TOWN OF GRAY

PLANNING BOARD

AGENDA • SEPTEMBER 14, 2023

Planning Board
Regular Meeting

Henry Pennell Municipal Complex
24 Main St., Gray, Maine
And via Zoom videoconferencing:
https://us06web.zoom.us/j/88951918347

7:00 PM

I. MEETING COMMENCES

Roll Call

II. MINUTES APPROVAL

a. Planning Board - Regular Meeting - July 13, 2023 7:00 PM

III. INFORMATION EXCHANGE

a.
- Reminder: **Thursday, October 5** annual meeting of all town committees and boards
- Project updates

IV. NEW BUSINESS

a. Approve FY2024 Planning Board meeting/deadline schedule

V. NEW BUSINESS/PUBLIC HEARINGS

a. Self-storage and Village Design ordinance amendments

The Town of Gray is proposing amendments to the Zoning Ordinance, Chapter 402, to add a new section, 402.8.11: Self-storage facility standards; and to update the Village Center Design Standards reference to require parking behind the principal structure.

b. Hemlock Woods Subdivision Amendment

A request by 38 Blackthorne LLC, represented by Terradyn Consultants, LLC, to amend the Hemlock Woods subdivision located adjacent to Blackthorne Lane in a Rural Residential Agricultural zoning district. The proposed amendments show Blackthorne Lane where it was actually constructed and prior lot divisions in accordance with prior enforcement that has been resolved. The proposed amendments also include creating one new backlot for an existing dwelling on Tax Map 53, Lot 43-02, and eliminating the conservation designation for the common area on the original subdivision plan.

c. Cambell Acres Subdivision Amendment

A request by McDonnell Brothers Custom Builders, LLC, represented by DM Roma Consulting Engineers, for an amendment to the Cambell Acres subdivision, to divide the +/- 7-acre parcel off Jenny Drive, at Tax Map 56, Lot 17-28-03, in into three lots. The proposal is subject to major subdivision plan review, located in the Rural Residential & Agricultural zoning district.

VI. ADJOURNMENT

** The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.*

TOWN of GRAY

PLANNING BOARD

MINUTES • JULY 13, 2023

Henry Pennell Municipal Complex **7:00 PM**
24 Main Street Gray, ME, 04039

I) MEETING COMMENCES

ROLL CALL

Attendee Name	Status
Dan Cobb	Present
Tamara Lee Pinard	Present
Melinda Sheehee	Present
Dan Maguire	Present
Kristen Muszynski	Present
Martin Meaney	Present

Board member David Phelps was absent excused.

Call to order 7:03 p.m.

II) MINUTES APPROVAL

II.a) Planning Board- Regular Meeting- June 8, 2023 as amended

Motion to approve June 8, 2023 Planning Board meeting minutes

RESULT	**PASSED [UNANIMOUS]**
MOVER	Melinda Sheehee
SECONDER	Tamara Lee Pinard
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

III) INFORMATION EXCHANGE

Kristen shared update regarding LD2003 and the new deadline of January 1, 2024.
She also noted the Town wide board/committee meeting October 5, 2023.
The board agreed to move the August meeting to Monday, August 14 to accommodate staff liaison absence for conference attendance.

IV) NEW BUSINESS

IV.a) Sketch Plan Review: Cambell Acres Subdivision Amendment
A request by McDonnell Brothers Custom Builders, LLC, represented by DM

Roma Consulting Engineers, for Planning Board sketch plan review of a proposal to create three lots in the Cambell Acres subdivision on the 7.12+/- parcel off Jenny Road, Map 56, Lot 17-28-03 in the Rural Residential and Agricultural zoning district. This proposal is subject to major subdivision review.

Representative JP Connelly of DM Roma presented the plan. He noted that he had adjusted the plan from the original sketch submittals, to show grade and alignment of the road to adhere to town ordinance. He spoke to the development plan for the site. PB members noted that they are interested in site walk to picture the driveway entrance/slope. Advised the applicant to stake out the curb cut, centerline of the road. Board set site walk for Thursday, August 3, 2023 at 5 p.m.

V) NEW BUSINESS/PUBLIC HEARINGS

V.a) Amendment to an Approved Site Plan and Subdivision Plan: Avesta Meadowview II
A request by Avesta Housing Development Corporation, Avesta Meadowview II LP and Gray Senior Housing, Inc., represented by Ransom Consulting, LLC, for review of an amendment to an approved site plan and subdivision plan, for a multi-family 26-unit senior housing development located near 16 Hancock Street, Tax Map 43, lot 405-39, in the Village Center Zoning District. This application received approvals in June 2022 for site plan, conditional use, and subdivision review, as well as multi-family housing standards and village design standards.

Representative Maureen McGlone of Ransom Engineering presented the project amendments, including impacts from loss of the perimeter buffer, stormwater and utility easements. Tamara questioned pros/cons of locating the onsite power pole in the buffer. Maureen noted it would require more underground line. Dan Cobb asked if CMP would remove old poles? Maureen said yes they will remove them, but no timeline is provided.

Motion to continue Review of an Amendment to an Approved Site Plan and Subdivision Plan: Avesta Meadowview II
A request by Avesta Housing Development Corporation, Avesta Meadowview II LP and Gray Senior Housing, Inc., represented by Ransom Consulting, LLC, for review of an amendment to an approved site plan and subdivision plan, for a multi-family 26-unit senior housing development located near 16 Hancock Street, Tax Map 43, lot 405-39, in the Village Center Zoning District. This application received approvals in June 2022 for site plan, conditional use, and subdivision review, as well as multi-family housing standards and village design standards.

RESULT	**PASSED [UNANIMOUS]**
MOVER	Melinda Sheehee
SECONDER	Tamara Lee Pinard
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

Public Hearing opened at 7:33 p.m.

Cyndie Rogers, Meadowview resident, addressed the board. She said the plans have changed since initial Avesta meeting with residents and she would like an updated map of the new plans. Avesta representatives agreed to provide maps.

Public Hearing closed at 7:36 p.m.

The Board discussed the perimeter buffer and agreed that more robust plantings and boulders to protect those plantings from plowing damage are necessary.

Board also agreed to require power pole location outside of buffer.

Maureen stated that they can get updated landscaping plan for year-round screening. Avesta representatives Seric Kapp and Kyle Ambler agree they can do more buffering.

Cyndie Rogers asked if there will be a buffer between existing Meadowview buildings and the access road. Maureen replied that there is a proposal to include 5 junipers and a tulip tree – yes.

Seric said snow will be removed as needed to prevent pushing/damage.

Dan advised that the applicant should concentrate trees where natural buffer has been removed- Board had no comments on the stormwater plan.

Board agreed that the proposed potential parking spaces shown within the perimeter buffer should not be permitted.

Motion to approve the application by Avesta Housing Development Corporation, Avesta Meadowview II LP and Gray Senior Housing, Inc., for an amendment to an approved site plan and subdivision plan, for a multi-family 26-unit senior housing development located near 16 Hancock Street, Tax Map 43, lot 405-39, in the Village Center Zoning District. This application received approvals in June 2022 for site plan, conditional use, and subdivision review, as well as multi-family housing standards and village design standards. This approval is subject to the following conditions:

1. The project shall be constructed, operated, and maintained in accordance with the plans, submissions and testimony presented to the Planning Board by the applicant and its representatives.
2. All prior applicable standards and conditions of approval remain in effect.
3. The final subdivision plan shall be amended as necessary, including notations for any waivers as appropriate, and submitted to the Town Planner for final review before planning board members sign it for filing with the Registry of Deeds.
4. An amended stormwater management plan reflecting all comments from the town's consulting engineer, will be submitted to the town.
5. The applicant will submit a landscaping plan for staff approval that provides a mix of evergreen and deciduous trees along the westerly property line sufficient to create a visual buffer to the abutting property in areas where snow storage and other elements are located within the 50' perimeter buffer, per planning board discussion.
6. The applicant will add boulders to protect snow storage area buffer plantings from plow damage.

7. The applicant will include bi-annual inspection of the site drip-edge filter in the site maintenance plan and conduct clean outs regularly to ensure proper operation for stormwater management.
8. The Planning Board delegates authority to town staff to determine appropriate amounts for the inspection escrow account, erosion and sedimentation cash bond and performance guarantee that the developer is required to establish in accordance with Article 10 and 11 of the subdivision ordinance. A cost estimate is to be included in the final submittal for total cost of the subdivision improvements and the E&S measures, as presented in the plan to be reviewed and endorsed by the town's consulting engineering firm.
9. **The following conditions must be met prior to issuance of a building permit:**

   A. Issuance of the Maine DEP permits
   B. Issuance of subsurface waste water disposal permit
   C. All outstanding conditions of approval for the project (that remain applicable)
   D. Completion of a pre-construction meeting
   E. Establishment of all necessary financial sureties and escrows

10. Proposed grass paver parking to be eliminated.

RESULT	**PASSED [UNANIMOUS]**
MOVER	Tamara Lee Pinard
SECONDER	Melinda Sheehee
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

V.b) Preliminary Plan Review: Stillwater Phase II

A request by A.H. Grover, Inc., represented by Steve Roberge of SJR Engineering, Inc., for Planning Board preliminary plan review of a proposal to create Phase II of the Stillwater Pines Residential Open Space subdivision on the 36.29-acre parcel off Woodcock Road, Map 44, Lot 032-112-000 in the Medium Density zoning district. This proposal is subject to major subdivision review and the property is subject to a contract zoning agreement.

Steve Roberge of SJR Engineering presented the project with an overview of the plan set, and reviewed the site walk and abutter discussions. He noted that he agreed with and would address staff and engineering comments to date. He noted that the project needs to go to MDEP for SLODA and they are in the process of completing that application now. The board discussed the waiver requests and expressed support for rquiring the hydrogeological study due to the proximity to the Pleasant River. They supported waivers for the phosphorous and high-intensity soil study. Board supported requirement for engineered driveways and discussed potential impact of significant vernal pool setback on several proposed lots. Board discussed retention of trees and potential requirement for a landscaping plan. Ben Grover addresed the board to share concerns about grade and tree hazards if some trees retained between lots. Board agreed that street trees would be an appropriate compromise.

Public Hearing opened at 9:00pm Council liaison Dan Maguire noted that the road extension is proposed at 20' travel width, while the contract zoning

agreement denotes an 18' road. Board would rather see it wider, but not sure if the applicant has that authority. – Page 3 of 8, CZA. Asked Kristen to review with town attorney. Zoom participant Deana F., a property owner of an original section of Woodcock Road lot,inquired about the status of the road, impact behind her lot, mailboxes and grading for her driveway to the road. Ben Grover responded that the gang mailboxes are for phase I residents only; area behind her is all developed, done. No new plans. Kristen provided update on council review of Woodcock Road winter plowing review, coming up July 18. Dan Cobb said the driveway grading question should be addressed with the developer. Public Hearing closed at 9:10pm

Motion to approve the following waivers for the request by A.H. Grover, Inc., represented by Steve Roberge of SJR Engineering, Inc., for Planning Board preliminary plan review of a proposal to create Phase II of the Stillwater Pines Residential Open Space subdivision on the 36.29-acre parcel off Woodcock Road, Map 44, Lot 032-112-000 in the Medium Density zoning district. This proposal is subject to major subdivision review and the property is subject to a contract zoning agreement. *Placeholders:*

1. *The 401.7.3 D requirement for a phosphorous management plan, as the project is not located in the watershed of a great pond.*

2. *The 401.7.4. A requirement for a high-intensity soil survey, per engineering review finding the provided medium-high intensity survey to be sufficient.*

RESULT	**PASSED [UNANIMOUS]**
MOVER	Melinda Sheehee
SECONDER	Tamara Lee Pinard
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

Motion to approve Move to approve the following waivers for the request by A.H. Grover, Inc., represented by Steve Roberge of SJR Engineering, Inc., for Planning Board preliminary plan review of a proposal to create Phase II of the Stillwater Pines Residential Open Space subdivision on the 36.29-acre parcel off Woodcock Road, Map 44, Lot 032-112-000 in the Medium Density zoning district. This proposal is subject to major subdivision review and the property is subject to a contract zoning agreement.

1. *The 401.7.4 B requirement for a hydrogeological assessment, as the project is using public water and septic systems will be located outside the aquifer area.*

RESULT	**FAILED [0-3]**
MOVER	Melinda Sheehee
SECONDER	Tamara Lee Pinard
AYES	None
NAYS	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

Motion to approve Completeness per 401.7.1, the application by A.H. Grover, Inc. for preliminary plan review of a proposal to create Phase II of the Stillwater Pines Residential Open Space subdivision on the 36.29-acre parcel off Woodcock Road, Map

44, Lot 032-112-000 in the Medium Density zoning district. This proposal is subject to major subdivision review and the property is subject to a contract zoning agreement and the applicant is required to submit a hydrogeological assessment per 401.7.4.B.

RESULT	**PASSED [UNANIMOUS]**
MOVER	Tamara Lee Pinard
SECONDER	Melinda Sheehee
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

The board agree to hold off on granting preliminary approval due to outstanding hydrogeological study, additional engineering feedback and road width question.

Motion to table preliminary approval

RESULT	**PASSED [UNANIMOUS]**
MOVER	Tamara Lee Pinard
SECONDER	Melinda Sheehee
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

VI) ADJOURNMENT

Motion to adjourn Adjourned at 9:34 p.m.

RESULT	**PASSED [UNANIMOUS]**
MOVER	Melinda Sheehee
SECONDER	Tamara Lee Pinard
AYES	Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

PLANNING BOARD
2024 MEETING & APPLICATION DEADLINE SCHEDULE

To be approved at the 9/14/2023

MONTH	NEW APPLICATION DEADLINE	SKETCH PLAN & EXISTING APPLICATION DEADLINE	MEETING DATE
January	12/15/2023*	12-18-2023*	1-11-2024
February	1-12-2024	1-16-2024*	2-8-2024
March	2-16-2024	2-20-2024	3-14-2024
April	3-15-2024	3-18-2024*	4-11-2024
May	4-12-2024	4-16-2024*	5-9-2024
June	5-17-2024	5-20-2024	6-13-2024
July	6-14-2024	6-17-2024*	7-11-2024
August	7-12-2024	7-15-2024	8-8-2024
September	8-16-2024	8-19-2024	9-12-2024
October	9-13-2024	9-16-2024	10-10-2024
November	10-11-2024	10-15-2024*	11-14-2024
December	11-15-2024	11-18-2024	12-12-2024

**The deadline date has been adjusted to accommodate Holiday*

ZONING BOARD OF APPEALS
2024 MEETING & APPLICATION DEADLINE SCHEDULE

To be approved by the ZBA at the 9/27/23

MONTH	APPLICATION DEADLINE	MEETING DATE
January	12-29-2023	1-24-2024
February	2-2-2024	2-28-2024
March	3-1-2024	3-27-2024
April	3-29-2024	4-24-2024
May	4-26-2024	5-22-2024*
June	5-31-2024	6-26-2024
July	6-28-2024	7-24-2024
August	7-26-2024	8-21-2024*
September	8-30-2024	9-25-2024
October	9-27-2024	10-23-2024
November	10-25-2024	11-20-2024*
December	11-22-2024	12-18-2024*

**These dates have been adjusted to accommodate Holidays*

MEMO

August 25, 2023

TO: Town Council, Town Manager Nate Rudy
FROM: Community Development
RE: Updated amendments to proposed self-storage ordinance; self-storage design standards; village design standards amendment for parking

In response to input from the July 18 Town Council workshop discussion, herein is an updated version of the proposed ordinance, 402.8.11 Self-Storage Facility Standards for council discussion and review, including the associated self-storage facility design standards.

Also included for your review is an amendment to the Village Design Standards, to add a requirement for locating parking spaces in the rear of the building. This amendment was proposed during the June 12, 2023 workshop.

These items are before you for consideration at the September 5, 2023 Town Council meeting for a public hearing and first reading. The Planning Board will also host a public hearing at their regular meeting Sept. 14, 2023.

Notably, the council has extended the moratorium on self-storage developments through Dec. 27, 2023, with a view toward getting the amendments in place prior to the moratorium's expiry.

New Section

402.8.11: Self-storage facility standards:

A. Purpose: The purpose of these standards for Self-Storage is to maximize the use and value of commercial uses for road frontage properties and minimize adverse aesthetic impacts of self-storage facilities on abutting and neighboring properties.

B. Applicability

1. In addition to applicable review standards established in Article 10 (Site Plan Review), all self-storage facilities proposed after the adoption of these standards (March 1, 2023) are required to comply with requirements in this section and the associated design standards. This includes any self-storage facility that was previously approved but did not meet the Time Limit on Approval requirements of the zoning ordinance, and is thus considered a new application.

2. Expansion: Any self-storage facility that is proposed to be expanded after the adoption of these standards shall be required to obtain Planning Board approval and shall be subject to all practically achievable self-storage performance standards and design standards, as determined by the Planning Board, for the expanded portion of the development and associated infrastructure. No expansion or additional buildings will be permitted within the 300' setback from the edge of a road or right-of-way (ROW), whichever is greater, that is either publicly owned or has a public easement for winter maintenance.

3. Repairs/Replacement/Rebuilding: The Code Enforcement Officer shall have the authority to issue building permit(s) for the repair, replacement or rebuilding of one or more building(s) in a Self-Storage Facility for the same size, height and location as the original structure(s). Such repair, replacement or rebuilding shall be subject to all practically achievable self-storage performance standards and design standards, as determined by the Code Enforcement Officer in consultation with the Town Planner.

4. Outdoor storage is not permitted as a standalone use and must be integral to a self-storage facility and comply with all standards established in this section and in Article 10.

5. Any outdoor storage, including if added to an existing facility, must comply with all outdoor storage standards as specified in this section and as required in Article 10.

C. Minimum Setbacks

1. Any portion of any element of a self-storage facility must be at least three-hundred (300) feet from the edge of a road or right-of-way (ROW), whichever is greater, that is either publicly owned or has a public easement for winter maintenance. No component of a self-storage facility other than one access/driveway may be located within this three-hundred (300) foot setback. All other components of any self-storage facility must respect this minimum three-hundred (300) foot setback specifically including all fill extensions, buildings, outdoor

storage areas, drainage ditches, stormwater infrastructure, and perimeter buffer as specified in section "F" entitled "Perimeter Buffer Requirements."

2. A perimeter buffer in accordance with standards specified below in section "F" below entitled "Perimeter Buffer Requirements," is required around the entirety of the facility. Stormwater infrastructure is specifically prohibited from this buffer, such as level lip spreaders, detention basins and similar stormwater infrastructure involving clearing of vegetation. Pipes that may need to pass through the area are permitted.

3. Neither the Zoning Board of Appeals nor the Planning Board shall have the authority to reduce any of the minimum setbacks established above in this section "C" entitled "Minimum Setbacks" except for the perimeter buffer as established in this subsection "F," entitled "Perimeter Buffer Requirements" and subsection "G" entitled "Outdoor Self-Storage Standards."

D. Building Requirements

1. One-story self-storage building footprint standards:
   a. Maximum length: two-hundred (200) feet
   b. Maximum width: forty (40) feet.
   c. Maximum height (to the highest point of the structure): twenty-five (25) feet.

2. Two-story self-storage building footprint standards:
   a. Maximum footprint of any one structure: seventy-five hundred (7,500) square feet
   b. Maximum height (to the highest point of the structure): thirty (30) feet

3. Minimum separation between buildings/minimum drive aisle width: twenty-five (25) feet

4. All buildings/structures utilized for self-storage purposes that face the perimeter buffer shall be completely enclosed with permanent sides/siding. In no event shall such buildings/structures have one or more open sides. Seasonal installation and/or removal of temporary sides, such as fabric or similar, shall not be permitted and shall not be considered permanent sides/siding.

5. All buildings/structures shall comply with Town of Gray Design Standards for self-storage facilities (attached). The applicant shall submit scaled color renderings of all proposed buildings/structures as part of the submittal and the planning board will review these as an integral part of their review. The Planning Board shall have the authority to interpret the design standards and require changes to the plans that are consistent with the purpose and intent of the design standards and these performance standards.

6. In the event that a different or future non-residential use is proposed for the front portion of a parcel and self-storage facility use is proposed for the rear portion, the minimum separation between such structures shall be designed to meet currently applicable setbacks to allow for each use to be located on a separate parcel and must meet the Lot Frontage Development

Standards herein.

7. Buildings existing as of March 1, 2023 shall be eligible for re-use as a self-storage facility subject to all of the following standards:

a. The building for re-use must have a footprint no greater than ten thousand (10,000) square feet and be located on the same parcel or a directly abutting parcel containing a self-storage facility existing as of March 1, 2023, and
b. The building for re-use must be within one-hundred-and-fifty (150) feet, irrespective of any property line, of a building in a self-storage facility existing as of March 1, 2023, as measured from building to building, and
c. Any building proposed for re-use shall require Planning Board review and approval, for the purposes of complying with design standards as much as practicable. The Planning Board shall have the authority to require non-structural changes to the building in accordance with design standards as practicable, and
d. Any increases in the volume and/or footprint of a building for re-use, including overhangs, shall require Planning Board review and approval. Such increases shall conform to design standards, as practicable, and
e. In no event shall any increase in volume and/or footprint of a building for re-use purposes be extended to utilize or occupy any additional frontage on a road or right-of-way that is either publicly owned or has a public easement for winter maintenance, other than the portion of frontage occupied by the building that existed as of March 1, 2023, and
f. Increases in volume and/or footprint of a building for re-use, including overhangs that extend towards/closer to a road or right-of-way that is either publicly owned or has a public easement for winter maintenance, shall not be allowed unless the entirety of the building, including the increased volume and/or footprint of the building is at least three hundred (300) feet from the edge of the road or right-of-way, whichever is greater.

E. General Standards

1. Review and approval by the Planning Board is required for any new or expanded self-storage facility. The Planning Board shall review the proposed development under Site Plan Review and design standards, as applicable, and shall ensure that the performance standards in this section are met.

2. Any self-storage facility may consist of one or more combined developed footprint area(s).

3. Each combined developed footprint area shall not exceed three (3) acres/ 130,680 sf. This combined development footprint area shall include all buildings, outdoor storage areas, all stormwater infrastructure, fill extensions, all vehicular accessways, all non-vegetated areas, and similar such areas that are not in their natural state. This calculation shall not include the perimeter buffer and/or buffer areas complying with standards herein.

4. Within a lot with a self-storage facility, site-internal buffers are required to separate each combined developed footprint area. These site-internal buffers shall be a minimum depth of fifty (50) feet and shall conform to the perimeter buffer requirements of Section F, Perimeter

Buffer Requirements. As determined by the Planning Board, limited portions of such internal fifty (50)-foot buffers may contain stormwater infrastructure provided that the aesthetic separation between the two areas is maximized.

5. All standards for the self-storage facility, excluding the perimeter buffer, as detailed below herein, must be met and maintained on a parcel owned in fee by one (1) owner/party/entity. In no event shall the ownership of one or more buildings on one parcel be transferred to separate parties/entities.

6. No maintenance and/or repair work of any type shall be allowed on any vehicle and/or equipment that contains any type of fluid that potentially contaminates soil and/or groundwater if leaked. The operator of the facility shall be required to disclose this information to all parties utilizing the self-storage facility and report any instances of fluid leaks to Gray Public Safety within thirty (30) days of becoming aware of any fluid contamination.

7. All self-storage facilities shall be gated with security provisions sufficient to ensure access to the site only by patrons, owners, and those persons needing to access for operations and/or maintenance.

8. The entire perimeter, except the gated entry, of all self-storage facilities areas shall have a sufficient fence, as determined by the Planning Board as part of their review, to discourage/prevent access. Fence details shall be shown on planning board submittals. Chain-link fencing is not permissible in areas of the site that are visible from the road.

9. One (1) office area to provide administrative services solely serving the self-storage facility may be permitted provided that the cumulative area devoted to this use does not exceed two hundred (200) square feet. In the event that such space is part of a facility, a minimum of two (2) dedicated parking spaces within the immediate vicinity of such office area shall be required that do not block access to any accessway or self-storage unit(s).

10. In addition to applicable lighting requirements established in Article 10, Site Plan Review, all self-storage facilities shall be required to comply with standards in the USA Pattern Lighting Code in the International Dark Sky Association Outdoor Lighting Code Handbook version 1.14.2002 dated December 2000/September 2002 or subsequent update. The Planning Board shall review compliance with such standards, with peer review as necessary at applicant expense, as an integral part of reviewing a proposed facility.

F. Perimeter Buffer Requirements

1. All new, or expanded, self-storage facilities shall comply with all of the following perimeter buffer requirements. Any building(s) existing as of March 1, 2023 that is proposed for re-use as a self-storage facility shall comply with the perimeter buffer requirements to the maximum extend practicable as determined by the Planning Board.

2. The entirety of the perimeter buffer shall consist of dense, mature, natural vegetation meeting and maintaining standards as established in this section.

3. Any of the following site components shall not be located or considered part of the minimum perimeter buffer: driveways, buildings, parking areas, fencing, vehicular accessways, outdoor storage areas, retaining walls, fill extensions for vehicular accessways and/or buildings, drainage ditches and stormwater infrastructure.

4. Only one vehicular accessway shall be allowed in this perimeter buffer unless the planning board determines that through-traffic is necessary to allow a second accessway. Multiple accessways through the buffer are specifically prohibited. The width of any such accessway through the perimeter buffer shall be limited to the practical functionality necessary as determined by the planning board.

5. In the event that applicable standards for the perimeter buffer are met and maintained via an easement, all applicable perimeter buffer standards shall be included in the description of easement language, as determined by the Code Enforcement Officer with input from the Planner, that is recorded at the Registry of Deeds prior to the issuance of a building permit for the project. A condition of approval memorializing this requirement shall be part of the Planning Board final decision.

6. The full depth of the perimeter buffer shall consist of dense, mature, natural, non-invasive vegetation, consisting of predominantly evergreen trees, as determined by the Planning Board. In order for the Planning Board to determine the specifications for the buffer vegetation, the Board shall require applying the point system standards as the minimum standards for any 25 foot by 50 foot for the first one-hundred (100) feet established for a "Shoreland Buffer Strip" contained in Section 15 of the Gray Shoreland Zoning Ordinance (Chapter 403) entitled "Clearing or Removal of Vegetation for Development Activities other than Timber Harvesting" be met and maintained. In accordance with the purpose of maintaining the perimeter buffer, all standards for the "Shoreland Buffer Strip" in Section 15 of Chapter 403 that allow for the removal of vegetation, pruning of branches on the lower one-third of a tree, clearing of vegetation for development, and existing cleared openings shall not be applicable for this Section 402.8.11, Self-Storage Facility Standards.

7. In the event that existing conditions do not meet the requirements of this section at the time the application is before the Planning Board, the Board shall have the authority to require the applicant to plant native species trees (predominantly evergreens) and other appropriate native vegetation to establish a buffer meeting standards established in this section within a reasonable time period as determined by the Planning Board. Ideally, a sufficient buffer should be achieved within five (5) years.

8. In order to ensure that the perimeter buffer meets and maintains standards, or will meet standards per above in this section, the Planning Board shall have the authority for a peer review, at the applicant's expense, and shall also have the authority to require that the applicant post a sufficient financial surety for any necessary replanting per Section 402.10.17

in accordance with professionally accepted practices such as an eighty (80) percent survival rate for a five (5) year period.

9. The Planning Board shall be authorized to require additional buffering and screening, including additional plantings, to maximize the density of the mature natural vegetation, emphasizing the use of evergreen species, for any portion of a proposed self-storage facility located within one or more viewshed(s) from a public road(s), including road(s) that have a public easement for winter maintenance. The Planning Board shall have the authority to require the applicant to submit photographs of existing conditions from various vantages and accurate renderings of the anticipated proposed buffer at periodic time intervals, including at maturity.

10. The Planning Board will have the authority to consider reductions to the depth of the vegetated perimeter buffer or alter the nature of the buffer as herein, at different depths for each of the different buffer areas (front, side, rear) as well as different depths along one or more such buffers, taking into account existing conditions, the essential character and proximity of other uses on adjacent properties along the perimeter buffer.

a. In considering whether to approve a perimeter buffer reduction or alteration, the Planning Board should consider the treatment of the area and adhere to the following standards:

i. In no case shall any portion of the perimeter buffer be less than twenty-five (25) feet in width, except as permitted in section 10.b. below.

ii. Structures in self-storage facilities that do not exceed twenty (20) feet in height and buildings converted to self-storage facilities, per Section D above entitled Building Requirements, may be permitted to use solid fencing (not chain-link) with a reduced vegetated buffer to meet the perimeter buffer requirements.

b. In considering whether to approve a perimeter buffer reduction or alteration, the Planning Board should consider the treatment of the area and adhere to the following principles:

i. Within areas that are densely developed with non-residential uses when the application for a self-storage facility is submitted, a buffer with dense plantings, fencing, and or changes in grade may be a minimum of twenty-five (25) feet.

ii. For self-storage buildings on a parcel(s) located wholly within a Commercial/Industrial zoning district, that do not directly abut any properties outside of a Commercial/Industrial zoning district, the Planning Board will have the authority to approve a reduced buffer to a minimum of

fifteen (15) feet.

iii. A buffer with moderate levels of vegetative screening should be thirty (30) to forty (40) feet in width.

iv. In suburban and rural settings, the minimum width of the densely vegetated buffer should be twenty-five (25) feet. Plantings should be predominantly evergreen shrubs and trees designed to provide year-round screening.

v. For areas adjacent to service, loading, or outdoor storage areas, a minimum buffer width of fifty (50) feet screened by a combination of berms, fencing, and dense plantings (preferably evergreens).

vi. The Planning Board shall have the authority to reduce the depth of those portions of the proposed Self Storage Facility perimeter buffer that directly abut property owned by the Maine Turnpike Authority to a minimum of fifty (50) feet, provided that the intent of this ordinance and applicable standards, specifically including but not limited to buffering, are met and maintained.

G. Outdoor Self-Storage Standards

1. Any outdoor storage shall be located at least one-hundred (100) feet from any property line and shall be subject to additional standards as detailed in this section.

2. All outdoor storage areas that are storing any vehicles and/or equipment that use or contain any type of petroleum-based fluid, or any fluid that potentially contaminates soil if leaked, shall be impervious with pavement or concrete. All stormwater sheet-flow from such areas shall be directed in water-tight drainage piping into oil/water separators in accordance with professionally accepted practices. Stormwater discharge from the separators shall be daylighted to a readily accessible location that allows for the soil adjacent to stormwater daylighting to be tested in the event of leaks from such vehicles and/or equipment.

3. As part of the Planning Board's review, with input from qualified consultants at applicants' expense, the Board shall determine an appropriate stormwater maintenance schedule including periodic testing of soil at the stormwater daylight location and/or where the stormwater from the outdoor storage is absorbed into the ground.

4. For outdoor storage areas on a parcel(s) located wholly within a Commercial/Industrial zoning district, that do not directly abut any properties outside of a Commercial/Industrial zoning district, per 10.b., the Planning Board will have the authority to approve a reduced buffer to a minimum of fifty (50) feet provided it is at least one hundred (100) feet to the property line.

5. If an outdoor storage area is located adjacent to the perimeter of the facility abutting a property line(s), the minimum depth of the perimeter buffer, in accordance with standards specified below in this section, must be seventy-five (75) feet provided it is at least one hundred (100) feet to the property line.

6. As part of the final approval of the project, the Planning Board shall impose a condition of approval that requires the owner and/or operator (as appropriate) of the facility to submit an annual report containing information that summarizes the condition of the stormwater measures, testing results for potential contaminants associated with the stored items, and any corrective measures that have been completed for the previous year to verify that the stormwater from the outdoor storage is not contaminating the soil and/or adversely affecting groundwater in the vicinity of the facility. This report should be due by January 31st of each year. In the event of a spill or test results that show the presence of any contaminant(s), the owner/operator shall report these findings to the Gray Code Enforcement Officer within five business days of receiving the test results.

7. The maximum cumulative footprint of all area(s) utilized for outdoor self-storage shall not exceed twenty-five (25) percent of the developed portion of the self-storage facility consisting of buildings, accessways, etc. Based on the three (3) acre maximum footprint of the developed portion of the facility specified in "E" in this section entitled "General Standards," the maximum size of an outdoor storage area is .75 of an acre/32,670 sq. ft.

H. Lot Frontage Development Standards

Lot frontage is the portion of a lot directly abutting the main road. Development of the lot frontage within the three-hundred (300) foot road or right-of-way (ROW) setback of a self-storage facility parcel, for a separate permitted or conditionally permitted use in the zoning district, is subject to the following conditions:

1. The setback between the structure in the lot frontage development area and the nearest self-storage facility structure, measured building to building, shall be double the applicable rear setback for the zoning district, to allow for conformance in the case of future lot division. Otherwise, applicable setbacks for the zoning district will apply.
2. Development on the lot frontage of a self-storage facility will be subject to performance standards and design standards, as applicable.
3. The Planning Board shall have the authority to reduce the perimeter buffer between the lot frontage development and the self-storage facility, per Section F above, entitled Perimeter Buffer Requirements.
4. Parking areas for the lot frontage development must be located in the rear of the building(s) and shall not be directly visible from a public street.
5. The lot frontage development must be designed to provide for the safe movement of pedestrians and vehicles both internally and in connection with the self-storage development and/or other structures, lots or uses located further from the main road from development within the lot frontage development.

402.6.2 D

D. Only One Principal Building per Lot

No more than one (1) principal structure and its accessory buildings as regulated in this Ordinance may be located on any one lot, except in the case of a multi-building Self-Storage Facility, lot frontage development on a lot with a self-storage facility, as established in Section 402.8.11. Planned Unit Development and Multi-Family Housing, unless all applicable space and dimensional standards are met separately for each principal structure or use on the lot, subject to the following:

1. Where a lot has more than one existing principal structure or use, any new principal structure or use proposed for the lot, or any proposed division of the lot, shall meet all applicable space and dimensional standards for the new lot or principal structure or use; provided, however, before creation of a new principal structure or use on the lot or division of the lot, the property owner shall provide the Code Enforcement Officer with a sketch plan, drawn to scale, in sufficient detail to satisfy the Code Enforcement Officer that it accurately represents the current conditions in the field; and

2. The creation of a new lot or new principal use or structure must satisfy current space or dimensional standards established for the zone in which the lot is located. Where an existing principal structure is legally nonconforming as to any applicable space or dimensional standard, the creation of a new lot or principal use or structure shall not increase the degree of such nonconformity.

3. For lots located in the Business Development 2 Zoning District, the number of uses per principal structure shall be determined by standards established in Section 402.8.8 of this Ordinance.

4. No variances are allowed from the provisions of the preceding paragraphs of this section.

Town of Gray Design Standards for self-storage facilities

Use- specific performance standards to become: 402.8.11

These design standards apply to all self-storage facilities, as defined in the Town of Gray Land Use Ordinance.

PURPOSE:

The Town has set these standards in response to increased interest in development of self-storage facilities, both within the Town and in surrounding towns. This use has historically seen the installation of multiple long, single-story metal buildings, which can be visually monotonous and unattractive, detracting from the community's desired image. Variations in roofline elements and façade treatments are proposed herein to break up the scale of such buildings and add visual interest.

These standards seek to promote an aesthetically pleasing appearance for self-storage facilities, in the interest of retaining Gray's rural character, and protecting property values within the town and specifically within the districts in which the self-storage use is conditionally permitted.

Photographs and captions included herein are meant to provide visualizations of the intended design effect.

APPLICABILITY:

These standards apply to all developments defined as "self-storage" use per the Gray Zoning Ordinance, presented to town staff, Staff Review Committee or Planning Board as of the effective date of these standards, and are meant to supplement the existing standards of the Gray Zoning Ordinance.

DESIGN ELEMENTS:

The architectural design elements outlined below are options that can be combined to meet the stated purpose of improving the appearance of self-storage facilities, particularly by breaking up long, monotonous facades.

Materials: The Town recognizes that many self-storage facilities are metal buildings with metal roofs. For complementary architectural design elements to such buildings, such as the façade treatments listed below, a traditional Northern New England appearance is preferred, such as brick, clapboard and shingles. Contemporary materials with similar appearance, such as veneers, composites, vinyl and dyed concrete can be used to achieve this end on all or part of metal buildings.

Roofs: Pitched roofs are required, with a minimal pitch of at least 5/12. Buildings with projecting rooflines should be designed to create strong patterns of shade and shadow.

Façade treatments: Blank, unadorned or unscreened walls facing public roads, residential neighborhoods, or the front or side of abutting properties should be avoided. In addition to landscape buffering, façade treatments such as those listed below should be added to provide depth and visual interest on extended walls.













Clockwise from top: Brick façade; pitched roof with appropriate colors and stone wainscoting; decorative canopy; faux windows with stone brick façade; overhang canopy; dormer.

- wall plane projections and recesses,
- roof elevation variations,
- Faux windows, with or without shutters
- Decorative lighting
- Exterior artwork (i.e., building murals)
- canopies
- variations in siding materials and orientations, such as patterns or a combination of vertical and horizontal siding
- wainscoting
- awnings
- decorative dormers

Buffering: The reviewing authority shall have the ability to require buffering and screening of self-storage facility building(s) sufficient to minimize the impact on abutting properties and any publicly maintained road from which the development is visible.

These buffers/screens can include, but are not limited to: plantings, hedges, fencing, berms, walling, and combinations thereof.

New plantings must be tolerant species of sufficient height and blend with existing vegetation, which should also be retained as buffering whenever possible. Long term, plantings must be maintained or replaced to continue to serve as buffers. Fencing should be in colors compatible with the building and with the rural image of the town.

Colors: Building colors should be compatible with surrounding properties, to include earth tones and neutral colors, compatible with traditional New England construction. Roof colors shall be those commonly found on residential buildings, including but not limited to brown, black, gray and green, and shall be of a dark hue.

Lighting: All building and site lighting must be directed downward to minimize light pollution. Lights should be aimed and shielded to avoid any light directed onto the road, sidewalks or abutting properties. Lights should be directed only onto the building or the site. Light fixtures should be considered to highlight design elements as well as illuminate entry points and improve site security.

Solar Panels: Fixed solar panels that are flush-mounted to the roof and/or walls, not more than 8 (eight) inches above the roof plane and/or walls of a self-storage facility building are permitted, provided that they do not significantly change the orientation/appearance of the roofline and the necessary permits are obtained. Panels that are installed at a different orientation than the roof plane, or installed/angled to be more than 8 (eight) inches above the roof plane require Planning Board review and approval with the intent of maximizing compliance with design standards.

ADMINISTRATIVE PROCEDURE:

The Planning Board shall administer these standards as part of the site plan review process for a self-storage development, per Article 10 of the Gray Zoning Ordinance. Appeals of the Planning Board's decisions are to be made according to the provisions of site plan review, 402.10.17.

		RRA	LD *	MD	BD-1	BD-2	C	VC *	VCP *	BT-1 *	BT-2 *	WH-1 *	WH-2 *	LMOD
1.	Personal Services				C	C	C	C	C	C				
2.	Planned Unit Development ‡				C	C	C	C	C	C				
3.	Places for Public Assembly, Indoor and Outdoor	C	C		C	C		P	P					
4.	Private Assembly				C	C	C	C	C					
5.	Private Landing Strips for Personal Aircraft ‡	C			C	C								
6.	Public Utilities	C	C	C	C	C	C	C	C	C	C	C	C	
7.	Redemption Center						C			C			P	
8.	Registered Caregiver*				C	C	C	C						
9.	Registered Caregiver Cultivation Area*				C	C	C	C						
10.	Repair Service				P	P	C	P	P		C		C	
11.	Research Facility				C	C		C	C					
12.	Residential Open Space Subdivisions	P	P	P										
13.	Restaurant				P	P	C	P	P	C	C			
14.	Retail Trade				P	P	C	P	P	C	C		C	
15.	School	P	P	P		C	C	C	C	C	C		C	
16.	Self-Storage Facility				~~C~~	~~C~~	~~C~~			~~C~~				C
17.	Single-Family Dwelling	P	P	P	P	P	P	P	P	P	P	P	P	
18.	Similar Uses	C	C	C	C	C	C	C	C	C	C	C	C	
19.	Tavern					C	C	C	C					
20.	Trucking Terminal				C	C								
21.	Two-Family Dwelling	P	P	P	P	P	P	P	P	P	P		P	
22.	Warehousing				P	P								P/C
23.	Wholesale Trade				C	C		P	P					
24.														

use of an arcade system, trellis, colonnade or other open structures.

D. Provide Useable Open Spaces – Wherever practical, open space areas shall be grouped into useable, prominent landscaped areas so as to provide useable open space within a complex of buildings or project; however, this provision does not require that every building or project or all areas surrounding buildings to provide useable open space.

E. Provide Outdoor Seating Areas – Buildings shall be placed in a manner that allows space for outdoor seating areas. Spaces between buildings that offer clear, useable shapes may be used for this purpose; however, this does not require that all spaces between buildings be designed for use as outdoor seating areas.

COLOR STANDARDS

A. Use Compatible Colors – Colors used on buildings shall be compatible with colors of the surrounding area.

TRASH LOADING/STORAGE/PARKING AREAS

A. Enclose Dumpsters in Attractive & Durable Enclosures – Trash and garbage containers shall be stored in an enclosure that is architecturally compatible with the project or building and which includes concrete pads or appropriately designed asphalt surfaces. Trash enclosure gates shall be constructed of durable materials that obscure view by a minimum of eighty (80) percent.

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~~E.~~B. Locate Such Service Areas Away from Abutting Residences – Non-residential buildings adjacent to residential properties shall be designed or positioned so that loading and delivery activities occur on the side of a building opposite the side facing residential property, and shall not be located within the required setback.

~~F.~~C. Provide Loading Areas for Restaurants – Every free-standing restaurant site shall include a loading area or arrangement for other accommodations.

~~G.~~D. Loading Docks not to be Visible from the Street – Loading docks shall not be directly visible from a public street. Complete screening matching the building design or a landscape buffer achieving eighty (80) percent screening within three (3) years shall be installed where necessary to meet this requirement.

~~H.~~E. No Standing & Idling Trucks – Trucks are prohibited from parking and idling in maneuvering or circulation areas that are adjacent to residential properties, except for approved loading or dock areas.

~~I.~~F. Carefully Locate & Screen Outdoor Storage Areas – Outdoor storage shall be located within approved storage areas that are permanently screened from view. Outdoor storage shall not be allowed in required parking or loading areas.

~~J.~~G. Parking areas to be located in rear – Parking areas are to be located in the rear of the building(s) and shall not be directly visible from a public street.

PART 4 – RESIDENTIAL DESIGN STANDARDS AND ADMINISTRATIVE PROCEDURES

I. PURPOSE

The purpose of these Design Standards for the construction of single-family residential buildings, two-family residential buildings, three-family residential buildings, accessory dwelling units, and all detached accessory structures in the Village Center (VC) and Village Center Proper (VCP) Districts is to promote the construction of such buildings in a manner that is calculated to allow for adaptive re-use of the site for either commercial or residential purposes in the future. The objective is to grant the Town of Gray increased flexibility in meeting its current goals under the Comprehensive Plan, including promoting growth in the VC and VCP districts.

II. APPLICABILITY

These Design Standards apply to all single-family residential buildings, two-family residential buildings, three-family residential buildings, accessory dwelling units, and all detached accessory structures newly constructed or reconstructed in the VC or VCP Districts, as well as those that have been substantially altered, repaired, or moved.

For the purposes of applicability of these standards, "substantially altered, repaired, or moved" shall mean any one or more of the following:

1. requires a building permit for construction that affects greater than fifty percent (50%) of the floor area of the existing structure

2. requires a building permit for exterior renovations which involve structural alterations to the building.

III. AESTHETIC STANDARDS

Newly constructed or reconstructed single-family residential buildings, two-family residential buildings, three-family residential buildings, accessory dwelling units, and all detached accessory structures in the VC or VCP Districts, as well as existing buildings (used for that purpose) and their appurtenances, which have been substantially altered, repaired or moved, shall be visually compatible with the buildings and terrain to which they are visually related and specifically with nearby and/or adjacent buildings in terms of the following factors:

A. Overall Style: The building's architectural style shall be consistent throughout, with all sides matching or complementing the style of those with the greatest visibility from the public street(s).

1. To prevent long, visually monotonous building façades, design features shall be added to the building, such as but not limited to, wall plane projections, recesses, widows, roof elevation variations, and variations in siding materials and orientations.



2. Accessory or auxiliary structures, including garages

and sheds, shall be architecturally consistent with the primary structures in the use of color, material, and detailing.

B. Relationship of Façade Materials: The façades of a building, particularly the front façade, should be visually compatible with surrounding buildings.



1. Use of traditional wood clapboard or cedar shake siding is the basic standard. Synthetic, composite, or other siding materials are acceptable if they are substantially identical in appearance to natural materials and of equal or greater durability.

2. Brick or stone masonry is also acceptable.



a. Brick material shall be of New England character, normally red to reddish brown in color, and shall be laid with three courses in eight inches. Normal brick size shall be 2 3/8 x 3 5/8 x 7 5/8.

b. Use of economy shape, square, or elongated brick is not permitted.

c. Multi-color brick products or patterns composed of different colors of bricks are prohibited, and any pattern in the brick masonry shall be muted with all patterns composed of brick of the same color. Alternatively, bricks may be painted, provided they are painted a single, solid color.

3. Concrete block, split face block, multicolored brick, asphalt shingles, T-111, plywood, diagonal siding, industrial metal siding, standing seam metal siding, synthetic brick, and synthetic stone are prohibited; however, use of stucco is permissible.

4. Concrete block chimneys and exposed metal chimney flues on the side of the house facing the street are prohibited. Exposed metal chimney flues on the sides of houses shall be enclosed and sided with the same or similar siding as the house.



5. Full height walls surrounding porches are not permitted. Screens in the warmer months and storm windows in the cold months are permitted, this does not include installation of combination storm and screen windows.

C. Roof Shapes and Materials: The shape and proportion of the roof should be visually compatible with the architectural style of the building and with those of

neighboring buildings. Flat roofs are discouraged.

1. Roof forms such as gable, hipped, or slight variations are acceptable.



2. Buildings shall have a roof pitch in the ranges of 6:12 to 12:12. Porch roofs are permitted to have a pitch of 4:12 provided that the porch does not exceed 20% of the building's cumulative footprint.

3. Preferred materials are asphalt shingle, fire-treated wood shingles, natural slate, rubber, composite material made to resemble slate, and/or metal.



4. Buildings that are more than forty feet (40') in length, face a public street, and have a symmetrical gabled pitched roof are encouraged to break up the roof with multiple dormers proportioned and coordinated with the overall façade design.

5. Roof colors shall be those commonly found on residential buildings within the VC and VCP Districts, including but not limited to brown, black, grey, and green, and shall be of a dark hue.

6. Roof dormers with pitched or shed roof forms are permitted, and skylights within the roof plane are acceptable. Shed roofs that are integrated with the building form are also acceptable.

7. Exposed roof vents such as turbines or power roof ventilators are discouraged.

D. Proportionality and Placement: The building's overall size; mass in relationship to the open space around it; and door, window, porch, and balcony sizes shall be visually compatible with its site and with its neighborhood.

1. The height of the building shall be visually compatible with the heights of buildings in the neighborhood, with particular attention paid to the height of principal structures on adjacent lots, so as not to dramatically change the street's appearance or to unduly shade neighbors and/or the street.

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Compliant: **Noncompliant:**




2. The rhythm of open spaces around buildings to the buildings themselves should be considered when determining visual compatibility, whether it is between buildings or between buildings and the street (setbacks).

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Compliant: **Noncompliant:**




3. The size and spacing of the building's windows and doors shall be proportional and visually compatible with those of its neighbors.

Compliant: **Noncompliant:**




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E. Access Features: The features of a building that allow for access to the interior shall meet certain minimal design standards that ensure both their functionality and visual compatibility with others in the neighborhood.

1. The incorporation of one, and not more than one, recognizable front door facing the street is required.

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2. Buildings shall not have more than one exterior stairway leading to a second or higher story, and the design of such exterior stairway shall be visually compatible with the design of the building as a whole and with any exterior stairways on neighboring buildings.

F. Site Features: The size, placement, and materials of walls, fences, driveways, and landscaping features should be visually compatible with the building, the property's terrain, neighboring buildings, and the terrain of abutting properties, as well as provide adequate privacy between lots.



1. Fences, if installed, shall be post-and-rail type with wood, wood composite, stone, or masonry posts with wood top and bottom rails. Infill between rails shall be vertical pickets or other patterns consistent with older residences within the district. Fences shall not exceed forty-two (42) inches in height.

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2. Preservation of existing mature trees and planting or preservation of masses of shrubs in the setback is encouraged. Landscaping should include planting of new trees and shrubs if none presently exist.

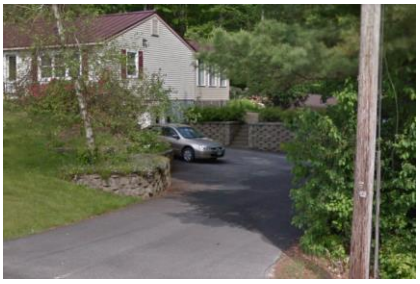
a. An effort shall be made to use indigenous species that are insect and disease resistant. Invasive species of plants are prohibited.

b. Any trees that are planted shall be a minimum of five (5') feet from the edge of the right-of-way (ROW). The mature form and height of plant materials shall be considered so they will not create unsafe conditions, such as protrusion into power lines, or blockage of pedestrians, bicyclists, or motorists' sight lines on the road.

3. The front, side, and rear yards abutting residential properties shall maintain the district boundary in its natural state to provide a buffer of at least the minimum setback distance or at least 10 feet. When natural features (i.e., slopes, gullies, trees, shrubs, rocks) do not exist or are insufficient to provide a buffer, the developer is encouraged to landscape, or where not feasible, provide fencing or screening. The buffer shall not be expected to completely hide the building from abutting properties.



4. Site walls (retaining walls), if installed, should be a natural stone, pre-cast concrete made to resemble stone, or brick masonry. The use of other modular concrete material is not permitted for the wall face. Site walls shall not exceed forty-two (42") inches in height unless functionally necessary due to the grades existing on the property, shall be located no closer than two (2') feet from the sidewalk, and shall be constructed to allow for proper drainage.



5. All new construction and development shall be designed to minimize storm water runoff from the site in excess of the natural predevelopment conditions. Where possible, existing natural runoff control features, such as berms, swales, terraces, and wooded areas shall be retained or added in order to reduce runoff and encourage infiltration of storm waters. All storm water must be treated underground.



6. All parking for new construction and development shall be located behind the building, not visible from the street.

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IV. SITE LAYOUT STANDARDS

A. The location of structures and site improvements on the parcel shall be designed and built to accommodate either residential or commercial uses. The applicant/developer shall provide a conceptual scaled plan of the parcel depicting all site components necessary to practically allow the parcel to be utilized for commercial purposes including:

1. Vehicular access (ingress and egress);

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2. On-site vehicular circulation;
3. Pedestrian access and internal circulation;
4. Parking layout and design;
5. ADA parking and access;

TERRADYN
CONSULTANTS, LLC

HEMLOCK WOODS SUBDIVISION

38 BLACKTHORNE LANE
GRAY, MAINE

SUBDIVISION AMENDMENT APPLICATION

PREPARED FOR:

38 BLACKTHORNE LLC
C/O TONY FERNANDEZ
P.O. BOX 685
GORHAM, ME 04038

PREPARED BY:

TERRADYN CONSULTANTS LLC
41 CAMPUS DRIVE, SUITE 101
NEW GLOUCESTER, ME 04260

AUG 2023

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ATTORNEYS AT LAW

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August 7, 2023

Gray Planning Board
Henry Pennell Municipal Complex
24 Main Street
Gray, ME 04039
Attn: Kristen Muszynski, Town Planner

RE: Application to Amend Hemlock Woods Subdivision (Phase I)

Dear Chairman Cobb and Members of the Planning Board:

I represent 38 Blackthorne, LLC (including members Tony Fernandez and Steve Trask) in their development of the real property located at 38 Blackthorne Lane in Gray as generally shown on Tax Map 53, Lot 43-2 ("Property"). Enclosed, please find an application to amend the Hemlock Woods Subdivision to create a back lot on Blackthorne Lane.

The Hemlock Woods Subdivision was originally approved by the Planning Board on February 23, 1989 and recorded in the Cumberland County Registry of Deeds in Plan Book 177, Page 36 and has a complicated history. Please see the enclosed summary for your reference.

Today, the Property is approximately 30.45 acres and is largely undeveloped except for an existing single-family home and attached garage with a well and septic system. The Property is located in the Rural Residential and Agricultural (RRA) District, and is surrounded by residential development on all sides. A wetland delineation has been conducted; wetland boundaries are shown on the attached plan. Tony and Steve propose to develop the Property in two phases, but request approval for Phase I today.

The Phases are:

- **Phase I:** With this application, Tony and Steve request approval to amend Hemlock Woods Plan to create a back lot in conformity with Section 402.7.5 of the Ordinance. The lot will be 2.15 acres to encompass the existing single-family home, garage, well, and septic system. The lot will be accessed by a 60' wide private access and utility easement that connects the end of Blackthorne Lane to the new lot. The remainder of the Property will be 28.3 acres.

- **Phase II:** In early 2024, Tony and Steve anticipate requesting approval to further amend the Hemlock Woods Plan to develop the remaining land as housing in conformity with Ordinance. Tony and Steve will reserve at least 8 acres of the remaining land as open space in connection with that development.

We look forward to discussing Phase I of this project with you at the Workshop and Planning Board Meeting on Thursday, September 14, 2023. Thank you for your time and consideration.

Sincerely,



Laura J. Hartz, Esq.

cc: Terradyn Consultants, LLC Jimmy Courborn, PLS
Steve Trask
Tony Fernandez

DrummondWoodsum
ATTORNEYS AT LAW

MEMORANDUM

TO:	Town of Gray Planning Board
FROM:	Laura J. Hartz, Esq.
DATE:	August 7, 2023
RE:	History of Hemlock Woods Subdivision

Below we provide a summary of the history of the Hemlock Woods Subdivision, a portion of which Bridgepoint Capital, LLC hopes to develop as housing in conformity with the Ordinance.

- February 23, 1989: Gray Planning Board approves "Hemlock Woods Plan" as a cluster subdivision with 14 lots of approximately 1.2-acres each, with a 27-acre common area, shared septic, and access from Route 115 via Woods Lane. Plan is recorded a CCRD Plan Book 177, Page 36.

- 1992 – 1994: The original developer sells two lots (not in conformity with the plan) and sells the balance of the property to Marc and Liana Rubinstein.

- 1994 – 2012: The Rubinsteins reconfigure the lots and sell them without receiving approval for an amended subdivision plan from the Gray Planning Board. The Rubinsteins record four new plans without subdivision approval. The owners receive building permits from the Town of Gray.

- November 5, 2012: Town of Gray issues Notice of Violation to Rubinsteins for conveying lots in violation of Ordinance and state law.

- October 16, 2013: Town of Gray issues second notice of violation to Rubinsteins.

- 2013 – 2018: Rubinsteins default on their mortgage, their lender forecloses, and institutes a title insurance claim. Town, lender, and title insurance company negotiate.

- July 16, 2018: Town, lender, and title insurance company enter into settlement agreement resolving violations and obligating the parties to improve the road, form a road association, and convey the fee in the road to the association.

- December 4, 2019: Bridgepoint Capital buys the remaining undeveloped land and the road, helps to form the Blackthorne Lane Road Association (BLRA), and conveys the fee in the road to BLRA.

TERRADYN
CONSULTANTS, LLC

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5. UTILITY & ACCESS EASEMENT DEED (Bk 39800 Pg 34)
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7. U.S. FISH & WILDLIFE SERVICE – IPaC
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EXHIBIT PLANS & SUBDIVISION PLAN

9. TOWN GIS MAP W/ ZONING
10. FEMA FLOOD MAP
11. CROPPED TOWN COMPREHENSIVE PLAN
12. HEMLOCK WOODS SUBDIVISION AMENDMENT PLAN

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED			
Property Location/Address	38 Blackthorne Lane	Property Map/Lot	053 . 043 . 002 . 000
Zoning District	Rural Residential & Agricultural	Lot Acreage	30.45 acres
Owner Name	38 Blackthorne, LLC	Tax Sheet	
Owner Address	PO Box 685, Gorham, ME 04038	Owner Phone	207-232-7505
APPLICANT			
Name (IF different than owner)	Tony Fernandez	Contact Phone Number	207-232-7505
Mailing Address	PO Box 685, Gorham, ME 04038	Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address	tfernandez@bridgepointlend.com		
AGENT/CONSULTANT			
Name	Terradyn Consultants, LLC - Jimmy Courbron	Contact Phone Number	207-212-4478
Mailing Address	95 Main Street - Suite 201	Alternate Phone Number	207-926-5111
Mailing City/State/Zip	Auburn, Me 04210	Fax Number	
Email Address	jim@terradynconsultants.com		

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

☐ **Subdivision**
- Sketch Plan Review
- Preliminary Plan Review (Major)
- Final Plan Review (Major)
- Minor

☐ **Site Plan Review**
- Pre-Application Conference
- Minor
- Major

☐ **Shoreland Zoning Permit**

☐ **Other (specify)**
- Conditional Use
- ☒ Amendment
- Extension
- Workshop
- Contract Zone Request

Project Description / Comments:

Proposed amendment to Hemlock Woods Subdivision.

Applicant Signature [redacted] **Date** 5/11/2023

PRELIMINARY SUBDIVISION PLAN APPLICATION SUBMISSION CHECKLIST F-1B TOWN OF GRAY MAINE

For Office Use Only
Date Received: _____
Received by: _____

SUBDIVISION

Subdivision Name	Hemlock Wood Subdivision	Date	August 07, 2023

This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. The checklist, however, does not substitute for the requirements of **Article 7** of the Subdivision Ordinance. The Planning Board will also use the checklist to ensure your application is complete. Indicate if the information has been submitted or if a waiver is requested. If you feel that information is not applicable to your project, please indicate in the second column. The perimeter survey, subdivision plan and engineering plans may be contained on the same drawing. Detailed engineering drawings such as road profiles, drainage swales and erosion/sedimentation plans, however, may best be presented on a separate sheet or sheets. Note that this checklist only covers the submission requirements for a *preliminary plan*.

There is an additional checklist for *final plan* submission. Neither checklist addresses the standards that the subdivision plan must meet. For review standards refer to Article 13 & checklist F-1D.

PRELIMINARY SUBDIVISION PLAN SUBMISSION REQUIREMENTS

	Submitted by Applicant	Not Applicable	Applicant Request to be Waived	Reviewed by Planner/ Engineer	Waived by Planning Board
401.7.2.A Fourteen (14) copies of application plus accompanying information	X				
401.7.2.B LOCATION MAP					
B.1 Existing subdivisions in the proximity of proposed subdivision	X				
B.2 Locations and names of existing and proposed streets	X				
B.3 Zoning boundaries and designations	X				
B.4 Outline of proposed subdivision and owner's remaining contiguous land	X				
401.7.2.C PRELIMINARY PLAN					
C. Fourteen (14) copies of all maps and/or drawings printed or reproduced on paper	X				
C. Scale not smaller than 1"= 100'; for subdivision more than 100 acres, not smaller than 1"= 200'	X				
401.7.2.C APPLICATION REQUIREMENTS					
C.1 Name of subdivision name of town and assessor's map and lot number(s)	X				
C.2 Verification of right, title or interest in property	X				
C.3 Standard boundary survey with bearings and distances, certified by PLS, all corners located and marked.	X				
C.3 Standard boundary survey shows entire parcel or tract and all contiguous land in common ownership within the last five years per MRSA Title 30-A section 4401	X				
C.4 Copy of most recently recorded deed; all restrictions, easements, rights-of-way and other encumbrances	X				
C.5 Deed restrictions on proposed new lots or dwellings	X				

401.7.2.C APPLICATION REQUIREMENTS (CONT'D)					
C.6 Map of test pits & test pit analyses by Site Evaluator or Certified Soil Scientist		X			
C.7 Type of water supply system(s)		X			
C.7 Gray Water District letter of capacity		X			
C.8 Date plan prepared, north point and graphic map scale	X				
C.9 Names and addresses of record owner, applicant, plan preparer(s) and adjoining property owners	X				
C.10 All wetlands delineated regardless of size	X				
C.11 Total acres in subdivision; location of property lines, existing building(s), unusually large specimen trees, vegetative cover type and other essential physical features	X				
C.12 All rivers, streams and brooks within and adjacent to subdivision; designation of great pond watershed	X				
C.13 Zoning district of proposed subdivision and any zoning boundary lines affecting the subdivision	X				
C.14 Location and size of existing and proposed sewers, water mains, culverts and drainage ways on and adjacent to subdivision	X				
C.15 Location, name and widths of existing and proposed streets and highways easements, building lines, parks and open spaces on or adjacent to subdivision	X				
C.16 Width & location of any streets, public improvements or open space shown in Comprehensive Plan within the property	X				
C.17 Proposed lot lines, approximate dimensions and lot areas	X				
C.18 Parcels of land proposed to be dedicated to public use; condition of such dedication	X				
C.19 Open space to be preserved; proposed ownership, improvements, management	X				
C.20 Area of each lot permitting forest clearing and/or lawn	X				
C.21 Anticipated driveway locations & constraints	X				
C.22 100-year flood elevations in flood prone areas		X			
C.22 Areas within or adjacent to the subdivision identified by the Comprehensive Plan, MDIFW, MNAP, or BWH as areas to be preserved and appropriate preservation measures.	X				
C.23 Areas within or adjacent to subdivision listed in the Comprehensive Plan or listed/eligible to be listed on National Register of Historic Places	X				

401.7.3 ADDITIONAL REQUIRED PLANS & STUDIES					
A. Contour lines at interval set by Planning Board showing all areas at greater than 25% slopes		X			
B. Erosion & sedimentation control plan (can be waived if not in great pond watershed and < 5% impervious)		X			
C. Stormwater management plan (can be waived if not in great pond watershed and < 5% impervious)		X			
D. Phosphorus management plan if in pond watershed & > 4 lots or 800 ft. of road or drives		X			
401.7.4 REQUIRED SUBMISSIONS FOR WHICH A WAIVER MAY BE GRANTED					
A. High Intensity Soil Survey by a Registered Soil Scientist		X			
B.1 Hydrogeologic assessment for subdivision if any part of subdivision is over a sand and gravel aquifer, or		X			
B.2 Hydrogeologic assessment if average density is more than one dwelling unit per 100,000 sq. ft.		X			
B.3 Hydrogeologic assessment if Board determines potential adverse impacts on ground water quality (e.g., shallow bedrock soils, cluster subdivisions)		X			
C. Vehicular trip generation rates & entrance sight distances		X			
D. Traffic impact analysis by a registered traffic P.E. for 28 or more parking spaces or projected to generate more than 140 vehicle trips per day to include expected ADT, peak-hour volumes, access conditions, distribution of traffic, types of vehicles expected, effect on LOS, recommended improvements		X			

DLN1002140134675

Quitclaim Deed

Anthony Fernandez, of Gorham, County of Cumberland and State of Maine, and **Steven Trask,** of Scarborough, County of Cumberland and State of Maine, for consideration paid, grant to **38 Blackthorne, LLC,** a Maine limited liability company, having a mailing address of 38 Madison Way, Gorham, Maine 04038 **WITH QUITCLAIM COVENANT**, the land and interest in land situated in Gray, County of Cumberland and State of Maine, described as follows:

A certain lot or parcel of land with any improvements thereon, situated on the westerly side of Route 115 in the Town of Gray, County of Cumberland and State of Maine, bounded and described as follows:

A certain lot or parcel of land in the Town of Gray in the County of Cumberland and State of Maine, and lying on the westerly side of the road leading from Gary Corner to North Yarmouth, bounded and described as follows, to wit:

Beginning on the line of the said road at a stone wall twelve (12) rods from the southeast corner of the dwelling house belonging to the Estate of John D. Sawyer (deceased) thence southeasterly on the line of the said road, eighty-three (83) rods, more or less, to a stone wall and land of Ralph R. Lawton; thence south about fifty (50) degrees west on said Lawston's line one hundred forty-eight (148) rods, more or less, to a stone post and corner made by lot hereby conveyed, also land of Sumner Perley, Harvey Libby and George H. Chase; thence west about forty (40) degrees north, seventy-two (72) rods, more or less, to an iron post and corner of land owned by John D. Sawyer Estate; thence on said Sawyer's line northeasterly about one hundred ninety (190) rods, more or less, to place of beginning.

Excepting and reserving from the above described premises a conveyance from Hale Bros. Inc. to Neils G. Bailey and Gloria R. Bailey, which said deed is duly recorded in the Cumberland County Registry of Deeds; the deed of Vincent, dated December 18, 1981, and recorded in said Registry in Book 4898, Page 232; the deed of Sanborn dated January 12, 1982, and recorded in the Cumberland County Registry of Deeds in Book 4907, Page 201; and the deed of Burrows, dated July 5, 1983, and recorded in said Registry in Book 6213, Pages 281-282.

Excepting from the herein parcel conveyed the following:

1. A certain lot or parcel of land conveyed to Cathleen M. White from the Grantor herein dated July 3, 1972 and recorded at said Registry of Deeds in Book 10158, Page 171.

2. A certain lot or parcel of land conveyed to Paul R. Murphy, et al. from the Grantor herein dated June 25, 1993 and recorded in said Registry of Deeds in Book 10791, Page 294.

3. A certain lot or parcel of land bounded and described as follows: on the east by said Route 115; on the west by property of said Cathleen M. White, now Cathleen M. Bowen, et al.; on the south by land now or formerly of Timothy and Ellen Sanborn (Book 4907, Page 201); and on the north by land now or formerly of Robert S. and Gale M. Blanchard (Book 4694, Page 82). Reference is made to a plan recorded at the Cumberland County Registry of Deeds in Plan Book 177, Page 36 which more particularly describes this parcel. Reference is further made to a deed from the Grantor herein so the said Cathleen M. Bowen and Joseph M. Bowen by deed of even or recent date.

That portion of the parcel conveyed to the Grantees herein shown as Woods Lane on said Plan recorded in Plan Book 177, Page 36 extending from the westerly sideline of Route 115 in a westerly direction to a point, which point is the extension of the westerly sideline of Murphy's lot in a southerly direction for the width of Woods Lane, is an easement or right of way in common with said Murphy and White, now Bowen.

Also a certain lot or parcel of land northwesterly of, but not adjacent to Blackthorne Lane, in the Town of Gray, County of Cumberland and State of Maine. Said lot being more specifically bounded and described as follows:

Beginning at a point located at the northwesterly corner of the grantor as described in the Cumberland County Registry of Deeds in Book 10791, Page 294. Said point being located South 52° 41' 13" West 336 feet from a capped iron rod at the northerly corner of land of the grantor.

Thence North 52° 41' 13" East along the northwesterly sideline of the grantor, 10.70 feet to a point.

Thence South 41° 00' 39" East, across land of the grantor, 96.56 feet to a point and land of the grantee.

Thence North 47° 16' 37" West along the land of the grantee, 97.83 feet to the point of beginning.

Reference is made to a "Plan of Hemlock Woods" recorded in the Cumberland County Registry of Deeds in Book 177, Page 36.

Excepting and reserving the premises described in the deed from Marc L. Rubinstein and Liana L. Rubinstein to Paul R. Murphy and Julia A. Murphy fka Julia A. Stilphen dated April 9, 1996 and recorded in the Cumberland County Registry of Deeds in Book 12451 Page 179.

Excepting and reserving the premises described in the deed from Marc L. Rubinstein and Liana L. Rubinstein to Joshua D. Martell and Judith A. Martell dated November 19, 1999 and recorded in the Cumberland County Registry of Deeds in Book 15179 Page 188.

DOC :15895 BK:37896 PG:146
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
03/05/2021, 01:03:15P
Register of Deeds Nancy A. Lane E-RECORDED

Excepting and reserving the premises described in the deed from Marc L. Rubinstein and Liana L. Rubinstein to MGM Builders, Inc. dated November 30, 2020 and recorded in the Cumberland County Registry of Deeds in Book 15875, Page 343.

Being the same premises conveyed to Anthony Fernandez and Steven Trask, by virtue of a deed from U.S. Bank National Association, as Trustee for American General Mortgage Loan Trust 2010-1 American General Mortgage Pass-Through Certificates, Series 2010-1 dated December 4, 2019 and recorded in the Cumberland County Registry of Deeds in Book 37218, Page 84.

IN WITNESS WHEREOF, We have hereunto set our hands and seals this 5th day of March, 2021.

Witness

Anthony Fernandez

Witness

Steven Trask

STATE OF MAINE
COUNTY OF CUMBERLAND

March 5, 2021

Personally appeared the above named Anthony Fernandez and Steven Trask and acknowledged the foregoing instrument to be their free act and deed.

Before me,

Notary Public/Attorney-at-Law

SANDRA J. WOOD
NOTARY PUBLIC
State of Maine
Commission Expires Jan. 9, 2027

After recording return to:
38 Blackthorne, LLC
109 Gordon Farms Road
Gorham, ME 04038

MAINE REAL ESTATE TAX-Paid

DLN1002240185646

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

ANTHONY FERNANDEZ, of Gorham, Maine, whose mailing address is 38 Madison Way, Gorham, ME 04039, and **STEVEN TRASK**, of Scarborough, Maine, whose mailing address is 208 Broadturn Rd., Scarborough, ME 04074, do hereby **GRANT** to **BLACKTHORNE LANE ROAD ASSOCIATION**, a Maine nonprofit corporation, whose mailing address is c/o Jensen Baird Gardner & Henry, Ten Free Street, Box 4510, Portland, Maine 04112-4510, with **QUITCLAIM COVENANTS**, the land in Gray, Maine, described as follows:

All that certain tract of land being in said Town of Gray, and being more particularly bounded and described on **Exhibit A**, attached hereto.

The grantors herein except and reserve, to themselves and their heirs and assigns forever, as owners of the premises conveyed to them by deed from U.S. Bank National Association, recorded in Book 37218, Page 84, the right of ingress and egress, by foot and vehicle, in over and across the designated 60 foot wide right of way known as "**Blackthorne Lane**" located within the premises described on **Exhibit A**, which 60 foot wide right of way extends from the westerly sideline of Yarmouth Road and along and adjacent to the most southerly boundary of the existing lots of said Bowen, Redmond, Martell, Tobalske, Distasio, and Lincoln Capital, as identified on **Exhibit A**.

The premises conveyed herein are conveyed subject to the rights of ingress and egress of the owners of the lots abutting on and served by said Blackthorne Lane and included within the property described on **Exhibit A**.

WITNESS our hands and seals as of the date set forth below.

WITNESS:

_____

[redacted]
Anthony Fernandez
Dated: 3/8, ~~2021~~ 2022
AF

STATE OF MAINE
County of Cumberland, ss.
March 8, ~~2021~~ 2022

Then personally appeared the above named ANTHONY FERNANDEZ and acknowledged the foregoing instrument to be his free act and deed.

Before me,
[redacted]
Attorney at Law/Notary Public
Printed Name:

JAN-MARIE CARROLL
STATE OF MAINE
MY COMMISSION EXPIRES MARCH 31, 2024
NOTARY PUBLIC

[Trask signature page follows on page 2.]

[redacted]

Steven Trask
Dated: 3/8 ~~,2021~~ 2022

SJ

STATE OF MAINE
County of ~~York, ss.~~ Cumberland Inc

March 8, ~~2021~~ 2022 inc

Then personally appeared the above named STEVEN TRASK and acknowledged the foregoing instrument to be his free act and deed.

Before me

[redacted]

Attorney at Law/Notary Public
Printed Name:

[Exhibit A follows on pages 3 and 4]

JAN-MARIE CARROLL
STATE OF MAINE
MY COMMISSION EXPIRES MARCH 31, 2024
NOTARY PUBLIC

EXHIBIT A: Property Description - Blackthorne Lane Property, Gray, Maine
(Note: "CCRD" refers to Cumberland County Registry of Deeds).

A certain lot or parcel of land located on the westerly side of the Yarmouth Road, in the Town of Gray, County of Cumberland, and State of Maine, being bounded and described as follows.

Beginning at an iron marker found at the southwesterly corner of land now or formerly of O'Donnell (see CCRD BOOK 27573, Page 70) and land now or formerly of Joseph Bowen (CCRD BOOK 17423, Page 127), and as shown on a plan prepared by Sitelines, PA, entitled "Survey Plan of Land of U.S. Bank National Association, As Trustee 38 Blackthorne Lane" dated September 25, 2016 (herein, the "Plan"), and thence:

1) Southerly by said Bowen land, to an iron marker, said marker being located S 05°18'00" E a distance of Forty and 00/100 (40.00) feet from said point of beginning;

2) S 84°42'00" W by said Bowen land a distance of One Hundred Fifty-Two and 12/100 (152.12) feet to a point;

3) Westerly by said Bowen land and land now or formerly held by Stephen and Debora Redmond (CCRD BOOK 15019, Page 248) as shown on said Plan, following a curve to the left having a radius of Two Hundred Sixty and 00/100 (260.00) feet, an arc distance of Two Hundred Forty-Nine and 58/100 (249.58) feet to a point;

4) S 29°42'00" W by said Redmond land a distance of Sixty-Eight and 54/100 (68.54) to an iron marker;

5) S 43°02'55" W by land now or formerly held by Joshua and Judith Martell (CCRD BOOK 15179, Page 188) as shown on said Plan a distance of One Hundred Sixty-Four and 85/100 (164.85) feet to an iron marker;

6) S 37°07'12" W by said Martell land distance of One Hundred and 00/100 (100.00) feet to a point and land now or formerly held by Bob and Amy Tobalske (CCRD BOOK 24385, Page 338);

7) S 37°07'12" W by said land now or formerly of Tobalske as shown on said Plan a distance of Two Hundred Ten and 00/100 (210.00) feet to an iron marker at land now or formerly of Distasio (CCRD BOOK 29831, Page 221);

8) S 37°07'12" W by said land now or formerly held by Patricia and Anthony Distasio as shown on said Plan a distance of Two Hundred and 00/100 (200.00) feet to a point at land now or formerly of Lincoln Capital (CCRD BOOK 31730, Page 207);

9) S 37°07'12" W by land now or formerly held by Lincoln Capitol as shown on said Plan a distance of One Hundred Thirty and 01/100 (130.01) feet to a point;

10) S 50°35'58" W by said land of Lincoln Capital a distance of One Hundred Thirty-Two and 85/100 (132.85) feet to a point;

11) S 50°35'58" W through said land of Lincoln Capital a distance of Fifty and 00/100 (50.00) feet to a point;

12) S 39°24'02" E through said land of Lincoln Capital a distance of One Hundred-Ten and 00/100 (110.00) feet to a point;

13) N 50°35'58" E through said land of Lincoln Capital a distance of Fifty and 00/100 (50.00) feet to a point at land now or formerly of Neils and Gloria Bailey (CCRD BOOK 4692, Page 1);

14) N 39°24'02" W along said Bailey land a distance of approximately Ten (10) feet to an iron marker;

15) N 44°10'46" E by said Bailey land, land of Kimberly Bailey (CCRD BOOK 28328, Page 214, and land of Neils Bailey II (CCRD BOOK 12588, Page 169), all as shown on said Plan, a total distance of One Thousand Three Hundred Seven and 55/100 (1307.55) feet to an iron marker;

16) N 84°42'00" E by said land of Neils Bailey, II a distance of Four Hundred Nine and 84/100 (409.84) feet to a point and said westerly sideline of the Yarmouth Road; thence

17) N 02°10'09" E by said Yarmouth Road a distance of Sixty and 51/100 (60.51) feet to a point; thence

18) N 02°10'09" E, continuing by said Yarmouth Road a distance of Forty and 34/100 (40.34) feet to a point and land now or formerly of Edward and Lisa Lehman (CCRD BOOK 24835, Page 202);

19) S 84°42'00" W by said Lehman land and said O'Donnell land a total distance of Four Hundred and Five and 83/100 (405.83) feet to the point of beginning.

Bearings are Magnetic and are based on bearings on plan entitled "Standard Boundary Survey-Hemlock Woods made for Henry Buchholz", dated May 12, 1989 by R.P. Titcomb Associates , Inc., recorded in Plan Book 177, Page 36, as referenced on plan entitled "Survey Plan of Land of U.S. Bank National Association, As Trustee 38 Blackthorne Lane" dated September 25, 2016.

Meaning and intending to describe land designated as "Blackthorne Lane and turnaround easement" as shown on a plan entitled "Survey Plan of Land of U.S. Bank National Association, As Trustee 38 Blackthorne Lane" dated September 25, 2016.

P:\LEL\GRAY Town of\Deed to Association-Blackthorne Lane 3.2.2021.doc

DOC :53347 BK:39800 PG:34
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
10/24/2022, 10:08:23A
Register of Deeds Jessica M. Spaulding E-RECORDED

EASEMENT DEED

BLACKTHORNE LANE ROAD ASSOCIATION, a Maine nonprofit corporation, whose mailing address is c/o Jensen Baird Gardner & Henry, Ten Free Street, Box 4510, Portland, Maine 04112-4510 does hereby **QUITCLAIM** to **ANTHONY FERNANDEZ**, of Gorham, Maine, whose mailing address is 38 Madison Way, Gorham, ME 04039, and **STEVEN TRASK**, of Scarborough, Maine, whose mailing address is 208 Broadturn Rd., Scarborough, ME 04074, the following easement regarding land in Gray, Maine, as follows:

The right and easement for the installation and maintenance of utilities, in, over, across and within the designated 60 foot wide right of way known as "**Blackthorne Lane**" located on the premises described in a deed recorded in Book 39241, Page 175. The within easement is granted for the benefit of and appurtenant to remaining portions of the premises conveyed to grantees by deed from U.S. Bank National Association recorded in Book 37218, Page 84,

The right and easement granted herein is made upon the following conditions:

a) Following any work or disturbance of the road or right of way area, such areas shall be restored to their original condition by the Grantees, their heirs, successors and assigns.
b) Any work done by Grantees pursuant to the within easement shall be undertaken and performed in accordance with all applicable laws, ordinances, rules and regulations, and only after obtaining any and all applicable permits, licenses or approvals.
c) Grantees shall hold the Association harmless from and indemnify it for any loss, costs or expenses arising out of the work done in the exercise of the foregoing easement.

The purpose of this deed is to correct for the omission of rights for the grantees to provide utility services to the retained land, which was inadvertently omitted in the original conveyance dated March 8, 2022 and recorded in the Cumberland County Registry of Deeds at Book 39241 Page 175.

WITNESS, its hand and seal as of this 20 day of October, 2022.

WITNESS: [redacted]

Blackthorne Lane Road Association
[redacted]
By: Leslie E. Lowry, Esq.
Its: President

STATE OF MAINE
County of Cumberland, ss. October 20, 2022

Then personally appeared the above named Leslie E. Lowry and acknowledged the foregoing instrument to be his free act and deed on behalf of the **Blackthorne** Lane Road Association.

Before me
[redacted]
~~Attorney at Law~~/Notary Public
Printed Name: Katelyn A. Payne

KATELYN A. PAYNE
Notary Public-Maine
My Commission Expires
September 24, 2027

Utility easement deed.

DECLARATION

of

BLACKTHORNE LANE ROAD ASSOCIATION

Including Certain Covenants and Restrictions

This Declaration is made by and among Blackthorne Lane Road Association, a Maine non-profit corporation (hereinafter referred to as "**Association**" or "**Declarant**"), and by the Lot Owners, as hereinafter defined.

WHEREAS, the Association was formed by the filing of articles of incorporation with the Maine Secretary of State's Office on January 24, 2018, as a result of negotiations resulting in that certain settlement agreement and release, dated July 26, 2018, by and among the Town of Gray, Chicago Title Insurance Company, and US Bank National Association as Trustee for American General Mortgage Loan Trust 2010-1 American General Mortgage Pass-Through Certificates, Series 2010-1, seen and agreed to by the then-existing Lot Owners, as defined below (the "**Settlement Agreement**").

WHEREAS, the Association is the fee owner of certain real estate situated in the Town of Gray, County of Cumberland, State of Maine by Quitclaim Deed with Covenant of Anthony Fernandez and Steven Trask to Blackthorne Lane Road Association, dated March 8, 2022, and recorded in the Cumberland County Registry of Deeds at Book 39241, Page 175, as shown on a plan attached hereto and incorporated herein as **Exhibit A**, and being described more particularly in the deed attached hereto and incorporated herein as **Exhibit B** (the "**Property**").

WHEREAS, the Property includes (i) a 50-foot wide private road or right of way now known as "**Blackthorne Lane**" and (ii) land adjacent to such Blackthorne Lane right of way (herein, the "Adjacent Land"), which Adjacent Land may serve or be used for drainage and snow storage/disposal from Blackthorne Lane. Such Adjacent Land is part of the Property but outside the bounds of Blackthorne Lane and is intended to be maintained in an undeveloped and natural state, and maintenance and upkeep of such Adjacent Land including plantings, removal of trash, dead trees or limbs or unsightly refuse, may be undertaken only by or at the direction of the Association.

WHEREAS, the parties listed on **Exhibit C** are the "**Lot Owners.**" The Lot Owners are the owners of residential use properties which are lots or parcels of land (each herein a "**Lot**") identified on **Exhibit C** by reference to the deed by which each respective Lot Owner acquired or holds title to such Lot.

WHERAS, the Lots adjoin the Property and have, or may have, certain rights and easements with respect to Blackthorne Lane by virtue of prior deeds conveying such Lots (the "Existing Rights and Easements").

WHEREAS, all of the Lot Owners are members of the Association.

WHEREAS, the Association and the Lot Owners wish to establish a mechanism and agreement for managing the use, maintenance, repair, and upkeep of Blackthorne Lane and the Adjacent Land for the use and benefit of their Lots, and for the general welfare of the Lots on Blackthorne Lane.

THEREFORE, the Association and the Lot Owners do each hereby declare, covenant, and agree with each other, and for and on behalf of their respective successors, heirs, and assigns, that the Property shall be held, owned, and maintained subject to the terms of this Declaration for the purposes of protecting the value and desirability of the Lots in perpetuity; and, further, that the Association is formed and has adopted, contemporaneously herewith, its Bylaws, Rules and Regulations, for the purposes of improving, maintaining and repairing "Blackthorne Lane" which serves each Lot, and the Property. The rights and obligations hereunder shall run with the title to the Property and the Lots, and shall be binding on all parties having or hereafter acquiring any right, title, or interest in the Lots or any part thereof, whether as owners, joint owners, tenants, or occupants, and each of their respective successors, heirs, and assigns. All rights respecting the use of and obligations for maintenance and upkeep of the Property hereunder may be enforced by the Association and the Owners, as provided herein.

1. **Definition and Terms.**

a. "**Association**" shall mean and refer to BLACKTHORNE LANE ROAD ASSOCIATION, a Maine non-profit corporation, the Bylaws of which are attached hereto as **Exhibit D**.

b. "**Owner**" shall mean and refer to the record owner, whether one or more persons or entities, of any Lot, and their respective heirs, assigns, or successors in title of such Lot, including the Lot Owners who have initially joined in this Declaration. The owner of the currently unimproved lot owned by Lincoln Capital, LLC, shall become a member of the road association and so entitled to a vote therein upon drawing a building permit therefor and then becomes liable for the various fees and assessments as the other Lot Owners. Any person, firm, or entity who holds an interest as a mortgagee in a Lot only as security for a loan shall not be a member of the Association.

c. "**Lot**" shall mean and refer to (i) each of the seven (7) legally existing Lots listed on **Exhibit C** (including the unimproved lot owned by Lincoln Capital, LLC), or any legally created lot made by the division of the Lot owned by Fernandez and Trask on said **Exhibit C**. Each of the Lots is directly accessed to and from the public road known as Route 115 (a/k/a "**Yarmouth Road**") by or across Blackthorne Lane. The owner or owners of any Lot legally created hereafter, which Lot is accessed by, through or over Blackthorne Lane, shall be required and deemed to hold title to such Lot subject

to the terms of this Declaration. For the purposes of this Declaration, a "legally created Lot" shall mean a lot or parcel of land created by lawful subdivision of any existing lot accessed by Blackthorne Lane. Further, for purposes of this Agreement, adjacent Lots in common ownership which have only one (1) residential dwelling thereon and are used and occupied as a single site shall be deemed a single Lot. Each Lot is entitled to one (1) vote in the Association.

2. **Association.** The Association is organized and existing for the purpose of improving, repairing and maintaining Blackthorne Lane and the Property.

3. **Members.** Lot Owners shall be members of the Association, and membership in the Association shall be limited to Lot Owners. Membership shall be appurtenant to and may not be severed from ownership of a Lot; provided, that a tenant of a Lot pursuant to a written lease of over one (1) year may be eligible to act under a written proxy for the actual titled Owner of that Lot for the duration of the lease (or such shorter time as may be stated by the Owner in the written proxy), upon providing the written Proxy to the Board, signed by owners of such Lot.

4. **Assessments.** Each member shall pay to the Association the assessments as established by the Association. Assessments shall be apportioned equally, on a per Lot basis. Assessments shall be used to achieve the objectives of the Association as described in the Declaration and Bylaws. The Board of Directors shall establish the date or dates on which the assessments shall be due, or if no due date is specified, assessments shall be due and payable no later than fifteen (15) days from being ratified and/or approved. The number of Lots that exist as of the time of such ratified or approved assessment shall be the total number of Lots for purposes of apportioning assessments.

a. Annual Assessments. Simultaneously with notice of the annual meeting of the Association, the Board of Directors shall cause a proposed annual budget to be delivered to the Owners. The annual budget shall include the anticipated costs and expenses, for the 12-month period from January 1st through December 31st, of maintaining Blackthorne Lane, the costs of administration and enforcement of this Declaration, future reserves, and comprehensive policy(ies) of general liability insurance naming the Association as insured. The proposed annual budget (excluding any portion of the budget constituting a "**Special Assessment**," as described below), shall be deemed ratified and approved at the annual meeting, *unless such assessment is rejected at that time* by a vote of greater than two-thirds (2/3rds) of the membership who are voting in person or by proxy. Annual Assessments shall be established by the Board of Directors based upon the approved annual budget of the Association. If the proposed annual budget is not approved, then the annual budget last adopted shall remain in effect until an annual budget for the then-current year is approved.

b. Special Assessments. In addition to the annual assessments authorized above, the Association may levy, in any assessment year, a special assessment, applicable to that year only, for the purpose of defraying, in whole or in part, the cost of any construction, reconstruction or repair of Blackthorne Lane. Each member agrees to pay such additional special assessments as may be authorized. Any such special assessment shall have the approval of two-thirds (2/3rds) of the votes of the membership

who are voting in person or by proxy at a meeting duly called for the purpose of adopting such a Special Assessment.

5. Covenant to Pay Assessments. By joining in this Declaration, the Owners of each Lot, including any lot hereinafter lawfully created as provided herein, hereby covenants for themselves and their heirs and assigns (and each subsequent Owner of any Lot by acceptance of a deed to a Lot, whether or not it shall be so expressed in such deed) is deemed to covenant and agree to pay to the Association: (i) annual assessments, and (ii) special assessments as provided above. If any assessment is not paid on the date when due, such assessment together with interest, costs, and reasonable attorney fees incurred by the Association in any proceedings brought to collect such unpaid Assessments, shall be a charge on the land and shall be a continuing lien upon the Lot against which each such assessment is made. Any such lien may be enforced in any manner provided for the foreclosure of mortgages or liens under Maine law. Each such assessment, together with interest, costs, and reasonable attorney's fees, shall also be the personal obligation of the person who is the owner of record of such property at the time when the assessment fell due. The personal obligation for delinquent assessments shall not pass to the successors in title unless expressly assumed by them; provided that the lien for an unpaid assessment shall continue as an encumbrance on the title to such Lot.

Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at the rate of eighteen percent (18%) per annum. The Association may bring an action at law against the Owner personally obligated to pay the same, or foreclose the lien against the Lot for which the assessment was made. No Owner may waive or otherwise escape liability for any assessments provided tor herein by non-use of Blackthorne Lane or by abandonment of such owner's Lot.

The lien of the assessments provided for herein shall be subordinate to the lien of any mortgage having the first priority among all mortgages encumbering a Lot. Sale or transfer of any Lot shall not affect the assessment lien. However, the sale or transfer of any Lot pursuant to the foreclosure of a first priority mortgage shall extinguish the lien of such assessment as to payments which became due prior to such sale or transfer pursuant to such foreclosure. No sale or transfer, whether by foreclosure of a first priority mortgage or otherwise, shall relieve such Lot from liability for any assessments thereafter becoming due or from the lien thereof, nor shall any such sale or transfer relieve the Owner from his personal liability for such assessments

Failure by the Association, or by any owner, to enforce the above provisions shall in no event be deemed a waiver of the right to do so thereafter.

6. Maintenance. The upkeep and maintenance of Blackthorne Lane shall include the following minimum activities:

a. Blackthorne Lane shall be maintained all year-round in passable condition, including plowing, sanding, de-icing, grading or re-grading, and such other maintenance as may be deemed appropriate by the Board.

b. All ditching, culverts and similar storm water mechanisms shall be kept open and free for the flow of water in their "normally designed state" or in such condition as the Board may reasonably determine to be suitable for such purposes. Periodic resurfacing (in whole or part) of Blackthorne Lane shall be performed, as deemed appropriate by the Board. "Resurfacing" for the purposes hereof shall mean adding new or additional gravel or other suitable surface finishes to maintain compliance with Town ordinances and requirements for private roads such as Blackthorne Lane.

c. Washouts, pot-holes and other damage caused by erosion and/or ordinary wear and tear shall be promptly repaired, provided this shall not be construed to obligate the Association to repair any damage caused by an owner or that owner's invitees.

7. **Repairs; Maintenance.** Each owner shall repair or cause to be repaired, at his or her own expense, any damage caused by said owner, or by the owner's invitees, to the right of way which exceeds ordinary wear and tear occurring by residential purposes. Each owner shall be responsible for maintaining in a good and suitable condition the entrance drive area from the normal or customary travelled way within Blackthorne Lane into such Owner's lot, including without limitation drainage bars or pipes going over or under such driveway entrance. Only one entrance from Blackthorne Lane onto each Lot is allowed, and no such entrance shall exceed 20 feet in width. The Board may adopt, from time to time, other appropriate standards for such entrances, including location, size, and materials.

8. **Unobstructed Passage.** No Owner shall obstruct, hinder, or interfere or permit the obstruction, hindrance or interference with the free and uninterrupted use of the right of way for access by all members, and their families, tenants, or guests.

9. **Enforcement.** Without limiting any rights of the Association to seek enforcement in its own name, each Owner shall have the right to enforce this Agreement against any other member by legal or equitable action. Upon demand by any member, any disagreement as to the rights of any party under the agreement shall be submitted to binding arbitration in accordance with the current Rules of the American Arbitration Association.

10. **Amendment and Termination.** The covenants and restrictions of this Declaration shall run with and bind the land unless terminated by the affirmative vote of 75% of the votes in the Association. This Declaration may be amended by the affirmative vote of 75% of the votes in the Association by members entitled to cast a vote. Any duly adopted amendment of this Declaration shall be signed by at least 75% of the Lot Owners, and any such amendment may only take effect upon recording in the Cumberland County Registry of Deeds.

11. **Successors and Assigns.** This Agreement shall be binding upon and inure to the benefit of the undersigned and the respective successors in interest to the Lot(s) owned by the undersigned.

[Signature page follows. Remainder of page intentionally blank.]

In WITNESS WHEREOF, the undersigned parties have signed and sealed this instrument on November 9, 2022.

DECLARANT:

BLACKTHORNE LANE ROAD ASSOCIATION

By [redacted]
Leslie Lowry, President, duly authorized

State of Maine

County of Cumberland, ss

Personally appeared before me Leslie Lowry, President of the Blackthorne Lane Road Association, duly authorized, who acknowledged the foregoing instrument to be his free act and deed in said capacity and the free act and deed of Blackthorne Lane Road Association.

[redacted]
Notary Public / ~~Attorney At Law~~

AMANDA ST. PIERRE
Notary Public-Maine
My Commission Expires
August 27, 2029

Print Name: _____

My commission expires / Bar No.: _____

LOT OWNERS:

10 Blackthorne Lane (Map/Lot 53-43-2-3)

Adrian B. Miller

16 Blackthorne Lane (Map/Lot 53-43-2-4)

Stephen B. Redmond

Debora A. Redmond

20 Blackthorne Lane (Map/Lot 53-43-2-7)

Joshua D. Martell

Judith A. Martell

24 Blackthorne Lane (Map/Lot 53-43-2-8)

Bart R. Tobalske

Amy J. Tobalske

32 Blackthorne Lane (Map/Lot 53-43-2-9)

Patricia Distasio

Anthony Distasio

38 Blackthorne Lane (Map/Lot 53-43-2-10)
38 Blackthorne Lane, LLC

By: [redacted]
Anthony Fernandez, Member

[redacted]
Steven Trask, Member

00 Blackthorne Lane (Map/Lot 53-43-2-00)
38 Blackthorne Lane, LLC

By: [redacted]
Anthony Fernandez, Member

[redacted]
Steven Trask, Member

EXHIBIT D

BYLAWS OF BLACKTHORNE LANE ROAD ASSOCIATION

Article 1: Name and Objectives of Association

Section 1.1. Name. This association shall be known as Blackthorne Lane Road Association, hereinafter called the "Association".

Section 1.2. Objectives. The Association shall be obligated to maintain and repair the common access road which serves the Lot(s) described in the Blackthorne Lane Road Association Declaration dated _____, 2021 (the "Declaration"). The Declaration is to be recorded in the Cumberland County Registry of Deeds, and a copy of these Bylaws shall be attached to the Bylaws.

Article 2: Membership

Section 2.1. Membership. The membership of the Association shall be limited to Lot Owners, as such term is defined in the Declaration.

Section 2.2. Assessments. Each member shall pay to the Association the *assessments* as established by the Association, pursuant to the Declaration. The Association shall have a lien on the Lot of any defaulting member to secure the payment of such charges, interest, expenses, costs, and fees, which lien may be enforced in any manner provided for the foreclosure of mortgages or liens under Maine law.

Section 2.3. Vote. Each member may vote in person or by proxy at any meeting of the members; provided, however, that if two or more members have or hold common or joint ownership of any Lot, only one vote shall be cast for each Lot with common or joint ownership. The owner(s) of more than one Lot shall have one vote for each Lot. If the holders of a majority interest in any Lot cannot agree on how to cast the vote allocated to that Lot, then the vote shall not be cast. The designation of any proxy shall be made in writing to the Secretary of the Association, and shall be revocable at any time by written notice to the Secretary. So long as the rules of Quorum are met, and except as otherwise provided herein or in the Declaration, a vote of the Association shall pass if approved by a majority of those qualified (in person or by proxy) to vote at the time such vote is taken.

Article 3: Directors and Officers

Section 3.1. Board of Directors. The Board of Directors shall consist of three members, each of whom shall be a Lot owner, elected by majority vote at the annual meeting of the members of the Association. Directors shall serve for terms of two years, and the terms shall be staggered so that either one or two directors shall be elected at each annual meeting. Directors may not serve more than four consecutive terms. Co-owners of a Lot may both serve as directors.

Section 3.2. Officers. The officers of the Association shall consist of a President, Secretary, and Treasurer. The officers shall be elected annually from among the directors by majority vote of the Board of Directors at its first meeting following the annual meeting of members of the Association.

Section 3.3. Vacancies. If a vacancy occurs among the directors or officers, the Board of Directors shall fill said vacancy for the remainder of the term.

Section 3.4. Removal. Any director or officer may be removed from office if so voted by members of the Association entitled to cast at least three-fourths of the total number of votes in the Association.

Article 4: Meetings

Section 4.1. Annual Meeting of Members. The date of the annual meeting of members of the Association shall be established by the Board of Directors. Notice of the time and place of holding the annual meeting shall be mailed or emailed to each member not less than ten nor more than fifty days before the date of each annual meeting.

Section 4.2. Special Meeting of the Association. Special meetings of the Association members may be called by the President, two members of the Board of Directors, or upon request of four (4) members to the President made in writing. Notice of the meeting shall be mailed or emailed to each member not less than ten (10) nor more than fifty (50) days before the date of the meeting. At such special meeting there shall only be considered such business as is specified in the notice of meeting.

Section 4.3. Quorum for Meeting. At all meetings of the Association, either regular or special, the presence of members in good standing, in person or by proxy, entitled to cast more than one half of the total number of votes in the Association, shall constitute a quorum.

Section 4.4. Lack of Quorum. If a quorum is not present, the presiding officer may adjourn the meeting to a day and hour set by such officer. The members present at a duly called or held meeting at which a quorum was once present may continue to do business at the meeting notwithstanding the withdrawal of enough members to leave less than a quorum.

Section 4.5. Location. Meetings of the Association shall be in the Town of Gray in Cumberland County, Maine, and held at a suitable place convenient to the members and such place shall be specified in the notice of the meeting.

Article 5: Duties of Officers

Section 5.1. President. The President shall preside at all meetings of the Association.

Section 5.2. Secretary. The Secretary shall keep the minutes of all meetings of the Association and shall, if requested, read such minutes at the close of each meeting for approval. The Secretary shall mail out all notices for meetings of the Association.

Section 5.3. Treasurer. The Treasurer shall have charge of all receipts and monies of the Association, deposit them in the name of the Association in a bank approved by the Association, and disburse funds as ordered or authorized by the Association. The Treasurer shall keep regular accounts of all receipts and disbursements, submit the records when requested, and give an itemized statement at regular meetings of the Association. The Treasurer or the President may sign checks and withdrawal slips on behalf of the Association upon any and all of its bank accounts.

Section 5.4. Execution of Instruments. The President, together with either the Secretary or the Treasurer, shall, on being so directed by the Association, sign all leases, contracts, or other instruments in writing.

Article 6: Duties and Powers of the Board of Directors

Section 6.1. Management of Association. The Board of Directors of the Association shall have general charge and management of the affairs, funds, and property of the Association. The Board of Directors shall have the duty to prepare the annual budget of the Association; to appoint such committees as the Board of Directors deems advisable, and to fill any vacancies thereof; and otherwise carry out the purposes of the Association according to its Articles of Incorporation and these Bylaws.

Section 6.2. Assessments. The Board of Directors shall have the power to collect the Assessments which members are required to pay and to take such actions as they deem necessary to their collection. Generally, the annual budget for the Association shall be a calendar year, to wit, from January 1st through and including December 31st.

Section 6.3. Meetings. The Board of Directors, at their discretion, shall set times and days for meetings as agreed by a majority of the Board. There shall be no need for formal written notice of the meetings, but rather, it will be left to the President of the Association, who shall be the Chair of the Board of Directors, to schedule meetings of the Board when necessary. A majority of the Board of Directors shall constitute a quorum for conducting business. Any member of the Board of Directors may participate in any meeting thereof by conference telephone, provided that he may hear and be heard by all others participating in the meeting.

Article 7: Compensation of Officers

Neither the officers nor members serving on committees shall receive any salary or compensation for services rendered to the Association. Any person may be reimbursed for materials supplied or expenses incurred in the performance of services to the Association, at the discretion of the Board of Directors.

Article 8: Notices

All notices to members shall be mailed or emailed to their addresses as given on the books of the Association or the local real estate tax assessor, and such mailing or emailing shall constitute presumptive evidence of receipt thereof.

Article 9: Liability of Officers

The officers of the Association shall not be liable to the members of the Association for any mistake of judgment, negligence, or otherwise, except for their own individual willful misconduct or bad faith. The members of the Association shall indemnify and hold harmless each of the officers against all contractual liability to others arising out of contracts made by the officers on behalf of the Association unless any such contract shall have been made in bad faith or contrary to the provisions of the Articles of Incorporation or of these Bylaws. It is intended that the officers shall have no personal liability with respect to any contract made by them on behalf of the Association. It is also intended that any liability of any member of the Association arising out of any contract made by said officers either individually, pursuant to authority provided hereunder, or acting as a group in the form of a Board of Directors, or out of the aforesaid indemnity in favor of said officers, shall be limited to such proportion of

the total liability thereunder as said member's votes in the Association bear to the total number of votes in the Association.

Article 10: Business Records

The corporate business records of the Association shall at all times, during reasonable business hours, be subject to the inspection of any member in accordance with the Maine Non-profit Corporation Act.

Article 11: Parliamentary Rules

Roberts Rules of Order, as most recently revised, shall govern the conduct of the Association meetings when not in conflict with these Bylaws.

Article 12: Amendments

Section 12.1. Proposal. Amendments to these Bylaws may be proposed by a majority of members of the Association, whether meeting as members or by an instrument in writing signed by them.

Section 12.2. Adoption. Amendments to these Bylaws may be adopted only if so voted by members of the Association entitled to cast at least two-thirds of the total number of votes in the Association, provided that notice of the proposed amendment is given in the notice of the meeting.

END OF BYLAWS.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588

In Reply Refer To:
Project Code: 2023-0080128
Project Name: Blackthorne Lane

May 10, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

PROJECT SUMMARY

Project Code: 2023-0080128
Project Name: Blackthorne Lane
Project Type: Mixed-Use Construction
Project Description: Proposed subdivision construction
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.8689871,-70.29208662942838,14z



Counties: Cumberland County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	Terradyn Consultans, LLC
Name:	Amanda Robinson-Mullen
Address:	95 Main Street
Address Line 2:	Suite 201
City:	Auburn
State:	ME
Zip:	04210
Email	amanda@terradynconsultants.com
Phone:	2079464480

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering
(207)289-3826

PROPERTY ADDRESS

Town Or Plantation: GRAY 43-2

Street Subdivision Lot #: 25 & 26 WOODS LANE OFF 115 Yarmouth Rd

PROPERTY OWNERS NAME

Last: RUBINSTEIN First: MARC

Applicant Name: MARC RUBINSTEIN

Mailing Address of Owner/Applicant (If Different): 30 WILLOW GROVE ROAD
BRUNSWICK, ME 04011

Caution: Permit Required

The Subsurface Wastewater Disposal System shall not be installed until a Permit is attached here by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Owner/Applicant Statement

I certify that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Local Plumbi

[redacted] 6/22/94

Signature of Owner/Applicant — Date

Caution: Inspection Required

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules.

Local Plumbing Inspector Signature — Date Approved

PERMIT INFORMATION

THIS APPLICATION IS FOR:
1. ■ NEW SYSTEM
2. ☐ REPLACEMENT SYSTEM
3. ☐ EXPANDED SYSTEM
4. ☐ EXPERIMENTAL SYSTEM

SEASONAL CONVERSION
to be completed by the LPI
5. ☐ SYSTEM COMPLIES WITH RULES
6. ☐ CONNECTED TO SANITARY SEWER
7. ☐ SYSTEM INSTALLED – P# _____
8. ☐ SYSTEM DESIGN RECORDED AND ATTACHED

IF REPLACEMENT SYSTEM:
YEAR FAILING SYSTEM INSTALLED _____
THE FAILING SYSTEM IS:
1. ☐ BED 3. ☐ TRENCH
2. ☐ CHAMBER 4. ☐ OTHER: _____

THIS APPLICATION REQUIRES:
1. ■ NO RULE VARIANCE
2. ☐ NEW SYSTEM VARIANCE
Attach New System Variance Form
3. ☐ REPLACEMENT SYSTEM VARIANCE
Attach Replacement System Variance Form
a. ☐ Requiring Local Plumbing Inspector Approval
b. ☐ Requires State and Local Plumbing Inspector Approval
4. ☐ MINIMUM LOT SIZE VARIANCE

DISPOSAL SYSTEM TO SERVE:
1. ■ SINGLE FAMILY DWELLING
2. ☐ MODULAR OR MOBILE HOME
3. ☐ MULTIPLE FAMILY DWELLING
4. ☐ OTHER _____ SPECIFY

INSTALLATION IS:
COMPLETE SYSTEM
1. ■ NON-ENGINEERED SYSTEM
2. ☐ PRIMITIVE SYSTEM
(Includes Alternative Toilet)
3. ☐ ENGINEERED (+2000 gpd)
INDIVIDUALLY INSTALLED COMPONENTS:
4. ☐ TREATMENT TANK (ONLY)
5. ☐ HOLDING TANK _____ GAL
6. ☐ ALTERNATIVE TOILET (ONLY)
7. ☐ NON-ENGINEERED DISPOSAL AREA (ONLY)
8. ☐ ENGINEERED DISPOSAL AREA (ONLY)
9. ☐ SEPARATED LAUNDRY SYSTEM

SIZE OF PROPERTY	ZONING
± 33 AC.	RR

TYPE OF WATER SUPPLY
PROPOSED DRILLED WELL

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. ■ SEPTIC: ■ Regular ☐ Low Profile
2. ☐ AEROBIC
SIZE: 1000 GALS.

WATER CONSERVATION
1. ■ NONE
2. ☐ LOW VOLUME TOILET
3. ☐ SEPARATED LAUNDRY SYSTEM
4. ☐ ALTERNATIVE TOILET
SPECIFY: _____

PUMPING
1. ☐ NOT REQUIRED
2. ☐ MAY BE REQUIRED
(DEPENDING ON TREATMENT TANK LOCATION AND ELEVATION)
3. ■ REQUIRED
DOSE: 75-150 GALS.

CRITERIA USED FOR DESIGN FLOW (BEDROOMS, SEATING, EMPLOYEES, WATER RECORDS, ETC.)
3 BEDROOMS
WITH MINIMUM
THEORETICAL
DESIGN FLOW

SOIL CONDITIONS USED FOR DESIGN PURPOSES

PROFILE	CONDITION
3	ATII

DEPTH TO LIMITING FACTOR: 16

SIZE RATINGS USED FOR DESIGN PURPOSES
1. ☐ SMALL
2. ☐ MEDIUM
3. ■ MEDIUM-LARGE
4. ☐ LARGE
5. ☐ EXTRA LARGE

DISPOSAL AREA TYPE/SIZE
1. ■ BED 1000 Sq. Ft.
2. ☐ CHAMBER _____ Sq. Ft.
☐ REGULAR ☐ H-20
3. ☐ TRENCH _____ Linear Ft.
4. ☐ OTHER: _____

DESIGN FLOW: 270 (GALLONS/DAY)

SITE EVALUATOR STATEMENT

On January 12, 1994 (date) I conducted a site evaluation for this project and certify that the data reported is accurate. The system I propose is in accordance with the Subsurface Wastewater Disposal Rules.

[redacted] — Site Evaluator Signature

5216 — SE#

2/2/94 — Date

(Local Plumbing Inspector's Signature if permit is for Seasonal Conversion.)

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

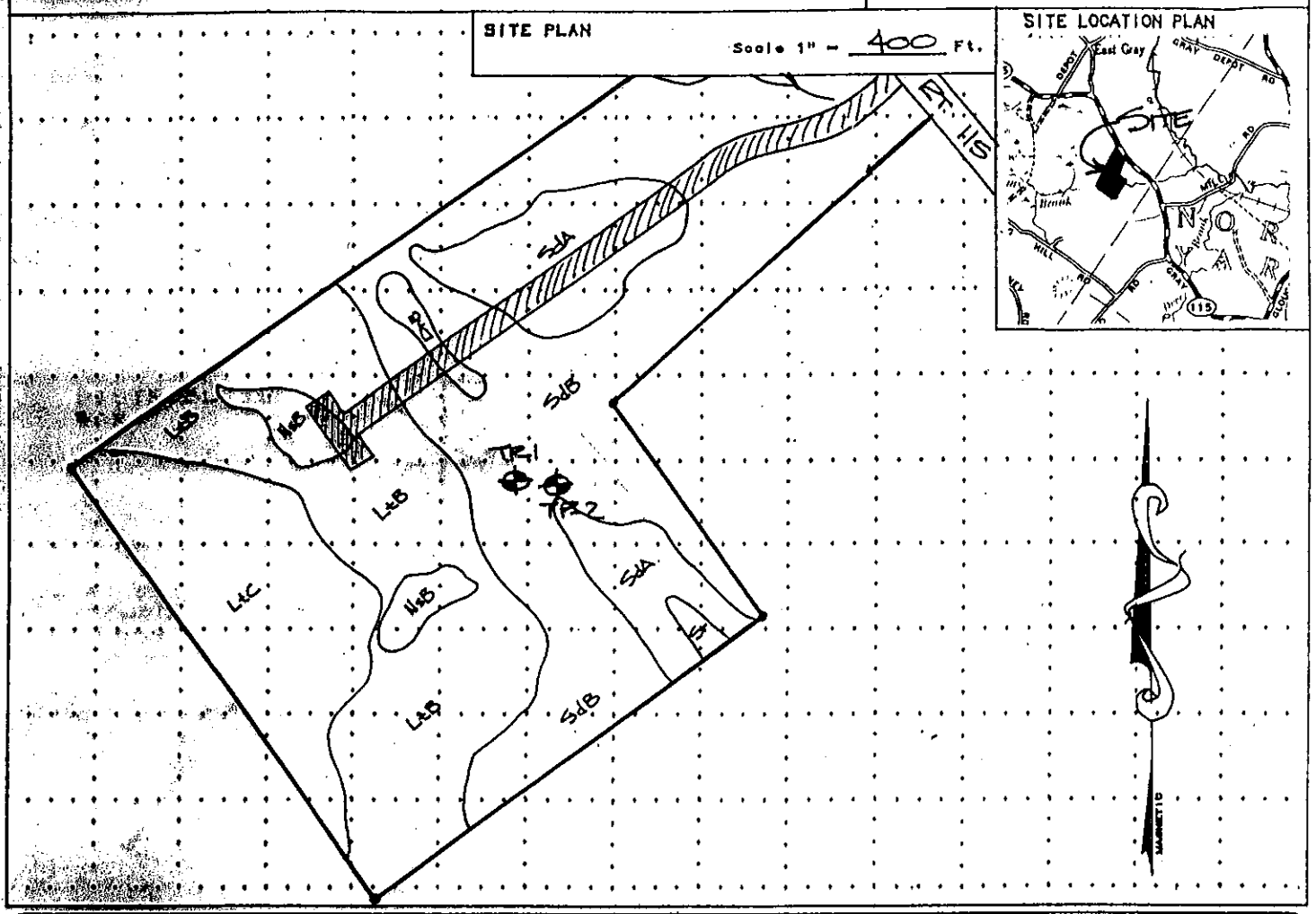
Town, City, Plantation: GRAY

Street, Road, Subdivision: WOODS LANE OFF 115

Owners Name: MARC RUBINSTEIN

SITE PLAN

Scale 1" = 400 Ft.



SITE LOCATION PLAN

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-1 ■ Test Pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM	FROZEN FRIABLE	REDDISH BROWN	
10	GRAVELLY VERY SANDY LOAM	FRIABLE	DARK YELLOW BROWN	
20	LOAMY GRAV. SAND	SOMEWHAT FIRM	LIGHT OLIVE BROWN	FAINT & FEW
30	BEDROCK			
40				
50				

Soil Classification		Slope	Limiting Factor	
3 Profile	A III Condition	0-2 %	16	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Observation Hole TP-2 ■ Test Pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM	FROZEN FRIABLE	DARK GRAY BROWN	
10	GRAVELLY VERY SANDY LOAM	FRIABLE	REDDISH BROWN	NONE OBSERVED
20	BEDROCK			
30				
40				
50				

Soil Classification		Slope	Limiting Factor	
3 Profile	A III Condition	0-2 %	18	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

[redacted]
Site Evaluator Signature

5216
SE#

2/2/94
Date

PAUL W. LAWRENCE * P.O. BOX 369 WINDHAM, ME 04062 * (207)892-2175

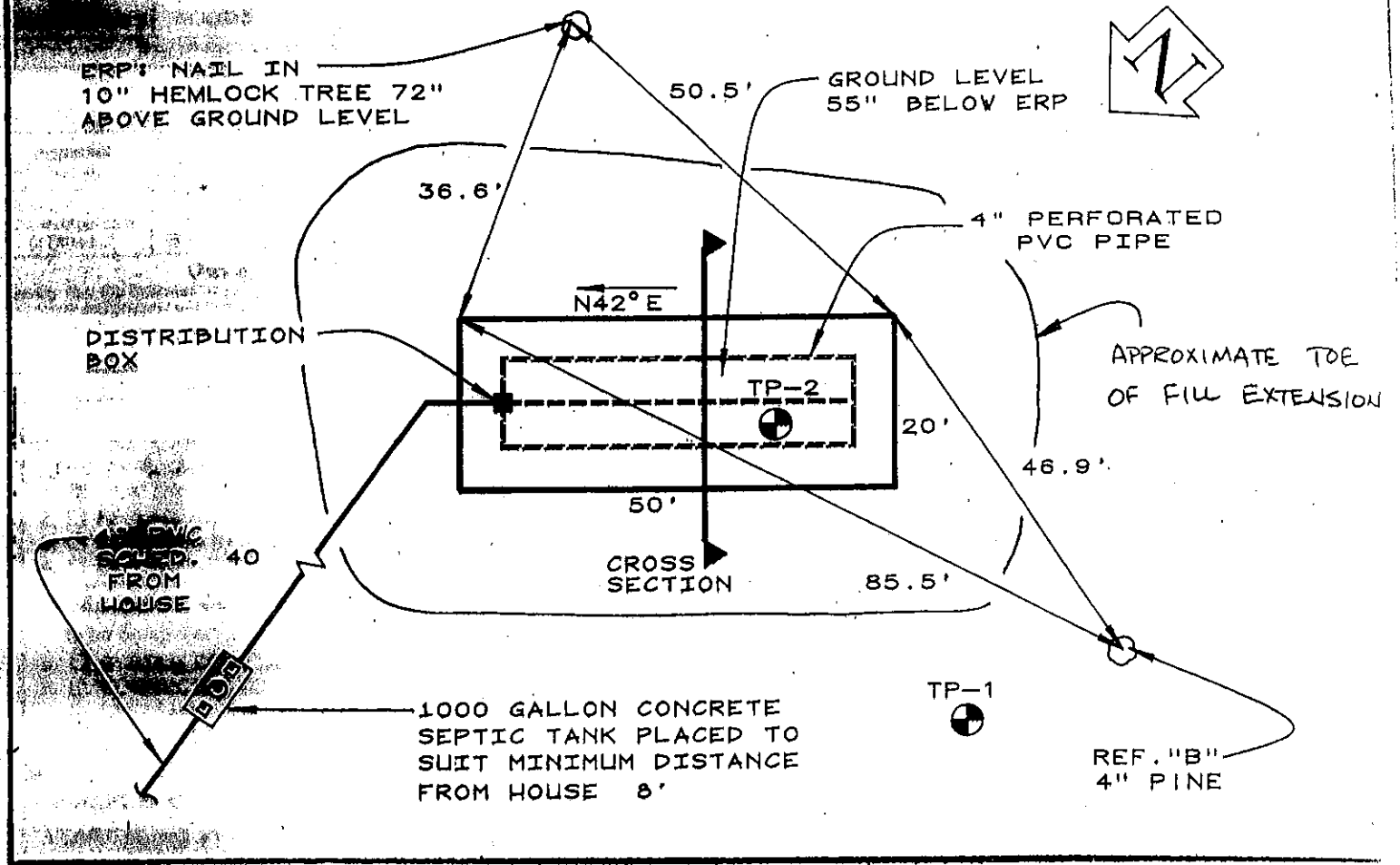
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Division of Health Engineering

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
GRAY	WOODS LANE OFF 115	MARC RUBINSTEIN

SUBSURFACE WASTEWATER DISPOSAL PLAN

SCALE 1" = 20 FT.

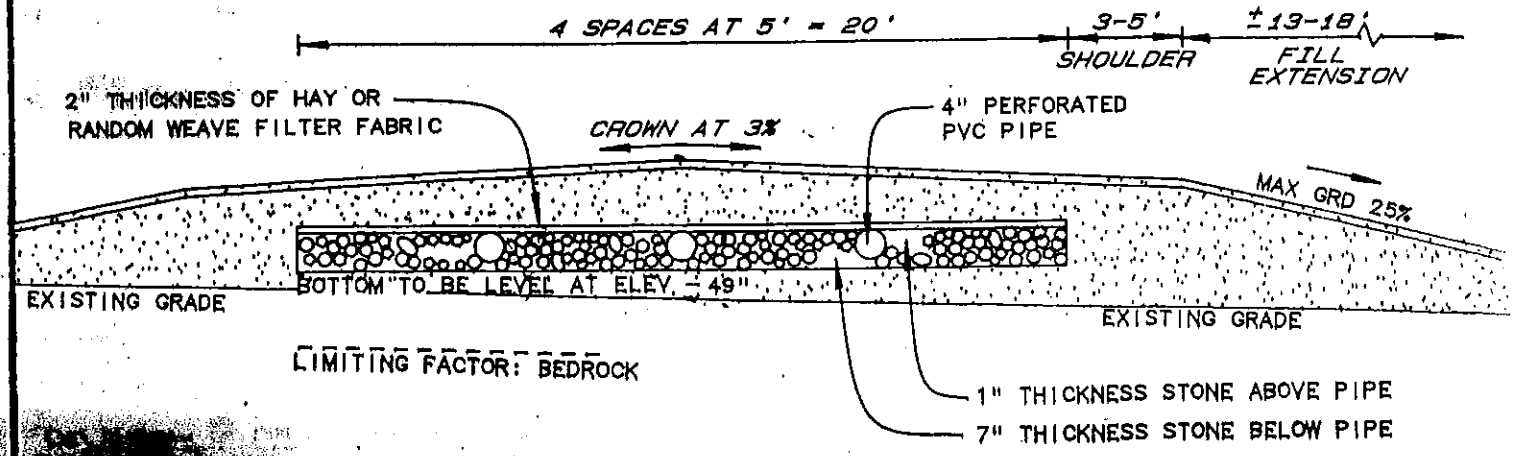


FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT LOCATION & DESCRIPTION
Depth of Fill (Upslope)	±35-40"	Reference Elevation is	0"	
Depth of Fill (Downslope)	±29"	Bottom of Disposal Area	-49"	NAIL IN 10" HEMLOCK TREE
		Top of Distribution Lines or Chambers	-38"	72" ABOVE GROUND LEVEL

DISPOSAL AREA CROSS SECTION

SCALE: VERTICAL: 1" = 5 FT. HORIZONTAL: 1" = 5 FT.

NOTES:
* STONE TO BE ± 1 1/2" FREE OF FINES AND ORGANIC DEBRIS
* FILL TO BE LOAMY SAND FREE OF FINES & ORGANIC DEBRIS
* FINAL GRADES SHALL BE LOAMED AND SEEDED TO PREVENT EROSION



[redacted]
Site Evaluator Signature

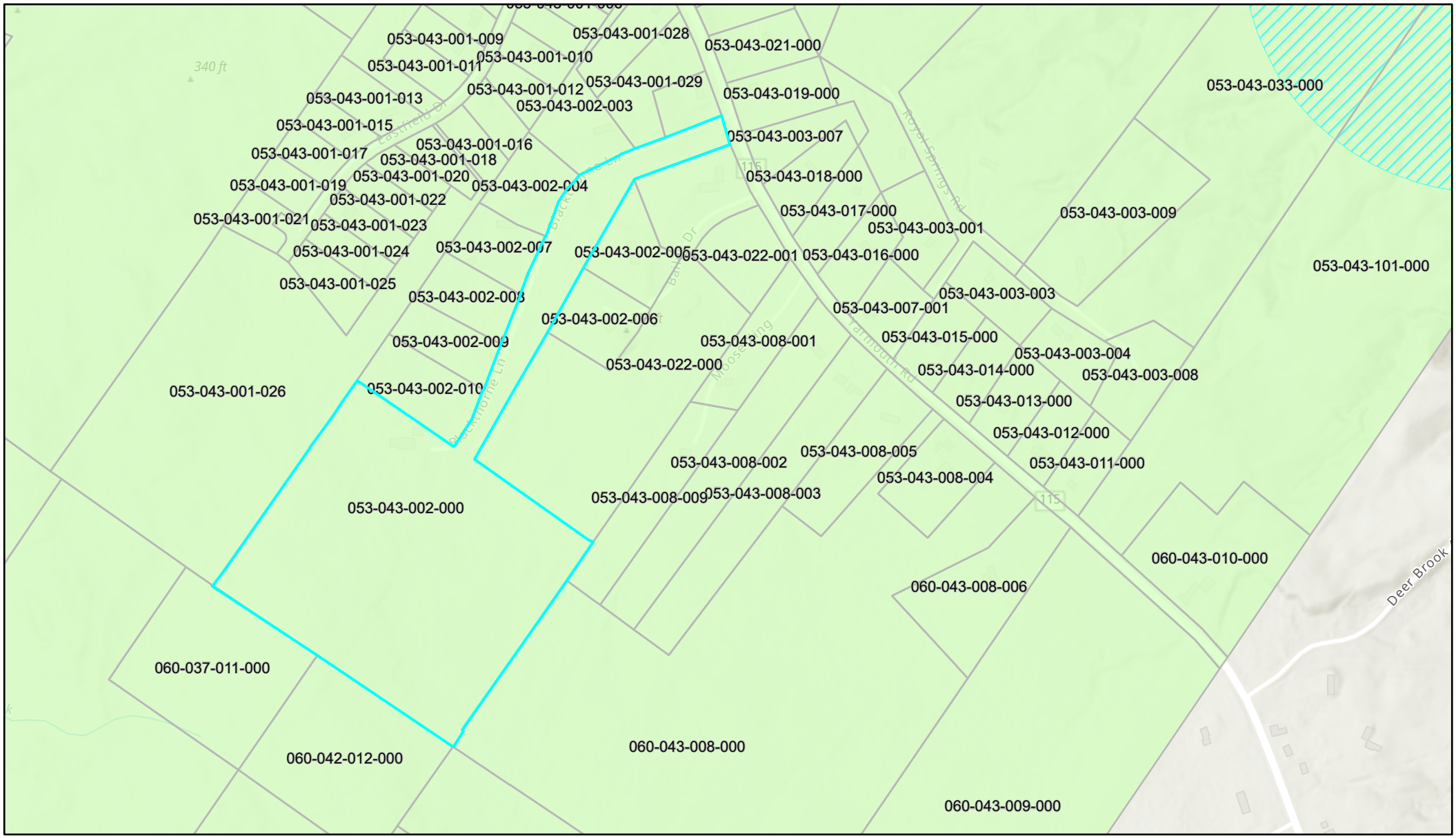
5216
SE#

2/2/94
Date

Page 3 of 3
HHE-200 Rev.

PAUL W. LAWRENCE * P.O. BOX 369 WINDHAM, ME 04062 * (207)892-2175

Town of Gray Parcels



4/21/2023, 10:08:16 AM

Tax Parcels (2022)

Gray Zoning Overlay

DEPWell

General Zoning

Wellhead Protection-1

Rural Residential and Agricultural

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

contact your insurance agent, or call th
Program at (800) 638-6620.

APPROXIMATE S
1000 0

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
GRAY, MAINE
CUMBERLAND COUNTY

PANEL 15 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230048 0015 A

EFFECTIVE DATE:
JANUARY 6,1982

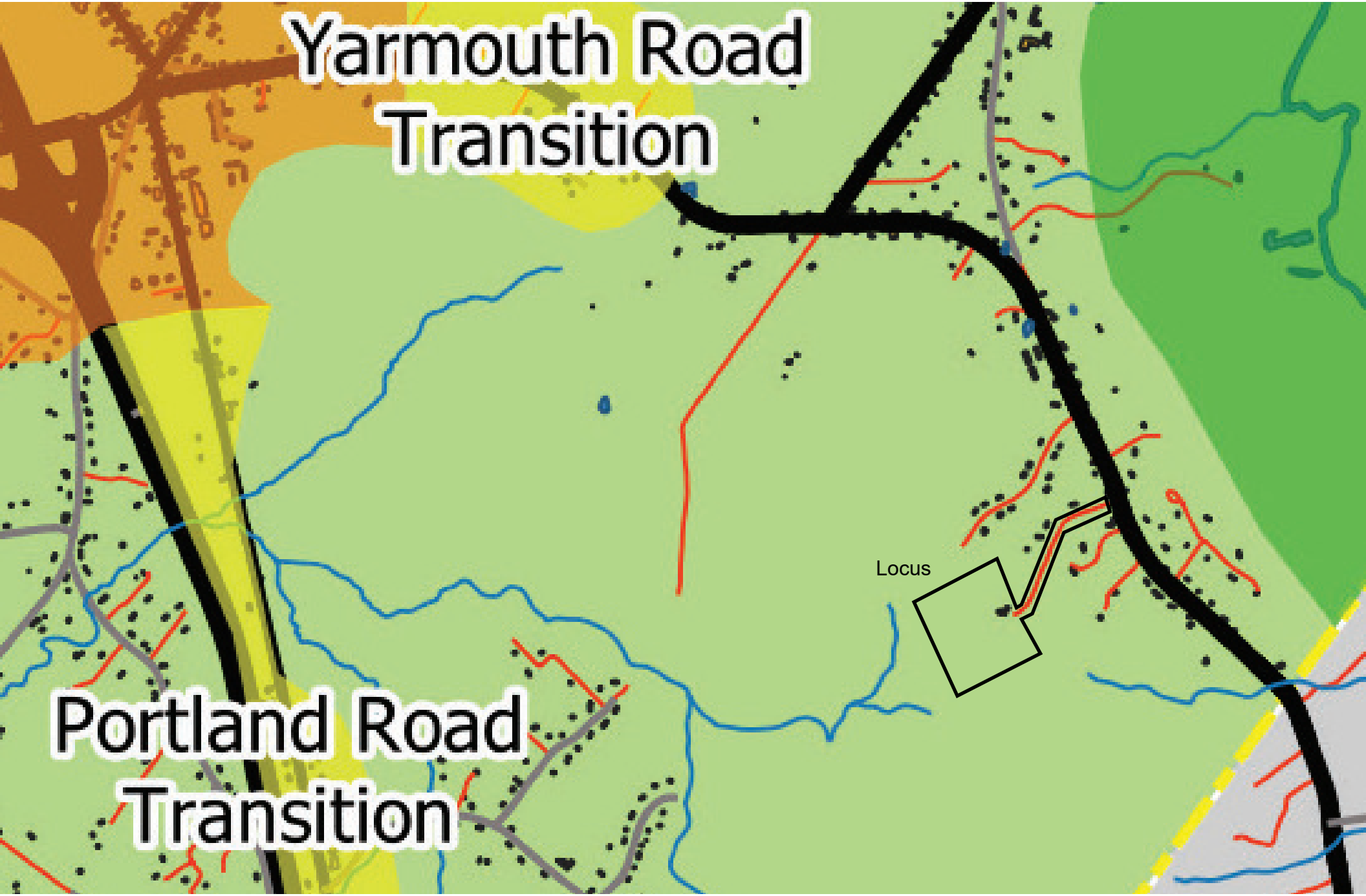
federal emergency management agency

ZONE C
ZONE B
ZONE A
ZONE A
ZONE A
ZONE A
ZONE A
Locus
DEPOT ROAD
MAINE CENTRAL RAILROAD
CORPORATE LIMITS
CORPORATE LIMITS
115
Wiggins Brook
Wiggins Brook
HILL ROAD
MAINE
LONG
252
WAY
DRIVE
PRIVATE DR
PRIVATE DR

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

Town Comprehensive Plan Map

Page 24 of Comprehensive Plan Dated September 15, 2020



Surveyor's Certification

To the best of my knowledge, I have used ordinary and prudent conduct expected of Professional Land Surveyors and the results shown here represent the licensee's responsibility to the public as required under the Standards of Practice as defined by the Board of Licensure for Professional Land Surveyors (M.R.S.A Title 32, Chapter 141, Dated April 2001).

Except as Follows:

1. Survey Report Limited to Notes on the Plan

2. No Deed Description to Date

Plan Prepared by: _____

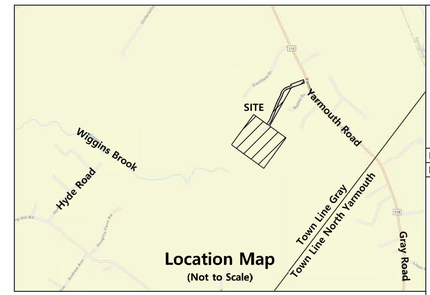
Jimmy C. Courbron PLS # 2532

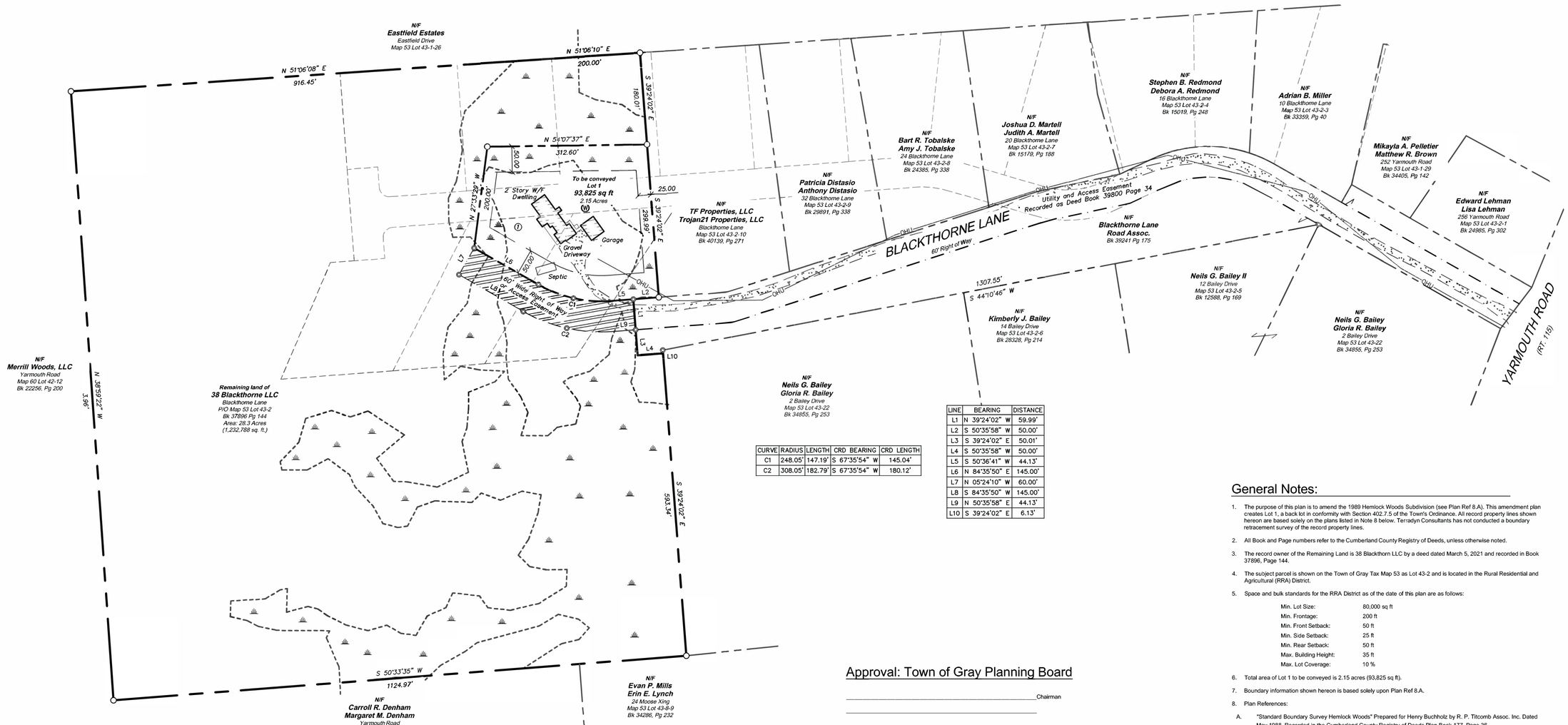
Legend:

- Record Property Line/R.O.W.
- Proposed Lot Line/R.O.W.
- Lines per Plan Ref. 8A
- Abutter Line/R.O.W.
- Building
- Building Overhang
- Deck/Steps
- Building Setback Line
- Easement Line
- 5/8" Rebar (TERRADYN PLS 2532)
- Monument (4" X 4" X 48" Granite w/ Drillhole)
- Iron Marker (per Plan Ref. 8.B)
- Wetlands
- Edge of Wetland

PLAN REF 8A

MAG NORTH





CURVE	RADIUS	LENGTH	CRD BEARING	CRD LENGTH
C1	248.05'	147.19'	S 67°35'54" W	145.04'
C2	308.05'	182.79'	S 67°35'54" W	180.12'

LINE	BEARING	DISTANCE
L1	N 39°24'02" W	59.99'
L2	S 50°35'58" W	50.00'
L3	S 39°24'02" E	50.01'
L4	S 50°35'58" W	50.00'
L5	S 50°36'41" W	44.13'
L6	N 84°35'50" E	145.00'
L7	N 05°24'10" W	60.00'
L8	S 84°35'50" W	145.00'
L9	N 50°35'58" E	44.13'
L10	S 39°24'02" E	6.13'

General Notes:

1. The purpose of this plan is to amend the 1989 Hemlock Woods Subdivision (see Plan Ref 8.A). This amendment plan creates Lot 1, a back lot in conformity with Section 402.7.5 of the Town's Ordinance. All record property lines shown hereon are based solely on the plans listed in Note 8 below. Terradyn Consultants has not conducted a boundary retracement survey of the record property lines.
2. All Book and Page numbers refer to the Cumberland County Registry of Deeds, unless otherwise noted.
3. The record owner of the Remaining Land is 38 Blackthorn LLC by a deed dated March 5, 2021 and recorded in Book 37896, Page 144.
4. The subject parcel is shown on the Town of Gray Tax Map 53 as Lot 43-2 and is located in the Rural Residential and Agricultural (RRA) District.
5. Space and bulk standards for the RRA District as of the date of this plan are as follows:

Min. Lot Size:	80,000 sq ft
Min. Frontage:	200 ft
Min. Front Setback:	50 ft
Min. Side Setback:	25 ft
Min. Rear Setback:	50 ft
Max. Building Height:	35 ft
Max. Lot Coverage:	10 %

6. Total area of Lot 1 to be conveyed is 2.15 acres (93,825 sq ft).
7. Boundary information shown hereon is based solely upon Plan Ref 8.A.
8. Plan References:
   - A. "Standard Boundary Survey Hemlock Woods" Prepared for Henry Buchholz by R. P. Titcomb Assoc. Inc. Dated May 1988. Recorded in the Cumberland County Registry of Deeds Plan Book 177, Page 36.
   - B. "Survey Plan of Land of U.S. Bank National Association, as Trustee 38 Blackthorne Lane" Prepared for U.S. National Association by Sitelines, PA. Dated September 2016.
9. Plan orientation is Magnetic North, based on Plan Ref. 8.A. Elevations depicted hereon are NAVD88, based on dual-frequency GPS observations.
10. A portion of the subject parcel is located within Zone C, Areas of Minimal Flood Hazard as delineated on the Flood Insurance Rate Map for the Town of Gray, Cumberland County, Community-Panel Number 2300480015A, having an Effective Date of Jan 6, 1982.
11. A wetland delineation was performed on the remaining land and Lot 7 by Mark Hampton Associates, Inc. in April 2022. This wetlands delineation conforms to the standards and methods outlined in the 1987 Wetland Delineation Manual and Northeast Regional Supplement authored and published by the U.S. Army Corps of Engineers. All Wetland flags were located using Global Positioning System (GPS) technology capable of decimeter accuracy.
12. The depth, size, location, existence or nonexistence of underground utilities and/or structures were not investigated as part of this survey. Utilities depicted hereon may not necessarily represent all existing utilities. Owners, contractors, and/or designers need to contact Dig-Safe Systems, Inc. (call 811) and field verify existing utilities prior to digging or breaking ground.
13. The issuance of a building permit for a single family dwelling on a back lot shall in no way be construed to imply the acceptance of any access way for the purpose of maintenance, improvements or snow removal by the Town of Gray.
14. Record of the 60' wide Right of Way or Access Easement depicted hereon shall be recorded as part of the deed of the Lot 1.
15. Fee ownership of the Right of Way or Access Easement will remain with the Grantor.
16. Developer anticipates development of Remaining Land pursuant of Town Ordinance and shall reserve a minimum of 8 acres of the Remaining Land as open space.

Approval: Town of Gray Planning Board

_____Chairman

_____

_____

_____

_____

_____

_____Date

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 INCH = 100 FT.

STATE OF MAINE, Cumberland County, SS
REGISTRY OF DEEDS

Received _____

At ____ h ____ m ____M and recorded in

Plan Book _____, Page _____

Attest _____
Registrar

STATE OF MAINE
JIMMY C. COURBRON
No. PLS2532
PROFESSIONAL LAND SURVEYOR

DATE: DATE
PLS: PLS

NO.	DATE	REVISIONS
1	08/03/2023	ISSUED TO ATTORNEY FOR REVIEW
2	08/15/2023	ISSUED FOR PLANNING BOARD REVIEW

ADDRESS: 41 CAMPUS DRIVE, SUITE 301, NEW GLOUCESTER, ME 04260
PHONE: (207) 926-5111
WEB SITE: www.terradynconsultants.com

TERRADYN CONSULTANTS, LLC
Civil Engineering | Land Surveying | Geomatics
Stormwater Design | Land Planning | Environmental Permitting

PROJECT: Hemlock Woods
BLACKTHORNE LANE, GRAY, MAINE

SHEET TITLE: 1st Amended Subd vision Plan

FOR RECORD OWNER: TONY FERNANDEZ
PO BOX 989
GORHAM, ME 04038

DATE: 08/15/2023
SCALE: 1"= 100'
JOB NO: 22-82
SHEET: 1 OF 1

C:\USERS\terradyn Consultants\Project Folders - Documents\2022 Jobs\22-82 Blackthorne Lane\2405Survey\22-82.dwg

Sheet Size: 24" X 36"

N/F
ALWIN H. & MARY SANDRA GROVER
4497/240

N/F
ROBERT S. & GALE M. BLANCHARD
4694/82

N/F
TIMOTHY C. & ELLEN G. SANBORN
4907/201

N/F
SUZANNE K. VINCENT
4898/232

N/F
TIMOTHY J. & DEBRA A. GRANT
6231/281

N/F
NEILS G. & GLORIA R. BAILEY
3392/167
4011/266
4692/1

N/F
MARY J. TAYLOR
5324/140

N/F
ALWIN H. & MARY SANDRA GROVER
4497/240

N/F
PRISCILLA E. LIBBEY
6699/155

LAND TO BE CONVEYED TO ABUTTER
20,335 sq. ft.
0.47 acres

3/4" hollow
remains of
Old Wood Post

5/8" rebar

3/4" hollow

1/2" solid

1-1/2" hollow

1" hollow

3/4"hollow

3"X 8" granite monument

3/4" hollow
crimped top

Old Wood Post

N 51°-06'-10" E 3152.06'

S 54°-55'-00" W 529.27'

S 12°-22'-32" E 49.38'

N 22°-53'-39" E 1151.96'

S 30°-33'-35" W 1124.97'

S 44°-10'-46" W 1307.55'

S 01°-26'-41" E 699.47'

N 50°-36'-26" E 940.00'

S 50°-36'-26" W 940.00'

S 44°-24'-00" E 288.98'

N 29°-42'-00" E 101.83'

S 29°-42'-00" W 101.83'

S 21°-06'-26" W 179.59'

N 71°-06'-26" E 179.59'

S 21°-06'-26" W 179.59'

S 18°-31'-39" E 324.71'

S 29°-38'-58" E 241.53'

S 39°-53'-54" E 240.49'

S 35°-45'-47" E 258.52'

S 21°-04'-30" E 179.31'

S 18°-35'-35" E 321.88'

S 85°-18'-00" E 40.00'

S 84°-42'-00" E 486.84'

S 05°-18'-00" E 100.00'

N 84°-42'-00" W 486.84'

N 05°-18'-00" W 100.00'

N 84°-42'-00" W 540.84'

S 84°-42'-00" E 540.84'

N 84°-42'-00" W 40.00'

S 84°-42'-00" E 40.00

Preliminary Application for Residential Subdivision

To the Town of Gray Maine

Cambell Acres- Amended Subdivision

Jenny Drive & Lieutenants Drive
Gray, Maine

Applicant:
McDonnell Brothers Custom Builders, LLC.
391 Roosevelt Trail
Windham, Maine 04062

Prepared By:
DM Roma Consulting Engineers
PO Box 1116
Windham, ME 04062

DM ROMA
CONSULTING ENGINEERS

DM ROMA
CONSULTING ENGINEERS

August 4, 2023

Town of Gray Planning Board
c/o Kristen Muszynski, Town Planner
Henry Pennell Municipal Complex
24 Main St, Gray, ME 04039

Re: Cambell Acres – Amended Subdivision – Preliminary Major Subdivision Application
McDonnell Brothers Custom Builders, LLC. – Owner/Applicant

Dear Ms. Muszynski:

On behalf of McDonnell Brothers Custom Builders, LLC., DM Roma Consulting Engineers has prepared the enclosed Preliminary Major Subdivision application package for a proposed residential subdivision project located off Jenny Drive, proposing the development of a residential subdivision with three proposed lots. The subject parcel is shown on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The 7.12-acre parcel, identified as Map 28 Lot 17-28-03 on the above referenced Amended Subdivision Plan is presumed to be the current Assessor assigned lot number, however current Town records show the lot as a portion of Lot 17-028-0 Town of Gray Tax Map 56.

Development Description

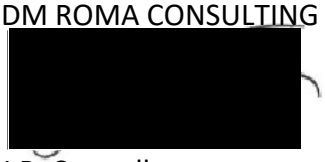
The parcel is located within the Rural Residential and Agriculture District and currently consists of undeveloped woodland. The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' and will include a hammerhead turnaround at the end of the proposed dead-end road.

The proposed residential lots are intended to be served by private water supply wells, and private waste water disposal systems. Electrical and data utilities will also be extended to the proposed residential lots from Jenny Road. No evidence of wetlands was identified through investigations on the property performed by Mainely Soils. Additionally, the project design is not anticipated to create more than one (1) acre of impervious area, therefore the project will not be subject to a MDEP Stormwater permit; however, permitting for the project will likely require a Stormwater Permit-By-Rule for disturbance of over one acre of land, which we intend to submit prior to submitting the Planning Board Final Subdivision application.

Enclosed with this submission is the application, supporting documentation and design plans for your review. Upon your review of the submission, please do not hesitate to contact me if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS



J.P. Connolly
Senior Project Engineer

Cc: McDonnell Brothers Custom Builders, LLC.

CAMBELL ACRES AMENDED SUBDIVISION - RESIDENTIAL SUBDIVISION
GRAY, MAINE

MAJOR PRELIMINARY SUBDIVISION APPLICATION

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SECTION 2	TOWN APPLICATIONS AND CHECKLIST
SECTION 3	RIGHT, TITLE OR INTEREST
SECTION 4	SITE LOCATION MAP
SECTION 5	SOILS, WETLAND MEMO & TEST PIT LOGS
SECTION 6	STORMWATER MANAGEMENT REPORT
SECTION 7	EROSION & SEDIMENTATION CONTROL PLAN
SECTION 8	WAIVER REQUESTS
SECTION 9	COVENANTS AND RESTRICTIONS
SECTION 10	FEMA FIRMETTE
SECTION 11	BEGINNING WITH HABITAT MAP
SECTION 12	FIRE DEPARTMENT COORDINATION

SECTION 1

PROJECT NARRATIVE AND PERFORMANCE & DESIGN STANDARDS

PROJECT NARRATIVE

SECTION 1 – SITE DESCRIPTION PROPOSED USE NARRATIVE

The project site is a 7.12±-acre parcel, located within the Rural Residential and Agriculture (RRA) zoning district, identified as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The Assessor's Parcel Number shown on Amended Subdivision Plan is presumed to be the current Assessor assigned lot number, however current Town records show the lot as a portion of Lot 17-028-0 Town of Gray Tax Map 28. The property is vacant and consists predominantly of natural woodland with a small field area that is located within a buffer area at the northeasterly corner of the property.

The project site is currently owned by McDonnell Brothers Custom Builders, LLC. according to the warranty deed on file at the Cumberland County Registry of Deeds Book 40059, page 250.

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road extending from Jenny Drive a total of approximately 421' in length and will include a hammerhead turnaround at the end of the proposed dead-end road. As such this project is proposing new road construction the project qualifies under the Town's definition as a Major Subdivision Application.

The subdivision road, proposes to provide access and frontage to the site. This will require a new curb cut location on Jenny Drive. The proposed subdivision will create a total of three (3) residential lots, all being served by the proposed subdivision road and therefore the subdivision road would be required to meet the requirements of Table 401.13.16-2 for a Minor Rural Street.

The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site. Each secondary service is proposed to be installed underground to each lot.

PERFORMANCE AND DESIGN STANDARDS:

The following summary identifies the means in which the proposed project meets the Town of Gray Subdivision Ordinance Article 13 – Performance & Design Standards:

401.13.1 – Basic Subdivision Layout: The proposed lot layout is not required to comply with section A and appears to comply with sections B, C, and D. The project is required to provide a minimum of 200 feet of street frontage for each proposed lot, therefore utilities are not required per 401.13.1.C to be installed underground. Density calculations and space and bulk requirements are included on the Second Amended Subdivision Plan.

401.13.2 – Sufficient Water: The project proposes to provide the water supply to the project using three private wells. The proposed private wells, are required to be placed a minimum of 50-feet from the proposed private subdivision road, as all potential proposed well locations will be upgradient of the private road. The current project design shows that the closest potential well location to the subdivision road ROW is associated with Lot 2 and is approximately 140 feet at its closest point to the proposed subdivision road.

401.13.2.C. – Fire Protection: The proposed project intends to address the fire protection requirements for the project through the incorporation of proposed fire suppression systems (fire sprinklers) in each of the three (3) proposed duplexes.

401.13.3 – Erosion and Sedimentation and Impact on Water Bodies: The proposed project design includes an erosion and sedimentation control measures and is incorporated throughout the project design plans.

401.13.4 – Sewage Disposal: Test pits were performed by Mainely Soils, LLC and indicated "… test pits contained suitable soils to support a 'First Time System' according to the Maine Subsurface Wastewater Disposal Rules." Three letters from Mainely Soils, LLC. one "RE: Soil Evaluation for Subsurface Wastewater Disposal Systems Campbell (SP) Shore Road Lots, Gray, Maine" dated December 9, 2021; one "RE: Wetland and Soil Assessment – 55 Campbell(SP) Shore Road" dated February 17, 2021; and one "RE: Soil Evaluation for Subsurface Wastewater Disposal Systems Campbell (SP) Acres, Gray, Maine" dated July 27, 2023, and all associated soil logs have been included in section 5 of this application.

401.13.5 – Solid Waste: It is anticipated that after construction, the residents will contract with a private waste hauler for disposal of typical residential generated solid wastes. During construction, all construction debris and waste will be the responsibility of the contractor/developer to ensure that all waste is appropriately and properly disposed meeting all applicable Federal, State and local rules and regulations.

401.13.6 – Impact on Natural Beauty, Aesthetics, Historic Sites, Wildlife Habitat, Rare and Natural Areas or Public Access to the Shoreline: The proposed project design will provide approximately 421 linear feet of proposed subdivision road. The project will maintain a minimum of 50' buffer from Jenny Drive except for clearing to allow for the construction the proposed subdivision road through the 50' buffer.

The project site is currently natural woodland, so lot development on each of the three proposed lots as well as the subdivision road and stormwater basin will require clearing. The project designs and plans illustrate the proposed clearing limits required to construct the project. The project was designed with the goal of maintaining as much of the existing natural woodland as possible in effort to provide the proposed lots with natural woodland screening to provide the lots with as much privacy to maintain a rural setting. The clearing areas shown thereon are limited to the area required to provide clearance to construct the project that will be allowed to be maintained as lawn/landscaped area by the residents of the proposed duplexes.

Based on the Beginning with Habitat mapping, the project is not within or adjacent to any wildlife habitat or rare and natural areas. Additionally, based on a search of abutting properties it does not appear that there are any existing structures that would qualify as Historic Sites.

401.13.7 – Conformance with Zoning Ordinance and Other Land Use Ordinances: The proposed subdivision layout has been designed to meet the space and density requirements of the Rural Residential and Agriculture (RRA) zoning district.

401.13.8 – Financial and Technical Capacity: The applicants are professional land developers and home builders that have experience in constructing subdivisions of this nature and scale in surrounding communities. The applicants have retained DM Roma Consulting Engineers, Mainely Soils (professional site evaluator), and Survey Inc. (a licensed Maine Surveyor) to conduct due diligence, project planning and permitting support. The applicants have provided a letter from Katahdin Trust Company dated July 31, 2023 (included in Section 3) indicating that the applicant is a current client and that Katahdin Trust Company would be willing to finance the current project.

401.13.9 - Impact of Ground Water Quality or Quantity: The current proposed project design should have no significant impact on ground water quality or quantity, due to the nature and scale of the development. Private septic systems will be designed to service the specific design flow of each proposed residence, and tests pits indicate the site's general suitability to support this approach. Within a letter prepared by Mainely Soils, LLC. dated February 17, 2022, it states that "All five of the test pits contained suitable soils to support a 'First Time System' according to the Maine Subsurface Wastewater Disposal Rules.

401.13.10 – Floodplain Management: The FEMA FIRMette has been included in Section 11 illustrating the limits of the floodplain associated with an un-named stream tributary to the Pleasant River. The un-named tributary, at the closest point to the project site is located approximately 2300+ feet to the southeast.

401.13.11 – Identification of Freshwater Wetlands, Rivers, Streams or Brooks: Site investigations for natural resource areas were conducted by Mainely Soils, LLC. A wetland

evaluation was performed by Mainely Soils, and in a letter dated February 17, 2022 included in Section 5 of this application, indicates that the "…site did not contain any wetland areas."

Per the USGS Quadrangle Map for North Windham, the project site is, at its closest point, approximately 1100+ linear feet from Glantz Brook to the east, and located approximately 2300+ feet to the southeast of an unnamed tributary of the Pleasant River.

401.13.12 – Stormwater Management: The proposed project design will require a Stormwater Permit By Rule through the DEP, which will require compliance with the Chapter 500 Basic standards, due to the project consisting of more than 1 acre of developed area, while the Town requires compliance with Chapter 500 Basic and Flooding standards.

The Stormwater Management report has been included in Section 6 to demonstrate the project design's compliance and the project design did evaluate the project for stormwater culvert sizing requirements. The project design proposes the installation two (2) road culverts, and two (2) driveway culverts. The computation including stormwater analysis to evaluate pre-developed and proposed conditions of the hydrologic and hydraulic design model is included in Section 6 of this application.

401.13.13 – Residential Open Space Subdivisions: The proposed project is not proposed as a residential open space subdivision as it intends to be utilized for duplex residential structures, which are not allowed as part of a residential open space subdivision. As such the project has been designed to meet the dimensional standard requirements of the Town of Gray Zoning Ordinance included on Table 402.5.4 A "Lot Dimension & Density Standards".

401.13.14 – Compliance with Timber Harvesting Rules: The parcel was created in 2022, as shown on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The parcel does not appear to have had any recent tree harvesting or tree clearing operations.

401.13.15 – Traffic Conditions and Streets & 401.13.16 – Specific Access and Street Design Standards: The proposed project design intends to construct a subdivision road. The subdivision road is intended to provide frontage and access to Lots 1-3 from Jenny Drive.

The proposed subdivision road will be designed to meet the Minor Rural Street requirements, by constructing a gravel road section meeting the travel way width and shoulders required. As such, the general access and level of service for the subdivision road and Jenny Drive will comply with section 401.13.15.B. General Access Standards and 401.13.15.C General Internal Subdivision Street Standards. Additionally, the project is not

expected to impact the Level of Service of any existing streets or intersections in the neighboring area.

Sight distances for the proposed subdivision road intersection location exceed the minimum sight distance requirements for the posted speed limit and are subject to verification.

Based on the current version of the Institute of Transportation Engineers (ITE) Trip Generation Handbook for Single Family Detached Housing (Land Use 210), the project is anticipated to generate approximately 5.94 peak PM trip ends.

401.13.17 – Driveway Design Standards: The proposed project design will include private driveways for each of the three (3) lots with access and frontage along the proposed subdivision road. The driveway layout and design for each individual lot will be subject to the standards of 401.13.17 and subject to review prior to the issuance of individual building permits for each lot.

Due to the nature of the project and existing site conditions, the Roadway Plan & Profile sheet 4 of 6 in the project plan set, has been developed to demonstrate that the proposed project site can successfully constructed and will accommodate the project design including the approximate location of each of the three (3) duplexes, associated driveways, private potable well and private septic system as well as associated grading in accordance with the Town of Gray's Subdivision Ordinance (Chapter 402) and Street Ordinance (Chapter 400).

SECTION 2 – TOWN APPLICATIONS

Completed Town of Gray applications are included in Section 2 of this application package, including:

- Planning Board/Staff Review Committee Application
- Preliminary Subdivision Plan Application Checklist F-1B,

SECTION 3 – TITLE, RIGHT, OR INTEREST

A copy of the Quitclaim deed which indicates that McDonnell Brother Custom Builders, LLC is the owner of the subject parcel.

SECTION 4 – SITE LOCATION MAP

A site location map is included in Section 4 of this application package.

SECTION 5 – PRELIMINARY WASTERWATER DISPOSAL INVESTIGATION MEMO & TEST PIT LOGS

A letter prepared by Mainely Soils, LLC. entitled "Soil Evaluation for Subsurface Wastewater Disposal Systems Campbell Acres, Gray Maine" dated July 27, 2023 has been included in Section 5 of this application. Within this report are test pit logs indicating suitable soils for septic systems. Previous letters from Mainely Soils, LLC. "RE: Soil Evaluation for Subsurface Wastewater Disposal Systems Campbell(SP) Shore Road Lots, Gray, Maine" dated December 9, 2021 and one "RE: Wetland and Soil Assessment – 55 Campbell(SP) Shore Road" dated February 17, 2021 and all associated test pit logs are included in Section 5 as well.

SECTION 6 – STORMWATER NARRATIVE AND CULVERT SIZING CALCULATIONS

A stormwater management report with Watershed maps has been included in Section 6, along with a HydroCAD Model output data, and detention basin sizing design.

SECTION 7 – EROSION AND SEDIMENTATION CONTROL PLAN

Erosion and sedimentation control measures are shown on the Roadway Plan and Profile sheet PP-1, with details of the erosion control measures included on Detail sheet D-1, both of which are included with the Second Amended Subdivision Plan as part of the project design plans.

SECTION 8 – WAIVER REQUESTS

The applicant would like the Planning Board to consider granting a waiver to the requirement for the High Intensity Soil Survey, Hydrogeologic Assessment, and the requirement for all proposed property corners to be stone or concrete monuments. A waiver request letter is included in Section 8 of this application.

SECTION 9 – COVENANTS AND RESTRICTIONS

The applicant is preparing a draft of the Declaration of Rights, Restrictions, Covenants & Easements which will be provided to the Town for review as soon as they are available

SECTION 10 – FEMA FIRMETTE

A copy of the FEMA Firmette with floodplain mapping has been included in Section 10.

SECTION 11 – BEGINNING WITH HABITAT MAPPING

A site-specific copy of the Beginning with Habitat Map has been included in Section 11 indicating no known protected habitats within the property limits.

SECTION 12 – FIRE DEPARTMENT COORDINATION

DM Roma Consulting has provided the project plans and application to the Fire Department for review and comment, and intends to work with the Fire Department to address any concerns. The email correspondence from DM Roma Consulting Engineers to the Town's Fire Department is included in Section 12.

SECTION 2

TOWN APPLICATIONS AND CHECKLIST

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED			
Property Location/Address	Jenny Drive	Property Map/Lot	Map 56 Lot 17 28 03
Zoning District	Rural Residential & Agriculture	Lot Acreage	7.12 acres
Owner Name	McDonnell Brothers Custom Builders, LLC	Tax Sheet	
Owner Address	391 Roosevelt Trail, Windham ME	Owner Phone	
APPLICANT			
Name (IF different than owner)		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			
AGENT/CONSULTANT			
Name	DM Roma ~ J.P. Connolly	Contact Phone Number	(207) 591-5055
Mailing Address	PO Box 1116	Alternate Phone Number	(760) 840-0997
Mailing City/State/Zip	Windham, Maine, 04062	Fax Number	
Email Address	jp@dmroma.com		

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

☒ **Subdivision**
- Sketch Plan Review
- × Preliminary Plan Review (Major)
- Final Plan Review (Major)
- Minor

☐ **Site Plan Review**
- Pre-Application Conference
- Minor
- Major

☐ **Shoreland Zoning Permit**

☐ **Other (specify)**
- Conditional Use
- × Amendment
- Extension
- Workshop
- Contract Zone Request

Second amendment of Cambell Acres Subdivision

Project Description / Comments:

The applicant/owner is proposing to develop the 7.12± acre parcel (shown on Tax Map 56, Lot 17-28-03) into a three (3) lot residential subdivision; consisting of one (1) duplex house on each proposed lot, and including construction of a road way (421± linear feet in length of new private road). The project will also include the integration of stormwater management including drainage swales, culverts and stormwater quality management in the form a grassed line soil fiter basin BMP. Each lot will be serviced with a private well and septic system, as well as served by overhead electric and data services.

Applicant Signature [redacted] as agent **Date** 8-4-2023

PRELIMINARY SUBDIVISION PLAN APPLICATION SUBMISSION CHECKLIST F-1B TOWN OF GRAY MAINE

For Office Use Only
Date Received: _____
Received by: _____

SUBDIVISION

Subdivision Name	Cambell Acres - Amended Sudbivision	Date	August 4, 2023

This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. The checklist, however, does not substitute for the requirements of **Article 7** of the Subdivision Ordinance. The Planning Board will also use the checklist to ensure your application is complete. Indicate if the information has been submitted or if a waiver is requested. If you feel that information is not applicable to your project, please indicate in the second column. The perimeter survey, subdivision plan and engineering plans may be contained on the same drawing. Detailed engineering drawings such as road profiles, drainage swales and erosion/sedimentation plans, however, may best be presented on a separate sheet or sheets. Note that this checklist only covers the submission requirements for a *preliminary plan*.

There is an additional checklist for *final plan* submission. Neither checklist addresses the standards that the subdivision plan must meet. For review standards refer to Article 13 & checklist F-1D.

PRELIMINARY SUBDIVISION PLAN SUBMISSION REQUIREMENTS

	Submitted by Applicant	Not Applicable	Applicant Request to be Waived	Reviewed by Planner/ Engineer	Waived by Planning Board
401.7.2.A Fourteen (14) copies of application plus accompanying information	X				
401.7.2.B LOCATION MAP					
B.1 Existing subdivisions in the proximity of proposed subdivision	X				
B.2 Locations and names of existing and proposed streets	X				
B.3 Zoning boundaries and designations	X				
B.4 Outline of proposed subdivision and owner's remaining contiguous land	X				
401.7.2.C PRELIMINARY PLAN					
C. Fourteen (14) copies of all maps and/or drawings printed or reproduced on paper	X				
C. Scale not smaller than 1"= 100'; for subdivision more than 100 acres, not smaller than 1"= 200'	X				
401.7.2.C APPLICATION REQUIREMENTS					
C.1 Name of subdivision name of town and assessor's map and lot number(s)	X				
C.2 Verification of right, title or interest in property	X				
C.3 Standard boundary survey with bearings and distances, certified by PLS, all corners located and marked.	X				
C.3 Standard boundary survey shows entire parcel or tract and all contiguous land in common ownership within the last five years per MRSA Title 30-A section 4401	X				
C.4 Copy of most recently recorded deed; all restrictions, easements, rights-of-way and other encumbrances	X				
C.5 Deed restrictions on proposed new lots or dwellings	X				

401.7.2.C APPLICATION REQUIREMENTS (CONT'D)					
C.6 Map of test pits & test pit analyses by Site Evaluator or Certified Soil Scientist	X				
C.7 Type of water supply system(s)	X				
C.7 Gray Water District letter of capacity		X			
C.8 Date plan prepared, north point and graphic map scale	X				
C.9 Names and addresses of record owner, applicant, plan preparer(s) and adjoining property owners	X				
C.10 All wetlands delineated regardless of size		X			
C.11 Total acres in subdivision; location of property lines, existing building(s), unusually large specimen trees, vegetative cover type and other essential physical features	X				
C.12 All rivers, streams and brooks within and adjacent to subdivision; designation of great pond watershed		X			
C.13 Zoning district of proposed subdivision and any zoning boundary lines affecting the subdivision	X				
C.14 Location and size of existing and proposed sewers, water mains, culverts and drainage ways on and adjacent to subdivision	X				
C.15 Location, name and widths of existing and proposed streets and highways easements, building lines, parks and open spaces on or adjacent to subdivision	X				
C.16 Width & location of any streets, public improvements or open space shown in Comprehensive Plan within the property		X			
C.17 Proposed lot lines, approximate dimensions and lot areas	X				
C.18 Parcels of land proposed to be dedicated to public use; condition of such dedication		X			
C.19 Open space to be preserved; proposed ownership, improvements, management		X			
C.20 Area of each lot permitting forest clearing and/or lawn	X				
C.21 Anticipated driveway locations & constraints	X				
C.22 100-year flood elevations in flood prone areas		X			
C.22 Areas within or adjacent to the subdivision identified by the Comprehensive Plan, MDIFW, MNAP, or BWH as areas to be preserved and appropriate preservation measures.		X			
C.23 Areas within or adjacent to subdivision listed in the Comprehensive Plan or listed/eligible to be listed on National Register of Historic Places		X			

401.7.3 ADDITIONAL REQUIRED PLANS & STUDIES					
A. Contour lines at interval set by Planning Board showing all areas at greater than 25% slopes	X				
B. Erosion & sedimentation control plan (can be waived if not in great pond watershed and < 5% impervious)	X				
C. Stormwater management plan (can be waived if not in great pond watershed and < 5% impervious)	X				
D. Phosphorus management plan if in pond watershed & > 4 lots or 800 ft. of road or drives		X			
401.7.4 REQUIRED SUBMISSIONS FOR WHICH A WAIVER MAY BE GRANTED					
A. High Intensity Soil Survey by a Registered Soil Scientist			X		
B.1 Hydrogeologic assessment for subdivision if any part of subdivision is over a sand and gravel aquifer, or		X			
B.2 Hydrogeologic assessment if average density is more than one dwelling unit per 100,000 sq. ft.			X		
B.3 Hydrogeologic assessment if Board determines potential adverse impacts on ground water quality (e.g., shallow bedrock soils, cluster subdivisions)			X		
C. Vehicular trip generation rates & entrance sight distances	X				
D. Traffic impact analysis by a registered traffic P.E. for 28 or more parking spaces or projected to generate more than 140 vehicle trips per day to include expected ADT, peak-hour volumes, access conditions, distribution of traffic, types of vehicles expected, effect on LOS, recommended improvements		X			

SECTION 3

RIGHT, TITLE OR INTEREST

MAINE REAL ESTATE TAX-Paid

DLN: 1002340230835

QUITCLAIM DEED
(With Covenant)

KNOW ALL BY THESE PRESENTS, that **Kristin A. Stanley** and **Philip M. Stanley**, of Gray, Maine, for consideration paid, grant to **McDonnell Brothers Custom Builders, LLC**, a Maine limited liability company with a place of business in Windham, Maine, with Quitclaim Covenant, the land together with any improvements thereon situated in Gray, Cumberland County, State of Maine, bounded and described as follows:

SEE **EXHIBIT A** ATTACHED HERETO AND INCORPORATED HEREIN

IN WITNESS WHEREOF, the said Kristin A. Stanley and Philip M. Stanley have executed this instrument this 31 day of March, 2023.

[redacted]
Witness

[redacted]
Kristin A. Stanley

[redacted]
Witness

[redacted]
Philip M. Stanley

STATE OF MAINE
CUMBERLAND, SS. March 31, 2023

Personally appeared the above-named Kristin A. Stanley and Philip M. Stanley and each acknowledged the foregoing instrument to be their respective free act and deed.

Before me,

[redacted]
Notary Public/~~Attorney-at-Law~~

Julie Dudley
Notary Public, Maine
My Commission Expires November 28, 2028

EXHIBIT A

A certain lot or parcel of land with any buildings thereon situated on the Cambell Shore Road (sometimes referred to as Campbell Shore Road) in Gray in the County of Cumberland and State of Maine, and shown as Lot No. 1 on a subdivision plan of Cambell Acres, Gray, Maine, which plan is recorded in the Cumberland County Registry of Deeds in Plan Book 104, Page 27, said Lot No. 1 comprises 14.5 acres, more or less.

The premises conveyed herewith are conveyed subject to the provisions set forth in said subdivision plan as follows:

1. Further subdivision of this lot may not be made without the express approval of the Planning Board of the Town of Gray.

EXCEPTING and RESERVING a certain lot or parcel of land on the Southwesterly side of Campbell Shore Road and on the Southeasterly side of Jenny Drive in the Town of Gray, County of Cumberland, State of Maine, conveyed by Paul D. Wheelden and Sheila J. Wheelden to Carl I. Higgins and Angela V. Higgins by deed dated October 29, 1998 recorded in said Registry of Deeds in Book 14318, Page 319 and therein bounded and described as follows:

Beginning at a 5/8" rebar iron pin set in concrete at the intersection of the Southwesterly sideline of Campbell Shore Road with the Southeasterly sideline of Jenny Drive as shown on a Final Subdivision Plan of Campbell Acres by Land Use Consultants Inc. dated October 24, 1998, and recorded in the Cumberland County Registry of Deeds, Plan Book 104 Page 27;

THENCE by the following courses and distances:

1) S 31° 48' 30" E along the Southwesterly sideline of Campbell Shore Road a distance of One Hundred Thirty-Four and 19/100 (134.19) Feet to a point;

2) 35° 34' 30" E along the Southwesterly sideline of Campbell Shore Road a distance of Sixty-Five and 81/100 (65.81) Feet to a 5/8" rebar iron pin set;

3) S 49° 51' 30" W by remaining land of Grantors a distance of Four Hundred and 00/100 (400.00) Feet to a 5/8" rebar iron pin set;

4) N 37° 22' 00" W by remaining land of Grantors a distance of Two Hundred and 00/100 (200.00) Feet to a 5/8" rebar iron pin set on the Southeasterly sideline of Jenny Drive;

5) N 60° 22' 22" E along the Southeasterly sideline of Jenny Drive a distance of Seventy-Five and 00/100 (75.00) Feet to a point;

6) N 43° 06' 00" E along the Southeasterly sideline of Jenny Drive a distance of One Hundred Forty-One and 11/100 (141.11) Feet to a concrete monument found;

7) N 51° 05' 10" E along the Southeasterly sideline of Jenny Drive a distance of Two Hundred One and 18/100 (201.18) Feet to the point of beginning.

FURTHER EXCEPTING a certain lot or parcel of land conveyed by Grantors to Zachary Cooperstein and Taryn Passamonti by deed dated June 17, 2022 recorded in said Registry of Deeds in Book 39516, Page 300, bounded and described therein as follows:

A certain lot or parcel of land with any buildings thereon situated on Cambell Shore Road in Gray in the County of Cumberland and State of Maine, and shown as Tax Map 56 Lot 17-28-00 on the plan entitled "Amended Subdivision Plan Cambell Acres, Cambell Shore Road, Gray, Maine for Kristin Stanley, survey by Survey Inc.," dated April 14, 2022, recorded on May 11, 2022, in Plan Book 222, Page 174. Said Parcel containing 3.74 acres +/-.

FURTHER EXCEPTING a certain lot or parcel of land conveyed by Grantors to William Brochu and Aurora Brochu by deed dated July 8, 2022 recorded in said Registry of Deeds in Book 39564, Page 60, bounded and described therein as follows:

A certain lot or parcel of land, with any improvements thereon, situated on Jenny Drive in the Town of Gray, County of Cumberland and State of Maine, and shown as Tax Map 56 Lot 172802 on the Plan entitled "Amended Subdivision Plan, Cambell Acres, Cambell Shore Road, Gray, Maine for Kristin Stanley, survey by Survey, Inc.," dated April 14, 2022, recorded on May 11, 2022, in Cumberland County Registry of Deeds in Plan Book 222, Page 174.

Reference is made to a survey entitled "Resubdivision Plan of Lot 1 Campbell Acres Subdivision for Francis L. and Verna L. Mackell" dated January 8, 1988 recorded in said Registry of Deeds in Plan Book 170, Page 58, approved by the Gray Planning Board on April 28, 1988.

For title, reference may be had to a deed from Sheila J. Wheelden to Kristin A. Stanley and Philip M. Stanley, dated November 1, 2021 recorded in said Registry of Deeds in Book 38846, Page 201.

Katahdin Trust Company

July 31, 2023

To DM Roma Consulting Engineers

RE: McDonnell Brothers Custom Builders, LLC

The McDonnell Brothers, Garrett and Andrew McDonnell, are currently clients of mine here at Katahdin Trust Company. They are financially sound and we would be happy to consider financing for their current project.

If you need anything else, please let me know.

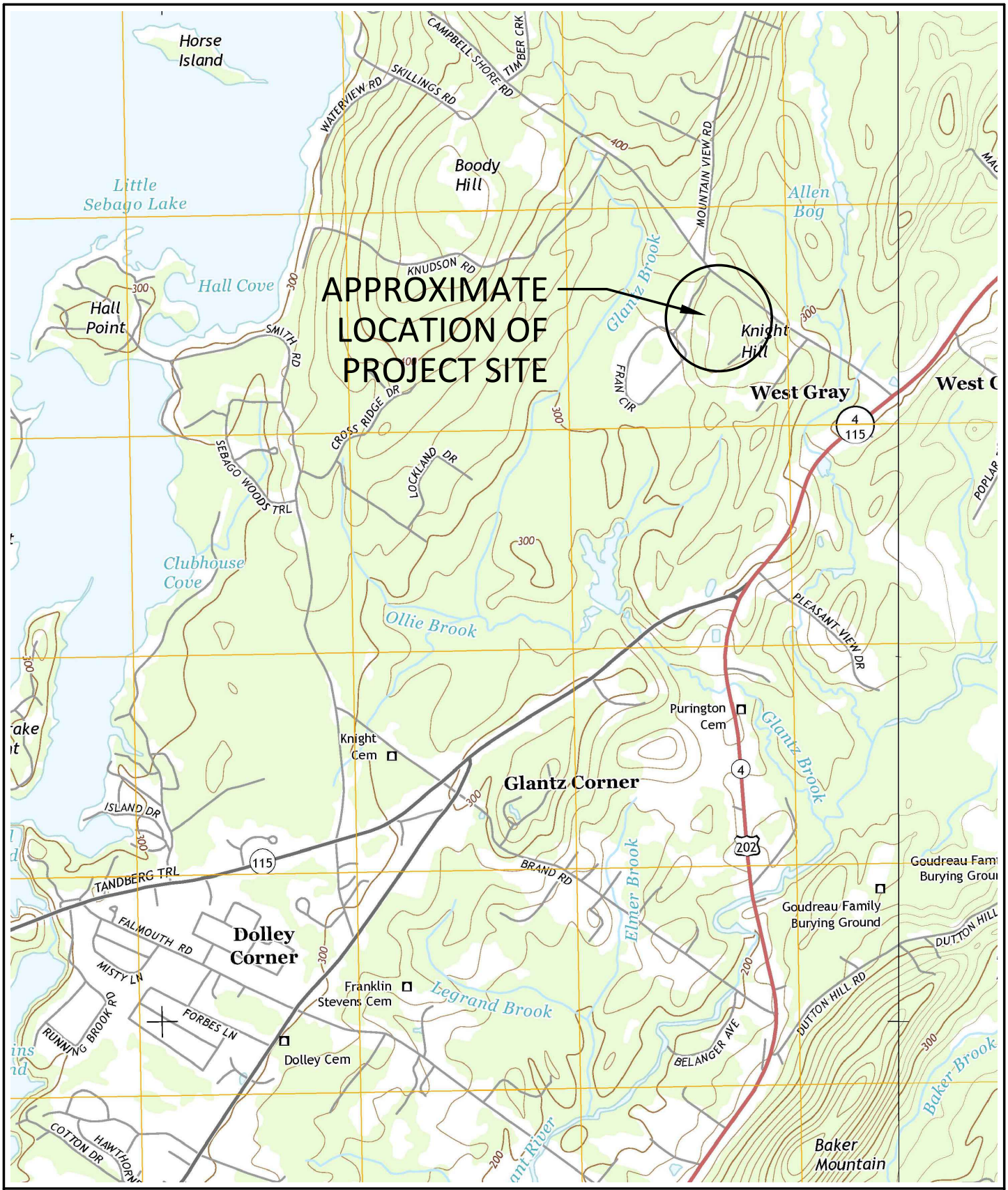
Sincerely,



Vicki L. Bessette
Vice President
Commercial Services

SECTION 4

SITE LOCATION MAP



SITE LOCATION MAP

CAMBELL ACRES AMENDED SUBDIVISION
GRAY, MAINE

FOR RECORD OWNER:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

SCALE: 1"=2000'
DATE: 8-4-2023
JOB NUMBER: 23015

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

SECTION 5

SOILS, WETLAND MEMO & TEST PIT LOGS

July 27, 2023

J.P. Connolly
DM Roma Consulting Engineers
Windham, ME 04062

RE: Soil Evaluation for Subsurface Wastewater Disposal Systems
Campbell Acres, Gray, Maine

Dear Mr. Connolly:

On July 27, 2023, three additional test pits were dug and assessed within the proposed Cambell Acres residential house lots located on the west side of Campbell Shore Road and the south side of Jenny Lane in Gray by Alexander Finamore, LSE #391. The parcel is identified by the Town of Gray as Tax Map 56 Lot 17-28-0. Each test pit was located with a submeter accuracy Trimble Geo handheld GPS unit and marked with a pink survey flag. Test pits 6 and 7 were located on side slopes and revealed sandy loam glacial till soils with a restrictive layer between 18 and 28 inches below the mineral surface. Both of these test pits contained suitable soils to support a 'First Time System' according to the Maine Subsurface Wastewater Disposal Rules.

A third test pit was dug in the vicinity of a proposed stormwater outfall and identified as TP-SW1. This test pit was located in a swale and revealed sandy loam soils with a seasonal water table at 13 inches and a restrictive layer at 18 inches.

Please find the soil profile descriptions of the test pits attached.

If you have any questions, please feel free to email me at: mainelysoils@gmail.com or call 207-650-4313.

Sincerely,

[redacted]

Alexander A. Finamore, LSE #391, CWS #267

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	McDonnell Brothers Custom Builders, LLC	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-6 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLIVE	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 18" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-7 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[ ] hydric [■] non-hydric | Slope %: 0-3 | Limiting factor: 28" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-SW1 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLVIE	
		OLIVE BROWN	FEW, FINE, & FAINT
	FIRM		
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: 13" | [■] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | D (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) | (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature [redacted]	Date: 7/27/23
	name printed/typed: Alexander A. Finamore	Lic.#: 391

February 17, 2022

Bill Shippen
Survey Inc
936 Roosevelt Trail, Unit 5
Windham, ME 04062

RE: Wetland and Soil Assessment - 55 Campbell Shore Road
Fryeburg, Maine

Dear Mr. Shippen:

On February 11, 2022, a plot of land in the Town of Gray identified as Map 56, Lot 17-28 was surveyed for the presence of wetlands in accordance with the Army Corps of Engineers 1987 Wetland Delineation Manual (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) (Regional Supplement, 2012).

The lot was located on the west side of Campbell Shore Road and the south side of Jenny Lane in an area of residential development. The site is currently occupied by a residential dwelling accessed by Campbell Shore Road, associated lawn area, and undeveloped forested land to the west and southern extents of the site.

The southern and western portions of the site is forested and slopes downwards in a northwesterly direction towards Jenny Lane. Dominant vegetation within the forested area included white pine (*Pinus strobus*), white ash (*Fraxinus americana*), eastern hemlock (*Tsuga canadensis*), red oak (*Quercus rubra*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), white birch (*Betula papyrifera*), gray birch (*Betula populifolia*), and quaking aspen (*Populus tremula*). The understory consisted of sparse scrub-shrub vegetation including gray birch, white pine, red maple, and American beech. The herbaceous layer was mostly obscured by 6" of snow at the time of the site visit. Soils consisted of fine sandy loam material overlying gravelly sandy loam glacial till material with a hardpan below the mineral surface. There was no evidence of wetland hydrology within the study area. Therefore, the site did not contain any wetland areas.

On December 9, 2021 two test pits were dug and assessed for suitability of subsurface wastewater disposal for two proposed residential house lots. On February 11, 2022, three additional test pits were dug and assessed throughout the remainder of the site to determine the soil conditions. Test Pits werets were dug and assessed by Alexander Finamore, LSE #391. Each test pit was located with a submeter accuracy Trimble Geo handheld GPS unit and marked with a pink survey flag. All five of the test pits contained suitable soils to support a 'First Time System' according to the Maine Subsurface Wastewater Disposal Rules. Please find the soil profile descriptions of the test pits attached.

The Natural Resource Conservation Service soil survey mapping identifies native soils at the site as being formed within lodgment tills (Paxton series) (Web Soil Survey, 2022). The Paxton series is a well drained loamy soil map unit. Test pits were compared to the Cumberland

County Medium Intensity Soil survey to determine congruence. It is of the site evaluators opinion that the soils observed onsite match the Medium Intensity soil survey closely. Soils on site were found to be of lodgment till in nature with a moderately deep restrictive layer closely resembling the Paxton Series. Due to the similarities of the soils observed within the pits dug for septic suitability to the Cumberland County Medium Intensity Soil survey mapping, it is of the site evaluator's opinion that all soils onsite are well drained.

Please find site photos attached. Army Corps Wetland Delineation forms can be provided upon request documenting upland conditions.

If you have any questions, please feel free to email me at: mainelysoils@gmail.com or call 207-650-4313.

Sincerely,

[redacted]

Alexander A. Finamore, LSE #391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-3 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 32"			

hydric / non-hydric	Slope %	Limiting factor	
non-hydric	3-8	20"	[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-4 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 44"			

hydric / non-hydric	Slope %	Limiting factor	
non-hydric	0-3	34"	[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-5 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
LIMIT OF EXCAVATION = 44"			

hydric / non-hydric	Slope %	Limiting factor	
[■] non-hydric	5-8	>48"	[ ] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 2 (Profile) B (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

hydric / non-hydric	Slope %	Limiting factor	
[ ] non-hydric			[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 2/11/22
	name printed/typed: Alexander A. Finamore	Lic.#: 391

December 9, 2021

Bill Shippen
Survey Inc.
Windham, ME 04062

RE: Soil Evaluation for Subsurface Wastewater Disposal Systems
Campbell Shore Road Lots, Gray, Maine

Dear Mr. Shippen:

On December 9, 2021, two test pits were dug and assessed on two proposed residential house lots located on the west side of Campbell Shore Road and the south side of Jenny Lane in Gray by Alexander Finamore, LSE #391. The parcel is identified by the Town of Gray as Tax Map 56 Lot 17-28-0. Each test pit was located by with a submeter accuracy Trimble Geo handheld GPS unit and marked with a pink survey flag. Both test pits were located on side slopes and revealed sandy loam glacial till soils with a restritctive layer between 24 and 34 inches below the mineral surface. All of the test pits contained suitable soils to support a 'First Time System' according to the Maine Subsurface Wastewater Disposal Rules. Please find the soil profile descriptions of the test pits attached.

If you have any questions, please feel free to email me at: mainelysoils@gmail.com or call 207-650-4313.

Sincerely,

[redacted]

Alexander A. Finamore, LSE #391, CWS #267

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-1 [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 24" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 Profile | C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-2 [ ] [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-3 | Limiting factor: 34" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 Profile | C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric | Slope % | Limiting factor | [■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric | Slope % | Limiting factor | [■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 12/9/21
	name printed/typed: Alexander A. Finamore	Lic.#: 391

SECTION 6

STORMWATER MANAGEMENT REPORT

DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

CAMBELL ACRES AMENDED SUBDIVISION
JENNY DRIVE & LEIUTENANTS DRIVE
GRAY, MAINE

A. Narrative

McDonnell Brothers Custom Builders, LLC, the applicant, is proposing to develop a 7.12±-acre parcel off of Jenny Drive in Gray, Maine. The project site is identified as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The property is vacant and consists predominantly of natural woodland with a small field area that is located within a buffer area at the northeasterly corner of the property.

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' and will include a hammerhead turnaround at the end of the proposed dead-end road. The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site.

In general, the property drains southwesterly towards Jenny Drive and discharges from the site into a depressed natural area within the site or to the existing road drainage swale in Jenny Drive, both ultimately merging at a depression at the outlet of a road culvert at the intersection of Jenny Drive and Fran Circle. From that point, stormwater is conveyed into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River.

B. Alterations to Land Cover

McDonnell Brothers Custom Builders, LLC, intends to construct the roadway, the duplexes as well as all associated improvements and stormwater infrastructure. The applicant will be responsible for creating approximately 18,791 square feet (0.43± acres) of impervious surface consisting of the proposed roadway, and driveways, an additional 5,670 square feet of proposed roof area associated with the three proposed duplexes and approximately 63,186 square feet (1.45± acres) of landscaped area totaling approximately 87,647 square feet (2.01± acres) of total developed area.

The Town of Gray's Subdivision Ordinance indicates that the project's stormwater design will be required to meet the Basic and Flooding Standards of the Chapter 500 Stormwater Management rules.

The site is moderately sloped (5-9%) with steeper slopes closer to Jenny Drive. Soils on the property were determined utilizing the Medium Intensity Soil Maps for Cumberland County, Maine published by the Natural Resources Conservation Service. The soils boundaries and hydrologic soils group (HSG) designations are indicated on the Watershed Maps within the design plan set and a Soils Map has been included as Attachment 1 of this report. Attachment 2 of this report includes all test pit logs analyzed within the project site.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns. The goal of the storm drainage system design is to provide attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains and constructed stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2-, 10- and 25 years was obtained from the Northeast Regional Climate Center's extreme precipitation tables for the project site.

D. Basic Standards

The project is required by the MDEP and the Town to provide permanent and temporary Erosion Control Best Management Practices. These methods are incorporated into the project design and outlined in detail in the plan set.

E. Flooding Standard

The Town of Gray requires the project to detain, retain or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project.

The project's stormwater design incorporates a detention to maintain these peak stormwater flows to pre-developed project conditions. The proposed project design has been modeled to evaluate and analyze the stormwater runoff characteristics of the site prior to construction of the project and upon completion of all proposed construction activities.

The first and only study point, Study Point 1 (SP-1) is located to the south of the project site near the outlet to an existing road culvert at the intersection of Jenny Drive and Fran Circle. This depression collects stormwater generated from both off-site and on-site tributary areas where the Jenny Drive Road swale converges with a natural drainage path, as well as the discharge from the existing road culvert. Stormwater is then conveyed to the south into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River. Sub-basin watershed area for SP1 is made up of both proposed onsite development and offsite areas, and consists of developed land, undeveloped woodland, and undeveloped meadow areas.

The following table summarizes the analysis:

Table 1 – Peak Rates of Stormwater Runoff						
Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP1	3.57	3.55	8.26	7.66	12.37	11.90

As illustrated in the table above, the proposed project's design including the integration of the proposed detention basin, reduces the peak rates of runoff at the study point.

The detention basin has been designed based on the MDEP guidelines and provides adequate flooding storage during the larger storm events. To demonstrate that the design of the detention basin has the required 1 foot of freeboard between the emergency spillway and the top of berm during the 25-year storm event assuming failure of the other discharge devices, a stormwater analysis was performed. The HydroCAD output has been provided in Attachment 3 of this report.

The watershed maps showing pre-development and post-development drainage patterns are included in the plan set and the computations performed with the HydroCAD software program are included as Attachment 4 of this report.

F. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is established. The Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in Attachment 5 of this report.

Prepared by:

DM ROMA CONSULTING ENGINEERS

[redacted]

J.P. Connolly
Senior Project Engineer

[redacted]

Jayson R. Haskell P.E.
Southern Maine Regional Manager

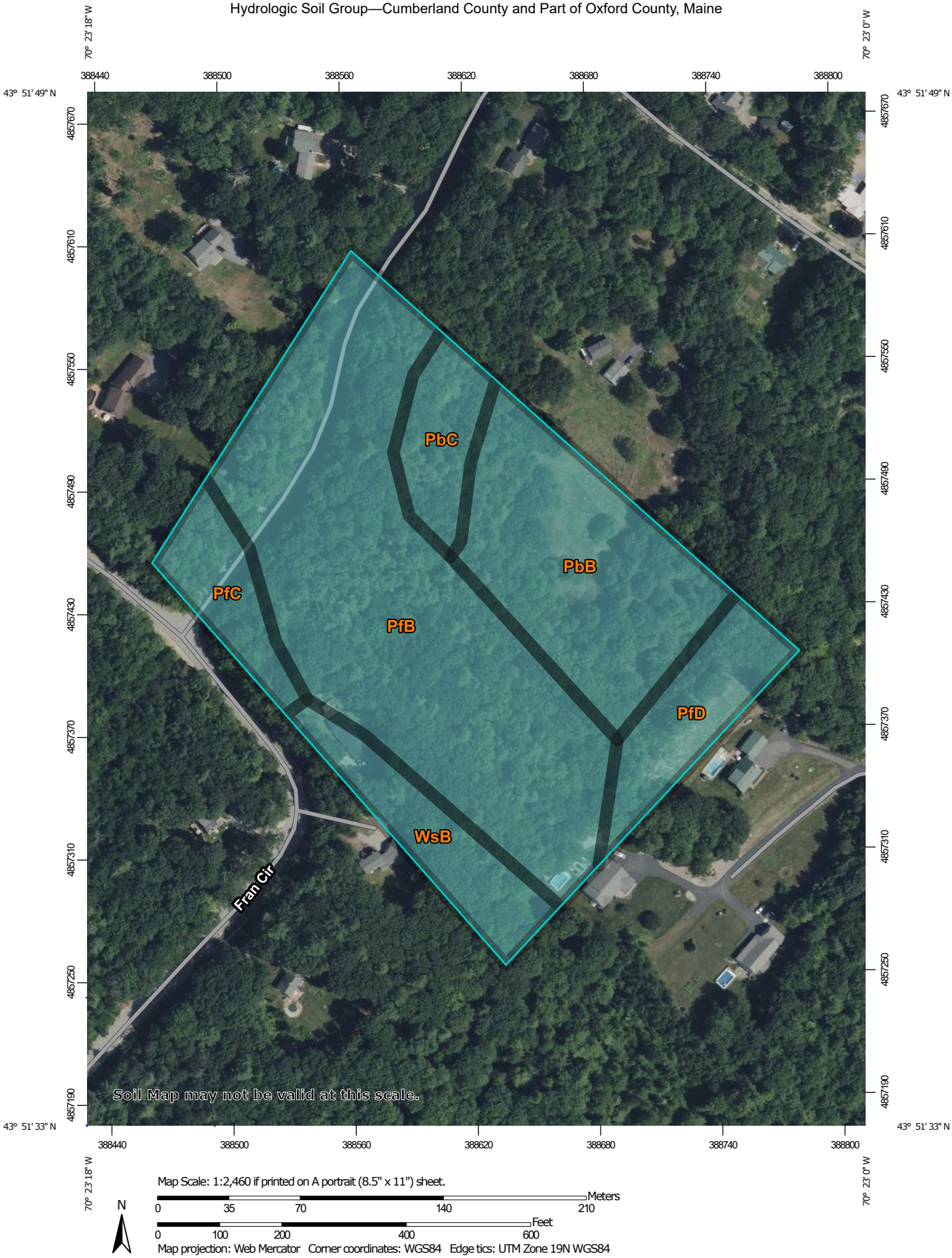
STATE OF MAINE
JAYSON R. HASKELL

[redacted]

8-4-2023

ATTACHMENT 1

MEDIUM INTENSITY SOILS MAP


70° 23' 18" W
70° 23' 0" W
388440
388500
388560
388620
388680
388740
388800
43° 51' 49" N
43° 51' 33" N
4857670
4857610
4857550
4857490
4857430
4857370
4857310
4857250
4857190
PbC
PbB
PfC
PfB
PfD
WsB
Fran Cir
Soil Map may not be valid at this scale.
Map Scale: 1:2,460 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 35 70 140 210
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 22, 2021—Oct 7, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	2.9	21.9%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	C	6.6	49.4%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	C	1.1	8.3%
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	C	1.1	8.4%
Totals for Area of Interest			**13.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT 2

TEST PIT LOGS

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-1 [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric

Slope %: 0-5

Limiting factor: 24"

[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification: 3 Profile C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-2 [ ] [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric

Slope %: 0-3

Limiting factor: 34"

[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification: 3 Profile C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric

Slope %:

Limiting factor:

[■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification:

Profile Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric

Slope %:

Limiting factor:

[■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification:

Profile Soil Condition

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 12/9/21
	name printed/typed: Alexander A. Finamore	Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-3 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 32"			

hydric / non-hydric	Slope %	Limiting factor	ground water / restrictive layer / bedrock
non-hydric	3-8	20"	restrictive layer

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-4 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 44"			

hydric / non-hydric	Slope %	Limiting factor	ground water / restrictive layer / bedrock
non-hydric	0-3	34"	restrictive layer

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-5 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
LIMIT OF EXCAVATION = 44"			

hydric / non-hydric	Slope %	Limiting factor	ground water / restrictive layer / bedrock
non-hydric	5-8	>48"	restrictive layer

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 2 (Profile) | B (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

hydric / non-hydric	Slope %	Limiting factor	ground water / restrictive layer / bedrock
non-hydric			restrictive layer

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) | (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 2/11/22
	name printed/typed: Alexander A. Finamore	Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	McDonnell Brothers Custom Builders, LLC	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-6 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLIVE	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 18" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-7 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[ ] hydric [■] non-hydric | Slope %: 0-3 | Limiting factor: 28" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-SW1 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLVIE	
		OLIVE BROWN	FEW, FINE, & FAINT
	FIRM		
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: 13" | [■] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) D (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 7/27/23
	name printed/typed: Alexander A. Finamore	Lic.#: 391

ATTACHMENT 3

DETENTION BASIN SIZING CALCULATIONS

DETENTION BASIN - SPILLWAY RUN

Summary for Pond DB1:

[80] Warning: Exceeded Pond R6 by 1.12' @ 26.16 hrs (4.20 cfs 148,532 cf)

Inflow Area = 128,158 sf, 2.50% Impervious, Inflow Depth = 3.06" for 25-Year event
Inflow = 5.46 cfs @ 12.44 hrs, Volume= 32,632 cf
Outflow = 5.25 cfs @ 12.52 hrs, Volume= 27,730 cf, Atten= 4%, Lag= 5.2 min
Primary = 5.25 cfs @ 12.52 hrs, Volume= 27,730 cf
Secondary = [redacted] cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.54' @ 12.52 hrs Surf.Area= 3,824 sf Storage= 6,851 cf

PEAK WS EL.= 334.54'
BERM EL.= 335.5
FREEBOARD:
335.5-334.54=0.96' ~

Plug-Flow detention time= 103.7 min calculated for 27,699 cf (85% of inflow)
Center-of-Mass det. time= 39.1 min (890.7 - 851.7)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	8,703 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,163	252.4	3,801	8,703	4,221

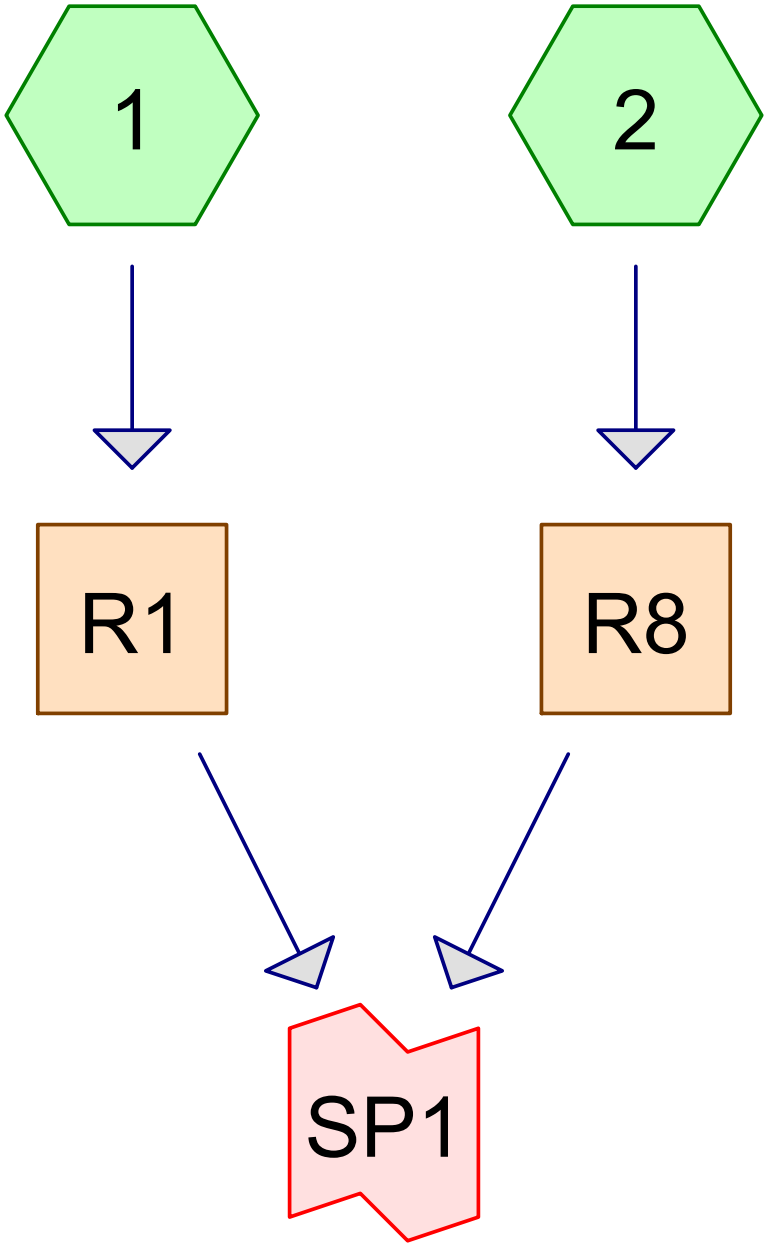
Device	Routing	Invert	Outlet Devices
#1	Primary	334.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	332.30'	**8.0" Round Culvert X 0.00** L= 22.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 332.30' / 332.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.21 cfs @ 12.52 hrs HW=334.53' TW=332.53' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.21 cfs @ 1.95 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=332.30' TW=332.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

ATTACHMENT 4

HYDROCAD CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 23015 - PRE
Prepared by DM Roma Consulting Engineers, Printed 8/4/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=762' Tc=24.3 min CN=72 Runoff=0.84 cfs 4,591 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=761' Tc=37.6 min CN=72 Runoff=2.86 cfs 19,080 cf

Reach R1: Avg. Flow Depth=0.07' Max Vel=1.63 fps Inflow=0.84 cfs 4,591 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=0.83 cfs 4,591 cf

Reach R8: Avg. Flow Depth=0.35' Max Vel=3.52 fps Inflow=2.86 cfs 19,080 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=2.86 cfs 19,080 cf

Link SP1: Inflow=3.57 cfs 23,671 cf
Primary=3.57 cfs 23,671 cf

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=762' Tc=24.3 min CN=72 Runoff=1.95 cfs 9,919 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=761' Tc=37.6 min CN=72 Runoff=6.62 cfs 41,219 cf

Reach R1: Avg. Flow Depth=0.10' Max Vel=2.00 fps Inflow=1.95 cfs 9,919 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=1.93 cfs 9,919 cf

Reach R8: Avg. Flow Depth=0.48' Max Vel=4.34 fps Inflow=6.62 cfs 41,219 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=6.62 cfs 41,219 cf

Link SP1: Inflow=8.26 cfs 51,138 cf
Primary=8.26 cfs 51,138 cf

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=762' Tc=24.3 min CN=72 Runoff=2.91 cfs 14,634 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=761' Tc=37.6 min CN=72 Runoff=9.91 cfs 60,813 cf

Reach R1: Avg. Flow Depth=0.12' Max Vel=2.15 fps Inflow=2.91 cfs 14,634 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=2.90 cfs 14,634 cf

Reach R8: Avg. Flow Depth=0.55' Max Vel=4.80 fps Inflow=9.91 cfs 60,813 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=9.91 cfs 60,813 cf

Link SP1: Inflow=12.37 cfs 75,447 cf
Primary=12.37 cfs 75,447 cf

Summary for Subcatchment 1:

Runoff = 2.91 cfs @ 12.35 hrs, Volume= 14,634 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
9,859	74	>75% Grass cover, Good, HSG C
52,718	72	Woods/grass comb., Good, HSG C
62,577	72	Weighted Average
62,577		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	130	0.0460	0.11		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.5	118	0.0549	3.77		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
4.2	384	0.0937	1.53		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.4	130	0.0354	4.97	155.19	**Channel Flow, Seg D to E** Area= 31.2 sf Perim= 63.5' r= 0.49' n= 0.035 Earth, dense weeds
24.3	762	Total			

Summary for Subcatchment 2:

Runoff = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
18,347	74	>75% Grass cover, Good, HSG C
241,705	72	Woods/grass comb., Good, HSG C
260,052	72	Weighted Average
260,052		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	150	0.0167	0.08		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.8	61	0.0734	1.35		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.3	125	0.0582	6.30	238.91	**Channel Flow, Seg C to D** Area= 37.9 sf Perim= 78.5' r= 0.48' n= 0.035 Earth, dense weeds
1.0	84	0.0807	1.42		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.3	86	0.0261	4.96	293.50	**Channel Flow, Seg E to F** Area= 59.2 sf Perim= 121.4' r= 0.49' n= 0.030 Earth, grassed & winding
2.9	255	0.0833	1.44		**Shallow Concentrated Flow, Seg F to G** Woodland Kv= 5.0 fps
37.6	761	Total			

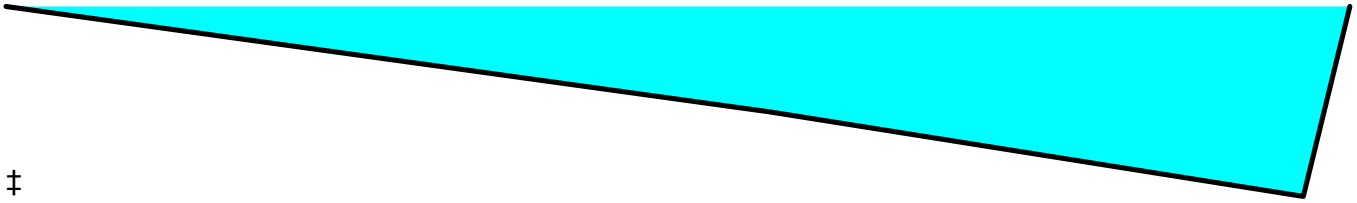
Summary for Reach R1:

Inflow Area = 62,577 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 2.91 cfs @ 12.35 hrs, Volume= 14,634 cf
Outflow = 2.90 cfs @ 12.37 hrs, Volume= 14,634 cf, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.15 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 3.8 min

Peak Storage= 306 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.09' Flow Area= 0.8 sf, Capacity= 1.62 cfs

Custom cross-section, Length= 226.9' Slope= 0.0528 '/'
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 323.97', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	322.00	0.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.2	8.0	36	0.18
0.09	0.8	19.4	191	1.62

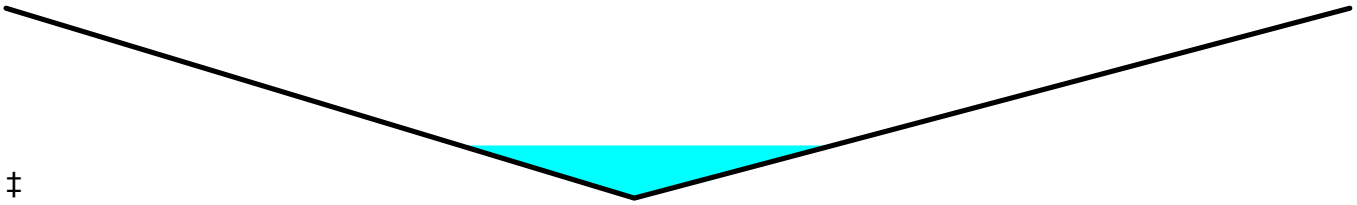
Summary for Reach R8:

Inflow Area = 260,052 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf
Outflow = 9.91 cfs @ 12.54 hrs, Volume= 60,813 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.9 min

Peak Storage= 531 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 304.41 cfs

Custom cross-section, Length= 257.2' Slope= 0.0719 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 330.50', Outlet Invert= 312.00'



‡

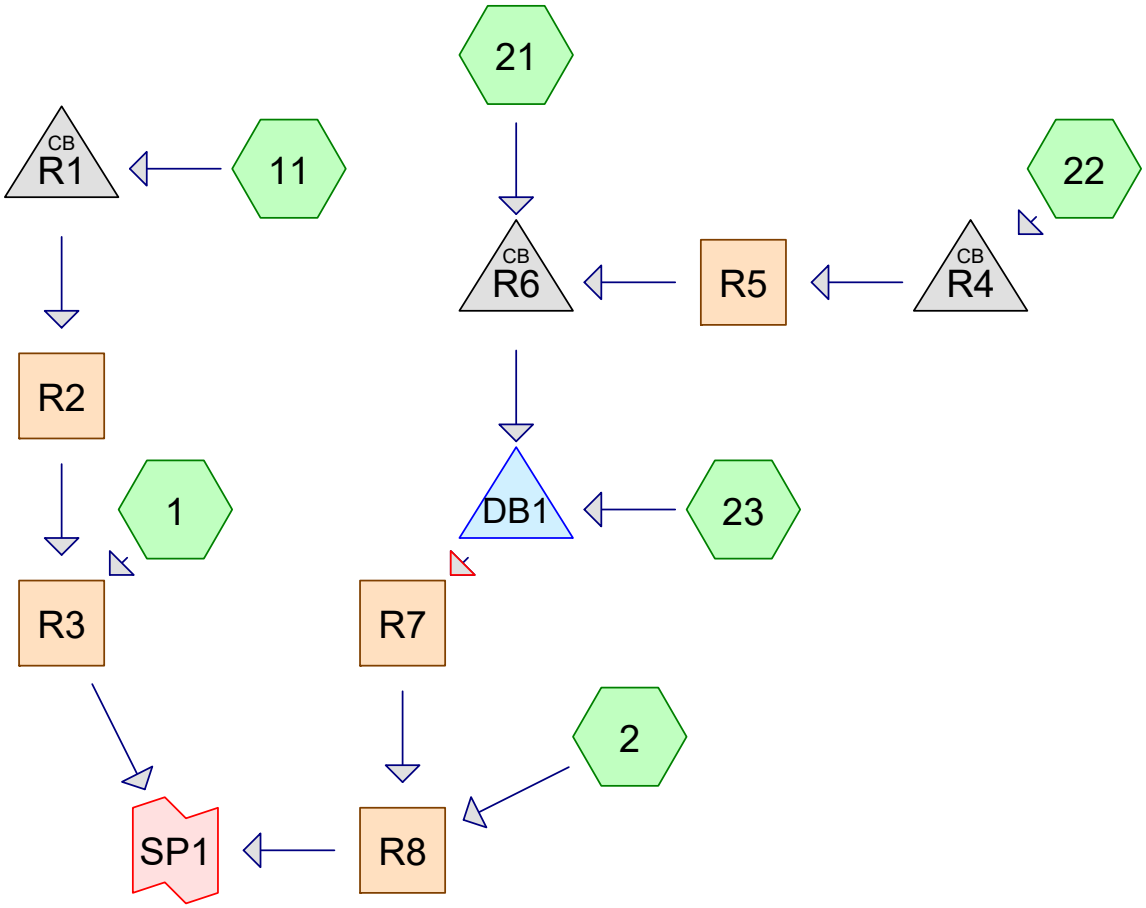
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	304.41

Summary for Link SP1:

Inflow Area = 322,629 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 12.37 cfs @ 12.50 hrs, Volume= 75,447 cf
Primary = 12.37 cfs @ 12.50 hrs, Volume= 75,447 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 23015 - POST w RURAL EASEMENT ROAD
Prepared by DM Roma Consulting Engineers, Printed 8/4/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,877 sf 0.00% Impervious Runoff Depth=1.10"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.29 cfs 1,085 cf

Subcatchment 2: Runoff Area=86,893 sf 2.58% Impervious Runoff Depth=0.99"
Flow Length=622' Tc=24.2 min UI Adjusted CN=74 Runoff=1.33 cfs 7,134 cf

Subcatchment 11: Runoff Area=96,254 sf 1.32% Impervious Runoff Depth=0.93"
Flow Length=705' Tc=24.1 min UI Adjusted CN=73 Runoff=1.38 cfs 7,476 cf

Subcatchment 21: Runoff Area=48,478 sf 1.99% Impervious Runoff Depth=1.04"
Flow Length=629' Tc=36.6 min CN=75 Runoff=0.66 cfs 4,202 cf

Subcatchment 22: Runoff Area=67,476 sf 3.32% Impervious Runoff Depth=0.99"
Flow Length=541' Tc=29.8 min UI Adjusted CN=74 Runoff=0.95 cfs 5,540 cf

Subcatchment 23: Runoff Area=12,204 sf 0.00% Impervious Runoff Depth=1.15"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.31 cfs 1,175 cf

Reach R2: Avg. Flow Depth=0.54' Max Vel=1.31 fps Inflow=1.38 cfs 7,476 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=1.38 cfs 7,476 cf

Reach R3: Avg. Flow Depth=0.09' Max Vel=1.89 fps Inflow=1.54 cfs 8,561 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=1.53 cfs 8,561 cf

Reach R5: Avg. Flow Depth=0.11' Max Vel=3.87 fps Inflow=0.95 cfs 5,540 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=0.95 cfs 5,540 cf

Reach R7: Avg. Flow Depth=0.30' Max Vel=1.84 fps Inflow=1.08 cfs 10,905 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=1.08 cfs 10,905 cf

Reach R8: Avg. Flow Depth=0.31' Max Vel=3.25 fps Inflow=2.07 cfs 18,039 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=2.07 cfs 18,039 cf

Pond DB1: Peak Elev=333.16' Storage=2,256 cf Inflow=1.73 cfs 10,917 cf
Primary=0.00 cfs 0 cf Secondary=1.08 cfs 10,905 cf Outflow=1.08 cfs 10,905 cf

Pond R1: Peak Elev=323.67' Inflow=1.38 cfs 7,476 cf
15.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=1.38 cfs 7,476 cf

Pond R4: Peak Elev=346.82' Inflow=0.95 cfs 5,540 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=0.95 cfs 5,540 cf

Pond R6: Peak Elev=333.51' Inflow=1.60 cfs 9,742 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=1.60 cfs 9,742 cf

Link SP1: Inflow=3.55 cfs 26,601 cf
Primary=3.55 cfs 26,601 cf

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,877 sf 0.00% Impervious Runoff Depth=2.22"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.61 cfs 2,195 cf

Subcatchment 2: Runoff Area=86,893 sf 2.58% Impervious Runoff Depth=2.06"
Flow Length=622' Tc=24.2 min UI Adjusted CN=74 Runoff=2.95 cfs 14,897 cf

Subcatchment 11: Runoff Area=96,254 sf 1.32% Impervious Runoff Depth=1.98"
Flow Length=705' Tc=24.1 min UI Adjusted CN=73 Runoff=3.13 cfs 15,874 cf

Subcatchment 21: Runoff Area=48,478 sf 1.99% Impervious Runoff Depth=2.14"
Flow Length=629' Tc=36.6 min CN=75 Runoff=1.42 cfs 8,633 cf

Subcatchment 22: Runoff Area=67,476 sf 3.32% Impervious Runoff Depth=2.06"
Flow Length=541' Tc=29.8 min UI Adjusted CN=74 Runoff=2.09 cfs 11,568 cf

Subcatchment 23: Runoff Area=12,204 sf 0.00% Impervious Runoff Depth=2.30"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.64 cfs 2,339 cf

Reach R2: Avg. Flow Depth=0.73' Max Vel=1.61 fps Inflow=3.13 cfs 15,874 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=3.13 cfs 15,874 cf

Reach R3: Avg. Flow Depth=0.13' Max Vel=2.20 fps Inflow=3.45 cfs 18,069 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=3.42 cfs 18,069 cf

Reach R5: Avg. Flow Depth=0.17' Max Vel=5.04 fps Inflow=2.09 cfs 11,568 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=2.09 cfs 11,568 cf

Reach R7: Avg. Flow Depth=0.40' Max Vel=2.24 fps Inflow=2.38 cfs 22,529 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=2.40 cfs 22,529 cf

Reach R8: Avg. Flow Depth=0.40' Max Vel=3.89 fps Inflow=4.26 cfs 37,426 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=4.27 cfs 37,426 cf

Pond DB1: Peak Elev=334.13' Storage=5,340 cf Inflow=3.73 cfs 22,541 cf
Primary=0.57 cfs 591 cf Secondary=1.81 cfs 21,938 cf Outflow=2.38 cfs 22,529 cf

Pond R1: Peak Elev=324.08' Inflow=3.13 cfs 15,874 cf
15.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=3.13 cfs 15,874 cf

Pond R4: Peak Elev=347.08' Inflow=2.09 cfs 11,568 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=2.09 cfs 11,568 cf

Pond R6: Peak Elev=334.25' Inflow=3.47 cfs 20,201 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=3.47 cfs 20,201 cf

Link SP1: Inflow=7.66 cfs 55,495 cf
Primary=7.66 cfs 55,495 cf

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,877 sf 0.00% Impervious Runoff Depth=3.18"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.88 cfs 3,150 cf

Subcatchment 2: Runoff Area=86,893 sf 2.58% Impervious Runoff Depth=2.99"
Flow Length=622' Tc=24.2 min UI Adjusted CN=74 Runoff=4.33 cfs 21,668 cf

Subcatchment 11: Runoff Area=96,254 sf 1.32% Impervious Runoff Depth=2.90"
Flow Length=705' Tc=24.1 min UI Adjusted CN=73 Runoff=4.65 cfs 23,252 cf

Subcatchment 21: Runoff Area=48,478 sf 1.99% Impervious Runoff Depth=3.09"
Flow Length=629' Tc=36.6 min CN=75 Runoff=2.07 cfs 12,471 cf

Subcatchment 22: Runoff Area=67,476 sf 3.32% Impervious Runoff Depth=2.99"
Flow Length=541' Tc=29.8 min UI Adjusted CN=74 Runoff=3.07 cfs 16,826 cf

Subcatchment 23: Runoff Area=12,204 sf 0.00% Impervious Runoff Depth=3.28"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.91 cfs 3,335 cf

Reach R2: Avg. Flow Depth=0.85' Max Vel=1.78 fps Inflow=4.65 cfs 23,252 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=4.65 cfs 23,252 cf

Reach R3: Avg. Flow Depth=0.16' Max Vel=2.30 fps Inflow=5.10 cfs 26,402 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=5.06 cfs 26,402 cf

Reach R5: Avg. Flow Depth=0.21' Max Vel=5.71 fps Inflow=3.07 cfs 16,826 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=3.07 cfs 16,826 cf

Reach R7: Avg. Flow Depth=0.52' Max Vel=2.66 fps Inflow=4.77 cfs 32,621 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=4.86 cfs 32,621 cf

Reach R8: Avg. Flow Depth=0.51' Max Vel=4.54 fps Inflow=7.93 cfs 54,289 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=7.95 cfs 54,289 cf

Pond DB1: Peak Elev=334.36' Storage=6,191 cf Inflow=5.46 cfs 32,632 cf
Primary=2.82 cfs 4,720 cf Secondary=1.95 cfs 27,900 cf Outflow=4.77 cfs 32,621 cf

Pond R1: Peak Elev=324.44' Inflow=4.65 cfs 23,252 cf
15.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=4.65 cfs 23,252 cf

Pond R4: Peak Elev=347.26' Inflow=3.07 cfs 16,826 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=3.07 cfs 16,826 cf

Pond R6: Peak Elev=334.94' Inflow=5.07 cfs 29,297 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=5.07 cfs 29,297 cf

Link SP1: Inflow=11.90 cfs 80,691 cf
Primary=11.90 cfs 80,691 cf

Summary for Subcatchment 1:

Runoff = 0.88 cfs @ 12.12 hrs, Volume= 3,150 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	2,953	74	>75% Grass cover, Good, HSG C
	7,111	72	Woods/grass comb., Good, HSG C
*	1,813	96	Gravel surface
	11,877	76	Weighted Average
	11,877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	88	0.1704	0.18		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"

Summary for Subcatchment 2:

Runoff = 4.33 cfs @ 12.34 hrs, Volume= 21,668 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	14,455	74		>75% Grass cover, Proposed, Good, HSG C
	64,663	72		Woods/grass comb., Good, HSG C
*	5,537	96		Gravel surface
*	2,238	98		Unconnected roofs,
	86,893	75	74	Weighted Average, UI Adjusted
	84,655			97.42% Pervious Area
	2,238			2.58% Impervious Area
	2,238			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	148	0.0505	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.2	94	0.0454	8.98	259.35	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.50' Z= 20.0 & 3.0 '/' Top.W=36.50' n= 0.030 Earth, grassed & winding
0.3	117	0.0510	6.85	386.33	**Channel Flow, Seg C to D** Area= 56.4 sf Perim= 117.7' r= 0.48' n= 0.030 Earth, grassed & winding
3.2	263	0.0760	1.38		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
24.2	622	Total			

Summary for Subcatchment 11:

Runoff = 4.65 cfs @ 12.34 hrs, Volume= 23,252 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	19,839	74		>75% Grass cover, Existing, Good, HSG C
*	11,386	74		>75% Grass cover, Proposed, Good, HSG C
	61,566	72		Woods/grass comb., Good, HSG C
*	2,189	96		Gravel surface
*	1,274	98		Unconnected roofs,
	96,254	74	73	Weighted Average, UI Adjusted
	94,980			98.68% Pervious Area
	1,274			1.32% Impervious Area
	1,274			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	130	0.0460	0.11		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.5	118	0.0549	3.77		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
4.2	384	0.0937	1.53		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.2	57	0.0354	4.97	155.19	**Channel Flow, Seg D to E** Area= 31.2 sf Perim= 63.5' r= 0.49' n= 0.035 Earth, dense weeds
0.0	16	0.1592	24.34	527.11	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.030 Earth, grassed & winding
24.1	705	Total			

Summary for Subcatchment 21:

Runoff = 2.07 cfs @ 12.51 hrs, Volume= 12,471 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	8,369	74	>75% Grass cover, Existing, Good, HSG C
*	5,716	74	>75% Grass cover, Proposed, Good, HSG C
	29,712	72	Woods/grass comb., Good, HSG C
*	3,716	96	Gravel surface
*	965	98	Unconnected roofs,
	48,478	75	Weighted Average
	47,513		98.01% Pervious Area
	965		1.99% Impervious Area
	965		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	150	0.0167	0.08		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.4	69	0.0253	0.80		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	93	0.0590	3.91		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
2.3	180	0.0681	1.30		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.1	20	0.0571	3.85		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.1	41	0.1017	6.47		**Shallow Concentrated Flow, Seg F to G** Paved Kv= 20.3 fps
0.0	14	0.2933	8.72		**Shallow Concentrated Flow, Seg G to H** Unpaved Kv= 16.1 fps
0.0	62	0.1399	23.72	578.97	**Trap/Vee/Rect Channel Flow, Seg H to I** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
36.6	629	Total			

Summary for Subcatchment 22:

Runoff = 3.07 cfs @ 12.42 hrs, Volume= 16,826 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	10,619	74		>75% Grass cover, Proposed, Good, HSG C
	50,182	72		Woods/grass comb., Good, HSG C
*	4,437	96		Gravel surface
*	2,238	98		Unconnected roofs,
	67,476	75	74	Weighted Average, UI Adjusted
	65,238			96.68% Pervious Area
	2,238			3.32% Impervious Area
	2,238			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	150	0.0267	0.09		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.1	61	0.0693	8.12	211.97	**Channel Flow, Seg B to C** Area= 26.1 sf Perim= 53.1' r= 0.49' n= 0.030 Earth, grassed & winding
1.5	107	0.0586	1.21		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.1	12	0.0586	3.90		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.9	78	0.0770	1.39		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.3	41	0.0184	2.18		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.1	92	0.0833	18.30	446.75	**Trap/Vee/Rect Channel Flow, Seg G to H** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
29.8	541	Total			

Summary for Subcatchment 23:

Runoff = 0.91 cfs @ 12.15 hrs, Volume= 3,335 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	8,891	74	>75% Grass cover, Proposed, Good, HSG C
	1,446	72	Woods/grass comb., Good, HSG C
*	1,867	96	Gravel surface
*	0	98	Unconnected roofs,
	12,204	77	Weighted Average
	12,204		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	60	0.0835	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.6	27	0.3330	0.27		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
9.8	87	Total			

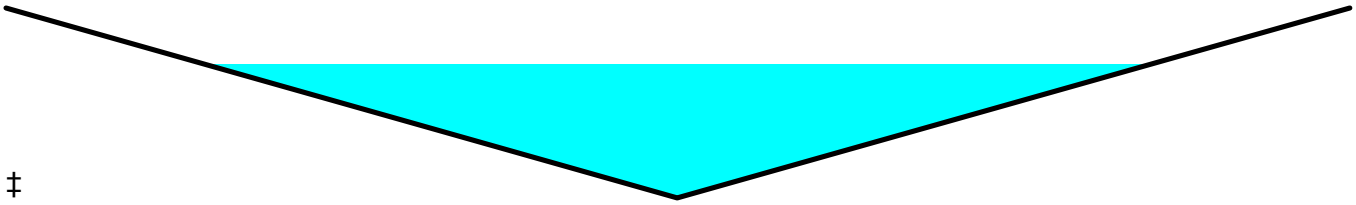
Summary for Reach R2:

Inflow Area = 96,254 sf, 1.32% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.65 cfs @ 12.34 hrs, Volume= 23,252 cf
Outflow = 4.65 cfs @ 12.35 hrs, Volume= 23,252 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 1.78 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 0.7 min

Peak Storage= 90 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.20' Flow Area= 5.2 sf, Capacity= 11.80 cfs

Custom cross-section, Length= 34.4' Slope= 0.0058 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 322.80', Outlet Invert= 322.60'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
4.37	322.80	1.20
8.75	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.20	5.2	9.1	181	11.80

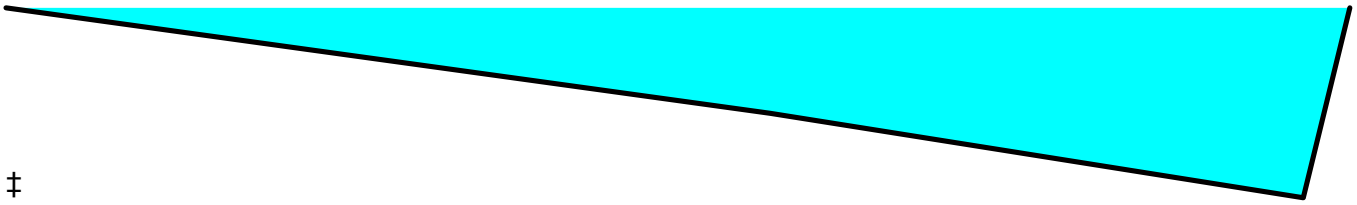
Summary for Reach R3:

Inflow Area = 108,131 sf, 1.18% Impervious, Inflow Depth = 2.93" for 25-Year event
Inflow = 5.10 cfs @ 12.33 hrs, Volume= 26,402 cf
Outflow = 5.06 cfs @ 12.36 hrs, Volume= 26,402 cf, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 3.5 min

Peak Storage= 499 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.09' Flow Area= 0.8 sf, Capacity= 1.62 cfs

Custom cross-section, Length= 226.9' Slope= 0.0528 '/'
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 323.97', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	322.00	0.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.2	8.0	36	0.18
0.09	0.8	19.4	191	1.62

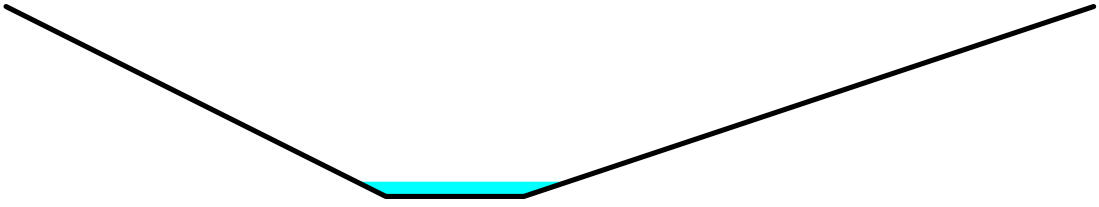
Summary for Reach R5:

Inflow Area = 67,476 sf, 3.32% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 3.07 cfs @ 12.42 hrs, Volume= 16,826 cf
Outflow = 3.07 cfs @ 12.43 hrs, Volume= 16,826 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 5.71 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 0.5 min

Peak Storage= 33 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 579.71 cfs

2.00' x 2.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 62.1' Slope= 0.1403 '/'
Inlet Invert= 341.59', Outlet Invert= 332.88'



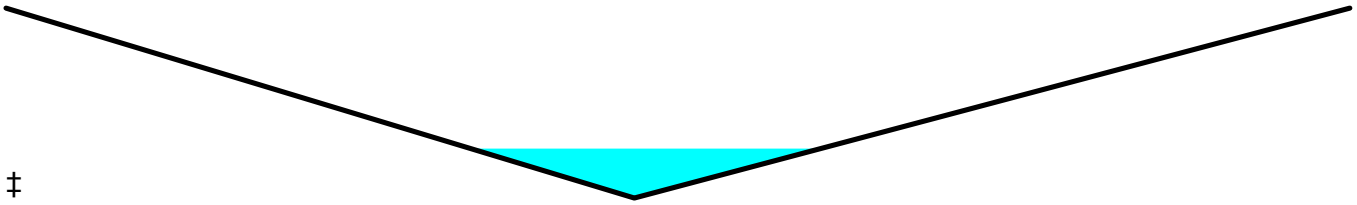
Summary for Reach R7:

Inflow Area = 128,158 sf, 2.50% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 4.77 cfs @ 12.61 hrs, Volume= 32,621 cf
Outflow = 4.86 cfs @ 12.60 hrs, Volume= 32,621 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 2.66 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 1.7 min

Peak Storage= 112 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 176.83 cfs

Custom cross-section, Length= 61.8' Slope= 0.0243 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 332.00', Outlet Invert= 330.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	1,664	176.83

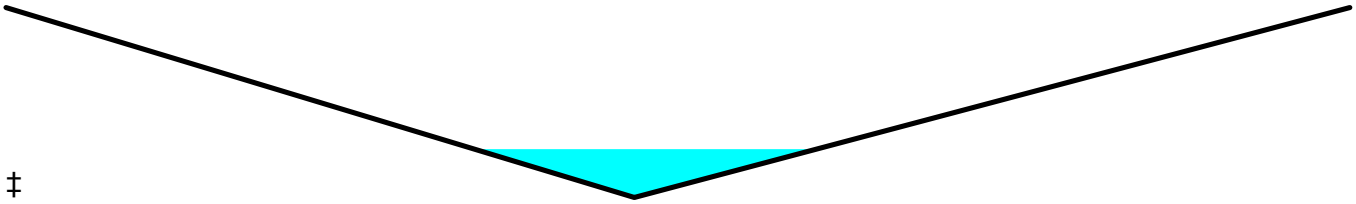
Summary for Reach R8:

Inflow Area = 215,051 sf, 2.53% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 7.93 cfs @ 12.56 hrs, Volume= 54,289 cf
Outflow = 7.95 cfs @ 12.57 hrs, Volume= 54,289 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 4.54 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 4.2 min

Peak Storage= 450 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 304.41 cfs

Custom cross-section, Length= 257.2' Slope= 0.0719 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 330.50', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	304.41

Summary for Pond DB1:

Inflow Area = 128,158 sf, 2.50% Impervious, Inflow Depth = 3.06" for 25-Year event
Inflow = 5.46 cfs @ 12.44 hrs, Volume= 32,632 cf
Outflow = 4.77 cfs @ 12.61 hrs, Volume= 32,621 cf, Atten= 13%, Lag= 10.3 min
Primary = 2.82 cfs @ 12.61 hrs, Volume= 4,720 cf
Secondary = 1.95 cfs @ 12.61 hrs, Volume= 27,900 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.36' @ 12.61 hrs Surf.Area= 3,699 sf Storage= 6,191 cf

Plug-Flow detention time= 39.3 min calculated for 32,584 cf (100% of inflow)
Center-of-Mass det. time= 40.3 min (892.0 - 851.7)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	8,703 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,163	252.4	3,801	8,703	4,221

Device	Routing	Invert	Outlet Devices
#1	Primary	334.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	332.30'	**8.0" Round Culvert** L= 22.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 332.30' / 332.00' S= 0.0133 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.78 cfs @ 12.61 hrs HW=334.36' TW=332.51' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.78 cfs @ 1.56 fps)

Secondary OutFlow Max=1.95 cfs @ 12.61 hrs HW=334.36' TW=332.51' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 1.95 cfs @ 5.58 fps)

Summary for Pond R1:

Inflow Area = 96,254 sf, 1.32% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.65 cfs @ 12.34 hrs, Volume= 23,252 cf
Outflow = 4.65 cfs @ 12.34 hrs, Volume= 23,252 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.65 cfs @ 12.34 hrs, Volume= 23,252 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 324.44' @ 12.34 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**15.0" Round Culvert** L= 34.2' Ke= 0.500 Inlet / Outlet Invert= 323.00' / 322.80' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.58 cfs @ 12.34 hrs HW=324.42' TW=323.64' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 4.58 cfs @ 4.11 fps)

Summary for Pond R4:

Inflow Area = 67,476 sf, 3.32% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 3.07 cfs @ 12.42 hrs, Volume= 16,826 cf
Outflow = 3.07 cfs @ 12.42 hrs, Volume= 16,826 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.42 hrs, Volume= 16,826 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 347.26' @ 12.42 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.04 cfs @ 12.42 hrs HW=347.26' TW=341.80' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.04 cfs @ 3.22 fps)

Summary for Pond R6:

Inflow Area = 115,954 sf, 2.76% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 5.07 cfs @ 12.46 hrs, Volume= 29,297 cf
Outflow = 5.07 cfs @ 12.46 hrs, Volume= 29,297 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.46 hrs, Volume= 29,297 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.94' @ 12.58 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	332.88'	**15.0" Round Culvert** L= 36.6' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 332.88' / 332.37' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.19 cfs @ 12.46 hrs HW=334.73' TW=334.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.19 cfs @ 3.42 fps)

Summary for Link SP1:

Inflow Area = 323,182 sf, 2.08% Impervious, Inflow Depth = 3.00" for 25-Year event
Inflow = 11.90 cfs @ 12.53 hrs, Volume= 80,691 cf
Primary = 11.90 cfs @ 12.53 hrs, Volume= 80,691 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs

ATTACHMENT 5

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

Responsible Party

Owner: McDonnell Brothers Custom Builders, LLC.
391 Roosevelt Trail
Windham, Maine 04062

The owner/applicant is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until a homeowner's association is established. Once the association is established, maintenance will be the responsibility of the homeowners. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the stormwater basins. To ensure the basins function as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basins due to compaction.

4. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
   (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
   (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
   (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
   (d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measures, must be maintained by the owner in effective operating condition. A qualified inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Storm Drains:** Inspect storm drains in the spring, late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the storm drain's outlet.

D. **Detention Basin:** The detention basin is not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage.

   The basin shall be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain storage capacity. Any bare areas or erosion rills shall be repaired with new loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure. Inspect culvert outlet as indicated in Section 1C and the emergency spillway inspected as indicated in Section 1E.

E. **Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

F. **Regular Maintenance:** Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

G. **Documentation:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Ditches, swales and other open channels	Inspect after major rainfall event.			
	Inspect for erosion or slumping and repair			
	Mowed at least annually			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – DETENTION BASIN

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Detention Basin	Check after each rainfall event to ensure that pond drains dry			
	Mow grass at least annually to control growth of woody vegetation			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

ATTACHMENT 5

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

Responsible Party

Owner: McDonnell Brothers Custom Builders, LLC.
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The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the stormwater basins. To ensure the basins function as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basins due to compaction.

4. **Snow Storage:** The proposed underdrained filter basin and wet ponds shall not be utilized for snow storage. Snow storage areas shall be located away from the basins, and in areas that will direct snow melt runoff into one of the basins on site.

5. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;

(h) Uncontaminated groundwater or spring water;
(i) Foundation or footer drain-water where flows are not contaminated;
(j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
(k) Potable water sources including waterline flushings; and
(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
(d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measure, must be maintained by the owner in effective operating condition. A qualified third-party inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The inspector shall be certified through the MDEP to inspect the stormwater infrastructure. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Storm Drains:** Inspect storm drains in the spring, late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the

inlet, at the outlet, and within the conduit; and to repair any erosion damage at the storm drain's outlet.

D. Outlet Control Structures: Inspect and, if required, clean out structure at least once a year, preferably in early spring. Clean out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the structure and inlet grate.

E. Detention Basin: The detention basin is not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage. Basin should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. Basins to be inspected every six months thereafter with at least one inspection after a major storm event.

The basin shall be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain storage capacity. Any bare areas or erosion rills shall be repaired with new loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure. Inspect culvert outlet as indicated in Section 1C and the emergency spillway inspected as indicated in Section 1G.

F. Emergency Spillway: Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

G. Regular Maintenance: Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

H. Documentation: Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town and MDEP staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Ditches, swales and other open channels	Inspect after major rainfall event.			
	Inspect for erosion or slumping and repair			
	Mowed at least annually			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – DETENTION BASIN

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Detention Basin	Check after each rainfall event to ensure that pond drains dry			
	Mow grass at least annually to control growth of woody vegetation			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

SECTION 7

EROSION & SEDIMENTATION CONTROL PLAN
(INCLUDED WITHIN PLAN SET)

SECTION 8

WAIVER REQUESTS

WAIVER REQUESTS

The applicant would like the Planning Board to consider granting waivers to the following requirements:

- High Intensity Soil Survey
- Hydrogeologic Assessment
- Stone or Concrete monuments at all property corners

The applicant is requesting the Planning Board consider granting a waiver from the requirement of having a high-intensity soil survey performed for the project site. Soil test pits conducted on the project site confirm that the medium intensity soil mapping is accurate in the vicinity of the test pits. With the project not proposing improvements such as engineered waste water system(s), it is the opinion of the applicant that the high-intensity soil survey will not provide any significant additional information as to the suitability of the site's soil conditions for the improvements proposed.

The applicant is requesting the Planning Board consider granting a waiver from the requirement of having a hydrogeologic assessment of the site. The project site is not located within a sand and gravel aquifer, and the average density of the current proposed three (3) lot layout results is one dwelling per 51,691± sf of total lot area (310,017 sf / 6 proposed dwellings = 51,691 sf). As such the impact of the proposed project on the hydrogeology of the site is not expected to be significant.

The applicant is requesting the Planning Board consider granting a waiver from the requirement that all property corners be monumented with stone or concrete bounds. Many of the proposed property corners are located within stonewalls. Setting property pins (capped iron rebar typically) in a stonewall is difficult to do with accuracy. Setting stone or concrete pre-cast bounds would be even more difficult and would likely require a portion of the stonewall wall to be removed in the vicinity of the property corner.

SECTION 9

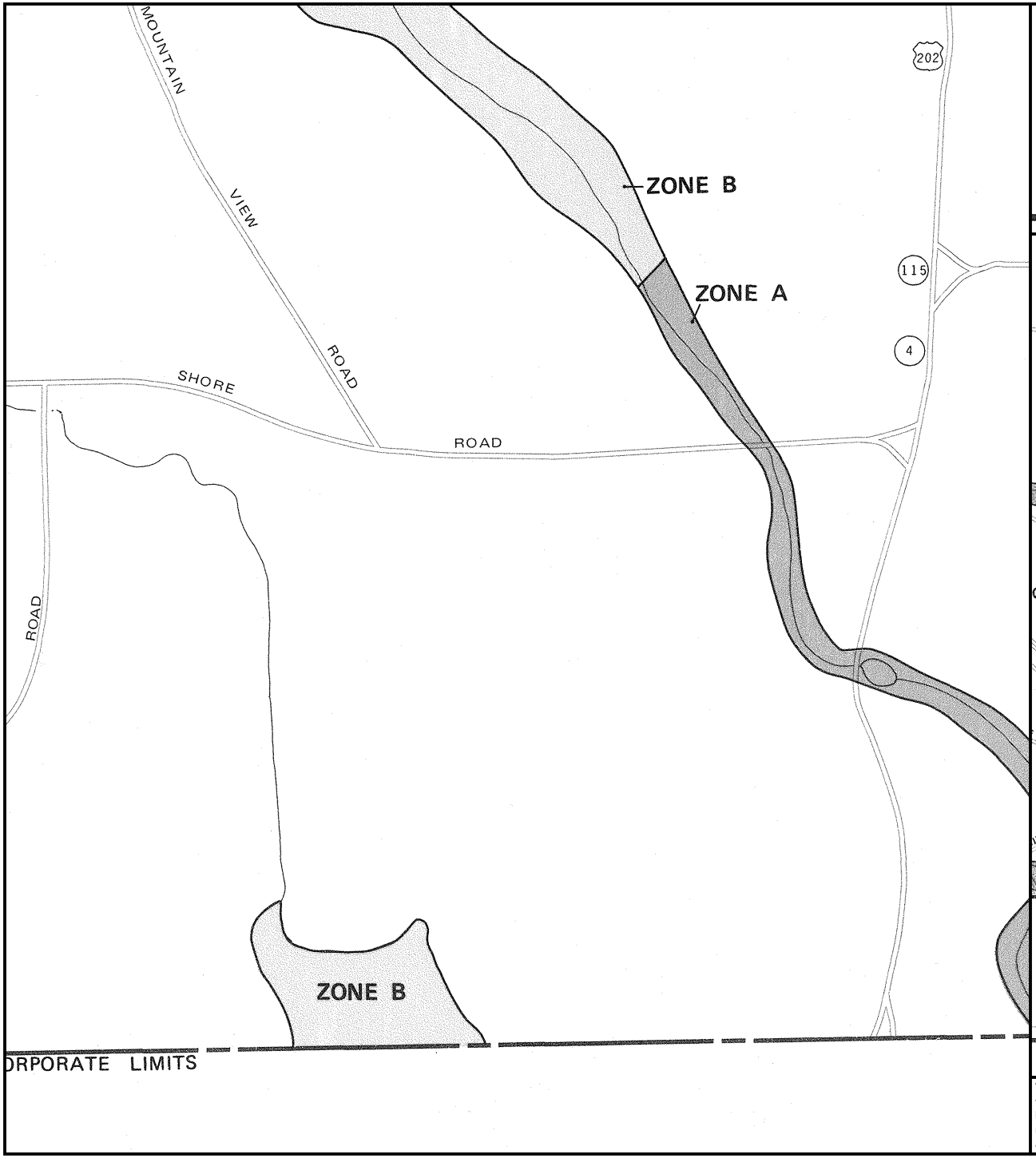
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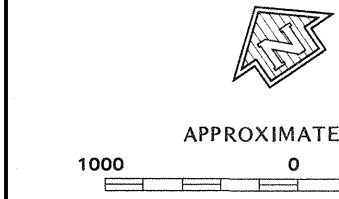
Covenants and Restrictions

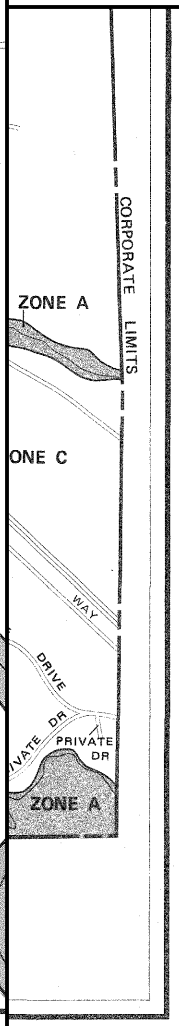
The property owner/applicant's legal counsel is preparing draft homeowner's documents and will be provided for the Town's review as soon as they are available.

SECTION 10

FEMA FIRMETTE







NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
GRAY, MAINE
CUMBERLAND COUNTY

PANEL 15 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230048 0015 A

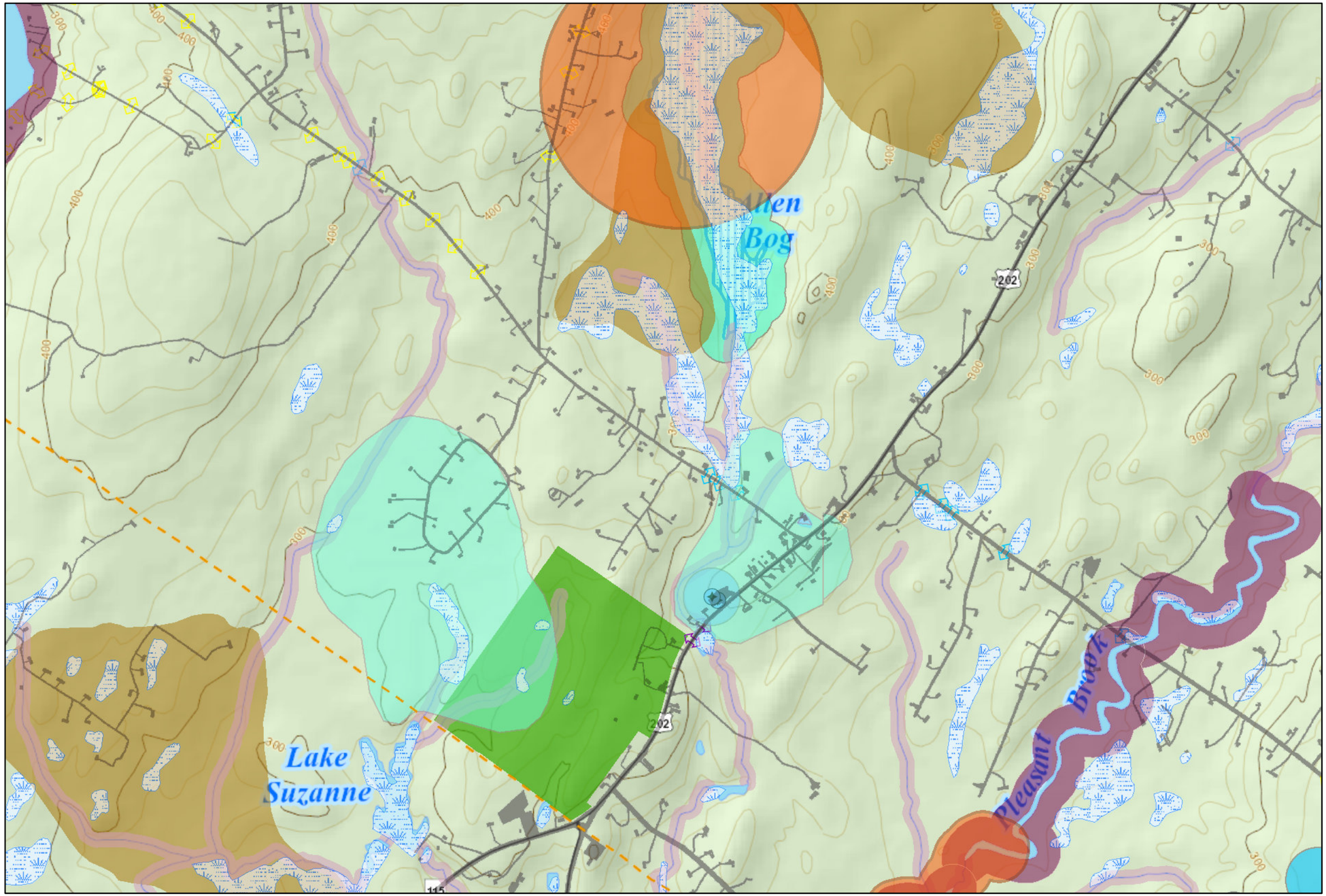
EFFECTIVE DATE:
JANUARY 6,1982

federal emergency management agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

SECTION 11

BEGINNING WITH HABITAT MAP



BEGINNING WITH HABITAT

Legend

- City/Township
- 1
- 2
- Watershed Divide (HUC 12)
- Watershed Divide (HUC 10)
- Watershed Divide (HUC 8)
- Watershed Divide (HUC 6)
- Wetlands
- Great Ponds
- Stream_Buffers_75ft
- Shellfish Beds
- Public Water Supply Wells
- Source Protection
- Aquifers
- ETSC Animal Habitat Buffers
- Rare Plants and Natural Communities
- Natural Communities
- Wild Brook Trout Habitat
- Atlantic Salmon Rearing Habitat
- Atlantic Salmon Spawning Habitat
- Roseate Tern, Piping Plover or Least Tern Nesting Areas
- Deer Wintering
- Inland Wading Bird and Waterfowl Habitat
- Wildlife Wetlands
- Seabird Nesting Island
- Shorebird Habitat
- Tidal Wading Bird and Waterfowl Habitat
- Significant Vernal Pools
- Less than 2000 Vehicles/Day
- More than 2000 Vehicles/Day
- Less than 2000 Vehicles/Day
- More than 2000 Vehicles/Day
- Undeveloped Habitat Blocks
- Highway Bridge Connectors
- Maine Conserved Lands
- Federal
- Municipal
- Water Dist., etc.
- Private
- State
- Conserved Lands Easements
- Focus

State of Maine

The Nature Conservancy
Protecting nature. Preserving life.™

Maine Audubon

Maine Coast Heritage Trust
A Statewide Land Conservation Organization

SWOAM
Small Woodland Owners Association of Maine

MaineDOT

Maine Endangered and Nongame Wildlife Fund

N
W E
S

0 0.225 0.45 0.9 1.35 mi

Supported in part by Maine Outdoor Heritage Fund lottery ticket sales

Map Prepared by Maine Department of Inland Fisheries & Wildlife
March 2023

Supported in part by Loon Conservation Plate funds

SECTION 12

FIRE DEPARTMENT COORDINATION

From: J.P. Connolly
To: "Kurt Elkanich"
Subject: RE: Lieutenants Drive - Cambell Shore Amended Subdivision ~ McDonnell Brothers Custom Builders LLC.
Date: Friday, August 4, 2023 11:20:00 AM

Thank you very much Chief,

The road section proposed is the based on the Town's minor rural street section that requires a minimum 20 foot wide gravel section; I will also advise my client that 20' is the absolute minimum as I am aware that they are considering expanding the road to the rural public easement street section.

J.P.

DM ROMA
CONSULTING ENGINEERS

Mailing Address:
P.O. Box 1116
Windham, ME 04062

Office Location:
850 Main Street
Westbrook, ME 04092

O: (207) 591-5055
C: (760) 840-0997

From: Kurt Elkanich <kelkanich@graymaine.org>
Sent: Thursday, August 3, 2023 3:02 PM
To: J.P. Connolly <jp@dmroma.com>; Peter Holmquist <pholmquist@graymaine.org>
Subject: Re: Lieutenants Drive - Cambell Shore Amended Subdivision ~ McDonnell Brothers Custom Builders LLC.

Hi J. P. ,
The only thing I see that is a concern is that per NFPA the road needs to be 20 feet wide and 13' 6" clear overhead.

Kurt

Get Outlook for iOS

From: J.P. Connolly <jp@dmroma.com>
Sent: Thursday, August 3, 2023 2:09:34 PM
To: Kurt Elkanich <kelkanich@graymaine.org>; Peter Holmquist <pholmquist@graymaine.org>
Subject: Lieutenants Drive - Cambell Shore Amended Subdivision ~ McDonnell Brothers Custom Builders LLC.

Good afternoon Chief Elkanich and Assistant Chief Holmquist;

My name is J.P. Connolly and I work for DM Roma Consulting Engineers. Our client, McDonnell Brothers Custom Builders, LLC. own a property off of Jenny Drive that was part of a subdivision, Cambell Acres, that they intend to develop with three duplexes on three proposed lots. The project includes a private road "Lieutenants Drive" (not yet approved by the E911 officer) about 400 feet in length, a hammerhead turnaround and improvements on three new lots associated with the duplexes. The duplexes that are proposed will be constructed with fire sprinkler systems for fire suppression.

We intend to submit a preliminary subdivision application for the project in the next few days to the Community Development Department, and I presume they will be forwarding you plans and application documents requesting your review and comment for the Planning Board. I have attached a pdf of the plan set for your use and welcome any feedback on the project as it relates to life safety.

Please do not hesitate to contact me if you would like any additional information, have any comments that you would like our plans to address, or any other matter you would like my attention on and I will do my best to help. At the same time, please do not fell obligated to respond to this email as I recognize the value of your time and don't want to burden you with any additional responsibility. Thank you for both for your time and service!

J.P. Connolly

Senior Project Engineer

DM ROMA
CONSULTING ENGINEERS

Mailing Address:
P.O. Box 1116
Windham, ME 04062
O: (207) 591-5055
C: (760) 840-0997

Office Location:
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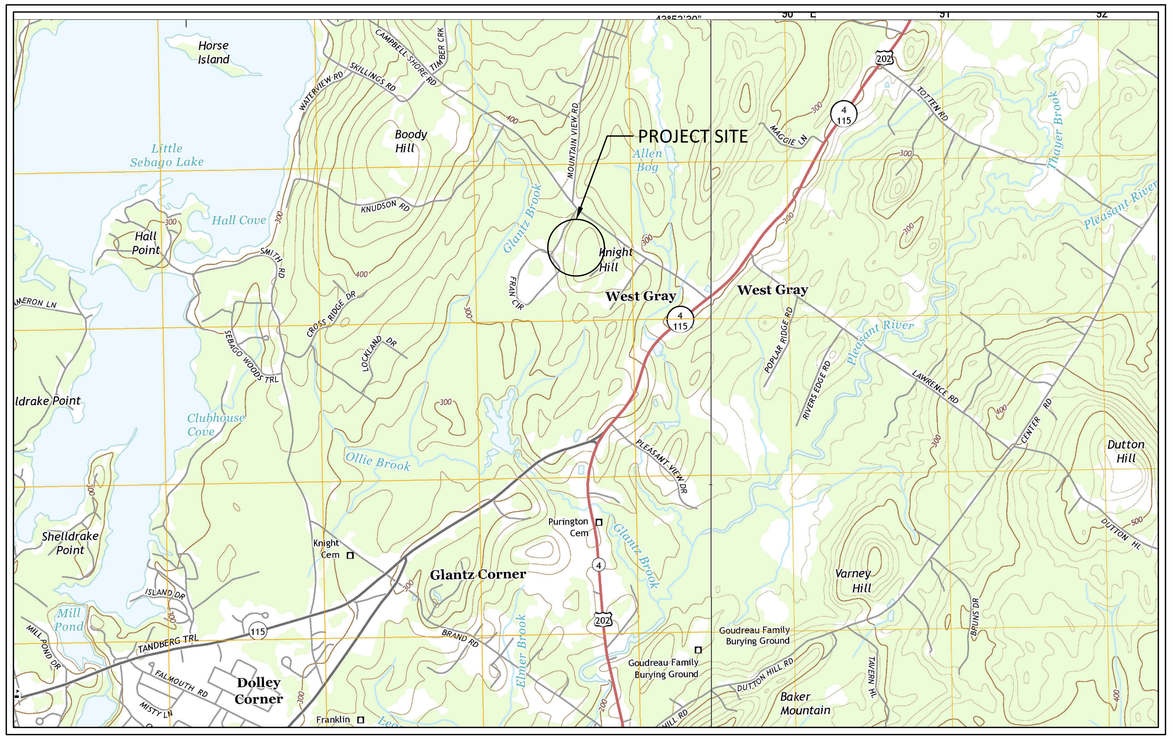
This electronic mail message and any attachments hereto, as well as any electronic mail message(s) that may be sent in response to it, may be considered public records, and may therefore be subject to public record requests for review and copying under Maine's Right to Know Law (Title 1, 401-521 of the Maine Revised Statutes).
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CAMBELL ACRES SECOND AMENDED SUBDIVISION

JENNY DRIVE - LIEUTENANTS DRIVE
GRAY, MAINE

CONSULTANTS

CIVIL ENGINEER	DM ROMA CONSULTING ENGINEERS
LAND SURVEYOR	SURVEY, INC.
SITE EVALUATOR	MAINELY SOILS, LLC



PROJECT VICINITY MAP

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

AUGUST 22, 2023

PREPARED BY:

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

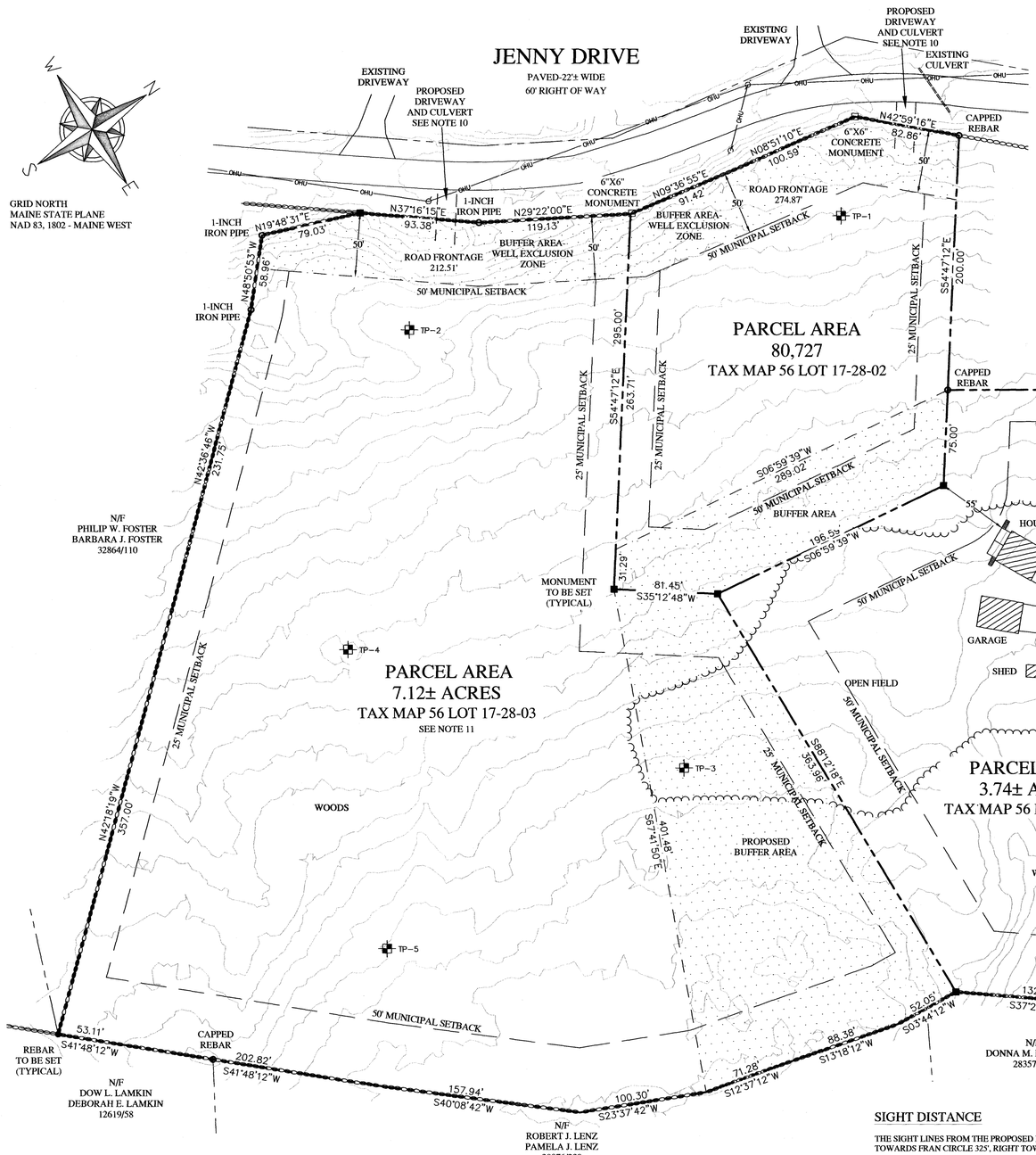
APPLICANT:

McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE 04062

CAMBELL ACRES SECOND AMENDED SUBDIVISION

DRAWING SHEET INDEX

PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	AMENDED SUBDIVISION PLAN CAMBELL ACRES
3	SECOND AMENDED SUBDIVISION PLAN
4	ROADWAY PLAN AND PROFILE: LIEUTENANTS DRIVE
5	DETAILS
6	DETAILS



State of Maine, Cumberland SS.
Registry of Deeds
Received May 11, 20 22
at 11 h 39 m A M and recorded in
Plan Book 222 Page 174
Attest: _____ Register
[redacted]

ZONING:

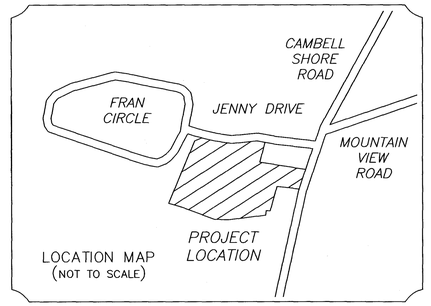
THE PARCEL IS LOCATED WITHIN THE RURAL RESIDENTIAL AND AGRICULTURAL DISTRICT WITH THE FOLLOWING CURRENT DIMENSIONAL REQUIREMENTS:

MINIMUM LOT AREA	80,000 SF
MINIMUM STREET FRONTAGE	200'
MAXIMUM LOT COVERAGE	10%
MINIMUM LOT LINE SETBACK FRONT	50'
MINIMUM LOT LINE SETBACK SIDE	25'
MINIMUM LOT LINE SETBACK REAR	50'
MAXIMUM BUILDING HEIGHT	35'

REFERENCE IS MADE TO THE ZONING ORDINANCE FOR THE TOWN OF GRAY FOR ADDITIONAL INFORMATION.

FLOOD NOTE

THAT THIS LOT DOES NOT, BY SCALING METHODS, FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE TOWN OF GRAY, MAINE COMMUNITY PANEL NO. 230048-0015A WITH AN EFFECTIVE DATE OF JANUARY 6, 1982.



NET RESIDENTIAL AREA CALCULATION

Zone	RRA
Total Area (in square feet)	390674
4D.2.a. Slopes 25% or steeper	17189
D.2.b. Land which is not able to be practically accessible, usable, or unavailable due to its location and/or existing site condition(s) such as being cut off from the main parcel	82993
D.2.c. All land areas within the 100-year floodplain FEMA FIRM Maps regardless of any other classification.	0
D.2.d. Land situated below the normal high water mark of any water body	0
D.2.e. Land below the upland edge of freshwater wetlands except Forested Wetlands that are to remain undeveloped and not located in a 100-year floodplain.	0
D.2.f. All lands that have been determined to be a liquidation harvesting.	0
D.2.g. Unusable areas larger than 1,500 sf such as significant rock outcroppings, etc.	0
D.2.h. Land area consisting of unreclaimed gravel pits	0
D.2.i. Poorly drained soils unless located in a Forested Wetland that are to remain undeveloped and not located in a 100-year floodplain	0
D.2.j. Very poorly drained soils.	0
Subtotal of D.2 series	
100182	
D.3.a. Somewhat poorly drained soils	0
D.3.b. Land designated as Resource Protection District that remain undeveloped	0
D.3.c. Forested Wetlands that remain undeveloped not located in a 100-year floodplain	0
D.3.d.i. Significant Wildlife habitat as mapped by MDIF&W	0
D.3.d.ii. Significant Wildlife habitats determined by the applicant in consultation with the MDIF&W	0
D.3.d.iii. Endangered botanical resources as mapped by Maine Natural Areas Program	0
D.3.d.iv. Endangered botanical resources as determined by applicant consultation with the Maine Department of Conservation	0
Subtotal of D.3 series:	
0	
50% of D.3 series:	
0	
Total Deductions from D.2 & D.3 series:	
100182	
Subtotal of Remaining Area:	
290692	
D.5 Roads & ROWs deduction: 10% of remaining area or actual area of ROW (whichever is greater)	0
Net Residential Area	290692
Minimum Land Area per Dwelling Unit	80000
Net Residential Density	3.63365

The Planning Board, at its meeting held on April 14, 2022, also voted 3-0 to waive the following subdivision requirements:

- 401.13.6 open space
- 401.13.6 f homeowner's association
- 401.13.8 financial and technical capacity
- 401.13.12 stormwater management
- 401.13.18 C.3.c field verification of soils

APPROVED BY THE TOWN OF GRAY, MAINE PLANNING BOARD

[redacted]

April 14, 2022 DATE

PLAN REFERENCES:

(1) PLAN OF PROPERTY IN GRAY MAINE MADE FOR VERA G. JORDAN DATED MAY 23, 1973 REVISED JUNE 7, 1973 BY HI AND EC JORDAN.

(2) CAMPBELL ACRES GRAY, MAINE FINAL SUBDIVISION PLAN K. NORTON & J. GENDRON SOUTH PORTLAND, MAINE DATED OCTOBER 1974 BY LAND USE CONSULTANTS, INC RECORDED IN PLAN BOOK 104 PAGE 27 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(3) CAMPBELL SUBDIVISION GRAY MAINE RECORDED IN PLAN BOOK 115 PAGE 4 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(4) SUBDIVISION PLAN OF CAMPBELL ACRES GRAY, MAINE FOR KERRY NORTON AND EDSON SOBEY DATED OCT. 5, 1977 BY JACK BERMAN, INC. RECORDED IN PLAN BOOK 119 PAGE 65 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(5) STANDARD BOUNDARY SURVEY ON CAMPBELL SHORE ROAD GRAY, MAINE FOR SUZANNE TANBERG DATED OCTOBER 1994 BY WAYNE T. WOOD AND CO. RECORDED IN PLAN BOOK 195 PAGE 403 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(6) RESUBDIVISION PLAN OF LOT 1 CAMPBELL ACRES SUBDIVISION FOR FRANCIS L. AND VERNA L. MACKELL FRAN CIRCLE AND JENNY DRIVE DATED JANUARY 8, 1988 BY JOHN D. PALMITER RECORDED IN PLAN BOOK 170 PAGE 58 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(7) BOUNDARY SURVEY CAMPBELL SHORE ROAD GRAY, MAINE FOR: KRISTIN STANLEY DATED OCTOBER 2021 BY SURVEY INC.

(8) THE THREE LOTS SHOWN ON THIS PLAN ARE A SUBDIVISION OF LOT #1 ON A 1974 PLAN RECORDED IN PLAN BOOK 104, PAGE 27 CCRD. ON 9-10-98, THE GRAY PLANNING BOARD APPROVED AN AMENDMENT THAT SPLIT OFF A PORTION OF LOT #1 TO CARL AND ANGELA HIGGINS. THIS 1998 PLAN WAS NEVER SIGNED OR RECORDED; IT IS ON FILE AT GRAY TOWN HALL. ADDITIONAL DETAILS ARE IN THE PLANNING BOARD NOTICE OF DECISION FOR THIS 2022 AMENDED PLAN, ALSO AT GRAY TOWN HALL.

SIGHT DISTANCE

THE SIGHT LINES FROM THE PROPOSED DRIVEWAY ON LOT 17-28-03 ARE: LEFT TOWARDS FRAN CIRCLE 325', RIGHT TOWARDS CURVE ON JENNY DRIVE 350'

THE SIGHT LINES FROM THE PROPOSED DRIVEWAY ON LOT 17-28-02 ARE: LEFT TOWARDS CURVE ON JENNY DRIVE 290', RIGHT TOWARDS CAMPBELL SHORE ROAD 325'
THE SPEED LIMIT ON JENNY DRIVE IS ASSUMED TO BE 25 MPH.

CERTIFICATION:

I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

WILLIAM C. SHIPPEN P.L.S. 2118

STATE OF MAINE ★ WILLIAM C. SHIPPEN 2118 ★ PROFESSIONAL LAND SURVEYOR

SURVEY NOTES:

(1) THE OWNERS OF RECORD ARE KRISTIN A. STANLEY AND PHILIP M. STANLEY AS DESCRIBED IN A DEED RECORDED IN BOOK 38846 PAGE 201 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(2) THE PARCEL IS SHOWN AS LOT 17-28-00 ON THE TOWN OF GRAY ASSESSORS MAP 56.

(3) BEARINGS ARE GRID NORTH, MAINE STATE PLANE 1802 WEST ZONE.

(4) VERTICAL DATUM- NAVD 88

(5) LIMITS OF THE OPEN FIELD WERE TAKEN FROM GOOGLE EARTH IMAGERY.

(6) TEST PIT INFORMATION WAS PROVIDED BY MAINELY SOILS DURHAM, MAINE. TEST PITS 1 AND 2 ARE FOR PROPOSED SEPTIC SYSTEMS. TEST PITS 3,4 AND 5 ARE FOR THE WETLAND AND SOIL ASSESSMENT.

(7) CONTOURS SHOWN ARE TAKEN FROM THE NOAA DIGITAL COAST: DATA ACCESS VIEWER.

(8) BUFFER AREAS ARE SUBJECT TO LIMITED CUTTING OF TREES AND VEGETATION. NO BUILDINGS ARE TO BE LOCATED WITHIN THE BUFFER AREAS.

(9) THERE SHALL BE NO CONSTRUCTION WITHIN THE 50' FORESTED BUFFERS BETWEEN THE LOTS AND ALONG THE ROAD FRONTAGE, OTHER THAN THE NECESSARY CLEARING FOR THE APPROVED DRIVEWAYS. FORESTED BUFFERS AS SHOWN ON SAID PLAN SHALL BE KEPT IN A NATURAL VEGETATIVE STATE WITH ONLY DEAD DISEASED TREES OR TREES THAT POSE A SAFETY HAZARD THAT MAY BE REMOVED IN KEEPING WITH THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS, CHAPTER 500.

(10) DRIVEWAYS WILL ADHERE TO THE DRIVEWAY STANDARDS OUTLINED IN 401.13.16-17 AND THE TOWN OF GRAY STREET ORDINANCE, CHAPTER 400 SECTION 5. ENGINEERING MAY BE REQUIRED. THE TWO DRIVEWAY LOCATIONS SHOWN ON THIS PLAN ARE FIXED. ANY OTHER LOCATION FOR THE TWO DRIVEWAYS OR ANY ADDITIONAL DRIVEWAYS MUST BE APPROVED BY THE GRAY PLANNING BOARD.

(11) FURTHER SUBDIVISION OF THIS LOT MAY NOT BE MADE WITHOUT THE EXPRESS APPROVAL OF THE PLANNING BOARD OF THE TOWN OF GRAY. NO ADDITIONAL CURB CUTS ARE ALLOWED WITHOUT EXPRESS APPROVAL OF THE PLANNING BOARD OF THE TOWN OF GRAY.

(12) SPRINKLER INSTALLATION IS REQUIRED FOR ANY DWELLING UNIT INSTALLED ON LOTS 56-17-28-02 AND 56-17-28-03. SPRINKLERS ARE NOT REQUIRED FOR THE EXISTING SINGLE-FAMILY HOME ON LOT 56-17-28-00.

(13) THESE TWO NEW LOTS WILL BE SERVED BY INDIVIDUAL DRILLED WELLS AND ON-SITE SEPTIC SYSTEMS.

NOTE

THE PURPOSE OF THIS AMENDED SUBDIVISION PLAN IS TO DIVIDE LOT 1 AS SHOWN ON A PLAN ENTITLED "CAMPBELL ACRES" RECORDED IN PLAN BOOK 104 PAGE 27 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS. THE PROJECT SHALL BE CONSTRUCTED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE PLANS, TEXTUAL SUBMISSIONS AND TESTIMONY PRESENTED TO THE PLANNING BOARD BY THE APPLICANT.

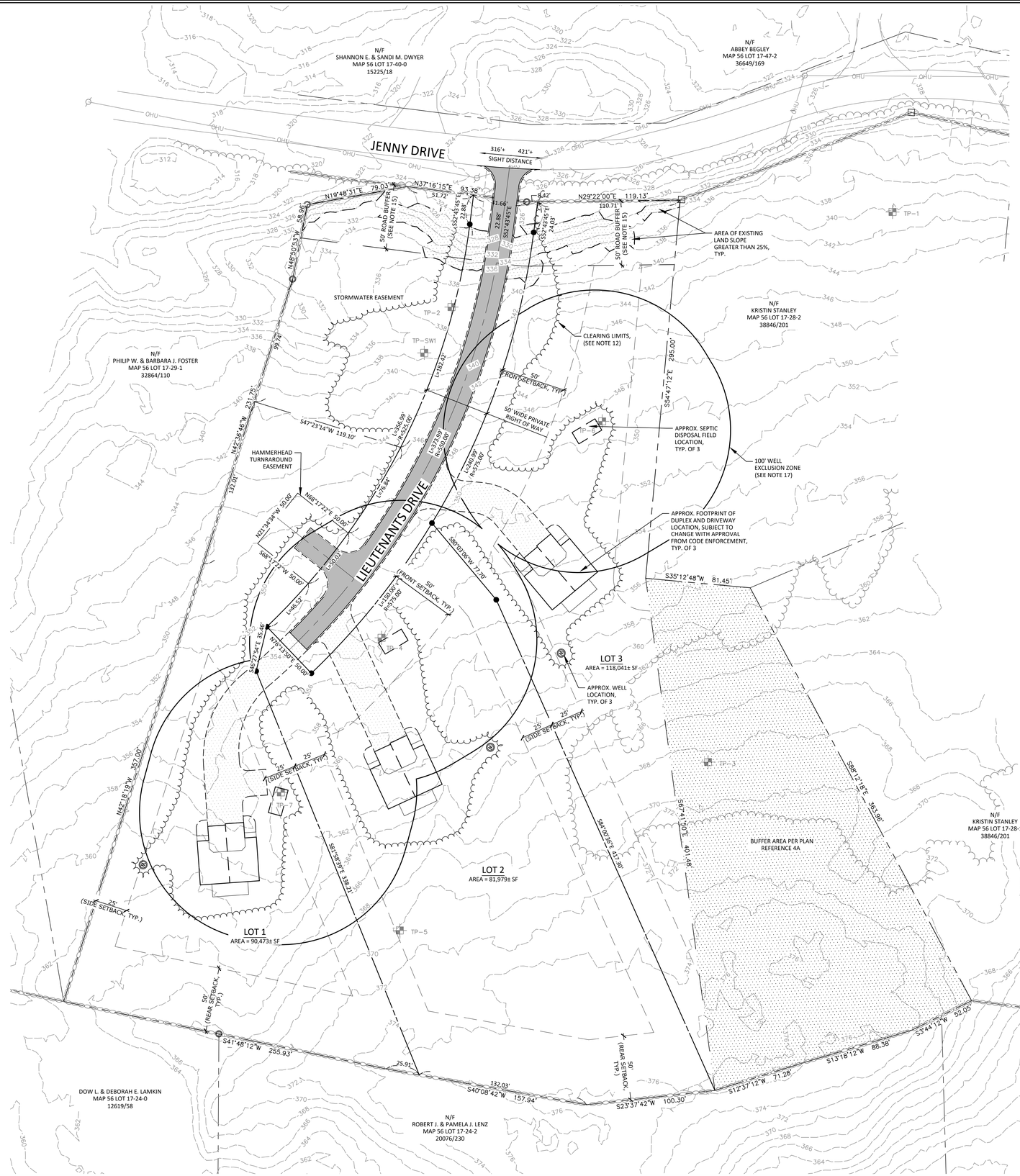
AMENDED SUBDIVISION PLAN CAMBELL ACRES

CAMBELL SHORE ROAD
GRAY, MAINE

FOR: **KRISTIN STANLEY**
PO BOX 1161
GRAY, MAINE 04039
(CLIENT)

SURVEY BY: **SURVEY, INC.**
P.O. BOX 210
WINDHAM, ME 04062
(207) 892-2556
INFO@SURVEYINCORPORATED.COM

DWN: WCS CHK: DRR
DATE: DECEMBER 2021 JOB NO. 21-270-2
REV: 3-10-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 3-16-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 4-4-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 5-4-22 PLANNING BOARD CONDITIONS OF APPROVAL
REV: 5-9-22 MISC CHANGES AS REQUESTED BY TOWN



GENERAL NOTES:

1. THE OWNER OF RECORD OF THE PROPERTY IS McDONNELL BROTHERS CUSTOM BUILDERS, LLC. BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 40059 PAGE 250.
2. TOTAL AREA OF THE PARCEL IS APPROXIMATELY 7.12 ACRES.
3. PARCEL TAX MAP REFERENCE: TOWN OF GRAY ASSESSORS MAP 56, LOT 17-28-03.
4. PLAN REFERENCES:
   - 4.A. AMENDED SUBDIVISION PLAN CAMBELL ACRES, PREPARED FOR KRISTIN STANLEY, PREPARED BY SURVEY, INC. DATED DECEMBER 2021 AND REVISED THRU 5-9-22, AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 222 PAGE 174 ON MAY 11, 2022.
   - 4.B. CAMBELL ACRES, GRAY, MAINE FINAL SUBDIVISION PLAN, PREPARED FOR K. NORTON & J. GENDRON, PREPARED BY LAND USE CONSULTANTS, INC. DATED OCTOBER 1974 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 104 PAGE 27 ON DEC. 6, 1974.
5. HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4.A.
8. TOPOGRAPHIC CONTOURS SHOWN HEREON ARE BASED ON PLAN REFERENCE 4.A.
9. THE PROPERTY IS LOCATED IN THE RURAL RESIDENTIAL AND AGRICULTURE DISTRICT.
10. SPACE AND BULK REQUIREMENTS: RRA DISTRICT

	CONVENTIONAL SUBDIVISION
MIN LOT AREA:	80,000 SF
MIN AREA PER DWELLING UNIT:	40,000 SF
MIN STREET FRONTAGE:	200 FT
MIN FRONT YARD SETBACK:	50 FT
MIN SIDE YARD SETBACK:	25 FT
MIN REAR YARD SETBACK:	50 FT
MAX LOT COVERAGE:	10%
MAX LOT BUILDING COVERAGE:	N/A
MAX BUILDING HEIGHT:	35 FT

11. SOIL EVALUATION TEST PITS PERFORMED ON DECEMBER 19, 2021, FEBRUARY 11, 2022 AND JULY 27, 2023 BY MAINELY SOILS, LLC.
12. PROPOSED CLEARING NECESSARY FOR THE CONSTRUCTION OF THE SUBDIVISION ROAD AND ALL LOT DEVELOPMENT IS LIMITED TO CLEARING LIMITS SHOWN ON THIS PLAN.
13. ALL LOTS IN THIS SUBDIVISION ARE REQUIRED TO PROVIDE ROOF DRIP EDGES FOR ALL PROPOSED DUPLEXES.
14. ANY FUTURE DEVELOPMENT OR CHANGES TO THIS SUBDIVISION PLAN WILL REQUIRE PLANNING BOARD APPROVAL AND WILL BE CONSIDERED AS AN AMENDMENT TO A MAJOR SUBDIVISION. THE PLANNING BOARD MAY REQUIRE ADDITIONAL PLANS & STUDIES PER 401.7.3-5 THAT WERE WAIVED OR NOT REQUIRED AS PART OF THIS SUBDIVISION APPROVAL.
15. THE 50' FOREST SCENIC BUFFERS ALONG JENNY DRIVE IS TO REMAIN IN THEIR CURRENT VEGETATIVE CONDITION EXCEPT FOR CLEARING REQUIRED FOR ACCESS DRIVE CONSTRUCTION AND THE REMOVAL OF ANY DEAD OR DISEASED TREES.
16. PROPOSED BUILDINGS ON ALL PROPOSED LOTS ARE INTENDED TO BE CONSTRUCTED WITH FIRE SPRINKLERS MEETING NFPA STANDARDS. IN THE EVENT FIRE SPRINKLER SYSTEMS ARE NOT INSTALLED, A FIRE CISTERN MEETING THE TOWN OF GRAY'S REQUIREMENTS OUTLINED IN SECTION 401.13.2.C.4 SHALL BE INSTALLED.
17. ALL LOTS IN THE SUBDIVISION SHALL BE SERVED BY PRIVATE ON-SITE POTABLE WELLS, AND PRIVATE SUBSURFACE WASTEWATER DISPOSAL SYSTEMS AND UNDERGROUND ELECTRICAL, TELEPHONE AND CABLE SERVICES. PRIVATE ON-SITE POTABLE WELLS SHALL NOT BE CONSTRUCTED WITHIN 100 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED DOWNHILL FROM THE STREET, OR WITHIN 50 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED UPHILL OF THE STREET. WATER SUPPLIES SHALL MEET PRIMARY DRINKING WATER STANDARDS CONTAINED IN THE STAT OF MAINE RULES RELATING TO DRINKING WATER. WELL EXCLUSION ZONE SHOWN HEREON BASED ON APPROXIMATE SEPTIC DISPOSAL FIELD LOCATION AND TO BE VERIFIED BASED ON FINAL SEPTIC DESIGN.
18. ALL DRIVEWAY AND LOT DEVELOPMENT WORK SHALL PROVIDE FOR EROSION & SEDIMENTATION CONTROL BMPS IN ACCORDANCE WITH THE MAINE DEP HANDBOOK OF EROSION AND SEDIMENTATION CONTROL LATEST REVISION.
19. THE PROPOSED TREE LINE(S) SHOWN HEREON ARE FIXED AS PART OF THE PERMIT APPROVALS AND NO ADDITIONAL CLEARING, EARTHWORK, OR DISTURBANCE IS PERMITTED WITHOUT STATE AND FEDERAL PERMIT AMENDMENTS. PRIOR TO CONSTRUCTION ALL TREE CLEARING LIMITS AND BUFFERS SHALL BE CLEARLY MARKED.
20. ALL ROADS IN THIS SUBDIVISION SHALL REMAIN PRIVATE ROADS TO BE MAINTAINED BY THE DEVELOPER OR THE LOT OWNERS AND SHALL NOT BE ACCEPTED OR MAINTAINED BY THE TOWN EXCEPT FOR ROADS THAT MEET REQUIREMENTS FOR WINTER MAINTENANCE UNDER A PUBLIC EASEMENT.

NET RESIDENTIAL DENSITY CALCULATIONS:

GROSS LAND AREA:	310,342± S.F.
100% DEDUCTIONS:	
a. STEEP SLOPES (25% OR GREATER)	6,291 S.F.
b. INACCESSIBLE LAND	0 S.F.
c. 100-YEAR FLOODPLAIN	0 S.F.
d. WATERBODIES	0 S.F.
e. NON-FORESTED OR IMPACTED WETLANDS	0 S.F.
f. LIQUIDATION HARVESTING	0 S.F.
g. SIGNIFICANT ROCK OUTCROP	0 S.F.
h. GRAVEL PIT	0 S.F.
i. POORLY DRAINED SOILS	0 S.F.
j. VERY POORLY DRAINED SOILS	0 S.F.
SUBTOTAL 100% DEDUCTION:	6,291 S.F.
50% DEDUCTIONS:	
a. SOMEWHAT POORLY DRAINED SOILS	0 S.F.
b. RESOURCE PROTECTION (UNDEVELOPED)	0 S.F.
c. FORESTED WETLANDS (UNDEVELOPED)	0 S.F.
d. SIGNIFICANT HABITAT	0 S.F.
SUBTOTAL 50% DEDUCTIONS:	0 S.F.
ACTUAL DEDUCTION:	0 S.F.
NET AREA SUBTOTAL:	304,050 S.F.
DEDUCT 10% FOR ROADS & RIGHT OF WAYS:	30,405 S.F.
TOTAL NET AREA:	273,645 S.F.
REQUIRED MIN. LOT AREA:	80,000 S.F.
MAXIMUM ALLOWABLE LOTS:	3.42
NUMBER OF LOTS PROPOSED:	3
REQUIRED MIN. AREA PER DWELLING:	40,000 SF
MAXIMUM ALLOWABLE DWELLING:	6.84
NUMBER OF LOTS PROPOSED:	6

APPROVED - TOWN OF GRAY PLANNING BOARD:

CHAIRPERSON _____ DATE _____

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
	SETBACK
EASEMENT LINE	
GRANITE MONUMENT	■
IRON PIN/DRILL HOLE	
CENTERLINE	
	BUILDING
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
200 201 CONTOUR LINE	
CULVERT/STORMDRAIN	
UTILITY POLE	
OHU OVERHEAD UTILITIES	
STONEWALL	

GRID

0 20 40 80
GRAPHIC SCALE
1" = 40'

STATE OF MAINE
JAYSON R. GENDRON
No. 12012
[redacted]

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

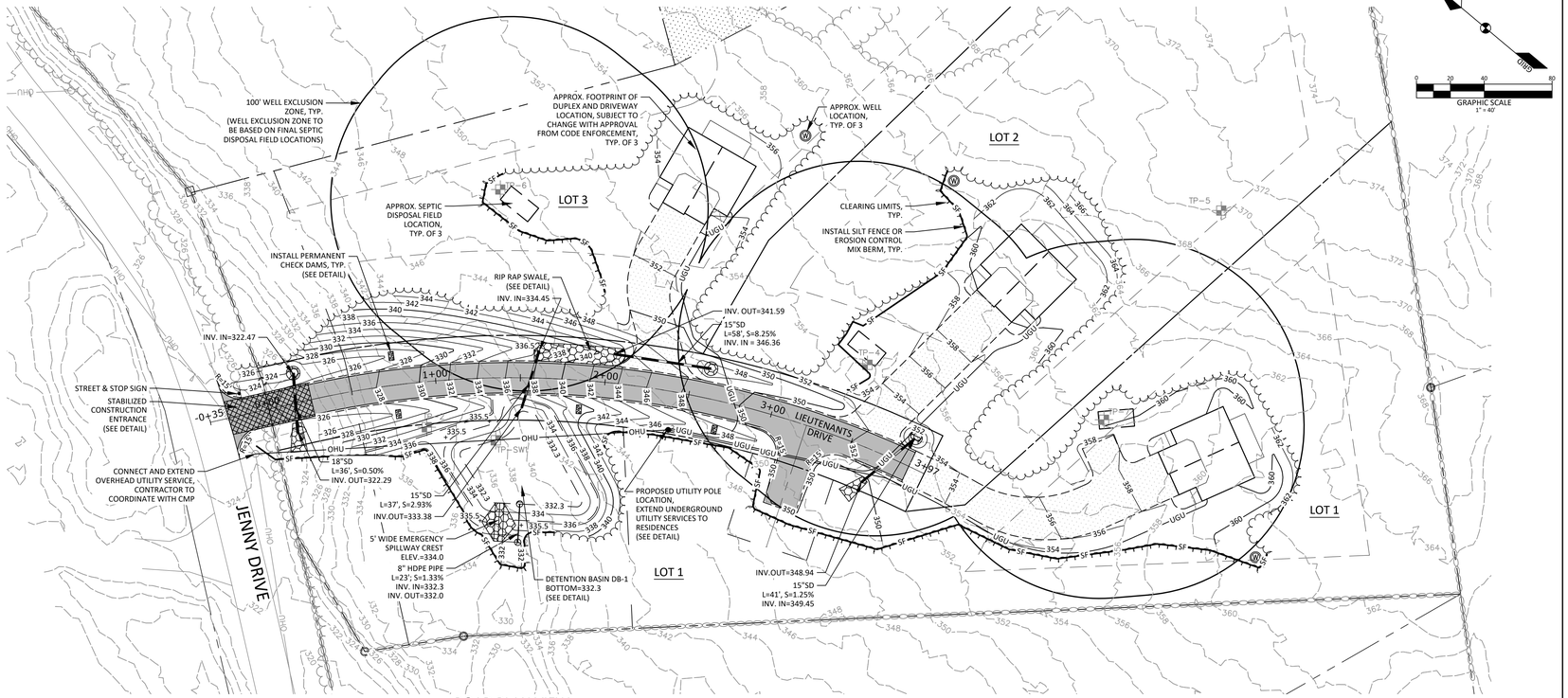
REV	DATE	BY	DESCRIPTION
A	6-19-23	JPC	ISSUED FOR TOWN SKETCH PLAN REVIEW
B	7-13-23	JPC	REVISED ROAD ALIGNMENT
C	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
D	8-22-23	JPC	REVISED PER TOWN COMMENTS

SECOND AMENDED SUBDIVISION PLAN

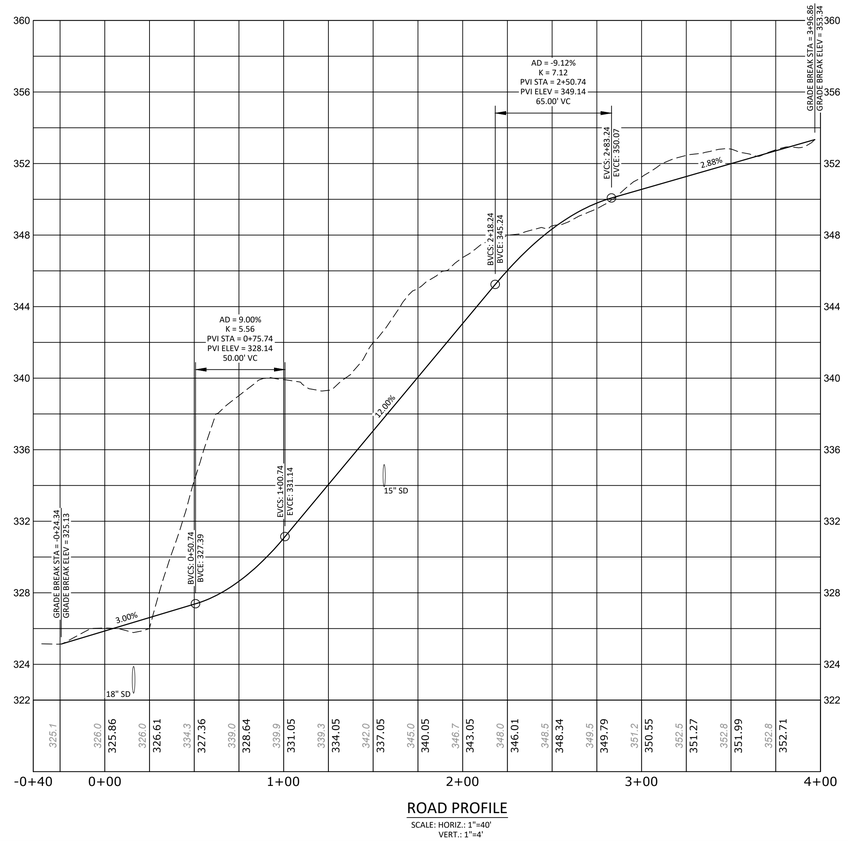
CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANTS DRIVE
GRAY, MAINE

FOR RECORD OWNER:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015	JOB NUMBER:
1" = 40'	SCALE:
8-22-2023	DATE:
SHEET 3 OF 6	
SASB-1	



ROAD PLAN VIEW
SCALE: 1"=40'



ROAD PROFILE
SCALE: HORIZ.: 1"=40'
VERT.: 1"=4'

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	SETBACK	
	EASEMENT LINE	
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
	EDGE OF GRAVEL	
	STONEWALL	
	SIGN	
-200- -201-	CONTOUR LINE	200 201
	TREELINE	
TP-1	TEST PIT	
	CULVERT/STORMDRAIN	
W	WELL	W
	UTILITY POLE	
OHU	OVERHEAD UTILITIES	OHU
UGU	UNDERGROUND UTILITIES	UGU
	TRANSFORMER PAD	T
	RIPRAP	
	SILT FENCE	SF

STATE OF MAINE
JAYSON R. CAMPBELL
No. 12012

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-10-23	JPC	REVISED PER TOWN COMMENTS
C	8-22-23	JPC	REVISED LOT 1 AND LOT 3 LAYOUT

ROADWAY PLAN & PROFILE: LIEUTENANTS DRIVE

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANTS DRIVE
GRAY, MAINE
FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015
JOB NUMBER:

1" = 40'
SCALE:

8-22-2023
DATE:

SHEET 4 OF 6

PP-1

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) SHALL BE EMPLOYED:

1. POLLUTION PREVENTION

MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

2. TEMPORARY SOIL STABILIZATION BMPS

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDED DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES NEED TO BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAULIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
- -ORGANIC MATTER CONTENT SHALL BE BETWEEN 50-100%, DRY WEIGHT BASIS.
- -MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE MIX WITH NO LARGER ROCKS (>4")
- -ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- -LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- -IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING
- -THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	3.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL, TYP.). IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGH THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE GROWING SEASON THE FOLLOWING YEAR. TO PREPARE THE SEEDBED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P205-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	112	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 7/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPS

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA . SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP, AND THE FENCE SHALL BE PLACED IN THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS SHALL BE PROHIBITED AT THE BASE OF A LONG OR STEEP SLOPE (8% OR GREATER) WITHOUT THE ADDITIONAL SUPPORT OF A FILTER FENCE INSTALLED ON THE DOWNHILL SIDE OF THE BERM.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL) AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE VOLUMES OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO REPLACE THE BARRIER WITH A TEMPORARY STONE CHECK DAM. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

TEMPORARY EROSION CONTROL MEASURES ARE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

4. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS EITHER PAVED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPS ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A FABRIC OR OTHER PERVIOUS MATERIAL THAT IS PLACED ABOVE OR BELOW THE GRATE THAT TRAPS SEDIMENT ON THE SURFACE AND ALLOWS WATER TO FLOW THROUGH THE GRATE. CONSIDERATIONS SUCH AS WEATHER CONDITIONS, SLOPES, TRIBUTARY WATERSHED AREA AND EXPECTED SEDIMENT ACCUMULATION SHOULD BE FACTORED INTO MAKING A DECISION ON ANY PARTICULAR PRODUCT, AND THE MANUFACTURER'S RECOMMENDATIONS ON INSTALLATION AND MAINTENANCE SHALL BE STRICTLY ADHERED TO.

5. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE A MINIMUM OF 10 FEET WIDE. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

6. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST. GRAVEL SURFACES SHALL EITHER BE TREATED WITH AN APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

7. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADED WITHIN 7 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS. CUT AND FILL SLOPES THAT ARE TO BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, CLAY LOAM), AND SHALL BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, ROOTS AND NOXIOUS WEEDS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

9. PERMANENT SOIL STABILIZATION

IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

SEEDED AREAS: TO PREPARE THE SEEDBED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK THE FERTILIZER AND LIMESTONE INTO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND ALL STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET MDOT TYPE-C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE BANKS, OR DOWNCUTTING OF THE CHANNEL.

10. STORMWATER CHANNELS

EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL. PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN THE ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERTY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WITH THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STACKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL (0.5 INCH RAINFALL OR GREATER) OR SNOWFALL. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. ANY SOIL STOCKPILE WILL NOT BE PLACED WITHIN 100 FEET FROM ANY REGULATED NATURAL RESOURCE.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90%) IN THE SPRING SHALL BE REVEGETATED.

6. OVER-WINTER STABILIZATION OF DITCHES AND CHANNELS

ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED BY NOVEMBER 1. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A GRASS-LINED DITCH OR CHANNEL IS STABILIZED BY SEPTEMBER 1, THEN EITHER A SOD LINING SHALL BE INSTALLED PRIOR TO OCTOBER 1 OR THE DITCH MUST BE LINED WITH STONE RIPRAP BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE PRIOR TO NOVEMBER 1.

7. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

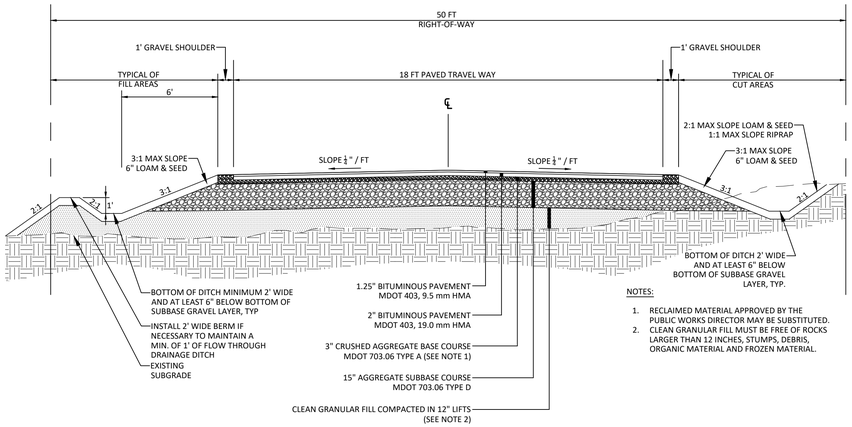
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. ALL AREAS HAVING A GRADE STEEPER THAN 8% SHALL BE CONSIDERED A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN THE SLOPE SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS BY OCTOBER 1, SOD BY OCTOBER 1, EROSION CONTROL MIX BY NOVEMBER 1 OR STONE RIPRAP BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

8. OVER-WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN THE AREA SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION BY OCTOBER 1, SOD BY OCTOBER 1, OR MULCH BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

9. MAINTENANCE

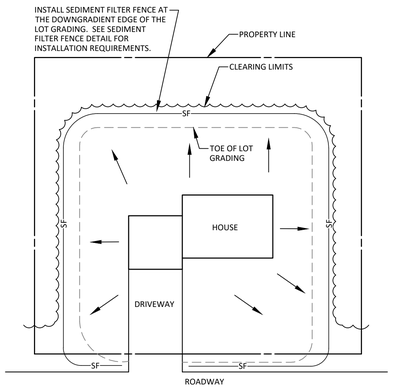
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM, PERIOD OF THAWING AND RUNOFF AND AT LAST ONCE A WEEK, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL, IN THE SPRING



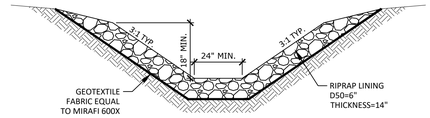
NOTES:

1. RECLAIMED MATERIAL APPROVED BY THE PUBLIC WORKS DIRECTOR MAY BE SUBSTITUTED.
2. CLEAN GRANULAR FILL MUST BE FREE OF ROCKS LARGER THAN 12 INCHES, STUMPS, DEBRIS, ORGANIC MATERIAL AND FROZEN MATERIAL.

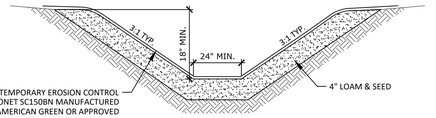
TYPICAL ROADWAY SECTION
MODIFIED MINOR RURAL STREET STANDARD



TYPICAL HOUSE LOT EROSION CONTROL DETAIL
NOT TO SCALE

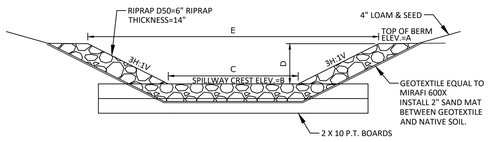


RIPRAP SWALE
NOT TO SCALE



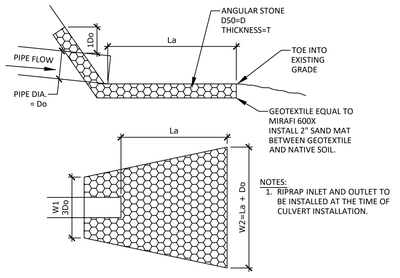
INSTALL TEMPORARY EROSION CONTROL BLANKET, BIONET SC150BN MANUFACTURED BY NORTH AMERICAN GREEN OR APPROVED EQUIVALENT WITHIN LIMITS OF DRAINAGE SWALE. CONTRACTOR TO STAPLE EROSION CONTROL BLANKET PER MANUFACTURER'S SPECIFICATIONS.

DRAINAGE SWALE
NOT TO SCALE



SPILLWAY DATA					
POND ID	A	B	C	D	E
DB-1	335.50	334.00	5'	1.50'	14.00'

RIPRAPPED SPILLWAY CROSS-SECTION
NOT TO SCALE

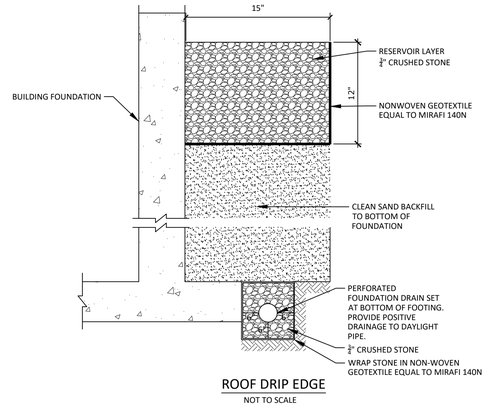


NOTES:

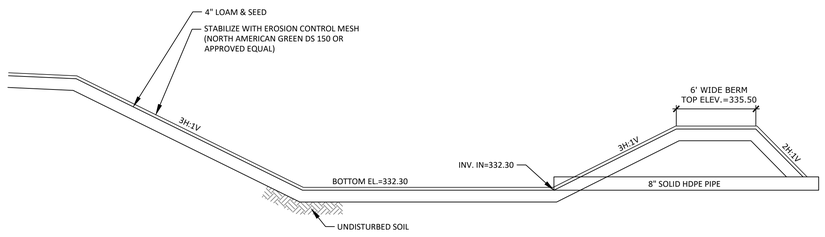
1. RIPRAP INLET AND OUTLET TO BE INSTALLED AT THE TIME OF CULVERT INSTALLATION.

RIPRAP APRON DATA					
SD DIA.	W1	W2	La	D	T
15"	4'	9'	8'	6"	14"
18"	5'	10'	11'	6"	14"

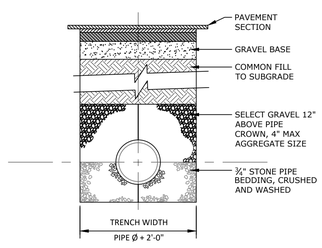
RIPRAP APRON AT PIPE
NOT TO SCALE



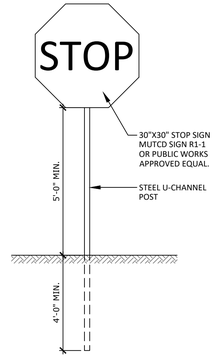
ROOF DRIP EDGE
NOT TO SCALE



DETENTION BASIN SECTION
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE



STOP SIGN INSTALLATION
NOT TO SCALE

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 593-5055

JAYSON R. HASKELL
No. 13002
STATE OF MAINE
REGISTERED PROFESSIONAL ENGINEER
8-22-23

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-22-23	JPC	REVISED PER TOWN COMMENTS

DETAILS

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANTS DRIVE
GRAY, MAINE

FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
39 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

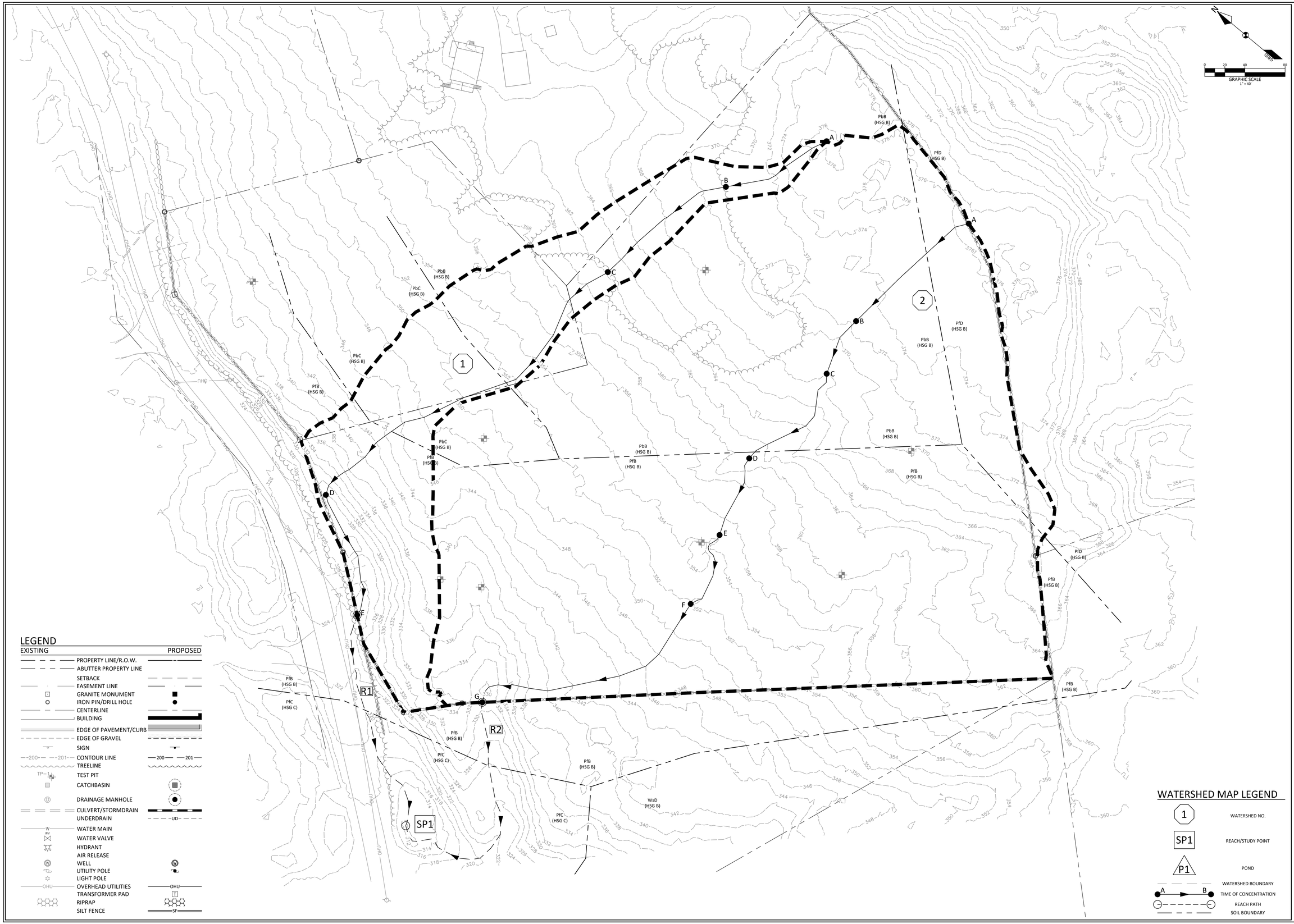
23015
JOB NUMBER:

AS NOTED
SCALE:

8-22-2023
DATE:

SHEET 6 OF 6

D-2



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	SETBACK	
	EASEMENT LINE	
	GRANITE MONUMENT	
	IRON PIN/DRILL HOLE	
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
	EDGE OF GRAVEL	
	SIGN	
-200- -201-	CONTOUR LINE	200 201
	TREELINE	
TP-1	TEST PIT	
	CATCHBASIN	
D	DRAINAGE MANHOLE	
	CULVERT/STORMDRAIN	
	UNDERDRAIN	UD
W	WATER MAIN	
W	WATER VALVE	
	HYDRANT	
	AIR RELEASE	
W	WELL	W
	UTILITY POLE	
	LIGHT POLE	
OHU	OVERHEAD UTILITIES	OHU
	TRANSFORMER PAD	T
	RIPRAP	
	SILT FENCE	SF

WATERSHED MAP LEGEND

- 1 — WATERSHED NO.
- SP1 — REACH/STUDY POINT
- P1 — POND
- WATERSHED BOUNDARY
- A → B — TIME OF CONCENTRATION
- REACH PATH
- SOIL BOUNDARY

STATE OF MAINE
JAYSON R. JACKSON
No. 13032
[redacted]

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-22-23	JPC	REVISED PER TOWN COMMENTS

WATERSHED MAP: EXISTING CONDITIONS

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE
GRAY, MAINE

FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015	JOB NUMBER:
1" = 40'	SCALE:
8-22-2023	DATE:
SHEET 1 OF 2	
WM-1	



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	SETBACK	
	EASEMENT LINE	
	GRANITE MONUMENT	
	IRON PIN/DRILL HOLE	
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
	EDGE OF GRAVEL	
	SIGN	
200 201	CONTOUR LINE	200 201
	TREELINE	
TP	TEST PIT	
	CATCHBASIN	
	DRAINAGE MANHOLE	
	CULVERT/STORMDRAIN	
	UNDERDRAIN	UD
W	WATER MAIN	
	WATER VALVE	
	HYDRANT	
	AIR RELEASE	
W	WELL	W
	UTILITY POLE	
	LIGHT POLE	
OHU	OVERHEAD UTILITIES	OHU
	TRANSFORMER PAD	T
	RIPRAP	
	SILT FENCE	SF

WATERSHED MAP LEGEND

- 1 — WATERSHED NO.
- SP1 — REACH/STUDY POINT
- P1 — POND
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- REACH PATH
- SOIL BOUNDARY

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-22-23	JPC	REVISED PER TOWN COMMENTS

STATE OF MAINE
JAYSON R. PERKINS
No. 12102
[redacted]

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

WATERSHED MAP: DEVELOPED CONDITIONS

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE
GRAY, MAINE

FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015	JOB NUMBER:
1" = 40'	SCALE:
8-22-2023	DATE:
SHEET 2 OF 2	
WM-2	

From:	Dan Cobb
To:	zachary cooperstein
Cc:	Tamara Lee. Pinard; Melinda Sheehee; David Phelps; Kristen Muszynski; Dan Maguire; Martin Meaney
Subject:	Re: Cambell Acres duplex development
Date:	Wednesday, August 23, 2023 2:03:26 PM

Hi Zachary,

Thank you for your email. I have shared it via this response with the balance of the planning board, the town planner, and the town council liaisons to the planning board—Dan Maguire and Martin Meaney.

I understand and appreciate your concerns around density in the RRA zone and the background of the referenced sales and subdivisions.

As a quasi-judicial board, the planning board must apply the ordinances that are in-effect at the time of application. We will do our job in this regard to the best of our abilities.

Some of the points that you've raised are policy issues that are set by the town council. Thus I've included our town council liaisons for their awareness of your concerns. Once a policy becomes ordinance, then the planning board is tasked with judging the merits of an application according to the ordinance in-effect. We don't set policy. I'd urge you and your neighbors to voice your concerns to the town council, so they can make the most informed policy decisions that best represent the interests of residents.

Thanks,

Dan

Sent from my iPhone

On Aug 21, 2023, at 9:12 PM, zachary cooperstein <finepointgc@gmail.com> wrote:

Members of the planning board and all and any others who this may concern.

I'm writing you today out of strong concern around the prospect of having a 3 duplex development built off of Jenny drive (tax map 56 lot 17-28-03), directly abutting my property (55 Cambell Shore Rd) to the rear. I suppose I will start by saying what a shock this is to myself, my neighbor (who grew up on the original 14 acre property at 55 Cambell shore rd), and others who recall very clearly being told by the Stanleys that they had no plans for the rear parcell, that perhaps they would build a small house for one of their Mothers. This is the same story they told to Kristen Muszynski (I was told when I spoke to her on the phone after receiving the notice for the site walk) in regards to the 2 acre lot on Jenny drive, which had already been sold off and is now currently being built on. We now all realize that we were lied to. Looking closely at the survey and engineering reports from their original subdivision proposal to split the remaining 11 acres into 3 lots, they dug 3 test pits in the rear parcel to verify soil conditions suitable for septic systems etc. Shame on us for not digging into the paperwork more deeply and realizing it was prepped for 3 lots at the time but I assumed they were honest people. My neighbor intentionally turned down more lucrative offers from developers for his mothers property (the then 11 acres remaining at 55 Cambell shore rd) and

intentionally sold it to the Stanleys because they were neighborhood people who indicated that they would not turn the property into a housing development. Had they given any indication of this whatsoever, he would not have sold to them. They continued this lie right through the sale to me and my girlfriend of the original house and remaining 3.74 acres. Had they been honest about their intentions to develop the back 7 acres into a separate subdivision it would have affected our decision on whether or not to purchase the house.

I trust that you all will thoroughly and extensively review all zoning laws, codes, and guidelines to make sure that the proposed development 100% complies in every way, shape and form. However, in the event that the proposal is compliant, just because a development proposal technically complies with regulations, does not necessarily mean it is appropriate for or in the best interest of an existing neighborhood. In this case I, as well as dozens of other neighbors if not every single person in the neighborhood, feel extremely strongly that it is not in the best interest of our neighborhood, nor is it in any way appropriate. This is an extremely bold move on the part of the MCdonnell brothers. They must know that this will be met with extreme resistance by the neighborhood and leave existing residents with a negative view of them. Clearly they don't care. There are lots of parcels of land for sale within a 30 mile radius. But they chose this one, in the back of an old farm, on a dead end street, with no multifamily housing anywhere in the area, directly abbuting a large area that directly prohibits multifamily housing. Honestly, what were they thinking?!? It was a thoughtless move driven by froth and arrogance.

This development will directly negatively impact the property values of abutters and nearby neighbors alike. People who have built or are building their lives in this neighborhood. People who are invested in and care about the neighborhood. The execution of this proposed development as is, will effectively take money in the form of property value right out of the pockets of our neighborhood residents and put it directly into the pockets of developers who do not care at all about our neighborhood or even live in the town of Gray. To approve this proposal sets a terrible precedent. It sends the message that the town of Gray encourages this type of dense development at the cost of its existing residents. Has the original subdivision of 55 cambell shore rd even been fully recorded in the town records or made it into the assessor's book yet? and we are already entertaining subdividing it again. Taking a single residence property, subdividing it twice and turning into 8 residences in the course of 2 years in an area zoned rural agricultural, is completely outrageous. What then is preventing every homeowner in the area from turning their 1.8+ acre lots into multi family dwellings. Why then couldn't I turn my house on 3.74 acres into a 4 unit dwelling? Is this what we as residents of gray want to see happen to our quiet rural neighborhoods? This is why we live in areas like this, to enjoy the quiet, private, peaceful setting. Not to turn it into a city.

In your considerations of this proposal I urge you to consider the facts. That the 55 cambell shore property was acquired from my neighbor by the Stanleys through dishonest, self serving means. That this is a proposal for a 6 unit duplex development in a rural agricultural zoning district surrounded by a neighborhood that prohibits multifamily development. That to approve this proposal as is, takes money directly out of the pockets of all the existing neighbors and puts it directly into the pockets of out of town developers who don't care about our town or neighborhood whatsoever. That approving this will open the door for more of this sort of development in our rural neighborhoods further negatively impacting the current residents. The negative impact of this proposed development is substantial, inappropriate, and completely unfair to the current residents of the neighborhood. I urge you to fully consider the negative impact of allowing duplexes in this location and hopefully come to the realization

that single family homes are far more appropriate. Lets work together for the future of Gray, a safe, quaint, quiet town where residents are prioritized over the profits of developers.

Thank you,

--
Zachary Cooperstein
Fine Point Custom Carpentry
617-823-7239

https://www.facebook.com/FinePointCustomCarpentry/
https://www.linkedin.com/in/zachary-cooperstein-813138134

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DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

CAMBELL ACRES AMENDED SUBDIVISION
JENNY DRIVE & LEIUTENANTS DRIVE
GRAY, MAINE

A. Narrative

McDonnell Brothers Custom Builders, LLC, the applicant, is proposing to develop a 7.12±-acre parcel off of Jenny Drive in Gray, Maine. The project site is identified as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The property is vacant and consists predominantly of natural woodland with a small field area that is located within a buffer area at the northeasterly corner of the property.

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' from the intersection of Jenny Drive to the end of the proposed subdivision road and will include a hammerhead turnaround at the end of the proposed dead-end road. The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site.

In general, the property drains southwesterly towards Jenny Drive and discharges from the site into a depressed natural area within the site or to the existing road drainage swale in Jenny Drive, both ultimately merging at a depression at the outlet of a road culvert at the intersection of Jenny Drive and Fran Circle. From that point, stormwater is conveyed into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River.

B. Alterations to Land Cover

McDonnell Brothers Custom Builders, LLC, intends to construct the roadway, the duplexes as well as all associated improvements and stormwater infrastructure. The applicant will be responsible for creating approximately 19,716 square feet (0.45± acres) of impervious surface consisting of the proposed roadway, and driveways, an additional 6,715 square feet of proposed roof area associated with the three proposed duplexes and approximately 57,893 square feet (1.33± acres) of landscaped area totaling approximately 84,324 square feet (1.94± acres) of total developed area.

The Town of Gray's Subdivision Ordinance indicates that the project's stormwater design will be required to meet the Basic and Flooding Standards of the Chapter 500 Stormwater Management rules.

The site is moderately sloped (5-9%) with steeper slopes closer to Jenny Drive. Soils on the property were determined utilizing the Medium Intensity Soil Maps for Cumberland County, Maine published by the Natural Resources Conservation Service. The soils boundaries and hydrologic soils group (HSG) designations are indicated on the Watershed Maps within the design plan set and a Soils Map has been included as Attachment 1 of this report. Attachment 2 of this report includes all test pit logs analyzed within the project site.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns. The goal of the storm drainage system design is to provide attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains and constructed stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2-, 10- and 25 years was obtained from the Northeast Regional Climate Center's extreme precipitation tables for the project site.

D. Basic Standards

The project is required by the MDEP and the Town to provide permanent and temporary Erosion Control Best Management Practices. These methods are incorporated into the project design and outlined in detail in the plan set.

E. Flooding Standard

The Town of Gray requires the project to detain, retain or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project.

The project's stormwater design incorporates a detention to maintain these peak stormwater flows to pre-developed project conditions. The proposed project design has been modeled to evaluate and analyze the stormwater runoff characteristics of the site prior to construction of the project and upon completion of all proposed construction activities.

The first and only study point, Study Point 1 (SP-1) is located to the south of the project site near the outlet to an existing road culvert at the intersection of Jenny Drive and Fran Circle. This depression collects stormwater generated from both off-site and on-site tributary areas where the Jenny Drive Road swale converges with a natural drainage path, as well as the discharge from the existing road culvert. Stormwater is then conveyed to the south into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River. Sub-basin watershed area for SP1 is made up of both proposed onsite development and offsite areas, and consists of developed land, undeveloped woodland, and undeveloped meadow areas.

The following table summarizes the analysis:

Table 1 – Peak Rates of Stormwater Runoff						
Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP1	3.57	3.51	8.26	7.76	12.37	11.42

As illustrated in the table above, the proposed project's design including the integration of the proposed detention basin, reduces the peak rates of runoff at the study point.

The detention basin has been designed based on the MDEP guidelines and provides adequate flooding storage during the larger storm events. To demonstrate that the design of the detention basin has the required 1 foot of freeboard between the emergency spillway and the top of berm during the 25-year storm event assuming failure of the other discharge devices, a stormwater analysis was performed. The HydroCAD output has been provided in Attachment 3 of this report.

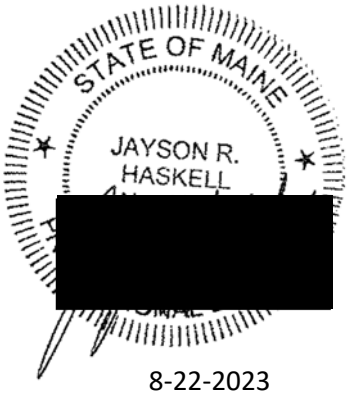
The watershed maps showing pre-development and post-development drainage patterns are included in the plan set and the computations performed with the HydroCAD software program are included as Attachment 4 of this report.

F. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is established. The Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in Attachment 5 of this report.

Prepared by:

DM ROMA CONSULTING ENGINEERS



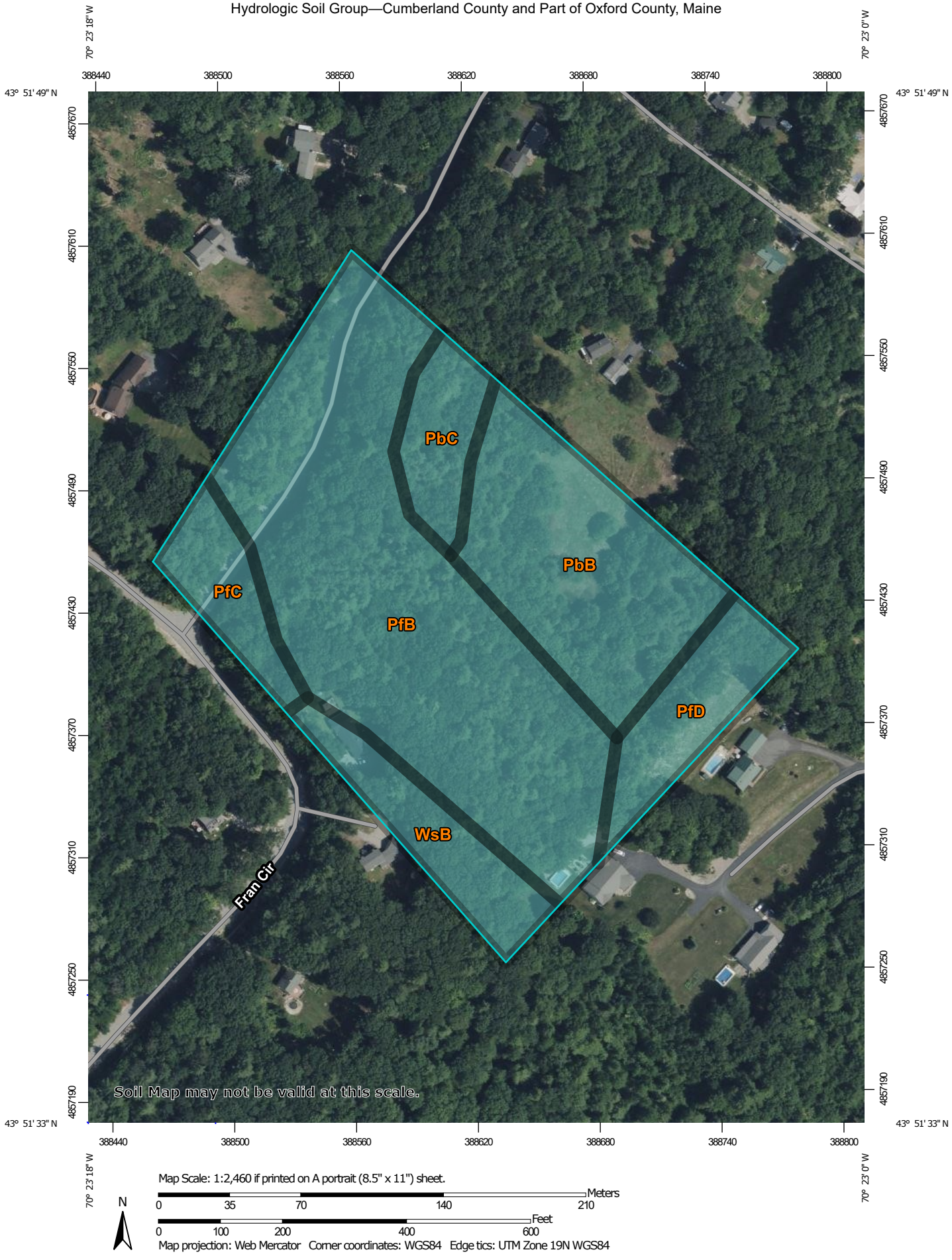
J.P. Connolly
Senior Project Engineer

Jayson R. Haskell P.E.
Southern Maine Regional Manager

8-22-2023

ATTACHMENT 1

MEDIUM INTENSITY SOILS MAP


70° 23' 18" W
70° 23' 0" W
388440
388500
388560
388620
388680
388740
388800
43° 51' 49" N
43° 51' 33" N
4857670
4857610
4857550
4857490
4857430
4857370
4857310
4857250
4857190
PbC
PbB
PfC
PfB
PfD
WsB
Fran Cir
Soil Map may not be valid at this scale.
Map Scale: 1:2,460 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 35 70 140 210
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 22, 2021—Oct 7, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	2.9	21.9%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	C	6.6	49.4%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	C	1.1	8.3%
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	C	1.1	8.4%
Totals for Area of Interest			**13.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT 2

TEST PIT LOGS

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-1 [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric

Slope %: 0-5

Limiting factor: 24"

[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification: 3 Profile: C Soil Condition:

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-2 [ ] [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric

Slope %: 0-3

Limiting factor: 34"

[ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification: 3 Profile: C Soil Condition:

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric

Slope %:

Limiting factor:

[■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification:

Profile: Soil Condition:

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric

Slope %:

Limiting factor:

[■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name:

Drainage Class: Hydrologic Group:

L.S.E. Soil Classification:

Profile: Soil Condition:

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 12/9/21
	name printed/typed: Alexander A. Finamore	Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-3 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		BROWN	
	FIRM	OLIVE BROWN	FEW. FINE. & FAINT
LIMIT OF EXCAVATION = 32"			

[■] hydric [ ] non-hydric | Slope %: 3-8 | Limiting factor: 20" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-4 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW. FINE. & FAINT
LIMIT OF EXCAVATION = 44"			

[■] hydric [ ] non-hydric | Slope %: 0-3 | Limiting factor: 34" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-5 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
LIMIT OF EXCAVATION = 44"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: >48" | [ ] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 2 (Profile) | B (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 2/11/22
	name printed/typed: Alexander A. Finamore	Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	McDonnell Brothers Custom Builders, LLC	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-6 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLIVE	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 18" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-7 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[ ] hydric [■] non-hydric | Slope %: 0-3 | Limiting factor: 28" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-SW1 | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLVIE	
		OLIVE BROWN	FEW, FINE, & FAINT
	FIRM		
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: 13" | [■] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | D (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: | [X] Test Pit | [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) | (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
L.S.E.	signature: [redacted]	Date: 7/27/23
	name printed/typed: Alexander A. Finamore	Lic.#: 391

ATTACHMENT 3

DETENTION BASIN SIZING CALCULATIONS

DETENTION BASIN - SPILLWAY RUN

Summary for Pond DB1:

[80] Warning: Exceeded Pond R6 by 1.12' @ 26.08 hrs (4.20 cfs 168,215 cf)

Inflow Area = 127,972 sf, 6.27% Impervious, Inflow Depth = 3.06" for 25-Year event
Inflow = 5.51 cfs @ 12.43 hrs, Volume= 32,589 cf
Outflow = 5.32 cfs @ 12.52 hrs, Volume= 27,687 cf, Atten= 3%, Lag= 5.2 min
Primary = 5.32 cfs @ 12.52 hrs, Volume= 27,687 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

PEAK WS EL.= 334.54'
BERM EL.= 335.5
FREEBOARD:
335.5-334.54=0.96' ~ 1'

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.54' @ 12.52 hrs Surf.Area= 3,827 sf Storage= 6,869 cf

Plug-Flow detention time= 103.9 min calculated for 27,657 cf (85% of inflow)
Center-of-Mass det. time= 39.1 min (890.5 - 851.5)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	8,703 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,163	252.4	3,801	8,703	4,221

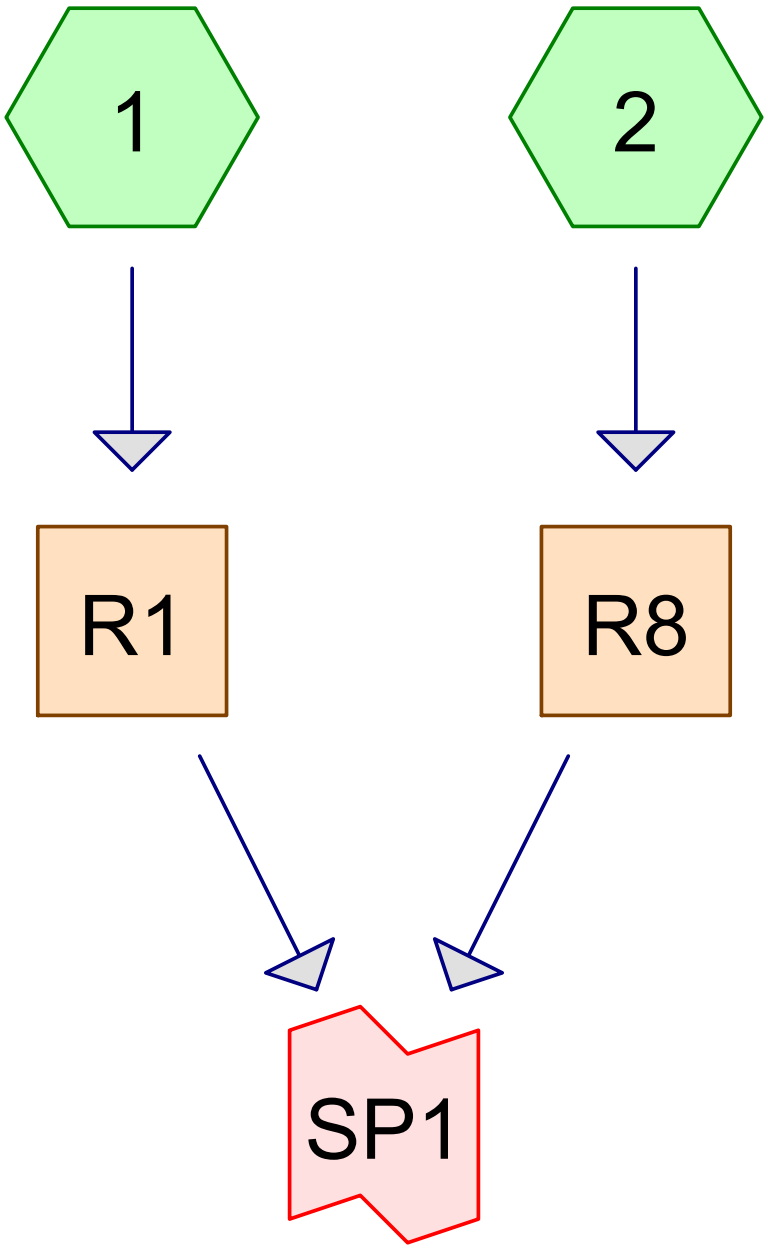
Device	Routing	Invert	Outlet Devices
#1	Primary	334.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	332.30'	**8.0" Round Culvert X 0.00** L= 22.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 332.30' / 332.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.25 cfs @ 12.52 hrs HW=334.54' TW=332.53' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.25 cfs @ 1.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=332.30' TW=332.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

ATTACHMENT 4

HYDROCAD CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 23015 - PRE
Prepared by DM Roma Consulting Engineers, Printed 8/4/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=762' Tc=24.3 min CN=72 Runoff=0.84 cfs 4,591 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=761' Tc=37.6 min CN=72 Runoff=2.86 cfs 19,080 cf

Reach R1: Avg. Flow Depth=0.07' Max Vel=1.63 fps Inflow=0.84 cfs 4,591 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=0.83 cfs 4,591 cf

Reach R8: Avg. Flow Depth=0.35' Max Vel=3.52 fps Inflow=2.86 cfs 19,080 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=2.86 cfs 19,080 cf

Link SP1: Inflow=3.57 cfs 23,671 cf
Primary=3.57 cfs 23,671 cf

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=762' Tc=24.3 min CN=72 Runoff=1.95 cfs 9,919 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=761' Tc=37.6 min CN=72 Runoff=6.62 cfs 41,219 cf

Reach R1: Avg. Flow Depth=0.10' Max Vel=2.00 fps Inflow=1.95 cfs 9,919 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=1.93 cfs 9,919 cf

Reach R8: Avg. Flow Depth=0.48' Max Vel=4.34 fps Inflow=6.62 cfs 41,219 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=6.62 cfs 41,219 cf

Link SP1: Inflow=8.26 cfs 51,138 cf
Primary=8.26 cfs 51,138 cf

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=62,577 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=762' Tc=24.3 min CN=72 Runoff=2.91 cfs 14,634 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=761' Tc=37.6 min CN=72 Runoff=9.91 cfs 60,813 cf

Reach R1: Avg. Flow Depth=0.12' Max Vel=2.15 fps Inflow=2.91 cfs 14,634 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=2.90 cfs 14,634 cf

Reach R8: Avg. Flow Depth=0.55' Max Vel=4.80 fps Inflow=9.91 cfs 60,813 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=9.91 cfs 60,813 cf

Link SP1: Inflow=12.37 cfs 75,447 cf
Primary=12.37 cfs 75,447 cf

Summary for Subcatchment 1:

Runoff = 2.91 cfs @ 12.35 hrs, Volume= 14,634 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
9,859	74	>75% Grass cover, Good, HSG C
52,718	72	Woods/grass comb., Good, HSG C
62,577	72	Weighted Average
62,577		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	130	0.0460	0.11		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.5	118	0.0549	3.77		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
4.2	384	0.0937	1.53		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.4	130	0.0354	4.97	155.19	**Channel Flow, Seg D to E** Area= 31.2 sf Perim= 63.5' r= 0.49' n= 0.035 Earth, dense weeds
24.3	762	Total			

Summary for Subcatchment 2:

Runoff = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
18,347	74	>75% Grass cover, Good, HSG C
241,705	72	Woods/grass comb., Good, HSG C
260,052	72	Weighted Average
260,052		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	150	0.0167	0.08		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.8	61	0.0734	1.35		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.3	125	0.0582	6.30	238.91	**Channel Flow, Seg C to D** Area= 37.9 sf Perim= 78.5' r= 0.48' n= 0.035 Earth, dense weeds
1.0	84	0.0807	1.42		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.3	86	0.0261	4.96	293.50	**Channel Flow, Seg E to F** Area= 59.2 sf Perim= 121.4' r= 0.49' n= 0.030 Earth, grassed & winding
2.9	255	0.0833	1.44		**Shallow Concentrated Flow, Seg F to G** Woodland Kv= 5.0 fps
37.6	761	Total			

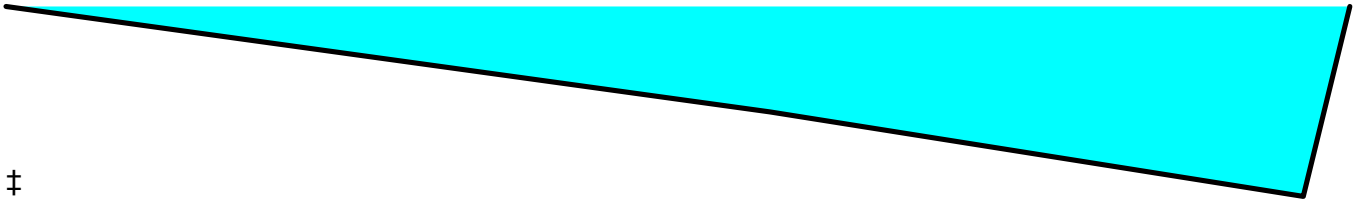
Summary for Reach R1:

Inflow Area = 62,577 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 2.91 cfs @ 12.35 hrs, Volume= 14,634 cf
Outflow = 2.90 cfs @ 12.37 hrs, Volume= 14,634 cf, Atten= 1%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.15 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 3.8 min

Peak Storage= 306 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.09' Flow Area= 0.8 sf, Capacity= 1.62 cfs

Custom cross-section, Length= 226.9' Slope= 0.0528 '/'
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 323.97', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	322.00	0.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.2	8.0	36	0.18
0.09	0.8	19.4	191	1.62

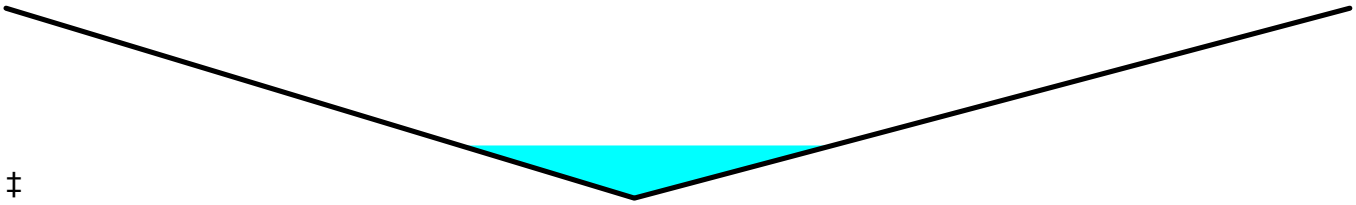
Summary for Reach R8:

Inflow Area = 260,052 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf
Outflow = 9.91 cfs @ 12.54 hrs, Volume= 60,813 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.9 min

Peak Storage= 531 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 304.41 cfs

Custom cross-section, Length= 257.2' Slope= 0.0719 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 330.50', Outlet Invert= 312.00'



‡

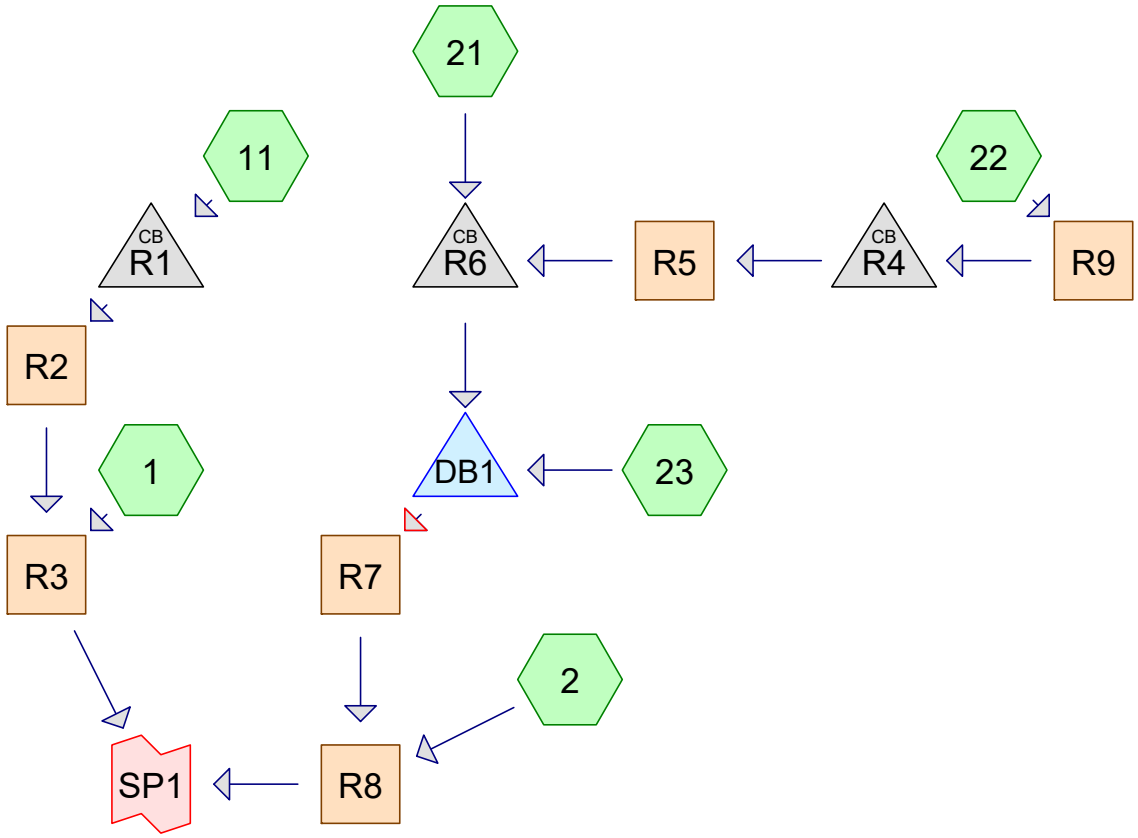
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	304.41

Summary for Link SP1:

Inflow Area = 322,629 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 12.37 cfs @ 12.50 hrs, Volume= 75,447 cf
Primary = 12.37 cfs @ 12.50 hrs, Volume= 75,447 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 23015 - POST
Prepared by DM Roma Consulting Engineers, Printed 8/23/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,878 sf 12.99% Impervious Runoff Depth=1.10"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.29 cfs 1,086 cf

Subcatchment 2: Runoff Area=86,710 sf 3.88% Impervious Runoff Depth=0.99"
Flow Length=592' Tc=17.5 min UI Adjusted CN=74 Runoff=1.52 cfs 7,119 cf

Subcatchment 11: Runoff Area=96,620 sf 1.73% Impervious Runoff Depth=0.93"
Flow Length=705' Tc=24.1 min CN=73 Runoff=1.39 cfs 7,504 cf

Subcatchment 21: Runoff Area=48,109 sf 6.40% Impervious Runoff Depth=1.04"
Flow Length=606' Tc=35.7 min UI Adjusted CN=75 Runoff=0.66 cfs 4,170 cf

Subcatchment 22: Runoff Area=67,389 sf 4.90% Impervious Runoff Depth=0.99"
Flow Length=548' Tc=29.3 min UI Adjusted CN=74 Runoff=0.95 cfs 5,533 cf

Subcatchment 23: Runoff Area=12,474 sf 13.24% Impervious Runoff Depth=1.15"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.32 cfs 1,201 cf

Reach R2: Avg. Flow Depth=0.54' Max Vel=1.32 fps Inflow=1.39 cfs 7,504 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=1.39 cfs 7,504 cf

Reach R3: Avg. Flow Depth=0.09' Max Vel=1.90 fps Inflow=1.54 cfs 8,590 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=1.54 cfs 8,590 cf

Reach R5: Avg. Flow Depth=0.11' Max Vel=3.88 fps Inflow=0.95 cfs 5,533 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=0.96 cfs 5,533 cf

Reach R7: Avg. Flow Depth=0.30' Max Vel=1.84 fps Inflow=1.08 cfs 10,892 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=1.08 cfs 10,892 cf

Reach R8: Avg. Flow Depth=0.30' Max Vel=3.21 fps Inflow=1.97 cfs 18,011 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=1.97 cfs 18,011 cf

Reach R9: Avg. Flow Depth=0.16' Max Vel=2.55 fps Inflow=0.95 cfs 5,533 cf
n=0.030 L=91.7' S=0.0397 '/' Capacity=308.40 cfs Outflow=0.95 cfs 5,533 cf

Pond DB1: Peak Elev=333.17' Storage=2,266 cf Inflow=1.74 cfs 10,903 cf
Primary=0.00 cfs 0 cf Secondary=1.08 cfs 10,892 cf Outflow=1.08 cfs 10,892 cf

Pond R1: Peak Elev=323.64' Inflow=1.39 cfs 7,504 cf
18.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=1.39 cfs 7,504 cf

Pond R4: Peak Elev=346.82' Inflow=0.95 cfs 5,533 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=0.95 cfs 5,533 cf

Pond R6: Peak Elev=333.51' Inflow=1.61 cfs 9,703 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=1.61 cfs 9,703 cf

Link SP1: Inflow=3.51 cfs 26,601 cf
Primary=3.51 cfs 26,601 cf

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,878 sf 12.99% Impervious Runoff Depth=2.22"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.61 cfs 2,195 cf

Subcatchment 2: Runoff Area=86,710 sf 3.88% Impervious Runoff Depth=2.06"
Flow Length=592' Tc=17.5 min UI Adjusted CN=74 Runoff=3.35 cfs 14,866 cf

Subcatchment 11: Runoff Area=96,620 sf 1.73% Impervious Runoff Depth=1.98"
Flow Length=705' Tc=24.1 min CN=73 Runoff=3.15 cfs 15,934 cf

Subcatchment 21: Runoff Area=48,109 sf 6.40% Impervious Runoff Depth=2.14"
Flow Length=606' Tc=35.7 min UI Adjusted CN=75 Runoff=1.43 cfs 8,567 cf

Subcatchment 22: Runoff Area=67,389 sf 4.90% Impervious Runoff Depth=2.06"
Flow Length=548' Tc=29.3 min UI Adjusted CN=74 Runoff=2.10 cfs 11,553 cf

Subcatchment 23: Runoff Area=12,474 sf 13.24% Impervious Runoff Depth=2.30"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.65 cfs 2,391 cf

Reach R2: Avg. Flow Depth=0.73' Max Vel=1.61 fps Inflow=3.15 cfs 15,934 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=3.15 cfs 15,934 cf

Reach R3: Avg. Flow Depth=0.13' Max Vel=2.20 fps Inflow=3.46 cfs 18,130 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=3.43 cfs 18,130 cf

Reach R5: Avg. Flow Depth=0.17' Max Vel=5.05 fps Inflow=2.10 cfs 11,553 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=2.10 cfs 11,553 cf

Reach R7: Avg. Flow Depth=0.40' Max Vel=2.24 fps Inflow=2.40 cfs 22,500 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=2.41 cfs 22,500 cf

Reach R8: Avg. Flow Depth=0.41' Max Vel=3.92 fps Inflow=4.45 cfs 37,366 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=4.40 cfs 37,366 cf

Reach R9: Avg. Flow Depth=0.24' Max Vel=3.28 fps Inflow=2.10 cfs 11,553 cf
n=0.030 L=91.7' S=0.0397 '/' Capacity=308.40 cfs Outflow=2.10 cfs 11,553 cf

Pond DB1: Peak Elev=334.13' Storage=5,347 cf Inflow=3.77 cfs 22,512 cf
Primary=0.58 cfs 608 cf Secondary=1.81 cfs 21,892 cf Outflow=2.40 cfs 22,500 cf

Pond R1: Peak Elev=323.98' Inflow=3.15 cfs 15,934 cf
18.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=3.15 cfs 15,934 cf

Pond R4: Peak Elev=347.08' Inflow=2.10 cfs 11,553 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=2.10 cfs 11,553 cf

Pond R6: Peak Elev=334.25' Inflow=3.49 cfs 20,121 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=3.49 cfs 20,121 cf

Link SP1: Inflow=7.76 cfs 55,496 cf
Primary=7.76 cfs 55,496 cf

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,878 sf 12.99% Impervious Runoff Depth=3.18"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=0.88 cfs 3,150 cf

Subcatchment 2: Runoff Area=86,710 sf 3.88% Impervious Runoff Depth=2.99"
Flow Length=592' Tc=17.5 min UI Adjusted CN=74 Runoff=4.93 cfs 21,623 cf

Subcatchment 11: Runoff Area=96,620 sf 1.73% Impervious Runoff Depth=2.90"
Flow Length=705' Tc=24.1 min CN=73 Runoff=4.66 cfs 23,340 cf

Subcatchment 21: Runoff Area=48,109 sf 6.40% Impervious Runoff Depth=3.09"
Flow Length=606' Tc=35.7 min UI Adjusted CN=75 Runoff=2.08 cfs 12,376 cf

Subcatchment 22: Runoff Area=67,389 sf 4.90% Impervious Runoff Depth=2.99"
Flow Length=548' Tc=29.3 min UI Adjusted CN=74 Runoff=3.09 cfs 16,805 cf

Subcatchment 23: Runoff Area=12,474 sf 13.24% Impervious Runoff Depth=3.28"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.93 cfs 3,409 cf

Reach R2: Avg. Flow Depth=0.85' Max Vel=1.78 fps Inflow=4.66 cfs 23,340 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=4.67 cfs 23,340 cf

Reach R3: Avg. Flow Depth=0.16' Max Vel=2.30 fps Inflow=5.11 cfs 26,491 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=5.08 cfs 26,491 cf

Reach R5: Avg. Flow Depth=0.21' Max Vel=5.72 fps Inflow=3.09 cfs 16,805 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=3.09 cfs 16,805 cf

Reach R7: Avg. Flow Depth=0.52' Max Vel=2.66 fps Inflow=4.81 cfs 32,578 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=4.90 cfs 32,578 cf

Reach R8: Avg. Flow Depth=0.50' Max Vel=4.46 fps Inflow=7.37 cfs 54,200 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=7.40 cfs 54,200 cf

Reach R9: Avg. Flow Depth=0.30' Max Vel=3.70 fps Inflow=3.09 cfs 16,805 cf
n=0.030 L=91.7' S=0.0397 '/' Capacity=308.40 cfs Outflow=3.09 cfs 16,805 cf

Pond DB1: Peak Elev=334.36' Storage=6,201 cf Inflow=5.51 cfs 32,589 cf
Primary=2.86 cfs 4,739 cf Secondary=1.95 cfs 27,839 cf Outflow=4.81 cfs 32,578 cf

Pond R1: Peak Elev=324.25' Inflow=4.66 cfs 23,340 cf
18.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=4.66 cfs 23,340 cf

Pond R4: Peak Elev=347.27' Inflow=3.09 cfs 16,805 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=3.09 cfs 16,805 cf

Pond R6: Peak Elev=334.95' Inflow=5.11 cfs 29,181 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=5.11 cfs 29,181 cf

Link SP1: Inflow=11.42 cfs 80,691 cf
Primary=11.42 cfs 80,691 cf

Summary for Subcatchment 1:

Runoff = 0.88 cfs @ 12.12 hrs, Volume= 3,150 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	3,356	74	>75% Grass cover, Good, HSG C
	6,842	72	Woods/grass comb., Good, HSG C
*	1,543	98	Paved road
*	137	96	Gravel surface
	11,878	76	Weighted Average
	10,335		87.01% Pervious Area
	1,543		12.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	88	0.1704	0.18		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"

Summary for Subcatchment 2:

Runoff = 4.93 cfs @ 12.25 hrs, Volume= 21,623 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	14,621	74		>75% Grass cover, Proposed, Good, HSG C
	63,991	72		Woods/grass comb., Good, HSG C
*	1,128	98		Paved road
*	4,732	96		Gravel surface
*	2,238	98		Unconnected roofs,
	86,710	75	74	Weighted Average, UI Adjusted
	83,344			96.12% Pervious Area
	3,366			3.88% Impervious Area
	2,238			66.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	91	0.0608	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.3	165	0.0546	9.85	284.41	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.50' Z= 20.0 & 3.0 '/' Top.W=36.50' n= 0.030 Earth, grassed & winding
1.1	73	0.0477	1.09		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
3.2	263	0.0769	1.39		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps

17.5	592	Total

Summary for Subcatchment 11:

Runoff = 4.66 cfs @ 12.34 hrs, Volume= 23,340 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	19,839	74	>75% Grass cover, Existing, Good, HSG C
*	10,052	74	>75% Grass cover, Proposed, Good, HSG C
	64,875	72	Woods/grass comb., Good, HSG C
*	1,675	98	Paved road
*	179	96	Gravel surface
*	0	98	Unconnected roofs,
	96,620	73	Weighted Average
	94,945		98.27% Pervious Area
	1,675		1.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	130	0.0460	0.11		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.5	118	0.0549	3.77		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
4.2	384	0.0937	1.53		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.2	57	0.0354	4.97	155.19	**Channel Flow, Seg D to E** Area= 31.2 sf Perim= 63.5' r= 0.49' n= 0.035 Earth, dense weeds
0.0	16	0.1592	24.34	527.11	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.030 Earth, grassed & winding
24.1	705	Total			

Summary for Subcatchment 21:

Runoff = 2.08 cfs @ 12.50 hrs, Volume= 12,376 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	8,369	74		>75% Grass cover, Existing, Good, HSG C
*	7,334	74		>75% Grass cover, Proposed, Good, HSG C
	26,057	72		Woods/grass comb., Good, HSG C
*	840	98		Paved road
*	3,271	96		Gravel surface
*	2,238	98		Unconnected roofs,
	48,109	76	75	Weighted Average, UI Adjusted
	45,031			93.60% Pervious Area
	3,078			6.40% Impervious Area
	2,238			72.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	150	0.0167	0.08		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.4	69	0.0253	0.80		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	93	0.0590	3.91		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.0	91	0.0904	1.50		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.5	104	0.0507	3.63		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.1	41	0.1017	5.13		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.0	14	0.2933	8.72		**Shallow Concentrated Flow, Seg G to H** Unpaved Kv= 16.1 fps
0.0	44	0.1399	23.72	578.97	**Trap/Vee/Rect Channel Flow, Seg H to I** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
35.7	606	Total			

Summary for Subcatchment 22:

Runoff = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	13,338	74		>75% Grass cover, Proposed, Good, HSG C
	47,432	72		Woods/grass comb., Good, HSG C
*	1,062	98		Paved road
*	3,319	96		Gravel surface
*	2,238	98		Unconnected roofs,
	67,389	75	74	Weighted Average, UI Adjusted
	64,089			95.10% Pervious Area
	3,300			4.90% Impervious Area
	2,238			67.82% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	150	0.0267	0.09		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.1	61	0.0693	8.12	211.97	**Channel Flow, Seg B to C** Area= 26.1 sf Perim= 53.1' r= 0.49' n= 0.030 Earth, grassed & winding
1.3	90	0.0558	1.18		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.1	29	0.0586	3.90		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.5	39	0.0773	1.39		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.4	87	0.0430	3.34		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.1	92	0.0833	18.30	446.75	**Trap/Vee/Rect Channel Flow, Seg G to H** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
29.3	548	Total			

Summary for Subcatchment 23:

Runoff = 0.93 cfs @ 12.15 hrs, Volume= 3,409 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	9,192	74	>75% Grass cover, Proposed, Good, HSG C
	1,452	72	Woods/grass comb., Good, HSG C
*	1,651	98	Paved road
*	179	96	Gravel surface
*	0	98	Unconnected roofs,
	12,474	77	Weighted Average
	10,823		86.76% Pervious Area
	1,651		13.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	60	0.0835	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.6	27	0.3330	0.27		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
9.8	87	Total			

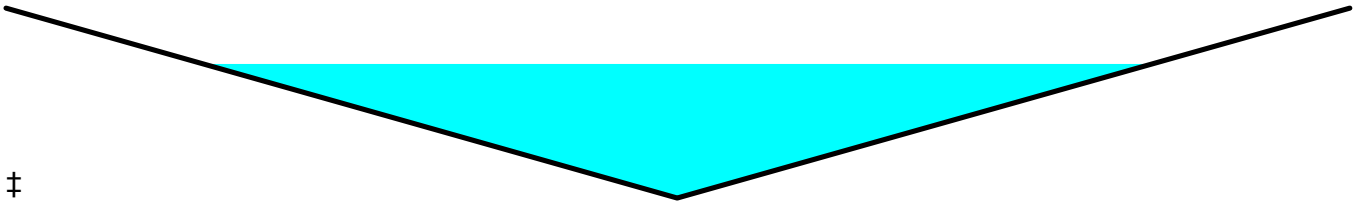
Summary for Reach R2:

Inflow Area = 96,620 sf, 1.73% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.66 cfs @ 12.34 hrs, Volume= 23,340 cf
Outflow = 4.67 cfs @ 12.35 hrs, Volume= 23,340 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 1.78 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 0.7 min

Peak Storage= 90 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.20' Flow Area= 5.2 sf, Capacity= 11.80 cfs

Custom cross-section, Length= 34.4' Slope= 0.0058 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 322.80', Outlet Invert= 322.60'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
4.37	322.80	1.20
8.75	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.20	5.2	9.1	181	11.80

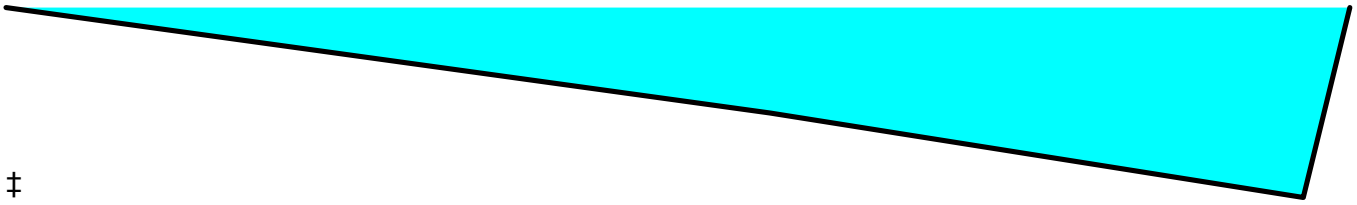
Summary for Reach R3:

Inflow Area = 108,498 sf, 2.97% Impervious, Inflow Depth = 2.93" for 25-Year event
Inflow = 5.11 cfs @ 12.33 hrs, Volume= 26,491 cf
Outflow = 5.08 cfs @ 12.36 hrs, Volume= 26,491 cf, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 3.5 min

Peak Storage= 501 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.09' Flow Area= 0.8 sf, Capacity= 1.62 cfs

Custom cross-section, Length= 226.9' Slope= 0.0528 '/'
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 323.97', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	322.00	0.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.04	0.2	8.0	36	0.18
0.09	0.8	19.4	191	1.62

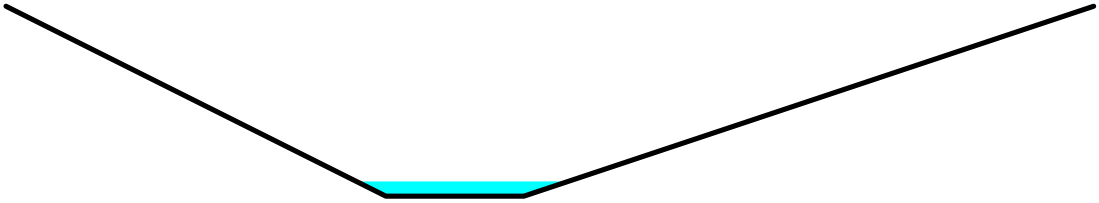
Summary for Reach R5:

Inflow Area = 67,389 sf, 4.90% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf
Outflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 5.72 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 0.5 min

Peak Storage= 33 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 579.71 cfs

2.00' x 2.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 62.1' Slope= 0.1403 '/'
Inlet Invert= 341.59', Outlet Invert= 332.88'



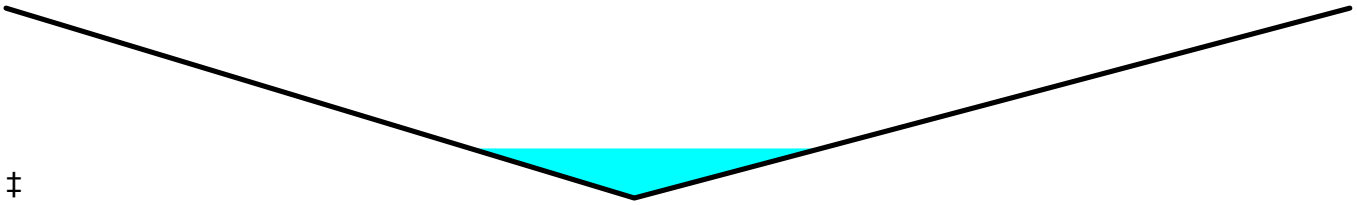
Summary for Reach R7:

Inflow Area = 127,972 sf, 6.27% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 4.81 cfs @ 12.60 hrs, Volume= 32,578 cf
Outflow = 4.90 cfs @ 12.60 hrs, Volume= 32,578 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 2.66 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 1.7 min

Peak Storage= 113 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 176.83 cfs

Custom cross-section, Length= 61.8' Slope= 0.0243 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 332.00', Outlet Invert= 330.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	1,664	176.83

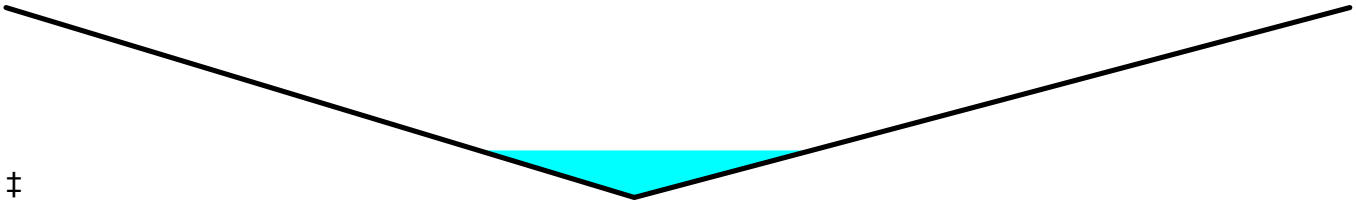
Summary for Reach R8:

Inflow Area = 214,682 sf, 5.31% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 7.37 cfs @ 12.55 hrs, Volume= 54,200 cf
Outflow = 7.40 cfs @ 12.57 hrs, Volume= 54,200 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 4.46 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 4.2 min

Peak Storage= 426 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 304.41 cfs

Custom cross-section, Length= 257.2' Slope= 0.0719 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 330.50', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	304.41

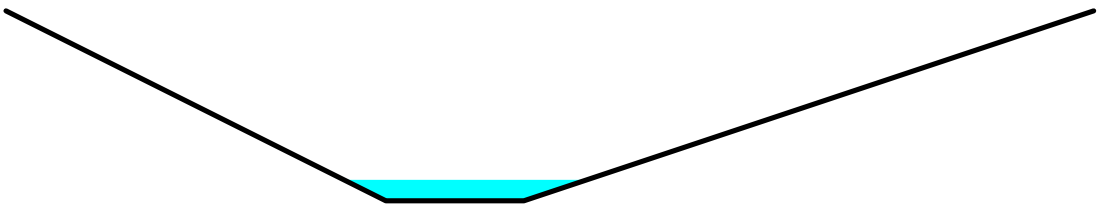
Summary for Reach R9:

Inflow Area = 67,389 sf, 4.90% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf
Outflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 1.1 min

Peak Storage= 77 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 308.40 cfs

2.00' x 2.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 91.7' Slope= 0.0397 '/'
Inlet Invert= 350.00', Outlet Invert= 346.36'



Summary for Pond DB1:

Inflow Area = 127,972 sf, 6.27% Impervious, Inflow Depth = 3.06" for 25-Year event
Inflow = 5.51 cfs @ 12.43 hrs, Volume= 32,589 cf
Outflow = 4.81 cfs @ 12.60 hrs, Volume= 32,578 cf, Atten= 13%, Lag= 10.1 min
Primary = 2.86 cfs @ 12.60 hrs, Volume= 4,739 cf
Secondary = 1.95 cfs @ 12.60 hrs, Volume= 27,839 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.36' @ 12.60 hrs Surf.Area= 3,701 sf Storage= 6,201 cf

Plug-Flow detention time= 41.1 min calculated for 32,578 cf (100% of inflow)
Center-of-Mass det. time= 40.3 min (891.8 - 851.5)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	8,703 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,163	252.4	3,801	8,703	4,221

Device	Routing	Invert	Outlet Devices
#1	Primary	334.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	332.30'	**8.0" Round Culvert** L= 22.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 332.30' / 332.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.81 cfs @ 12.60 hrs HW=334.36' TW=332.52' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.81 cfs @ 1.56 fps)

Secondary OutFlow Max=1.95 cfs @ 12.60 hrs HW=334.36' TW=332.52' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 1.95 cfs @ 5.58 fps)

Summary for Pond R1:

Inflow Area = 96,620 sf, 1.73% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.66 cfs @ 12.34 hrs, Volume= 23,340 cf
Outflow = 4.66 cfs @ 12.34 hrs, Volume= 23,340 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.66 cfs @ 12.34 hrs, Volume= 23,340 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 324.25' @ 12.34 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 34.2' Ke= 0.500

Inlet / Outlet Invert= 323.00' / 322.80' S= 0.0058 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.60 cfs @ 12.34 hrs HW=324.24' TW=323.64' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 4.60 cfs @ 4.01 fps)

Summary for Pond R4:

Inflow Area = 67,389 sf, 4.90% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf
Outflow = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.09 cfs @ 12.42 hrs, Volume= 16,805 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 347.27' @ 12.42 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.06 cfs @ 12.42 hrs HW=347.26' TW=341.80' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.06 cfs @ 3.23 fps)

Summary for Pond R6:

Inflow Area = 115,498 sf, 5.52% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 5.11 cfs @ 12.45 hrs, Volume= 29,181 cf
Outflow = 5.11 cfs @ 12.45 hrs, Volume= 29,181 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.11 cfs @ 12.45 hrs, Volume= 29,181 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.95' @ 12.57 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	332.88'	**15.0" Round Culvert** L= 36.6' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 332.88' / 332.37' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.22 cfs @ 12.45 hrs HW=334.73' TW=334.22' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.22 cfs @ 3.43 fps)

Summary for Link SP1:

Inflow Area = 323,180 sf, 4.52% Impervious, Inflow Depth = 3.00" for 25-Year event
Inflow = 11.42 cfs @ 12.52 hrs, Volume= 80,691 cf
Primary = 11.42 cfs @ 12.52 hrs, Volume= 80,691 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs

Time span=0.00-72.00 hrs, dt=0.08 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=11,878 sf 12.99% Impervious Runoff Depth=4.12"
Flow Length=88' Slope=0.1704 '/' Tc=8.3 min CN=76 Runoff=1.13 cfs 4,073 cf

Subcatchment 2: Runoff Area=86,710 sf 3.88% Impervious Runoff Depth=3.90"
Flow Length=592' Tc=17.5 min UI Adjusted CN=74 Runoff=6.43 cfs 28,202 cf

Subcatchment 11: Runoff Area=96,620 sf 1.73% Impervious Runoff Depth=3.80"
Flow Length=705' Tc=24.1 min CN=73 Runoff=6.13 cfs 30,578 cf

Subcatchment 21: Runoff Area=48,109 sf 6.40% Impervious Runoff Depth=4.01"
Flow Length=606' Tc=35.7 min UI Adjusted CN=75 Runoff=2.70 cfs 16,071 cf

Subcatchment 22: Runoff Area=67,389 sf 4.90% Impervious Runoff Depth=3.90"
Flow Length=548' Tc=29.3 min UI Adjusted CN=74 Runoff=4.03 cfs 21,918 cf

Subcatchment 23: Runoff Area=12,474 sf 13.24% Impervious Runoff Depth=4.22"
Flow Length=87' Tc=9.8 min CN=77 Runoff=1.20 cfs 4,389 cf

Reach R2: Avg. Flow Depth=0.94' Max Vel=1.91 fps Inflow=6.13 cfs 30,578 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=6.13 cfs 30,578 cf

Reach R3: Avg. Flow Depth=0.19' Max Vel=2.35 fps Inflow=6.71 cfs 34,651 cf
n=0.022 L=226.9' S=0.0528 '/' Capacity=1.62 cfs Outflow=6.66 cfs 34,651 cf

Reach R5: Avg. Flow Depth=0.25' Max Vel=6.22 fps Inflow=4.03 cfs 21,918 cf
n=0.030 L=62.1' S=0.1403 '/' Capacity=579.71 cfs Outflow=4.04 cfs 21,918 cf

Reach R7: Avg. Flow Depth=0.59' Max Vel=2.90 fps Inflow=6.78 cfs 42,367 cf
n=0.035 L=61.8' S=0.0243 '/' Capacity=176.83 cfs Outflow=6.77 cfs 42,367 cf

Reach R8: Avg. Flow Depth=0.57' Max Vel=4.90 fps Inflow=10.71 cfs 70,569 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=10.76 cfs 70,569 cf

Reach R9: Avg. Flow Depth=0.35' Max Vel=4.01 fps Inflow=4.03 cfs 21,918 cf
n=0.030 L=91.7' S=0.0397 '/' Capacity=308.40 cfs Outflow=4.03 cfs 21,918 cf

Pond DB1: Peak Elev=334.50' Storage=6,725 cf Inflow=7.18 cfs 42,378 cf
Primary=4.75 cfs 9,368 cf Secondary=2.03 cfs 32,998 cf Outflow=6.78 cfs 42,367 cf

Pond R1: Peak Elev=324.50' Inflow=6.13 cfs 30,578 cf
18.0" Round Culvert n=0.013 L=34.2' S=0.0058 '/' Outflow=6.13 cfs 30,578 cf

Pond R4: Peak Elev=347.45' Inflow=4.03 cfs 21,918 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=4.03 cfs 21,918 cf

Pond R6: Peak Elev=335.68' Inflow=6.66 cfs 37,989 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0139 '/' Outflow=6.66 cfs 37,989 cf

Link SP1: Inflow=16.82 cfs 105,220 cf
Primary=16.82 cfs 105,220 cf

Summary for Pond DB1:

Inflow Area = 127,972 sf, 6.27% Impervious, Inflow Depth = 3.97" for 50-Year event
Inflow = 7.18 cfs @ 12.43 hrs, Volume= 42,378 cf
Outflow = 6.78 cfs @ 12.54 hrs, Volume= 42,367 cf, Atten= 6%, Lag= 6.5 min
Primary = 4.75 cfs @ 12.54 hrs, Volume= 9,368 cf
Secondary = 2.03 cfs @ 12.54 hrs, Volume= 32,998 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 334.50' @ 12.54 hrs Surf.Area= 3,800 sf Storage= 6,725 cf

Plug-Flow detention time= 37.0 min calculated for 42,367 cf (100% of inflow)
Center-of-Mass det. time= 36.2 min (880.1 - 843.9)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	8,703 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,163	252.4	3,801	8,703	4,221

Device	Routing	Invert	Outlet Devices
#1	Primary	334.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	332.30'	**8.0" Round Culvert** L= 22.6' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 332.30' / 332.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=4.69 cfs @ 12.54 hrs HW=334.50' TW=332.59' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4.69 cfs @ 1.88 fps)

Secondary OutFlow Max=2.03 cfs @ 12.54 hrs HW=334.50' TW=332.59' (Dynamic Tailwater)
↑**2=Culvert** (Inlet Controls 2.03 cfs @ 5.80 fps)

Summary for Pond R1:

Inflow Area = 96,620 sf, 1.73% Impervious, Inflow Depth = 3.80" for 50-Year event
Inflow = 6.13 cfs @ 12.34 hrs, Volume= 30,578 cf
Outflow = 6.13 cfs @ 12.34 hrs, Volume= 30,578 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.13 cfs @ 12.34 hrs, Volume= 30,578 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 324.50' @ 12.34 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	323.00'	**18.0" Round Culvert** L= 34.2' Ke= 0.500

Inlet / Outlet Invert= 323.00' / 322.80' S= 0.0058 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.06 cfs @ 12.34 hrs HW=324.49' TW=323.73' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 6.06 cfs @ 4.30 fps)

Summary for Pond R4:

Inflow Area = 67,389 sf, 4.90% Impervious, Inflow Depth = 3.90" for 50-Year event
Inflow = 4.03 cfs @ 12.42 hrs, Volume= 21,918 cf
Outflow = 4.03 cfs @ 12.42 hrs, Volume= 21,918 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.03 cfs @ 12.42 hrs, Volume= 21,918 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 347.45' @ 12.42 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.01 cfs @ 12.42 hrs HW=347.44' TW=341.84' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.01 cfs @ 3.54 fps)

Summary for Pond R6:

Inflow Area = 115,498 sf, 5.52% Impervious, Inflow Depth = 3.95" for 50-Year event
Inflow = 6.66 cfs @ 12.44 hrs, Volume= 37,989 cf
Outflow = 6.66 cfs @ 12.44 hrs, Volume= 37,989 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.66 cfs @ 12.44 hrs, Volume= 37,989 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs
Peak Elev= 335.68' @ 12.50 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	332.88'	**15.0" Round Culvert** L= 36.6' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 332.88' / 332.37' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.24 cfs @ 12.44 hrs HW=335.58' TW=334.46' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 6.24 cfs @ 5.08 fps)

Summary for Link SP1:

Inflow Area = 323,180 sf, 4.52% Impervious, Inflow Depth = 3.91" for 50-Year event
Inflow = 16.82 cfs @ 12.44 hrs, Volume= 105,220 cf
Primary = 16.82 cfs @ 12.44 hrs, Volume= 105,220 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.08 hrs

ATTACHMENT 5

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

Responsible Party

Owner: McDonnell Brothers Custom Builders, LLC.
391 Roosevelt Trail
Windham, Maine 04062

The owner/applicant is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until a homeowner's association is established. Once the association is established, maintenance will be the responsibility of the homeowners. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the stormwater basins. To ensure the basins function as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basins due to compaction.

4. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
   (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
   (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
   (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
   (d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measures, must be maintained by the owner in effective operating condition. A qualified inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Storm Drains:** Inspect storm drains in the spring, late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the storm drain's outlet.

D. **Detention Basin:** The detention basin is not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage.

   The basin shall be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain storage capacity. Any bare areas or erosion rills shall be repaired with new loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure. Inspect culvert outlet as indicated in Section 1C and the emergency spillway inspected as indicated in Section 1E.

E. **Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

F. **Regular Maintenance:** Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

G. **Documentation:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Ditches, swales and other open channels	Inspect after major rainfall event.			
	Inspect for erosion or slumping and repair			
	Mowed at least annually			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – DETENTION BASIN

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Detention Basin	Check after each rainfall event to ensure that pond drains dry			
	Mow grass at least annually to control growth of woody vegetation			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

DM ROMA
CONSULTING ENGINEERS

August 23, 2023

Town of Gray Planning Board
c/o Kristen Muszynski, Town Planner
Henry Pennell Municipal Complex
24 Main St, Gray, ME 04039

Re: Cambell Acres – Amended Subdivision – Preliminary Major Subdivision Application
Planning Department and Town Engineer review comment response
McDonnell Brothers Custom Builders, LLC. – Owner/Applicant

Dear Ms. Muszynski:

On behalf of McDonnell Brothers Custom Builders, LLC., DM Roma Consulting Engineers has revised the project plan set for the proposed residential subdivision project located off Jenny Drive, proposing the development of a residential subdivision with three proposed lots. The revisions were prepared to address concerns and comments that we have received to date from the Town Staff, Town's Review Engineer, and abutters. Given the nature of the revisions we wanted to provide the Town and especially the Planning Board with an opportunity to review the revised plans in effort to address a primary concern that was raised regarding the distance and buffering of the existing neighbors from the proposed development. Many of the revisions to the project design were made to address this concern and we wanted to present this version of the project design at the scheduled Planning Board hearing.

The subject parcel is shown on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The 7.12-acre parcel, identified as Lot 17-28-03 on the above referenced Amended Subdivision Plan is the current Assessor assigned lot number. The cover letter and project narrative submitted in the Preliminary Subdivision Application package indicated the project site was on the Town of Gray Tax Map 28; however, the correct Tax Map is number 56, as it is identified on the application form.

This letter is intended to clarify and highlight the changes that were made to the project design as shown on the revised plan set, as well as to provide a response to the comments received to date. The following is a list of comments and followed by our response:

Town Staff/Site Walk comments:

- Provide more natural buffer or propose additional screening to benefit existing neighbors
    - Lot 1 was revised with the driveway extending from the end of the proposed subdivision road "Lieutenants Drive" and the building was placed further back so that a deeper natural buffer could be preserved. The result was that the tree clearing limits are not 28'+ at the closest point to the abutting property limits. Lot

3's building and driveway was also revised to provide more separation from the neighbor to the north. The building was rotated and placed further back so that the building was placed much further from the building being constructed compared to the initial design.

- Culvert at Jenny Drive should be 18"
  - The project design at the intersection of the proposed subdivision road "Lieutenants Drive" and Jenny Drive was revised to provide grading design to accommodate a culvert with 18-inch diameter.
- DPW recommends paving the road due to steep slope
  - The road section has been revised to provide an 18-foot paved travel way with 1' gravel shoulders on each side.

Town's Review Engineer comments:

- The Homeowners Association documents are pending.
  - We will provide Homeowners Association documents as soon as they are made available, with the expectation that they will be provided along with the application for final subdivision approval.
- Revise snow storage note in the Inspection, Maintenance, and Housekeeping Plan to remove the reference to underdrained filter basins and wet ponds.
  - We did not find the reference referred to; snow storage is discussed only in the detention basin section of the Inspection, Maintenance and Housekeeping Plan being submitted with this letter.
- Provide a detail for the roof drain drip edges.
  - Detail added to detail sheet D-2.
- Revise the roadway cross slope on the typical section to ½" per foot (Subdivision Ordinance Section 401.13.16.B.3.a)
  - Alternately we revised the road section to a paved 18 ft travel way with 1' gravel shoulders each side.
- Provide an analysis for the 50 year storm for the two roadway cross culverts (Subdivision Ordinance Section 401.13.16.B.3.d)
  - 50 year HydroCAD output for all culverts provided in revised stormwater report.
- Provide Lot Numbers on the grading plan of the Roadway Plan and Profile.
  - Revised plan and profile accordingly.
- While the Town Ordinance appears to allow a maximum road grade of 12% and a gravel road surface, we have concerns about long term erosion of the gravel surface. Provide more information on how road drainage will be managed to minimize erosion damage to the section of the road with 12% grade. Runoff from gravel roads often does not flow to the edges as well as on paved roads and this is often exacerbated on roads with steep longitudinal grades. In general, road cross slopes for gravel roads are often increased to allow runoff to flow to the ditches. The Design Engineer should consider increasing the

cross slope to 4% for the gravel road. Even with this change, we would still have concerns about long term erosion of the gravel road surface.
    - We concur with this concern, and have provided a paved travel way road section with the revised project design.
- Show check dams in the ditches that align with the spacing provided on the check dam detail.
    - Revised detail and placed the stone check dams along with rip rap swale section to address potential erosion resulting from flow velocity.
- Confirm that flow velocities in the ditches will not cause erosion. Specify the type of erosion control blanket in the vegetated ditch detail.
    - Revised swale detail to specify erosion control blanket.
- The driveway on Lot 3 of the revised Plan and Profile is closer than 10 feet to the adjacent property line. Revise to provide a 10 foot minimum setback. (Subdivision Ordinance Section 401.13.17.H).
    - Revised Lot 3 building and driveway layout. Adjusted the driveway design to provide 11' of separation at it's closest point to the property limit.
- The driveway to Lot 1 crosses the Lot 2 property on the revised Plan and Profile. Keep Subdivision Ordinance Section 401.13.17.H in mind when revising. The location at the end of the turnaround may not work with snow storage/winter maintenance. (Subdivision Ordinance Section 401.13.17.E).
    - We don't anticipate this project being maintained by the Town. As such the Homeowner's Association will be responsible for plowing of the proposed subdivision road and driveways. As such we anticipate the plowing of the road to push snow from the road up the driveway and stored in the vicinity of the Lot 1 driveway turnaround.

Enclosed with this submission is the revised supporting documentation and design plans for your review. Upon your review of the submission, please do not hesitate to contact me if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

J.P. Connolly
Senior Project Engineer

Cc: McDonnell Brothers Custom Builders, LLC.

August 16, 2023

Re: Agent Authorization

I, Garrett McDonnell, am an authorized representative of McDonnell Brothers Custom Builders, LLC., the owner of the property on Jenny Drive, in Gray, Maine. The property is shown as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022.

I have retained the services of DM Roma Consulting Engineers to act as my agent to apply for land use permits associated with the development of this property.

Sincerely,

[redacted]

Garrett McDonnell

Planning Board Site Walk

Jenny Drive subdivision proposal

5 p.m., August 3, 2023

Meeting convened at 5:05 p.m.,

Approximately 28 abutters/interested parties in attendance.

Board members present: Dan Cobb, Tamara Lee Pinard, Melinda Sheehee

Board member absent: David Phelps

Also present: Staff liaison Kristen Muszynski, Council alternate liaison Marty Meaney, JP Connelly of DM Roma Engineers (representing the applicant), Public Works Interim Director Tim Estes

Tim noted that he will want additional information about the crown of the road and topography to keep water off Jenny Drive. 15" culvert will be sufficient at road.

JP walked the property with the board, noted the large hill at approximately station 60/75.

Stated that each DU is expected to be approximately 40x36.

May pursue easement for driveway off end of road.

Board expressed desire for increased buffering along Foster property line, ideally 50', additional plantings.

Abutters noted some stormwater concerns from the new lot that is being built out now; JP advised that this is subject to significant review. He is unsure if the units will be rented or purchased. Will need an HOA for road maintenance.

They intend to meet the 12% grade requirement and not request waivers, with flat area of driveway 75' in to keep water away from road.

Abutters expressed concern regarding duplexes in a single-family home neighborhood.

JP agreed to meet with abutters to discuss buffering.

Walk adjourned 5:40 pm.