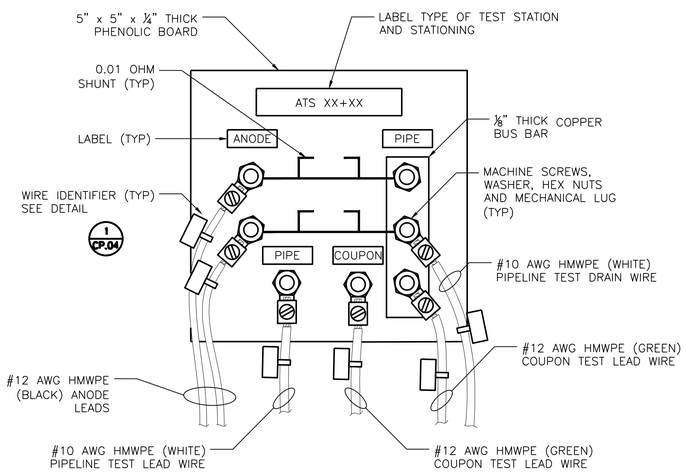

ANODE TEST STATION (ATS) TERMINAL BOARD DETAIL (4 CP.02)
SCALE: NTS

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Design By: AV Date: 12/2024
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GLENN WILLSON (APPROVED BY) Date: 6/2025

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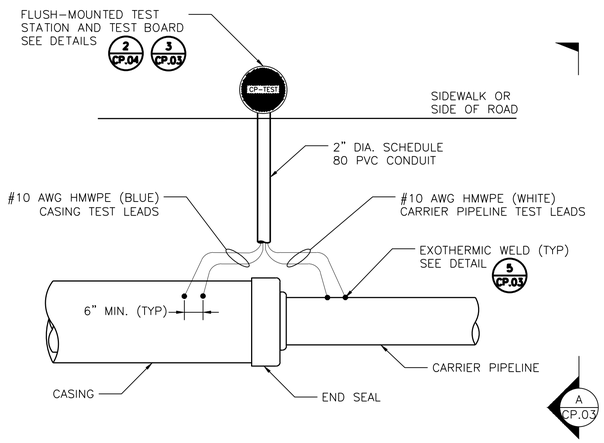
V&A Project No.: 23-0096

CATHODIC PROTECTION DETAILS
FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: CP-2
File Name: 23-0096 CP DETAILS.DWG
Scale: NTS
Sheet No.: 9 OF 14

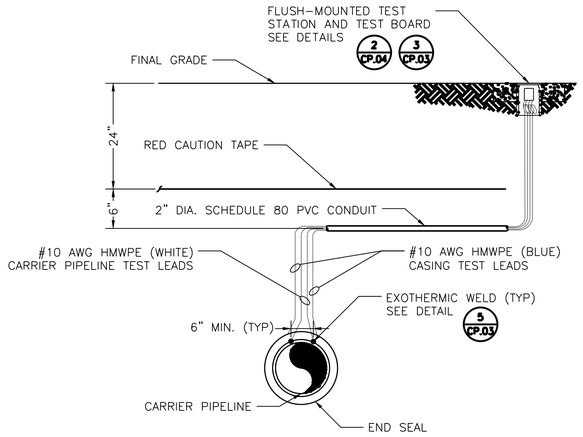
Approved
Contract #H-798-00264
James A. Meyer
10/8/2025
452



CASING TEST STATION (CTS) PLAN VIEW

SCALE: NTS

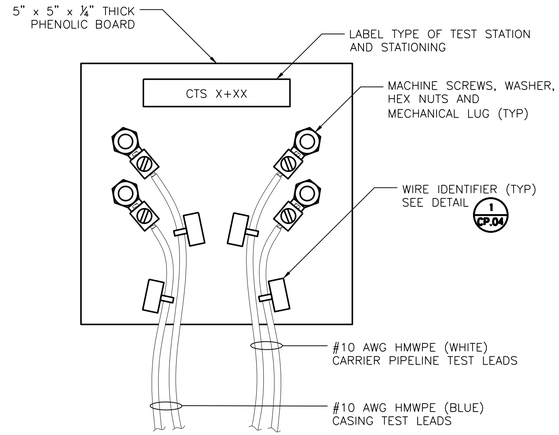
1 CP.03



CASING TEST STATION (CTS) SECTION VIEW

SCALE: NTS

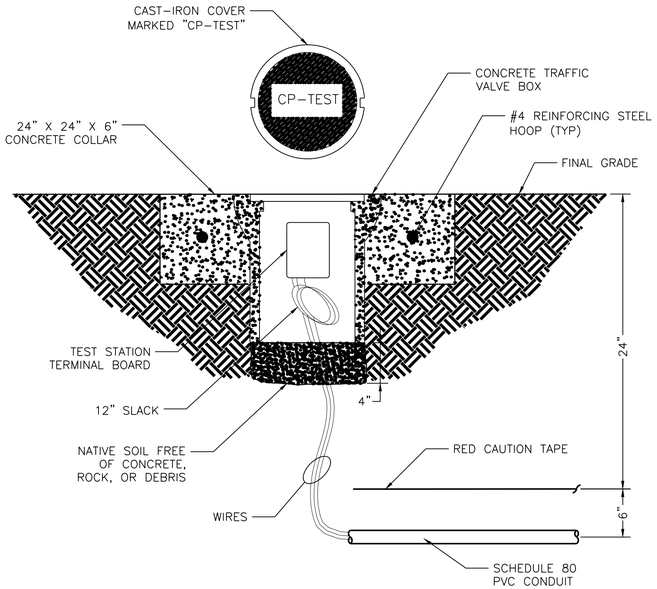
A CP.03



CASING TEST STATION (CTS) TERMINAL BOARD DETAIL

SCALE: NTS

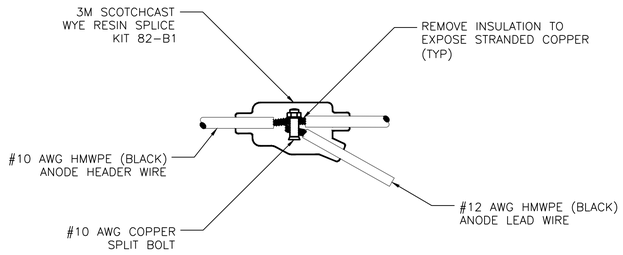
2 CP.03



FLUSH-MOUNTED TEST STATION DETAIL

SCALE: NTS

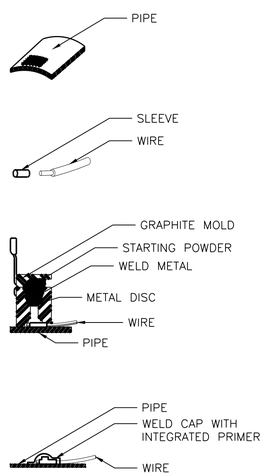
3 CP.03



WYE WIRE SPLICE DETAIL

SCALE: NTS

4 CP.03



1. ALL WELDS SHALL BE 6" APART AT MINIMUM.
2. GRIND PIPE TO BARE METAL AND CLEAN SURFACE. GROUND AREA SHALL BE LARGE ENOUGH FOR EXOTHERMIC WELD AND SMALL ENOUGH TO BE COMPLETELY COVERED BY WELD CAP.
3. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
4. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN. REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER. TEST WELD WITH 22 OZ HAMMER.
5. COVER CONNECTION WITH WELD CAP WITH INTEGRATED PRIMER. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH COATING AND LINING MANUFACTURER'S RECOMMENDATIONS.

EXOTHERMIC WELD DETAIL FOR STEEL PIPE

SCALE: NTS

5 CP.03

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CATHODIC PROTECTION DETAILS FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: CP-3

File Name: 23-0096 CP DETAILS.DWG

Scale: NTS

Sheet No.: 10 OF 14

Approved
H-798-00264
James J. Meyer
10/8/2025

PROJECT MANAGER: NITA M. NAIK, P.E.
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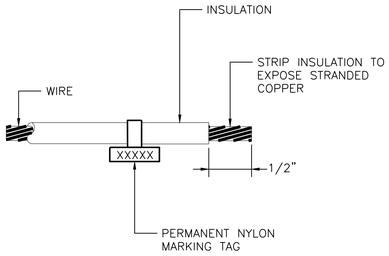
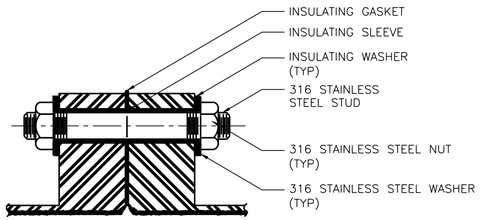
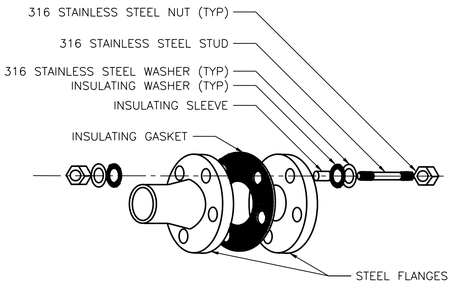


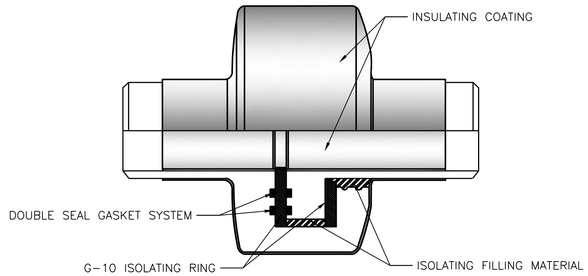
WIRE IDENTIFIER SCHEDULE	
STRUCTURE	LABEL
60" WELLFIELD TRANSMISSION MAIN	60" WTM
60" PCCP CONNECTION	60" PCCP
GALVANIC ANODE	ANODE

WIRE IDENTIFIER DETAIL (1 / CP.04)
SCALE: NTS

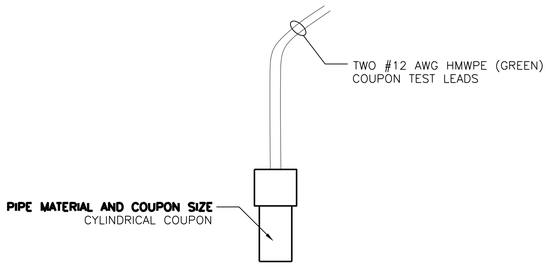




DIELECTRIC INSULATING FLANGE KIT DETAIL WITH SECTION VIEW (2 / CP.04)
SCALE: NTS



MONOLITHIC INSULATING JOINT DETAIL (3 / CP.04)
SCALE: NTS



COUPON DETAIL (4 / CP.04)
SCALE: NTS

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GLENN WILLSON Date: 6/2025
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CATHODIC PROTECTION DETAILS
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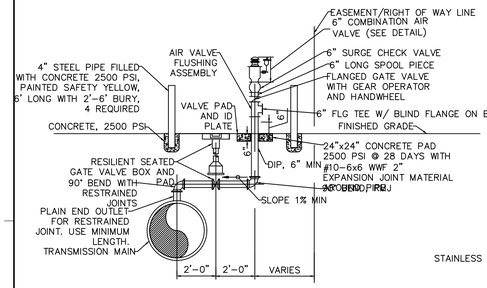
REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: CP-4
File Name: 23-0096 CP DETAILS.DWG
Scale: NTS
Sheet No.: 11 OF 14

Approved H-708-00264 James A. Meyer 10/8/2025



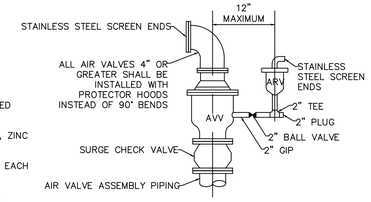
NOTES:

1. ALL UNDERGROUND PIPING AND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT, UNLESS OTHERWISE NOTED.
2. ALL NUTS AND BOLTS SHALL BE HEAVY HEAD HEX, CADMIUM, ZINC COATED, OR GALVANIZED GRADE B CARBON STEEL.
3. CONTRACTOR SHALL SUPPLY A DETAILED PIPING LAYOUT FOR EACH AIR VALVE INSTALLATION FOR THE ENGINEER'S REVIEW.
4. ALL FLUSHING TEES SHALL BE INSTALLED AT 90° AWAY FROM ISOLATION VALVE TO EACH ASSEMBLY.

TYPE I

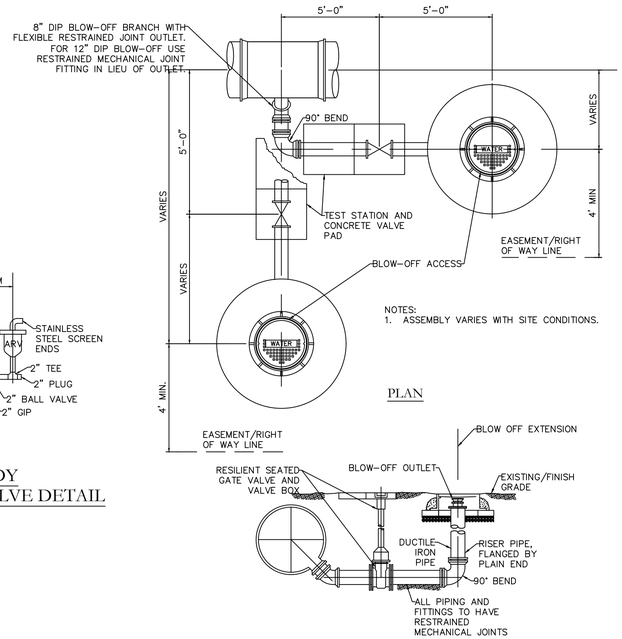
AIR VALVE ASSEMBLY DETAIL

NO SCALE



DUPLEX BODY COMBINATION AIR VALVE DETAIL

NO SCALE



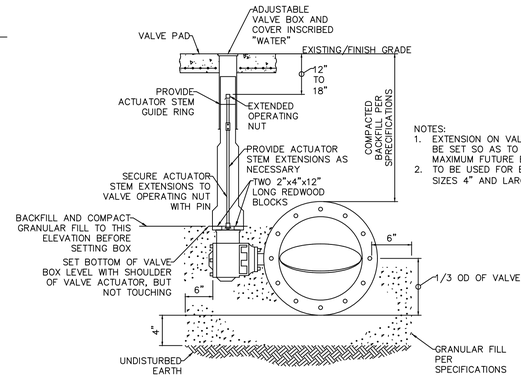
NOTES:
1. ASSEMBLY VARIES WITH SITE CONDITIONS.

PLAN

WATER MAINS

BLOW-OFF ASSEMBLY DETAILS

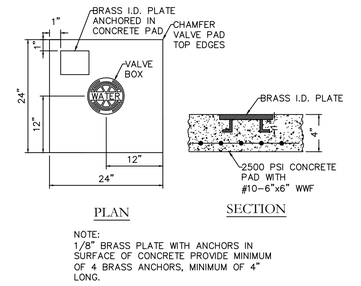
NO SCALE



NOTES:
1. EXTENSION ON VALVE BOX SHALL BE SET SO AS TO ALLOW FOR MAXIMUM FUTURE EXTENSION.
2. TO BE USED FOR BURIED VALVES, SIZES 4" AND LARGER.

BUTTERFLY VALVE DETAIL

NO SCALE

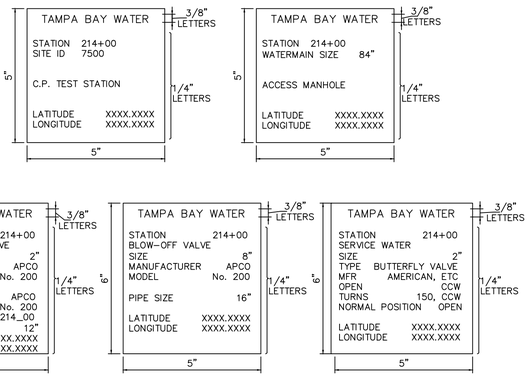


PLAN SECTION

NOTE:
1/8" BRASS PLATE WITH ANCHORS IN SURFACE OF CONCRETE PROVIDE MINIMUM OF 4 BRASS ANCHORS, MINIMUM OF 4" LONG.

VALVE PAD OR TEST STATION PAD DETAILS

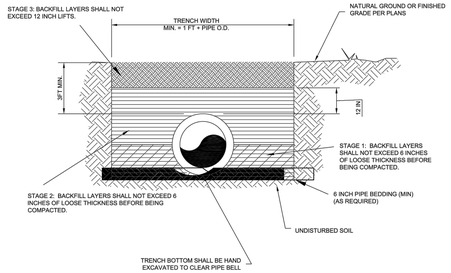
NO SCALE



NOTE:
DETAILS SHOW TYPICAL EXAMPLES. ACCURATE PROJECT SPECIFIC INFORMATION SHALL BE PROVIDED AT EACH LOCATION. PROVIDE LAT/LON IN DEGREES, MINUTES AND DECIMAL SECONDS.

I.D. PLATE DETAILS

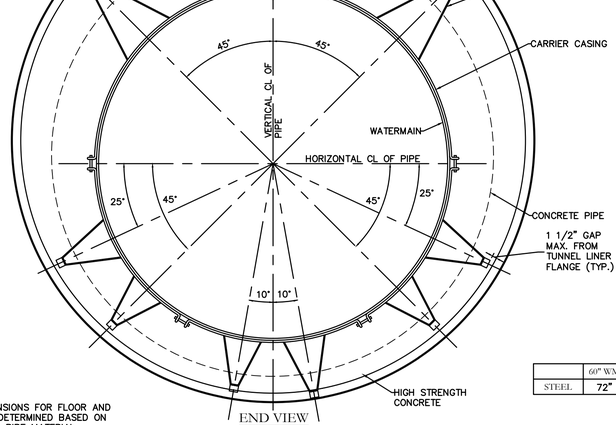
NO SCALE



NOTES:
1. BEDDING: 6 INCHES BEDDING (MIN) AS REQUIRED. IN THE EVENT UNSUITABLE OR UNSTABLE SOIL IS ENCOUNTERED, REMOVE IT AND REPLACE WITH MATERIAL MEETING AASHTO SOIL CLASSIFICATION A-1, A-2, OR A-3.
2. STAGE 1: ADEQUATE COMPACTED FILL SHALL BE PLACED ABOVE THE BEDDING MATERIAL AND BENEATH THE HAUNCHES OF THE PIPE. BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED.
3. STAGE 2: BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) TO A POINT 1 FT ABOVE THE PIPE (OR AS STATED IN THE SPECIFICATION).
4. STAGE 3: BACKFILL LAYERS SHALL NOT EXCEED 12-INCH LIFTS. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) OR AS STATED IN THE SPECIFICATION

TRENCH DETAIL BACKFILL & COMPACTION

NO SCALE



END VIEW

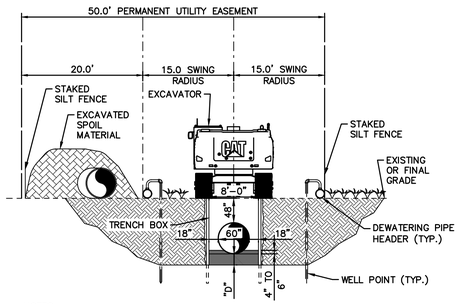
NOTES:
1. SPACING AND DIMENSIONS FOR FLOOR AND SKID RISER TO BE DETERMINED BASED ON PIPE DIAMETER AND PIPE MATERIAL INSTALLED.
2. PROVIDE ANNULAR SPACE GROUTING BETWEEN TUNNEL LINER AND CARRIER PIPE PER SPECIFICATIONS.
3. PROVIDE CONTACT GROUTING EXTERNAL TO TUNNEL LINER PER SPECIFICATIONS.

TUNNEL LINER INSTALLATION WITH CASING INSULATORS

NO SCALE

	60" WM	54" WM	42" WM
STEEL	72"	66"	54"

TUNNEL/CASING LINER SCHEDULE



NOTES:
1. EXCAVATED SPOIL MATERIAL WILL BE TEMPORARY. MATERIAL WILL BE USED FOR BACKFILL MATERIAL IN TRENCH OR REMOVED FROM THE SITE.
2. ALL DISTURBED AREAS WILL BE RESTORED TO EXISTING GRADE.

TYPICAL TRENCH SECTION A

NO SCALE

PROJECT MANAGER: NITA M. NAIK, P.E.
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NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

TAMPA BAY WATER STANDARD DETAILS

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: D-1

File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: NTS

Sheet No. 12 OF 14

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Jayna S. Horton
10/8/2025

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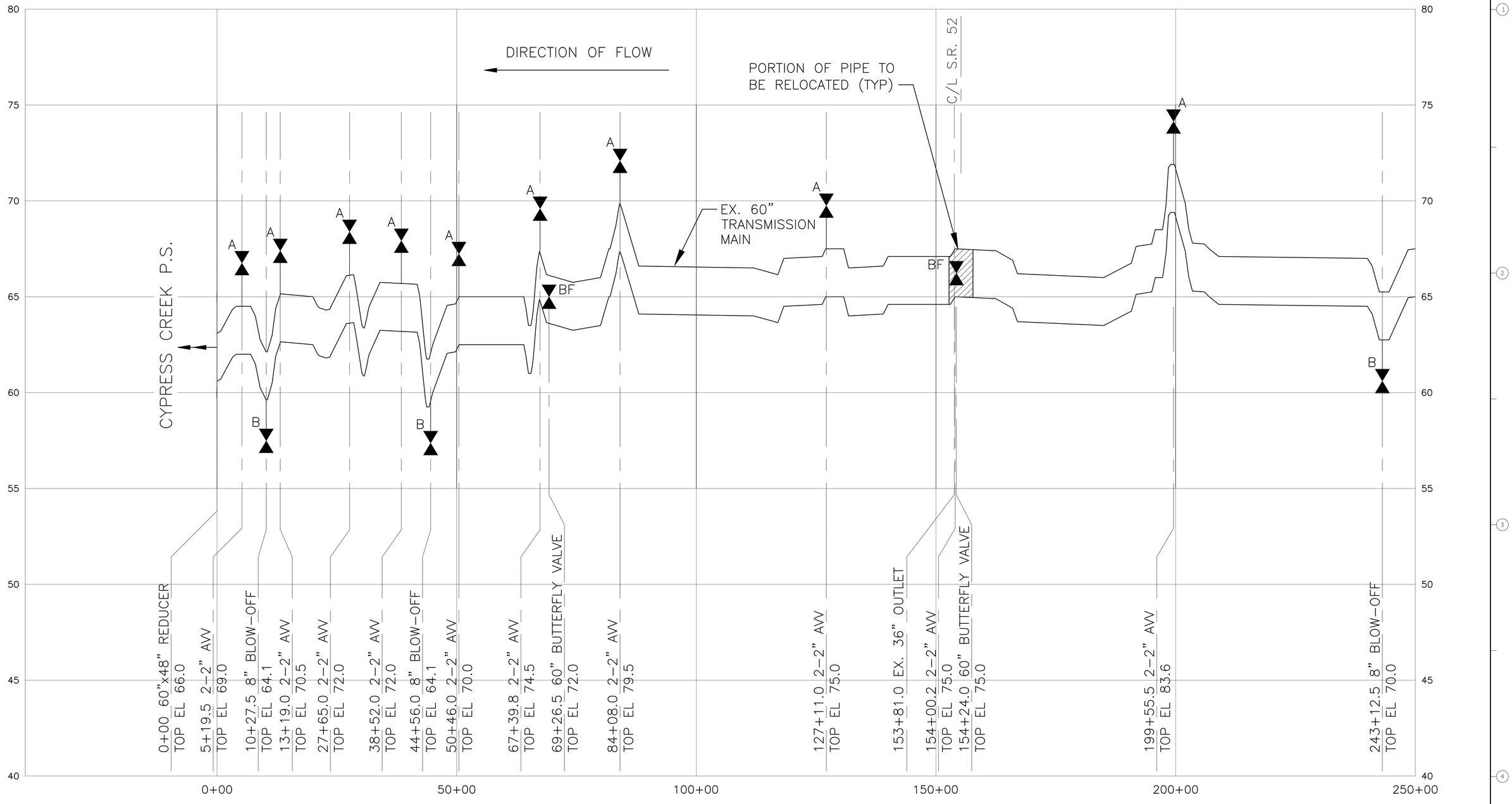

NOTE:

1. THIS PROFILE IS INTENDED FOR SHOWING THE APPROXIMATE LOCATIONS OF EXISTING APPURTENANCES AS RELATED TO REMOVAL OF WATER FROM WITHIN THE PIPE DURING CONSTRUCTION. THE ELEVATIONS OF THE 60" WATER TRANSMISSION MAIN FOR TAMPA BAY WATER WAS BASED ON THE FOLLOWING RECORD DRAWINGS: PROJECT NO. 404-78-0153 PREPARED BY CDM (5-19-81).
2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JHORTON\D1402567\GDT-PLTS-DETAIL_SHEET.DWG - D-2 - PLOTTED 6/12/2025 4:03 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

TBW Project No.: 07153

Sheet Designation: D-2

Sheet No.: 13 OF 14

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1-798-00264
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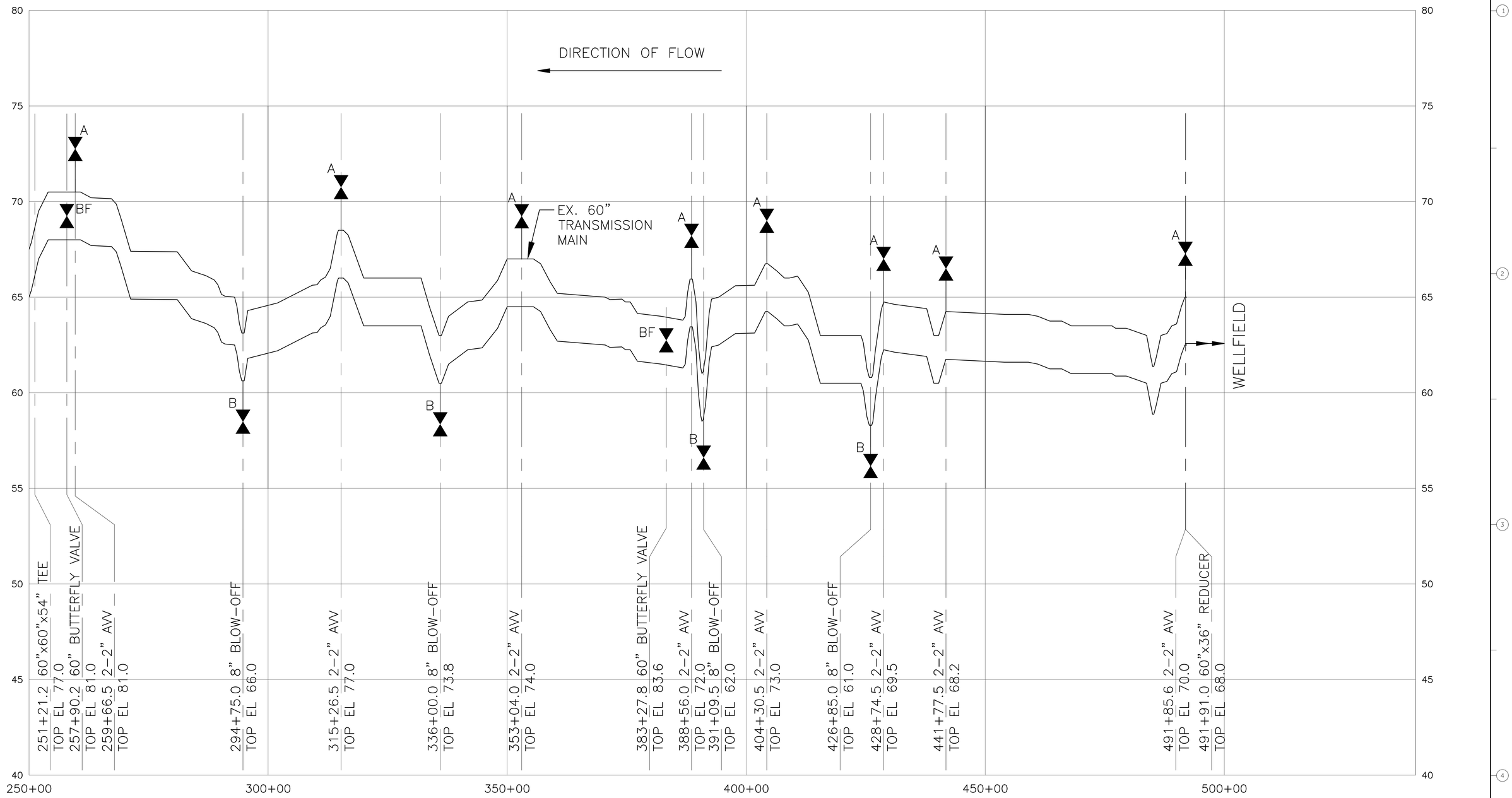

NOTE:

1. THIS PROFILE IS INTENDED FOR SHOWING THE APPROXIMATE LOCATIONS OF EXISTING APPURTENANCES AS RELATED TO REMOVAL OF WATER FROM WITHIN THE PIPE DURING CONSTRUCTION. THE ELEVATIONS OF THE 60" WATER TRANSMISSION MAIN FOR TAMPA BAY WATER WAS BASED ON THE FOLLOWING RECORD DRAWINGS: PROJECT NO. 404-78-0153 PREPARED BY CDM (5-19-81).
2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GDT-PLTS-DETAIL-SHEET.DWG - D-3 - PLOTTED: 6/12/2025 4:03 PM BY HORTON, JAYNA

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Design By: JH Date: 06/12/25
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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: D-3

File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

Sheet No. 14 OF 14

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SEE THE PERMIT - PART 2: Engineer responsible for inspection, PART 3: Completion date, PART 4: General Provisions, PART 5: Special Provisions.

SPECIAL PROVISIONS

This Permit subject to the following provisions, conditions and stipulations: This Permit issuances DOES NOT in any way approve the applicant's plan.

1. **Notification:** Contact the Florida Department of Transportation (FDOT) 48 hours before starting construction. (A pre-construction meeting and **liability insurance is required for all permits –see Permit Category, Permit page 1, part 1 Permit Information).**

   Contact: James Meyer, Permits Manager OR Brooksville Operations Program Engineer 16411 Spring Hill Dr. Brooksville, FL.34604 * 352- 848-2600 Monday -Thursday 7:00 A.M. to 5:30 P.M.

2. **Work and Material Standards -Specifications:** ***The FDOT standards, specifications and Permit take priority over the permittee's plans.*** All construction work and materials must (mandatory) be FDOT certified and in conformance with the latest edition of the FDOT ***Standard Plans for Road and Bridge Construction (Standard Plans), Utility Accommodation Manual, Standard Specifications (Spec.s), Florida Design Manual*** and ***Flexible Pavement Design Manual for New Construction and Pavement Rehabilitation.***
3. **Maintenance of Traffic:** All Maintenance of Traffic (TTC) signs and markings (including for bicycles, sidewalks and pedestrians), for lane/road closures, detours and right of way work for construction and/or maintenance must be in conformance with the ***Standard Plans 102 - 600 series (use appropriate SP for the work type - multi or two lanes, urban or rural roadways).*** All work only during daytime unless otherwise approved, and off-peak work hours may be required. All night work or overnight MOT must be approved by the FDOT. Submit lane closure calculations as required. All MOT must be set up and maintained by a certified MOT work site safety supervisor.
4. **Driveway/Connection Design:** The driveway must be in conformance with the ***Standard Plans 000-515*** (Rural or Urban) including the radius, slopes and remove/replace the paved shoulder in front of the driveway (see Pavement Structure) to a matching roadway structural section. The driveway profile grade maximum is 10% for commercial and 28% for residential. Urban flared driveway with sidewalk must have the correct walkaround, flares, slopes, ramps and detectable warnings. See ***Standard Plans 522-001, 522-002 and 000-515 sheets 2,3,4 of 7.***
5. **Roadway Widening Design:** All rural or urban roadway widening for more lanes in conjunction with a driveway must match existing roadway and slope (usually 2-3%) with a 11 feet wide outside paved shoulder (usually 5 feet wide with 6% slope paved and 6 feet wide 6% slope unpaved shoulder, left turn lane shoulders match existing median shoulders). The shoulder front ditch slope is usually 1 (rise) to 6 (run). Maintain clear recovery zone distances and if required use guardrails and handrails for excessive slopes and obstructions. The widening approach solid/skip striping pattern must be in conformance with ***Standard Plan 711-001, sheet 5-14***.
6. **Drainage - Mitered End Sections:** All project drainage should be away from the FDOT roadway and right-of-way. The connection must drain away from the roadway for at least 5 feet. A Drainage Permit or exemption is required for any drainage work within or discharge to the FDOT right of way. The driveway and mitered end section ***(Standard Plan 430-022)*** including (correctly sized with beveled/radii corners and splash pads), pipe size and type, shoulder width and 1v:4h side slopes must be in conformance with ***Standard Plan 430-022, 430-001 and 000-515.*** All other drainage work and materials must be in conformance with F.D.M. and ***Standard Plan 425-001 to 524-001***.
7. **Construction Stages –Time Period:** The permittee's engineer is responsible for inspection. All construction must be done in stages with each stage (for example) subgrade, base, etc. inspected and approved by the FDOT (or the inspection must be waived by the FDOT) before starting the next stage. Complete the construction in a timely manner and within one year of issuance as noted on the permit.
8. **Turn Lanes - Sight Distance:** The median opening and spacing, left turn lane transitions, queues and lengths must be in conformance with FDM. The sight distance and length must be in conformance with FDM***.***
9. **Signs and Striping:** All traffic signs, striping, raised pavement markers and pavement markings must be in conformance with FDOT Standard ***Plan 11000 and 17000 series***. See ***Standard Plan*** for pavement markings, thermoplastic and traffic signs. Apply thermoplastic 14 days (no wait for concrete) after paving and apply interim striping until thermoplastic is applied. Remove existing striping by mill and resurface with matching asphalt (water blasting and grinding are not allowed). A rural commercial driveway must have at a minimum a high intensity reflective 36" R1-1 STOP sign with a 24" wide stop bar located between 12-25 feet away from the roadway.
10. **Sod and Erosion Control**: All areas in the right of way disturbed during construction must be restored, compacted, sodded and watered in conformance with the ***Standard Specifications, Section 104*** and ***Standard Plan 570-001, 570-010.*** Excess shoulder lime rock must be removed or mixed with a sufficient amount of soil and fertilizer to ensure growth. During construction install erosion control, silt fences, turbidity barriers etc. in conformance with ***Standard Specifications, Section 104***, NPDES/DEP and SWPPP (Stormwater permit/plan) requirements.
11. **Pavement:** The mainline widening etc. (and the mainline shoulder in front of the connection must be removed and replaced), MUST match the mainline thickness, type of stabilization, base and structural course, friction course (FC), and aggregates etc. (course or fine graded), unless otherwise directed by the FDOT/engineer. Submit approved testing laboratory certification for the design mix and density test results. The density tests must be a minimum of 3 per section of widening for each lift, unless otherwise directed by the FDOT/engineer. The paving seam lines must align with striping, and if needed use compatible mill and overlay, resurface, leveling etc., over entire existing roadway to reduce old/new pavement joints. **Driveway Pavement:** The minimum driveway pavement section: (this driveway pavement is not for the mainline and does not replace a better or match existing pavement or as specified by the FDOT/engineer. For roadway widening see Pavement Design Manual design criteria; traffic volumes, rural/urban, multi/single lanes, loads, soil, speed etc.):

    A. Sub-base: Stabilized 12 inch below the base* or ***Skip to Option A-1***
    Base: 8-inch-thick primed lime rock (double course – 4-inch lifts) or B-12.5 (Superpave asphalt base) if required
    Surface: 1.5-inch-thick asphalt type SP or type S (and **FC shoulder as needed) (and/or match existing structural & FC)

    A-1. Sub-base: No sub grade is required
    Base: 12-inch-thick primed lime rock (6-inch lifts) * or B-12.5 (Superpave asphalt) if required (1.5 x 8" = 12" base)
    Surface: 1.5-inch-thick asphalt surface type SP or type S and **FC as needed (and/or match existing structural & FC)

    or B. Sub-base: No compaction specified*
    Base: 8-inch-thick Sand Asphalt Hot Mix (triple course – 3 lifts) 800 lb. stability
    Surface: 1.5-inch-thick asphalt type SP or type S and **FC as needed

    or C. 6-inch-thick of FDOT approved Class I 3000 psi concrete (6" for traffic bearing & 4" for sidewalk) on suitable soil with expansion joints as required. See ***Standard Specifications 346 and 350***

    * The sub-base (stabilization) must extend 4 inches beyond the base above and/or the base must extend 4 inches beyond the pavement section above (or 4 inches beyond back of curb)
    **The FC may not be required on low volume/speed driveways beyond the mainline shoulder, providing the mainline and driveway surface difference ("lip") does not exceed the limit.

12. **Lime rock Base:** The lime rock base material must be from a FDOT approved source. At no time must a lift course thickness exceed 6 inches. The lime rock base must be in conformance with FDOT ***Design Standards 514*** and ***Standard Specifications, Section 200.*** The Type B-12.5 asphalt black base may be required by the FDOT to expedite work or for wet conditions etc.
13. **Site/Other Approvals/Permits**: The permittee must comply with all federal, state, county and local ordinances with proof of local site plan approval, Southwest Florida Water Management District and Turnpike District permits/approval, utility company notifications/locates and coordination with other FDOT projects etc. This connection must not be of any cost to the FDOT or interfere with other or FDOT projects.
14. **Easements/Dedications:** The permittee/engineer must ensure that all easements and dedications are recorded and submitted to FDOT before final acceptance of the permit.
15. **Quality Control and Acceptance:** The permittee and/or permittee's engineer is/are responsible for inspecting the work and materials and meet all FDOT indices, standards, specifications, conditions, qualified/approved/certified products and provisions of the permit. Submit a ***Record Drawings Report by Permittee's Professional Engineer*** (FDOT form 850-040-19) and AS BUILTS (if needed). The permit issuance

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Inspector

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does not relieve the permittee, contractor and engineer from complying with FDOT requirements. The FDOT must accept the driveway BEFORE the driveway may be used. G:\PermitACCESS\Brooksville Forms\Permit Attachments - FDOT Attach this for permit issueance\PERMIT ATTACHMENT Special Provisions.doc

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Looking south at State Road 52



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Looking east at State Road 52



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Looking west at State Road 52



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Looking south at State Road 52



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Looking north at State Road 52



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Meeting Minutes

Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict Tampa Bay Water Project No. 07153 – Coordination Meeting

July 30, 2025
3:30 PM– 4:30 PM
Teams Meeting

Item	Action On
1. **Attendees** –	
a. Tampa Bay Water: Danielle Keirsey; Justin Fox	
b. FDOT: Sally Prescott; Rohan Abraham; Mark Chianese; Joe Goddard; Tyler Matthews; James Meyer; Ashley Miller	
c. Wade Trim: Nita Sharma; Jayna Horton	
2. **Discussion**	
a. The attendees went through introductions.	
b. Danielle Keirsey ran through the initial considerations Tampa Bay Water focused on during the design of the 60" transmission main replacement across SR 52. The approach to remove the existing 60" pipe up until the current FDOT ROW and fill and grout the pipe under the roadway was taken to minimize impact to SR 52. Danielle also highlighted the intention of Tampa Bay Water to complete the relocation prior to FDOT beginning construction, therefore leaving the pipe filled and grouted for FDOT to remove as they move through with their project. This mindset was also taken to eliminate multiple contractors in the field for more efficient construction.	
c. Sally Prescott brought up the concern of leaving the existing 60" transmission main in the roadway initially came from the Maintenance department. She also posed the question of constructability and price issues if the pipe were to remain filled and grouted in the roadway.	
d. Tyler Matthews and Joe Goddard both confirmed if the plans noted the grouted pipe, FDOT would have the necessary equipment on site to remove. This should not affect constructability of the FDOT project. Ron Abraham noted the necessity of the Project Manager accepting the additional cost.	Wade Trim and Tampa Bay Water to adjust CLSM specification prior to bidding.

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Item	Action On
e. Justin Fox stated Tampa Bay Water would be willing to do CLSM grout to make it easier for the contractor to excavate. Nita Sharma confirmed the grouted pipe would be excavatable. f. Sally Prescott also asked about the additional MOT required for pipe removal. Tyler Matthews responded that the pipe removal would not heavily impact current MOT plans and the FDOT project could be phased to limit traffic. g. Tyler Matthews mentioned looking into a UWHCA agreement for handling the cost of pipe removal. Justin Fox responded that Tampa Bay Water would have to look into the original agreement between FDOT and Tampa Bay Water when the existing 60" pipe was constructed. The pipe pre-dates current FDOT regulations. h. Danielle Kiersey states Tampa Bay Water did not anticipate this additional cost for pipe removal and would have to discuss internally before committing to anything. i. Sally Prescott will remain the point of contact. j. Note after the meeting FDOT confirmed that FDOT will absorb the cost of pipeline removal withing FDOT's roadway contract. See attached email dated 7/30/25.	Sally Prescott to send the UWHCA to Tampa Bay Water.

"The above notes represent the writer's understanding of the items discussed and conclusions reached at the meeting. Please notify the writer immediately if your understanding is different. A clarification or correction will be issued to all parties. This document will be considered accurate if no corrections or clarifications are received within one week of issuance."

Minutes by,
Wade Trim, Inc.

Jayna Horton
Engineer
cc: All Attendees

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2025-H-798-00264
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Sharma, Nita

From: Danielle Keirsey <dkeirsey@tampabaywater.org>
Sent: Thursday, July 31, 2025 1:53 PM
To: Prescott, Sally; JFox
Cc: Matthews, Tyler; Dunn, Mark; Sharma, Nita
Subject: RE: FPN 256334-3 // SR 52 - Water Transmission Main removal work
Attachments: E-301-AWWA-C301-Product-Sheet2.pdf

This message originated outside of Wade Trim

Good afternoon Sally, Thank you for coordinating yesterday's meeting and for following up. This option would be preferred by Tampa Bay Water.

The existing pipe is a pre-stressed concrete cylinder pipe (PCCP). I've attached a modern cutsheet for this pipe material. The actual pipe was likely manufactured by Price Brothers or Interpace, so the weights may be slightly different than what is listed here. We don't have any known asbestos pipes in our system – it wasn't used in that large of pipe diameters. Our record drawings for this pipe are available for download using this link https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:81739d38-8ce3-4c70-8001-cbe606bf9c32. I believe sheet M-7 is where we cross SR 52.

We propose using FDOT's standard specification for excavatable flowable fill (strength 100 psi) – **Section 121** https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/specifications/by-year/2017/july-2017/ebook/717ebook.pdf?sfvrsn=e0b7d16b_0 .

As noted during yesterday's call, we are packaging up our 100% design plans and specifications for bidding. We will update the plans to specify filling the old pipe per FDOT's flowable fill spec section 121.

Once you have an opportunity to review, please let me know if you have any follow up questions.

Thank you,

Danielle Keirsey, PMP
Senior Project Manager - Engineer

TAMPA BAY WATER
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Tampa Bay Water
2575 Enterprise Road, Clearwater, FL 33763
O: 727.791.2377 | **M:** 813.295.3732
dkeirsey@tampabaywater.org | tampabaywater.org

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James A. Meyer
10/8/2025

From: Prescott, Sally <Sally.Prescott@dot.state.fl.us>
Sent: Wednesday, July 30, 2025 4:20 PM
To: Danielle Keirsey <dkeirsey@tampabaywater.org>; Justin Fox <jfox@tampabaywater.org>
Cc: Matthews, Tyler <Tyler.Matthews@dot.state.fl.us>; Dunn, Mark <Mark.Dunn@dot.state.fl.us>; Sharma, Nita <nsharma@wadetrim.com>
Subject: FPN 256334-3 // SR 52 - Water Transmission Main removal work

Danielle & Jusn ,

Our Maintenance and Construco n teams discussed the situao n a8er the meen g and are considering having our roadway contractor to absorb the removal work within our roadway contract, at FDOT's expense. Could you provide us with more informao n about the pipe material and the details/specificao ns of the grout material / requirements that you will use, and any other pern ent informao n that we can provide to our contractor? Is there potena l asbestos?

Thank you for your assistance.

Sally

Sally A. Prescott
Utility Project Manager, GEC

FDOT District 7 Utilities
11201 N. McKinley Dr. MS 7-820
Tampa, FL 33612
Phone: 813-975-6784
Hours: 7:30a to 4:30p
TUES/WED/THURS
(Off on Mon/Fri)

For upcoming project information in FDOT District 7, visit: http://www.fdottampabay.com/

Disclaimer

Tampa Bay Water scans all email for viruses, worms, and inappropriate material and blocks email deemed harmful or inappropriate. Email service is provided to Tampa Bay Water users for business purposes and is subject to public records laws.

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EXHIBIT C

FRAC-OUT CONTINGENCY PLAN

The specific objectives of this plan are to:

- Minimize the potential for a frac-out associated with microtunneling and directional drilling activities.
- Provide for a timely detection of frac-outs.
- Protect environmentally sensitive areas.
- Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite, and
- Ensure that all appropriate notifications are made immediately public, project management and personnel, and environmental agencies.

1.0 Best Management Practices (BMP)

The construction team (Team) will implement all Best Management Practices (BMPs) described in this section to minimize the potential for adverse environmental impacts during the Microtunneling Process. BMPs for erosion control within the staging areas will be implemented and properly maintained at all times during construction of the upland entry/exit pits and drilling operations to prevent siltation and turbid discharges in excess of State water quality standards in accordance with Florida Statutes 62-302 F.A.C. Methods will include, but are not limited to the use of stalked hay bales, staked filter cloth, sodding, seeding and mulching as appropriate; staged construction; and the installation and maintenance of turbidity screens around the immediate project site when adjacent or near to open water.

To provide an additional level of resource protection, the volume of bentonite in the drill string will be monitored at all times during the trenchless operations.

All entry and exit areas have been located in uplands. All construction staging will occur in these upland areas. Exit and entry pits are also a part of the work areas and will be enclosed by silt fences and hay bales. A spill kit will be onsite and used if a frac-out occurs. A vacuum truck will be readily available onsite or offsite within 15 minutes of deployment prior to and during all drilling operations. Containment materials (hay bales, silt fencing, sandbags, frac-out spill kits, etc.) will be staged onsite at locations where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (hay bales or sedimentation fences) between the bore site and the edge of the wetland will be constructed, prior to drilling, to prevent released bentonite material from reaching the water/wetlands.

The site supervisor/foreman will ensure all waste materials are properly containerized, labeled, and removed from the site to an approved disposal facility by personnel experienced in the removal, transport, and disposal of drilling mud.

The site supervisor/foreman will be familiar with all aspects of the drilling activity, the contents of this Plan and the conditions of approval under which the activity is permitted to take place. The site supervisor/foreman will have the authority to stop work and commit the resources (personnel and

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equipment) necessary to implement this plan. The site supervisor/foreman will assure that a copy of this plan is available (onsite) and accessible to all construction personnel.

2.0 Equipment

The site supervisor/foreman will ensure that:

- All equipment and vehicles are being checked and maintained daily to prevent leaks of hazardous materials.
- Spill kits and spill containment materials are available onsite at all times and that the equipment is in good working order.
- Equipment required to contain and clean up a frac-out release on land or underwater, including vacuum devices and hoses, will either be available at the work sire or readily available at an offsite location within 15 minutes of the bore site.
- Silt Fences, absorbent pads, and plastic sheeting for placement beneath motorized equipment will be available should any visual evidence of engine fluids leakage be observed.
- Water containing mud, silt, bentonite, or pollutants from equipment washing or other activities will not be allowed to enter the adjacent wetlands. The bentonite used in the drilling process will either be disposed of at an approved disposal facility or recycle in an approved manner. Other construction materials and wastes will be recycled, or disposed of, as appropriate.
- A vacuum truck will be staged at a location from which it can be mobilized and relocated so that at any place along the drill shot can be reached by the apparatus within 10 minutes of a frac-out.

3.0 Training

Prior to the start of construction, the site supervisor/foreman will ensure that crew members receive training in the following:

- The provisions of the trenchless Plan, equipment maintenance and site-specific permit and monitoring requirements.
- Inspection procedures for release prevention and containment equipment and materials.
- Contactor/crew member responsibilities in the event of a release.
- Operation of release prevention and control equipment and the location of the release control materials, as necessary and appropriate.
- Protocols for communication with agency representatives who might be onsite during the cleanup effort.

4.0 Frac-out Monitoring

The trenchless plan will be available on site and the following procedures will be followed each day, prior to the start of work. The site supervisor/foreman will be onsite at any time that drilling is occurring or is planned to occur. The site supervisor/foreman will ensure that a job briefing meeting is held at the start of each day or drilling to review the plan and appropriate procedures to be followed

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in case of a frac-out. Questions will be answered and clarification given on any points of concern.

5.0 Pressure Monitoring

Drilling pressures will be closely and continuously monitored so they do not exceed those needed to penetrate the formation. Pressure levels will be set at a minimum level to prevent frac-outs. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added.

Once the drill rig is in place and the drilling begins, the drill operator will stop work whenever the pressure in the drill rig drops or there is a lack of returns in the entrance pit. At this time the site supervisor/foreman will be informed of the potential frac-out. The site supervisor/foreman and the drill rig operator(s) will work to identify the likely location of the frac-out. The location of the frac-out will be recorded and notes made on the location and measures taken to address the concern. The following subsections will be adhered to when addressing a frac-out situation.

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. The clean-up of all spills will begin immediately. The Management & Safety Department will be notified immediately of any spills and will be consulted regarding clean-up procedures. A spill kit will be onsite and be used if a frac-out occurs. A vacuum truck, hose(s), and containment materials such as straw bales, will also be onsite or offsite within 15 minutes of deployment prior to and during all operations. The information will include the location of the frac-out and an estimate of the volume of drilling fluids accidentally released. See section 6.0, Notification, for all agency points of contact, as well as all information to be included in written reports.

The site supervisor/foreman will be immediately notified. In the event of a frac-out, the site supervisor/foreman will conduct an evaluation of the situation and direct recommended actions in accordance with the following sections. The SWC site supervisor/foreman will maintain communication with the FDEP contact to provide a schedule of the activities if requested.

6.0 Frac-out Contingency Plan

The response of the field crew to a frac-out release will be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that pose additional threats to sensitive resources will be taken, as follows:

- Trenchless activities will stop immediately.
- The machine will be pulled back to relieve pressure on frac-out.
- The site supervisor/foreman will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications are made.
- The site supervisor/foreman will evaluate the situation and recommend the type and level of response warranted, including the level of notification required.
- The site supervisor will notify all agency contacts identified in Section 6.0, Notification.
- If the frac-out is minor, easily contained, has not reached the surface and is not threatening

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sensitive resources, the viscosity of the drilling fluids may be increased and/or a leak stopping compound previously approved by the Florida Department of Environmental Protection (DEP) will be used to block the frac-out. If the use of the leak stopping compound is not fully successful, the bore stem will be redirected to a new location along the desired drill path where a frac-out has not occurred.

- lf a frac-out has reached the surface, any material contaminated with bentonite will be removed by hand, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand will be placed, and the area returned to pre-project contours.
- If a frac-out occurs on land, reaches the surface and becomes widespread, the site supervisor/foreman will authorize a readily accessible vacuum truck and equipment stored offsite to be mobilized. The vacuum truck may be positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot or may be pulled by a piece of equipment so that contaminated soils can be vacuumed up.

6.0 Notification

In the event a frac-out reaches a wetland or water source, the site supervisor/foreman will notify the Engineer of Record and immediately notify the appropriate resource agencies. All agency notifications will occur within 24 hours and proper written documentation will be submitted to agencies within 10 business days. The following information will be provided in these written reports:

- Name and telephone number of person reporting.
- Location of the release.
- Date and time of the release.
- Type, quantity, and estimated size of drilling fluid release.
- How the release occurred.
- The type of activity that was occurring around the area of the frac-out.
- Description of any sensitive areas and their location in relation to the frac-out.
- Description of the methods used to clean up or secure the site.
- Listing of the current permits obtained for the project.

7.0 Contingency Mitigation Plan

Following the clean-up of a frac-out, the Team will conduct an evaluation of the situation and coordinate with all environmental regulatory agencies to develop a mitigation plan to fully offset any impacts to the wetlands. The plan will be based on a functional assessment that describes how the proposed mitigation would offset both direct and indirect impacts to these resources.

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

FL LA6667249

Wade Trim, Inc.
201 N. Franklin St, Suite 1350
• Tampa, FL 33602
813.882.4373 • www.wadetrim.com

September 24, 2025

Florida Department of Transportation

Attention: Michael G. Mcclurg
Permit Coordinator

Re: Response to First Request for Information (RFI)
Florida Department of Transportation
Utility Permit 2025-H-798-00715
Tampa Bay Water Project No. 07153 Cross Bar Ranch Wellfield Water Transmission Main Relocation

Dear Mr. Mcclurg:

The purpose of this letter is to respond to the Additional Comments received for the above-mentioned project on **07/21/2025** and to notify the Reviewer of a change in the proposed pipeline alignment**.** The pipeline shift is necessary to avoid wetland impacts. The pipeline casing will still extend past the existing and proposed FDOT roadways as required. In order to satisfy FDOT's request for the 60" transmission main to be relocated prior to the letting of Project 256334-3, removing potential wetland impacts is imperative. In regard to the RFI comments below, questions are included in regular font and responses are in **bold** font.

1. Comment: Please include the following FDOT Notes: "Tampa Bay Water will continue to maintain ownership of the grouted, out-of-service 60 water transmission main until roadway project 256334-3-52-01 is let, where it will be removed during roadway construction, by the UAO." "Contact FDOT James Meyer 48 hours before working in FDOT R/W 352-848-2600, to activate permit." "Sidewalks should NOT be closed more than 2 weeks for the duration of the permit. The contractor will need to provide accommodation for pedestrians." "Restore FDOT R/W with Sod only." "Contact Scott Brown Pasco County for locates of lighting fiber and signal conduits: Pasco County 727-849-6845."

   Response: Above-listed notes added to sheet G-2 under General Notes and FDOT Notes.

2. Provide MOT Technician "Name, Phone Number, Certification, Email Address".

   Response: Contact to be determined after project is bid later this year. Contact will be provided to FDOT prior to construction within FDOT ROW as required.

3. For permit close out once construction is completed: Enter in the FDOT's One Stop Permitting – "Certify Construction Complete" or provide, original signed copy of Permit Application (pg. 3 of 3) and As-builts. Once construction is completed for permit close out.

   Response: Acknowledged. Wade Trim and Tampa Bay Water will follow the above-mentioned methods for ensuring proper permit closeout once construction has completed.

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

4. Sheet C-2: Was the 167' of 60" WM to remain in place and grout-filled coordinated with FDOT #256334-3 project manager?

   Response: Yes, coordination with the FDOT #256334-3 project manager has been ongoing and this method has been discussed and approved during the meeting held on July 30, 2025. See attached meeting minutes for reference (Exhibit D). The corresponding fill and grout callout has also been updated on sheet C-2 to reference FDOT specs as agreed upon.

5. Please provide the following: Microtunnels under FDOT roadways there must be a contingency plan and dewatering plan. Contingency should have an emergency on call MOT/TTC contractor and an emergency Asphalt contractor to restore the roadway if something should happen to the Microtunnel.

   Response: This note has been added to sheet G-2 for the contractor.

6. Provide Contingency Plan and Dewatering Plan before starting work in FDOT R/W.

   Response: The Frac Out Contingency plan has been added to the permit submittal as Exhibit C. The Contractor's dewatering plan will be provided prior to construction.

7. FDOT recommends GPR be performed along path of microtunnel minimum of 10' on either side of the casing pipe prior to pre-drill meeting with FDOT inspector which is required.

   Response: Acknowledged. General note 2 on sheet G-2 requires the contractor to locate all the utilities prior to construction. This note has also been added as part of the FDOT notes in the plan set.

Very truly yours,

Wade Trim, Inc.



Nita Sharma
Project Manger

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

McClurg, Michael G.

From: Meyer, James
Sent: Thursday, August 14, 2025 11:16 AM
To: McClurg, Michael G.
Subject: FW: 256334-1: SR 52 and Tampa Bay Water (Project No. 07153)
Attachments: Cross Bar Ranch Meeting with FDOT Minutes_073025.pdf

Thank you

James Meyer
Permit Manager
Brooksville Operations
16411 Spring Hill Drive
Brooksville, FL 34604
Office 352-848-2600x2610
FDOT-OSP v3.0 (All Types) - One Stop Permitting **(Works Best in Chrome)**

From: Prescott, Sally <Sally.Prescott@dot.state.fl.us>
Sent: Thursday, August 14, 2025 9:51 AM
To: Abraham, Rohan <Rohan.Abraham@dot.state.fl.us>; Chianese, Mark <Mark.Chianese@dot.state.fl.us>; Goddard, Joe <Joe.Goddard@dot.state.fl.us>; Matthews, Tyler <Tyler.Matthews@dot.state.fl.us>; Meyer, James <James.Meyer@dot.state.fl.us>; Miller, Ashley L. <AshleyL.Miller@dot.state.fl.us>
Cc: Sharma, Nita <nsharma@wadetrim.com>; Danielle Keirsey (dkeirsey@tampabaywater.org) <dkeirsey@tampabaywater.org>; Justin Fox <jfox@tampabaywater.org>; Nicole Thomas <nthomas@tampabaywater.org>
Subject: FW: 256334-1: SR 52 and Tampa Bay Water (Project No. 07153)

Forwarding.

Sally A. Prescott
Utility Project Manager, GEC

From: Sharma, Nita <nsharma@wadetrim.com>
Sent: Thursday, August 14, 2025 9:47 AM
To: Danielle Keirsey <dkeirsey@tampabaywater.org>; JFox <JFox@tampabaywater.org>; Nicole Thomas <nthomas@tampabaywater.org>; Prescott, Sally <Sally.Prescott@dot.state.fl.us>
Cc: Horton, Jayna <jhorton@wadetrim.com>
Subject: RE: 256334-1: SR 52 and Tampa Bay Water (Project No. 07153)

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

EXTERNAL SENDER: Use caution with links and attachments.

All,

Please see attached meeting minutes from the meeting held to discuss the pipe grout filling.

Sally- I did not have email addressed for the FDOT folks who were added to the call. Please forward to them.

Thanks,
Nita

Nita Naik Sharma, PE, Area Lead
One Tampa City Center, 201 N. Franklin St., Suite 1350, Tampa, FL 33602
813.882.4373 office
513.304.9246 cell

-----Original Appointment-----
From: Danielle Keirsey <dkeirsey@tampabaywater.org>
Sent: Thursday, July 24, 2025 4:24 PM
To: Danielle Keirsey; JFox; Nicole Thomas; Sharma, Nita; Sally.Prescott@dot.state.fl.us
Subject: 256334-1: SR 52 and Tampa Bay Water (Project No. 07153)
When: Wednesday, July 30, 2025 3:30 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

This message originated outside of Wade Trim

The purpose of this meeting is to discuss the grout filling and removal of Tampa Bay Water's 60" water main that crosses SR 52, within the limits of FDOT project 256334-1 and associated with right of way use permit application number 2025-H-798-00175 .

Sally, please forward this invitation to the appropriate FDOT staff.

Thank you,

Danielle Keirsey, PMP

Microsoft Teams Need help?

Join the meeting now

Meeting ID: 213 230 389 062 7

Passcode: d6Eo7ns6

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

Dial in by phone

+1 312-667-5662,,941221270# United States, Chicago

Find a local number

Phone conference ID: 941 221 270#

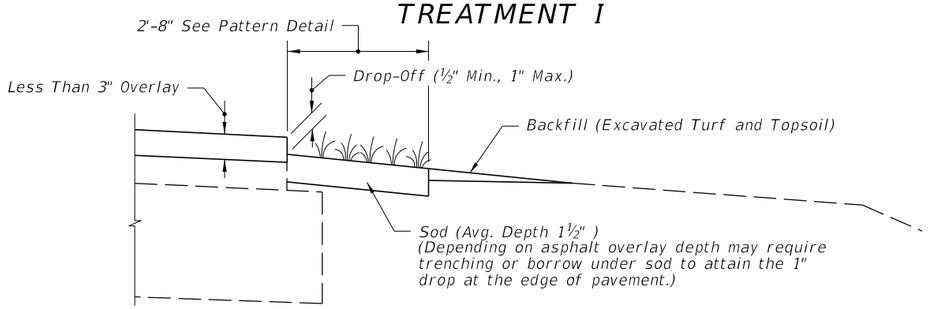
For organizers: Meeting options | Reset dial-in PIN
Org help

Disclaimer

Tampa Bay Water scans all email for viruses, worms, and inappropriate material and blocks email deemed harmful or inappropriate. Email service is provided to Tampa Bay Water users for business purposes and is subject to public records laws.

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

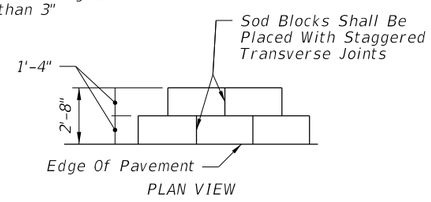
TREATMENT I



COMPLETED SHOULDER

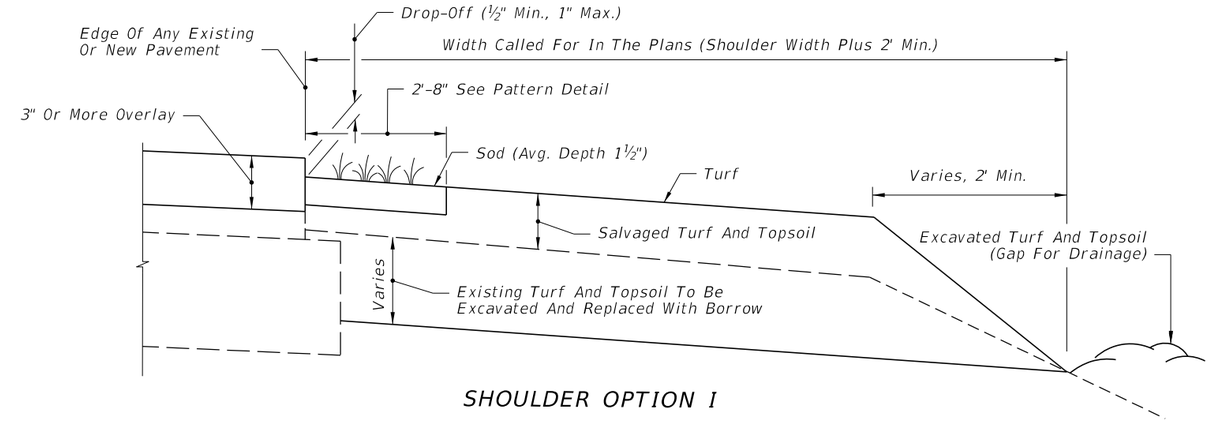
CRITERIA FOR USING TREATMENT I

Project___
- is resurfacing, widening and resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is less than 3"

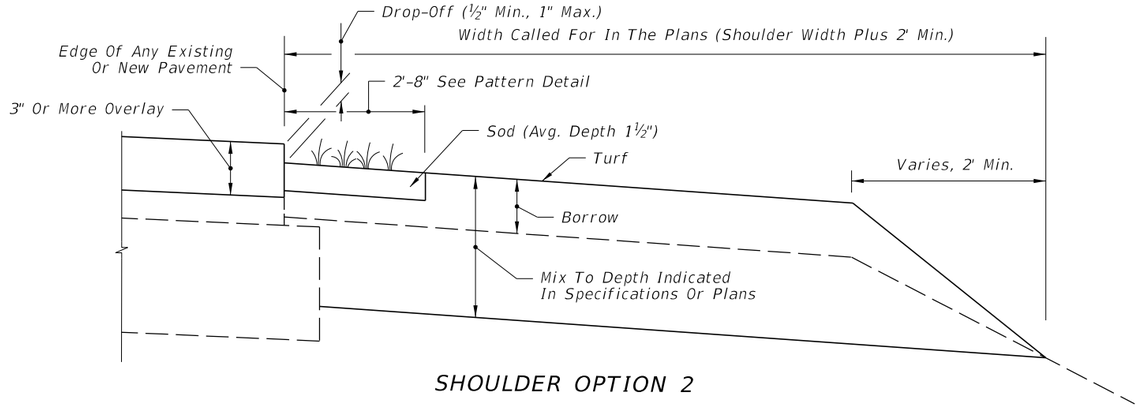


PATTERN DETAIL

TREATMENT II



SHOULDER OPTION I



SHOULDER OPTION 2

CRITERIA FOR USING TREATMENT II

Project___
- is resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is 3" or more

A SIMILAR TREATMENT MAY BE USED FOR PROJECTS THAT REQUIRE SHOULDER WIDENING. DETAILS ARE TO BE SHOWN IN THE PLANS.

GENERAL NOTES

1. Treatment I:

   If trenching under sod is necessary to achieve the required Drop-Off, excavated topsoil is to be used for filling voids and low areas at the edge of pavement or for flushing along the edge of sod. Excess material to be uniformly distributed over the shoulder.

2. Treatment II:

   A. Borrow must meet the requirements for a "Select" material in accordance with Index 120-001 and Specification 120.

   B. Borrow may be used in lieu of excavated turf and topsoil when economically feasible. There will be no additional payment for substituting borrow for excavated turf and topsoil.

3. Special attention is to be directed at achieving the required Drop-Off at the edge of pavement, within the dimension range shown.

4. Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.

5. Turf Establishment:

   A. Wildflowers destroyed by shoulder sodding and turf operations are to be reestablished under the seeding rates prescribed for permanent wildflower #2 Group shown by table on Index 570-001.

   B. Establish turf in accordance with Specification 570.

10/3/2023 1:57:39 PM

LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	SHOULDER SODDING AND TURF ON EXISTING FACILITIES	INDEX	SHEET
11/01/18					570-010	479 1 of 1

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

Florida Department of Transportation

Stormwater Pollution Prevention



Requirements for Regulated Activities

- Obtain and abide by Department of Environmental Protection (DEP) Generic Permit for Construction Activities.
  https://floridadep.gov/water/stormwater/content/guidance-and-web-links
- Obtain and abide by Water Management District permits, as applicable.
  https://www.swfwmd.state.fl.us/business/epermitting/environmental-resource-permit
- Obtain and abide by appropriate local permitting requirements.

For more information regarding NPDES Generic Permits for Construction Activities, please visit:
https://floridadep.gov/water/stormwater/content/construction-activity
To apply using the online FDEP Business Portal, please visit:
https://www.fldepportal.com/DepPortal/go/home

Contacts:

To report *illicit discharges,* please contact the appropriate representative listed below:

Citrus County	Citrus County BOCC – Engineering	Primary:(352)-527-5446
Hernando County	Hernando County Stormwater	Primary:(352)-754-4062
Hillsborough County	Hillsborough County Environmental Protection Commission	Primary:(813)-627-2600 Alternate:(813)-744-5671
Pasco County	Pasco County Stormwater	Primary:(727)-834-3611
Pinellas County	Pinellas County Environmental Management	Primary:(727)-464-4187 Alternate:(727)-464-4703
FDOT Right-of-Way	District Maintenance	Primary:(813)-975-6639

Background

The National Pollutant Discharge Elimination System (NPDES) is a stormwater permitting program managed by the Florida Department of Environmental Protection (FDEP) which regulates construction activities that disturb one or more acres of land. Projects less than one acre may be regulated if the activity is part of a larger common plan of development or sale that will exceed the one-acre threshold. Disturbance includes clearing, grading, and excavating. The NPDES program also regulates municipal storm sewer systems that serve highways, area roads, and streets in your neighborhood.

Preventing Illicit Discharges & Water Pollution

Illicit Discharges are point sources of discharge which negatively impact stormwater, which eventually drains into local natural water systems. The most effective way to eliminate these discharges is to dispose of pollutants correctly.

Below are common examples:

- Yard clippings and leaves
- Fertilizers and herbicides
- Pet waste
- Trash
- Used motor oil and filters
- Antifreeze and transmission fluid
- Paint
- Solvent and degreaser
- Cooking grease





For more information on the proper disposal of wastes contact FDEP at: (813)-470-5700

Environmental Protection Agency (EPA) Spill Response Hotline: 1-800-424-8802
For EPA spill and environmental violation information, please visit: https://www.epa.gov/pesticide-incidents/how-report-spills-and-environmental-violations

Approved
2025-H-798-00264
James A. Meyer
10/8/2025

FLORIDA DEPARTMENT OF Environmental Protection

Southwest District
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

December 19, 2025

Tampa Bay Water
c/o Charles Carden
2575 Enterprise Road
Clearwater, Florida, 33763
Permitting@Tampabaywater.org

Dear Charles Carden:

Enclosed is the Environmental Resource Permit, DEP Project No. 51-0459255-002-EI, issued pursuant to Part IV of Chapter 373, Florida Statutes, and Title 62, Florida Administrative Code.

Appeal rights for you and for any affected third party are described in the text of the permit along with conditions that must be met when authorized activities are undertaken.

You, as the applicant, are responsible for all aspects of permit compliance. You should therefore review this permit document carefully to ensure compliance with the general conditions and specific conditions contained herein.

Please be aware of permit General Condition number 4, which states, "At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), 'Construction Commencement Notice.'"

If you have any questions about this document, please contact me at Jessica.t.hamilton@floridadep.gov or at 813-470-5956. Thank you for your participation in the permit process and in managing the natural resources of the State of Florida.

Sincerely,

Jessica Hamilton

Jessica Hamilton
Environmental Specialist III
Permitting and Waste Cleanup Program

Enclosure: Environmental Resource Permit with Attachments (42 pages)

FLORIDA DEPARTMENT OF
Environmental Protection

Southwest District
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

Permittee/Authorized Entity:
Tampa Bay Water
c/o Charles Carden
2575 Enterprise Road
Clearwater, Florida, 33763

Cross Ranch Water Transmission

Authorized Agent:
Wade Trim
c/o Nita Sharma
201 North Franklin Street, Suite 1350
Tampa, Florida, 33602

Individual Environmental Resource Permit

State-owned Submerged Lands Authorization – Not Applicable

U.S. Army Corps of Engineers Authorization – Separate Corps Authorization Required

Pasco County
Permit No.: 51-0459255-002-EI

Permit Issuance Date: 12/19/2025
Permit Construction Phase Expiration Date: 12/18/2030

FLORIDA DEPARTMENT OF
Environmental Protection

Southwest District
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

Environmental Resource Permit

Permittee: Tampa Bay Water c/o Charles Carden
Permit No: 51-0459255-002-EI

PROJECT LOCATION

The activities authorized by this permit are located within the Right-Of-Way on State Road 52, Land O' Lakes, Florida 34637, Parcel ID: 07-25-19-0000-29900-0000, in Section 7, Township 25 South, Range 19 East in Pasco County, at latitude 28° 19' 18.62" and longitude -82° 26' 39.83".

PROJECT DESCRIPTION

The permittee is authorized to relocate approximately 500 linear feet of an existing 60-inch diameter raw water transmission line. Those activities include the micro tunneling under the roadway and roadside swale, and the remaining pipeline will be constructed within uplands by open cut trenching. No impacts to wetlands or surface waters are proposed. Authorized activities are depicted on the attached exhibits.

AUTHORIZATIONS

Cross Ranch Water Transmission

Environmental Resource Permit
The Department has determined that the activity qualifies for an Environmental Resource Permit. Therefore, the Environmental Resource Permit is hereby granted, pursuant to Part IV of Chapter 373, Florida Statutes (F.S.), and Chapter 62-330, Florida Administrative Code (F.A.C.).

Sovereignty Submerged Lands Authorization
As staff to the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), the Department has determined the activity is not on submerged lands owned by the State of Florida. Therefore, your project is not subject to the requirements of Chapter 253, F.S., or Rule 18-21, F.A.C.

Federal Authorization
Your proposed activity as outlined on your application and attached drawings **does not qualify** for Federal authorization pursuant to the State Programmatic General Permit and a **SEPARATE permit** or authorization **shall be required** from the Corps. You must apply separately to the Corps using the Application for Department of the Army Permit (ENG 4345) or alternative as allowed by Corps regulations. More information on Corps permitting may be found online in the Jacksonville District Regulatory Division Sourcebook:

(https://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/).
Authority for review - an agreement with the USACOE entitled "Coordination Agreement Between the U. S. Army Corps of Engineers (Jacksonville District) and the Florida Department of Environmental Protection (or Duly Authorized Designee), State Programmatic General Permit", Section 10 of the Rivers and Harbor Act of 1899, and Section 404 of the Clean Water Act.

Coastal Zone Management Consistent
Issuance of this authorization also constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

Water Quality Certification Granted
This permit also constitutes a *grant* of water quality certification under Section 401 of the Clean Water Act, 33 U.S.C. Section 1341. Pursuant to Rule 62-330.062, F.A.C. issuance of the individual or conceptual approval permit under this chapter shall constitute certification of compliance with water quality standards.

Other Authorizations
You are advised that authorizations or permits for this activity may be required by other federal, state, regional, or local entities including but not limited to local governments or municipalities. This permit does not relieve you from the requirements to obtain all other required permits or authorizations.

The activity described may be conducted only in accordance with the terms, conditions and attachments contained in this document. Issuance and granting of the permit and authorizations herein do not infer, nor guarantee, nor imply that future permits, authorizations, or modifications will be granted by the Department.

PERMIT CONDITIONS

The activities described must be conducted in accordance with:

- **The Specific Conditions**
- **The General Conditions**
- **The limits, conditions and locations of work shown in the attached drawings**
- **The term limits of this authorization**

You are advised to read and understand these conditions and drawings prior to beginning the authorized activities, and to ensure the work is conducted in conformance with all the terms, conditions, and drawings herein. If you are using a contractor, the contractor also should read and understand these conditions and drawings prior to beginning any activity. Failure to comply with these conditions, including any mitigation requirements, shall be grounds for the Department to revoke the permit and authorization and to take appropriate enforcement action. Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and this permit authorization, as described.

SPECIFIC CONDITIONS

1. Submittals required herein (e.g., progress reports, as-built drawings, etc.) shall include the permittee's name and permit number 51-0459255-002-EI and shall be directed by e-mail to SW_ERP_CAP@floridadep.gov with a subject line of "Compliance: permit number 51-0459255-002-EI", or by mail to:

   Department of Environmental Protection
   Southwest District
   ATTN: ERP Compliance Assurance
   13051 North Telecom Parkway, Suite 101
   Temple Terrace, FL 33637-0926

2. The structure/work authorized by this permit shall not be placed/conducted on any property, other than that owned by the permittee, without the prior written approval of that property owner.

3. In the event the permittee files for bankruptcy prior to completion of work permitted and required by this permit, the permittee must notify the Department within 30 days of filing. The notification shall identify the bankruptcy court and case number and shall include a copy of the bankruptcy petition.

SPECIFIC CONDITIONS – PRIOR TO ANY CONSTRUCTION

4. Best management practices for erosion control shall be implemented prior to construction commencement and shall be maintained at all times during construction to prevent siltation and turbid discharges in excess of State water quality standards (>29 NTU's above background, pursuant to Rule 62-302, F.A.C. Methods may include but are not limited to the use of staked hay bales, staked filter cloth, sodding, seeding, staged construction and the installation of turbidity screens around the immediate project site.

SPECIFIC CONDITIONS – CONSTRUCTION ACTIVITIES

5. Wetland areas or waterbodies that are outside the specific limits of construction authorized by this permit, must be protected from erosion, sedimentation, siltation, scouring, excess turbidity, and/or dewatering. There shall be no discharge in violation of the water quality standards in Chapter 62-302, F.A.C. Turbidity/erosion controls shall be installed prior to clearing, excavation or placement of fill material, shall be maintained until construction is completed, disturbed areas are stabilized, and turbidity levels have fallen to less than 29 NTU's above background. The turbidity and erosion control devices shall be removed within 14 days once these conditions are met.

6. Areas of exposed soils shall be isolated from wetlands or other surface waters to prevent erosion and deposition of these soils into wetlands or other surface waters during construction and operation of permitted activities.

7. Side slopes, exposed and/or disturbed land surfaces shall be stabilized with sod, seed or mulch within 48 hours following completion of final grades at the project site to prevent erosion, sedimentation, siltation or scouring.

8. The permittee shall be responsible for ensuring erosion control devices/procedures are inspected and maintained daily during all phases of construction authorized by this permit until areas disturbed during construction are sufficiently stabilized to prevent erosion, siltation, and turbid discharges.

9. Staked filter cloth shall be positioned at the edge of the permitted fill slopes adjacent to wetlands to prevent turbid run-off and erosion.

10. There shall be no discharge of construction debris into the waters of the state as conditioned by this permit enforceable under the Florida Litter Law 403.413, F.S., by all law enforcement officers.

11. This permit does not authorize the removal of any vegetation within the jurisdictional area. No dredging, filling, or other construction activity, including the removal of tree stumps and/or vegetative root masses, shall be conducted within the wetlands other than that performed within the specifically authorized work corridor.

12. Unauthorized impacts to wetlands as a result of the authorized construction shall be reported to the Department within 24 hours.

13. Storage or stockpiling of tools and materials (i.e., lumber, pilings, debris) within wetlands or other surface waters is prohibited.

SPECIFIC CONDITIONS FOR LISTED SPECIES

14. This permit does not authorize the permittee to cause any adverse impact to or "take" of state listed species and other regulated species of fish and wildlife. Compliance with state laws regulating the take of fish and wildlife is the responsibility of the owner or permittee associated with this project. Please refer to Chapter 68A-27 of the Florida Administrative Code for definitions of "take" and a list of fish and wildlife species. If listed species are observed onsite, Florida Fish and Wildlife Conservation Commission (FWC) staff are available to provide decision support information or assist in obtaining the appropriate FWC permits. Most marine endangered and threatened species are statutorily protected and a "take" permit cannot be issued. Requests for further information or review can be sent to ConservationPlanningServices@MyFWC.com.

15. If new information (e.g. listing of new species, new critical habitat, etc.) shows that the magnitude of impacts to federally listed species has the potential for adverse effects, the U.S. Fish and Wildlife Service (USFWS) will notify the Department. The Department will initiate coordination with the permittee and with the USFWS to determine what adverse impacts are likely and if additional minimization measures, reporting, or monitoring are

required in order to be consistent with the Endangered Species Act, as deemed necessary by USFWS.

16. The Permittee shall report any injured, sick, or dead federally or state listed animal(s) discovered onsite to the Florida Fish and Wildlife Conservation Commission Wildlife Alert number at 888-404-FWCC (3922).

SPECIFIC CONDITIONS – HORIZONTAL DIRECTIONAL DRILL

17. The hydraulic directional drill (HDD) bore pits and all staging shall be within uplands.

18. The permittee shall follow the approved Frac-Out Contingency Plan (attached).

19. All HDD activities shall take place during daylight hours only.

20. Within 2 hours of the HDD punch out and subsequent back-reams, the permittee shall perform a visual inspection of the submerged lands along the subaqueous portions of the HDD corridor to inspect for bentonite releases or frac-outs. Within 7 days of the HDD punch out and subsequent back-reams, the permittee shall submit a written summary report to the Department that includes the following information:

    a. timeline of the outfall/pit installations
    b. any complications encountered during outfall installations
    c. details of any dye detection and subsequent bentonite clean-up operation
    d. discussion of possible causes of bentonite discharges (frac-outs); and
    e. suggestions for future frac-out prevention measures

21. If a frac-out occurs during the subaqueous crossing installation which results in adverse impacts wetlands, submerged or emergent vegetation, or other biological resources, restoration and mitigation shall be required to offset adverse impacts.

22. Within 30 days of each pit installation, the permittee shall fully restore the staging area to its original condition. Paved surfaces shall be repaired, and unpaved surface areas shall be replanted with appropriate non-nuisance native vegetation.

SPECIFIC CONDITIONS – CONSTRUCTION COMPLETION

The permittee shall comply with the following conditions prior to the transfer to operation phase of the facility. All documentation required below shall be included with the permittee's request to transfer the project to the operation phase [Form No. 62-330.310(2), F.A.C.]

23. Within 30 days after completion of construction of the permitted or authorized activity, and prior to transfer to operation, the permittee shall submit photographs of the completed structure. The photographs shall show the size and dimensions of all existing structures and activities within the permitted project area. Constructed deviations may require a permit

modification and/or easement.

24. The permittee shall submit one set of signed, dated and sealed as-built drawings to the Department via email at SW_ERP_CAP@floridadep.gov for review and approval within 30 days of completion of construction. (Please contact the Department for files that are too large to email for alternative means of submitting electronically.) The as-built drawings shall be based on the Department permitted construction drawings and any pertinent specific conditions, which should be revised to reflect changes made during construction. Both the original design and constructed elevations must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawings. Surveyed dimensions and elevations required shall be verified and signed, dated and sealed by a Florida registered professional. *As-builts shall be submitted to the Department regardless of whether or not deviations are present. In addition, the permittee shall submit the "As-Built Certification and Request for Conversion to Operation Phase" form (Ch. 62-330.310(1), F.A.C.); as required in General Condition #6.*

    The following information shall be verified on the as-built drawings from the engineering drawings signed and sealed by Nita Naik Sharma, P.E., No.79670 on June 12, 2025, and Glenn Willson No. 86800 on September 23, 2025:

Plan View/ Cross Section Name	Drawing Number
Tree Removal and Limits of Disturbance	C-1
Plan	C-2
Profile	C-3
Condensed Profile	D-2-D-3

GENERAL CONDITIONS FOR INDIVIDUAL PERMITS

The following general conditions are binding on all individual permits issued under this chapter, except where the conditions are not applicable to the authorized activity, or where the conditions must be modified to accommodate project-specific conditions.

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best

management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007)*, and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008)*, which are both incorporated by reference in subparagraph 62-330.050(9)(b)5., F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice," (October 1, 2013), (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), incorporated by reference herein, indicating the expected start and completion dates. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C., and shall be submitted electronically or by mail to the Agency. However, for activities involving more than one acre of construction that also require a NPDES stormwater construction general permit, submittal of the Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Form 62-621.300(4)(b), shall also serve as notice of commencement of construction under this chapter and, in such a case, submittal of Form 62-330.350(1) is not required.

5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.

6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:

   a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex – "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or

   b. For all other activities – "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].

   c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:

   a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as- built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of

Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.

b. Within 30 days of submittal of the as- built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:

a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;

b. Convey to the permittee or create in the permittee any interest in real property;

c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or

d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

12. The permittee shall notify the Agency in writing:

a. Immediately if any previously submitted information is discovered to be inaccurate; and

b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where

the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850)245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, F.S. For project activities subject to prior consultation with the DHR and as an alternative to the above requirements, the permittee may follow procedures for unanticipated discoveries as set forth within a cultural resources assessment survey determined complete and sufficient by DHR and included as a specific permit condition herein.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with subsection 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

19. In addition to those general conditions in subsection (1), above, the Agency shall impose any additional project-specific special conditions necessary to assure the permitted activities will not be harmful to the water resources, as set forth in rules 62-330.301 and 62-330.302,

F.A.C., Volumes I and II, as applicable, and the rules incorporated by reference in this chapter.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the application.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.20 and 28-106.301, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, any e-mail address, any facsimile number, and telephone number of the petitioner, if the petitioner is not represented by an attorney or a qualified representative; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@dep.state.fl.us. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant and persons entitled to written notice under Section 120.60(3), F.S., must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 21

days of publication of the notice or within 21 days of receipt of the written notice, whichever occurs first. You cannot justifiably rely on the finality of this decision unless notice of this decision and the right of substantially affected persons to challenge this decision has been duly published or otherwise provided to all persons substantially affected by the decision. While you are not required to publish notice of this action, you may elect to do so pursuant Rule 62-110.106(10)(a).

The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C. If you do not publish notice of this action, this waiver will not apply to persons who have not received written notice of this action.

Extension of Time
Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@dep.state.fl.us, before the deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation
Mediation is not available in this proceeding.

FLAWAC Review
The applicant, or any party within the meaning of Section 373.114(1)(a) or 373.4275, F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under Section 373.114(1) or 373.4275, F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when this order is filed with the Clerk of the Department.

Judicial Review
Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Florida Rules of Appellate Procedure 9.110 and 9.190 with the Clerk of the Department in the Office of General Counsel (Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000) and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within 30 days from the date this action is filed with the Clerk of the Department.

Permit Expiration: 12/18/2030

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Shannon Herbon
Permitting Program Administrator
Permitting and Waste Cleanup Programs
Southwest District

Attachments:

1. Project Drawings and Design Specs., 14 pages
2. Frac-Out Contingency Plan, 4 pages
3. Construction Commencement Notice/Form 62-330.350(1), 1 page
4. As-Built Certification and Request for Conversion to Operation Phase/Form 62-330.310(1), 3 pages
5. Operation and Maintenance Inspection Certification/Form 62-330.311(1), 2 pages
6. Request for Transfer of Permit to the Perpetual Operation Entity/Form 62-330.310(2), 2 pages
7. Request to Transfer Permit/Form 62-330.340(1), 1 page

Copies furnished to:
Jessica Hamilton, Southwest District, Jessica.t.hamilton@Floridadep.gov
ERP Permitting, Southwest District, sw_erp@floridadep.gov
U.S. Army Corps of Engineers, tampareg@usace.army.mil
Nita Sharma, Wade Trim, Nsharma@wadetrim.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this permit, including all copies, were mailed before the close of business on **December 19, 2025,** to the above listed persons.

FILING AND ACKNOWLEDGMENT

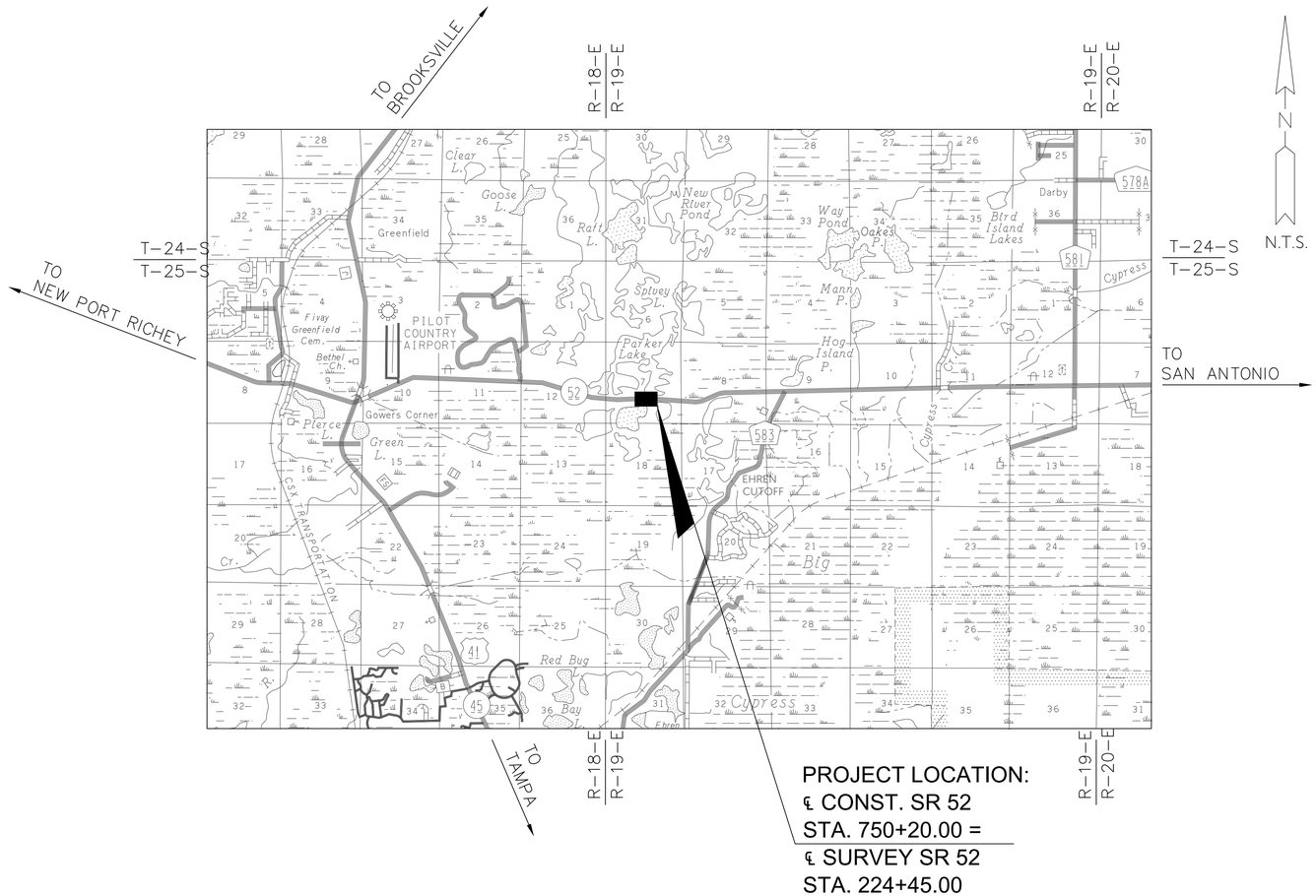
FILED, on this date, under 120.52(7) of the
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

Rhonda Hughes December 19, 2025
Clerk Date

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN RELOCATION

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road
Clearwater, Florida 33763
Ph: 727.796.2355
www.tampabaywater.org



PROJECT LOCATION

FINAL SUBMITTAL - SEPTEMBER 10, 2025

NOT FOR CONSTRUCTION

PERMIT SET

WADE TRIM

201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY NITA N. SHARMA ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

DATE: 06/12/2025

NITA NAIK SHARMA, P.E.

79670
LICENSE NO.

The Individual above shall be responsible individual for following sheets included herein:
G-1, G-2, G-3, G-4
C-1, C-2, C-3,
D-1, D-2, D-3,

The Individual above shall be responsible individual for following sheets included herein:
CP-1, CP-2, CP-3, CP-4

TAMPA BAY WATER PROJECT No.: 07153
DRAWING SET No.: G-1

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\GCS-PLTS-COVERSHEET.DWG - G-1 - PLOTTED 9/10/2025 11:08 AM BY HORTON, JAYNA

GENERAL NOTES:

1. ALL ELEVATIONS SHOWN ON THE DRAWINGS AND IN THE SURVEY NOTES ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988. STATE PLANE COORDINATES ARE REFERENCED TO NORTH AMERICAN DATUM OF 1983/90 (NAD 28/90).
2. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL OBTAIN THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION.
3. LAND SURVEY WAS OBTAINED FROM FDOT FPID 25633415201 PLANS DATED MARCH 2021.
4. UTILITIES AND STRUCTURES THAT ARE NOT SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL BE PROTECTED IN PLACE AND UTILITY SERVICE SHALL BE MAINTAINED. WHERE TEMPORARY CONFLICTS OCCUR BETWEEN EXISTING UTILITIES AND THE NEW CONSTRUCTION, PROTECT IN PLACE OR RELOCATE THE UTILITIES AND MAINTAIN UTILITY SERVICE ALL TO THE SATISFACTION OF THE UTILITY COMPANY. UTILITIES AND STRUCTURES SHOWN ON THE DRAWINGS TO BE REMOVED AND REPLACED OR RELOCATED, SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE TECHNICAL SPECIFICATIONS.
5. PROVIDE ADEQUATE, TEMPORARY THRUST RESTRAINT AT BENDS AND TEES IN EXISTING WATER MAINS AND OTHER PRESSURIZED CONDUITS IN PROXIMITY TO EXCAVATIONS AS REQUIRED TO PREVENT DISLODGEMENT, SEPARATION OR LEAKAGE OF THESE FACILITIES.
6. DISCHARGE OF ANY NON-CONTAMINATED WATER FROM SOIL DEWATERING OPERATIONS TO SURFACE WATERS, IF ANY, SHALL CONFORM TO THE FDEP GENERAL PERMIT REQUIREMENTS.
7. PROVIDE AT LEAST 48 HOURS NOTICE TO THE VARIOUS UTILITY COMPANIES IN ORDER TO PERMIT THE LOCATION OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION. NOTIFY THE VARIOUS UTILITY COMPANIES BY CALLING THE SUNSHINE ONE CALL CENTER (1-800-432-4770) OR IF NECESSARY, BY CONTACTING THE UTILITY COMPANIES INDIVIDUALLY.
8. CONFIRM UTILITY TO UTILITY CLEARANCES, HORIZONTAL AND VERTICAL, AND PIPE JOINT LOCATIONS IN ACCORDANCE WITH FLORIDA ADMINISTRATIVE CODE 62-555.314 AND 62-604.400.
9. THE HORIZONTAL ALIGNMENT OF THE REPLACEMENT WATER MAIN SHALL BE AS DIMENSIONED TO THE SURVEY BASELINE ON THE DRAWINGS. THE CONTRACTOR SHALL OBTAIN A COPY OF THE SURVEY AND LOCATE THE SURVEY BASELINE IN THE FIELD PRIOR TO CONSTRUCTION.
10. PIPE LAYING, LEAKAGE TESTING AND AS-BUILT DRAWINGS SHALL CONFORM TO ALL INFORMATION INDICATED ON THE PLANS AND DETAILS OR PROJECT TECHNICAL SPECIFICATIONS.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL TREES WITHIN THE VICINITY OF THE PROPOSED CONSTRUCTION IN ACCORDANCE WITH PASCO COUNTY PROTECTION STANDARDS UNLESS OTHERWISE INDICATED FOR REMOVAL. PRUNING OF BRANCHES IS NOT AUTHORIZED WITHOUT PRIOR APPROVAL FROM THE COUNTY, AND SHALL BE COMPLETED BY A CERTIFIED ARBORIST.
12. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS TO PROVIDE SUPPORT DURING CONSTRUCTION. UTILITY POLE OWNERS REPRESENTATIVE TO APPROVE SUPPORT METHOD PRIOR TO BEGINNING EXCAVATION AROUND UTILITY POLES. ONCE WORK IN THE AREA HAS BEEN COMPLETED, UTILITY REPRESENTATIVE SHALL INSPECT AND APPROVE FINAL GRADING PRIOR TO SUPPORT BEING REMOVED.
13. REFER TO GENERAL REQUIREMENTS SECTION OF TECHNICAL SPECIFICATIONS FOR PERMIT AGENCY COMMENTS.
14. ALL EXCAVATION AND BACKFILLING SHALL BE IN STRICT CONFORMANCE WITH TAMPA BAY WATER AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
15. WHERE CONSTRUCTION ACTIVITIES OCCUR WITHIN THE DRIP LINES OF EXISTING TREES, TREES ARE TO BE PROTECTED PER PASCO COUNTY NATURAL RESOURCES DIVISION REQUIREMENTS. ANY ROOT OR CANOPY TRIMMING TO FACILITATE CONSTRUCTION OF PROPOSED FACILITIES IS TO BE PERFORMED AT THE DIRECTION OF A CERTIFIED ARBORIST.
16. ANY AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED TO THE ORIGINAL GRADE AND SEEDED AND MULCHED.
17. ADD TEMPORARY 1" THICK STEEL PLATES TO ACT AS SHOCK PADS OVER EXISTING 60" PIPE WITHIN PROJECT LIMITS TO PROTECT DURING CONSTRUCTION.
18. CONTACT INFORMATION:

    TAMPA BAY WATER
    NAME: DANIELLE KEIRSEY, PROJECT MANAGER
    PHONE: (727) 791-2377
19. TAMPA BAY WATER WILL CONTINUE TO MAINTAIN OWNERSHIP OF THE GROUTED, OUT-OF-SERVICE 60" WATER TRANSMISSION MAIN UNTIL ROADWAY PROJECT 256334-3-52-01 IS LET, WHERE IT WILL BE REMOVED DURING ROADWAY CONSTRUCTION, BY THE UAO.

TREE REMOVAL TABLE

NORTHING	EASTING	SIZE	DESCRIPTION
1,450,055.0483'	513,108.5036'	23"	OAK
1,449,864.4522'	513,193.9677'	20"	OAK
1,449,862.5740'	513,209.7399'	9"	OAK
1,449,844.5240'	513,175.6765'	10"	PINE
1,449,845.4685'	513,179.6216'	9"	PINE
1,449,842.5842'	513,212.8580'	8"	OAK
1,449,836.3626'	513,199.2597'	6"	OAK
1,449,833.4797'	513,206.0446'	11"	OAK
1,449,833.2359'	513,218.5170'	15"	OAK
1,449,820.3176'	513,199.4656'	8"	OAK
1,449,819.9008'	513,232.1982'	4"	OAK
1,449,819.9008'	513,241.3715'	5"	OAK
1,449,811.6703'	513,223.2333'	10"	OAK
1,449,810.4778'	513,237.2867'	10"	PINE
1,449,806.3107'	513,232.4499'	9"	PINE
1,449,801.3590'	513,241.9987'	8"	PINE
1,449,849.5840'	513,114.2410'	7"	OAK
1,449,851.6820'	513,110.5290'	8"	PINE
1,449,848.2500'	513,103.5910'	14"	PINE
1,449,884.0290'	513,155.0570'	13"	OAK
1,449,876.8190'	513,147.6910'	10"	OAK
1,449,878.1520'	513,139.5010'	6"	OAK
1,449,893.2080'	513,128.3550'	15"	PINE
1,449,888.4180'	513,103.3360'	8"	OAK
1,449,889.6960'	513,085.7470'	7"	OAK

DRAWING INDEX

SHEET NO.	DESCRIPTION
G-1	COVER SHEET
G-2	DRAWING INDEX, NOTES & ABBREVIATIONS
G-3	LEGEND & SURVEY CONTROL
G-4	EXISTING CONDITIONS
C-1	TREE REMOVAL AND LIMITS OF DISTURBANCE
C-2	PLAN SHEET
C-3	PROFILE SHEET
CP-1	CATHODIC PROTECTION DETAILS
CP-2	CATHODIC PROTECTION DETAILS
CP-3	CATHODIC PROTECTION DETAILS
CP-4	CATHODIC PROTECTION DETAILS
D-1	TAMPA BAY WATER STANDARD DETAILS
D-2	CONDENSED PROFILE
D-3	CONDENSED PROFILE

TEST HOLE POINTS

TH	UTILITY OWNER	UTILITY TYPE	SIZE	MATERIAL	EXISTING GROUND ELEVATION	TOP ELEVATION
1	TAMPA BAY WATER	RWM	60"	PCCP		73.30'
2	TAMPA BAY WATER	RWM	60"	PCCP		72.13'
3	TAMPA BAY WATER	RWM	60"	PCCP		71.95'
4	UNKNOWN	DB COMM FOC	1/2"	PVC		76.86'
137	PASCO COUNTY	RECLAIM	36"	DIP	77.89'	70.02'
138	PURPLE	UNKNOWN	2-2"	PVC	78.29'	74.81'
139	TAMPA BAY WATER	RWM	60"	DIP	78.39'	73.38'
140	PURPLE	UNKNOWN	2-2"	PVC	77.30'	74.79'
141	TAMPA BAY WATER	RWM	60"	DIP	77.46'	73.11'
142	PASCO COUNTY	FOC	2"	HDPE	78.21'	74.91'
143	PASCO COUNTY	RECLAIM	36"	DIP	78.06'	71.84'
383	VERIZON	TELECOM	1"	DBC	78.01'	75.53'

FDOT NOTES:

1. CONTACT FDOT JAMES MEYER 48 HOURS BEFORE WORKING IN FDOT R/W 352-848-2600 TO ACTIVATE PERMIT.
2. SIDEWALKS SHOULD NOT BE CLOSED FOR MORE THAN 2 WEEKS FOR THE DURATION OF THE PERMIT. THE CONTRACTOR WILL NEED TO PROVIDE ACCOMMODATION FOR PEDESTRIANS.
3. RESTORE FDOT R/W WITH SOD ONLY.
4. CONTACT SCOTT BROWN PASCO COUNTY FOR LOCATES OF LIGHTING FIBER AND SIGNAL CONDUITS: PASCO COUNTY 727-849-6845
5. FOR MICROTUNNELS UNDER FDOT ROADWAYS THERE MUST BE A CONTINGENCY PLAN AND DEWATERING PLAN. CONTINGENCY SHOULD HAVE AN EMERGENCY ON CALL MOT/TTC CONTRACTOR AND AN EMERGENCY ASPHALT CONTRACTOR TO RESTORE THE ROADWAY IF SOMETHING SHOULD HAPPEN TO THE MICROTUNNEL.
6. FDOT RECOMMENDS GPR BE PERFORMED ALONG PATH OF MICROTUNNEL MINIMUM OF 10' ON EITHER SIDE OF THE CASING PIPE PRIOR TO PRE-DRILL MEETING WITH FDOT INSPECTOR WHICH IS REQUIRED.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JHORTON\D1402567\GCS-PLTS-NOTE-SHEET.DWG - G-2 - PLOTTED: 9/11/2025 11:39 AM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

GENERAL NOTES AND INDEX

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-NOTE-SHEET.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153

Sheet Designation: G-2

Sheet No.: 2 OF 14

LEGEND

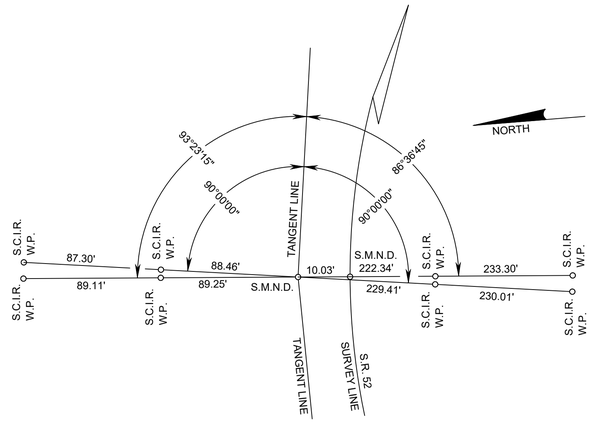
	EXISTING	PROPOSED	PREVIOUS
WATER MAIN	W W		
WATER MAIN & CASING PIPE	W W		
RECLAIMED WATER MAIN	REC		
OVERHEAD ELECTRIC	E E		
UNDERGROUND ELECTRIC	UE UE		
BURIED TELEPHONE	UT UT		
BURIED FIBER OPTIC	FO FO		
STORM MAIN		ST ST	
FENCE	X X X		
FDOT RIGHT OF WAY	R/W	R/W	R/W
PIPE/FENCE TO BE REMOVED		XXXXXXXXXXXXX	
LIMITS OF DISTURBANCE			

	EXISTING	PROPOSED
TEST HOLE	TH14Ø	
WATER CONTROL VALVE	WCV	
UTILITY POLE		
STORM MANHOLE	SD	
STORM STRUCTURE AND MES		
CONCRETE SLAB AND POST		
SOIL BORING		
BUTTERFLY VALVE		
CAP		
TREE		
TREE REMOVAL		

ABBREVIATIONS

B.O.S. = BEGINNING OF SURVEY
BWF = BARBED WIRE FENCE
E.O.S. = END OF SURVEY
EXIST. = EXISTING
F.C.I.R. = FOUND CAPPED IRON ROD
FDOT = FLORIDA DEPARTMENT OF TRANSPORTATION
F.I.P. = FOUND IRON PIPE
F.I.R. = FOUND IRON ROD
FND. N&D = FOUND NAIL AND DISK
F.M.N.D. = FOUND MAG NAIL & DISK
F.P.K.N.D. = FOUND PARKER-KALON NAIL & DISK
F.R.R.S. = FOUND RAIL ROAD SPIKE
ID. = IDENTIFICATION
LB = LICENSED BUSINESS
LF = LINEAR FOOT (FEET)
MES = MITERED END SECTION
M.O.C. = MIDDLE OF CURVE
PAVT. = PAVEMENT
P.C. = POINT OF CURVATURE
P.I. = POINT OF INTERSECTION
P.O.T. = POINT ON TANGENT
PT. = POINT
P.T. = POINT OF TANGENCY
RCP = REINFORCED CONCRETE PIPE
REF. = REFERENCE
RPS = REVOLUTION PROFESSIONAL SERVICES
S.C.I.R. = SET CAPPED IRON ROD 1/2" (RPS LB 7889)
S.C.I.R. W.P. = SET CAPPED IRON ROD 1/2" (RPSWITNES LB 7889)
SHLDR = SHOULDER
SMF = STORMATER MANAGEMENT FACILITY
S.M.N.D. = SET MAG NAIL & DISK (RPS LB 7889)
S.R. = STATE ROAD
STA. = STATION
TH = TEST HOLE
NTS = NOT TO SCALE

SURVEY CONTROL



P.I. STA. 224+03.81
S.M.N.D.
& M.O.C. STA. 224+03.41
S.M.N.D.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JH.HORTON\D1402567\GCS-PLTS-LEGEND.DWG - G-3 - PLOTTED 6/12/2025 4:03 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
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Tampa, FL 33602
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www.wadetrim.com
Certificate of Authorization No.: 3952

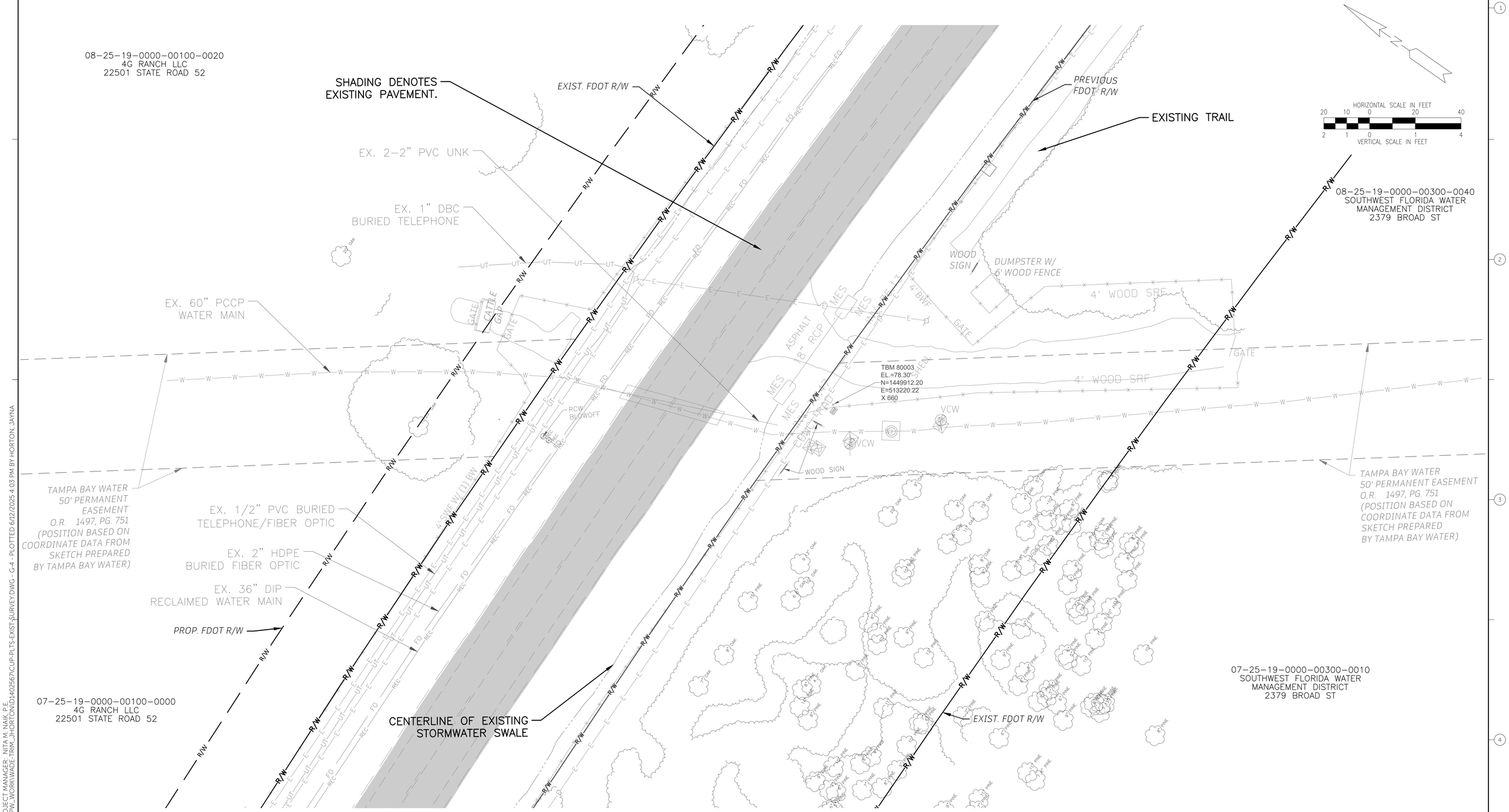
TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

LEGEND, ABBREVIATIONS AND SURVEY CONTROL

REV	DESCRIPTION	BY	DATE

File Name: GCS-PLTS-LEGEND.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: G-3
Sheet No.: 3 OF 14



PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORKWADE-TRIM_JHORTON\D1402567\CUP-PLTS-EXIST-SURVEY.DWG - G-4 - PLOTTED 6/12/2025 4:03 PM BY HORTON, JAYNA

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Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
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SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
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NITA SHARMA Date: 06/12/25
APPROVED BY.

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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
EXISTING CONDITIONS
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

File Name: CUP-PLTS-Exist-Survey.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

TBW Project No.: 07153
Sheet Designation: G-4
Sheet No.: 4 OF 14

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

SHADING DENOTES EXISTING PAVEMENT.

REMOVE AND REPLACE APPROX. 61 LF OF EXISTING FENCE

150 LF OF 60" STEEL TRANSMISSION MAIN

APPROX. 370 LF OF PROPOSED TEMPORARY FDOT FENCE TYPE A

APPROX. LIMITS OF DISTURBANCE/ SILT FENCE

42" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR. 8' SHLDR. PAVT.

℄ DRIVEWAY 750+14.00, 67.00' LT.

GRADED DRWY. PER FDOT INDEX 330-001

749+95.67, 132.00' LT. MATCH EXIST.

749+83.11, 132.00' LT. MATCH EXIST.

WB SR 52 (SCHRADER HWY.)

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE E C & G

℄ MEDIAN OPENING STA. 751+34.89

PROPOSED INLET PROTECTION (TYP)

EB SR 52 (SCHRADER HWY.)

PREVIOUS FDOT R/W

TYPE E C & G

10' SHLDR. 8' SHLDR. PAVT.

6" CONC. DRWY. PER FDOT INDEX 330-001

751+46.07, 128.00' RT. MATCH EXIST.

751+67.43, 128.00' RT. MATCH EXIST.

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

PRIVATE DRIVE

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

BOR #B-1

BOR #B-2

EX. 36" OUTLET

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

FUTURE WREC TRANSMISSION POLE

APPX. WETLAND LINE

APPROX. LIMITS OF DISTURBANCE/DOUBLE SILT FENCE

15 LF OF 36" STEEL TRANSMISSION MAIN

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

167 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE BY MICROTUNNEL

18 LF OF 60" STEEL TRANSMISSION MAIN IN 78" CASING PIPE VIA OPEN CUT

PROP. FDOT R/W

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

SUMP

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

10' SHLDR.
5' SHLDR. PAVT.
12' SHARED USE PATH

8' SHLDR.
4' SHLDR. PAVT.

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

EXIST. FDOT R/W

10' SHLDR.
8' SHLDR. PAVT.

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

LEGEND

- TREE REMOVAL
- TREE PROTECTION
- SILT FENCE / LIMITS OF DISTURBANCE
- INLET PROTECTION

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-LOD.DWG - C-1 LIMITS - PLOTTED: 9/10/2025 5:48 PM BY HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
TREE REMOVAL AND LIMITS OF DISTURBANCE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: C-1
File Name: CUP-PLTS-LOD.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No.: 5 OF 14

08-25-19-0000-00100-0020
4G RANCH LLC
22501 STATE ROAD 52

APPROX. 110 LF 60" WATER MAIN TO BE REMOVED

APPROX. MICROTUNNEL SHAFT

STA 11+30
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG

150 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT
STA 10+88.0
60" 22.5° BEND

STA 10+47.0
OFFSET: 7.0' R
AIR RELEASE VALVE

STA 10+27.0
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 152+71±
SEE NOTE 1

APPROX. 167 LF 60" WATER MAIN TO BE FILLED WITH EXCAVATABLE FLOWABLE FILL (STRENGTH 100 PSI) IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 121

APPROX. 131 LF 60" WATER MAIN TO BE REMOVED

STA 14+02
60"X36" TEE
LEAKAGE TEST PLUG

08-25-19-0000-00300-0040
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

STA 14+34.9
29°36' 60" BEND

133 LF OF 60" STEEL TRANSMISSION MAIN VIA OPEN CUT

STA 14+06.2
60" BUTTERFLY VALVE
LEAKAGE TEST PLUG

15 LF OF 36" STEEL TRANSMISSION MAIN VIA OPEN CUT

STA 14+02, 7.70' RT
36" BUTTERFLY VALVE

36" CAP

STA 13+97.4
60" 13°25'12" BEND
VPI Δ=13°25'12"

STA 14+94.9
CONNECT TO EXISTING 60" PCCP PIPE
APPROX. STA 157+71±
SEE NOTE 1

STA 14+81.6
OFFSET: 7.0' R
AIR RELEASE VALVE

APPROX. MICROTUNNEL SHAFT

STA 13+82.5
60" 46°32'24" BEND
HPI Δ=45°
VPI Δ=13°25'12"

07-25-19-0000-00300-0010
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD ST

07-25-19-0000-00100-0000
4G RANCH LLC
22501 STATE ROAD 52

STA 11+58.0
60" 45° BEND
(ROLLED 4°55.8')

STA 11+65.9
60" 45° BEND
(ROLLED 5°04')

PIPE ℄
STA 12+58.7=
℄ CONST. SR52
STA 749+90.1

WB SR 52 (SCHRADER HWY.)

EB SR 52 (SCHRADER HWY.)

TBM 80003
EL.=78.30'
N=1449912.20
E=513220.22
X 660

BOR #B-1

BOR #B-2

42" PIPE (BY FDOT CONTRACTOR)

370 LF OF 42" PIPE (BY FDOT CONTRACTOR)

5 LF OF 24" PIPE (BY FDOT CONTRACTOR)

63 LF OF 18" PIPE (BY FDOT CONTRACTOR)

177 LF OF 14" X 23" PIPE (BY FDOT CONTRACTOR)

305 LF OF 19" X 30" PIPE (BY FDOT CONTRACTOR)

EXISTING 60" TAMPA BAY WATER PIPELINE

12' SHARED USE PATH

50' TAMPA BAY WATER EASEMENT

TAMPA BAY WATER 50' PERMANENT EASEMENT O.R. 1497, PG. 751 (POSITION BASED ON COORDINATE DATA FROM SKETCH PREPARED BY TAMPA BAY WATER)

APPX. WETLAND LINE

PROP. FDOT R/W

EXIST. FDOT R/W

PREVIOUS FDOT R/W

10' SHLDR.
8' SHLDR. PAVT.

8' SHLDR.
4' SHLDR. PAVT.

10' SHLDR.
8' SHLDR. PAVT.

12' SHARED USE PATH

SUMP

℄ DRIVEWAY
750+14.06, 67.00' LT.

℄ DRIVEWAY
751+05.21, 67.00' RT.

℄ MEDIAN OPENING
STA. 751+34.89

749+95.67, 132.00' LT.
MATCH EXIST.

749+83.11, 132.00' LT.
MATCH EXIST.

751+46.07, 128.00' RT.
MATCH EXIST.

751+67.43, 128.00' RT.
MATCH EXIST.

6" CONC. DRWY. PER FDOT INDEX 330-001

GRADED DRWY. PER

PRIVATE DRIVE

FUTURE WREC TRANSMISSION POLE

VAR. WIDTH CONC. TRAF. SEP. (TYPE I, OPTION II)

TYPE F C & G

TYPE D

ASPHALT

8" RCP

MES

VCW

CONCRETE SLAB W/ POST AND WIRES

WOOD SIGN

METAL POST

DUMPSTER W/ WOOD FENCE

4' WOOD

4' WOOD SRF.

S-267 S-268 S-269 S-270 S-265

TH1 TH2 TH3 TH4 TH135 TH135A TH136 TH137 TH138 TH139 TH140 TH141 TH142 TH143

HORIZONTAL SCALE IN FEET
20 10 0 20 40
VERTICAL SCALE IN FEET
2 1 0 1 4

NOTE 1. LOCATE SUITABLE EXISTING PIPE JOINT FOR CONNECTION. CAREFULLY DISASSEMBLE JOINT WITHOUT DAMAGING PIPE TO REMAIN IN SERVICE.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\CUP-PLTS-PLAN.DWG - C-2 PLAN - PLOTTED: 9/10/2025 5:47 PM BY: HORTON, JAYNA

TAMPA BAY WATER
Supplying Water To The Region

2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

WADE TRIM
201 North Franklin Street, Suite 1350
Tampa, FL 33602
813.882.4373
www.wadetrim.com
Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PLAN
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

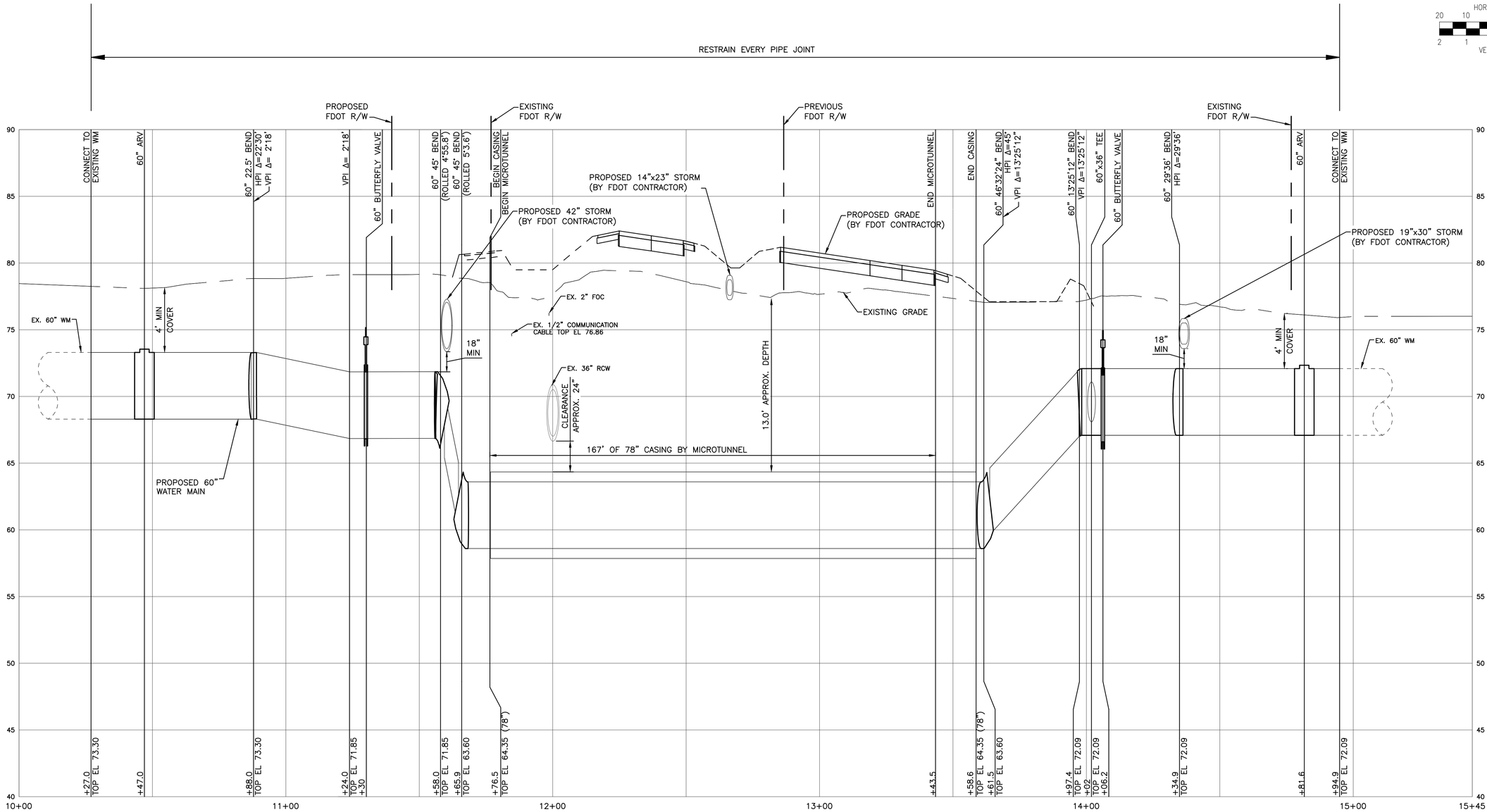
TBW Project No.: 07153
Sheet Designation: C-2
File Name: CUP-PLTS-PLAN.DWG
Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'
Sheet No.: 6 OF 14

500

HORIZONTAL SCALE IN FEET
20 10 0 20 40
2 1 0 1 4
VERTICAL SCALE IN FEET

HORIZ. SCALE: 1"=20'
VERT. SCALE: 1"=4'

RESTRAIN EVERY PIPE JOINT



NOTE 1. CONTRACTOR SHALL USE SUITABLE EXCAVATED MATERIALS TO COMPACT AND BACKFILL SHAFT AND PIPE EXCAVATIONS IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02220, 3.4 A. IN ADDITION, ALL EXCAVATIONS LOCATED UNDER OR WITHIN CLOSE PROXIMITY TO THE FUTURE FDOT ROADWAY PAVEMENT AND ROADWAY SHOULDERS AS SHOWN IN PROFILE VIEW ON THIS PLAN SHEET SHALL MEET FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PARTICULARLY SECTIONS 120 AND 125, AND OTHER RELATED STANDARDS IN REGARDS TO COMPACTION AND BACKFILLING. FLOWABLE FILL CAN BE USED AS A BACKFILL ALTERNATIVE IN CERTAIN SITUATIONS, FOLLOWING THE REQUIREMENTS IN SECTION 121 OF FDOT.

PROJECT MANAGER: NITA M. NAIK, P.E.
C:\PW_WORK\WADE-TRIM_JHORTON\D1402567\C\UP-PLTS-PLAN.DWG - C-3 PROFILE - PLOTTED: 9/12/2025 11:39 AM BY HORTON, JAYNA

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Supplying Water To The Region

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WWW.TAMPABAYWATER.ORG

SEAL

NITA NAIK SHARMA
LICENSE
No. 79670
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

STATE ROAD 52
PROFILE
STA 10+00 TO STA 15+50

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: C-3

File Name: CUP-PLTS-PLAN.DWG

Scale: HORIZ. SCALE: 1"=20' VERT. SCALE: 1"=4'

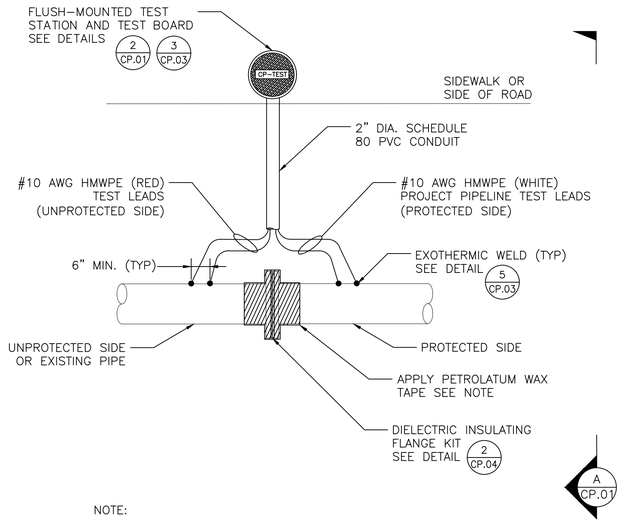
Sheet No.: 7 OF 14

501

TEST STATION SCHEDULE							
NO.	PIPELINE/STREET NAME	STATION	TEST STATION TYPE	NUMBER OF ANODES	TYPE OF ANODES	NOTES	REFERENCE DETAILS
1	60" STEEL TRANSMISSION MAIN	10+27	UTS	N/A	N/A	BEGINNING OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02
2	60" STEEL TRANSMISSION MAIN	10+60	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
3	60" STEEL TRANSMISSION MAIN	11+77	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND BEGINNING OF 195' CASING	1/CP.03, 2/CP.03
4	60" STEEL TRANSMISSION MAIN	13+71	CTS	N/A	N/A	60" PROJECT TRANSMISSION MAIN AND END OF 195' CASING	1/CP.03, 2/CP.03
5	60" STEEL TRANSMISSION MAIN	14+80	ATS	12	HIGH-POTENTIAL MAGNESIUM (60 LB)		3/CP.02, 4CP.02
6	60" STEEL TRANSMISSION MAIN	14+94	UTS	N/A	N/A	END OF PIPELINE, CONNECTING TO EXISTING 60" PCCP PIPE	1/CP.02, 2/CP.02

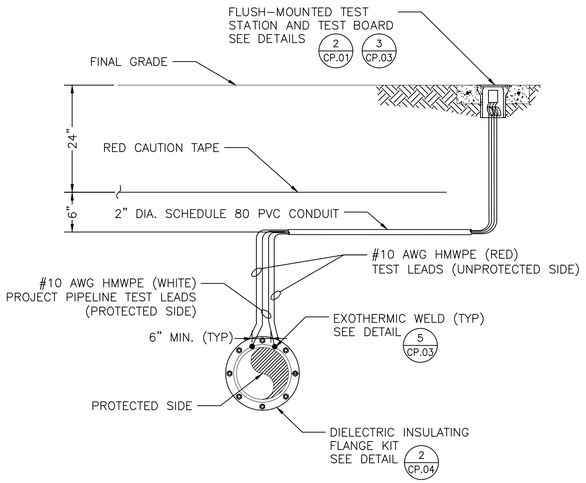
NOTES:

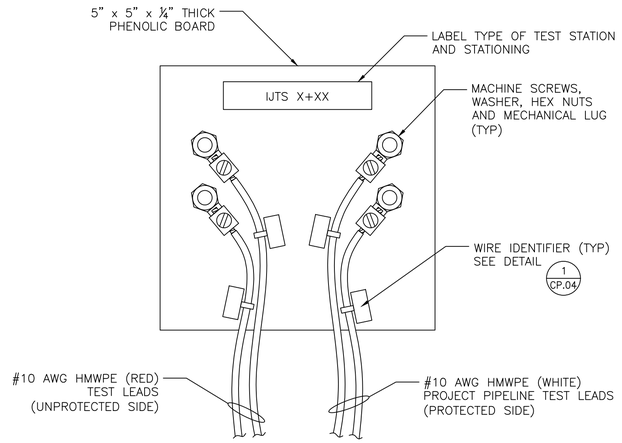
1. CONTRACTOR HAS THE OPTION AND MUST CHOOSE BETWEEN USING A DIELECTRIC INSULATING FLANGED JOINT OR A MONOLITHIC INSULATING JOINT FOR THE PROJECT PIPELINE TO ACHIEVE ISOLATION FROM METALLIC CONNECTIONS. BOTH OPTIONS HAVE BEEN PRESENTED IN THIS PACKAGE.
2. ALL VALVES AND NON WELDED JOINTS MUST FEATURE A MIN. OF TWO #2 AWG HMWPE (BLACK) JOINT BOND WIRES TO ACHIEVE ELECTRICAL CONTINUITY WITH THE PROJECT PIPELINE.



NOTE:

COAT THE EXTERIOR OF THE INSULATING FLANGE WITH PETROLATUM WAX TAPE FOR A MINIMUM OF 3 FEET BEYOND THE GASKET WITH A MINIMUM OF 6 INCHES OF OVERLAP WITH THE FACTORY-APPLIED COATING ON THE PIPELINE.





INSULATING JOINT TEST STATION (IJTS)
PLAN VIEW
SCALE: NTS
1/CP.01

INSULATING JOINT TEST STATION (IJTS)
SECTION VIEW
SCALE: NTS
A/CP.01

INSULATING JOINT TEST STATION (IJTS)
TERMINAL BOARD DETAIL
SCALE: NTS
2/CP.01

PROJECT MANAGER: NITA M. NAIK, P.E.
E:\PROJECTS\2023\0001 THRU 0099\23-0096 WADE TRIM TBW\500 DRAWINGS\DESIGN\90%\23-0096 CP DETAILS.DWG - CP.01 - PLOTTED 9/19/2025 8:30 AM BY ASLEY VICTOR

TAMPA BAY WATER
Supplying Water To The Region
2575 ENTERPRISE ROAD
CLEARWATER, FLORIDA 33763
727.796.2355
WWW.TAMPABAYWATER.ORG

SEAL
GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER
2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
Checked By: XXX Date: X/X/XX
GLENN WILLSON Date: 6/2025
APPROVED BY:

V&A
V&A Consulting Engineers, Inc.
8600 Hidden River Pkwy, Suite 550
Tampa, FL 33637 Tel. (813) 977-6005
Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

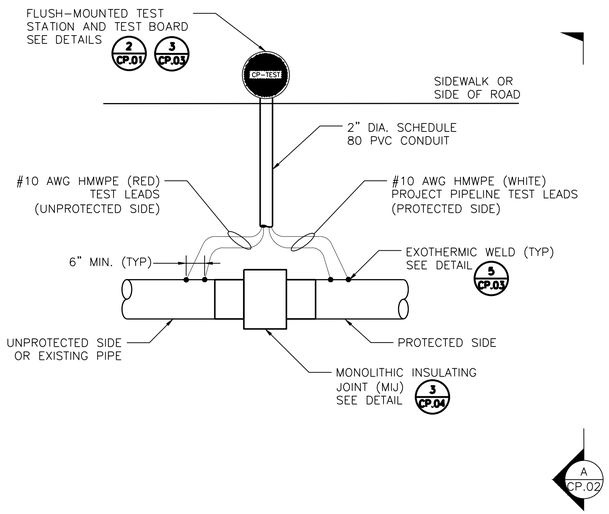
CATHODIC PROTECTION DETAILS
FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

File Name: 23-0096 CP DETAILS.DWG
Scale: NTS

TBW Project No.: 07153
Sheet Designation: CP-1
Sheet No.: 8 OF 14

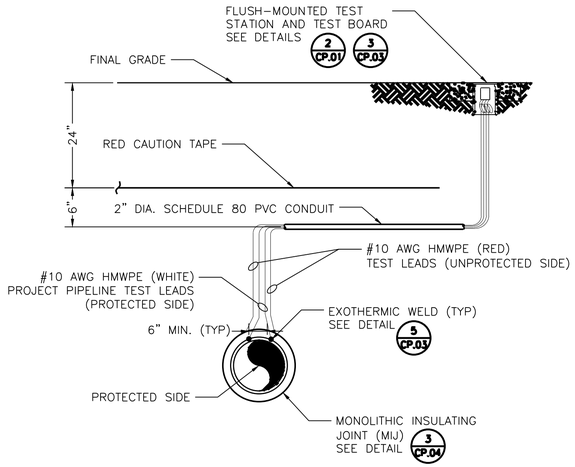
502



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) PLAN VIEW

1 CP.02

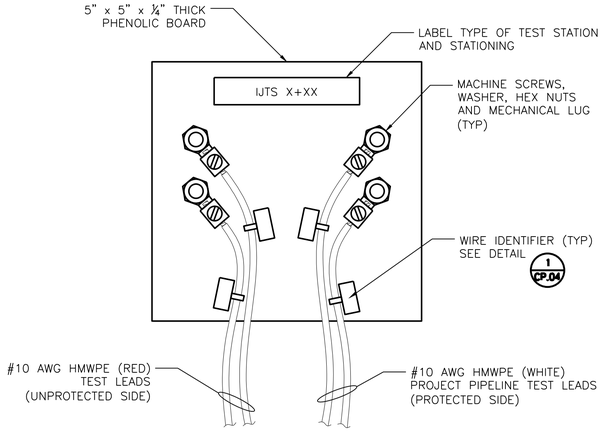
SCALE: NTS



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) SECTION VIEW

A CP.02

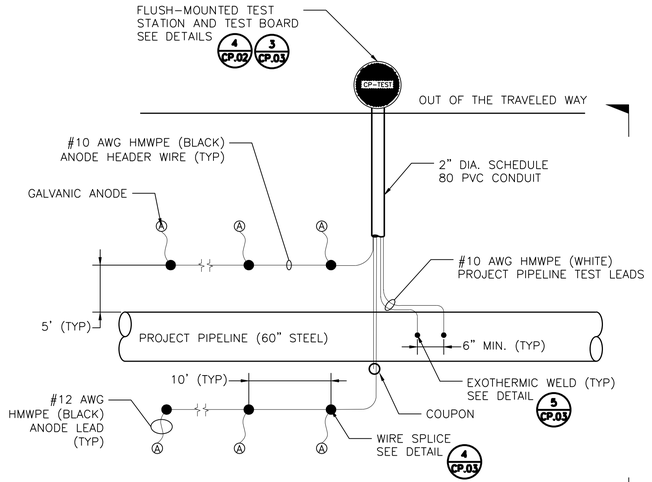
SCALE: NTS



MONOLITHIC INSULATING JOINT TEST STATION (MIJTS) TERMINAL BOARD DETAIL

2 CP.02

SCALE: NTS

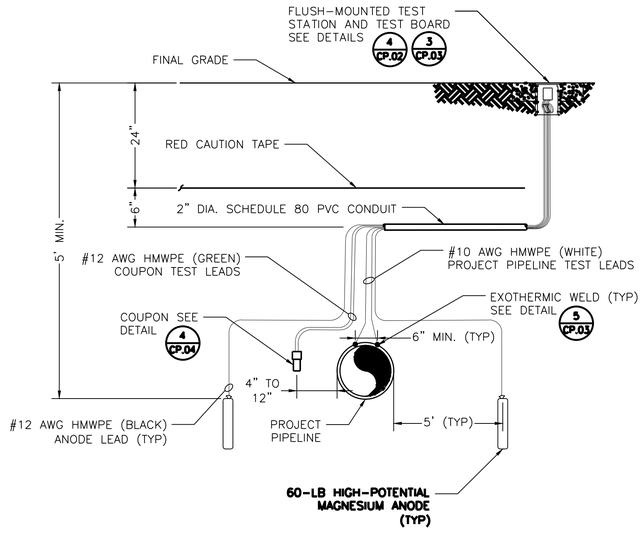


NOTE:
1. THE SIZE, TYPE, AND NUMBER OF ANODES PER ANODE BED SHALL BE AS SHOWN ON THE TEST STATION SCHEDULE.
2. ANODES MAY HAVE TO BE INSTALLED POST BACKFILL DUE TO LIMITED SPACING.
3. ANODES ARE TO BE INSTALLED ALONGSIDE THE PROJECT PIPELINE, 60" STEEL.

ANODE TEST STATION (ATS) PLAN VIEW

3 CP.02

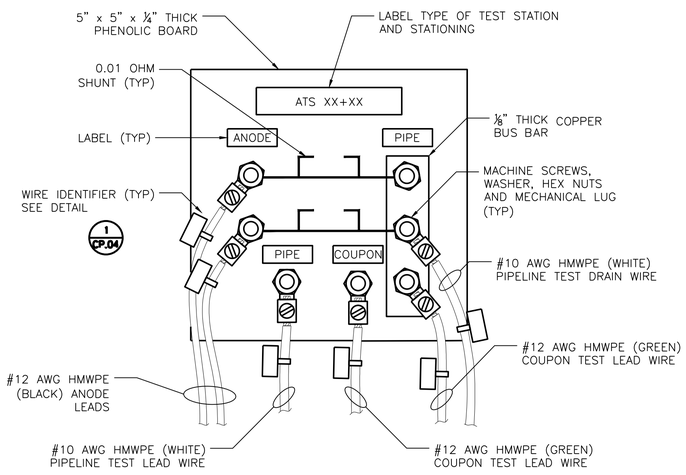
SCALE: NTS



ANODE TEST STATION (ATS) SECTION VIEW

B CP.02

SCALE: NTS



ANODE TEST STATION (ATS) TERMINAL BOARD DETAIL

4 CP.02

SCALE: NTS

PROJECT MANAGER: NITA M. NAIK, P.E.
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GLENN H. WILLSON LICENSE No. 86800 STATE OF FLORIDA PROFESSIONAL ENGINEER
2/28/2027

Design By: AV Date: 12/2024
Drawn By: AV Date: 12/2024
Checked By: XXX Date: X/X/XX
GLENN WILLSON (APPROVED BY) Date: 6/2025

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Cert. of Authorization No. 33080 - L.B. #8512
V&A Project No.: 23-0096

CATHODIC PROTECTION DETAILS FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

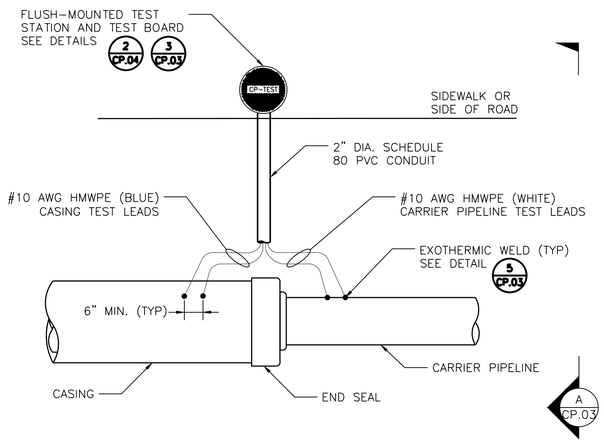
Sheet Designation: CP-2

File Name: 23-0096 CP DETAILS.DWG

Scale: NTS

Sheet No.: 9 OF 14

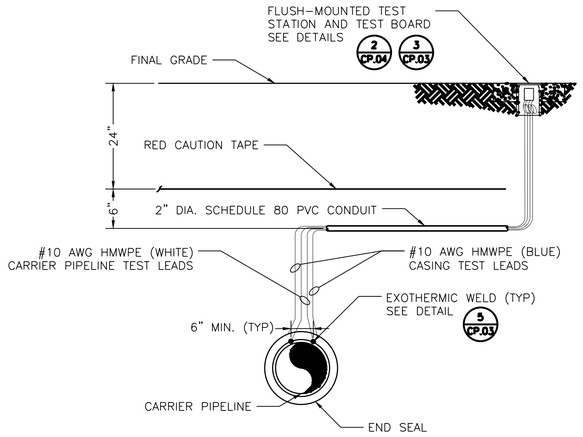
503



CASING TEST STATION (CTS) PLAN VIEW

SCALE: NTS

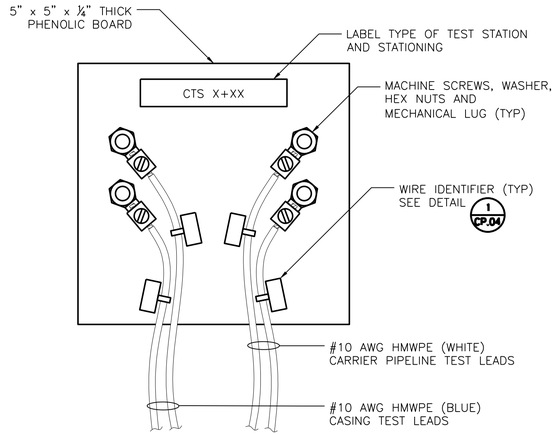
1 CP.03



CASING TEST STATION (CTS) SECTION VIEW

SCALE: NTS

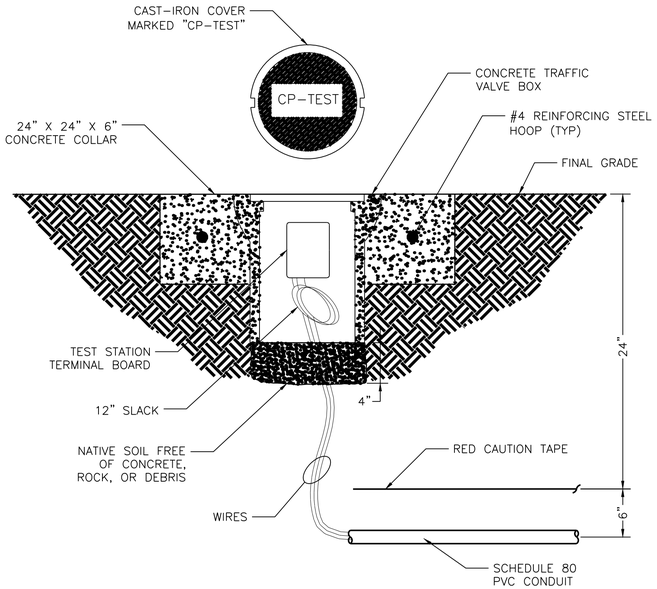
A CP.03



CASING TEST STATION (CTS) TERMINAL BOARD DETAIL

SCALE: NTS

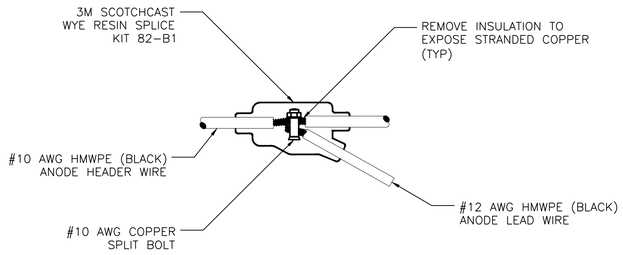
2 CP.03



FLUSH-MOUNTED TEST STATION DETAIL

SCALE: NTS

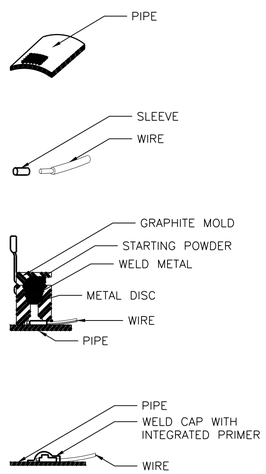
3 CP.03



WYE WIRE SPLICE DETAIL

SCALE: NTS

4 CP.03



1. ALL WELDS SHALL BE 6" APART AT MINIMUM.
2. GRIND PIPE TO BARE METAL AND CLEAN SURFACE. GROUND AREA SHALL BE LARGE ENOUGH FOR EXOTHERMIC WELD AND SMALL ENOUGH TO BE COMPLETELY COVERED BY WELD CAP.
3. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
4. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN. REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER. TEST WELD WITH 22 OZ HAMMER.
5. COVER CONNECTION WITH WELD CAP WITH INTEGRATED PRIMER. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH COATING AND LINING MANUFACTURER'S RECOMMENDATIONS.

EXOTHERMIC WELD DETAIL FOR STEEL PIPE

SCALE: NTS

5 CP.03

PROJECT MANAGER: NITA M. NAIK, P.E.
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GLENN WILLSON Date: 6/2025
APPROVED BY

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CATHODIC PROTECTION DETAILS FINAL SUBMITTAL

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

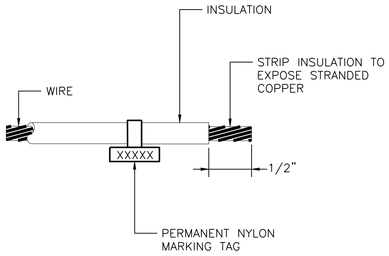
Sheet Designation: CP-3

File Name: 23-0096 CP DETAILS.DWG

Scale: NTS

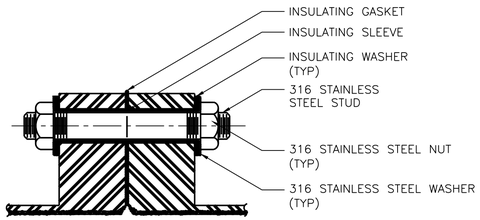
Sheet No.: 10 OF 14

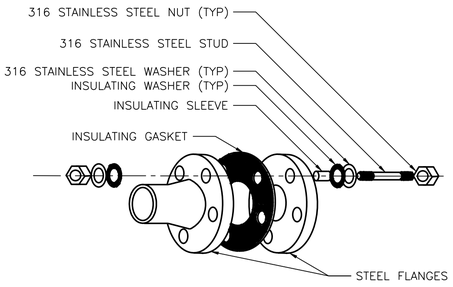
504



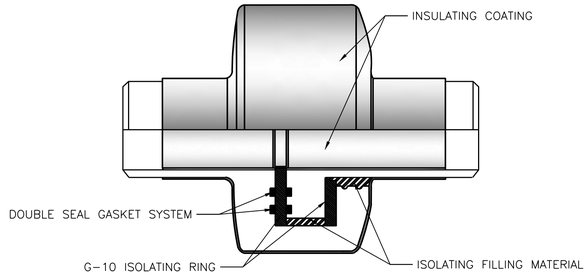
WIRE IDENTIFIER SCHEDULE	
STRUCTURE	LABEL
60" WELLFIELD TRANSMISSION MAIN	60" WTM
60" PCCP CONNECTION	60" PCCP
GALVANIC ANODE	ANODE

WIRE IDENTIFIER DETAIL (1 / CP.04)
SCALE: NTS

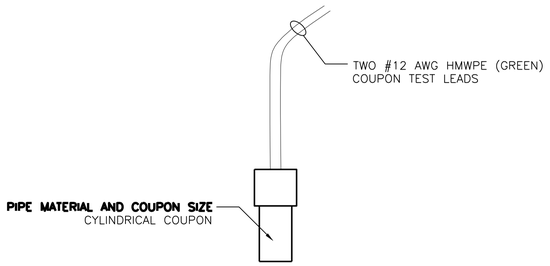




DIELECTRIC INSULATING FLANGE KIT DETAIL WITH SECTION VIEW (2 / CP.04)
SCALE: NTS



MONOLITHIC INSULATING JOINT DETAIL (3 / CP.04)
SCALE: NTS



COUPON DETAIL (4 / CP.04)
SCALE: NTS

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CATHODIC PROTECTION DETAILS
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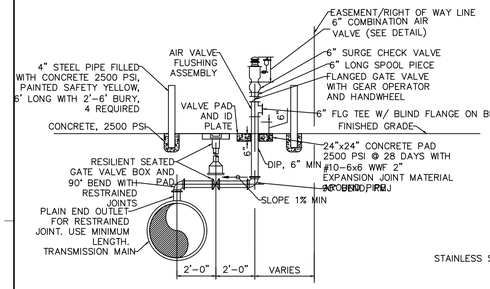
REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: CP-4
File Name: 23-0096 CP DETAILS.DWG
Scale: NTS
Sheet No.: 11 OF 14

505

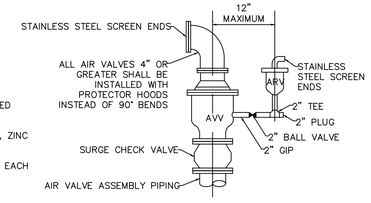


NOTES:

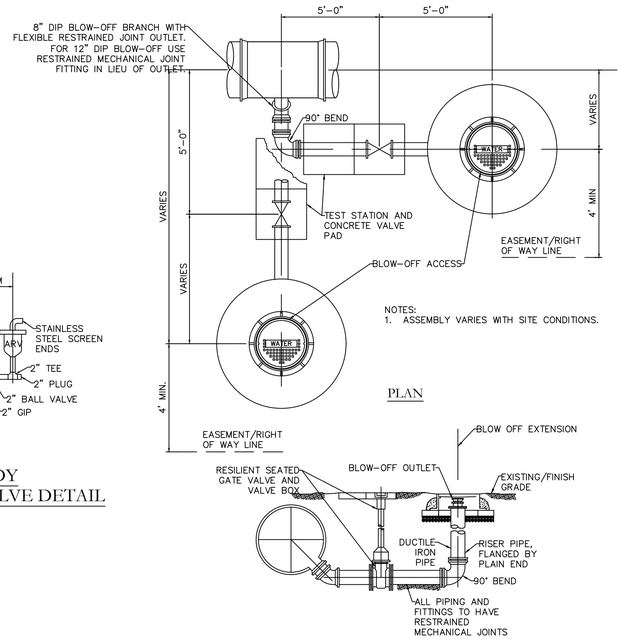
1. ALL UNDERGROUND PIPING AND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT, UNLESS OTHERWISE NOTED.
2. ALL NUTS AND BOLTS SHALL BE HEAVY HEAD HEX, CADMIUM, ZINC COATED, OR GALVANIZED GRADE B CARBON STEEL.
3. CONTRACTOR SHALL SUPPLY A DETAILED PIPING LAYOUT FOR EACH AIR VALVE INSTALLATION FOR THE ENGINEER'S REVIEW.
4. ALL FLUSHING TEES SHALL BE INSTALLED AT 90° AWAY FROM ISOLATION VALVE TO EACH ASSEMBLY.

TYPE I

AIR VALVE ASSEMBLY DETAIL
NO SCALE

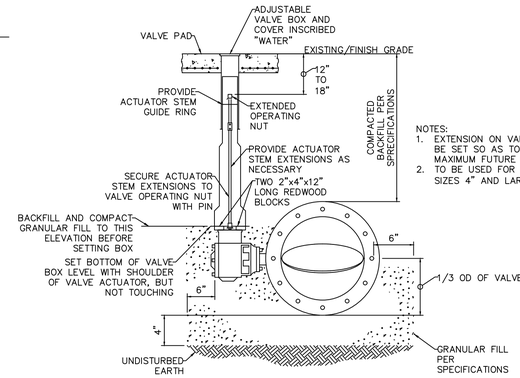


DUPLEX BODY COMBINATION AIR VALVE DETAIL
NO SCALE



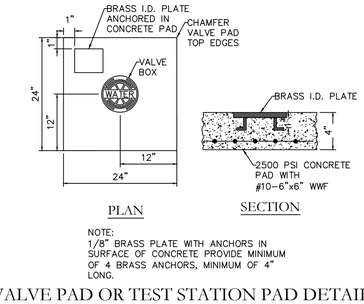
NOTES:
1. ASSEMBLY VARIES WITH SITE CONDITIONS.

BLOW-OFF ASSEMBLY DETAILS
NO SCALE



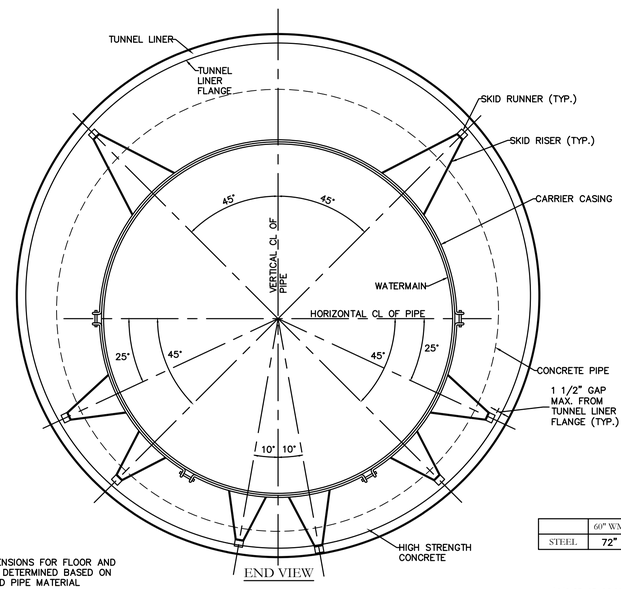
NOTES:
1. EXTENSION ON VALVE BOX SHALL BE SET SO AS TO ALLOW FOR MAXIMUM FUTURE EXTENSION.
2. TO BE USED FOR BURIED VALVES, SIZES 4" AND LARGER.

BUTTERFLY VALVE DETAIL
NO SCALE



NOTE:
1/8" BRASS PLATE WITH ANCHORS IN SURFACE OF CONCRETE PROVIDE MINIMUM OF 4 BRASS ANCHORS, MINIMUM OF 4" LONG.

VALVE PAD OR TEST STATION PAD DETAILS
NO SCALE



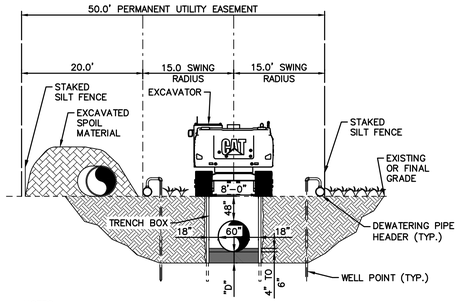
NOTES:

1. SPACING AND DIMENSIONS FOR FLOOR AND SKID RISER TO BE DETERMINED BASED ON PIPE DIAMETER AND PIPE MATERIAL INSTALLED.
2. PROVIDE ANNULAR SPACE GROUTING BETWEEN TUNNEL LINER AND CARRIER PIPE PER SPECIFICATIONS.
3. PROVIDE CONTACT GROUTING EXTERNAL TO TUNNEL LINER PER SPECIFICATIONS.

TUNNEL LINER INSTALLATION WITH CASING INSULATORS
NO SCALE

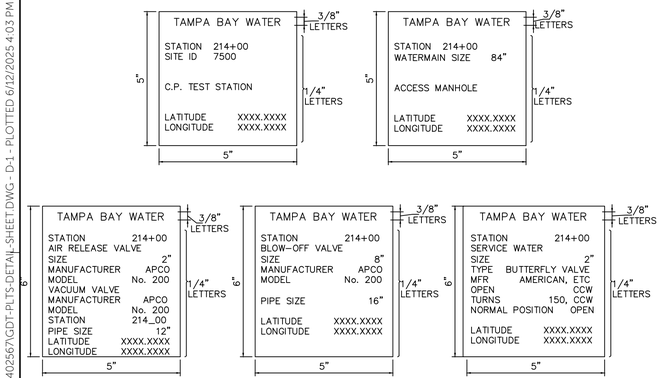
	60" WM	54" WM	42" WM
STEEL	72"	66"	54"

TUNNEL/CASING LINER SCHEDULE



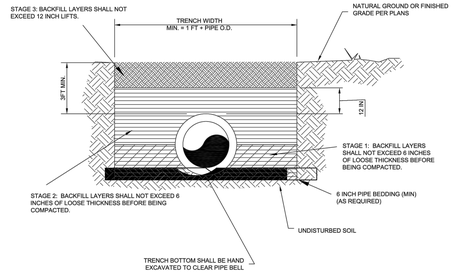
NOTES:
1. EXCAVATED SPOIL MATERIAL WILL BE TEMPORARY. MATERIAL WILL BE USED FOR BACKFILL MATERIAL IN TRENCH OR REMOVED FROM THE SITE.
2. ALL DISTURBED AREAS WILL BE RESTORED TO EXISTING GRADE.

TYPICAL TRENCH SECTION A
NO SCALE



NOTE:
DETAILS SHOW TYPICAL EXAMPLES. ACCURATE PROJECT SPECIFIC INFORMATION SHALL BE PROVIDED AT EACH LOCATION. PROVIDE LAT/LON IN DEGREES, MINUTES AND DECIMAL SECONDS.

I.D. PLATE DETAILS
NO SCALE



NOTES:

1. BEDDING: 6 INCHES BEDDING (MIN) AS REQUIRED. IN THE EVENT UNSUITABLE OR UNSTABLE SOIL IS ENCOUNTERED, REMOVE IT AND REPLACE WITH MATERIAL MEETING AASHTO SOIL CLASSIFICATION A-1, A-2, OR A-3.
2. STAGE 1: ADEQUATE COMPACTED FILL SHALL BE PLACED ABOVE THE BEDDING MATERIAL AND BENEATH THE HAUNCHES OF THE PIPE. BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED.
3. STAGE 2: BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) TO A POINT 1 FT ABOVE THE PIPE (OR AS STATED IN THE SPECIFICATION).
4. STAGE 3: BACKFILL LAYERS SHALL NOT EXCEED 12-INCH LIFTS. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) OR AS STATED IN THE SPECIFICATION

TRENCH DETAIL BACKFILL & COMPACTION
NO SCALE

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NITA NAIK SHARMA LICENSE No. 79670 STATE OF FLORIDA PROFESSIONAL ENGINEER

Design By: JH Date: 06/12/25
Drawn By: JW Date: 06/12/25
Checked By: TYW Date: 06/12/25
NITA SHARMA Date: 06/12/25
APPROVED BY:

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Tampa, FL 33602
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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

TAMPA BAY WATER STANDARD DETAILS

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153
Sheet Designation: D-1
File Name: GDT-PLTS-DETAIL-SHEET.DWG
Scale: NTS
Sheet No.: 12 OF 14

PROJECT MANAGER: NITA M. NAIK, P.E.
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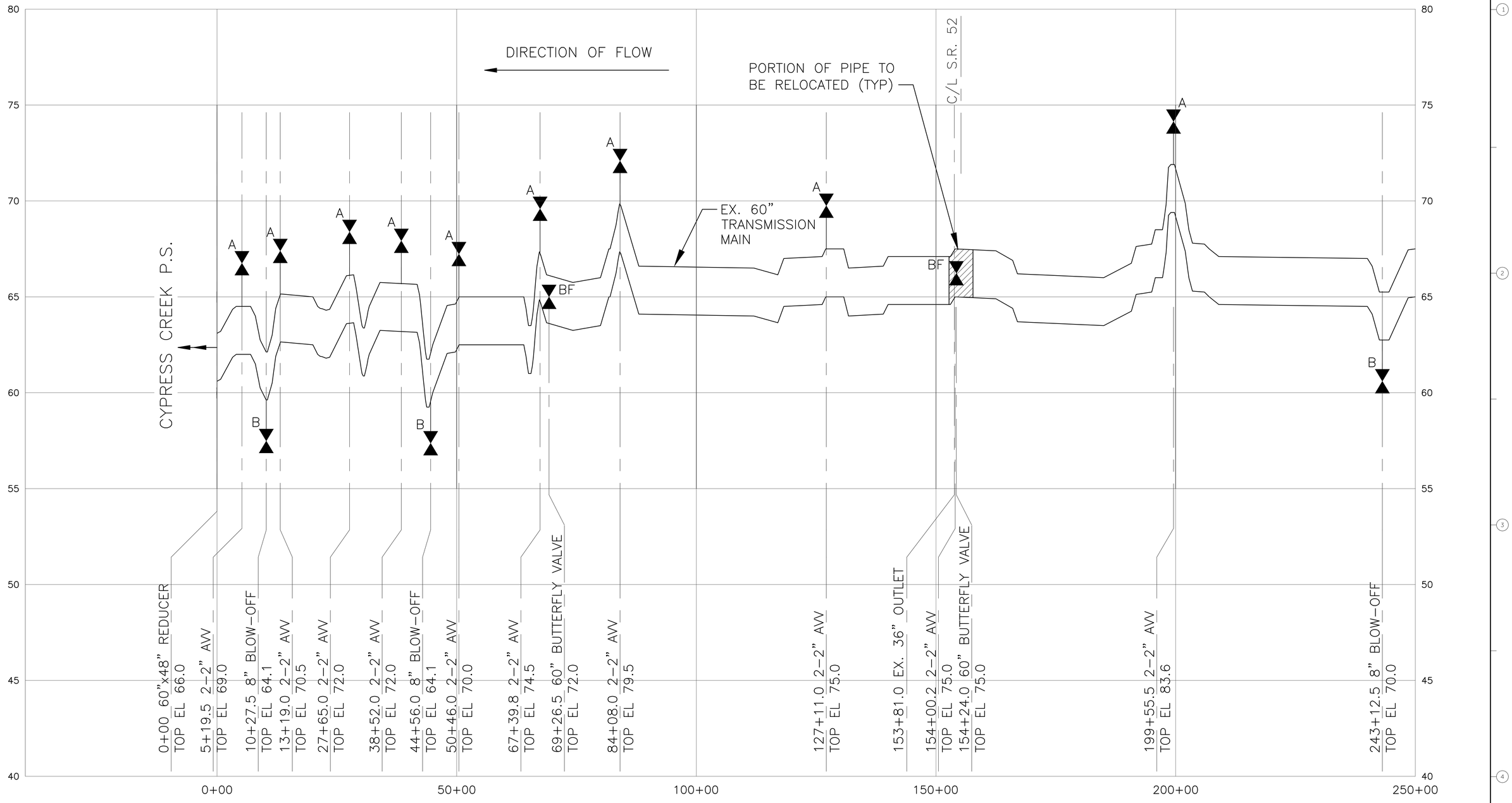

NOTE:

1. THIS PROFILE IS INTENDED FOR SHOWING THE APPROXIMATE LOCATIONS OF EXISTING APPURTENANCES AS RELATED TO REMOVAL OF WATER FROM WITHIN THE PIPE DURING CONSTRUCTION. THE ELEVATIONS OF THE 60" WATER TRANSMISSION MAIN FOR TAMPA BAY WATER WAS BASED ON THE FOLLOWING RECORD DRAWINGS: PROJECT NO. 404-78-0153 PREPARED BY CDM (5-19-81).
2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
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NITA SHARMA Date: 06/12/25
APPROVED BY:

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Certificate of Authorization No.: 3952

TAMPA BAY WATER
PROJECT NO. 07153
CROSS BAR RANCH WELLFIELD
WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

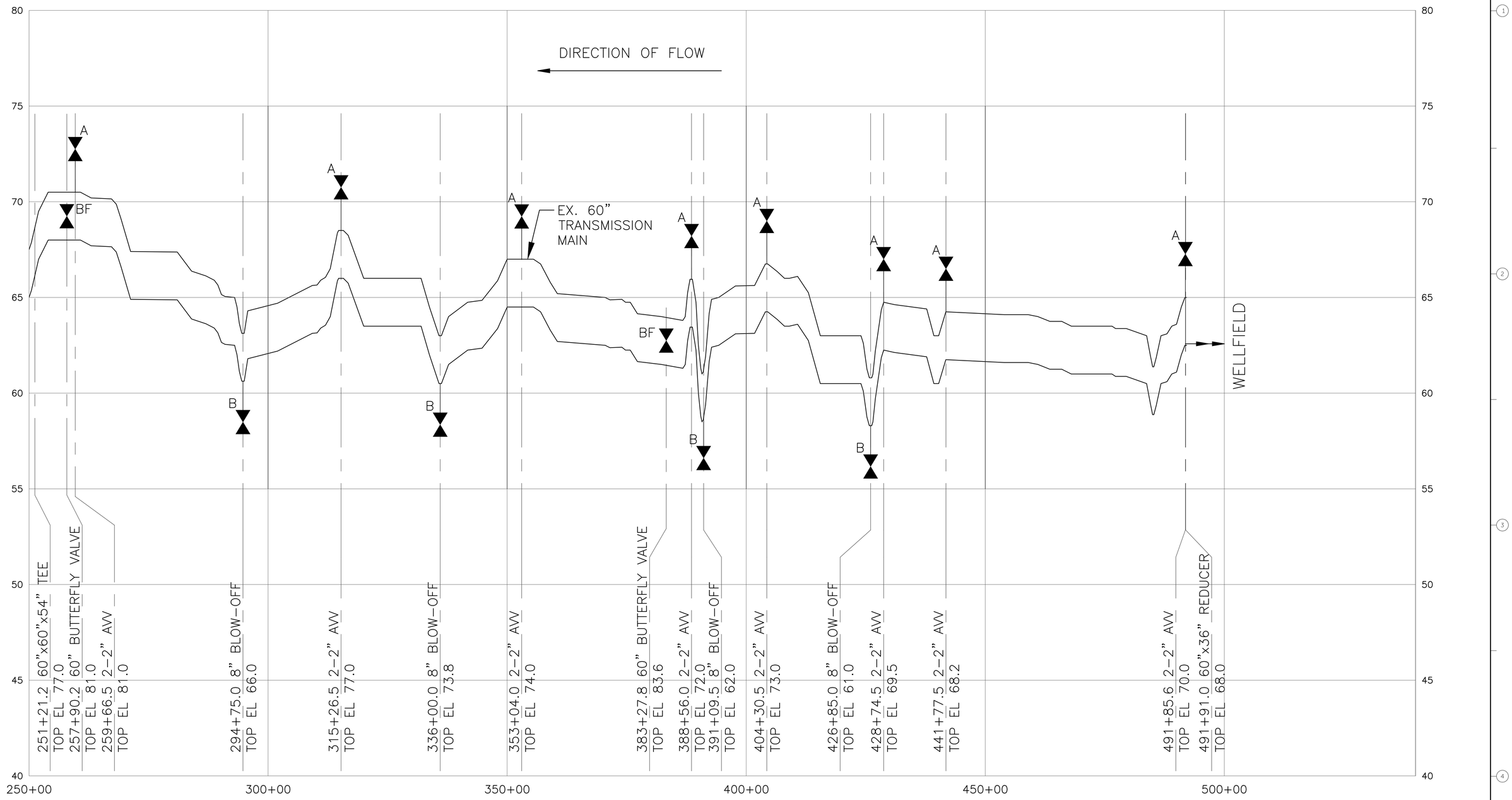
File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

TBW Project No.: 07153

Sheet Designation: D-2

Sheet No.: 13 OF 14



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2. CONTRACTOR TO SUBMIT PIPELINE CONTENTS DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. SHOW ACCESS POINTS AS WELL AS ALL APPURTENANCES TO BE OPERATED.

PROFILE

SCALE: 1"= 1,000' HORIZ.
1"= 5' VERT.

PROJECT MANAGER: NITA M. NAIK, P.E.
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WATER TRANSMISSION MAIN

CONDENSED PROFILE

REV	DESCRIPTION	BY	DATE

TBW Project No.: 07153

Sheet Designation: D-3

File Name: GDT-PLTS-DETAIL-SHEET.DWG

Scale: HORIZ. SCALE: 1"=1,000' VERT. SCALE: 1"=5'

Sheet No.: 14 OF 14

FRAC-OUT CONTINGENCY PLAN

The specific objectives of this plan are to:

- Minimize the potential for a frac-out associated with microtunneling and directional drilling activities.
- Provide for a timely detection of frac-outs.
- Protect environmentally sensitive areas.
- Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite, and
- Ensure that all appropriate notifications are made immediately public, project management and personnel, and environmental agencies.

1.0 Best Management Practices (BMP)

The construction team (Team) will implement all Best Management Practices (BMPs) described in this section to minimize the potential for adverse environmental impacts during the Microtunneling Process. BMPs for erosion control within the staging areas will be implemented and properly maintained at all times during construction of the upland entry/exit pits and drilling operations to prevent siltation and turbid discharges in excess of State water quality standards in accordance with Florida Statutes 62-302 F.A.C. Methods will include, but are not limited to the use of stalked hay bales, staked filter cloth, sodding, seeding and mulching as appropriate; staged construction; and the installation and maintenance of turbidity screens around the immediate project site when adjacent or near to open water.

To provide an additional level of resource protection, the volume of bentonite in the drill string will be monitored at all times during the trenchless operations.

All entry and exit areas have been located in uplands. All construction staging will occur in these upland areas. Exit and entry pits are also a part of the work areas and will be enclosed by silt fences and hay bales. A spill kit will be onsite and used if a frac-out occurs. A vacuum truck will be readily available onsite or offsite within 15 minutes of deployment prior to and during all drilling operations. Containment materials (hay bales, silt fencing, sandbags, frac-out spill kits, etc.) will be staged onsite at locations where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (hay bales or sedimentation fences) between the bore site and the edge of the wetland will be constructed, prior to drilling, to prevent released bentonite material from reaching the water/wetlands.

The site supervisor/foreman will ensure all waste materials are properly containerized, labeled, and removed from the site to an approved disposal facility by personnel experienced in the removal, transport, and disposal of drilling mud.

The site supervisor/foreman will be familiar with all aspects of the drilling activity, the contents of this Plan and the conditions of approval under which the activity is permitted to take place. The site supervisor/foreman will have the authority to stop work and commit the resources (personnel and

equipment) necessary to implement this plan. The site supervisor/foreman will assure that a copy of this plan is available (onsite) and accessible to all construction personnel.

2.0 Equipment

The site supervisor/foreman will ensure that:

- All equipment and vehicles are being checked and maintained daily to prevent leaks of hazardous materials.
- Spill kits and spill containment materials are available onsite at all times and that the equipment is in good working order.
- Equipment required to contain and clean up a frac-out release on land or underwater, including vacuum devices and hoses, will either be available at the work sire or readily available at an offsite location within 15 minutes of the bore site.
- Silt Fences, absorbent pads, and plastic sheeting for placement beneath motorized equipment will be available should any visual evidence of engine fluids leakage be observed.
- Water containing mud, silt, bentonite, or pollutants from equipment washing or other activities will not be allowed to enter the adjacent wetlands. The bentonite used in the drilling process will either be disposed of at an approved disposal facility or recycle in an approved manner. Other construction materials and wastes will be recycled, or disposed of, as appropriate.
- A vacuum truck will be staged at a location from which it can be mobilized and relocated so that at any place along the drill shot can be reached by the apparatus within 10 minutes of a frac-out.

3.0 Training

Prior to the start of construction, the site supervisor/foreman will ensure that crew members receive training in the following:

- The provisions of the trenchless Plan, equipment maintenance and site-specific permit and monitoring requirements.
- Inspection procedures for release prevention and containment equipment and materials.
- Contactor/crew member responsibilities in the event of a release.
- Operation of release prevention and control equipment and the location of the release control materials, as necessary and appropriate.
- Protocols for communication with agency representatives who might be onsite during the cleanup effort.

4.0 Frac-out Monitoring

The trenchless plan will be available on site and the following procedures will be followed each day, prior to the start of work. The site supervisor/foreman will be onsite at any time that drilling is occurring or is planned to occur. The site supervisor/foreman will ensure that a job briefing meeting is held at the start of each day or drilling to review the plan and appropriate procedures to be followed

in case of a frac-out. Questions will be answered and clarification given on any points of concern.

5.0 Pressure Monitoring

Drilling pressures will be closely and continuously monitored so they do not exceed those needed to penetrate the formation. Pressure levels will be set at a minimum level to prevent frac-outs. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added.

Once the drill rig is in place and the drilling begins, the drill operator will stop work whenever the pressure in the drill rig drops or there is a lack of returns in the entrance pit. At this time the site supervisor/foreman will be informed of the potential frac-out. The site supervisor/foreman and the drill rig operator(s) will work to identify the likely location of the frac-out. The location of the frac-out will be recorded and notes made on the location and measures taken to address the concern. The following subsections will be adhered to when addressing a frac-out situation.

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. The clean-up of all spills will begin immediately. The Management & Safety Department will be notified immediately of any spills and will be consulted regarding clean-up procedures. A spill kit will be onsite and be used if a frac-out occurs. A vacuum truck, hose(s), and containment materials such as straw bales, will also be onsite or offsite within 15 minutes of deployment prior to and during all operations. The information will include the location of the frac-out and an estimate of the volume of drilling fluids accidentally released. See section 6.0, Notification, for all agency points of contact, as well as all information to be included in written reports.

The site supervisor/foreman will be immediately notified. In the event of a frac-out, the site supervisor/foreman will conduct an evaluation of the situation and direct recommended actions in accordance with the following sections. The SWC site supervisor/foreman will maintain communication with the FDEP contact to provide a schedule of the activities if requested.

6.0 Frac-out Contingency Plan

The response of the field crew to a frac-out release will be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that pose additional threats to sensitive resources will be taken, as follows:

- Trenchless activities will stop immediately.
- The machine will be pulled back to relieve pressure on frac-out.
- The site supervisor/foreman will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications are made.
- The site supervisor/foreman will evaluate the situation and recommend the type and level of response warranted, including the level of notification required.
- The site supervisor will notify all agency contacts identified in Section 6.0, Notification.
- If the frac-out is minor, easily contained, has not reached the surface and is not threatening

sensitive resources, the viscosity of the drilling fluids may be increased and/or a leak stopping compound previously approved by the Florida Department of Environmental Protection (DEP) will be used to block the frac-out. If the use of the leak stopping compound is not fully successful, the bore stem will be redirected to a new location along the desired drill path where a frac-out has not occurred.

- lf a frac-out has reached the surface, any material contaminated with bentonite will be removed by hand, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand will be placed, and the area returned to pre-project contours.
- If a frac-out occurs on land, reaches the surface and becomes widespread, the site supervisor/foreman will authorize a readily accessible vacuum truck and equipment stored offsite to be mobilized. The vacuum truck may be positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot or may be pulled by a piece of equipment so that contaminated soils can be vacuumed up.

6.0 Notification

In the event a frac-out reaches a wetland or water source, the site supervisor/foreman will notify the Engineer of Record and immediately notify the appropriate resource agencies. All agency notifications will occur within 24 hours and proper written documentation will be submitted to agencies within 10 business days. The following information will be provided in these written reports:

- Name and telephone number of person reporting.
- Location of the release.
- Date and time of the release.
- Type, quantity, and estimated size of drilling fluid release.
- How the release occurred.
- The type of activity that was occurring around the area of the frac-out.
- Description of any sensitive areas and their location in relation to the frac-out.
- Description of the methods used to clean up or secure the site.
- Listing of the current permits obtained for the project.

7.0 Contingency Mitigation Plan

Following the clean-up of a frac-out, the Team will conduct an evaluation of the situation and coordinate with all environmental regulatory agencies to develop a mitigation plan to fully offset any impacts to the wetlands. The plan will be based on a functional assessment that describes how the proposed mitigation would offset both direct and indirect impacts to these resources.

CONSTRUCTION COMMENCEMENT NOTICE

Instructions: In accordance with Chapter 62-330.350(1)(d), F.A.C., complete and submit this form at least 48 hours prior to commencement of activity authorized by permit.

Permit No. _____ Application No. _____

Project Name _____ Phase _____

Construction of the system authorized by the above referenced Environmental Resource Permit and Application, is expected to commence on _____ , 20 _____ and will have an estimated completion date of _____ , 20 _____

PLEASE NOTE: If the actual construction commencement date is not known within 30 days of issuance of the permit, District staff should be so notified in writing. As soon as a construction commencement date is known, the permittee shall submit a completed construction commencement notice form.

Permittee's or Authorized Agent's Signature _____ Company _____

Print Name _____ Title _____ Date _____

E-mail _____ Phone Number _____

As-Built Certification
And Request for Conversion to Operation Phase

Instructions: Complete and submit this page within 30 days of completion of the entire project, or any independent portion of the project, as required by the permit conditions. The operation phase of the permit is effective when the construction certification for the entire permit/application is approved by the Agency. If the final operation and maintenance entity is not the permittee, the permittee shall operate the project, system, works, or other activities temporarily until such time as the transfer to the operation entity is finalized (use Form 62-330.310(2)).

Permit No: Application No: Permittee:

Project Name: Phase or Independent Portion (if applicable):

I HEREBY CERTIFY THAT (please check only one box):

☐ To the best of my knowledge, information, and belief, construction of the project has been completed in substantial conformance with the plans specifications and conditions permitted by the Agency. Any minor deviations will not prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. Attached are documents to demonstrate satisfaction of the outstanding permit conditions, other than long term monitoring and inspection requirements.

☐ Construction of the project was NOT completed in substantial conformance with the plans and specifications permitted by the Agency. Any deviations or independent phasing will not prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. (Contact the permitting agency to determine whether a modification of the permit will be required in accordance with Rule 62-330.315, F.A.C.) Attached is a description of substantial deviations, a set of as-built drawings, and documents to demonstrate satisfaction of the outstanding permit conditions, other than long term monitoring and inspection requirements.

☐ Construction of the project was NOT completed in substantial conformance with the plans and specifications permitted by the Agency. There are substantial deviations that prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. I acknowledge that corrections to the project and/or a modification of the permit will likely be required, and that conversion to the operation phase cannot be approved at this time. As-built or record drawings reflecting the substantial deviations are attached.

For activities that require certification by a registered professional:

By: _____ (Print Name) (Fla. Lic. or Reg. No.)
Signature

(Company Name) (Company Address)

(Telephone Number) (Email Address)

AFFIX SEAL

(Date)

For activities that do not require certification by a registered professional:

By: _____ (Print Name)
Signature

(Company Name) (Company Address)

(Telephone Number) (Email Address) (Date)

Drawings and Information Checklist

Following is a list of information that is to be verified and/or submitted by the Registered Professional or Permittee:

1. All surveyed dimensions and elevations shall be certified by a registered Surveyor or Mapper under Chapter 472, F.S.

2. The registered professional's certification shall be based upon on-site observation of construction (scheduled and conducted by the registered professional of record or by a project representative under direct supervision) and review of as-built drawings, with field measurements and verification as needed, for the purpose of determining if the work was completed in accordance with original permitted construction plans, specifications, and conditions.

3. If submitted, the as-built drawings are to be based on the permitted construction drawings revised to reflect any substantial deviations made during construction. Both the original design and constructed condition must be clearly shown. The plans need to be clearly labeled as "as-built" or "record" drawings that clearly highlight (such as through "red lines" or "clouds") any substantial deviations made during construction. As required by law, all surveyed dimensions and elevations required shall be verified and signed, dated, and sealed by an appropriate registered professional. The following information, at a minimum, shall be verified on the as-built drawings, and supplemental documents if needed:

    a. Discharge structures - Locations, dimensions and elevations of all, including weirs, orifices, gates, pumps, pipes, and oil and grease skimmers;
    b. Detention/Retention Area(s) – Identification number, size in acres, side slopes (h:v), dimensions, elevations, contours, or cross-sections of all, sufficient to determine stage-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems,
    c. Side bank and underdrain filters, or exfiltration trenches - locations, dimensions, and elevations of all, including clean-outs, pipes, connections to control structures, and points of discharge to receiving waters;
    d. System grading - dimensions, elevations, contours, final grades, or cross-sections to determine contributing drainage areas, flow directions, and conveyance of runoff to the system discharge point(s);
    e. Conveyance - dimensions, elevations, contours, final grades, or cross-sections of systems utilized to divert off-site runoff around or through the new system;
    f. Benchmark(s) - location and description (minimum of one per major water control structure);
    g. Datum- All elevations should be referenced to a vertical datum clearly identified on the plans, preferably the same datum used in the permit plans.

4. Wetland mitigation or restoration areas - Show the plan view of all areas, depicting a spatial distribution of plantings conducted by zone (if plantings are required by permit), with a list showing all species planted in each zone, numbers of each species, sizes, date(s) planted, and identification of source of material; also provide the dimensions, elevations, contours, and representative cross-sections depicting the construction.

5. A map depicting the phase or independent portion of the project being certified, if all components of the project authorized in the permit are not being certified at this time.

6. Any additional information or outstanding submittals required by permit conditions or to document permit compliance, other than long-term monitoring or inspection requirements.

OPERATION AND MAINTENANCE INSPECTION CERTIFICATION

Instructions: Submit this form to the Agency within 30 days of completion of the inspection, or after any failure of a stormwater management system or deviation from the permit. This form will be used to document inspections required under Section 12.5 of Applicant's Handbook Volume I.

Permit No.: _____ Application No.: _____ Date Issued: _____

Identification or Name of Stormwater Management System: _____

Phase of Stormwater Management System (if applicable): _____

Inspection Date: _____

Included Documentation: (check all that are attached)

☐ Form 62-330.311(X) "Inspection Checklist" (Required for permitted inspection frequency)

☐ Updated O&M cost estimate

☐ Updated O&M Plan

☐ Monitoring Reports

Inspection results: (check all that apply)

☐ The undersigned hereby certifies that the works or activities are functioning in substantial conformance with the permit. This certification is based upon on-site observation of the system conducted by me or my designee under my direct supervision and my review of as-built plans.

☐ The following maintenance was conducted since the last inspection (attach additional pages if needed):

_____

☐ The undersigned hereby certifies that I or my designee under my direct supervision has inspected this surface water management system and the system does not appear to be functioning in substantial conformance with the permit. I am aware that maintenance or alteration is required to bring the system into substantial compliance with the terms and conditions of the permit. As appropriate, I have informed the owner of the following:

a) The system does not appear to be functioning properly;
b) That maintenance or repair is required to bring the system into compliance; and
c) If maintenance or repair measures are not adequate to bring the system into compliance, the system may have to be replaced or an alternative design constructed subsequent to approval by the agency below.

The following components of the system do not appear to be functioning properly (attach additional pages if needed):

_____

Any components of the constructed system that are not in substantial conformance with the permitted system shall require a written request to modify the permit in accordance with the provisions of Rule 62-330.315, F.A.C. If such modification request is not approved by the agency below, the components of the system that are not in conformance with the permit are subject to enforcement action under Sections 373.119, 373.129, 373.136, and 373.430, F.S.

OPERATION AND MAINTENANCE INSPECTION CERTIFICATION

Name of Inspector: _____ Florida Registration Number Or Qualified Inspector Number: _____

Entity providing Inspector Training: _____

Date of completion of Inspector Training: _____

Inspector's Company Name: _____

Mailing Address: _____

City: State: Zip Code:

Phone: Fax: Email:

Signature of Inspector _____ Date_____

Report Reviewed by Permittee:

Name of Permittee: _____

Signature of Permittee_____ Date_____

Title (if any) _____

Request for Transfer of Environmental Resource Permit to the Perpetual Operation and Maintenance Entity

Instructions: Complete this form to transfer the permit to the operation and maintenance entity. This form can be completed concurrently with, or within 30 days of approval of, the As-Built Certification and Request for Conversion to Operation Phase (Form 62-330.310(1)). Please include all documentation required under Section 12.2.1(b) of Applicant's Handbook Volume I (see checklist below). **Failure to submit the appropriate final documents will result in the permittee remaining liable for operation and maintenance of the permitted activities.**

Permit No.: Application No(s):

Project Name: Phase (if applicable):

A. Request to Transfer: The permittee requests that the permit be transferred to the legal entity responsible for operation and maintenance (O&M).

By: _____ _____
Signature of Permittee — Name and Title

_____ _____
Company Name — Company Address

_____ _____
Phone/email address — City, State, Zip

B. Agreement for System Operation and Maintenance Responsibility: The below-named legal entity agrees to operate and maintain the works or activities in compliance with all permit conditions and provisions of Chapter 62-330, Florida Administrative Code (F.A.C.) and Applicant's Handbook Volumes I and II.

The operation and maintenance entity does not need to sign this form if it is the same entity that was approved for operation and maintenance in the issued permit.

Authorization for any proposed modification to the permitted activities shall be applied for and obtained prior to conducting such modification.

By: _____ _____
Signature of Representative of O&M Entity — Name of Entity for O&M

_____ _____
Name and Title — Address

_____ _____
Email Address — City, State, Zip

_____ _____
Phone — Date

Enclosed are the following documents, as applicable:

☐ Copy of recorded transfer of title to the operating entity for the common areas on which the stormwater management system is located (unless dedicated by plat)
☐ Copy of all recorded plats
☐ Copy of recorded declaration of covenants and restrictions, amendments, and associated exhibits
☐ Copy of filed articles of incorporation (if filed before 1995)
☐ Copy of operation and maintenance plan
☐ Copy of the cost estimate required under Section 12.3 of Applicant's Handbook Volume I

☐ Copy of signed Form 62-330.301(26), “Certification of Financial Capability for Perpetual Operations and Maintenance Entities”

☐ Completed documentation that the operating entity meets the requirements of Section 12.3 of Applicant’s Handbook Volume I. (Note: this is optional, but aids in processing of this request)

Request to Transfer
Environmental Resource and/or State 404 Program Permit

Instructions: To be completed, executed, and submitted by the new owner to the Agency within 30 days after any transfer of ownership or control of the real property where the permitted activity is located.

Use of this form is not required when a valid ERP permit is in the operation and maintenance phase. In such case, the owner must notify the Agency in writing within 30 days of a change in ownership or control of the entire real property, project, or activity covered by the permit. The notification may be by letter or email, or through use of this form, and must be sent to the office that issued the permit. A processing fee is not required for this notice. The permit shall automatically transfer to the new owner or person in control, except in cases of abandonment, revocation, or modification of a permit as provided in Sections 373.426 and 373.429, F.S. (2013). If a permittee fails to provide written notice to the Agency within 30 days of the change in ownership or control, or if the change does not include the entire real property or activity covered by the permit, then the transfer must be requested using this form.

Permit No(s): Application No(s).: Acres to be Transferred:

Permitted Project: Proposed Project Name (if different):

Phase of Project (if applicable):

I hereby notify the Agency that I have acquired ownership or control of the land on which the permitted system is located through the sale or other legal transfer of the land. By signing below, I hereby certify that I have sufficient real property interest or control in the land in accordance with subsection 4.2.3(d) of Applicant's Handbook Volume I; attached is a copy of my title, easement, or other demonstration of ownership or control in the land, including any revised plats, as recorded in the Public Records. I request that the permit(s) be modified to reflect that I agree to be the new permittee. By so doing, I acknowledge that I have examined the permit terms, conditions, and drawings, and agree to accept all rights and obligations as permittee, including agreeing to be liable for compliance with all of the permit terms and conditions and to be liable for any corrective actions required as a result of any violations of the permit after approval of this modification by the Permitting Agency. Also attached are copies of any recorded restrictive covenants, articles of incorporation, and certificate of incorporation that may have been changed as a result of my assuming ownership or control of the lands. As necessary, I agree to furnish the Agency with demonstration that I have the ability to provide for the operation and maintenance of the system for the duration of the permit in accordance with subsection 12.3 of Applicant's Handbook Volume I.

Name of Proposed Permittee:

Mailing Address:

City: State: Zip:

Telephone: E-mail:

_____ _____

Signature of Proposed Permittee Date:

_____

Name and Title

Enclosures:

☐ Copy of title, easement, or other demonstration of ownership or control in the land, as recorded in the Public Records ☐ Copy of current plat(s) (if any), as recorded in the Public Records

☐ Copy of current recorded restrictive covenants and articles of incorporation (if any)

☐ Other

FLORIDA DEPARTMENT OF Environmental Protection

Southwest District
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

November 12, 2025

ELECTRONIC CORRESPONDENCE

In the matter of an
Application for Permit by:

Charles Carden,
General Manager
Tampa Bay Water Cypress Creek WTP
2575 Enterprise Road
Clearwater, FL 33763
permitting@tampabaywater.org

DEP File No. 0030575-028-WC/M1
County: Pasco

NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number 0030575-028-WC/M1 to construct public water system component/effluent transmission water main, issued pursuant to Section 403.861(9), Florida Statutes.

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the application.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rules 28-106.201 and 28-106.301, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, any e-mail address, any facsimile number, and telephone number of the petitioner, if the petitioner is not represented by an attorney or a qualified representative; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@FloridaDEP.gov. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant and persons entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. You cannot justifiably rely on the finality of this decision unless notice of this decision and the right of substantially affected persons to challenge this decision has been duly published or otherwise provided to all persons substantially affected by the decision. While you are not required to publish notice of this action, you may elect to do so pursuant Rule 62-110.106(10)(a), F.A.C.

The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C. If you do not publish notice of this action, this waiver may not apply to persons who have not received a clear point of entry.

Extension of Time
Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@dep.state.fl.us, before the deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation
Mediation is not available in this proceeding.

Judicial Review
Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Florida Rules of Appellate Procedure 9.110 and 9.190 with the Clerk of the Department in the Office of General Counsel (Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000) and by filing a copy of the Notice of Appeal

accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within 30 days from the date this action is filed with the Clerk of the Department.

EXECUTION AND CLERKING

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

for Shannon Herbon
Program Administrator
Permitting & Waste Cleanup Program
Southwest District

Enclosures: Permit No. 0030575-028-WC/M1
Utilities Separation Requirements

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

November 12, 2025

Clerk **Date**

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Permit Issuance and all copies were mailed/electronically transmitted before the close of business on November 12, 2025, to those persons listed.

Copies Furnished to:
Nita Naik Sharma, P.E., Wade Trim, Inc, nsharma@wadetrim.com
Andre Miller, Tampa Bay Water, amillers@tampabaywater.org
James Brock, DEP SWD, james.brock@floridadep.gov
Larisa Orekhova, DEP SWD, Larisa.Orekhova@floridadep.gov

FLORIDA DEPARTMENT OF Environmental Protection

Southwest District
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

ELECTRONIC CORRESPONDENCE

PERMITTEE:
Tampa Bay Water Cypress Creek WTP
Charles Carden, General Manager
2575 Enterprise Road
Clearwater, FL 33763
permitting@tampabaywater.org

PWS ID NUMBER: 651-2230
PERMIT NUMBER: 0030575-028-WC/M1
DATE OF ISSUE: **November 12, 2025**
EXPIRATION DATE: **November 11, 2030**
COUNTY: Pasco
PROJECT: Cross Bar Ranch Wellfield Water Transmission Main

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-550, 62-555 and 62-560. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TO CONSTRUCT: A relocation of existing 60-inch diameter raw water transition main (TM) across State Road (SR) 52 for the Cypress Creek Water Treatment Plant.

PROPOSED CONSTRUCTION INCLUDES:

1. A relocation of approximately 500 linear feet of existing 60-inch diameter raw water transition main (TM).

The permitted operating maximum-day capacity of this plant, 110,000,000 gpd, will not be affected by this project.

IN ACCORDANCE WITH: preliminary design report, engineering drawings and related documents, prepared by Nita Naik Sharma, P.E., [Wade trim, Inc.].

LOCATION: The proposed pipeline is adjacent to existing Tampa Bay Water easement crossing SR 52, approximately 1.7 miles west of the intersection of SR 52 and Ehren Cutoff in Pasco County.

A. **General Conditions**

The permittee shall be aware of and operate under the Permit Conditions below. These applicable conditions are binding upon the permittee and enforceable pursuant to Chapter 403, Florida Statutes. [F.A.C. Rule 62-555.533(1)]

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times (reasonable time may depend on the nature of the concern being investigated), access to the premises where the permitted activity is located or conducted to:

    a. Have access to and copy any records that must be kept under conditions of the permit;
    b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
    c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

    a. A description of and cause of noncompliance; and
    b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

11. This permit is transferable only upon Department approval in accordance with Rule 62- 4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (BACT)
    b. Determination of Prevention of Significant Deterioration (PSD)
    c. Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
    d. Compliance with New Source Performance Standards

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:
        i. the date, exact place, and time of sampling or measurements;
        ii. the person responsible for performing the sampling or measurements;
        iii. the dates analyses were performed;
        iv. the person responsible for performing the analyses;
        v. the analytical techniques or methods used;
        vi. the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

B. Regulatory Section

1. All construction must be in accordance with this permit. Before commencing work on project changes for which a construction permit modification is required per 62-555.536(1), the permittee shall submit to the Department a written request for a permit modification. Each such request shall be accompanied by one copy of a revised construction permit application, the proper processing fee and one copy of either a revised preliminary design report or revised drawings, specifications and design data. [F.A.C. Rule 62-555.536].

2. Permitted construction or alteration of public water supply systems must be supervised during construction by a professional engineer registered in the State of Florida if the project was designed under the responsible charge of a professional engineer licensed in the State of Florida. The permittee must retain the service of a professional engineer registered in the State of Florida to observe that construction of the project is in accordance with the engineering plans and specifications as submitted in support of the application for this permit. [F.A.C. Rule 62-555.520(3)].

3. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoe remains, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources and the permitting agency. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

4. If delays will cause project completion to extend beyond the expiration date of this permit, the permittee shall submit to the Department a request to extend the expiration date of this permit including the appropriate processing fee. This request shall specify the reasons for the delay and shall be submitted to the Department for approval prior to the expiration date of this permit. Note that no specific construction permit shall be extended so as to remain in effect longer than five years. [F.A.C. Rule 62-555.536(4)]. {OPTIONAL}

5. In accordance with General Condition #11 of this permit, this permit is transferable only upon Department approval. Persons proposing to transfer this permit must apply jointly for a transfer of the permit within 30 days after the sale or legal transfer of ownership of the permitted project that has not been cleared for service by the Department using form, 62-555.900(8), Application for Transfer of a PWS Construction Permit along with the appropriate fee. [F.A.C. Rule 62-555.536(5)]

6. This permit satisfies Drinking Water permitting requirements only and does not authorize construction or operation of this new transmission main (TM) prior to obtaining all other necessary permits from other program areas within the Department, or required permits from other state, federal, or local agencies.

7. If gasoline contamination is found at the construction site, work shall be stopped and the proper authorities notified. With the approval of the Department, ductile iron pipe and fittings, and solvent resistant gaskets materials shall be used in the contaminated area. The ductile pipe shall be used in the contaminated area. The ductile iron pipe shall extend 100 feet beyond any solvent noted. Any contaminated soil that is excavated shall be placed on an impermeable mat, covered with waterproof covering, and held for disposal. <u>If the site cannot be properly cleaned, then consultation with the Department is necessary prior to continuing with the project construction.</u>

8. This permit does not constitute approval of construction on jurisdictional wetland areas; therefore such approval must be obtained separately from the Water Management District or from DEP ERP Section, as applicable, Permittee shall provide a copy of the permit approval to the Department if water main installation involves activities on wetlands.

C. Construction Standards

1. All products, including paints, which shall come into contact with potable water, either directly or indirectly, shall conform with National Sanitation Foundation (NSF) International, Water Chemicals Codex, Food Chemicals Codex, American Water Works Association (AWWA) Standards and the Food and Drug Administration, as provided in Rule 62-555.320(3), F.A.C.

2. Water supply facilities, including mains, pipe, fittings, valves, fire hydrants and other materials shall be installed in accordance with the latest applicable AWWA Standards and Department rules and regulations. The system shall be pressure and leak tested in accordance with AWWA Standard C600 C603, or C605, as applicable, and disinfected in accordance with AWWA Standard C651-653, as well as in accordance with Rule 62-555.340, F.A.C.

3. The installation or repairs of any public water system, or any plumbing in residential or nonresidential facilities providing water for human consumption, which is connected to a public water system shall be lead free in accordance with Rule 62-555.322, F.A.C.

4. When any existing asbestos cement (AC) pipes are replaced under this permit, the permittee shall do so in accordance with the applicable rules of Federal Asbestos Regulation and Florida DEP requirements. For specific requirements applicable to AC pipes, the permittee should contact the Air and Waste Management section managers prior to commencing any such activities at 813.470.5700. Please be aware that a notification is required to be submitted to the Department for a regulated project.

5. Permittee shall ensure that there shall be no cross-connection with any non-potable water source in accordance with Rule 62-555.360, F.A.C.

6. The new or altered aboveground piping at the drinking water treatment plant shall be color coded and labeled as recommended in Section 2.14 of "Recommended Standards for Water Works, 1997 Edition". [F.A.C. Rule 62-555.320(10)]

7. Permittee shall ensure that there shall be no cross-connection with any non-potable water source in accordance with Rule 62-555.360, F.A.C.

D. Operational Requirements

1. The current operational requirements for this water treatment plant are not changed by the project.

2. The supplier of water shall operate and maintain the public water system so as to comply with applicable standards in F.A.C. Rule 62-550 and 62-555.350.

2. The permittee shall have complete record drawings produced for the project in accordance with Rule 62-555.530(4), F.A.C.

E. Monitoring Provisions

1. The current monitoring requirements for this water treatment plant are not changed by the project.

2. Permittee shall follow the guidelines of Chapters 62-550, 62-555, and 62-560, F.A.C., regarding public drinking water system standards, monitoring, reporting, permitting, construction, and operation.

F. Clearance Requirements

1. The permittee must instruct the engineer of record to request system clearance from the Department within sixty (60) days of completion of construction, testing and disinfecting the system. Bacteriological test results

shall be considered unacceptable if the test were completed more than 60 days before the Department received the results. [F.A.C. Rule 62-555.340(2)(c)]

Permitted construction or alteration of a public water system may not be placed into service until a letter of clearance has been issued by this Department. [F.A.C. Rule 62-555.345]

2. Prior to placing this project into service, Permittee shall submit, at a minimum, all of the following to the Department for evaluation and approval for operation, as provided in Rules 62-555.340 and 62-555.345, F.A.C.:
   a. the engineer's *Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components Into Operation* {DEP Form 62-555.900(9)};
   b. certified record drawings, if there are any changes noted for the permitted project.
   c. two consecutive days of satisfactory bacteriological analytical results (see paragraph 3 below).
   d. copy of a satisfactory pressure test of the process piping performed in accordance with AWWA Standards. [F.A.C. Rule 62-555.320(21)(a)(1)]

3. The new facilities shall be cleaned, disinfected, and bacteriologically cleared in accordance with Chapter 62-555, F.A.C. The bacteriological clearance data representative of the storage tank (two samples on consecutive days), the well discharge piping and water main (in accordance with the instructions for Bacteriological Sampling Locations shown below) and the untreated well water (two samples per day for 5 consecutive days collected at least six hours apart for each of the two wells) shall be submitted to the Department with the engineer's certification of construction completion. [Section 62-555.340 and 62-555.315(6)(b), F.A.C.]

   Bacteriological Sampling Locations: Copies of satisfactory bacteriological analyses taken from locations within the distribution system or water main extension to be cleared, in accordance with Rules 62-555.315 (6), 62-555.340 and 62-555.330, F.A.C. and American Water Works Association (AWWA) Standard C 651-92 as follows:

   - *The endpoint of the proposed addition;*
   - *Any water lines branching off a main extension;*
   - *Every 1,200 feet of water main;*
   - *Each location shall be sampled on two separate days (at least 6 hours apart) with sample point locations and chlorine residual readings **clearly indicated** on the report and/or drawings.*
   - *Bacteriological sample results will be considered unacceptable if the tests were completed more than 60 days before the Department receives the results.*

In order to facilitate the issuance of a letter of clearance, the Department requests that all of the above information be submitted as one package.

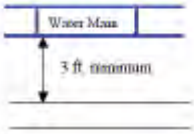
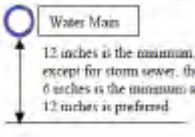
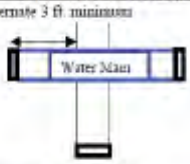
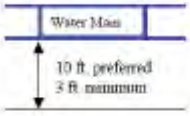
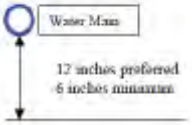
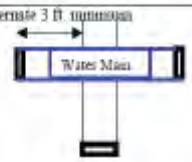
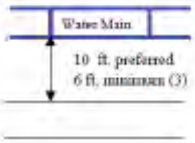
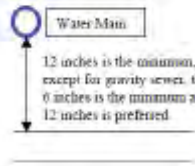
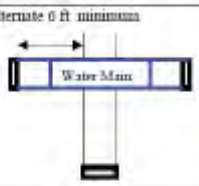
Executed in Hillsborough County, Florida

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

_____

for Shannon Herbon
Program Administrator
Permitting & Waste Cleanup Program
Southwest District

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH RULE 62-555.314, F.A.C.

Other Pipe	Horizontal Separation	Crossings (1)	Joint Spacing @ Crossings (Full Joint Centered)
Storm Sewer, Stormwater Force Main, Reclaimed Water (2)			
Vacuum Sanitary Sewer			
Gravity or Pressure Sanitary Sewer, Sanitary Sewer Force Main, Reclaimed Water (4)			
On-Site Sewage Treatment & Disposal System	10 ft. minimum	---	---

(1) Water main should cross above other pipe. When water main must be below other pipe, the minimum separation is 12 inches.

(2) Reclaimed water regulated under Part III of Chapter 62-610, F.A.C.

(3) 3 ft. for gravity sanitary sewer where the bottom of the water main is laid at least 6 inches above the top of the gravity sanitary sewer.

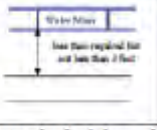
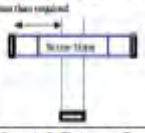
(4) Reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.

EXCEPTIONS TO MINIMUM SEPARATION REQUIREMENTS

Where it is not technically feasible or economically sensible to comply with the requirements of 62-555.314(1) or (2), F.A.C., **the Department shall allow exceptions to these requirements if suppliers of water or construction permit applicants provide technical or economic justification for each exception and provide alternative construction features that afford a similar level of reliability and public health protection.**

Acceptable alternative construction features include the following:

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH 62-555.314(5)(a), F.A.C.

Other Pipe	Horizontal Separation	Joint Spacing @ Crossings (Full Joint Centered)
Gravity or Pressure Sanitary Sewer, Sanitary Sewer Force Main, Reclaimed Water, Vacuum Sanitary Sewer, Storm Sewer, Stormwater Force Main		

Where an underground water main is being laid **less than the required minimum horizontal distance** from another pipeline and where an underground water main is **crossing another pipeline and joints in the water main are being located less than the required minimum distance from joints in the other pipeline**:

1. Use of pressure-rated pipe conforming to the American Water Works Association standards incorporated into Rule 62-555.330, F.A.C., for the other pipeline if it is a gravity- or vacuum-type pipeline;

2. Use of welded, fused, or otherwise restrained joints for either the water main or the other pipeline; **or**

3. Use of watertight casing pipe or concrete encasement at least four inches thick for either the water main or the other pipeline.

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH 62-555.314(5)(b), F.A.C.

Other Pipe	Horizontal Separation	Crossings
Gravity or Pressure Sanitary Sewer, Sanitary Sewer Force Main, Reclaimed Water, Vacuum Sanitary Sewer, Storm Sewer, Stormwater Force Main		

Where an underground water main is being laid **less than three feet horizontally** from another pipeline and where an underground water main is **crossing another pipeline and is being laid less than the required minimum vertical distance from the other pipeline**:

Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe) or concrete encasement at least four inches thick for both the water main **and** for the other pipeline if it is new and is conveying wastewater or reclaimed water.

Disclaimer – This document is provided for your convenience only. Please refer to Rule 62-555.314, F.A.C., for additional construction requirements.

EXHIBIT B
BIDDER'S RESPONSE FORMS

1. BID FORM

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

OFFER

TO: Tampa Bay Water

The undersigned hereby offers and agrees to furnish the goods and/or services in compliance with all terms, scope of work, conditions, specifications, and addenda in this Invitation for Bids.

INVESTIGATION:

The undersigned, by submission of this Bid Form, certifies it has thoroughly examined all ITB documents, including any Existing Condition Documents and Project site in order to familiarize itself with all existing conditions. This may include the physical condition on the ground including, but not limited to, the soil borings and has satisfied itself that the number of borings and their locations are adequate or has made any additional soil tests or borings if they feel the number, type, or location of those provided by Tampa Bay Water are inadequate or incomplete.

OBLIGATION:

The undersigned, by submission of this Bid Form, hereby agrees to be obligated, if selected as the Contractor, to provide the stated goods and/or services to Tampa Bay Water for the term as stated herein, and to enter into a Contract with Tampa Bay Water, in accordance with all documents herein, together with any written addenda.

BID PRICE:

The undersigned agrees to abide by the pricing contained on the Price Form.

ADDENDA:

The Bidder acknowledges receipt of the addenda noted below and has incorporated the content of Addenda into this Bid:

#1 #_____ #_____ #_____

CONTRACTOR CONTRACT:

The Bidder agrees to the terms and conditions in the draft Contract included with this ITB **(initial one below)**:

_____ "As is" with no modifications.

_____ With the changes requested in the attached document (attach to this form) and understands that Tampa Bay Water reserves the right to reject the change requests.

LITIGATION:

The Bidder understands it must disclose any past, pending or threatened litigation or regulatory action involving construction services provided by the Bidder **(initial one below):**

_____ None are known to exist.

Action exists, and a full explanation has been attached to this form.

CONFLICTS OF INTEREST:

The Bidder understands it must disclose any potential conflict of interest which would adversely affect the Bidder's ability to provide fair, loyal, and competitive services to Tampa Bay Water. Such disclosures shall include, but not be limited to, the Bidder's contractual obligations, property interests or clientele relationship or the property interests, contractual obligations or relationships of the Bidder's principals, officers, directors, employees or agents which are directly or indirectly related to Tampa Bay Water and its operations, its Agency Representative, the Southwest Florida Water Management District (SWFWMD), the Florida Department of Environmental Protection (FDEP), or any of our member governments **(initial one below):**

____ None are known to exist.

____ Potential or apparent conflict exists, and a full explanation has been attached to this form.

COMPLIANCE WITH LAWS/PERMITS:

The Bidder certifies it is not currently in violation of any regulatory rules and regulations that may have an impact on the firm's operations, and it agrees to comply with all local, State, and Federal statutes, regulations, directives and orders as applicable to the services provided and offered to Tampa Bay Water. The Bidder further agrees it has not been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List; nor has it engaged in a boycott of Israel and has no business operations in Cuba or Syria. (Per Section 287.135(5), Florida Statutes). Additionally, the Bidder certifies (pursuant to Subsection 287.134(2)(a), Florida Statutes) it has not been placed on the discriminatory vendor list.

NONCOLLUSION:

The undersigned, hereinafter called Bidder, declares and certifies that (i) all principals with an interest in this Bid have been named herein; (ii) this Bid is, in all respects, fair and without fraud; (iii) this Bid is made without collusion with any official of Tampa Bay Water or Engineer; and (iv) the Bid is made without any connection or collusion with any person submitting another Bid for the Work.

CONTRACT EXECUTION:

The undersigned Bidder proposes and agrees that if this Bid is accepted, it shall enter into a contract with Tampa Bay Water in the form included with the Contract documents and perform and furnish all Work as specified or indicated in this ITB at the price bid and within the time specified, and in accordance with the other terms and conditions of the Contract documents.

CONTRACT MODIFICATION PRICING:

Bidder acknowledges and agrees that the separate prices on this Bid, where they are applicable and deemed acceptable by Tampa Bay Water, will be used by Tampa Bay Water and Bidder, if awarded the Contract documents, whenever similar work is added or deducted from the Contract documents.

PROJECT UNDERSTANDING:

Bidder represents that before making its Bid, Bidder has familiarized itself with the nature and extent of the Contract documents (as defined in the General Conditions), Work, Project site, locality, and all local conditions and laws and regulations that may in any manner affect cost, schedule, progress, performance, or furnishing of the Work.

Further, Bidder has read and studied carefully: reports of explorations and tests of surface and subsurface conditions; and those drawings of physical conditions in or relating to existing surface or subsurface structures or underground utilities; and accepts the determinations established in 6.0

Supplemental Information for Bidders to the extent of the technical data contained in those reports and drawings upon which Bidder may rely, which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has read and studied all information and data shown or indicated in the Contract documents about other work under separate contracts at or near the Project site and assumes responsibility for all conditions and consequences which may result from other work and which in any manner affect cost, schedule, progress, performance, and furnishing of the Work.
Further, Bidder has correlated the results of the activities, examinations, and studies as noted above, with the terms and conditions of the Contract documents and has exercised its own independent judgement in the interpretation of this information.

NOTICE OF ERRORS:
Bidder has given Tampa Bay Water notice of all conflicts, ambiguities, errors, or omissions, if any that Bidder has discovered in the ITB.

FIRM OFFER:
Bidder has read the Contract documents and accepts all of the terms and conditions of the Contract documents, including without limitation those dealing with the disposition of Bid Security. Bidder acknowledges all Bids shall remain firm for 90 days or as otherwise required by this ITB.

REQUIREMENTS IN EFFECT:
Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the Laws and Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specifications, manual, code, or Laws and Regulations in effect on the date of the receipt of Bids, except as may be otherwise specifically stated.

PUBLIC RECORDS:
Each Bidder, by submitting a Bid, acknowledges the Agency's legal obligation in accordance with Chapter 119 of the Florida Statutes, to respond to all public records requests in a timely manner and expressly waives any right to contest, impede, prevent or delay such disclosure, or to initiate any proceeding that may have the effect of impeding, preventing or delaying such disclosure, unless the Bidder establishes its right to a public records exception. It is the responsibility of the Bidder alone to establish its right to any such exception. Under no circumstances will Tampa Bay Water be responsible or liable to a Bidder or any other party as a result of disclosing any such information or materials.

TRENCH SAFETY ACT:
Bidder acknowledges and agrees that the trench safety standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of Bidder. The price on the Price Form includes Bidder's total cost for compliance with the Florida Trench Safety Act.

SUPPLIERS:
Bidder certifies that all suppliers, if acceptable to Tampa Bay Water, shall be supplying the material or equipment for the portions of the Work identified in the list in the event Bidder is awarded the Contract.

I certify, under penalty of perjury, that I have the legal authorization to bind the firm hereunder: The individual signing this form certifies, under penalty of perjury, that (s)he has the authority to sign on behalf of the firm. (If signature is by an agent, other than an officer of the corporation or a member of a partnership, a notarized power-of-attorney must accompany the Bid.) The following is certified by the signing of this form:

BID CONTACT INFORMATION AND PRIMARY SIGNATURE

JDS Pipe Inc.
Firm Name

3258 Parkside Center Circle, Tampa, FL 33619
Firm Address

Eric Malvin
Printed Name

770-972-8000
Phone Number

emalvin@jdspipe.com
Email Address

CUC1224651
Firm Business License Number

Underground & Excavation — 8/31/26
License Classification — Renewal Date

Is license active? yes

This Bid is submitted on this 17th day of March, 2026.



2. AUTHORIZED SIGNATURES

This Bid Form must be signed in the legal name of the company and by an officer or partner having authority to bind the company or firm by his or her signature. Electronic signatures are acceptable. Complete the applicable section below based on firm type:

If Bidder is an individual:

Name of Individual: n/a

Title: _____

By _____
(if other than individual, Attach Power of Attorney)

Doing Business As: _____

Business Address: _____

Telephone: _____

If Bidder is a Partnership:

By: n/a
(True Name of Partnership)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

_____
Name of General or Limited Partner(s) Authorized to Sign

By: _____
(Attach evidence of authority to sign)

Business Address: _____

Telephone: _____

If Bidder is a Corporation:

By: JDS Pipe Inc.
(Legal Corporation Name)

Name: Eric Malvin

Title: Vice President

By: _____
(attach evidence of authority to sign)

Name and Title and Signature of Official Attesting:

Name: Jennifer Butler

Title: Corporate Secretary

By: _____

Business Address: 272 Hurricane Shoals Rd. NE, Lawrenceville, GA 30046

Telephone: 770-972-8000

State of Incorporation: Georgia

If Bidder is a Joint Venture: n/a

Each joint venturer shall be identified below and shall sign the Bid. The manner of signing for each individual, partnership and corporation that is a party to the joint venture shall be in the same manner as is indicated above.

Joint Venture Partners:

_____

_____

_____

_____

This project provides an Owner's Allowance in the amount of $246,000.00 which is not included in the Price Form above. Contractor's use of Owner's Allowance is not guaranteed. (Usage of Owner's Allowance must be pre-approved by Tampa Bay Water in writing.)

Bidder acknowledges and agrees that the Trench Safety Standards in effect at the time of this Bid and at the time(s) of performing the Work shall be adhered to and compliance is the complete and sole responsibility of the Bidder. The proposed Total Bid Price, as stated herein includes Bidder's total cost for compliance with the Florida Trench Safety Act.

Bidder shall have an Indemnification responsibility in the amount of $100.00 which is not included in the Price Form above.

TAMPA BAY WATER
Supplying Water To The Region

REVISED ADDENDUM ONE – ATTACHMENT "1"

3. PRICE FORM - CROSS BAR RANCH WELLFIELD WATER TRANSMISSION MAIN -UTILITY CONFLICT (Project #07153)

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

Review this ITB in its entirety and provide pricing below that is inclusive of all expenses.

Item No. (a)	FDOT Pay Item No. (b)	Description (c)	Unit (d)	Estimated Quantity (e)	Unit Price ($) (f)	Total Estimated Price ($) (e)x(f)=(g) (g)
1	Misc.	General Conditions, Bonds and Insurance (2%)	Lump Sum	1	$115,000.00	$115,000.00
2	T&E	Mobilization, and Demobilization (not to exceed 5% of the bid)	Lump Sum	1	$295,000.00	$295,000.00
3	1050 61260	Furnish and Install 60-inch Steel Water Main by Open Cut	Linear Foot	301	$4,751.00	$1,430,051.00
4	1050 61160	Furnish and Install 60-inch Steel Water Main by Microtunneling	Linear Foot	167	$19,700.00	$3,289,900.00
5	1050 61236	Furnish and Install 36-inch Steel Water Main by Open Cut	Linear Foot	15	$2,670.00	$40,050.00
6a	1055 61160	Furnish and Install 60-inch Steel Fittings	Each	6	$20,300.00	$121,800.00
7	1055 61136	Furnish and Install 36-inch Steel Fittings	Each	2	$7,200.00	$14,400.00
8	1080 26102	Furnish and Install Air Release Valves	Each	2	$22,700.00	$45,400.00
9	1080 24160	Furnish and Install 60-inch Butterfly Valve	Each	2	$167,000.00	$334,000.00
10	1080 24136	Furnish and Install 36-Inch Butterfly Valve	Each	1	$56,000.00	$56,000.00
11	0400-603	Cathodic Protection	Lump Sum	1	$59,000.00	$59,000.00
12	E574 1	Sod Restoration	Square Yard	3,800	$13.00	$49,400.00
13	0430830	Place Existing Pipe Out of Service by Grouting	Cubic Yard	70	$590.00	$41,300.00
14	1050 16006	Place Existing Pipe Out of Service by Removing	Linear Foot	250	$130.00	$32,500.00
TOTAL BID PRICE: (TOTAL OF ITEMS 1-14 IN COLUMN (G) FOR BASIS OF AWARD)						$5,923,801.00

QUALITY MANUAL

(Edition 1)

FOR MANUFACTURING OF STEEL WELDED PIPES AND APPLICATION OF INTERNAL CEMENT MORTAR LINING, ANTI CORROSION COATING ON PIPES.

(REF: ISO 9001:2015, THE STEEL PLATE FABRICATORS ASSOCIATION (SPFA), AMERICAN WATER WORKS ASSOCIATION (AWWA), ANSI/AWWA C 200-17) QUALITY MANAGEMENT SYSTEMS

CONTROLLED COPY NO	:
PREPARED BY	: MANAGER QA
APPROVED BY	: DIRECTOR QA

AMERICAN SPIRALWELD PIPE CO, LLC

WORKS:	**SALES & PROJECT MANAGEMENT:**
2061 AMERICAN ITALIAN WAY, COLUMBIA, SC 29209 1225 E MARENGO AVENUE, FLINT, MI 48505 2700 J EAGAN ST, PARIS, TX 75460	2916 N. 16th Street, Birmingham, AL 35207

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PREPARED BY	APPROVED BY
(Joshua Williams) (MANAGER QA)	(Rahul Patwardhan) (DIRECTOR QA)

American SpiralWeld Pipe Company, LLC
Project Reference List

Date	Project Location and Description	Owner	Engineer	Contractor or Purchaser	Quantity (ft)	Size
Oct-14	Lake Huron Initiative Flint, MI	Karegnondi Water Authority G-4610 Beecher Rd Flint, MI 810-701-6514		Direct Bid to KWA	131,690 128,891	60" 66"
Nov-16	WTM Package No. 4A Oak Lawn, IL	The Village of Oak Lawn 9446 S. Raymond Ave Oak Lawn, IL 708-636-4400	CDM Smtih 125 South Wacker Drive; Suite 700 Chicago, IL 60606 312-346-5000	Reliable Contracting & Equipment Co. 4100 S. Emerald Avenue Chicago, IL 60609 312-666-3626	154 11,727 943 23	48" 60" 68" 54"
Jul-18	Conduit 16 West Segment Arvada, CO	Denver Water 1600 W 12th Ave Denver, CO 80204 303-628-6614	HDR / Dewberry 1670 Broadway Denver, CO 80202 303-764-1520	Garney Construction 7911 Shaffer Pkwy Littleton, CO 80127 303-791-3600	9,300	66"
Mar-20	Homestake Suction Pipeline Replacement Project Granite, CO	Colorado Springs Utilities 1521 Hancock Expressway, PO Box 1103, Mail Coe 1821 Colorado Springs, CO 80947 (719) 668-8537	Dewberry 990 S Broadway, Suite 400 Denver, CO 80209 (303) 951-0613	Garney Construction 7911 Shaffer Pkwy Littleton, CO 80127 303-791-3600	1,700	66"
Apr-20	WTM Package No 6A Oak Lawn, IL	The Village of Oak Lawn 9446 S. Raymond Ave Oak Lawn, IL 708-636-4400	CDM Smith 125 South Wacker Drive, Suite 700 Chicago, IL 60606 312-346-5000	Reliable Contracting and Equipment Co. 4100 S. Emerald Ave Chicago, IL 60609 312-666-3626	26,476	60"

AMERICAN
SPIRALWELD PIPE

THE RIGHT WAY

Clayton Simons
Territory Manager

March 13, 2026

Crossbar Ranch Wellfield Water Transmission Main – Utility Conflict
Tampa, FL

This letter certifies that American SpiralWeld Pipe (ASWP) meets the experience requirements in specification section 15065 – 1.05.B.1-3.

American SpiralWeld Pipe Company, LLC is a fully owned subsidiary of American Cast Iron Pipe Company. American Cast Iron Pipe Company, Inc. (ACIPCO) is an employee-owned company, headquartered in Birmingham, AL, which employs approximately 2,600 people in 18 facilities in the U.S. and South America. Since it was founded in 1905, ACIPCO has operated on the principle of the Golden Rule: Treat others the way you want to be treated.

American SpiralWeld Pipe manufactures spiral-welded steel pipe and has production facilities in Columbia, South Carolina (constructed in 2000), Flint, Michigan (constructed in 2014) and Paris, Texas (constructed in 2021). No other facility in the U.S. can match the capacity of AMERICAN's spiral mills that manufacture high quality steel pipe in sizes up to 144" in diameter. Production rates through the facilities vary according to pipe size and wall thickness. ASWP is certified by the Steel Plate Fabricator's Association (SPFA), which is a quality assurance program specific to the manufacture of AWWA C200 Steel Water Pipe.

This letter certifies that ASWP has sufficient production capacity available for the volume of work of the subject project. The quantity of pipe required for this project represents a very small percentage of our overall production capacity. ASWP will be able to meet the pipe shipment requirements of the installing contractor for the subject project so that the contractor can meet the contract time.

Please see the attached list of similar projects manufactured and successfully installed and in operation for the last 5 years.

Attached to this letter is our quality assurance manual as requested.

Please let me know if you need additional information.

Sincerely,

Clayton Simons
Territory Manager
American SpiralWeld Pipe Company, LLC

4. FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", JDS Inc., a corporation X, individual ____, partnership ____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", Harco National Insurance Company, a corporation of the state of IL, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of Five Percent of Amount Bid ____ Dollars ($5%), lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017, covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

IMPORTANT: Sureties executing this Bid Bond shall be currently authorized to do business in the State of Florida as surety and, except as otherwise provided by the Florida Statutes, be on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies. Bonds cannot be in excess of the amount indicated as approved by that list.

Harco National Insurance Company
(Name of Surety)

4200 Six Forks Road, Suite 1400 Raleigh, NC 27609
(Address)

847-321-4800
(Telephone Number)

William Reidinger
(Name of Duly Authorized Florida Agent)

24850 Burnt Pine Drive #4. Bonita Springs, FL 34134
(Address)

847-463-7251
(Telephone Number)

Signed and sealed this 17th day of March, 20 26.

Bidder/Principal JDS Inc.

Witness
Jennifer Butler
Jennifer Butler CFO/Corporate Secretary

By: Eric Malvin - VP - FL
Name and Title

JDS Inc CORPORATE SEAL STATE OF GEORGIA

Surety Harco National Insurance Company

Witness
John W. McGuire

By:
William Reidinger, Attorney-in-Fact
Name and Title

By Attorney-In-Fact:
(Attach Certified Copy of Power of Attorney

HARCO NATIONAL INSURANCE COMPANY CORPORATE SEAL 1984 ILLINOIS

FLORIDA DEPARTMENT OF FINANCIAL SERVICES

WILLIAM PATRICK REIDINGER

License Number : E033020

Resident Insurance License

- 0220 - GENERAL LINES (PROP & CAS)

Issue Date

01/26/2025

Please Note: A licensee may only transact insurance with an active appointment by an eligible insurer or employer. If you are acting as a surplus lines agent, public adjuster, or reinsurance intermediary manager/broker, you should have an appointment recorded in your own name on file with the Department. If you are unsure of your license status you should contact the Florida Department of Financial Services immediately. This license will expire if more than 48 months elapse without an appointment for each class of insurance listed. If such expiration occurs, the individual will be required to re-qualify as a first-time applicant. If this license was obtained by passing a licensure examination offered by the Florida Department of Financial Services, the licensee is required to comply with continuing education requirements contained in 626.2815 or 648.385, Florida Statutes. A licensee may track their continuing education requirements completed or needed in their MyProfile account at https://dice.fldfs.com. To validate the accuracy of this license you may review the individual license record under "Licensee Search" on the Florida Department of Financial Services website at www.myfloridacfo.com/division/agents.



Jimmy Patronis
Chief Financial Officer
State of Florida

POWER OF ATTORNEY
HARCO NATIONAL INSURANCE COMPANY
INTERNATIONAL FIDELITY INSURANCE COMPANY
Member companies of IAT Insurance Group, Headquartered: 4200 Six Forks Rd, Suite 1400, Raleigh, NC 27609

Bond # Bid Bond

Principal JDS Inc.

Obligee Tampa Bay Water

KNOW ALL MEN BY THESE PRESENTS: That **HARCO NATIONAL INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of Illinois, and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

William Reidinger

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, including but not limited to Proposal Bonds and Consents of Surety, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** and is granted under and by authority of the following resolution adopted by the Board of Directors of **INTERNATIONAL FIDELITY INSURANCE COMPANY** at a meeting duly held on the 3rd day of June 2025 and by the Board of Directors of **HARCO NATIONAL INSURANCE COMPANY** at a meeting held on the 3rd day of June 2025.

"**RESOLVED**, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, including but not limited to Proposal Bonds and Consents of Surety, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** have each executed and attested these presents on this 17th day of March, 2026

INTERNATIONAL FIDELITY INSURANCE COMPANY CORPORATE SEAL 1904 NEW JERSEY

STATE OF NEW JERSEY
County of Essex

STATE OF ILLINOIS
County of Cook

HARCO NATIONAL INSURANCE COMPANY CORPORATE SEAL 1984 ILLINOIS

Michael F. Zurcher
Executive Vice President, Harco National Insurance Company
and International Fidelity Insurance Company

On this 17th day of March, 2026, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.

CATHY CRUZ NOTARY PUBLIC STATE OF NEW JERSEY

IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Cathy Cruz a Notary Public of New Jersey
My Commission Expires April 16, 2029

CERTIFICATION

I, the undersigned officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 17th day of March, 2026

549

Irene Martins, Assistant Secretary



5. CERTIFICATE OF PRINCIPAL

I, Jennifer Butler, certify that I am the Secretary of the Corporation ✓, or a General Partner _____ or Managing Partner _____ of the partnership, named as the Bidder in the attached Bid Bond; that Eric Malvin who signed the Bid Bond on behalf of the Bidder, was then Vice President-FL of that organization ✓ or partnership _____; that I know his/her signature, and on the Bid Bond is genuine; and that the Bid Bond was duly signed, sealed, and attested for and on behalf of that organization ✓ or partnership _____ by authority of its governing body _____ or partners _____.

Jennifer Butler

Signed by Secretary of the Corporation or

By General or Managing Partner Authorized to Sign

JDS Pipe Inc.

Name of the Corporation or True Name of the Partnership

(Corporate Seal)

JDS Inc CORPORATE SEAL STATE OF GEORGIA

Verification

State of Georgia

County of Barrow

Before me, a Notary Public duly commissioned, qualified and acting, by means of ☑ physical presence or ☐ online notarization, personally appeared Jennifer Butler who is personally known to me or who has produced personally Known as identification, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for JDS Inc. named Bidder in favor of the Tampa Bay Water.

Subscribed and sworn before me this 17th day of March, 20 24.

Melissa A Montgomery

Notary Public

My Commission Expires: August 4, 2028

MELISSA A MONTGOMERY NOTARY PUBLIC BARROW COUNTY GEORGIA EXPIRES AUGUST 4, 2028

6. CONTRACTOR AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

STATE OF Georgia
COUNTY OF Barrow

BEFORE ME, the undersigned authority, appeared Eric Malvin, who first being duly sworn hereby swears or affirms as follows:

1. I make this affidavit on personal knowledge.
2. I am over the age of 18 years and otherwise confident to make this Affidavit.
3. I am the Vice President - FL of JDS Inc. (the "Contractor").
4. I am authorized by JDS Inc. to make this Affidavit on behalf of Contractor.

E-Verify

1. Contractor acknowledges that Section 448.09, Florida Statutes, makes it unlawful for any person to knowingly employ, hire, recruit, or refer, for private or public employment, an alien who is not duly authorized to work in the United States.
2. Contractor acknowledges that Section 448.095, Florida Statutes, prohibits public employers, contractors, and subcontractors from entering into a contract unless each party to the contract registers and uses E-Verify.
3. Contractor is in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
4. Contractor understands it shall remain in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes, during the term of any contract with Tampa Bay Water.
5. Contractor's subcontractors are in compliance with the requirements of Sections 448.09 and 448.095, Florida Statutes.
6. Contractor shall ensure compliance with the requirements of Sections 448.09 and 449.095, Florida Statutes, by any and all of its subcontractors.
7. Neither the Contractor, nor any subcontractor of Contractor, has had a contract terminated by a public employer for violating Section 448.095, Florida Statutes, within the year preceding the date of this Affidavit.
8. If the Contractor or any subcontractor of Contractor has a contract terminated by a public employer for any such violation during the term of any contract with Tampa Bay Water, it shall provide immediate notice thereof to Tampa Bay Water.

Anti-Human Trafficking

In accordance with Section 787.06(13), Florida Statues, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

Scrutinized Companies

A. Pursuant to Subsections 287.133(2) and (3), Florida Statutes, Respondent acknowledges that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a proposal on a Contract provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

B. Pursuant to Subsection 287.134(2)(a), Florida Statutes, Respondent acknowledges that an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; an may not transact business with any public entity.

C. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that a company that has been placed on the Scrutinized Companies with Activities in Sudan List; the Scrutinized Companies with Activities in the Iran Petroleum Energy Section List; or the Scrutinized Companies that Boycott Israel List or a company that engages in a boycott of Israel, is ineligible and may not submit a bid, proposal, or enter into or renew a contract with an Agency for goods or services of $1 million or more. At the time of submission of a proposal for a contract or contract renewal for goods or services of $1 million or more, the company must certify that it is not on either such List and further that it does not have business operations in Cuba or Syria as required by Section 287.135(5), Florida Statutes.

D. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for goods or services of $1 million or more if the awarded company is found to have submitted a false certification as provided under Section 287.135(5), been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in Business operations in Cuba or Syria.

E. Pursuant to Section 287.135, Florida Statutes, Respondent acknowledges that Tampa Bay Water has the option to terminate any contract for good or services of any amount if the awarded company is found to have or been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel.

Foreign Countries of Concern

Pursuant to Section 287.138, Florida Statues, Tampa Bay Water may not enter into a contract with an entity that gives access to an individual's personal identifying information if the entity is owned, controlled or organized under the laws of a Foreign Country of Concern which includes the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolas Maduro, the Syrian Arab Republic, or any other entity or Agency under the significant control of such Foreign Country of Concern.

JDS Inc CORPORATE SEAL STATE OF GEORGIA

Signature of Affiant
on behalf of Contractor/

By: Eric Malvin
As its: Vice President - FL
Dated: March 17, 2026

Sworn to (or affirmed) and subscribed before me by means of ☑ physical presence or ☐ online notarization, this 17th day of March, 2026, by Eric Malvin, on behalf of JDS Inc, who is personally known to me or who has produced personally Known as identification.

MELISSA A MONTGOMERY NOTARY PUBLIC BARROW COUNTY GEORGIA EXPIRES AUGUST 4, 2028

Print Name: Melissa A Montgomery
Notary Public of the State of ~~Florida~~ Georgia

My Commission Expires:

7. NON-COLLUSION AFFIDAVIT

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Wade Trim, Inc.
Project Name: Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict
Project No.: 07153

Affiant, Eric Malvin, being first duly sworn, deposes and says that:

Affiant is (Title) Vice President - FL of JDS Inc, ("Bidder"). Affiant has personal knowledge of the matters set forth in this Affidavit and is competent to testify about them.

Bidder has submitted to Tampa Bay Water, a Bid ("Bid") to construct the above referenced Project, also referred to in this Affidavit as the "Work".

This Non-Collusion Affidavit is executed by Affiant for inclusion with the submission to Tampa Bay Water of the Bid and may be relied upon by Tampa Bay Water in considering the Bid.

Affiant is fully informed about the preparation and contents of the Bid and of all pertinent circumstances surrounding the Bid; has not entered into any illegal contract, combination, conspiracy or other unlawful act; and the Bid is genuine and is not a collusive or sham Bid.

Neither Bidder nor any of its officers, partners, agents, representatives, employees or parties in interest, including this Affiant, have in any way entered or proposed to enter into any combination to prevent the making of any Bid, or to fix a price or prices (including any overhead, profit or other cost elements) for the Bid; or have made any Contract, or given or promised any consideration to induce any other person not to submit a Bid for the Work, or to submit a Bid at a specified price; or have secured or intended to secure through any Contract an unlawful advantage against Tampa Bay Water, or any other person interested in the Work.

The Bid is not intended to secure an unfair advantage or benefit from Tampa Bay Water or in favor of any person interested in the proposed Work.

The prices proposed are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful Contract on the part of Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and neither Bidder nor any of its officers, partners, owners agents, representatives, employees, or parties in interest, including this Affiant, have divulged information regarding the Bid or any data about the Bid to any other person.

By: _____
Print Name: Eric Malvin
Title: Vice President - FL

JDS Inc CORPORATE SEAL STATE OF GEORGIA

8. LITIGATION HISTORY

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

List all litigation and arbitration from the past 5 years, regardless of results or current status.

Project Name	Parties to Dispute	Nature of Dispute	Resolution of Dispute
N/A			

[Attach Additional Pages If Necessary]

9. MAJOR EQUIPMENT LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

To enable Tampa Bay Water to evaluate Bidder's qualifications to perform the Work, Bidder shall list all of the equipment it proposes to use in performing the Work.

Make/Model	Year	Owned or Leased	Condition	Availability for this Project
please see attached				

[Attach Additional Pages if Necessary]

Fleet	AssetName	Year	Make	Model
11-1293	DODGE 3500 4WD MOBILE DRILL	2001	DODGE	DODGE 3500 4X4
11-1477	FREIGHTLINER M2106 FLATBED	2004	FREIGHTLINER	FREIGHTLINER M2106 FLATBED
11-1635	FORD F-450 XL SD SERVICE TRUCK	2006	FORD	FORD F450 XL SD
11-1647	FREIGHTLINER M2106 FLATBED	2007	FREIGHTLINER	FREIGHTLINER M2106
11-1649	FREIGHTLINER M2106 FLATBED	2007	FREIGHTLINER	FREIGHTLINER M2106
11-1665	STERLING 24" FLATBED	2007	STERLING	STERLING 24' FLAT BED
11-1683	MACK CTP713 FUEL/LUBE	2007	MACK	MACK CTP713 FUEL/LUBE
11-1719	CHEVROLET 1500	2008	CHEVROLET	CHEVROLET 1500
11-1771	PETERBUILT 388 T/A HWY	2012	PETERBILT	PETERBILT 388 T/A HWY
11-1799	FORD F250 SUPER CAB 4X4	2012	FORD	FORD F250 SUPER CAB 4X4
11-1800	FORD F250 SUPER CAB 4X4	2012	FORD	FORD F250 SUPER CAB 4X4
11-1974	FORD F550 SERVICE TRUCK	2015	FORD	FORD F550 SERVICE TRUCK
11-2003	FORD VAN E350	2014	FORD	FORD VAN E350
11-2037	FORD F-750	2015	FORD	FORD F-750
11-2152	FREIGHTLINER M2106 WATER	2012	FREIGHTLINER	FREIGHTLINER M2106 WATER
11-2164	FREIGHTLINER M2106 FLATBED	2019	FREIGHTLINER	FREIGHTLINER M2106 FLATBED
11-2191	FORD F250 CREW CAB	2020	FORD	FORD F250 CREW CAB
11-2252	CHEVROLET 2500 CREW CAB	2022	CHEVROLET	CHEVROLET 2500 CREW CAB
11-2265	CHEVROLET 5500 FLATBED	2021	CHEVROLET	CHEVROLET 5500 FLATBED
11-2270	FORD F250 CREW CAB	2022	FORD	FORD F250 CREW CAB
11-2280	CHEVROLET 6500 FLATBED	2022	CHEVEROLET	CHEVROLET 6500 FLATBED
11-2315	CHEVROLET 2500 CREW CAB	2024	CHEVROLET	CHEVROLET 2500 CREW CAB
11-2331	FORD F250 CREW CAB 4X4	2024	FORD	FORD F250 CREW CAB 4X4
11-2345	FORD F250 CREW CAB 4X4	2024	FORD	FORD F250 CREW CAB 4X4
11-2346	FORD F250 CREW CAB 4X4	2024	FORD	FORD F250 CREW CAB 4X4
11-2347	KENWORTH T880 FUEL TRUCK	2025	KENWORTH	KENWORTH T880
11-2379	CHEVROLET SILVERADO 4WD	2025	CHEVROLET	CHEVROLET SILVERADO
11-2390	CHEVROLET SILVERADO 4WD	2025	CHEVROLET	SILVERADO 2500HD
11-2391	PETERBILT 589	2026	PETERBILT	589
11-2402	CHEVROLET SILVERADO 4WD	2025	CHEVROLET	CHEVROLET SILVERADO
11-489	FORD F7000 WATER TRUCK	1986	FORD	FORD F7000 WATER TRUCK
12-1925	KOM PC35MR-3	2013	KOMATSU	KOMATSU PC35MR-3
12-1926	HIT ZX670-5 HYD T4I	2013	HITACHI	HITACHI ZX670-5 HYD T4I
12-1972	KOM PC35MR-3	2014	KOMATSU	KOMATSU PC35MR-3
12-2023	KOM PC210LC-10	2014	KOMATSU	PC210LC-10
12-2093	CAT 304 E2	2016	CATERPILLAR	CAT 304E2
12-2094	CAT 304 E2	2016	CATERPILLAR	CAT 304E2
12-2134	KOM PC170LC-11	2018	KOMATSU	KOMATSU PC170LC-11
12-2135	KOM PC138USLC-11	2018	KOMATSU	KOMATSU PC138USLC-11
12-2223	KOM PC210LC-11	2021	KOMATSU	KOMATSU PC210-11
12-2224	KOM PC210LC-11	2021	KOMATSU	KOMATSU PC210-11
12-2225	KOM PC210LC-11	2021	KOMATSU	KOMATSU PC210-11
12-2226	KOM PC490LC-11	2021	KOMATSU	KOMATSU PC490-11
12-2227	KOM PC490LC-11	2021	KOMATSU	KOMATSU PC490-11
12-2259	KOM PC210LC-11	2022	KOMATSU	KOMATSU PC210LC-11
12-2260	KOM PC210LC-11	2022	KOMATSU	KOMATSU PC210LC-11
12-2261	KOM PC490LC-11	2022	KOMATSU	KOMATSU PC490LC-11
12-2262	KOM PC35MR-5	2022	KOMATSU	KOMATSU PC35MR-5
12-2281	KOM PC238USLC-11	2022	KOMATSU	KOMATSU PC238USLC11
12-2282	KOM PC238USLC-11	2022	KOMATSU	KOMATSU PC238USLC-11
12-2289	KOM PC650LC-11	2023	KOMATSU	KOMATSU PC650-11
12-2290	KOM PC490LC-11	2023	KOMATSU	KOMATSU PC490LC-11
12-2311	KOM PC360LC-11	2024	KOMATSU	KOMATSU PC360LC-11
12-2337	KOM PC210LC-11	2024	KOMATSU	KOMATSU PC210-11
12-2353	HIT ZX345USLC-6	2025	HITACHI	HITACHI ZX345USLC-6
12-2355	KOM PC210LC-11	2025	KOMATSU	KOMATSU PC210LC-11
12-2356	KOM PC210LC-11	2025	KOMATSU	KOMATSU PC210LC-11
12-2357	KOM PC210LC-11	2025	KOMATSU	KOMATSU PC210LC-11
12-2358	KOM PC210LC-11	2025	KOMATSU	KOMATSU PC210LC-11
12-2359	KOM PC390LC-11	2025	KOMATSU	KOMATSU PC390LC-11
12-2360	KOM PC360LC-11	2025	KOMATSU	KOMATSU PC360LC-11
12-2362	KOM PC88MR-11	2025	KOMATSU	KOMATSU PC88MR-11
12-2363	KOM PC88MR-11	2025	KOMATSU	KOMATSU PC88MR-11
12-2378	HIT ZX245USLC-7 EXCAVATOR	2024	HITACHI	HITACHI ZX245USLC-7

12-2401	HIT ZX245USLC-6	2024	HITACHI	HITACHI ZX245USLC-6
12-819	KOM PC400LC-3 SHOVEL	1992	KOMATSU	KOMATSU PC400LC-3
13-2065	CAT 420E 4X4	2011	CATERPILLAR	CATERPILLAR 420E 4X4
13-2069	CAT 420E 4X4	2011	CATERPILLAR	CATERPILLAR 420E 4X4
14-1140	CAT 953LGP	1990	CATERPILLAR	CATERPILLAR 953LGP
14-1718	KOM CK30-1	2006	KOMATSU	KOMATSU CK30-1
14-2343	CAT 289D3	2024	CATERPILLAR	CATERPILLAR 289D3
15-2133	KOM WA 320-8	2018	KOMATSU	KOMATSU WA 320-8
15-2153	KOM WA 320-8	2018	KOMATSU	KOMATSU WA 320-8
15-2218	KOM WA 200-8	2021	KOMATSU	KOMATSU WA 200-8
15-2219	KOM WA 320-8	2021	KOMATSU	KOMATSU WA 320-8
15-2220	KOM WA 320-8	2021	KOMATSU	KOMATSU WA 320-8
15-2221	KOM WA320-8	2021	KOMATSU	KOMATSU WA320-8
15-2222	KOM WA380-8	2021	KOMATSU	KOMATSU WA380-8
15-2263	KOM WA320-8	2022	KOMATSU	KOMATSU WA320-8
15-2288	KOM WA380-8	2023	KOMATSU	KOMATSU WA380-8
15-2342	KOM WA320-8	2024	KOMATSU	KOMATSU WA320-8
15-2361	KOM WA380-8	2025	KOMATSU	KOMATSU WA380-8
15-651	KOM WA350	1989	KOMATSU	KOMATSU WA350
16-1145	FORD 3930	1997	FORD	FORD 3930
17-1939	CAT D5K2 LGP T4I	2013	CATERPILLAR	D5K LGP T4I
17-2020	CAT D3K2 LGP T4I	2014	CATERPILLAR	D3K2 LGP T4I
17-2030	CAT D3K2 LGP T4I	2015	CATERPILLAR	D3K2 LGP T4I
17-2217	KOMATSU D51PX-24	2021	KOMATSU	D51PX-24
17-2253	KOMATSU D51PX-24	2022	KOMATSU	D51PX-24
17-2258	KOMATSU D39PX-24	2022	KOMATSU	D39PX-24
17-2284	KOMATSU D51PX-24	2023	KOMATSU	D51PX-24
17-2285	KOMATSU D51PX-24	2023	KOMATSU	D51PX-24
17-2314	KOMATSU D39PX-24	2024	KOMATSU	D39PX-24
18-1094	KOMATSU FG25T	1996	KOMATSU	FG25T
18-1195	CATERPILLAR FORKLIFT GP15G			GP15G
18-1622	JCB FORKLIFT	1997	JCB	JCB 930
19-1199	PIPE TRAILER			
19-1401	DROP DECK STRETCH	1997		STEP DECK
19-1530	20' TOOL CUBE WHITE			
19-1535	20' TOOL CUBE BLUE			
19-1549	20' TOOL CUBE YELLOW			
19-1560	20' TOOL CUBE GREY			
19-1720	WINSTON TRAILER	2009	WINSTON	WINSTON TRAILER
19-1729	TRAILER	2000	WINSTON	WINSTON TRAILER
19-1781	8x24 HOPPER FLATBED TRAILER	2002		
19-1784	TRAIL KING TRAILER			
19-1956	BIG TEX 22' TRAILER FIXED TILT	2014		
19-2166	2019 KAUFMAN TRAILER	2019	KAUFMAN	KAUFMAN FH-15K-40D
19-2188	20' RED TOOL CUBE			
19-2276	22 Big Tex Trailer	2022	BIG TEX	BIG TEX TRAILER
19-2338	2024 Trail King Trailer	2024	Trail King	
19-2339	2024 Trail King Trailer	2024	Trail King	
19-626	FRUEHAUF FLATBED			PB80F2S45
20-1253	MILLER WELDER 225D			
20-1433	MILLER 301D WELDER - JOSE			
20-2371	LINCOLN WELDER	2023	LINCOLN	LINCOLN 260MPX
20-569	MILLER (WIRE WELDER)			CP300
20-668	MILLER (WIRE WELDER)			DELTAWELD 651
21-1209	INGERSOLL-RAND	1999		P185WJD
21-1479	INGERSOL RAND COMP P18WJD			
21-1689	ASD30 175 PSI 460 AC			
21-1973	INGERSOL RAND P185WJD	2006		
21-2005	INGERSON RAND 14HP MODEL 245	2014		2475
21-2063	SULLAIR 185	2005		
21-2064	SULLAIR 185	2005		
21-2141	18 INGERSOLL RAND AIR COMP	2018	INGERSOLL RAND	INGERSOLL RAND AIR COMPRESSOR
21-2192	2020 INGERSOL RAND	2020	NORTH STAR	NORTH STAR 459212L
21-2257	2007 SULLAIR 185	2007	SULLAIR	SULLAIR 185DPQ-JD
22-1663	MOBILE B31 DRILL RIG			

23-1539	1R MS90 JACK HAMMER			
23-1551	MW ROCK DRILL			
23-1727	CP0069 ROCKDRILL			
23-2010	ATLAS HAND DRILL CP0069	2014		
23-209	1RMX90 JACK HAMMER			
23-341	APT JACK HAMMER MODEL #180			
24-1233	RICE HYDRO TEST PUMP			DPH2B
24-1643	WATER PUMP THOMPSON VAC PUMP	2006	THOMPSON	6V DIS-4
24-1660	MUD HOG PUMP	2007	CH&E	55A31 SRHM
24-1661	MUD HOG PUMP	2007	CH&M	55A31 SRHM
24-2031	WATER PUMP 11 GPM 550 PSI			HONDA
24-2075	THOMPSON VAC PUMP ENCLOSED	2016	THOMPSON	6V-DJDS-45T-MC
24-2076	THOMPSON VAC PUMP ENCLOSED	2016	THOMPSOM	6V-DJDS-45T-MC
24-212	MUD HOG PUMP	1986	CH&M	55AQS
24-2272	WATER PUMP THOMPSON VAC PUMP	2022	THOMPSON	6V-DDS-D2.9
24-2273	WATER PUMP THOMPSON VAC PUMP	2023	THOMPSON	6V-DDS-D2.9
24-2316	WATER PUMP THOMPSON VAC PUMP	2024	THOMPSON	6V-DDS-D2.9
24-773	MUD HOG PUMP	1991	CH&M	55AQS
24-776	MUD HOG PUMP	1991	CH&M	55AQS
24-783	WATER PUMP THOMPSON VAC PUMP	1991	THOMPSON	6V DIS-4
25-101	KONECRANE 10 TON	2005	KONECRANE	KONECRANE 10 TON
26-1865	4" TSURUMI ELECTRIC WATER PUMP	2012		
26-1903	SUBMERSIBLE PUMP		GODWIN	GSP10
26-1909	TUSA NK2-15-220 PUMP	2013	TSURUMI	NK2-15
26-1948	14 TSURUMI 3" ELEC WATER PUMP	2014	TSURUMI	TSURUMI WATER PUMP
26-2012	4" TSURUMI ELECTRIC WATER PUMP	2014		
26-2013	4" TSURUMI ELECTRIC WATER PUMP	2014		
26-2034	ELECTRIC WATER PUMP	5015		4" TSURUMI
26-2035	ELECTRIC WATER PUMP	2015		4" TSURUMI
26-2146	19 TSURUMI ELEC PUMP	2019	TSURUMI	TSURUMI NK4-22
26-2167	19 TSURUMI 4" ELEC WATER PUMP	2019	TSURUMI	TSURUMI KTZ437
26-2319	Tsurumi 4" Electric Pump			
26-2320	2024 Tsurumi 3" Electric Pump	2024		NK4-22
28-2171	HAMM 47" ROLLER	2013	HAMM	3205
28-2302	HAMM 84" ROLLER	2015	HAMM	H11IX
29-1716	TRAMAC PLATE TAMP	2009	TRAMAC	TRAMAC PLATE TAMP
29-719	ALLIED HO-PAC TAMP			9700C
30-2310	ATLAS COPCO Q25 KVA	2024	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
30-2329	CP ATLAS COPCO Q25 KVA	2021	CP ATLAS COPCO	CP ATLAS COPCO CPG 25 ID FT4
30-2330	CP ATLAS COPCO Q25 KVA	2021	CP ATLAS COPCO	CP ATLAS COPCO CPG 25 ID FT4
30-2377	ATLAS COPCO Q25 KVA	2025	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
30-2383	ATLAS COPCO Q25 KVA	2025	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
31-1721	PIPER 200 LAZER			
31-1739	LASER	2009	LEICA PIPER	LEICA PIPER 200
31-2090	2016 LEICA PIPER 200	2016	LEICA PIPER	LEICA PIPER 200
31-2110	'17 LEICA PIPER 200	2017	LEICA PIPER	LEICA PIPER 200
32-2309	Lay-Mor Sweeper			SM300
33-1018	METROTECH 810 PIPE LOCATOR			810
33-1020	LIETZ 115 LEVEL TRANSIT			301
33-1105	AMERICAN 20-50 BORIN	1996	AMERICAN	BORING MACHINE
33-1503	SOKKIA 301 TRANSIT			
33-1518	HONDA GENERATOR			
33-1520	GENERAL EP 8 BLOWER			
33-1521	MUELLER B-100 TAP MACHINE			
33-1537	GENERAL EP 8 BLOWER			
33-1541	MUELLER D-5 TAP MACHINE	2004	MUELLER	MUELLER D-5
33-1542	MUELLER D-5 TAP MACHINE			
33-1543	MUELLER B-101 TAP MACHINE	2004	MUELLER	MUELLER B-101
33-1552	CHERNIE AIR TEST KIT			
33-1558	CONDE' MH TEST KIT	2004	CHERNIE	CHERNIE MAN HOLE
33-1562	NIKON AC-25 LEVEL			
33-1595	BUSH HOG PULVERIZER PVS720			
33-1613	FUEL TANK W/ AIR COMPRESSOR	2005		FUEL TANK W/ AIR COMPRESSOR
33-1633	MARLOW FUEL PUMP 2AM32			
33-1672	PVS840 BUSHHOG PULVERIZER			pu5840

33-1702	200 GAL FUEL TANK			
33-1703	150 GAL FUEL TANK			
33-1704	250 GAL FUEL TANK			
33-1705	250 GAL FUEL TANK			
33-1708	PEMBERTON BOOM			
33-1712	CONCRETE BUCKET			
33-1713	CONCRETE BUCKET			
33-1717	250 GAL TANK FROM TRAILER			
33-1723	PC200 DOZER BLADE			
33-1742	twin hose assy	2009		PT30 PIERCING TOOL MODEL
33-1745	SWEEPER	2005	LAY-MOR	LAY-MOR SWEEPER
33-1751	CATERPILLAR	2010	CATERPILLAR	CATERPILLAR WEKA DK32
33-1774	PC45 CXI HAMMER	2011		
33-1792	LAYMORE SWEEPER	2005	LAYMORE	LAYMORE 8HC
33-1835	MILWAUKEE MAGNET DRILL	2012	MILWAUKEE	MILWAUKEE MAGNET DRILL
33-1842	TAPPING MACHINE (US PIPE)	1995		
33-1843	TAPPING MACHINE (US PIPE)			
33-1868	MECECO GENERATOR	2012	MECECO	MECECO GENERATOR
33-1875	LAYMORE BROOM	2003	LAY-MOR	LAY-MOR 8HC
33-1899	HPE EU3000 HANDI GENERATOR		HONDA	HANDI/ EU3000
33-1943	TRIPOD RETRIEVAL SYSTEM RL50G	2013		
33-2024	LT8-300P LEVEL TRANSIT W/OPTIC			
33-2068	MUELLER CL 12 TAP W/AIR POWER	2015	MUELLER	W/AIR POWER H-614
33-2071	ATLAS COPCO Q25 KVA	2015	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
33-2072	ATLAS COPCO Q25 KVA	2015	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
33-2073	LAY-MOR 8HC SWEEPER	2010		
33-2078	18 INCH FLOOR SAW DIAMOND	2016	DIAMOND PRODUCT	DIAMOND PRODUCT CC1200
33-2084	HUSKY PRESSURE WASHER		HUSKY	HUSKY H1650
33-2106	26CC AUGER WITH REVER	2017	ECHO	ECHO EDR260
33-2107	20IN SN BAR	2017	STIHL	STIHL MS291
33-2108	14IN CUTQUICK	2017	STIHL	STIHL TS700
33-2127	18 STIHL CHAINSAW	2018	STIHL	STIHL MS291
33-2128	GASALERT MAXXT II	2018	BW TECHNOLOGIES	BW TECHNOLOGIES XT-XWHM-Y-NA
33-2129	2018 ASPHALT ZIPPER AZ500-203B	2018		AZ 500-203B
33-2132	HYPERTHERM PLASMA CUTTER		HYPERTHERM	HYPERTHERM PMX 105
33-2144	NA324	2018	LEICA	LEICA NA324
33-2149	MESSAGE BOARD	2015	AMERICAN SIGNAL	PMST
33-2151	STIHL MS291 CHAINSAW	2019	STIHL	STIHL MS291
33-2162	ARROW BOARD	2008	PSI	
33-2163	MESSAGE BOARD	2015	AMERICAN SIGNAL	C331 PMB
33-2175	2011 AMERICAN SIGNAL MESG BRD	2011	AMERICAN SIGNAL	CMS
33-2176	'10 TEREX RL4000 LIGHT SET	2010	TEREX	
33-2177	'99 AMIDA AL400 LIGHT SET	1999	AMIDA LIGHT TOWER	AL4060D-4MH
33-2178	TEREX LIGHT TOWER	2010	TEREX	RL400
33-2179	INGERSOL RAND LIGHT TOWER		INGERSOL RAND	L64MH
33-2181	2010 MAGNUM LIGHT SET	2010	MAGNUM	MLT 3060M
33-2182	2010 MAGNUM LIGHT SET	2010	MAGNUM	MLT 3060M
33-2189	2020 BW GAS ALERT			
33-2195	20 STIHL TS700 PIPE SAW	2020	STIHL	STIHL TS700
33-2197	LAY-MOR SM300 SWEEPER		LAY-MOR	LAY-MOR SM300
33-2199	CUTQUICK	2020	STIHL	STIHL TS700
33-2200	ATLAS COPCO Q25 KVA	2020	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
33-2201	ATLAS COPCO Q25 KVA	2020	ATLAS COPCO	ATLAS COPCO QAS 25 ID FT4
33-431	NEW YORK BLOWER			B9131R-100
33-690	D.W. TRANSIT LT8 300P			
33-840	JDS WINCH			
33-948	SCHONSTEDT PIPE LOCATOR			
33-975	SOKKIA LEVEL B21			230
35-2251	FURUKAWA 210 HAMMER	2022	FURUKAWA	FURUKAWA FX275QTV
35-2279	22 INDECO 1200 HAMMER	2022	INDECO	INDECO HP12000
36-10001	PC200 72" SMOOTH MOUTH BUCKET	2022	TERAN	PC200 72"
36-10002	PC300 36" BUCKET		STRICKLAND	PC300 36" BUCKET
36-10003	PC200 60" SMOOTH MOUTH BUCKET	2022	CF	PC200 60" SMOOTH MOUTH
36-10004	PC650/EX670 48" BUCKET		ESCO	PC650/EX670 48"
36-10005	PC200 24" BUCKET	2023	GEITH	PC200 24"

36-10006	PC200 30" BUCKET	2023	GEITH	PC200 30"
36-10007	PC200 48" BUCKET	2023	TROJAN	PC200 48"
36-10008	PC200 48" BUCKET	2023	TROJAN	PC200 48"
36-10009	PC200 54" BUCKET	2025	ESCO	PC200 54"
36-10010	PC300 48" BUCKET	2025	ESCO	PC300 48"
36-10011	PC200 54" BUCKET	2025	ESCO	PC200 54"
36-10012	PC200 54" BUCKET	2025	ESCO	PC200 54"
36-10013	PC300 30" BUCKET	2025	ESCO	PC300 30"
36-10014	PC200 48" BUCKET	2025	ESCO	PC200 48"
36-10015	PC88 12" BUCKET	2025	ESCO	PC88 12"
36-10016	PC88 36" BUCKET	2025	ESCO	PC88 36"
36-10017	PC200 42" BUCKET	2025	ESCO	PC200 42"
36-10018	PC200 42" BUCKET	2020	CATERPILLAR	PC200 42"
36-10019	PC200 54" BUCKET	2025	ESCO	PC200 54"
36-10020	PC300 42" BUCKET	2024	PALADIN	PC300 42"
36-10021 RPO	PC200 54" BUCKET		ESCO	PC200 54"
36-10022	PC200 54" BUCKET	2025	SECO	PC200 54"
36-10023	PC300 42" BUCKET	2025	ESCO	PC300 42"
36-10024	PC200 42" BUCKET	2025	ESCO	PC200 42"
36-9705	PC200 42" BUCKET		HENSLEY	PC200 42"
36-9709	PC400 84" SMOOTH MOUTH BUCKET		PEMBERTON	PC400 84"
36-9711	PC400 24" BUCKET			PC400 24"
36-9712	PC200 60" SMOOTH MOUTH BUCKET		CF	PC200 60"
36-9715	PC300 60" BUCKET	2023	JDS	PC300 60"
36-9717	HINGED 68" SMOOTH MOUTH BUCKET	1999	KOMATSU	HINGED 68"
36-9719	PC170 60" SMOOTH MOUTH BUCKET			PC170 60"
36-9729	PC88 24" BUCKET		ESCO	PC88 24"
36-9730	PC200 84" SMOOTH MOUTH BUCKET			PC200 84"
36-9733	PC650/EX670 84" BUCKET	1999		PC650/EX670 84"
36-9735	PC200 48" BUCKET			PC200 48"
36-9736	PC300 71" SMOOTH MOUTH BUCKET			PC300 71"
36-9738	PC35 18" BUCKET			PC35 18"
36-9739	PC88 18" BUCKET			PC88 18"
36-9742	PC300 96" ALLIGATOR BUCKET	1992		PC300 96"
36-9750	PC400 72" ALLIGATOR BUCKET			PC400 72"
36-9752	PC400 42" BUCKET	1999		PC400 42"
36-9765	PC300 84" SMOOTH MOUTH BUCKET	1993	WAGWAY	PC300 84"
36-9767	PC400 ALLIGATOR BUCKET	1993		PC400 90"
36-9773	PC35 24" BUCKET		TAG	PC35 24"
36-9775	PC138 18" BUCKET	2012	36-9818	PC138 18"
36-9782	PC650/EX670 48" BUCKET		ESCO	PC650/EX670 48"
36-9783	PC400 84" SMOOTH MOUTH BUCKET	1995	KOMATSU	PC400 84"
36-9787	PC400 54" BUCKET	2002	ESCO	PC400 54"
36-9790	400 SHOVEL BUCKET	1995	KOMATSU	PC400SH-72"
36-9791	PC170 24" BUCKET	2009	CF	PC170 24"
36-9792	PC200 36" BUCKET		HENSLEY	PC200 36"
36-9798	PC 88 18" BUCKET	2011	TAG	TAG PC88 18"
36-9799	PC400 48" BUCKET		ESCO	PC400 48"
36-9810	PC650/EX670 60" BUCKET		TAG	PC650/EX670 60"
36-9813	PC400 60" BUCKET		ESCO	PC400 60"
36-9814	PC400 54" BUCKET	2013	ESCO	PC400 54"
36-9818	PC200 54" BUCKET		ESCO	PC200 54"
36-9831	CAT420 24" BUCKET	2011	CATERPILLER	CAT 24" 13-2069
36-9840	CAT304 24" BUCKET	2016	CATERPILLER	CAT304 24" 12-2093
36-9845	CAT304 24" BUCKET	2016	CATERPILLER	CAT304 24" 12-2094
36-9846	CAT420 24" BUCKET	2011	CATERPILLER	CAT 24" 13-2065
36-9863	PC88 24" BUCKET	2015	TAG	PC88 24"
36-9874	PC36 18" BUCKET	2016	TAG	PC36 18"
36-9877	PC200 48" BUCKET	2017	ESCO	PC200 48"
36-9878	PC138 36" BUCKET	2018	HENSLEY	PC138 36"
36-9879	PC170 36" BUCKET	2018	ESCO	PC170 36"
36-9880	PC200 54" BUCKET	2018		PC200 54"
36-9881	PC400 42" BUCKET	2015	JOHN DEER	PC400 42"
36-9882	PC200 42" BUCKET	2019	ESCO	PC200 42"
36-9884	PC400 48" BUCKET	2019	ESCO	PC400 48"

36-9885	PC300 48" BUCKET	2019	ESCO	PC300 48"
36-9886	PC300 42" BUCKET	2019	ESCO	PC300 42"
36-9887	PC200 60" SMOOTH MOUTH BUCKET	2019	ESCO	PC200 60"
36-9888	PC200 54" BUCKET	2019	ESCO	PC200 54"
36-9889	PC138 60" SMOOTH MOUTH BUCKET	2020	SOLEBEE"S	PC138 60"
36-9890	PC400 72" BUCKET	2021	ESCO	PC400 72"
36-9891	PC400 42" BUCKET	2021	ESCO	PC400 42"
36-9892	PC200 30" BUCKET	2021	ESCO	PC200 36"
36-9893	PC200 30" BUCKET	2021	ESCO	PC200 30"
36-9894	PC200 54" BUCKET	2021	ESCO	PC200 54"
36-9895	PC88 48" SMOOTH MOUTH BUCKET	2021	GEITH	PC88 48"
36-9896	PC400 72" BUCKET	2022	ESCO	PC400 72" BUCKET
36-9897	PC200 54" BUCKET	2022	ESCO	PC200 54"
37-9801	GRAVEL BOX 8'X13'6"			
37-9802	GRAVEL BOX 5'6"X11'6"			
37-9803	GRAVEL BOX 10'X13'2" W/ PULL B			
37-9804	GRAVEL BOX 6'X10'X4			
37-9805	GRAVEL BOX 11'X14'X6			WEIGHT INCLUDES TRACKS
37-9806	GRAVEL BOX 8'8" YELLOW DUMP BE			631B
37-9810	GRAVL BOX			
38-3947	MANHOLE BOX			
38-9901	DITCH BOX - 28X4.5X6			NON-ADJUSTABLE
38-9902	DITCH BOX - 28X5X6			NON-ADJUSTABLE
38-9903	DITCH BOX - 28X4.5X6			NON-ADJUSTABLE
38-9907	DITCH BOX - 28X4.5X6			NON-ADJUSTABLE
38-9908	DITCH BOX - 30X7X8			NON-ADJUSTABLE
38-9909	DITCH BOX - 10X4X8			NON-ADJUSTABLE
38-9911	DITCH BOX - 28X5.5X8			
38-9912	DITCH BOX - 28X7X11.5			NON-ADJUSTABLE
38-9914	DITCH BOX - 15X4X8			NON-ADJUSTABLE
38-9915	DITCH BOX - 8X3X6			NON-ADJUSTABLE
38-9916	DITCH BOX 10X8X4	2008	JDS	NON-ADJUSTABLE TU10X8X4
38-9918	DITCH BOX - 10X11X8			NON-ADJUSTABLE MANHOLE
38-9923	DITCH BOX - 28X3X6			ADJUSTABLE
38-9924	DITCH BOX - 28X6X10			ADJUSTABLE
38-9925	DITCH BOX - 14X4.5X8			
38-9928	DITCH BOX - MH BOX 10X7X10	2010	SEC/JDS	4DW1110
38-9929	DITCH BOX - MH BOX 10X7X10	2010	SEC/JDS	4DW1110
38-9930	DITCH BOX - 14X4.5X8			
38-9931	DITCH BOX - 10x16			
38-9932	TRENCH BOX 10X24 SPREADER BAR	2007	SUNBELT	6M1024
38-9936	24'x10' ADJUSTABLE BOX	1999	GME	K1024 NKE
38-9937	TRENCH BOX-NON ADJUSTABLE			GME
38-9938	12 X 8 X 4 TRENCH BOX	2006	JDS INC	TU12X8X4
38-9941	DITCHBOX 10x8x8	2008	JDS/Schmitz	NON-ADJUSTABLE TU10X8X8
38-9945	TRENCHBOX 10X28	2015	SEC/JDS	6TS1028D
38-9946	MANHOLE			
38-9947	MANHOLE BOX			
38-9948	8' X 10' ADJUSTABLE BOX	2020	SEC/JDS	810DW
38-9953	10'X16' SPREADER BAR	2025	CERDA	C6M1013KES/6C
39-00-3014	ROLLER			
39-00-45	DITCH ROLLER 45" WIDE			
39-00-60	DITCH ROLLER 60" WIDE			
39-00-6914	ROLLER			
39-00-72	DITCH ROLLER 72" WIDE			
39-00-81-1	DITCH ROLLER			
39-144-65	PIPE ROLLER			
39-41-66	SPLIT ROLLER FIXED			
39-52-52	PIPE ROLLERS			
39-84-60	PIPE ROLLER ADJUSTABLE			
39-88-24	DITCH ROLLER			
39-90-170	PIPE ROLLER			
39-96-72	ADJUSTABLE SPLIT ROLLER			
42-2307	COMPRESSOR, GREASE, DEF			
42-2314	Newberry Tanks Fuel Tank 300 G			

43-2318	20' Tan Tool Cube			
46-2236	WASNCO AFAD	2021	WANCO	AFAD
46-2237	WANCO AFAD	2021	WANCO	AFAD
46-2238	WANCO AFAD	2021	WANCO	AFAD
46-2239	WANCO AFAD	2021	WANCO	AFAD
46-2240	WANCO MESSAGE BOARD	2021	WANCO	WVT39B0
46-2317	2024 Wanco Arrow Board			
50-2228	STIHL CHAINSAW MS391	2021	STIHL	
51-2255	22 STIHL TS700 14INCH CUTQUICK	2022	STIHL	
51-2256	22 STIHL TS700 14 INCH CUTQUIK	2022	STIHL	
52-2308	David White Transit			
52-2321	David White Transit			LT8-300LTU
53-2230	BWT002 GAS ALERT	2021	BM	
8-1636	KOMATSU TRACKED TRUCK	1997	KOMATSU	CD110R
8-1668	MST 2500			
8-1755	KOM CD 110R-2	2008	KOMATSU	
8-1995	OFF ROAD TRUCK			
8-2286	KOMATSU OFF RD TRUCK HM300-5	2023	KOMATSU	HM300-5
8-2287	KOMATSU OFF RD TRUCK HM300-5	2023	KOMATSU	HM300-5
8-2333	MOROOKA MST3000VD	2017	MOROOKA	
8-2364	KOM CD1000R-2 TRACKED TRUCK	2006	KOMATSU	KOMATSU CD1000R-2
8-2365	KOM CD100R-1 TRACKED TRUCK	1997	KOMATSU	KOMATSU CD100R-1
8-2366	KOM CD110R-1	1997	KOMATSU	KOMATSU CD110R-1
8-2367	KOM CD110R-1	1998	KOMATSU	KOMATSU CD110R-1
8-2368	KOM CD110-1	1999	KOMATSU	KOMATSU CD110-1
RPO D39PX-24	KOMATSU D39PX-24	2025	KOMATSU	D39PC-24
RPO PC 210LC-1	KOM PC210LC-11	2025	KOMATSU	PC210LC-11
RPO PC 360LC-1	KOM PC360-11	2025	KOMATSU	PC360-11
RPO WA320-8	KOM WA320-8	2025	KOMATSU	KOMATSU WA320-8

10. MAJOR EQUIPMENT MANUFACTURERS

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Line Item	Description	Equipment Type/Material	Manufacturer	Distributor or Supplier
3	60" Steel Pipe	Steel	American Spiral Weld Pipe Co.	
4	60" Steel Pipe Tunnel	Steel	American Spiral Weld Pipe Co.	
5	36" Steel Pipe	Steel	American Spiral Weld Pipe Co.	
6	60" Steel Fittings	Steel	American Spiral Weld Pipe Co.	
7	36" Steel Fittings	Steel	American Spiral Weld Pipe Co.	
8.	ARV		APCO	Ferguson Ent.
8	Plug Valves	ARV	Dezurik	Ferguson Ent.
9	60" Butterfly	Valve	Dezurik	Ferguson Ent.
10	36" Butterfly	Valve	Dezurik	Ferguson Ent.

[Attach Additional Pages If Necessary]

11. SUBCONTRACTORS LIST

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Bidder shall perform (with Bidder's own employees) not less than fifty-one percent (51%) of the labor (total contract price less the cost of materials for the Project). For all remaining work, list each Subcontractor to whom Bidder intends to award a sub-contract in excess of two percent (2%) of the Total Price on the Price Form. These Subcontractors, if acceptable to Tampa Bay Water, shall be awarded subcontracts for the portions of the Work identified in the list, in the event Bidder is awarded the Contract.

Work To Be Performed	Name/Address	Percent of Total Bid Price
Micro-Tunnel	Bradshaw Construction 175 West Liberty Rd. 410-970-8300	$2,978,000 Eldersburg, MD 21784
Pipe Welding	National Welding Inc 7025 Commerce Park Dr. Midvale, UT 84047 801-255-5959	$75,000

12. QUESTIONNAIRE

Failure to fully complete this form may result in the Bidder being deemed NONRESPONSIVE.

Owner: Tampa Bay Water
Engineer: Wade Trim, Inc.
Project Name: Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict
Project No.: 07153

The undersigned warrants that all statements and answers to questions hereinafter made are current, accurate, and complete as of the date indicated below.

Respond to the items below with sufficient information to show the Bidder has sufficient qualifications to perform the required Work. (See 3.2 Minimum Qualifications)

1. How many years has your organization been in business as a licensed general contractor under your present business name? 5+.
2. Attach to this Form a list of all contracts comparable to this project that your organization has performed during the last five years. For each contract listed, include the owner's contract number, contract title, brief project description, original Contract Price, final Contract Price, substantial completion date or percent complete (if not completed), and the name, address and phone number of an individual from the owner to which your organization may refer.
3. Are there any current federal, state, or local tax liens filed on your organization? ___Yes ✓No
   If yes, attach a list of all current tax liens and an explanation for each.
4. Has your organization failed to complete work awarded to it in the last five years? ____Yes ✓No
   If yes, attach an explanation, including description of the project, identification of the owner, contract award date, and reason work was not completed.
5. Has your organization ever had a contract terminated for default in the last five years? ___Yes ✓No
   If yes, attach an explanation, including description of the project, identification of the owner, contract termination date, and reason for each termination for default.
6. Has your organization ever had significant accidents or OSHA violations in the last five years? ___Yes ✓No
   If yes, attach a list of each significant accident or OSHA violation, including a description and date of each event, and an explanation for each.
7. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction project? no.
   If so, state name of individual, organization and reason therefore.
   n/a
8. Does your organization or its key personnel now hold valid certificates of competency or licenses for which a specific license is required? no.
   If so, attach copies of all licenses covering the Work under the Contract Documents together with the specific political jurisdiction issuing said licenses.
   Attachment _____, consisting of _____ pages.
9. Is your organization owned, controlled or organized under the law of a Foreign County of Concern as identified in Section 287.138, Florida Statutes? no

By: _____
Print Name: Eric Malsy
Title: Vice President

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
VIRGINIA AVENUE	553	Long Engineering, Inc.	GA Power	$2,979,169.19	Installation of 900 LF of 96" and	NO	1/11/2008
SUBSTATION		2550 Heritage CT. Ste. 100	1480 MLK Avenue		867 LF of 30" RCP		
		Atlanta, GA 30339	Baxley, GA 31513				
		Michael VanBriggle 770-951-2495	Tony Calhoun 334-426-9792				
SOUTHWEST WATER	599	Kimley-Horn and Associates, Inc.	City of Charlotte	$7,433,482.81	36" DIP 20,500 LF	NO	12/23/2009
TRANSMISSION MAIN PHASE C		4651 Charlotte Park Dr, Suite 300	Charlotte Mecklenburg Utilities		42" DIP 1,800 LF		
Charlotte, NC		Charlotte, NC 28217	5100 Brookshire Blvd				
		Michael McClellan (704) 333-5131	Charlotte, NC 28216				
			Amy Verschel (704) 399-2221				
PHASE 1A TRANSMISSION	600	Camp Dresser & McKee Inc.	Anderson Regional Joint	$5,072,278.00	36" DIP 6,968 LF	NO	3/15/2010
IMPROVEMENTS		330 East Coffee Street	Water System		42" DIP 3,600 LF		
Anderson, SC		Greenville, SC 29601	998 Hunters Trail		48" DIP 3,600 LF		
		Phil Parkins (864) 527-0478	Anderson, SC 29625				
			Jennifer Barrington				
BEAVER RUIN PUMP STATION	628	Gwinnett County BOC	Gwinnett County BOC	$ 81,000.00	Replace existing 12" steel pipe	NO	3/1/2011
UPGRADE		75 Langley Dr.	75 Langley Dr.		with 12" and 14" DIP; including		
Gwinnett County, GA		Lawrenceville, GA 30046	Lawrenceville, GA 30046		fittings, couplings, supports, and		
		Jackie Floyd 770-822-8740	Jackie Floyd 770-822-8740		extending the pipe by 7'		
MIDDLE OCONEE 36" SANITARY	681	Jacobs Engineering Group	Athens-Clarke County	$ 1,218,800.45	Construction of approx. 300 LF of 36"	NO	11/8/2011
SEWER RIVER CROSSING		4100 Barnett Shoals Rd.	124 E. Hancock Avenue		DIP, including 120 LF of sub-aqueous		
Athens-Clarke County, GA		Athens, GA 30605	Athens, GA 30601		installation w/4 steel H-pile pipe		
		Jim Wrona 706-338-4704			supports.		
SOUTH ANDERSON WATER SUPPLY	669	Camp Dresser & McKee Inc.	Anderson Regional Joint	$2,040,950.75	Installation of 41,448' of	No	3/1/2011
RAW WATER TRANS. MAIN		330 East Coffee Street	Water System		12", 24", 30", 36" DIP		
Anderson, SC		Greenville, SC 29601	998 Hunters Trail				
		Phil Parkins (864) 527-0478	Anderson, SC 29625				
			Jennifer Barrington				
			(864) 332-6534				
HAYNES BRIDGE RD. WATER MAIN	705	City of Alpharetta	City of Alpharetta	$1,246,234.00	Installation of 3,775' of 6"-30" DIP	NO	4/25/2012
FOR C.W. MATTHEWS		1790 Hembree Rd.	1790 Hembree Rd.		watermain, connections to existing		
1600 Kenview Dr., Marietta, GA		Alpharetta, GA 30009	Alpharetta, GA 30009		12" and 30" Watermain, 42" Steel		
770-422-7520					Casing Jack & Bore, 18" Steel		
					Casing Jack & Bore.		

JDS INC.
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RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
TEMPLE JOHNSON RD. 48"	697	Engineering Strategies, Inc.	Gwinnett County DWR	$1,422,255.60	Installation of 2580' of 48" DIP WM	NO	5/25/2012
WATER MAIN REPLACEMENT PH 2		3855 Shallowford Rd. Suite 525	684 Winder Hwy.		with all related appurtenances		
Gwinnett County, GA		Marietta, GA 30062	Lawrenceville, GA 30046				
		770-429-0001	Peter Coker 678-376-6700				
ALPHARETTA WATER MAIN	701	Fulton Co. Dept. of Water	Fulton Co. Dept. of Water	$4,294,332.00	Installation of 2925' of 54" and 1550'	NO	1/30/2013
REPLACEMENT		Resources	Resources		of 12" DIP water main		
Fulton County, GA		141 Pryor St. SW, Ste 6001	141 Pryor St. SW, Ste 6001				
		Atlanta, GA 30328	Atlanta, GA 30328				
		Earl Burrell 404-612-7462	Earl Burrell 404-612-7462				
THOMPSON ST. WATER &	705-01	Khafra Engineering	City of Alpharetta	$2,863,374.00	Installation of 1970' of 8" DIP	NO	6/15/2013
SEWER		Consultants, Inc.	1790 Hembree Rd.		Sanitary Sewer, 3250' of 30" DIP		
City of Alpharetta		225 Peachtree St., Ste 1600	Alpharetta, GA 30009		Water Main, Air Release/Blow - Off		
Sub to C.W. Matthews		Atlanta, GA 30303			Valve Assembly, 42" and 18" Jack		
Byron Rhodes 770-422-7520					and bore, fire hydrants, and all other		
					project related appurtenances.		
NORRIS LAKE PUMP STATION	706	Brown & Caldwell	Gwinnett County DWR	$ 8,650,768.00	Pump Station Improvements;	NO	9/20/2013
AND FORCE MAIN		990 Hammond Dr., Ste 400	684 Winder Hwy.		sitework, new electrical bldg.		
Gwinnett County, GA		Atlanta, GA 30328	Lawrenceville, GA 30046		installation of wastewater pumps		
		Scott Adams 770-673-3637	Yomi Akinhanmi		and installation of 20,000 LF of 16"		
			678-376-6974		DIP Force Mains		
NORTH TEXOMA RAW WATER	730	Freese and Nichols, Inc.	North Texas Municipal	$ 20,662,320.00	Installation of 92,191.86' of 96" pipe	NO	1/31/2014
OUTFALL SECTIONS A & B		1701 N. Market St.,	Water District		including connections, road		
Sub to Garney Companies		500, LB 51	Corey Anderson		crossings, creek crossings, and		
David Burkhart 816-741-4600		Dallas, TX 75202	972-948-1109		all other related appurtenances.		
SOUTH GWINNETT PUMP STATION	735	Brown & Caldwell	Gwinnett County DWR	$ 7,660,294.00	Replacement of an existing pump	NO	8/1/2014
AND FORCE MAIN		990 Hammond Dr., Ste 400	684 Winder Hwy.		station and construction of 2 new		
Gwinnett County, GA		Atlanta, GA 30328	Lawrenceville, GA 30046		pump stations; installation of 32,135		
		Scott Adams 770-673-3637	Yomi Akinhanmi		LF of 4"-14" DIP Force Main		
			678-376-6974				
48" PCCP REPLACEMENT	777	Columbia Engineering	Gwinnett Co. DWR	$ 5,377,840.00	48" PCCP water transmission main	NO	12/30/2014
(SKYLAND DR. TO LENORA		2763 Meadow Church Rd.	684 Winder Hwy.		replacement with 48" DIP; 9,850' of		
CH. RD)		Suite 100	Lawrenceville, GA 30045		48" DIP, 50' of 36" DIP, 150' of 24"		
Gwinnett County, GA		Duluth, GA 30097	Michael Efeyini 678-376-7069		DIP, and 50' of 12" DIP		



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RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
Lakepoint Sports Complex	764	Doulgerakis Consulting Eng.	Lakepoint Land, LLC	$ 7,870,193.63	Installation of 13,811' of 24" - 72"	NO	1/31/2015
Sub for TGC, LLC	769	2665 Old Milton Pkwy.	1946 Monroe Dr.		RCP; 9,190' of 8"-16" DIP Water;		
112 East Johnson St.		Alpharetta, GA 30009	Atlanta, GA 30324		5,940' of 8"-16" DIP Sewer, and		
justin.stuckey@cssllc.us		770-753-9800	404-872-8666		120' of 16" jack & bore and 100' of 24" jack & bore		
JACKSON PARK SEWER	785	City of Hendersonville, NC	City of Hendersonville, NC	$ 5,042,079.40	Installation of 12,356' of 24" - 42"	NO	1/1/2015
INTERCEPTOR		305 Williams St.	305 Williams St.		PVC Gravity Sewer main; demo		
Hendersonville, NC		Hendersonville, NC 28792	Hendersonville, NC 28792		existing pump station; jack & bore;		
		Brent Detwiler 828-697-3060	Brent Detwiler 828-697-3060		dewatering, and by-pass pumping		
WOLFPEN SEWER	796	City of Hendersonville, NC	City of Hendersonville, NC	$ 2,769,270.86	Installation of 10,000 LF of 18"-24"	NO	4/1/2015
INTERCEPTOR		305 Williams St.	305 Williams St.		Sewer; 50 manholes, demo existing		
Hendersonville, NC		Hendersonville, NC 28792	Hendersonville, NC 28792		pump stations, sealing and		
		Brent Detwiler 828-697-3060	Brent Detwiler 828-697-3060		abandonment of their force main.		
SHAKERAG GRAVITY SEWER	828	Forsyth County	Forsyth County	$ 2,222,109.75	Installation of 3,900 LF of 24" DIP	NO	8/8/2015
Forsyth County, GA		514 West Maple St., Ste. 104	514 West Maple St., Ste. 104		Gravity Sewer and 3,400 LF of 30"		
		Cumming, GA 30040	Cumming, GA 30040		DIP		
		Donna Kukarola 770-888-8872	Donna Kukarola 770-888-8872				
ALPHARETTA WATER TRANS	821	Fulton County Dept. of Water	Fulton County Dept. of Water	$ 3,157,459.80	Installation of 3,600' of 30" DIP,	NO	10/30/2015
MAIN - GAP THREE		Resources	Resources		including connections, fire hydrants,		
Fulton County, GA		141 Pryor Street SW Ste 6001	141 Pryor Street SW Ste 6001		pavement replacement, sidewalk		
		Atlanta, GA 30328	Atlanta, GA 30328		and curb & gutter		
		Earl Burrell 404-612-7462	Earl Burrell 404-612-7462				
WOLF CREEK FORCE MAIN	838	Brown & Caldwell	Gwinnett Co. DWR	$ 1,695,753.00	Installation of 8,200 LF of 16" DIP	NO	1/29/16
REPLACEMENT		990 Hammond Dr., Suite 400	684 Winder Hwy.		Force Main, 600 LF of 8" Gravity		
Gwinnett County, GA		Atlanta, GA 30328	Lawrenceville, GA 30045		Sewer, Demo 4,200 LF of 18" Force		
		Daniel Murphy 770-673-3614	Roxsann Bowles 678-376-6700		Main, manhole replacement, paving		
STONECREST SANITARY	766	DeKalb Co. Dept. of Watershed	DeKalb Co. Dept. of Watershed	$ 9,839,055.50	Installation of 25,845 LF of 16"-42"	NO	3/1/16
SEWER SYSTEM IMP.		1300 Commerce Dr.	1300 Commerce Dr.		Gravity Sewer and Force Main;		
DeKalb County, GA		Decatur, GA 30030	Decatur, GA 30030		310 LF of 60" Tunnel		
		Wendell Brown	Wendell Brown				
		770-621-7268	770-621-7268				

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RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
DACULA AREA WATER MAIN	847	Engineering Strategies, Inc.	Gwinnett County DWR	$1,847,268.00	Installation of 10,700' of 16" DIP,	NO	10/11/2016
IMP. - PHASE I		3855 Shallowford Road	684 Winder Hwy.		280' of 30" steel cased jack and		
Gwinnett County, GA		Ste. 525	Lawrenceville, GA 30046		bore, 240' of 16" steel cased		
		Marietta, GA 30062	Michael Efeyini 678-376-6700		jack and bore, and all other project		
CHANDLER WOODS FORCE	846	Precision Planning, Inc.	Gwinnett County DWR	$3,629,111.00	Replacement of existing 48" PCCP	NO	3/29/2016
MAIN REPLACEMENT & 48"		400 Pike Blvd.	684 Winder Hwy.		water main with 48" DIP water main		
PCCP REPLACEMENT		Lawrenceville, GA 30046	Lawrenceville, GA 30046		5,900 LF of 48" DIP; 5,340 LF of 12"		
(NEW HOPE RD. TO BARRETT		770-338-8156	Michael Efeyini 678-376-6700		DIP gravity sewer with 20 manholes,		
BLUFF DR.)					625 LF 10" DIP force main.		
Gwinnett County, GA							
48" PCCP WATER MAIN REP.	845	Engineering Strategies, Inc.	Gwinnett County DWR	$7,135,365.00	Installation of 4,925' of 8" DIP,	NO	7/1/2016
(ATHENS HWY. TO LOGANVILLE		3855 Shallowford Road	684 Winder Hwy.		replace 12,950' of PCCP with 48"		
HWY.)		Ste. 525	Lawrenceville, GA 30046		DIP, with all project related		
Gwinnett County, GA		Marietta, GA 30062	Michael Efeyini 678-376-6700		appurtenances.		
		770-429-0001					
CROOKED CREEK WRF	879	Black & Veatch Corporation	Gwinnett County DWR	$ 2,239,563.50	Expansion of Plant Rd. w/curb &	NO	11/4/2016
PLANT ROAD & UTILITIES		50 Hurt Plaza, Ste. 1150	684 Winder Hwy.		gutter, and sidewalk, replacement		
IMPROVEMENTS		Atlanta, GA 30303	Lawrenceville, GA 30046		of stream crossing culvert, 12" fire		
Gwinnett County, GA		Daniel Shaw	Hussein Khorramzadeh		main, 6" domestic watermain, 18"		
			678-376-6700		to 24" RCP		
ROCK CREEK/LITTLE	866	Polyengineering	City of Dothan	$ 6,828,251.00	Installation of 10,280' of 36" DIP	NO	5/31/2017
CHOCTAWHATCHEE TRUNK		1935 Headland Avenue	126 North Saint Andrews St.		0'-22' Depth, 2,440' of 4"-24" PVC		
LINE		Dothan, AL 36303	Dothan, AL 36303		Sanitary Sewer Pipe, 48"-84"		
City of Dothan, Al		Kenny Sanders			Concrete Manholes, remove and		
		334-793-4700			replacement concrete/asphalt		
		334-793-4700			replacement concrete/asphalt		
WOODWARD MILL RD.	891	Columbia Engineering	Gwinnett County DWR	$ 1,508,355.00	Installation of 5,405' of 16"-66"	NO	2/25/2017
DRAINAGE IMPROVEMENTS		2862 Buford Hwy. Ste. 200	684 Winder Hwy.		RCP		
Gwinnett County, GA		Duluth, GA 30096	Lawrenceville, GA 30046				
		Randy Strunk	Don Gravitt				
		770-925-0357	678-376-6926				

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
LOCKRIDGE FOREST PHASE II	898	R.P. Weston Consulting	Gwinnett County DWR	$ 1,716,630.00	Replacement of 17,400' of 2"-8"	NO	5/23/2017
WATER MAIN REPLACEMENT		3675 Crestwood Pkwy.	684 Winder Hwy.		ACP with 8" DIP and all other		
Gwinnett County, GA		Ste. 472	Lawrenceville, GA 30046		project related appurtenances.		
		Duluth, GA 30096	Manoj Bhimani				
		Jeff Weston 770-858-5825	678-376-7117				
FLINT RIVER OUTFALL	904	Clayton Co. Water Authority	Clayton Co. Water Authority	$ 4,726,156.80	Installation of approximately	NO	8/31/2017
REPLACEMENT 1B		1600 Battle Creek Road	1600 Battle Creek Road		6,400' of 60" gravity sewer.		
Clayton County, GA		Morrow, GA 30260	Morrow, GA 30260				
		Larry Michaels	Larry Michaels				
		770-302-3427	770-302-3427				
FORT YARGO RAW WATER	923	City of Winder	Carter & Sloope, Inc.	$ 6,440,651.00	30,000' of 24" raw water main,	NO	8/22/2017
PROJECT - CONTRACT B		28 East Midland Ave	1031 Stonebridge Pkwy.		bores, fittings, combination air		
Winder, GA		Winder, GA 30688	Watkinsville, GA 30677		valves, driveway and road		
		Roger Wilhelm	Claire Swaim		replacement, erosion control and		
		770-867-7978	478-477-3923		grassing.		
BARNETT SHOALS	967	CH2M	Athens-Clarke Co Public Utilities	$ 2,998,941.00	Installation of 6,100' of 30" and	NO	9/30/2018
INTERCEPTOR AND GREENWAY		6600 Peachtree Dunwoody Rd	124 E. Hancock Avenue		260' of 16" DIP gravity sewer;		
TRAIL PROJECT		400 Embassy Row, Ste. 600	Athens, GA 30601		2,200' of 12" wide concrete		
Athens-Clarke County, GA		Atlanta, GA 30328	Glenn Coleman		trail		
		George Kaufman 678-371-3078	706-613-3470				
WESTSIDE 36" WATER TRANS	985	Civil Engineering Consultants	City of Cumming	$ 2,786,421.00	Installation of 5,000' of 36"	NO	12/7/2018
MAIN - PHASE 2		4994 Lower Roswell Rd.	100 Main Street		DIP Water Main		
City of Cumming, GA		Suite 17, Marietta, GA	Cumming, GA 30040				
		Andrew Lovejoy					
		770-977-5767					
NEWTON FORCE MAIN	986	Hayes, James & Assoc.	Forsyth County	$ 1,203,023.40	Installation of 5,100' of 14" DIP	NO	8/31/2018
Forsyth County, GA		4145 Shackleford Rd., Ste 300	110 E. Main St., Ste. 150		Force Main		
		Norcross, GA 30093	Cumming, GA 30040				
		Michael Bentley	Jim Neuhause				
		770-923-1600	770-781-2160				

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
MABLETON PARKWAY 36"	1011	Engineering Strategies	Cobb County-Marietta Water	$ 4,734,822.00	Replacement of 5,500' of 36"	NO	12/31/2018
WATER MAIN REPL.		3855 Shallowford Rd. Ste 525	1170 Atlanta Ind. Drive		PCCP with DIP		
Cobb County-Marietta		Marietta, GA 30062	Marietta, GA 30066				
		Pedro Rossello 770-429-0001	Chris Dillard 770-514-5350				
		770-923-1600	770-781-2160				
UPPER PROCTOR CREEK	1024	jp2	City of Atlanta DWM	$ 2,110,484.85	Installation of 2,500' of 48", 60"	NO	10/16/2019
CAPACITY RELIEF		5887 Glenridge Dr.	72 Marietta St. NW		& 96" RCP		
City of Atlanta		Atlanta, GA 30328	Atlanta, GA 30303				
Sub to Astra Rohadfox		404-979-3310	678-614-2369				
JACKSON STREET	1043	Thomas & Hutton	City of Buford	$ 304,637.00	Installation of 650' of 15"-24" RCP	NO	3/30/2019
STORMWATER CDBG		P.O. Box 468536	2300 Buford Hwy.				
City of Buford, GA		Atlanta, GA 468536	Buford, GA 30518				
		Matt Dunagin	Clyde Black				
		864-590-9246	770-945-6761				
THE WATER SUPPLY PROGRAM	916	RT2	City of Atlanta DWM	$ 4,450,500.00	Installation of 1,112' of 72" Steel	NO	3/1/2020
FC-7888 (PHASE I) HEMPHILL PS		5887 Glenridge Dr., Ste. 300	72 Marietta St. NW		Slip Line 1,433' of 72" Steel		
72" REHABILITATION		Atlanta, GA 30328	Atlanta, GA 30303				
Atlanta, GA		Joe Ussery	678-614-2369				
Sub to PC Russell JV		404-979-3300					
Phil Mullen 678-215-5923							
WESTSIDE 36" WATER TRANS	1040	Civil Engineering Consultants	City of Cumming	$ 7,553,853.40	Installation of 8,280' of 36" DIP	NO	6/28/2019
MAIN PHASE 4		4994 Lower Roswell Rd.	100 Main Street		Water Main and 1,780' of 24" DIP		
City of Cumming, GA		Suite 17, Marietta, GA	Cumming, GA 30040		Water Main		
		Andrew Lovejoy					
		770-977-5767					
SUNNY HILL ROAD 48" PCCP	1034	Precision Planning, Inc.	Gwinnett DWR	$ 10,907,596.00	Install approx. 11,450' of 48" DIP	NO	2/12/2020
REPL.		400 Pike Blvd.	684 Winder Hwy.		water main, 13,100' of 12" DIP		
Gwinnett County, GA		Lawrenceville, GA 30046	Lawrenceville, GA 30046		water main, 330' of 8" DIP water		
		Bill Crowder 770-267-8800	Michael Efeyini 678-376-6700		main, 840' of 6" DI water main;		
					18", 30" and 48" RCP culverts		

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
48" PCCP REPLACEMENT	1067	Constantine Engineering, Inc.	Gwinnett DWR	$ 7,361,994.00	Installation of 8,300' of 48",	NO	5/11/2020
(LOGANVILLE HWY TO GRAYSON		368 West Pike St. Ste. 104	684 Winder Hwy.		3,400' of 12" and 170' of 8" DIP		
TANK)		Lawrenceville, GA 30046	Lawrenceville, GA 30046		water main		
Gwinnett County, GA		Josh Petersen	Michael Efeyini 678-376-6700				
		678-214-4070					
SR 400 WATERLINE	1079	Constatine Engineering, Inc.	Forsyth County	$ 4,741,394.60	Installation of 3,312' of 42" DIP	NO	9/4/2020
Forsyth County, GA		368 West Pike St. Suite 104	110 E. Main St. Suite 150		WM, 3,632' of 36" DIP WM and		
		Lawrenceville, GA 30046	Cumming, GA 30040		105' of 60" and 54" Bores		
		Jeff Duplantis	Kyle Fikes				
		678-765-1780	678-455-8384				
EAST HIRAM SEWER IMPR.	1061	Freese & Nichols	Paulding Co. BOC	$9,288,701.50	4,720' of 8" GS, 6,645' of 16" GS	NO	12/1/2020
Paulding County, GA		3350 Riverwood Pkwy., Ste. 1900	240 Constitution Blvd.		12,880' of 8" FM, and PS		
		Atlanta, GA 30339	Dallas, GA 30132				
			Laurie Ashmore				
			678-224-4080				
KIMBALL BRIDGE RD from	1063	AECOM	Fulton County Dept. of	$5,487,664.00	Installation of 2,825' of 54"	NO	12/1/2020
NORTH POINT PKWY TO		1360 Peachtree St., NE, Ste 500	Public Works		DIP Water Main, and 1,625'		
WATERS RD. WATERLINE		Atlanta, GA 30309	Sub for CMES		of 12" DIP Water Main		
Fulton County, GA		678-808-8800					
FULTON-COBB DIVERSION	1026	Freese & Nichols, Inc.	Fulton Co Dept of Public Works	$ 28,366,020.00	Construct approx. 6 miles of	NO	9/30/2021
LINE & PUMP STATION D/B		360 Interstate North Pkwy.	141 Pryor St SW, Ste 6001		24"-30" forcemain and		
Fulton County, GA		Suite 250	Atlanta, GA 30303		construction of a new pump		
		Atlanta, GA 30339	Simeon Solomero		station.		
		Forest Hunt 336-392-8432	404-612-7418				
FLINT RIVER OUTFALL PH 3	1089	Clayton Co. Water Authority	Clayton Co. Water Authority	$9,399,555.25	Installation of 12,100' of 42",	NO	9/30/2021
Clayton County, GA		1600 Battle Creek Rd.	1600 Battle Creek Rd.		36", and 30" Gravity Sewer		
		Morrow, GA 30260	Morrow, GA 30260				
		Clifford Beroset 770-302-3427	Clifford Beroset 770-302-3427				
			678-224-4080				

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
NORTH CHATTAHOOCHEE	1102-03	Engineering Strategies	Gwinnett DWR	$7,175,447.59	Installation of 4,000' of 54" DIP	NO	5/30/2021
INTERCEPTOR PHASE 1A		3855 Shallowford Rd. Ste 525	684 Winder Hwy.		Sewer with an in-ditch replacement		
Gwinnett County, GA		Marietta, GA 30062	Lawrenceville, GA 30046		of 2,249'.		
		John Fleck 770-429-0001	Curtis Bokey 678-376-6700				
HOPKINS CREEK/STANLEY RD	1125	Gwinnett County DWR	Gwinnett County DWR	$5,779,380.09	Installation of 5,758' of 24" DIP	NO	2/1/2023
SEWER INTERCEPTOR		684 Winder Hwy.	684 Winder Hwy.		gravity sewer.		
Gwinnett County, GA		Lawrenceville, GA 30046	Lawrenceville, GA 30046				
		678-376-6700	678-376-6700				
FRONTIER DRIVE WATER MAIN	1107	Gwinnett County DWR	Prime Engineering	$1,583,450.00	Installation of 10,600' of 8"	NO	8/1/2021
REPLACEMENT		684 Winder Hwy.	Paul Boyer		DIP Water		
Gwinnett County, GA		Lawrenceville, GA 30046	404-425-7100				
		Manoj Bhimani 678-376-6700					
SR 369 WIDENING WATER	1110	Constantine Engineering	Forsyth County	$4,453,342.00	Installation of 16,89' of 3" -	NO	12/1/2022
Forsyth County, GA		368 W. Pie Street	514 W. Maple St., Suite 104		36" DIP Water		
Sub for Vertical Earth		Suite 104	Cumming, GA 30030				
770-888-2224		Lawrenceville, GA 30046					
FRONTIER DR. PH 2	1149	Prime Engineering, Inc.	Gwinnett County DWR	$ 4,258,964.00	Replacement of existing	NO	6/1/2024
WATER MAIN REPLACMENT		3715 Northside Pkwy. Ste. 200	684 Winder Hwy.		water mains with 12,900;' of 8"		
Gwinnett County, GA		Atlanta, GA 30327	Lawrenceville, GA 30046		DIP.		
		404-425-7100	678-376-6700				

JDS INC.
272 HURRICANE SHOALS RD, NE
LAWRENCEVILLE, GA 30046

RECENTLY COMPLETED PROJECTS

PROJECT NAME	JOB #	ENGINEER	OWNER	CONTRACT $	DESCRIPTION	CLAIMS PENALTIES	FINAL
RIVERDALE OUTFALL	1156	Clayton Co. Water Authority	Clayton Co. Water Authority	$6,783,169.80	Installation of 5,800' of 36",	NO	2/1/2025
REPLACEMENT-PHASE 1		1600 Battle Creek Rd.	1600 Battle Creek Rd.		30", & 24" Gravity Sewer		
Clayton County, GA		Morrow, GA 30260	Morrow, GA 30260				
		Clifford Beroset 770-302-3427	Clifford Beroset 770-302-3427				
DESIGN BUILD SERVICES	1122	Freese & Nichols, Inc.	Gwinnett County DWR	$ 123,912,540.00	Design-build project with	NO	3/1/2025
EASTERN REGIONAL		360 Interstate North Pkwy.	684 Winder Hwy.		construction of gravity sewer,		
INFRASTRUCTURE PROJECT		Suite 250	Lawrenceville, GA 30046		force main, water main, pump		
Gwinnett County, GA		Atlanta, GA 30339	Jimmy Powell		station, and a trail.		
		Carlton Sherrer 404-334-4310	678-376-7159				
FACTORY SHOALS 30" & SIX	1148	Freese & Nichols, Inc.	Cobb Co - Marietta Water	$17,947,632.00	Installation 3,200' of 30" and	NO	4/1/2025
FLAGS 24" WM REPLACEMENT		360 Interstate North Pkwy.	1170 Atlanta Industrial Dr.		8,200' of 24" DIP water main		
Cobb Co. - Marietta, GA		Suite 250	Marietta, GA 30066				
		Atlanta, GA 30339	Chris Dillard				
		Forest Hunt 336-392-8432					
MANER ROAD WATER MAIN	1151	Carter & Sloope, Inc.	Cobb Co - Marietta Water	$13,919,123.00	Remove and replace 4,100'	NO	4/1/2025
REPLACEMENT		1031 Stonebridge Parkway	1170 Atlanta Industrial Dr.		of 36" DIP and install a new		
Cobb Co. - Marietta, GA		Watkinsville, GA 30677	Marietta, GA 30066		30" FRP water main.		
		John Solomon 770-263-5945	Chris Dillard		DIP water		
TURKEY CROSSING PS AND FM	1169	Engineering Strategies, Inc.	Gwinnett County DWR	$4,587,557.00	Pump Station and Force Main	NO	4/25/2025
Gwinnett County GA		38556 Shallowford Rd Ste 525	684 Winder Hwy.		1,650' of 6" DIP		
		Marietta, GA 30062	Lawrenceville, GA 30046				
		John Fleck 770-429-0001	Jimmy Powell 678-376-6700				
LITTLE SUWANEE CREEK	1165	Precision Planning, Inc.	Gwinnett County DWR	$6,759,614.00	265' of 48" steel casing, 235'	NO	6/13/2025
GRAVITY SEWER/FORCE MAIN		400 Pike Blvd.	684 Winder Hwy.		of 36" steel casing, 7,100' of		
Gwinnett County GA		Lawrenceville, GA 30045	Lawrenceville, GA 30046		16" DIP gravity sewer		
		Richard Crowder	678-376-6700				
		770-962-8000					

Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE GENERAL CONTRACTOR HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

SUNQUIST, HARLAN RAYMOND SR

SPECTRUM UNDERGROUND INC
5802 BEE RIDGE ROAD
SARASOTA FL 34233

LICENSE NUMBER: CGC008435

EXPIRATION DATE: AUGUST 31, 2026

Always verify licenses online at MyFloridaLicense.com

ISSUED: 06/28/2024

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STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

2601 BLAIR STONE ROAD
TALLAHASSEE FL 32399-0783

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STATE OF FLORIDA DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CUC1224651 ISSUED: 07/29/2024
CERT UNDERGROUND & EXCAV CNTR
ARCHER, STEVEN JAMES
JDS PIPE INC.

Signature
LICENSED UNDER CHAPTER 489, FLORIDA STATUTES
EXPIRATION DATE: AUGUST 31, 2026

Ron DeSantis, Governor Melanie S. Griffin, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
CONSTRUCTION INDUSTRY LICENSING BOARD

LICENSE NUMBER: CUC1224651 **EXPIRATION DATE: AUGUST 31, 2026**

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

ARCHER, STEVEN JAMES
JDS PIPE INC.
272 HURRICANE SHOALS RD NE
LAWRENCEVILLE GA 30046

ISSUED: 07/29/2024

Always verify licenses online at MyFloridaLicense.com
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4. FLORIDA BID BOND

Failure to fully complete this form SHALL result in the Bidder being deemed NONRESPONSIVE.

KNOW ALL MEN BY THESE PRESENTS:

That the "Bidder", JDS Inc., a corporation X, individual ____, partnership ____, of the state of Florida, qualified to do business in this State, as Principal, and the "Surety", Harco National Insurance Company, a corporation of the state of IL, authorized to do business as a surety in this State, as Surety, are hereby held and firmly bound unto the Tampa Bay Water as Obligees, in the sum of Five Percent of Amount Bid Dollars ($5%), lawful money of the United States of America, which represents five percent (5%) of the sum of Bidder's proposed total contract price, for the payment of which Bidder and the Surety hereby bind ourselves, our respective heirs, successors, legal representatives and assigns, jointly, and severally, firmly by these presents.

WHEREAS, Bidder has submitted to Tampa Bay Water, its Bid to which this Bond is attached, to enter into the Contract with Tampa Bay Water for the Cross Bar Ranch Wellfield Water Transmission Main-Utility Conflict, Project No.: 07153, Contract #2026017, covered by the Contract documents prepared by Tampa Bay Water and the Engineer, which Contract documents are incorporated herein by this reference:

NOW, THEREFORE: THE CONDITION OF THIS OBLIGATION IS THAT, Bidder and Surety are jointly and severally bound by all of the provisions of this Bid Bond, and if Bidder faithfully performs and fulfills all the understandings, covenants, terms, conditions and requirements of this ITB (including addenda issued before the date of the opening of the Bid) within the time specified or any extension thereof, with or without notice to the Surety, or if Bidder fails to comply with all requirements of this ITB within the time specified or any extension thereof, with or without notice to the Surety, but pays Tampa Bay Water the full amount of the sum set forth in this Bid Bond as liquidated damages, then this obligation shall be null and void, otherwise to remain in full force and effect.

A. If Tampa Bay Water makes demand on the Surety to perform in accordance with the Surety's obligations under this Bond, then the full amount of the Bid Bond shall be immediately due and payable to Tampa Bay Water, and the Surety shall pay that sum without delay. Additionally, the Surety shall reimburse Tampa Bay Water for all costs of collection (including but not limited to attorney's fees).

B. The Surety, for value received, stipulates and agrees that the obligations of the Surety and this Bid Bond shall be in no way impaired or affected by any extension of the time within which Tampa Bay Water may accept the Bid, and the Surety does, by this Bid Bond, waive notice of any such extension.

C. The term this "State" means the State of Florida. Other defined terms (i.e., capitalized terms) used in this Bid Bond have the intent and meanings assigned to them in the General Conditions of the Contract documents, Definitions.

IMPORTANT: Sureties executing this Bid Bond shall be currently authorized to do business in the State of Florida as surety and, except as otherwise provided by the Florida Statutes, be on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies. Bonds cannot be in excess of the amount indicated as approved by that list.

Harco National Insurance Company
(Name of Surety)

4200 Six Forks Road, Suite 1400 Raleigh, NC 27609
(Address)

847-321-4800
(Telephone Number)

William Reidinger
(Name of Duly Authorized Florida Agent)

24850 Burnt Pine Drive #4. Bonita Springs, FL 34134
(Address)

847-463-7251
(Telephone Number)

Signed and sealed this 17th day of March, 20 26.

Bidder/Principal JDS Inc.

Witness

Jennifer Butler
CFO/Corporate Secretary

By:

Eric Malvin - VP - FL
Name and Title

JDS Inc CORPORATE SEAL STATE OF GEORGIA

Surety Harco National Insurance Company

Witness

John W. McGuire

By:

William Reidinger, Attorney-in-Fact
Name and Title

By Attorney-In-Fact:
(Attach Certified Copy of Power of Attorney

HARCO NATIONAL INSURANCE COMPANY CORPORATE SEAL 1984 ILLINOIS

FLORIDA DEPARTMENT OF FINANCIAL SERVICES

WILLIAM PATRICK REIDINGER

License Number : E033020

Resident Insurance License

- 0220 - GENERAL LINES (PROP & CAS)

Issue Date

01/26/2025

Please Note: A licensee may only transact insurance with an active appointment by an eligible insurer or employer. If you are acting as a surplus lines agent, public adjuster, or reinsurance intermediary manager/broker, you should have an appointment recorded in your own name on file with the Department. If you are unsure of your license status you should contact the Florida Department of Financial Services immediately. This license will expire if more than 48 months elapse without an appointment for each class of insurance listed. If such expiration occurs, the individual will be required to re-qualify as a first-time applicant. If this license was obtained by passing a licensure examination offered by the Florida Department of Financial Services, the licensee is required to comply with continuing education requirements contained in 626.2815 or 648.385, Florida Statutes. A licensee may track their continuing education requirements completed or needed in their MyProfile account at https://dice.fldfs.com. To validate the accuracy of this license you may review the individual license record under "Licensee Search" on the Florida Department of Financial Services website at www.myfloridacfo.com/division/agents.



Jimmy Patronis
Chief Financial Officer
State of Florida

POWER OF ATTORNEY
HARCO NATIONAL INSURANCE COMPANY
INTERNATIONAL FIDELITY INSURANCE COMPANY
Member companies of IAT Insurance Group, Headquartered: 4200 Six Forks Rd, Suite 1400, Raleigh, NC 27609

Bond # Bid Bond

Principal JDS Inc.

Obligee Tampa Bay Water

KNOW ALL MEN BY THESE PRESENTS: That **HARCO NATIONAL INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of Illinois, and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

William Reidinger

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, including but not limited to Proposal Bonds and Consents of Surety, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** and is granted under and by authority of the following resolution adopted by the Board of Directors of **INTERNATIONAL FIDELITY INSURANCE COMPANY** at a meeting duly held on the 3rd day of June 2025 and by the Board of Directors of **HARCO NATIONAL INSURANCE COMPANY** at a meeting held on the 3rd day of June 2025.

"**RESOLVED**, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, including but not limited to Proposal Bonds and Consents of Surety, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** have each executed and attested these presents on this 17th day of March, 2026

INTERNATIONAL FIDELITY INSURANCE COMPANY CORPORATE SEAL 1904 NEW JERSEY

STATE OF NEW JERSEY
County of Essex

STATE OF ILLINOIS
County of Cook

HARCO NATIONAL INSURANCE COMPANY CORPORATE SEAL 1984 ILLINOIS

Michael F. Zurcher
Executive Vice President, Harco National Insurance Company
and International Fidelity Insurance Company

On this 17th day of March, 2026, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.

CATHY CRUZ NOTARY PUBLIC STATE OF NEW JERSEY

IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Cathy Cruz a Notary Public of New Jersey
My Commission Expires April 16, 2029

CERTIFICATION

I, the undersigned officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 17th day of March, 2026

581

Irene Martins, Assistant Secretary

JDS, Inc.
272 Hurricane Shoals Road, N.E.
Lawrenceville, Georgia 30046-4402
(770) 972-8000
(770) 979-3748 Fax
www.jdspipe.com

To Whom It May Concern:

This letter is to confirm that JDS Inc., together with its affiliated and related entities (collectively, "JDS"), completed the acquisition of one hundred percent (100%) of the issued and outstanding equity interests of Spectrum Underground, Inc. (the "Company" or "Spectrum") on February 23, 2026 (the "Acquisition").

Following the closing of the Acquisition, the Spectrum continues its operations as a wholly owned subsidiary of JDS. In connection with the Acquisition, all key employees of Spectrum have accepted employment with JDS and/or its JDS continues to support the ongoing business operations of the Company.

Steven J. Archer CEO/President

Harlan Sunquist, Jr. CEO/ President

Cross Bar Ranch Wellfield Transmission Main Utility Conflict Contract 2026-017

Agenda Item C.5

April 20, 2026

Danielle Keirsey, PMP
Senior Project Manager
Tampa Bay Water

Project Overview

- ~300 feet 60-inch diameter steel pipe via open cut
- ~170 feet 60-inch diameter steel pipe via microtunneling
- Valves (36-inch and 60-inch diameter)
- Cathodic Protection
- ~250 feet 60-inch diameter steel pipe to be removed



Recommendation

- Staff recommends Board approval of the of Contract 2026-017 with JDS Inc., dba JDS Pipe, Inc. in the amount of $6,169,901 inclusive of $246,000 for Owner's Allowance.

TAMPA BAY WATER

Questions?

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM D.1

DATE: April 6, 2026

TO: Board of Directors

FROM: Charles H. Carden, General Manager

SUBJECT: Member Government Report - City of St. Petersburg - *Presentation*

SUMMARY

City of St. Petersburg utility staff will provide a presentation on its water supply system and current topics of interest.

SUGGESTED ACTION

Receive Report.

COST/FUNDING SOURCE

N/A

DISCUSSION

Each member government utility is given the opportunity to present its current water operations and any other topics of interest on a rotational basis. A member of the City of St. Petersburg Utility staff will present on behalf of the city.

D.1 Member Government Update - City of St. Petersburg

ST. PETERSBURG WATER RESOUCES DEPARTMENT

TAMPA BAY WATER BOARD MEETING

April 20, 2026

John E. Palenchar, Director

st.petersburg
www.stpete.org

The Story of Water Resources

- There and Back Again — a Water's Tale.
  - The true story of the people whose roles, responsibilities, skills, and instincts create the reliability the public expects.



st.petersburg
www.stpete.org

Overview of the Water Journey

From:

- Tampa Bay Water

To:

- Cosme Water Treatment Plant, to
- Water Distribution, to
- Wastewater Collection, to
- Wastewater Treatment, to
- Reclaimed Water Distribution *(and back again…)*



The Water Journey | St. Pete, FL - YouTube

st.petersburg
www.stpete.org

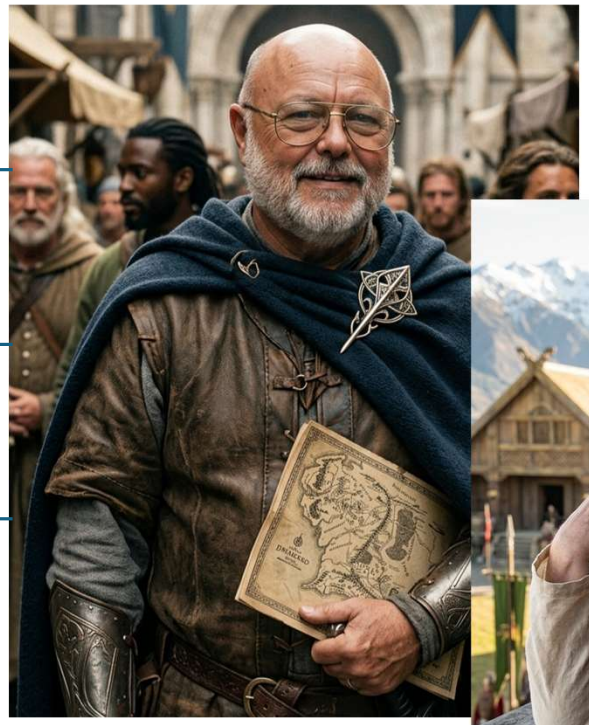
Cosme Water Treatment Plan

Raw and treated water delivered from Tampa Bay Water

Advanced treatment and disinfection

Operators monitor quality, capacity, and reliability

Water leaves Cosme meeting or exceeding all standards







st.petersburg
www.stpete.org

STAFF 101: Boil Water Notice | St. Pete, FL - YouTube

Water Distribution

System reliability

Pressure stability

Immediate response to breaks or emerging risks

Customer water quality call response







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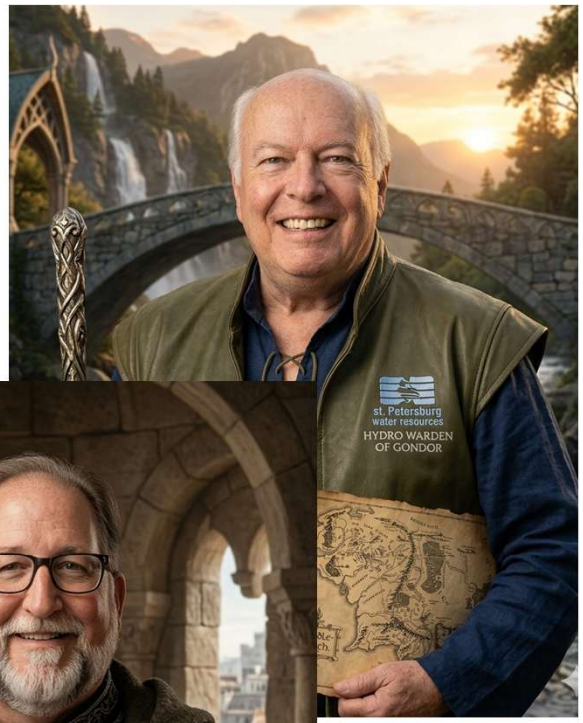
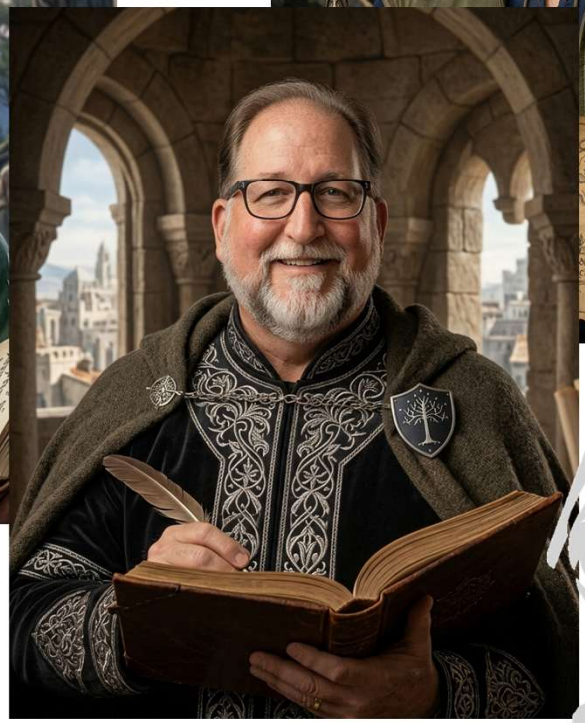
Environmental Compliance

- Regulatory compliance sampling
- Environmental analytical laboratory operations
- Industrial and commercial customer monitoring
- Surface water quality monitoring







st.petersburg
www.stpete.org

[On the Job: Water Scientist | St. Pete, FL - YouTube]

Admin & Special Projects

Recruiting, retention, and organizational culture

Private lateral program, and lead / copper rule revision

Training and safety

Community engagement and education







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www.stpete.org

[Stories of Impact: Paula on the Lateral Lines Rebate Program | St. Pete, FL - YouTube]

Capital Improvements

Develop five-, ten-, and thirty-year capital plans

Coordinate design and permitting of in-house projects

Supports utility rate studies

Coordinates with procurement and engineering departments







st.petersburg
www.stpete.org

Wastewater

Wastewater collection system — more than 800 miles of gravity mains, force mains, and pump stations

Monitoring technologies (level sensors, smart manholes) detect inflow/infiltration and prevent SSOs

Operators monitor quality, capacity, and reliability to produce reclaimed water a vital irrigation resource for thousands of customers

St. Pete Agile Resiliency (SPAR) strategy toward: Resiliency, Capacity, Modernization, Environmental protection







st.petersburg
www.stpete.org

The Firsts: Sylvia Rosario | St. Pete, FL - YouTube

Reclaim & Water Conservation

The story ends — and begins again.

Aquifer storage and recovery augments reclaimed supply

Sensible sprinkler program for potable, well, and reclaimed

Extends the usefulness of every gallon







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Questions



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TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.1

DATE: April 3, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Division Officers and Directors

SUBJECT: Agency Division Activity Reports for February and March 2026 - *Receive Report*

SUMMARY

The following is an update on current activities for each Tampa Bay Water Division for the months of February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The following is an update on current activities for each Tampa Bay Water Division for the months of February and March 2026.

Business Strategies Division

The Business Strategies Division manages relationships that are critical to the agency's success including with staff, elected officials, member governments, stakeholders and the public. The division oversees the agency's board services, continuous improvement, human resources, legislative affairs, public engagement, safety services and strategic planning functions.

Continuous Improvement Department

The Continuous Improvement Department is responsible for establishing and implementing continuous improvement programs and projects for the agency and ensuring the safety and security of the agency's employees and assets.

Continuous Improvement

- Convened eleven cross-functional working group sessions to assess corrective and preventive actions, recommend efficiencies, and document improvements to strengthen agency-wide operations.
- Conducted review of the current Strategic Plan for updates or changes to maintain alignment of priorities, resources, and outcomes with the agency’s mission and vision.
- Completed developing a Strategic Asset Management Plan.
- Completed the first draft of the agency’s next five-year Strategic Plan.
- Met with K2i Team to discuss various solutions to common regional challenges.

Business Process Improvement

- Conducted three process mapping sessions to aid agency departments in the creation of controlled documents and process maps.
- Expanded the PowerDMS document library with 35 newly published documents while initiating an effort to consolidate related materials into department-specific manuals to improve usability and reduce overall document volume.
- Developed a formal knowledge-retention interview process for departing staff and partnered with Human Resources to strengthen and standardize the offboarding process, helping preserve institutional knowledge and continuity.

Emergency Management

- Participated in the Hillsborough Regional Kickoff Meeting to strengthen coordination and collaboration with regional partners.
- Attended a Disaster and Resilience Conference to remain current on emerging technologies, best practices, and advancements in emergency preparedness.
- Enhanced the Everbridge platform by standardizing scribe guides and expanding training resources, while deploying the Everbridge 360 Mobile interface with custom forms to streamline in-field reporting and improve the consistency, quality, and usability of submitted information.

Human Resources Department

The Human Resources Department is responsible for establishing and administering human resources policies and procedures in accordance with federal, state and local laws and requirements, under the oversight and approval by the agency's general manager and board of directors. In addition, Human Resources is responsible for employee recruitment and retention, benefits administration, employee relations, training and development, employee compensation, workers compensation and oversight of the Employee Appreciation Team.

- Human Resource Administration: Began the Pay and Class Study - provided documentation and scheduled manager meetings with Cody and Associates. Researched new process for FMLA, ADA and workplace investigations.
- Benefits: Reviewed current benefit data in preparation for insurance renewals.
- Employee Appreciation: Held annual Chili Cookoff and Employee Appreciation Day events.
- Recruitment and Hiring: Recruited for Data Analytic Co-Op, Public Communication Co-Op, Demand Management Co-op, Engineering Co-OP, Electricians (2), Executive Administrative Strategist, Mechanical Tech, Water Plant Operator Trainee, Water Quality Scientist. Hired Mechanical Technician, Executive Administrative Strategist, Water Plant Operator Trainee,
- Training and Development: Held bi-monthly Leadership Team Meeting and provided training; Arranged Safety Training through Florida Safety Council; Reviewed annual employee survey for areas of improvement.

Grant Funding and Government Affairs Department

Grant Funding and Government Affairs develops strategic initiatives to advocate for the agency and its members and is responsible for developing and implementing strategic positions and priorities for the Agency’s legislative, grant funding and regulatory policy initiatives.

- Attended the quarterly TBRPC Agency on Bay and Coastal Management meeting on behalf of Tampa Bay Water.
- Participated in Hillsborough Commissioner Chris Boles' Community Town Hall, to bring awareness to members of the community about Tampa Bay Water, the South Hillsborough Pipeline, and water conservation.
- Hosted Congresswoman Luna’s District Director to provide a Tampa Bay Water security briefing.
- Monitored committee meetings and reviewed newly filed legislation for potential implications for Tampa Bay Water.
- Coordinated with federal consultants to advance Tampa Bay Water’s federal advocacy priorities, including monitoring developments related to the Water Resources Development Act and federal appropriations.
- Coordinated with Jones Walker Consultants and relative Congressional delegates to identify community project request sponsors for ongoing CIP priority projects.

Public Communications Department

The Public Communication Department builds and maintains the agency reputation through various communications tools and methods; provides education, information and outreach on agency projects, programs and policies to stakeholders; and develops and implements critical water supply plans.

Project Public Engagement

Tampa Bay Water includes public outreach and public engagement in each agency project – from conception to completion. The agency has several on-going projects through the renewal & replacement program, capital improvement program and Long-term Master Water Plan.

- **South Hillsborough Pipeline** – Public information and outreach on this project can be found in the South Hillsborough Pipeline Status Report.
- **Long-term Master Water Plan Feasibility Studies** – For the Eastern Pasco Wellfield Feasibility Study, the project team responded to resident inquiries via the project hotline and email address. A letter was finalized and is ready for distribution to residents within the project area informing them of a future aquifer performance test. The project team conducted an internal workshop on February 17, 2026, to review current project status. For the Tampa Bay Seawater Desalination Plant Expansion, the project team submitted the final draft of the project fact sheet to Tampa Bay Water for review and approval. For the Consolidated Water Use Permit, there was no activity.

Public Communications, Outreach and Education

Public Communications, Outreach and Education develop and execute strategic communications programs that support and promote agency projects, policies and initiatives, and build and maintain relationships with agency stakeholders.

- Hosted 18 facility tours for 197 guests and staff at the Tampa Bay Water Desalination Plant, Regional Reservoir, and Surface Water Treatment Plant.
- Marketing and Document Creation - Completed the 2025 Water Quality Report and posted it to the website; Prepared marketing materials and made website updates for the 2026 Tampa Bay Community Water Wise Awards program application period.
- Events: Supported CIP Open House events with the Planning and Projects team; Coordinated and hosted the Surface Water Treatment Plant Expansion Groundbreaking; Exhibited at the St. Pete Science Festival; Judged entries at the Pasco County Schools Science Fair; Visited Pasco County Schools District Environmental Education Program locations for signage opportunities; Attended the Keep Pinellas Beautiful Awards Luncheon.
- Media: Participated in a live local TV News segment for the Tampa Bay Water Wise rebate program; Coordinated and participated in two live local TV News segment for the Tampa Bay Water Wise rebate program; Coordinated a press conference on Tampa Bay Water's stage three drought alert; Coordinated and participated in two live national TV segments regarding Tampa Bay's drought.
- Created and distributed social media content for current drought conditions and conservation,

World Water Day, Fix a Leak Week, South Hillsborough Pipeline construction methods, the Surface Water Treatment Plant Expansion Groundbreaking, World Wetlands Day, the South Hillsborough Pipeline project, Community Water Wise Awards winners, water conservation, St. Pete Science Festival, Tampa Bay Water's engineering open house, and other content.

Safety Services Department

Safety Services is responsible for the agency Safety and Security programs.

- Completed 218 site inspections.
- Visited TECO site for safety and security overview.
- Completed a Quarterly Business Review with vendor Convergint, including IT.
- Introduced the concept of "Tailgate Talks" to the Agency.
- Completed two vehicle incident investigations.
- Completed the Annual Sling/Strap/Lift Equipment inspection for the Agency (First time in-house).
- Introduced the re-vamp of the Near Miss program.
- Introduced the concept of Departments holding a "Safety Moment" at their meetings.

Planning and Projects Division

The Planning and Projects Division is responsible for the delivery of the Agency's Capital Improvements Program including, design, permitting, and construction of capital projects. Additionally, the Division is responsible for engineering evaluations, surveying, utility conflict management, and real estate management and acquisition.

Division staff continues to work in the following critical projects/programs. Projects and Programs detailed reports are included in the project specific status reports in this agenda.

- Surface Water Treatment Plant Expansion (Project 01014)
- South Hillsborough Pipeline (Projects 01610/01616)
- Long-term Master Water Plan Feasibility Program and Developmental Alternative (Projects 11020/11021/112022/11025)

Construction

Construction administers capital projects construction contracts to be following the design, permitting, regulatory requirements, property rights, budget, schedule, and all related agreements.

- Eldridge–Wilde Wellfield Improvements (Project No. 50016): Pumps and motors have been installed for all seven Group 2 wells. Disinfection and flushing activities are complete, and bacteriological sampling is underway to confirm compliance.
- Lake Bridge Water Treatment Plant – Pump No. 4 (Project No. 07542): Submittals for the new pump, motor, and variable frequency drive are currently under review.
- Cypress Creek Water Treatment Plant – Chemical Piping Replacement (Project No. 50051):

Installation of new chemical piping, storage tanks, and feed pumps has been completed for sodium hypochlorite and caustic. Work has begun on the chemical piping and feed pumps for the third and final chemical, ammonia.

- Surface Water Treatment Plant – Renewal and Replacement Program (Project No. 50075): Construction is complete. The project is scheduled for closeout at the May 2026 Board meeting.
- Cosme Water Treatment Plant – Yard Piping Improvements (Project No. 07131): Construction is complete. The project is scheduled for closeout at the April 2026 Board meeting.
- Tampa Bay Desalination Facility – VFD Replacement (Project No. 50055)
  Installation of new power cells has been completed for three additional VFDs. Ten of the twelve VFDs are now complete, with the remaining two scheduled for completion in August 2026.

Engineering

Engineering conducts limited in-house design; provides capital projects project management services in as-needed basis; conducts engineering studies and assessments; manage Agency design standards and specifications; ensure that all capital projects meet Agency's engineering standards and specifications; and provides quality review of capital projects design completed by outsourced services.

- High Service Pump Station VFDs (Project No. 50070): Action items resulting from the VFD vendor workshop held back in February are ongoing. The Consultant is drafting reference questionnaires to multiple medium-voltage VFD owners. Instrumentation and Control (I&C) coordination meetings are also being planned.
- Cypress Creek Generators Study (Project No. 50037): The final report was submitted to Tampa Bay Water for review.
- Arc Flash Program – Standard Operating Procedure (SOP): A Standard Operating Procedure (SOP) was developed for arc flash calculations, studies, mitigation measures, and equipment labeling. Final deliverables are expected in May 2026, after which the project will be closed out.
- Cathodic Protection Systems Program (Project No. 11018): The Cathodic Protection (CP) Systems Program is designed to assess the condition of critical facilities and pipelines and to repair CP equipment, infrastructure, and associated components. Monitoring reports are completed annually on half of the CP Systems, with the remaining half assessed the following year. This approach provides a full system assessment over a two-year cycle. The 2025 monitoring and survey report identified required repairs and recommended improvements. Most repairs were completed in fall 2025 and again during February and March 2026. The next round of CP assessments is scheduled for April and May 2026.
- Morris Bridge Wellfield Improvements (Project No. 50021): Coordination with Hillsborough County Flatwoods Park staff continues, including periodic project updates to ranger staff. The project was advertised in November 2025, with bids received on February 18, 2026. A pre-bid meeting was held on December 17, 2025. Construction bid approval is anticipated at the April 2026 Board meeting.
- Source Water Quality and Business Case Evaluation (Project No. 11026): A project kick-off meeting was held on November 4, 2025. A data-gathering plan and report list were developed, and data is being retrieved from DataMart. The project team is reviewing data requests,

researching and pulling reports, and supplying information for the evaluation. The next step includes conducting internal Tampa Bay Water staff interviews and hosting a group workshop to clarify data and findings.

- 045 System Hydraulic and Emergency Scenario Analysis Report (Project No. 11023)
  The final report is currently under Quality Control review. Submittal of the final report to the Board is tentatively anticipated for the May 2026 Board Meeting.

Project Management

The Project Management Department manages and implements the update of the Agency's Capital Improvements Program, the Long-term Master Water Plan, and the Energy Management Program and other Agency critical plans and reports and provides capital projects project management services. They also are responsible for the development of all processes and procedures for effective project management following project management best practices.

- FY 2027–2036 Capital Improvements Program: The Capital Improvements Program (CIP) Plan update is ongoing. New projects have been identified, with statements of work, cost estimates, and schedules developed. A prioritization workshop was held to score and rank projects and project cash flows have been completed. The draft updated CIP Plan will be included in the April 2026 Board Budget Workshop.
- Cypress Creek Water Treatment Plant – 72 Inch Valve (Project No. 50073): The Consultant has completed the 90% design. Guaranteed Maximum Price (GMP) Proposal No. 1 for early material procurement was approved by the Board of Directors at the January meeting.
- Cypress Creek Wellfield Improvements (Project No. 01602): Tampa Bay Water requested a change order to the engineering consultant to include standby generators in the Basis of Design Report, based on findings from the Cypress Creek Generator Study (Project No. 50037). Following approval of this change order, the design consultant is advancing toward completion of the 30% design and the updated Basis of Design Report in late April 2026.
- Tampa Bay Desalination Facility – Reverse Osmosis Trains (Project No. 01622): A change order to the Operations, Maintenance, and Management (OM&M) contract with U.S. Water–Acciona is being negotiated for the construction of Reverse Osmosis Racks 6 and 7. This change order will be presented to the Board for approval at the May 2026 meeting.
- Cosme Collection Main – Utility Conflict (Project No. 06914): The 60% design is currently under review by Hillsborough County. An initial agreement has been reached to enter into a Joint Project Agreement (JPA) with Hillsborough County, allowing the project to be constructed concurrently with the County's Walker Middle School Circulation Improvement Project.
- Cypress Creek Wellfield Surface Water Improvements – Phase 3 (Project No. 09108): A task order has been negotiated with an as needed civil contractor to complete construction activities under this project. The task request will be presented at the April 2026 Board meeting for approval.
- Tampa Bypass Canal (MLK) Pumps (Project No. 07070): This project has entered the planning phase. The project team is reviewing and finalizing the Statement of Work prior to negotiating scope and fee with an as needed contractor to perform the routine maintenance activities

identified for this project.

- Cross Bar Ranch Wellfield Water Transmission Main – Utility Conflict (Project No. 07153): The construction contract was advertised in January 2026, and five bids were received on March 17, 2026. A recommendation to award to the lowest responsive bidder, JDS Pipe, Inc., will be presented at the April 2026 Board Meeting for approval. Coordination with the Florida Department of Transportation is ongoing.
- Cypress Creek Pump Station Repump Improvements (Project No. 07544): Staff are confirming the project scope and will proceed with negotiating a scope and fee for professional engineering services with an as needed consultant.
- Surface Water Treatment Plant Water Quality Pilot Study (Project No. 03511): The project is currently in the Professional Services Selection phase. The team is working with Veolia Water North America Operating Services, LLC to develop the project design proposal, which is planned for presentation at the April 2026 Board meeting for approval.
- Surface Water Treatment Plant – SCADA System Upgrades (Project No. 06912): The project has reached the 90% design milestone, and Value Engineering activities have been completed to identify construction cost reduction opportunities. The design consultant is finalizing the design and preparing the draft Guaranteed Maximum Price (GMP) for the upcoming construction phase.
- BUD Wells 5 and 7 – Water Quality Treatment Improvements (Projects No. 03505 and 03512): This project is in the Professional Services Selection phase. Procurement documents have been provided to Purchasing, with a planned Request for Proposals (RFP) release date of April 28, 2026. Final scope development and RFP issuance are contingent upon Board direction regarding water quality projects at the April 2026 Board meeting.

Real Estate

Real Estate is responsible for the negotiation and acquisition of property rights for capital projects and supports other departments by verifying that property rights under existing agreements allow proposed projects and other activities. Additionally, it manages existing lease and license agreements, property address changes, verifies taxes due or exemption status annually, and disposes of surplus property.

- South Hillsborough Pipeline (Projects No. 01610 / 01616): A detailed report of activities is included in the South Hillsborough Program and Property Acquisition agenda items.
- South Hillsborough Wellfield (Project No. 01612): A detailed report of activities is included in the South Hillsborough Program agenda item.
- Cypress Creek Wellfield Improvements (Project No. 01602): The District has granted Tampa Bay Water permission to access District property under the existing license agreement. This authorization applies to all Tampa Bay Water employees, consultants, contractors, and the U.S. Army Corps of Engineers performing work associated with this project.
- Parsons Professional Park – Lots 10 and 11: Lots 10 and 11 have been offered to Hillsborough County for acquisition. If the County declines, the lots will be offered for sale to the general public through advertisement. No responses were received from letters sent via certified mail to abutting property owners more than 30 days ago.
- Brandon Urban Dispersed No. 7: Discussions are ongoing with the property owner adjacent to

BUD 7 regarding acquisition of property in fee, or alternatively, the granting of an easement along Tampa Bay Water's driveway to provide additional truck turnaround space. Tampa Bay Water submitted a backup offer through the listing agent to purchase the property in fee after the initial contract did not close as scheduled on April 1, 2026.

- Starkey Wellfield: The District has confirmed it will begin drafting a formal Management Agreement to replace the current License Agreement. The new agreement will address responsibilities for maintenance and engineering reporting related to the wooden access bridge.

Surveying

Surveying manages the utility conflicts and cathodic protection programs; manages and conducts surveys; manages and maintain record drawings; and maintain and develop computer-aided design (CAD) and geospatial data for the Agency. They also assist with engineering, construction, real estate, and geographic information systems (GIS) activities.

- Cypress Creek Transmission Main – Review and Impacts: Multiple utility conflicts along the Cypress Creek Transmission Main corridor have been reviewed. Tasks and schedules are being developed for multiple phases of additional surveying needed to address identified impacts. Efforts are also underway to inventory above ground pipeline appurtenances and verify their locations.
- Cypress Bridge Transmission Main: The contractor continues locating infrastructure between the Cypress Creek Pump Station and Cypress Bridge Well No. 2, with approximately 70% of the infrastructure located to date. Additional efforts have begun to consolidate Cypress Bridge Transmission Main Contract B CAD record drawings. Ongoing updates to the Contract A CAD as built drawings for the pipeline and appurtenances will reflect and reference ongoing field verification efforts.
- Starkey Collection Main: The contractor has completed utility locating and surveying efforts along DeCubellis Road in Pasco County. Final survey documents have been completed and delivered. This work supports identification of Tampa Bay Water's underground pipelines and above ground appurtenances in advance of a planned roadway widening project.
- Section 21 Wellfield: A scope of work has been prepared to locate above ground and underground infrastructure along Van Dyke Road in support of a potential sidewalk installation project. Contractors are currently clearing vegetation within the project limits to reduce overall scope and survey costs.
- Desalination Transmission Main: A contractor is locating a segment of the Desalination Transmission Main at the intersection of 78th Street in preparation for proposed roadway modifications and additional utility installations.

Finance and Administration Division

The Finance and Administration Division is responsible for finances, procurement, inventory, risk and vital records. Departments include Finance, Purchasing and Warehouse and Records.

Finance

Finance manages the budget, payroll, account payables and receivables, capital assets, cash and investments, debt management and financial compliance for the Agency. They also assist with the training and maintenance of the accounting software, Munis.

- Four Finance staff members participated in training at the Munis Conference.
- Met with staff from member governments to review and address questions regarding the proposed Fiscal Year 2027 budget.
- Completed the Fiscal Year 2025 Popular Annual Financial Report (PAFR).

Purchasing and Warehouse

Purchasing issues, processes and administers the appropriate solicitations and ensures that all procurement activities are conducted in compliance with statutes, policies and provides best value solutions for the Agency. They also are responsible for the management and accountability of the agency's warehouse and inventory items.

- Purchasing & Warehouse Manager and one Purchasing Specialist II attended the 2026 NIGP Leadership Summit.
- Purchasing & Warehouse Manager and three purchasing staff participated in the 2026 CIP Project Open House for engineering firms, answering inquiries and leading training sessions on how to conduct business with Tampa Bay Water
- Purchasing & Warehouse Manager was voted 2026 Manager of the Year by the Tampa Bay Area Chapter of NIGP
- Purchasing Specialist II was voted 2026 Buyer of the Year by the Tampa Bay Area Chapter of NIGP
- Purchasing & Warehouse Manager attended the Tampa Bay Water 5-year Strategic Plan Alignment meeting
- Four purchasing staff attended the Tampa Bay Area Chapter of NIGP Spring Symposium, hosted and organized by one of the agency's Purchasing Specialist II

Administrative Services

Management of board services, including overseeing the monthly board agenda process, legal liaison services that include coordinating activities between staff and general counsel, and management of the agency liability insurance and records programs.

- Met with insurance team to discuss changes to flood zone map and potential for additional coverage. Begin review of additional facilities to determine eligibility.
- Completed renewal for aircraft (drone) coverage.
- Conducted annual insurance tour of RWTP and Land O' Lakes with STARR to evaluate property risks and changes for upcoming renewals.

Information Technology Division

The Information Technology (IT) department supports Tampa Bay Water's computer, communications, and data systems. IT staff design, build, support, manage, procure, and maintain various technology systems to ensure the ability for staff to accomplish their key objectives and optimize productivity. The group is responsible for the management and security of the Agency's data, electronic information, and network systems. The department is composed of three core cross-functional teams: Applications, Systems, and SCADA (Supervisory and Control and Data Acquisition).

Applications

The Applications team supports data and software systems built within various technologies. This includes development, maintenance, and procurement for custom applications, databases and flows, and third-party software including GIS systems.

- Long Term Demand Forecast System – Completed various software and data tasks in support of next execution of the forecast.
- Data Management Program – Kicked off the governance phase of the program, project plan completed.
- Integrated Hydrological Model – Completed additional enhancements supporting the ongoing migration from a structured to an unstructured grid.
- Chemical Ordering System – Launched development effort for automating chemical ordering. Completed architecture research and technical solution design and finalized planning.
- Financial System – Completed system improvements and modernization efforts to support implementation of automation features.
- OROP (Optimized Regional Operations Plan) - Completed report updates and data support activities.
- Completed SCADA to data warehouse data pipeline improvements including development and testing sub-daily data refresh capability.

Systems

The Systems team manages Agency's enterprise technology infrastructure encompassing: PCs, computer peripherals, servers, networks, data centers, cloud environments, and telecommunication systems. The team also oversees cybersecurity systems, polices, risk assessments, and vulnerability scanning, including ongoing system patching and backups.

- The Enterprise Network Infrastructure Strategy:
    - Network Hardware Replacement activities continue, network hardware is being deployed to replace existing aged equipment in a phased manner.
    - Completed additional network architecture enhancements as per the project plan.
- Completed data communications upgrades at several locations to provide better performance of our physical security system (cameras and access controls.)
- Began project to assess and improve cellular and wireless network coverage at several key

locations.
- Began server operating system upgrade project, upgrading operating system across our server environment.
- Continued the migration of cellular data connections for field collection devices to a new account with public service pricing and features.
- Supported the replacement and decommissioning of the agency's multi-function printing devices.

SCADA

The SCADA (Supervisory and Control and Data Acquisition) system is a mission critical component of Tampa Bay Water managing and monitoring water production facilities both physically and wirelessly connected. The team is responsible for the ongoing development, maintenance, and security of the SCADA system, including managing dedicated hardware, software, networks, and telecommunications.

- Completed multiple modifications and enhancements to SCADA database and graphics at the request of Operations and Maintenance.
- Fulfilled multiple operational data requests (historical data, time series, flow data).
- Completed upgrades to network perimeter protection devices.
- Completed implementation of additional data replicator on corporate network for redundancy/testing
- Participated in cybersecurity assessment activities.
- Tested and verified backup communication pathways using wireless gateways.
- Completed data historian improvements and security changes.
- Participated in Industrial Control Systems (ICS) cybersecurity training and certification efforts.
- Continued design reviews for the CIP - 06912 SCADA System Upgrades Design Surface Water Treatment Plant SCADA Upgrade.
- Alarm Management Optimization Project: Continued application of alarm enhancements. The team is updating one site at time in close coordination with the Operations department.

Science Division

The Science Division provides water resource technical support for planning, operations, demand management, water quality and regulatory functions of the Agency and manages the Tampa Bay Water Wise conservation rebate program.

Systems Decision Support

Addresses the Agency's system-wide decision support needs on a multi-scale time horizon; designs, implements, and maintains water resources optimization tools, integrated hydrological models, risk and reliability analysis tools, water demand management and forecasting programs and models all in support of operational, annual budgeting and long-range planning needs; leads the Agency's effort in climate variability and climate change assessment and adaptation.

- Master Water Plan Modeling Support: Updated environmental weights and model constraints in the System Wide Reliability Evaluation model and completed multiple baseline condition scenarios with the Integrated Hydrologic Model for the groundwater project feasibility studies. Worked with project consultant to determine infrastructure sizing for the Lake Tarpon surface water feasibility study.
- Completed initial calibration of a regional system hydraulic model for part of the Tampa Bay Water regional system. Developed the ability to link OROP projections of demand and supply for upcoming weeks with the hydraulic model to analyze scenarios under different operational conditions; currently validating these codes.
- Staff prepared two technical sessions and presented agency technical work at the University of Florida Biennial Water Symposium.

Tampa Bay Water Wise

Tampa Bay Water Wise is the agency's water conservation rebate program. The goal is to save up to 3.8 million gallons of potable water per day by 2030 and cost-effectively defer the need for equivalent new water supplies.

- The Tampa Bay Water Wise program has saved 1,102,651 gallons per day from March 2020 through March 20, 2026. The majority of water savings come from multi-family retrofits of bathroom fixtures, and the remainder comes from indoor and outdoor measures implemented by homeowners and commercial properties.
- To achieve the high savings target for 2026, the program has enhanced some of the rebate offerings over the past few months. In addition to the increased toilet rebate adopted in 2025, the program has recently enhanced the commercial irrigation rebate offering to cover up to 50% of efficiency improvement projects. The Working Group is currently reviewing changes to the residential Sprinkler System rebate to increase the water saving opportunities for customers and contractors.

Permitting

The Water Use Permitting Department is responsible for the acquisition and renewal of, and compliance with, Agency Water Use Permits including implementation of the Domestic Well Mitigation Program and environmental/hydrologic/hydrobiologic monitoring. Work also includes monitoring and management of wetland impacts associated with construction and/or past operation of Agency facilities and infrastructure and management of lands owned by the Agency to maintain an appropriate natural habitat.

- Completing responses to District questions for the groundwater credit quantities to be acquired from four permits held by Land Reserve Inc. and Farmland Reserve, Inc. and transferred to our Balm Farm permit.
- Continued technical and project coordination support for the Consolidated Permit increase and East Pasco Wellfield feasibility projects for the Master Water Plan. Completed aquifer performance test data analysis at a Dade City location to collect additional data for the East Pasco

Wellfield feasibility study.

- Compiling and analyzing data for the annual compliance reports due July 1 for all Agency water use permits and completed environmental analyses for the biennial Optimized Regional Operations Plan compliance report.
- Reviewing data analysis and water budget models to evaluate augmentation levels at four lakes adjacent to the Cross Bar Ranch Wellfield as part of Water Use Permit renewal application documents.

Environmental/Hydrologic Monitoring

- Completed all permit-required environmental data collection.
- Completed bi-annual calibration of all agency rain gauges.

Water Quality Services

Water Quality Services is responsible for laboratory testing, water quality compliance reporting, source water assessment and protection, and water quality treatment support to operations.

Laboratory

- Completed analytical compliance sampling for monthly drinking water quality samples collected in February and March 2026 per Exhibit D and state/federal requirements.
- Completed analyses of samples collected for regional delivery system monthly performance monitoring, including analysis of supplemental parameters for operational studies and source water characterization.
- Laboratory Manager continued cross training a senior laboratory scientist on quality control functions and continued updating standard operating procedures.
- Laboratory Manager continued preparing staff for a third-party independent laboratory performance assessment. to maintain State analytical certifications. The assessment was performed on March 3-5, 2026. The Laboratory is working on action items identified in assessor's written report.
- Collected and analyzed third quarter PFAS compliance samples in February and March 2026 and continued preparation for conducting the annual water quality monitoring in April 2026 in accordance with state and federal requirements.

Source Water Assessment and Protection

- S::CAN and YSI advanced water quality instrumentation monitoring and maintenance continued at the Alafia River pump station intake and TBC lower and middle pool intakes. These data assist in source water selection and improve treatment efficiency at the Regional Surface Water Treatment Plant.
- Continued instrument data integration with the Aquarius Webportal platform to enhance useability by water production operators and water quality scientists and technicians.
- Continued providing source water quality support to Engineering Department consultant to

evaluate options for improving yield reliability of the Regional Surface Water Treatment Plant and surface water supplies under extreme water quality events and other conditions.

Water Quality Support

- Facilitated the Water Quality Working Group meetings with members on February 12, 2026 and March 12, 2026.
- The Carollo Engineers final technical memorandum report updating their Regional Water Quality Study (RWQS) concept designs, implementation plan recommendations based on PFAS bench-scale treatability studies and CIP-based cost projections for the RWQS implementation plan recommendations were presented to the Board on February 23, 2026.
- Completed a comparative review of analytical results from the agency's first, second and third PFAS quarterly compliance monitoring data with post-UCMR5/PFAS supplemental monthly analytical data that further support RWQS treatment recommendations.
- Continued evaluating alternative water treatment chemical equipment and real-time water quality monitoring technologies to optimize removal of total organic carbon and other parameters with existing treatment processes.
- The Water Research Foundation previously approved funding for a study of an ion exchange process for treatment of total organic carbon and PFAS. Staff worked with the Water Research Foundation to finalize contract terms. This project will be led by Carollo Engineers with active participation and co-funding by the City of Tampa and Tampa Bay Water. The findings of this study will directly benefit and inform ongoing RWQS work.

Water Production Division

The Water Production Division is responsible for the operation and maintenance of the agency's water production assets that provide drinking water to the members. Departments within the division include: Buildings & Grounds and Fleet Services, Maintenance Planning & Reliability, and Operations & Maintenance.

- Provided drinking water to meet member government demands in compliance with Exhibit D and Safe Drinking Water Act water quality standards.
- Provided support for the Surface Water Treatment Plant Expansion project and several other active CIP projects.

Buildings & Grounds and Fleet Services

The Buildings & Grounds and Fleet Services team is responsible for maintaining the primary physical plants of each facility, including HVAC systems, roadways, fire safety systems, and roofing and coating systems. The team also takes care of the acquisition and maintenance of fleet vehicles for the entire agency. Highlights from the Buildings, Grounds, and Fleet Services team include:

- Replaced the aging fluorescent Morris Bridge WTP Lighting in both electrical buildings and the

Analyzer building with LED lighting.
- Repaved the remaining 5 miles of the Reservoir Toe Road and the parking area. This completes the sequenced multi-year reservoir paving effort.
- Restriped and marked the parking lots at Cypress Creek, Lake Bridge, Morris Bridge, US 41 Booster, Regional, Lithia H2S Facility and BUD 5.
- Cleared trees and brush along one mile of Van Dyke Rd as part of a surveying effort supporting road widening in that area.
- Completed the Clearwater office second floor server room renovation effort.
- Cleared trees and brush in the Cypress Creek Facility north fence-line area and along the Cypress Creek Wellfield Roadways to allow better access.
- Painted all pumps and interior/exterior piping at US 41 Booster Station and the Pinellas County POC Piping at Keller.

Maintenance Planning & Reliability

The Maintenance Planning & Reliability team is responsible for overseeing the Agency's Asset Management System, including the MAXIMO software and the Renewal and Replacement Program. Highlights from the Maintenance Planning & Reliability team include:

- Asset tags - Installed at Maytum, Crossbar, and Cypress Creek.
- Asset tags – Added 39 new assets to Maximo and printed 39 assets tags in March.
- 3 jobplans modified in February and 34 jobplans modified in March.
- 1 PM modified in February and 1 PM modified in March.
- Wrote SOP's for process documentation.
- Testing Dynamic jobplans in Maximo.
- Attended Florida Maximo User Group Meeting – planner / scheduler training.

Operations & Maintenance

The Operations & Maintenance team is responsible for ensuring that the Agency's production assets are maintained and operated in a sustainable and resilient manner to fulfill the drinking water needs of the member governments. They provide continuous attention to the system, adjusting to changing conditions and in compliance with permit and environmental recovery constraints. Highlights from the Operations & Maintenance team include:

- The Surface Water Treatment Plant produced an average of 54.48 million gallons per day (mgd) during February and March 2026.
- The Seawater Desalination Facility produced an average of 12.18 mgd during February and 15.12 mgd during March 2026.
- As of the end of March 2026, the level in the regional reservoir is 104.33 feet, corresponding to 5.77 billion gallons of storage.
- Submitted the FY25 Comprehensive Annual Reservoir Report (CARR) to FDEP.
- Submitted the FY25 Annual Flow Meter Calibration Report to member government utility directors and SWFWMD.

- Submitted FY25 Tier II Facility Reports to USEPA.
- Completed the replacement of the Da/d flow control valves on the aeration system at the Reservoir.
- Completed the UPS replacement at the Maytum New Port Richey Water Treatment Plant.
- Completed the Sodium Hypochlorite bulk tank replacement at the Keller Hydrogen Sulfide Removal Facility.
- Completed the piping installation and disinfection process to allow a connection of the Cosme Transmission Main and South Pasco 42-in Transmission Main while St. Petersburg's Cosme Water Treatment Plant is offline for construction.
- Completed the installation of soft starts on six Cosme wells.
- Completed the conversion to Ammonium Sulfate at Lake Bridge and Bud-5 Water Treatment Plants.
- Completed the controller replacement for the Tampa Bypass Canal generator.
- Completed the isolation valve replacements for the Regional High Service Pump Station – Mixing Station pump.
- Completed five pump and motor repairs for various treatment facilities and wells.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.2

DATE: April 6, 2026

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Legal Services Activity Report for February and March 2026 - *Receive Report*

SUMMARY

The General Counsel Activity Report summarizes the major activities and work effort of the General Counsel and provides an update on the status of ongoing litigation and any other matters being handled by Special Counsel.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

Uniform Rate

DISCUSSION

The General Counsel's Office provides legal services to the Board and agency staff and manages Special Counsel in their representation of Tampa Bay Water. During February and March 2026, the major activities and work effort for legal services included:

Board of Directors

- Attended the February regular Board meeting and advance briefings with Board members.

Facilities and Property

- Assisted with property acquisition and easement matters related to the South Hillsborough Pipeline project.
- Assisted staff with matters related to the South Hillsborough Wellfield.
- Continued working with staff on the disposition of surplus properties.
- Continued working on issues related to potential acceptance of donated parcel from Pinellas County.
- Attended groundbreaking event for Surface Water Treatment Plant expansion.

Contracts and Procurement

- Reviewed contracts and contract amendments for commodities, construction, grants, and professional services.
- Continued coordinating with staff on a review and update of procurement forms.
- Continued work with staff and consultants on various contractual matters related to next phases of Surface Water Treatment Plant Expansion and South Hillsborough Pipeline projects, and operations for the Surface Water Treatment Plant and Desalination Plant.

Coordination with Agency Management

- Participated in weekly meetings with the General Manager and Executive Team.
- Continued working with staff on point of connection and interconnect matters.
- Conferred with staff and reviewed various draft policies.
- Attended meeting with staff and Southwest Florida Water Management District on potential emergency order due to drought.
- Participated with staff in meetings with City of Tampa regarding surplus water agreement.

Legislative and Grant Funding

- Reviewed legislative reports and bills of interest.
- Attended legislative team meetings.

Litigation

Tampa Bay Water v. E.I. Dupont de Nemours and Company, et al.
Case No. 2:20-cv-1867 RMG, United States District Court for the District of South Carolina, Charleston Division

Counsel: Frazer PLC, Napoli Shkolnik, PLLC, Ventura Law, and Frank Charles Miranda, P.A.

Issue: Complaint for damages pertaining to PFAS and related compounds including counts for strict liability, failure to warn, design defect, negligence, private nuisance, public nuisance, and fraudulent

conveyance.

Status: Complaint filed May 14, 2020. Litigation sampling performed and results posted to agency website in April 2023. Submitted agency's supplemental response to fact sheet in August 2023. Judge Gergel issued a Final Approval Order and Judgment for the DuPont settlement on February 26, 2024. On March 29, 2024, a Final Approval Order and Judgment for the 3M settlement was entered.On July 25, 2024, Tampa Bay Water filed its claims for the DuPont and 3M settlements with the assistance of special counsel for Tampa Bay Water. On August 26, 2024, Tampa Bay Water filed a special needs claim with the assistance of special counsel. During the summer of 2024, settlements were reached with TYCO/Chemguard ($750 million) and BASF ($312,500 million). Claims for these settlements were filed by Tampa Bay Water in early April 2025. Agreements have also been reached in the Kidde-Fenwal bankruptcy case, which if approved through both the bankruptcy court and this class action case, will result in $129.2 million to be distributed to the water provider litigations. Claims against other defendants remain pending. The Claims Administrator will allocate compensation to all eligible class members as the claims review periods conclude for each settlement. Tampa Bay Water has thus far been awarded approximately 181 million points in both the 3M and Dupont settlements. A portion of the first 3M settlement payment in the net amount of $2,961,827.37 was received by Tampa Bay Water on approximately June 24, 2025, with the remainder of the first settlement payment received in August 2025. The second 3M settlement payment in the net amount of $8,076,613.10 was received in September 2025. The settlement payment for DuPont (one lump sum) was received in November 2025. The TYCO/BASF settlement payment is expected by mid-year 2026.

WPC Industrial Contractors, LLC and Randall Environmental, Inc. v. Tampa Bay Water
Case No. 24-5494-CI, Circuit Court for Pinellas County, Florida

Counsel: GrayRobinson, P.A.

Issue: Complaint for damages alleging Tampa Bay Water breached its contract with WPC Industrial Contractors, LLC and Randall Environmental, Inc. for the Eldridge-Wilde Wellfield Pumps and Motors Replacement Project and the Cypress Trails Property Improvements Project.

Status: Complaint filed in Hillsborough County on October 29, 2024. Motion to Dismiss filed by Tampa Bay Water on November 21, 2024 due to improper venue (Hillsborough County instead of Pinellas County as required by the contract). The case was transferred to Pinellas County on December 19, 2024. An Answer and Affirmative Defenses was filed on behalf of Tampa Bay Water on January 14, 2025. The Board approved the filing of a counterclaim at its January 2025 meeting, and it was filed on February 4, 2025. The Plaintiffs filed an Amended Complaint on February 25, 2025. On July 18, 2025, a Motion for Leave to Amend Answer and Counterclaim was filed on behalf of Tampa Bay Water, which was granted on August 7, 2025. Counsel for Tampa Bay Water learned that WPC Industrial Contractors' assets were liquidated and distributed to creditors in a proceeding in Duval County. As a result, there likely will not be any assets against which to collect a judgment from WPC Industrial Contractors if awarded. Randall Environmental was the only entity named on the applicable insurance policy, allowing pursuit of full relief against it on the counterclaim. Discovery and initial

negotiations are ongoing. An Initial Case Management Conference was held on August 6, 2025, and February 2027 is presently targeted for a trial. Per GrayRobinson, as of early January 2026 the Plaintiffs had not been actively pursuing their claim; however, to comply with court scheduling requirements GrayRobinson will be proceeding with the retention of experts and scheduling of depositions.

Polk Regional Water Cooperative v. Tampa Bay Water and Southwest Florida Water Management District - Case No. 25-5480, Division of Administrative Hearings

Counsel: Gunster Yoakley & Stewart, P.A.

Issue: Petition for Formal Administrative Hearing filed by Polk Regional Water Cooperative challenging the Southwest Florida Water Management District's issuance of a water use permit to Tampa Bay Water to increase its surface water withdrawal from the Alafia River from 10% to 19% above the minimum flow threshold.

Status: On September 29, 2025, the Polk Regional Water Cooperative filed a Petition for Formal Administrative Hearing against Tampa Bay Water and the Southwest Florida Water Management District ("District"), challenging the District's issuance of a water use permit to Tampa Bay Water to increase its surface water withdrawal from the Alafia River from 10% to 19% above the minimum flow threshold. The District forwarded the Petition to the Division of Administrative Hearings on October 14, 2025. Tampa Bay Water filed a Motion to Dismiss Petition for Lack of Standing, which was denied. On January 28, 2026, Polk Regional Water Cooperative filed a Motion for Leave to Amend Petition, and a Response in Opposition was filed by Tampa Bay Water on February 5, 2026. Mosaic Fertilizer, LLC filed a Motion to Intervene on February 4, 2026 in support of the permit modification and to protect their existing legal user status. The administrative hearing set for March 4-11, 2026 was canceled after terms of settlement were agreed to during a mediation held on February 12, 2026. The settlement has been approved by Polk Regional Water Cooperative and the District and will be considered by the Tampa Bay Water Board at its April 20 meeting.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.3

DATE: April 2, 2026

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Legal Services Budget Report for February & March 2026 - *Receive Report*

SUMMARY

This item presents the status of the budget for the General Counsel and legal services paid in February & March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

Uniform Rate/Bond Funds

DISCUSSION

Legal expenditures paid in February & March totaled $406,381.83. These expenditures were associated with general operations activities and appropriately paid for from the uniform rate. In February & March there were expenditures in the amount of $125,709.18 paid from bond funds for legal services for the South Hillsborough Pipeline. Attached are spreadsheets showing payments made to each law firm.

Attachments (2)

Legal Expenses - Feb26
Legal Expenses - Mar26

STATUS OF FY 2026 LEGAL BUDGET - AS OF FEBRUARY 28, 2026							
Law Firm	**Task**	**PO#**	**PO DATE**	**PO Amount**	**Monthly Expenses**	**Expend to Date**	**Remaining PO Balance**
UNIFROM RATE FUNDS							
BUSH GRAZIANO RICE	Employment Law	20260079	9/25/2025	$25,000.00	$0.00	$2,478.20	$22,521.80
BUENAVENTURA LAW	Special Counsel Services	20250372 CLOSED	1/8/2025	$20,000.00	$0.00	$2,175.00	$17,825.00
GUNSTER, YOAKLEY & STEWART, PA	Special Counsel Services	20260183	10/27/2025	$690,000.00	$344,123.73	$614,251.54	$75,748.46
GRAY ROBINSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20260062	9/25/2025	$50,000.00	$4,317.50	$6,307.50	$43,692.50
HANKIN & HANKIN	Real Estate	20260084	9/25/2025	$10,000.00	$0.00	$0.00	$10,000.00
NABORS, GIBLIN & NICKERSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20260058 CLOSED	9/25/2025	$10,000.00	$0.00	$0.00	$10,000.00
PERSSON, COHEN, MOONEY,FERNANDEZ	General Counsel Services	20260081	9/25/2025	$137,500.00	$25,000.00	$100,000.00	$37,500.00
PERSSON, COHEN, MOONEY,FERNANDEZ	Special Counsel Services	20260204	11/5/2025	$5,000.00	$0.00	$0.00	$5,000.00
UNIFORM RATE TOTALS				**$947,500.00**	**$373,441.23**	**$725,212.24**	**$222,287.76**
BOND FUNDS							
GRAY ROBINSON	Property Acquisition and Eminent Domain	20230399	10/3/2023	$1,186,900.50	$72,283.00	$753,077.51	$433,822.99
BUENAVENTURA LAW	Property Acquisition and Eminent Domain	20250373 CLOSED	1/8/2025	$94,758.82	$0.00	$78,232.70	$16,526.12
PERSSON, COHEN, MOONEY,FERNANDEZ	Legal Service	20260177	10/23/2025	$90,000.00	$1,870.00	$8,332.50	$81,667.50
BOND FUNDS TOTALS SINCE START OF PROJECT				**$1,371,659.32**	**$74,153.00**	**$839,642.71**	**$532,016.61**

Uniform Rate Funds: Total Budget $600,000 Allocated Funds $537,500 Unallocated Funds $62,500

Bond Funds: *Additional funds are available from bond funds as needed and fees associated with Segment B are reimbursed by Hillsborough County pursuant to the JPA. A combined additional $836,900.50 was added to PO 20230399.

STATUS OF FY 2026 LEGAL BUDGET - AS OF MARCH 31, 2026							
Law Firm	**Task**	**PO#**	**PO DATE**	**PO Amount**	**Monthly Expenses**	**Expend to Date**	**Remaining PO Balance**
UNIFROM RATE FUNDS							
BUSH GRAZIANO RICE	Employment Law	20260079	9/25/2025	$25,000.00	$6,202.60	$8,680.80	$16,319.20
BUENAVENTURA LAW	Special Counsel Services	20250372 CLOSED	1/8/2025	$20,000.00	$0.00	$2,175.00	$17,825.00
GUNSTER, YOAKLEY & STEWART, PA	Special Counsel Services	20260183	10/27/2025	$690,000.00	$0.00	$614,251.54	$75,748.46
GRAY ROBINSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20260062	9/25/2025	$50,000.00	$1,738.00	$28,045.50	$21,954.50
HANKIN & HANKIN	Real Estate	20260084	9/25/2025	$10,000.00	$0.00	$0.00	$10,000.00
NABORS, GIBLIN & NICKERSON	Admin, Construction, Contracts, Civil Claims, Property, etc.	20260058 CLOSED	9/25/2025	$10,000.00	$0.00	$0.00	$10,000.00
PERSSON, COHEN, MOONEY,FERNANDEZ	General Counsel Services	20260081	9/25/2025	$137,500.00	$25,000.00	$125,000.00	$12,500.00
PERSSON, COHEN, MOONEY,FERNANDEZ	Special Counsel Services	20260204	11/5/2025	$5,000.00	$0.00	$0.00	$5,000.00
UNIFORM RATE TOTALS				**$947,500.00**	**$32,940.60**	**$778,152.84**	**$169,347.16**
BOND FUNDS							
GRAY ROBINSON	Property Acquisition and Eminent Domain	20230399	10/3/2023	$1,186,900.50	$48,228.68	$801,306.19	$385,594.31
BUENAVENTURA LAW	Property Acquisition and Eminent Domain	20250373 CLOSED	1/8/2025	$94,758.82	$0.00	$78,232.70	$16,526.12
PERSSON, COHEN, MOONEY,FERNANDEZ	Legal Service	20260177	10/23/2025	$90,000.00	$3,327.50	$11,660.00	$78,340.00
BOND FUNDS TOTALS SINCE START OF PROJECT				**$1,371,659.32**	**$51,556.18**	**$891,198.89**	**$480,460.43**

Uniform Rate Funds: Total Budget $600,000 Allocated Funds $537,500 Unallocated Funds $62,500

Bond Funds: *Additional funds are available from bond funds as needed and fees associated with Segment B are reimbursed by Hillsborough County pursuant to the JPA. A combined additional $836,900.50 was added to PO 20230399.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.4

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Comprehensive Check List with Delegated Check Approval Items for February and March 2026 - *Receive Report*

SUMMARY

Attached is a list of all checks and wire transfers written for the months of February and March 2026. Additional information is provided for checks over $50,000 and for delegated approval items.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The attached report lists all checks and wire transfers which have been written during the months of February and March 2026. To provide the Board additional information, a description is included for all delegated approval item payments. Delegated approval items were authorized by the General Manager under his delegated approval authority and are marked “Delegated Approval”.

Items with delegated approval are generally items such as payroll taxes, Florida Retirement System, utilities, and so forth, which are approved by the board in the budget process but for which there is not a

specific approved contract or agenda item.

By policy, the General Manager is authorized to approve all expenditures of $150,000 or less. All contractual obligations or purchase orders issued in excess of $150,000 are approved by the Board through the contract approval, agenda approval, or budget approval processes. The comprehensive check list includes a description for all payments over $50,000 and identifies those items previously approved by the board with “Receive”.

Attachments (2)

2026 FEB CHECK REGISTER
2026 MARCH CHECK REGISTER

TAMPA BAY WATER

CHECK REGISTER - FEB 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639233	02/04/2026	78 DEGREES AIR CONDITIONING AND REFRIGERATION LLC	7,276.76		
639234	02/04/2026	AECOM TECHNICAL SERVICES, INC.	192,469.54	FEASIBILITY GROUNDWATER STUDY & ELEC I&C SPECS UPDATE	RECEIVE
639235	02/04/2026	AMERICAN FAMILY LIFE ASSURANCE COMPANY OF COLUMBUS	817.90		
639236	02/04/2026	AIR MECHANICAL & SERVICE CORP.	98,335.05	CLEARWATER SERVER ROOM MODIFICATIONS	RECEIVE
639237	02/04/2026	AIRGAS USA, LLC	129,576.24	CHEMICAL - CARBON DIOXIDE	RECEIVE
639238	02/04/2026	AIRGAS SPECIALTY PRODUCTS, INC.	4,558.48		
639239	02/04/2026	ALLIED UNIVERSAL CORPORATION	102,685.66	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639240	02/04/2026	ALLIED UNIVERSAL CORPORATION	46,680.96		
639241	02/04/2026	APPLIED DRILLING ENG	265,102.78	EP WF TEST WELL CONSTRUCTION PROJ	RECEIVE
639242	02/04/2026	BLACK & VEATCH CORPORATION	28,871.75		
639243	**02/04/2026**	**BRIGHT HOUSE NETWORKS LLC**	**2,503.47**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
639244	02/04/2026	CARMEUSE LIME & STONE, INC.	54,625.77	CHEMICAL - QUICKLIME	RECEIVE
639245	02/04/2026	CAROLLO ENGINEERS INC	3,406.00		
639246	02/04/2026	CDW LLC	33,267.48		
639247	02/04/2026	CHEMICAL SYSTEMS OF ORLANDO, INC.	43,880.40		
639248	02/04/2026	CITY ELECTRIC SUPPLY COMPANY	1,650.00		
639249	**02/04/2026**	**CITY OF CLEARWATER UTILITIES**	**2,971.10**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639250	02/04/2026	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	2,886.50		
639251	**02/04/2026**	**DUKE ENERGY CORPORATION**	**37,564.76**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639252	02/04/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	71,271.58	ERP REHA & STORMWATER POND WATER USE PERMITTING	RECEIVE
639253	02/04/2026	EYEMED VISION CARE	1,427.91		
639254	02/04/2026	FEDERAL EXPRESS CORPORATION	49.54		
639255	02/04/2026	FRONT LINE POWER LLC	2,409.14		
639256	**02/04/2026**	**FRONTIER COMMUNICATIONS**	**354.57**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639257	**02/04/2026**	**FRONTIER COMMUNICATIONS**	**392.95**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639258	02/04/2026	GEOPOINT SURVEYING, INC.	7,536.25		
639259	02/04/2026	SIEMENS INDUSTRY	2,740.00		
639260	02/04/2026	GRAY ROBINSON, P.A.	1,990.00		
639261	02/04/2026	GUIDEPOINT SECURITY LLC	9,686.74		
639262	02/04/2026	HACH COMPANY	14,020.61		
639263	02/04/2026	HACH COMPANY	32.13		
639264	02/04/2026	HAWKINS, INC.	3,267.50		
639265	02/04/2026	HAYS HOLDING CORPORATION	10,720.51		
639266	02/04/2026	HAZEN & SAWYER, P.C.	1,986.00		
639267	02/04/2026	ARROW EXTERMINATORS	79.00		
639268	02/04/2026	INTERACID NORTH AMERICA, INC.	19,694.54		
639269	02/04/2026	KEMIRA WATER SOLUTIONS, INC.	67,841.19	CHEMICAL - FERRIC SULFATE	RECEIVE
639270	02/04/2026	LHOIST NORTH AMERICA OF ALABAMA, LLC	22,333.64		

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639271	02/04/2026	MATHESON TRI-GAS INC.	14,629.62		
639272	02/04/2026	MCKIM & CREED PA	17,802.48		
639273	**02/04/2026**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639274	02/04/2026	NEW DIRECTIONS BEHAVIORAL HEALTH LLC	1,531.02		
639275	02/04/2026	ODYSSEY MANUFACTURING COMPANY	93,977.40	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639276	02/04/2026	ODYSSEY MANUFACTURING COMPANY	2,817.35		
639277	02/04/2026	PAFF TREE SERVICE, LLC	594.00		
639278	02/04/2026	PIPER FIRE PROTECTION, INC.	744.72		
639279	02/04/2026	PLYMOUTH PLAZA, LLC	11,553.76		
639280	02/04/2026	POLYDYNE INC	27,555.00		
639281	02/04/2026	PVS TECHNOLOGIES, INC.	11,972.88		
639282	02/04/2026	RAFTELIS FINANCIAL CONSULTANTS, INC.	6,880.00		
639283	02/04/2026	ATLANTA FORKLIFTS INC.	3,801.40		
639284	02/04/2026	RING POWER CORPORATION	28,893.22		
639285	02/04/2026	RS AMERICAS, INC	2,637.66		
639286	**02/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639287	**02/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639288	**02/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639289	**02/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.79**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639290	**02/04/2026**	**TAMPA ELECTRIC CO**	**149,191.27**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639291	**02/04/2026**	**TAMPA ELECTRIC CO**	**10,342.50**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639292	02/04/2026	TEAM TECHNICAL SERVICES	301.49		
639293	02/04/2026	THATCHER CHEMICAL OF FLORIDA INC.	17,314.56		
639294	02/04/2026	TIMES PUBLISHING CO	629.00		
639295	02/04/2026	V&A CONSULTING ENGINEERING, INC.	10,932.70		
639296	02/04/2026	TEHERA VALENTINE-WYATT	404.75		
639297	02/04/2026	VEOLIA WATER NORTH AMERICA	2,122,480.31	SWTP SCADA UPGRADE, EXPANSION PROJ & DEC O&M	RECEIVE
639298	**02/04/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**10,788.36**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639299	**02/04/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**13.80**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639300	02/04/2026	W W GRAINGER INC	706.29		
639301	02/04/2026	WISE CONSULTING GROUP	1,437.50		
639302	02/04/2026	WSP USA INC	1,645.00		
WIRE	**02/05/2026**	**FLORIDA DIV OF RETIREMENT CASHIER**	**234,752.87**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
WIRE	**02/06/2026**	**INTERNAL REVENUE SERVICE**	**155,244.83**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
639303	02/11/2026	AIR CENTERS OF FLORIDA, INC.	13,372.04		
639304	02/11/2026	AIR MECHANICAL & SERVICE CORP.	5,924.39		
639305	02/11/2026	AIRGAS USA, LLC	29,796.96		
639306	02/11/2026	AIRGAS SPECIALTY PRODUCTS, INC.	19,284.03		

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639307	02/11/2026	UNIVERSAL PROTECTION SERVICE LP	114,796.23	SECURITY SRV 12/26/25- 1/29/26	RECEIVE
639308	02/11/2026	ALLIED UNIVERSAL CORPORATION	69,032.26	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639309	02/11/2026	APPLIED ECOLOGY, INC	13,655.69		
639310	02/11/2026	ARCADIS US INC.	24,036.50		
639311	02/11/2026	ARCHER WESTERN CONSTRUCTION LLC	1,473.45		
639312	02/11/2026	ARDURRA GROUP, INC	46,136.90		
639313	02/11/2026	BLACK & VEATCH CORPORATION	59,942.74	S HILLSB PIPELINE PROJ	RECEIVE
639314	02/11/2026	CARMEUSE LIME & STONE, INC.	52,713.15	CHEMICAL - QUICKLIME	RECEIVE
639315	02/11/2026	CATALYST COMMUNICATIONS GROUP LLC	2,825.00		
639316	02/11/2026	VALVE & ACTUATION SERVICES LLC	2,403.98		
639317	02/11/2026	CHANDLER ASSET MANAGEMENT, INC.	6,232.91		
639318	02/11/2026	CITY OF CLEARWATER POLICE DEPT	260.00		
639319	02/11/2026	CORCORAN & ASSOCIATES, INC.	12,770.00		
639320	02/11/2026	CUMBEY & FAIR, INC.	18,768.00		
639321	02/11/2026	DIALOGUE PUBLIC RELATIONS, LLC	4,596.25		
639322	**02/11/2026**	**DUKE ENERGY CORPORATION**	**53,481.68**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639323	02/11/2026	ECHOSAT, INC.	47.74		
639324	02/11/2026	EDDIE VISION INC.	1,200.00		
639325	02/11/2026	ENTERPRISE FM TRUST	14,682.40		
639326	02/11/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	16,074.45		
639327	02/11/2026	FEDERAL EXPRESS CORPORATION	76.21		
639328	02/11/2026	FISHER SCIENTIFIC COMPANY LLC	267.66		
639329	02/11/2026	FLORIDA DEPT OF STATE	25.90		
639330	02/11/2026	FLORIDA TREE AND PROPERTY MAINTENANCE	17,956.50		
639331	02/11/2026	FRONT LINE POWER LLC	25,719.04		
639332	**02/11/2026**	**FRONTIER COMMUNICATIONS**	**140.98**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639333	**02/11/2026**	**FRONTIER COMMUNICATIONS**	**227.34**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639334	02/11/2026	GARNEY COMPANIES, INC.	242,774.78	S HILLSB PIPELINE PROJ	RECEIVE
639335	02/11/2026	GILSON ENGINEERING SALES, INC.	2,740.00		
639336	02/11/2026	HACH COMPANY	1,857.76		
639337	02/11/2026	HAWKINS, INC.	4,807.00		
639338	02/11/2026	HAYS HOLDING CORPORATION	13,372.59		
639339	02/11/2026	HERC RENTALS, INC.	3,440.00		
639340	02/11/2026	ARROW EXTERMINATORS	266.00		
639341	02/11/2026	INTERACID NORTH AMERICA, INC.	45,871.17		
639342	02/11/2026	JONES WALKER, LLP	6,875.00		
639343	02/11/2026	KEEP PINELLAS BEAUTIFUL, INC.	10,000.00		
639344	02/11/2026	KEMIRA WATER SOLUTIONS, INC.	75,185.04	CHEMICAL - FERRIC SULFATE	RECEIVE

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639345	02/11/2026	STEVEN KROESEN	116.00		
639346	02/11/2026	LDM LAWN SERVICE, LLC	1,502.50		
639347	02/11/2026	LHOIST NORTH AMERICA OF ALABAMA, LLC	23,157.72		
639348	02/11/2026	MATHESON TRI-GAS INC.	24,399.35		
639349	02/11/2026	ODYSSEY MANUFACTURING COMPANY	102,939.85	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639350	02/11/2026	ODYSSEY MANUFACTURING COMPANY	46,123.05		
639351	02/11/2026	ODYSSEY MANUFACTURING COMPANY	537.95		
639352	02/11/2026	OFFICE DEPOT	885.14		
639353	02/11/2026	PAFF TREE SERVICE, LLC	19,342.00		
639354	02/11/2026	PALMA CEIA LOCK & KEY, INC.	915.00		
639355	02/11/2026	PERSSON, COHEN, MOONEY, FERNANDEZ & JACKSON, P.A.	26,870.00		
639356	02/11/2026	PIPER FIRE PROTECTION, INC.	3,520.77		
639357	02/11/2026	POLYDYNE INC	11,715.00		
639358	02/11/2026	MALIQUE RANKIN	82.65		
639359	02/11/2026	RDSG LLC	3,000.00		
639360	02/11/2026	ATLANTA FORKLIFTS INC.	764.68		
639361	02/11/2026	RICOH USA, INC.	693.00		
639362	02/11/2026	RING POWER CORPORATION	34,357.37		
639363	02/11/2026	ROWLAND (DE), LLC	138,567.06	REGIONAL WATER LANE WATER MAIN WORK	RECEIVE
639364	02/11/2026	SAFE SOFTWARE	670.00		
639365	02/11/2026	SHI INTERNATIONAL CORP	13,624.90		
639366	02/11/2026	SMITH INDUSTRIES INC	322.24		
639367	02/11/2026	SOUTHEAST DRILLING SERVICES INC	0.00	CY BRG & BUD 4 WELL PUMP REPAIRS	RECEIVE
639368	02/11/2026	STAG INDUSTRIES LLC	16,600.00		
639369	02/11/2026	STANTEC CONSULTING SERVICES, INC.	197,204.49	S HILLSB PIPELINE PROJ	RECEIVE
639370	02/11/2026	STANTEC CONSULTING SERVICES, INC.	4,882.64		
639371	02/11/2026	STANTEC CONSULTING SERVICES, INC.	3,219.50		
639372	02/11/2026	SUNSHINE STATE ONE CALL OF FLORIDA INC	249.35		
639373	**02/11/2026**	**TAMPA ELECTRIC CO**	**939,641.64**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639374	**02/11/2026**	**TAMPA ELECTRIC CO**	**30,694.23**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639375	02/11/2026	MAINZER MANAGEMENT INC	4,422.00		
639376	02/11/2026	TK ELEVATOR CORPORATION	1,402.49		
639377	02/11/2026	TLC DIVERSIFIED, INC.	308,997.00	CYC WTP CHEMICAL PIPING CONSTRUCTION PROJ	RECEIVE
639378	02/11/2026	UNIFIRST CORPORATION	171.84		
639379	02/11/2026	USGS	27,450.00		
639380	02/11/2026	VANASSE HANGEN BRUSTLIN INC	1,950.00		
639381	**02/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**2,636.08**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639382	**02/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**2,993.99**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**

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639383	**02/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**10,688.86**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639384	02/11/2026	WASTE MANAGEMENT INC. OF FLORIDA	1,231.29		
639385	02/11/2026	WISE CONSULTING GROUP	13,603.30		
639386	**02/11/2026**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**99,951.60**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639387	02/18/2026	22ND CENTURY TECHNOLOGIES, INC.	4,630.50		
639388	02/18/2026	ACLARIAN LLC	1,125.00		
639389	02/18/2026	ADVANCED ENVIRONMENTAL LABORATORIES, INC	120.00		
639390	02/18/2026	AIR MECHANICAL & SERVICE CORP.	8,586.96		
639391	02/18/2026	AIRGAS USA, LLC	29,421.22		
639392	02/18/2026	AIRGAS SOUTH, INC.	461.79		
639393	02/18/2026	AIRGAS SPECIALTY PRODUCTS, INC.	9,116.84		
639394	02/18/2026	ALLIED UNIVERSAL CORPORATION	4,664.62		
639395	02/18/2026	AMICI ENGINEERING CONTRACTORS, LLC	54,739.69	DAV 90 REPLACMENT	RECEIVE
639396	02/18/2026	ARTEMIS CONSULTING COLLECTIVE INC	26,533.98		
639397	02/18/2026	CARMEUSE LIME & STONE, INC.	38,904.32		
639398	02/18/2026	CDW LLC	27,667.65		
639399	02/18/2026	CHEMICAL SYSTEMS OF ORLANDO, INC.	63,417.40	CHEMICAL - DIATOMACEOUS EARTH	RECEIVE
639400	02/18/2026	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	650.78		
639401	02/18/2026	ELECTRICAL ENGINEERING ENTERPRISES INC	67,155.00	ELECTRICAL WORK ON WELL 153 & 154	RECEIVE
639402	02/18/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	2,045.80		
639403	02/18/2026	FEDERAL EXPRESS CORPORATION	84.70		
639404	02/18/2026	FISHER SCIENTIFIC COMPANY LLC	1,658.35		
639405	02/18/2026	FLAGSHIP AVIATION SERVICES LLC	19,780.33		
639406	02/18/2026	HACH COMPANY	11,302.74		
639407	02/18/2026	HARRISON CONTRACTING CO., INC.	4,300.00		
639408	02/18/2026	HAWKINS, INC.	2,595.00		
639409	02/18/2026	HAYS HOLDING CORPORATION	13,372.59		
639410	**02/18/2026**	**HILLSBOROUGH COUNTY**	**75.65**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639411	**02/18/2026**	**HILLSBOROUGH COUNTY**	**20.94**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639412	**02/18/2026**	**HILLSBOROUGH COUNTY**	**81.54**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639413	02/18/2026	SCHOOL BOARD OF HILLSBOROUGH COUNTY	100.00		
639414	02/18/2026	ARROW EXTERMINATORS	200.00		
639415	02/18/2026	INTERACID NORTH AMERICA, INC.	45,988.74		
639416	02/18/2026	INTERPRO SOLUTIONS, LLC	17,751.00		
639417	02/18/2026	JONES WALKER, LLP	12,500.00		
639418	02/18/2026	KAT CONSTRUCTION & MATERIALS, INC.	195,268.74	ELDRIDGE WILDE WF PUMPS & MOTORS REPLACMENTS PRJ	RECEIVE
639419	02/18/2026	DANIELLE KEIRSEY	1,673.30		
639420	02/18/2026	KEMIRA WATER SOLUTIONS, INC.	76,842.27	CHEMICAL - FERRIC SULFATE	RECEIVE

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639421	02/18/2026	LHOIST NORTH AMERICA OF ALABAMA, LLC	33,731.55		
639422	02/18/2026	MATHESON TRI-GAS INC.	16,175.92		
639423	02/18/2026	MCMASTER-CARR	437.81		
639424	**02/18/2026**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639425	02/18/2026	ODYSSEY MANUFACTURING COMPANY	93,084.20	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639426	02/18/2026	ODYSSEY MANUFACTURING COMPANY	7,917.00		
639427	02/18/2026	KSHITIJ PARAJULI	80.75		
639428	02/18/2026	PIPER FIRE PROTECTION, INC.	11,283.65		
639429	02/18/2026	POLYDYNE INC	27,555.00		
639430	02/18/2026	RDSG LLC	4,400.00		
639431	02/18/2026	RING POWER CORPORATION	5,285.80		
639432	02/18/2026	RING POWER CORPORATION	1,872.50		
639433	**02/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639434	**02/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639435	**02/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639436	**02/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.76**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639437	**02/18/2026**	**CITY OF TAMPA OFFICES**	**26.50**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639438	**02/18/2026**	**TAMPA ELECTRIC CO**	**5,976.43**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639439	02/18/2026	THATCHER CHEMICAL OF FLORIDA INC.	26,123.52		
639440	02/18/2026	TIMES PUBLISHING CO	1,014.00		
639441	02/18/2026	UNIFIRST CORPORATION	89.59		
639442	02/18/2026	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	22,574.44		
639443	**02/18/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**3,381.01**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639444	**02/18/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**9,217.87**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639445	02/18/2026	VITAL RECORDS HOLDINGS, LLC	496.21		
639446	02/18/2026	W W GRAINGER INC	2,243.54		
639447	02/18/2026	WASTE MANAGEMENT INC. OF FLORIDA	2,443.70		
639448	**02/18/2026**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**26,368.98**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639449	02/18/2026	WRIGHT EXPRESS CORPORATION	9,074.19		
639450	02/18/2026	ZOHO CORPORATION	27,337.00		
WIRE	**02/19/2026**	**BOOKY OREN GLOBAL WATER TECHNOLOGIES LTD.**	**12,464.00**		
WIRE	**02/20/2026**	**INTERNAL REVENUE SERVICE**	**165,384.58**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
639451	02/25/2026	ADVANCED ENVIRONMENTAL LABORATORIES, INC	510.00		
639452	02/25/2026	AIRGAS USA, LLC	119,959.18	CHEMICAL - CARBON DIOXIDE	
639453	02/25/2026	ALLIED UNIVERSAL CORPORATION	107,674.70	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639454	02/25/2026	ALLIED UNIVERSAL CORPORATION	2,727.77		RECEIVE
639455	02/25/2026	J.C. EHRLICH CO.	269.21		
639456	02/25/2026	AMPL OPTIMIZATION INC.	48,933.34		

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639457	02/25/2026	FINGER LAKES BUSINESS SERVICES, INC.	97.00		
639458	02/25/2026	APPLIED ECOLOGY, INC	40,606.69		
639459	02/25/2026	ARCADIS US INC.	10,888.50		
639460	02/25/2026	ARCHER WESTERN CONSTRUCTION LLC	20,125.02		
639461	02/25/2026	ARDURRA GROUP, INC	4,860.00		
639462	02/25/2026	ARTEMIS CONSULTING COLLECTIVE INC	14,216.70		
639463	**02/25/2026**	**BRIGHT HOUSE NETWORKS LLC**	**1,293.41**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
639464	02/25/2026	CAROLLO ENGINEERS INC	4,134.50		
639465	02/25/2026	CATALYST COMMUNICATIONS GROUP LLC	6,000.00		
639466	02/25/2026	CCH, INC.	572.73		
639467	02/25/2026	CDW LLC	82,057.76	I.T. WMWARE, RUBRIK RENEWALS	RECEIVE
639468	02/25/2026	CHAPPELL ROBERTS INC	12,990.11		
639469	02/25/2026	CLEAR CHANNEL OUTDOOR	9,270.00		
639470	02/25/2026	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	14,464.62		
639471	02/25/2026	ECOHYDROLOGIX LLC	22,225.05		
639472	02/25/2026	ELECTRIC GAS INDUSTRIES ASSOCIATION	89,886.91	3RD PARTY DEMAND MGMT REBATE	RECEIVE
639473	02/25/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	48,159.20		
639474	02/25/2026	EUROFINS DRINKING WATER AND WASTEWATER CENTRAL LLC	900.00		
639475	02/25/2026	FEDERAL EXPRESS CORPORATION	258.42		
639476	02/25/2026	FISHER SCIENTIFIC COMPANY LLC	1,076.15		
639477	02/25/2026	BLUE CROSS BLUE SHIELD OF FLORIDA	359,239.34	PPO, HMO, GOINS & NOTHSTEIN MONTH PREM - MARCH 2026	RECEIVE
639478	02/25/2026	FLORIDA DEPT OF MANAGEMENT SERVICES	20,842.32		
639479	**02/25/2026**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639480	**02/25/2026**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639481	**02/25/2026**	**FRONTIER COMMUNICATIONS**	**680.00**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639482	02/25/2026	GARNEY COMPANIES, INC.	434,494.02	S. HILLSB PIPELINE PROJ	RECEIVE
639483	02/25/2026	GEOPOINT SURVEYING, INC.	8,251.00		
639484	02/25/2026	JEFF GEURINK	480.75		
639485	02/25/2026	GSI ENVIRONMENTAL, INC.	4,770.24		
639486	02/25/2026	HAWKINS, INC.	2,452.00		
639487	02/25/2026	HAYS HOLDING CORPORATION	13,596.97		
639488	02/25/2026	TENCARVA MACHINERY COMPANY	5,234.48		
639489	02/25/2026	ARROW EXTERMINATORS	79.00		
639490	02/25/2026	IDEXX LABORATORIES INC	778.63		
639491	02/25/2026	INFOARMOR, INC.	388.65		
639492	02/25/2026	IVAN LOAI	68.01		
639493	02/25/2026	MAULDIN & JENKINS, LLC	49,300.00		
639494	02/25/2026	MCKIM & CREED PA	4,580.46		

TAMPA BAY WATER

CHECK REGISTER - FEB 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639495	02/25/2026	MUTUAL OF OMAHA COMPANY	4,752.63		
639496	02/25/2026	ODYSSEY MANUFACTURING COMPANY	30,821.20		
639497	02/25/2026	OHLIN SALES INC.	372.38		
639498	02/25/2026	PIPER FIRE PROTECTION, INC.	1,185.00		
639499	02/25/2026	RDSG LLC	500.00		
639500	02/25/2026	ATLANTA FORKLIFTS INC.	485.65		
639501	02/25/2026	RICOH USA, INC.	2,920.80		
639502	02/25/2026	RING POWER CORPORATION	3,051.64		
639503	02/25/2026	MICHAEL SCHRANTZ	200.00		
639504	02/25/2026	SERPENTIX CONVEYOR, LLC	198,200.00	SWTP EXPANSION PROJ	RECEIVE
639505	02/25/2026	SMITH INDUSTRIES INC	4,221.50		
639506	02/25/2026	STANDARD INSURANCE CO	12,082.80		
639507	02/25/2026	STANTEC CONSULTING SERVICES, INC.	150,643.52	S. HILLSB PIPELINE PROJ	RECEIVE
639508	02/25/2026	STANTEC CONSULTING SERVICES, INC.	2,476.85		
639509	02/25/2026	SANDRO SVRDLIN	1,174.18		
639510	**02/25/2026**	**TAMPA ELECTRIC CO**	**66,101.63**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639511	**02/25/2026**	**TAMPA ELECTRIC CO**	**544.57**	**ELECTRIC BILL - WELL FIELDS & PUMPING STATIONS**	**DELEGATED APPROVAL**
639512	02/25/2026	SYLINT GROUP INC	12,750.00		
639513	02/25/2026	UNIFIRST CORPORATION	696.04		
639514	02/25/2026	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	793,284.09	DESAL O&M - JAN	RECEIVE
639515	02/25/2026	USABLE LIFE	7,357.08		
639516	02/25/2026	V&A CONSULTING ENGINEERING, INC.	1,418.75		
639517	02/25/2026	VEOLIA WATER NORTH AMERICA	677,328.58	SWTP O*M - JAN	RECEIVE
639518	**02/25/2026**	**VERIZON FLORIDA INC**	**37,235.12**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639519	02/25/2026	W W GRAINGER INC	1,360.99		
639520	02/25/2026	WADE-TRIM INC	110,886.68	S. HILLSB PIPELINE PROJ	RECEIVE
639521	02/25/2026	WADE-TRIM INC	1,009,106.09	S. HILLSB PIPELINE PROJ	RECEIVE
639522	02/25/2026	WATER & AIR RESEARCH, INC.	800.00		
639523	**02/25/2026**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**2,318.24**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
295 CHECKS			13,362,054.89		

TAMPA BAY WATER

CHECK REGISTER - MAR 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639524	03/04/2026	AIR CENTERS OF FLORIDA, INC.	960.47		
639525	03/04/2026	AIR MECHANICAL & SERVICE CORP.	30,336.52		
639526	03/04/2026	AIRGAS USA, LLC	20,150.28		
639527	03/04/2026	AIRGAS SPECIALTY PRODUCTS, INC.	24,920.60		
639528	03/04/2026	ALLIED UNIVERSAL CORPORATION	58,832.72	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639529	03/04/2026	AMICI ENGINEERING CONTRACTORS, LLC	53,521.39	REGIONAL LARGE PIPELINE WORK	RECEIVE
639530	03/04/2026	APPLIED ECOLOGY, INC	1,874.28		
639531	03/04/2026	BAKER TILLY ADVISORY GROUP	4,096.05		
639532	03/04/2026	BLACK & VEATCH CORPORATION	274,696.06	CIP, IPM & STAFF AUGMENTATION PROJECTS	RECEIVE
639533	**03/04/2026**	**BRIGHT HOUSE NETWORKS LLC**	**2,510.07**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
639534	03/04/2026	MCTEMPO INVESTMENT	911.00		
639535	03/04/2026	CARMEUSE LIME & STONE, INC.	53,690.46	CHEMICAL - QUICKLIME	RECEIVE
639536	03/04/2026	CHEMICAL SYSTEMS OF ORLANDO, INC.	1,800.00		
639537	03/04/2026	CITRUS PARK WELL DRILLING & IRRIGATION INC	9,700.00		
639538	**03/04/2026**	**CITY OF CLEARWATER UTILITIES**	**2,987.51**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639539	**03/04/2026**	**DUKE ENERGY CORPORATION**	**8,699.64**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639540	03/04/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	7,584.73		
639541	03/04/2026	AMY FLACK	220.81		
639542	03/04/2026	FLATWOODS CONSULTING GROUP, INC.	3,663.00		
639543	**03/04/2026**	**FRONTIER COMMUNICATIONS**	**354.57**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639544	03/04/2026	GARNEY COMPANIES, INC.	3,952,991.97	SO HILLB PIPELINE PROJ	RECEIVE
639545	03/04/2026	GFT INFRASTRUCTURE, INC.	105,611.00	3RD PARTY RESERVOIR DAM SAFETY COMPLIANCE	RECEIVE
639546	03/04/2026	GRAND BAR RANCH, LLC	4,122.51		
639547	03/04/2026	GRAY ROBINSON, P.A.	76,600.50	SPECIAL COUNSEL AND LEGAL SERVICES	RECEIVE
639548	03/04/2026	STACY GUNDRY	372.05		
639549	03/04/2026	GUNSTER, YOAKLEY & STEWART, PA	344,123.73	SPECIAL COUNSEL LEGAL SERVICE	RECEIVE
639550	03/04/2026	HACH COMPANY	24,692.26		
639551	03/04/2026	HARRISON CONTRACTING CO., INC.	6,500.00		
639552	03/04/2026	HAWKINS, INC.	11,397.50		
639553	03/04/2026	HAYS HOLDING CORPORATION	8,516.59		
639554	03/04/2026	HAZEN & SAWYER, P.C.	21,095.25		
639555	03/04/2026	HAZEN & SAWYER, P.C.	800.00		
639556	03/04/2026	INTERACID NORTH AMERICA, INC.	58,874.58	CHEMICAL - SULFURIC ACID	RECEIVE
639557	03/04/2026	MARK JOHNS	1,249.00		
639558	03/04/2026	KEMIRA WATER SOLUTIONS, INC.	103,870.79	CHEMICAL - FERRIC SULFATE	RECEIVE
639559	03/04/2026	MATHESON TRI-GAS INC.	30,857.65		
639560	03/04/2026	MCKIM & CREED PA	15,795.42		
639561	**03/04/2026**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639562	03/04/2026	MILLER BUILDING & REPAIR SERVICES, INC.	7,865.00		

TAMPA BAY WATER

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CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639563	03/04/2026	NV5 GEOSPATIAL, INC.	40,833.48		
639564	03/04/2026	ODYSSEY MANUFACTURING COMPANY	88,753.05	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639565	03/04/2026	PALMA CEIA LOCK & KEY, INC.	5,220.00		
639566	03/04/2026	PIPER FIRE PROTECTION, INC.	9,876.84		
639567	03/04/2026	PLYMOUTH PLAZA, LLC	5,776.88		
639568	03/04/2026	PVS TECHNOLOGIES, INC.	12,004.96		
639569	03/04/2026	MALIQUE RANKIN	163.13		
639570	03/04/2026	RDSG LLC	1,100.00		
639571	03/04/2026	REPUBLIC SERVICES OF FLORIDA	861.55		
639572	03/04/2026	RING POWER CORPORATION	495.95		
639573	03/04/2026	SHI INTERNATIONAL CORP	15,633.75		
639574	03/04/2026	SMITH INDUSTRIES INC	2,487.78		
639575	**03/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639576	**03/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639577	**03/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639578	**03/04/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.79**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639579	03/04/2026	SURVALENT TECHNOLOGY INC.	64,644.00	I.T. SCADA SOFTWARE SUPPORT RENEWAL	RECEIVE
639580	03/04/2026	TAMPA ELECTRIC CO	179,103.35		
639581	03/04/2026	TLC DIVERSIFIED, INC.	264,899.52	CYC WTP CHIMICAL PIPING CONSTRUCTION PROJ	RECEIVE
639582	03/04/2026	UNIFIRST CORPORATION	188.68		
639583	03/04/2026	V&A CONSULTING ENGINEERING, INC.	9,615.00		
639584	03/04/2026	TEHERA VALENTINE-WYATT	168.20		
639585	03/04/2026	VEOLIA WATER NORTH AMERICA	1,000,895.64	SWTP EXPANSION CIP PROJ	RECEIVE
639586	03/04/2026	HUI WANG	862.91		
639587	03/04/2026	WORKSCAPES, INC.	3,833.36		
639588	03/04/2026	WSP USA INC	4,370.39		
WIRE	**03/05/2026**	**FLORIDA DIV OF RETIREMENT CASHIER**	**234,607.55**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
WIRE	**03/06/2026**	**INTERNAL REVENUE SERVICE**	**156,540.74**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
639589	03/11/2026	ACCESSIBLE360 LLC	2,250.00		
639590	03/11/2026	ACLARIAN LLC	2,175.00		
639591	03/11/2026	ADVANCED ROOFING, INC.	538.81		
639592	03/11/2026	AMERICAN FAMILY LIFE ASSURANCE COMPANY OF COLUMBUS	817.90		
639593	03/11/2026	AIR CENTERS OF FLORIDA, INC.	9,908.24		
639594	03/11/2026	AIR MECHANICAL & SERVICE CORP.	2,183.46		
639595	03/11/2026	AIRGAS USA, LLC	99,170.34	CHEMICAL - CARBON DIOXIDE	RECEIVE
639596	03/11/2026	AIRGAS SPECIALTY PRODUCTS, INC.	7,274.07		
639597	03/11/2026	UNIVERSAL PROTECTION SERVICE LP	93,014.22	SECURITY SRV - 1/30-2/26/26	RECEIVE
639598	03/11/2026	ALLIED UNIVERSAL CORPORATION	116,412.25	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639599	03/11/2026	ALLIED UNIVERSAL CORPORATION	30,912.03		

TAMPA BAY WATER

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CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639600	03/11/2026	AMERICAN SPIRALWELD PIPE CO.	1,741,377.00	ODP STEEL PIPE SO HILLS PIPELINE PROJ	RECEIVE
639601	03/11/2026	APPLIED ECOLOGY, INC	12,630.59		
639602	03/11/2026	AREA PRINTING, INC.	336.00		
639603	03/11/2026	AUTOMATIONDIRECT.COM, INC.	2,140.00		
639604	03/11/2026	BAYVIEW PUBLIC RELATIONS INC.	12,355.75		
639605	03/11/2026	BLACK & VEATCH CORPORATION	11,870.00		
639606	03/11/2026	CARMEUSE LIME & STONE, INC.	13,556.61		
639607	03/11/2026	CATALYST COMMUNICATIONS GROUP LLC	5,762.50		
639608	03/11/2026	CHEMICAL SYSTEMS OF ORLANDO, INC.	21,129.00		
639609	03/11/2026	CITY OF CLEARWATER POLICE DEPT	260.00		
639610	03/11/2026	CLASSIC CONTROLS INC	636.53		
639611	03/11/2026	CUMBEY & FAIR, INC.	22,080.00		
639612	03/11/2026	DIALOGUE PUBLIC RELATIONS, LLC	4,537.50		
639613	**03/11/2026**	**DUKE ENERGY CORPORATION**	**56,658.46**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639614	03/11/2026	ECHOSAT, INC.	47.74		
639615	03/11/2026	ECOHYDROLOGIX LLC	10,202.20		
639616	03/11/2026	EDDIE'S PAINT AND BODY	11,790.98		
639617	03/11/2026	EMPLOYEE BENEFITS CORPORATION	253.65		
639618	03/11/2026	ENTERPRISE FM TRUST	233,779.23	VEHICLE PURCHASES AND MONTHLY MAINT	RECEIVE
639619	03/11/2026	SOLOMON ERKYIHUN	826.88		
639620	03/11/2026	EYEMED VISION CARE	1,416.84		
639621	03/11/2026	FEDERAL EXPRESS CORPORATION	125.64		
639622	03/11/2026	FERGUSON ENTERPRISES INC	1,200.00		
639623	03/11/2026	FISHER SCIENTIFIC COMPANY LLC	843.95		
639624	03/11/2026	FLORIDA TREE AND PROPERTY MAINTENANCE	35,976.50		
639625	03/11/2026	FRONT LINE POWER LLC	1,053.30		
639626	**03/11/2026**	**FRONTIER COMMUNICATIONS**	**392.95**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639627	**03/11/2026**	**FRONTIER COMMUNICATIONS**	**140.98**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639628	03/11/2026	HACH COMPANY	1,116.66		
639629	03/11/2026	HAWKINS, INC.	5,412.00		
639630	03/11/2026	HAYS HOLDING CORPORATION	17,239.81		
639631	03/11/2026	HAZEN & SAWYER, P.C.	8,000.00		
639632	03/11/2026	HERC RENTALS, INC.	1,720.00		
639633	03/11/2026	HILLSBOROUGH COUNTY	39,397.77		
639634	**03/11/2026**	**HILLSBOROUGH COUNTY**	**87.25**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639635	03/11/2026	INTERACID NORTH AMERICA, INC.	19,987.17		
639636	03/11/2026	SHANE JOHNSON	703.35		
639637	03/11/2026	JONES WALKER, LLP	6,750.00		
639638	03/11/2026	KEMIRA WATER SOLUTIONS, INC.	41,857.84		

TAMPA BAY WATER

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CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639639	03/11/2026	LDM LAWN SERVICE, LLC	890.00		
639640	03/11/2026	LHOIST NORTH AMERICA OF ALABAMA, LLC	23,786.92		
639641	03/11/2026	MATHESON TRI-GAS INC.	10,959.82		
639642	03/11/2026	ODYSSEY MANUFACTURING COMPANY	101,479.70	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639643	03/11/2026	ODYSSEY MANUFACTURING COMPANY	36,308.00		
639644	03/11/2026	KSHITIJ PARAJULI	1,036.19		
639645	03/11/2026	PERSSON, COHEN, MOONEY, FERNANDEZ & JACKSON, P.A.	28,327.50		
639646	03/11/2026	PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS	9,539.24		
639647	03/11/2026	PIPER FIRE PROTECTION, INC.	2,033.72		
639648	03/11/2026	POLYDYNE INC	1,694.00		
639649	03/11/2026	RDSG LLC	300.00		
639650	03/11/2026	ATLANTA FORKLIFTS INC.	709.25		
639651	03/11/2026	RICOH USA, INC.	693.00		
639652	03/11/2026	RING POWER CORPORATION	10,157.56		
639653	03/11/2026	SMITH INDUSTRIES INC	1,312.37		
639654	03/11/2026	SOUTHEASTERN FREIGHT LINES INC	668.61		
639655	03/11/2026	BAY PINES INVESTMENTS, INC	1,019.75		
639656	03/11/2026	SUNSHINE STATE ONE CALL OF FLORIDA INC	249.35		
639657	**03/11/2026**	**TAMPA ELECTRIC CO**	**854,440.05**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639658	**03/11/2026**	**TAMPA ELECTRIC CO**	**35,001.95**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639659	03/11/2026	THATCHER CHEMICAL OF FLORIDA INC.	17,460.48		
639660	03/11/2026	TRINOVA INC.	377.92		
639661	03/11/2026	UNIFIRST CORPORATION	185.52		
639662	03/11/2026	UNIVERSITY OF CENTRAL FLORIDA	18,773.00		
639663	03/11/2026	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	255,658.74	DESAL VFD REPLACEMENTS PROJ	RECEIVE
639664	03/11/2026	VEOLIA WATER NORTH AMERICA	83,576.24	SWTP SCADA SYSTEM UPGRADE	RECEIVE
639665	**03/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**11,357.94**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639666	**03/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**13.80**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639667	**03/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**6,290.04**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639668	**03/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**1,241.47**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639669	**03/11/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**11,029.45**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639670	03/11/2026	VITAL RECORDS HOLDINGS, LLC	1,167.37		
639671	03/11/2026	W W GRAINGER INC	395.46		
639672	03/11/2026	WADE-TRIM INC	13,309.81		
639673	03/11/2026	WASTE MANAGEMENT INC. OF FLORIDA	3,674.99		
639674	03/11/2026	WELLSWOOD CIVIC CLUB	800.00		
639675	03/11/2026	WISE CONSULTING GROUP	2,682.00		
639676	**03/11/2026**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**117,096.28**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639677	03/18/2026	ADVANCED ENVIRONMENTAL LABORATORIES, INC	2,299.00		

TAMPA BAY WATER

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CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639678	03/18/2026	AIR MECHANICAL & SERVICE CORP.	5,879.60		
639679	03/18/2026	AIRGAS USA, LLC	11,726.01		
639680	03/18/2026	AIRGAS SOUTH, INC.	391.33		
639681	03/18/2026	ALLIED UNIVERSAL CORPORATION	4,784.96		
639682	03/18/2026	J.C. EHRLICH CO.	269.21		
639683	03/18/2026	AMICI ENGINEERING CONTRACTORS, LLC	45,261.98		
639684	03/18/2026	APPLIED DRILLING ENG	70,326.39	EAST PASCO WF CONSTRUCTION PROJ	RECEIVE
639685	03/18/2026	ARDURRA GROUP, INC	3,888.00		
639686	03/18/2026	TIRUSEW ASEFA	807.19		
639687	03/18/2026	BAL ENGINEERING, INC.	3,000.00		
639688	03/18/2026	CDW LLC	2,912.00		
639689	03/18/2026	CHANDLER ASSET MANAGEMENT, INC.	6,228.33		
639690	03/18/2026	INTERNATIONAL CHEMTEX CORPORATION	1,116.43		
639691	03/18/2026	CINTAS CORPORATION	328.65		
639692	03/18/2026	CLEAR CHANNEL OUTDOOR	9,270.00		
639693	03/18/2026	DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC.	4,646.05		
639694	03/18/2026	CORCORAN & ASSOCIATES, INC.	12,500.00		
639695	03/18/2026	DIVISION OF ADMINISTRATIVE	602.25		
639696	03/18/2026	THE DOOR WHISPERER LLC	400.00		
639697	**03/18/2026**	**DUKE ENERGY CORPORATION**	**240.46**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639698	**03/18/2026**	**DUKE ENERGY CORPORATION**	**4,409.24**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639699	03/18/2026	ELECTRIC GAS INDUSTRIES ASSOCIATION	161,851.55	DEMAND MGMT REBATE PROG	RECEIVE
639700	03/18/2026	ELECTRICAL ENGINEERING ENTERPRISES INC	214,289.28	ELECTRICAL WORK REPLACE SOFT STARTS ON PUMP CONTROLS	RECEIVE
639701	03/18/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	2,450.00		
639702	03/18/2026	FISHER SCIENTIFIC COMPANY LLC	65.12		
639703	03/18/2026	FLORIDA DEPT OF STATE	27.58		
639704	03/18/2026	FLORIDA LIGHTING MAINTENANCE LLC	4,781.50		
639705	03/18/2026	FLORIDA TREE AND PROPERTY MAINTENANCE	3,600.00		
639706	03/18/2026	FRONT LINE POWER LLC	63,853.35	INSTALL UPS WITH BYPASS SWITCH & POLE STUDY	RECEIVE
639707	**03/18/2026**	**FRONTIER COMMUNICATIONS**	**227.34**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639708	03/18/2026	GARNEY COMPANIES, INC.	4,298,942.65	S. HILLSB PIPELINE PROJ SEGMENT A & B	RECEIVE
639709	03/18/2026	GEOPOINT SURVEYING, INC.	6,134.50		
639710	03/18/2026	JEFF GEURINK	886.15		
639711	03/18/2026	HACH COMPANY	15,847.72		
639712	03/18/2026	HAYS HOLDING CORPORATION	8,769.02		
639713	03/18/2026	HAZEN & SAWYER, P.C.	1,025.65		
639714	03/18/2026	HAZEN & SAWYER, P.C.	3,972.00		
639715	03/18/2026	HAZEN & SAWYER, P.C.	3,972.00		
639716	**03/18/2026**	**HILLSBOROUGH COUNTY**	**20.12**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**

TAMPA BAY WATER

CHECK REGISTER - MAR 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639717	**03/18/2026**	**HILLSBOROUGH COUNTY**	**87.17**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639718	03/18/2026	ARROW EXTERMINATORS	257.00		
639719	03/18/2026	HUSS DRILLING, INC	66,286.25	COREHOLE CONSTRUCTION PROJ	RECEIVE
639720	03/18/2026	JACOBS ENGINEERING GROUP INC	8,296.00		
639721	03/18/2026	JONES WALKER, LLP	12,500.00		
639722	03/18/2026	DANIELLE KEIRSEY	104.18		
639723	03/18/2026	KONECRANES INC	3,725.00		
639724	**03/18/2026**	**MICHIGAN STATE DISBURSEMENT UNIT**	**368.51**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639725	03/18/2026	MILLER BUILDING & REPAIR SERVICES, INC.	1,080.00		
639726	03/18/2026	BRANDON MOORE	568.84		
639727	03/18/2026	OFFICE DEPOT	531.01		
639728	03/18/2026	PIPER FIRE PROTECTION, INC.	4,070.00		
639729	03/18/2026	MALIQUE RANKIN	53.46		
639730	03/18/2026	RDSG LLC	1,100.00		
639731	03/18/2026	RICOH USA, INC.	2,890.80		
639732	03/18/2026	RING POWER CORPORATION	24,027.18		
639733	03/18/2026	RING POWER CORPORATION	5,243.00		
639734	03/18/2026	RING POWER CORPORATION	2,996.00		
639735	03/18/2026	ROWLAND (DE), LLC	33,663.03		
639736	03/18/2026	RS AMERICAS, INC	1,578.60		
639737	03/18/2026	SOUTHEAST DRILLING SERVICES INC	78,449.00	BUD 4 & VTP PUMP REPAIR AND MAINT	RECEIVE
639738	03/18/2026	SOUTHEAST DRILLING SERVICES INC	28,601.00		
639739	03/18/2026	STANDARD INSURANCE CO	12,272.08		
639740	**03/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**466.82**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639741	**03/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**326.03**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639742	**03/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**346.15**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639743	**03/18/2026**	**STATE OF FLORIDA DISBURSEMENT UNIT**	**194.28**	**CHILD SUPPORT**	**DELEGATED APPROVAL**
639744	03/18/2026	SURVTECH SOLUTIONS, INC.	245,434.50	CYPRESS BRIDGE TM SURVEYING	RECEIVE
639745	03/18/2026	TAMPA ARMATURE WORKS INC	4,970.00		
639746	**03/18/2026**	**CITY OF TAMPA OFFICES**	**30.24**	**UTILITY PAYMENT**	**DELEGATED APPROVAL**
639747	**03/18/2026**	**TAMPA ELECTRIC CO**	**3,637.30**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639748	03/18/2026	UNIFIRST CORPORATION	171.03		
639749	03/18/2026	UNIVERSITY OF CENTRAL FLORIDA	14,480.00		
639750	**03/18/2026**	**VERIZON FLORIDA INC**	**74,470.24**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639751	**03/18/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**3,380.95**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639752	**03/18/2026**	**VERIZON WIRELESS COMMUNICATIONS LLC**	**9,217.87**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639753	03/18/2026	W W GRAINGER INC	2,444.30		
639754	03/18/2026	HUI WANG	399.00		
639755	03/18/2026	FIKADU WELIDEHANNA	864.20		

TAMPA BAY WATER

CHECK REGISTER - MAR 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639756	03/18/2026	WILDLANDS CONSERVATION, INC.	2,055.98		
639757	**03/18/2026**	**WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.**	**39,742.83**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639758	03/18/2026	WRIGHT EXPRESS CORPORATION	8,759.62		
639759	03/18/2026	WSP USA INC	2,105.00		
WIRE	**03/19/2026**	**BOOKY OREN GLOBAL WATER TECHNOLOGIES LTD.**	**12,464.00**		
WIRE	**03/20/2026**	**INTERNAL REVENUE SERVICE**	**152,569.42**	**FEDERAL PAYROLL TAX DEPOSIT**	**DELEGATED APPROVAL**
639760	03/25/2026	22ND CENTURY TECHNOLOGIES, INC.	4,725.00		
639761	03/25/2026	AECOM TECHNICAL SERVICES, INC.	90,982.56	ELECTRICAL STANDARD SPEC UPDATES & FEASIBILITY GROUNDWATER STUDY	RECEIVE
639762	03/25/2026	AIR CENTERS OF FLORIDA, INC.	20,635.00		
639763	03/25/2026	AIR MECHANICAL & SERVICE CORP.	12,154.61		
639764	03/25/2026	AIRGAS USA, LLC	98,887.47	CHEMICAL - CARBON DIOXIDE	RECEIVE
639765	03/25/2026	AIRGAS SPECIALTY PRODUCTS, INC.	8,959.70		
639766	03/25/2026	ALLIED UNIVERSAL CORPORATION	58,304.92	CHEMICAL - SODIUM HYDROXIDE	RECEIVE
639767	03/25/2026	FINGER LAKES BUSINESS SERVICES, INC.	113.48		
639768	03/25/2026	APPLIED DRILLING ENG	174,683.89	EPWF TEST WELL CONSTRUCTION PRJ	RECEIVE
639769	03/25/2026	APPLIED ECOLOGY, INC	11,752.62		
639770	03/25/2026	BLACK & VEATCH CORPORATION	194,318.36	IPM & SO HILLS PIPELINE PRJ	RECEIVE
639771	**03/25/2026**	**BRIGHT HOUSE NETWORKS LLC**	**1,293.41**	**UTILITIES - INTERNET**	**DELEGATED APPROVAL**
639772	03/25/2026	BROWN, AMELIA	43.05		
639773	03/25/2026	BUSH GRAZIANO RICE & HEARING, P.A.	6,202.60		
639774	03/25/2026	CARMEUSE LIME & STONE, INC.	34,837.41		
639775	03/25/2026	CAROLLO ENGINEERS INC	6,168.00		
639776	03/25/2026	CHEMICAL SYSTEMS OF ORLANDO, INC.	42,258.00		
639777	03/25/2026	CINTAS CORPORATION	328.65		
639778	03/25/2026	THE DOOR WHISPERER LLC	3,390.00		
639779	03/25/2026	ELECTRICAL ENGINEERING ENTERPRISES INC	114,000.00	CYC & SO PASCO VDF MODULES CONSTRUCTION PRJ	RECEIVE
639780	03/25/2026	EMPLOYEE BENEFITS CORPORATION	257.88		
639781	03/25/2026	ENERGY CAP, LLC	17,630.74		
639782	03/25/2026	ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION	1,250.00		
639783	03/25/2026	FEDERAL EXPRESS CORPORATION	295.78		
639784	03/25/2026	FLAGSHIP AVIATION SERVICES LLC	19,888.25		
639785	03/25/2026	BLUE CROSS BLUE SHIELD OF FLORIDA	4,385.62		
639786	03/25/2026	FLORIDA DEPT OF MANAGEMENT SERVICES	20,804.65		
639787	**03/25/2026**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639788	**03/25/2026**	**FRONTIER COMMUNICATIONS**	**179.49**	**UTILITY PAYMENT -COMMUMICATION**	**DELEGATED APPROVAL**
639789	03/25/2026	HAWKINS, INC.	21,127.75		
639790	03/25/2026	HAYS HOLDING CORPORATION	11,570.43		
639791	03/25/2026	INFOARMOR, INC.	388.65		
639792	03/25/2026	INTERACID NORTH AMERICA, INC.	46,308.89		

TAMPA BAY WATER

CHECK REGISTER - MAR 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639793	03/25/2026	DANIELLE KEIRSEY	1,136.38		
639794	03/25/2026	KEMIRA WATER SOLUTIONS, INC.	69,417.67	CHEMICAL - FERRIC SULFATE	RECEIVE
639795	03/25/2026	CASEY LALOMIA	50.92		
639796	03/25/2026	LHOIST NORTH AMERICA OF ALABAMA, LLC	23,157.72		
639797	03/25/2026	MANSFIELD OIL COMPANY OF GAINSVILLE INC	21,480.76		
639798	03/25/2026	MATHESON TRI-GAS INC.	40,774.47		
639799	03/25/2026	MATHESON TRI-GAS INC.	1,157.22		
639800	03/25/2026	METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	30,000.00		
639801	03/25/2026	MILLER BUILDING & REPAIR SERVICES, INC.	630.00		
639802	03/25/2026	MUTUAL OF OMAHA COMPANY	4,761.21		
639803	03/25/2026	NV5 GEOSPATIAL, INC.	10,271.07		
639804	03/25/2026	ODYSSEY MANUFACTURING COMPANY	102,745.55	CHEMICAL - SODIUM HYPOCHLORITE	RECEIVE
639805	03/25/2026	ODYSSEY MANUFACTURING COMPANY	26,118.85		
639806	03/25/2026	PAFF TREE SERVICE, LLC	53,058.00	TREE TRIMMING & MAINT	RECEIVE
639807	03/25/2026	PALMA CEIA LOCK & KEY, INC.	335.00		
639808	03/25/2026	KSHITIJ PARAJULI	81.97		
639809	03/25/2026	PIPER FIRE PROTECTION, INC.	1,717.04		
639810	03/25/2026	PRINTER LOGIC INC	5,700.00		
639811	03/25/2026	PVS TECHNOLOGIES, INC.	11,783.48		
639812	03/25/2026	QUEST ECOLOGY INC	3,060.00		
639813	03/25/2026	RDSG LLC	4,400.00		
639814	03/25/2026	ATLANTA FORKLIFTS INC.	585.33		
639815	03/25/2026	RING POWER CORPORATION	417.30		
639816	03/25/2026	RS AMERICAS, INC	681.67		
639817	03/25/2026	SHI INTERNATIONAL CORP	14,936.38		
639818	03/25/2026	SKM SYSTEMS ANALYSIS INC	1,976.20		
639819	03/25/2026	STANTEC CONSULTING SERVICES, INC.	14,890.78		
639820	03/25/2026	STANTEC CONSULTING SERVICES, INC.	190,722.07	SO HILLSB PIPELINE PROJ	RECEIVE
639821	**03/25/2026**	**TAMPA ELECTRIC CO**	**74,264.97**	**ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS**	**DELEGATED APPROVAL**
639822	03/25/2026	TEMPACO, INC.	2,986.24		
639823	03/25/2026	THATCHER CHEMICAL OF FLORIDA INC.	18,807.41		
639824	03/25/2026	JAMES TOOLE	220.71		
639825	03/25/2026	TUCKER ENTERPRISE SERVICES, INC.	5,250.00		
639826	03/25/2026	UNIFIRST CORPORATION	89.59		
639827	03/25/2026	US WATER-ACCIONA SEAWATER DESLINATION PARTNERS	1,064,669.48	DESAL VFD REPLACMENT PROJ AND DESAL FEB O&M	RECEIVE
639828	03/25/2026	USABLE LIFE	7,453.92		
639829	03/25/2026	VANASSE HANGEN BRUSTLIN INC	14,025.00		
639830	03/25/2026	W W GRAINGER INC	1,850.66		
639831	03/25/2026	WATERFORD TECHNOLOGIES, INC.	18,783.00		

TAMPA BAY WATER

CHECK REGISTER - MAR 2026

CHECK#	CHECK DATE	VENDOR NAME	CHECK AMOUNT	DESCRIPTION	APPROVE/RECEIVE
639832	03/25/2026	WITHLACOOCHEE RIVER ELECTRIC COOPERATIVE, INC.	2,278.75	ELECTRIC BILL - WELL FIELDS AND PUMPING STATIONS	DELEGATED APPROVAL
313 CHECKS			20,541,804.47		

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.5

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Disposition of Fixed Assets for February and March 2026 - *Receive Report*

SUMMARY

Attached is a list of fixed assets and minor equipment removed from service and approved by the General Manager for disposal in accordance with agency policy in the months of February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The two workstation/office desk were discarded and replaced with newer units as they no longer met the needs of the agency. The Hach CL17 chlorine analyzer was no longer in operational condition and was cannibalized for its useful parts and replaced with a newer unit. The BK Precision 2542C Oscilloscope was no longer in operational condition and was discarded. The two Swan AMI Turbiwell analyzers (one in Feb/one in March) were no longer in operational condition and were cannibalized for their useful parts and replaced with a newer units. The miscellaneous lab equipment was no longer needed by the agency and was sold as surplus at auction. The Hach SC200 was discarded as it was no

longer in operational condition. The Thermo-Fisher Heratherm OGS180 Oven was no longer cost-effective to maintain and has since been discarded and replaced with a newer, more efficient unit. The Ingersoll-Rand air compressor was no longer in operational condition and has been discarded. The AP 7000 Probe was part of a pilot program that is no longer in use as it was determined that a more accurate and efficient S-CAN probe would be used going forward. The Siemens TOC M5310C portable analyzer was in disrepair and determined not cost-effective to repair. The miscellaneous computer equipment was surplus and no longer met the needs of the agency and has been replaced with newer, more efficient units.

Attachments (2)

Asset Disposal List_FEB_26
Asset Disposal List_MAR_26

TAMPA BAY WATER
SURPLUS ITEMS APPROVED FOR DISPOSITION BY THE GENERAL MANAGER
UNDER DELEGATION OF AUTHORITY FROM THE BOARD PER POLICY 650-08
MONTH OF FEBRUARY FY2026

ASSET#	ASSET DESCRIPTION	SERIAL NUMBER	ACQ DATE	ACQ COST	ACCUM DEPR	BOOK VALUE	CLASS	ASSET TYPE
9446	WORKSTATION	Q18004_28546	08/25/05	2,735.69	2,735.69	-	08	FURNITURE
9447	WORKSTATION	Q18004_28546	08/25/05	2,735.69	2,735.69	-	08	FURNITURE
11740	ANALYZER,HACH CL17, CHLORINE	162320005202	09/08/16	3,262.59	3,262.59	-	13	ELECTRONIC EQUIP.
12172	OSCILLOSCOPE, BK PRECISION 2542C-MSO 100	524A19102	04/02/19	1,565.00	1,565.00	-	13	ELECTRONIC EQUIP.
12247	ANALYZER,SWAN AMI TURBWELL	4922	09/26/19	5,049.85	4,268.36	781.49	13	ELECTRONIC EQUIP.
						-		
na	MISC LAB EQUIPMENT	-	-	-	-	-		
	Total			15,348.82	14,567.33	781.49		

TAMPA BAY WATER
SURPLUS ITEMS APPROVED FOR DISPOSITION BY THE GENERAL MANAGER
UNDER DELEGATION OF AUTHORITY FROM THE BOARD PER POLICY 650-08
MONTH OF MARCH FY2026

ASSET#	ASSET DESCRIPTION	SERIAL NUMBER	ACQ DATE	ACQ COST	ACCUM DEPR	BOOK VALUE	CLASS	ASSET TYPE
11081	CONTROLLER,HACH SC200	1205C0052785	07/12/12	1,702.31	1,702.31	-	13	ELECTRONIC EQUIP.
11663	OVEN, THERMO-FISHER HERATHERM OGS180	41839575	11/05/15	2,408.45	2,408.45	-	10	LAB EQUIP.
12050	AIR COMPRESSOR, 13HP INGERSOLL-RAND	NAR10376128	08/07/18	2,038.00	2,038.00	-	16	TOOLS/MAINT EQUIP.
12341	AP 7000 PROBE	-	09/30/20	55,644.11	26,236.01	29,408.10	10	LAB EQUIP.
12374	ANALYZER, SIEMENS TOC M5310C PORTABLE	20105799	12/03/20	37,252.12	19,246.89	18,005.23	10	LAB EQUIP.
12246	ANALYZER,SWAN AMI TURBWELL	4876	09/26/19	5,049.85	5,049.85	-	13	ELECTRONIC EQUIP.
						-		
na	MISC COMPUTER EQUIPMENT	-	-	-	-	-		
	Total			104,094.84	56,681.51	47,413.33		

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.6

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Financial Statements - February and March 2026 - *Receive Report*

SUMMARY

The attached Statement of Revenues and Expenditures summarizes the Agency's uniform rate basis financial activity for February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

Financial Statement - Summary of Major Points:

Revenues – Operating revenue consists of water sales (fixed and variable components), sales from the Tampa Bypass Canal to the City of Tampa, operating grants, other additional surcharges revenue and the board-approved balance carried forward from the previous year through the Rate Stabilization Fund. Fixed rate revenue is earned in level monthly increments and only catches up to the expenditures at year end. Non-Operating Income consists of investment income, miscellaneous income, litigation recoveries and capital contributions.

Expenditures - Throughout the year, actual expenditures normally lag behind by at least one to two months. This is due to the fact that vendor bills and the subsequent payment of those bills generally lag behind the actual performance of the services by 30 to 45 days. When the fiscal year end approaches, the books are held open to allow for all fiscal year activity to be accounted for and shown in the appropriate fiscal year. Variable rate expenditures will have seasonal peaks as the agency enters the dry season and adjusts the supply sources.

The “Encumbrance” balance shown on the bottom of the financial statements represents the amount of open purchase orders (committed funds and blanket purchase orders) as of the end of the month, including purchase orders carried forward from the previous year. Although the encumbrance is presented for informational purposes, it gives a projected contractual commitment against current year funds. There are many purchase orders established at the beginning of the year that will be spent through the year and monthly revenue will be collected through the year to offset that expense, some of the categories with larger encumbrances at the beginning of the year include Water Treatment Chemicals, Power, and Professional Services. Professional service tasks frequently carry over beyond the end of a fiscal year, in which case the applicable open purchase orders and the associated budget dollars are carried into the next fiscal year to allow for completion of those tasks as mentioned above.

Attachments (2)

Financial Statements 02.2026
Financial Statements 03.2026

TAMPA BAY WATER - UNIFORM RATE BASIS
Statement of Revenues and Expenditures
41.37% Fiscal Year Completed
February 28, 2026

	Current Month Actual	Original Budget	Revised Budget	Year to Date (YTD) Actual	YTD Actual % of Revised Budget
OPERATING REVENUE:					
Operating Grant - SWFWMD	0	500,000	500,000	27,695	5.54%
Water Sales - Fixed	12,922,305	155,067,663	155,067,663	64,611,526	41.67%
Water Sales - Variable	3,427,453	46,910,161	46,910,161	18,795,296	40.07%
Water Sales - Other	6,250	75,000	75,000	104,716	139.62%
Water Sales - Tampa By-Pass Canal	267,914	1,290,594	1,290,594	1,210,021	93.76%
Rate Stabilization (Note 1)	834,227	10,010,721	29,475,929	23,636,344	80.19%
TOTAL OPERATING REVENUE	17,458,150	213,854,139	233,319,347	108,385,598	46.45%
OPERATING EXPENSES:					
FIXED OPERATING EXPENSE:					
Personnel Services	1,897,748	27,964,100	27,964,100	9,550,690	34.15%
Materials & Supplies	156,133	3,063,969	3,330,604	1,212,541	36.41%
Members Water Quality costs	4,000	48,000	48,000	20,000	41.67%
Legal Services	373,441	600,000	626,233	723,472	115.53%
Professional Services	2,594,692	32,364,630	43,072,008	11,880,150	27.58%
Repairs & Other Services	614,604	9,433,385	13,557,449	4,104,179	30.27%
Rent, Lease & Insurance	18,099	4,018,272	4,032,272	3,125,311	77.51%
TOTAL FIXED OPERATING EXPENSE	5,658,718	77,492,356	92,630,666	30,616,343	33.05%
VARIABLE OPERATING EXPENSE:					
Water Treatment Chemicals	1,730,286	26,194,508	26,576,729	9,077,646	34.16%
Electricity	1,414,627	20,071,653	21,641,154	6,245,920	28.86%
Water for Resale	40,248	644,000	644,000	217,274	33.74%
TOTAL VARIABLE OPERATING EXPENSE	3,185,161	46,910,161	48,861,883	15,540,841	31.81%
NON-OPERATING INCOME:					
Investment Income (Note 2)	626,046	5,075,001	5,075,001	2,600,636	51.24%
Investment Income-Unrealized Gain/(Loss)	280,352	0	0	548,613	0.00%
Miscellaneous	3,654	0	0	261,034	0.00%
Litigation Recoveries	0	0	0	9,732	0.00%
Capital Contributions (Grants)	0	0	0	0	0.00%
TOTAL NON-OPERATING INCOME	910,053	5,075,001	5,075,001	3,420,015	67.39%
NON-OPERATING EXPENSES:					
Bond Issue Cost	0	0	0	0	0.00%
Interest - Acquisition Credits	116,727	1,400,725	1,400,725	583,635	41.67%
Interest - Bonds	4,106,139	48,483,565	48,483,565	20,530,693	42.35%
TOTAL NON-OPERATING EXPENSES	4,222,866	49,884,290	49,884,290	21,114,329	42.33%
Excess of Revenues over Expenditures before Capital Transactions	5,301,458	44,642,333	47,017,508	44,534,100	94.72%
OTHER EXPENDITURES:					
Principal - Acquisition Credits	735,903	8,830,833	8,830,833	3,679,514	41.67%
Principal - Bonds	2,800,750	35,114,000	35,114,000	14,003,750	39.88%
Capital Expenditures	0	1,197,500	3,572,677	577,256	16.16%
TOTAL OTHER EXPENDITURES	3,536,653	45,142,333	47,517,510	18,260,520	38.43%
RESERVES					
O&M Reserve Fund Use (Note 3)	0	500,000	500,000	500,000	100.00%
O&M Reserve Funding	0	0	0	0	0.00%
NET RESERVE ACTIVITY	0	500,000	500,000	500,000	100.00%
Excess Revenue over Expenditures/(Expenditures over Revenue)	**1,764,805**			**26,773,580**	
Encumbrances as of 02/28/2026					**66,054,600**

Note 1 - Rate stabilization year to date actual reflects 5/12th of the approved budget transfer of $10,010,721, plus the carried forward purchase orders of $12,387,843, and $7,077,367 of FY25 unencumbered funds carried forward into FY26, as approved by the Board.
Note 2 - Investment income actuals includes revenue earned and realized gains/losses on investments. Unrealized gains/losses are reflected separately.
Note 3 - Represents Board approved use of Reserves reflected in FY26 Budget.

TAMPA BAY WATER - UNIFORM RATE BASIS
Statement of Revenues and Expenditures
49.86% Fiscal Year Completed
March 31, 2026

	Current Month Actual	Original Budget	Revised Budget	Year to Date (YTD) Actual	YTD Actual % of Revised Budget
OPERATING REVENUE:					
Operating Grant - SWFWMD	0	500,000	500,000	27,695	5.54%
Water Sales - Fixed	12,922,305	155,067,663	155,067,663	77,533,831	50.00%
Water Sales - Variable	3,690,332	46,910,161	46,910,161	22,485,628	47.93%
Water Sales - Other	6,250	75,000	75,000	110,966	147.95%
Water Sales - Tampa By-Pass Canal	0	1,290,594	1,290,594	1,210,021	93.76%
Rate Stabilization (Note 1)	834,227	10,010,721	29,475,929	24,470,571	83.02%
TOTAL OPERATING REVENUE	17,453,114	213,854,139	233,319,347	125,838,712	53.93%
OPERATING EXPENSES:					
FIXED OPERATING EXPENSE:					
Personnel Services	1,843,899	27,964,100	27,964,100	11,394,590	40.75%
Materials & Supplies	182,176	3,063,969	3,330,604	1,394,716	41.88%
Members Water Quality costs	4,000	48,000	48,000	24,000	50.00%
Legal Services	31,203	600,000	626,233	754,675	120.51%
Professional Services	1,876,335	32,364,630	43,072,008	13,756,485	31.94%
Repairs & Other Services	784,646	9,433,385	13,557,449	4,888,826	36.06%
Rent, Lease & Insurance	21,061	4,018,272	4,032,272	3,146,372	78.03%
TOTAL FIXED OPERATING EXPENSE	4,743,321	77,492,356	92,630,666	35,359,664	38.17%
VARIABLE OPERATING EXPENSE:					
Water Treatment Chemicals	1,485,254	26,194,508	26,576,729	10,562,901	39.74%
Electricity	1,597,884	20,071,653	21,641,154	7,843,804	36.24%
Water for Resale	0	644,000	644,000	217,274	33.74%
TOTAL VARIABLE OPERATING EXPENSE	3,083,138	46,910,161	48,861,883	18,623,979	38.12%
NON-OPERATING INCOME:					
Investment Income (Note 2)	608,895	5,075,001	5,075,001	3,209,531	63.24%
Investment Income-Unrealized Gain/(Loss)	(1,271,068)	0	0	(722,455)	0.00%
Miscellaneous	71,551	0	0	332,585	0.00%
Litigation Recoveries	0	0	0	9,732	0.00%
Capital Contributions (Grants)	0	0	0	0	0.00%
TOTAL NON-OPERATING INCOME	-590,621	5,075,001	5,075,001	2,829,394	55.75%
NON-OPERATING EXPENSES:					
Bond Issue Cost	0	0	0	0	0.00%
Interest - Acquisition Credits	116,727	1,400,725	1,400,725	700,362	50.00%
Interest - Bonds	4,106,139	48,483,565	48,483,565	24,636,832	50.81%
TOTAL NON-OPERATING EXPENSES	4,222,866	49,884,290	49,884,290	25,337,194	50.79%
Excess of Revenues over Expenditures before Capital Transactions	4,813,168	44,642,333	47,017,508	49,347,268	104.96%
OTHER EXPENDITURES:					
Principal - Acquisition Credits	735,903	8,830,833	8,830,833	4,415,416	50.00%
Principal - Bonds	2,800,750	35,114,000	35,114,000	16,804,500	47.86%
Capital Expenditures	220,517	1,197,500	3,572,677	797,773	22.33%
TOTAL OTHER EXPENDITURES	3,757,170	45,142,333	47,517,510	22,017,689	46.34%
RESERVES					
O&M Reserve Fund Use (Note 3)	0	500,000	500,000	500,000	100.00%
O&M Reserve Funding	0	0	0	0	0.00%
NET RESERVE ACTIVITY	0	500,000	500,000	500,000	100.00%
Excess Revenue over Expenditures/(Expenditures over Revenue)	**1,055,999**			**27,829,579**	
Encumbrances as of 03/31/2026					**61,491,078**

Financial Statements completed on 04.03.2026. Still missing some month end Journal Entries for March 2026

Note 1 - Rate stabilization year to date actual reflects 6/12th of the approved budget transfer of $10,010,721, plus the carried forward purchase orders of $12,387,843, and $7,077,367 of FY25 unencumbered funds carried forward into FY26, as approved by the Board.

Note 2 - Investment income actuals includes revenue earned and realized gains/losses on investments. Unrealized gains/losses are reflected separately.

Note 3 - Represents Board approved use of Reserves reflected in FY26 Budget.

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.7

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Investment Schedules for February and March 2026 - *Receive Report*

SUMMARY

The attached investment statements and reports provide details of Tampa Bay Water's investments for February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

The attached Chandler Asset Management Consolidated Statement and Bond Market Review provide a monthly summary of the agency's asset allocations and the drivers of the economy that may affect investment performance.

Chandler Asset Management, the Board's contracted investment advisor, manages a portion of the agency's funds to earn a higher return, without sacrificing or risking principal.

As of March 31, 2026, the funds currently managed by Chandler Asset Management had a Market Value $182,259,106 and are detailed in the attached statement. all the investments are held in a third-party trust account with US Bank as custodian.

As of March 31, 2026, the Agency had $617,599,985 held in deposit accounts or certificates of deposits with multiple banking institutions, with interest rates ranging from 2.07% to 3.70%. In addition, these banking institutions participate in the State of Florida Public Funds pool and are designated Public Funds. Under this program, each participating bank is required to post collateral with the State at a percentage of the amount of Public Funds held by that bank. The percentage of collateral required is determined by the State and may vary by institution. Of the funds held by Tampa Bay Water, 93% are restricted as to purpose. An additional $30.6 million in the Utility Reserve Fund is not restricted as to purpose but must be maintained at levels sufficient to ensure compliance with debt coverage requirements.

BACKGROUND

Resolution 2017-002 approves the Agency's Investment Policy.

US Government Securities - Treasuries (100%) - Collective term used to describe debt instruments backed by the US Government and issued through the US Department of Treasure.

US Government Agency (50%) – A debt instrument issued by one of the Federal Agencies.

Federal Instrumentalities (80%) - A government sponsored/owned entity created by US Congress.

Mortgage-Backed Securities (20%) – An ownership interest in a pool of mortgage loans made by financial institutions to finance the borrower's purchase of a home or other real estate.

Repurchase Agreements (50%) - A short-term investment vehicle where an investor agrees to buy securities from a counterparty and simultaneously agrees to resell the securities back to the counterparty at an agreed upon time for an agreed upon price.

Commercial Paper (25%) – Short term unsecured promissory note issued by a company or financial institution. Issued at a discount and matures for par or face value.

Corporate Note (25%) – A debt instrument issued by a corporation with a maturity of greater than one year and less than ten years.

Bankers' Acceptances (25%) – A draft or bill of exchange drawn upon and accepted by a bank.

Municipal Note/Bond (20%) – A debt instrument issued by a state, local government or public agency.

Supranationals (15%) – A debt instrument issued by the International Bank for Reconstruction and Development, International Finance Corporation or Inter-American Development Bank.

Money Market Mutual Funds (50%) – Market in which short-term debt instruments are issued/traded.

Intergovernmental Investment Pool (25%) – An investment by local governments in which their money is pooled as a method for managing local funds.

Attachments (4)

Investment Schedule for February 2026 (1 of 2)
Investment Schedule for February 2026 (2 of 2)
Investment Schedule for March 2026 (1 of 2)
Investment Schedule for March 2026 (2 of 2)

Portfolio Summary

02/01/2026 - 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

Portfolio Characteristics

	Portfolio
Average Modified Duration	1.70
Average Coupon Rate*	3.978
Average Purchase YTM	4.17
Average Market YTM	3.57
Average Credit Quality	AA
Average Final Maturity	1.89
Average Life	1.80

Footnote: 1

Account Summary

	Portfolio
Beginning Market Value	180,342,354.17
Ending Market Value	181,266,798.82
Beginning Accrued Balance	1,849,476.54
Ending Accrued Balance	1,836,927.43
Beginning Total Market Value	182,191,830.71
Ending Total Market Value	182,921,621.53
Beginning Current Par	179,396,364.13
Ending Current Par	179,994,924.51
Beginning Book Value	178,954,033.62
Ending Book Value	179,594,599.97
Beginning Original Cost	178,458,000.73
Ending Original Cost	179,104,831.93

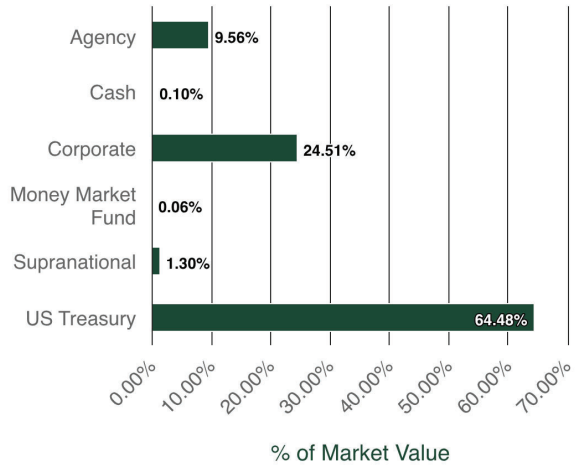
Footnotes: 2,3,4,5

Top Issuers

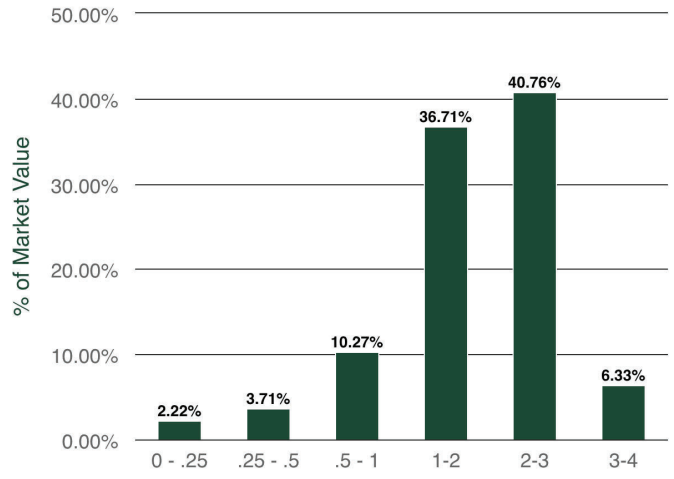
Issuer	% of Market Value
United States	64.48%
Farm Credit System	4.83%
Federal Home Loan Banks	4.72%
JPMorgan Chase & Co.	1.70%
The Home Depot, Inc.	1.54%
Blackrock, Inc.	1.51%
State Street Corporation	1.20%
Wells Fargo & Company	1.13%
Morgan Stanley	1.12%
The Goldman Sachs Group, Inc.	1.03%

Footnotes: 6,7,8

Sector Allocation



Maturity Distribution



Credit Quality*



Chart calculated by: Market Value

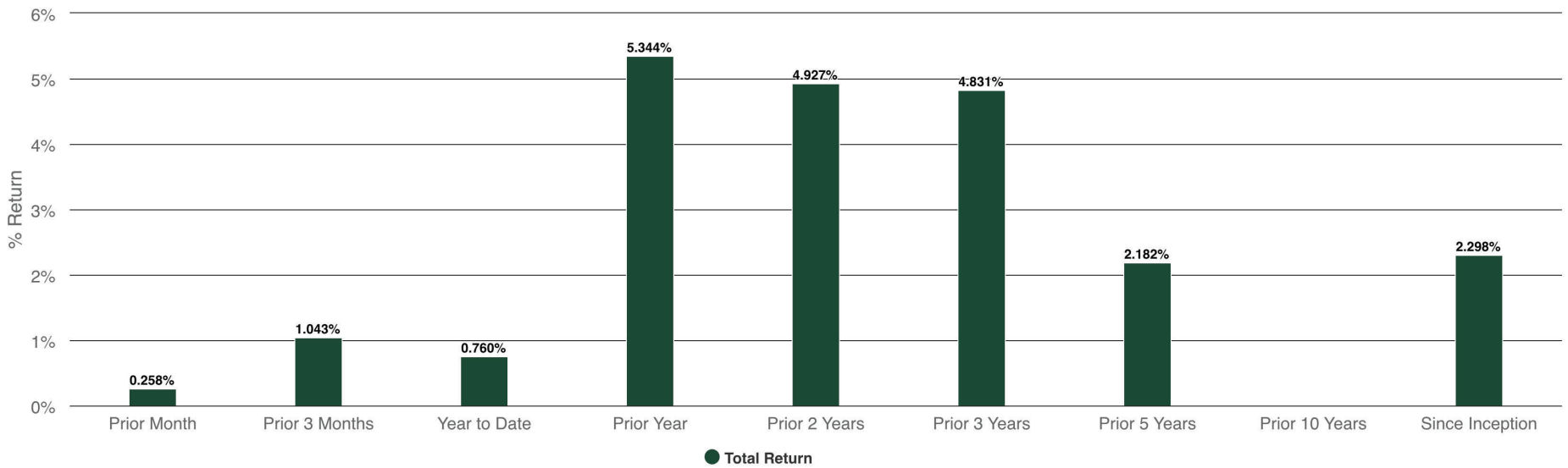
Portfolio Summary

02/01/2026 - 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

Performance Review (Gross)



1: * Weighted by: Market Value. 2: * Weighted by: Ending Market Value. 3: * Formula Column: Beginning Accrued Balance = [Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]. 4: * Formula Column: Ending Accrued Balance = [Ending Due and Accrued]+[Ending Cash Mutual Fund Dividend Receivable]. 5: * Formula Column: Beginning Total Market Value = [Beginning Market Value]+([Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]). 6: * Grouped by: Issuer. 7: * Groups Sorted by: % of Market Value. 8: * Weighted by: Ending Total Market Value.

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
3130ATS57	Agency	FEDERAL HOME LOAN BANKS 4.5 03/10/2028	03/10/2028 2.030	600,000.00 04/20/2023 618,726.00	4.50	600,000.00	102.1312	612,787.20 12,825.00 625,612.20	Aa1 AA+ AA+
3130ATUS4	Agency	FEDERAL HOME LOAN BANKS 4.25 12/10/2027	12/10/2027 1.780	450,000.00 05/18/2023 457,983.00	4.25	450,000.00	101.3973	456,287.85 4,303.13 460,590.97	Aa1 AA+ AA+
3130AV6J6	Agency	FEDERAL HOME LOAN BANKS 4.5 03/13/2026	03/13/2026 0.036	1,600,000.00 --- 1,624,390.00	4.50	1,600,000.00	100.0226	1,600,361.60 33,600.00 1,633,961.60	Aa1 AA+ AA+
3130AWLZ1	Agency	FEDERAL HOME LOAN BANKS 4.75 06/12/2026	06/12/2026 0.285	1,650,000.00 08/28/2023 1,645,297.50	4.75	1,650,000.00	100.2819	1,654,651.35 17,198.96 1,671,850.31	Aa1 AA+ AA+
3133EPC60	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/15/2027	11/15/2027 1.712	2,150,000.00 11/09/2023 2,142,023.50	4.63	2,150,000.00	101.8899	2,190,632.85 29,278.82 2,219,911.67	Aa1 AA+ AA+
3130AXU63	Agency	FEDERAL HOME LOAN BANKS 4.625 11/17/2026	11/17/2026 0.717	1,100,000.00 11/29/2023 1,104,400.00	4.63	1,100,000.00	100.6837	1,107,520.70 14,697.22 1,122,217.92	Aa1 AA+ AA+
3133EPH81	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 10/04/2027	10/04/2027 1.597	1,800,000.00 12/07/2023 1,812,906.00	4.50	1,800,000.00	101.5844	1,828,519.20 33,075.00 1,861,594.20	Aa1 AA+ AA+
3133ERFJ5	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 05/20/2027	05/20/2027 1.222	3,700,000.00 --- 3,697,095.00	4.50	3,700,000.00	101.1199	3,741,436.30 46,712.50 3,788,148.80	Aa1 AA+ AA+
3130AWN63	Agency	FEDERAL HOME LOAN BANKS 4.0 06/30/2028	06/30/2028 2.337	1,600,000.00 07/18/2023 1,593,696.00	4.00	1,600,000.00	101.4389	1,623,022.40 10,844.44 1,633,866.84	Aa1 AA+ AA+
3130AYPN0	Agency	FEDERAL HOME LOAN BANKS 4.125 01/15/2027	01/15/2027 0.879	1,000,000.00 01/29/2024 998,860.00	4.13	1,000,000.00	100.4588	1,004,588.00 5,270.83 1,009,858.83	Aa1 AA+ AA+
3133EPNG6	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.375 06/23/2026	06/23/2026 0.315	1,000,000.00 06/20/2023 999,470.00	4.38	1,000,000.00	100.1932	1,001,932.00 8,263.89 1,010,195.89	Aa1 AA+ AA+
3130AWTQ3	Agency	FEDERAL HOME LOAN BANKS 4.625 09/11/2026	09/11/2026 0.534	500,000.00 09/27/2023 494,865.00	4.63	500,000.00	100.4875	502,437.50 10,920.14 513,357.64	Aa1 AA+ AA+
CCYUSD	Cash	Receivable	02/28/2026 0.000	176,585.55 --- 176,585.55	0.00	176,585.55	1.0000	176,585.55 0.00 176,585.55	Aaa AAA AAA
26444HAC5	Corporate	DUKE ENERGY FLORIDA LLC 3.2 01/15/2027	01/15/2027 0.879	850,000.00 05/16/2024 810,866.00	3.20	850,000.00	99.5209	845,927.65 3,475.56 849,403.21	A1 A WR
38141GWZ3	Corporate	GOLDMAN SACHS GROUP INC 4.223 05/01/2029	05/01/2029 3.170	1,150,000.00 --- 1,149,694.00	4.22	1,150,000.00	100.2957	1,153,400.55 16,188.17 1,169,588.72	A2 BBB+ A
74456QBU9	Corporate	PUBLIC SERVICE ELECTRIC AND GAS CO 3.7 05/01/2028	05/01/2028 2.172	1,300,000.00 05/20/2025 1,276,964.00	3.70	1,300,000.00	99.7345	1,296,548.50 16,033.33 1,312,581.83	A1 A WR
89236TFT7	Corporate	TOYOTA MOTOR CREDIT CORP 3.65 01/08/2029	01/08/2029 2.862	1,800,000.00 --- 1,785,797.00	3.65	1,800,000.00	99.8766	1,797,778.80 9,672.50 1,807,451.30	A1 A+ A+
74460DAD1	Corporate	PUBLIC STORAGE OPERATING CO 3.385 05/01/2029	05/01/2029 3.170	700,000.00 01/28/2026 686,202.00	3.38	700,000.00	98.7090	690,963.00 7,898.33 698,861.33	A2 A NA
74340XBL4	Corporate	PROLOGIS LP 4.375 02/01/2029	02/01/2029 2.928	175,000.00 02/12/2026 177,101.75	4.38	175,000.00	101.2925	177,261.88 638.02 177,899.90	A2 A WR
91324PEY4	Corporate	UNITEDHEALTH GROUP INC 4.6 04/15/2027	04/15/2027 1.126	350,000.00 07/03/2024 347,910.50	4.60	350,000.00	100.7827	352,739.45 6,082.22 358,821.67	A2 A+ A

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
89115A2W1	Corporate	TORONTO-DOMINION BANK 4.98 04/05/2027	04/05/2027 1.099	500,000.00 --- 496,150.75	4.98	500,000.00	101.2466	506,233.00 10,098.33 516,331.33	A2 A- AA-
14913UAL4	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 5.0 05/14/2027	05/14/2027 1.205	800,000.00 --- 800,744.00	5.00	800,000.00	101.5718	812,574.40 11,888.89 824,463.29	A2 A A+
437076DB5	Corporate	HOME DEPOT INC 4.875 06/25/2027	06/25/2027 1.320	2,750,000.00 --- 2,746,480.50	4.88	2,750,000.00	101.4804	2,790,711.00 24,578.13 2,815,289.13	A2 A A
09290DAH4	Corporate	BLACKROCK INC 4.6 07/26/2027	07/26/2027 1.405	2,710,000.00 --- 2,712,067.80	4.60	2,710,000.00	101.2434	2,743,696.14 12,119.72 2,755,815.86	Aa3 AA- NA
532457CP1	Corporate	ELI LILLY AND CO 4.15 08/14/2027	08/14/2027 1.457	1,750,000.00 08/13/2024 1,752,240.00	4.15	1,750,000.00	100.7248	1,762,684.00 3,429.51 1,766,113.51	Aa3 A+ NA
46647PEU6	Corporate	JPMORGAN CHASE & CO 4.915 01/24/2029	01/24/2029 2.906	1,555,000.00 --- 1,555,339.50	4.92	1,555,000.00	101.8260	1,583,394.30 7,855.13 1,591,249.43	A1 A AA-
857477CU5	Corporate	STATE STREET CORP 4.536 02/28/2028	02/28/2028 2.000	1,150,000.00 --- 1,149,977.50	4.54	1,150,000.00	101.5704	1,168,059.60 434.70 1,168,494.30	Aa3 A AA-
06405LAH4	Corporate	BANK OF NEW YORK MELLON 4.729 04/20/2029	04/20/2029 3.140	1,300,000.00 05/14/2025 1,306,422.00	4.73	1,300,000.00	101.7060	1,322,178.00 22,370.80 1,344,548.80	Aa2 AA- AA
025816ED7	Corporate	AMERICAN EXPRESS CO 4.731 04/25/2029	04/25/2029 3.153	1,500,000.00 05/01/2025 1,511,415.00	4.73	1,500,000.00	101.6562	1,524,843.00 24,837.75 1,549,680.75	A2 A- A
58989V2M5	Corporate	MET TOWER GLOBAL FUNDING 4.0 01/14/2029	01/14/2029 2.879	1,705,000.00 --- 1,702,518.55	4.00	1,705,000.00	100.1482	1,707,526.81 8,903.89 1,716,430.70	Aa3 AA- AA-
06406RCG0	Corporate	BANK OF NEW YORK MELLON CORP 4.026 01/22/2030	01/22/2030 3.898	105,000.00 01/14/2026 105,000.00	4.03	105,000.00	100.1659	105,174.20 457.96 105,632.15	Aa3 A AA-
61748UAR3	Corporate	MORGAN STANLEY 4.238 01/09/2030	01/09/2030 3.862	300,000.00 01/22/2026 299,937.00	4.24	300,000.00	100.3498	301,049.40 1,447.98 302,497.38	A1 A- A+
95000U4D2	Corporate	WELLS FARGO & CO 4.182 01/23/2030	01/23/2030 3.901	1,485,000.00 --- 1,485,121.65	4.18	1,485,000.00	100.3544	1,490,262.84 6,555.28 1,496,818.13	A1 BBB+ A+
92826CAY8	Corporate	VISA INC 3.8 02/12/2029	02/12/2029 2.958	1,400,000.00 02/03/2026 1,398,390.00	3.80	1,400,000.00	100.4999	1,406,998.60 2,807.78 1,409,806.38	Aa3 AA- NA
02079KBJ5	Corporate	ALPHABET INC 3.7 02/15/2029	02/15/2029 2.966	440,000.00 02/09/2026 438,402.80	3.70	440,000.00	100.0968	440,425.92 814.00 441,239.92	Aa2 AA+ NA
46647PAV8	Corporate	JPMORGAN CHASE & CO 4.203 07/23/2029	07/23/2029 3.397	800,000.00 09/04/2025 802,728.00	4.20	800,000.00	100.4329	803,463.20 3,549.20 807,012.40	A1 A AA-
89115A2C5	Corporate	TORONTO-DOMINION BANK 4.108 06/08/2027	06/08/2027 1.274	1,000,000.00 03/07/2024 975,470.00	4.11	1,000,000.00	100.3700	1,003,700.00 9,471.22 1,013,171.22	A2 A- NA
341081GN1	Corporate	FLORIDA POWER & LIGHT CO 4.4 05/15/2028	05/15/2028 2.211	1,300,000.00 --- 1,305,816.00	4.40	1,300,000.00	101.2759	1,316,586.70 16,842.22 1,333,428.92	Aa2 A+ AA-
857477CN1	Corporate	STATE STREET CORP 4.53 02/20/2029	02/20/2029 2.980	1,000,000.00 05/20/2025 1,000,930.00	4.53	1,000,000.00	101.3490	1,013,490.00 1,384.17 1,014,874.17	Aa3 A AA-
61690DK72	Corporate	MORGAN STANLEY BANK NA 5.016 01/12/2029	01/12/2029 2.873	1,100,000.00 01/16/2025 1,100,946.00	5.02	1,100,000.00	101.9266	1,121,192.60 7,510.07 1,128,702.67	Aa3 A+ AA-

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
06051GMK2	Corporate	BANK OF AMERICA CORP 4.979 01/24/2029	01/24/2029 2.906	1,075,000.00 01/17/2025 1,075,000.00	4.98	1,075,000.00	101.7866	1,094,205.95 5,501.10 1,099,707.05	A1 A- AA-
40139LBM4	Corporate	GUARDIAN LIFE GLOBAL FUNDING 4.066 09/05/2028	09/05/2028 2.520	1,200,000.00 11/12/2025 1,200,948.00	4.07	1,200,000.00	100.3954	1,204,744.80 23,853.87 1,228,598.67	Aa1 AA+ NA
69371RU20	Corporate	PACCAR FINANCIAL CORP 4.0 11/07/2028	11/07/2028 2.693	825,000.00 11/05/2025 824,538.00	4.00	825,000.00	100.7301	831,023.32 10,450.00 841,473.32	A1 A+ NA
14913UBD1	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 3.95 11/14/2028	11/14/2028 2.712	850,000.00 11/10/2025 849,549.50	3.95	850,000.00	100.5451	854,633.35 9,979.24 864,612.59	A2 A A+
023135CS3	Corporate	AMAZON.COM INC 3.9 11/20/2028	11/20/2028 2.728	985,000.00 11/17/2025 984,783.30	3.90	985,000.00	100.5449	990,367.27 10,777.54 1,001,144.81	A1 AA AA-
63743HGE6	Corporate	NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORP 4.05 02/09/2029	02/09/2029 2.950	1,200,000.00 --- 1,204,736.00	4.05	1,200,000.00	100.4865	1,205,838.00 2,970.00 1,208,808.00	A2 NA A
91324PCW0	Corporate	UNITEDHEALTH GROUP INC 3.45 01/15/2027	01/15/2027 0.879	500,000.00 03/07/2024 483,735.00	3.45	500,000.00	99.7138	498,569.00 2,204.17 500,773.17	A2 A+ A
74460WAD9	Corporate	PUBLIC STORAGE OPERATING CO 1.85 05/01/2028	05/01/2028 2.172	500,000.00 06/09/2025 466,315.00	1.85	500,000.00	95.9460	479,730.00 3,083.33 482,813.33	A2 A NA
61747YER2	Corporate	MORGAN STANLEY 4.21 04/20/2028	04/20/2028 2.142	600,000.00 01/16/2025 591,414.00	4.21	600,000.00	100.1916	601,149.60 9,191.83 610,341.43	A1 A- A+
46647PDA1	Corporate	JPMORGAN CHASE & CO 4.323 04/26/2028	04/26/2028 2.159	700,000.00 01/16/2025 692,055.00	4.32	700,000.00	100.3409	702,386.30 10,507.29 712,893.59	A1 A AA-
06051GKP3	Corporate	BANK OF AMERICA CORP 4.376 04/27/2028	04/27/2028 2.162	700,000.00 08/20/2025 701,001.00	4.38	700,000.00	100.4575	703,202.50 10,551.02 713,753.52	A1 A- AA-
38141GZU1	Corporate	GOLDMAN SACHS GROUP INC 4.482 08/23/2028	08/23/2028 2.485	700,000.00 08/20/2025 702,758.00	4.48	700,000.00	100.6817	704,771.90 697.20 705,469.10	A2 BBB+ A
69371RS56	Corporate	PACCAR FINANCIAL CORP 5.05 08/10/2026	08/10/2026 0.446	165,000.00 08/24/2023 164,825.10	5.05	165,000.00	100.4838	165,798.27 486.06 166,284.33	A1 A+ NA
24422EXF1	Corporate	JOHN DEERE CAPITAL CORP 4.5 01/08/2027	01/08/2027 0.860	550,000.00 01/11/2024 549,840.50	4.50	550,000.00	100.6518	553,584.90 3,643.75 557,228.65	A1 A A+
17275RBQ4	Corporate	CISCO SYSTEMS INC 4.8 02/26/2027	02/26/2027 0.994	500,000.00 --- 499,662.90	4.80	500,000.00	100.9609	504,804.50 333.33 505,137.83	A1 AA- NA
24422EXZ7	Corporate	JOHN DEERE CAPITAL CORP 4.65 01/07/2028	01/07/2028 1.857	475,000.00 01/06/2025 474,857.50	4.65	475,000.00	101.8565	483,818.38 3,313.13 487,131.50	A1 A A+
95000U3R2	Corporate	WELLS FARGO & CO 4.9 01/24/2028	01/24/2028 1.903	550,000.00 01/16/2025 550,000.00	4.90	550,000.00	100.7888	554,338.40 2,769.86 557,108.26	A1 BBB+ A+
26442UAT1	Corporate	DUKE ENERGY PROGRESS LLC 4.35 03/06/2027	03/06/2027 1.016	500,000.00 03/03/2025 500,135.00	4.35	500,000.00	100.6663	503,331.50 10,572.92 513,904.42	Aa3 A NA
66815L2X6	Corporate	NORTHWESTERN MUTUAL GLOBAL FUNDING 4.125 08/25/2028	08/25/2028 2.490	550,000.00 12/10/2025 551,677.50	4.13	550,000.00	100.6625	553,643.75 378.13 554,021.88	Aa1 AA+ AAA
31846V203	Money Market Fund	FIRST AMER:GVT OBLG Y	02/28/2026 0.000	103,338.96 --- 103,338.96	3.31	103,338.96	1.0000	103,338.96 0.00 103,338.96	Aaa AAAm AAA

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
459058KT9	Supranational	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028	07/12/2028 2.370	1,300,000.00 07/07/2023 1,242,982.00	3.50	1,300,000.00	100.2115	1,302,749.50 6,193.06 1,308,942.56	Aaa AAA NA
45950KDD9	Supranational	INTERNATIONAL FINANCE CORP 4.5 07/13/2028	07/13/2028 2.372	1,020,000.00 07/06/2023 1,018,867.80	4.50	1,020,000.00	102.4503	1,044,993.06 6,120.00 1,051,113.06	Aaa AAA NA
91282CEF4	US Treasury	UNITED STATES TREASURY 2.5 03/31/2027	03/31/2027 1.085	3,300,000.00 --- 3,081,140.63	2.50	3,300,000.00	98.9453	3,265,194.90 34,450.55 3,299,645.45	Aa1 AA+ AA+
91282CFU0	US Treasury	UNITED STATES TREASURY 4.125 10/31/2027	10/31/2027 1.671	1,650,000.00 09/07/2023 1,625,378.91	4.13	1,650,000.00	101.1211	1,668,498.15 22,750.17 1,691,248.32	Aa1 AA+ AA+
91282CFZ9	US Treasury	UNITED STATES TREASURY 3.875 11/30/2027	11/30/2027 1.753	3,570,000.00 --- 3,587,190.62	3.88	3,570,000.00	100.7734	3,597,610.38 34,584.38 3,632,194.75	Aa1 AA+ AA+
91282CGC9	US Treasury	UNITED STATES TREASURY 3.875 12/31/2027	12/31/2027 1.838	2,100,000.00 01/20/2023 2,129,613.28	3.88	2,100,000.00	100.8242	2,117,308.20 13,487.57 2,130,795.77	Aa1 AA+ AA+
91282CGH8	US Treasury	UNITED STATES TREASURY 3.5 01/31/2028	01/31/2028 1.923	3,400,000.00 --- 3,383,730.48	3.50	3,400,000.00	100.1914	3,406,507.60 9,533.15 3,416,040.75	Aa1 AA+ AA+
91282CHA2	US Treasury	UNITED STATES TREASURY 3.5 04/30/2028	04/30/2028 2.170	2,400,000.00 05/12/2023 2,406,750.00	3.50	2,400,000.00	100.2188	2,405,251.20 28,077.35 2,433,328.55	Aa1 AA+ AA+
91282CHK0	US Treasury	UNITED STATES TREASURY 4.0 06/30/2028	06/30/2028 2.337	750,000.00 02/04/2025 743,115.23	4.00	750,000.00	101.3828	760,371.00 4,972.38 765,343.38	Aa1 AA+ AA+
91282CHX2	US Treasury	UNITED STATES TREASURY 4.375 08/31/2028	08/31/2028 2.507	2,625,000.00 --- 2,632,719.72	4.38	2,625,000.00	102.3438	2,686,524.75 312.08 2,686,836.83	Aa1 AA+ AA+
91282CJW2	US Treasury	UNITED STATES TREASURY 4.0 01/31/2029	01/31/2029 2.925	2,700,000.00 --- 2,673,058.60	4.00	2,700,000.00	101.6719	2,745,141.30 8,651.93 2,753,793.23	Aa1 AA+ AA+
91282CKA8	US Treasury	UNITED STATES TREASURY 4.125 02/15/2027	02/15/2027 0.964	2,950,000.00 --- 2,923,935.55	4.13	2,950,000.00	100.5398	2,965,924.10 4,706.15 2,970,630.25	Aa1 AA+ AA+
91282CKD2	US Treasury	UNITED STATES TREASURY 4.25 02/28/2029	02/28/2029 3.000	750,000.00 02/04/2025 747,685.55	4.25	750,000.00	102.4102	768,076.50 86.62 768,163.12	Aa1 AA+ AA+
91282CKE0	US Treasury	UNITED STATES TREASURY 4.25 03/15/2027	03/15/2027 1.041	2,050,000.00 04/30/2024 2,016,287.11	4.25	2,050,000.00	100.7468	2,065,309.40 40,193.02 2,105,502.42	Aa1 AA+ AA+
91282CKG5	US Treasury	UNITED STATES TREASURY 4.125 03/31/2029	03/31/2029 3.085	3,250,000.00 --- 3,192,529.30	4.13	3,250,000.00	102.1016	3,318,302.00 55,982.14 3,374,284.14	Aa1 AA+ AA+
91282CKJ9	US Treasury	UNITED STATES TREASURY 4.5 04/15/2027	04/15/2027 1.126	3,800,000.00 04/25/2024 3,763,039.07	4.50	3,800,000.00	101.0859	3,841,264.20 64,359.89 3,905,624.09	Aa1 AA+ AA+
91282CKR1	US Treasury	UNITED STATES TREASURY 4.5 05/15/2027	05/15/2027 1.208	1,400,000.00 --- 1,397,375.00	4.50	1,400,000.00	101.1758	1,416,461.20 18,447.51 1,434,908.71	Aa1 AA+ AA+
91282CKX8	US Treasury	UNITED STATES TREASURY 4.25 06/30/2029	06/30/2029 3.334	750,000.00 02/04/2025 747,158.20	4.25	750,000.00	102.5977	769,482.75 5,283.15 774,765.90	Aa1 AA+ AA+
91282CMN8	US Treasury	UNITED STATES TREASURY 4.25 02/15/2028	02/15/2028 1.964	4,850,000.00 --- 4,831,451.17	4.25	4,850,000.00	101.6016	4,927,677.60 7,971.69 4,935,649.29	Aa1 AA+ AA+
91282CMS7	US Treasury	UNITED STATES TREASURY 3.875 03/15/2028	03/15/2028 2.044	1,400,000.00 --- 1,395,664.07	3.88	1,400,000.00	100.9531	1,413,343.40 25,026.93 1,438,370.33	Aa1 AA+ AA+

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
91282CMW8	US Treasury	UNITED STATES TREASURY 3.75 04/15/2028	04/15/2028 2.129	2,900,000.00 04/17/2025 2,898,414.07	3.75	2,900,000.00	100.7266	2,921,071.40 40,930.63 2,962,002.03	Aa1 AA+ AA+
91282CNU1	US Treasury	UNITED STATES TREASURY 3.625 08/15/2028	08/15/2028 2.463	1,350,000.00 --- 1,350,029.30	3.63	1,350,000.00	100.5703	1,357,699.05 1,892.61 1,359,591.66	Aa1 AA+ AA+
91282CNY3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2028	09/15/2028 2.548	2,800,000.00 --- 2,783,259.77	3.38	2,800,000.00	99.9648	2,799,014.40 43,595.30 2,842,609.70	Aa1 AA+ AA+
91282CPB1	US Treasury	UNITED STATES TREASURY 3.5 09/30/2027	09/30/2027 1.586	750,000.00 01/15/2026 749,179.69	3.50	750,000.00	100.1094	750,820.50 10,961.54 761,782.04	Aa1 AA+ AA+
91282CPC9	US Treasury	UNITED STATES TREASURY 3.5 10/15/2028	10/15/2028 2.630	4,150,000.00 --- 4,145,966.79	3.50	4,150,000.00	100.2734	4,161,346.10 54,668.27 4,216,014.37	Aa1 AA+ AA+
91282CPK1	US Treasury	UNITED STATES TREASURY 3.5 11/15/2028	11/15/2028 2.715	1,750,000.00 --- 1,748,378.91	3.50	1,750,000.00	100.2852	1,754,991.00 17,935.08 1,772,926.08	Aa1 AA+ AA+
91282CPP0	US Treasury	UNITED STATES TREASURY 3.5 12/15/2028	12/15/2028 2.797	3,700,000.00 --- 3,693,796.87	3.50	3,700,000.00	100.2969	3,710,985.30 27,038.46 3,738,023.76	Aa1 AA+ AA+
91282CPT2	US Treasury	UNITED STATES TREASURY 3.5 01/15/2029	01/15/2029 2.882	1,850,000.00 --- 1,844,146.48	3.50	1,850,000.00	100.3047	1,855,636.95 8,049.03 1,863,685.98	Aa1 AA+ AA+
91282CGP0	US Treasury	UNITED STATES TREASURY 4.0 02/29/2028	02/29/2028 2.003	2,800,000.00 --- 2,784,195.32	4.00	2,800,000.00	101.1523	2,832,264.40 304.35 2,832,568.75	Aa1 AA+ AA+
91282CGT2	US Treasury	UNITED STATES TREASURY 3.625 03/31/2028	03/31/2028 2.088	2,000,000.00 09/18/2025 2,003,046.88	3.63	2,000,000.00	100.4648	2,009,296.00 30,274.73 2,039,570.73	Aa1 AA+ AA+
91282CHE4	US Treasury	UNITED STATES TREASURY 3.625 05/31/2028	05/31/2028 2.255	2,000,000.00 08/20/2025 1,997,031.25	3.63	2,000,000.00	100.5039	2,010,078.00 18,125.00 2,028,203.00	Aa1 AA+ AA+
91282CJC6	US Treasury	UNITED STATES TREASURY 4.625 10/15/2026	10/15/2026 0.627	1,700,000.00 10/30/2023 1,687,382.81	4.63	1,700,000.00	100.6023	1,710,239.10 29,592.38 1,739,831.48	Aa1 AA+ AA+
91282CJN2	US Treasury	UNITED STATES TREASURY 4.375 11/30/2028	11/30/2028 2.756	1,550,000.00 12/14/2023 1,585,662.11	4.38	1,550,000.00	102.5508	1,589,537.40 16,953.13 1,606,490.52	Aa1 AA+ AA+
91282CKK6	US Treasury	UNITED STATES TREASURY 4.875 04/30/2026	04/30/2026 0.167	1,000,000.00 05/29/2024 997,968.75	4.88	1,000,000.00	100.1836	1,001,836.00 16,294.89 1,018,130.89	Aa1 AA+ AA+
91282CLG4	US Treasury	UNITED STATES TREASURY 3.75 08/15/2027	08/15/2027 1.460	2,300,000.00 09/26/2024 2,313,566.41	3.75	2,300,000.00	100.4297	2,309,883.10 3,335.64 2,313,218.74	Aa1 AA+ AA+
91282CLL3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2027	09/15/2027 1.545	5,000,000.00 --- 4,981,855.47	3.38	5,000,000.00	99.9063	4,995,315.00 77,848.76 5,073,163.76	Aa1 AA+ AA+
91282CLQ2	US Treasury	UNITED STATES TREASURY 3.875 10/15/2027	10/15/2027 1.627	2,250,000.00 10/18/2024 2,250,703.13	3.88	2,250,000.00	100.6953	2,265,644.25 32,815.08 2,298,459.33	Aa1 AA+ AA+
91282CLS8	US Treasury	UNITED STATES TREASURY 4.125 10/31/2026	10/31/2026 0.671	2,700,000.00 --- 2,698,179.68	4.13	2,700,000.00	100.3117	2,708,415.90 37,227.56 2,745,643.46	Aa1 AA+ AA+
912797QX8	US Treasury	UNITED STATES TREASURY 06/11/2026	06/11/2026 0.282	1,400,000.00 11/25/2025 1,372,822.21	0.00	1,400,000.00	99.0001	1,386,001.40 0.00 1,386,001.40	P-1 A-1+ F1+
91282CNH0	US Treasury	UNITED STATES TREASURY 3.875 06/15/2028	06/15/2028 2.296	2,400,000.00 --- 2,405,320.31	3.88	2,400,000.00	101.0820	2,425,968.00 19,417.58 2,445,385.58	Aa1 AA+ AA+

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

CUSIP	Security Type	Issue	Maturity Date, Years to F nal Mat t	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
91282CNM9	US Treasury	UNITED STATES TREASURY 3.875 07/15/2028	07/15/2028 2.378	2,800,000.00 07/15/2025 2,795,734.37	3.88	2,800,000.00	101.0977	2,830,735.60 13,487.57 2,844,223.17	Aa1 AA+ AA+
91282CNP2	US Treasury	UNITED STATES TREASURY 3.875 07/31/2027	07/31/2027 1.419	1,400,000.00 11/14/2025 1,405,414.06	3.88	1,400,000.00	100.5742	1,408,038.80 4,345.99 1,412,384.79	Aa1 AA+ AA+
91282CQA2	US Treasury	UNITED STATES TREASURY 3.5 02/15/2029	02/15/2029 2.966	3,600,000.00 02/26/2026 3,603,937.50	3.50	3,600,000.00	100.3125	3,611,250.00 4,872.93 3,616,122.93	Aa1 AA+ AA+
91282CET4	US Treasury	UNITED STATES TREASURY 2.625 05/31/2027	05/31/2027 1.252	1,100,000.00 12/14/2023 1,051,746.09	2.63	1,100,000.00	98.9531	1,088,484.10 7,218.75 1,095,702.85	Aa1 AA+ AA+
91282CEW7	US Treasury	UNITED STATES TREASURY 3.25 06/30/2027	06/30/2027 1.334	1,100,000.00 01/31/2024 1,073,015.63	3.25	1,100,000.00	99.7305	1,097,035.50 5,925.41 1,102,960.91	Aa1 AA+ AA+
91282CFB2	US Treasury	UNITED STATES TREASURY 2.75 07/31/2027	07/31/2027 1.419	1,000,000.00 04/25/2024 937,382.81	2.75	1,000,000.00	99.0391	990,391.00 2,203.04 992,594.04	Aa1 AA+ AA+
91282CFH9	US Treasury	UNITED STATES TREASURY 3.125 08/31/2027	08/31/2027 1.504	1,000,000.00 04/25/2024 947,695.31	3.13	1,000,000.00	99.5430	995,430.00 84.92 995,514.92	Aa1 AA+ AA+
91282CFM8	US Treasury	UNITED STATES TREASURY 4.125 09/30/2027	09/30/2027 1.586	1,000,000.00 04/25/2024 978,046.88	4.13	1,000,000.00	101.0625	1,010,625.00 17,225.27 1,027,850.27	Aa1 AA+ AA+
91282CHB0	US Treasury	UNITED STATES TREASURY 3.625 05/15/2026	05/15/2026 0.208	1,150,000.00 05/16/2023 1,147,259.77	3.63	1,150,000.00	99.9793	1,149,761.95 12,206.84 1,161,968.79	Aa1 AA+ AA+
91282CJK8	US Treasury	UNITED STATES TREASURY 4.625 11/15/2026	11/15/2026 0.712	1,500,000.00 --- 1,495,129.88	4.63	1,500,000.00	100.6892	1,510,338.00 20,314.23 1,530,652.23	Aa1 AA+ AA+
91282CJT9	US Treasury	UNITED STATES TREASURY 4.0 01/15/2027	01/15/2027 0.879	1,500,000.00 01/11/2024 1,496,542.97	4.00	1,500,000.00	100.3867	1,505,800.50 7,458.56 1,513,259.06	Aa1 AA+ AA+
91282CKS9	US Treasury	UNITED STATES TREASURY 4.875 05/31/2026	05/31/2026 0.252	1,500,000.00 06/18/2024 1,504,628.91	4.88	1,500,000.00	100.2725	1,504,087.50 18,281.25 1,522,368.75	Aa1 AA+ AA+
91282CKY6	US Treasury	UNITED STATES TREASURY 4.625 06/30/2026	06/30/2026 0.334	1,000,000.00 07/03/2024 998,945.31	4.63	1,000,000.00	100.3086	1,003,086.00 7,665.75 1,010,751.75	Aa1 AA+ AA+
91282CLP4	US Treasury	UNITED STATES TREASURY 3.5 09/30/2026	09/30/2026 0.586	2,000,000.00 10/18/2024 1,983,046.88	3.50	2,000,000.00	99.9111	1,998,222.00 29,230.77 2,027,452.77	Aa1 AA+ AA+
91282CLX7	US Treasury	UNITED STATES TREASURY 4.125 11/15/2027	11/15/2027 1.712	650,000.00 05/21/2025 651,675.78	4.13	650,000.00	101.1563	657,515.95 7,851.17 665,367.12	Aa1 AA+ AA+
91282CMB4	US Treasury	UNITED STATES TREASURY 4.0 12/15/2027	12/15/2027 1.794	1,750,000.00 12/12/2024 1,743,164.06	4.00	1,750,000.00	101.0195	1,767,841.25 14,615.38 1,782,456.63	Aa1 AA+ AA+
91282CME8	US Treasury	UNITED STATES TREASURY 4.25 12/31/2026	12/31/2026 0.838	1,200,000.00 12/30/2024 1,199,859.38	4.25	1,200,000.00	100.5672	1,206,806.40 8,453.04 1,215,259.44	Aa1 AA+ AA+
91282CND9	US Treasury	UNITED STATES TREASURY 3.75 05/15/2028	05/15/2028 2.211	850,000.00 05/14/2025 842,927.73	3.75	850,000.00	100.7539	856,408.15 9,333.56 865,741.71	Aa1 AA+ AA+
---	**---**	**---**	**01/19/2028 1.891**	**179,994,924.51 --- 179,104,831.93**	**3.98**	**179,994,924.51**	**100.5600**	**181,266,798.82 1,654,822.71 182,921,621.53**	**Aa2 AA AA+**

CHANDLER ASSET MANAGEMENT

Holdings

As of 02/28/2026

Tampa Bay Water Cons Agg (362512)

Dated: 03/18/2026

* Weighted by: Market Value. * Holdings Displayed by: Position.



February 2026

Bond Market Review

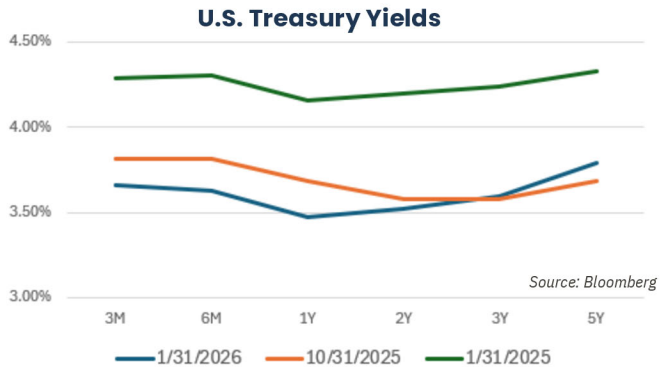
Market Summary

Recent economic data point to moderating inflation and a continued rebalancing in labor market conditions. Although price pressures remain modestly above the Federal Reserve's longer-run target, the unemployment rate has declined to 4.3%. As the data flow stabilizes, the Chandler team expects further yield curve steepening as the Federal Reserve gradually guides the policy rate toward a more neutral range. One additional 25-basis-point rate cut may occur in the first half of 2026, while U.S. trade and fiscal policy remain key sources of elevated market uncertainty.

The Federal Reserve's January Federal Open Market Committee meeting concluded with policymakers maintaining the target range at 3.50%–3.75%, following three consecutive 25-basis-point cuts at the end of 2025. However, officials remained divided on the policy outlook, as Governors Christopher Waller and Stephen Miran dissented in favor of an additional rate reduction. Meanwhile, the future policy regime began to take shape with President Trump's announcement of Kevin Warsh as his nominee for the next Federal Reserve Chair.

The US Treasury yield curve steepened in January, as the 2-year Treasury yield rose 4 basis points to 3.52%, the 5-year Treasury was up 6 basis points to 3.79%, and the 10-year Treasury yield was 7 basis points higher at 4.24%. The spread between the 2-year and 10-year Treasury yield points on the curve was 2 basis points wider from December at +71 basis points at January month-end. The spread between the 2-year Treasury and 10-year Treasury yield one year ago was +56 basis points. The spread between the 3-month and 10-year Treasury yield points on the curve was +58 basis points in January versus +54 basis points in December.

The U.S. Treasury market was not immune to the volatility that struck capital markets in January. Geopolitical turmoil and concerns over tech and software stocks' AI exposure roiled equities and whipsawed the MOVE Index. The month ended with a slightly steeper yield curve, reflecting an almost parallel upward shift across maturities. Escalating conflicts across all four hemispheres—along with Federal Reserve officials facing DOJ subpoenas—could drive Treasury yields lower via a flight-to-quality trade in the first half of 2026.



Credit Spreads

Credit spreads were tighter in December

	Spread to Treasuries	One Month Ago	Change
3-month top rated commercial paper	-	0.03	(0.03)
2-year A corporate note	0.30	0.36	(0.06)
5-year A corporate note	0.47	0.51	(0.03)
5-year Agency note	0.04	0.03	0.01

Source: Bloomberg; data as of 12/31/2025

Treasury Yields

Volatility picks up in the U.S. Treasury market

Treasury Yields	Trend	1/30/2026	12/31/2025	Change
3 month	▲	3.66	3.63	0.03
2 year	▲	3.52	3.48	0.04
3 year	▲	3.59	3.54	0.05
5 year	▲	3.79	3.73	0.06
7 year	▲	4.01	3.94	0.07
10 year	▲	4.24	4.17	0.07
30 year	▲	4.87	4.85	0.02

Source: Bloomberg

CHANDLER ASSET MANAGEMENT

Market Data

Data as of 1/30/2026 unless otherwise noted

	1-Mo Chg	% Chg
S&P 500		
9,939.03	93.53	1.37%
NASDAQ		
23,461.82	219.83	0.95%
Dow Jones		
48,492.47	829.18	1.73%
FTSE (UK)		
10,223.54	292.16	2.94%
DAX (Germany)		
24,538.81	48.40	0.20%
Hang Seng (Hong Kong)		
27,387.11	1,756.57	6.85%
Nikkei (Japan)		
53,322.85	2,983.37	5.93%

World Stock Market Index Descriptions

S&P 500–The S&P 500 is a market value-weighted index of 500 large-capitalization stocks. The 500 companies included in the index capture approximately 80% of available US market capitalization. NASDAQ–The NASDAQ Composite Index is the market capitalization-weighted index of over 3,300 common stocks listed on the NASDAQ stock exchange. Dow Jones–The Dow Jones Industrial Average is an index that tracks 30 large, publicly-owned companies trading on the New York Stock Exchange and the NASDAQ. The Financial Times Stock Exchange Group (FTSE)–The FTSE is a share index of the 100 companies listed on the London Stock Exchange with the highest market capitalization. DAX–The Deutscher Aktienindex (DAX) is a blue chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange. Hang Seng–The Hang Seng Index is a freefloat-adjusted market-capitalization-weighted stock market index in Hong Kong. It is used to record and monitor daily changes of the largest companies of the Hong Kong stock market and is the main indicator of overall market performance in Hong Kong. Nikkei–Japan's Nikkei 225 Stock Average is a price-weighted index composed of Japan's top 225 blue-chip companies traded on the Tokyo Stock Exchange.

Economic Roundup

Consumer Prices

On the headline basis, inflation moderated in January with the Consumer Price Index (CPI) rising 0.2% for the month, down from 0.3% in December. On an annual basis, headline CPI eased to 2.4% from 2.7% a year earlier. Core CPI, which excludes volatile food and energy prices, edged up to 0.3% in January from 0.2% the previous month, while the annual rate eased slightly to 2.5% from 2.6%. The Personal Consumption Expenditures (PCE) Index for October and November, released on January 22, showed headline inflation rising 0.2% in each month, driven by increases in both goods and services. On an annual basis, headline PCE inflation advanced 2.7% in October and 2.8% in November. Core PCE, which excludes food and energy, also rose 0.2% month-over-month in both months, while the annual rate edged up from 2.7% to 2.8% in November.

Retail Sales

Inclement weather may have contributed to Retail Sales missing analyst estimates in December. Advanced Retail Sales were unchanged on a month-over-month basis for the second consecutive month and increased at 2.4% on an annual basis. The control group measure, which feeds into GDP, unexpectedly declined -0.1% versus an estimate to rise 0.4% from November. The government shutdown may have weighed on consumer confidence regarding jobs, incomes, and overall financial conditions, both current and in the future. The Conference Board's Consumer Confidence Index declined by 9.7 points to 84.5 in January from an upwardly revised 94.2 in December, sinking to its lowest level since 2014 and resuming the downtrend after a brief year-end uptick. Consumers grew more pessimistic about both current and future business conditions and the labor market.

Labor Market

The January Nonfarm Payrolls report exceeded expectations, adding 130,000 jobs compared to the forecast of 65,000. Job gains were concentrated in the private education and health services sectors, while government employment posted the largest decline. Meanwhile, the unemployment rate declined for a second straight month to 4.3% in January, according to the Bureau of Labor Statistics. Taken together, the data suggest the labor market may be showing signs of stabilization at the start of 2026.

Housing Starts

The S&P CoreLogic Case-Shiller 20-City Composite Home Price Index rose 1.4% year over year in November, holding near the slowest annual pace since mid-2023. Short-term momentum softened further, with 15 of the 20 tracked markets reporting month-over-month declines on a non-seasonally adjusted basis as elevated mortgage rates and affordability challenges continued to weigh on demand. Housing starts declined in October to an annualized rate of 1.25 million units, adding 875,000 single-family starts and 372,000 multifamily starts. The Freddie Mac 30-year fixed mortgage rate trended lower, ending January at 6.10%.

Economic Indicator	Current Release	Prior Release	One Year Ago
Trade Balance	(70.31) $B Dec. 31	(53.04) $B Nov. 30	(96.95) $B Dec. 31
Gross Domestic Product	1.40% Dec. 31	4.40% Sep. 30	1.90% Dec. 31
Unemployment Rate	4.30% Jan. 31	4.40% Dec. 31	4.00% Jan. 31
Prime Rate	6.75% Jan. 30	6.75% Dec. 31	7.50% Jan. 31
Refinitiv/CoreCommodity CRB Index	320.09 Jan. 30	298.78 Dec. 31	304.95 Jan. 31
Oil (West Texas Int.)	$65.21 Jan. 30	$57.42 Dec. 31	$72.53 Jan. 31
Consumer Price Index (YoY)	2.40% Jan. 30	2.70% Dec. 31	3.00% Jan. 31
Producer Price Index (YoY)	2.00% Dec. 31	2.70% Nov. 30	2.80% Dec. 31
Euro/Dollar	1.19 Jan. 30	1.17 Dec. 31	1.04 Jan. 31

Source: Bloomberg

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CHANDLER ASSET MANAGEMENT

Portfolio Summary

03/01/2026 - 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

Portfolio Characteristics

	Portfolio
Average Modified Duration	1.66
Average Coupon Rate*	3.960
Average Purchase YTM	4.15
Average Market YTM	3.92
Average Credit Quality	AA
Average Final Maturity	1.85
Average Life	1.80

Footnote: 1

Account Summary

	Portfolio
Beginning Market Value	181,266,798.82
Ending Market Value	180,536,089.22
Beginning Accrued Balance	1,836,927.43
Ending Accrued Balance	1,729,522.03
Beginning Total Market Value	183,103,726.25
Ending Total Market Value	182,259,106.29
Beginning Current Par	179,994,924.51
Ending Current Par	180,562,142.27
Beginning Book Value	179,594,599.97
Ending Book Value	180,172,274.26
Beginning Original Cost	179,104,831.93
Ending Original Cost	179,645,460.93

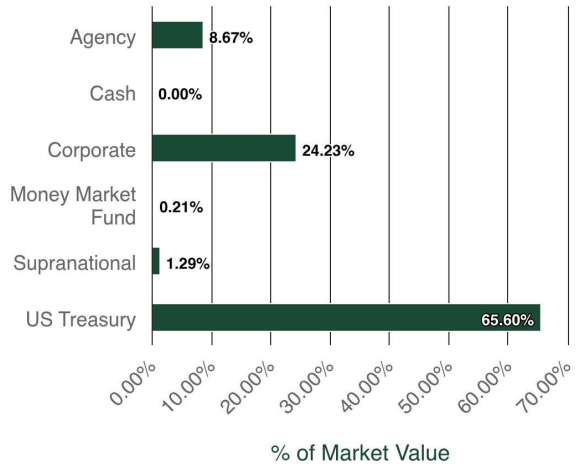
Footnotes: 2,3,4,5

Top Issuers

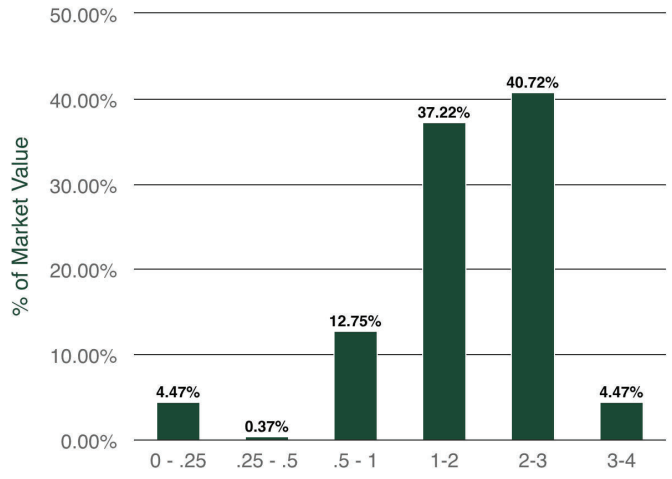
Issuer	% of Market Value
United States	65.60%
Farm Credit System	4.83%
Federal Home Loan Banks	3.84%
JPMorgan Chase & Co.	1.70%
Blackrock, Inc.	1.51%
The Home Depot, Inc.	1.20%
State Street Corporation	1.20%
Wells Fargo & Company	1.12%
Morgan Stanley	1.11%
The Goldman Sachs Group, Inc.	1.02%

Footnotes: 6,7,8

Sector Allocation



Maturity Distribution



Credit Quality*



Chart calculated by: Market Value

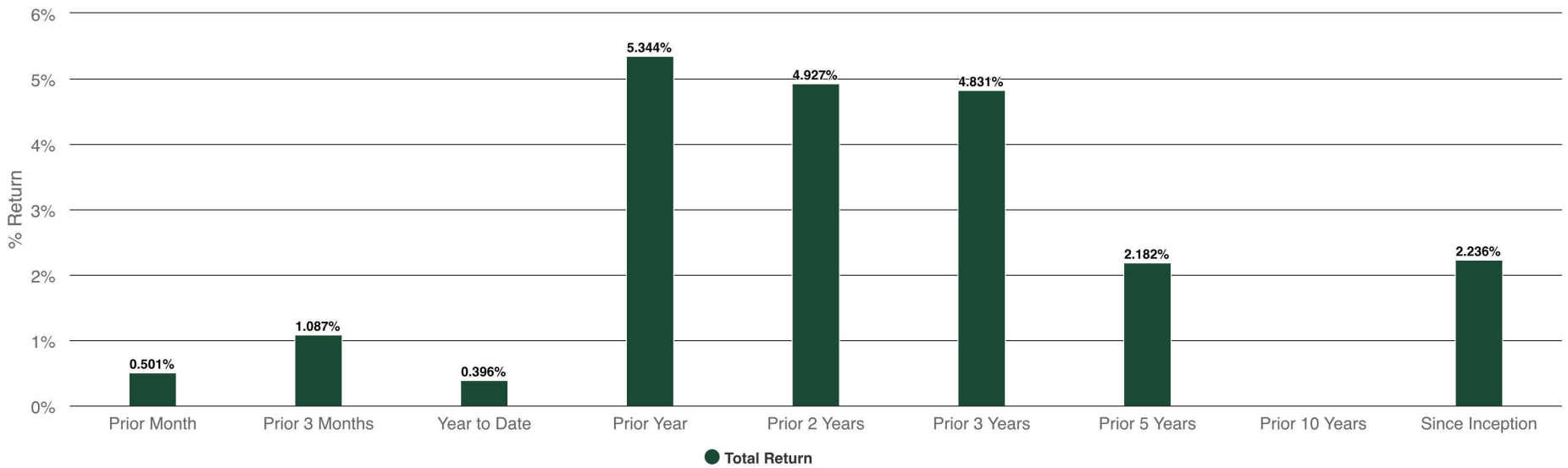
Portfolio Summary

03/01/2026 - 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

Performance Review (Gross)



1: * Weighted by: Market Value. 2: * Weighted by: Ending Market Value. 3: * Formula Column: Beginning Accrued Balance = [Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]. 4: * Formula Column: Ending Accrued Balance = [Ending Due and Accrued]+[Ending Cash Mutual Fund Dividend Receivable]. 5: * Formula Column: Beginning Total Market Value = [Beginning Market Value]+([Beginning Due and Accrued]+[Beginning Cash Mutual Fund Dividend Receivable]). 6: * Grouped by: Issuer. 7: * Groups Sorted by: % of Market Value. 8: * Weighted by: Ending Total Market Value.

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
3130ATS57	Agency	FEDERAL HOME LOAN BANKS 4.5 03/10/2028	03/10/2028 1.945	600,000.00 04/20/2023 618,726.00	4.50	600,000.00	101.2131	607,278.60 1,575.00 608,853.60	Aa1 AA+ AA+
3130ATUS4	Agency	FEDERAL HOME LOAN BANKS 4.25 12/10/2027	12/10/2027 1.695	450,000.00 05/18/2023 457,983.00	4.25	450,000.00	100.7111	453,199.95 5,896.88 459,096.83	Aa1 AA+ AA+
3130AWLZ1	Agency	FEDERAL HOME LOAN BANKS 4.75 06/12/2026	06/12/2026 0.200	1,650,000.00 08/28/2023 1,645,297.50	4.75	1,650,000.00	100.1837	1,653,031.05 23,730.21 1,676,761.26	Aa1 AA+ AA+
3133EPC60	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.625 11/15/2027	11/15/2027 1.627	2,150,000.00 11/09/2023 2,142,023.50	4.63	2,150,000.00	101.2749	2,177,410.35 37,565.28 2,214,975.63	Aa1 AA+ AA+
3130AXU63	Agency	FEDERAL HOME LOAN BANKS 4.625 11/17/2026	11/17/2026 0.632	1,100,000.00 11/29/2023 1,104,400.00	4.63	1,100,000.00	100.5419	1,105,960.90 18,936.81 1,124,897.71	Aa1 AA+ AA+
3133EPH81	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 10/04/2027	10/04/2027 1.512	1,800,000.00 12/07/2023 1,812,906.00	4.50	1,800,000.00	101.0537	1,818,966.60 39,825.00 1,858,791.60	Aa1 AA+ AA+
3133ERFJ5	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.5 05/20/2027	05/20/2027 1.137	3,700,000.00 --- 3,697,095.00	4.50	3,700,000.00	100.7964	3,729,466.80 60,587.50 3,790,054.30	Aa1 AA+ AA+
3130AWN63	Agency	FEDERAL HOME LOAN BANKS 4.0 06/30/2028	06/30/2028 2.249	1,600,000.00 07/18/2023 1,593,696.00	4.00	1,600,000.00	100.5516	1,608,825.60 16,177.78 1,625,003.38	Aa1 AA+ AA+
3130AYPN0	Agency	FEDERAL HOME LOAN BANKS 4.125 01/15/2027	01/15/2027 0.794	1,000,000.00 01/29/2024 998,860.00	4.13	1,000,000.00	100.2852	1,002,852.00 8,708.33 1,011,560.33	Aa1 AA+ AA+
3133EPNG6	Agency	FEDERAL FARM CREDIT BANKS FUNDING CORP 4.375 06/23/2026	06/23/2026 0.230	1,000,000.00 06/20/2023 999,470.00	4.38	1,000,000.00	100.1337	1,001,337.00 11,909.72 1,013,246.72	Aa1 AA+ AA+
3130AWTQ3	Agency	FEDERAL HOME LOAN BANKS 4.625 09/11/2026	09/11/2026 0.449	500,000.00 09/27/2023 494,865.00	4.63	500,000.00	100.3886	501,943.00 1,284.72 503,227.72	Aa1 AA+ AA+
CCYUSD	Cash	Receivable	03/31/2026 0.000	3,252.48 --- 3,252.48	0.00	3,252.48	1.0000	3,252.48 0.00 3,252.48	Aaa AAA AAA
38141GWZ3	Corporate	GOLDMAN SACHS GROUP INC 4.223 05/01/2029	05/01/2029 3.085	1,150,000.00 --- 1,149,694.00	4.22	1,150,000.00	99.4357	1,143,510.55 20,235.21 1,163,745.76	A2 BBB+ A
74456QBU9	Corporate	PUBLIC SERVICE ELECTRIC AND GAS CO 3.7 05/01/2028	05/01/2028 2.085	1,300,000.00 05/20/2025 1,276,964.00	3.70	1,300,000.00	98.8182	1,284,636.60 20,041.67 1,304,678.27	A1 A WR
89236TFT7	Corporate	TOYOTA MOTOR CREDIT CORP 3.65 01/08/2029	01/08/2029 2.775	1,800,000.00 --- 1,785,797.00	3.65	1,800,000.00	98.4398	1,771,916.40 15,147.50 1,787,063.90	A1 A+ A+
74460DAD1	Corporate	PUBLIC STORAGE OPERATING CO 3.385 05/01/2029	05/01/2029 3.085	700,000.00 01/28/2026 686,202.00	3.38	700,000.00	97.5483	682,838.10 9,872.92 692,711.02	A2 A NA
74340XBL4	Corporate	PROLOGIS LP 4.375 02/01/2029	02/01/2029 2.841	175,000.00 02/12/2026 177,101.75	4.38	175,000.00	100.0544	175,095.20 1,276.04 176,371.24	A2 A WR
91324PEY4	Corporate	UNITEDHEALTH GROUP INC 4.6 04/15/2027	04/15/2027 1.041	350,000.00 07/03/2024 347,910.50	4.60	350,000.00	100.3935	351,377.25 7,423.89 358,801.14	A2 A+ A
89115A2W1	Corporate	TORONTO-DOMINION BANK 4.98 04/05/2027	04/05/2027 1.014	500,000.00 --- 496,150.75	4.98	500,000.00	100.7292	503,646.00 12,173.33 515,819.33	A2 A- AA-
14913UAL4	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 5.0 05/14/2027	05/14/2027 1.120	800,000.00 --- 800,744.00	5.00	800,000.00	100.9704	807,763.20 15,222.22 822,985.42	A2 A A+

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
437076DB5	Corporate	HOME DEPOT INC 4.875 06/25/2027	06/25/2027 1.235	2,150,000.00 --- 2,147,902.50	4.88	2,150,000.00	100.9646	2,170,738.90 27,950.00 2,198,688.90	A2 A A
09290DAH4	Corporate	BLACKROCK INC 4.6 07/26/2027	07/26/2027 1.320	2,710,000.00 --- 2,712,067.80	4.60	2,710,000.00	100.6793	2,728,409.03 22,508.06 2,750,917.09	Aa3 AA- NA
532457CP1	Corporate	ELI LILLY AND CO 4.15 08/14/2027	08/14/2027 1.372	1,750,000.00 08/13/2024 1,752,240.00	4.15	1,750,000.00	100.1259	1,752,203.25 9,481.60 1,761,684.85	Aa3 A+ NA
46647PEU6	Corporate	JPMORGAN CHASE & CO 4.915 01/24/2029	01/24/2029 2.819	1,555,000.00 --- 1,555,339.50	4.92	1,555,000.00	100.8517	1,568,243.94 14,224.15 1,582,468.08	A1 A AA-
857477CU5	Corporate	STATE STREET CORP 4.536 02/28/2028	02/28/2028 1.914	1,150,000.00 --- 1,149,977.50	4.54	1,150,000.00	100.6700	1,157,705.00 4,781.70 1,162,486.70	Aa3 A AA-
06405LAH4	Corporate	BANK OF NEW YORK MELLON 4.729 04/20/2029	04/20/2029 3.055	1,300,000.00 05/14/2025 1,306,422.00	4.73	1,300,000.00	100.7113	1,309,246.90 27,493.88 1,336,740.78	Aa2 AA- AA
025816ED7	Corporate	AMERICAN EXPRESS CO 4.731 04/25/2029	04/25/2029 3.068	1,500,000.00 05/01/2025 1,511,415.00	4.73	1,500,000.00	100.6321	1,509,481.50 30,751.50 1,540,233.00	A2 A- A
58989V2M5	Corporate	MET TOWER GLOBAL FUNDING 4.0 01/14/2029	01/14/2029 2.791	1,705,000.00 --- 1,702,518.55	4.00	1,705,000.00	98.9517	1,687,126.49 14,587.22 1,701,713.71	Aa3 AA- AA-
06406RCG0	Corporate	BANK OF NEW YORK MELLON CORP 4.026 01/22/2030	01/22/2030 3.813	105,000.00 01/14/2026 105,000.00	4.03	105,000.00	98.9990	103,948.95 810.23 104,759.18	Aa3 A AA-
61748UAR3	Corporate	MORGAN STANLEY 4.238 01/09/2030	01/09/2030 3.778	300,000.00 01/22/2026 299,937.00	4.24	300,000.00	98.9909	296,972.70 2,507.48 299,480.18	A1 A- A+
95000U4D2	Corporate	WELLS FARGO & CO 4.182 01/23/2030	01/23/2030 3.816	1,485,000.00 --- 1,485,121.65	4.18	1,485,000.00	99.1140	1,471,842.90 11,730.51 1,483,573.41	A1 BBB+ A+
92826CAY8	Corporate	VISA INC 3.8 02/12/2029	02/12/2029 2.871	1,400,000.00 02/03/2026 1,398,390.00	3.80	1,400,000.00	99.3919	1,391,486.60 7,241.11 1,398,727.71	Aa3 AA- NA
02079KBJ5	Corporate	ALPHABET INC 3.7 02/15/2029	02/15/2029 2.879	440,000.00 02/09/2026 438,402.80	3.70	440,000.00	99.1406	436,218.64 2,170.67 438,389.31	Aa2 AA+ NA
24422EYK9	Corporate	JOHN DEERE CAPITAL CORP 3.9 03/09/2029	03/09/2029 2.939	1,195,000.00 03/05/2026 1,193,398.70	3.90	1,195,000.00	99.3576	1,187,323.32 2,718.63 1,190,041.95	A1 A A+
46647PAV8	Corporate	JPMORGAN CHASE & CO 4.203 07/23/2029	07/23/2029 3.312	800,000.00 09/04/2025 802,728.00	4.20	800,000.00	99.4251	795,400.80 6,351.20 801,752.00	A1 A AA-
89115A2C5	Corporate	TORONTO-DOMINION BANK 4.108 06/08/2027	06/08/2027 1.189	1,000,000.00 03/07/2024 975,470.00	4.11	1,000,000.00	99.7378	997,378.00 12,894.56 1,010,272.56	A2 A- NA
341081GN1	Corporate	FLORIDA POWER & LIGHT CO 4.4 05/15/2028	05/15/2028 2.123	1,300,000.00 --- 1,305,816.00	4.40	1,300,000.00	100.4007	1,305,209.10 21,608.89 1,326,817.99	Aa2 A+ AA-
857477CN1	Corporate	STATE STREET CORP 4.53 02/20/2029	02/20/2029 2.893	1,000,000.00 05/20/2025 1,000,930.00	4.53	1,000,000.00	100.5612	1,005,612.00 5,159.17 1,010,771.17	Aa3 A AA-
61690DK72	Corporate	MORGAN STANLEY BANK NA 5.016 01/12/2029	01/12/2029 2.786	1,100,000.00 01/16/2025 1,100,946.00	5.02	1,100,000.00	101.0703	1,111,773.30 12,108.07 1,123,881.37	Aa3 A+ AA-
06051GMK2	Corporate	BANK OF AMERICA CORP 4.979 01/24/2029	01/24/2029 2.819	1,075,000.00 01/17/2025 1,075,000.00	4.98	1,075,000.00	100.7791	1,083,375.32 9,961.46 1,093,336.78	A1 A- AA-

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
40139LBM4	Corporate	GUARDIAN LIFE GLOBAL FUNDING 4.066 09/05/2028	09/05/2028 2.433	1,200,000.00 11/12/2025 1,200,948.00	4.07	1,200,000.00	99.2595	1,191,114.00 3,523.87 1,194,637.87	Aa1 AA+ NA
69371RU20	Corporate	PACCAR FINANCIAL CORP 4.0 11/07/2028	11/07/2028 2.605	825,000.00 11/05/2025 824,538.00	4.00	825,000.00	99.6428	822,053.10 13,200.00 835,253.10	A1 A+ NA
14913UBD1	Corporate	CATERPILLAR FINANCIAL SERVICES CORP 3.95 11/14/2028	11/14/2028 2.624	850,000.00 11/10/2025 849,549.50	3.95	850,000.00	99.5213	845,931.05 12,777.15 858,708.20	A2 A A+
023135CS3	Corporate	AMAZON.COM INC 3.9 11/20/2028	11/20/2028 2.641	985,000.00 11/17/2025 984,783.30	3.90	985,000.00	99.5726	980,790.11 13,978.79 994,768.90	A1 AA AA-
63743HGE6	Corporate	NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORP 4.05 02/09/2029	02/09/2029 2.862	1,200,000.00 --- 1,204,736.00	4.05	1,200,000.00	99.3382	1,192,058.40 7,020.00 1,199,078.40	A2 NA A
91324PCW0	Corporate	UNITEDHEALTH GROUP INC 3.45 01/15/2027	01/15/2027 0.794	500,000.00 03/07/2024 483,735.00	3.45	500,000.00	99.5019	497,509.50 3,641.67 501,151.17	A2 A+ A
26444HAC5	Corporate	DUKE ENERGY FLORIDA LLC 3.2 01/15/2027	01/15/2027 0.794	500,000.00 05/16/2024 476,980.00	3.20	500,000.00	99.3252	496,626.00 3,377.78 500,003.78	A1 A WR
74460WAD9	Corporate	PUBLIC STORAGE OPERATING CO 1.85 05/01/2028	05/01/2028 2.085	500,000.00 06/09/2025 466,315.00	1.85	500,000.00	95.2688	476,344.00 3,854.17 480,198.17	A2 A NA
61747YER2	Corporate	MORGAN STANLEY 4.21 04/20/2028	04/20/2028 2.055	600,000.00 01/16/2025 591,414.00	4.21	600,000.00	99.7253	598,351.80 11,296.83 609,648.63	A1 A- A+
46647PDA1	Corporate	JPMORGAN CHASE & CO 4.323 04/26/2028	04/26/2028 2.071	700,000.00 01/16/2025 692,055.00	4.32	700,000.00	99.9543	699,680.10 13,029.04 712,709.14	A1 A AA-
06051GKP3	Corporate	BANK OF AMERICA CORP 4.376 04/27/2028	04/27/2028 2.074	700,000.00 08/20/2025 701,001.00	4.38	700,000.00	99.9264	699,484.80 13,103.69 712,588.49	A1 A- AA-
38141GZU1	Corporate	GOLDMAN SACHS GROUP INC 4.482 08/23/2028	08/23/2028 2.397	700,000.00 08/20/2025 702,758.00	4.48	700,000.00	99.9981	699,986.70 3,311.70 703,298.40	A2 BBB+ A
69371RS56	Corporate	PACCAR FINANCIAL CORP 5.05 08/10/2026	08/10/2026 0.361	165,000.00 08/24/2023 164,825.10	5.05	165,000.00	100.3013	165,497.14 1,180.44 166,677.58	A1 A+ NA
17275RBQ4	Corporate	CISCO SYSTEMS INC 4.8 02/26/2027	02/26/2027 0.909	500,000.00 --- 499,662.90	4.80	500,000.00	100.6082	503,041.00 2,333.33 505,374.33	A1 AA- NA
24422EXZ7	Corporate	JOHN DEERE CAPITAL CORP 4.65 01/07/2028	01/07/2028 1.772	475,000.00 01/06/2025 474,857.50	4.65	475,000.00	100.9141	479,341.97 5,153.75 484,495.72	A1 A A+
95000U3R2	Corporate	WELLS FARGO & CO 4.9 01/24/2028	01/24/2028 1.819	550,000.00 01/16/2025 550,000.00	4.90	550,000.00	100.3627	551,994.85 5,015.69 557,010.54	A1 BBB+ A+
26442UAT1	Corporate	DUKE ENERGY PROGRESS LLC 4.35 03/06/2027	03/06/2027 0.931	500,000.00 03/03/2025 500,135.00	4.35	500,000.00	100.1963	500,981.50 1,510.42 502,491.92	Aa3 A NA
66815L2X6	Corporate	NORTHWESTERN MUTUAL GLOBAL FUNDING 4.125 08/25/2028	08/25/2028 2.402	550,000.00 12/10/2025 551,677.50	4.13	550,000.00	99.6696	548,182.80 2,268.75 550,451.55	Aa1 AA+ AAA
31846V203	Money Market Fund	FIRST AMER:GVT OBLG Y	03/31/2026 0.000	373,889.79 --- 373,889.79	3.28	373,889.79	1.0000	373,889.79 0.00 373,889.79	Aaa AAAm AAA
459058KT9	Supranational	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPM 3.5 07/12/2028	07/12/2028 2.282	1,300,000.00 07/07/2023 1,242,982.00	3.50	1,300,000.00	99.3160	1,291,108.00 9,984.72 1,301,092.72	Aaa AAA NA

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

CUSIP	Security Type	Issue	Maturity Date, Years to Final Maturity	Original Par, Purchase Date, Original Cost	Coupon Rate	Current Par	Market Price	Market Value, Accrued Balance, Total Market Value	Moody's Rating, S&P Rating, Fitch Rating
45950KDD9	Supranational	INTERNATIONAL FINANCE CORP 4.5 07/13/2028	07/13/2028 2.285	1,020,000.00 07/06/2023 1,018,867.80	4.50	1,020,000.00	101.4658	1,034,951.16 9,945.00 1,044,896.16	Aaa AAA NA
91282CEF4	US Treasury	UNITED STATES TREASURY 2.5 03/31/2027	03/31/2027 1.000	3,300,000.00 --- 3,081,140.63	2.50	3,300,000.00	98.8250	3,261,225.00 225.41 3,261,450.41	Aa1 AA+ AA+
91282CFU0	US Treasury	UNITED STATES TREASURY 4.125 10/31/2027	10/31/2027 1.586	1,650,000.00 09/07/2023 1,625,378.91	4.13	1,650,000.00	100.4141	1,656,832.65 28,578.73 1,685,411.38	Aa1 AA+ AA+
91282CFZ9	US Treasury	UNITED STATES TREASURY 3.875 11/30/2027	11/30/2027 1.668	3,570,000.00 --- 3,587,190.62	3.88	3,570,000.00	100.0586	3,572,092.02 46,365.87 3,618,457.89	Aa1 AA+ AA+
91282CGC9	US Treasury	UNITED STATES TREASURY 3.875 12/31/2027	12/31/2027 1.753	2,100,000.00 01/20/2023 2,129,613.28	3.88	2,100,000.00	100.0703	2,101,476.30 20,456.15 2,121,932.45	Aa1 AA+ AA+
91282CGH8	US Treasury	UNITED STATES TREASURY 3.5 01/31/2028	01/31/2028 1.838	3,400,000.00 --- 3,383,730.48	3.50	3,400,000.00	99.4297	3,380,609.80 19,723.76 3,400,333.56	Aa1 AA+ AA+
91282CHA2	US Treasury	UNITED STATES TREASURY 3.5 04/30/2028	04/30/2028 2.082	2,400,000.00 05/12/2023 2,406,750.00	3.50	2,400,000.00	99.3672	2,384,812.80 35,270.72 2,420,083.52	Aa1 AA+ AA+
91282CHK0	US Treasury	UNITED STATES TREASURY 4.0 06/30/2028	06/30/2028 2.249	750,000.00 02/04/2025 743,115.23	4.00	750,000.00	100.4180	753,135.00 7,541.44 760,676.44	Aa1 AA+ AA+
91282CHX2	US Treasury	UNITED STATES TREASURY 4.375 08/31/2028	08/31/2028 2.419	2,625,000.00 --- 2,632,719.72	4.38	2,625,000.00	101.2500	2,657,812.50 9,986.41 2,667,798.91	Aa1 AA+ AA+
91282CJW2	US Treasury	UNITED STATES TREASURY 4.0 01/31/2029	01/31/2029 2.838	2,700,000.00 --- 2,673,058.60	4.00	2,700,000.00	100.4531	2,712,233.70 17,900.55 2,730,134.25	Aa1 AA+ AA+
91282CKA8	US Treasury	UNITED STATES TREASURY 4.125 02/15/2027	02/15/2027 0.879	2,950,000.00 --- 2,923,935.55	4.13	2,950,000.00	100.3109	2,959,171.55 15,126.90 2,974,298.45	Aa1 AA+ AA+
91282CKD2	US Treasury	UNITED STATES TREASURY 4.25 02/28/2029	02/28/2029 2.914	750,000.00 02/04/2025 747,685.55	4.25	750,000.00	101.1484	758,613.00 2,771.74 761,384.74	Aa1 AA+ AA+
91282CKE0	US Treasury	UNITED STATES TREASURY 4.25 03/15/2027	03/15/2027 0.956	2,050,000.00 04/30/2024 2,016,287.11	4.25	2,050,000.00	100.4828	2,059,897.40 4,024.80 2,063,922.20	Aa1 AA+ AA+
91282CKG5	US Treasury	UNITED STATES TREASURY 4.125 03/31/2029	03/31/2029 3.000	3,250,000.00 --- 3,192,529.30	4.13	3,250,000.00	100.8320	3,277,040.00 366.29 3,277,406.29	Aa1 AA+ AA+
91282CKJ9	US Treasury	UNITED STATES TREASURY 4.5 04/15/2027	04/15/2027 1.041	3,800,000.00 04/25/2024 3,763,039.07	4.50	3,800,000.00	100.7613	3,828,929.40 78,923.08 3,907,852.48	Aa1 AA+ AA+
91282CKR1	US Treasury	UNITED STATES TREASURY 4.5 05/15/2027	05/15/2027 1.123	1,400,000.00 --- 1,397,375.00	4.50	1,400,000.00	100.7344	1,410,281.60 23,842.54 1,434,124.14	Aa1 AA+ AA+
91282CKX8	US Treasury	UNITED STATES TREASURY 4.25 06/30/2029	06/30/2029 3.249	750,000.00 02/04/2025 747,158.20	4.25	750,000.00	101.2109	759,081.75 8,012.78 767,094.53	Aa1 AA+ AA+
91282CMN8	US Treasury	UNITED STATES TREASURY 4.25 02/15/2028	02/15/2028 1.879	4,850,000.00 --- 4,831,451.17	4.25	4,850,000.00	100.7656	4,887,131.60 25,623.27 4,912,754.87	Aa1 AA+ AA+
91282CMS7	US Treasury	UNITED STATES TREASURY 3.875 03/15/2028	03/15/2028 1.958	1,400,000.00 --- 1,395,664.07	3.88	1,400,000.00	100.1133	1,401,586.20 2,506.11 1,404,092.31	Aa1 AA+ AA+
91282CMW8	US Treasury	UNITED STATES TREASURY 3.75 04/15/2028	04/15/2028 2.041	2,900,000.00 04/17/2025 2,898,414.07	3.75	2,900,000.00	99.8633	2,896,035.70 50,192.31 2,946,228.01	Aa1 AA+ AA+

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

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91282CNM9	US Treasury	UNITED STATES TREASURY 3.875 07/15/2028	07/15/2028 2.290	3,275,000.00 --- 3,271,328.12	3.88	3,275,000.00	100.1172	3,278,838.30 26,643.30 3,305,481.60	Aa1 AA+ AA+
91282CNU1	US Treasury	UNITED STATES TREASURY 3.625 08/15/2028	08/15/2028 2.375	2,550,000.00 --- 2,544,451.18	3.63	2,550,000.00	99.5742	2,539,142.10 11,490.85 2,550,632.95	Aa1 AA+ AA+
91282CNY3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2028	09/15/2028 2.460	2,800,000.00 --- 2,783,259.77	3.38	2,800,000.00	98.9688	2,771,126.40 4,365.49 2,775,491.89	Aa1 AA+ AA+
91282CPB1	US Treasury	UNITED STATES TREASURY 3.5 09/30/2027	09/30/2027 1.501	750,000.00 01/15/2026 749,179.69	3.50	750,000.00	99.5117	746,337.75 71.72 746,409.47	Aa1 AA+ AA+
91282CPC9	US Treasury	UNITED STATES TREASURY 3.5 10/15/2028	10/15/2028 2.542	4,150,000.00 --- 4,145,966.79	3.50	4,150,000.00	99.2227	4,117,742.05 67,038.46 4,184,780.51	Aa1 AA+ AA+
91282CPK1	US Treasury	UNITED STATES TREASURY 3.5 11/15/2028	11/15/2028 2.627	1,750,000.00 --- 1,748,378.91	3.50	1,750,000.00	99.1914	1,735,849.50 23,180.25 1,759,029.75	Aa1 AA+ AA+
91282CPP0	US Treasury	UNITED STATES TREASURY 3.5 12/15/2028	12/15/2028 2.709	3,700,000.00 --- 3,693,796.87	3.50	3,700,000.00	99.1719	3,669,360.30 38,067.31 3,707,427.61	Aa1 AA+ AA+
91282CPT2	US Treasury	UNITED STATES TREASURY 3.5 01/15/2029	01/15/2029 2.794	1,850,000.00 --- 1,844,146.48	3.50	1,850,000.00	99.1484	1,834,245.40 13,593.92 1,847,839.32	Aa1 AA+ AA+
91282CQE4	US Treasury	UNITED STATES TREASURY 3.5 03/15/2029	03/15/2029 2.956	1,050,000.00 --- 1,040,042.97	3.50	1,050,000.00	99.1172	1,040,730.60 1,697.69 1,042,428.29	Aa1 AA+ AA+
91282CGP0	US Treasury	UNITED STATES TREASURY 4.0 02/29/2028	02/29/2028 1.917	2,800,000.00 --- 2,784,195.32	4.00	2,800,000.00	100.3281	2,809,186.80 9,739.13 2,818,925.93	Aa1 AA+ AA+
91282CGT2	US Treasury	UNITED STATES TREASURY 3.625 03/31/2028	03/31/2028 2.000	2,000,000.00 09/18/2025 2,003,046.88	3.63	2,000,000.00	99.6367	1,992,734.00 198.09 1,992,932.09	Aa1 AA+ AA+
91282CHE4	US Treasury	UNITED STATES TREASURY 3.625 05/31/2028	05/31/2028 2.167	2,000,000.00 08/20/2025 1,997,031.25	3.63	2,000,000.00	99.6055	1,992,110.00 24,299.45 2,016,409.45	Aa1 AA+ AA+
91282CJC6	US Treasury	UNITED STATES TREASURY 4.625 10/15/2026	10/15/2026 0.542	1,700,000.00 10/30/2023 1,687,382.81	4.63	1,700,000.00	100.4522	1,707,687.40 36,288.46 1,743,975.86	Aa1 AA+ AA+
91282CJN2	US Treasury	UNITED STATES TREASURY 4.375 11/30/2028	11/30/2028 2.668	1,550,000.00 12/14/2023 1,585,662.11	4.38	1,550,000.00	101.3828	1,571,433.40 22,728.37 1,594,161.77	Aa1 AA+ AA+
91282CLG4	US Treasury	UNITED STATES TREASURY 3.75 08/15/2027	08/15/2027 1.375	2,300,000.00 09/26/2024 2,313,566.41	3.75	2,300,000.00	99.8750	2,297,125.00 10,721.69 2,307,846.69	Aa1 AA+ AA+
91282CLL3	US Treasury	UNITED STATES TREASURY 3.375 09/15/2027	09/15/2027 1.460	5,000,000.00 --- 4,981,855.47	3.38	5,000,000.00	99.3477	4,967,385.00 7,795.52 4,975,180.52	Aa1 AA+ AA+
91282CLQ2	US Treasury	UNITED STATES TREASURY 3.875 10/15/2027	10/15/2027 1.542	2,250,000.00 10/18/2024 2,250,703.13	3.88	2,250,000.00	100.0625	2,251,406.25 40,240.38 2,291,646.63	Aa1 AA+ AA+
91282CLS8	US Treasury	UNITED STATES TREASURY 4.125 10/31/2026	10/31/2026 0.586	2,700,000.00 --- 2,698,179.68	4.13	2,700,000.00	100.1758	2,704,746.60 46,765.19 2,751,511.79	Aa1 AA+ AA+
912797QX8	US Treasury	UNITED STATES TREASURY 06/11/2026	06/11/2026 0.197	1,400,000.00 11/25/2025 1,372,822.21	0.00	1,400,000.00	99.2905	1,390,067.00 0.00 1,390,067.00	P-1 A-1+ F1+
91282CNH0	US Treasury	UNITED STATES TREASURY 3.875 06/15/2028	06/15/2028 2.208	2,400,000.00 --- 2,405,320.31	3.88	2,400,000.00	100.1328	2,403,187.20 27,337.91 2,430,525.11	Aa1 AA+ AA+

CHANDLER ASSET MANAGEMENT

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

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91282CNP2	US Treasury	UNITED STATES TREASURY 3.875 07/31/2027	07/31/2027 1.334	1,400,000.00 11/14/2025 1,405,414.06	3.88	1,400,000.00	100.0391	1,400,547.40 8,991.71 1,409,539.11	Aa1 AA+ AA+
91282CQA2	US Treasury	UNITED STATES TREASURY 3.5 02/15/2029	02/15/2029 2.879	3,600,000.00 02/26/2026 3,603,937.50	3.50	3,600,000.00	99.1328	3,568,780.80 15,662.98 3,584,443.78	Aa1 AA+ AA+
91282CET4	US Treasury	UNITED STATES TREASURY 2.625 05/31/2027	05/31/2027 1.167	1,100,000.00 12/14/2023 1,051,746.09	2.63	1,100,000.00	98.6445	1,085,089.50 9,677.88 1,094,767.38	Aa1 AA+ AA+
91282CEW7	US Treasury	UNITED STATES TREASURY 3.25 06/30/2027	06/30/2027 1.249	1,100,000.00 01/31/2024 1,073,015.63	3.25	1,100,000.00	99.3047	1,092,351.70 8,986.88 1,101,338.58	Aa1 AA+ AA+
91282CFB2	US Treasury	UNITED STATES TREASURY 2.75 07/31/2027	07/31/2027 1.334	1,000,000.00 04/25/2024 937,382.81	2.75	1,000,000.00	98.5977	985,977.00 4,558.01 990,535.01	Aa1 AA+ AA+
91282CFH9	US Treasury	UNITED STATES TREASURY 3.125 08/31/2027	08/31/2027 1.419	1,000,000.00 04/25/2024 947,695.31	3.13	1,000,000.00	99.0195	990,195.00 2,717.39 992,912.39	Aa1 AA+ AA+
91282CFM8	US Treasury	UNITED STATES TREASURY 4.125 09/30/2027	09/30/2027 1.501	1,000,000.00 04/25/2024 978,046.88	4.13	1,000,000.00	100.4102	1,004,102.00 112.70 1,004,214.70	Aa1 AA+ AA+
91282CHB0	US Treasury	UNITED STATES TREASURY 3.625 05/15/2026	05/15/2026 0.123	1,150,000.00 05/16/2023 1,147,259.77	3.63	1,150,000.00	99.9783	1,149,750.45 15,776.76 1,165,527.21	Aa1 AA+ AA+
91282CJK8	US Treasury	UNITED STATES TREASURY 4.625 11/15/2026	11/15/2026 0.627	1,500,000.00 --- 1,495,129.88	4.63	1,500,000.00	100.5102	1,507,653.00 26,255.18 1,533,908.18	Aa1 AA+ AA+
91282CJT9	US Treasury	UNITED STATES TREASURY 4.0 01/15/2027	01/15/2027 0.794	1,500,000.00 01/11/2024 1,496,542.97	4.00	1,500,000.00	100.1973	1,502,959.50 12,596.69 1,515,556.19	Aa1 AA+ AA+
91282CKS9	US Treasury	UNITED STATES TREASURY 4.875 05/31/2026	05/31/2026 0.167	1,500,000.00 06/18/2024 1,504,628.91	4.88	1,500,000.00	100.1648	1,502,472.00 24,508.93 1,526,980.93	Aa1 AA+ AA+
91282CKY6	US Treasury	UNITED STATES TREASURY 4.625 06/30/2026	06/30/2026 0.249	1,000,000.00 07/03/2024 998,945.31	4.63	1,000,000.00	100.2156	1,002,156.00 11,626.38 1,013,782.38	Aa1 AA+ AA+
91282CLP4	US Treasury	UNITED STATES TREASURY 3.5 09/30/2026	09/30/2026 0.501	2,000,000.00 10/18/2024 1,983,046.88	3.50	2,000,000.00	99.8633	1,997,266.00 191.26 1,997,457.26	Aa1 AA+ AA+
91282CLX7	US Treasury	UNITED STATES TREASURY 4.125 11/15/2027	11/15/2027 1.627	650,000.00 05/21/2025 651,675.78	4.13	650,000.00	100.4297	652,793.05 10,147.27 662,940.32	Aa1 AA+ AA+
91282CMB4	US Treasury	UNITED STATES TREASURY 4.0 12/15/2027	12/15/2027 1.709	1,750,000.00 12/12/2024 1,743,164.06	4.00	1,750,000.00	100.2695	1,754,716.25 20,576.92 1,775,293.17	Aa1 AA+ AA+
91282CME8	US Treasury	UNITED STATES TREASURY 4.25 12/31/2026	12/31/2026 0.753	1,200,000.00 12/30/2024 1,199,859.38	4.25	1,200,000.00	100.3508	1,204,209.60 12,820.44 1,217,030.04	Aa1 AA+ AA+
91282CND9	US Treasury	UNITED STATES TREASURY 3.75 05/15/2028	05/15/2028 2.123	850,000.00 05/14/2025 842,927.73	3.75	850,000.00	99.8633	848,838.05 12,063.19 860,901.24	Aa1 AA+ AA+
91282CQB0	US Treasury	UNITED STATES TREASURY 3.375 02/29/2028	02/29/2028 1.917	650,000.00 03/23/2026 644,617.19	3.38	650,000.00	99.2109	644,870.85 1,907.61 646,778.46	Aa1 AA+ AA+
---	**---**	**---**	**02/06/2028 1.854**	**180,562,142.27 --- 179,645,460.93**	**3.96**	**180,562,142.27**	**99.7845**	**180,536,089.22 1,723,017.07 182,259,106.29**	**Aa2 AA AA+**

Holdings

As of 03/31/2026

Tampa Bay Water Cons Agg (362512)

Dated: 04/02/2026

* Weighted by: Market Value. * Holdings Displayed by: Position.



March 2026

Bond Market Review

Market Summary

February economic data continued to reflect the measured disinflationary progression that has characterized conditions throughout the post-pandemic normalization cycle, with price pressures maintaining a trajectory toward the Federal Reserve longer-run objective while remaining modestly above the 2.0% target. The unemployment rate edged up to 4.4%, remaining in a historically lower range and affirming that the labor market has shown recent stability following an extended sequence of gradual softening. With no Federal Open Market Committee (FOMC) meeting scheduled for February, the target range of 3.50% to 3.75% remained unchanged throughout the month, and market participants continued to assign meaningful probability to at least one additional 25-basis point rate reduction in 2026. U.S. trade and fiscal policy continue to represent important sources of elevated market uncertainty, while escalating geopolitical tensions contributed to a notable flight-to-quality bid in Treasury securities that drove yields sharply lower across the curve.

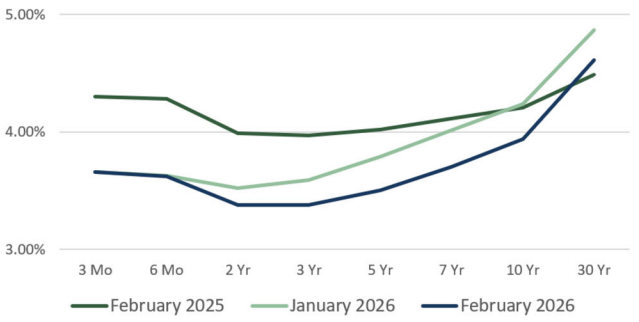
The Federal Reserve did not convene in February, consistent with its scheduled meeting calendar, with the next policy decision anticipated at the March Federal Open Market Committee meeting. The target range remains at 3.50% to 3.75%, following three consecutive 25-basis-point reductions at the end of 2025. Senate confirmation proceedings for Kevin Warsh, President Trump nominee to succeed Chair Jerome Powell as Federal Reserve Chair, advanced during February, introducing a consequential dimension of institutional uncertainty into an already divided policy outlook. Market-implied probabilities for a rate reduction at the March FOMC meeting remained subdued, while the Chandler team continues to expect a 25 basis point cut in the second half of 2026. Although the February outcome represented a temporary departure from this view and a steeper term structure, the medium-term expectation for yield curve steepening remains intact, supported by ongoing Federal Reserve policy normalization.

The US Treasury yield curve flattened in February as yields fell across all maturities, driven by escalating trade policy uncertainty, emerging stagflation concerns, and intensifying geopolitical risk that collectively prompted investors to seek the relative safety of U.S. Treasuries.

The 10-year Treasury yield declined 30 basis points to close the month at 3.94%, crossing below the psychologically significant 4.0% threshold for the first time in several months, while the 2-year yield fell 15 basis points to 3.38%, its lowest closing level since August 2022. The 5-year Treasury was down 29 basis points to 3.50%.

The spread between the 2-year and 10-year Treasury yield points on the curve was 15 basis points tighter from January at +56 basis points at February month-end. The spread between the 2-year Treasury and 10-year Treasury yield one year ago was +22 basis points. The spread between the 3-month and 10-year Treasury yield points on the curve was +28 basis points in February versus +58 basis points in January.

U.S. Treasury Yields



Source: Bloomberg

Credit Spreads

Credit spreads were wider in February

	Spread to Treasuries	One Month Ago	Change
3-month top rated commercial paper	0.01	0.00	0.01
2-year A corporate note	0.38	0.30	0.08
5-year A corporate note	0.60	0.47	0.13
5-year Agency note	0.05	0.04	0.01

Source: Bloomberg; data as of 2/27/2026

Treasury Yields

Yields drop in the U.S. Treasury market

Treasury Yields	Trend	2/27/2026	1/30/2026	Change
3 month	-	3.66	3.66	0.00
2 year	▼	3.38	3.52	-0.15
3 year	▼	3.38	3.59	-0.21
5 year	▼	3.50	3.79	-0.29
7 year	▼	3.70	4.01	-0.31
10 year	▼	3.94	4.24	-0.30
30 year	▼	4.61	4.87	-0.26

Source: Bloomberg

CHANDLER ASSET MANAGEMENT

Market Data

Data as of 2/27/2026 unless otherwise noted

	1-Mo Chg	% Chg
S&P 500		
6878.88	(60.15)	-0.87%
NASDAQ		
22,668.21	(793.61)	-3.38%
Dow Jones		
48,977.92	85.45	0.17%
FTSE (UK)		
10,910.55	687.01	6.72%
DAX (Germany)		
25,284.26	793.85	3.24%
Hang Seng (Hong Kong)		
26,630.54	(756.57)	-2.76%
Nikkei (Japan)		
58,850.27	8,510.79	16.91%

World Stock Market Index Descriptions

S&P 500–The S&P 500 is a market value-weighted index of 500 large-capitalization stocks. The 500 companies included in the index capture approximately 80% of available US market capitalization. NASDAQ–The NASDAQ Composite Index is the market capitalization-weighted index of over 3,300 common stocks listed on the NASDAQ stock exchange. Dow Jones–The Dow Jones Industrial Average is an index that tracks 30 large, publicly-owned companies trading on the New York Stock Exchange and the NASDAQ. The Financial Times Stock Exchange Group (FTSE)–The FTSE is a share index of the 100 companies listed on the London Stock Exchange with the highest market capitalization. DAX–The Deutscher Aktienindex (DAX) is a blue chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange. Hang Seng–The Hang Seng Index is a freefloat-adjusted market-capitalization-weighted stock market index in Hong Kong. It is used to record and monitor daily changes of the largest companies of the Hong Kong stock market and is the main indicator of overall market performance in Hong Kong. Nikkei–Japan's Nikkei 225 Stock Average is a price-weighted index composed of Japan's top 225 blue-chip companies traded on the Tokyo Stock Exchange.

Economic Roundup

Consumer Prices

Inflation firmed slightly in February on a headline basis, with the Consumer Price Index (CPI) rising 0.3% for the month, following a 0.2% increase in January. On an annual basis, headline CPI rose 2.4%, unchanged from January. Core CPI, which excludes volatile food and energy prices, increased 0.2% in February, down from January's 0.3% pace, while the annual rate held steady at 2.5%. The Personal Consumption Expenditures (PCE) Index rose 0.3% in January, easing from a 0.4% gain in December. On a year-over-year basis, headline PCE also edged down to 2.8% from 2.9% the prior month. Core PCE held steady at 0.4% on the month but ticked up to 3.1% annually from 3.0% in December, driven largely by higher healthcare services costs.

Retail Sales

Retail sales edged down 0.2% in January from December, driven by a decline in vehicle sales, but were up 3.2% on a seasonally adjusted annual basis. The control group measure, which feeds directly into GDP calculations, rose 0.3% from the prior month, matching expectations. Adverse winter weather continued to restrain retail activity during the month. The Conference Board's Consumer Confidence Index rose to 91.2 in February from an upwardly revised 89.0 in January. Confidence improved amid signs of labor market stability and moderating inflation. However, the survey noted an increase in respondents citing concerns about the overall cost of goods as well as political and trade uncertainties.

Labor Market

The February Nonfarm Payrolls report showed an unexpected decline of 92,000 jobs, contrasting with expectations for a 55,000 increase. The loss partly reflected a month-long strike involving more than 30,000 Kaiser Permanente employees, while severe winter weather further weighed on hiring. Even so, payroll declines were broad-based across several industries. The unemployment rate rose to 4.4% in February, according to the Bureau of Labor Statistics. The unexpectedly weak jobs report may prompt renewed concerns about the labor market's recent stability.

Housing Starts

Housing starts rose 7.2% in January to an annualized pace of 1.487 million units, including 935,000 single-family and 552,000 multifamily starts. The December S&P Cotality Case-Shiller 20-City Composite Home Price Index posted a 1.3% year-over-year gain in 2025 on a non-seasonally adjusted basis—the weakest annual increase since 2011. Notably, inflation outpaced home price appreciation in the second half of the year, ending a 10-year trend of positive real returns. Over the same period, the Freddie Mac 30-year fixed mortgage rate continued to edge lower, reaching 5.98 percent by the end of February.

Economic Indicator	Current Release	Prior Release	One Year Ago
Trade Balance	(54.56) $B Jan. 30	(70.31) $B Dec. 31	(131.40) $B Jan. 31
Gross Domestic Product	2.0% Dec. 31	4.30% Sep. 30	2.40% Dec. 31
Unemployment Rate	4.40% Feb. 28	4.30% Jan. 31	4.20% Feb. 28
Prime Rate	6.75% Feb. 27	6.75% Jan. 30	7.50% Feb. 28
Refinitiv/CoreCommodity CRB Index	312.67 Feb. 27	320.09 Jan. 30	301.83 Feb. 28
Oil (West Texas Int.)	$67.02 Feb. 27	$65.21 Jan. 30	$69.76 Feb. 28
Consumer Price Index (YoY)	2.40% Jan. 30	2.40% Jan. 30	3.00% Jan. 31
Producer Price Index (YoY)	1.70% Feb. 28	2.00% Dec. 31	2.14% Feb. 28
Euro/Dollar	1.18 Feb. 27	1.19 Jan. 30	1.04 Feb. 28

Source: Bloomberg

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TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.8

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: True-Up of Fixed Costs between Member Governments through February and March 2026 - *Receive Report*

SUMMARY

Member Government actual contributions are adjusted at year-end to the current year's budgeted fixed costs, based upon their pro-rata portion of current year production. The process is referred to as True-Up and occurs after each fiscal year has closed (September 30). The attached tables report the members' potential allocation of fixed costs through February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

To assist our Members in their planning and budgeting, we present a monthly schedule that shows the potential true-up adjustment due each September based on the water production to date for the current fiscal year. This is done to ensure that each member is aware of the upcoming true-up billing and that the member government will have time to take appropriate planning measures for the September 2026 year-end closeout.

Each member is billed for fixed charges through the year based upon their respective pro-rata share of the prior year's production.

BACKGROUND

As required by the Master Water Supply Contract, each member's actual contributions are adjusted at year-end to the current year's budgeted fixed costs, based upon their pro-rata portion of current year production.

Attachments (2)

Potential True Up FEBRUARY-28-2026
Potential True Up MARCH-31-2026

POTENTIAL TRUE UP FOR FY 2026 AS OF 2/28/2026

	MONTHLY DEMAND								
	ST PETE	PINELLAS	TAMPA (Morris Br)	HILLSBOROUGH	PASCO	NEW PORT RICHEY	TOTALS		
Oct-25	853.00	1,457.52	255.40	2,661.11	1,310.06	94.93	6,632.02		
Nov-25	827.73	1,401.78	294.88	2,583.73	1,263.01	86.74	6,457.87		
Dec-25	820.24	1,366.11	69.90	2,492.94	1,218.49	85.89	6,053.57		
Jan-26	831.57	1,400.29	-	2,436.14	1,177.56	84.96	5,930.52		
Feb-26	776.95	1,294.83	175.85	2,173.59	1,094.63	76.34	5,592.19		
Mar-26							-		
Apr-26							-		
May-26							-		
Jun-26							-		
Jul-26							-		
Aug-26							-		
Sep-26							-		
FY 25 FYE	10,116.01	17,591.37	171.73	28,982.02	14,493.62	1,080.20	72,434.95	198.45	MGD
FY 26 YTD	4,109.49	6,920.53	796.03	12,347.51	6,063.75	428.86	30,666.17	203.09	MGD
+ / -	(6,006.52)	(10,670.84)	624.30	(16,634.51)	(8,429.87)	(651.34)	(41,768.78)	4.64	MGD

FY26 YTD MGD	27.22	45.83	5.27	81.77	40.16	2.84	203.09
% of YTD	13.40%	22.57%	2.60%	40.26%	19.77%	1.40%	100.00%
FY 25 MGD	27.72	48.20	0.47	79.40	39.71	2.95	198.45
% of FY 25	13.97%	24.29%	0.24%	40.01%	20.01%	1.48%	100.00%
Fixed billed FY26	21,656,119.78	37,659,691.44	367,251.53	62,044,411.97	31,028,066.38	2,312,121.90	155,067,663.00
Actual fixed based on % of ytd	$ 20,780,195.58	$ 34,994,601.99	$ 4,025,234.05	$ 62,436,865.10	$ 30,662,177.30	$ 2,168,588.97	$ 155,067,663.00
Potential True-up	$ (875,924.20)	$ (2,665,089.45)	$ 3,657,982.52	$ 392,453.13	$ (365,889.08)	$ (143,532.93)	$ 0.00

POTENTIAL TRUE UP FOR FY 2026 AS OF 3/31/2026

	MONTHLY DEMAND								
	ST PETE	PINELLAS	TAMPA (Morris Br)	HILLSBOROUGH	PASCO	NEW PORT RICHEY	TOTALS		
Oct-25	853.00	1,457.52	255.40	2,661.11	1,310.06	94.93	6,632.02		
Nov-25	827.73	1,401.78	294.88	2,583.73	1,263.01	86.74	6,457.87		
Dec-25	820.24	1,366.11	69.90	2,492.94	1,218.49	85.89	6,053.57		
Jan-26	831.57	1,400.29	-	2,436.14	1,177.56	84.96	5,930.52		
Feb-26	776.95	1,294.83	175.85	2,173.59	1,094.63	76.34	5,592.19		
Mar-26	853.29	1,495.88	276.64	2,355.92	1,234.24	81.77	6,297.74		
Apr-26							-		
May-26							-		
Jun-26							-		
Jul-26							-		
Aug-26							-		
Sep-26							-		
FY 25 FYE	10,116.01	17,591.37	171.73	28,982.02	14,493.62	1,080.20	72,434.95	198.45	MGD
FY 26 YTD	4,962.78	8,416.41	1,072.67	14,703.43	7,297.99	510.63	36,963.91	203.10	MGD
+ / -	(5,153.23)	(9,174.96)	900.94	(14,278.59)	(7,195.63)	(569.57)	(35,471.04)	4.65	MGD
FY26 YTD MGD	27.27	46.24	5.89	80.79	40.10	2.81	203.10		
% of YTD	13.43%	22.77%	2.90%	39.78%	19.74%	1.38%	100.00%		
FY 25 MGD	27.72	48.20	0.47	79.40	39.71	2.95	198.45		
% of FY 25	13.97%	24.29%	0.24%	40.01%	20.01%	1.48%	100.00%		
Fixed billed FY26	21,656,119.78	37,659,691.44	367,251.53	62,044,411.97	31,028,066.38	2,312,121.90	155,067,663.00		
Actual fixed based on % of ytd	$ 20,819,407.27	$ 35,307,764.51	$ 4,499,968.48	$ 61,682,504.05	$ 30,615,869.75	$ 2,142,148.94	$ 155,067,663.00		
Potential True-up	$ (836,712.51)	$ (2,351,926.93)	$ 4,132,716.95	$ (361,907.92)	$ (412,196.63)	$ (169,972.96)	$ (0.00)		

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM F.9

DATE: April 1, 2026

TO: Board of Directors

THRU: Charles H. Carden, General Manager

FROM: Christina Sackett, Chief Financial Officer

SUBJECT: Vendor's Status Reports for February and March 2026 - *Receive Report*

SUMMARY

Attached are status reports of As-Needed Professional Service Contractors and Vendors utilized by Tampa Bay Water for February and March 2026.

SUGGESTED ACTION

Receive and File.

COST/FUNDING SOURCE

N/A

DISCUSSION

Attached are summaries of the as-needed contracted services being utilized by the agency for February and March 2026. This report shows total contract values, cumulative purchase orders issued against the contracts, and actual expenditures made under the contracts.

Attachment (2)

February 2026
March 2026

Contract Summary

Monthly Status Report of Vendors

February 1, 2026 thru February 28, 2026

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
A.C. SCHULTES OF FLORIDA, INC. 11/18/24 thru 03/30/26 2025700	$500,000.00		$0.00	$0.00	$0.00	$0.00
ACLARIAN LLC 10/20/22 thru 05/25/25 2023702	$175,000.00		$98,000.00	$98,000.00	$88,821.60	$9,178.40
ADVANCED ENVIRONMENTAL LABORATORIES, INC 03/21/22 thru 02/28/23 2022036	$200,000.00		$190,000.00	$190,000.00	$133,957.10	$56,042.90
ADVANCED ROOFING, INC. 11/22/23 thru 11/30/24 2024012	$600,000.00		$360,000.00	$360,000.00	$244,794.04	$115,205.96
AECOM TECHNICAL SERVICES, INC. 09/20/21 thru 09/01/26 2021038	$2,000,000.99		$1,092,850.00	$1,092,850.00	$398,328.48	$694,521.52
AECOM TECHNICAL SERVICES, INC. 07/15/24 thru 12/31/26 2024029	$5,254,167.00		$3,908,517.00	$3,908,517.00	$1,345,521.47	$2,562,995.53
AGILENT TECHNOLOGIES, INC. 01/01/24 thru 12/31/26 2024901	$38,751.70		$0.00	$0.00	$0.00	$0.00
AIR MECHANICAL & SERVICE CORP. 10/01/22 thru 02/02/23 2023701	$2,163,069.60	$1,200,000.00	$2,328,979.05	$3,528,979.05	$1,667,109.01	$1,861,870.04
AIRGAS SPECIALTY PRODUCTS, INC. 01/01/23 thru 12/31/23 2023016V	$2,439,522.95		$2,477,512.00	$2,477,512.00	$1,950,643.88	$526,868.12
AIRGAS USA, LLC 08/19/24 thru 09/30/25 2025012	$11,641,440.00		$5,086,505.00	$5,086,505.00	$3,956,364.63	$1,130,140.37
AJAX PAVING INDUSTRIES OF FLORIDA LLC 10/18/21 thru 09/02/23 2022701	$925,000.00		$839,763.00	$839,763.00	$838,503.00	$1,260.00
AJAX PAVING INDUSTRIES OF FLORIDA LLC 02/23/26 thru 03/31/27 2026703	$800,000.00		$0.00	$0.00	$0.00	$0.00
ALAN PLUMMER AND ASSOCIATES, INC. 05/09/22 thru 09/01/26 2021036V	$2,001,205.65		$189,376.00	$189,376.00	$189,376.00	$0.00
ALLIED UNIVERSAL CORPORATION 10/01/23 thru 09/30/24 2024006	$16,554,611.91		$15,088,641.91	$15,088,641.91	$9,746,846.55	$5,341,795.36
AMERICAN SPIRALWELD PIPE CO. 10/29/24 thru 12/31/29 2025707	$55,000,000.00		$46,085,053.72	$46,085,053.72	$8,823,837.27	$37,261,216.45
AMICI ENGINEERING CONTRACTORS, LLC 10/01/25 thru 09/30/30 2026009	$800,000.00	$300,000.00	$0.00	$300,000.00	$0.00	$300,000.00
APG ELECTRIC, INC. 08/21/25 thru 09/30/28 2025053	$206,323.18		$206,323.18	$206,323.18	$203,323.18	$3,000.00
APPLIED DRILLING ENG 11/18/24 thru 03/30/26 2025701	$1,735,110.00		$1,235,110.00	$1,235,110.00	$339,324.17	$895,785.83

Contract Summary

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
APPLIED ECOLOGY, INC 03/15/22 thru 03/31/25 2022035	$1,394,970.58		$273,533.61	$273,533.61	$151,678.70	$121,854.91
APPLIED ECOLOGY, INC 10/01/22 thru 09/30/26 2022054	$364,150.83		$371,800.82	$371,800.82	$273,577.03	$98,223.79
ARCADIS US INC. 03/21/22 thru 05/01/27 2022019	$750,000.00	$124,410.00	$624,183.00	$748,593.00	$618,748.04	$129,844.96
ARCHER WESTERN CONSTRUCTION LLC 11/14/22 thru 12/31/25 2023001	$22,450,100.00		$22,450,100.00	$22,450,100.00	$21,050,739.04	$1,399,360.96
ARCHER WESTERN CONSTRUCTION LLC 02/03/25 thru 07/23/27 2025036	$3,319,100.00		$3,319,100.00	$3,319,100.00	$178,315.00	$3,140,785.00
ARDURRA GROUP, INC 09/20/21 thru 09/01/26 2021030	$2,000,001.00		$499,571.00	$499,571.00	$239,301.04	$260,269.96
ARDURRA GROUP, INC 10/03/24 thru 09/30/29 2025002	$500,000.00		$48,600.00	$48,600.00	$41,310.00	$7,290.00
ARTEMIS CONSULTING COLLECTIVE INC 08/18/25 thru 09/30/26 2022003V	$399,388.00		$280,694.00	$280,694.00	$127,355.58	$153,338.42
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022028V	$96,088.95		$93,579.50	$93,579.50	$39,345.68	$54,233.82
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022052V	$248,479.62		$238,632.00	$238,632.00	$112,867.07	$125,764.93
AURIGO SOFTWARE TECHNOLOGIES INC 01/01/26 thru 12/31/30 2026014	$1,679,014.20		$0.00	$0.00	$0.00	$0.00
BAKER TILLY ADVISORY GROUP 07/21/25 thru 07/21/26 2025047	$125,000.00		$125,000.00	$125,000.00	$97,403.95	$27,596.05
BAL ENGINEERING, INC. 02/14/19 thru 2019700	$90,000.00		$87,400.00	$87,400.00	$76,795.00	$10,605.00
BAL ENGINEERING, INC. 09/18/23 thru 12/10/25 2024701	$200,000.00		$55,000.00	$55,000.00	$9,500.00	$45,500.00
BAYVIEW PUBLIC RELATIONS INC. 10/01/22 thru 09/30/25 2023024	$525,000.00	$15,950.00	$65,523.00	$81,473.00	$62,184.50	$19,288.50
BEST LINE OIL COMPANY 05/19/25 thru 09/30/27 2025715	$300,000.00		$30,000.00	$30,000.00	$1,203.36	$28,796.64
BIG SEA, INC. 10/01/22 thru 09/30/24 2023011	$400,000.00		$163,025.00	$163,025.00	$136,325.00	$26,700.00
BLACK & VEATCH CORPORATION 09/01/16 thru 10/26/25 2016031	$3,950,877.00		$3,950,877.00	$3,950,877.00	$3,102,965.36	$847,911.64

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BLACK & VEATCH CORPORATION 09/20/21 thru 09/30/29 2022001	$24,024,246.92		$16,570,948.80	$16,570,948.80	$12,716,241.64	$3,854,707.16
BUSH GRAZIANO RICE & HEARING, P.A. 10/16/23 thru 10/16/24 2024014	$150,000.00		$80,000.00	$80,000.00	$22,652.10	$57,347.90
C&T CONTRACTING SERVICES LLC 11/03/25 thru 03/31/27 2026012	$1,545,255.00		$1,545,255.00	$1,545,255.00	$0.00	$1,545,255.00
CARMEUSE LIME & STONE, INC. 08/15/22 thru 09/30/23 2023018	$10,133,383.35		$9,652,726.00	$9,652,726.00	$7,636,178.95	$2,016,547.05
CAROLLO ENGINEERS INC 09/20/21 thru 09/01/26 2021029	$2,000,000.00		$680,681.50	$680,681.50	$601,940.35	$78,741.15
CATALYST COMMUNICATIONS GROUP LLC 10/01/22 thru 09/30/25 2023010	$945,000.00		$271,268.15	$271,268.15	$249,116.80	$22,151.35
CDM SMITH INC 09/20/21 thru 09/01/26 2021033	$2,000,001.00		$609,678.98	$609,678.98	$508,368.01	$101,310.97
CEC MOTOR & UTILITY SERVICES LLC 04/17/23 thru 04/30/27 2023032	$1,000,000.00		$100,000.00	$100,000.00	$59,379.50	$40,620.50
CHANDLER ASSET MANAGEMENT, INC. 08/17/20 thru 12/13/22 2021700	$526,975.00		$451,451.30	$451,451.30	$369,883.63	$81,567.67
CHEMICAL SYSTEMS OF ORLANDO, INC. 08/19/24 thru 09/30/25 2025013	$2,754,612.56		$1,514,525.00	$1,514,525.00	$1,088,782.57	$425,742.43
CITRUS PARK WELL DRILLING & IRRIGATION INC 06/20/22 thru 06/30/23 2022058	$400,000.00		$0.00	$0.00	$0.00	$0.00
CIVILSURV DESIGN GROUP, INC. 10/01/24 thru 09/30/29 2025003	$500,000.00		$0.00	$0.00	$0.00	$0.00
CL2 SOLUTIONS, LLC. 10/23/24 thru 10/23/25 2025706	$30,000.00		$0.00	$0.00	$0.00	$0.00
CODY & ASSOCIATES, INC. 01/15/26 thru 04/30/27 2026704	$29,900.00	$29,900.00	$0.00	$29,900.00	$0.00	$29,900.00
CORCORAN & ASSOCIATES, INC. 08/18/20 thru 08/18/23 2021004	$750,000.00		$702,200.00	$702,200.00	$690,970.00	$11,230.00
CORCORAN & ASSOCIATES, INC. 10/01/25 thru 09/30/27 2025051	$750,000.00		$150,000.00	$150,000.00	$62,770.00	$87,230.00
CORE & MAIN LP 11/06/24 thru 12/31/29 2025709	$4,000,000.00		$2,576,187.02	$2,576,187.02	$1,365,389.00	$1,210,798.02
CORRPRO COMPANIES, INC. 01/01/22 thru 12/31/26 2022011	$750,000.00		$616,153.00	$616,153.00	$427,773.97	$188,379.03

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CUMBEY & FAIR, INC. 10/03/24 thru 09/30/29 2025004	$500,000.00		$500,000.00	$500,000.00	$338,157.00	$161,843.00
DESIGNER AT LARGE 10/01/22 thru 09/30/24 2023012	$160,000.00		$42,089.00	$42,089.00	$42,089.00	$0.00
DEWBERRY ENGINEERS, INC 09/20/21 thru 09/01/26 2021034	$2,000,001.00		$173,953.00	$173,953.00	$20,570.13	$153,382.87
DEWBERRY ENGINEERS, INC 10/03/24 thru 09/30/29 2025005	$500,000.00		$64,044.98	$64,044.98	$52,906.86	$11,138.12
DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC. 07/21/25 thru 02/18/29 2025719	$881,062.08		$62,875.32	$62,875.32	$60,986.52	$1,888.80
DIALOGUE PUBLIC RELATIONS, LLC 10/01/22 thru 09/30/25 2023009	$945,000.00		$496,337.50	$496,337.50	$382,185.44	$114,152.06
DIGITAL AERIAL SOLUTIONS, LLC 10/21/24 thru 09/30/28 2025010	$807,383.68		$595,152.26	$595,152.26	$286,749.80	$308,402.46
DONALD J POLMANN 04/17/23 thru 04/30/26 2023509	$150,000.00		$10,625.00	$10,625.00	$10,625.00	$0.00
DXP ENTERPRISES INC 01/26/26 thru 01/31/28 2026709	$882,183.72	$882,183.72	$0.00	$882,183.72	$0.00	$882,183.72
EARTH RESOURCES, INC. 03/15/22 thru 03/31/25 2022027	$400,000.00		$97,689.24	$97,689.24	$34,479.24	$63,210.00
EARTH RESOURCES, INC. 10/03/22 thru 09/30/26 2022053	$417,406.09		$438,924.42	$438,924.42	$324,021.24	$114,903.18
EARTHBALANCE 03/29/22 thru 03/31/25 2022041	$400,000.00		$32,994.00	$32,994.00	$32,994.00	$0.00
ECO-LAND DESIGN, LLC 08/19/24 thru 09/30/25 2025025	$284,000.00		$2,500.00	$2,500.00	$150.00	$2,350.00
ECOHYDROLOGIX LLC 03/15/22 thru 03/31/25 2022032	$400,000.00		$29,750.00	$29,750.00	$29,750.00	$0.00
ECOHYDROLOGIX LLC 10/03/22 thru 09/30/26 2022055	$655,976.00		$655,978.00	$655,978.00	$522,416.04	$133,561.96
ELECTRIC GAS INDUSTRIES ASSOCIATION 11/01/25 thru 10/31/30 2026015	$12,098,169.00		$1,922,586.00	$1,922,586.00	$384,633.50	$1,537,952.50
ELECTRICAL ENGINEERING ENTERPRISES INC 12/19/24 thru 08/24/26 2025028	$1,717,198.00		$1,717,198.00	$1,717,198.00	$151,993.54	$1,565,204.46
ELECTRICAL ENGINEERING ENTERPRISES INC 11/18/24 thru 12/31/26 2025040	$585,000.00		$550,000.00	$550,000.00	$264,248.27	$285,751.73

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EMERGENCY MANAGEMENT SERVICES INTERNATIONAL, INC. 12/16/24 thru 10/23/27 2025710	$75,000.00		$25,000.00	$25,000.00	$21,907.41	$3,092.59
ENERGY CAP, LLC 02/18/19 thru 2019030	$148,662.25		$148,662.25	$148,662.25	$142,667.85	$5,994.40
ENTERPRISE FM TRUST 09/15/25 thru 05/31/26 2026702	$790,000.00		$592,000.00	$592,000.00	$79,885.67	$512,114.33
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 08/17/20 thru 09/30/25 2021001	$2,739,331.00		$2,739,331.00	$2,739,331.00	$2,739,331.00	$0.00
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 04/14/22 thru 03/31/25 2022030	$400,000.00		$382,724.00	$382,724.00	$357,651.86	$25,072.14
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 03/21/22 thru 03/31/25 2022034V	$400,000.00		$400,989.84	$400,989.84	$74,894.36	$326,095.48
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 09/20/24 thru 06/14/29 2025704	$2,374,000.00		$489,858.00	$489,858.00	$215,302.21	$274,555.79
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 05/19/25 thru 09/30/29 2025716	$2,477,000.00		$600,000.00	$600,000.00	$160,960.51	$439,039.49
FARMLAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507B	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
FIVE12 PAINTING & REMODELING LLC 10/01/22 thru 09/30/23 2023014	$775,993.00		$409,280.00	$409,280.00	$267,737.00	$141,543.00
FLAGSHIP AVIATION SERVICES LLC 11/01/25 thru 12/31/29 2026700	$920,000.00		$230,000.00	$230,000.00	$61,317.85	$168,682.15
FLATWOODS CONSULTING GROUP, INC. 03/15/22 thru 03/31/25 2022029	$400,000.00		$70,300.00	$70,300.00	$61,276.35	$9,023.65
FLORIDA TREE AND PROPERTY MAINTENANCE 01/01/23 thru 12/31/23 2023025	$1,336,380.75		$1,225,000.00	$1,225,000.00	$983,333.50	$241,666.50
FORTILINE, INC. 01/26/26 thru 01/31/28 2026708	$724,796.51	$724,796.51	$0.00	$724,796.51	$0.00	$724,796.51
FRONT LINE POWER LLC 11/18/24 thru 12/31/26 2025039	$925,182.40	$250,000.00	$690,000.00	$940,000.00	$281,573.37	$658,426.63
GARNEY COMPANIES, INC. 11/13/23 thru 12/31/27 2023027	$407,665,470.74		$348,709,927.62	$348,709,927.62	$21,827,970.63	$326,881,956.99
GEOPOINT SURVEYING, INC. 09/15/25 thru 09/30/29 2026001	$1,661,360.00		$415,340.00	$415,340.00	$26,695.25	$388,644.75
GEORGE F YOUNG INC 10/01/24 thru 09/30/29 2025006	$500,000.00		$0.00	$0.00	$0.00	$0.00

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GFT INFRASTRUCTURE, INC. 03/17/25 thru 03/31/28 2025043V	$1,891,201.00		$354,346.00	$354,346.00	$0.00	$354,346.00
GHD SERVICES, INC. 09/20/21 thru 09/30/24 2022007	$450,000.00		$237,610.77	$237,610.77	$163,027.94	$74,582.83
GRAY ROBINSON, P.A. 12/17/18 thru 09/30/19 2019039	$1,546,900.50	$100,000.00	$1,488,875.61	$1,588,875.61	$751,553.52	$837,322.09
GSI ENVIRONMENTAL, INC. 10/21/19 thru 12/31/26 2020017	$1,500,000.00		$1,426,343.96	$1,426,343.96	$1,364,218.91	$62,125.05
GSI ENVIRONMENTAL, INC. 11/15/24 thru 10/31/29 2025021	$1,000,000.00		$0.00	$0.00	$0.00	$0.00
GUNSTER, YOAKLEY & STEWART, PA 10/20/25 thru 12/31/26 2026041	$690,000.00	$690,000.00	$0.00	$690,000.00	$0.00	$690,000.00
HAWKINS, INC. 08/15/22 thru 09/30/23 2023019	$1,767,673.30		$1,079,329.00	$1,079,329.00	$805,687.45	$273,641.55
HAWKINS, INC. 01/26/26 thru 09/30/27 2026040	$16,502,500.00	$1,600,000.00	$0.00	$1,600,000.00	$0.00	$1,600,000.00
HAZEN & SAWYER, P.C. 10/21/19 thru 12/31/26 2020013	$400,000.00		$359,650.83	$359,650.83	$344,008.33	$15,642.50
HAZEN & SAWYER, P.C. 10/21/19 thru 12/31/26 2020018	$800,000.00		$220,000.00	$220,000.00	$198,610.42	$21,389.58
HAZEN & SAWYER, P.C. 09/20/21 thru 09/01/26 2021032	$2,000,001.00		$867,650.00	$867,650.00	$425,304.00	$442,346.00
HAZEN & SAWYER, P.C. 03/21/22 thru 05/01/27 2022020	$750,000.00		$475,263.00	$475,263.00	$412,929.54	$62,333.46
HAZEN & SAWYER, P.C. 11/08/22 thru 12/31/25 2022060	$1,089,370.10		$819,965.00	$819,965.00	$712,787.43	$107,177.57
HAZEN & SAWYER, P.C. 11/18/24 thru 05/18/26 2024030	$2,630,698.00		$2,630,698.00	$2,630,698.00	$207,363.95	$2,423,334.05
HAZEN & SAWYER, P.C. 11/15/24 thru 10/31/29 2025022	$1,000,000.00		$160,100.00	$160,100.00	$20,000.00	$140,100.00
HILLSBOROUGH COUNTY 10/01/24 thru 06/30/26 AGR2025001	$200,245.00		$200,245.00	$200,245.00	$196,649.80	$3,595.20
HILLSBOROUGH COUNTY 10/01/25 thru 12/31/27 AGR2026001	$424,839.00		$208,255.00	$208,255.00	$0.00	$208,255.00
HPC INDUSTRIAL SERVICES, LLC 08/19/24 thru 09/30/25 2025020	$283,453.00		$0.00	$0.00	$0.00	$0.00

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
HSW CONSULTING LLC 09/20/21 thru 09/30/24 2022006	$450,000.00		$106,572.00	$106,572.00	$101,386.25	$5,185.75
HUSS DRILLING, INC 08/19/24 thru 09/30/26 2024702	$806,525.00		$806,525.00	$806,525.00	$218,850.31	$587,674.69
IN DEPTH INC. 10/16/23 thru 03/30/25 2024008	$333,000.00		$264,770.00	$264,770.00	$153,060.00	$111,710.00
INTERA, INC. 10/21/19 thru 12/31/26 2020019	$749,999.90		$346,400.58	$346,400.58	$225,618.99	$120,781.59
INTERACID NORTH AMERICA, INC. 05/19/25 thru 09/30/25 2025016V	$4,891,461.26		$2,596,892.00	$2,596,892.00	$1,295,520.44	$1,301,371.56
JACOBS ENGINEERING GROUP INC 09/20/21 thru 09/01/26 2021037	$1,999,001.00		$598,793.24	$598,793.24	$596,043.24	$2,750.00
JACOBS ENGINEERING GROUP INC 08/21/23 thru 05/30/27 2023026	$836,348.00		$836,348.00	$836,348.00	$732,664.50	$103,683.50
JACOBS ENGINEERING GROUP INC 08/20/25 thru 09/30/28 2025029	$369,499.00		$369,499.00	$369,499.00	$0.00	$369,499.00
JONES WALKER, LLP 01/01/24 thru 01/01/25 2024040	$241,000.00		$241,125.04	$241,125.04	$174,086.74	$67,038.30
JONES WALKER, LLP 10/01/25 thru 09/30/27 2025052	$750,000.00		$150,000.00	$150,000.00	$62,500.00	$87,500.00
KAT CONSTRUCTION & MATERIALS, INC. 09/30/24 thru 12/31/26 2020044V	$10,663,512.64		$10,663,512.64	$10,663,512.64	$3,732,563.77	$6,930,948.87
KAT CONSTRUCTION & MATERIALS, INC. 12/01/23 thru 12/31/25 2024011	$1,335,340.00		$1,335,340.00	$1,335,340.00	$1,302,915.98	$32,424.02
KELLER AMERICA, INC 08/19/24 thru 09/30/26 2025001	$226,224.60		$52,889.07	$52,889.07	$52,889.07	$0.00
KEMIRA WATER SOLUTIONS, INC. 04/21/25 thru 09/30/25 2023017V	$6,893,963.00		$6,393,963.00	$6,393,963.00	$2,828,758.07	$3,565,204.93
LAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507A	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
LHOIST NORTH AMERICA OF ALABAMA, LLC 09/05/24 thru 09/30/25 2025011	$1,494,353.20		$838,640.00	$838,640.00	$563,121.74	$275,518.26
LOCHER ENVIRONMENTAL TECHNOLOGY LLC 01/05/22 thru 12/01/27 2022704	$143,673.00		$50,000.00	$50,000.00	$31,859.85	$18,140.15
MAINZER MANAGEMENT INC 10/01/23 thru 09/30/25 2024004	$278,700.00	$49,236.00	$278,700.00	$327,936.00	$162,629.00	$165,307.00

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MANSFIELD OIL COMPANY OF GAINSVILLE INC 09/15/25 thru 05/01/28 2026701	$250,000.00		$50,000.00	$50,000.00	$17,430.94	$32,569.06
MATHESON TRI-GAS INC. 01/01/25 thru 09/30/25 2025017	$3,171,057.98		$1,960,730.00	$1,960,730.00	$1,082,016.91	$878,713.09
MAULDIN & JENKINS, LLC 04/18/22 thru 02/28/27 2022900	$601,900.00		$579,000.00	$579,000.00	$533,000.00	$46,000.00
MCKIM & CREED PA 09/20/21 thru 09/01/26 2021035	$2,000,001.01		$298,645.00	$298,645.00	$217,291.15	$81,353.85
MCKIM & CREED PA 05/27/25 thru 04/19/27 2025042	$1,464,000.00		$1,464,000.00	$1,464,000.00	$456,761.34	$1,007,238.66
MCKIM & CREED PA 10/20/25 thru 09/20/29 2026016	$1,000,550.00		$1,000,550.00	$1,000,550.00	$23,077.17	$977,472.83
MICHAEL T. HANKIN, P.A. 07/21/25 thru 12/31/27 2025054	$20,000.00		$20,000.00	$20,000.00	$1,267.50	$18,732.50
MORENO INDUSTRIAL 10/01/25 thru 09/30/30 2026007	$800,000.00		$200,000.00	$200,000.00	$25,643.00	$174,357.00
NABORS, GIBLIN, & NICKERSON P.A. 12/17/18 thru 09/17/19 2019040	$135,000.00		$161,292.14	$161,292.14	$63,116.62	$98,175.52
NATIONAL EC SERVICES, INC. 10/17/22 thru 12/31/26 2023005	$600,000.00		$599,960.00	$599,960.00	$458,768.40	$141,191.60
NWPX INFASTRUCTURE INC 05/02/25 thru 12/31/28 2025718	$9,678,046.80		$9,678,046.80	$9,678,046.80	$3,495,048.00	$6,182,998.80
NWPX INFASTRUCTURE INC 01/26/26 thru 01/31/28 2026707	$1,138,443.90	$1,138,443.90	$0.00	$1,138,443.90	$0.00	$1,138,443.90
ODYSSEY MANUFACTURING COMPANY 01/01/25 thru 09/30/25 2025018	$31,206,767.20		$9,459,073.00	$9,459,073.00	$5,981,611.10	$3,477,461.90
PAFF TREE SERVICE, LLC 03/29/22 thru 03/31/23 2022046	$750,000.00	$150,000.00	$558,627.00	$708,627.00	$539,271.00	$169,356.00
PARTRIDGE WELL DRILLING COMPANY, INC 11/18/24 thru 03/30/26 2025702	$500,000.00		$0.00	$0.00	$0.00	$0.00
PASCO COUNTY OFFICES 10/01/25 thru 12/31/27 AGR2026002	$428,400.00		$210,000.00	$210,000.00	$38,117.61	$171,882.39
PCL CONSTRUCTION, INC. 08/21/23 thru 06/30/26 2023028	$1,504,600.00		$1,504,600.00	$1,504,600.00	$1,489,711.76	$14,888.24
PCL CONSTRUCTION, INC. 08/21/23 thru 05/30/27 2023029	$4,426,900.00		$1,018,792.96	$1,018,792.96	$101,556.17	$917,236.79

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
PERSONNEL SOLUTIONS PLUS LLC 05/15/23 thru 04/02/30 2023705	$200,000.00		$25,000.00	$25,000.00	$23,575.35	$1,424.65
PERSSON, COHEN, MOONEY, FERNANDEZ & JACKSON, P.A. 03/01/25 thru 02/28/26 2025045	$420,000.00		$420,000.00	$420,000.00	$283,332.50	$136,667.50
PFM ASSET MANAGEMENT LLC 06/09/06 thru 09/30/17 2006067	$500,000.00		$298,415.00	$298,415.00	$242,007.50	$56,407.50
PFM FINANCIAL ADVISORS LLC 05/15/23 thru 03/21/26 2023703	$144,000.00		$56,000.00	$56,000.00	$22,500.00	$33,500.00
PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS 10/01/24 thru 09/30/25 AGR2025003	$381,875.32		$188,107.00	$188,107.00	$185,276.34	$2,830.66
PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS 10/01/24 thru 06/30/26 AGR2025003	$381,875.32		$188,107.00	$188,107.00	$185,276.34	$2,830.66
PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS 10/01/25 thru 12/31/27 AGR2026003	$417,486.00		$204,650.00	$204,650.00	$44,932.27	$159,717.73
PIPER FIRE PROTECTION, INC. 10/01/22 thru 09/30/23 2023020	$700,000.00		$574,955.92	$574,955.92	$410,197.10	$164,758.82
PLYMOUTH PLAZA, LLC 01/01/25 thru 12/31/25 2025044	$67,500.00		$67,500.00	$67,500.00	$63,508.06	$3,991.94
POLYDYNE INC 10/01/23 thru 09/30/24 2024005	$1,618,110.00		$1,878,416.00	$1,878,416.00	$1,038,988.50	$839,427.50
POND & COMPANY 12/14/20 thru 12/14/25 2021017	$682,000.00		$692,049.98	$692,049.98	$631,896.76	$60,153.22
PRIMARY FLOW SIGNAL, INC. 01/26/26 thru 01/31/28 2026706	$217,970.00	$217,970.00	$0.00	$217,970.00	$0.00	$217,970.00
PRITCHETT STEINBECK GROUP, INC. 03/15/22 thru 03/31/25 2022028	$470,000.00		$368,911.05	$368,911.05	$278,030.09	$90,880.96
PVS TECHNOLOGIES, INC. 09/05/24 thru 09/30/25 2025014	$1,809,000.00		$983,719.00	$983,719.00	$214,030.63	$769,688.37
QUEST ECOLOGY INC 03/29/22 thru 03/31/25 2022043	$700,000.00		$562,469.65	$562,469.65	$411,469.79	$150,999.86
RAFTELIS FINANCIAL CONSULTANTS, INC. 03/21/22 thru 05/01/27 2022021	$750,000.00		$560,150.00	$560,150.00	$408,026.56	$152,123.44
RAZORBACK LLC 10/16/23 thru 03/30/25 2024009	$1,355,600.00		$1,358,000.00	$1,358,000.00	$1,317,600.00	$40,400.00
RICK RICHARDS, INC. 04/05/22 thru 03/31/25 2022045	$833,000.00		$189,550.00	$189,550.00	$101,120.00	$88,430.00

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RICK RICHARDS, INC. 03/21/22 thru 03/31/23 2022047	$950,000.00		$763,885.00	$763,885.00	$656,879.00	$107,006.00
ROWLAND (DE), LLC 08/16/21 thru 09/30/25 2021045	$2,000,000.00		$1,008,610.00	$1,008,610.00	$623,349.53	$385,260.47
ROWLAND (DE), LLC 10/01/25 thru 09/30/30 2026006	$800,000.00		$760,000.00	$760,000.00	$172,154.20	$587,845.80
ROWLAND (DE), LLC 10/01/25 thru 09/30/30 2026008	$800,000.00		$200,000.00	$200,000.00	$0.00	$200,000.00
SMITH INDUSTRIES INC 03/21/22 thru 03/31/23 2022049	$800,000.00		$518,976.90	$518,976.90	$466,113.40	$52,863.50
SOLAR JET PRODUCTIONS LLC 10/01/22 thru 09/30/24 2023023	$200,000.00		$12,070.80	$12,070.80	$12,070.80	$0.00
SOUTHEAST DRILLING SERVICES INC 08/19/24 thru 09/30/26 2025026	$3,000,000.00	$200,000.00	$150,000.00	$350,000.00	$146,528.00	$203,472.00
SOUTHEAST DRILLING SERVICES INC 11/18/24 thru 03/30/26 2025703	$500,000.00		$0.00	$0.00	$0.00	$0.00
SOUTHWEST FLORIDA WATER MANAGEMENT 10/01/21 thru AGR2021013	$145,054,000.00		$0.00	$0.00	$0.00	$0.00
STAG INDUSTRIES LLC 07/15/24 thru 07/31/25 2024018	$350,000.00		$350,000.00	$350,000.00	$197,191.94	$152,808.06
STANTEC CONSULTING SERVICES, INC. 10/27/20 thru 09/30/26 2021002	$2,787,414.98		$2,787,414.98	$2,787,414.98	$1,452,702.89	$1,334,712.09
STANTEC CONSULTING SERVICES, INC. 08/16/21 thru 02/28/29 2021025	$26,995,874.64		$20,995,874.64	$20,995,874.64	$11,931,046.03	$9,064,828.61
STANTEC CONSULTING SERVICES, INC. 09/20/21 thru 09/01/26 2021028	$2,000,001.00		$650,028.00	$650,028.00	$372,592.50	$277,435.50
STANTEC CONSULTING SERVICES, INC. 09/20/21 thru 09/30/24 2022009V	$450,000.00		$39,715.00	$39,715.00	$39,715.00	$0.00
STANTEC CONSULTING SERVICES, INC. 03/21/22 thru 03/31/25 2022040V	$299,435.00		$285,280.00	$285,280.00	$241,793.96	$43,486.04
STARBOARD CONSULTING LLC 04/15/24 thru 06/30/26 2024001	$243,020.00		$243,020.00	$243,020.00	$210,020.00	$33,000.00
SURVTECH SOLUTIONS, INC. 10/01/24 thru 09/30/29 2025007	$500,000.00		$410,685.00	$410,685.00	$0.00	$410,685.00
TAMCO ELECTRIC INC 11/18/24 thru 12/31/26 2025038	$295,875.00		$160,000.00	$160,000.00	$100,909.11	$59,090.89

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
TAMPA ARMATURE WORKS INC 05/11/23 thru 04/30/27 2023031	$1,500,000.00		$735,000.00	$735,000.00	$372,671.39	$362,328.61
THATCHER CHEMICAL OF FLORIDA INC. 08/19/24 thru 09/30/25 2025015	$838,754.00		$557,501.00	$557,501.00	$258,083.41	$299,417.59
THE VALERIN GROUP, INC. 10/01/22 thru 09/30/24 2023013	$160,000.00		$1,500.00	$1,500.00	$1,500.00	$0.00
THERMO ELECTRON NORTH AMERICA LLC 03/18/24 thru 03/31/26 2024015	$232,780.65		$264,560.10	$264,560.10	$232,780.65	$31,779.45
TK ELEVATOR CORPORATION 03/24/25 thru 12/31/25 2025713	$60,000.00		$53,482.86	$53,482.86	$53,482.86	$0.00
TLC DIVERSIFIED, INC. 05/20/24 thru 11/20/25 2024013	$6,508,280.00		$6,508,280.00	$6,508,280.00	$4,578,903.26	$1,929,376.74
TUCKER ENTERPRISE SERVICES, INC. 03/21/22 thru 03/31/23 2022048	$650,000.00		$335,000.00	$335,000.00	$237,570.00	$97,430.00
U.S. DEPARTMENT OF AGRICULTURE - FLORIDA 10/01/25 thru 09/30/26 AGR2026005	$50,000.00		$50,000.00	$50,000.00	$7,200.89	$42,799.11
UNIVERSAL PROTECTION SERVICE LP 02/24/25 thru 09/30/27 2025714V	$1,431,711.00		$1,106,325.20	$1,106,325.20	$731,164.77	$375,160.43
UNIVERSITY OF CENTRAL FLORIDA 08/16/24 thru 06/30/25 2024017	$90,000.00		$90,000.00	$90,000.00	$64,285.70	$25,714.30
UNIVERSITY OF CENTRAL FLORIDA 09/30/24 thru 11/30/26 2024021	$115,840.00		$115,840.00	$115,840.00	$57,920.00	$57,920.00
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 07/01/24 thru 06/30/25 2024016	$99,000.00		$99,000.00	$99,000.00	$98,138.26	$861.74
UNIVERSITY OF SOUTH FLORIDA 09/01/24 thru 06/30/26 2024019	$89,996.00		$89,996.00	$89,996.00	$89,996.00	$0.00
UNIVERSITY OF SOUTH FLORIDA 05/01/24 thru 06/30/26 2024020	$99,987.00		$99,987.00	$99,987.00	$77,962.00	$22,025.00
US WATER-ACCIONA SEAWATER DESLINATION PARTNERS 07/17/23 thru 11/15/29 2005062V	$41,929,058.42		$42,153,555.47	$42,153,555.47	$33,282,746.04	$8,870,809.43
USGS 10/01/25 thru 09/30/26 AGR2026004	$109,800.00		$109,800.00	$109,800.00	$27,450.00	$82,350.00
V&A CONSULTING ENGINEERING, INC. 08/17/22 thru 09/01/26 2021027V	$2,040,278.53		$1,260,944.13	$1,260,944.13	$507,634.41	$753,309.72
VANASSE HANGEN BRUSTLIN INC 04/05/22 thru 03/31/25 2022033	$400,000.00	$45,460.00	$187,885.00	$233,345.00	$170,880.40	$62,464.60

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
VEOLIA WATER NORTH AMERICA 04/10/00 thru 01/15/28 2000028	$229,897,678.62		$198,276,468.03	$198,276,468.03	$52,420,596.45	$145,855,871.58
VERIZON FLORIDA INC 08/25/20 thru 12/31/26 2020054	$1,954,614.10		$2,131,600.00	$2,131,600.00	$1,684,479.46	$447,120.54
WADE-TRIM INC 08/16/21 thru 02/28/29 2021024	$45,126,791.00		$45,126,791.00	$45,126,791.00	$21,309,602.10	$23,817,188.90
WADE-TRIM INC 09/20/21 thru 09/01/26 2021031	$2,000,001.00		$543,941.00	$543,941.00	$169,479.57	$374,461.43
WANTMAN GROUP, INC 10/01/24 thru 09/30/29 2025009	$500,000.00		$16,805.00	$16,805.00	$16,805.00	$0.00
WATER & AIR RESEARCH, INC. 03/21/22 thru 03/31/25 2022042	$600,000.00	$110,043.00	$471,195.96	$581,238.96	$382,416.96	$198,822.00
WESTFALL MANUFACTURING COMPANY 01/26/26 thru 01/31/28 2026705	$203,300.00	$203,300.00	$0.00	$203,300.00	$0.00	$203,300.00
WILDLANDS CONSERVATION, INC. 03/21/22 thru 03/31/25 2022044	$700,000.00	$74,701.20	$497,614.71	$572,315.91	$454,482.71	$117,833.20
WISE CONSULTING GROUP 08/16/21 thru 09/30/26 2022004	$539,028.00		$539,028.00	$539,028.00	$373,959.04	$165,068.96
WISE CONSULTING GROUP 10/01/25 thru 09/30/26 2022008V	$150,000.00		$32,000.00	$32,000.00	$5,312.50	$26,687.50
WSP USA INC 09/20/21 thru 09/30/24 2022005	$481,520.00		$160,707.00	$160,707.00	$113,396.58	$47,310.42
WSP USA INC 03/21/22 thru 03/21/26 2022031V	$360,660.50		$0.00	$0.00	$0.00	$0.00
WSP USA INC 03/21/22 thru 05/01/27 2022051	$750,000.00		$164,910.37	$164,910.37	$59,214.50	$105,695.87
WSP USA INC 10/01/24 thru 09/30/29 2025008	$500,000.00		$0.00	$0.00	$0.00	$0.00

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A.C. SCHULTES OF FLORIDA, INC. 11/18/24 thru 03/30/26 2025700	$500,000.00		$0.00	$0.00	$0.00	$0.00
ACLARIAN LLC 10/20/22 thru 05/25/25 2023702	$175,000.00		$98,000.00	$98,000.00	$90,996.60	$7,003.40
ADVANCED ENVIRONMENTAL LABORATORIES, INC 03/21/22 thru 02/28/23 2022036	$200,000.00		$190,000.00	$190,000.00	$136,276.10	$53,723.90
ADVANCED ENVIRONMENTAL LABORATORIES, INC 03/11/26 thru 03/31/31 2026023	$112,500.00		$0.00	$0.00	$0.00	$0.00
ADVANCED ROOFING, INC. 11/22/23 thru 11/30/24 2024012	$600,000.00		$360,000.00	$360,000.00	$245,332.85	$114,667.15
AECOM TECHNICAL SERVICES, INC. 09/20/21 thru 09/01/26 2021038	$2,000,000.99		$1,092,850.00	$1,092,850.00	$414,918.48	$677,931.52
AECOM TECHNICAL SERVICES, INC. 07/15/24 thru 12/31/26 2024029	$5,254,167.00		$3,908,517.00	$3,908,517.00	$1,419,914.03	$2,488,602.97
AGILENT TECHNOLOGIES, INC. 01/01/24 thru 12/31/26 2024901	$38,751.70		$0.00	$0.00	$0.00	$0.00
AIR MECHANICAL & SERVICE CORP. 10/01/22 thru 02/02/23 2023701	$2,163,069.60		$2,128,979.05	$2,128,979.05	$1,722,590.64	$406,388.41
AIRGAS SPECIALTY PRODUCTS, INC. 01/01/23 thru 12/31/23 2023016V	$2,439,522.95		$2,477,512.00	$2,477,512.00	$1,999,363.28	$478,148.72
AIRGAS USA, LLC 08/19/24 thru 09/30/25 2025012	$11,641,440.00		$5,086,505.00	$5,086,505.00	$4,272,525.99	$813,979.01
AJAX PAVING INDUSTRIES OF FLORIDA LLC 10/18/21 thru 09/02/23 2022701	$925,000.00		$839,763.00	$839,763.00	$838,503.00	$1,260.00
AJAX PAVING INDUSTRIES OF FLORIDA LLC 02/23/26 thru 03/31/27 2026703	$3,200,000.00	$1,536,000.00	$0.00	$1,536,000.00	$0.00	$1,536,000.00
ALAN PLUMMER AND ASSOCIATES, INC. 05/09/22 thru 09/01/26 2021036V	$2,001,205.65		$189,376.00	$189,376.00	$189,376.00	$0.00
ALLIED UNIVERSAL CORPORATION 10/01/23 thru 09/30/24 2024006	$16,554,611.91		$15,088,641.91	$15,088,641.91	$10,016,093.43	$5,072,548.48
AMERICAN SPIRALWELD PIPE CO. 10/29/24 thru 12/31/29 2025707	$55,000,000.00		$46,085,053.72	$46,085,053.72	$10,565,214.27	$35,519,839.45
AMICI ENGINEERING CONTRACTORS, LLC 10/01/25 thru 09/30/30 2026009	$800,000.00		$300,000.00	$300,000.00	$169,228.08	$130,771.92
APG ELECTRIC, INC. 08/21/25 thru 09/30/28 2025053	$206,323.18		$206,323.18	$206,323.18	$203,323.18	$3,000.00
APPLIED DRILLING ENG 11/18/24 thru 03/30/26 2025701	$1,735,110.00		$1,235,110.00	$1,235,110.00	$584,334.45	$650,775.55

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APPLIED ECOLOGY, INC 03/15/22 thru 03/31/25 2022035	$500,000.00		$273,533.61	$273,533.61	$171,591.49	$101,942.12
APPLIED ECOLOGY, INC 10/01/22 thru 09/30/26 2022054	$364,150.83		$371,800.82	$371,800.82	$286,207.62	$85,593.20
ARCADIS US INC. 03/21/22 thru 05/01/27 2022019	$750,000.00		$748,593.00	$748,593.00	$618,748.04	$129,844.96
ARCHER WESTERN CONSTRUCTION LLC 11/14/22 thru 12/31/25 2023001	$22,450,100.00		$22,450,100.00	$22,450,100.00	$21,050,739.04	$1,399,360.96
ARCHER WESTERN CONSTRUCTION LLC 02/03/25 thru 07/23/27 2025036	$3,319,100.00		$3,319,100.00	$3,319,100.00	$178,315.00	$3,140,785.00
ARDURRA GROUP, INC 09/20/21 thru 09/01/26 2021030	$2,000,001.00		$499,571.00	$499,571.00	$239,301.04	$260,269.96
ARDURRA GROUP, INC 10/03/24 thru 09/30/29 2025002	$500,000.00		$48,600.00	$48,600.00	$45,198.00	$3,402.00
ARTEMIS CONSULTING COLLECTIVE INC 08/18/25 thru 09/30/26 2022003V	$399,388.00		$280,694.00	$280,694.00	$137,204.28	$143,489.72
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022028V	$96,088.95		$93,579.50	$93,579.50	$46,649.07	$46,930.43
ARTEMIS CONSULTING COLLECTIVE INC 09/15/25 thru 09/30/26 2022052V	$248,479.62		$238,632.00	$238,632.00	$120,194.02	$118,437.98
AURIGO SOFTWARE TECHNOLOGIES INC 01/01/26 thru 12/31/30 2026014	$1,679,014.20		$0.00	$0.00	$0.00	$0.00
BAKER TILLY ADVISORY GROUP 07/21/25 thru 07/21/26 2025047	$125,000.00		$125,000.00	$125,000.00	$101,500.00	$23,500.00
BAL ENGINEERING, INC. 09/18/23 thru 12/10/25 2024701	$200,000.00		$55,000.00	$55,000.00	$18,330.00	$36,670.00
BAYVIEW PUBLIC RELATIONS INC. 10/01/22 thru 09/30/25 2023024	$525,000.00		$81,473.00	$81,473.00	$74,540.25	$6,932.75
BEST LINE OIL COMPANY 05/19/25 thru 09/30/27 2025715	$300,000.00		$30,000.00	$30,000.00	$1,203.36	$28,796.64
BIG SEA, INC. 10/01/22 thru 09/30/24 2023011	$400,000.00		$163,025.00	$163,025.00	$136,325.00	$26,700.00
BLACK & VEATCH CORPORATION 09/01/16 thru 10/26/25 2016031	$3,950,877.00		$3,950,877.00	$3,950,877.00	$3,191,643.86	$759,233.14
BLACK & VEATCH CORPORATION 09/20/21 thru 09/30/29 2022001	$24,024,246.92		$16,570,948.80	$16,570,948.80	$13,187,660.06	$3,383,288.74
BUSH GRAZIANO RICE & HEARING, P.A. 10/16/23 thru 10/16/24 2024014	$150,000.00		$80,000.00	$80,000.00	$28,854.70	$51,145.30

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Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
C&T CONTRACTING SERVICES LLC 11/03/25 thru 03/31/27 2026012	$1,545,255.00		$1,545,255.00	$1,545,255.00	$0.00	$1,545,255.00
CARDINAL FENCE, LLC 02/23/26 thru 03/31/31 2026038	$750,000.00		$0.00	$0.00	$0.00	$0.00
CARMEUSE LIME & STONE, INC. 08/15/22 thru 09/30/23 2023018	$10,133,383.35		$9,652,726.00	$9,652,726.00	$7,764,677.81	$1,888,048.19
CAROLLO ENGINEERS INC 09/20/21 thru 09/01/26 2021029	$2,000,000.00	$15,796.00	$1,424,234.50	$1,440,030.50	$608,108.35	$831,922.15
CATALYST COMMUNICATIONS GROUP LLC 10/01/22 thru 09/30/25 2023010	$945,000.00		$271,268.15	$271,268.15	$254,879.30	$16,388.85
CDM SMITH INC 09/20/21 thru 09/01/26 2021033	$2,000,001.00		$609,678.98	$609,678.98	$524,268.01	$85,410.97
CEC MOTOR & UTILITY SERVICES LLC 04/17/23 thru 04/30/27 2023032	$1,000,000.00		$100,000.00	$100,000.00	$59,379.50	$40,620.50
CHANDLER ASSET MANAGEMENT, INC. 08/17/20 thru 12/13/22 2021700	$526,975.00		$451,451.30	$451,451.30	$376,111.96	$75,339.34
CHEMICAL SYSTEMS OF ORLANDO, INC. 08/19/24 thru 09/30/25 2025013	$2,754,612.56		$1,514,525.00	$1,514,525.00	$1,153,969.57	$360,555.43
CITRUS PARK WELL DRILLING & IRRIGATION INC 06/20/22 thru 06/30/23 2022058	$400,000.00		$0.00	$0.00	$0.00	$0.00
CIVILSURV DESIGN GROUP, INC. 10/01/24 thru 09/30/29 2025003	$500,000.00		$0.00	$0.00	$0.00	$0.00
CL2 SOLUTIONS, LLC. 10/23/24 thru 10/23/25 2025706	$30,000.00		$0.00	$0.00	$0.00	$0.00
CODY & ASSOCIATES, INC. 01/15/26 thru 04/30/27 2026704	$29,900.00		$29,900.00	$29,900.00	$0.00	$29,900.00
CORCORAN & ASSOCIATES, INC. 08/18/20 thru 08/18/23 2021004	$750,000.00		$702,200.00	$702,200.00	$690,970.00	$11,230.00
CORCORAN & ASSOCIATES, INC. 10/01/25 thru 09/30/27 2025051	$750,000.00		$150,000.00	$150,000.00	$75,270.00	$74,730.00
CORE & MAIN LP 11/06/24 thru 12/31/29 2025709	$4,000,000.00		$2,576,187.02	$2,576,187.02	$1,365,389.00	$1,210,798.02
CORRPRO COMPANIES, INC. 01/01/22 thru 12/31/26 2022011	$750,000.00		$616,153.00	$616,153.00	$427,773.97	$188,379.03
CUMBEY & FAIR, INC. 10/03/24 thru 09/30/29 2025004	$500,000.00		$500,000.00	$500,000.00	$360,237.00	$139,763.00
DESIGNER AT LARGE 10/01/22 thru 09/30/24 2023012	$160,000.00		$42,089.00	$42,089.00	$42,089.00	$0.00

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DEWBERRY ENGINEERS, INC 09/20/21 thru 09/01/26 2021034	$2,000,001.00		$173,953.00	$173,953.00	$20,570.13	$153,382.87
DEWBERRY ENGINEERS, INC 10/03/24 thru 09/30/29 2025005	$500,000.00	$17,800.00	$64,044.98	$81,844.98	$61,285.65	$20,559.33
DG INVESTMENT INTERMEDIATE HOLDINGS 2, INC. 07/21/25 thru 02/18/29 2025719	$881,062.08	$15,000.00	$62,875.32	$77,875.32	$65,632.57	$12,242.75
DIALOGUE PUBLIC RELATIONS, LLC 10/01/22 thru 09/30/25 2023009	$945,000.00		$496,337.50	$496,337.50	$386,722.94	$109,614.56
DIGITAL AERIAL SOLUTIONS, LLC 10/21/24 thru 09/30/28 2025010	$807,383.68		$595,152.26	$595,152.26	$286,749.80	$308,402.46
DONALD J POLMANN 04/17/23 thru 04/30/26 2023509	$150,000.00		$10,625.00	$10,625.00	$10,625.00	$0.00
DXP ENTERPRISES INC 01/26/26 thru 01/31/28 2026709	$882,183.72		$882,183.72	$882,183.72	$0.00	$882,183.72
EARTH RESOURCES, INC. 03/15/22 thru 03/31/25 2022027	$400,000.00		$97,689.24	$97,689.24	$34,479.24	$63,210.00
EARTH RESOURCES, INC. 10/03/22 thru 09/30/26 2022053	$417,406.09		$438,924.42	$438,924.42	$324,021.24	$114,903.18
EARTHBALANCE 03/29/22 thru 03/31/25 2022041	$400,000.00		$32,994.00	$32,994.00	$32,994.00	$0.00
ECO-LAND DESIGN, LLC 08/19/24 thru 09/30/25 2025025	$284,000.00		$2,500.00	$2,500.00	$150.00	$2,350.00
ECOHYDROLOGIX LLC 03/15/22 thru 03/31/25 2022032	$400,000.00		$29,750.00	$29,750.00	$29,750.00	$0.00
ECOHYDROLOGIX LLC 10/03/22 thru 09/30/26 2022055	$655,976.00		$655,978.00	$655,978.00	$532,618.24	$123,359.76
ELECTRIC GAS INDUSTRIES ASSOCIATION 11/01/25 thru 10/31/30 2026015	$12,098,169.00		$1,922,586.00	$1,922,586.00	$546,485.05	$1,376,100.95
ELECTRICAL ENGINEERING ENTERPRISES INC 12/19/24 thru 08/24/26 2025028	$1,717,198.00		$1,717,198.00	$1,717,198.00	$265,993.54	$1,451,204.46
ELECTRICAL ENGINEERING ENTERPRISES INC 11/18/24 thru 12/31/26 2025040	$1,000,000.00	$450,000.00	$250,000.00	$700,000.00	$172,219.27	$527,780.73
EMERGENCY MANAGEMENT SERVICES INTERNATIONAL, INC. 12/16/24 thru 10/23/27 2025710	$75,000.00		$25,000.00	$25,000.00	$21,907.41	$3,092.59
ENERGY CAP, LLC 02/18/19 thru 2019030	$148,662.25		$148,662.25	$148,662.25	$142,667.85	$5,994.40
ENTERPRISE FM TRUST 09/15/25 thru 05/31/26 2026702	$790,000.00	$567,000.00	$175,000.00	$742,000.00	$0.00	$742,000.00

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ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 08/17/20 thru 09/30/25 2021001	$2,739,331.00		$2,739,331.00	$2,739,331.00	$2,739,331.00	$0.00
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 04/14/22 thru 03/31/25 2022030	$400,000.00		$382,724.00	$382,724.00	$361,351.86	$21,372.14
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 03/21/22 thru 03/31/25 2022034V	$400,000.00		$400,989.84	$400,989.84	$74,894.36	$326,095.48
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 09/20/24 thru 06/14/29 2025704	$2,374,000.00		$489,858.00	$489,858.00	$222,886.94	$266,971.06
ENVIRONMENTAL SCIENCE ASSOCIATES CORPORATION 05/19/25 thru 09/30/29 2025716	$2,477,000.00		$600,000.00	$600,000.00	$198,962.64	$401,037.36
EUROFINS DRINKING WATER AND WASTEWATER, SOUTHEAST 03/11/26 thru 03/31/31 2026024	$37,500.00		$0.00	$0.00	$0.00	$0.00
FARMLAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507B	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
FIVE12 PAINTING & REMODELING LLC 10/01/22 thru 09/30/23 2023014	$775,993.00		$409,280.00	$409,280.00	$267,737.00	$141,543.00
FLAGSHIP AVIATION SERVICES LLC 11/01/25 thru 12/31/29 2026700	$920,000.00		$230,000.00	$230,000.00	$81,206.10	$148,793.90
FLATWOODS CONSULTING GROUP, INC. 03/15/22 thru 03/31/25 2022029	$400,000.00		$70,300.00	$70,300.00	$64,939.35	$5,360.65
FLORIDA TREE AND PROPERTY MAINTENANCE 01/01/23 thru 12/31/23 2023025	$1,336,380.75		$1,225,000.00	$1,225,000.00	$1,022,910.00	$202,090.00
FORTILINE, INC. 01/26/26 thru 01/31/28 2026708	$724,796.51		$724,796.51	$724,796.51	$0.00	$724,796.51
FRONT LINE POWER LLC 11/18/24 thru 12/31/26 2025039	$1,300,000.00	$350,000.00	$690,000.00	$1,040,000.00	$281,573.37	$758,426.63
GARNEY COMPANIES, INC. 11/13/23 thru 12/31/27 2023027	$407,665,470.74		$348,709,927.62	$348,709,927.62	$30,079,905.25	$318,630,022.37
GEOPOINT SURVEYING, INC. 09/15/25 thru 09/30/29 2026001	$1,661,360.00		$415,340.00	$415,340.00	$32,829.75	$382,510.25
GEORGE F YOUNG INC 10/01/24 thru 09/30/29 2025006	$500,000.00		$0.00	$0.00	$0.00	$0.00
GFT INFRASTRUCTURE, INC. 03/17/25 thru 03/31/28 2025043V	$1,891,201.00		$354,346.00	$354,346.00	$105,611.00	$248,735.00
GHD SERVICES, INC. 09/20/21 thru 09/30/24 2022007	$450,000.00		$237,610.77	$237,610.77	$163,027.94	$74,582.83
GRAY ROBINSON, P.A. 12/17/18 thru 09/30/19 2019039	$1,546,900.50		$1,588,875.61	$1,588,875.61	$876,382.70	$712,492.91

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GSI ENVIRONMENTAL, INC. 10/21/19 thru 12/31/26 2020017	$1,500,000.00		$1,426,343.96	$1,426,343.96	$1,364,218.91	$62,125.05
GSI ENVIRONMENTAL, INC. 11/15/24 thru 10/31/29 2025021	$1,000,000.00	$48,467.12	$0.00	$48,467.12	$0.00	$48,467.12
GUNSTER, YOAKLEY & STEWART, PA 10/20/25 thru 12/31/26 2026041	$690,000.00		$690,000.00	$690,000.00	$614,251.54	$75,748.46
HAWKINS, INC. 08/15/22 thru 09/30/23 2023019	$1,767,673.30		$1,079,329.00	$1,079,329.00	$813,625.45	$265,703.55
HAWKINS, INC. 01/26/26 thru 09/30/27 2026040	$16,502,500.00		$1,600,000.00	$1,600,000.00	$31,003.75	$1,568,996.25
HAZEN & SAWYER, P.C. 10/21/19 thru 12/31/26 2020018	$800,000.00	$745.53	$220,000.00	$220,745.53	$199,636.07	$21,109.46
HAZEN & SAWYER, P.C. 09/20/21 thru 09/01/26 2021032	$2,000,001.00		$867,650.00	$867,650.00	$433,248.00	$434,402.00
HAZEN & SAWYER, P.C. 03/21/22 thru 05/01/27 2022020	$750,000.00		$475,263.00	$475,263.00	$412,929.54	$62,333.46
HAZEN & SAWYER, P.C. 11/08/22 thru 12/31/25 2022060	$1,089,370.10		$819,965.00	$819,965.00	$718,068.48	$101,896.52
HAZEN & SAWYER, P.C. 11/18/24 thru 05/18/26 2024030	$2,630,698.00		$2,630,698.00	$2,630,698.00	$228,459.20	$2,402,238.80
HAZEN & SAWYER, P.C. 11/15/24 thru 10/31/29 2025022	$1,000,000.00		$160,100.00	$160,100.00	$28,800.00	$131,300.00
HILLSBOROUGH COUNTY 10/01/24 thru 06/30/26 AGR2025001	$200,245.00		$200,245.00	$200,245.00	$196,649.80	$3,595.20
HILLSBOROUGH COUNTY 10/01/25 thru 12/31/27 AGR2026001	$424,839.00		$208,255.00	$208,255.00	$39,397.77	$168,857.23
HPC INDUSTRIAL SERVICES, LLC 08/19/24 thru 09/30/25 2025020	$283,453.00		$0.00	$0.00	$0.00	$0.00
HSW CONSULTING LLC 09/20/21 thru 09/30/24 2022006	$450,000.00		$106,572.00	$106,572.00	$101,386.25	$5,185.75
HUSS DRILLING, INC 08/19/24 thru 09/30/26 2024702	$806,525.00		$806,525.00	$806,525.00	$285,136.56	$521,388.44
IN DEPTH INC. 10/16/23 thru 03/30/25 2024008	$333,000.00		$264,770.00	$264,770.00	$153,060.00	$111,710.00
INTERA, INC. 10/21/19 thru 12/31/26 2020019	$749,999.90		$346,400.58	$346,400.58	$225,618.99	$120,781.59
INTERACID NORTH AMERICA, INC. 05/19/25 thru 09/30/25 2025016V	$4,891,461.26		$2,596,892.00	$2,596,892.00	$1,434,008.64	$1,162,883.36

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JACOBS ENGINEERING GROUP INC 09/20/21 thru 09/01/26 2021037	$1,999,001.00		$598,793.24	$598,793.24	$596,043.24	$2,750.00
JACOBS ENGINEERING GROUP INC 08/21/23 thru 05/30/27 2023026	$836,348.00		$836,348.00	$836,348.00	$740,960.50	$95,387.50
JACOBS ENGINEERING GROUP INC 08/20/25 thru 09/30/28 2025029	$369,499.00		$369,499.00	$369,499.00	$0.00	$369,499.00
JONES WALKER, LLP 01/01/24 thru 01/01/25 2024040	$241,000.00		$241,125.04	$241,125.04	$180,836.74	$60,288.30
JONES WALKER, LLP 10/01/25 thru 09/30/27 2025052	$750,000.00		$150,000.00	$150,000.00	$75,000.00	$75,000.00
KAT CONSTRUCTION & MATERIALS, INC. 09/30/24 thru 12/31/26 2020044V	$10,663,512.64		$10,663,512.64	$10,663,512.64	$3,732,563.77	$6,930,948.87
KAT CONSTRUCTION & MATERIALS, INC. 12/01/23 thru 12/31/25 2024011	$1,335,340.00		$1,335,340.00	$1,335,340.00	$1,302,915.98	$32,424.02
KELLER AMERICA, INC 08/19/24 thru 09/30/26 2025001	$226,224.60		$52,889.07	$52,889.07	$52,889.07	$0.00
KEMIRA WATER SOLUTIONS, INC. 04/21/25 thru 09/30/25 2023017V	$6,893,963.00		$6,393,963.00	$6,393,963.00	$3,086,124.86	$3,307,838.14
LAND RESERVE, INC. 02/11/25 thru 12/31/25 AGR202507A	$9,475,019.00		$0.00	$0.00	$0.00	$0.00
LHOIST NORTH AMERICA OF ALABAMA, LLC 09/05/24 thru 09/30/25 2025011	$1,494,353.20		$838,640.00	$838,640.00	$610,066.38	$228,573.62
LOCHER ENVIRONMENTAL TECHNOLOGY LLC 01/05/22 thru 12/01/27 2022704	$143,673.00		$50,000.00	$50,000.00	$31,859.85	$18,140.15
MAINZER MANAGEMENT INC 10/01/23 thru 09/30/25 2024004	$278,700.00		$327,936.00	$327,936.00	$174,704.00	$153,232.00
MANSFIELD OIL COMPANY OF GAINSVILLE INC 09/15/25 thru 05/01/28 2026701	$250,000.00		$50,000.00	$50,000.00	$38,911.70	$11,088.30
MATHESON TRI-GAS INC. 01/01/25 thru 09/30/25 2025017	$3,171,057.98		$1,960,730.00	$1,960,730.00	$1,180,108.77	$780,621.23
MAULDIN & JENKINS, LLC 04/18/22 thru 02/28/27 2022900	$601,900.00		$579,000.00	$579,000.00	$533,000.00	$46,000.00
MCKIM & CREED PA 09/20/21 thru 09/01/26 2021035	$2,000,001.01		$298,645.00	$298,645.00	$217,291.15	$81,353.85
MCKIM & CREED PA 05/27/25 thru 04/19/27 2025042	$1,464,000.00		$1,464,000.00	$1,464,000.00	$482,438.34	$981,561.66
MCKIM & CREED PA 10/20/25 thru 09/20/29 2026016	$1,000,550.00		$1,000,550.00	$1,000,550.00	$53,829.26	$946,720.74

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MICHAEL T. HANKIN, P.A. 07/21/25 thru 12/31/27 2025054	$20,000.00		$20,000.00	$20,000.00	$1,267.50	$18,732.50
MORENO INDUSTRIAL 10/01/25 thru 09/30/30 2026007	$800,000.00		$200,000.00	$200,000.00	$25,643.00	$174,357.00
NABORS, GIBLIN, & NICKERSON P.A. 12/17/18 thru 09/17/19 2019040	$135,000.00		$161,292.14	$161,292.14	$63,116.62	$98,175.52
NATIONAL EC SERVICES, INC. 02/23/26 thru 03/31/27 2022029V	$335,060.65		$0.00	$0.00	$0.00	$0.00
NATIONAL EC SERVICES, INC. 10/17/22 thru 12/31/26 2023005	$600,000.00		$599,960.00	$599,960.00	$458,768.40	$141,191.60
NWPX INFASTRUCTURE INC 05/02/25 thru 12/31/28 2025718	$9,678,046.80		$9,678,046.80	$9,678,046.80	$3,495,048.00	$6,182,998.80
NWPX INFASTRUCTURE INC 01/26/26 thru 01/31/28 2026707	$1,138,443.90		$1,138,443.90	$1,138,443.90	$0.00	$1,138,443.90
ODYSSEY MANUFACTURING COMPANY 01/01/25 thru 09/30/25 2025018	$31,206,767.20		$9,459,073.00	$9,459,073.00	$6,451,115.30	$3,007,957.70
PAFF TREE SERVICE, LLC 03/29/22 thru 03/31/23 2022046	$750,000.00		$708,627.00	$708,627.00	$650,888.00	$57,739.00
PAFF TREE SERVICE, LLC 02/23/26 thru 03/31/28 2026026	$800,000.00		$0.00	$0.00	$0.00	$0.00
PARTRIDGE WELL DRILLING COMPANY, INC 11/18/24 thru 03/30/26 2025702	$500,000.00		$0.00	$0.00	$0.00	$0.00
PASCO COUNTY OFFICES 10/01/25 thru 12/31/27 AGR2026002	$428,400.00		$210,000.00	$210,000.00	$38,117.61	$171,882.39
PCL CONSTRUCTION, INC. 08/21/23 thru 06/30/26 2023028	$1,504,600.00		$1,504,600.00	$1,504,600.00	$1,489,711.76	$14,888.24
PCL CONSTRUCTION, INC. 08/21/23 thru 05/30/27 2023029	$4,426,900.00		$1,018,792.96	$1,018,792.96	$101,556.17	$917,236.79
PERSONNEL SOLUTIONS PLUS LLC 05/15/23 thru 04/02/30 2023705	$200,000.00		$25,000.00	$25,000.00	$23,575.35	$1,424.65
PERSSON, COHEN, MOONEY, FERNANDEZ & JACKSON, P.A. 03/01/25 thru 02/28/26 2025045	$420,000.00		$420,000.00	$420,000.00	$311,660.00	$108,340.00
PFM ASSET MANAGEMENT LLC 06/09/06 thru 09/30/17 2006067	$500,000.00		$298,415.00	$298,415.00	$242,007.50	$56,407.50
PFM FINANCIAL ADVISORS LLC 05/15/23 thru 03/21/26 2023703	$144,000.00		$56,000.00	$56,000.00	$22,500.00	$33,500.00
PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS 10/01/24 thru 09/30/25 AGR2025003	$188,107.00		$188,107.00	$188,107.00	$185,276.34	$2,830.66

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PINELLAS COUNTY BOARD OF COUNTY COMMISSIONERS 10/01/25 thru 12/31/27 AGR2026003	$417,486.00		$204,650.00	$204,650.00	$44,932.27	$159,717.73
PIPER FIRE PROTECTION, INC. 10/01/22 thru 09/30/23 2023020	$700,000.00		$574,955.92	$574,955.92	$427,894.70	$147,061.22
PLYMOUTH PLAZA, LLC 01/01/25 thru 12/31/25 2025044	$67,500.00		$67,500.00	$67,500.00	$63,508.06	$3,991.94
POLYDYNE INC 10/01/23 thru 09/30/24 2024005	$1,618,110.00		$1,878,416.00	$1,878,416.00	$1,040,682.50	$837,733.50
POND & COMPANY 12/14/20 thru 12/14/25 2021017	$682,000.00		$692,049.98	$692,049.98	$631,896.76	$60,153.22
PRIMARY FLOW SIGNAL, INC. 01/26/26 thru 01/31/28 2026706	$217,970.00		$217,970.00	$217,970.00	$0.00	$217,970.00
PRITCHETT STEINBECK GROUP, INC. 03/15/22 thru 03/31/25 2022028	$470,000.00		$368,911.05	$368,911.05	$278,030.09	$90,880.96
PVS TECHNOLOGIES, INC. 09/05/24 thru 09/30/25 2025014	$1,809,000.00		$983,719.00	$983,719.00	$237,819.07	$745,899.93
QUEST ECOLOGY INC 03/29/22 thru 03/31/25 2022043	$700,000.00		$562,469.65	$562,469.65	$414,529.79	$147,939.86
RAFTELIS FINANCIAL CONSULTANTS, INC. 03/21/22 thru 05/01/27 2022021	$750,000.00		$560,150.00	$560,150.00	$408,026.56	$152,123.44
RAZORBACK LLC 10/16/23 thru 03/30/25 2024009	$1,355,600.00		$1,358,000.00	$1,358,000.00	$1,317,600.00	$40,400.00
RICK RICHARDS, INC. 04/05/22 thru 03/31/25 2022045	$833,000.00		$189,550.00	$189,550.00	$101,120.00	$88,430.00
RICK RICHARDS, INC. 03/21/22 thru 03/31/23 2022047	$950,000.00		$763,885.00	$763,885.00	$656,879.00	$107,006.00
RICK RICHARDS, INC. 02/23/26 thru 03/31/28 2026027	$800,000.00		$0.00	$0.00	$0.00	$0.00
ROWLAND (DE), LLC 08/16/21 thru 09/30/25 2021045	$2,000,000.00		$1,008,610.00	$1,008,610.00	$657,012.56	$351,597.44
ROWLAND (DE), LLC 10/01/25 thru 09/30/30 2026006	$800,000.00		$760,000.00	$760,000.00	$172,154.20	$587,845.80
ROWLAND (DE), LLC 10/01/25 thru 09/30/30 2026008	$800,000.00		$200,000.00	$200,000.00	$0.00	$200,000.00
SMITH INDUSTRIES INC 03/21/22 thru 03/31/23 2022049	$800,000.00		$518,976.90	$518,976.90	$469,913.55	$49,063.35
SOLAR JET PRODUCTIONS LLC 10/01/22 thru 09/30/24 2023023	$200,000.00		$12,070.80	$12,070.80	$12,070.80	$0.00

Contract Summary

Monthly Status Report of Vendors

March 1, 2026 thru March 31, 2026

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
SOUTHEAST DRILLING SERVICES INC 08/19/24 thru 09/30/26 2025026	$3,000,000.00		$350,000.00	$350,000.00	$198,778.00	$151,222.00
SOUTHEAST DRILLING SERVICES INC 11/18/24 thru 03/30/26 2025703	$500,000.00		$0.00	$0.00	$0.00	$0.00
SOUTHWEST FLORIDA WATER MANAGEMENT 10/01/21 thru AGR2021013	$145,054,000.00		$0.00	$0.00	$0.00	$0.00
STAG INDUSTRIES LLC 07/15/24 thru 07/31/25 2024018	$350,000.00		$350,000.00	$350,000.00	$197,191.94	$152,808.06
STANTEC CONSULTING SERVICES, INC. 10/27/20 thru 09/30/26 2021002	$2,787,414.98		$2,787,414.98	$2,787,414.98	$1,452,702.89	$1,334,712.09
STANTEC CONSULTING SERVICES, INC. 08/16/21 thru 02/28/29 2021025	$26,995,874.64		$20,995,874.64	$20,995,874.64	$12,136,658.88	$8,859,215.76
STANTEC CONSULTING SERVICES, INC. 09/20/21 thru 09/01/26 2021028	$2,000,001.00		$650,028.00	$650,028.00	$372,592.50	$277,435.50
STANTEC CONSULTING SERVICES, INC. 09/20/21 thru 09/30/24 2022009V	$450,000.00		$39,715.00	$39,715.00	$39,715.00	$0.00
STANTEC CONSULTING SERVICES, INC. 03/21/22 thru 03/31/25 2022040V	$299,435.00		$285,280.00	$285,280.00	$241,793.96	$43,486.04
STARBOARD CONSULTING LLC 04/15/24 thru 06/30/26 2024001	$243,020.00		$243,020.00	$243,020.00	$210,020.00	$33,000.00
SURVTECH SOLUTIONS, INC. 10/01/24 thru 09/30/29 2025007	$500,000.00		$410,685.00	$410,685.00	$245,434.50	$165,250.50
TAMCO ELECTRIC INC 11/18/24 thru 12/31/26 2025038	$400,000.00		$160,000.00	$160,000.00	$100,909.11	$59,090.89
TAMPA ARMATURE WORKS INC 05/11/23 thru 04/30/27 2023031	$1,500,000.00	$400,000.00	$485,000.00	$885,000.00	$347,208.29	$537,791.71
THATCHER CHEMICAL OF FLORIDA INC. 08/19/24 thru 09/30/25 2025015	$838,754.00		$557,501.00	$557,501.00	$294,351.30	$263,149.70
THE VALERIN GROUP, INC. 10/01/22 thru 09/30/24 2023013	$160,000.00		$1,500.00	$1,500.00	$1,500.00	$0.00
THERMO ELECTRON NORTH AMERICA LLC 03/18/24 thru 03/31/26 2024015	$232,780.65		$264,560.10	$264,560.10	$232,780.65	$31,779.45
TK ELEVATOR CORPORATION 03/24/25 thru 12/31/25 2025713	$60,000.00		$53,482.86	$53,482.86	$53,482.86	$0.00
TLC DIVERSIFIED, INC. 05/20/24 thru 11/20/25 2024013	$6,508,280.00		$6,508,280.00	$6,508,280.00	$4,843,802.78	$1,664,477.22
TUCKER ENTERPRISE SERVICES, INC. 03/21/22 thru 03/31/23 2022048	$650,000.00		$335,000.00	$335,000.00	$242,820.00	$92,180.00

Contract Summary

Monthly Status Report of Vendors

March 1, 2026 thru March 31, 2026

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
TUCKER ENTERPRISE SERVICES, INC. 02/23/26 thru 03/31/28 2026029	$800,000.00		$0.00	$0.00	$0.00	$0.00
U.S. DEPARTMENT OF AGRICULTURE - FLORIDA 10/01/25 thru 09/30/26 AGR2026005	$50,000.00		$50,000.00	$50,000.00	$7,200.89	$42,799.11
UNIVERSAL PROTECTION SERVICE LP 02/24/25 thru 09/30/27 2025714V	$1,431,711.00		$1,106,325.20	$1,106,325.20	$824,178.99	$282,146.21
UNIVERSITY OF CENTRAL FLORIDA 08/16/24 thru 06/30/25 2024017	$90,000.00		$90,000.00	$90,000.00	$64,285.70	$25,714.30
UNIVERSITY OF CENTRAL FLORIDA 09/30/24 thru 11/30/26 2024021	$115,840.00		$115,840.00	$115,840.00	$72,400.00	$43,440.00
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 07/01/24 thru 06/30/25 2024016	$99,000.00		$99,000.00	$99,000.00	$98,138.26	$861.74
UNIVERSITY OF SOUTH FLORIDA 09/01/24 thru 06/30/26 2024019	$89,996.00		$89,996.00	$89,996.00	$89,996.00	$0.00
UNIVERSITY OF SOUTH FLORIDA 05/01/24 thru 06/30/26 2024020	$99,987.00		$99,987.00	$99,987.00	$77,962.00	$22,025.00
US WATER-ACCIONA SEAWATER DESLINATION PARTNERS 07/17/23 thru 11/15/29 2005062V	$41,929,058.42	$8,767,264.00	$33,476,291.47	$42,243,555.47	$30,470,130.53	$11,773,424.94
USGS 10/01/25 thru 09/30/26 AGR2026004	$109,800.00		$109,800.00	$109,800.00	$27,450.00	$82,350.00
V&A CONSULTING ENGINEERING, INC. 08/17/22 thru 09/01/26 2021027V	$2,040,278.53		$1,260,944.13	$1,260,944.13	$524,578.41	$736,365.72
VANASSE HANGEN BRUSTLIN INC 04/05/22 thru 03/31/25 2022033	$400,000.00		$233,345.00	$233,345.00	$184,905.40	$48,439.60
VEOLIA WATER NORTH AMERICA 04/10/00 thru 01/15/28 2000028	$229,897,678.62		$198,276,468.03	$198,276,468.03	$53,505,068.33	$144,771,399.70
VERIZON FLORIDA INC 08/25/20 thru 12/31/26 2020054	$1,954,614.10		$2,131,600.00	$2,131,600.00	$1,758,949.70	$372,650.30
WADE-TRIM INC 08/16/21 thru 02/28/29 2021024	$45,126,791.00		$45,126,791.00	$45,126,791.00	$21,309,602.10	$23,817,188.90
WADE-TRIM INC 09/20/21 thru 09/01/26 2021031	$2,000,001.00		$543,941.00	$543,941.00	$182,789.38	$361,151.62
WANTMAN GROUP, INC 10/01/24 thru 09/30/29 2025009	$500,000.00		$16,805.00	$16,805.00	$16,805.00	$0.00
WATER & AIR RESEARCH, INC. 03/21/22 thru 03/31/25 2022042	$600,000.00		$581,238.96	$581,238.96	$382,416.96	$198,822.00
WESTFALL MANUFACTURING COMPANY 01/26/26 thru 01/31/28 2026705	$203,300.00		$203,300.00	$203,300.00	$0.00	$203,300.00

Contract Summary

Monthly Status Report of Vendors

March 1, 2026 thru March 31, 2026

Vendor Name and Contract Dates	Contract Amount Authorized	Current Period PO Amount Issued	Previous PO Amount Issued	Total PO Issued To Date	Total Expended To Date	Outstanding PO Balance
WILDLANDS CONSERVATION, INC. 03/21/22 thru 03/31/25 2022044	$700,000.00		$572,315.91	$572,315.91	$456,538.69	$115,777.22
WISE CONSULTING GROUP 08/16/21 thru 09/30/26 2022004	$539,028.00		$539,028.00	$539,028.00	$376,641.04	$162,386.96
WISE CONSULTING GROUP 10/01/25 thru 09/30/26 2022008V	$150,000.00		$32,000.00	$32,000.00	$7,750.00	$24,250.00
WRIGHT TREE SERVICE, INC. 02/23/26 thru 03/31/28 2026028	$800,000.00		$0.00	$0.00	$0.00	$0.00
WSP USA INC 09/20/21 thru 09/30/24 2022005	$481,520.00		$160,707.00	$160,707.00	$113,396.58	$47,310.42
WSP USA INC 03/21/22 thru 03/21/26 2022031V	$360,660.50		$0.00	$0.00	$0.00	$0.00
WSP USA INC 03/21/22 thru 05/01/27 2022051	$750,000.00		$164,910.37	$164,910.37	$65,689.89	$99,220.48
WSP USA INC 10/01/24 thru 09/30/29 2025008	$500,000.00		$0.00	$0.00	$0.00	$0.00

TAMPA BAY WATER
Supplying Water To The Region

AGENDA ITEM G.1

DATE: April 3, 2026

TO: Board of Directors

FROM: Kelly M. Fernandez, General Counsel

SUBJECT: Attorney-Client Session between the Board of Directors and legal counsel pursuant to Section 286.011(8), F.S., pertaining to Polk Regional Water Cooperative v. Southwest Florida Water Management District and Tampa Bay Water (Florida Division of Administrative Hearings Case No.: 25-005480) - *Discussion and Action*

SUMMARY

In accordance with Section 286.011(8), Florida Statutes, the Board will convene a private attorney-client briefing session during the Board meeting concerning this litigation matter in order to discuss settlement negotiations and/or strategy related to the litigation expenditures.

SUGGESTED ACTION

Post-session, consider approval of the Notice of Change of Agency Action and Settlement and Coordination Agreement Between Polk Regional Water Cooperative, Tampa Bay Water, & Southwest Florida Water Management District.

COST/FUNDING SOURCE

N/A

DISCUSSION

A Private Attorney-Client Session, pursuant to Section 286.011(8), F.S., will be held to discuss Polk Regional Water Cooperative v. Southwest Florida Water Management District and Tampa Bay Water . In attendance will be General Counsel Kelly Fernandez, Deputy General Counsel R. David Jackson, Special Counsel Timothy Riley, Elizabeth Ross, and Greg Munson, Chair Lisset Hanewicz, Vice Chair

Seth Weightman, Board Members Harry Cohen, Dave Eggers, Charlie Miranda, Chopper Davis, Ron Oakley, Kathleen Peters, and Joshua Wostal, General Manager Charles Carden, and a certified court reporter. The expected duration is sixty (60) minutes.

Post-session, formal action by the Board on the Notice of Change of Agency Action and Settlement and Coordination Agreement Between Polk Regional Water Cooperative, Tampa Bay Water, & Southwest Florida Water Management District ("Settlement") will be requested. The Settlement has been formally approved by the Polk Regional Water Cooperative and the Southwest Florida Water Management District.

Attachments (2)

Notice of Change of Agency Action and Settlement Agreement Between PRWC, TBW, & SWFWMD
Notice of Final Agency Action-Approval

NOTICE OF CHANGE OF AGENCY ACTION
AND
SETTLEMENT AND COORDINATION AGREEMENT BETWEEN POLK REGIONAL WATER COOPERATIVE, TAMPA BAY WATER, & SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

This Notice of Change of Agency Action and Settlement and Coordination Agreement Between Polk Regional Water Cooperative, Tampa Bay Water, & Southwest Florida Water Management District ("Agreement") is entered into by and among the Polk Regional Water Cooperative, an interlocal entity organized under sections 163.01 and 373.713, Florida Statutes, ("PRWC"), Tampa Bay Water, a Regional Water Supply Authority, an interlocal entity organized under sections 163.01 and 373.715, Florida Statutes, ("TBW"), and the Southwest Florida Water Management District, an independent special district of the State of Florida ("District"). PRWC, TBW, and the District are each a Party and collectively the Parties.

WHEREAS, portions of the Alafia River begin in Polk County flow west into and through Hillsborough County and eventually discharge into Hillsborough Bay; and

WHEREAS, the District has established minimum flows in the Alafia River pursuant to Sections 373.042 and 373.0421, Florida Statutes, and Rule 40D-8.041(11) and (12), Florida Administrative Code; and

WHEREAS, the minimum flow established by the District for the Lower Alafia River in Rule 40D-8.041(12)(c), Florida Administrative Code, limits consumptive use of the river to no more than 19% of the daily flow to the Lower Alafia River System that is above 120 cubic feet per second ("cfs"); and

WHEREAS, Water Use Permit No. 20011794.002 (the "Existing Permit"), which was issued by the District to TBW on November 27, 2012, authorizes TBW to withdraw no more than 10% of the available flow above the Minimum Flow threshold up to a maximum daily diversion of 60 million gallons per day ("mgd"); and

WHEREAS, on May 22, 2025, TBW applied to the District for Water Use Permit No. 200111794.003 (the "Proposed Permit"), which requested modification of its Existing Permit to increase the withdrawal from 10% to 19% of the available flow above the Minimum Flow threshold up to a maximum daily diversion of 75 mgd; and

WHEREAS, on June 17, 2025, the PRWC submitted Water Use Permit Application No. 20021263.000, requesting to withdraw an annual average of 15 to16 mgd of surface water from the North and South Prongs of the Alafia River for public supply use ("PRWC Permit Application"); and

WHEREAS, on July 22, 2025, the District issued a Notice of Final Agency Action approving the Proposed Permit at the flow rates requested by TBW; and

WHEREAS, on September 29, 2025, the PRWC petitioned for a formal administrative hearing challenging that action, which proceeding is pending before the Florida Division of Administrative Hearings as Case No. 25-5480 ("DOAH Proceeding"); and

WHEREAS, on February 12, 2026, mediation between the Parties' representatives began and initially resulted in a general basis for amicable settlement on points of agreement which has resulted in an abeyance of the DOAH Proceeding until April 22, 2026, to allow time for the Parties to reach a written settlement agreement; and

WHEREAS, the Parties desire to resolve the DOAH Proceeding and avoid additional litigation concerning TBW's Alafia River withdrawals, to modify and extend the duration of TBW's Alafia River Water Use Permit, to withdraw PRWCS's Permit Application, as well as to establish a structured, collaborative planning and technical coordination process that respects each Party's statutory authority and fiscal constraints; and

WHEREAS, the District's staff has reviewed Tampa Bay Water's application for the Proposed Permit and the Notice of Final Agency Action issued on July 22,

2025, together with the applicable minimum flows and levels and the District's water use permitting standards and Basis of Review; and

WHEREAS, based on that review, the District has determined that certain revisions to the Proposed Permit are consistent with the applicable criteria for issuance of a water use permit, including extending the permit expiration date to 2040 and amending Special Condition 9 to clarify the calculation of Baseline Flow, the flow-based diversion schedule, and a coordinated allocation provision that operates in conjunction with any qualifying PRWC water use permit application submitted in 2032 or later consistent with this Agreement, together with conforming clarifications; and

WHEREAS, the Parties desire to provide notice of the revisions to the Proposed Permit contemplated by this Agreement and completely settle, release, and discharge all claims among themselves regarding the DOAH Proceeding, including the PRWC Permit Application; and

NOW THEREFORE, in consideration of the mutual covenants in this Agreement and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Parties agree, as follows:

I. **EFFECTIVE DATE.** This Agreement shall become effective on the date it is duly executed by all of the Parties. The last date of execution by all the Parties shall be known as the "Effective Date" of this Agreement.

II. **CONTINGENT.** This Agreement is contingent upon the District's Final Order granting TBW a Final Permit that is in substantially the same form as that contained in the attached Exhibit A, Draft Final Permit, including the changes to the "Total Quantities Authorized Under This Permit" section, Special Condition 9.d., and an expiration date to extend fourteen (14) years after the date of issuance.

III. **DURATION**. This Agreement shall remain in effect for thirty-five (35) years from the date of the issuance of the Final Permit.

IV. RELINQUISHING JURISDICTION, DISMISSAL, AND WITHDRAWAL OF PRWC PERMIT APPLICATION. Within five (5) days of the Agreement's Effective Date, the Parties shall file a joint motion in the DOAH Proceeding requesting the Administrative Law Judge accept the Agreement and relinquish jurisdiction to the District for the Parties to act in compliance with this Agreement. This process will allow the District to enter a Final Order dismissing the Petition with prejudice, issuing the Final Permit, and closing the case at its next monthly Governing Board business meeting. Furthermore, the PRWC will withdraw its pending PRWC Permit Application within five (5) days from the date of the District's Final Order issuing the Final Permit.

V. PRWC COVENANT NOT TO CHALLENGE TBW. If TBW seeks to modify or renew Water Use Permit 20011794 et seq. with the District on or before 2040, the PRWC agrees that it shall not contest any agency action that results from TBW's water use permit modification or renewal application. This includes not opposing a permit application when it is being processed at the District and not filing, pursuing or participating as an intervenor in an administrative challenge pursuant to Chapter 120, Florida Statutes, or any successor statute, or initiating or participating in any other judicial action seeking to challenge any agency action that results from TBW's renewal. Additionally, the PRWC will not support or finance any third party bringing either an administrative or judicial challenge to any agency action on Water Use Permit 2001194 et seq.

VI. TBW COVENANT NOT TO CHALLENGE PRWC. If the PRWC proceeds with submitting a water use permit application to the District after December 31, 2032, but before December 31, 2040, to withdraw surface water from the North or South Prongs of the Alafia River consistent with the terms of this Agreement, TBW agrees that it will not contest any agency action that results from the PRWC's application submittal. This includes not opposing this permit application when it is being processed at the District and not filing, pursuing or participating as an intervenor in an administrative challenge pursuant to Chapter 120, Florida Statutes, or any successor statute, or initiating or participating in any other judicial action seeking to challenge any agency action that results from the PRWC's application for withdrawals from the North or South prongs of the Alafia River . Additionally, TBW will not support or finance any third party bringing either an

administrative or judicial challenge to any agency action against the PRWC water use permit for withdrawals from the North or South Prongs of the Alafia River.

VII. TBW PERMIT.

a. Modification of the Proposed Permit. The Parties agree to the modifications of the Proposed Permit, as attached hereto and incorporated herein as Exhibit A. Special Condition 9 shall only be modified before 2040 if the PRWC accepts an Alternative Project as set forth in the Settlement Agreement.

b. TBW's Obligation to Modify Final Permit

After December 31, 2032, PRWC shall give TBW written notice at least ninety (90) days prior to commencement of the actual withdrawal of water for potable water use by the PRWC from the North or South Prongs of the Alafia River, at which time within thirty (30) days, TBW shall submit a letter to the District to limit its permitted withdrawal from the Lower Alafia River based on the below modified diversion schedule to be effective upon the first day of actual withdrawal water for potable supply by the PRWC.

1. No diversion from the Alafia River may occur when the calculated Baseline Flow for the previous day is 128 cfs (82.7 mgd) or less.

2. For a calculated Baseline Flow between 128 cfs (82.7 mgd) and 149 cfs (96.3 mgd) for the previous day, the daily diversion is limited to the difference between the Baseline Flow and 128 cfs (82.7 mgd).

3. For a calculated Baseline Flow of 149 cfs (96.3 mgd) or greater for the previous day, the daily diversion is limited to 14% of the Baseline Flow.

4. The maximum diversion on any single day shall not exceed 75 mgd (116.1 cfs).

If the PRWC does not submit a written request for TBW to limit its permitted withdrawal from the Alafia River prior to the expiration date of the Final Permit in

2040, then TBW shall no longer be required to reduce its withdrawal from the Alafia River.

VIII. WATER SUPPLY PLANNING COMMITTEE. Within thirty (30) days of the Effective Date, the Parties will designate a representative to be the single point of contact for meeting scheduling. Within three (3) months of the Effective Date, representatives of TBW, PRWC, and the District shall schedule and attend quarterly meetings for the Water Supply Planning Committee to participate in structured planning and regulatory coordination to improve collaboration and align regional planning assumptions. Such coordination shall at a minimum include: (a) Identification of potential water supply projects, and TBW and District cooperation with feasibility studies if so undertaken by the PRWC, to provide an annual average of 12 mgd to meet the PRWC's water demands from sources other than the Alafia River; (b) Joint participation in the District's 2030 Regional Water Supply Planning process; (c) Identification of regional water resources and water supply development options; and, (d) Use of existing planning forums or technical workgroups to facilitate a dialogue on regional water supply planning activities.

IX. PRWC WATER SUPPLY PROJECT. The PRWC has until December 31, 2032, to identify alternative water supply project(s) as described below, or elect to pursue a project on the Alafia River, otherwise the PRWC waives any claim to withdraw water from the Alafia River pursuant to this Agreement. If the Parties identify water supply project(s) with an annual average capacity 12 mgd or greater before December 31, 2032, the PRWC will decide if the project(s) is/are feasible to replace the Alafia River as a potential water supply. The PRWC's decision shall be approved by the PRWC's Board of Directors on or before December 31, 2032. If the PRWC selects the identified alternative water supply projects(s), it waives any claim to withdraw water from the Alafia River pursuant to this Agreement. If no water supply project(s) with an annual average capacity of 12 mgd or greater is/are identified, or if the PRWC determines in its sole discretion the identified project(s) is/are not feasible, the PRWC may pursue a withdrawal from the Alafia River in accordance with this Agreement if such project has been determined feasible by the PRWC no later than December 31, 2032, otherwise TBW is released from its obligation to potentially reduce its allocation from 19% to 14%.

X. TERMINATION. This Agreement may only be terminated by written consent of all the Parties.

XI. MISCELLANEOUS PROVISIONS.

a. Notice. Notices under this Agreement must be in writing and delivered by hand, nationally recognized overnight courier, or email with confirmation of receipt, to the following representatives (or successors designated by notice):

As to the TBW:	Tampa Bay Water 2575 Enterprise Road Clearwater, Florida 33763 Attn: Chuck Carden General Manager Phone: (727) 796-2355 Fax: (727) 791-2388
With a copy to: (Which Shall Not Constitute Notice)	Persson, Cohen, Mooney, Fernandez & Jackson, P.A. 236 Pedro Street Venice, Florida 34285-2322 Attn: Kelly Fernandez, Esq. Phone: (941) 306-4730 Fax: (941) 306-4832
As to the PRWC	Polk Regional Water Cooperative 330 W. Church Street Bartow, FL 33831-9005 Attn: Eric DeHaven Executive Director Phone: (863) 534-6475 Fax: (863) 534-7069

With a copy to:	de la Parte, Gilbert, McNamara & Caldevilla, P.A.
(Which Shall Not Constitute Notice)	101 E. Kennedy Boulevard Suite 3100 Tampa, FL 33602 Attn: Edward P. de la Parte, Jr., Esq. Phone: (813) 229-2775 Fax: (813) 229-2712
As to the District:	Southwest Florida Water Management District 7601 U.S. Highway 301 North Tampa, FL 33637 Attn: Brian Armstrong Executive Director Phone: (352) 505-1298 Fax: (352)754-3493
With a copy to:	Office of the General Counsel, Southwest Florida Water Management District
(Which Shall Not Constitute Notice)	7601 U.S. Highway 301 North Tampa, FL 33637 Attn: Chris Tumminia General Counsel Phone: (813) 985-7481 Fax: (813) 367-9776

b. Authority to Enter Agreement. The Parties each have the power, authority, and legal right to enter into and perform the obligations set forth in this Agreement, and the execution and delivery and performance hereof by the Parties has been duly authorized by the governing authority of each of the Parties.

c. Entire Agreement. This Agreement represents the entire understanding and agreement between the Parties with respect to the subject matter and supersedes or replaces all prior representations, statements, and

understandings between the Parties with respect to the matters and things addressed herein, either written or oral.

d. Binding Effect. All of the terms and provisions of this Agreement, whether so expressed or not, shall be binding upon, inure to the benefit of, and be enforceable by the Parties and their respective legal representatives, successors and permitted assigns.

e. Default and Remedy.

i. Default. Failure on the part of any Party to observe, comply with, perform or maintain in any material way any term, covenant, condition, duty, obligation, representation or express warranty contained in this Agreement shall constitute a Default under this Agreement.

ii. Notice of Default and Opportunity to Cure. Upon occurrence of an alleged Default by any Party, the other Party shall deliver written notice to the Party allegedly in Default that identifies the specific nature of the alleged Default. The Party receiving such notice shall have thirty (30) days within which to cure the alleged Default. Provided that, if the alleged Default is of such nature that it cannot be reasonably cured within thirty (30) days, the Party allegedly in Default shall have such additional time as may be reasonably necessary to cure the alleged Default, so long as within said period, the alleged defaulting Party commences the cure and diligently prosecutes such cure until completion.

iii. Remedy for Default. For any alleged Default not cured as provided in Article XI.e.ii of this Agreement, the non-Defaulting Party may seek any remedy it may have available in law or in equity against the alleged Defaulting Party once completing the Dispute Resolution and Mediation provisions within Article XI.e.iv.

iv. Dispute Resolution and Mediation. Prior to seeking any legal remedy for Default, the Parties shall be required to engage in dispute resolution and mediate the dispute with all the Parties. A Party shall submit a dispute to be resolved by delivering to the other Parties a written notice requesting resolution of the dispute. Within ten (10) business days after receipt of the written notice, the Parties will first confer in good faith at the executive level in attempt to resolve the dispute.

If that first meeting is unsuccessful, the Party submitting a dispute to be resolved shall deliver to the other Parties a written notice requesting mediation and include a list of three (3) potential mediators for consideration. Within ten (10) business days of the receipt of written notice, the Parties will select one of the proposed mediators or mutually agree to a mediator. To the extent practicable, all mediators shall have special competence and experience with respect to the subject matter under consideration. Within thirty (30) days following the selection, mediation will be scheduled. This mediation shall occur in-person and be held at location mutually selected by the Parties, or at a location of the mediator's choosing if the Parties cannot agree. The Parties shall share equally in the fees and expenses of the mediator. Each Party shall pay their respective attorney's fees, expert fees and other expenses related to the mediation. Any settlement achieved through mediation shall be made in writing and approved by the Parties.

If a settlement is not reached within one hundred and eighty (180) days after the initiation of mediation or, if the mediator declares an impasse, then a Party may seek any and all legal or equitable remedies for the alleged Default. The mediation process set forth herein is intended to be a waiver of or a substitute or replacement for the conflict resolution process set forth in Chapter 164, Florida Statutes, which is acknowledged by all Parties.

f. Time Extensions. The Parties by joint written consent may extend or change any of the deadlines specified in this Agreement.

g. Amendment or Modification. This Agreement may not be amended or modified without prior written consent of all of the Parties to this Agreement. Any amendments or modifications, in whole or in part, will be documented through a written instrument that sets forth such changes and which is signed by all of the Parties.

h. Waiver. Any failure by a Party to exercise any right, power or privilege under this Agreement shall not constitute a waiver of that right, power, or privilege under this Agreement.

i. Assignability. This Agreement may not be assigned without the prior written consent of all of the Parties to this Agreement.

j. Third Parties. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement, on any person other than the Parties, their legal representatives, successors and permitted assigns. Nothing in this Agreement is intended to relieve or discharge the obligation of any third person to any Party, nor shall any provision of this Agreement be interpreted to give any third person any right of subrogation or action over or against the Parties.

k. Recording. The Parties intend this Agreement to be an interlocal agreement pursuant to section 163.01, Florida Statutes, and it shall be recorded by the PRWC with the Clerk of the Circuit Court in and for Polk, Hillsborough, Pasco, and Pinellas Counties, Florida.

l. Severability. If any part of this Agreement is contrary to, prohibited by or deemed invalid under applicable law or regulation, such provision shall be inapplicable and deemed omitted to the extent so contrary, prohibited or invalid, but the remainder shall not be invalidated and shall be given full force and effect so far as possible.

m. Governing Law and Venue. This Agreement and all transactions contemplated by this Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Florida without regard to any contrary conflicts of law principle. Venue of all proceedings in connection with this Agreement shall be exclusively in Sarasota County, Florida and each Party waives whatever their respective rights may have been in the selection of venue.

n. Headings. The headings contained in this Agreement are for convenience of reference only, and shall not limit or otherwise affect in any way the meaning or interpretation of this Agreement.

o. Attorney's Fees. The Parties agree that each Party shall bear its own attorney's fees and costs incurred in connection with this Agreement.

p. Waiver of Jury Trial. The Parties expressly and specifically waive the right to a jury trial as to any issue in any way connected to this Agreement.

q. Counterparts and Electronic Signature. This Agreement may be executed in counterparts, each of which is an original, and by electronic signature or scanned copies, each of which is deemed an original.

r. No Construction Against Drafting Party. The Parties to this Agreement expressly recognize that this Agreement results from a negotiation process in which each Party was given the opportunity to consult with counsel and contribute to the drafting of this Agreement. Given this fact, no legal or other presumptions against the Party drafting any portion of this Agreement concerning its construction, interpretation, or otherwise shall accrue to the benefit of any Party to this Agreement and each Party expressly waives the right to assert such presumption in any proceeding or disputes connected with, arising out of, or involving this Agreement.

s. Public Records and Sunshine Compliance. Each Party shall comply with applicable public records and open meetings laws. The Parties acknowledge that documents created or received under this Agreement may be public records subject to disclosure.

t. Preservation of Authority. Each Party expressly preserves its statutory authority and discretion, including but not limited to, the District's authority to regulate consumptive uses of water, evaluate and act on applications, and ensure adequate water supply; TBW's authority under its interlocal agreement and governing statutes; and PRWC's authority under its interlocal agreement and governing statutes.

u. Miscellaneous Provisions.

i. No Party shall be deemed to be an agent of any other Party nor shall represent that it has the authority to bind any other Party.

ii. In computing any time period under this Agreement, any reference to days shall mean calendar days, unless business days are specifically referenced. In computing any period of time under this Agreement, exclude the day of the event that triggers the computation of the period of time. If the last day of a period of time is a Saturday, Sunday or legal holiday, the period of time shall run until the end of the next calendar day which is not a Saturday, Sunday or legal holiday.

iii. Nothing in this Agreement shall be deemed a waiver of any Party's police powers.

[Signatures begin on the following pages]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized officers as of the Effective Date.

POLK REGIONAL WATER COOPERATIVE

By: Nathanial Birdsong

Name: Nathanial Birdsong

Title: Chair

Date: March 18, 2026

Approved as to Form and Correctness:

Edward de la Parte

Edward P. de la Parte, Jr.
Legal Counsel

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY

By: _____

Name: Lisset Hanewicz

Title: Chairman, Commissioner Hillsborough County

Date: _____

Approved as to Form and Correctness:

_____

Kelly Fernandez, Esq.
Legal Counsel

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

By: _____
John Mitten, Chair

Approved as to Legal Form and Content

_____
Chris Tumminia, Esq.
General Counsel

Attest: _____

Name: Ashley Bell Barnett

Filed this 24th day of March 2026.

_____
Deputy Agency Clerk

TAMPA BAY WATER, A REGIONAL WATER SUPPLY AUTHORITY

By: _____

Name: Lisset Hanewicz

Title: Chair, Council Member for City of St. Petersburg

Date: _____

Attest:

_____

Charles H. Carden, Secretary

Approved as to Form and Correctness:

_____

Kelly Fernandez, Esq.

Legal Counsel

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)

Southwest Florida
Water Management District

WaterMatters.org

Bartow Office
170 Century [illegible]
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Office
78 Sarasota Center Boulevard
Sarasota, Florida 34240-9770
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Office
7601 U.S. 301 North (Fort King Highway)
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

An Equal Opportunity Employer

July 22, 2025

Tampa Bay Water
Attn: Cathleen Beaudoin Jonas
2575 Enterprise Road
Clearwater, FL 33763

Subject: **Notice of Final Agency Action – Approval**
Water Use Permit No.: 20 011794.003
Project Name: Alafia River Withdrawal Facility
County: Hillsborough

Dear Sir/Madam:

The Southwest Florida Water Management District (District) is in receipt of your application for Water Use Permit No. 20 011794.003. Based upon a review of the information you submitted, the application was approved by the District's Governing Board. A copy of the permit is enclosed for your records. Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action on the permit application described in this letter.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notices of agency action, as well as a noticing form that can be used, are available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publication provided by the newspaper should be sent to the District's Tampa Service Office for retention in this permit's File of Record.

Please be advised that the Governing Board has formulated a water shortage plan referenced in a Standard Water Use Permit Condition (Exhibit A) of your permit, and will implement such a plan during periods of water shortage. You will be notified during a declared water shortage of any change in the conditions of your Permit or any suspension of your Permit, or of any restriction on your use of water for the duration of any declared water shortage. Please further note that water conservation is a condition of your Permit and should be practiced at all times.

The ID tags for your withdrawals shall be installed by a District representative. This representative will attempt to contact you within 30 days to discuss placement of your tags. If you have any questions or concerns regarding your tags, please contact Joseph Hagin at 813-278-7784 in the Tampa Service Office. If you have any questions or concerns regarding your permit or any other information, please contact the Water Use Permit Bureau in the Tampa Service Office.

Sincerely,

April Breton Electronically Signed

April Breton
Bureau Chief
Water Use Permit Bureau
Regulation Division

Encl: Permit
Notice of Rights

cc: Cathleen Beaudoin Jonas

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT
Individual PERMIT
NO. 20 011794.003

PERMIT ISSUE DATE:	EXPIRATION DATE:	May [SW Board Mtg Date]__, 2040
July 22, 2025		

The Permittee is responsible for submitting an application to renew this permit no sooner than one year prior to the expiration date, and no later than the end of the last business day before the expiration date, whether or not the Permittee receives prior notification by mail. Failure to submit a renewal application prior to the expiration date and continuing to withdraw water after the expiration date is a violation of Chapter 373, Florida Statutes, and Chapter 40D-2, Florida Administrative Code, and may result in a monetary penalty and/or loss of the right to use the water. Issuance of a renewal of this permit is contingent upon District approval.

TYPE OF APPLICATION: Modification

GRANTED TO: Tampa Bay Water/Attn: Cathleen Beaudoin Jonas
2575 Enterprise Road
Clearwater, FL 33763

PROJECT NAME: Tampa Bay Water Alafia River Project

WATER USE CAUTION AREA(S): SOUTHERN WATER USE CAUTION AREA

COUNTY: Hillsborough

TOTAL QUANTITIES AUTHORIZED UNDER THIS PERMIT (in gallons per day)	
ANNUAL AVERAGE	32,200,000 gpd *
MAXIMUM	75,000,000 gpd

* The actual quantities authorized under the permit are based on the flows in the Alafia River as described in Special Condition No. 9. The annual average quantity shown above is a projection based on Historical Flows.

ABSTRACT:

This is a modification of an existing water use permit for public supply and authorizes a maximum daily withdrawal of 75 mgd of water from the Alafia River. Actual withdrawals are not limited by the Annual Average quantity and instead will be based on withdrawals in accord with permit conditions including the percentage withdrawal schedule provided below, which is increased from the previous revision of 10% to 19% of the available flow above the Minimum Flow threshold. Tampa Bay Water is a regional utility that relies on multiple sources to meet demand, including the Alafia River Withdrawal Facility which has been developed for conjunctive use to meet regional demand, optimize wellfield withdrawals, and relieve associated environmental stresses. There is no change in Use Type from the previous revision. The Annual Average quantity is an estimate only of the long-term average yield. The Maximum Daily quantity represents maximum system pumping capacity.

TBW ALAFIA RIVER DIVERSION SCHEDULE

Permitted daily withdrawal	When baseline flow for previous day is:
No withdrawals	≤128 cfs (82.7 mgd)
All flow above 128 cfs (82.7 mgd)	>128 cfs (82.7 mgd) and ≤ 158 cfs (102.1 mgd)
19% of Flow, up to 116.1 cfs (75 mgd)	>158 cfs (102.1 mgd)

Special Conditions include those that require the Permittee to submit the Annual Surface Water Withdrawal Report by July 1 of each year, monthly reporting of withdrawals, continued monitoring of river stage, streamflow and spring discharge. Report compliance with the Minimum Flow for the Alafia River, daily calculations of Baseline Flow and permitted withdrawal rates, and continued implementation of the Hydrobiological Monitoring Plan, with annual data and periodic interpretive reports also due by July 1 of each year.

USE TYPE

Regional Public
Supply System

WITHDRAWAL POINT QUANTITY TABLE

Water use from these withdrawal points are restricted to the quantities given below :

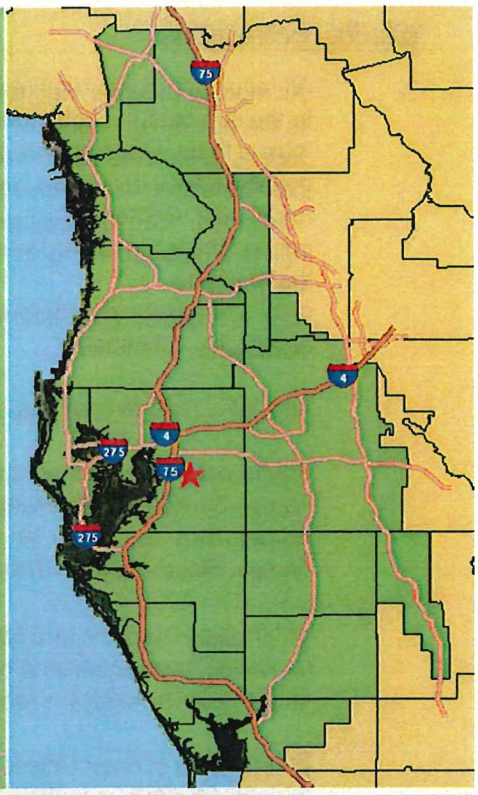
I.D. NO. PERMITTEE/ DISTRICT	DIAM (in.)	DEPTH TTL./CSD.FT. (feet bls)	USE DESCRIPTION	AVERAGE (gpd)	PEAK MONTH (gpd)	MAXIMUM (gpd)
1 / 1	120	N/A / N/A	Public Supply	Per Special Cond. 9	Per Special Cond. 9	75,000,000

WITHDRAWAL POINT LOCATION TABLE

DISTRICT I.D. NO.	LATITUDE/LONGITUDE
1	27° 51' 25.74"/82° 16' 07.22"

Location Map
Tampa Bay Water/Attn: Cathleen Beaudoin Jonas
WUP No. 20 011794.003







Legend

- DIDs
- WUP Boundary
- Natural Color Imagery

HILLSBOROUGH COUNTY

N
W E
S

Southwest Florida
Water Management District

STANDARD CONDITIONS:

The Permittee shall comply with the Standard Conditions attached hereto, incorporated herein by reference as Exhibit A and made a part hereof.

SPECIAL CONDITIONS:

1. All reports and data required by condition(s) of the permit shall be submitted to the District according to the due date(s) contained in the specific condition. If the condition specifies that a District-supplied form is to be used, the Permittee should use that form in order for their submission to be acknowledged in a timely manner. The only alternative to this requirement is to use the District Permit Information Center (www.swfwmd.state.fl.us/permits/epermitting/) to submit data, plans or reports online. There are instructions at the District website on how to register to set up an account to do so. If the report or
data is received on or before the tenth day of the month following data collection, it shall be deemed as a timely submittal.

   All mailed reports and data are to be sent to:

   Southwest Florida Water Management District
   Tampa Service Office, Water Use Permit
   Bureau 7601 U.S. Hwy. 301 North
   Tampa, Florida 33637-6759

   Submission of plans and reports: Unless submitted online or otherwise indicated in the special condition, the original and two copies of each plan and report, such as conservation plans, environmental analyses, aquifer test results, per capita annual reports, etc. are required.

   Submission of data: Unless otherwise indicated in the special condition, an original (no copies) is required for data submittals such as crop report forms, meter readings and/or pumpage, rainfall, water level, evapotranspiration, or water quality data.

   (499)

2. The Annual Average Daily quantity for District ID No. 1, Permittee ID No. 1, shown in the Withdrawal Point Quantity Table, is an estimate only of the long-term average yield, and is not intended to restrict the withdrawal quantities authorized from the Alafia River. The quantities withdrawn from the Alafia River are limited by Special Conditions in this Permit and the Maximum Daily quantity of 75 MGD.(221)

3. The Permittee shall investigate complaints related to withdrawals. This condition shall be an ongoing effort for the duration of this permit. All complainants will make an application to the Permittee and must receive an investigation report, including any action to be taken within a reasonable time by the Permittee. The Permittee shall file a report of the complaint, the findings of facts, and any mitigation action taken or to be taken by the Permittee, to the Water Use Bureau Chief for review and approval within 90 days of the receipt of any complaint. The report shall include:

   a. The name and address of each complainant;
   b. The date and nature of the complaint;
   c. A summary of the Permittee's investigation;
   d. A summary of the Permittee's determination, including details of any mitigation activities; and
   e. Cost of mitigation activity for each complaint.

   Full mitigation shall not exceed 180 days from complaint receipt, unless additional time is granted by the District. A summary of the investigations of complaint and mitigation activities related to the Alafia River Withdrawal Facility for the annual reporting period shall be provided in the Annual Report.(448)

4. The Permittee shall submit a concise individual annual report ("Alafia River Surface Water Withdrawal Annual Report") to the District which compiles the data collected during the course of the year, by Special Condition of this permit and as part of the HBMP, and provides an assessment of the water resources and environmental systems in the area of the Alafia River. The Surface Water Withdrawal

Annual Report shall concisely summarize the elements listed below, and any other elements within this

permit which require annual environmental reporting, with emphasis on the interactions between these elements, where appropriate. Three hard copies of each Surface Water Withdrawal Annual Report, plus one copy in electronic format, shall be submitted to the Water Use Bureau Chief by July 1 of each year. The report shall cover the preceding water year from October 1 to September 30.

1. Hydrologic Data and Water Production Summary. Flow metering, stage, streamflow and spring discharge monitoring data collected as part of this permit shall be summarized. This section shall also include a summary of activities conducted to maintain accuracy of flow metering, and discussion as to how this facility is operated in compliance with the Tampa Bay Water Optimized Regional Operations Plan.
2. Environmental Conditions and HBMP Implementation. Data collected as part of the HBMP shall be summarized and analyzed by the Permittee to document any effects of surface water withdrawals on the Alafia River and its estuary. Each annual report will contain a HBMP data report of all raw data collected during the past year. A brief summary of any recommended changes to the monitoring requirements shall also be included. More comprehensive analyses for the HBMP shall be included in the HBMP Interpretive reports which shall be submitted every five years.
3. Investigation of Complaints. A summary of the investigations of all complaints concerning adverse impacts to existing legal users, land uses and environmental features, as well as all of the Permittee's efforts to mitigate such adverse impacts, shall be provided for each reporting period. (524)

5. This Permit is located within the Southern Water Use Caution Area (SWUCA). Pursuant to Section 373.0421, Florida Statutes, the SWUCA is subject to a minimum flows and levels recovery strategy, which became effective on January 1, 2007. The Governing Board may amend the recovery strategy, including amending applicable water use permitting rules based on an annual assessment of water resource criteria, cumulative water withdrawal impacts, and on a recurring five-year evaluation of the status of the recovery strategy up to the year 2025 as described in Chapter 40D-80, Florida Administrative Code. This Permit is subject to modification to comply with new rules.(652)

6. A. Flow Metering
Flow data recorded at the Alafia River intake structure pipeline shall represent the total surface water source pumpage for the Alafia River Withdrawal Facility. For flow monitoring points equipped with SCADA, the Permittee shall maintain the following for each flow monitoring point: one venturi-type flow meter or other approved flow meter, one non-resettable totalizing recording device at each monitoring point, and one remote transmitter unit that transfers the recorded flow data by telemetry to the remote SCADA master station. The SCADA master station flow data shall be recorded on a daily basis for each flow monitoring point and for the combined facility pumpage. For all SCADA-equipped monitoring points, the non-resettable totalizing recording device at each monitoring point shall be recorded on an annual basis, and reported in the Annual Report with a comparison to the SCADA-retrieved cumulative flow for each monitoring point. If and when any part of the facility becomes equipped with SCADA, the provisions of this paragraph shall apply.

The Permittee shall undertake regular and routine testing, calibration and preventive/corrective maintenance for all flow meters to ensure that they have and maintain an accuracy within 5 percent of actual flow as installed. Within 3 working days of identification of a meter that does not meet this standard, the Permittee shall inform the District in writing of the facts regarding the problem. Until the problem is corrected, flows through the metered point shall be estimated. The Permittee shall correct the problem within 15 days following identification of the problem, or discontinue use of the withdrawal until the problem is corrected, unless an extension is confirmed in writing from the Water Use Permit Bureau Chief. The Annual Report shall summarize activities conducted to maintain accuracy of flow metering.

B. Stage, Streamflow and Spring Discharge Monitoring
The Permittee shall monitor the average daily stage and estimated average daily flow for the Alafia River, and the average daily stage and spring discharge for Buckhorn and Lithia Springs at the sites and frequencies listed in Exhibit D. The sites listed in Exhibit D are currently monitored in accordance with the South Central Hillsborough Regional Wellfield (SCHRWF) and Brandon Urban Dispersed Wellfield (BUDWF) Water Use Permits (WUPs 4352 and 11732, respectively). The Permittee may utilize data obtained from the SCHRWF and BUDWF to satisfy the permit monitoring requirements for this condition. However, should monitoring at the sites listed in Exhibit D cease to be required under

permit, or establish new District-approved sites to replace the lost sites.

The sites listed in Exhibit D shall continue to be monitored and reported in accordance with the SCHRWF and BUDWF permits. Data from these sites shall not be reported for this permit as long as the data is submitted in support of the SCHRWF and BUDWF permits. For the purpose of this permit, data obtained from the listed sites during the annual reporting period shall be summarized in the Annual Report required by this permit. Any proposed changes to the recording frequency and locations shall be approved by the Water Use Permit Bureau Chief, and shall be summarized in the Annual Report as described in the applicable Special Condition.

(675)

7. The Permittee shall continue implementation of the Tampa Bypass Canal/Alafia River Water Supply Projects Hydrobiological Monitoring Plan 2010 Update (HBMP), dated February 2011 and as modified on 8/1/2012, which is incorporated herein as Exhibit C. Any proposed changes to the HBMP should be submitted in writing to the Water Use Permit Bureau Chief for review and approval.

The HBMP includes an annual Data report due by July 1 each year, and periodic Interpretive reports on a five-year cycle with the next due by July 1, 2026. Upon completion of each five-year cycle of the HBMP, a draft Interpretive report shall be submitted to the District as part of the overall annual Data report. The District shall review and provide written comments within 45 days of the submittal of each draft Interpretive report. Final Interpretive reports shall be submitted by the Permittee within 90 days of receipt of District comments.

The District will review the results of these reports to determine if the withdrawals have or are expected to result in unacceptable environmental impacts to the natural resources of the Alafia River and its estuary as addressed in Section 4 of the District's Basis of Review, Water Use Permit Information Manual, Part B. If unacceptable environmental impacts have or are expected to occur due to the withdrawals, then the District shall require a revision to the withdrawal schedule.(676)

8. The following withdrawal facilities shall continue to be maintained and operated with existing, non-resettable, totalizing flow meter(s) or other measuring device(s) as approved by the Water Use Permit Bureau Chief:

District ID No. 1, Permittee ID No. 1 (Alafia River Withdrawal Facility intake near Bell Shoals Road)
District ID No. 2, Permittee ID No. ALF-2 (Influent meter into the Regional Water Treatment Plant from all sources)

Meter reading and reporting, as well as meter accuracy checks every five years shall be in accordance with instructions in Exhibit B, Metering Instructions, attached to and made part of this permit.(719)

9. Surface water withdrawals at DID No.1 will be based on adjusted previous day's average flow of the Alafia River at the "Alafia River at Lithia" gage (USGS Gage 02301500) combined with weekly measured flows at Buckhorn Springs and Lithia Springs Major. This will be referred to as Baseline Flow and shall be determined on a daily basis using the following formula:

1. Average daily river flow as measured at the Lithia gage for the previous day shall be multiplied by a factor of 1.117, to account for additional watershed contributions between the gage and the Alafia River Withdrawal Facility intake.
2. The most recent springflow measured at Buckhorn Springs and Lithia Springs Major shall be added to the product in Step One.
3. The Annual Average Daily withdrawal of 5.06 MGD (approximately 8 cfs) permitted to upgradient existing legal user Mosaic (WUP 1532) shall be added to the sum in Step Two.
4. The resulting quantity is the Baseline Flow for purposes of determining Tampa Bay Water's permitted daily withdrawal.

Baseline Flow shall be calculated and recorded on a daily basis and reported to the Permit Data Section (using District approved forms) on or before the fifteenth (15th) day of the following month, as DID No. 110. The recordings shall include daily average water flow in million gallons per day (MGD), and daily average water flow in cubic feet per second (cfs).

The quantities withdrawn from the lower Alafia River by Tampa Bay Water are limited by the adopted Minimum Flow, delineated in Rule 40D-8.041(8), Florida Administrative Code, and the maximum diversion capacity, and are set forth as referenced below:
a. No diversion from the Alafia River may occur when the calculated Baseline Flow for the previous day is 128 cfs (82.7 mgd) or less, representing the Low Flow Threshold of 120 cfs plus the Annual Average Daily withdrawal of 8 cfs permitted to Mosaic;
b. For a calculated Baseline Flow between 128 cfs (82.7 mgd) and 158 cfs (102.1 mgd) for the previous day, the daily diversion is limited to the difference between the Baseline Flow and 128 cfs (82.7 mgd).
c. For a calculated Baseline Flow of 158 cfs (102.1 mgd) or greater for the previous day, the daily diversion is limited to 19% of the Baseline Flow.
d. The maximum diversion on any single day shall not exceed 75 MGD (116.1 cfs).

Potential Adjustment of Special Condition 9:

(i) Existing Legal User Status: After December 31, 2032, but before 2040, if the Polk Regional Water Cooperative (PRWC) submits a water use permit application to the District for the withdrawal of surface water from the North or South Prongs of the Alafia River for potable public water use solely for its members located in Polk County consistent with the Settlement and Coordination Agreement Between Polk Regional Water Cooperative, Tampa Bay Water, & Southwest Florida Water Management District (Settlement Agreement), Tampa Bay Waters's existing legal user status, as defined, in part, under condition 9.3. above, shall be limited to 14% of Baseline Flow, unless a different percentage is determined based on the Settlement Agreement for a prorata reduction.

(ii) Tampa Bay Water Alafia River Allocation Modification: After December 31, 2032, but before December 31, 2040, upon the request of PRWC, within thirty (30) days, Tampa Bay Water shall submit a letter to the District to modify its permit to limit its permitted withdrawal from the Lower Alafia River based on the following modified diversion schedule, to become effective upon actual commencement of the withdrawal of surface water for potable water use by the PRWC from the North or South Prongs of the Alafia River located in Polk County.

(iii) Modification or Deletion of Special Condition 9: Special Condition 9 may only be modified or deleted before the expiration date of this permit in 2040 if the PRWC accepts an Alternative Project as set forth in the Settlement Agreement, PRWC fails to determine an Alafia River project is feasible as set forth in the Settlement Agreement, or the parties to the Settlement and Coordination Agreement agree in writing otherwise.

1. No diversion from the Alafia River may occur when the calculated Baseline Flow for the previous day is 128 cfs (82.7 mgd) or less.

2. For a calculated Baseline Flow between 128 cfs (82.7 mgd) and 149 cfs (96.3 mgd) for the previous day, the daily diversion is limited to the difference between the Baseline Flow and 128 cfs (82.7 mgd).

3. For a calculated Baseline Flow of 149 cfs (96.3 mgd) or greater for the previous day, the daily diversion is limited to 14% of the Baseline Flow.

4. The maximum diversion on any single day shall not exceed 75 mgd (116.1 cfs). (990)

10. This permit and the facilities governed by the permit shall be operated in accordance with the Tampa Bay Water Optimized Regional Operations Plan, and all modifications thereof, as approved by the District.(991)

11. Total influent quantities delivered to the C.W. Bill Young Reservoir shall be calculated on a daily basis and reported to the District as District ID No. 4, Permittee ID No. RES INF by the fifteenth day of each month.(992)

12. The remedies for violation of this permit are cumulative. Thus, the pursuit of one remedy shall not preclude the pursuit of other remedies provided by this permit or by applicable law. The pursuit of any remedy provided in this permit or by applicable law shall not constitute a forfeiture or waiver of any other remedy. The waiver of one violation shall not be deemed a waiver of any other violation. Forbearance to enforce one or more of the remedies provided by this permit or by applicable law on

an event of violation shall not be deemed or construed to constitute a waiver of the right to any remedy for that violation.(995)

40D-2
Exhibit A

WATER USE PERMIT STANDARD CONDITIONS

1. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, collect samples, take measurements, observe permitted and related facilities and collect and document any information deemed necessary to determine compliance with the approved plans, specifications and conditions of this permit. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

2. When necessary to analyze impacts to the water resource or existing users, the District shall require the Permittee to install flow metering or other measuring devices to record withdrawal quantities and submit the data to the District.

3. A District identification tag shall be prominently displayed at each withdrawal point that is required by the District to be metered or for which withdrawal quantities are required to be reported to the District, by permanently affixing the tag to the withdrawal facility.

4. The Permittee shall mitigate any adverse impact to environmental features or offsite land uses as a result of withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Examples of adverse impacts include the following:
   A. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or
   B. Damage to crops and other vegetation causing financial harm to the owner; and
   C. Damage to the habitat of endangered or threatened species.

5. The Permittee shall mitigate any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the District may require the Permittee to mitigate the impacts. Adverse impacts include:

   A. A reduction in water levels which impairs the ability of a well to produce water;
   B. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or
   C. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of an aquifer or water body.

6. Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and / or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit documentation showing that it continues to have legal control or transfer control of the permitted system / project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40D-1.6105, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

7. All withdrawals authorized by this WUP shall be implemented as conditioned by this permit, including any documents submitted as part of the permit application incorporated by reference in a permit condition. This permit is subject to review and modification, enforcement action, or revocation, in whole or in part, pursuant to Section 373.136 or 373.243, F.S.

8. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the Permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

9. The Permittee shall cease or reduce surface water withdrawal as directed by the District if water levels in lakes fall below the applicable minimum water level established in Chapter 40D-8, F.A.C., or rates of flow in streams fall below the minimum levels established in Chapter 40D-8, F.A.C.

10. The Permittee shall cease or reduce withdrawal as directed by the District if water levels in aquifers fall below the minimum levels established by the Governing Board.

11. A Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that section 373.239, F.S., and Rule 40D-2.331, F.A.C., are applicable to permit modifications.

12. The Permittee shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for the Permittee's water use classification, this permit shall be subject to those requirements upon notice and after a reasonable period for compliance.

13. The District may establish special regulations for Water-Use Caution Areas. At such time as the Governing Board adopts such provisions, this permit shall be subject to them upon notice and after a reasonable period for compliance.

14. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order.

15. This permit is issued based on information provided by the Permittee demonstrating that the use of water is reasonable and beneficial, consistent with the public interest, and will not interfere with any existing legal use of water. If, during the term of the permit, it is determined by the District that a statement in the application and in the supporting data are found to be untrue and inaccurate, the use is not reasonable and beneficial, in the public interest, or does impact an existing legal use of water, the Governing Board shall modify this permit or shall revoke this permit following notice and hearing, pursuant to sections 373.136 or 373.243, F.S. The Permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

16. Within the Southern Water Use Caution Area, if the District determines that significant water quantity or quality changes, impacts to existing legal uses, or adverse environmental impacts are occurring, the District, upon reasonable notice to the Permittee, including a statement of facts upon which the District based its determination, may reconsider the quantities permitted or other conditions of the permit as appropriate to address the change or impact, but only after an opportunity for the Permittee to resolve or mitigate the change or impact or to request a hearing.

17. All permits are contingent upon continued ownership or legal control of all property on which pumps, wells, diversions or other water withdrawal facilities are located.

Exhibit B
Instruction
s

METERING INSTRUCTIONS

The Permittee shall meter withdrawals from surface waters and/or the ground water resources, and meter readings from each withdrawal facility shall be recorded on a monthly basis within the last week of the month. The meter reading(s) shall be reported to the Water Use Permit Bureau on or before the tenth day of the following month for monthly reporting frequencies.

For bi-annual reporting, the data shall be recorded on a monthly basis and reported on or before the tenth day of the month
following the sixth month of recorded data.

The Permittee shall submit meter readings online using the Permit Information Center at www.swfwmd.state.fl.us/permits/epermitting/ or on District supplied scanning forms unless another arrangement for submission of this data has been approved by the District. Submission of such data by any other unauthorized form or mechanism may result in loss of data and subsequent delinquency notifications. Call the Water Use Permit Bureau inTampa at (813) 985-7481 if difficulty is encountered.

The meters shall adhere to the following descriptions and shall be installed or maintained as follows:

1. The meter(s) shall be non-resettable, totalizing flow meter(s) that have a totalizer of sufficient magnitude to retain total gallon data for a minimum of the three highest consecutive months permitted quantities. If other measuring device(s) are proposed, prior to installation, approval shall be obtained in writing from the Water Use Permit Bureau Chief.
2. The Permittee shall report non-use on all metered standby withdrawal facilities on the scanning form or approved alternative reporting method.
3. If a metered withdrawal facility is not used during any given month, the meter report shall be submitted to the District indicating the same meter reading as was submitted the previous month.
4. The flow meter(s) or other approved device(s) shall have and maintain an accuracy within five percent of the actual flow as installed.
5. Meter accuracy testing requirements:
   A. For newly metered withdrawal points, the flow meter installation shall be designed for inline field access for meter accuracy testing.
   B. The meter shall be tested for accuracy on-site, as installed according to the Flow Meter Accuracy Test Instructions in this Exhibit B, every five years in the assigned month for the county, beginning from the date of its installation for new meters or from the date of initial issuance of this permit containing the metering condition with an accuracy test requirement for existing meters.
   C. The testing frequency will be decreased if the Permittee demonstrates to the satisfaction of the District that a longer period of time for testing is warranted.
   D. The test will be accepted by the District only if performed by a person knowledgeable in the testing equipment used.
   E. If the actual flow is found to be greater than 5% different from the measured flow, within 30 days, the Permittee shall have the meter re-calibrated, repaired, or replaced, whichever is necessary. Documentation of the test and a certificate of re-calibration, if applicable, shall be submitted within 30 days of each test or re-calibration.
6. The meter shall be installed according to the manufacturer's instructions for achieving accurate flow to the specifications above, or it shall be installed in a straight length of pipe where there is at least an upstream length equal to ten (10) times the outside pipe diameter and a downstream length equal to two (2) times the outside pipe diameter. Where there is not at least a length of ten diameters upstream available, flow straightening vanes shall be used in the upstream line.
7. Broken or malfunctioning meter:
   A. If the meter or other flow measuring device malfunctions or breaks, the Permittee shall notify the District within 15 days of discovering the malfunction or breakage.
   B. The meter must be replaced with a repaired or new meter, subject to the same specifications given above, within 30 days of the discovery.

C. If the meter is removed from the withdrawal point for any other reason, it shall be replaced with another meter having the same specifications given above, or the meter shall be reinstalled within 30 days of its removal

from the withdrawal. In either event, a fully functioning meter shall not be off the withdrawal point for more than 60 consecutive days.

8. While the meter is not functioning correctly, the Permittee shall keep track of the total amount of time the withdrawal point was used for each month and multiply those minutes times the pump capacity (in gallons per minute) for total gallons. The estimate of the number of gallons used each month during that period shall be submitted on District scanning forms and noted as estimated per instructions on the form. If the data is submitted by another approved method, the fact that it is estimated must be indicated. The reason for the necessity to estimate pumpage shall be reported with the estimate.

9. In the event a new meter is installed to replace a broken meter, it and its installation shall meet the specifications of this condition. The permittee shall notify the District of the replacement with the first submittal of meter readings from the new meter.

FLOW METER ACCURACY TEST INSTRUCTIONS

1. Accuracy Test Due Date - The Permittee is to schedule their accuracy test according to the following schedule:

A. For existing metered withdrawal points, add five years to the previous test year, and make the test in the month assigned to your county.

B. For withdrawal points for which metering is added for the first time, the test is to be scheduled five years from the issue year in the month assigned to your county.

C. For proposed withdrawal points, the test date is five years from the completion date of the withdrawal point in the month assigned to your county.

D. For the Permittee's convenience, if there are multiple due-years for meter accuracy testing because of the timing of the installation and/or previous accuracy tests of meters, the Permittee can submit a request in writing to the Water Use Permit Bureau Chief for one specific year to be assigned as the due date year for meter testing. Permittees with many meters to test may also request the tests to be grouped into one year or spread out evenly over two to three years.

E. The months for accuracy testing of meters are assigned by county. The Permittee is requested but not required to have their testing done in the month assigned to their county. This is to have sufficient District staff available for assistance.

January	Hillsborough
February	Manatee, Pasco
March	Polk (for odd numbered permits)*
April	Polk (for even numbered permits)*
May	Highlands
June	Hardee, Charlotte
July	None or Special Request
August	None or Special Request
September	Desoto, Sarasota
October	Citrus, Levy, Lake
November	Hernando, Sumter, Marion
December	Pinellas

* The permittee may request their multiple permits be tested in the same month.

2. Accuracy Test Requirements: The Permittee shall test the accuracy of flow meters on permitted withdrawal points as follows:

A. The equipment water temperature shall be set to 72 degrees Fahrenheit for ground water, and to the measured water temperature for other water sources.

B. A minimum of two separate timed tests shall be performed for each meter. Each timed test shall consist of measuring flow using the test meter and the installed meter for a minimum of four minutes duration. If the two tests do not yield consistent results, additional tests shall be performed for a minimum of eight minutes or

longer per test until consistent results are obtained.

C. If the installed meter has a rate of flow, or large multiplier that does not allow for consistent results to be obtained with four- or eight-minute tests, the duration of the test shall be increased as necessary to obtain accurate and consistent results with respect to the type of flow meter installed.

D. The results of two consistent tests shall be averaged, and the result will be considered the test result for the meter being tested. This result shall be expressed as a plus or minus percent (rounded to the nearest one-tenth percent) accuracy of the installed meter relative to the test meter. The percent accuracy indicates the deviation (if any), of the meter being tested from the test meter.

3. Accuracy Test Report: The Permittees shall demonstrate that the results of the meter test(s) are accurate by submitting the following information within 30 days of the test:

A. A completed Flow Meter Accuracy Verification Form, Form LEG-R.101.00 (5/14) for each flow meter tested. This form can be obtained from the District's website (www.watermatters.org) under "ePermitting and Rules" for Water Use Permits.

B. A printout of data that was input into the test equipment, if the test equipment is capable of creating such a printout;

C. A statement attesting that the manufacturer of the test equipment, or an entity approved or authorized by the manufacturer, has trained the operator to use the specific model test equipment used for testing;

D. The date of the test equipment's most recent calibration that demonstrates that it was calibrated within the previous twelve months, and the test lab' s National Institute of Standards and Testing (N.I.S.T.) traceability reference number.

E. A diagram showing the precise location on the pipe where the testing equipment was mounted shall be supplied with the form. This diagram shall also show the pump, installed meter, the configuration (with all valves, tees, elbows, and any other possible flow disturbing devices) that exists between the
pump and the test location clearly noted with measurements. If flow straightening vanes are utilized, their location(s) shall also be included in the diagram.

F. A picture of the test location, including the pump, installed flow meter, and the measuring device, or for sites where the picture does not include all of the items listed above, a picture of the test site with a notation of distances to these items.

WELL COMPLAINT INSTRUCTIONS

The permittee shall adhere to the following process for handling water resource, surface or ground water withdrawal point impact, dewatering complaints, or discharge/seepage of water from their property:

1. Within 48 hours of a complaint received by the Permittee related to their withdrawal or use of water or dewatering activity, the Permittee shall notify the District, perform a preliminary investigation to determine whether the Permittee's pumpage, dewatering activity, or discharge/seepage from their property may have caused the problem.
2. If this preliminary assessment indicates that the Permittee may be responsible, the Permittee shall, within 72 hours of complaint receipt, supply the complainant with any water necessary for health and safety purposes, such as drinking water.
3. If the resulting investigation determines that the Permittee was not responsible for the well problem, the Permittee shall document the reasons for this determination.
4. If the detailed investigation confirms that the complainant's problem was caused by the Permittee's pumpage, dewatering, or discharge or water impoundment activities:
   A. The complainant's problem shall be fully corrected within 15 days of complaint receipt.
   B. Impacts to wells: Full correction shall be restoration of the complainant's well to pre-impact condition or better, including the aspects of pressure levels, discharge quantity, and water quality. This

detailed investigation shall include, but not be limited to, an analysis of water levels and pumpage impacts at the time of the complainant's problem, well and pump characteristics including depths, capacity, pump

curves, and irrigation system requirements.

5. The Permittee shall file a report of the complaint, the findings of facts, appropriate technical data, and any mitigating action taken or to be taken by the Permittee, to the Water Use Permit Bureau Chief, for review and approval within 20 days of the receipt of any complaint. The report shall include:
   A. The name and address of each complainant;
   B. The date and nature of the complaint;
   C. A summary of the Permittee's investigation;
   D. A summary of the Permittee's determination, including details of any mitigation activities; and
   E. Cost of mitigation activity for each complaint.
6. A copy of the report shall be sent to the complainant within 20 days of complaint receipt.

April Breton Electronically Signed

Authorized Signature
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

This permit, issued under the provision of Chapter 373, Florida Statues and Florida Administrative Code 40D-2, authorizes the Permittee to withdraw the quantities outlined above, and may require various activities to be performed by the Permittee as described in the permit, including the Special Conditions. The permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the Permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

Exhibit C
Tampa Bypass Canal / Alafia River
Water Supply Projects
Hydrobiological Monitoring Program
2010 Update

Tampa Bypass Canal / Alafia River Water Supply Projects Hydrobiological Monitoring Program 2010 Update

FINAL

Prepared by

TAMPA BAY WATER
Supplying Water To The Region

2575 Enterprise Road
Clearwater, Florida 33763

PBS&J

4030 Boy Scout Boulevard
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February 2011

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Abbreviations and Acronyms

AR	Alafia River
Chl-a	Chlorophyll-a
DOC	Dissolved Organic Carbon
DO	Dissolved Oxygen
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency (U.S.)
EPCHC	Environmental Protection Commission of Hillsborough County
FIM	FWRI Fisheries Independent Monitoring Program
FWRI	Fish and Wildlife Research Institute (formerly Florida Marine Research Institute)
GIS	Geographic Information System
HBMP	Hydrobiological Monitoring Program
HR	Hillsborough River
MB	McKay Bay
NRC	National Research Council
NWS	National Weather Service
PBS&J	PBS&J, Inc.
PR	Palm River
PSU	Practical Salinity Units
PPT	Parts per Thousand
QA/QC	Quality Assurance/ Quality Control
Rkm	River Kilometer
SAV	Submerged Aquatic Vegetation
SAS	Software system developed by the SAS Institute, Cary, NC.
SWFWMD	Southwest Florida Water Management District
TBC	Tampa Bypass Canal
TOC	Total Organic Carbon
TSS	Total Suspended Solids
USF	University of South Florida
USGS	U.S. Geological Survey
WUP	Water Use Permit

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1.0 Introduction

Special conditions in the Southwest Florida Water Management District (SWFWMD or District) Water Use Permits (WUPs) 2011794.00 and 2011796.00 required development and implementation of comprehensive hydrobiological monitoring programs (HBMPs) for the Alafia River and the Tampa Bypass Canal/Hillsborough River Water Supply Projects. Because of the consistent elements and the close proximity of the two water supply projects, a single, integrated HBMP was designed and implemented to meet the permit requirements for both projects (PBS&J, 2000).

This document, the HBMP 2010 Update, incorporates all previously approved program modifications and reflects the current HBMP as of July 2010.

1.1. Background

Design of the Alafia River/Tampa Bypass Canal HBMP began in May 1999. The HBMP was designed in a series of workshops and subcommittee meetings attended by regulatory agency and local government representatives, and other stakeholders. A final HBMP design document was completed in late 1999 (PBS&J, 2000).

HBMP field sampling was initiated in April 2000, and continued implementation of the HBMP has been required under special conditions for the renewed and modified water use permits for these regional public water supply projects. The HBMP was intended to be routinely modified based on field conditions and the ongoing evaluation of HBMP data.

In the ten years since the acceptance of the final HBMP design by both the design group and the Tampa Bay Water Board, several modifications have been made to the HBMP design. These modifications were in response to requests by the District and other stakeholders, logistical problems encountered during early implementation, and the sampling modifications identified based on evaluations of HBMP data.

Potential modifications to improve the monitoring program have been provided in HBMP annual and multi-year interpretative reports and discussed at Annual HBMP Meetings. All modifications approved by the District and incorporated into the program are listed in Appendix A.

1.2. HBMP Goals and Objectives

In accordance with the District's Basis for Review for water use permitting, the minimal goal of the HBMP is to generate information at an appropriate scale and resolution to determine if the permitted water supply projects are in compliance with District rules. Accordingly, the overall goals established for the HBMP are consistent with the District's performance standards provided in the Basis of Review.

The goal of the HBMP is to ensure that reduced flows in the Tampa Bypass Canal, Hillsborough River and Alafia River attributable to Tampa Bay Water's permitted surface water withdrawals do not deviate from the normal rate and range of fluctuation to the extent that:

- Water quality, vegetation, and animal populations are adversely impacted in streams and estuaries
- Salinity distributions in tidal streams and estuaries are significantly altered as a result of withdrawals
- Recreational use or aesthetic qualities of the resource are adversely impacted.

In addition to the above stated goals, the 1999 design process also generated programmatic objectives to address the District's process for evaluating compliance with these Water Use Permits. Accordingly, stakeholders agreed upon HBMP objectives as follows:

- Document existing conditions in the potentially affected waterbodies
- Enable the detection of changed conditions in the potentially affected waterbodies
- Determine if the detected changed conditions are attributable to reductions in freshwater inflows
- Provide a scientifically defensible means to evaluate whether the permitted surface water withdrawals are causing or significantly contributing to the detected changed conditions
- Determine whether the detected changed conditions constitute or could result in unacceptable adverse impacts
- Recommend appropriate management actions or operational changes designed to eliminate or mitigate unacceptable adverse impacts if they occur or are expected to occur.

As reflected in the above listed objectives, the overall purpose and scope of the HBMP extend beyond just data acquisition, analysis, and reporting. The HBMP also incorporates programmatic criteria that have been developed to ensure that the permitted withdrawals are consistent with District rules throughout the lifetime of the permits.

1.3. HBMP Monitoring Areas

Stakeholders involved in the 1999 design process came to consensus that any potential impacts from the permitted surface water withdrawals would likely first be manifested in the river systems where surface water withdrawals will take place, and possibly Hillsborough Bay. Therefore, the potentially affected waterbodies or portions of waterbodies were identified based on geographic areas of concern; these were defined as "reporting units" for purposes of monitoring program design.

HBMP reporting units were established for each of five potentially affected waterbodies:

- The lower Alafia River below Bell Shoals Road
- The Tampa Bypass Canal/Palm River below Structure S-160
- McKay Bay
- The lower Hillsborough River below the City of Tampa dam
- Hillsborough Bay

The design stakeholder group concluded that Hillsborough Bay proper could be potentially affected by the permitted water supply projects, but that additional sampling in Hillsborough Bay

as a component of the HBMP was not warranted for two reasons. First, impacts from Tampa Bay Water withdrawals should be detected in the other reporting units before being detected in Hillsborough Bay. Second, the data gathered from existing long-term EPCHC and FWRI monitoring programs can be used to characterize the status of this reporting unit.

1.4. HBMP Monitoring Elements

The HBMP has three monitoring program elements:

- Hydrology/Water quality
- Biota
- Habitat/Vegetation

During the design of the HBMP, critical indicators were identified for each monitoring element in each reporting unit. Critical indicators are units of measure that describe the status of the statistical populations or subpopulations of interest, usually in response to some environmental stressor. Structural and hydrobiological differences among the reporting units necessitate slightly different groups of critical indicators for each.

Specific monitoring objectives for each of the three HBMP elements adopted by the stakeholder group are summarized briefly below.

- Hydrology/Water Quality
    - Estimate the daily freshwater inflows, freshwater withdrawals, and water levels in each reporting unit.
    - Estimate the distribution of water quality indicators by reporting unit on an appropriate temporal basis.

Estimates of freshwater inflows and withdrawals, and water levels, are to be made on a daily basis. The temporal basis is consistent for all water quality indicators; however, the temporal basis differs among the spatial reporting units. All reporting units have adequate sample size to ensure both annual and seasonal estimates of water quality conditions.

- Biota
    - Estimate by reporting unit on an appropriate temporal basis, the species composition (to the lowest practical identifiable level), and abundance and distribution of:
        - Juvenile and adult fishes
        - Benthic macroinvertebrate infauna and epifauna
        - Ichthyoplankton and other macrozooplankton.

As with water quality, the temporal basis is consistent for all biotic indicators, however, the temporal basis differs among the spatial reporting units. All reporting units have adequate sample size to ensure both annual and seasonal estimates of biotic conditions in all reporting units.

An additional indicator for the biota element, "estimate the species composition (to the lowest practical identifiable level) and abundance of water-dependent birds in upper McKay Bay and

the Alafia Banks on an appropriate temporal basis", was included in the initial design, but was discontinued from the program based on evaluation of data collected (see Appendix A).

- Habitat/Vegetation
  - Estimate the areal extent and upstream/downstream limits of emergent vegetation communities by reporting unit on a periodic basis.
  - Estimate species composition and relative abundance of submerged aquatic vegetation communities in the Alafia River on periodic basis.
  - Estimate the distribution of sediment grain size and sediment total organic matter by reporting unit on an appropriate temporal basis (derived from benthic sampling).

Typically, there is little within-year variation in the habitat indicators, therefore, estimation of the status of these indicators on an annual or multi-year basis was considered appropriate. The temporal basis is consistent for all habitat indicators across all spatial reporting units. All reporting units have adequate sample size to ensure annual estimates of habitat conditions.

2.0 HBMP Design Approach

This section provides an overview of the sampling techniques and strategies used in the HBMP. Sections 2.1 and 2.2 discuss the general design of the program. Section 2.3 discusses the general indicators used in the program. HBMP geographic reporting units, spatial strata and randomization, temporal stratification, and considerations for each reporting unit are discussed in Sections 2.4-2.6.

2.1. HBMP Design - General Considerations

Appropriate environmental monitoring programs are critical components of effective resource management. According to the National Research Council (1990), effective environmental monitoring:

- Provides the information needed to evaluate the effectiveness of, and to appropriately adjust, resource management actions
- Provides an early warning system, allowing for lower cost solutions to environmental problems
- Contributes to the knowledge of ecosystems and how they are affected by human activity, and such knowledge allows for the establishment of priorities for environmental protection and for the assessment of status and trends
- Provides information that helps to answer layperson questions
- Is essential for the construction, adjustment, and verification of quantitative predictive models which are an important basis for evaluating, developing, and selecting environmental management strategies
- Provides resource managers the scientific rationale for setting environmental standards
- Determines legal compliance with established environmental standards and conditions as set forth in regulatory programs.

Environmental monitoring programs need to have clearly articulated goals and objectives to minimize data gaps and unanswered critical questions. Therefore, monitoring programs need to be properly designed at the outset, and monitoring methods appropriately applied, if they are to meet the multiple expectations of all those who rely on the information generated. Even when monitoring programs are technically sound, it is their overall design and institutional context that often limits the usefulness of the resulting information.

The National Research Council (1990) has identified the following factors for sound program design and objective implementation of monitoring programs:

- The goals and objectives of the monitoring program must be clearly articulated in terms that pose questions that are meaningful to the public and that provide the basis for scientific investigation
- Not only must data be gathered, but attention must also be paid to their management, synthesis, interpretation, and analysis
- Procedures for quality assurance are needed, including multiple levels of peer review

- Well-designed monitoring programs often result in unanswered questions about environmental processes or human impacts. Therefore, where feasible, supportive research should be provided
- Adequate resources are needed not only for data collection but also for detailed analysis, evaluation, and reporting over the long term
- Programs should be sufficiently flexible to allow for their modification when and where changes in conditions or new information suggests the need
- Provision should be made to ensure that monitoring information is made available to all interested parties in a form that is useful to them.

2.2. General Design Criteria Associated with HBMP Monitoring Elements

The initial step undertaken in the development of the HBMP was to define those parameters that were thought to be indicators of potential changes in each of the potentially affected water bodies. The next step was to define the geographical areas where data collection should be implemented. It was agreed that the HBMP sampling design should provide technically sound and practical methods for collecting the data needed to obtain unbiased population, subpopulation, and variance estimates.

Unbiased population and subpopulation estimates are metrics whose average value, taken over all possible samples, is equal to the population parameter value of the metric. In other words, the estimate gives the correct value for some measure of the population. Here, the term **population** refers to the totality of individual observations about which inferences are to be made within a definitely specified sampling area limited in space and time.

Cochran et al. (1954) point out that the population to be sampled (the *sampled* population) should coincide with the population about which inferences are to be drawn (the *target* population). Cochran (1977) further states that at times, for reasons of practicability or convenience, the sampled population is more restricted than the target population. In such cases, it should be noted that conclusions drawn from the sample apply to the sampled population. Judgment must be used to determine the extent to which the conclusions will also apply to the target population. One way in which this problem can be avoided is to ensure at the design phase that the sampled population is carefully defined to closely agree with the target population definition.

A **subpopulation** is a specific portion of the population, defined either in space or time. For example, the subpopulation may be the shallow portion (defined by some specific depth) of the waterbody of concern. A subpopulation could also be all measurements made in a particular season of the year (e.g., wet or dry season subpopulations).

Sampling theory was employed to determine the best design for the HBMP sampling strategy. There are basically two common types of sampling strategies (Cochran, 1977):

Probability Sampling - Employing this approach requires a definition of the set of distinct samples that the sampling program is capable of sampling if applied to a specific population.

Each possible sample must have a known probability of selection. The samples are selected by a random process in which each sample receives its appropriate probability of being selected.

Nonprobability Sampling - Common approaches include: sampling a restricted portion of the population that is readily accessible (e.g., fixed station sampling of salinity from a bridge); haphazard sample selection without conscious planning; and a selection of "typical" or "representative" sample units that are considered close to the average of the target population.

If conditions are appropriate, each of the methods can provide useful results. However, the only way to verify if an estimate is unbiased is to compare it with the actual population values or an estimate derived from a probability sampling approach. Even if such a test comparison demonstrates that the nonprobability sampling estimate is unbiased, this does not necessarily mean that method will continue to give unbiased results under all circumstances. For example, future changes in drainage patterns in a watershed may cause more or less runoff to enter the waterbody of concern. Therefore, in this example, checks of the unbiased nature of the nonprobability sample estimate would have to continue throughout the length of the monitoring program. A probability sampling approach yields unbiased estimates regardless of changing conditions.

Unbiased variance estimates will provide a measure of uncertainty in the population and subpopulation estimates. In order to ensure that variance estimates are unbiased, it is recommended that the sampling design follow the basic rules for probability sampling and variance estimation. Thus, for all elements of the sampling design, at least two samples must be collected from each subpopulation for which an unbiased estimate of variance is required, and each sampling unit in the subpopulation must have a known, non-zero probability of inclusion in the sample. In addition, the pairwise inclusion probabilities of all possible combinations of the two samples must be known and non-zero. Logistical constraints may require that some sampling units have a lower inclusion probability than others, and can be incorporated into the sampling design, if necessary. The inclusion probabilities used to select sampling units will be specified quantitatively, introduced as weights in all computations of estimates and associated variances, and hence allow all estimates to be unbiased.

Given the above conditions, and based on the efforts of the HBMP design stakeholder group, it was concluded that a probability-based design was best suited to meet the programmatic goals and objectives of the HBMP. It should, however, be noted that several other data needs were also identified that would not be best addressed using a probability-based approach. These informational needs were anticipated to be addressed separately as "special studies" (see Appendix A and PBS&J, 2000 for additional information).

To implement the design approach, a series of decisions were made regarding the specifics of the monitoring program design. First, specific **monitoring objectives** were defined. Second, the **indicators** of the status of the population (or subpopulations) were defined. Third, the **reporting units** were defined with respect to both space and time.

The general probability sampling approach allows inferences to be drawn not only about the target populations but also a variety of subpopulations. As a general rule of thumb, if it is desired

to draw an inference with regard to a particular subpopulation, then that subpopulation or **stratum** should be designed into the overall monitoring plan (Summers and Maddox, 1999). The use of strata within a sampling design enhances the power to detect differences because it optimizes the design based on the natural variability characteristics of the indicators being measured.

Cochran (1977) concludes that incorporating strata into the sampling design, referred to as **stratified random sampling**, is a common and indicated technique if:

- Data of known precision are wanted for certain subpopulations, in which case it is advisable to treat each such subdivision as a "population" in its own right
- Convenience dictates the use of stratification
- Sampling problems differ markedly in different parts of the population
- It is desired to increase the precision of estimates of the characteristics of the population as a whole.

The HBMP design stakeholder group concluded that a stratified random sampling approach was the best sampling design to meet HBMP objectives.

2.3. General Indicator Characteristics for HBMP Monitoring Elements

Following the identification of specific measurable monitoring objectives, the next step in the monitoring design process is the definition of appropriate indicators. Indicators are units of measure that describe the status of the statistical populations, or subpopulations, of interest, usually in response to some environmental stressor. The term **indicator** in this context is somewhat analogous to the term *parameter*, as it is applied in environmental monitoring jargon; however, it is broader in scope.

Indicators can be generally broken down into two classes: 1) desirable indicators, and 2) critical indicators. General characteristics for each of these are listed below.

General characteristics of desirable indicators include:

- Sampling Unit Stable - measurements of the response indicator taken at a sampling unit should be stable over the course of the sampling period
- Available Method - should have a generally accepted, standardized method of measurement that can be applied on a regional scale
- Historical Record - has a historical database, or a historical database can be generated from acceptable data sources
- Retrospective - can be related to past conditions via retrospective analyses
- Anticipatory - provides an early warning of widespread changes in ecosystem processes or conditions
- Cost-Effective - has low incremental cost relative to its information value
- New Information - provides new information; does not merely duplicate data already collected by other agencies or investigators

General characteristics of critical indicators include:

- Regionally Responsive - must reflect changes in ecosystem conditions and respond to stressors of concern across most resource classes and habitats in a region
- Unambiguously Interpretable - must be related to an assessment endpoint or relative exposure or habitat variable that forms part of the investigators' overall conceptual model of ecological structure and function
- Low Measurement Error - exhibits low measurement error and stability of regional cumulative frequency distribution during the index period
- Simple Quantification - can be quantified by cost-effective synoptic or automated monitoring
- Environmental Impact - sampling must have minimal environmental impact
- Low Year-to-Year Variability - must have sufficiently low natural inter-annual variation to detect ecologically significant changes within a reasonable time frame

It is important to note that, with respect to surface water supply projects, all potentially applicable response indicators must have either a direct relationship to changes in freshwater inflows, or an indirect relationship (e.g., center of fish population distribution). Indicators with a direct relationship to freshwater inflows are typically physical or chemical in nature (e.g., salinity), and respond more or less instantaneously to changing inflows. Indicators with an indirect relationship to freshwater inflows are typically biological in nature (e.g., center of fish population distribution), are mediated by physical and chemical changes, and generally respond on a slower time scale (e.g., days, months, and seasons).

The HBMP design stakeholder group deliberated on critical and desirable indicators over the course of several workshops, applied the criteria described above, and generated a list of potential indicators for each of the three identified monitoring elements: hydrology/water quality, biota, and habitat. This list was ultimately reduced to a final recommended suite of critical indicators for each monitoring element (see PBS&J, 2000) that is summarized in the following sections.

2.4. Reporting Units and Spatial Strata

The spatial and temporal extents, statistically often referred to as the *target population*, of the sampling program were defined during the development of the HBMP.

The potentially affected waterbodies or portions of waterbodies were identified based on geographic areas of concern; these were defined as spatial "reporting units" for purposes of program design and monitoring for withdrawal-related changes on an annual basis.

HBMP spatial reporting units include:

- Lower Hillsborough River – Figure 2.4.1
- Tampa Bypass Canal/Palm River - Figure 2.4.2
- McKay Bay – Figure 2.4.3
- Lower Alafia River – Figure 2.4.4
- Hillsborough Bay – Figure 2.4.5

HBMP sampling is conducted in each of the four primary reporting units: the lower Hillsborough River, the Tampa Bypass Canal/Palm River, McKay Bay, and the lower Alafia River.

For the fifth reporting unit, Hillsborough Bay, the HBMP design stakeholder group concluded that this reporting unit could be affected by the permitted water supply projects, but that additional sampling in Hillsborough Bay as a component of the HBMP was not warranted for two reasons. First, impacts from Tampa Bay Water withdrawals should be detected in the other reporting units before being detected in Hillsborough Bay. Second, the data gathered from existing monitoring programs can be used to characterize the status of this reporting unit.

HBMP data collection sites in Hillsborough Bay are located near the mouth of each primary reporting unit. The Environmental Protection Commission of Hillsborough County (EPCHC) and the FWRI have long-term monitoring programs in Hillsborough Bay that are independent of the HBMP. In Water Year 2005, the Fisheries Independent Monitoring Program of the Fish and Wildlife Research Institute (FWRI) also began HBMP-specific sampling in Hillsborough Bay at the mouth of the Alafia River. Results from these programs comprise the majority of the data evaluated by the HBMP for Hillsborough Bay reporting unit.

2.5. Spatial Randomization

To develop the HBMP stratified random sampling design, a randomized method for choosing monthly sampling sites is used for each of the spatial strata within each reporting unit. The centerlines of the linear reporting units were generated using an ARCINFO function that interpolates intermediate topographic contours. The function used the riverbanks as contours and interpolated the centerlines as intermediate contours between the banks. The centerlines were then divided into 1-meter long segments, and each of these was defined as a potential sampling station and named according to its distance from the river mouth and the strata in which it was located.

HBMP monthly sampling stations for the linear reporting units are selected by stratum. Each station in the stratum is assigned a unique consecutive whole number. A series of random numbers is then created using the SAS "ranuni()" statement. These random numbers are matched with the numbers assigned to the stations, and the corresponding stations are selected. Lists of primary and alternate stations by stratum are provided to the field staff. In the event that a primary station cannot be sampled, field staff must choose the first alternate station (not the closest station). If an alternate station cannot be sampled, field staff must choose the next alternate station in the sequence.

A "right", "left", or "center" ("shallow right", "shallow left", or "deep" in the Palm River) designation is also chosen in the monthly sample selection process. A "left" designation instructs the field staff to take a sample on the left 33% of the river (with left defined as the left side looking upstream). A "center" designation instructs the crew to sample in the center 33% of the river and a "right" designation in the right 33%. The designations are the same for the Palm River except that the "shallow" stations are sampled in water less than 2 meters deep. The lateral positions are randomly selected using the SAS "ranuni()" statement. Each portion of a river has

an equal chance of being selected for any given station. The depth strata of the Palm River are treated as substrata. Lateral position is not randomly selected in the deep Palm River substrata. The "left" or "right" lateral positions are randomly selected in the Palm River shallow strata.

Stations for water quality, benthos, and fish sampling are randomly selected for each monthly sampling. Stations for plankton sampling were randomly selected one time at the beginning of the program.

McKay Bay monthly stations are grouped by hexagon or cell. Initially a cell is randomly selected for sampling. Then the station within the selected cell is selected in a manner consistent with the technique described above for the linear reporting units. Lists of the primary and alternate stations are provided to the field staff. There is only one primary station in each cell. If that station cannot be sampled, field staff must select the first alternate station. If an alternate station cannot be sampled, crews must select the next alternate station in that cell. There are no lateral sample station designations in McKay Bay.

McKay Bay cells are selected using a method weighted for the number of stations in each cell. Each of the McKay Bay cells is the same size, but some of the cells on the edge of the bay overlap land areas. These overlap areas do not constitute valid stations. McKay Bay cells are selected using a weighted formula in SAS. Each cell is assigned a sequential percentage of the values from 0 to 1 in accordance with the proportion of the total stations in McKay Bay located in that cell. For instance, if Cell 1 contains 15% of the total stations it would be assigned values from 0.00001 to 0.15000 in the formula. If Cell 2 contained 5% of the stations in McKay Bay, it would be assigned values from 0.15001 to 0.20000 in the formula. Though the water quality, benthos, fish, and plankton efforts may sample the same cell during a given month, a single sampling element is never sampled twice within one cell in a given month.

2.6. Temporal Strata

Temporal strata are specific to each of the four reporting units. In general, these strata were defined to ensure that the key within-year sources of variation were taken into account. Specifically, two sources of within-year variation were considered critical. One source dealt with the intra-annual variation in flows due to the seasonal differences in rainfall. Typically, flows are higher in the normal wet season period (July through September) when compared to flows observed in the dry season (October through June). Flows in the months of April and May in particular can be extremely low due to prolonged periods of low rainfall. The second within-year source of expected variation in flows would be the manifestation of the permitted withdrawal schedules. Since the withdrawal schedules vary as a function of ambient flow, the reductions in freshwater flow due to the withdrawals will not be consistent throughout the year. Based on historical flow conditions, the greatest daily withdrawals will typically occur during the months of July through September.

Two other sources of temporal variation, tides and diel variability, were considered during the development of the sampling program but were determined to be adequately addressed to meet HBMP objectives based on other sampling criteria and constraints.

2.6.1. Lower Hillsborough River

The general temporal sampling strategy for the lower Hillsborough River ensures that an adequate sample size is available for drawing inferences about river-wide status on an annual or seasonal basis. A temporally even sampling effort exists for water quality, fish, and plankton sampling. By comparison, the benthic sampling program currently includes two different sampling intensities. Benthic sampling effort in both the wet season (i.e., July through September) and in the late dry season (April through June) is greater than that during the periods of October through December and January through March. Thus, the lower Hillsborough River sampling strategy for benthos is on a wet season/dry season basis.

In addition, continuous monitoring (every 15 minutes) of conductivity and temperature is conducted at three permanent fixed locations (Sligh Ave., Columbus Ave., and a third station located between Sligh and Columbus). These stations provide information on short-term responses in water quality to changes in freshwater flow. Rainfall and flow measurements are determined on a daily basis. Vegetation sampling consists of aerial photography and shoreline surveys conducted every three years between October and December.

2.6.2. TBC/Palm River

The temporal sampling strategy for the TBC/Palm River focuses on the expected differences in river status that are likely to occur between the wet and dry seasons. Sampling for benthos and water quality during the wet season, when mean daily withdrawals will be largest, is more intense than during the dry season. To this end, there are two temporal sampling strata for both water quality and benthos, with adequate sampling intensity for inferences to be made regarding the status of water quality or benthos in the river for both the wet and dry seasons. Equivalent sampling intensities are employed across all months of the year for zooplankton sampling. Based on stakeholder consensus and District approval, fish sampling in the TBC/Palm River was discontinued in Water Year 2009 (see Appendix A).

Continuous monitoring (every 15 minutes) of conductivity and temperature is conducted at the Maydell Drive recorder. This monitoring provides information on short-term responses in water quality to changes in freshwater flow. Rainfall and flow measurements are collected on a daily basis. Vegetation sampling consists of aerial photography and shoreline surveys conducted every three years during the months of October through December.

2.6.3. McKay Bay

The temporal sampling strategy for McKay Bay closely follows that for the TBC/Palm River and focuses on the expected differences in the status of McKay Bay between the wet and dry seasons. Continuous monitoring (every 15 minutes) of conductivity and temperature is conducted at the 22nd Street Causeway station. Sampling of benthos and water quality is more intense during the wet season, when mean daily withdrawals are expected to be greatest based on historical flow conditions. Equivalent sampling intensities are employed across all months for both fish and plankton sampling.

The sampling schedule is based on temporal randomization around a selected day within each month. This method provides estimates of within-temporal stratum variability, increases the power of any tests of significance, and also best represents the range of flow conditions expected.

2.6.4. Lower Alafia River

The temporal sampling strategy for the lower Alafia River is very similar to that defined for the lower Hillsborough River. Equal sampling intensities are employed across all months for water quality, benthos, fish, and plankton sampling. The sampling intensity is meant to be sufficient to allow meaningful river-wide inferences regarding each of these HBMP elements to be drawn on a quarterly basis. An additional fish sampling effort occurs once annually in the freshwater stratum.

During the HBMP design process, stakeholders recommended that an inset stratum for benthic sampling be specifically addressed, extending approximately 1 km upstream and 1 km downstream of the freshwater interface based on an analysis of pre-operational water quality data. Additional benthic sampling is currently conducted in the inset stratum during the months of June through August. This sampling was initially designed to be sufficiently intense to allow inferences to be drawn about the status of this stratum during the wet season.

Continuous monitoring (every 15 minutes) of conductivity and temperature is conducted at one fixed station currently located on the River south of Buckhorn Creek. In addition, the USGS collects data from two additional fixed sites on the Alafia River. These data provide information on short term responses in water quality to changes in freshwater flow. The frequency of rainfall and flow measurements is daily. Vegetation sampling consists of aerial photography and shoreline surveys conducted every three years during the October through December period. Submerged aquatic vegetation is currently monitored every five years in two strata.

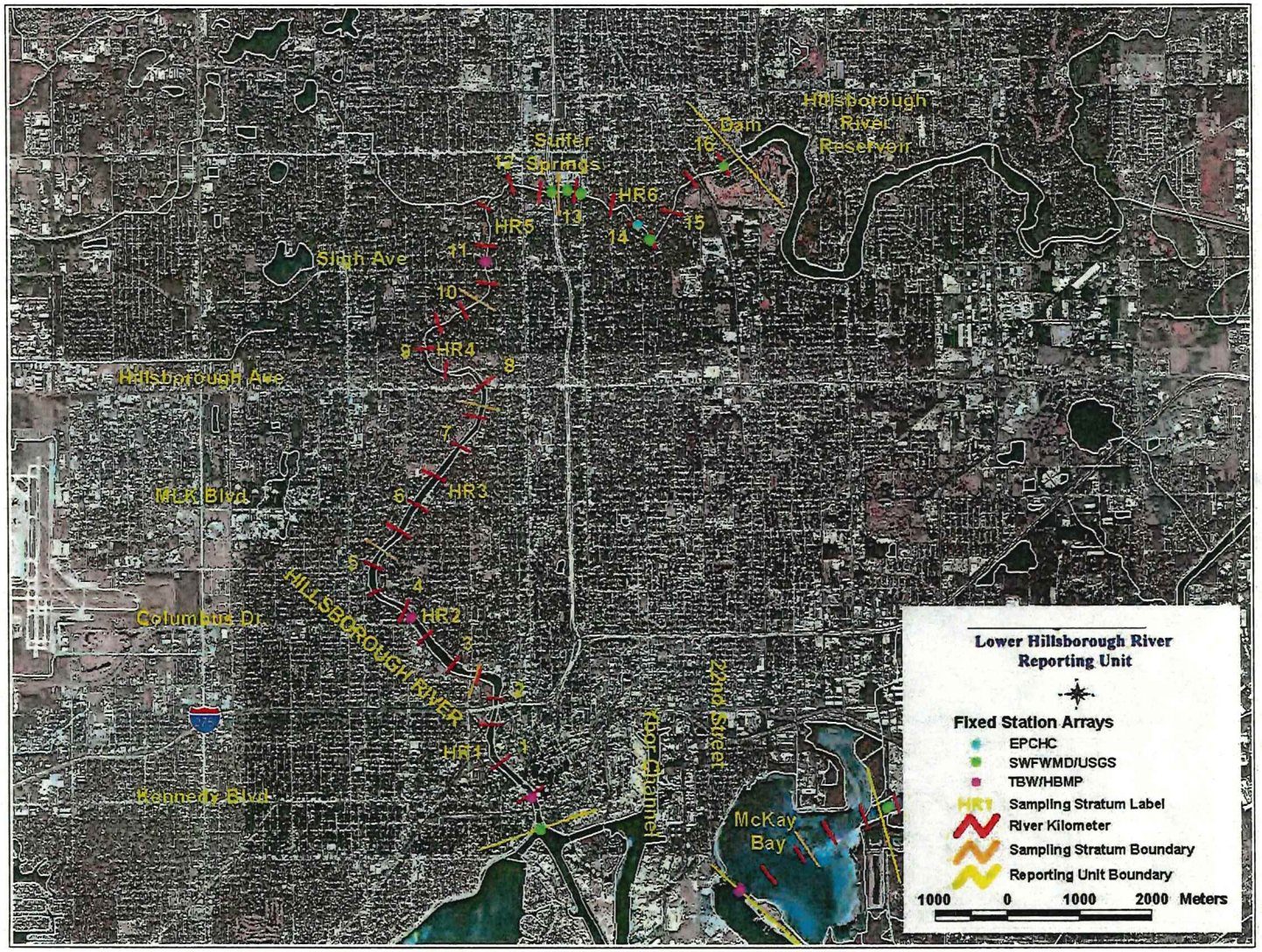

Figure 2.4.1. Lower Hillsborough River Reporting Unit

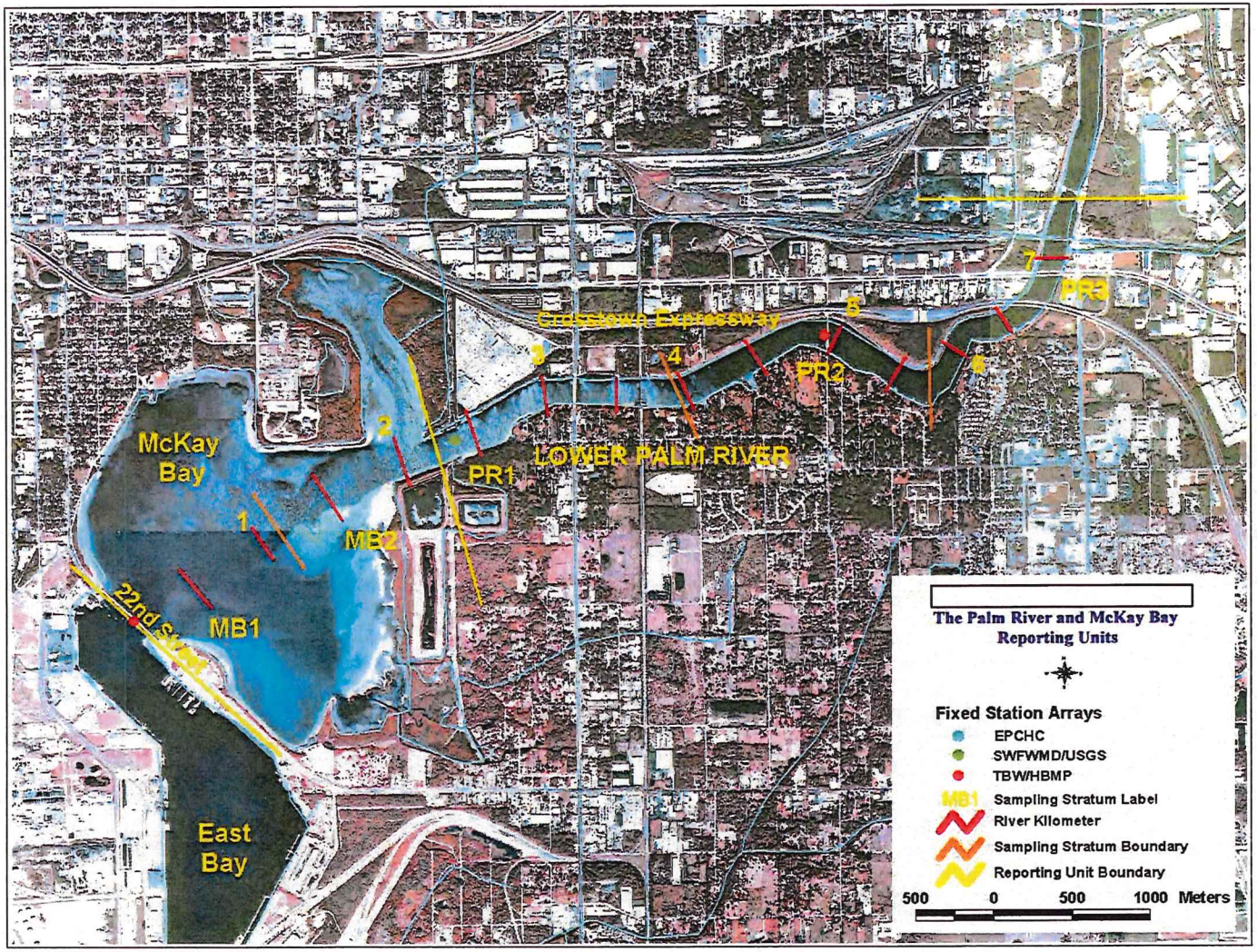

Figure 2.4.2. The Palm River and McKay Bay Reporting Units

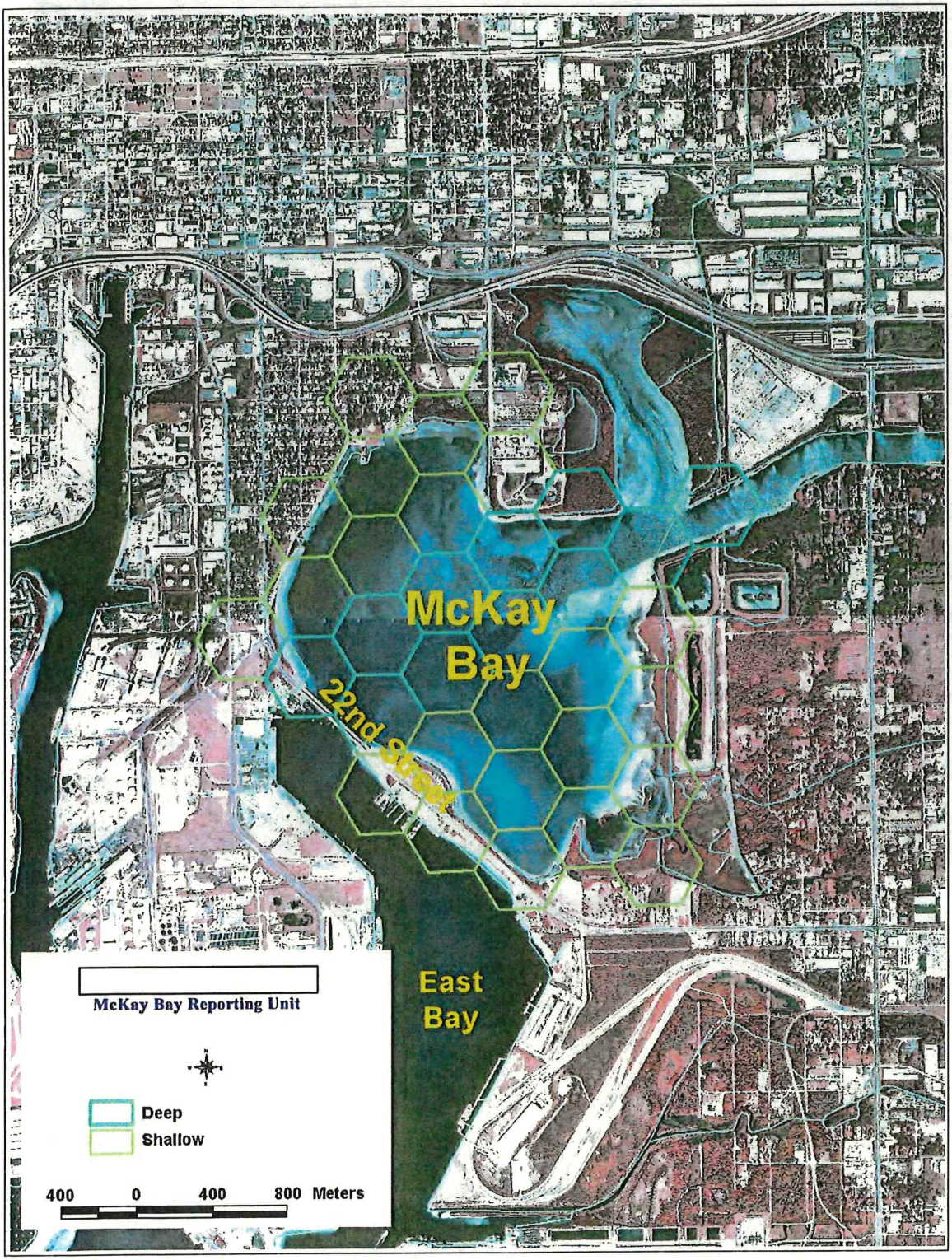

Figure 2.4.3. McKay Bay Reporting Unit

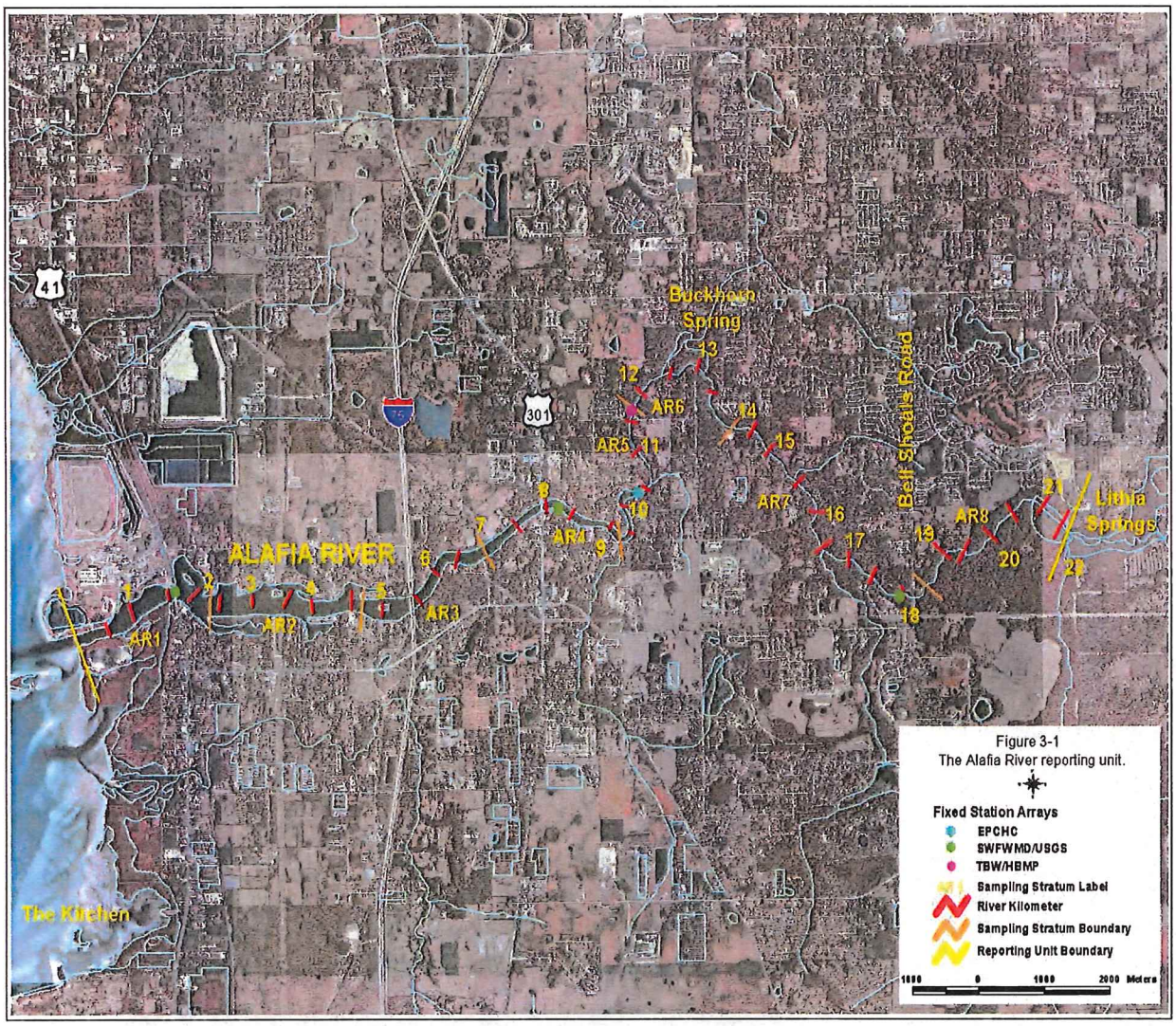

Figure 2.4.4. The Alafia River Reporting Unit

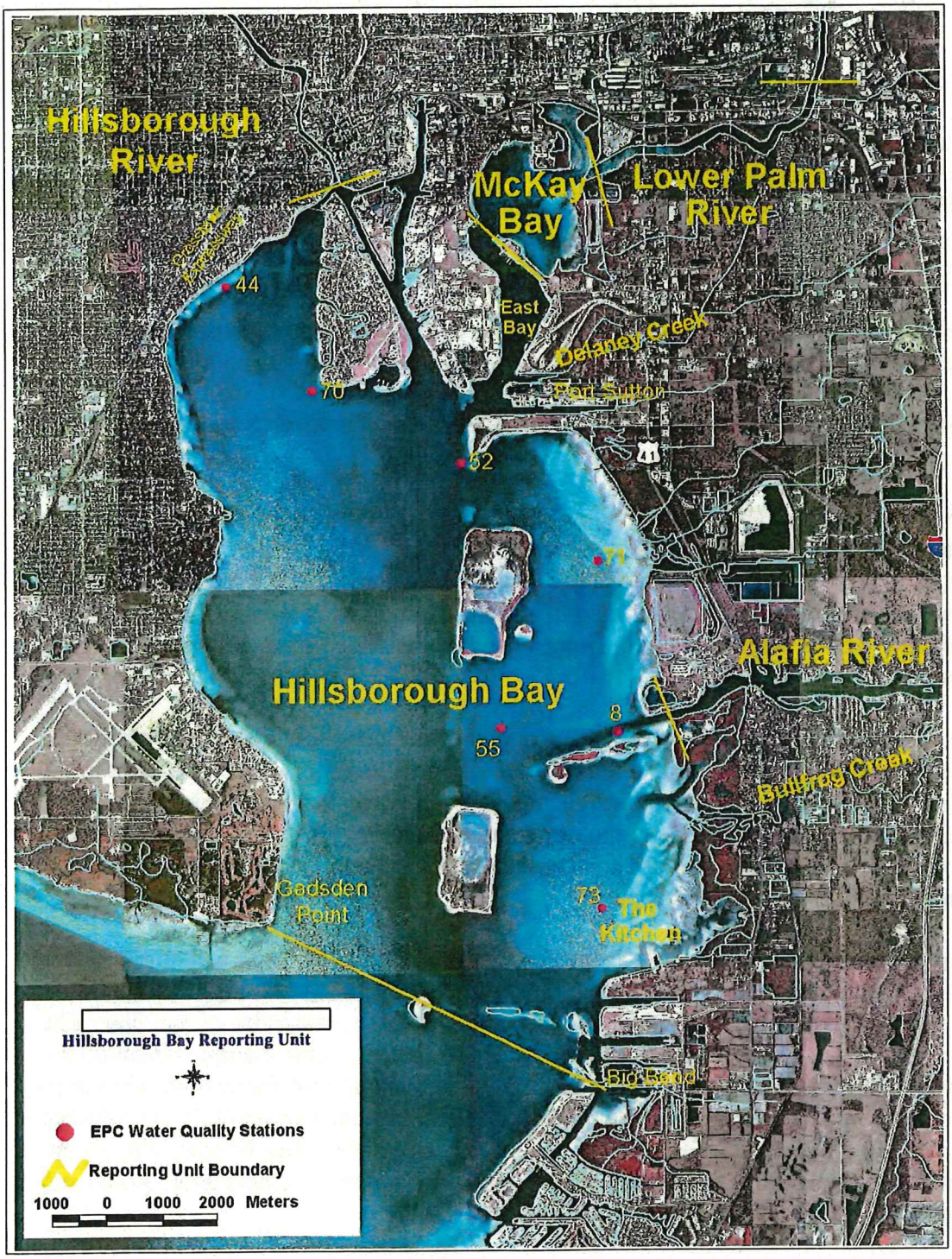

Figure 2.4.5. Hillsborough Bay Reporting Unit

3.0 Tampa Bypass Canal/Hillsborough River HBMP

3.1. Introduction

This section describes the special permit conditions, flow, water quality, and biological data collection efforts in the lower Hillsborough River, Tampa Bypass Canal (TBC), and McKay Bay conducted under the HBMP. The sampling programs for these reporting units are summarized in Tables 3.1.1 through 3.1.3 at the end of this section. Modifications to the initial HBMP sampling design and the rationale for these modifications are provided in Appendix A.

Additional information and specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

3.2. Lower Hillsborough River, Tampa Bypass Canal and McKay Bay Reporting Units

The Lower Hillsborough River (HR) reporting unit (Figure 2.4.1) extends from the mouth of the river at Platt Street to the City of Tampa Dam, covering a distance of 16.34 river kilometers. This spatial reporting unit was divided into six strata, five of equal length (2.55 km) below Sulphur Springs, and one of 3.61 km in length from Sulphur Springs upstream to the dam. These strata are used for all of the HBMP elements (i.e., water quality, benthos, adult and juvenile fish, ichthyoplankton and vegetation).

The TBC/Palm River reporting unit (Figure 2.4.2) extends from the mouth upstream to Structure S-160. This spatial reporting unit is divided into 3 strata of equal length (1.75 km). In addition to these longitudinal strata, it was also recognized during HBMP design that significant variation in both water quality and benthos might exist due to differences in depth. Therefore, both shallow and deep water substrata within each longitudinal stratum were defined in the Palm River for both water quality and benthos monitoring elements.

The McKay Bay reporting unit (Figure 2.4.3) extends from the 22nd Street Causeway to the mouth of the TBC. This spatial reporting unit was divided into 2 strata: 1) the channel that runs approximately along the centerline of the Bay; and 2) the shallow remainder of the Bay. The channel portion was further divided into 2 strata of equal length (1.1 km). Sample selection for water quality and benthic sampling locations is based on a hexagonal grid framework, similar to that used by the Environmental Protection Commission of Hillsborough County (EPCHC), except using a finer grid scale of approximately 0.2 km^2. These hexagons were then divided into a 1-m^2 grid and potential sample stations established at the 1-m^2 grid nodes. The hexagons, grids, and stations were generated by Janicki Environmental (PBS&J, 2000).

3.3. Lower Hillsborough River and Tampa Bypass Canal Permit Conditions

Water Use Permit 20011796.002 for the Tampa Bypass Canal (TBC)/Hillsborough River Water Supply Projects authorizes Tampa Bay Water to divert water from the Hillsborough River and withdraw water from Tampa Bypass Canal according to the schedule provided in the permit.

This permit requires that Tampa Bay Water continue to implement the approved TBC/Hillsborough River HBMP in order to address the following objectives:

- Use baseline conditions to compare the effects of the permitted water use upon streamflow rates, salinity distributions, and selected water quality and biologic variables within the lower Hillsborough River below Tampa Dam, TBC, Palm River, and McKay Bay
- Monitor diversions from the Hillsborough River and withdrawals from the TBC at the withdrawal points and evaluate streamflow data for the lower Hillsborough River at the Tampa Dam, and the TBC at the District's Structures 160 and 162
- Evaluate the ecological relationships of the lower Hillsborough River below Tampa Dam, TBC, Palm River, and McKay Bay to freshwater flows
- Monitor selected water quality and biologic variables in order to determine if the ecological characteristics of the lower Hillsborough River below Tampa Dam, TBC, Palm River, and McKay Bay relate to freshwater flow change over time
- Determine the relative effect of permitted diversions and withdrawals on any ecologic changes that may occur in the lower Hillsborough River below Tampa Dam, TBC, Palm River, and McKay Bay
- Determine if these withdrawals cause or significantly contribute to any unacceptable adverse environmental impacts to the natural resources of the lower Hillsborough River below Tampa Dam, TBC, Palm River, and McKay Bay exhibit as a result of changes in freshwater flows. The HBMP shall identify criteria that will be used to determine unacceptable adverse environmental impacts to the resources
- Coordinate with appropriate agencies that have or are currently collecting data that can be incorporated into the HBMP to avoid duplication of effort and to facilitate the most efficient use of resources.

3.4. Sampling Site Selection

All but one of the monthly sample sites (stations) for water quality, fish, benthos, and plankton are randomly selected. There is a fixed water quality sampling station at the mouth of the Hillsborough River and East Bay. This station is collocated with EPCHC water quality sampling Station 52. Sampling stations for water quality, fish, and benthos are randomly selected each month. Sampling stations for plankton were randomly selected at the beginning of the HBMP and remain fixed.

Sampling stations for the Hillsborough River and TBC are identified by stratum and location relative to the mouth of the river. Thus, the station in Hillsborough River Stratum 1, 1000 meters from the mouth of the river, is identified as "HR101000". The prefix "HR1" designates the river and stratum and the suffix "01000" identifies the distance from the mouth of the river. The "HR"

and "PR" designations identify Hillsborough and Palm River stations, respectively. All potential stations and their corresponding latitude and longitude have been determined and are listed in the project database. Stations are chosen in each stratum by randomly selecting from the list of potential stations.

Plankton sampling stations in McKay Bay are identified by the "MB" prefix and are oriented on a centerline that begins at the 22nd Street Causeway Bridge and ends at the downstream terminus of the TBC centerline. Plankton sampling in McKay Bay occurs in two strata. The naming convention for McKay Bay plankton stations follows that of the rivers with the distance designation representing meters from the 22nd Street Causeway. The TBC stations for water quality, fish, benthos, and plankton are also defined in meters from the 22nd Street Causeway.

In addition to the station location along the river's length, the location relative to the river's width (left, middle, or right) is also randomly selected for water quality, fish, and benthos sampling. Finally, the starting point of a day's sample collection (e.g. river mouth or upstream boundary) is randomly selected each month for water quality.

River width and starting point selection parameters are not used for water quality, fish, or benthos sampling in McKay Bay, as the McKay Bay sampling design is not based upon linear stratification. For sampling purposes, McKay Bay has been divided into hexagons, which are further partitioned into 1-meter cells. Each potential sample station is located within a single grid cell. Stations are selected by randomly selecting a hexagon, then randomly selecting a grid cell within the hexagon. The prefix "M" and a unique suffix number that identifies the hexagon and grid cell identify McKay Bay stations.

The week in which sampling is conducted for each month is randomly selected for water quality and fish. Plankton sampling dates are chosen based upon the appropriate correspondence of tide stage with time of day. The Environmental Protection Commission of Hillsborough County (EPCHC) performs water quality and benthos sampling in Hillsborough Bay at fixed sampling stations during fixed weeks of the month or a late summer/early fall index period.

3.5. Hydrology / Water Quality

Current data collection activities for the hydrology/water quality element of the TBC/Hillsborough River HBMP are described briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

River flow and rainfall measurements are obtained from Tampa Bay Water maintained equipment or equipment maintained and operated by USGS. Salinity data are obtained from HBMP continuous water quality recording stations installed specifically for this project; these stations were installed in the early part of Water Year 2001.

Water quality samples and measurements are taken monthly in each of the three reporting units, lower Hillsborough River, TBC, and McKay Bay. Water quality sampling consists of a water column profile and an associated grab sample. The water column profiles measure temperature,

specific conductance, pH, salinity (calculated from specific conductance), and dissolved oxygen. These measurements are typically made at the water column surface, bottom, and 0.5 meter increments from the surface. The grab samples are analyzed by a subcontracted laboratory for parameters specific to each reporting unit. Sampling is typically conducted over a two- to three-day period. An increased number of samples are taken during the summer wet-season as shown in the HBMP sampling summary tables below. Hydrologic and water quality parameters measured in the lower Hillsborough River, TBC, and McKay Bay are shown in Table 3.5.1. In addition, the EPCHC collects water quality samples once monthly at fixed stations in Hillsborough Bay. This effort measures all water quality parameters included in the HBMP.

As described above, the HBMP maintains one continuous water quality recorder in the TBC, one in McKay Bay, and three in the Hillsborough River (Sligh Ave., Columbus Ave., and between Sligh and Columbus). These recorders were installed in Water Year 2001 as part of the HBMP and are listed in the sampling summary tables (Tables 3.7.1-3.7.3). In addition, the USGS maintains several long-term real-time water quality recorders that are used for the HBMP.

Table 3.5.1. Hydrologic and water quality parameters measured in the three reporting units.

Lower Hillsborough River	Tampa Bypass Canal Lower Palm River	McKay Bay
stream flow	stream flow	stream flow
surface water elevation	surface water elevation	surface water elevation
salinity	salinity	salinity
specific conductance	specific conductance	specific conductance
temperature	temperature	temperature
pH	pH	pH
dissolved oxygen	dissolved oxygen	dissolved oxygen
chlorophyll *a*	chlorophyll *a*	chlorophyll *a*
----------	color	color
orthophosphorus*	orthophosphorus*	orthophosphorus*
total phosphorus*	total phosphorus*	total phosphorus*
ammonia/ammonium *	ammonia/ammonium *	ammonia/ammonium *
nitrate+nitrite*	nitrate+nitrite*	nitrate+nitrite*
total Kjeldahl nitrogen*	total Kjeldahl nitrogen*	total Kjeldahl nitrogen*
total nitrogen*	total nitrogen*	total nitrogen*

*Sampling for these parameters is not specified or required in the original or the current HBMP design. These parameters have been collected during certain water years for other Tampa Bay Water projects.

3.6. Biota

Current data collection activities for the biota element of the TBC/Hillsborough River HBMP (benthic macroinvertebrates, ichthyoplankton and other zooplankton, and fish) are described

briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

3.6.1. Benthic Macroinvertebrates

Benthic macroinvertebrate samples are also taken monthly in each of the three reporting units. Sampling is typically conducted over a three- to four-day period. A greater number of samples are taken during the summer wet-season. Hillsborough River samples are archived in an unsorted condition in April, May, June, October, November, and December. Samples during these months were not included in the draft HBMP design. During its review of the draft HBMP design, SWFWMD requested that samples be collected during these months, but archived for potential future analysis (see Appendix A). Samples for the remainder of the year are sorted and analyzed.

The sample collection and analysis techniques of the HBMP and the EPCHC programs are the same. The EPCHC benthos-sampling program includes Hillsborough Bay. EPCHC samples once per year during a late summer/early fall index period.

Water column casts or profiles and Secchi-depth measurements are performed at each station. Sediment samples are also taken at each station to be analyzed for percent fines and organic matter content. Benthic macroinvertebrate samples are sieved and stored for later sorting and analyses by the subcontracted invertebrate taxonomy laboratory.

3.6.2. Ichthyoplankton and other Zooplankton

Plankton collections are made monthly in each reporting unit by University of South Florida (USF) staff. The sampled locations within each reporting unit were selected using a one-time stratified-random approach as described above.

Dates of sampling are chosen to correspond with the occurrence of night-time flood tides. Night-time zooplankton catches are known to be generally larger than daytime catches. This phenomenon was confirmed during preliminary sampling of the lower Alafia River prior to 2000. Similarly, existing data indicate that, during flood tides, the estuarine water column tends to contain more organisms that are moving upstream or are trying to maintain position within the estuary, whereas ebb tidal waters tend to contain more organisms that are in the process of leaving the estuary. Night-time flood tides were therefore chosen as the standard conditions for zooplankton sampling. A water column profile is performed at the end of each tow.

3.6.3. Fish

Fish sampling is conducted once monthly in each reporting unit except the TBC by Florida Fish and Wildlife Research Institute (FWRI) staff. The sampling effort in each stratum typically consists of utilizing two 21-m seines and one 6.1-m otter trawl, though some strata in the Hillsborough River are not sampled with trawls. Most of the animals traditionally sampled by the FWRI Fisheries Independent Monitoring Program are included in this effort. These include all fishes, blue crabs, stone crabs, horseshoe crabs and penaeid shrimp. A water profile is performed at each station.

3.7. Habitat / Vegetation

Current data collection activities for the habitat/vegetation element of the TBC/Hillsborough River HBMP are described briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

Vegetation sampling consists of interpretation of aerial photography and shoreline surveys conducted every three years during the October through December period. The boundaries of floodplain vegetation associations delineated during previous HBMP mapping events are plotted on false-color infrared aerial photographs provided by Tampa Bay Water. Paper and/or electronic versions of the photographs and boundaries are used in the field to map changes in floodplain vegetation. These photographs are supplemented with other aerial photographs if necessary. The observed vegetation-association boundaries are compared with the previous event's boundary to determine any shifts. Changes in vegetation boundaries are made by creating a copy of the previous event's coverage and editing only those polygons with changed boundaries or shapes. This procedure is designed to minimize observer bias.

If changes are identified on paper maps, the resulting polygons are digitized to create a GIS coverage for each reporting unit. Inter-annual changes in the area and extent of major vegetation associations in the reporting units are calculated by comparing the association boundaries and areas over time. These vegetation association polygons are also used to calculate linear estimates of vegetation shoreline extents. Estimation of the first and last occurrence of vegetation community indicator species (e.g., black needlerush (*Juncus roemerianus*)) for each monitoring event is based on the population occurrence of each species rather than the occurrence of individual plants of each species.

Table 3.1.1
Sampling Program Summary for the Lower Hillsborough River Reporting Unit

Element	Spatial Strata	Month												Total
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
Water Quality	6 strata	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	1/stratum	72
	1 fixed bay station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	1/station	12
Benthos	6 strata	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	144[1]
Fish	Seine samples in 6 longitudinal strata (HR1 – HR6)	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	144 seines
	Trawl samples in 3 longitudinal strata (HR1 - HR3)	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	72 trawls
Ichthyoplankton and other Zooplankton	6 strata	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ Stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	144 hauls
Hydrology/ Water Quality	Temperature, conductivity and salinity (bottom and surface) at Sligh Ave., Columbus Ave., and a third station located between Sligh and Columbus													
Vegetation/Habitat	Entire reporting unit										polygon mapping shoreline survey [2]			1 1

[1] Only samples collected from January through March, and July through September (72 samples a year), are processed; the remaining samples are preserved and archived after sieving but before sorting and other analyses. Sediment samples are not collected for the archived samples.

[2] Conducted once every three years (Fall 2011 (WY 2012), Fall 2014 (WY 2015), etc.).

Table 3.1.2
Sampling Program Summary for the TBC/Palm River Reporting Unit

Element	Spatial Strata	Month												Total
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
Water Quality	3 longitudinal strata (PR1 - PR3,) with Deep channel & shallow substrata	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	2 deep & 2 shallow/ stratum	2 deep & 2 shallow/ stratum	2 deep & 2 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	1 deep & 1 shallow/ stratum	90
	1 Fixed Station on upstream side of S-160	1	1	1	1	1	1	1	1	1	1	1	1	12
Benthos	1 Stratum (PR1 downstream of US41) with Deep channel / shallow substrata	1 Deep 1 Shallow		1 Deep 1 Shallow		1 Deep 1 Shallow		1 Deep 1 Shallow	1 Deep 1 Shallow	1 Deep 1 Shallow		1 Deep 1 Shallow		14
Ichthyoplankton and other Zooplankton	1 Stratum (PR1 downstream of US41) in deep center channel	2 hauls/ stratum	2 hauls/ Stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ Stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	24 hauls
Hydrology/ Water Quality	Maydell Drive (temperature, conductivity, and salinity @ surface and bottom).													
Vegetation/Habitat	Entire reporting unit										polygon mapping[1]			1
											shoreline survey[1]			1

[1] Conducted once every three years (Fall 2011 (WY 2012), Fall 2014 (WY 2015), etc.).

Table 3.1.3
Sampling Program Summary for the McKay Bay Reporting Unit

Element	Spatial Strata	Month												Total
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
Water Quality	34 cells	3	4	3	4	3	3	10	10	10	3	4	3	60
Benthos	34 cells	3	4	3	4	3	3	10	10	10	3	4	3	60
Fish	1 shallow (seine: 26 cells) and 1 deep (trawl: 18 cells) strata	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	1 seine in each of 10 cells 1 trawl in each of 4 cells	120 seines 48 trawls
Ichthyoplankton and other Zooplankton	6 cells – fixed location stations - shallow 2 strata – fixed location stations – deep channel	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ Stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 haul/s stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	1 haul/ cell 2 hauls/ stratum	72 hauls 48 hauls
Hydrology/ Water Quality	22nd Street Causeway (temperature, conductivity, and salinity @ surface and bottom).													
Vegetation/Habitat	Entire reporting unit										polygon mapping [1]			1

[1] Conducted once every three years (Fall 2011 (WY 2012), Fall 2014 (WY 2015), etc.).

4.0 Alafia River HBMP

4.1. Introduction

This section described the flow, water quality, and biological data collection efforts in the lower Alafia River conducted under the HBMP. The sampling program for this reporting unit is summarized in Table 4.1.1 at the end of this section. Modifications to the initial sampling design and the rationale for these modifications are provided in Appendix A.

Additional information and specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

4.2. Lower Alafia River Reporting Unit

The current lower Alafia River (AR) spatial reporting unit (Figure 2.4.4) is about 18.5 kilometers long. The estuarine portion of the river extends from the mouth to approximately river kilometer 14 (Rkm 14). This estuarine portion of the river was divided into 6 strata of equal length (2.33 km). The remaining 4.5 kilometers of the reporting unit, from kilometer 14 to kilometer 18.5 slightly upstream of Bell Shoals Road, is generally considered to be a freshwater system. An additional freshwater segment, upstream of the intake (stratum AR8, Rkm 18.5 to 21.0) was removed from the original HBMP design because the sampling methods required in this stratum were not compatible with those used in the other strata, and potential impacts related to withdrawals are most likely to be observed downstream of Tampa Bay Water's intake near Bell Shoals Road.

These strata are used for all of the HBMP study elements. An additional inset stratum for benthos sampling was defined in consultation with Hillsborough County and the SWFWMD. This stratum extends approximately 1 km upstream (Rkm 13) and 1 km downstream (Rkm 7) of the freshwater interface and includes additional sampling for portions of Strata AR4 and AR6 and all of AR5.

4.3. Alafia River Permit Conditions

Water Use Permit 2011794.01 for the Alafia River authorizes Tampa Bay Water to withdraw water from the Alafia River at Bell Shoals Road according to the schedule provided in the permit.

The original water use permit (Permit 2011794.00) required Tampa Bay Water to develop and implement an HBMP) for the Alafia River. The permit specified that the HBMP address the following objectives:

- Establish baseline conditions prior to permitted use for streamflow rates, salinity distributions, and selected water quality and biological variables within the Alafia River and its estuary

- Monitor withdrawals from the Alafia River at the withdrawal point and evaluate streamflow data for the river at all applicable locations
- Evaluate the ecological relationships of the Alafia River and its estuary to freshwater flows
- Monitor selected water quality and biological variables in order to determine if the ecological characteristics of the river and its estuary related to freshwater flow change over time
- Determine the relative effect of permitted withdrawals from the Alafia River on any ecologic changes that may occur in the river and its estuary
- Determine if these withdrawals cause or significantly contribute to any unacceptable environmental impacts that the river and its estuary exhibit as a result of changes in freshwater flows
- Coordinate with appropriate agencies that have or are currently collecting data that can be incorporated into the HBMP to avoid duplication of effort and to facilitate the most efficient use of resources.

4.4. Sampling Site Selection

All but one of the monthly sample sites (stations) for water quality, fish, benthos, and plankton are randomly selected. There is a fixed water quality sampling station at the mouth of the Alafia River. This station corresponds to EPCHC water quality Station 8. Sampling stations for water quality, fish, and benthos are randomly selected each month. Sampling stations for plankton and for fixed-station vegetation monitoring were randomly selected at the beginning of the HBMP and remain fixed.

Sampling stations for the Alafia River are identified by stratum and location relative to the mouth of the river. Thus, the station in Alafia River Stratum 1, 1000 meters from the mouth of the river, is identified as "AR101000". The prefix "AR1" designates the river and stratum and the suffix "01000" identifies the distance from the mouth of the river. All potential stations and their corresponding latitude and longitude have been determined and are listed in the project database. Stations are chosen in each stratum by randomly selecting from the list of potential stations.

In addition to the station location along the river's length, the location relative to the river's width (left, middle or right) is also randomly selected for water quality, fish and benthos sampling. Finally, the starting point of a day's sample collection (e.g., river mouth or upstream boundary) is randomly selected each month for water quality. The week in which sampling is conducted for each month is randomly selected for water quality and fish. Plankton sampling dates are chosen based upon the appropriate correspondence of tide stage with time of day.

4.5. Hydrology / Water Quality

Current data collection activities for the hydrology/water quality element of the Alafia River HBMP are described briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

River flow and rainfall measurements are obtained from Tampa Bay Water maintained equipment or equipment maintained and operated by the USGS. Salinity data are obtained from the HBMP continuous water quality recording station installed on the Alafia River downstream of Buckhorn Creek; this station was installed in the early part of Water Year 2001.

Water quality samples and measurements are taken once a month. Water quality sampling consists of a water column profile and an associated grab sample. The water column profiles measure temperature, specific conductance, pH, salinity (calculated from specific conductance), and dissolved oxygen. These measurements are typically made at the water column surface, at the bottom, and at 0.5 meter increments from the surface. The grab samples are analyzed by a subcontracted laboratory for the parameters listed in Table 4.6.1. Sampling is typically conducted over a two-day period.

Table 4.5.1. Hydrologic and water quality parameters measured in the Alafia River.

Lower Alafia River
stream flow
surface water elevation
salinity
specific conductance
temperature
pH
dissolved oxygen
chlorophyll *a*
color
total suspended solids
orthophosphorus* total
phosphorus*
ammonia/ammonium*
nitrate+nitrite*
total Kjeldahl nitrogen*
total nitrogen*

*Sampling for these parameters is not specified or required in the original or the current HBMP design. These parameters have been collected during certain water years for other Tampa Bay Water projects.

4.6. Biota

Current data collection activities for the biota element of the Alafia River HBMP (benthic macroinvertebrates, ichthyoplankton and other zooplankton, and fish) are described briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

4.6.1. Benthic Macroinvertebrates

Benthic macroinvertebrate samples are also taken once monthly in the Alafia River reporting unit. Sampling is typically conducted over a three- to four-day period. A greater number of samples are taken during the summer wet-season in an index stratum in the middle of the Alafia River. Early modeling efforts and subsequent analyses suggested that were salinity changes to occur as a result of Tampa Bay Water operations, they would most likely occur in this stratum.

Water column casts or profiles and Secchi-depth measurements are performed at each station. Sediment samples are also taken at each station to be analyzed for percent fines and organic matter content. Benthic macroinvertebrate samples are sieved and stored for later sorting and analyses by the subcontract invertebrate taxonomy laboratory.

4.6.2. Ichthyoplankton and other Zooplankton

Plankton collections are made monthly in the reporting unit by University of South Florida (USF) staff. The sampled locations within the reporting unit were selected using a one-time stratified-random approach as described above. Dates of sampling are chosen to correspond with the occurrence of night-time flood tides. Night-time zooplankton catches are known to be generally larger than daytime catches. This phenomenon was confirmed during preliminary sampling of the lower Alafia River. Similarly, existing data indicate that, during flood tides, the estuarine water column tends to contain more organisms that are moving upstream or are trying to maintain position within the estuary, whereas ebb tidal waters tend to contain more organisms that are in the process of leaving the estuary. Night-time flood tides were therefore chosen as the standard conditions for zooplankton sampling. A water column profile is performed at the end of each tow.

4.6.3. Fish

Fish sampling is conducted once monthly by Fish and Wildlife Research Institute (FWRI) staff. The sampling effort in each stratum typically consists of utilizing two 21-m seines and one 6.1-m otter trawl. The upper and lower-most strata of the Alafia River are not sampled using trawls. Additional Alafia River associated fish sampling occurs in Hillsborough Bay at the mouth of the Alafia River. This additional sampling effort was initiated in Water Year 2005 to assess fish populations that leave the Alafia River during periods of high flow (see Appendix A). Most of the animals traditionally sampled by the FWRI Fisheries Independent Monitoring Program are included in this effort. These include all fishes, blue crabs, stone crabs, horseshoe crabs, grass shrimp and penaeid shrimp. A water column profile and Secchi depth measurements are performed at each station.

4.7. Habitat / Vegetation

Current data collection activities for the habitat/vegetation element of the Alafia River HBMP are described briefly below. Specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

Riverine vegetation is mapped once every three years during the Fall index period (September through December). The boundaries of floodplain vegetation associations delineated during previous HBMP mapping events are plotted on false-color infrared aerial photographs provided by Tampa Bay Water. Paper and/or electronic versions of the photographs and boundaries are used in the field to map changes in floodplain vegetation. These photographs are supplemented with other aerial photographs if necessary. Vegetation is usually mapped by field staff in boats. The observed vegetation-association boundaries are compared with the previous event's boundary to determine shifts. Changes in vegetation boundaries are made by creating a copy of the previous event's coverage and editing only those polygons with changed boundaries or shapes. This procedure is designed to minimize observer bias.

If changes are made on paper maps, the resulting polygons are digitized to create a GIS coverage for each reporting unit. Inter-annual changes in the area and extent of major vegetation associations in the reporting units are calculated by comparing the association boundaries and areas over time. These vegetation association polygons are also used to calculate linear estimates of vegetation shoreline extents. Estimation of the first and last occurrence of vegetation community indicator species (e.g., black needlerush (*Juncus roemerianus*)) for each monitoring event is based on the population occurrence of each species rather than the occurrence of individual plants of each species.

Submerged aquatic vegetation (SAV) is surveyed once every five years. Sampling is conducted once during the SAV growing season. SAV is surveyed in two reporting units defined as the marine/brackish transitional area, and the brackish/fresh transitional area. These reporting units were identified by documenting the existing first and last occurrence of black needlerush (*Juncus roemerianus*). The mid-points of the marine/brackish and the brackish/fresh reporting units are defined as the observed downstream and upstream last occurrence of *Juncus*, respectively. The respective reporting units extend 2 km upstream and 2 km downstream from these two mid-points, therefore, both the marine/brackish and the brackish/fresh reporting units are 4 river km in length. Each reporting is divided into four spatial strata, each 1 km in length.

Under the original SAV sampling protocol, SAV was assessed at randomly-selected sampling locations in each stratum, on both the left and right sides of the river channel centerline. A revised sampling protocol has been implemented using underwater cameras. Under the revised protocol, a two transects (one on each side of the river) are surveyed for SAV along the entire 8-kilometer combined extent of the marine/brackish and brackish/fresh reporting units. The transects are surveyed by towing an underwater camera transmitting to a surface video screen. The transects are defined as the area between the side of the river channel and the water depth of two meters or less. Staff performing the survey documents the latitude and longitude of each SAV occurrence. These latitude and longitudes are converted to decimal river kilometers for reporting purposes.

In the event the video camera protocol cannot be implemented, SAV is sampling according to the original protocol. Under the original sampling protocol, a total of 36 randomly selected samples per reporting unit are collected using divers. These consist of eight samples per stratum (four samples on each side of the river). The relative percent cover of SAV plant species within a 1 m^2 quadrat is assessed at each sample location. The SAV sample locations are randomly selected for each event.

Table 4.1.1
Sampling Program Summary for the Lower Alafia River Reporting Unit

Element	Spatial Strata	Month												Total
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
Water Quality	6 estuarine strata	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	144
	1 fixed bay station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	1 station	12
	1 freshwater stratum (AR7)	2/stratum	3/stratum	2/stratum	3/stratum	2/stratum	3/stratum	2/stratum	3/stratum	2/stratum	3/stratum	2/stratum	3/stratum	30
Benthos	6 estuarine strata	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	2/stratum	144
	1 inset stratum						7/stratum	6/stratum	7/stratum					20
	1 freshwater stratum (AR7)	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	3/stratum	36
Fish	6 longitudinal, estuarine strata (AR1 – AR6) with shallow samples	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	2 seines/ stratum	144 seines
	3 longitudinal, estuarine strata (AR1 – AR3) with deep samples	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	2 trawl/ stratum	72 trawls
	1 freshwater stratum (AR7) with shoreline seines										10 seines/ stratum			10 seines
	1 bay stratum (AR0) outside river mouth	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	2 shoreline seines 2 offshore seines 3 trawls	24 shoreline seines 24 offshore seines 36 trawls
Ichthyoplankton and other Zooplankton	6 estuarine (AR1 – AR6)	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	2 hauls/ stratum	144 hauls
Hydrology/ Water Quality	Temperature, conductivity and salinity (bottom and surface) at a site to near Buckhorn Creek.													
Vegetation/Habitat	Entire reporting unit										Polygon mapping & shoreline survey[1]			1
	One 8-km stratum										SAV survey[2]			1

[1] Conducted once every three years (Fall 2011 (WY 2012), Fall 2014 (WY 2015), etc.).

[2] Conducted once every five years (WY 2011, WY2016, etc.).

5.0 HBMP Data Quality and Management

Data quality and effective data management are critical components of all monitoring programs. Given the complexity of the HBMP, meeting data quality and management objectives is crucial for effective and accurate data collection and interpretation. HBMP data management activities including data collection, handling, evaluation, verification, validation, and reporting are described briefly in this section. The HBMP organizational chart is shown in Figure 5.1.1.

Additional information and specific procedures for sample collection and analysis are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

5.1. Data Quality Objectives

An important goal of the HBMP is the development of data quality objectives (DQOs) that are integrated with environmental data collection activities. Data quality objectives are statements that describe in precise quantitative terms the level of uncertainty that can be associated with collected environmental data, and as such provide insight into the level of certainty that can be applied without compromising the intended use of the data. Use of data quality objectives also provides statistical criteria that can aid the design of sampling strategy elements, balancing costs, and/or resource constraints.

Typically, DQOs are best developed by those identified as potential users of the data. In the absence of specific decision criteria, and the wide variety of potential uses to which the HMBP data may eventually be applied, the initial set of target DQOs are based on professional judgment, and are intended only to provide a starting point for a long-term, iterative DQO process. Consequently, these preliminary DQOs do not necessarily constitute definitive rules for accepting or rejecting results, but rather provide guidelines for continued improvement. Several iterations of the DQO process may be required as potential HBMP data users further define their specific needs.

During the collection of data under the HBMP, it is extremely important to both control and determine measurement error to the greatest extent possible. Measurement quality objectives (MQOs) are established for each sampling field method and laboratory analysis procedure. MQOs essentially represent data quality objectives based on internal and external controls (variability) associated with each type of data measurement. As such, they can be used to establish criteria for data acceptability until reliable error bounds are established for each measured response variable. As data are accumulated during the HBMP, error rates associated with each measurement are established and refinement of the initial target DQOs can be accomplished to determine the need for modifications to the sampling design and/or quality assurance/quality control (QA/QC) plan.

Initial measurements of data quality objectives for each of the various parameters can be expressed in terms of goals for accuracy, precision and completeness. These preliminary MQOs are based on estimates of the anticipated data quality, including the instrument manufacturer's specifications, sampler experience, and/or data collected during other similar studies. In general,

DQOs or MQOs are used to establish five aspects of data quality: representativeness, completeness, comparability, accuracy and precision. The MQOs are used along with both field and laboratory measurements to develop quality control criteria and to set the bounds of acceptable measurement error.

5.1.1. Representativeness

Representativeness is defined as "the degree to which the data accurately and precisely represent a characteristic of a population parameter, variation of a property, a process characteristic, or an operational condition" (Stanley and Verner, 1985). The concept of representativeness within the context of the biological monitoring program refers to the ability of the sampling effort to accurately and precisely characterize the selected environmental indicators effectively both temporally and spatially.

The design of the sampling program and the location of sampling sites provide the primary focus for defining the "representativeness" of population estimates for each reporting unit and strata. The HBMP employs a probability sampling approach that samples resources in proportion to their abundance and distribution to obtain unbiased estimates of resource characteristics and variability. The probability sampling approach applies systematic sampling to facilitate characterizations of spatial patterns and to encourage geographic coverage.

Once unbiased quantitative information on the kinds, extent, condition and distribution of resources and associated estimates of uncertainty are known, a baseline of the status of existing conditions is established. This baseline information is used to develop criteria for identifying "representativeness", the processes and magnitude of change associated with natural variation, and changes observed over time.

The data quality attribute of "representativeness" applies not only to the overall sampling design, but also to individual measurements and samples obtained during all temporal and spatial aspects of the monitoring effort. Holding time requirements for different types of samples ensure that analytical results are representative of conditions at the time of sampling; these requirements are specified for individual indicators. In addition, the use of QA/QC samples, which are similar in composition to samples being measured, provides estimates of precision and bias that are representative of sample measurements. Therefore, as a general program objective, the types of QA samples (i.e., performance evaluation material) used to assess the quality of analytical data will be as representative as possible of the natural samples collected during the project with respect to both composition and concentration.

5.1.2. Completeness

Completeness is defined as "a measure of the amount of data collected from a measurement process compared to the amount that was expected to be obtained under the conditions of measurement" (Stanley and Verner, 1985). All study elements within the HBMP have established completeness goals of 100% for each of the various indicators being measured. However, given the probability-based sampling design being employed, failure to achieve this

goal will not preclude the within-year or between-year assessment of ecosystem condition. The major consequence of having less than 100% complete data from all expected stations is a relatively minor loss of statistical power in the areal estimate of condition. The 100% completeness goal is established in an attempt to derive the maximum statistical power from the present sampling design. Based on the experience of other monitoring programs, failure to achieve this goal usually results from the field staff's inability to sample at some stations due to logistical barriers such as insufficient depth, impenetrable substrate, or adverse weather conditions. In the limited number of instances where these conditions may be encountered, extensive efforts will be made to re-locate the station or re-sample the station at a later date. In this way, the field personnel must always strive to achieve the 100% completeness goal. In addition, established protocols for tracking samples during shipment and laboratory processing will be followed to minimize data loss following successful sample collection.

5.1.3. Comparability

Comparability is defined as "the confidence with which one data set can be compared to another" (Stanley and Verner, 1985). Comparability of reporting units and calculations, database management processes, and interpretative procedures must be assured if the overall goals of the HBMP monitoring program are to be realized. A goal of the HBMP program is to generate extensive documentation to ensure that all future efforts can be made comparable. All field and laboratory methods are described in detail and available to all field personnel and analytical laboratory staff. In addition, the comparability of laboratory measurements will be established and monitored through duplicates and/or the use of field split and duplicate performance evaluation samples. The sampling design for each of the HBMP study elements has been made flexible enough to allow for analytical adjustments, if necessary, to ensure data comparability.

5.1.4. Accuracy and Precision

The term "accuracy", is used synonymously with the term bias within this QA/QC plan, and is defined as the difference between a measured value and the true or expected value.

Precision, by comparison, is defined as the degree of mutual agreement among individual repeated measurements. Collectively, accuracy and precision can provide an estimate of the total error or uncertainty associated with any individual measured value (Kirchner, 1983; Hunt and Wilson, 1986; Taylor, 1987). Measurement quality objectives for the various indicators are expressed separately as goals for both accuracy and precision. Accuracy and precision goals may not be definable for all parameters due to the nature of the measurement type. In order to evaluate the MQOs for accuracy and precision, various QA/QC samples will be collected and analyzed for most data collection activities.

5.2. Data Precision and Accuracy

General considerations for ensuring the precision and accuracy of field measurements and analytical laboratory results are described briefly below. Specific procedures are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

5.2.1. Field Measurements

Duplicate sets of field measurements are to be taken once per reporting unit per sampling day. These values (i.e., temperature, pH, DO, conductivity) will be documented as duplicates in the field notebooks and specifically used for determinations of instrument/sampling precision.

Measurements of accuracy will be based on QA/QC checks of standards at the end of each sampling event.

The precision of field measurements will be determined using the statistic "Relative Percent Difference" (RPD).

$$RPD = \{(|R1-R2|)/[(R1+R2)/2]\} \times 100$$

Where:

R1 = value of sample

R2 = value of sample duplicate

The RPD will be calculated for each duplicated pair of observations. The average or mean RPD is calculated by the formula:

$$\text{Mean}_{RPD} = \text{Sum (RPDs)} / n$$

where n = number of duplicate pairs

The standard deviation of the mean will be used to quantify precision measurements. The standard deviation of the mean is calculated by:

$$s^2_{RPD} = [\text{Sum}(X_i^2) - (\text{Sum}(X_i)^2/n)] / (n-1)$$

Where:

X_i = each calculated RPD

n = number of duplicate pairs

Hence:

$$s_{RPD} = (S^2_{RPD})^{1/2}$$

The s_{RPD} will be calculated for the previous 20 duplicates for each *in situ* field parameter. Based on such duplicate pairs, control and warning limits for precision will be calculated. Standard protocol is to define the "Control Limit" as 2 times the s_{RPD}, with the "Warning Limit" as 3 times the s_{RPD}. Using these procedures, control and warning charts can be generated to flag observations that exceed either Warning and/or Control Limits.

5.2.2. Method Detection Limits

For Method Detection Limits (MDLs), reagent-grade water is used to prepare a laboratory standard in a concentration range 1 to 5 times the estimated MDL of the specific compound of interest. If the estimated MDL is found to be correct, then seven aliquots of the standard are analyzed using the complete analytical method. The following calculations are then used to determine the MDL, and the Practical Quantification Limit (PQL).

In accordance with EPA procedures listed in 40 CFR 136 Appendix B, the MDL and PQL are determined by the following:

where: SD = standard deviation of 7 replicate measurements
MDL = 3.14 times the SD
PQL = 12 times the SD

MDLs are required to be recalculated when there are substantial changes in either the instrumentation or technique used.

5.3. HBMP Data Management

General considerations for HBMP data management (data sources, database management, and data verification) are described briefly below. Specific procedures are provided in the HBMP Quality Assurance and Quality Control Plan-Version 2.1 (PBS&J, 2008).

5.3.1. Data Sources

The HBMP is comprised of a number of separate and unique sampling efforts being conducted by each of the various members of the Project Team (see Figure 5.1.1). Certain members of the Project Team have ongoing, standardized data handling processes and verification and data storage methodologies (Florida Fish and Wildlife Research Institute, Terra Environmental, and the University of South Florida). For this reason, the initial steps: 1) logging of field and laboratory records, 2) data checking steps, 3) data review; and 4) internal QA/QC documentation, will follow the existing established protocols and will address the particularly unique criteria of each of these study elements. Raw hard copy data will be permanently maintained, and after being visually form checked for errors, will be entered into electronic format using appropriate protocols and multiple levels (both visual and automated) of checks to assure that all data quality goals are satisfied.

Some of the data used by the HBMP are provided by external sources. Examples include daily river flows, withdrawal rates, rainfall, other meteorological data, aerial photos and GIS data that are obtained on a relatively routine basis. In addition, the majority of the data to be used in assessing the status of Hillsborough Bay will come from external sources, such as EPCHC, FWRI, and SWFWMD. The schedule for retrieval of data from other sources varies based on data availability from the data provider.

Data transfer formats will be defined in consultation with the data providers. Care will be taken to ensure that all data received will be appropriately documented, to the greatest extent possible. This documentation will include definitions of variables and variable codes, units of measure, methods, and spatial definition of samples (e.g., latitude and longitude of sampling point). When possible, cross-comparisons of these data and the data collected by the HBMP will be made as an additional quality assurance check.

Historical data from other sources will also be used in the analysis of the HBMP data. The HBMP data management process will support data retrieval and documentation from all of these

other sources to ensure the data from these sources are correctly linked with the primary HBMP data sources.

5.3.2. Database Management

The HBMP data are housed within a relational Microsoft Access database. Data for each reporting element (water quality, fish, plankton, etc.) are stored in a series of tables that are relational to each other and separate from the other reporting elements. Export of data from Access to other software applications such as Excel (or other spreadsheets), SAS, and HTML for Internet applications will be facilitated through the use of this standardized data application. The use of a relational database ensures that many different data types can be effectively linked using common variable names and values.

Data from each HBMP study element, as well as other outside sources (SWFWMD, USGS, EPCHC, etc.), will have appropriately organized primary keys in order to properly link the data tables and retain the relational integrity of the data. Examples of primary key variables include, but are not be limited to: sampling group, date, time, reporting unit, stratum/substratum, and station location (such as river kilometer). Typically, the data for a given HBMP program element will be aggregated by year and month within the data set.

The "condition field" of all HBMP data which has been entered, checked through at least two steps for errors, and received the application of any necessary reduction methodologies (dilutions, calculations of species numbers, etc.) will remain designated as "raw" until undergoing further steps in the data validation protocol.

5.3.3. Data Verification

Following the entry, logging, and checking of all "raw" data, error and range checking procedures for data verification purposes will be performed. During the verification process, specific data conditions will be noted using appropriate "data qualifier" designations. Standard DEP/EPA data qualifier codes will be used, as needed, in the appropriately identified database field. Only after all such appropriate levels of data validation have been completed, will the "condition field" within each specific data record be changed from "raw" to "verified". Only the database manager and his/her designees will have read/write abilities at this level. All other database users will be provided with read-only access to data that has been listed as "raw" and is in the verification process. Any errors and/or other changes of data made between the "raw" and "verified" status must be fully explained in the appropriate "note field," and a permanent written record of any such changes will be maintained by the QA/QC Officer.

Cross comparison of "verified" data from the different HBMP elements allows further, subsequent, "validation" of each specific data entry. Final review of the data in this Verified Data Set will also include any other cross comparisons, for example, between field and laboratory data, or between taxonomic experts. Only after final QA/QC review of each specific subset of data (monthly for water quality, quarterly for most other project study elements) will the QA/QC Officer update the "verified" status of the data to "validated". Only under unusual circumstances will data not designated as "validated" be made available for general

dissemination. The QA/QC Officer, after final review with the appropriate specific project leaders, will be responsible for applying the final "data qualifier" and "data flags" within the database. These will be used to inform the end-users of the data of any problems that may have been found to exist in the data that could not be reconciled during the verification and validation checks of the data. In addition to the standard "data qualifiers", three levels of "data flags" will be used in a separate data field. These include:

- **accepted** - this type of designation will be used to designate data that has successfully met all established QA/QC protocols, procedures and standards. ***End users should encounter few, if any, difficulties utilizing data with this designation.***

- **rejected** - this designation will be used to indicate data that did not meet a significant element of the established QA/QC protocols, procedures or standards. Specific notes within the database will explain all such designations (i.e., chlorophyll *a* filters were not appropriately frozen and arrived at the Laboratory in an unacceptable condition). ***End users should never use any data with such a designation.***

- **provisional** - such data was collected, passed almost all of the required QA/QC protocols, but failed some minor QA/QC procedure or standard. Such problems will be noted in the database (i.e., the water chemistry sample for color was analyzed 1 hour outside its required hold time). ***Even though such values have a high probability of being representative of actual conditions, such data should probably be used with caution.***

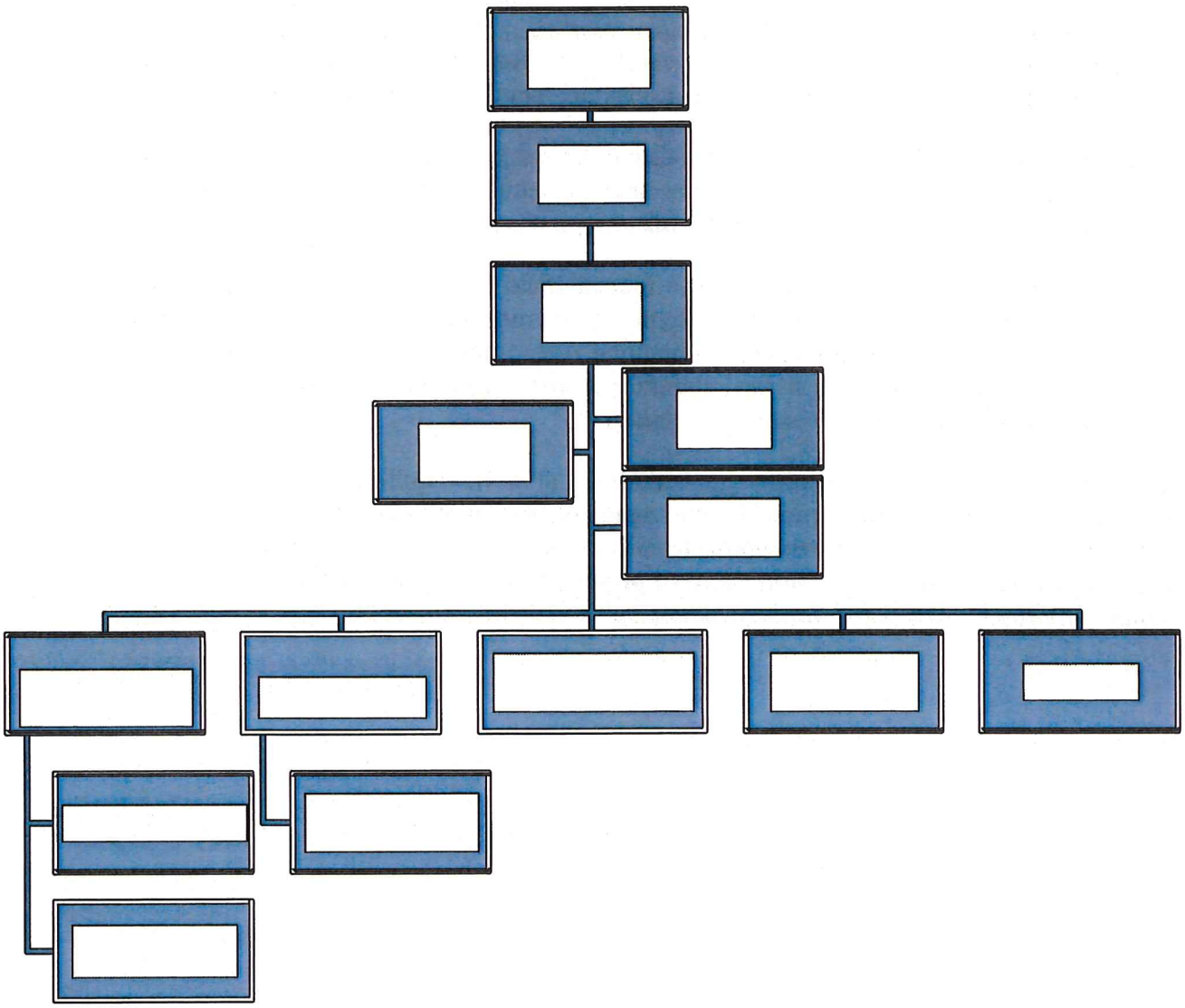

Figure 5.1.1. HBMP Organizational Chart

6.0 HBMP Reporting and Future Program Modifications

This section provides a brief summary of the HBMP reporting process and potential refinements to the program. The HBMP was intended to be routinely modified based on field conditions and the ongoing evaluation of HBMP data; recommendations are provided in HBMP reports and discussed at Annual Meetings. Previous modifications based on requests by the District and other stakeholders, logistical issues during implementation, and HBMP data evaluations are provided in Appendix A. All modifications approved by the District through July 2010 and incorporated into the program are provided in this section. It is anticipated that additional modifications will be made in the future to ensure cost-effective and appropriate monitoring relative to the objectives of the HBMP.

6.1. Reporting

The Southwest Florida Water Management District water use permits require that the HBMP results be submitted to SWFWMD in one of two report types: Annual Data Reports, and multi-year Interpretive Reports currently required once every five years for the TBC/Hillsborough River and once every three years for the Alafia River. General report requirements and methods used for data analysis are described briefly below.

6.1.1. TBC/Hillsborough River HBMP

Southwest Florida Water Management District (SWFWMD) Water Use Permit 2011796.002 for the Tampa Bypass Canal (TBC) and Hillsborough River requires that the HBMP results be submitted to SWFWMD annually in one of two types of reports. During most years, Tampa Bay Water is required to submit a HBMP Annual Report which includes all raw data collected by the HBMP for the preceding October 1st through September 30th water year. The permit requires an HBMP Annual Report in tabular form with text limited to an explanation of variable names and a description of any problems encountered or important observations made during the monitoring year. Once every five years (in July 2010, July 2015, July 2020, and July 2025), Tampa Bay Water is required submit a multi-year HBMP Interpretive Report.

The permit states the interpretive report will include comprehensive analyses of data collected by the HBMP and relevant data collected by other entities. These analyses are to be qualitative and/or quantitative and meant to evaluate the interactions of hydrologic conditions and withdrawals on streamflow, nutrient loading, salinity distributions, and the response of related water quality and biological variables in the lower Hillsborough River below the Tampa Dam, TBC, Palm River, and McKay Bay. The HBMP Interpretive Reports also include an appendix that provides tables of raw data collected by the HBMP during the previous water year thus fulfilling the requirement of the annual report for that year.

6.1.2. Alafia River HBMP

SWFWMD Water Use Permit 2011794.01 for the Alafia River states that HBMP reports will be submitted to the District according to the time frame established in the final approved HBMP plan. The periodic cycle for these reports will include yearly data reports and periodic

interpretive reports. The 1999 HBMP design (PBS&J, 2000) established a schedule for interpretive reports after Water Year 2003 and Water Year 2005 (July 2004 and 2006 respectively). A three year interval for interpretive reports (July 2009, July 2012, July 2015, etc.) was proposed during the Water Year 2006 annual meeting and subsequently approved by SWFWMD.

The Alafia River water use permit requires the submission of an annual data report of all raw data collected during the past water year. These reports are to be in tabular form with text limited to an explanation of variable names and a description of any problems encountered or important observations made during the monitoring year. The water use permit describes the required interpretive reports as including comprehensive analyses of all data collected to date that specifically address the objectives of the HBMP. It also states that qualitative and quantitative analyses shall be presented to evaluate the interactions of hydrologic conditions and withdrawals on streamflow, inundation of the river channel and its floodplain, nutrient loading, salinity distributions in the estuary, and the response of related water quality and biological variables. Like the Hillsborough/TBC interpretive reports, the Alafia River interpretive reports must also include an appendix that provides raw data collected by the HBMP during the previous water year in order to fulfill the requirement for the annual data report for that year.

6.2. Data Analysis

HBMP annual data reports and interpretive reports have used a number of methods to report and analyze data. Several of the most common are described briefly below.

6.2.1. Descriptive Statistics and Time Series

The HBMP has used descriptive statistics and descriptive time series to characterize all rainfall, hydrological, water quality and biological data. These data have also been compared to same day and lagged flow terms to ascertain relationships between these parameters and flow. Standard diversity measurements have been used to characterize and compare biological data. In addition, the first and last occurrences of organisms by distance up the river have been calculated and analyzed for particular groupings and other patterns.

6.2.2. HBMP Elements / Indicators

Since 2001, the HBMP has reviewed the characteristics and patterns of numerous physical, chemical, and biological parameters collected and/or analyzed by the HBMP, Minimum Flows Determination efforts, or similar programs in the HBMP study area. These programs have identified a subset of parameters/indicators that appear to be most useful in describing conditions and potential changes within the study area. These parameters shared certain characteristics. One of the most important characteristics was that the parameter/indicator was present and can be measured with sufficient frequency and/or in sufficient numbers to be statistically significant. The rivers and bays in the study area experience natural seasonal variations, so season absences of useful parameters are to be expected. However, parameters/indicators that are not present in sufficient frequency or numbers during at least part of the year have typically not been useful in

assessing status or trends within the rivers and bays of interest. HBMP parameters by monitoring element, potential effects of withdrawals, and SWFWMD MFL resources of concern are shown in Table 6.2.1.

Table 6.2.1 HBMP Elements/Indicators and SWFWMD MFL Resources of Concern

Element / Indicator	Potential Withdrawal Effects	MFL Resource of Concern/ Management Goals	Approved Design Modification[1]
Hydrology/Water Quality			
Salinity	↑ salinity	Maintain river bottom areas within appropriate salinity zones for the protection of benthic macro-invertebrate communities. Maintain suitable salinity regime for oysters	Added recorders/ fixed stations (2001)
Dissolved Oxygen	↑ or ↓ dissolved oxygen	Determine changes in low DO concentrations	Discontinued recorders (2004)
Chlorophyll-a	↑ or ↓ chlorophyll-a	Determine changes in distribution and probability of high chlorophyll-a	--
Specific Conductance	↑ specific conductance	--	--
Temperature	↑ or ↓ temperatures	--	--
pH	↑ pH values	--	--
Secchi Disk Depth	↑ or ↓ Secchi disk depth	--	--
Light Transmission	↑ or ↓ light transmission	--	--
Stream Flow	↓ streamflows	--	--
Water Level	↓ water elevations (upper river)	--	--
Color	↓ color	--	--
Total and Dissolved Organic Carbon	↓ TOC, ↓ DOC	--	Discontinued (2004)
Total Suspended Solids	↑ or ↓ TSS	--	--
Biotic Indicators			
Benthic Macroinvertebrates	Δ species composition, abundance, distribution; seasonal, archive, Alafia inset stratum	Maintain river bottom areas within appropriate salinity zones for the protection of benthic macroinvertebrate communities. Maintain suitable salinity regime for oysters	Redistributed sampling (2008)
Ichthyoplankton/ Zooplankton	Δ species composition, abundance, distribution	Protect nursery function by maintaining distribution and abundance of important fish and invertebrate taxa	Redistributed sampling (2008)
Adult/Juvenile Fishes	Δ species composition, abundance, distribution	Protect nursery function by maintaining distribution and abundance of important fish and invertebrate taxa	Added stratum Alafia River Delta (2005); redistributed sampling (2008)

Water-Dependent Birds	Δ species composition, abundance, distribution		Discontinued McKay Bay (2004); added Alafia Banks (2005-2008)
Habitat			
Emergent Vegetation	Δ species composition, abundance, distribution	Maintain surface isohaline locations within ranges that protect distribution of low-salinity shoreline vegetation communities	Eliminated Alafia fixed station (2008); reduced frequency (2004)
Submerged Vegetation	Δ species composition, abundance, distribution		Decreased frequency (2001)
Sediment Grain Size and Organic Matter			--
Note 1. Approved change from initial HBMP design (see Appendix A).			

6.2.3. HBMP Biotic Parameters of Interest

A large number of fish and invertebrate species in various life stages have been collected during the duration of the HBMP. Only a small number of these occur with sufficient frequency and abundance to allow for meaningful analyses. Even smaller subsets appear to have potential direct or indirect relationships to river flow. The species and groups that have been most informative in HBMP analyses to-date for the TBC/McKay Bay, the lower Hillsborough River and the lower Alafia River are listed in Tables 6.2.2-6.2.4.

Table 6.2.2 HBMP Key Biotic Indicators: TBC and McKay Bay

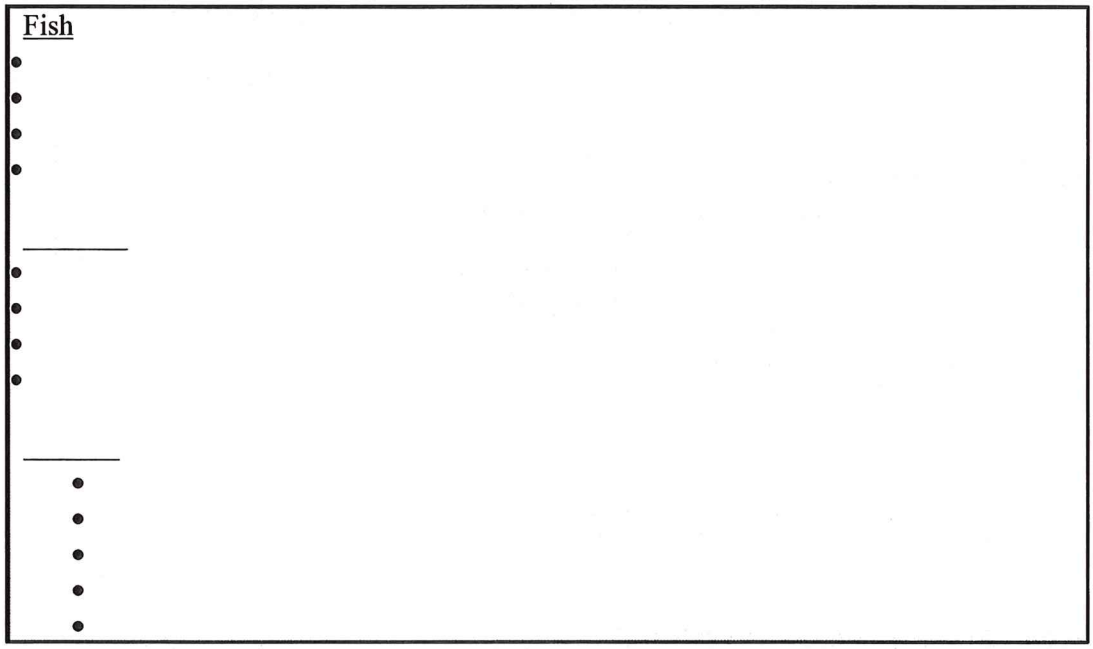

Table 6.2.3 HBMP Key Biotic Indicators: Lower Hillsborough River



Table 6.2.4 HBMP Key Biotic Indicators: Lower Alafia River

Fish • • • • • • • • • • • • • • • • • • • • • • • • • •	
Vegetation	Mangrove Swamp Needlerush Needlerush/Leather Fern Wetland Hardwood Forest Mixed Herbaceous Wetland Cattail

6.2.4. Center of Abundance

Center of abundance (COA) statistics describe the average position of occurrence for a given taxon over the sampling time period. For the linear riverine reporting units that are divided into spatial strata along a gradient, the COA can be described in terms of river kilometer (Rkm). Center of abundance was calculated by weighting the location of occurrence by the number of organisms of the given species collected at that location.

6.2.5. Abundance Weighted Salinity

Abundance weighted salinity (AWS) is a statistic that describes the salinity range in which a given taxon is found to be most abundant. Abundance weighted salinity weights the salinity at each sample collection site by the number or density of organisms of the given species collected at that location.

6.2.6. Dissolved Oxygen and Chlorophyll-a Thresholds and Exceedances

Water quality data collected by the HBMP to date have been used to develop logistic regression models to evaluate the potential effects of Tampa Bay Water withdrawals on water quality (dissolved oxygen and chlorophyll-a) within the HBMP reporting units. These models predict the probability of a sample being in exceedance of a threshold value. The exceedance thresholds used were obtained from independent scientific studies by the SWFWMD, the University of South Florida, and the Tampa Bay Estuary Program (TBEP). These studies were based on data from HBMP rivers and other tidal streams in southwest Florida. These models have been validated with additional data for successive interpretive reports.

6.2.7. Hydrodynamic Models

The HBMP has applied hydrodynamic models developed by the District for minimum flows analyses and other assessments of flow-related changes in estuarine systems. For HBMP analyses, these models have been applied to compare baseline and withdrawal scenarios. The first scenario uses actual, observed river flows that occurred downstream of the withdrawal locations to model daily conditions along the entire length of the reporting units during the periods in question. The second scenario adds the daily volumes of water diverted by Tampa Bay water to the observed river flows to "reconstruct" the flows that would have occurred in the absence of Tampa Bay Water operations. Modeled salinity conditions using observed flows have been compared to modeled salinity conditions using reconstructed flows to estimate the daily effect of Tampa Bay Water operations on water quality conditions and salinity regimes in the reporting units.

6.3. Potential Future Program Modifications

In an effort to improve the utility of information generated by the HBMP to detect potential effects of changes in flow on the five reporting units, several minor modifications to HBMP elements have been proposed. These were described in the Alafia River 2009 Year 10

Interpretive Report and the TBC/Hillsborough River 2010 Year 10 HBMP Interpretive Report, and discussed at the 2009 and 2010 HBMP Annual Meetings. The recommended modifications are summarized in the following sections.

6.3.1. Annual Reporting

As discussed at the 2010 HBMP Annual Meeting, current routine annual data reporting requires significant resources that may be better utilized. There was consensus that current HBMP reporting requirements be reviewed with the District and revised as appropriate.

6.3.2. Hydrology/Water Quality

The continuous salinity recording station below Buckhorn Springs on the Alafia River is located on a former speed zone sign piling that is becoming increasingly unstable. In Water Year 2008, the District gave approval to relocate this station just upstream or downstream of the current location. Suitable speed zone pilings are present just upstream of the Buckhorn Springs location. A long-term, EPCHC maintained continuous recorder location is also located just downstream of Buckhorn Springs. In the near future, this station may be relocated to the upstream location or data from the ECPHC station may be used for this HBMP data collection effort.

6.3.3. Benthic Macroinvertebrate Sampling (Special Studies)

Based on HBMP data collected to-date and numerous evaluations completed by Tampa Bay Water, the Southwest Florida Water Management District, the University of South Florida and others, the utility of the benthic program for detecting potential changes associated with Tampa Bay Water's permitted withdrawals has been limited. HBMP modifications that maintain or increase the ability of the benthic monitoring element to detect changes related to withdrawals for public supply while maintaining or reducing costs would be a valuable modification to the current program.

Suggested possible changes to the benthic invertebrate sampling element of the HBMP include:

- Concentrating benthic sampling effort in the Alafia River to improve statistical power
- Using seasonal index periods to characterize the benthos community as an alternative sampling strategy to the current design which requires year-round sampling
- Utilizing benthic taxa collected during sampling for the plankton element to characterize potential withdrawal-related changes in benthic indicators.

Each of these changes and supporting analyses are described briefly below. It is anticipated that the results of studies described below will be used in a re-evaluation of the entire benthos sampling program design that will be completed and presented at the 2011 or 2012 HBMP Annual Meeting.

6.3.3.1. Redirected Alafia River Sampling

As a result of statistical power analyses conducted in 2008, the Alafia River fish sampling program was modified after Water Year 2008. The power analyses concluded that the number of trawl samples in the upper river strata containing only one species or no individuals at all was making it difficult for the sampling program to detect statistically significant changes of a 15% magnitude. As a result, trawl sampling was concentrated in the mid to lower river strata where models predicted the most salinity fluctuations as a result of withdrawals. This was accomplished by discontinuing upstream trawl samples and increasing mid and lower strata trawl samples accordingly.

The power analyses also concluded that Alafia River samples with only a single species present or no benthic macroinvertebrates were reducing the benthic sampling program's ability to measure a statistically significant 15% change, suggesting that the Alafia River benthic program might be improved by concentrating sampling effort. Samples could be concentrated by shifting them out of the upper and lower strata into the middle strata where the greatest salinity changes are predicted. Samples could also be concentrated by shifting samples to certain "index period" months when withdrawals might have the greatest potential effect on benthic macroinvertebrates. The probability of collecting a benthic sample with just one species or with no organisms is greater in some months. This characteristic of the Alafia River will need to be taken into account if samples are concentrated in time and/or space.

6.3.3.2. Benthos Sampling Design Re-Evaluation

The results of preliminary analyses (Janicki Environmental, 2009) suggest that if the HBMP goal is to optimize the benthic element for statistical power to detect inter-annual differences in means for common community metrics, a sampling window incorporating months between December and May would yield the highest power in general. This time period tended to have higher CPUE, higher diversity and a lower frequency of null catches. This time period also coincides with recruitment windows for many estuarine dependent fish species of commercial and recreational value that prey on benthic taxa.

6.3.3.3. Compare Benthic and Zooplankton Samples

As discussed at the 2010 HBMP Annual Meeting, several macroinvertebrate groups collected in the plankton sampling effort are reported as grouped taxa and not identified to lower taxonomic levels. Many of these taxa also occur in the benthic samples.

It is possible that plankton sampling alone might be sufficient to provide information on that portion of the benthic community that is most susceptible to changes in flow and withdrawal. Alternatively, analyses may reveal that certain benthic taxa could be identified to a higher taxonomic level than currently utilized. These analyses could also determine if a coordinated plankton and benthic sampling program should be utilized.

For this special study, archived samples collected under the ichthyoplankton element would be selected, specific lumped taxa would be analyzed to lower taxonomic levels, and the occurrence

of macroinvertebrate taxa in the plankton and benthic samples would be evaluated relative to the objectives of the HBMP.

Field sampling of benthic populations would continue as specified under the current HBMP. However, these samples would be archived in alcohol for potential future sorting and taxonomic identification pending the results of additional analyses on archived plankton samples. It is anticipated that the results of these additional taxonomic analyses can be completed in time for presentation at the 2011 HBMP annual meeting.

6.3.4. Fish and Freshwater Inflows (SWFWMD Study)

The District has discussed re-evaluating existing fish versus river flow and salinity regressions using HBMP data collected since the original regressions were created five or more years ago. The District has recently initiated a new project to examine the applicability of using fish abundance and diversity to establish minimum flows and levels for southwest Florida coastal rivers. This study is meant to identify the strengths and weaknesses of the current approaches to establishing "fish-flow" relationships, identify confounding effects that may affect the relationships between fish and freshwater inflows, explore new techniques to identify effects of freshwater flows on fish populations, and identify new analytical tools.

This study will examine fish responses to changes in flow near the ranges typically observed during Tampa Bay Water operations. While the effects of changes in river flow on estuarine fish have been studied by a number of researchers, many of these efforts examined changes in flow much greater than those possible under the Tampa Bay Water operating regimes. Therefore, although not specifically performed for the HBMP, the results of this study may be important for re-evaluation of the HBMP fish and/or plankton sampling elements.

6.3.5. Habitat / Vegetation

Analysis of vegetation mapping data from Water Years 2003, 2006 and 2009 found very small changes in vegetation coverage. These changes could not be related to the relatively large natural changes in flow and salinity that occurred during this 6-year period. Changes in flow and salinity as a result of Tampa Bay Water operations are much smaller than those that occur as a result of natural variation in rainfall. If vegetation mapping cannot detect a change as a result of natural variations in flow, vegetation mapping is highly unlikely to be able to detect changes as a result of Tampa Bay Water operations. The next vegetation mapping event is not scheduled to occur until 2012, but the monitoring program may be better served by redirecting this effort towards additional direct measures of impact such as continuous water quality recorders. At a minimum, extending the vegetation mapping to a once per 6-year cycle is recommended.

7.0 HBMP Programmatic Criteria

As discussed in previous sections of this document, the overall purpose and scope of the HBMP extend beyond just data acquisition, analysis and reporting. The HBMP also incorporates programmatic criteria that have been included to ensure that the permitted withdrawals are consistent with District rules throughout the lifetime of the permits.

In the context of the HBMP, the term programmatic criteria refers to: 1) the criteria by which unacceptable environmental impacts are determined; and 2) the process by which appropriate management responses to detected conditions that constitute or could potentially lead to adverse environmental impact are determined and implemented. Important components of these criteria include established minimum flows and levels for lower Hillsborough River, Tampa Bypass Canal and Alafia River; specific HBMP objectives for each waterbody included as special conditions in WUPs for the Tampa Bypass Canal/Hillsborough River and Alafia River Water Supply Projects; and ongoing assessment of HBMP data to identify and evaluate any detected hydrobiological changes attributable to the permitted withdrawals, and appropriate management actions.

7.1. Background

In addition to other requirements, Water Use Permit (WUP) applicants must demonstrate that the proposed withdrawals meet the following Southwest Florida Water Management District (District or SWFWMD) conditions for issuance related to potential environmental impacts (40D-2.301, F.A.C.):

> *(b) Will not cause quantity or quality changes that adversely impact the water resources, including both surface and groundwater*
> *(c) Will not cause adverse environmental impacts to wetlands, lakes, streams, estuaries, fish and wildlife or other natural resources*
> *(g) Will not significantly induce saline water intrusion.*

The District's Basis of Review for WUPs for withdrawals from natural streams (Section 4.2.c) also requires that the following specific performance standards be met:

> *a. Flow rates shall not deviate from the normal rate and range of fluctuation to the extent that water quality, vegetation, and animal populations are adversely impacted in streams and estuaries.*
> *b. Flow rates shall not be reduced from the existing level of flow to the extent that salinity distributions in tidal streams and estuaries are significantly altered as a result of withdrawals.*
> *c. Flow rates shall not deviate from the normal rate and range of fluctuation to the extent that recreational use or aesthetic qualities of the water resource are adversely impacted.*

To provide ongoing reasonable assurance that District performance standards would be met, special conditions of the TBC/Hillsborough River and Alafia River project WUPs required the development and implementation of the HBMP as described in previous chapters of this document. General HBMP objectives are to collect data on the spatial and temporal

characteristics of environmental indicators including salinity regimes, water quality and biotic integrity (PBSJ, 2000).

Inherent in District rules is the recognition that surface water withdrawals are linked to potential changes in: 1) salinity patterns; 2) associated water quality constituents; and 3) biological communities. This potential linkage can be summarized conceptually as follows:

Freshwater Inflows
⇩
Salinity and Associated Water Quality Indicators
⇩
Biotic and Habitat Indicators

It should be noted, however, that while freshwater withdrawals may have a direct and instantaneous physical effect on salinity patterns, the effects of freshwater withdrawals on other water quality constituents and biological communities in particular, are typically indirect and complex. Such indirect impacts are mediated by physical and chemical changes or processes, and are typically manifested on longer time scales (e.g., days, months, seasons or years).

For example, a reduction in freshwater inflows may result in increased salinities within the geographic range of a population of a particular benthic organism; but if the changed salinity still remains within the salinity tolerance range of the organism, the abundance and distribution of the organism will likely not be affected. However, if that same change in salinity results in increased density stratification, which in turn leads to hypoxic conditions on the bottom, the abundance and distribution of the organism could be affected.

In addition to linkage between freshwater withdrawals and biological communities, the District performance standards also link adverse impact to:

- A significant deviation from natural or historic conditions
- A significant degradation of conditions necessary to support economically important activities such sport and commercial fishing, and water-dependent recreation and aesthetics.

7.2. Minimum Flows and Levels

At the time of initial HBMP development, limited standards or specific criteria were available for evaluating freshwater withdrawal-related changes to estuarine systems, or determining significant impacts to these systems. Since implementation of the HBMP in 2000, the District has developed and adopted Minimum Flows and Levels (MFLs) for the lower Hillsborough River, Tampa Bypass Canal and Alafia River as required by the Florida Legislature (SWFWMD 2004, 2006 and 2008). MFLs are based on technical evaluations that determine critical flows and the amount of water that can be withdrawn without causing unacceptable impacts to the ecology

of natural systems, recreational use or aesthetic qualities of these waterbodies (SWFWMD, 2008).

MFL documents prepared for each waterbody describe the purpose and background of the MFL, and provide descriptions of the physical and hydrologic characteristics of the waterbody and watershed, including river and spring flows, withdrawals, and river/channel morphology, sediments, and habitats. These documents also provide extensive analyses of freshwater inflows and relationships to important parameters and characteristics that were used to establish the MFLs, including:

- Tides and freshwater inflows and water levels and residence time, and results of hydrodynamic models developed for these estuarine systems
- Freshwater inflows and water quality constituents including salinity, dissolved oxygen, nutrients and chlorophyll-a
- Freshwater inflow and biological characteristics, including phytoplankton, benthic macroinvertebrates, mollusks, oysters, zooplankton and fishes.

MFL documents describe how these relationships were determined and used to examine the effects of reduced freshwater inflows on the hydrological and biological components of each system. For each system, baseline periods were identified and methods for evaluating flow reduction scenarios were selected. To determine minimum flow thresholds, resources of concern were identified along with appropriate identification of acceptable levels of change that do not result in unacceptable impacts to the ecology or other resources. Important considerations for the resources of concern included the following:

- Maintaining appropriate salinity zones for benthic macroinvertebrate communities, oysters, shoreline vegetation, and fish and invertebrates
- Minimizing the probability of hypoxia (dissolved oxygen concentrations <2.5 mg/L); specifically, examining the distribution and probability of low dissolved oxygen concentrations resulting from changes in flow
- Minimizing the probability of excessive chlorophyll-a concentrations, specifically examining the distribution and probability of high chlorophyll-a resulting from changes in flow.

Using the relationships between freshwater inflows and metrics for various resources of concern, the District identified water quality and biological resources of each waterbody that were particularly sensitive to flow reductions during periods of low flow. In addition to salinity changes during these periods, residence times typically increase in these waterbodies, potentially leading to large phytoplankton blooms, dissolved oxygen impacts and/or increases in abundance of non-desirable predators.

MFLs for the lower Hillsborough River, the Tampa Bypass Canal and the Alafia River were developed by the District based on the considerations described above over a multi-year process and have been adopted in District rules (40D-8, F.A.C.). Each of these is described briefly in the following sections.

7.2.1. TBC MFL

The Minimum Flow (MFL) for the Tampa Bypass Canal (TBC) was adopted in 2006. For the TBC, the District determined that establishment of an MFL was not appropriate due to designated flood control purpose and use of the TBC (SWFWMD, 2004), and an MFL of 0 cfs at Structure 160 was ultimately adopted. MFL analyses completed by the District evaluated relationships between flow and salinity, DO, and biota and concluded that no defensible technical basis exists for an MFL (SWFWMD, 2005). District technical analyses and conclusions for TBC MFL studies were confirmed by independent scientific per review (Powell et al., 2005).

In general, stratification is common in the TBC, but salinity was relatively insensitive to flow. Hypoxia was prevalent, but statistical analyses suggested that flow accounted for less than 50% of the variation in hypoxia. Overall, high flows in the TBC result in greater ecological effects than insufficient flows. High flows caused prolonged low salinity conditions, vertical stratification and hypoxia.

In addition to flood control and regional drinking water supply, the TBC is used to augment the Hillsborough River reservoir for the City of Tampa water supply and to meet requirements of the lower Hillsborough River MFL as discussed below.

7.2.2. Lower Hillsborough River MFL

The revised Minimum Flow (MFL) for the Lower Hillsborough River was established in November 2007. This MFL requires a 20 cfs (~13 mgd) flow at the base of the City of Tampa dam during the July 1 - March 31 time period and 24 cfs (~15.5 mgd) from April 1 - June 30, with an adjustment if there are lower than normal flows in the upper river.

In order to meet MFL requirements when water is not available to flow over the dam, a Recovery Strategy was adopted by the District along with the MFL identifying activities and milestones to be achieved in accordance with the time schedule specified (40D-80.073(8), F.A.C.). Sources of water to be used to meet the MFL include:

- Sulfur Springs discharge: 10 cfs (~6.46 mgd) to the base of the City of Tampa dam
- TBC pool: up to 7.1 mgd (~11 cfs) from the middle pool discharged to the Hillsborough River through S-161 and pumped to the base of the dam; up to 7.1 mgd from the middle pool to the dam through a pipeline to be constructed by 2013.
- Morris Bridge Sink Project: up to 3.9 mgd (~6.03 cfs) from Morris Bridge Sink to the TBC middle pool or 3.9 mgd from the TBC lower pool to the middle pool if available, then discharge to the Hillsborough River through S-161 and pumped to the base of the dam.

- The TBC middle pool and Morris Bridge Sink/TBC lower pool sources have specific operational and performance criteria identified as well as transmission pipeline construction components (40D-80.073(8), F.A.C.).

Additional potential MFL augmentation sources include Blue Sink based on cost/benefit and feasibility analyses to be completed, and other sources as identified in the future. Monitoring and evaluation for the MFL and Recovery Strategy are performed by the City of Tampa and the District with an annual implementation evaluation and report completed by the District.

The Lower Hillsborough River MFL was based on analyses presented in Lower Hillsborough River Low Flow Study Results and Minimum Flow Recommendation (SWFWMD, 2006). District technical analyses and conclusions for Lower Hillsborough River MFL studies were confirmed by independent scientific per review (Montagna, et al., 2007).

The primary water quality and ecological condition affected by freshwater inflows at the base of the dam is salinity, although tides and other factors (e.g., stormwater, winds, and salinity in Tampa Bay) complicate this relationship. In addition to analyses of existing data and modeling, Lower Hillsborough River and related Sulphur Springs MFL studies included a series of experimental water releases conducted to evaluate the effect of changes in flow on water quality parameters. These studies concluded that the effect of flow changes (in the low flow range) on salinity generally decrease as a function of increasing distance from the dam and depth in the water column.

Principal components analysis (PCA) performed on biological sampling results identified four salinity ranges utilized by invertebrates. The findings for benthic macroinvertebrate community structure showed that a distinct group of these organisms occur in river habitats with salinity in the range of <5 ppt. However, there was a high degree of species overlap among adjacent salinity zones and few estuarine species were identified as requiring a single salinity zone. Because some invertebrate species are restricted to the lower salinity range, maintaining an essentially permanent area of the lower river with a salinity of <5 psu would provide habitat for those predominantly oligohaline and fresh water species, assuming other habitat requirements are also present.

The creation of a < 5 psu salinity zone was chosen as the principal ecological criterion on which to establish minimum flows for the LHR. Juvenile stages of important estuarine dependent fish species concentrate in oligohaline waters. Benefits (in terms of provision of low salinity habitat) accruing from fresh (or nearly fresh) water inputs at the dam are most pronounced near the dam, with the magnitude of the effect diminishing downstream. For a given discharge rate, the strongest effects are realized nearest the dam and decrease incrementally downstream.

7.2.3. Lower Alafia River MFL

The minimum flow (MFL) rule for the lower Alafia River was established in 2009. This MFL was defined as not more than a 19% reduction of daily flows with a low-flow threshold of 120

cfs. Similar to other MFLs in southwest Florida, the District used the percent-of-flow method for the Lower Alafia River to determine the amount of water that can be withdrawn without causing

unacceptable impacts to the ecology or other water resources (SWFWMD, 2008). District technical analyses and conclusions for Lower Alafia River MFL studies were confirmed by independent scientific per review (Powell et al., 2008).

The Alafia River MFL document provides extensive analyses of freshwater inflows and relationships to important parameters and characteristics that were used to establish the MFL, including:

- Tides and freshwater inflows and water levels and residence time, including results of a hydrodynamic model developed for the lower river
- Freshwater inflows and water quality constituents including salinity, dissolved oxygen, nutrients, and chlorophyll-a
- Freshwater inflow and biological characteristics, specifically phytoplankton, benthic macroinvertebrates, mollusks, oysters, zooplankton, and fishes.

The MFL document describes how these relationships were determined and used to examine the effects of reduced freshwater inflows on the hydrological and biological components of the Lower Alafia River. First, a baseline period was identified and a method for developing flow reduction scenarios was selected. Second, resources of concern were identified along with appropriate identification of acceptable levels of change that do not result in unacceptable ecological impacts to habitat metrics.

The important considerations for the resources of concern included the following:

- Maintaining appropriate salinity zones for benthic macroinvertebrate communities, oysters, shoreline vegetation, and fish and invertebrates
- Minimizing the probability of hypoxia (dissolved oxygen concentrations <2.5 mg/L); specifically, the distribution and probability of low dissolved oxygen concentrations resulting from changes in flow
- Minimizing the probability of excessive chlorophyll-a concentrations; specifically, the distribution and probability of high chlorophyll-a resulting from changes in flow.

Using the relationships between freshwater inflows and the habitat metrics of the various resources of concern, the District found that the water quality and biological resources of the lower river were particularly sensitive to flow reductions during periods of low flow. During these periods, residence times increase within the lower river, potentially leading to large phytoplankton blooms and increases in abundance of non-desirable predators.

The effects of the MFL on metrics identified for the resources of concern were examined using hydrodynamic modeling and regression relationships between freshwater inflows and biological metrics. Regression models were used to predict changes in abundances of different life stages and size classes of fish and invertebrate species due to reduced freshwater inflows to the lower river. The results of these analyses indicated that the 19% reduction and the low-flow threshold would not result in unacceptable reductions in abundance, and most notably would not reduce the median abundance of juvenile red drum more than the 15% threshold identified.

Hydrodynamic modeling was used to examine changes in bottom areas of salinity zones important to benthic macroinvertebrates. Regression models were used to examine changes in surface isohalines that would affect wetland shorelines, and to predict shifts in geographic centers of abundance for key fish and invertebrate species. The combined results indicated that the minimum flows based on the abundance of key fish and invertebrate species would also prevent significant harm to the other resource characteristics. Logistic regression analyses were performed to predict the increased probability of low dissolved oxygen and high chlorophyll-a concentrations in response to reduced flows, indicating that the recommended minimum flows would not result in significant harm to the lower river, with only very small changes in probability of the occurrence of undesirable conditions.

7.3. WUP Requirements

To provide ongoing reasonable assurance that District performance standards would be met, special conditions of the TBC/Hillsborough River and Alafia River project WUPs required the development and implementation of the HBMP as described in previous chapters of this document. The general objectives of the HBMP are to collect data on the spatial and temporal characteristics of environmental indicators including salinity regimes, water quality and biotic integrity (PBSJ, 2000). Specific HBMP objectives related to ongoing compliance with District performance criteria are also provided in each WUP as listed in the following sections.

7.3.1. Tampa Bypass Canal Water Supply Project

Water Use Permit 20011796.002 for the Tampa Bypass Canal (TBC)/Hillsborough River Water Supply Project authorizes Tampa Bay Water to divert water from the Hillsborough River and withdraw water from Tampa Bypass Canal according to the schedule provided in the permit. This permit requires that Tampa Bay Water continue to implement the approved TBC/Hillsborough River HBMP in order to address the following objectives:

- Use baseline conditions to compare the effects of the permitted water use upon streamflow rates, salinity distributions, and selected water quality and biologic variables within the lower Hillsborough River below the Tampa Dam, TBC, Palm River and McKay Bay.

- Monitor diversions from the Hillsborough River and withdrawals from the TBC at the withdrawal points and evaluate streamflow data for the lower Hillsborough River at the Tampa Dam, and the TBC at the District's flood control Structures 160 and 162.

- Evaluate the ecological relationships of the lower Hillsborough River below the Tampa Dam, TBC, Palm River and McKay Bay to freshwater flows.

- Monitor selected water quality and biologic variables related to freshwater flow in order to determine if the ecological characteristics of the lower Hillsborough River below the Tampa Dam, TBC, Palm River and McKay Bay change over time.

- Determine the relative effect of permitted diversions and withdrawals on any ecologic changes that may occur in the lower Hillsborough River below the Tampa Dam, TBC, Palm River and McKay Bay.

- Determine if these withdrawals cause or significantly contribute to any unacceptable adverse environmental impacts to the natural resources of the lower Hillsborough River below the Tampa Dam, TBC, Palm River and McKay Bay due to changes in freshwater flows. The HBMP shall identify criteria that will be used to determine unacceptable adverse environmental impacts to the resources.

- Coordinate with appropriate agencies that have or are currently collecting data that can be incorporated into the HBMP to avoid duplication of effort and to facilitate the most efficient use of resources.

HBMP data collection activities that meet these objectives are described in Section 3.

7.3.2. Alafia River Water Supply Project

Water Use Permit 2011794.01 for the Alafia River authorizes Tampa Bay Water to withdraw water from the Alafia River at Bell Shoals Road according to the schedule provided in the permit. The original water use permit (Permit 2011794.00) required Tampa Bay Water to develop and implement an HBMP for the Alafia River. The permit specified that the HBMP address the following objectives:

- Establish baseline conditions prior to permitted use for streamflow rates, salinity distributions, and selected water quality and biological variables within the Alafia River and its estuary.

- Monitor withdrawals from the Alafia River at the withdrawal point and evaluate streamflow data for the river at all applicable locations.

- Evaluate the ecological relationships of the Alafia River and its estuary to freshwater flows.

- Monitor selected water quality and biological variables related to freshwater flow in order to determine if the ecological characteristics of the river and its estuary change over time.

- Determine the relative effect of permitted withdrawals from the Alafia River on any ecologic changes that may occur in the river and its estuary.

- Determine if these withdrawals cause or significantly contribute to any unacceptable environmental impacts that the river and its estuary exhibit as a result of changes in freshwater flows.

- Coordinate with appropriate agencies that have or are currently collecting data that can be incorporated into the HBMP to avoid duplication of effort and to facilitate the most efficient use of resources.

HBMP data collection activities to meet these objectives are described in Section 4.

7.4. HBMP Programmatic Criteria

Participants in the original HBMP design reached consensus that the HBMP would provide adequate data to detect potentially adverse hydrobiological changes in the HBMP reporting units. Participants also noted that the HBMP would need to determine if any observed hydrobiological changes were the result of natural variation or the permitted freshwater withdrawals. To address this need, it was concluded that HBMP data could also be used to support the enhancement of various predictive models that could be used to determine the incremental effects of the permitted withdrawals on any changes in freshwater inflows.

As required by specific conditions of the Water Use Permits, one of the goals of the HBMP design process was to identify criteria that will be used to determine unacceptable environmental impacts to the resources of concern. Given the above described considerations, the HBMP design group attempted to identify these criteria, as they specifically relate to the Tampa Bypass Canal and Alafia River Water Supply Projects. These criteria were described as follows:

> *A detected change, supported by statistical inference or a preponderance of evidence, from the pre-operational abundance, distribution, species composition, or species richness of biological communities of concern in the Lower Hillsborough River, Lower Palm River/TBC, McKay Bay, or Lower Alafia River reporting units that can be attributed to reductions in freshwater inflows caused by the permitted surface water withdrawals.*

The above described criteria were recommended by the HBMP design group for use in determining what conditions might constitute an unacceptable environmental impact with respect to the permitted withdrawals. The HBMP design group noted that conditions meeting the above recommended criteria for unacceptable environmental impact could be detected, measured and described in many different ways. A few examples are discussed below:

- Significant dislocation of an ecologically significant species distribution - a "center of population" (either abundance or frequency) statistic has been used in the HBMP to

assess the distribution of adult and young fish, and benthos relative to river location. Other related measures of distribution dislocations may also be applicable for the HBMP.

- Elimination or reduced abundance of a "desirable" species - the elimination, or a significant reduction in the abundance, of a "desirable" (e.g., economically or ecologically important) species within a reporting unit would likely be considered an unacceptable environmental impact. Measures of species composition and abundance for critical biological indicators are included in the HBMP.

- Significant change in species richness or similar measure of community balance.

- Significantly increased abundance of an "undesirable" species that could consume or out-compete desirable species - the converse of the above described scenario. Measures of species composition and abundance for biological indicators are included in the HBMP. As introduced exotic or nuisance species often occur in ecosystems due to factors unrelated to stress caused by fresh water withdrawals, any significant increases in exotic or nuisance species would require additional evaluation.

Given the potentially infinite measures of unacceptable environmental impact, it was the general consensus of the HBMP design group that specific programmatic criteria or thresholds not be developed for every indicator. Rather, the HBMP design group recommended the application of a consensus-based process to evaluate whether unacceptable environmental impact has occurred, or is in the process of occurring (PBS&J, 2000).

The second HBMP interpretive analyses (PBS&J, 2006) summarized the assessment of unacceptable environmental impact as a series of ten progressive questions. These questions are:

1. What were the daily flows in each reporting unit during the study period, and how did these flows compare to the historical flow record?

2. What were the daily Tampa Bay Water withdrawals from each reporting unit during the study period, and how did these withdrawals affect daily flows?

3. What was the observed intra- and inter-annual variation in salinity in each reporting unit during the study period?

4. What portion of the observed intra- and inter-annual variation in salinity was attributable to Tampa Bay Water withdrawals?

5. How did observed changes in salinity attributable to changes in flow compare to the predicted salinity vs. flow relationships used during the WUP process?

6. What was the observed intra- and inter-annual variation in chlorophyll-a and dissolved oxygen in each reporting unit during the study period?

7. What portion of the observed intra- and inter-annual variation in chlorophyll-a and dissolved oxygen was attributable to Tampa Bay Water withdrawals?

8. What was the observed intra- and inter-annual variation in the species composition, abundance and spatial/temporal distribution of key biotic indicators in each reporting unit during the study period?

9. To what extent did variation in flow or flow-related variables (e.g., salinity) affect the intra- and inter-annual variation in the species composition, abundance and spatial/temporal distribution of key biotic indicators?

10. To what extent did the variation in flow or flow-related variables attributable to Tampa Bay Water withdrawals affect the intra- and inter-annual variation in the species composition, abundance and spatial/temporal distribution of key biotic indicators?

If observed changes in the intra- and inter-annual variation in the species composition, abundance and spatial/temporal distribution of key biotic indicators are identified as clearly attributable to Tampa Bay Water withdrawals, the next analytical step would be to determine if these changes constituted an unacceptable environmental impact.

7.5. HBMP Management Responses

The final step for reasonable assurance in meeting District standards involves the identification of appropriate management actions or remedial measures to be taken if adverse environmental impacts are detected, although no particular management actions are specifically identified. However, waiting until an adverse environmental impact has occurred to initiate appropriate management actions or remedial measures reduces the opportunity to adequately protect resources that may be at risk. Therefore, proactive resource management is needed to protect the resources of concern in the potentially affected water bodies.

The initial HBMP design included an appropriate sequence of management actions that should be initiated if conditions are observed that could potentially lead to, or are consistent with, the above described criteria for unacceptable environmental impact. The following management actions, listed sequentially in order of increasing intensity, are recommended for consideration under the HBMP:

- Data QA/QC Audit - This action would involve the performance of a concentrated QA/QC audit to determine if the detected change was the result of laboratory problems, data entry errors, violation of sampling protocols, etc.

- Data Comparison (Correlates) - This action would involve a review of data correlates (e.g., specific conductance is a correlate to salinity) to determine if there is more than one line of evidence reflecting the detected change.

- Determination of the magnitude and ecological importance of the detected change.

- Assessment of the degree of statistical certainty for an observed change to determine the likelihood that the observed change was due to chance alone (e.g., *alpha* error).

- Assessment based on combined results for magnitude of change and probability that the change is due to chance alone. If both the detected change and the degree of certainty are low, then a less intense management response would be appropriate including increased or directed sampling efforts. If the detected change is considered to be moderate or large and the degree of certainty is high (e.g., low alpha), then a more intense management response may be indicated. If the detected change is relatively large, but the degree of certainty is low (e.g., high alpha), then a less intense management response may be appropriate.

- HBMP Special Meeting - If the data review and comparison indicates that a detected change is not due to quality control problems and is reflected in multiple lines of evidence, the next step would involve convening a special HBMP meeting. The purpose of the meeting would be to discuss the data review and comparison findings with all HBMP participants to determine additional steps to refine the understanding of the magnitude and extent of the detected change. Additional data analyses or a redirected and focused sampling effort to better define the detected change would be recommended as appropriate.

- Redirected Sampling Effort - This action would involve conducting more focused supplemental sampling and/or additional studies (e.g., controlled withdrawal/flow experiments) in the affected reporting units with the objective of gaining a better understanding of the detected change. The additional data collected from this effort could then be subjected to previous steps as appropriate. This action would determine if detection of the change is repeatable under a more focused sampling program. Although this step could be valuable, it may not be necessary for a redirected sampling effort to be conducted for all hydrobiological changes detected by the HBMP.

- Modified Withdrawal Schedules - Modified freshwater withdrawal schedules could include provisional or temporary reductions in withdrawal rates, or modifications to the schedules such that greater withdrawals would occur during high flows, but lesser withdrawals would occur during low flows. Another alternative would be the development of an optimization schedule whereby the highest withdrawal rates would occur in the river source with the greatest harvestable flows at any given time. Given the regional need for additional water supplies, a permanent reduction in the total permitted withdrawal volumes would likely be viewed as the most intense response to detected adverse impact.

As noted, consideration and application of these recommended management actions would vary with the specific hydrobiological changes and statistical measures of certainty involved.

However, this approach meets the need for reasonable assurance as well as the overall objectives of the HBMP.

Appendices

HBMP 2010 Update

APPENDIX A
Previously Authorized HBMP Design and Programmatic Modifications

Design of the Alafia River/Tampa Bypass Canal HBMP began in May 1999. The HBMP was designed in a series of workshops and subcommittee meetings attended by regulatory agency and local government representatives, and other stakeholders. A final HBMP design document was completed in late 1999 (PBS&J, 2000).

HBMP field sampling was initiated in April 2000, and continued implementation of the HBMP has been required under special conditions for the renewed and modified water use permits for these regional public water supply projects. The HBMP was intended to be routinely modified based on field conditions and the ongoing evaluation of HBMP data.

In the ten years since the acceptance of the final HBMP design by both the design group and the Tampa Bay Water Board, several minor modifications have been made to the HBMP. These modifications were in response to requests by the District and other stakeholders, logistical problems encountered during early implementation, and the sampling modifications identified based on evaluations of HBMP data.

Potential modifications to improve the monitoring program have been provided in HBMP annual and multi-year interpretative reports, and discussed at Annual HBMP Meetings. All modifications approved by the District through July 2010 and incorporated into the program are listed below.

1. Spatial Strata

Discontinued Sampling in Alafia River Stratum AR8

In 2000, Alafia River stratum AR8 was found to be inaccessible on nearly all tides. This portion of the river is also physically different than the lower river and would have required different benthic, fish, and plankton sampling methods than the lower river. As a result, stratum AR8 was deleted from the monitoring program with District approval after the first few months of program implementation. The sampling effort scheduled for AR8 was transferred to the other freshwater stratum (AR7), also with District approval.

2. Hydrology/Water Quality

Added Fixed-Location Water Quality Sample Stations

In Water Year 2001, three additional fixed-location water quality monitoring stations were added at the request of the District. One additional fixed-location water quality sampling station was added at the mouth of the Alafia River and one at the mouth of the Hillsborough River at existing EPCHC sampling sites. A third fixed station was added at the upstream side of the S160 dam. This station is only sampled when there is flow over S160. These stations were meant to describe upstream and downstream boundary inputs (by downstream flow or incoming tide) to the reporting units.

Discontinued Total Organic Carbon and Dissolved Organic Carbon

Total organic carbon and dissolved organic carbon sampling was discontinued in the Alafia River, TBC and McKay Bay at the end of Water Year 2004 (September 2004). There was consensus at the 2004 Annual Meeting to discontinue the sampling and analysis of TOC and DOC as part of the HBMP because the HBMP had generated a considerable amount of data for dissolved and total organic carbon in these systems and additional data was not necessary.

Discontinued Continuous Dissolved Oxygen Sensors

Dissolved oxygen (DO) probes on the Sligh Avenue and Columbus Avenue continuous recorder stations in the Hillsborough River reporting unit were deactivated during Water Year 2004. There was consensus at the 2004 Annual Meeting that DO measurements at these stations could be discontinued. This consensus was based on the belief that the data collected under long-term deployments of membrane-based, dissolved oxygen measurement equipment did not have the precision to detect the small changes predicted as a result of withdrawals.

3. Biota

Completed McKay Bay and TBC Oyster and Mollusk Surveys

Oyster and mollusk surveys were conducted in McKay Bay and the TBC as special studies completed in 2005 and 2008. These studies included a bathymetric and oyster bar survey (PBS&J, 2005), and mapped the distribution and assessed the health of oysters and other mollusks (Janicki Environmental, 2008).

Discontinued Avian Surveys near McKay, Added Avian Study near Alafia

There were significant variations in natural flow from 2000 to 2004 including some of the highest and lowest flow on record. However, there was no relationship between flow and bird observations collected during this period. Based on data collected from 2000 to 2004, HBMP annual meeting participants concluded that the ability to link changes in bird communities to flow and salinity changes associated with the surface water projects was tenuous at best. As a result, bird sampling in the ponds area was eliminated in Water Year 2005, and a redesigned Alafia area sampling was implemented.

Completed Avian Special Study at Alafia Banks

In Water Year 2005, surveys included quantification of foraging effort by select benthic feeding indicator species as part of an approved HBMP special study. No relationship between flow and bird populations were observed during this sampling, and all bird sampling in the Alafia Banks was discontinued at the end of Water Year 2008 with District approval. Since relationships between the large natural variations in Alafia River flow and bird populations could not be detected, it was determined that it would be difficult or impossible to detect variations in bird populations as a result of withdrawals.

Added Expanded Fish Sampling in Hillsborough Bay Adjacent to the Alafia River

The HBMP was designed to characterize baseline conditions, and detect hydrobiological changes, in the river estuaries of the Alafia, Hillsborough and Palm Rivers, and McKay Bay. Although Hillsborough Bay was a defined reporting unit in the HBMP, it was the consensus of the Focus Group that hydrobiological changes associated with the permitted withdrawals would first be detected in the rivers long before any potential cumulative impacts in Hillsborough Bay were realized. Therefore, the HBMP Focus Group did not recommend additional sampling of Hillsborough Bay. Rather, they concluded that data currently being routinely collected by others (e.g., EPCHC and FWRI) would likely be adequate to assess changes in water quality, benthos and fish communities in Hillsborough Bay.

At the 2004 Annual Meeting, FWRI staff pointed out that the FIM sampling effort was not intended to make annual inferences regarding fish population changes in Hillsborough Bay, and suggested that if it is desirable to make annual inferences regarding potential cumulative impacts on fish communities, the

sampling intensity of the FIM program would need to be increased. There was agreement among the meeting participants that the original assumptions regarding the initial detection of changes related to surface water withdrawals in the river estuaries still held true, but that the adequacy of sampling activities in Hillsborough Bay should be evaluated further. As a result of re-evaluating the adequacy of existing monitoring programs to address the issues of concern in Hillsborough Bay, additional fish sampling stations were added as a special study to the HBMP in Water Year 2005. The stations are located near the mouth of the Alafia River (referred to as the Alafia River Delta stratum).

After several years of data collection in the delta area, power analyses conducted by Janicki Environmental found that this sampling did not have sufficient power to detect a 25% change in community indices in the Alafia River Delta stratum. This sampling is divided into two spatial strata, an inner stratum at the mouth of the river, and an outer stratum more distant from the river. FWRI staff suggested that the power of this sampling could be improved by concentrating sampling in the inner stratum. This sampling program was redesigned to consist of seven samples per year, all of which are taken in the inner stratum. This recommendation was approved by the District and implemented at the beginning of Water Year 2009.

Redistributed Benthic and Fish Sampling Effort in the Alafia River, Hillsborough River, and Tampa Bypass Canal

Power analysis conducted by Janicki Environmental found that the relatively high number of catches with no organisms greatly reduced the analytical power of trawls in the upper Alafia River and Hillsborough River strata and the majority of the TBC. In order to address this issue, FWRI staff recommended that all fish trawl samples originally conducted in Alafia and Hillsborough Rivers strata 4 and 5 be shifted to downstream to strata 1, 2, and 3 (see Tables 3.7.1 and 4.7.1). FWRI staff believed shifting trawls to the downstream strata would improve the analytical power of sampling in the downstream strata. Seine sampling would remain unchanged and would still be conducted the upstream strata. This recommendation was approved by SWFWMD and implemented at the beginning of Water Year 2009.

The majority of the TBC is comprised of areas where large numbers of zero fish and benthic catches occur. As a result, fish sampling was stopped in the TBC beginning in Water Year 2009. Benthic sampling upstream of the US 41 bridge was stopped at the same time. The District believed that benthic habitat conditions in the short stretch of the TBC downstream of the US41 Bridge might be more indicative of McKay Bay than the TBC and requested that benthic sampling be continued below US41.

4. Habitat/Vegetation

Reduced Frequency of Alafia SAV Surveys

In October 2001, the District approved an additional program modification based on data collected during Water Year 2001. This modification changed the frequency of submerged aquatic vegetation surveys in the Alafia River from once per year to once every five years. This change was initiated after SAV was found in only one location (the mouth of a spring discharge) in the Alafia River during the first SAV sampling event. It was felt that annual monitoring was not warranted given the lack of SAV in baseline conditions.

Reduced Frequency of Vegetation Mapping

At the 2004 Annual Meeting, SWFWMD staff agreed that the required interval for vegetation polygon mapping could be lengthened and suggested that once every three years in concert with the submittal of

comprehensive interpretive reports would be appropriate. This change was initiated because no significant changes had been observed in the 2000, 2001, 2002, and 2003 mapping events even though there had been large natural variation in flow. The last mapping occurred in Water Year 2009. The next mapping is scheduled to occur in the Fall of Water Year 2012.

Discontinued Alafia Fixed-Station Vegetation Sampling

Fixed-station vegetation sampling on the Alafia River was discontinued at the end of Water Year 2008 with District approval. Analyses of data collected from 2001 to 2007 were unable to detect changes in vegetation as a result of the large variation of inter-annual flows during this period. As a result, it was unlikely that this monitoring could have detected changes as a result of Tampa Bay Water operations. This monitoring effort was confounded by the fact that vegetation in areas most likely to be influenced by salinity changes as a result of withdrawals consisted of narrow fringe marshes adjoining residential properties. These areas contained large amounts of invasive exotic and nuisance vegetation and were subject to many forms of disturbance aside from those that might be caused by Tampa Bay Water operations.

5. Reporting

Modified Interpretive Report Schedule/Frequency

The frequency of interpretive report submittals was discussed at the May 2003 HBMP Annual Meeting. Interpretive reports were originally required to be submitted every five years. This 5-year interval included a mid-term, interpretive report submitted in year 3 of each five-year evaluation period, and a comprehensive interpretive report submitted in year 5 of each five-year evaluation period. At the May 2003 Annual Meeting, Tampa Bay Water proposed that the interpretive report submittal schedule be modified such that comprehensive interpretive reports are submitted every three years. Each comprehensive interpretive report would summarize HBMP findings of the previous two years, as well as compare these findings to the HBMP and baseline periods of record. Representatives from the SWFWMD and other meeting participants agreed with this proposed schedule. The first HBMP Interpretive Report was submitted to the District on July 2003 and the second in July 2006. The HBMP reporting the Alafia River and other reporting units was split with the most recent TBC/Hillsborough water use permit. The TBC/Hillsborough interpretive reports are now submitted at five-year interval. The last report was submitted in 2010 and the next report is due in July 2015. The Alafia Interpretive Report remains on a three-year interval. The last report was submitted in 2009. Under the current schedule, the fourth Alafia Interpretive Report will be submitted in July 2012.

APPENDIX B
HBMP and HBMP-Related Documents

HBMP Program Documents

PBS&J, 2008. TBC/Alafia River HBMP Quality Assurance Project Plan v2.1. Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2002. TBC/Alafia River HBMP Quality Assurance Project Plan v1.1. Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2000. TBC/Alafia River Water Supply Projects HBMP (Design Document) (September). Prepared for Tampa Bay Water, Clearwater, Florida.

SWFWMD Minimum Flows and Levels and Related Documents

Janicki Environmental, Inc., 2005. Alafia River EPCHC Salinity Regression Review. Prepared by Janicki Environmental for the Southwest Florida Water .Management District

Janicki Environmental, Inc., 2005. Alafia River Isohaline Regression Models. Prepared by Janicki Environmental for the Southwest Florida Water Management District.

Janicki Environmental, Inc., 2005. Technical Memorandum: Tampa Bypass Canal/McKay Bay Regression Results. Prepared by Janicki Environmental for the Southwest Florida Water Management District.

Janicki Environmental, Inc., 2007. Development of Analytical Tools for Quantifying Minimum Flows in Southwest Florida Tidal Rivers Based Upon Benthic Macroinvertebrate Communities. Report prepared for the Southwest Florida Water Management District. Brooksville, Florida.

MacDonald, T.C., Peebles, E.B., M.F.D. Greenwood, R.D. Matheson, and R.H. McMichael, 2005. Freshwater inflow effects on fishes and invertebrates in the Hillsborough River estuary. Joint report of the Florida Fish and Wildlife Conservation Commission and the University of South Florida College of Marine Science submitted to the Southwest Florida Water Management District. Brooksville, Florida.

MacDonald, T.C., 2007. Written communication - Letter from the Florida Fish and Wildlife Conservation Commission to the Southwest Florida Water Management District regarding identification of hatchery-reared and wild juvenile red drum in the Lower Alafia River and revision of regressions to predict the abundance of juvenile red drum as a function of freshwater inflow.

Matheson, R.E., M.F.D. Greenwood, T.C. MacDonald, R.H. McMichael, 2005. Assessment of Relationships Between Freshwater Inflow and Populations of Fish and Selected Macroinvertebrates in the Lower Alafia River, Florida. Report prepared by the Florida Fish and Wildlife Research Institute for the Southwest Florida Water Management District. Brooksville, Florida.

Montagna, P., G.L. Powell and J.N. Boyer, 2007. Scientific Peer Review of the Lower Hillsborough River Low Flow Study Results and Minimum Flow Recommendation. Prepared for the Southwest Florida Water Management District, Brooksville, Florida.

Mote Marine Laboratory, 2003. An investigation of relationships between freshwater inflows and benthic macroinvertebrates in the Alafia River estuary. Report prepared by Mote Marine Laboratory for the Southwest Florida Water Management District, Brooksville, Florida.

Peebles, E.B., 2002. An Assessment of the Effects of Freshwater Inflows on Fish and Invertebrate Habitat Use in the Alafia River Estuary. Report prepared by the University of South Florida College of Marine Science for the Southwest Florida Water Management District. Brooksville, Florida.

Peebles, E.B., 2005. An Analysis of Freshwater Inflow Effects on the Early Stages of Fish and Their Invertebrate Prey in the Alafia River Estuary. Report prepared by the University of South Florida College of Marine Science for the Southwest Florida Water Management District. Brooksville, Florida.

Peebles, E.B., 2005. Review of Feeding Habits of Juvenile Estuarine-Dependent Fishes and Blue Crabs: Identification of Important Prey. Report prepared by the University of South Florida College of Marine Science for the Southwest Florida Water Management District. Brooksville, Florida

Powell, G.L., P.A. Montagna and R. Walton, 2005. Minimum Flows for the Tampa Bypass Canal, Tampa, Florida: Scientific Peer Review Report. Prepared for the Southwest Florida Water Management District, Brooksville, Florida.

Powell, G.L., M. Alber and B.H. Johnson, 2008. Review of Minimum Flows and Levels for the Lower Alafia River, Florida: Scientific Peer Review Report. Prepared for the Southwest Florida Water Management District, Brooksville, Florida.

Southwest Florida Water Management District, 2005. Minimum Flows for the Tampa Bypass Canal, Tampa, Fl. Prepared by the Southwest Florida Water Management District Ecologic Evaluation Section, Brooksville, Florida.

Southwest Florida Water Management District, 2006. Lower Hillsborough River Low Flow Study Results and Minimum Flow Recommendation. Prepared by the Southwest Florida Water Management District, Brooksville, Florida.

Southwest Florida Water Management District, 2008. The Determination of Minimum Flows for the Lower Alafia River Estuary. Prepared by the Southwest Florida Water Management District Ecologic Evaluation Section, Brooksville, Florida.

HBMP Interpretive and Related Reports

PBS&J, 2010. Summary of Existing Literature for the Lower Alafia River (draft in preparation). Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2010. TBC/Hillsborough River HBMP Water Year 2010 Year 10 Interpretive Report (July). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2009. Environmental Analysis and Assessment in Support of Tampa Bay Water's Water Use Permit Application for the Alafia River (September). Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2009. Responses to SWFWMD Comments on Alafia River HBMP Water Year 2008 Year 9 Interpretive Report (August). Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2009. Alafia River HBMP Water Year 2008 Year 9 Interpretive Report (July). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2006. Tampa Bypass Canal Water Supply Project (Including Hillsborough River Water Source) Water Use Permit Modification: Volume II - Environmental Analysis Report (October). Prepared for Montgomery Watson Harza, Tampa, Florida.

PBS&J, 2006. TBC/Alafia River HBMP Water Year 2005 Year 6 Interpretive Report (July). Prepared for Tampa Bay Water, Clearwater, Florida. Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2003. TBC/Alafia River Water Year 2002 Year 3 Interpretive Report (August) (includes Lithia and Buckhorn Springs interpolation). Prepared for Tampa Bay Water, Clearwater, Florida.

HBMP Hydrology/Water Quality

English, D.C., R.W. Kitsmiller, and E.B. Peebles, 2007. Bio-Optical Properties of the Tidal Alafia River; Comparisons with Bay Anchovy Distribution. Report prepared by the USF College of Marine Science for Tampa Bay Water (draft in preparation, March 2007).

Janicki Environmental, Inc., 2005. Empirical Analysis and Evaluation of the Potential Effects of Surface Water Withdrawals on Surface Water Elevations in the Alafia River. Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Examining the Relationship between Freshwater Flows, Nutrient Loads, Chlorophyll a Concentrations and the Distribution of Benthic Macroinvertebrates in the Lower Alafia River. Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2009. Examining the Relationship between Freshwater Flows, Nutrient Loads, Chlorophyll a Concentrations and the Spatial and Temporal Distribution of Zooplankton in the Lower Alafia River (October). Prepared for Tampa Bay Water, Clearwater, Florida.

Pribble, R., et al., 2008. Temporal and Spatial Variability in Salinity in Three Tampa Bay Tributaries (draft). Prepared for Tampa Bay Water, Clearwater, Florida.

Wessel, M., et al., 2008. Relationships between Freshwater Flows, Nutrient Loading, Chlorophyll-a and benthic macroinvertebrates in the Alafia River (draft). Prepared for Tampa Bay Water, Clearwater, Florida.

HBMP Benthic Invertebrates

Grabe, S. et al., 2008. Benthos of the Alafia River Estuary (Tampa Bay, Florida, USA) During and After a Prolonged Period of Low Freshwater Inflow (manuscript submitted to Marine Environmental Research).

Janicki Environmental Inc., 2004. Development of a Benthic Salinity Index for Tampa Bay and Its Tributaries (February). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental Inc., 2009. Benthic Salinity Index for the Major Estuarine Tributaries of Hillsborough Bay (October, draft). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Comparison of taxonomic nomenclature used in analysis of Tampa Bay Water's HBMP benthic samples (August). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Examination of the Power of the HBMP Sampling Design to Detect Changes in Fish and Benthos Populations in the Alafia River, Lower Hillsborough River, McKay Bay and the Tampa Bypass Canal (September). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Review of laboratory protocols used in analysis of Tampa Bay Water's HBMP benthic samples (July). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Survey of Oysters and other Mollusks in McKay Bay & the Tampa Bypass Canal (September). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Technical Memorandum: Comparison of Hillsborough River Archived Benthos Sample Collection Dates to Corresponding River Flows (draft). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2009. Technical Memorandum: HBMP Benthos Sampling Design Re-evaluation- May 2009 Workshop (September). Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2005. McKay Bay Bathymetric and Oyster Bar Survey (March). Prepared for Tampa Bay Water, Clearwater, Florida.

HBMP Fish (Adult/Juvenile), Ichthyoplankton/Zooplankton, Birds

Janicki Environmental Inc., 2004. Extending the Tampa Bay Water HBMP Fish Sampling Effort into Hillsborough Bay, Tech Memorandum: Evaluation of Potential Monitoring Program Design Additions (December). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental Inc., 2004. Relationships between Freshwater Inflow and Fish Communities in the Lower Alafia River (May). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Examination of the Power of the HBMP Sampling Design to Detect Changes in Fish and Benthos Populations in the Alafia River, Lower Hillsborough River, McKay Bay and the Tampa Bypass Canal (September). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2008. Examination of the Power of the HBMP Sampling Design to Detect Changes in Ichthyo- and Zooplankton Populations in the Alafia River, Lower Hillsborough River, McKay Bay and the Tampa Bypass Canal (October). Prepared for Tampa Bay Water, Clearwater, Florida.

Janicki Environmental, Inc., 2009. Examining the Relationship between Freshwater Flows, Nutrient Loads, Chlorophyll a Concentrations and the Spatial and Temporal Distribution of Zooplankton in the Lower Alafia River (October). Prepared for Tampa Bay Water, Clearwater, Florida.

PBS&J, 2008. Technical Memorandum: HBMP Special Study Bird Foraging and Benthic Prey (draft TM). Prepared for Tampa Bay Water, Clearwater, Florida.

Peebles, E.B., 2004. An Analysis of Fish and Invertebrate Data Related to the Establishment of Minimum Flows for the Tampa Bypass Canal. Report prepared by the University of South Florida College of Marine Science for the Southwest Florida Water Management District. Brooksville, Florida.

Wessel, M., 2008. Fish Community Response to Inflow Variations in Two Impounded and One Unimpounded Tidal Tributary to Tampa Bay, Florida (manuscript submitted to Environmental Indicators).

Exhibit D
Tampa Bay Water Alafia
Hydrologic Monitoring Sites

TBW ALAFIA HYDROLOGIC MONITORING SITES

PERMITTEE ID	LAT/LONG	WATER BODY	PARAMETER	FREQUENCY
AR-BS	275129/821614	Alafia at Bell Shoals	Stage	Continuous
AR-L	275209/821225	Alafia at Lithia	Stage/Streamflow	Continuous
BS	275329/821810	Buckhorn Springs	Spring Discharge	Weekly
LS	275150/821349	Lithia Springs	Spring Discharge	Weekly
LSM	275158/821351	Lithia Springs Major	Spring Discharge	Weekly

Notice of Rights

ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District 's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.

2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.

3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.

4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.

5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.

6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.

7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 Highway 301 North, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 367-9776. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

JUDICIAL REVIEW

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.

2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.