CITY OF CHARLES TOWN
PLANNING COMMISSION
AGENDA • OCTOBER 23, 2023

Committee Meeting **CITY HALL** **7:00 PM**
101 E Washington Street, Charles Town, WV 25414

1. CALL TO ORDER

2. WORK SESSION

: Work Session: Minor Subdivision requirements
1. Staff Report.pdf

: Work Session: Neighborhood-Residential Use Changes
1. Staff Report.pdf

3. CALL TO ORDER

4. APPROVAL OF MINUTES

21. : Draft August 28, 2023 Minutes
Draft August Minutes.docx

5. UNFINISHED BUSINESS

: Commission Review: SLD2023-04 Fairview Subdivision: Completeness Review
1. Staff Report.pdf
2. Application.pdf
3. Revised Sketch.pdf
4. KH Review.pdf
5. KH Review of Revised Plans.pdf
6. 2023 Revised and signed COA.pdf

6. NEW BUSINESS

: **Public Hearing**: SLD2023-02 Westover Dental Sketch Plan
1. Staff Report.pdf
2. Application.pdf
3. Revised Sketch.pdf
4. KH Review.pdf

: **Public Hearing**: SLD2023-09 Joan and Joe's Coffee Sketch Plan
1. Staff Report.pdf
2.Application.pdf
3. Revised Plans.pdf
4._KH_Comments.pdf
5._KH_Updated_Comments.pdf
6._Stormwater_Report.pdf

: **Public Hearing:** TXA2023-07 Commercial Pad Site requirements

1. Staff Report.pdf

: **Public Hearing:** TXA 2023-10 Open Space requirements
1. Staff Report.pdf

7. ADJOURNMENT

8. NOTICE: The Public May View the Meeting Live by Clicking on the Event Link at:

https://www.charlestownwv.us/government/agendas-and-minutes/

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Resolution
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

Work Session: Minor Subdivision requirements

ATTACHMENTS:

- 1. Staff Report.pdf

Changes to Minor Subdivision Review

Date: For the October 23, 2023 Planning Commission work session
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.

ISSUE

Current regulations regarding boundary line adjustment and property mergers create a burden on applicants by requiring that they either obtain Planning Commission approval or a waiver. Additionally, the language about constructing a single-family residential home not located within a platted subdivision is unclear and could be construed to require Planning Commission review. These processes can be handled via administrative review by City staff. The addition of duplexes to administrative review may allow for additional development opportunities that would not need to go through a full subdivision process, which takes additional time and funds.

COUNCIL

This item has not been brought to Council.

CURRENT LANGUAGE

Minor Subdivision/Land Development. A Minor Subdivision/Land Development is a Subdivision or Land Development that will not require the development or extension of off-tract infrastructure or Improvements, municipal or other governmental facilities or Improvements, or Public Streets or Roads. Only the following shall be considered Minor Subdivisions/Land Developments:

a. **Division of One Parcel into Two Parcels**. The division of one (1) new parcel from an existing parent tract if, and only if, the new parcel and the residue parent tract will each:

(i) adjoin an existing Public Street or Road, and

(ii) satisfy the minimum lot size requirements for the Zoning District in which the land is located.

Only one (1) new parcel plus the residue parent tract may be created from a parent tract existing as of the effective date of this Ordinance pursuant to a Minor Subdivision/Land Development. Any further Subdivision or Development of the new parcel or the residue parent tract will not be a Minor Subdivision/Land Development and must be processed under the Major Subdivision/Land Development provisions of this Ordinance. Such division shall meet the standards of Section 1332.06.

b. **Minor Boundary Line Adjustments**. Minor boundary line adjustments, including transfer of parcels of land to achieve a boundary line settlement, where no new parcels are created. Adjustment of a boundary line in excess of twenty-five feet (25') will not be considered a Minor Subdivision/Land Development under this Subsection 1332.02(A)(1)(b) except upon waiver of such limit by the Planning Commission.

c. **Merger**. Merger or consolidation of the entirety of two or more contiguous parcels of land owned by the same Person. Once merged or consolidated, the new tract shall be a single parcel and any further Subdivision or Development of that tract must comply with this Ordinance.

d. **Residential Construction**. The construction, erection, installation or placement of one (1) single-family residence on a single parcel or Lot; provided that, such activity shall not be considered a Land Development subject to this Ordinance (excepting only the requirements herein for an Improvement Location/Land Disturbance Permit) if the subject Lot was specifically identified as a separate identical Lot on a Final Plat approved as part of a previously approved Final S/LD Application for a Subdivision/Land Development containing said Lot.

There are additional items classified as minor subdivisions but which I do not propose to change. Therefore, that language is not included in this report.

PROPOSED LANGUAGE

Proposed changes are in red.

a. **Division of One Parcel into Two Parcels**. The division of one (1) new parcel from an existing parent tract if, and only if, the new parcel and the residue parent tract will each:

(i) adjoin an existing Public Street or Road, or a private access easement, and

(ii) satisfy the minimum lot size and lot width requirements for the Zoning District in which the land is located.

Only one (1) new parcel plus the residue parent tract may be created from a parent tract existing as of the effective date of this Ordinance pursuant to a Minor Subdivision/Land Development. Any further Subdivision or Development of the new parcel or the residue parent tract will not be a Minor Subdivision/Land Development and must be processed under the Major Subdivision/Land Development provisions of this Ordinance. Such division shall meet the standards of Section 1332.06.

b. ~~**Minor**~~ **Boundary Line Adjustments**. ~~Minor~~ boundary line adjustments, including transfer of parcels of land to achieve a boundary line settlement, where no new parcels are created. ~~Adjustment of a boundary line in excess of twenty-five feet (25') will not be considered a Minor Subdivision/Land Development under this Subsection 1332.02(A)(1)(b) except upon waiver of such limit by the Planning Commission.~~

c. **Merger**. Merger or consolidation of the entirety of two or more contiguous parcels of land ~~owned by the same Person~~. Once merged or consolidated, the new tract shall be a single parcel and any further Subdivision or Development of that tract must comply with this Ordinance.

d. **Residential Construction**. The construction, erection, installation or placement of one (1) single-family residence on a single parcel or Lot; or the construction, erection, installation or placement of one (1) duplex upon two abutting Lots; provided that, such activity shall not be considered a Land Development subject to this Ordinance (excepting only the requirements herein for an Improvement Location/Land Disturbance Permit) ~~if the subject Lot was specifically identified as a separate identical Lot on a Final Plat approved as part of a previously approved Final S/LD Application for a Subdivision/Land Development containing said Lot.~~

JURISDICTIONAL COMPARISON

1. **Martinsburg:**

Minor Subdivision. A Minor Subdivision is a Subdivision that will not require the Development or extension of off-tract infrastructure or Improvements, municipal or other local governmental facilities or Improvements, or Public Streets or Roads. Only the following shall be considered Minor Subdivision:

A. Division of one parcel into a maximum of four (4) parcels. The division of one (1) existing parcel into a maximum of four (4) proposed parcels including the remaining parent tract if, and only if, the new parcels and the residue parent tract will each:

1. Adjoin an existing Public Street or Road, and

2. Satisfy the minimum Lot size requirements for the Zoning District in which the land is located.

B. Only three (3) new parcels plus the residue parent tract may be created from a parent tract existing as of the effective date of this Ordinance pursuant to a Minor Subdivision. Any further Subdivision or Development of the new parcel or the residue parent tract will not be a Minor Subdivision and must be processed under the Major Subdivision provisions of this Ordinance. Such division shall meet the standards of Section 1305.03 (c).

C. Minor Boundary Line Adjustments. Minor boundary line adjustments, including transfer of parcels of land to achieve a boundary line settlement, where no new parcels are created.

D. Merger. Merger or consolidation of the entirety of two or more contiguous parcels of land owned by the same Person. Once merged or consolidated, the new tract shall be a single parcel and any further Subdivision or Development of that tract must comply with this Ordinance.

E. Residential Construction. The construction, erection, installation or placement of one (1) single-family residence on a single parcel or Lot; provided that, such activity shall not be considered a Land Development subject to this Ordinance (excepting only the requirements herein for a Land Disturbance Permit) if the subject Lot was specifically identified as a separate identical Lot on a Final Plat approved as part of a previously approved Final Subdivision and/or Land Development Application for a Subdivision containing said Lot.

…

2. City of Leesburg VA

Administrative review of boundary line adjustments if:
(a) Shall not result in the creation of additional buildable lots; and

(b) Shall represent the same general lot relationships as shown in the plat prior to the boundary line adjustment; and

(c) Shall not involve the relocation or alteration of streets, alleys, easements for public passage,
or other public areas; and
(d) Shall not relocate or alter any easements or utility right-of-way without the express written consent of all persons holding interest therein; and

(e) Shall result in lots, which conform to the requirements of the Leesburg Zoning Ordinance, or in the case of existing non-conforming lots, does not increase the extent of non- conformance (See Section 10.4.4.E. of the Leesburg Zoning Ordinance).

Administrative review of minor subdivisions if 5 or fewer lots are created and the following criteria are met:

(1) Full frontage improvements (i.e. curb, gutter, sidewalk, and storm sewer) exist across the frontage of the proposed lots.

(2) No water or sanitary sewer mains are needed or proposed.

(3) No underground storm sewers are needed or proposed, except for necessary surface drainage swales.

(4) The street right-of-way meets the requirements of these regulations, or dedication of required right-of-way is made as part of the proposed subdivision.

(5) No new streets are needed or proposed.

(6) No vacation of streets is needed or proposed.

(7) No pipestem lot can be created as part of the minor subdivision

Planning Commission
101 East Washington Street
Charles Town, WV 25414

SCHEDULED

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

AGENDA ITEM (ID #)

Work Session: Neighborhood-Residential Use Changes

ATTACHMENTS:

- 1. Staff Report.pdf

Neighborhood Residential Use Mix Review

Date: For the October 23, 2023 Planning Commission Meeting
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.

ISSUE

While the NR zoning district allows for some recreational uses by-right (such as parks, tennis courts, gym), the only retail use permitted is a convenience store open 15-16 hours/day. That is the sole commercial use allowed at all, either by-right or with a special exception. Additionally, the only office use allowed at all is a government office building.

PURPOSE

The purpose of the NR District is to provide for a mix of housing types and related services and Uses, including Commercial Uses and office services. It is the intent of the zoning classification to allow mixed development on undeveloped land and, where applicable as may be further described in this Ordinance, the Redevelopment of specific parcels within the City.

The NR District applies to parcels or tracts larger than five (5) acres. The intent is to create a cohesive pattern of primarily residential development that allows a mix of Uses, including neighborhood servicing Commercial and office Uses and/or Commercial and office Uses that complement the primarily residential character of the neighborhood.

CITY COUNCIL

On September 5, 2023, City Council unanimously voted to refer this item to the Planning Commission for discussion and eventual public hearing.

POTENTIAL USES

The zoning use table is on the following pages and includes the current uses allowed, and proposed uses in red text.

Proposed use changes are based on the intent of the district.

CHARLES TOWN ZONING ORDINANCE DISTRICT USE TABLE Key: P – Permitted Use S – Special Exception Use PA – Permitted Accessory Use SA – Special Exception Accessory Use		ZONING DISTRICTS						
		Residential Low Density	Residential Medium-High Density	Neighborhood Residential	Neighborhood Commercial	General Commercial	Old Town Mixed Use Commercials	Old Town Residential
ITE Code	**Land Use**	**R-3**	**R-15**	**NR**	**NC**	**GC**	**OT-MUC**	**OT-R**
PORT AND TERMINAL USES (ITE CODES 000 – 009)								
090	Park-and-Ride Lot				P	P	P	
RESIDENTIAL USES (ITE CODES 200 - 299)								
210	Single-Family Detached Housing	P	P	P	P		P	P
*	Duplex	P	P	P			P	P
220	Apartment		P	P	P		P	S
230	Residential Condominium/Townhouse		P	P	P		P	S
240	Mobile Home Park		S					
251	Senior Adult Housing – Detached	P	P	P			P	
252	Senior Adult Housing – Attached		P	P	S		P	
253	Congregate Care Facility			S	S			
254	Assisted Living			S	S			
255	Continuing Care Retirement Community			S	S			
*	Adult Day Care Center			S	S	P		
*	Child Care Center			S	S	P		
*	Detached Garage or carport, provided it does not exceed 500 sq. feet.	PA	PA	PA	PA		PA	PA
	Guest Quarters	PA	PA	PA	PA			PA
	Group Home		S					S
*	Home Occupation, Minor	PA	PA	PA	PA		PA	PA
*	Home Occupation, Major	SA	SA	SA	SA		SA	SA
*	Swimming Pool (Private)	PA	PA	PA				PA
LODGING USES (ITE CODES 300 – 399)								
310	Hotel					P	S	
311	All Suites Hotel					P	S	
312	Business Hotel					P	S	
320	Motel					P	S	
*	Bed and Breakfast Inns	SA	SA	SA	P	P	P	SA

CHARLES TOWN ZONING ORDINANCE DISTRICT USE TABLE Key: P – Permitted Use S – Special Exception Use PA – Permitted Accessory Use SA – Special Exception Accessory Use		ZONING DISTRICTS						
		Residential Low Density	Residential Medium-High Density	Neighborhood Residential	Neighborhood Commercial	General Commercial	Old Town Mixed Use Commercials	Old Town Residential
ITE Code	Land Use	R-3	R-15	NR	NC	GC	OT-MUC	OT-R
RECREATIONAL USES (ITE CODES 400 – 499)								
411	City Park	P	P	P	P	P	P	P
412	County Park	P	P	P	P	P	P	
413	State Park	P	P	P	P	P	P	
416	Campground/Recreational Vehicle Park					S		
430	Golf Course		S	S	S	S		
431	Miniature Golf Course			S	P	P		
432	Golf Driving Range					S		
433	Batting Cages			S	P	P		
438	Billiard Hall			S	S	S	S	
435	Multipurpose Recreational Facility			S		P		
437	Bowling Alley			S		P		
440	Adult Cabaret (Adult Uses)					S		
441	Live Theater				P	P	P	
443/444	Movie Theater					P	P	
445	Multiplex Movie Theater					P		
460	Arena					S		
464	Roller Skating Rink					P		
465	Ice Skating Rink					P		
473	Casino/Video Lottery Establishment					S		
480	Amusement Park					S		
488	Soccer Complex		S	S	S	P		
490	Tennis Courts			P	P	P		
491	Racquet/Tennis Club			P	S	P		
492	Health/Fitness Club			P	P	P	P	
493	Athletic Club			P	P	P		
495	Recreational Community Center	S	S	S	P	P		
*	Swimming Pool Facility		S	S	S	S		S
INSTITUTIONAL USES (ITE CODE 500 – 599)								
520	Elementary School				P	P	P	P
522	Middle School/Junior High School				P	P	P	P

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ITE Code	Land Use	R-3	R-15	NR	NC	GC	OT-MUC	OT-R
530	High School				P	P	P	
534/536	Private School (K-12)				P	P	P	
540	Junior/Community College				P	P	P	
550	University/College				P	P	P	
*	Technical and Vocational School				P	P	P	
*	Professional and Management Development Training Center				P	P	P	S
560/561	Church/Synagogue			S	P	P	P	P
565	Day Care Center			~~SA~~ P	P	P	P	
566	Cemetery				P	P	P	
571	Prison					S		
580	Museum			P	P	P	P	S
*	Cultural Center			~~S~~ P	P	P	P	S
590	Library			P	P	P	P	
591	Lodge/Fraternal Organization			S	S	S	S	
MEDICAL USES (ITE CODES 600 – 699)								
610	Hospital					P		
612	(Outpatient) Surgery Center					P	S	
620	Nursing Home				P	P	P	
630	Clinic				P	P	P	
640	Animal Hospital/Veterinary Clinic				P	P	P	
*	Medical / Dental Lab				P	P	P	
*	Heliport					SA		
OFFICE USES (ITE CODES 700 – 799)								
710	General Office Building				P	P	P	
714	Corporate Headquarters Building				P	P	P	
715	Single Tenant Building			P	P	P	P	
720	Medical-Dental Office Building			P	P	P	P	
730	Government Office Building			P	P	P	P	
732	United States Post Office			P	P	P	P	
733	Government Office Complex					P	P	
735	Judicial Complex					P	S	
750	Office Park				P	P	P	
760	Research and Development Center					S	S	
770	Business Park					P	P	

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ITE Code	Land Use	R-3	R-15	NR	NC	GC	OT-MUC	OT-R
RETAIL USES (ITE CODES 800 – 899)								
812	Building Materials and Lumber Store					P	P	
813	Free-Standing Discount Superstore					P		
814	Specialty Retail Center			P		P		
815	Free-Standing Discount Store			P		P		
816	Hardware/Paint Store			P	P	P	P	
817	Nursery/Garden Center			S	P	P	P	
818	Nursery (Wholesale)					P		
820	Shopping Center				P	P		
823	Factory Outlet Center					P		
841	Automobile Sales					P	P	
843	Automobile Parts Sales					P		
848	Tire Store				P	P		
849	Tire Superstore					P		
850	Supermarket				P	P	P	
851	Convenience Market (Open 24 Hours)				P	P	P	
852	Convenience Market (Open 15 – 16 Hours)			P	P	P	P	
853	Convenience Market with Gasoline Pumps				S	P	S	
854	Discount Supermarket			S	P	P	P	
857	Discount Club					P		
859	Liquor Store (including Beer Distributor)				S	P	S	
860	Wholesale Market					P	P	
861	Sporting Goods Superstore					P		
862	Home Improvement Superstore					P		
863	Electronics Superstore					P		
864	Toy/Children's Superstore					P		
865	Baby Superstore					P		
866	Pet Supply Superstore					P		
867	Office Supply Superstore					P		
868	Book Superstore					P		
869	Discount Home Furnishings Superstore					P		
870	Apparel Store				P	P	P	

879	Arts and Crafts Store				P	P	P	

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ITE Code	**Land Use**	**R-3**	**R-15**	**NR**	**NC**	**GC**	**OT-MUC**	**OT-R**
880	Pharmacy/Drugstore w/o Drive-Through Window			P	P	P	P	
881	Pharmacy/Drugstore w/Drive-Through Window			S	P	P	S	
890	Furniture Store				P	P	P	
892	Carpet Store				P	P	P	
896	Video Rental Store				P	P	P	
*	Art Gallery				P	P	P	
*	Gift shops and Boutiques				P	P	P	
*	Farmers Market				P	P	P	
*	Florist			P	P	P	P	
*	Photo / Camera Store				P	P	P	
SERVICE USES (ITE CODES 900 – 999)								
911	Walk-in Bank			P	P	P	P	
912	Drive-in Bank			S	P	P	P	
918	Hair Salon			P	P	P	P	
931	Quality Restaurant				P	P	P	
932	High-Turnover (Sit-Down) Restaurant				P	P	P	
933	Fast-Food Restaurant w/o Drive-Through Window				P	P	P	
934	Fast-Food Restaurant with Drive-Through Window				P	P		
935	Fast-Food Restaurant with Drive-Through Window and No Indoor Seating				P	P		
936	Coffee/Donut Shop w/o Drive-Through Window				P	P	P	
937	Coffee/Donut Shop with Drive-Through Window				P	P		
938	Coffee/Donut Shop with Drive-Through Window and No Indoor Seating				P	P		
939	Bread/Donut/Bagel Shop w/o Drive-Through Window				P	P	P	
940	Bread/Donut/Bagel Shop with Drive-Through Window				P	P		
941	Quick Lube Vehicle Shop					P	P	
942	Automobile Care Center					P	P	

943	Automobile Parts and Service Center					P	P	

CHARLES TOWN ZONING ORDINANCE DISTRICT USE TABLE Key: P – Permitted Use S – Special Exception Use PA – Permitted Accessory Use SA – Special Exception Accessory Use		ZONING DISTRICTS						
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ITE Code	**Land Use**	**R-3**	**R-15**	**NR**	**NC**	**GC**	**OT-MUC**	**OT-R**
944	Gasoline/Service Station				P	P	P	
945	Gasoline/Service Station with Convenience Market				P	P	P	
946	Gasoline/Service Station with Convenience Market and Car Wash				P	P	P	
947	Self-Service Car Wash					P	P	
948	Automated Car Wash					P	P	
960	Dry Cleaners			S	P	P	P	
*	Funeral Home/Crematory				P	P	P	
*	Kennel				S	P		
*	Tattoo Parlor				S	P	P	
*	Self-Storage Facility				S	P		
*	Outdoor Café				P	P	P	
MISCELLANEOUS USES								
*	Parking Facility		PA	PA	PA	P	P	PA
*	Wireless Telecommunication Facilities	S	S	S	S	S	S	
*	Essential Utilities and Equipment	P	P	P	P	P	P	

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

Draft August 28, 2023 Minutes

ATTACHMENTS:

- Draft August Minutes.docx

CITY OF CHARLES TOWN

PLANNING COMMISSION MEETING

MINUTES • August 28, 2023

Regular Meeting **Council Chambers** **7:00 PM**

101 East Washington Street, Charles Town, WV 25414

1. **CALL TO ORDER**

Present:
Ann Paonessa – Chair
Angie Cummings – Secretary
Jessica Derr
Kevin Long
Jeff Hynes – Attended Virtually

James Newman – City Staff: Zoning Administrator
Kimberly Crosson – Permit Tech

2. APPROVAL OF MINUTES

- 2.1: Minutes – Correction to date of minutes on July 24, 2023 are required

Motion to approve minutes.

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Jessica Derr
SECONDER:	Kevin Long
AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

3. UNFINISHED BUSINESS

None

4. NEW BUSINESS

4.1: Public Hearing: Waiver 2023-06 - Request for a waiver to treat a boundary line adjustment as a minor site plan.

DRAFT

Staff gave presentation.

Applicant Mark Roper's representative, Seth Rivard, spoke.

Ann Paonessa asks if any questions for applicant. No questions are brought forth. Chair asks clarifying question regarding number of dwellings on each parcel. Applicant's representative clarifies that there will be one house per lot for a total of two houses.

Motion to open Public Hearing:

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Kevin Long
SECONDER:	Jessica Derr
AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

Ann Paonessa asks if anyone would like to speak regarding the matter. No one wishes to speak, no additional comments are made. Chair moves to motion to close.

Motion to close Public Hearing:

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Jessica Derr
SECONDER:	Kevin Long
AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

Ann Paonessa opens to floor for motion regarding matter.

Motion to approve Waiver 2023-06 as presented:

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Kevin Long
SECONDER:	Jessica Derr
AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

DRAFT

4.2: Public Hearing - SLD2023-08- Proposal for changes to Huntfield Phase 3B final plans.

Staff gave presentation.

Applicant Matt Powell, gave presentation.

Staff read letter of opposition from Ms. King onto record.

Ms. Price read own email and spoke in opposition.

Resident of Huntfield, Mr. Ray Heverline, appeared in person asking questions regarding the purposed changes.

Ann Paonessa asks if anyone would like to make a motion.

Jeff Hynes speaks and moves to table the proposal.

Jessica Derr seconds motion to table proposal.

Ann Paonessa opens for discussion.

Commissioners converses regarding tabling the proposal, and sought clarification from staff regarding the specifics of tabling the motion. Staff provides details regarding options for tabling the proposal.

Motion to table proposal SLD2023-08 for 45 days:

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Jessica Derr
SECONDER:	Kevin Long
AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

5. ADJOURNMENT

Motion to adjourn meeting:

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Ann Paonessa
SECONDER:	Kevin Long

DRAFT

AYES:	**Ann Paonessa, Angie Cummings, Jessica Derr, Jeff Hynes, Kevin Long**

Meeting adjourned at 8:01 pm.

DRAFT

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

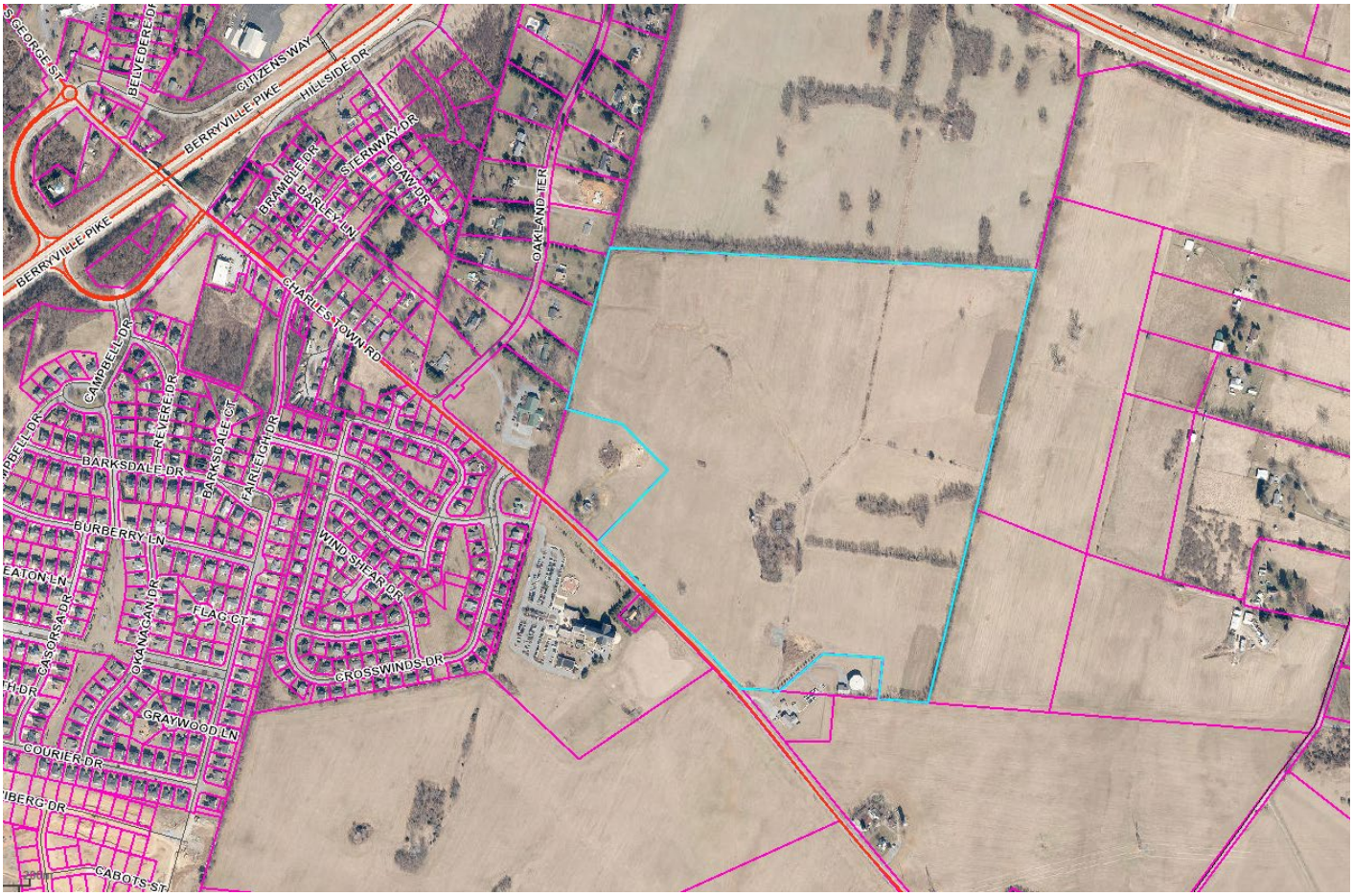
Commission Review: SLD2023-04 Fairview Subdivision: Completeness Review

ATTACHMENTS:

- 1. Staff Report.pdf
- 2. Application.pdf
- 3. Revised Sketch.pdf
- 4. KH Review.pdf
- 5. KH Review of Revised Plans.pdf
- 6. 2023 Revised and signed COA.pdf

Sketch Plan Completeness Review
SLD2023-04

Date: For the October 23, 2023 Planning Commission meeting
Applicant: LGI Homes-West Virginia LLC
Property Owner: Jaguar IV LC
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.
Proposal: Major Subdivision and Land Development.
Property Location: Located on Charles Town Road
Current Zoning: Neighborhood Residential



PROJECT OVERVIEW

The development of 113.65 acres for 184 townhomes, 266 single-family detached dwelling units, and 2 commercial site pads.

ZONING REVIEW

The property is zoned Neighborhood Residential (NR).

COMPLETENESS REVIEW

The sketch plan meets the requirement of being a complete application as stated in Subdivision Ordinance Section 1332.03.C.2.C. This does not mean the subdivision application meets the criteria for approval; it merely means that the application is deemed complete by staff.

Code Requirements for completeness, per section 1332.04.E. (Major Subdivision/Land Development):

a. Existing conditions, including boundary lines of the property
Provided.

b. A land use plan, showing the location, arrangement and approximate boundaries of all proposed land uses
Provided.

c. Vicinity Map, North arrow, scale (written and graphic) and date
Provided.

d. Names of the abutting owners, adjoining lot lines and structures on abutting lots within 100 feet of the property
Provided.

e. Title of the proposed project; the date, month and year the plan was prepared or revised; the name of the applicant(s), owner(s), and contract owner(s) and the name and address of the Engineer, Surveyor, Architect, Landscape Architect, or Land Planner who prepared the plan, including firm name.
Provided.

f. Current zoning and total area of the property
Provided. Neighborhood Residential zoning, and area is 113.65 acres.

g. Maximum and proposed density based on the Net Buildable Land Area
Provided. Maximum permitted density is 10 units/acre; proposed density is 4 units/acre.

h. Available utilities
Provided.

i. All existing sanitary sewer facilities and combined sewer facilities
Provided.

j. Depict location or statement of proposed water and sewer supply and other utility improvements.
Provided.

k. Existing covenants
Provided.

l. General layout of any proposed number of Lots, average Lot sizes and any proposed commercial uses, including any associated parking. Include proposed height of structures.
Provided; parking for commercial sues is dependent upon the exact use. Maximum height is 40 ft or 3 stories.

m. Statement of total acreage of the tract being subdivided or developed, including the Net Buildable Land Area
Provided. Net Buildable Land Area is 78.37 acres. Total development acreage is:
Residential -townhomes -----10.49 acres
Residential – Single Family---46.33 acres
Commercial area----------9.06 acres
Open Space----------12.49 acres

n. The approximate acreage in common open space, in each use and housing type and in roads, streets or rights-of-way for the total development
Provided. See item 'M' above.

o. The proposed number of dwelling units of each type in each in the total development
Provided. 184 townhomes and 266 single-family homes.

p. Location of proposed Street layout, including connections to adjoining streets or vacant lots,
Provided.

q. The location of sidewalks, trails and crosswalks, as may be applicable.
Provided. Plan shows right-of-way areas. Trail is required along the main thoroughfare 'Road A'.

r. Proposed open space and/or recreation areas, including notes on the plan describing the proposed use, activity area and/or improvement. The amount, approximate boundaries and location of common open space, with the percentage of the total acreage of the site to be placed in common open space.
Provided.

s. The location of environmental sensitive land to be included in common open space.
No environmentally sensitive lands identified.

t. Notes indicating any modifications, waivers, variances, special exceptions and/or conditional uses that are required.
None requested.

u. The location and extent of proposed buffers
Buffers between non-residential and residential uses will be provided at time of site plan submission for non-residential development components of this subdivision. Adjacent property is a working farm, which is a non-residential use. Buffers between this development and the farm may be appropriate.

v. The proposed location, arrangement, and right-of-way widths of roads and streets, including roads and streets providing access to adjoining parcels. The location and arrangement of street entrances, driveways and parking areas
Right-of-way width and location has bene provided. Parking lots for non-residential uses will be provided at time of site plan submission for non-residential development components of this subdivision.

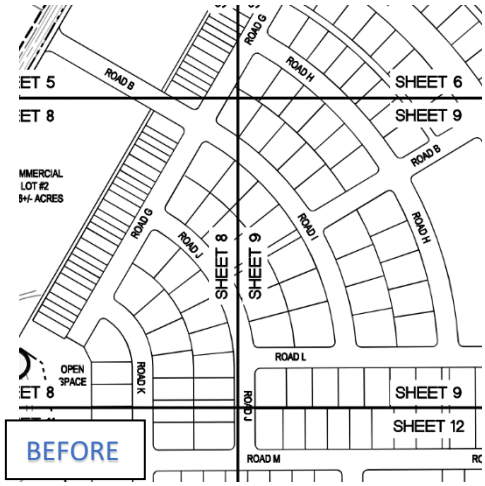
w. Calculations describing all proposed bonus factors with the location of and specifications for bonus improvements, when proposed.
No applicable bonus factors.

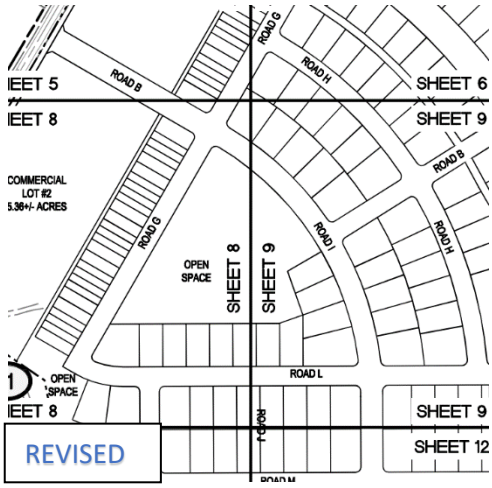
x. Any other information requested by the Subdivision Administrator in order for the Subdivision Administrator to make an accurate determination.
None required.

y. Commercial Design Review Standards as required in Section 1333.29, of this article.
To be provided at time of site plan submission for non-residential development components of this subdivision

CHANGES FROM PRIOR PLAN – MARCH 2023

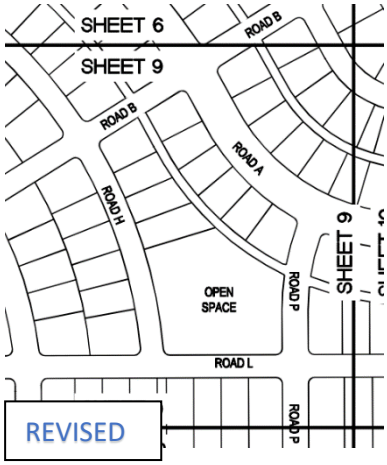
1. Common Open Space increased by 0.97 acres (from 11.52 to 12.49 acres).
2. Townhouse Lot Area decreased by 1.83 acres (from 12.32 to 10.49 acres).
3. Single-Family Lot Area increased by 2.06 acres (from 44.27 to 46.33 acres).
4. Road Right-of-Way Area decreased by 1.29 acres (from 27.51 to 25.81 acres).
5. Stormwater Management Area increased by 0.49 acres (from 8.56 to 9.05 acres).
6. Adjusted to provide prorated open space between townhomes and balance of property. Calculations provided.
7. Per COA, townhome area calculated at 20% and balance of property at 10%. Calculation resulted in 543,338 sq. ft. open space for the development. 544,000 sq. ft. open space provided.
8. Residential Area increased by 0.23 acres (from 56.59 to 56.82 acres).
9. Open Space increased by 0.97 acres (from 11.52 to 12.49 acres).
10. Land Use % adjusted to reflect updated acreages. All % requirements are achieved.
11. Revision 1: Road J removed, and Road L & I Extended. Allowed for right-of-way area to be reduced and existing tree grove with large diameter trees to be preserved. The removal of right-of-way allowed Land Use %'s to be achieved.





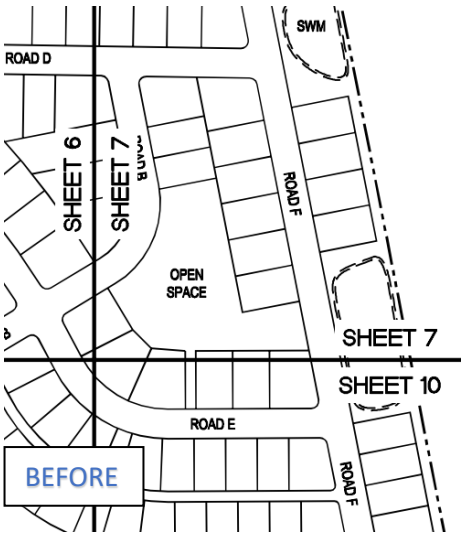
12. Revision 2: Central Open Space reduced and additional residential lot area provided. The addition of residential lot area was required to meet Land Use % requirements.

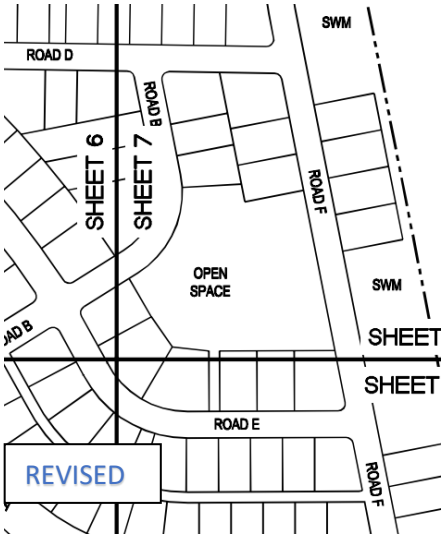




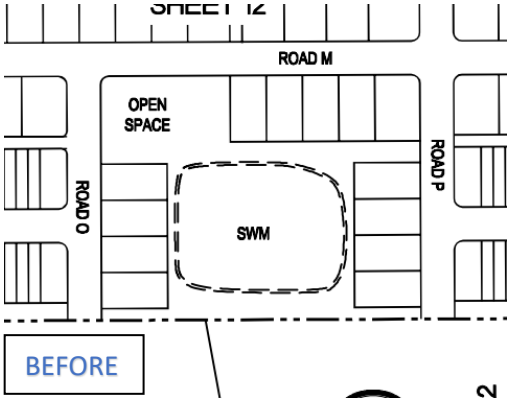
13.

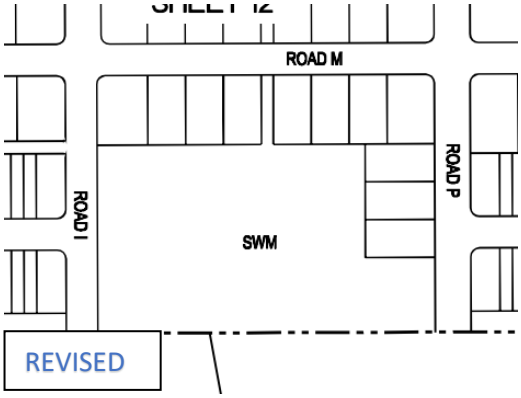
14. Revision 3: Open Space increased to achieve open space requirements.





15. Revision 4: SWM Area adjusted to reflect advanced engineering design.





CONDITIONS OF ANNEXATION

On September 18, 2023 City Council approved a set of revised conditions of annexation for the parcel. There are conditions that can be shown on the plans:

1. Requirements for community facilities, such as a playground, pavilion, tables and outdoor public grills.
2. Multi-purpose play field.
3. Bu stop shelters for bus services by the Jefferson County Board of Education and Eastern Panhandle Transit Authority.

These items will be required to be shown on the Preliminary Plan.

CONCLUSION

Staff deems the application complete; the Planning Commission should vote to determine the application is complete. If deemed complete, a public hearing would be scheduled for November 27, 2023.

Sketch Plan Application No._____

SKETCH PLAN APPLICATION

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
ARTICLE 1332, SUBDIVISION AND LAND DEVELOPMENT APPLICATION & APPROVAL REQUIREMENTS

To assist the Subdivision Administrator in the review of a Sketch Plan Application, the Applicant must utilize this form to supply the City with the information prescribed under Section 1332.03 of the Charles Town S/LD Ordinance. The submission of this form, along with the prescribed information and required fees, shall serve as a Sketch Plan Application as required by Ordinance Section 1332.03. Applicant is responsible to ensure the standards of Ordinance Section 1332.04, Sketch Plan Requirements, are met and provided herein is a checklist of the Sketch Plan requirements.

1. DATE March 14, 20 23

2. APPLICATION TYPE*

Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance

- x Submit three (3) copies of the Sketch Plan submitted and in Adobe PDF format

x Major S/LD Development

- x Submit three (3) copies of the Sketch Plan submitted and in Adobe PDF format

*There are two types of Sketch Plan submissions:

1. For Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance. Submission standards are found in Section 1332.04(D).
2. For a Sketch Plan for a Major S/LD application, submission standards are found in Section 1332.04(E)

3. $ 3 3 / , & $ 1 7 1 0 NAME* LGI Homes - West Virginia, LLC

Address: 1450 Lake Robbins Drive #430, The Woodlands, TX 77380

Telephone Number (301) 3556-5970 Fax Number (___)

Email Address mike.dropik@lgihomes.com

4. 3 5 2 3 (5 7 < 2 : 1 (5 ¶ 6 E 1 $ Jaguar IV LC

Address: 2755 Mews Lane; Charlottesville, VA 22901

Telephone Number (703) 209-0111 Fax Number (___)

Email Address ccocke@cst-cpa.com

5. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: Charles Town Road

Tax Map # and Parcel: TM 10, Parcel 218.1

Deed Book and Page #: 1089 / 144

Property Area in Square Feet or Acres: 4,950,477 SQ. FT. and 113.65 Acres

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

Mixed use residential and commercial community.

7. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

Existing Use: Agricultural

Current Zoning: Neighborhood Residential (NR)

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

8. ARE THERE ANY ANTICIPATED WAIVERS OR VARIANCES? IF YES, PROVIDE DETAILS.

No

9. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

None known

x No

10. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

Application No.	Project Name and Phase	Status	Approval Date
Conditions of Annexation Resolution 2005-15	Annexation Agreement	Approved	12-05-2005

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street)
(Interested parties are defined as adjacent properties within 100 feet).

Owner	# and Street	City, State, Zip
See attached graphic & list.		

APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1332.02 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant

_____ Date 3-14-2023

Signature of Property Owner (If different than Applicant)

Charles P Cocke Date 3/14/2023

Jaguar IV, LC, Mgr

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

FOR CITY USE ONLY

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments:_____

_____

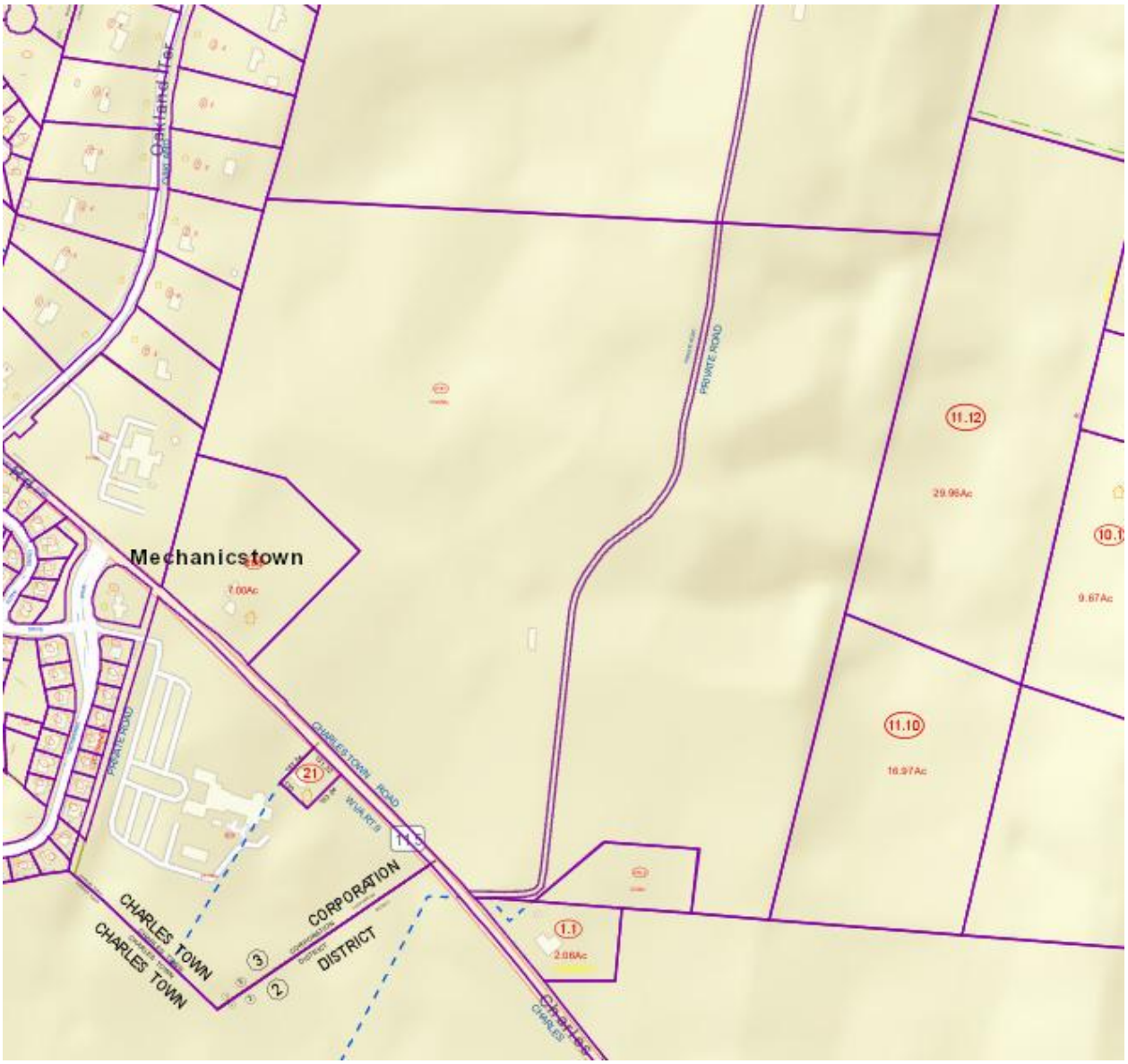
_____

_____

_____

_____

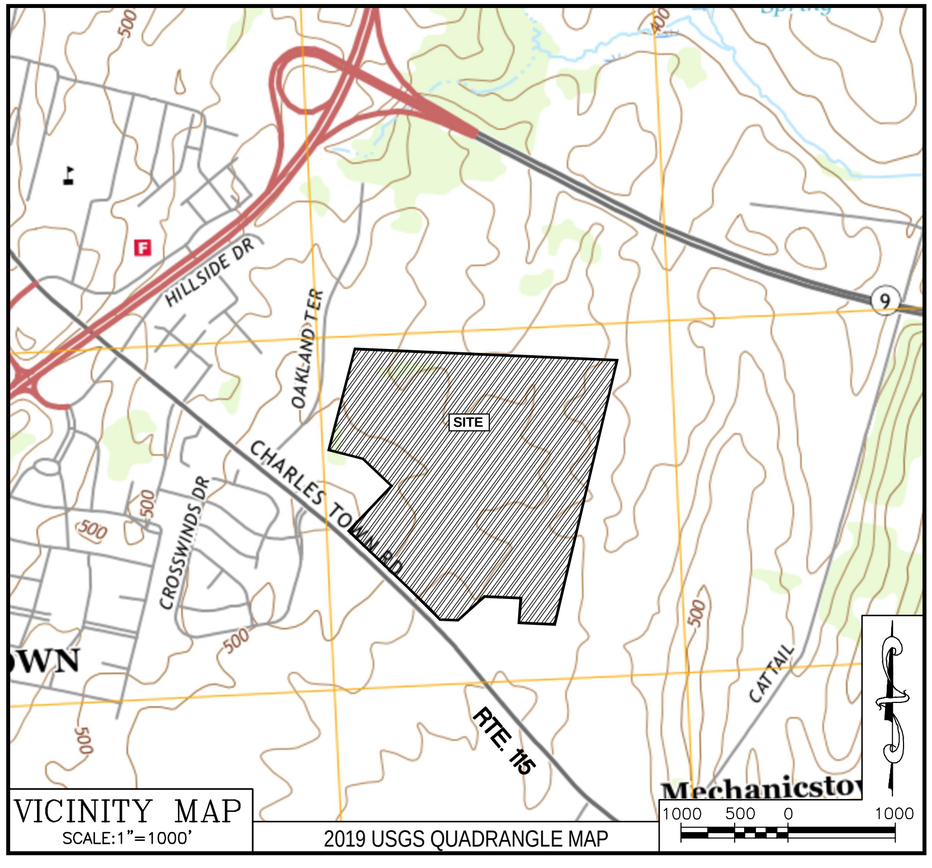
ADJACENT PROPERTY OWNER INFORM		
Reference #	Owner Name	Owner Address
1	OAKLAND COMMUNITY CHU	104 OAKLAND DRIVE, CHARLES TOWN, W
2	OAKLAND U. M. CHURCH TRU	70 OAKLAND TERRACE, CHARLES TOWN, V
3	KENT H TICE ET	104 OAKLAND TERRACE, CHARLES TOWN, V
4	MARK & CHARIS HEN	150 OAKLAND TERRACE, CHARLES TOWN, V
5	NORA SUE PAIN	188 OAKLAND TERRACE, CHARLES TOWN, V
6	DARAL A KIDWELL ES	254 OAKLAND TERRACE, CHARLES TOWN, V
7	MARK F. LANGLET	544 LEGO DRIVE, CHARLOTTESVILLE, \
8	CAROLYN & RONALD WIDM	1434 CATTAIL RUN RD, CHARLES TOWN, W
9	RONALD WIDMY	1434 CATTAIL RUN RD, CHARLES TOWN, W
10	HIGH HORIZONZ FARM	336 ROSEMONT WAY, CHARLES TOWN, W
11	CITY OF CHARLES T	PO BOX 14, CHARLES TOWN, WV
12	CITY OF CHARLES T	PO BOX 14, CHARLES TOWN, WV
13	DR ACQUISITIONS	60 THOMAS JOHNSON DR, FREDERICK, M
14	ROMAN CATHOLIC DIO	1300 BYRON ST, WHEELING, WV
15	HARRY D L	15376 CHARLES TOWN RD, CHARLES TOWN, V


Mechanicstown
PRIVATE ROAD
CHARLES TOWN ROAD
PRIVATE ROAD
CHARLES TOWN
CHARLES TOWN
CORPORATION
DISTRICT
11.12
29.96Ac
11.10
16.97Ac
21
1.1
2.08Ac
7.00Ac
9.67Ac

SKETCH PLAN FOR
FAIRVIEW
CITY OF CHARLES TOWN, WV
TAX MAP 10, PARCEL 218.1
DEED BOOK 1089, PAGE 144

OWNER
JAGUAR IV, LC
2755 MEWS LANE
CHARLOTTESVILLE, VA 22901

APPLICANT
LGI HOMES – WEST VIRGINIA, LLC
1450 LAKE ROBBINS DRIVE #430
THE WOODLANDS, TX 77380



VICINITY MAP
SCALE: 1"=1000'
2019 USGS QUADRANGLE MAP

SKETCH PLAN CHECKLIST NOTES PER SECTION 1332.04, SKETCH PLAN REQUIREMENTS

E.2.a. Existing conditions obtained from aerial survey. Perimeter boundary information shown hereon is based on a survey performed by GORDON.
E.2.b. See Sheets 3-13 for arrangement of land uses. Proposed land uses include single-family detached, single family attached, commercial, parks/open space and associated improvements.
E.2.c. See this sheet for a Vicinity Map. Map is 2019 USGS Quadrangle Map.
E.2.d. See Sheet 2 for all abutting owners; see Sheets 3-13 for adjoining lot lines, and structures within 100'. Owner information obtained from the Jefferson County Assessors Tax Map Viewer website.
E.2.e. See title block for for date, creator of plan and address. See this Sheet for Owner / Applicant information.
E.2.f. The property is zoned Neighborhood Residential (NR) and consists of 113.65+/- acres.
E.2.g. See Net Buildable Land Area Calculation Table Sheet 2 for maximum and proposed densities based on the net buildable land area.
E.2.h. Public water and sanitary sewer services are available through the Charles Town Utility Board (CTUB). Electric service is available from Potomac Edison.
E.2.i. A sanitary sewer pump station is located on Bailey Brooks Way approximately 2,200' north of Fairview.
E.2.j. Residential units will be provided water and sanitary sewer through proposed lines running within the right-of-ways and/or open spaces which will connect to existing within Charles Town Road. Electric will be provided from power lines along Charles Town Road.
E.2.k. There are no existing covenants for the subject property. The development is subject to the Conditions of Annexation (COA) approved in Resolution 2023-12.
E.2.l.
- See Sheets 3-13 for lot layout.
- 184 townhouse units are proposed as part of this application.
  - Average lots are 20'x100' and are 2,000 sf.
  - Townhomes may be up to 3-stories with an approximate height not to exceed 35'.
- 266 single-family detached units are proposed as part of this application.
  - Average lots are 60'x110' and are 6,600 sf.
  - Single-family homes may be up to 3-stories with an approximate height of 35'.
- 2 commercial lots consisting of 9.06 acres in the aggregate are proposed. 2.42 acres were conveyed to the City of Charles Town for expansion of the existing water treatment plant. Pursuant to COA Resolution 2023-12, these 2.42 acres contribute to the 10% commercial requirement.
- Parking for residential units will be provided on-lot and offsite through on-street parking. Commercial parking will be determined at site plan for the specific commercial lot and future uses.

E.2.m. The total acreage of the tract being subdivided is 113.65+/- acres.
- The developments Net Build Land Area is 3,413,925+/- square feet (78.37+/- acres).

E.2.n. See Approximate Acreages Table on Sheet 2.
E.2.o. The development will consist of 184 townhomes and 266 single-family detached units.
E.2.p. See Sheets 3-13 for proposed street layout. Access will be provided through Charles Town Road. Road A extends to the adjacent property to the north as identified in the Comprehensive Plan. Road A will have an 80' right-of-way as identified in the annexation agreement.
E.2.q.
- Sidewalks will be provided on both sides of all proposed streets within the subject property.
- No trails are proposed at this time, trails may be added at a later time in conjunction with project amenity design.

E.2.r. The development will provide passive open space throughout the property. See Approximate Acreages Table on Sheet 2 for additional information.
E.2.s. There are no environmental sensitive areas within the Common Open Space.
E.2.t. No Modifications, Waivers, Variances, Special Exceptions and/or Conditional Uses have been requested.
E.2.u. No buffers are required/proposed within the residential portion of this development. A buffer will be provided for the commercial development as required by City of Charles Town Ordinances based on the specific commercial use at time of site plan.
E.2.v. See Sheets 3-13 for road and right-of-way widths. All roads will be curb & gutter and will be in accordance with the the City's typical roadway section requirements (SDLO Appendix A). Driveways will be provided for each residential unit. Parking for commercial areas will be determined for the specific commercial uses at site plan. All proposed right-of-ways will be 50' (Neighborhood Street), 56' (Neighborhood Center Street), 61' (Minor Collector) or 80' (Road A).
E.2.u. This development will not include any bonus factors.

SHEET INDEX

1. COVER SHEET AND NOTES
2. OVERALL PLAN AND CALCULATIONS
3-13. CONCEPTUAL PLAN
14. CONDITIONS OF ANNEXATION
15. AERIAL OVERLAY

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Martinsburg, WV 25401 • www.ifs-ae.com

SEAL:

REVISIONS
4-18-2023: REVISED PER CITY COMMENTS
10-11-2023: REVISED PER CITY COMMENTS & REVISED COA

COVER SHEET AND NOTES

FAIRVIEW
SKETCH PLAN
CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

SCALE:	HORIZ.: 1"=1,000' VERT.:
DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	1 OF 15

FILE PATH: J:\PROJECTS\SKETCH PLANS\2023 FAIRVIEW_ARCH\CT-CONCEPT PLAN\FAIRVIEW_SKETCH PLAN.DWG
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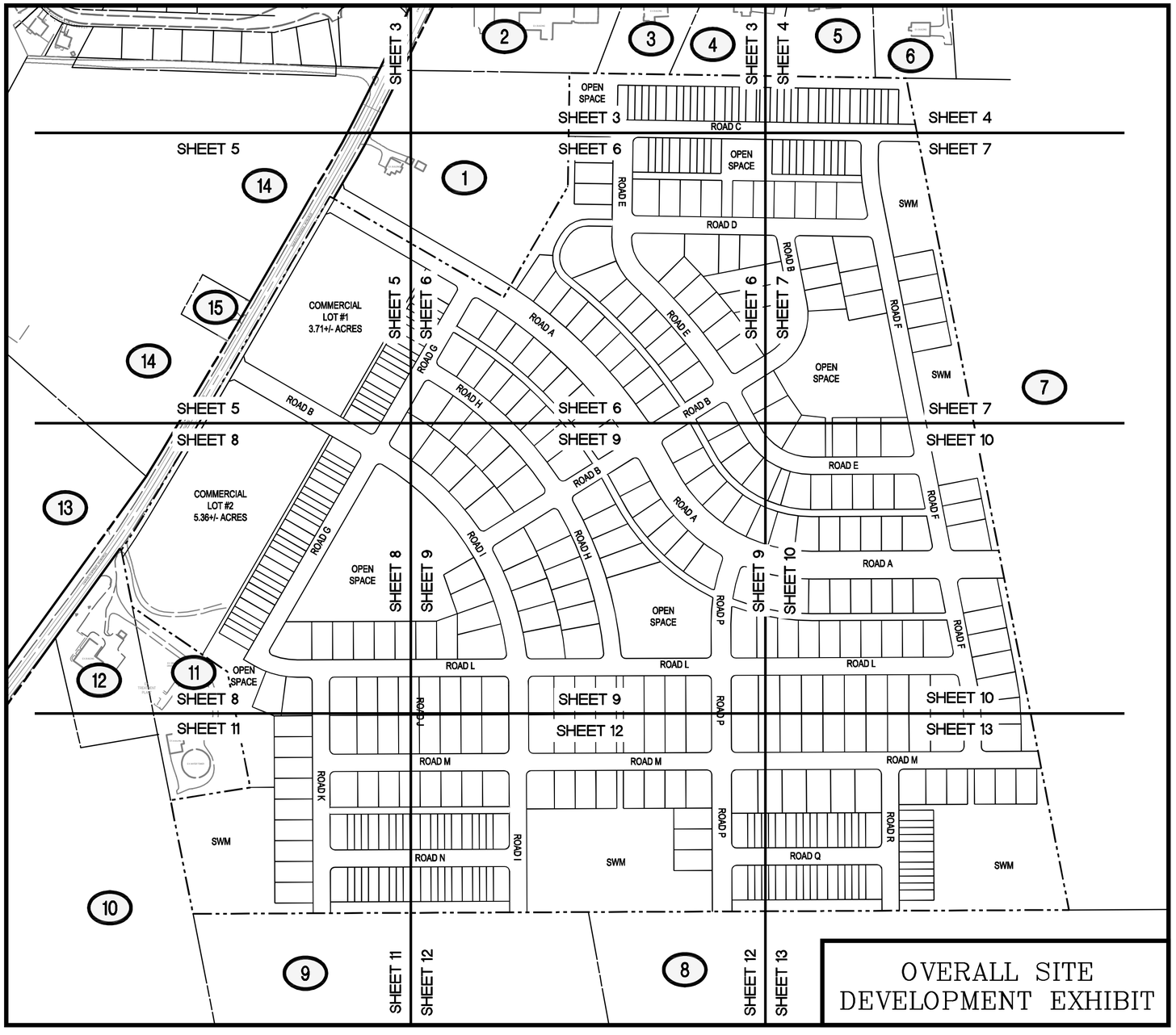

Density Checklist Section - 1332.04(E).2.g.	
Section 1322.08.(B).4.b.	
Maximum Based on NBLA	3,413,925 / 1,750 = 1,950 Units
Proposed	450 Units
Table 1322.08	
Maximum (10 Units Per Acre)	1,136 Units
Proposed	450 Units

Net Buildable Land Area Calculation - Checklist Section 1332.04(E).2.g.		
Area / Use	**Square Feet**	**Acres**
Gross Land Area	4,950,477	113.65
Right-of-Ways	1,124,480	25.81
Charles Town Road Right-of-Way Reservation	17,885	0.41
Stormwater Management Area	394,187	9.05
Sensitive Natural Areas (wetlands & floodplain)	0	0.00
Net Buildable Land Area (NBLA)	3,413,925	78.37

Approximate Acreages - Checklist Section 1332.04(E).2.n.		
Area / Use	**Square Feet**	**Acres**
Common Open Space	544,000	12.49
Residential Lot Area (Townhouse)	456,900	10.49
Residential Lot Area (Single-Family Detached)	2,018,200	46.33
Commercial Lot Area	394,825	9.06
Right-of-Ways	1,124,480	25.81
Charles Town Road Right-of-Way Reservation	17,885	0.41
Stormwater Management Area	394,187	9.05
Total	4,950,477	113.65
*Will vary with final engineering design.		

Common Open Space Calculations - Checklist Section 1332.04(E).2.x.	
ZO Table 1322.07 - 10% Required Open Space (Excludes Townhome Area)	
4,519,577 sf x 0.10	451,958 sf
COA Res. #2023-012 - 20% Required Open Space (Townhome Area Only)	
456,900 sf x 0.20	91,380 sf
Combined Open Space Calculations	
Total Required	543,338 sf
Total Proposed	544,000 sf

Neighborhood Residential Land Use Mix Requirements				
	Requirement		**Provided**	
Use	**%**	**Acres**	**%**	**Acres**
Residential	50	56.82	50.00	56.82
Commercial	10	11.36	10.10	11.48*
Open Space	10	11.36	11.18	12.49

*Per COA Resolution #2023-012 , Commercial includes 2.42 acres conveyed to the City of Charles Town for water treatment plant (PB 1135, Page 420).

ADJACENT PROPERTY OWNER INFORMATION						
Reference #	**Owner Name**	**Owner Address**	**District**	**Tax Map**	**Parcel**	**Zoning District**
1	OAKLAND COMMUNITY CHURCH	104 OAKLAND DRIVE, CHARLES TOWN, WV 25414	3	10	208	GENERAL COMMERCIAL
2	OAKLAND U. M. CHURCH TRUSTEES	70 OAKLAND TERRACE, CHARLES TOWN, WV 25414	3	10	219	GENERAL COMMERCIAL
3	KENT H TICE ET UX	104 OAKLAND TERRACE, CHARLES TOWN, WV 25414	2	18	6.26	RESIDENTIAL GROWTH (COUNTY)
4	MARK & CHARIS HENSON	150 OAKLAND TERRACE, CHARLES TOWN, WV 25414	2	18	6.25	RESIDENTIAL GROWTH (COUNTY)
5	NORA SUE PAINTER	188 OAKLAND TERRACE, CHARLES TOWN, WV 25414	2	18	6.24	RESIDENTIAL GROWTH (COUNTY)
6	DARAL A KIDWELL ESTATE	254 OAKLAND TERRACE, CHARLES TOWN, WV 25414	2	18	6.23	RESIDENTIAL GROWTH (COUNTY)
7	MARK F. LANGLET - TR	544 LEGO DRIVE, CHARLOTTESVILLE, VA 22911	3	15	17	NEIGHBORHOOD RESIDENTIAL
8	CAROLYN & RONALD WIDMYER	1434 CATTAIL RUN RD, CHARLES TOWN, WV 25414	2	18	11.12	RURAL (COUNTY)
9	RONALD WIDMYER	1434 CATTAIL RUN RD, CHARLES TOWN, WV 25414	2	18	11.10	RURAL (COUNTY)
10	HIGH HORIZONZ FARM INC	336 ROSEMONT WAY, CHARLES TOWN, WV 25414	2	19	1	RURAL (COUNTY)
11	CITY OF CHARLES TOWN	PO BOX 14, CHARLES TOWN, WV 25414	3	10	218.2	NEIGHBORHOOD RESIDENTIAL
12	CITY OF CHARLES TOWN	PO BOX 14, CHARLES TOWN, WV 25414	2	19	1.1	RURAL (COUNTY)
13	DR ACQUISITIONS LLC	60 THOMAS JOHNSON DR, FREDERICK, MD 21702	2	17	22	RESIDENTIAL GROWTH (COUNTY)
14	ROMAN CATHOLIC DIOCESE	1300 BYRON ST, WHEELING, WV 26003	3	10	213	NEIGHBORHOOD COMMERCIAL
15	HARRY D LEE	15376 CHARLES TOWN RD, CHARLES TOWN, WV 25414	2	17	21	RES-LIGHT INDUSTRIAL-COMM (COUNTY)

(1) – ADJACENT PROPERTY OWNER REFERENCE NUMBER

250 125 0 250

GRAPHICAL SCALE: 1" = 250'

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SEAL:

REVISIONS
4-18-2023: REVISED PER CITY COMMENTS
10-11-2023: REVISED PER CITY COMMENTS & REVISED COA

OVERALL PLAN AND CALCULATIONS

FAIRVIEW SKETCH PLAN

CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

SCALE:	HORIZ.: 1"=250' VERT.:
DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	2 OF 15

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LEGEND:

EXISTING		PROPOSED
———	BOUNDARY/RIGHT-OF-WAY LINE	———
———	ADJACENT BOUNDARY LINE	
— — —	EDGE OF PAVEMENT	
▭	BUILDINGS	
⌀	UTILITY POLE	
OHE OHE	OVERHEAD UTILITY LINE	
590	INDEX CONTOUR LINE (10')	
592	INTERMEDIATE CONTOUR LINE (2')	
∿∿∿	DRIP LINE OF TREES	
	5'-0" SIDEWALK	----------

(1) – ADJACENT PROPERTY OWNER REFERENCE NUMBER

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

MATCH LINE - SEE SHEET 4

CHARLES TOWN ROAD , WV ROUTE 115

EX. BUILDING

EX. BUILDING

EX. BUILDING

OPEN SPACE

ROAD C (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 6

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CONCEPTUAL PLAN

FAIRVIEW SKETCH PLAN

CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

SCALE:	HORIZ.: 1"=50' VERT.:
DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	3 OF 15

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MATCH LINE - SEE SHEET 3

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

OAKLAND TERRACE

EX. BUILDING

EX. BUILDING

4

5

6

7

ROAD C (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 7

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CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

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DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	4 OF 15

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50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

EX. BUILDING

ROAD A (80' RIGHT-OF-WAY)

CHARLES TOWN ROAD - WV ROUTE 115

EX. 16" WATER MAIN (TYP.)

COMMERCIAL
LOT #1
3.71+/- ACRES

EX. BUILDING

EX. 16" WATER MAIN (TYP.)

ROAD B (61' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 6

MATCH LINE - SEE SHEET 8

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CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

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CADD:	
NCS:	
SHEET:	5 OF 15

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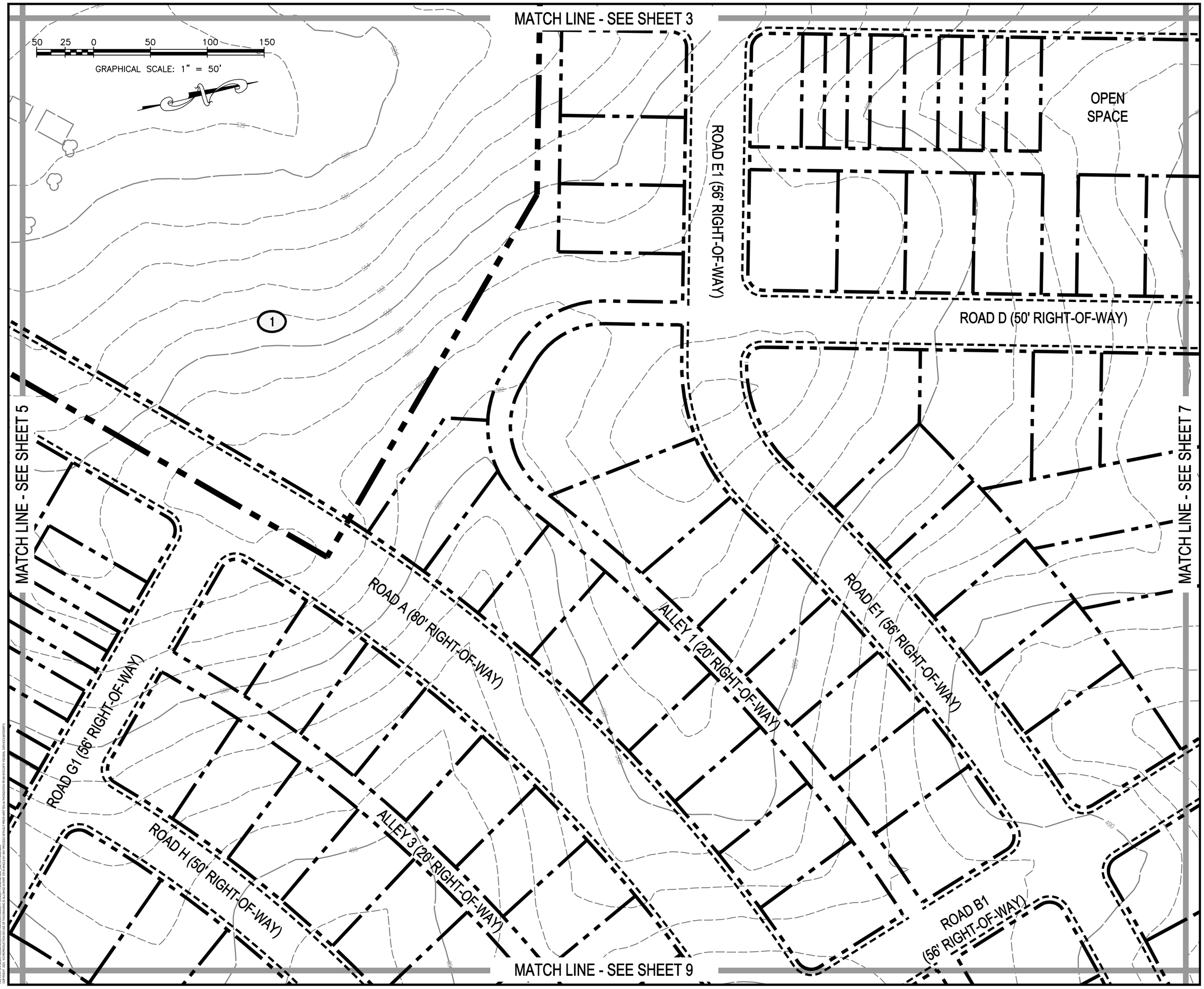

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NCS:	
SHEET:	6 OF 15

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MATCH LINE - SEE SHEET 4

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

STORM WATER MANAGEMENT (SWM)

MATCH LINE - SEE SHEET 6

ROAD B2 (50' RIGHT-OF-WAY)

ROAD F2 (50' RIGHT-OF-WAY)

7

OPEN SPACE

STORM WATER MANAGEMENT (SWM)

MATCH LINE - SEE SHEET 10

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DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	7 OF 15

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MATCH LINE - SEE SHEET 5

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

CHARLES TOWN ROAD - WV ROUTE 115

ROAD G (50' RIGHT-OF-WAY)

COMMERCIAL
LOT #2
5.36+/- ACRES

EX. 16" WATER MAIN (TYP.)

EX. FIRE HYDRANTS

EX. BUILDING

EX. GRAVEL DRIVE (TYP.)

EX. TREATMENT PLANT

OPEN SPACE

ROAD G (50' RIGHT-OF-WAY)

ROAD K (50' RIGH

MATCH LINE - SEE SHEET 9

MATCH LINE - SEE SHEET 11

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DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	8 OF 15

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MATCH LINE - SEE SHEET 6

ROAD B 3 (50' RIGHT-OF-WAY)

ALLEY 2 (20' RIGHT-OF-WAY)

ROAD A (80' RIGHT-OF-WAY)

ROAD I1 (56' RIGHT-OF-WAY)

ROAD H (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 8

MATCH LINE - SEE SHEET 10

OPEN SPACE

ROAD P1 (56' RIGHT-OF-WAY)

ROAD L (50' RIGHT-OF-WAY)

ROAD L (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 12

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TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

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JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	9 OF 15

MATCH LINE - SEE SHEET 7

STORM WATER MANAGEMENT (SWM)

ROAD E2 (50' RIGHT-OF-WAY)

ROAD F2 (50' RIGHT-OF-WAY)

ALLEY 2 (20' RIGHT-OF-WAY)

ROAD A (80' RIGHT-OF-WAY)

7

MATCH LINE - SEE SHEET 9

ALLEY 4 (20' RIGHT-OF-WAY)

ROAD L (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 13

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

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CONCEPTUAL PLAN

FAIRVIEW
SKETCH PLAN

CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

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DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	10 OF 15

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MATCH LINE - SEE SHEET 8

12

11

10

9

EX. BUILDING

EX. WATER TOWER

STORM WATER
MANAGEMENT (SWM)

RIGHT-OF-WAY)

ROAD K (50' RIGHT-OF-WAY)

ROAD M (50' RIGHT-OF-WAY)

ALLEY 5 (20' RIGHT-OF-WAY)

ROAD N (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 12

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

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CONCEPTUAL PLAN

FAIRVIEW
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TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

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DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	11 OF 15

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CT FILE # 2023-04

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DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	12 OF 15

MATCH LINE - SEE SHEET 13

ROAD P1
(56' RIGHT-OF-WAY)

ROAD P2 (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 9

ROAD M (50' RIGHT-OF-WAY)

STORM WATER MANAGEMENT (SWM)

ROAD I2 (50' RIGHT-OF-WAY)

ALLEY 5 (20' RIGHT-OF-WAY)

ROAD N (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 11

8

9

GRAPHICAL SCALE: 1" = 50'
50 25 0 50 100 150

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MATCH LINE - SEE SHEET 10

ROAD F (50' RIGHT-OF-WAY)

ROAD M (50' RIGHT-OF-WAY)

ROAD R (50' RIGHT-OF-WAY)

MATCH LINE - SEE SHEET 12

ROAD Q (50' RIGHT-OF-WAY)

STORM WATER MANAGEMENT (SWM)

7

8

50 25 0 50 100 150

GRAPHICAL SCALE: 1" = 50'

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SHEET:	13 OF 15

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Resolution #2023-012

City of Charles Town

101 East Washington Street, P.O. Box 14, Charles Town, WV 25414
Phone: (304) 725-2311 ♦ Web: www.charlestownwv.us

Resolution to Repeal and Replace the Conditions of Annexation for Fairview Property

WHEREAS, Oakland United Methodist Church and the Estate of Margaret Z. Dailey, by Bank of Charles Town as executor, presented their petition to annex property into the City of Charles Town (City) at a regular council meeting on the 19th day of September 2005 that was subsequently referred to the Finance Committee (Committee) and the Planning Commission (Commission) for review, analysis, and recommendation; and

WHEREAS, the Committee and Commission recommended, and the Charles Town City Council (Council) received and approved acceptance via Resolution 2005-15 on 5th day of December 2005 for annexation of Oakland United Methodist Church and the Estate of Margaret Z. Dailey, by Bank of Charles, her Executor, to incorporate such land into the City with several conditions including certain parcels with a zoning designation of Neighborhood Residential and General Commercial; and

WHEREAS, the petitioners agree that any conditions of annexation imposed by Council at that time would bind the owners of the property, their successors, and assigns; and

WHEREAS, nearly eighteen years after that initial agreement was made, the subject property remains undeveloped and the current property owners, working with the developer, have requested Council consider amendments to the original agreement that reflect the City's current growth plans and existing economic conditions; and

WHEREAS, the Mayor appointed a Select Committee on the 22nd day of June 2023, including representatives from the City's Community Development Division, Planning Commission, and Council, to work with the current owners to determine if amendments should be recommended to the full Council for further consideration; and

WHEREAS, after several productive discussions with the current property owner and prospective developer of the Fairview Property that was annexed with conditions into the City pursuant to Resolution 2005-15 (Resolution), the special committee recommends repealing the conditions of annexation imposed by the Resolution and replacing with new terms and conditions.

NOW, THEREFORE BE IT RESOLVED Council agrees to the following new terms and conditions with respect to the development of the Fairview Property: See Attached Exhibit 1

NOW, THEREFORE BE IT FURTHER RESOLVED, the Planning Commission shall review the owner/developers' sketch plan dated March 2023 for development during the 24th day of April, 2023 Planning Commission for consistency with the Neighborhood Residential Zoning District standards and other conditions outlined in this resolution, make adjustments with the owner/developer as agreed, and perform all other routine duties as outlined in the City's Subdivision and Land Development Ordinance related to this project; and

NOW, THEREFORE BE IT FUTHER RESOLVED, Council and the property owner agree that the terms and conditions contained in this resolution shall bind the current owner, their successor, and assigns.

Adopted the 18th day of September 2023.

Robert M. Trainor
Mayor

John Nissel
City Manager/Clerk

Exhibit 1 of Resolution 2023-012: City of Charles Town - Conditions of Annexation offered by Jaguar IV, LC, and any future assigns and/or buyers, for the annexation of approximately 113.8 acres into the City of Charles Town.

"Jaguar IV, LC", herein also referred to as "Land Owner", and any future assigns and/or buyers, agrees to the following conditions of annexation for "The Property" identified as Parcel 218.1, Tax Map 10, Charles Town District, for annexation into the City of Charles Town, herein also referred to as "The City":

Economic Impact:

1. In lieu of paying capital improvement fees, and fee in-lieu requirements for Park Dedication under Section 1333.17 of the Subdivision and Land Development Ordinance, the Land Owner proffers to pay a flat fee of $3,494.00 per residential unit at the time of building permit issuance. The Land Owner shall be exempt from any future capital improvement fees implemented by The City.
2. In lieu of paying capital improvement fees, the Land Owner proffers to pay a flat fee of $2,958.00 per thousand square feet of commercial space at the time of building permit issuance. The Land Owner shall be exempt from any future capital improvement fees implemented by The City.

Urban Zoning:

3. The Property is to be zoned (NR) Neighborhood Residential District. At least 10% of the total land area of Parcel 218.1 shall be created as "for-profit" commercial uses. All proposed land uses shall be so designated on the Sketch Plan. The 2.42-acre Parcel 218.2, deeded to the City of Charles Town in 2013 for a water treatment facility, is to be included in the calculation of commercial use.
4. The City agrees to the following clarifications of the Zoning Ordinance:
   a. Townhomes may be constructed on individual lots and do not need to be located on a 5 acre cluster.
   b. For all residential structures, street front set backs shall be measured from the street curb.
5. The Land Owner agrees to provide landscaped buffers between commercial uses and adjoining residential uses. Such buffers shall be as prescribed in the City's Zoning Ordinance or may be landscaped parks or trails.
6. In accordance with the NR Zone regulations, at least 10% of Parcel 218.1 shall be open space. As a mixed-use community, Section 1333.20(O) of the Subdivision and Land Development Ordinance of the City of Charles Town, open space standards for townhouse developments shall be pro-rated at 20% based on the percentage of the property that is developed for townhomes.

Municipal Infrastructure and Services:

7. As part of the development, the Land Owner agrees to create recreation areas, walking paths and a small community park(s) (1 to 2 acres) to be built for use of the residents and users of the planned development. These areas shall be maintained by the HOA created for the development.
8. The following amenities shall be included in the community park(s):
   a. Outdoor community center consisting of a pavilion with electricity, picnic tables and BBQ grills.
   b. Playground: Construct commercial grade playground equipment that serves the following age groups (6-23 months, 2-5 years, and 5-12 years). The playground should meet ADA compliance standards that features ramps and transfer stations with accessible access to the playground area. Playground surfacing should consist of ADA accessible engineered wood fiber, rubber mulch, or pour-in-place rubber surfacing with the goal of facilitating inclusive play opportunities.
   c. Multi-purpose play field.

Affordable Housing:

9. 10% of the residential units in the development shall meet HUD's HOME Homeownership Value Limits for Jefferson County.

Transportation:

10. The Landowner shall co-ordinate with the Jefferson County Board of Education to provide an adequate number of bus stop shelters within the development to be used for school transportation, subject to acceptance by the Jefferson County Board of Education.
11. The Landowner shall co-ordinate with the Eastern Panhandle Transit Authority to provide an adequate number of bus stop shelters for public transportation subject to acceptance by EPTA.
12. The Land Owner shall include the construction of a major roadway and trail consistent with the transportation plan of the City's Comprehensive Plan. The trail shall be fully constructed by the Land Owner to Subdivision and Land Development Ordinance standards under Section 1333.18(A) and Standard Detail ST1. The trail is to be located within the proposed major road right of way, and it shall be accessible by the general public. The road shall be designed as a continuous limited access roadway designed to serve the traffic generated by the subdivision, but not limiting the use of traffic calming features such as roundabouts, narrow travel lanes and raised crosswalks to make the road more compatible for a residential area. The Land Owner shall build this road not more than 2 lanes wide (minor collector road design standards), excluding required turning lanes, and this road shall be located within an eighty-foot wide right of way. The road shall be located to serve the various parts of the subdivision. An eighty foot wide right of way will be reserved and platted to allow completion through the Property of the major road to the property line [adjoining the approximately 92 acre Langlet property (currently Tax District 3/Map 15/Parcel 7)] of the parcel.
13. The City agrees to work with the Land Owner and the WVDOT to create the best main entrances into the development.
14. The Land Owner shall conduct a traffic impact analysis (TIA) once the Sketch Plan for the Development has been developed and actual uses and transportation patterns have been delineated. This TIA will be done in accordance with the guidelines as set by the WVDOH. It will be submitted with the Preliminary Subdivision / Land Development Plat.
15. The Land Owner agrees that if it is determined by the traffic study that traffic lights are required at build out of the development at any of the intersections with Route 115 that it will be responsible for any portion of the light the State Department of Highways deems appropriate.

Other:

16. The Land Owner shall ensure that the above conditions of annexation are binding to the property and upon any assigns and/or buyers of any, or all, portions of the property, excluding land given to the City or WVDOT.
17. To incentivize and attract commercial development within the City, all commercial lots associated with the land shall be prepared in a way that includes grading and utility installation. All commercial lots shall have all pad sites graded with utility installation (stubbed to the property line) completed during the initial start-up of Project Phase 1. Specifically, if Phase 1 includes more than 100 residential units, to include both townhomes and single-family homes, all commercial pad site preparation shall run concurrently with the construction of the first (10) ten residential units. No more than (10) ten residential units shall be constructed until all commercial lots are completed with the above requirements.

City of Charles Town

Robert M. Trainor
Mayor

Attest:

John Nissel
City Clerk

STATE OF WEST VIRGINIA
COUNTY OF Jefferson, to wit:

The foregoing instrument was acknowledged before me this 11 day of October, 2023, by Robert M. Trainor, in his capacity as Mayor of the City of Charles Town, a West Virginia municipal corporation.

(Affix Notarial Seal)

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Carolyn M. Vezzosi
City of Charles Town
101 E. Washington Street
PO Box 14
Charles Town, WV 25414
My Commission Expires June 12, 2029

Carolyn Vezzosi
NOTORY PUBLIC

My commission expires: 6/12/2025

Charles Cocke, Mgr.
Charles Cocke
Charles Cocke, Manager
Jaguar IV LC

STATE OF Maryland
County of Montgomery

The foregoing instrument was acknowledged before me this 5TH day of October, 2023,
By Charles Cocke, Manager of Jaguar IV LC
(Affix Notarial Seal)

Michael Dropik
NOTARY PUBLIC
Montgomery County
MARYLAND
MY COMMISSION EXPIRES November 10, 2026

NOTORY PUBLIC

My commission expires: 11-10-26

INTEGRITY FEDERAL SERVICES
CIVIL ENGINEERING • LANDSCAPE ARCHITECTURE • PLANNING
148 S. Queen Street, Suite 201 • Phone: 304-725-8456
Martinsburg, WV 25401 • www.ifs-ae.com

SEAL:

REVISIONS
4-18-2023: REVISED PER CITY COMMENTS
10-11-2023: REVISED PER CITY COMMENTS & REVISED COA

CONDITIONS OF ANNEXATION

FAIRVIEW
SKETCH PLAN
CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

SCALE:	HORIZ.: 1"=50' VERT.:
DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	14 OF 15

FILE PATH: J:\PROJECTS\CHARLES TOWN\2023 FAIRVIEW\1 ANNEX\1 CONCEPT PLAN\FAIRVIEW_SKETCH PLAN.DWG
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SEAL:

REVISIONS

4-18-2023: REVISED PER CITY COMMENTS
10-11-2023: REVISED PER CITY COMMENTS & REVISED COA

AERIAL OVERLAY

FAIRVIEW SKETCH PLAN

CITY OF CHARLES TOWN, WEST VIRGINIA
TAX MAP 10, PARCEL 218.1 (D.B. 1089, PG 144)

CT FILE # 2023-04

SCALE:	HORIZ.: NTS VERT.:
DATE:	MARCH, 2023
JOB:	FAIRVIEW
DRAWN: DC	CHECK: CW
CADD:	
NCS:	
SHEET:	15 OF 15

FILE PATH: Z:\PROJECTS\2023\23-025\1-SURVEY\SPI-ANNOTY CONCEPT PLAN\SPI-SPI - SKETCH PLAN2.DWG
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Kimley»Horn

Memorandum

To: Mark A. McDonald
Integrity Federal Services
148 S. Queen Street, Suite 201
Martinsburg, WV 25401

From: Mark Phillips, P.E.
Olivia A. Smith

Through: James Newman
City of Charles Town
101 E Washington Street
Charles Town, WV 25414

Date: April 10, 2023

Subject: Fairview Sketch Plan Review

This memorandum summarizes our review of the Sketch Plan for the Fairview Development (dated March, 2023, prepared by Integrity Federal Services) for a proposed development of 184 townhouses, 266 single family detached units and 2 commercial lots on approximately 113.65 acres. The site is currently zoned Neighborhood Residential (NR) per the City of Charles Town Zoning Ordinance dated June 18, 2012 (Rev. July 6, 2020). This application proposes a by-right development of approximately 13.71 acres of property.

Kimley-Horn's review of this application is limited to the Sketch Plan and Application provided. Based upon our review, we have no comments on the materials provided.

Thank you for the opportunity to review this Sketch Plan. Please feel free to contact us at 703-870-3631 should you have any questions.

KIMLEY-HORN & ASSOCIATES, INC.



Mark Phillips, P.E.
Project Manager, Associate

From: Phillips, Mark
To: James Newman
Subject: RE: Fairview Status?
Date: Thursday, October 19, 2023 2:09:44 PM

Hey James,

No new or additional comment and no time billed. The plan is the same they just added some conditions of annexation and an overall site map on the back end.

Mark R Phillips, P.E. (VA,WV)
Kimley-Horn | 19775 Belmont Executive Plaza, Suite 250, Ashburn, VA 20147
Direct: 703-870-3631 | Mobile: 540-454-6294
Connect with us: Twitter | LinkedIn | Facebook | Instagram | Kimley-Horn.com

Celebrating 16 years as one of FORTUNE's 100 Best Companies to Work For

---

From: James Newman <JNewman@charlestownwv.us>
Sent: Thursday, October 19, 2023 1:30 PM
To: Phillips, Mark <Mark.Phillips@kimley-horn.com>
Subject: FW: Fairview Status?

Hi Mark,

This is a revised sketch plan for Fairview subdivision. Please review and let me know comments/time.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

From: Chad Wallen <cwallen@ifs-ae.com>
Sent: Wednesday, October 11, 2023 6:18 PM
To: James Newman <JNewman@charlestownwv.us>
Cc: mike.dropik@lgihomes.com; Tom Evans <tevans@ifs-ae.com>
Subject: RE: Fairview Status?

James,

See updated with aerial overlay sheet. We will deliver a hardcopy tomorrow. Thanks

From: James Newman <JNewman@charlestownwv.us>
Sent: Wednesday, October 11, 2023 5:23 PM
To: Chad Wallen <cwallen@ifs-ae.com>
Cc: mike.dropik@lgihomes.com; Tom Evans <tevans@ifs-ae.com>
Subject: RE: Fairview Status?

Thanks Chad. Would you be able to adda sheet showing an aerial image of the property and immediate surroundings, and overlay the sketch on that so we can see how this would look compared to adjacent properties? I'll need one to-scale paper copy delivered.

From: Chad Wallen <cwallen@ifs-ae.com>
Sent: Wednesday, October 11, 2023 5:21 PM
To: James Newman <JNewman@charlestownwv.us>
Cc: mike.dropik@lgihomes.com; Tom Evans <tevans@ifs-ae.com>
Subject: RE: Fairview Status?

James,

Attached is the updated sketch plan. Let us know if and how many hardcopies you would like and we will deliver as directed. Thank you.

From: James Newman <JNewman@charlestownwv.us>
Sent: Tuesday, October 3, 2023 11:09 AM
To: Chad Wallen <cwallen@ifs-ae.com>
Subject: RE: Fairview Status?

Thanks for the update. Lets just wait for the signed version so everything matches.

From: Chad Wallen <cwallen@ifs-ae.com>
Sent: Monday, October 2, 2023 4:46 PM
To: James Newman <JNewman@charlestownwv.us>; Mike Dropik <mike.dropik@lgihomes.com>
Subject: Re: Fairview Status?

James,

Will have to you this week. Would you like the unsigned COA inserted into the plans or wait for the signed version? Thanks

---

From: James Newman <JNewman@charlestownwv.us>
Sent: Monday, October 2, 2023 4:39 PM
To: Mike Dropik <mike.dropik@lgihomes.com>; Chad Wallen <cwallen@ifs-ae.com>
Subject: Fairview Status?

Good afternoon Mike and Chad,

For Fairview, when do you anticipate having a revied sketch plan in? We still need to get the completeness review done. As for the Conditions of Annexation, I'm waiting on the signatures from you and then I'll send it to the Mayor for his signature, and then we should be set.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

Beware - This email comes from outside the City of Charles Town.
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City of Charles Town
101 East Washington Street, P.O. Box 14, Charles Town, WV 25414
Phone: (304) 725-2311 ♦ Web: www.charlestownwv.us

Resolution to Repeal and Replace the Conditions of Annexation for Fairview Property

WHEREAS, Oakland United Methodist Church and the Estate of Margaret Z. Dailey, by Bank of Charles Town as executor, presented their petition to annex property into the City of Charles Town (City) at a regular council meeting on the 19th day of September 2005 that was subsequently referred to the Finance Committee (Committee) and the Planning Commission (Commission) for review, analysis, and recommendation; and

WHEREAS, the Committee and Commission recommended, and the Charles Town City Council (Council) received and approved acceptance via Resolution 2005-15 on 5th day of December 2005 for annexation of Oakland United Methodist Church and the Estate of Margaret Z. Dailey, by Bank of Charles, her Executor, to incorporate such land into the City with several conditions including certain parcels with a zoning designation of Neighborhood Residential and General Commercial; and

WHEREAS, the petitioners agree that any conditions of annexation imposed by Council at that time would bind the owners of the property, their successors, and assigns; and

WHEREAS, nearly eighteen years after that initial agreement was made, the subject property remains undeveloped and the current property owners, working with the developer, have requested Council consider amendments to the original agreement that reflect the City's current growth plans and existing economic conditions; and

WHEREAS, the Mayor appointed a Select Committee on the 22nd day of June 2023, including representatives from the City's Community Development Division, Planning Commission, and Council, to work with the current owners to determine if amendments should be recommended to the full Council for further consideration; and

WHEREAS, after several productive discussions with the current property owner and prospective developer of the Fairview Property that was annexed with conditions into the City pursuant to Resolution 2005-15 (Resolution), the special committee recommends repealing the conditions of annexation imposed by the Resolution and replacing with new terms and conditions.

NOW, THEREFORE BE IT RESOLVED Council agrees to the following new terms and conditions with respect to the development of the Fairview Property: See Attached Exhibit 1

NOW, THEREFORE BE IT FURTHER RESOLVED, the Planning Commission shall review the owner/developers' sketch plan dated March 2023 for development during the 24th day of April, 2023 Planning Commission for consistency with the Neighborhood Residential Zoning District standards and other conditions outlined in this resolution, make adjustments with the owner/developer as agreed, and perform all other routine duties as outlined in the City's Subdivision and Land Development Ordinance related to this project; and

NOW, THEREFORE BE IT FUTHER RESOLVED, Council and the property owner agree that the terms and conditions contained in this resolution shall bind the current owner, their successor, and assigns.

Adopted the 18th day of September 2023.

Robert M. Trainor
Mayor

John Nissel
City Manager/Clerk

Exhibit 1 of Resolution 2023-012: City of Charles Town - Conditions of Annexation offered by Jaguar IV, LC, and any future assigns and/or buyers, for the annexation of approximately 113.8 acres into the City of Charles Town.

"Jaguar IV, LC", herein also referred to as "Land Owner", and any future assigns and/or buyers, agrees to the following conditions of annexation for "The Property" identified as Parcel 218.1, Tax Map 10, Charles Town District, for annexation into the City of Charles Town, herein also referred to as "The City":

Economic Impact:

1. In lieu of paying capital improvement fees, and fee in-lieu requirements for Park Dedication under Section 1333.17 of the Subdivision and Land Development Ordinance, the Land Owner proffers to pay a flat fee of $3,494.00 per residential unit at the time of building permit issuance. The Land Owner shall be exempt from any future capital improvement fees implemented by The City.

2. In lieu of paying capital improvement fees, the Land Owner proffers to pay a flat fee of $2,958.00 per thousand square feet of commercial space at the time of building permit issuance. The Land Owner shall be exempt from any future capital improvement fees implemented by The City.

Urban Zoning:

3. The Property is to be zoned (NR) Neighborhood Residential District. At least 10% of the total land area of Parcel 218.1 shall be created as "for-profit" commercial uses. All proposed land uses shall be so designated on the Sketch Plan. The 2.42-acre Parcel 218.2, deeded to the City of Charles Town in 2013 for a water treatment facility, is to be included in the calculation of commercial use.

4. The City agrees to the following clarifications of the Zoning Ordinance:

    a. Townhomes may be constructed on individual lots and do not need to be located on a 5 acre cluster.
    b. For all residential structures, street front set backs shall be measured from the street curb.

5. The Land Owner agrees to provide landscaped buffers between commercial uses and adjoining residential uses. Such buffers shall be as prescribed in the City's Zoning Ordinance or may be landscaped parks or trails.

6. In accordance with the NR Zone regulations, at least 10% of Parcel 218.1 shall be open space. As a mixed-use community, Section 1333.20(O) of the Subdivision and Land Development Ordinance of the City of Charles Town, open space standards for townhouse developments shall be pro-rated at 20% based on the percentage of the property that is developed for townhomes.

Municipal Infrastructure and Services:

7. As part of the development, the Land Owner agrees to create recreation areas, walking paths and a small community park(s) (1 to 2 acres) to be built for use of the residents and users of the planned development. These areas shall be maintained by the HOA created for the development.

8. The following amenities shall be included in the community park(s):

    a. Outdoor community center consisting of a pavilion with electricity, picnic tables and BBQ grills.

b. Playground: Construct commercial grade playground equipment that serves the following age groups (6-23 months, 2-5 years, and 5-12 years). The playground should meet ADA compliance standards that features ramps and transfer stations with accessible access to the playground area. Playground surfacing should consist of ADA accessible engineered wood fiber, rubber mulch, or pour-in-place rubber surfacing with the goal of facilitating inclusive play opportunities.

c. Multi-purpose play field.

Affordable Housing:

9. 10% of the residential units in the development shall meet HUD's HOME Homeownership Value Limits for Jefferson County.

Transportation:

10. The Landowner shall co-ordinate with the Jefferson County Board of Education to provide an adequate number of bus stop shelters within the development to be used for school transportation, subject to acceptance by the Jefferson County Board of Education.

11. The Landowner shall co-ordinate with the Eastern Panhandle Transit Authority to provide an adequate number of bus stop shelters for public transportation subject to acceptance by EPTA.

12. The Land Owner shall include the construction of a major roadway and trail consistent with the transportation plan of the City's Comprehensive Plan. The trail shall be fully constructed by the Land Owner to Subdivision and Land Development Ordinance standards under Section 1333.18(A) and Standard Detail ST1. The trail is to be located within the proposed major road right of way, and it shall be accessible by the general public. The road shall be designed as a continuous limited access roadway designed to serve the traffic generated by the subdivision, but not limiting the use of traffic calming features such as roundabouts, narrow travel lanes and raised crosswalks to make the road more compatible for a residential area. The Land Owner shall build this road not more than 2 lanes wide (minor collector road design standards), excluding required turning lanes, and this road shall be located within an eighty-foot wide right of way. The road shall be located to serve the various parts of the subdivision. An eighty foot wide right of way will be reserved and platted to allow completion through the Property of the major road to the property line [adjoining the approximately 92 acre Langlet property (currently Tax District 3/Map 15/Parcel 7)] of the parcel.

13. The City agrees to work with the Land Owner and the WVDOT to create the best main entrances into the development.

14. The Land Owner shall conduct a traffic impact analysis (TIA) once the Sketch Plan for the Development has been developed and actual uses and transportation patterns have been delineated. This TIA will be done in accordance with the guidelines as set by the WVDOH. It will be submitted with the Preliminary Subdivision / Land Development Plat.

15. The Land Owner agrees that if it is determined by the traffic study that traffic lights are required at build out of the development at any of the intersections with Route 115 that it will be responsible for any portion of the light the State Department of Highways deems appropriate.

Other:

16. The Land Owner shall ensure that the above conditions of annexation are binding to the property and upon any assigns and/or buyers of any, or all, portions of the property, excluding land given to the City or WVDOT.

17. To incentivize and attract commercial development within the City, all commercial lots associated with the land shall be prepared in a way that includes grading and utility installation. All commercial lots shall have all pad sites graded with utility installation (stubbed to the property line) completed during the initial start-up of Project Phase 1. Specifically, if Phase 1 includes more than 100 residential units, to include both townhomes and single-family homes, all commercial pad site preparation shall run concurrently with the construction of the first (10) ten residential units. No more than (10) ten residential units shall be constructed until all commercial lots are completed with the above requirements.

City of Charles Town

Robert M. Trainor
Mayor

Attest:

John Nissel
City Clerk

STATE OF WEST VIRGINIA
COUNTY OF Jefferson, to wit:

The foregoing instrument was acknowledged before me this 11 day of October, 2023, by Robert M. Trainor, in his capacity as Mayor of the City of Charles Town, a West Virginia municipal corporation.

(Affix Notarial Seal)

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Carolyn M. Vezzosi
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414
My Commission Expires June 12, 2025

Carolyn Vezzosi
NOTORY PUBLIC

My commission expires: 6/12/2025

Charles Cocke, Mgr.

Charles Cocke

Charles Cocke, Manager

Jaguar IV LC

STATE OF Maryland

County of Montgomery

The foregoing instrument was acknowledged before me this 5TH day of October, 2023,

by Charles Cocke, Manager of Jaguar IV LC

(Affix Notarial Seal)

Michael Dropik
NOTARY PUBLIC
Montgomery County
MARYLAND
MY COMMISSION EXPIRES November 10, 2026

NOTORY PUBLIC

My commission expires: 11-10-26

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

Public Hearing: SLD2023-02 Westover Dental Sketch Plan

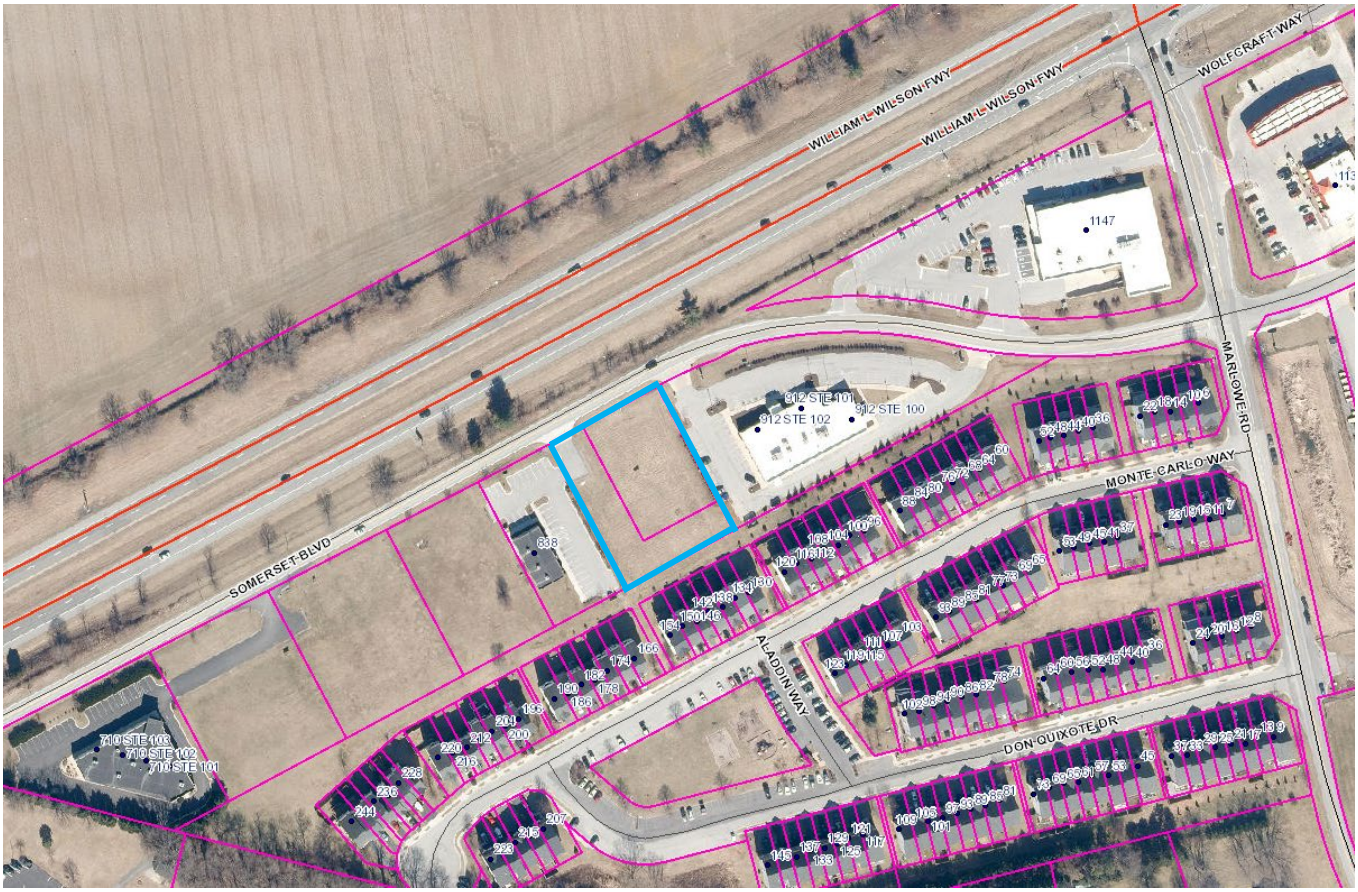
ATTACHMENTS:

- 1. Staff Report.pdf
- 2. Application.pdf
- 3. Revised Sketch.pdf
- 4. KH Review.pdf

Sketch Plan Review

SLD2023-02

Date: For the October 23, 2023 Planning Commission meeting
Applicant: Westover Holdings LLC
Property Owner: Grasso and Sons Development Corp. (Lot 6); Somerset LLC (Lot 5.0001)
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.
Proposal: Major land development
Property Location: TD: 03 / Map: 16A / Pcl: 0005.0001 & TD: 03 / Map: 16A / Pcl: 0006.0000, located on Somerset Blvd. Parcel is outlined in **blue** below.
Current Zoning: General Commercial (GC).



PROJECT OVERVIEW

The development of the property as a dental lab.

The parcels in question are TD 3 Map 16A Parcel 6, and TD 3 Map 16A Parcel 5.0001. the merger of these parcels was approved by the City Planner on November 28, 2011, but the owners at the time failed to finish the process. The property was merged on March 15, 2023 but has yet to appear on Jefferson County Geographic Information Systems (GIS) as merged.

HISTORY

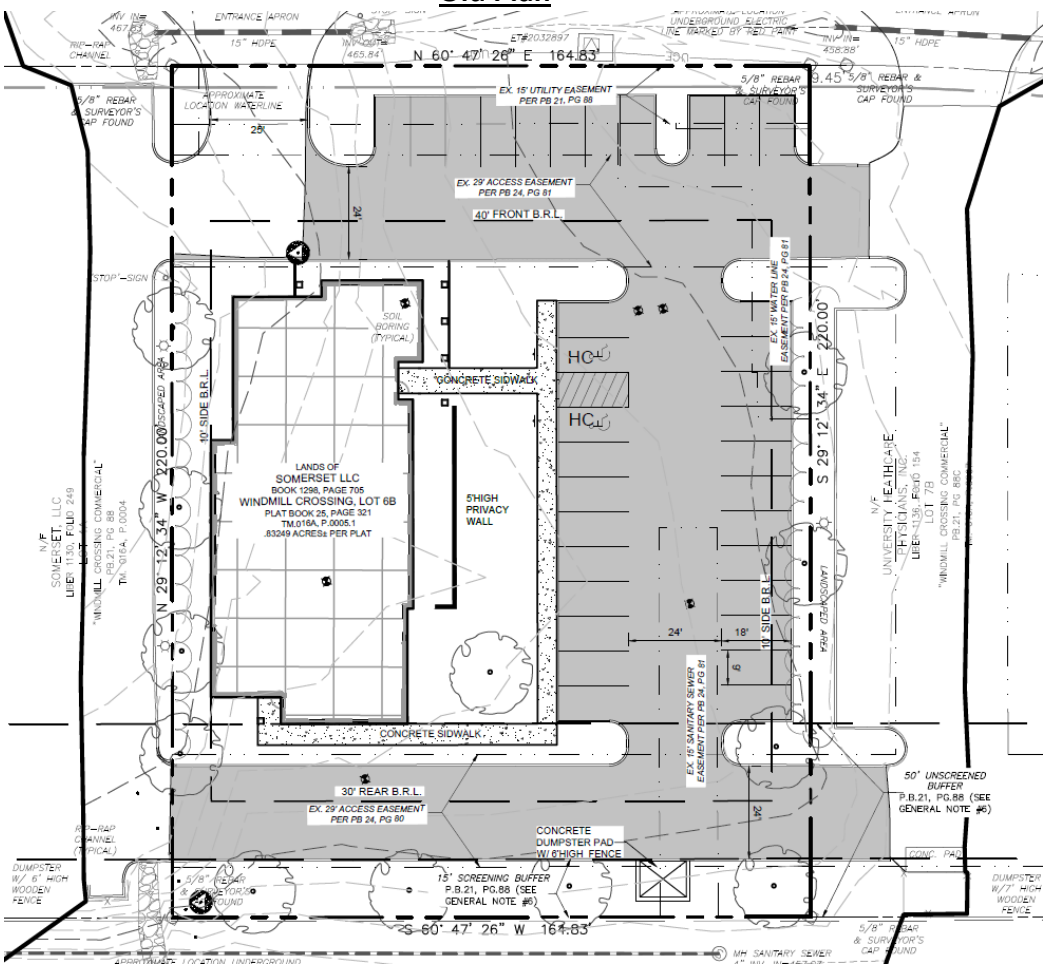
This item was previously approved by the Planning Commission. The Commission approved the sketch plan on April 24, 2023. Since then, the applicant has worked on modifying easements and other legal encumbrances on the property, and has changed the design of the project substantially.

CHANGES FROM PRIOR PLANS

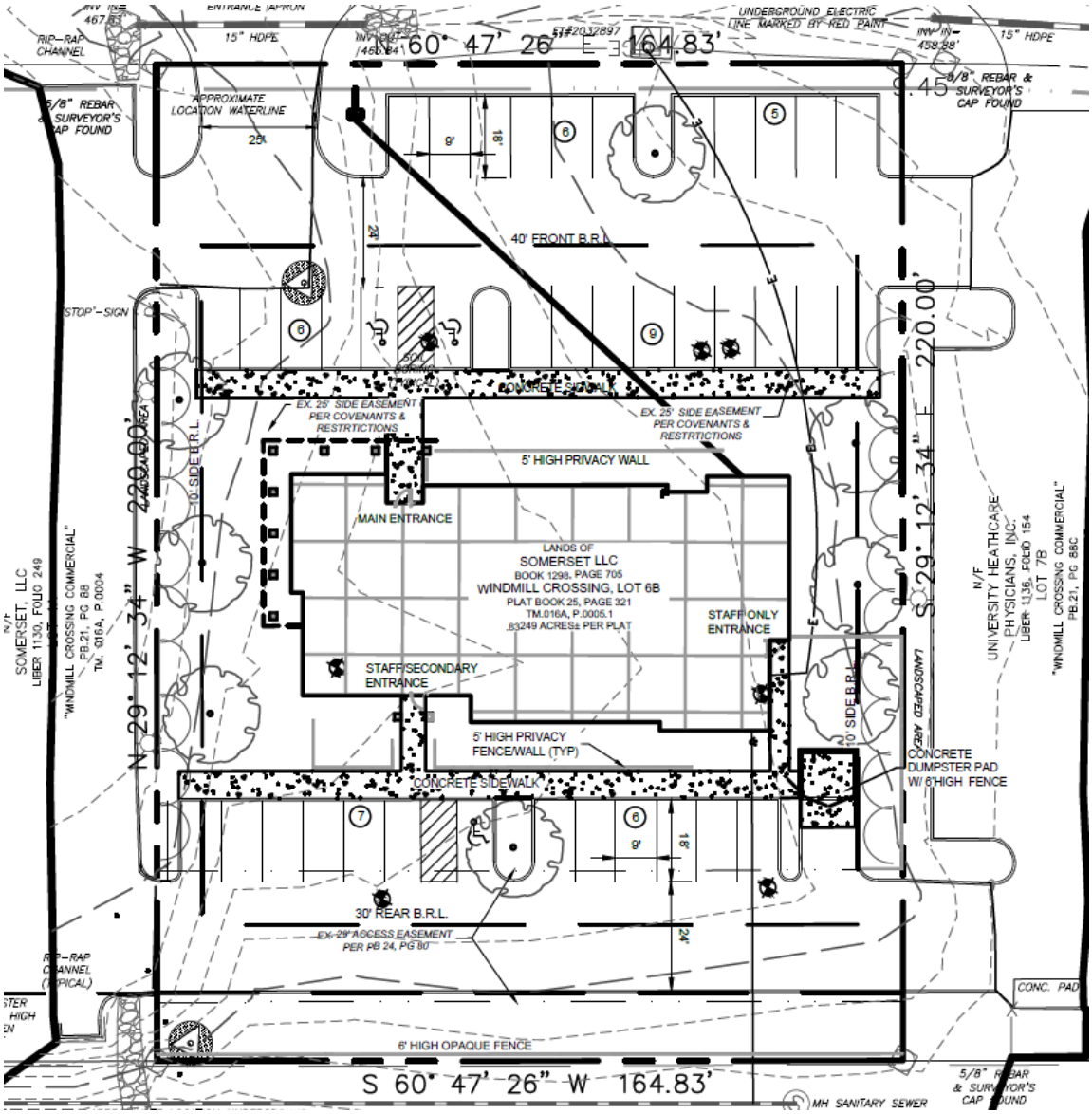
Changes from the prior approved sketch plan include:

1. Removal of the parking lot which connected the front and rear access drives. Those drives no longer connect on this parcel.
2. The parking lot has been removed. All parking is directly reached from the access drives.
3. The building location has changed. It is now in the center of the parcel in a horizontal layout, whereas the previous plan had it shifted further left and in a more vertical alignment.
4. Additional fencing around the structure is proposed.
5. The dumpster location has been changed.
6. Landscaping has been changed. The previous plans showed 11 trees, and the revised plans show 8 trees.

Old Plan



New Plan



ZONING REVIEW

The property is zoned General Commercial.

Table 1322.10, GC District Bulk and Area Regulations

Maximum Density	No Requirement
Minimum Lot Size	No Requirement
Minimum Lot Width	No Requirement
Minimum Front Yard Setback	40 feet
Minimum Side Yard Setback	10 feet (25 feet where adjoining a residential district)
Minimum Rear Yard Setback	30 feet
Maximum Lot Coverage	90 percent
Minimum Required Open Space	No Requirement
Maximum Building Height	55 feet[1]
Maximum Stories	5 stories[1]

[1] Hotels shall have a maximum height of 78 feet and maximum number of six (6) stories.

Site Development/Open Space.

Up to 70% of the site may be developed with impervious surface. The proposed development will cover 66.2% of the site (24,010 sq. ft. of developed area on a 36,268 sq. ft. site). There is no open space requirement.

Parking

Required parking for a dental lab is 3.53 spaces per 1,000 sq. ft. Based on a 5,472 sq. ft. structure, the required parking is 20 spaces. 39 spaces are being provided, of which three are handicap spaces.

Setbacks

All required setbacks have been met.
Front: 40 ft.
Sides: 10 ft.
Rear: 30 ft.

Landscaping/Buffering

There must be a minimum 6ft. tall opaque buffer between the structure and adjacent residential properties, which are located beyond the rear yard of this site. This requirement is met.

While the sketch plan shows a 6 ft. tall fence in the buffer area, a line of evergreens similar to those at the adjacent Urgent Care/912 Somerset Blvd. would provide landscaping continuity and fulfill the screening requirements. See the plantings outlined in blue below:



Dumpster Pad

The applicant is proposing a 6 ft. tall fence around the dumpster pad, which fulfills part of the Code requirements. Landscaping is required around the fence (except for the door location) to a depth of 5 ft. If the sketch plan is approved, the preliminary plan must include this required landscaping detail.

Lighting

Two lights are proposed at the left/west landscape area by the structure, and one light is shown on the right/east landscape area by the structure. All lighting must be shielded and downcast. Lighting must on black poles with an acorn top unless the Planning Commission specifies otherwise. A photometric plan is required on the preliminary plan.

Sidewalks

The applicant has shown a sidewalk as access from parking to the structure. This satisfies the requirements of the ordinance. There are no adjacent sidewalks or pedestrian paths for the proposed sidewalk to connect to.

Transportation/Connections

The prior sketch plan for this development had a parking lot connecting the two access roads on site. This plan does not have a connection between the two access roads. The adjacent Urgent Care has two access roads connected by a parking lot, and the adjacent optometrist site has parking spaces placed directly off the access road as well as a parking lot (see the picture on the previous page).

The application has shifted the location of the structure from the old plans; the layout is now more horizontal and centrally located on the site. This does not make it feasible to connect the two access roads via a parking lot.

CONCLUSION

This a request for approval of a sketch plan for a dental office. The sketch plan is generally in conformance with the requirements of the City's ordinances.

RECOMMENDATION

Approval.

Authentisign ID: 430C744B-89B7-ED11-BA77-14CB652F4F5B

Sketch Plan Application No._____

RECEIVED
SEP 6 2023
BY:_____

SKETCH PLAN APPLICATION

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
ARTICLE 1332, SUBDIVISION AND LAND DEVELOPMENT APPLICATION & APPROVAL REQUIREMENTS

To assist the Subdivision Administrator in the review of a Sketch Plan Application, the Applicant must utilize this form to supply the City with the information prescribed under Section 1332.03 of the Charles Town S/LD Ordinance. The submission of this form, along with the prescribed information and required fees, shall serve as the Applicant's Sketch Plan Application as required by Ordinance Section 1332.03. Applicant is responsible to ensure the standards of Ordinance Section 1332.04, Sketch Plan Requirements, are met and provided herein is a checklist of the Sketch Plan requirements.

1. DATE February 24th, 2023

2. APPLICATION TYPE*

Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance

- Submit Three (3) 11" x 17" copies of the Sketch Plan shall be submitted and in Adobe PDF format

X Major S/LD Development

- Submit Three (3) 18" x 24" copies of the Sketch Plan shall be submitted and in Adobe PDF format

*There are two types of Sketch Plan submissions:

1. For Zoning Use Permit, Special Exception Use and Sketch Plan requirements found in the Supplemental Regulations of the Zoning Ordinance. Submission standards are found in Section 1332.04(D).
2. For a Sketch Plan for a Major S/LD application, submission standards are found in Section 1332.04(E)

Authentisign ID: 430C744B-89B7-ED11-BA77-14CB652F4F5B

3. APPLICANT'S NAME* Westover Holdings LLC

Address: 11 Meadow Branch Ave, Winchester VA 22601

Telephone Number (804) 405-9873 Fax Number ( )

Email Address austinwestover@gmail.com

4. PROPERTY OWNER'S NAME Grasso & Sons Development Corp. 45omerset LLC

Address: 34047 Soaring Bamboo Path Wesley Chapel, FL 33543 175 John Thomas Way Charlestown WV 25414

Telephone Number (703) 303-9170 Fax Number ( ) 304-283-2601

Email Address PGrasso@USAid.gov JThomas@Jeffersonasphalt.net

5. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: Lot 6B Somerset Blvd Charles Town WV 25414

Tax Map # and Parcel: 16A / 6 16A/5.1

Deed Book and Page #: 1046/264 1130/249

Property Area in Square Feet or Acres: .83ac Total | .46ac This Parcel

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

Stand alone, single level dental office

7. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

Undeveloped land Zoned appropriately.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

Authentisign ID 430C744B-89B7-ED11-BA77-14CB652F4F5B

8. ARE THERE ANY ANTICIPATED WAIVERS OR VARIANCES? IF YES, PROVIDE DETAILS.

NO

9. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

X No

10. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

Application No.	Project Name and Phase	Status	Approval Date

Authentisign ID: 430C744B-89B7-ED11-8A77-14CB652F4F5B

11. INTERESTED PARTY ADDRESSES, FOR PUBLIC NOTICE (including across street) (Interested parties are defined as adjacent properties within 100 feet).

Owner	# and Street	City, State, Zip
AO Charles Town LLC	149 Linwood Way	Martinsburg, WV 25403
University Healthcare Physicians INC	2500 Foundation Way	Martinsburg, WV 25401
Anthony Shockney	130 Monte Carlo Way	Charles Town WV 25414
Frank & Coral Monteh	14502 Hazelmoor Ct	Silver Spring, MD 20906
Robert Miller	138 Monte Carlo CT	Charles Town WV 25414
Tamilyn & Chris Troxell	142 Monte Carlo CT	Charles Town WV 25414
Sean Gordon	146 Monte Carlo CT	Charles Town WV 25414
Maria Montero Hans Saavedra	150 Monte Carlo CT	Charles Town WV 25414
James & Carolyn Bryant	154 Monte Carlo CT	Charles Town WV 2544

APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1332.02 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant

_____ Date 2/24/23

Signature of Property Owner (If different than Applicant)

Authent. Peter Grasso Date 02/28/23

Signature of Property Owner (If different than Applicant)

John J. Thomas, Jr. Date 02/28/23

Authentisign ID 430C7448-89B7-ED11-BA77-14CB652F4F5B

Please submit an original completed Application and specified number of Site Plan copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

FOR CITY USE ONLY

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments:_____

_____

_____

_____

_____

_____

CHARLES TOWN, WEST VIRGINIA
Department of Community Development
Division of Planning and Zoning
101 East Washington Street, P.O. Box 14
Charles Town, West Virginia 25414

Phone: (304) 725-2311

Fax (304) 725-1014

File Number: _____
Staff Initials: _____
Fees Paid: _____

https://goo.gl/KGzDMZ

Sketch Plan Review Checklist
Amended 2017 Subdivsion Ordinance

(please check one) X **Major S/LD Application** or
_____ **Zoning Use Permit, Special Exception Use, or Sketch Plan (requirements found in the Supplemental Regulations of the Zoning Ordinance)**

Project Name: Westover Dental Office

Property Owner Information

Property Owner: Westover Holdings, LLC
Mailing Address: 11 Meadow Branch Ave
City: Winchester State: VA Zip Code: 22601
Phone Number: 804-405-9873 Email: austinwestover@gmail.com
Signature: gnature of Applicant Date: 03/01/2023

Applicant's Registered Engineer or Surveyor or Design Consultant

Name: Triad Engineering, Inc
Mailing Address: 1075-D Sherman Ave.
City: Hagerstown State: MD Zip Code: 21740
Phone Number: 301-797-6400 Email: eiser@triadeng.com

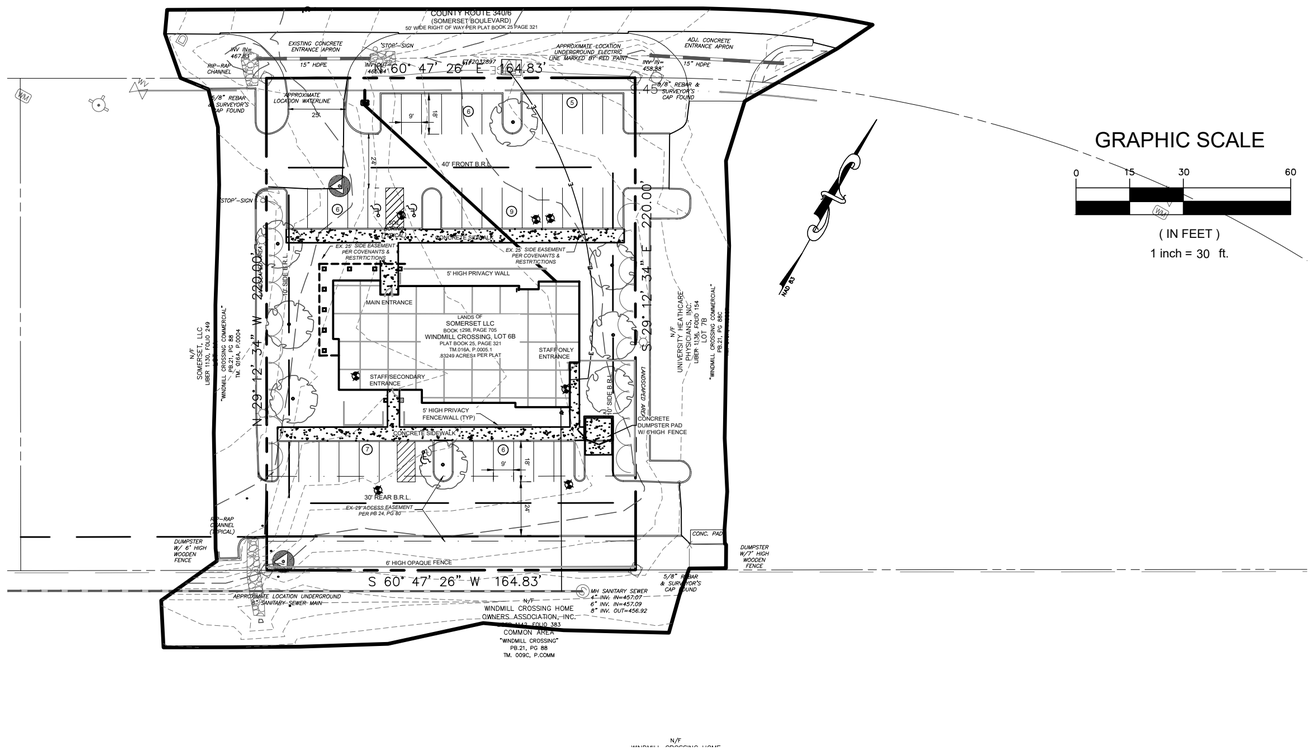
Physical Property Details

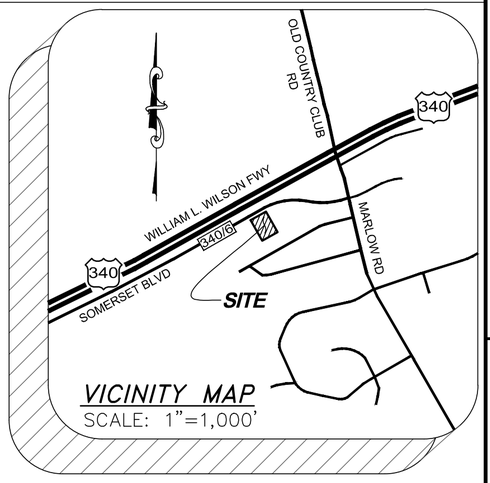
Physical Address: Lot 6B Somerset Blvd.
City: Charles Town State: WV Zip Code: 25414
Tax District: 3 Map No: 016A Parcel No: 0005.0001 & 0006.0000
Parcel Size: 0.86 AC total Deed Book: 25 & 24 Page No: 321 & 81

Zoning of Subject Property			Is the Project to Be:	Is Property In:
Urban Reserve (UR)	Residential Medium-High Density (R-15)	Neighborhood Commercial (NC)	Planned Unit Development (PUD)	Historic Overlay District (HOD)
General Commercial (GC)	Old Town Residential (OT-R)			Floodplain Overlay District (FOD)
Old Town Mixed Use Commercial (OT-MUC)	Neighborhood Residential (NR)			

City Use Only	1st Review	2nd Review	3rd Review	4th Review
Submittal Date				
Zoning Administrator				
City Planner				
GIS/Addressing				
Return Date				

SKETCH PLAN - WESTOVER DENTAL OFFICE





GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

GENERAL NOTES:

1. SITE IS SITUATED IN WINDMILL CROSSING SUBDIVISION, APPROXIMATELY 800' SOUTH OF THE INTERSECTION OF SOMERSET BLVD. AND MARLOW RD.
2. THE SURVEYED PROPERTY SHOWN HEREON IS THE SAME LAND DESCRIBED IN SCHEDULE "A" OF TITLE COMMITMENT No. _____, PREPARED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY WITH A COMMITMENT DATE OF OCTOBER 20, 2022 AT 9:00 A.M.
3. SITE CONSISTS OF 3 MERGED PARCELS, BEING PLATTED AT PB 25, PG 321. LANDS OF SOMERSET LLC. LIBER 1298, FOLIO 705; TM 016A, PCL 0005.0001
4. HORIZONTAL DATUM IS NAD83 WEST VIRGINIA NORTH STATE PLANE COORDINATE SYSTEM, VERTICAL DATUM IS NAVD 88, BOTH DERIVED FROM GPS RTK OBSERVATIONS.
5. NO EVIDENCE OF CEMETERIES, GRAVE SITES, OR BURIAL GROUNDS WERE OBSERVED AS OF THE DATE OF FIELD WORK COMPLETION.
6. CURRENT LAND USE - NOT DEVELOPED
   PROPOSED LAND - DENTIST OFFICE
7. ZONED - GENERAL COMMERCIAL (GC)
8. PROPERTY AREA - 36,268 SF (0.833 AC)
9. MAXIMUM ALLOWABLE 70% IMPERVIOUS. PROPOSED 24010 SF / 36268 SF = 66.2%
10. WATER & SEWER PROVIDED ON SITE BY CHARLES TOWN UTILITY BOARD. LETTER OF AVAILABILITY DATED DECEMBER 6, 2022 OBTAINED.
11. WINDMILL CROSSING WAS ANNEXED INTO THE CITY OF CHARLES TOWN IN 2007. IN 2011 THE CITY OF CHARLES TOWN AMENDED AND RESTATED CONDITIONS OF THE ANNEXATION IN RESOLUTION 2011-05 AND FURTHER AMENDED THE SIGNAGE CRITERIA IN RESOLUTION 2012-04.
12. BUILDING SETBACKS:
    FRONT - 40'
    REAR - 30'
    SIDE - 10'
13. 10' SCREENING BUFFER IN REAR ADJACENT TO RESIDENTIAL
14. PARKING REQUIREMENTS - MEDICAL/DENTAL OFFICE = 3.53 SPACES/1000SF GFA
    5,472 SF * 3.53 SP/1000 SF = 19.31 SP = 20 SPACES REQUIRED
    36 SPACES + 3 ADA SPACES PROVIDED
15. 25' SIDE YARD EASEMENTS WERE ESTABLISHED IN THE COVENANTS & RESTRICTIONS - DECLARATION OF WINDMILL CROSSING BUSINESS COMMUNITY, 1020-178.

LINETYPE LEGEND	
	SUBJECT PROPERTY LINE
	ADJOINING PROPERTY LINE
	MINIMUM BUILDING RESTRICTION LINE
	EDGE OF CONCRETE
	CONTOUR, MAJOR 5'
	CONTOUR, MINOR 1'
	CURB
X X	FENCE, AS NOTED
	LANDSCAPED AREAS
	ROAD, CENTER LINE
	ROAD, EDGE OF PAVEMENT
	UNDERGROUND SANITARY SEWER
	UNDERGROUND STORM DRAIN
UGE	UNDERGROUND ELECTRIC LINE

SYMBOLS LEGEND	
	ELECTRIC TRANSFORMER
	LIGHT POST
	REBAR & SURVEYOR'S CAP FOUND (AS NOTED)
S	SANITARY SEWER MANHOLE
	SIGN (AS NOTED)
	SOIL BORING

OWNER/DEVELOPER:
WESTOVER HOLDINGS, LLC
11 MEADOW BRANCH AVE
WINCHESTER, VA 22601

Austin Westover
austinwestover@gmail.com
(804)405-9873

ARCHITECT:
FAZIO ARCHITECTS
308-B CONGRESS AVE
AUSTIN, TX 78701

KEITH GREGG
keith@fazioarchitects.com
(512)494-1680

ENGINEERING/SURVEYING:
TRIAD ENGINEERING, INC
1075 SHERMAN AVE
HAGERSTOWN, MD 21790

ERIC ISER, PE
eiser@triadeng.com
(301)797-6400

Rev	Date	Agency
1	03-15-23	City of Charles Town Planning (Kimley-Horn)
2	04-03-23	Merger Deed Recorded
3	09/01/23	Layout Change per Client

TRIAD ENGINEERING, INC.
1075-D SHERMAN AVENUE
HAGERSTOWN, MD 21740
PH: 301.797.6400 FAX: 301.797.2424
OFFICE LOCATIONS
MARYLAND ○ PENNSYLVANIA ○ VIRGINIA ○ WEST VIRGINIA

CADD FILE:

DRAWN BY: Staff | CHECKED BY: E.H.I. | DATE: 09/01/2023 | SCALE: 1"=30'

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WEST VIRGINIA, LICENSE NO. 15067 EXPIRATION DATE: 12-31-2024

ERIC ISER REGISTERED 15067 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 09/01/23

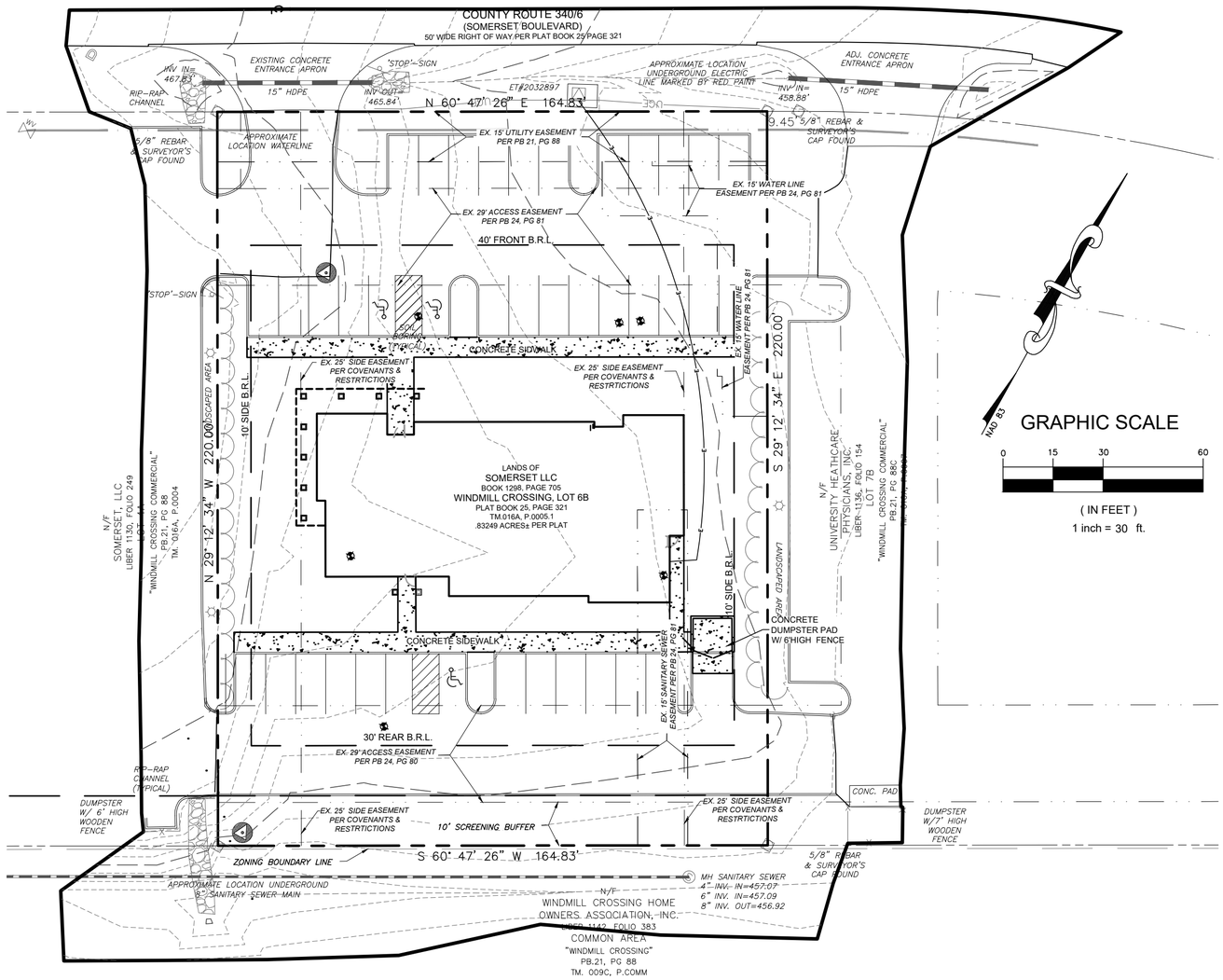
SKETCH PLAN OF WESTOVER DENTAL

WESTOVER HOLDINGS, LLC
PART OF LIBER 1130, FOLIO 249 AND LIBER 1046, FOLIO 264
SITUATED IN WINDMILL CROSSING APPROXIMATELY 880' WEST OF THE INTERSECTION OF SOMERSET BOULEVARD AND MARLOW ROAD IN CHARLES TOWN
JEFFERSON COUNTY, WEST VIRGINIA

TRIAD ENGINEERING, INC.
www.triadeng.com

SHEET NUMBER: C-1.0
FILE NO.: 03-22-0965
JOB NO.: 03-22-0965

SKETCH PLAN - WESTOVER DENTAL OFFICE



LINETYPE LEGEND

	SUBJECT PROPERTY LINE
	ADJOINING PROPERTY LINE
	MINIMUM BUILDING RESTRICTION LINE
	EDGE OF CONCRETE
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	CONTOUR, MINOR 1'
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X X	FENCE, AS NOTED
	LANDSCAPED AREAS
	ROAD, CENTER LINE
	ROAD, EDGE OF PAVEMENT
	UNDERGROUND SANITARY SEWER
	UNDERGROUND STORM DRAIN
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	LIGHT POST
	REBAR & SURVEYOR'S CAP FOUND (AS NOTED)
S	SANITARY SEWER MANHOLE
	SIGN (AS NOTED)
	SOIL BORING

OWNER/DEVELOPER:
WESTOVER HOLDINGS, LLC
11 MEADOW BRANCH AVE
WINCHESTER, VA 22601

Austin Westover
austinwestover@gmail.com
(804)405-9873

ARCHITECT:
FAZIO ARCHITECTS
308-B CONGRESS AVE
AUSTIN, TX 78701

KEITH GREGG
keith@fazioarchitects.com
(512)494-1680

ENGINEERING/SURVEYING:
TRIAD ENGINEERING, INC
1075 SHERMAN AVE
HAGERSTOWN, MD 21790

ERIC ISER, PE
eiser@triadeng.com
(301)797-6400

Rev	Date	Agency
1	03-15-23	City of Charles Town Planning (Kimley-Horn)
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PH: 301.797.6400 FAX: 301.797.2424
OFFICE LOCATIONS
MARYLAND ○ PENNSYLVANIA ○ VIRGINIA ○ WEST VIRGINIA

CADD FILE:	DRAWN BY: Staff	CHECKED BY: E.H.I.	SCALE: 1"=30'
		DATE: 09/01/2023	

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WEST VIRGINIA, LICENSE NO. 15067 EXPIRATION DATE: 12-31-2024

ERIC ISER REGISTERED 15067 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 09/01/23

SKETCH PLAN
OF
WESTOVER DENTAL

WESTOVER HOLDINGS, LLC
PART OF LIBER 1130, FOLIO 249 AND LIBER 1046, FOLIO 264

SITUATED IN WINDMILL CROSSING APPROXIMATELY 880' WEST OF THE INTERSECTION OF SOMERSET BOULEVARD AND MARLOW ROAD IN CHARLES TOWN
JEFFERSON COUNTY, WEST VIRGINIA

TRIAD ENGINEERING, INC.
www.triadeng.com

SHEET NUMBER:
C-1.1
FILE NO.: 03-22-0965
JOB NO.: 03-22-0965

Kimley»Horn

Memorandum

To: Eric Iser, P.E.
Project Manager
Triad Engineering, Inc
1075 Sherman Ave
Hagerstown, MD 21790

From: Mark Phillips, P.E.

Through: Mr. James Newman, AICP
City of Charles Town
101 E Washington Street
Charles Town, WV 25414

Date: September 6, 2023

Subject: Westover Dental Sketch Plan Review

This memorandum summarizes our review of the Sketch Plan for Westover Dental (dated September 1, 2023 prepared by Triad Engineering, Inc) for a proposed building that will serve as a dentist office on approximately 0.833 acres. The site is currently zoned General Commercial.

Kimley-Horn's review of this application is limited to the Sketch Plan provided. Based upon our review we have the following comments:

1. This Application is generally in conformance with the Sketch Plan requirements per City of Charles Town Subdivision and Land Development Ordinance dated June 23, 2012 (Rev. July 1, 2019).

Kimley-Horn has no further comments. Thank you for the opportunity to review this Sketch Plan Application. In the meantime, please feel free to contact us at 703-870-3631 should you have any questions.

KIMLEY-HORN & ASSOCIATES, INC.

Mark Phillips, P.E.
Project Manager
Associate

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

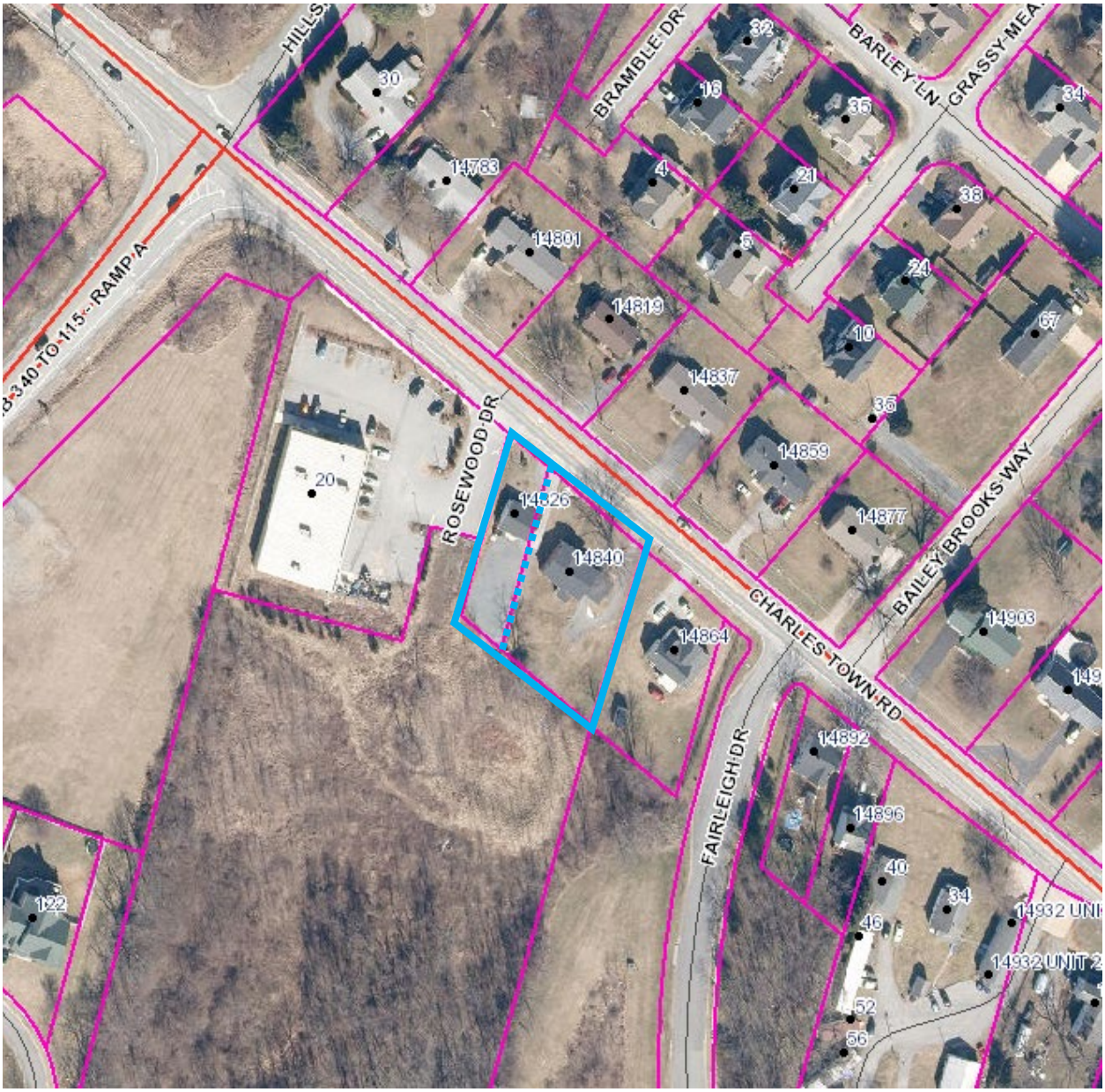
Public Hearing: SLD2023-09 Joan and Joe's Coffee Sketch Plan

ATTACHMENTS:

- 1. Staff Report.pdf
- 2.Application.pdf
- 3. Revised Plans.pdf
- 4._KH_Comments.pdf
- 5._KH_Updated_Comments.pdf
- 6._Stormwater_Report.pdf

Sketch Plan Review
SLD2023-09

Date: For the October 23, 2023 Planning Commission meeting
Applicant: Joan and Joe's Coffee
Property Owner: VERITAS PROPERTIES LLC
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.
Proposal: Development of a parking lot
Property Location: 14826 & 14840 Charles Town Road/ Tax District 3, Map 12, Parcel 12.0001 & Tax District 2, Map 17, Parcel 12.0003
Zoning District: General Commercial (GC).



PROJECT OVERVIEW

The applicant is seeking to expand their parking lot and access drive.

DEFINITIONS

COFFEE/DOUGHNUT SHOP – Restaurant that focuses on providing coffee and breakfast foods. May also sell newspapers, books, and music CDs. May offer indoor seating but no indoor table service.

RESTAURANT, FAST-FOOD – An establishment whose principal business is the sale of pre-prepared or rapidly prepared food directly to the customer in a ready-to- consume state for consumption either within the Restaurant Building or off premises.

PLANNING COMMISSION

The Planning Commission deemed this application complete at their September 25, 2023 meeting.

ZONING REVIEW

The property is zoned General Commercial.

Setbacks

Setbacks for parking lot require that parking spaces be at least 5 ft. from adjacent right-of-way. That requirement is met.

Density

Not applicable.

Lot coverage

Up to 90% of the lot may be developed. There is no open space requirement. The proposed development will cover 53% of the site.

Parking

Required parking for either a coffee/doughnut shop or fast food restaurant is 1parking space per every 3 seats. With 21 seats, the applicant is required to provide a minimum of 7 parking spaces, but will actually be providing 21 spaces, including 2 handicapped spaces.

Sidewalks

The applicant filled for a waiver from sidewalk requirements, which the Planning Commission denied. The applicant has provided a 5 ft. wide sidewalk along the entire frontage of the property. The sidewalk is required by Code Section 133.09.F to be separated from the curb a distance of 6 ft. This criteria is met.

Street Connections

There is an existing entrance onto Charles Town Road. That existing entrance would stay as an entrance lane, and a new exit lane would be built, also connecting to Charles Town Road. There are 7 access drive standards in the Subdivision Ordinance:

1. *The horizontal alignment of Access Drives shall conform to the requirement for Streets, as stated in Section 1333.02 of this Ordinance.*

   This requirement can be met during the preliminary plans when additional engineering details are required. The access road must be designed in such a way as to safely intersect with Charles Town Road.

2. *The horizontal alignment of Access Drives shall be measured along the centerline. Horizontal curves shall be used at all angle changes in excess of two (2) degrees. All curves shall be tangential arcs. The minimum horizontal curve radius shall be seventy five (75) feet.*

   This requirement can be met during the preliminary plans when additional engineering details are required.

3. *There shall be no more than two (2) entrances to the same property. Two (2) entrances to the same property must be located a minimum of 150 feet apart, measured from centerline to centerline.*

   This requirement is **not** met. There will be only two access drives for the property. They are approximately 100 ft. from each other, as measured from center line to centerline. There is no additional room on site to move the prosed exit lane any further from the entrance lane, as each access lane abuts side property lines.

4. *No Access Drive shall be constructed closer than 100 feet to the nearest intersection.*

   This requirement is met. The new access drive is more than 100 ft. from the nearest intersection.

5. *Access Drives shall not be located less than fifteen (15) feet from an adjoining property unless used as a shared Access Drive between the two abutting properties. Property owners must record an easement allowing cross access to and from the properties served by the shared Access Drive. The easement must include a joint maintenance agreement defining the responsibilities of the property owners.*

   This requirement is **not** met. The new access drive is less than 15 feet from the nearest adjacent property lines.

6. *Access Drives travel lanes shall have a minimum width of twenty-four (24) feet; however, sufficient design information must be submitted to indicate that the number of travel lanes and width proposed have been designed to accommodate the anticipated traffic to and from the development.*

   This requirements is **not** met. The road width is 15 feet. However, the new access drive will be an exit only, while the existing access drive will be an entrance only road. The 24 ft. width requirement assumes that the drive will be used for both entrance and exit traffic. The typical roadway section used for this type of road and described in

Subdivision Ordinance appendix A calls for a road width of 10 ft per lane, including curb and gutter. Therefore, the 15 ft. width is sufficient for the purpose of the new access road.

7. *The maximum slope of embankments adjacent to Access Drives shall not exceed 1V:3H unless a retaining wall is used to ensure that the earth is stabilized.*

   This requirement can be met during the preliminary plans when additional engineering details are required.

Easement

While not a Code requirement, the applicant should how the vehicular ingress/egress access ways will be accessed and maintained if the two parcels were to come under different ownerships.

Buffers

An opaque buffer at least 6 ft. in height is required between non-residential and residential uses. A 6ft. tall fence I shown along the east/right side of the structure as the required buffer. To the rear of the property is wooded property. The landscaping criteria is met.

Parking Lot Landscaping

Landscaping is not required to be shown on a sketch plan. The landscaping shown on the plan appears to conform to Code requirements; this will be determined during review of the preliminary plans.

Lighting

Lighting is not required to be shown on a sketch plan. Lighting is shown on the plans as being located near the curb cut of each access lane, which complies with City requirements. The height of the lighting is approximately 10 ft., which conforms to City requirements. Required lighting for parking lots must have acorn-style tops similar in design to what is used in the City's historic downtown. The design will need to be revised, with additional information on light cutoff and shielding to be provided.

Stormwater

The City's Engineering firm, Kimley-Horn, informed me on October 17 that *"I spoke with the applicant and all of my comments have been addressed with this submission."*

COMPREHENSIVE PLAN

The 2040 Comprehensive Plan identifies these parcels as General Commercial.

CONCLUSION

The application and design are generally in conformance with Code requirements. Issues regarding lighting can be settled at the preliminary plan stage. Additional details on landscaping will be provided at the preliminary plan stage. The applicant has adhered to the access drive requirements as much as is practical for this site.

RECOMMENDATION

Approval.

JHA Companies | ENGINEERS SURVEYORS ENVIRONMENTAL GIS MAPPING

transmittal

July 20, 2023

TO:	Subdivision Administrator	**FROM:**	Chris Waddell
	City of Charles Town		JHA Companies
	101 E Washington Street		362 W Burr Blvd, Ste 3
	Charles Town, WV 25414		Kearneysville, WV 25430
			681-209-7574

RE: Project Name: Joan & Joe's Coffee
JHA Project ID #: 2022-1685
Location: Charles Town, Jefferson, WV

TRANSMITTING:

No.	Date	Document
1	7/19/23	Application with check
1	7/19/23	PCSM Report
8	7/19/23	Site Plan (3: 24x36, 5: 11x17)

COMMENTS:

RECEIVED
JUL 21 2023
BY:

S/LD Application No._____

SUBDIVISION AND LAND DEVELOPMENT APPLICATION

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
ARTICLE 1332, SUBDIVISION AND LAND DEVELOPMENT APPLICATION & APPROVAL REQUIREMENTS

To assist the Subdivision Administrator in the review of a Subdivision and Land Development (S/LD) Application, the Applicant must utilize this form to supply the City with the information prescribed under Section 1332.03 of the Charles Town Subdivision Ordinance. The submission of this form, along with the prescribed information and required fees, shall serve as the Applicant's S/LD Application as required by Ordinance Section 1332.03.

1. DATE July 7, 2023

2. APPLICATION TYPE

☐ Minor Subdivision | Final S/LD Plan

☐ Major Subdivision Development*
- Preliminary S/LD Plan and Final Plat

☐ Major Land Development**
- Preliminary S/LD Plan

☒ Major Subdivision and Land Development***
- Preliminary S/LD Plan and Final Plat

*Conventional Subdivision – A Preliminary Plan and Plat Approval and a Final Plan and Plat Approval is required.

**No Division/Merger of Land – A Preliminary Plan and Plat Approval is required for the submission of a building or multiple buildings on one lot where there is no subdivision of land (commonly referred to as a site plan).

***A Preliminary Plan and Plat Approval and a Final Plan and Plat Approval is required for the submission of a building or multiple buildings that will require the merger, adjustment or subdivision of land.

3. APPLICANT'S NAME* Joan and Joe's Coffee Shop

Address: 14826 Charles Town Road

Telephone Number (681)252-1033 Fax Number ( )

Email Address

4. PROPERTY OWNER'S NAME Robert Mead

Address: 14826 Charles Town Road, Charles Town, WV 25414

Telephone Number (681)252-1033 Fax Number ( )

Email Address

5. LEGAL DESCRIPTION OF THE SUBJECT PROPERTY (list all parcels that apply)

Property Address: 14826 &14840 Charles Town Road

Tax Map # and Parcel: Map 12 - Parcel 12.1/ Map 17 - Parcel 12.3

Deed Book and Page #: 1122 pg 36 / 1243 page 647

Property Area in Square Feet or Acres: 0.14, 0.39 acres

6. DESCRIPTION OF PROJECT AND PROPOSED USE(S) OF THE PROPERTY:

The proposed use of the property will be a coffee shop.

This project will include renovation of existing home into a proposed coffee shop, upgraded exit, upgraded parking areas for the coffee shop, and stormwater facilities.

7. DESCRIPTION OF THE EXISTING (OR FORMER) USE(S) OF THE PROPERTY AND CURRENT ZONING:

Current Zoning for this property is GC-General Commerical.

*Applicants include: Property owner(s), Engineer(s), Surveyor(s), or Consultant(s)

8. ARE THERE ANY ANTICIPATED WAIVERS OR VARIANCES? IF YES, PROVIDE DETAILS.

N/A

9. PARCEL HISTORY (List all pending or previously approved applications on the subject parcels inventoried above, including previous site plan applications if this application is a site plan amendment)

Application No.	Project Name and Phase	Status	Approval Date

10. HAS THE PROPERTY BEEN THE SUBJECT OF ANY COURT ACTION?

☐ Yes (Please specify nature of all proceedings and current status and attach any documents showing court decisions, etc.)

☒ No

11. PLAN/PLAT SUBMISSION TO OTHER AGENCIES (Documentation of all required approvals must be attached to this Application or submitted prior to Preliminary S/LD Application approval)

Agency (Specify others as applicable)	Submittal Date	Approval/Permit Issued	Date of Approval/Issuance
City of Charles Town	07/07/2023		
City of Charles Town Utility Board	N/A		
Jefferson County Planning and Zoning Department	N/A		
Jefferson County Addressing Office	N/A		
Jefferson County Board of Education	N/A		
WV Department of Environmental Protection	N/A		
WV Department of Transportation, Division of Highways	07/07/2023		
WV State Historic Preservation Office	N/A		
WV Office of Environmental Health Services	N/A		
U.S. Army Corps of Engineers	N/A		

12. FEE CALCULATION (Per Fee Schedule) $200.00 Grading/Land Disturbance Permit

$200.00 filing fee plus $2,000 escrow Major Land

Land Development for Commercial

AMOUNT PAID $ $400 plus $2,000 escrow

APPLICANT CERTIFICATION

I certify that, to the best of my knowledge, the submitted information and statements are true and correct. I also certify that I have received and read Section 1332.03 of the Charles Town S/LD Ordinance and relevant provisions of the Charles Town City Code.

Signature of Applicant

Robert Mead Date 07 / 10 / 2023

Signature of Property Owner (If different than Applicant)

_____ Date _____

Please submit an original completed Application and specified number of Plan/Plat (Three (3) copies at 24" x 36", Adobe PDF format, and Five (5) copies at 11" x 17") copies to the following:

Subdivision Administrator
City of Charles Town
101 E. Washington Street
Charles Town, WV 25414

FOR CITY USE ONLY

Application Number:_____ Date Application Received:_____

Fee: $_____ Paid:$_____ Check No._____

Receipt No._____

Subdivision Administrator Approval:_____ Date:_____

Planning Commission Approval:_____ Date:_____

Comments/Conditions:_____

Signature Certificate

Reference number: V5BYL-CYKRJ-S9XUH-G7UHH

Signer	Timestamp	Signature
Robert Mead Email: rmead@onedigital.com Shared via link		Robert Mead
Sent:	10 Jul 2023 19:31:36 UTC	
Viewed:	10 Jul 2023 20:25:09 UTC	IP address: 72.83.31.207
Signed:	11 Jul 2023 13:24:51 UTC	Location: Vienna, United States

Document completed by all parties on:
11 Jul 2023 13:24:51 UTC

Page 1 of 1

Signed with PandaDoc

PandaDoc is a document workflow and certified eSignature solution trusted by 40,000+ companies worldwide.

SITE PLAN FOR

JOAN AND JOE'S COFFEE

CHARLES TOWN, JEFFERSON COUNTY
WEST VIRGINIA
TAX MAP 17 PARCEL 12.3
DEED BOOK 1275 PG 458

OWNER/DEVELOPER
ROBERT MEAD
14826 CHARLES TOWN ROAD
CHARLES TOWN, WV 25414, 681-252-1033

ENGINEER/SURVEYOR
JHA COMPANIES
362 W BURR BLVD.
SUITE 3
KEARNEYSVILLE, WV 25430

SITE DATA

TOTAL SITE AREA:	0.53 ACRES
EXISTING LAND USE:	COFFEE SHOP
ZONING:	GENERAL COMMERCIAL
WATER SUPPLY:	PUBLIC WATER
SEWAGE DISPOSAL:	PUBLIC SEWER
DEED REFERENCE:	DEED BOOK 1255, PAGE 466 & DEED BOOK 1275, PAGE 458
PLAT REFERENCE:	PLAT BOOK 25, PAGE 15
TAX PARCEL REFERENCE:	TAX MAP 12 PARCEL 12.1 & TAX MAP 17 PARCEL 12.3
FLOOD PLAIN:	ENTIRELY WITHIN ZONE X

PROPOSED LOT REQUIREMENTS

ZONING:	
GENERAL COMMERCIAL	
MINIMUM LOT SIZE	N/A
MIN. WIDTH	N/A
MAX BUILDING HEIGHT	55 FEET
BUILDING SETBACKS:	
FRONT YARD	40 FEET
SIDE YARD	10 FEET
REAR YARD	30 FEET
PARKING AND ACCESS DRIVE SETBACKS:	
FRONT YARD	15 FEET
SIDE YARD	20 FEET
REAR YARD	15 FEET
BUFFERS:	
FRONT YARD	20 FEET
SIDE YARD	20 FEET
REAR YARD	20 FEET

BOUNDARY NOTE:
BOUNDARY AND TOPOGRAPHY SHOWN HEREON IS FROM FIELD SURVEYS BY ROBERTS LAND SURVEYING.

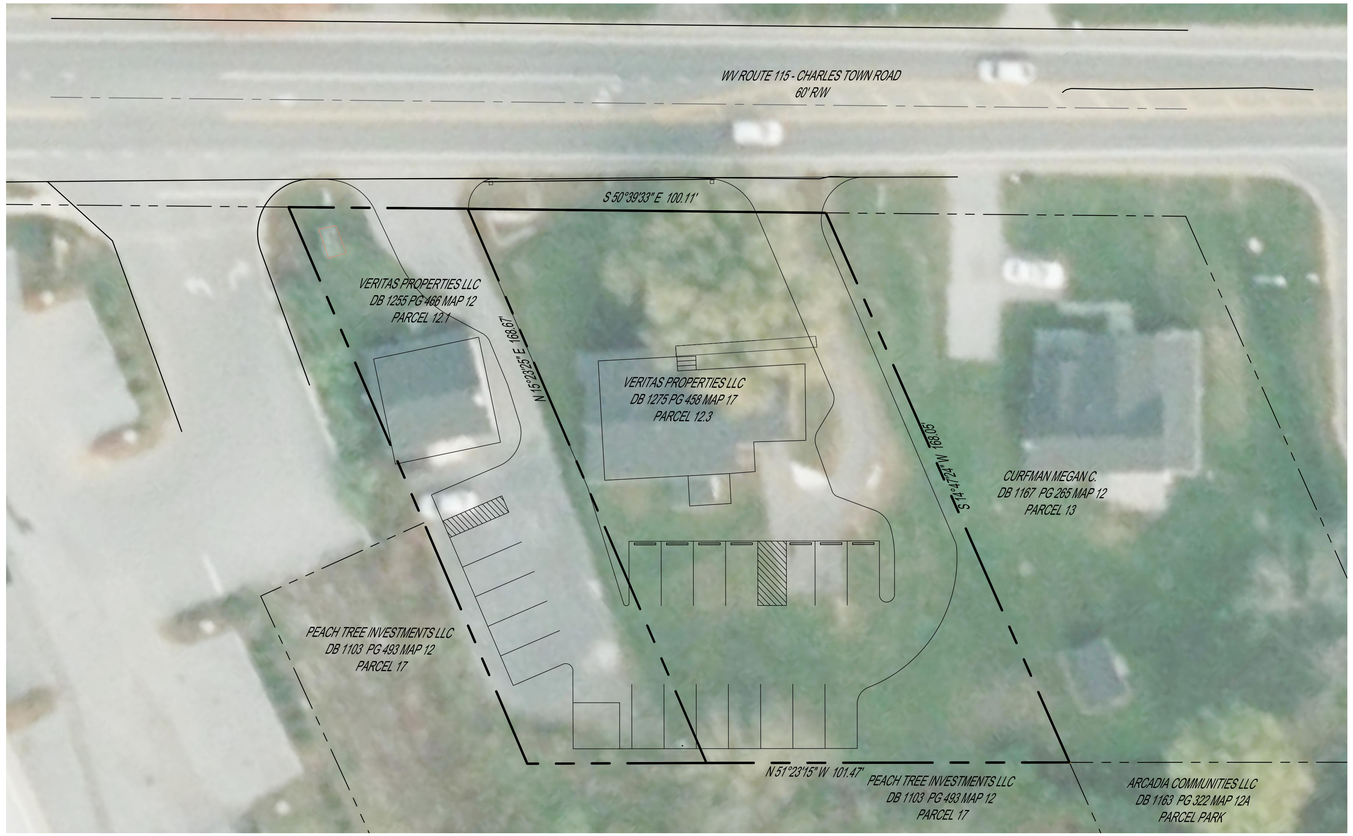
MONUMENT / MARKER NOTE:
CORNERS FOUND / SET / TO BE SET BY ROBERTS LAND SURVEYING

GENERAL NOTES:
1. NO PROPOSED ROADS, EASEMENTS, AND RIGHT-OF-WAYS.
2. THERE ARE NO FUTURE OR EXISTING EASEMENTS EXCEPT AS SHOWN.
3. PUBLIC WATER WILL BE USED TO SUPPLY THE COFFEE SHOP WITH WATER.
4. PARKING REQUIREMENTS:
   1 SPACE / 3 EVERY SEATS AVAILABLE FOR CUSTOMERS: 7 PARKING SPACES REQUIRED (21 AVAILABLE SEATS)
   TOTAL PARKING PROVIDED = 21 SPACES (INCLUDES 2 HANDICAPPED SPACES

FLOOD PLAIN
THIS SITE IS ENTIRELY LOCATED IN ZONE X - AREAS DETERMINED TO BE OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN, AS DELINEATED ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 54037C0138E DATED DECEMBER 18, 2009 FOR JEFFERSON COUNTY, WEST VIRGINIA BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

WETLANDS
NO ACTUAL FIELD DELINEATION OF WETLANDS WAS PERFORMED ON THIS SITE, HOWEVER THERE ARE NO WETLANDS PRESENT PER THE NATIONAL WETLANDS INVENTORY MAP.

COMPUTATIONAL BREAKDOWN	
TOTAL ACRES	0.534 ACRES
OPEN SPACE	0.25 ACRES
CONSERVATION EASEMENTS OR OTHER RESTRICTIVE EASEMENTS	N/A
STORMWATER MANAGEMENT AREAS	0.39 ACRES
REMAINING ACREAGE	0.144 ACRES
TABLE OF LOT AREAS	PARCEL 12: 7,768 SF PARCEL 12.3: 15,515 SF
DENSITY	3.74 UNITS/ACRE
RIGHT-OF-WAYS & EASEMENTS	N/A



GRAPHIC SCALE: 1" = 20'
20 0 20 40

WAIVER REQUESTS / PRIOR APPROVALS			
ORDINANCE	SECTION OF ORDINANCE	DESCRIPTION OF WAVIER OR VARIANCE	DATE GRANTED
SALDO	1333.23.C.2	CURB AND GUTTER	09/28/2023

THIS PLAT WAS APPROVED FOR RECORDATION BY THE CITY OF CHARLES TOWN, ON THE _____ DAY OF _____, 20_____, SUBJECT TO ANY CONDITIONS SPECIFIED HEREON.

ALL EXPENSES INCURRED WITH RESPECT TO IMPROVEMENTS FOR UTILITY SERVICES, PAVING, GRADING, LANDSCAPING, CURBS, GUTTERS, SIDEWALKS, ROAD LIGHTING, ROAD SIGNS, FLOOD PROTECTION DEVICES, DRAINAGE STRUCTURES AND ALL OTHER IMPROVEMENTS THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER AND NOT THE CITY.

_____ _____
SECRETARY OF THE PLANNING COMMISSION DATE

STATEMENT OF ACCURACY
THE ENGINEER AND/OR SURVEYOR, IN SIGNING THIS PLAT/PLAN, ATTESTS TO THE BEST OF HIS OR HER KNOWLEDGE, IS PLAN IS COMPLETE AND ACCURATE.

_____ _____
ENGINEER / SURVEYOR DATE

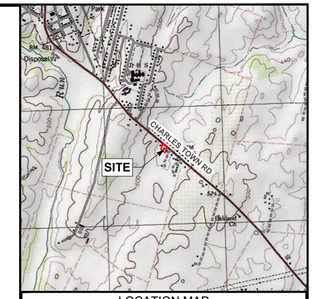
STATEMENT OF ACCEPTANCE
THE DEVELOPER, IN SIGNING THIS PLAT, AGREES TO ABIDE BY ALL CONDITIONS, TERMS AND SPECIFICATIONS PROVIDED HEREON; AND TO COMPLETE ALL THE IMPROVEMENTS REQUIRED BY THE PRELIMINARY PLAT OR SITE PLAN

_____ _____
OWNER / DEVELOPER DATE

PLAN CERTIFICATION
THE PROFESSIONAL ENGINEER OR LAND SURVEYOR, IN SIGNING THIS PLAT REPRESENTS A SURVEY MADE BY HIM/HER; ALL MONUMENTS AND IMPROVEMENTS INDICATED THEREON ACTUALLY EXIST, AND THAT THEIR LOCATION, SIZE, AND MATERIAL ARE CORRECTLY SHOWN; HE/SHE IS FAMILIAR WITH ALL REQUIREMENTS OF THIS ORDIANACE; AND, TO HIS/HER BEST KNOWLEDGE AND BELIEF, ALL REQUIREMENTS OF THIS ORDINANCE HAVE BEEN FULLY COMPLIED THEREWITH.

_____ _____
ENGINEER / SURVEYOR DATE

Sheet List Table	
Sheet Number	Sheet Title
C-0.01	COVER SHEET
C-1.00	EXISITING CONDITIONS PLAN
C-2.00	SITE PLAN
C-2.01	SITE DETAILS
C-3.00	STORMWATER MANAGEMENT PLAN
C-3.01	STORMWATER MANAGEMENT DETAILS
C-4.00	EROSION AND SEDIMENT CONTROL PLAN
C-4.01	EROSION AND SEDIMENT CONTROL DETAILS
C-5.00	LIGHTING PLAN



LOCATION MAP
SCALE: 1" = 2000'

NO.	DATE	DESCRIPTION	INT.
0	2023-07-07	FOR SUBMISSION	DMJ
1	2023-09-15	PER CITY ENGINEER COMMENTS	DMJ
2	2023-10-04	PER CITY ENGINEER COMMENTS	DMJ
3	2023-10-20	PER CITY ENGINEER COMMENTS	JAB

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PROJECT ID: 2022-1685	DRAWN: DMJ
DATE: 2023-07-07	DESIGN: JAB
SCALE: NOTED	CHECKED: JDH

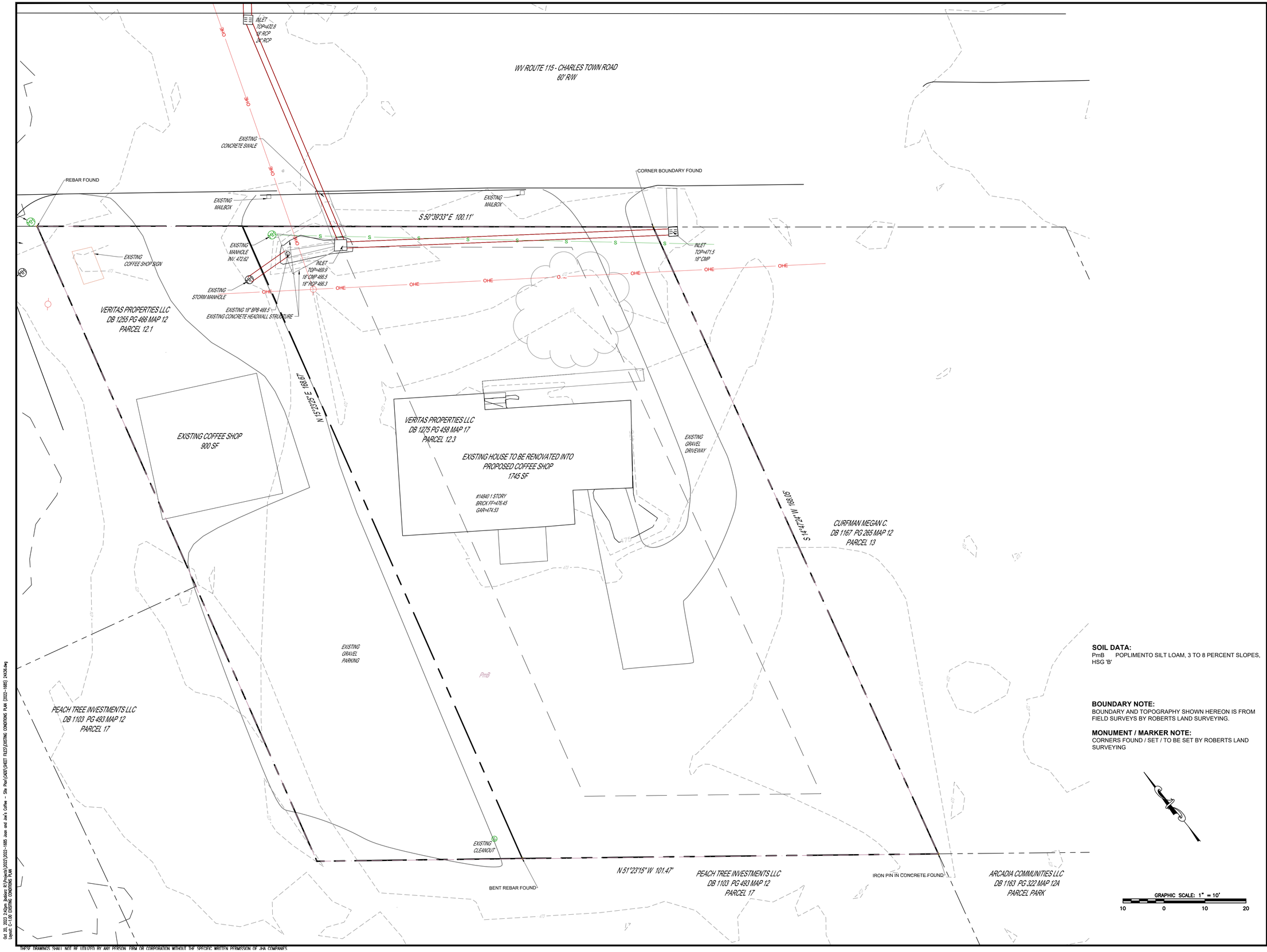
SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

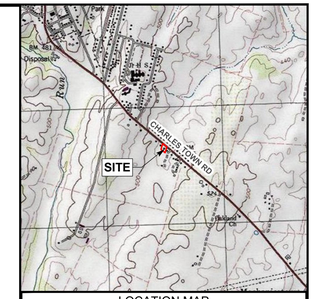
TITLE:
COVER SHEET

PLAN STATUS:	SHEET NO.
SITE PLAN	C-0.01

Oct 20, 2023 2:42pm jbolliger R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\COVER SHEET (2022-1685) JAB.dwg
Layout: C-0.01 COVER SHEET

THESE DRAWINGS SHALL NOT BE UTILIZED BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE SPECIFIC, WRITTEN PERMISSION OF JHA COMPANIES





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SCALE: 1" = 2000'

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SERIAL NO.

SOIL DATA:
PmB POPLIMENTO SILT LOAM, 3 TO 8 PERCENT SLOPES, HSG 'B'

BOUNDARY NOTE:
BOUNDARY AND TOPOGRAPHY SHOWN HEREON IS FROM FIELD SURVEYS BY ROBERTS LAND SURVEYING.

MONUMENT / MARKER NOTE:
CORNERS FOUND / SET / TO BE SET BY ROBERTS LAND SURVEYING

SEAL

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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
EXISITING CONDITIONS PLAN

PLAN STATUS:	SHEET NO.
SITE PLAN	C-1.00

Oct. 20, 2023 2:42pm jbabcock R:\Projects\2022\2022--1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\EXISTING CONDITIONS PLAN (2022--1685) 24X36.dwg
Layout: C-1.00 EXISTING CONDITIONS PLAN

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WV ROUTE 115 - CHARLES TOWN ROAD
60' R/W

CENTERLINE WV ROUTE 115- CHARLES TOWN ROAD

EXISTING EDGE OF PAVEMENT

INLET
TOP=472.8
15" RCP
24" RCP

POSTED SPEED LIMIT 45MPH

EXISTING SIGHT DISTANCE 528FT.

3.8% SLOPE DOWN
REQUIRED SIGHT DISTANCE 344FT.

EXISTING SIGHT DISTANCE 618FT+

2.1% SLOPE UP
REQUIRED SIGHT DISTANCE 378FT.

PROPOSED SIDEWALK AND WALL TO TIE INTO EXISTING CONCRETE HEADWALL

5 FOOT X 7 FOOT 8 INCH GALVANIZED DIAMOND NON-SLIP TREAD STEEL PLATE WITH 2 INCH LIP ON SOUTH SIDE WITH 4 INCH OVERLAP OVER CONCRETE SWALE TO MAINTAIN FLUSH WITH SIDEWALK

EXISTING CONCRETE SWALE

10 LF 34" HIGH HANDRAIL

30 LF 34" HIGH HANDRAIL

PROPOSED 5FT. CONCRETE SIDEWALK

PROPOSED ONE WAY SIGN

EXISTING MAILBOX

RIGHT OF WAY LINE

EXISTING COFFEE SHOP SIGN

EXISTING ENTRANCE TO BE UPDATED WITH CROSSWALK REPAVING

EXISTING MANHOLE INV. 472.62

EXISTING STORM MANHOLE

INLET
TOP=469.9
18" CMP 466.5
18" RCP 466.3

EXISTING 18" BPB 469.5
EXISTING CONCRETE HEADWALL STRUCTURE

PROPOSED RETAINING WALL

VERITAS PROPERTIES LLC
DB 1255 PG 466 MAP 12
PARCEL 12.1

SAWCUT EXISTING PAVEMENT

PROPOSED DO NOT ENTER SIGN

EXISTING MAILBOX

PROPOSED STOP BAR 12" WHITE TYPE V THERMO

TIE INTO EXISTING CONCRETE SWALE

PROPOSED DO NOT ENTER SIGN

SIGHT DISTANCE LINE
10' FROM EDGE OF PAVEMENT,
5' BEHIND STOP BAR

PROPOSED 5 FT. WIDE CONCRETE SIDEWALK

UPGRADE EXISTING ENTRANCE

EMERGENCY SPILLWAY
ELEV. 472.00

PROPOSED DRIVEWAY PAVING

15.00' WIDE DRIVEWAY

INLET
TOP=471.5
18" CMP

PROPOSED 30" STOP SIGN

BIORETENTION 2
BOTTOM: 470.0
TOP: 472.5

TIE INTO PROPOSED DRIVEWAY

PROPOSED WOODEN LANDSCAPING FENCE
4' - 6' TALL

VERITAS PROPERTIES LLC
DB 1275 PG 458 MAP 17
PARCEL 12.3

PROPOSED CONCRETE SIDEWALK

TRAFFIC ARROW (TYP)

CURB STOP TYP.

DUMPSTER ENCLOSURE

EXISTING CLEANOUT

BIORETENTION 1
BOTTOM: 470.0
TOP: 472.5

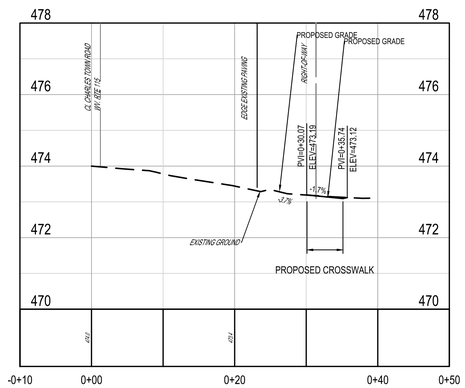
EMERGENCY SPILLWAY
ELEV: 472.00

PEACH TREE INVESTMENTS LLC
DB 1103 PG 493 MAP 12
PARCEL 17

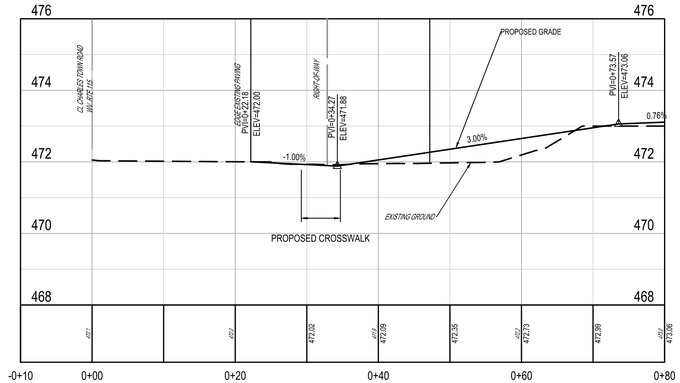
CURFMAN MEGAN C.
DB 1167 PG 265 MAP 12
PARCEL 13

PEACH TREE INVESTMENTS LLC
DB 1103 PG 493 MAP 12
PARCEL 17

ARCADIA COMMUNITIES LLC
DB 1163 PG 322 MAP 12A
PARCEL PARK



ENTRANCE
HORIZONTAL SCALE - 1:10
VERTICAL SCALE - 1:2

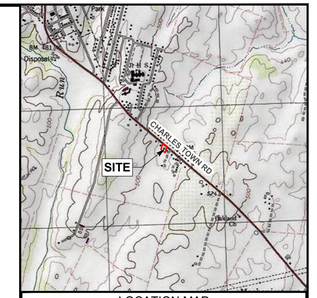


EXIT
HORIZONTAL SCALE - 1:10
VERTICAL SCALE - 1:2

LEGEND:

PROPOSED TREE

GRAPHIC SCALE: 1" = 10'
10 0 10 20



LOCATION MAP
SCALE: 1" = 2000'

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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE: SITE PLAN

PLAN STATUS: SITE PLAN

SHEET NO. C-2.00

Oct 20, 2023 2:42pm JBallard R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\SITE PLAN (2022-1685) 24X36.dwg
Layout: C-2.00 SITE PLAN

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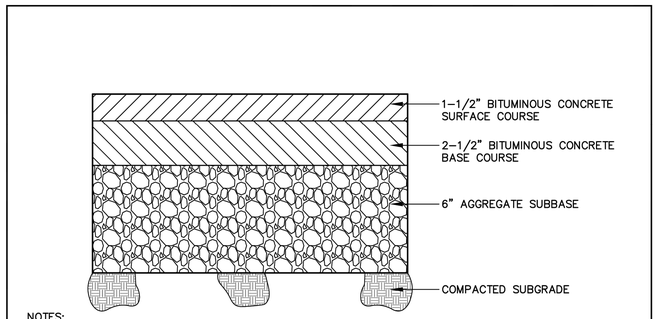
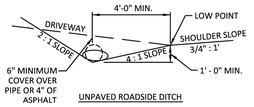


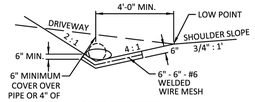
NOTES:

1. ALL BASE AND SUBGRADE MATERIAL SHALL BE COMPACTED TO 95% THEORETICAL MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99 METHOD A, WITHIN A ±2% OF OPTIMUM MOISTURE.

	STANDARD DETAIL	STANDARD NUMBER
	TYPICAL DRIVEWAY/PARKING PAVING SECTION	K-1

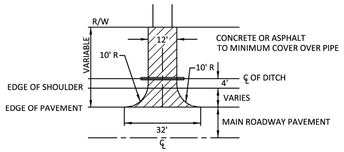


UNPAVED ROADSIDE DITCH



PAVED ROADSIDE DITCH

A PAVED DITCH IS REQUIRED WHERE SOIL CONDITIONS AND RUNOFF VELOCITIES WILL CAUSE EROSION.

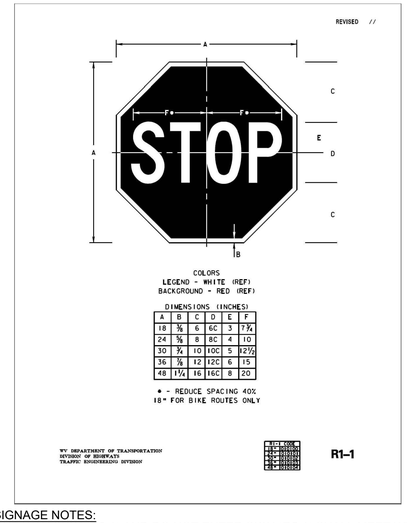


NOTES:

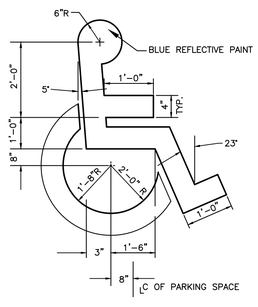
1. ALL CULVERTS SHALL BE SIZED IN ACCORDANCE WITH THE WVDOH DRAINAGE MANUAL - CURRENT EDITION.
2. DRIVEWAYS SHALL BE SURFACED FROM THE EDGE OF PAVEMENT TO THE PROPERTY LINE WITH THE SAME TYPE OF SURFACING USED ON THE STREET.
3. ALL DRIVEWAY GRADES SHALL START BACK OF THE SHOULDER LINE.
4. IN CUT SECTIONS, SIDES OF THE DRIVEWAY SHALL BE GRADED TO A MAXIMUM 3:1 SLOPE.
5. THE DITCH LINE MAY BE MOVED BACK TO PROVIDE REQUIRED COVER. THE TRANSITION OF THE DITCH LINE SHALL BE SMOOTH WITH A MINIMUM TRANSITION LENGTH OF 10 FEET.

NOT TO SCALE

	DRIVEWAY ENTRANCE WITH NO CURB AND GUTTER City of Charles Town	DE-1



SIGNAGE NOTES:
ONE WAY SIGN (R6-1) AND DO NOT ENTER SIGN (R5-1) SHALL MEET WVDOH REQUIREMENTS.

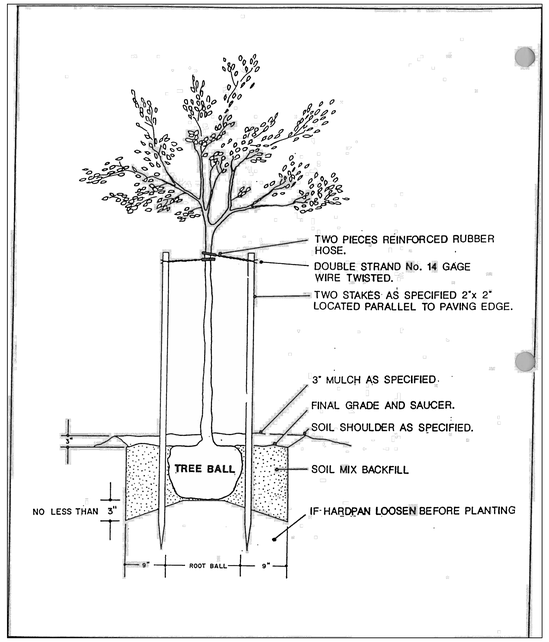


INTERNATIONAL HANDICAP SYMBOL

NOT TO SCALE
NOT FOR USE IN R.O.W.

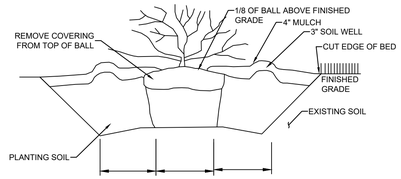
ANSI 117.1 REQUIREMENTS--ACCESSIBLE PARKING SPACES AND PASSENGER LOADINGS ZONES

1. SIGNAGE: ACCESSIBLE PARKING SPACES SHALL BE DESIGNATED AS RESERVED BY A SIGN SHOWING THE SYMBOL OF ACCESSIBILITY. VAN ACCESSIBLE SPACES SHALL HAVE AN ADDITIONAL SIGN "VAN-ACCESSIBLE" MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY. SUCH SIGNS SHALL BE LOCATED SO THEY CONNOT BE OBSCURED BY A VEHICLE IN THE SPACE.
2. ACCESSIBLE PARKING SPACES SERVING A PARTICULAR BUILDING SHALL BE LOCATED ON THE SHORTEST ACCESSIBLE OF TRAVEL FROM ADJACENT PARKING TO AN ACCESSIBLE ENTRANCE.
3. ACCESSIBLE PARKING SPACES SHALL BE AT LEAST 96 INCHES WIDE. PARKING ACCESS AISLES SHALL BE A MINIMUM OF 60 INCHES WIDE AND MUST BE PART OF AN ACCESSIBLE ROUTE TO THE BUILDING OR FACILITY ENTRANCE. TWO ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE. PARKING SPACES AND ACCESS AISLES SHALL BE LEVEL SURFACE SLOPES NOT EXCEEDING 1:50 (2%) IN ALL DIRECTIONS. VAN ACCESSIBILITY SPACES MUST BE AT LEAST 96 INCHES WIDE WITH AN AISLE WIDTH OF 60 INCHES MIN. VAN PARKING SPACES SHALL BE 132" MINIMUM IN WIDTH WITH A 60" ACCESS AISLE OR 96" IN WIDTH WITH A 96" ACCESS AISLE.



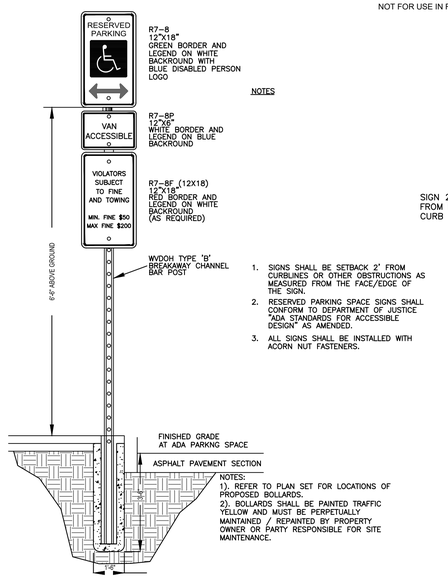
TREE PLANTING DETAIL

NOT TO SCALE
NOT FOR USE IN R.O.W.



SHRUB/PERENNIAL PLANTING DETAIL

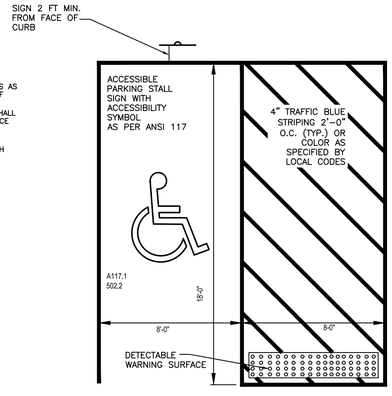
NOT TO SCALE
NOT FOR USE IN R.O.W.



1. SIGNS SHALL BE SETBACK 2' FROM CURBLINES OR OTHER OBSTRUCTIONS AS MEASURED FROM THE FACE/EDGE OF THE SIGN.
2. RESERVED PARKING SPACE SIGNS SHALL CONFORM TO DEPARTMENT OF JUSTICE "ADA STANDARDS FOR ACCESSIBLE DESIGN" AS AMENDED.
3. ALL SIGNS SHALL BE INSTALLED WITH ACORN NUT FASTENERS.

HANDICAP PARKING SIGN DETAIL

NOT TO SCALE
NOT FOR USE IN R.O.W.



STANDARD HANDICAP PARKING DETAILS

NOT TO SCALE
NOT FOR USE IN R.O.W.

LANDSCAPING PLANTING PROCEDURE:

1. ALL REQUIRED TREES AND SHRUBS SHALL BE PLANTED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE) A300 BEST MANAGEMENT PRACTICES.
2. ALL TREES SHALL BE PLANTED NO CLOSURE THAN THREE (3) FEET TO THE EDGE OF SIDEWALKS, CURBS, OR OTHER PAVEMENT.
3. EVERGREEN TREES SHALL BE A MINIMUM OF SIX (6) FEET IN HEIGHT AT THE TIME OF PLANTING.
4. SHRUBS SHALL BE A MINIMUM THREE (3) GALLON CONTAINER AT THE TIME OF PLANTING.
5. ALL PLANTINGS SHALL MAINTAIN A MINIMUM OF 18" AT THE TIME OF PLANTING.
6. ALL SHRUB MATERIAL SHALL BE A MINIMUM OF 3' AT MATURITY.

LANDSCAPING MAINTENANCE:

1. THE OWNER, DEVELOPER, AND/OR BUILDER WHO IS RESPONSIBLE FOR PLANTING REQUIRED LANDSCAPING SHALL BE RESPONSIBLE FOR MAINTAINING THE LANDSCAPING IN A STATE OF GOOD HEALTH FOR ONE (1) YEAR AFTER A DEVELOPMENT COMPLETION PERMIT IS ISSUED OR, IF SUCH A PERMIT IS NOT APPLICABLE, ONE (1) YEAR AFTER THE INSTALLED AND COMPLETED LANDSCAPING IS APPROVED BY THE SUBDIVISION ADMINISTRATOR FOLLOWING INSPECTION.
2. LANDSCAPING WILL BE INSPECTED INSPECTED AT THE TIME OF BOND RELEASE AND, IN CASE OF MATERIALS THAT HAVE NOT BEEN PLANTED AND ESTABLISHED IN GOOD CONDITION, THE RESPONSIBLE PERSON WILL BE REQUIRED TO POST A MAINTENANCE BOND FOR ONE YEAR TO GUARANTEE THE SURVIVAL OF MATERIALS.
3. APPROVED LANDSCAPING SHALL BE MAINTAINED IN A HEALTHY CONDITION WITH ADEQUATE WATERING, FERTILIZATION, AND GROOMING IN ACCORDANCE WITH INDUSTRY STANDARDS.

PROHIBITED SPECIES:
CERTAIN PLANT MATERIAL SPECIES IS PROHIBITED DUE TO INVASIVENESS, HARDINESS, MAINTENANCE, OR OTHER NUISANCE FEATURES. PLEASE SEE THE LIST OF PROHIBITED SPECIES LISTED BELOW OR IN APPENDIX C OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE OF THE CITY OF CHARLES TOWN, WV.

Prohibited Species

The following plants are prohibited from being used to meet these requirements due to problems with hardiness, maintenance, or nuisance:

Prohibited Species	
Kudzu Vine	Garlic Mustard
Purple Loosestrife	Paulownia
Japanese Honeysuckle	Multiflora Rose
Shrub Honeysuckle	Siberian Elm
Autumn Olive	Silver Popular
Common Privet	Mimosa
Tree of Heaven	Mulberry
Lespedeza	Silver Maple
Bradford Pear	Norway Maple
Elm	Box Elder
All Varity of Ash Trees	Bamboo

Any plant material not permitted by the West Virginia Invasive Species Strategic Plan and Voluntary Guidelines 2014, or as amended.



PROPOSED LANDSCAPE FENCE

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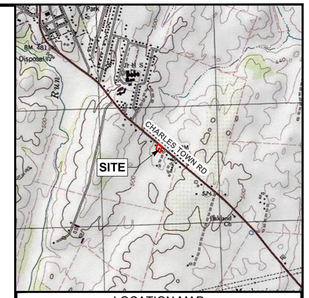

LOCATION MAP
SCALE: 1" = 2000'

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0	2023-07-07	FOR SUBMISSION	DMJ
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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
SITE DETAILS

PLAN STATUS:	SHEET NO.
SITE PLAN	C-2.01

Oct. 20, 2023 2:42pm jbaldner R:\Projects\2022\2022-1685 Joan and Joe's Coffee - Site Plan\LAND\SHEET FILES\DETAILS (2022-1685) 24X36.dwg
Layout: C-2.01 SITE DETAILS

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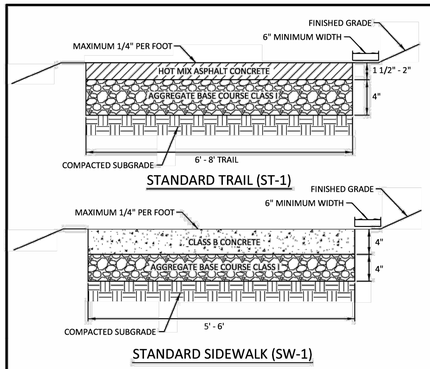


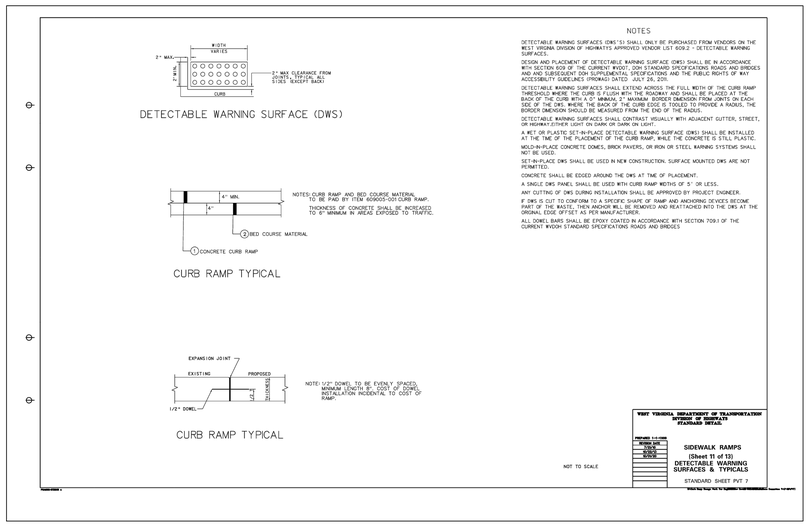
NOTES:

1. ALL PEDESTRIAN AND BIKE TRAILS LOCATED OUTSIDE OF CITY OF CHARLESTOWN RIGHT OF WAY SHALL BE A MINIMUM OF 5' IN WIDTH FOR SIDEWALKS, 6' FOR ALL PEDESTRIAN TRAILS, AND 8' FOR ALL BIKE TRAILS.
2. A PRIVATE ACCESS EASEMENT SHALL BE PROVIDED FOR ALL SIDEWALKS AND TRAILS OUTSIDE OF CITY OF CHARLES TOWN RIGHT OF WAY AND SHALL INCLUDE A MINIMUM OF 3' OF WIDTH ON BOTH SIDES OF THE TRAIL OR SIDEWALK.
3. THE MAXIMUM GRADE FOR ALL PEDESTRIAN TRAILS SHALL BE 10%.
4. THE MAXIMUM GRADE FOR ALL BIKE TRAILS SHALL BE 8%, EXCEPT UP TO 15% IS ALLOWED FOR DISTANCES OF LESS THAN 150 FEET.
5. APPROPRIATE LIGHTING AND SIGNAGE, LANDSCAPING, BUFFERING AND DRAINAGE MEASURES, ALONG WITH CONSIDERATIONS FOR SECURITY SHALL BE INCORPORATED IN THE DESIGN OF THESE FACILITIES.

NOT TO SCALE

TRAIL AND TYPICAL SIDEWALK
City of Charles Town

ST-1
SW-1



NOTES

DETECTABLE WARNING SURFACES (DWS'S) SHALL ONLY BE PURCHASED FROM VENDORS ON THE WEST VIRGINIA DIVISION OF HIGHWAYS APPROVED VENDOR LIST 609.2 - DETECTABLE WARNING SURFACES.

DESIGN AND PLACEMENT OF DETECTABLE WARNING SURFACE (DWS) SHALL BE IN ACCORDANCE WITH SECTION 609 OF THE CURRENT WVDOH STANDARD SPECIFICATIONS ROADS AND BRIDGES AND ANY SUBSEQUENT DOH SUPPLEMENTAL SPECIFICATIONS AND THE PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) DATED JULY 26, 2011.

DETECTABLE WARNING SURFACES SHALL EXTEND ACROSS THE FULL WIDTH OF THE CURB RAMP THRESHOLD WHERE THE CURB IS FLUSH WITH THE ROADWAY AND SHALL BE PLACED AT THE BACK OF THE CURB WITH A 0" MINIMUM, 2" MAXIMUM BORDER DIMENSION FROM JOINTS ON EACH SIDE OF THE DWS. WHERE THE BACK OF THE CURB EDGE IS TOOLED TO PROVIDE A RADIUS, THE BORDER DIMENSION SHOULD BE MEASURED FROM THE END OF THE RADIUS.

DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET, OR HIGHWAY EITHER LIGHT ON DARK OR DARK ON LIGHT.

A WET OR PLASTIC SET-IN-PLACE DETECTABLE WARNING SURFACE (DWS) SHALL BE INSTALLED AT THE TIME OF THE PLACEMENT OF THE CURB RAMP, WHILE THE CONCRETE IS STILL PLASTIC.

MOLD-IN-PLACE CONCRETE DOMES, BRICK PAVERS, OR IRON OR STEEL WARNING SYSTEMS SHALL NOT BE USED.

SET-IN-PLACE DWS SHALL BE USED IN NEW CONSTRUCTION. SURFACE MOUNTED DWS ARE NOT PERMITTED.

CONCRETE SHALL BE EDGED AROUND THE DWS AT TIME OF PLACEMENT.

A SINGLE DWS PANEL SHALL BE USED WITH CURB RAMP WIDTHS OF 5' OR LESS.

ANY CUTTING OF DWS DURING INSTALLATION SHALL BE APPROVED BY PROJECT ENGINEER.

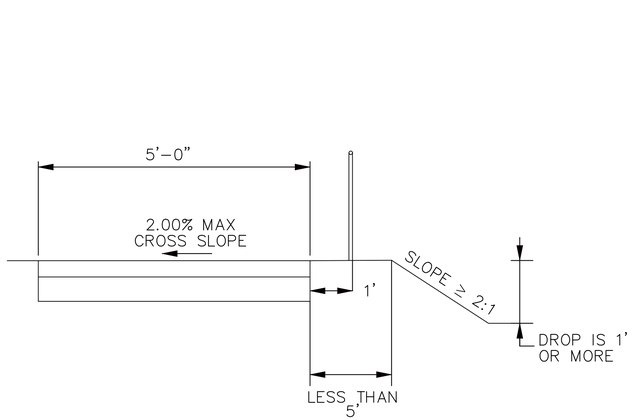
IF DWS IS CUT TO CONFORM TO A SPECIFIC SHAPE OF RAMP AND ANCHORING DEVICES BECOME EXPOSED, THE DWS SHALL BE REMOVED AND REMOVED AND REATTACHED INTO THE DWS AT THE ORIGINAL EDGE OFFSET AS PER MANUFACTURER.

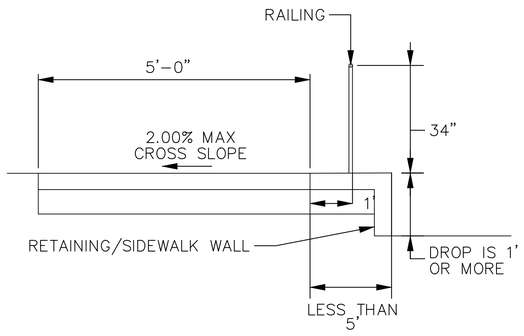
ALL DOWEL BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH SECTION 709.1 OF THE CURRENT WVDOH STANDARD SPECIFICATIONS ROADS AND BRIDGES

NOT TO SCALE

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

SIDEWALK RAMPS
(Sheet 11 of 13)
DETECTABLE WARNING SURFACES & TYPICALS
STANDARD SHEET PVT 7





SIDEWALK / HANDRAIL
TYPICAL SECTION

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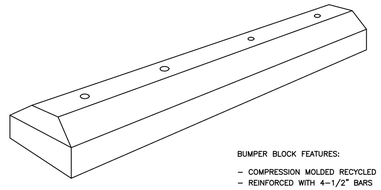


BUMPER BLOCK FEATURES:

- COMPRESSION MOLDED RECYCLED RUBBER COMPOSITE
- REINFORCED WITH 4-1/2" BARS
- BLACK WITH YELLOW REFLECTIVE STRIPES

BUMPER BLOCK SPECIFIED:

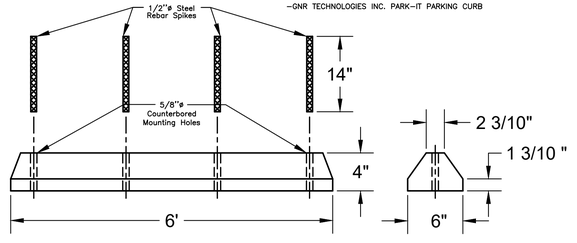
-GNR TECHNOLOGIES INC. PARK-IT PARKING CURB

Bumper Block Features:

- Compression Molded Recycled Rubber Composite
- Reinforced with 4-1/2" Bars
- Black with Yellow Reflective Stripes

Bumper Block Specified:

- GNR Technologies Inc. Park-It Parking Curb



RUBBER BUMPER BLOCK

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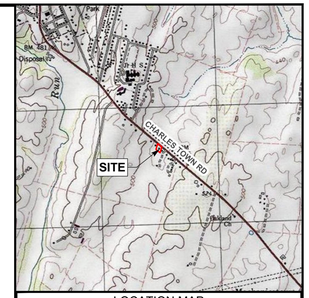

LOCATION MAP
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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
SITE DETAILS 2

PLAN STATUS:	SHEET NO.
SITE PLAN	C-2.02

Oct 20, 2023 2:42pm jbabbarz P:\Projects\2022\2022-1685 Joan and Joe's Coffee - Site Plan\CAD\SHEET FILES\DETAILS (2022-1685) 24X36.dwg
Layout: C-2.02 SITE DETAILS 2

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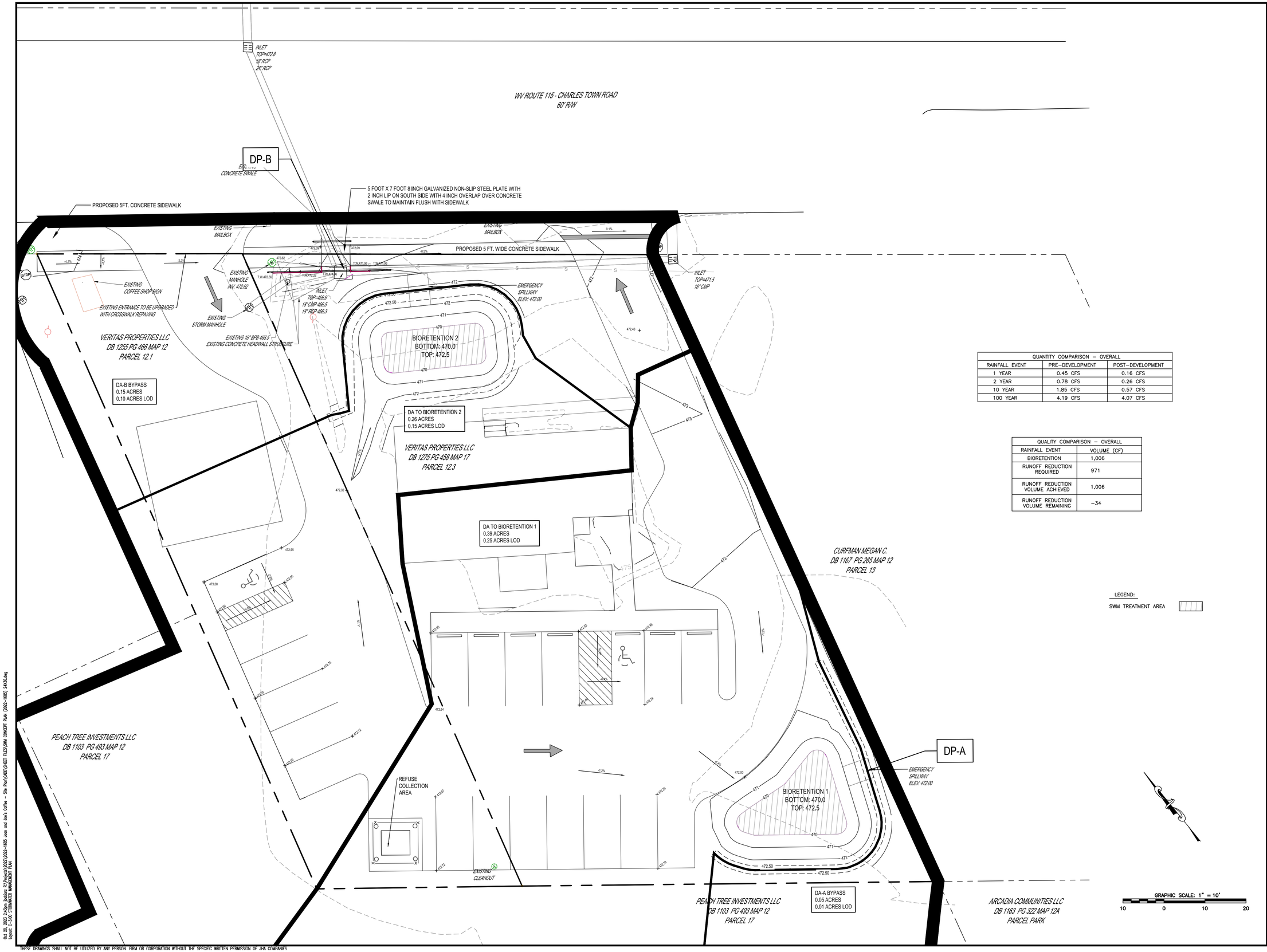
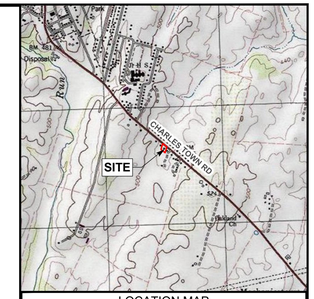


QUANTITY COMPARISON – OVERALL		
RAINFALL EVENT	PRE–DEVELOPMENT	POST–DEVELOPMENT
1 YEAR	0.45 CFS	0.16 CFS
2 YEAR	0.78 CFS	0.26 CFS
10 YEAR	1.85 CFS	0.57 CFS
100 YEAR	4.19 CFS	4.07 CFS

QUALITY COMPARISON – OVERALL	
RAINFALL EVENT	VOLUME (CF)
BIORETENTION	1,006
RUNOFF REDUCTION REQUIRED	971
RUNOFF REDUCTION VOLUME ACHIEVED	1,006
RUNOFF REDUCTION VOLUME REMAINING	–34



LOCATION MAP
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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
STORMWATER MANAGEMENT PLAN

PLAN STATUS: SITE PLAN
SHEET NO. C-3.00

Oct 20, 2023 2:43pm jbolden: R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\DWG\SHEET FILES\SWM CONCEPT PLAN (2022-1685) 24X36.dwg
Layout: C-3.00 STORMWATER MANAGEMENT PLAN

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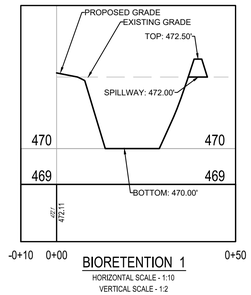

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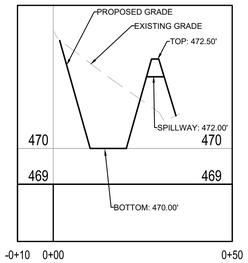
BIORETENTION 1

HORIZONTAL SCALE - 1:10
VERTICAL SCALE - 1:2



-0+10 0+00 0+50

BIORETENTION 2

HORIZONTAL SCALE - 1:10
VERTICAL SCALE - 1:2

BIORETENTION 1 QUANTITY ANALYSIS			
STORM EVENT	INFLOW	OVERFLOW	WATER SURFACE ELEVATION
2 YEAR	0.58 CFS	0.00 CFS	471.89'
10 YEAR	1.15 CFS	0.45 CFS	472.11'
100 YEAR	2.32 CFS	2.24 CFS	472.31'

BIORETENTION 1 QUALITY ANALYSIS	
RAINFALL EVENT	VOLUME (CF)
BIORETENTION	672 CF
RUNOFF REDUCTION REQUIRED	543 CF
RUNOFF REDUCTION ACHIEVED	672 CF
RUNOFF REDUCTION VOLUME REMAINING	-129 CF

BIORETENTION 2 QUANTITY ANALYSIS			
STORM EVENT	INFLOW	OVERFLOW	WATER SURFACE ELEVATION
2 YEAR	0.30 CFS	0.00 CFS	471.39'
10 YEAR	0.65 CFS	0.04 CFS	472.02'
100 YEAR	1.40 CFS	1.29 CFS	472.21'

BIORETENTION 2 QUALITY ANALYSIS	
RAINFALL EVENT	VOLUME (CF)
BIORETENTION	334 CF
RUNOFF REDUCTION REQUIRED	428 CF
RUNOFF REDUCTION ACHIEVED	334 CF
RUNOFF REDUCTION VOLUME REMAINING	94 CF

SOIL MEDIA MIXTURE:

THE SOIL MEDIA IS PERHAPS THE MOST IMPORTANT ELEMENT OF A BIORETENTION FACILITY IN TERMS OF LONG-TERM PERFORMANCE. THE FOLLOWING ARE KEY FACTORS TO CONSIDER IN DETERMINING AN ACCEPTABLE SOIL MEDIA MIXTURE.

- GENERAL SOIL MEDIA COMPOSITION
1. 70% TO 88% SAND
2. 8% TO 26% TOPSOIL; AND
3. 3% TO 5% ORGANIC MATTER (AGED COMPOST)

Table BR-5 Soil Media Criteria and Testing for Bioretention

Soil Media Criterion	Description	Standard(s)		
General Composition	Soil media must have the proper proportions sand, fines, and organic matter to promote plant growth, drain at the proper rate, and filter pollutants	70% to 88% sand; 8% to 26% top soil and 3% to 5% organic matter (aged compost)		
Sand	Silica based coarse aggregate[1] Locally-approved pulverized glass may be substituted if the local authority undertakes testing to verify compliance with the specification and also lack of heavy metals	Sieve 3/8 in No. 4 No. 8 No. 16 No. 30 No. 50 No. 100	Size 9.50 mm 4.75 mm 2.36 mm 1.18 mm 0.6 mm 0.3 mm 0.15 mm	% Passing 100 95 to 100 80 to 100 45 to 85 15 to 60 3 to 15 0 to 4
		Effective Particle size (D10) > 0.3mm Uniformity Coefficient (D60/D10) < 4.0		
Top Soil	Loamy sand or Sandy Loam	USDA Textural Triangle		
Organic Matter	Well aged, clean compost	Appendix D		
P-Index or Phosphorus (P) content	Soil media with high P levels will export P through the media and potentially to downstream conveyances or receiving waters	P content = 7 to 23 mg/kg		
Cation Exchange Capacity (CEC)	The CEC is determined by the amount of humus or organic matter. Higher CEC will promote pollutant removal	CEC > 10 milliequivalents per 100 grams		
Infiltration Rate	This refers to the infiltration rate of the soil media, and not the underlying soil A minimum rate is required to allow the soil media to properly drain	Minimum Infiltration Rate = 1 – 2 inches/hour (most soil media will have much higher rates)		
Soil Media Depth	The depth of soil media for various applications	Soil media depths for Level 1 and Level 2 design are specified in Table BR-1. If trees are included in the bioretention planting plan, tree planting holes in the filter bed must be at least 4 feet deep to provide enough soil volume for the root structure of mature trees. In addition, higher proportions of topsoil (30%) and aged compost (20%) should be added to these planting holes compared to the rest of the soil media. Turf, perennials or shrubs should be used instead of trees to landscape shallower filter beds.		

[1] *Many specifications for sand refer to ASTM C-33.The ASTM C-33 specification allows a particle size distribution that contains a large fraction of fines (silt and clay sized particles - < 0.05 mm). The smaller fines fill the voids between the larger sand sized particles, resulting in smaller and more convoluted pore spaces. While this condition provides a high degree of treatment, it also encourages clogging of the remaining void spaces with suspended solids and biological growth, resulting in a greater chance of a restrictive biomat forming. By limiting the fine particles allowed in the sand component, the combined media recipe of sand and the fines associated with the soil and organic material will be less prone to clogging while also providing an adequate level of filtration and retention.*

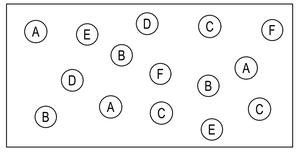
BIORETENTION INSTALLATION:

THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE TO PROPERLY INSTALL A BIORETENTION BASIN. THE CONSTRUCTION SEQUENCE FOR RESIDENTIAL RAIN GARDENS (SEE SUPPLEMENT 4.2.3.C) IS MORE SIMPLIFIED. THESE STEPS MAY BE MODIFIED TO REFLECT DIFFERENT BIORETENTION APPLICATIONS OR EXPECTED SITE CONDITIONS:

1. CONSTRUCTION OF THE BIORETENTION AREA MAY ONLY BEGIN AFTER THE ENTIRE CDA HAS BEEN STABILIZED WITH VEGETATION. IT MAY BE NECESSARY TO BLOCK CERTAIN CURB OR OTHER INLETS WHILE THE BIORETENTION AREA IS BEING CONSTRUCTED. THE PROPOSED SITE SHOULD BE CHECKED FOR EXISTING UTILITIES PRIOR TO ANY EXCAVATION
2. THE DESIGNER AND THE INSTALLER SHOULD HAVE A PRECONSTRUCTION MEETING, CHECKING THE BOUNDARIES OF THE CDA AND THE ACTUAL INLET ELEVATIONS TO ENSURE THEY CONFORM TO ORIGINAL DESIGN. SINCE OTHER CONTRACTORS MAY BE RESPONSIBLE FOR CONSTRUCTING PORTIONS OF THE SITE, IT IS QUITE COMMON TO FIND SUBTLE DIFFERENCES IN SITE GRADING, DRAINAGE AND PAVING ELEVATIONS THAT CAN PRODUCE HYDRAULICALLY IMPORTANT DIFFERENCES FOR THE PROPOSED BIORETENTION AREA. THE DESIGNER SHOULD CLEARLY COMMUNICATE, IN WRITING, ANY PROJECT CHANGES DETERMINED DURING THE PRECONSTRUCTION MEETING TO THE INSTALLER AND THE PLAN REVIEW/INSPECTION AUTHORITY.
3. TEMPORARY APPROVED EROSION AND SEDIMENT CONTROLS ARE NEEDED DURING CONSTRUCTION OF THE BIORETENTION AREA TO DIVERT STORMWATER AWAY FROM THE BIORETENTION AREA UNTIL IT IS COMPLETED. SPECIAL PROTECTION MEASURES SUCH AS EROSION CONTROL FABRICS MAY BE NEEDED TO PROTECT VULNERABLE SIDE SLOPES FROM EROSION DURING THE CONSTRUCTION PROCESS. IN CASES WHERE THE BIORETENTION IS CO-LOCATED WITH EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS), THE CONDITIONS NOTED IN SECTION BR-7.1 MUST BE FOLLOWED.
4. ANY PRE-TREATMENT CELLS SHOULD BE EXCAVATED FIRST AND THEN SEALED TO TRAP SEDIMENTS
5. EXCAVATORS OR BACKHOES SHOULD WORK FROM THE SIDES TO EXCAVATE THE BIORETENTION AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS. EXCAVATING EQUIPMENT SHOULD HAVE SCOOPS WITH ADEQUATE REACH SO THEY DO NOT HAVE TO SIT INSIDE THE FOOTPRINT OF THE BIORETENTION AREA. CONTRACTORS SHOULD USE A CELL CONSTRUCTION APPROACH IN LARGER BIORETENTION BASINS, WHEREBY THE BASIN IS SPLIT INTO 500 TO 1,000 SQ. FT. TEMPORARY CELLS WITH A 10-15 FOOT EARTH BRIDGE IN BETWEEN, SO THAT CELLS CAN BE EXCAVATED FROM THE SIDE.
6. IT MAY BE NECESSARY TO RIP THE BOTTOM SOILS TO A DEPTH OF 6 TO 12 INCHES TO PROMOTE GREATER INFILTRATION.
7. IF USING A FILTER FABRIC, PLACE THE FABRIC ON THE SIDES OF THE BIORETENTION AREA WITH A 6-INCH OVERLAP ON THE SIDES. IF AN UNDERDRAIN STONE STORAGE LAYER WILL BE USED, PLACE THE APPROPRIATE DEPTH OF NO.57 STONE ON THE BOTTOM, INSTALL THE PERFORATED UNDERDRAIN PIPE, PACK NO.57 STONE TO 3 INCHES ABOVE THE UNDERDRAIN PIPE. ON TOP OF THE NO.57 STONE, ADD 2 INCHES OF CHOKER STONE (NO.8 OR NO.89 STONE) AND THEN 2 TO 4 INCHES OF CONSTRUCTION SAND AS A FILTER BETWEEN THE UNDERDRAIN AND THE SOIL MEDIA LAYER. IF NO STONE STORAGE LAYER IS USED, START WITH 6 INCHES OF NO.57 STONE ON THE BOTTOM, AND PROCEED WITH THE LAYERING AS DESCRIBED ABOVE.
8. DELIVER THE SOIL MEDIA FROM AN APPROVED VENDOR, AND STORE IT ON AN ADJACENT IMPERVIOUS AREA OR PLASTIC SHEETING. APPLY THE MEDIA IN 12-INCH LIFTS UNTIL THE DESIRED TOP ELEVATION OF THE BIORETENTION AREA IS ACHIEVED. WAIT A FEW DAYS TO CHECK FOR SETTLEMENT, AND ADD ADDITIONAL MEDIA, AS NEEDED, TO ACHIEVE THE DESIGN ELEVATION.
9. PREPARE PLANTING HOLES FOR ANY TREES AND SHRUBS, INSTALL THE VEGETATION, AND WATER ACCORDINGLY. INSTALL ANY TEMPORARY IRRIGATION.
10. PLACE THE SURFACE COVER IN BOTH CELLS (MULCH, RIVER STONE OR TURF), DEPENDING ON THE DESIGN. IF COIR OR JUTE MATTING WILL BE USED IN LIEU OF MULCH, THE MATTING WILL NEED TO BE INSTALLED PRIOR TO PLANTING (STEP 9), AND HOLES OR SLITS WILL HAVE TO BE CUT IN THE MATTING TO INSTALL THE PLANTS.
11. INSTALL THE PLANT MATERIALS AS SHOWN IN THE LANDSCAPING PLAN, AND WATER THEM DURING WEEKS OF NO RAIN FOR THE FIRST TWO MONTHS.
12. IF CURB CUTS OR INLETS ARE BLOCKED DURING BIORETENTION INSTALLATION, UNBLOCK THESE AFTER THE DRAINAGE AREA AND SIDE SLOPES HAVE GOOD VEGETATIVE COVER. IT IS RECOMMENDED THAT UNBLOCKING CURB CUTS AND INLETS TAKE PLACE AFTER TWO TO THREE STORM EVENTS IF THE DRAINAGE AREA INCLUDES NEWLY INSTALLED ASPHALT, SINCE NEW ASPHALT TENDS TO PRODUCE A LOT OF FINES AND GRIT DURING THE FIRST SEVERAL STORMS.
13. CONDUCT THE FINAL CONSTRUCTION INSPECTION (SEE BELOW), THEN LOG THE GPS COORDINATES FOR EACH BIORETENTION FACILITY AND SUBMIT THEM FOR ENTRY INTO THE LOCAL MAINTENANCE TRACKING DATABASE.

LIST OF PLANTS FOR BIORETENTION AREA		
	NAME	QUANTITY
A	SWITCHGRASS - *PANICUM VIRGATUM*	3 PER 200 SF
B	HIGHBUSH BLUEBERRY - *VACCINIUM CORYMBOSUM*	3 PER 200 SF
C	INKBERRY - *ILEX GLABRA*	3 PER 200 SF
D	WINTERBERRY - *ILEX VERTICILLATA*	2 PER 200 SF
E	SPICEBUSH - *LINDERA BENZOIN*	2 PER 200 SF
F	PURPLE CONEFLOWER - *ECHINACEA PURPUREA*	2 PER 200 SF

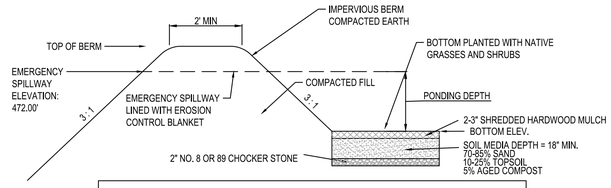
NOTE:
LOCATION AND QUANTITY OF PLANTINGS IS SHOW FOR COMPLIANCE PURPOSES.
ACTUAL ORGANIZATION AND POSITIONING MAY BE VARIED WITH THE APPROVAL OF OWNER AND ENGINEER.



PLANTING PLAN - TYPICAL
BIORETENTION BERM BOTTOM

1"=5'

GRAPHIC SCALE:



BIORETENTION BERM INFORMATION			
	BIORETENTION BERM 1		BIORETENTION BERM 2
TOP OF BERM	472.50	TOP OF BERM	472.50
BOTTOM ELEVATION	470.00	BOTTOM ELEVATION	470.00
EMERGENCY SPILLWAY	472.00	EMERGENCY SPILLWAY	472.00
PONDING DEPTH	2.00'	PONDING DEPTH	2.00'
LINING	NAG S200 STAPLE PATTERN E	LINING	NAG S200 STAPLE PATTERN E

BIORETENTION AREA MAINTENANCE NOTES

1. THE INFILTRATION AREA IS TO BE CHECKED REGULARLY FOR ANY SIGNS OF SETTLEMENT AND/OR EROSION AND TO ENSURE INFILTRATION.
2. THE INFILTRATION AREA IS TO BE CLEARED OF ANY TRASH, DEBRIS, INVASIVE SPECIES AND/OR WOODY VEGETATION.
3. THE INFILTRATION AREA IS TO BE FREE OF SILT AND HAVE PROPER VEGETATION.
4. THE INFILTRATION AREA IS TO BE INSPECTED FOR SIGNS OF FLOW CHANNELIZATION.
5. THE INFILTRATION AREA IS TO BE RESTORED TO A LEVEL GRADIENT IMMEDIATELY AFTER DEFICIENCIES ARE OBSERVED.

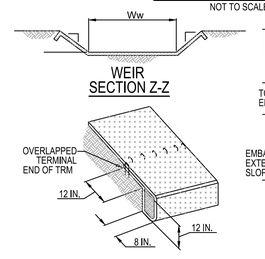
BIORETENTION AREA INSTALLATION NOTES

1. EXCAVATE AREA WITH TRACKED VEHICLES TO PREVENT SOIL COMPACTION.
2. SCARIFY BOTTOM OF INFILTRATION AREA.
3. IN CONDITIONS WHERE THE LIMITING ZONE IS ENCOUNTERED, THE CONTRACTOR SHALL OVER EXCAVATE THE INFILTRATION AREA AND ADD 24" OF CLEAN, NON-COMPACTED TOPSOIL UNDER THE BASIN BOTTOM.
4. SIDE SLOPES TO BE LINED WITH EROSION CONTROL BLANKET (NORTH AMERICAN GREEN S75 OR APPROVED)

NOTES:
1. BERM TO BE MECHANICALLY COMPACTED IN 8" LIFTS TO A MAXIMUM DRY WEIGHT DENSITY OF 98% OF THE FULL MATERIAL.
2. TOPSOIL SHALL BE REMOVED AND SURFACE SCARIFIED PRIOR TO PLACEMENT OF BERM FILL.
3. A SOILS EVALUATION TO DETERMINE SOIL SUITABILITY FOR THE PROPOSED INFILTRATION FACILITY SHALL BE PERFORMED DURING CONSTRUCTION MEETING TOWNSHIP ORDINANCE REQUIREMENTS. RESULTS OF THE SOIL TESTING SHALL BE SENT TO THE TOWNSHIP AND DESIGN ENGINEERS FOR REVIEW.

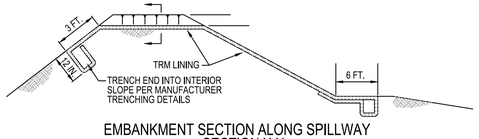
BIORETENTION BERM

NOT TO SCALE



TOE OF SLOPE OF SPILLWAY

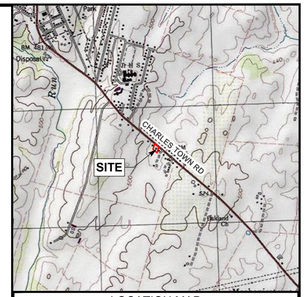
PLAN VIEW
SPILLWAY



EMBANKMENT SECTION ALONG SPILLWAY
SECTION X-X

	WEIR					LINING	
	Z3 (FT)	Z4 (FT	TOP ELEV WTE (FT)	CREST ELEV WCE (FT)	WIDTH Ww (FT)	TYPE	STAPLE PATTERN
BERM 1	3	3	472.5	472.0	5	S200	E
BERM 2	3	3	472.50	472.0	5	S200	E

BIORETENTION SPILLWAY WITH TRM LINING



LOCATION MAP
SCALE: 1" = 2000'

NO.	DATE	DESCRIPTION	INT.
0	2023-07-07	FOR SUBMISSION	DMJ
1	2023-08-15	PER CITY ENGINEER COMMENTS	DMJ
2	2023-10-04	PER CITY ENGINEER COMMENTS	DMJ
3	2023-10-20	PER CITY ENGINEER COMMENTS	JAB

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PROFESSIONAL ENGINEER

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ENGINEERS
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362 W. BURR BLVD. STE 3
KEARNEYSVILLE, WV 25430
PA • OH • NY • WV • VA • MD

PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
STORMWATER
MANAGEMENT DETAILS

PLAN STATUS:	SHEET NO.
SITE PLAN	C-3.01

Oct 20, 2023 2:43pm jbabbert R:\Projects\2022\2022-1685 Joes and Joe's Coffee – Site Plan\CAD\SHEET FILES\PCSM DETAILS (2022-1685) 24X36.dwg
Layout: C-3.01 STORMWATER MANAGEMENT DETAILS

THESE DRAWINGS SHALL NOT BE UTILIZED BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE SPECIFIC WRITTEN PERMISSION OF JHA COMPANIES

WV ROUTE 115 - CHARLES TOWN ROAD
60' R/W

INLET
TOP=472.8
15" RCP
24" RCP

EXISTING
CONCRETE SWALE

SAWCUT EXISTING PAVEMENT

PROPOSED STOP BAR 12"
WHITE TYPE V THERMO

SIGHT DISTANCE LINE
10' FROM EDGE OF PAVEMENT,
5' BEHIND STOP BAR

EXISTING
MAILBOX

EXISTING
MAILBOX

INLET PROTECTION

UPGRADE EXISTING ENTRANCE

EXISTING
COFFEE SHOP SIGN

EXISTING ENTRANCE TO BE UPGRADED
WITH CROSSWALK REPAVING

EXISTING
MANHOLE
INV. 472.62

EXISTING
STORM MANHOLE

INLET
TOP=469.9
18" CMP 466.5
18" RCP 466.3

EXISTING 18" BPB 468.5
EXISTING CONCRETE HEADWALL STRUCTURE

EMERGENCY
SPILLWAY
ELEV 472.00

PROPOSED DRIVEWAY PAVING

INLET
TOP=471.5
18" CMP

PROPOSED
30" STOP SIGN

SSF-1

VERITAS PROPERTIES LLC
DB 1255 PG 466 MAP 12
PARCEL 12.1

BIORETENTION 2
BOTTOM: 470.0
TOP: 472.5

ROCK CONSTRUCTION
ENTRANCE

LIMIT OF DISTURBANCE
0.51 ACRES

VERITAS PROPERTIES LLC
DB 1275 PG 458 MAP 17
PARCEL 12.3

EXISTING
GRAVEL
DRIVEWAY

SF-2

EXISTING COFFEE SHOP
900 SF

EXISTING HOUSE TO BE RENOVATED INTO
PROPOSED COFFEE SHOP
1745 SF

#14840 1 STORY
BRICK FF=476.45
GAR=474.53

CURFMAN MEGAN C.
DB 1167 PG 265 MAP 12
PARCEL 13

EXISTING
GRAVEL
PARKING

PEACH TREE INVESTMENTS LLC
DB 1103 PG 493 MAP 12
PARCEL 17

ROCK CONSTRUCTION
ENTRANCE

EMERGENCY
SPILLWAY
ELEV: 472.00

SF-1

BIORETENTION 1
BOTTOM: 470.0
TOP: 472.5

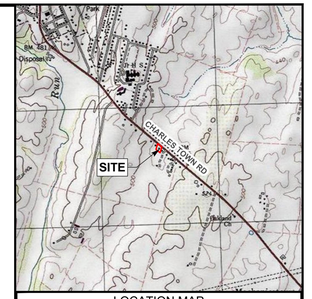
REFUSE
COLLECTION
AREA

EXISTING
CLEANOUT

PEACH TREE INVESTMENTS LLC
DB 1103 PG 493 MAP 12
PARCEL 17

ARCADIA COMMUNITIES LLC
DB 1163 PG 322 MAP 12A
PARCEL PARK

GRAPHIC SCALE: 1" = 10'
10 0 10 20



LOCATION MAP
SCALE: 1" = 2000'

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PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
EROSION AND SEDIMENT CONTROL PLAN

PLAN STATUS:	SHEET NO.
SITE PLAN	C-4.00

Oct 20, 2023 2:43pm Jbaldwin R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\ESC PLAN (2022-1685) 24X36 – Copy.dwg
Layout: C-4.00 EROSION AND SEDIMENT CONTROL PLAN

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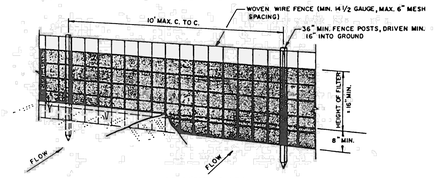
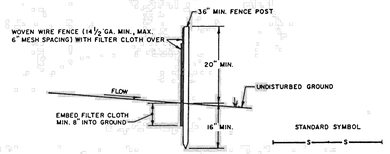
SILT FENCE



PERSPECTIVE VIEW



SECTION

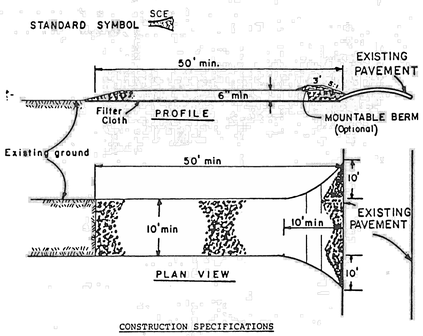
CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
FENCE: WOVEN WIRE, 14 Ga., 6" Max. MESH OPENING.
FILTER CLOTH: FILTER X, MIRAFI 100X, STABI-LINKA T140N OR APPROVED EQUAL.
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	SILT FENCE	REVISIONS	DETAIL No.
				SC -11

STABILIZED CONSTRUCTION ENTRANCE
not to scale



CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	STABILIZED CONSTRUCTION ENTRANCE	REVISIONS:	DETAIL No.
				SC -10

EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. ANY AREA OF EXPOSED SOIL WHERE NO CONSTRUCTION ACTIVITY IS ANTICIPATED FOR A PERIOD OF IONGER THAN THREE WEEKS OR WHERE CONSTRUCTION ACTIVITY HAS STOPPED FOR THREE WEEKS SHALL BE TEMPORARILY STABILIZED.
2. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT STABILIZATION SHALL BE COMPLETED WITHIN SEVEN CALENDAR DAYS AFTER COMPLETION OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN CALENDAR DAYS AFTER REACHING FINAL GRADE FOR ALL OTHER DISTURBED OR GRADED AREAS.
   THESE PROVISIONS DO NOT APPLY TO THOSE AREAS THAT ARE SHOWN ON THE PLAN FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED.
   THESE TIME REQUIREMENTS MAY BE EXTENDED, AS DEEMED NECESSARY BY THE JEFFERSON COUNTY ENGINEER IN THE EVENT THAT ADVERSE CONDITIONS PREVENT COMPLIANCE WITH THE STATED TIME LIMITATIONS FOR THE COMPLETION OF PERMANENT OR TEMPORARY STABILIZATION.
3. STABILIZATION WILL BE CONSIDERED ADEQUATE WHEN THE FOLLOWING CONDITIONS ARE MET:
   a. WATER COURSES, STREAM BANKS, AND DRAINAGE EASEMENTS SHALL BE 100% STABILIZED AND FREE FROM EROSION AND DEPOSITION.
   b. SLOPES STEEPER THAN 10% SHALL HAVE AT LEAST 98% STABLE GROUND COVER, AS DETERMINED BY THE JEFFERSON COUNTY ENGINEER.
   c. ALL OTHER AREAS SHALL HAVE AT LEAST 85% STABLE GROUND COVER, AS DETERMINED BY THE JEFFERSON COUNTY ENGINEER.
   d. GRASS VEGETATION SHALL HAVE REACHED A MINIMUM OF 3 INCHES OF HEIGHT OR HAVE BEEN MOWED BACK TO A MINIMUM OF 2 INCHES OF HEIGHT.
4. FOR ALL PROJECTS ADJACENT TO OR WITHIN 500 FEET OF A CONTINUOUSLY FLOWING STREAM, NO GRADING, EXCAVATING, REMOVAL, OR DESTRUCTION OF TOPSOIL, TREES, OR OTHER VEGETATIVE COVER, OR CONSTRUCTION ACTIVITY SHALL RESULT IN POINT OR NON-POINT LOADING OF SUSPENDED MATTER SUCH THAT TURBIDITY STANDARDS SPELLED OUT IN THE WATER RESOURCES BOARD LEGISLATIVE RULES ARE VIOLATED. SAID STANDARDS STATE THAT TURBIDITY SHALL NOT EXCEED 10 NTUS OVER BACKGROUND TURBIDITY WHEN THE BACKGROUND IS 50 NTUS OR LESS, OR HAVE MORE THAN A 10% INCREASE IN TURBIDITY (PLUS 10 NTUS MINIMUM) WHEN THE BACKGROUND TURBIDITY IS MORE THAN 50 NTUS.
5. INDICATION WHETHER AN OFF-SITE BORROW PIT IS (OR IS NOT) PROPOSED FOR THIS PROJECT.
6. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT ALL EROSION AND SEDIMENT CONTROL MEASURES ARE PERFORMING AS DESIGNED. THE JEFFERSON COUNTY ENGINEER MAY REQUIRE MODIFICATIONS TO AN APPROVED PLAN, REQUIRE ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES, OR CAUSE NEW PLANS TO BE SUBMITTED AS A RESULT OF FIELD INSPECTION REVEALING THE APPROVED PLANS DO NOT PROVIDE ADEQUATE PROTECTION.
7. ALL RESIDENTIAL AND COMMERCIAL/INDUSTRIAL BUILDING LOTS SHALL HAVE A STABILIZED CONSTRUCTION ENTRANCE INSTALLED PRIOR TO BEGINNING CONSTRUCTION ON THE LOT.
8. THE DEVELOPMENT IS RESPONSIBLE FOR ENSURING THAT ALL CLEARING, GRADING, DRAINAGE, CONSTRUCTION, AND DEVELOPMENT IS CONDUCTED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.

LIMITS OF EARTH DISTURBANCE LINES

THE LIMITS OF EARTH DISTURBANCE LINES ON THIS PLAN ARE SHOWN TO CLEARLY INDICATE THE APPROXIMATE LIMITS OF CONSTRUCTION ON THIS SITE. HOWEVER, THE LIMITS OF EARTH DISTURBANCE LINES MAY BE SHOWN OUTSIDE OF THE OVERALL PROPERTY BOUNDARY FOR CLARITY PURPOSES ONLY. NO CONSTRUCTION SHALL TAKE PLACE OUTSIDE OF THE PROPERTY BOUNDARY AS SHOWN ON THIS PLAN.

GENERAL EROSION AND SEDIMENTATION CONTROL MEASURES

1. THE PROPER IMPLEMENTATION AND MAINTENANCE OF THE EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THESE PLANS AND THE SUPPORTING DOCUMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER/OWNER.
2. UPON COMPLETION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY, THE OPERATOR SHALL STABILIZE IMMEDIATELY THE DISTURBED AREAS TO PROTECT FROM ACCELERATED EROSION.
3. IN THOSE AREAS WHERE SEEDING IS TEMPORARY IN NATURE, PRIOR TO THE NEXT PHASE OF CONSTRUCTION, ANNUAL RYE GRASS SHOULD BE USED AT AN APPLICATION RATE OF 1 LB/1,000 SQ. FT. AND FERTILIZED ACCORDING TO SOILS TESTS.
4. ALL EXPOSED AREAS NOT SEEDED PRIOR TO SEPTEMBER 15 OR EXPOSED AFTER THAT DATE WILL BE MULCHED UNTIL SEEDING CAN BE PERFORMED IN THE SPRING.
5. AN EROSION CONTROL BLANKET MUST BE INSTALLED ON ALL DISTURBED SLOPES STEEPER THAN 3:1, ALL AREAS OF CONCENTRATED FLOWS, AND DISTURBED AREAS WITHIN 50' OF STREAMS.
6. TEMPORARY "FILTER FABRIC FENCE" SHALL BE PLACED ON THE LOW SIDE OF ALL EXPOSED SOILS.
7. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.
8. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCE POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
9. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG OR EQUIVALENT SEDIMENT REMOVAL FACILITY, OVER UNDISTURBED VEGETATED AREAS.
10. ANY SEDIMENT REMOVED FROM BMPS DURING CONSTRUCTION WILL BE RETURNED TO UPLAND AREAS ON SITE AND INCORPORATED INTO THE SITE GRADING.
11. BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E & S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OR THE REVISIONS FROM THE APPROPRIATE EROSION AND SEDIMENT CONTROL DIRECTOR.
12. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES. NO CONSTRUCTION MATERIAL OR WASTE OR UNUSED CONSTRUCTION MATERIAL SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
13. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND MAKE SURE THE SITE(S) RECEIVING THE EXCESS MATERIAL HAS AN APPROVED EROSION AND SEDIMENT CONTROL PLAN THAT MEETS THE CONDITIONS OF LOCAL AND/OR OTHER STATE AND FEDERAL REGULATIONS.
14. AN EROSION AND SEDIMENT CONTROL PLAN SHALL BE PREPARED, DEVELOPED, APPROVED BY THE APPROPRIATE EROSION AND SEDIMENT CONTROL DIRECTOR AND IMPLEMENTED FOR ALL SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATION.

INSTALLATION AND MAINTENANCE RESPONSIBILITIES

1. THE PROPER IMPLEMENTATION AND MAINTENANCE OF THE EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THESE PLANS AND IN THE SUPPORTING DOCUMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER/OWNER.
2. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES INCLUDING PIPES, CHANNELS, INLETS, AND DETENTION BASINS ON INDIVIDUAL LOTS ARE TO BE INSTALLED BY THE DEVELOPER AND MAINTAINED BY THE OWNER. THE COUNTY SHALL HAVE THE RIGHT TO ENTER PROPERTY TO INSPECT THE FACILITIES AND, IF NECESSARY, TO MAINTAIN AND REPAIR THE FACILITY. THESE FACILITIES ARE TO BE MAINTAINED AT THE GRADES AND BY THE PROCEDURES SHOWN ON THESE PLANS.

EXCESS FILL MATERIAL

ALL EXCESS FILL MATERIAL GENERATED BY CONSTRUCTION MUST BE STOCKPILED ON THIS SITE. ALSO FILTER FABRIC FENCE OR APPROVED EQUIVALENT MUST BE INSTALLED ON THE LOW SIDE OF ALL STOCKPILED MATERIALS.

INSTALLATION, OWNERSHIP, AND MAINTENANCE RESPONSIBILITIES

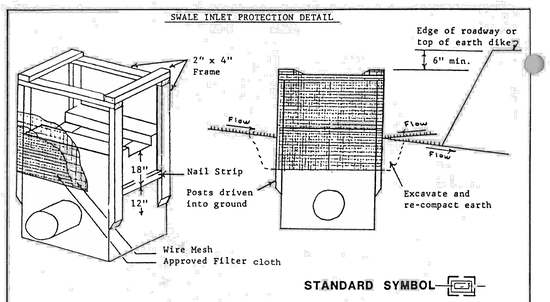
ALL PERMANENT STORMWATER MANAGEMENT FACILITIES INCLUDING STORMWATER BIORETENTION BERMS, INLETS, AND PIPES WILL BE INSTALLED BY THE OWNER / DEVELOPER. SINCE ALL FACILITIES WILL BE CONSTRUCTED ON LANDS OF THE OWNER / DEVELOPER AND THEREFORE OUTSIDE OF THE PUBLIC STREET RIGHT-OF-WAYS, THE FACILITIES SHALL BE INSTALLED, OWNED AND MAINTAINED BY THE OWNER / DEVELOPER. THE OWNER / DEVELOPER SHALL BE SOLELY RESPONSIBLE FOR KEEPING ALL STORMWATER MANAGEMENT FACILITIES FREE OF DEBRIS. THESE FACILITIES ARE TO BE MAINTAINED AT THE GRADES AND BY THE PROCEDURES SHOWN ON THESE PLANS.

1. THE PROPER IMPLEMENTATION AND MAINTENANCE OF THE EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THESE PLANS AND IN THE SUPPORTING DOCUMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE DEVELOPER / OWNER.
2. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES OUTSIDE OF PUBLIC RIGHT OF WAY (INCLUDING PIPES, CHANNELS, INLETS AND BIORETENTION BERMS) WITHIN THE DEVELOPMENT ARE TO BE INSTALLED AND MAINTAINED BY THE DEVELOPER. THESE FACILITIES ARE TO BE MAINTAINED AT THE GRADES AND BY THE PROCEDURES SHOWN ON THESE PLANS.
3. THE BIORETENTION BERMS REQUIRE THAT THE SITE BE STABILIZED ACCORDING TO THE APPROVED E&SC PLAN BEFORE INSTALLATION.

CONSTRUCTION SEQUENCE

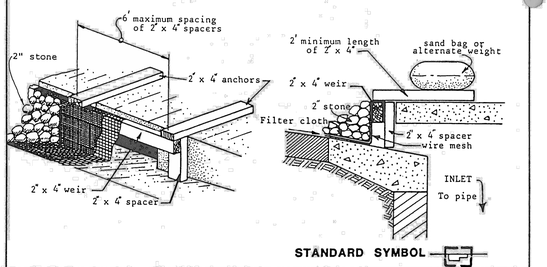
1. INSTALL SILT FENCING AS SPECIFIED ON THE PLAN.
2. INSTALL CONSTRUCTION ENTRANCE AS THE FIRST STEP IN GRADING ACTIVITIES.
3. BEGIN CLEARING AND GRUBBING AREA WITHIN THE LIMIT OF DISTURBANCE.
4. STRIP TOPSOIL AND PLACE INTO STOCKPILES AS SHOWN ON THE PLAN.
5. EXCAVATE AND GRADE THE BUILDING ADDITION AND PARKING AREA. PLACE EXCESS MATERIAL INTO STOCKPILES AS SHOWN ON THE PLAN.
6. TOPSOIL, SEED, AND MULCH ALL EXPOSED SOILS.
7. ONCE THE CONTRIBUTING DRAINAGE AREA TO BIORETENTION STABILIZES, INSTALL BIORETENTION AREAS.
   A. FOLLOW THE INSTALLATION AS SPECIFIED IN THE WEST VIRGINIA STORMWATER MANAGEMENT & DESIGN GUIDANCE MANUAL.
   B. EXCAVATE SUBSURFACE AREA. RIPPING BOTTOM IS ENCOURAGED TO PROMOTE INFILTRATION.
   C. INSTALL REQUIRED LINER STONE.
   D. INSTALL SOIL MEDIA.
   E. CONSTRUCT THE BERM WITH SUITABLE FILL.
   F. INSTALL PLANTINGS AS SPECIFIED ON PLAN IN ACCORDANCE WITH THE WVSM&DGM.
   G. APPLY MULCH ON THE SURFACE.
10. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IN THE OPINION OF THE LOCAL EROSION AND SEDIMENT CONTROL ADMINISTRATOR.

SWALE INLET PROTECTION DETAIL



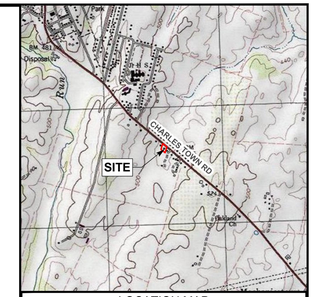
STANDARD SYMBOL

CURB INLET PROTECTION DETAIL



STANDARD SYMBOL

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	INLET PROTECTION DETAIL	REVISIONS:	DETAIL No.
				SC -13



LOCATION MAP
SCALE: 1" = 2000'

NO.	DATE	DESCRIPTION	INT.
0	2023-07-07	FOR SUBMISSION	DMJ
1	2023-08-15	PER CITY ENGINEER COMMENTS	DMJ
2	2023-10-04	PER CITY ENGINEER COMMENTS	DMJ
3	2023-10-20	PER CITY ENGINEER COMMENTS	JAB

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JOSEPH DANIEL HAGE REGISTERED 26156 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

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844-542-4757
362 W. BURR BLVD. STE 3
KEARNEYSVILLE, WV 25430
PA • OH • NY • WV • VA • MD

PROJECT ID: 2022-1685	DRAWN: DMJ
DATE: 2023-07-07	DESIGN: JAB
SCALE: NOTED	CHECKED: JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE: EROSION AND SEDIMENT CONTROL DETAILS

PLAN STATUS: SITE PLAN	SHEET NO. C-4.01

Oct. 20, 2023 2:43pm jbakker: R:\Projects\2022\2022-1685 Joan and Joe's Coffee - Site Plan\CAD\SHEET FILES\ESC DETAILS (2022-1685) 24X36.dwg
Layout: C-4.01 EROSION AND SEDIMENT CONTROL DETAILS

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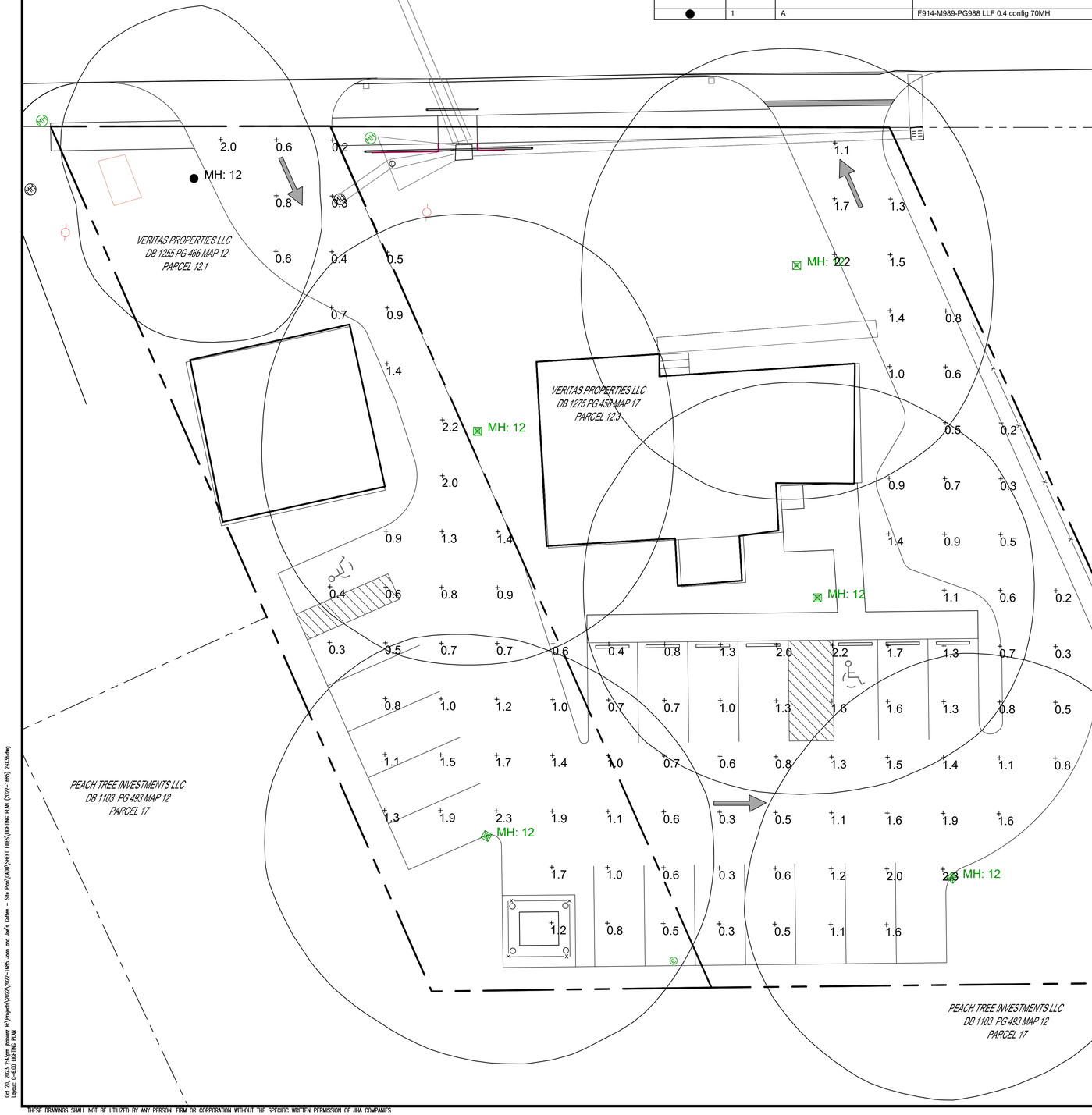
WV ROUTE 115 - CHARLES TOWN ROAD
60' R/W

Luminaire Schedule

Symbol	Qty	Label	Description	Lum. Lumens	Lum. Watts	LLF	Filename	Mounting Height
⊠	5	B	IES 50 Watt Type 5 Plannus-L	5536	50	0.900	IES 50 Watt Type 5 Plannus-L IES FILE.ies	12
●	1	A	F914-M989-PG988 LLF 0.4 config 70MH	6370	175	0.400	ITL51066.IES	12

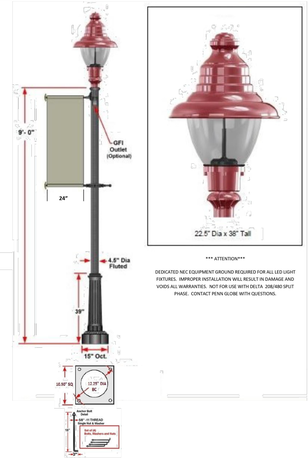


GRAPHIC SCALE: 1" = 10'
10 0 10 20

PENN GLOBE
LIGHTING DESIGN + MANUFACTURING

300 Shaw Road * North Branford CT 06471
Phone:203-484-7749 * Fax: 203-484-7758
www.pennglobe.com

DATE	08/15/23
DRAWING NUMBER	070-317-16933-F9B2-JX30-W541-W579
SPECIFIER	JHA COMPANIES
PROJECT NUMBER	070-317-16933
PROJECT NAME	JOAN AND JOE'S COFFEE



PRIMARY LIGHT SOURCE	PennSTAR® LED
CONFIGURATION	PLANNUS LED PLAFFORM
WATTAGE	50W (NOM)
DISTRIBUTION	SYMMETRIC
COLOR TEMPERATURE	4000K
VOLTAGE	120~277VAC AUTOSENSE
GLOBE	FROSTED UV STABILIZED ACRYLIC
POLE HEIGHT	9' - 0"
SHAFT	4.5" FLUTED
MATERIAL	ALUMINUM
OPTIONS	> SINGLE BANNER BRACKET SET > UPPER—FIXED -> LOWER—ADJUSTABLE > DUPLEX GFI WITH WHILE IN USE COVER
FINISH	2069X LT (RED) 1003X LT (BLACK)
QUANTITY	( )

MODEL NUMBER	DESCRIPTION
F9B2-GX920-FH925	PARKLANE 1200
P688-FH222-2110 / JX30-EZA72-0275-0400	TRADITIONAL POST / DUPEX GFI WITH COVER
W541-PVL24-P1X0-A090 / W579-PVL24-02X0-A090	SINGLE FIXED BANNER BRACKET / SINGLE ADJUSTABLE BANNER BRACKET

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Prepared by: M. Stonier

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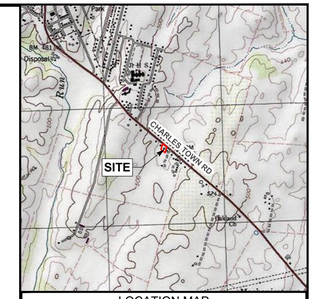

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SEAL
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PROJECT ID: 2022-1685	DRAWN: DMJ
DATE: 2023-07-07	DESIGN: JAB
SCALE: NOTED	CHECKED: JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
LIGHTING PLAN

PLAN STATUS: SITE PLAN
SHEET NO. C-5.00

Oct. 20, 2023 2:43pm jbaldner R:\Projects\2022\2022-1685 Joan and Joe's Coffee - Site Plan\CAD\SHEET FILES\LIGHTING PLAN (2022-1685) 24X36.dwg
Layout: C-5.00 LIGHTING PLAN

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Kimley»Horn

Memorandum

To: Joseph Hunt, P.E.
Project Manager
JHA Companies
362 W Burr Blvd, Suite 3
Kearneysville, WV 25430

From: Mark Phillips, P.E.

Through: Mr. James Newman, AICP
City Planner, Zoning/Subdivision Administrator
City of Charles Town
101 E Washington Street
Charles Town, WV 25414

Date: August 22, 2023

Subject: Joan and Joe's Coffee Shop Site Plan Review – 2nd Submission

This memorandum summarizes our review of the Site Plan for the entrance and parking improvements to the Joan and Joe's Coffee establishment (dated August 21, 2023 prepared by JHA Companies) for a proposed parking lot and ingress/egress improvement for the existing Joan and Joe's Coffee. The site is currently zoned General Commercial per the City of Charles Town Zoning Ordinance dated June 18, 2012 (Rev. July 6, 2020). This application proposes a by-right development of the approximate 0.53-acre property.

Kimley-Horn's review of this application is limited to the Site Plan Application provided. Based upon our review we have the following comments:

1. The Applicant should dimension the width of the proposed sidewalk and provide grading details to depict ADA compliance for cross slope and longitudinal slope. Additionally, the Applicant should confirm if handrail is needed adjacent to the steep slope near the existing drop inlet. A typical section for the sidewalk should be provided for the depth and type of concrete and subbase.
    a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a sidewalk along the frontage of the property.
    b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.
2. The Applicant should provide a consistent grass buffer strip between the edge of pavement and the proposed sidewalk. The sidewalk should also have a clear ADA compliant crossing of the proposed driveway ingress and egress. The Applicant should provide a driveway profile depicting the grades of the proposed driveway specifically in the locations where the sidewalk crosses so as to not exceed 2% cross slope.
    a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a sidewalk along the frontage of the property.
    b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.
3. Per the SL/DO Section 1333.23.C.2. "Curb and Gutter. Curb and gutter is required for parking areas in the City of Charles Town. Curbing shall be in compliance with the standard details of the City of Charles Town for curb (See Standard Detail CG-1, CG-1R, CG-2). To encourage Low Impact Design principles, the Planning Commission may allow alternative curb types, or no curb, in areas of a Subdivision/Land Development determined acceptable. The

City's Engineer and Subdivision Administrator shall provide a recommendation to the Planning Commission on the proposed alternative. Reduction of curbs and gutters shall be for the benefit of Low Impact Design principles and not solely to eliminate the cost associated with curb and gutter."

a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a curbs and gutters for this property.
b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.

Kimley-Horn recommends that comments 1 through 3 above be addressed by the Applicant.

Thank you for the opportunity to review this Site Plan. In the meantime, please feel free to contact us at 703-870-3631 should you have any questions.

KIMLEY-HORN & ASSOCIATES, INC.



Mark Phillips, P.E.
Project Manager
Associate

From: Phillips, Mark
To: James Newman
Subject: RE: Joan and Joe"s Coffee - Plan Status
Date: Tuesday, October 17, 2023 2:46:56 PM
Attachments: image001.png

Hey James,

I spoke with the applicant and all of my comments have been addressed with this submission.

Mark R Phillips, P.E. (VA,WV)
Kimley-Horn | 19775 Belmont Executive Plaza, Suite 250, Ashburn, VA 20147
Direct: 703-870-3631 | Mobile: 540-454-6294
Connect with us: Twitter | LinkedIn | Facebook | Instagram | Kimley-Horn.com

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From: Joe Hague, PE <jhague@jhacompanies.com>
Sent: Tuesday, October 17, 2023 2:45 PM
To: James Newman <JNewman@charlestownwv.us>
Cc: Christopher Waddell <cwaddell@jhacompanies.com>; Phillips, Mark <Mark.Phillips@kimley-horn.com>; Marc Mezzanotte, PE <mmezzanotte@jhacompanies.com>
Subject: RE: Joan and Joe's Coffee - Plan Status

James,
Please see the Revised Plan in the share link. Let me know if you cannot access.

Here are responses to the following comments.

1. The Applicant should dimension the width of the proposed sidewalk and provide grading details to depict ADA compliance for cross slope and longitudinal slope. Additionally, the Applicant should confirm if handrail is needed adjacent to the steep slope near the existing drop inlet. A typical section for the sidewalk should be provided for the depth and type of concrete and subbase.
    a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a sidewalk along the frontage of the property.
    b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.

R1: JHA Companies has provided both cross slope and longitudinal slope labels where the proposed sidewalk will be located that meets ADA compliance. Please see the revised plan sheet C-2.00. A proposed handrail has been provided adjacent to the steep slope near existing drop inlet and concrete headwall structure. A typical section of the sidewalk has been provided, please see the revised plan sheet C-2.02.

2. The Applicant should provide a consistent grass buffer strip between the edge of pavement and the proposed sidewalk. The sidewalk should also have a clear ADA compliant crossing of

the proposed driveway ingress and egress. The Applicant should provide a driveway profile depicting the grades of the proposed driveway specifically in the locations where the sidewalk crosses so as to not exceed 2% cross slope.

a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a sidewalk along the frontage of the property.
b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.

R2: JHA Companies has provided a grass buffer strip between the edge of pavement and the proposed sidewalk. The proposed sidewalk meets ADA compliance. The grass buffer strip and a driveway profile has been provided on plan sheet C-2.00 depicting the grades of the proposed driveway and where the sidewalk crosses. Please see the revised plan sheet C-2.00.

3. Per the SL/DO Section 1333.23.C.2. "Curb and Gutter. Curb and gutter is required for parking areas in the City of Charles Town. Curbing shall be in compliance with the standard details of the City of Charles Town for curb (See Standard Detail CG-1, CG-1R, CG-2). To encourage Low Impact Design principles, the Planning Commission may allow alternative curb types, or no curb, in areas of a Subdivision/Land Development determined acceptable. The City's Engineer and Subdivision Administrator shall provide a recommendation to the Planning Commission on the proposed alternative. Reduction of curbs and gutters shall be for the benefit of Low Impact Design principles and not solely to eliminate the cost associated with curb and gutter."
    a. Applicant response: JHA Companies acknowledges this comment and has requested a waiver removing the use of a curbs and gutters for this property.
    b. Kimley-Horn Comment: Understood, this comment will remain until notice of an approved waiver is provided by the Applicant.

R3: JHA Companies has provided a table with the granted wavier for SALDO Section 1333.23.C.2 "Curb and Gutter" with the approved date. Please see the revised wavier table on plan sheet C-0.01.

Thank you,

Secure Message Info

Message ID	FKHdmkgoRk8DED9Jtpf2vv
Message Expires	Thursday, 16 November
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20231013 2022-1685 PCSM REPORT.pdf	25.9 MB
20231013 2022-1685 Joan and Joe's.pdf	22.9 MB

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Joe Hague, PE
Project Engineer

t: 304-620-3940

From: James Newman <JNewman@charlestownwv.us>
Sent: Tuesday, August 22, 2023 3:01 PM
To: Joe Hague, PE <jhague@jhacompanies.com>
Subject: FW: Joan and Joe's Coffee - Plan Status

Please see the attached comments

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

From: Phillips, Mark <Mark.Phillips@kimley-horn.com>
Sent: Tuesday, August 22, 2023 2:30 PM
To: James Newman <JNewman@charlestownwv.us>
Subject: RE: Joan and Joe's Coffee - Plan Status

James,

Please see attached. It was only .5 hours of effort for $106.

Thanks,

Mark R Phillips, P.E. (VA,WV)
Kimley-Horn | 11400 Commerce Park Dr, Reston, VA 20191
Direct: 703-870-3631 | Mobile: 540-454-6294
Connect with us: Twitter | LinkedIn | Facebook | Instagram | Kimley-Horn.com

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From: James Newman <JNewman@charlestownwv.us>
Sent: Tuesday, August 22, 2023 1:19 PM
To: Phillips, Mark <Mark.Phillips@kimley-horn.com>
Subject: FW: Joan and Joe's Coffee - Plan Status

Hi Mark,

Please see the attachments for your comments on Joan and Joes Coffee. Please review and let me know time/cost.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

From: Joe Hague, PE <jhague@jhacompanies.com>
Sent: Monday, August 21, 2023 11:24 AM
To: James Newman <JNewman@charlestownwv.us>
Cc: Christopher Waddell <cwaddell@jhacompanies.com>
Subject: RE: Joan and Joe's Coffee - Plan Status

James,
Please find the Revised Site Plan for the City in response to engineer comments.
Thank you,
Joe

JHA Companies
Joe Hague, PE
Project Engineer
t: 304-620-3940

From: James Newman <JNewman@charlestownwv.us>
Sent: Thursday, August 17, 2023 10:14 AM
To: Joe Hague, PE <jhague@jhacompanies.com>
Subject: RE: Joan and Joe's Coffee - Plan Status

Good morning,

I have received your waiver.

-James

From: Joe Hague, PE <jhague@jhacompanies.com>
Sent: Wednesday, August 16, 2023 5:26 PM
To: James Newman <JNewman@charlestownwv.us>
Cc: Christopher Waddell <cwaddell@jhacompanies.com>
Subject: RE: Joan and Joe's Coffee - Plan Status

James,

Thank you for the heads up. I am finalizing plan to resubmit. I was waiting for lighting details. Please find the attached Waiver. Please copy Chris Waddell on future correspondence.

Thank you,

JHA Companies
Joe Hague, PE
Project Engineer
t: 304-620-3940

From: James Newman <JNewman@charlestownwv.us>
Sent: Monday, August 14, 2023 4:21 PM
To: Joe Hague, PE <jhague@jhacompanies.com>
Subject: Joan and Joe's Coffee - Plan Status

Hi Joe.,

What's the status of the plans for Joan and Joes coffee? I'll need them no later than 5pm Wednesday the 16th in order to get them on the August 28, Planning Commission meeting. In order to make that happen it'll need to address all the comments that Kimley-Horn had.

James Newman
City Planner, Zoning/Subdivision Administrator, AICP
City of Charles Town, WV
304-724-3251

Disclaimer: This email does NOT constitute a zoning or subdivision determination. To obtain an official determination, please contact the Zoning Administrator.

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POST CONSTRUCTION STORMWATER NARRATIVE

for

JOAN AND JOE'S COFFEE SHOP

14840 Charles Town Road

Charles Town, WV 25414

In

CHARLES TOWN, JEFFERSON COUNTY,

WEST VIRGINIA

Prepared for:

Joan and Joe's Coffee Shop
14826 Charles Town Road
Charles Town, WV 25414

Prepared by:

JHA Companies
ENGINEERS
SURVEYORS
ENVIRONMENTAL
GIS MAPPING
www.jhacompanies.com

362 W Burr Blvd.
Kearneysville, WV 25430
610-285-6694

JULY 7, 2023

LAST REVISED: OCTOBER 4, 2023

TABLE OF CONTENTS

I. POST-CONSTRUCTION STORM WATER MANGEMENT NARRATIVE 3

A. Project Overview
B. Existing Site Conditions Overview
C. Proposed Site Conditions Overview
D. Storm Water Management Criteria and Rationale
E. Quantity Control
F. Quality Control
G. Thermal Impact Analysis
H. Offsite Discharges
I. Conveyance Measures
J. Summary
K. Installation, Ownership and Maintenance Responsibilities

II. APPENDIX A – DEP SPREADSHEETS 13

III. APPENDIX C – DESIGN CALCULATIONS – OVERALL 26

IV. APPENDIX D – CONVEYANCE CALCULATIONS 170

V. APPENDIX E – SUPPORTING DOCUMENTS 173

SPILLWAY CALCULATIONS
SOILS REPORT

VI. APPENDIX F- MAPS 190

DRAINAGE AREA PLANS
USGS LOCATION MAP

PROJECT OVERVIEW

Joan and Joe's Coffee Shop is a facilities improvement development project located at 14840 & 14826 Charles Town Road Charles Town, West Virginia, on a 0.53-acre parcel of land in Charles Town in Jefferson County. The project site area is approximately 815 feet directly Southeast on WV County Route 115 from the intersection with Route 340. The project includes the construction of a new proposed parking area, widening of the exit, and two proposed stormwater expansion areas. The coffee shops facilities will continue to be serviced public septic and water. Stormwater management for the increased runoff from the new impervious area will be provided by constructing two rain gardens. Runoff from the improvements will be conveyed to rain gardens for control. This storm water management plan has been developed for Joan and Joe's Coffee Shop using the guidelines set forth in the West Virginia Storm Water Management and Design Guidance Manual, dated November 2012. In addition to the Manual guidelines, criteria from the City of Charles Town Subdivision and Land Development Ordinance were also used to develop the storm water design. The following narrative will demonstrate compliance with the storm water management guidelines in the following areas of runoff quantity control, runoff quality control, and storm conveyance. The storm water management quantity analysis has been done for the increase in impervious areas as a result of the proposed improvements and measures necessary to meet the Ordinance.

EXISTING SITE CONDITIONS OVERVIEW

The property is located within Charles Town, Jefferson County in the General Commercial property class. The property is currently serving as a coffee shop, land cover mostly consists of open space or meadow, and impervious area. Residential parcels surround the project's site location. The parcel generally slopes towards the north, and southeast. The lot currently is serviced by public water and sewer. The site drains to Bullskin Run, which is a part of the Shenandoah River watershed.

Soils

The project area is comprised of the following soil types:

SOILS DESCRIPTIONS						
SYMBOL	DESCRIPTION	DEPTH TO RESTRICTIVE FEATURE	NATURAL DRAINAGE CLASS	DEPTH TO WATER TABLE	HYDROLOGIC SOIL GROUP	HYDRIC SOIL RATING
PmB	Poplimento Silt Loam, 3 to 8 percent slopes	MORE THAN 80”	WELL DRAINED	MORE THAN 80"	B	NO
SOILS INFORMATION TAKEN FROM UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, WEB SOIL SURVEY.						

Additional site soil information is available in Appendix E.

Geology

There are known geological features (i.e., sinkholes, rock outcroppings, etc.) on the site and in the immediate surrounding area.

PROPOSED SITE CONDITIONS OVERVIEW

The project includes the construction of a new proposed parking area and widening of the exit. The increase of impervious areas in this project will be treated by two bioretention area.

STORMWATER MANAGEMENT CRITERIA AND RATIONALE

- **DESIGN CRITERIA**
  - The following references were used as standards for the preparation of these stormwater management plans:

1. June 1986 edition of SCS TR-55.
2. Hydroflow Stormwater Modeling System, version 10.0.
3. "Erosion and Sediment Control Best Management Practice Manual" dated 2006 by the WV DEP.
4. “West Virginia Stormwater Management and Design Guidance Manual” dated November 2012, by the WV DEP.
5. Subdivision and Land Development Ordinance of the City of Charles Town, West Virginia dated September 2012.

- **RUNOFF CURVE NUMBER – TR-55**

Cover	CN
Woods	58
Open Space	61
Impervious	98

- **RAINFALL DEPTHS – NOAA Atlas 14, Vol 2, Vers. 3.**
  Location: Charles Town, West Virginia

  Latitude: 39.2724^{o} Longitude: -77.8455^{o}

  Data: retrieved 5/31/2023

  - 1 year - 2.40 inches/24 hour rainfall
  - 2 year - 2.88 " " " " "
  - 10 year - 4.20 " " " " "
  - 100 year - 6.63 " " " " "

- **INFILTRATION RATE**
  - No infiltration testing was preformed, however based on NRCS soils data, soils on the site have an estimated infiltration rate of between 0.20 in/hr and 0.57 in/hr. Due to the small size of the site and proposed stormwater BMP's, JHA has assessed that limited infiltration will be of minimal concern and has designed the BMPs assuming infiltration rates on the higher end of the above range. This assessment largely came from the site already being well drained from the current / existing conditions of the site. However, for the purposes of peak outflow calculations the infiltration rate of 0.5 in/hr was used.

QUANTITY CONTROL

Tabulation of existing and proposed runoff peaks based on the SCS 24-hour Type II rainfall event for the area (See appendices B and C for calculations). For the purposes of determining required reductions based on karst reduction factors calculations including only the LOD area are provided separately.

DRAINAGE AREA A

QUANTITY COMPARISON

DRAINAGE AREA A					
Rainfall Event	Pre-Development Discharge (cfs)	Karst Reduction Factor	Required Post-Development Discharge based on Karst Reduction Factor (cfs)	Post-Development Discharge (cfs)	Difference (cfs)
1 Year	0.18	-	-	0.006	-0.174
2 Year	0.35	0.33	0.12	0.02	-0.33
10 Year	0.93	0.43	0.40	0.47	-0.46
100 Year	2.24	0.5	1.12	2.35	0.11

- Summary of Results - As can be seen from the above tables, DA-A post-development peaks leaving the site towards Bullskin Run which is located within the Shenandoah River Watershed, decrease from corresponding pre-development levels. The karst reduction has been met with the overall condition for the site, therefore in the professional opinion of JHA this reduction is sufficient to meet the intent of the karst reduction factor requirement for this project. For this project the 100-year storm reduction is not a requirement but is shown here.

DRAINAGE AREA B

QUANTITY COMPARISON

DRAINAGE AREA B					
Rainfall Event	Pre-Development Discharge (cfs)	Karst Reduction Factor	Required Post-Development Discharge based on Karst Reduction Factor (cfs)	Post-Development Discharge (cfs)	Difference (cfs)
1 Year	0.25	-	-	0.16	-0.09
2 Year	0.40	0.33	0.13	0.24	-0.16
10 Year	0.87	0.43	0.37	0.49	-0.38
100 Year	1.88	0.50	0.94	1.72	-0.16

- Summary of Results - As can be seen from the above tables, DA-B post-development peaks leaving the site towards Bullskin Run which is located within the Shenandoah River Watershed, decrease from corresponding pre-development levels. The karst reduction has been met with the overall condition for the site, therefore in the professional opinion of JHA this reduction is sufficient to meet the intent of the karst reduction factor requirement for this project. For this project the 100-year storm reduction is not a requirement but is shown here.

OVERALL DRAINAGE AREA

QUANTITY COMPARISON – OVERALL

COMBINED - OVERALL					
Rainfall Event	Pre-Development Discharge (cfs)	Karst Reduction Factor	Required Post-Development Discharge based on Karst Reduction Factor (cfs)	Post-Development Discharge (cfs)	Difference (cfs)
1 Year	0.45	-	-	0.16	-0.29
2 Year	0.78	0.33	0.26	0.26	-0.52
10 Year	1.85	0.43	0.80	0.57	-1.28
100 Year	4.19	0.50	2.10	4.07	-0.12

- Summary of Results - As can be seen from the above tables, overall post-development peaks leaving the site towards Bullskin Run which is located within the Shenandoah River Watershed, decrease from corresponding pre-development levels for the overall area. For this project the 100 year storm reduction is not a requirement but is shown here.

QUALITY CONTROL

Water quality BMPs for the proposed development consists primarily of the proposed bioretention berms for infiltration.

The post-development land cover and 1 inch rainfall (taken from WVDEP's Stormwater Spreadsheet Tool) will be as follows for this development:

Land Cover	Area (acres)	Volumetric Runoff Coefficient	1 inch Runoff (acre-feet)
Forest/Preserved Open Space	0.00	0.00	0.00
Managed Turf	0.20	0.20	0.001
Impervious	0.31	0.95	0.019
Total	0.51	0.59	0.02

The Forest/Preserved Open Space designation refers to all native vegetated areas of the site to remain undisturbed.

The Managed Turf designation refers to all grass areas of areas that were disturbed for construction and maintained as yard areas.

The Impervious designation refers to proposed parking area, buildings, and entrances.

All the proposed impervious area will discharge to the bioretention areas that will be used for infiltration.

The uncontrolled areas are primarily as existing and will not have detrimental effect on the water quality of the runoff.

Using these mentioned pretreatment measures and their associated volumes as shown below, the 1 inch rainfall are shown to be captured by the measures stated and shown.

Runoff Reduction BMP's	Volume (cf)
Bioretention	1,006
Runoff Reduction Required	971
Runoff Reduction Volume Achieved	1,006
Runoff Reduction Volume Remaining	-34

In this case, the expected quality control volume is achieved.

THERMAL IMPACT ANALYSIS

The runoff from the proposed development area will be reduced through infiltration. No additional thermal impacts are anticipated since runoff will be controlled using the bioretention area. Therefore, there will be no additional thermal impact to surface waters downstream.

OFFSITE DISCHARGES

As can be seen in the preceding "Quantity Control Results" section it is clear that the proposed project will not adversely affect the downstream property owners, but rather improve the downstream condition. The proposed development will also not adversely affect existing downstream streams and channels. The proposed project reduces the peak flows leaving the site to below pre-development levels and therefore falls under rights to "Common Law Easement" across all property owners prior to the runoff entering Bullskin Run. The project also effectively manages the quantity and quality of run-off leaving the site using the stormwater BMPs.

CONVEYANCE MEASURES

The conveyance for this project is primarily by the proposed bioretention areas. The proposed riser pipe discharges water to the existing inlet when the water levels reach the height of the orifice. The riser provides sufficient conveyance and water quality benefits to runoff before it can discharge offsite. No additional conveyance measures at this site.

SUMMARY

Quantity and quality calculations for the pre-development and post-development conditions for Joan and Joe's Coffee Shop were done in accordance with the stormwater management regulations for the City of Charles Town, and in accordance with the requirements of NPDES requirements.

As stated above, Stormwater management for the proposed expansion of Joan and Joe's Coffee Shop will consist of the proposed bioretention areas. These facilities are designed to control the runoff increase and to reduce post-development peak rates leaving the development site as well as having a positive effect on water quality leaving the site. As demonstrated, the proposed project will not have a detrimental effect on existing drainage in the area.

INSTALLATION, OWNERSHIP AND MAINTENANCE RESPONSIBILTIES

All permanent storm water management facilities including storm water infiltration berm, and pipes will be installed by the owner/developer. Since all facilities will be constructed on lands of the owner/developer and therefore outside of the public street right-of-ways, the facilities shall be installed, owned and maintained by the owner/developer. The owner/developer shall be solely responsible for keeping all storm water management facilities free of debris. These facilities are to be maintained at the grades and by the procedures shown on these plans.

1. The proper implementation and maintenance of the erosion and sedimentation control measures shown on these plans and in the supporting documents shall be the sole responsibility of the developer/owner.
2. All permanent storm water management facilities outside of public right of way (including pipes, channels, inlets and bioretention berms) within the development are to be installed and maintained by the developer. These facilities are to be maintained at the grades and by the procedures shown on these plans.
3. The bioretention berm requires that the site be stabilized according to the approved E&SC Plan before installation.

MAINTENANCE PROCEDURES - STORMWATER MANAGEMENT

1. Bioretention

While vegetation is being established, pruning and weeding may be required.

A. Detritus may also need to be removed every year. Perennial plantings may be cut down at the end of the growing season.
B. Mulch must be re-spread when erosion is evident and be replenished as needed. Once every 2 to 3 years the entire area may require mulch replacement.
C. Bioretention areas should be inspected at least two times per year for sediment buildup, erosion, vegetative condition, etc.
D. During periods of extended drought, Bioretention areas may require watering.
E. Trees and shrubs should be inspected twice per year to evaluate health.

APPENDIX A

DEP SPREADSHEETS

West Virginia MS4 Stormwater Compliance Spreadsheet v2.0; April 2013

data input cells

calculation cells

constant values

Site Data

Site Name: Joan and Joe's Coffee Shop

Site Information

Post-Development Land Cover

Drainage Area A

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.08	0.00	0.00	0.08
Impervious Cover (acres)	0.00	0.18	0.00	0.00	0.18
				Total	0.26

Drainage Area B

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.12	0.00	0.00	0.12
Impervious Cover (acres)	0.00	0.13	0.00	0.00	0.13
				Total	0.25

Drainage Area C

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00

Drainage Area D

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00

Drainage Area E

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00
				Total	0.00

Total Site Area

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space (acres)	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.20	0.00	0.00	0.20
Impervious Cover (acres)	0.00	0.31	0.00	0.00	0.31
Total:	0.00	0.51	0.00	0.00	0.51

Rv Coefficients					
Land Cover Type	**HSG A Soils**	**HSG B Soils**	**HSG C Soils**	**HSG D Soils**	
Forest/Preserved Open Space	0.00	0.00	0.00	0.00	
Managed Turf	0.15	0.20	0.22	0.25	
Impervious Cover	0.95	0.95	0.95	0.95	
Land Cover Summary					
Forest/Preserved Open Space (acres)	0.00				
Weighted Rv(forest)	0.00				
% Forest	0%				
Managed Turf (acres)	0.20				
Weighted Rv(turf)	0.20				
% Managed Turf	39%				
Impervious Cover (acres)	0.31				
Rv(impervious)	0.95				
% Impervious	61%				
Site Area (acres)	0.51				
Site Rv	**0.66**				
Development Credits (Select all that apply)					
Is the proposed development:					
a) Redevelopment?			Yes		
b) Brownfield redevelopment?			No		
c) High density (>7 units per acre)?			No		
d) Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre)?			No		
e) Mixed use or Transit Oriented Development (within 1/2 mile of transit)?			No		
	Total Credits (inches)		**0.2**		
Runoff Reduction Rainfall Event (inches)	0.80				
Target Runoff Reduction Volume, RRv (acre-feet)	0.02				
Target Runoff Reduction Volume, RRv (cubic feet)	971				

West Virginia MS4 Stormwater Compliance Spreadsheet v2.0; April 2013

Drainage Area A

Drainage Area A Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space	0.00	0.00	0.00	0.00	0.00
Managed Turf	0.00	0.08	0.00	0.00	0.08
Impervious Cover	0.00	0.18	0.00	0.00	0.18
				Total	0.26
Rv(drainage area)	0.72				
Rv(turf)	0.20				
Rv(impervious)	0.95				

RRv Achieved for Drainage Area A (cubic feet): 672

RRv Balance for Drainage Area A (cubic feet): -129 — More Credit than needed has been provided

RRv Balance for Total Site (cubic feet): -34

Apply Runoff Reduction Practices

Runoff Reduction Practice	Impervious Cover in Contributing Drainage Area (acres)	Managed Turf in Contributing Drainage Area (acres)	Volume Received by Practice (cubic feet)	Description of Credit	% Credit	Volume Received from Upstream Practices (cubic feet)	Total Volume Received by Practice (cubic feet)	Disconnection Area of Practice (square feet)	Storage Volume Provided by Practice (cubic feet)	Runoff Reduction (cubic feet)	Remaining Volume (cubic feet)	Downstream Practice
1. Vegetated Roof (4.2.9)												
Vegetated Roof		N/A	0	Reduce volume conveyed through green roof by 100%.	100%	N/A	0	N/A		0	0	
2. Impervious Surface Disconnection/Rooftop Practices												
Simple Disconnection to A/B Soils or Soil-Amended Filter Path in C/D Soils (4.2.2, Appendix D)		N/A	0	Reduce volume conveyed to conservation area by 4 cu. ft per each 100 sq. ft. of pervious receiving area.	N/A	0	0		N/A	0	0	
Simple Disconnection to C/D Soils (4.2.2)		N/A	0	Reduce volume conveyed to conservation area by 2 cu. ft per each 100 sq. ft. of pervious receiving area.	N/A	0	0		N/A	0	0	
To Residential Rain Garden (4.2.3.C)		N/A	0	60% volume reduction for the Design Volume of the practice	60%	0	0	N/A		0	0	
To Rainwater Harvesting (4.2.8)		N/A	0	Subtract a variable % of the provided Design Volume based on annual beneficial use (see Cistern Design Spreadsheet).		0	0	N/A		0	0	
3. Permeable Pavement (4.2.4)												
Permeable Pavement, Level 1		N/A	0	Subtract 45% of the provided storage volume.	45%	N/A	0	N/A		0	0	
Permeable Pavement, Level 2 (infiltration)		N/A	0	Subtract 100% of the provided storage volume.	100%	N/A	0	N/A		0	0	
Permeable Pavement, Level 2 (infiltration & underdrain)		N/A	0	Subtract 100% of the provided storage volume of sump and 45% of the provided storage volume in reservoir layer.		N/A	0	N/A		0	0	
4. Grass Swale (4.2.5)												
Grass Swale A/B Soils			0	Reduce volume conveyed through grass swale by 0.2 inches.	0.2	0	0	N/A	N/A	0	0	
Grass Swale C/D Soils			0	Reduce volume conveyed through grass swale by 0.1 inches.	0.1	0	0	N/A	N/A	0	0	
Grass Swale in C/D Soil with Soil Amendments			0	Reduce volume conveyed through grass swale by 0.2 inches.	0.2	0	0	N/A	N/A	0	0	
5. Water Quality Swale (4.2.3.A)												
Water Quality Swale, Level 1			0	Subtract 55% of the provided storage volume.	55%	0	0	N/A		0	0	
Water Quality Swale, Level 2			0	Subtract 100% of the provided storage volume.	100%	0	0	N/A		0	0	
6. Bioretention (4.2.3)												
Bioretention, Level 1 or Urban Bioretention (4.2.3.B)			0	Subtract 60% of the provided storage volume.	60%	0	0	N/A		0	0	

Bioretention, Level 2	0.18	0.07	672	Subtract 100% of the provided storage volume.	100%	0	672	N/A	672	672	0	
7. Infiltration (4.2.6) or Regenerative Stormwater Conveyance (4.2.7)												
Infiltration			0	Subtract 100% of the provided storage volume.	100%	0	0	N/A		0	0	
8. Filtration Practice (4.2.10) or Stormwater Wetland (4.2.11)*												
*Filtration Practice/Stormwater Wetland do NOT receive runoff reduction values, but do have associated pollutant removal values			0	0% runoff reduction	0%	0	0	N/A	0	0	0	
9. Sheetflow to Filter/Conservation Area (4.2.1)												
Sheetflow to Conservation Area with A/B Soils			0	Reduce volume conveyed to conservation area by 9 cu. ft per each 100 sq. ft. of conservation area.	N/A	0	0		N/A	0	0	
Sheetflow to Conservation Area with C/D Soils			0	Reduce volume conveyed to conservation area by 4 cu. ft per each 100 sq. ft. of conservation area.	N/A	0	0		N/A	0	0	
Sheetflow to Vegetated Filter Strip in A/B Soils or Compost Amended C/D Soils			0	Reduce volume conveyed to conservation area by 6 cu. ft per each 100 sq. ft. of filter strip.	N/A	0	0		N/A	0	0	
Sheet flow to Vegetated Filter Strip in C/D Soils			0	Reduce volume conveyed to conservation area by 3 cu. ft per each 100 sq. ft. of filter strip.	N/A	0	0		N/A	0	0	
Totals	**0.18**	**0.07**						**Runoff Reduction Volume Achieved for Drainage Area A:**		**672**	**See Runoff Reduction Summary Tab for Detailed Results**	
								Runoff Reduction Volume Balance for Total Site		**-34**	More Credit than needed has been provided	

West Virginia MS4 Stormwater Compliance Spreadsheet v2.0; April 2013

Drainage Area B

Drainage Area B Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Forest/Preserved Open Space	0.00	0.00	0.00	0.00	0.00
Managed Turf	0.00	0.12	0.00	0.00	0.12
Impervious Cover	0.00	0.13	0.00	0.00	0.13
				Total	0.25
Rv(drainage area)	0.59				
Rv(turf)	0.20				
Rv(impervious)	0.95				

RRv Achieved for Drainage Area B (cubic feet): 334
RRv Balance for Drainage Area B (cubic feet): 94 — More Credit than needed has been provided
RRv Balance for Total Site (cubic feet): -34

Apply Runoff Reduction Practices

Runoff Reduction Practice	Impervious Cover in Contributing Drainage Area (acres)	Managed Turf in Contributing Drainage Area (acres)	Volume Received by Practice (cubic feet)	Description of Credit	% Credit	Volume Received from Upstream Practices (cubic feet)	Total Volume Received by Practice (cubic feet)	Disconnection Area of Practice (square feet)	Storage Volume Provided by Practice (cubic feet)	Runoff Reduction (cubic feet)	Remaining Volume (cubic feet)	Downstream Practice		
1. Vegetated Roof (4.2.9)														
Vegetated Roof		N/A	0	Reduce volume conveyed through green roof by 100%.	100%	N/A	0	N/A		0	0			
2. Impervious Surface Disconnection/Rooftop Practices														
Simple Disconnection to A/B Soils or Soil-Amended Filter Path in C/D Soils (4.2.2, Appendix D)		N/A	0	Reduce volume conveyed to conservation area by 4 cu. ft per each 100 sq. ft. of pervious receiving area.	N/A	0	0		N/A	0	0			
Simple Disconnection to C/D Soils (4.2.2)		N/A	0	Reduce volume conveyed to conservation area by 2 cu. ft per each 100 sq. ft. of pervious receiving area.	N/A	0	0		N/A	0	0			
To Residential Rain Garden (4.2.3.C)		N/A	0	60% volume reduction for the Design Volume of the practice	60%	0	0	N/A		0	0			
To Rainwater Harvesting (4.2.8)		N/A	0	Subtract a variable % of the provided Design Volume based on annual beneficial use (see Cistern Design Spreadsheet).		0	0	N/A		0	0			
3. Permeable Pavement (4.2.4)													Storage Volume Provided by Sump Below Underdrain (cubic feet)	Storage Volume Provided by Reservoir Layer Above Underdrain (cubic feet)
Permeable Pavement, Level 1		N/A	0	Subtract 45% of the provided storage volume.	45%	N/A	0	N/A		0	0			
Permeable Pavement, Level 2 (infiltration)		N/A	0	Subtract 100% of the provided storage volume.	100%	N/A	0	N/A		0	0			
Permeable Pavement, Level 2 (infiltration & underdrain)		N/A	0	Subtract 100% of the provided storage volume of sump and 45% of the provided storage volume in reservoir layer.		N/A	0	N/A		0	0			
4. Grass Swale (4.2.5)													Water volume associated with contributing area (cubic feet)	
Grass Swale A/B Soils			0	Reduce volume conveyed through grass swale by 0.2 inches.	0.2	0	0	N/A	N/A	0	0		0	
Grass Swale C/D Soils			0	Reduce volume conveyed through grass swale by 0.1 inches.	0.1	0	0	N/A	N/A	0	0		0	
Grass Swale in C/D Soil with Soil Amendments			0	Reduce volume conveyed through grass swale by 0.2 inches.	0.2	0	0	N/A	N/A	0	0		0	
5. Water Quality Swale (4.2.3.A)														
Water Quality Swale, Level 1			0	Subtract 55% of the provided storage volume.	55%	0	0	N/A		0	0			
Water Quality Swale, Level 2			0	Subtract 100% of the provided storage volume.	100%	0	0	N/A		0	0			
6. Bioretention (4.2.3)														
Bioretention, Level 1 or Urban Bioretention (4.2.3.B)			0	Subtract 60% of the provided storage volume.	60%	0	0	N/A		0	0			
Bioretention, Level 2	0.08	0.08	334	Subtract 100% of the provided storage volume.	100%	0	334	N/A	334	334	0			
7. Infiltration (4.2.6) or Regenerative Stormwater Conveyance (4.2.7)														
Infiltration			0	Subtract 100% of the provided storage volume.	100%	0	0	N/A		0	0			
8. Filtration Practice (4.2.10) or Stormwater Wetland (4.2.11)*														
*Filtration Practice/Stormwater Wetland do NOT receive runoff reduction values, but do have associated pollutant removal values			0	0% runoff reduction	0%	0	0	N/A	0	0	0			
9. Sheetflow to Filter/Conservation Area (4.2.1)														
Sheetflow to Conservation Area with A/B Soils			0	Reduce volume conveyed to conservation area by 9 cu. ft per each 100 sq. ft. of conservation area.	N/A	0	0		N/A	0	0			

Sheetflow to Conservation Area with C/D Soils			0	Reduce volume conveyed to conservation area by 4 cu. ft per each 100 sq. ft. of conservation area.	N/A	0	0		N/A	0	0			
Sheetflow to Vegetated Filter Strip in A/B Soils or Compost Amended C/D Soils			0	Reduce volume conveyed to conservation area by 6 cu. ft per each 100 sq. ft. of filter strip.	N/A	0	0		N/A	0	0			
Sheet flow to Vegetated Filter Strip in C/D Soils			0	Reduce volume conveyed to conservation area by 3 cu. ft per each 100 sq. ft. of filter strip.	N/A	0	0		N/A	0	0			
Totals	**0.08**	**0.08**					**Runoff Reduction Volume Achieved for Drainage Area A**			**334**	**See Runoff Reduction Summary Tab for Detailed Results**			
							Runoff Reduction Volume Balance for Total Site			**-34**	More Credit than needed has been provided			

West Virginia MS4 Stormwater Compliance Spreadsheet v2.0; April 2013		
Stormwater Runoff Reduction Summary		
Target Runoff Reduction Volume, RRv (cubic feet)	971	
Runoff Reduction Achieved (cubic feet)	1,006	
Runoff Reduction Volume Remaining (cubic feet)	0	
1.5:1 Mitigation Runoff Volume (cubic feet)	0	
2:1 Mitigation Runoff Volume (cubic feet)	0	
Total Mitigation Runoff Volume Required (cubic feet)	0	

WV MS4 Stormwater Compliance Spreadsheet v2.0; April 2013		1-year storm	2-year storm	10-year storm		
Target Rainfall Event (in)		2.40	2.88	4.20		
Drainage Area A						
Drainage Area (acres)	0.26					
Storage Volume Provided By Runoff Reduction Practices (cf)	672					
Drainage Area B						
Drainage Area (acres)	0.25					
Storage Volume Provided By Runoff Reduction Practices (cf)	334					
Drainage Area C						
Drainage Area (acres)	0.00					
Storage Volume Provided By Runoff Reduction Practices (cf)	0					
Drainage Area D						
Drainage Area (acres)	0.00					
Storage Volume Provided By Runoff Reduction Practices (cf)	0					
Drainage Area E						
Drainage Area (acres)	0.00					
Storage Volume Provided By Runoff Reduction Practices (cf)	0					

Based on the use of Runoff Reduction practices in the various drainage areas, the spreadsheet calculates an adjusted $RV_{Developed}$ and adjusted Curve Number.

Drainage Area A		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Preserved Open Space	Area (acres)	0.0	0.0	0.0	0.0	
	CN	30	55	70	77	
Managed Turf	Area (acres)	0.0	0.1	0.0	0.0	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.0	0.2	0.0	0.0	
	CN	98	98	98	98	
					Weighted CN	**S**
					87	1.55
		1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction		1.20	1.61	2.78		
$RV_{Developed}$ (in) with Runoff Reduction		0.49	0.89	2.07		
Adjusted CN for D.A. A		**72**	**75**	**78**		

Drainage Area B		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Preserved Open Space	Area (acres)	0.0	0.0	0.0	0.0	
	CN	30	55	70	77	
Managed Turf	Area (acres)	0.0	0.1	0.0	0.0	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.0	0.1	0.0	0.0	
	CN	98	98	98	98	
					Weighted CN	**S**
					80	2.46
		0	**0**	**0**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.83	1.18	2.23		
$RV_{Developed}$ (in) with Runoff Reduction		0.46	0.81	1.86		
Adjusted CN for D.A. B		**72**	**73**	**75**		

Drainage Area C		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Preserved Open Space	Area (acres)	0.0	0.0	0.0	0.0	
	CN	30	55	70	77	
Managed Turf	Area (acres)	0.0	0.0	0.0	0.0	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.0	0.0	0.0	0.0	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		0	**0.18**	**0**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
Adjusted CN for D.A. C		**0**	**0**	**0**		

Drainage Area D		**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Preserved Open Space	Area (acres)	0.0	0.0	0.0	0.0	
	CN	30	55	70	77	
Managed Turf	Area (acres)	0.0	0.0	0.0	0.0	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.0	0.0	0.0	0.0	
	CN	98	98	98	98	
					Weighted CN	**S**
					0	1000.00
		0	**0.13**	**0**		
$RV_{Developed}$ (in) with no Runoff Reduction		0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction		0.00	0.00	0.00		
Adjusted CN for D.A. D		**0**	**0**	**0**		

Site Data Summary

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.20	0.00	0.00	0.20	*39.22*
Impervious (acres)	0.00	0.31	0.00	0.00	0.31	*60.78*
					0.51	*100.00*

Site Rv	0.66
Post Development Treatment Volume (ft3)	971

Total Runoff Volume Reduction (ft3)	1,006

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.08	0.12	0.00	0.00	0.00	*0.20*
Impervious (acres)	0.18	0.13	0.00	0.00	0.00	*0.31*
						0.51

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.08	0.00	0.00	0.08	*30.77*
Impervious (acres)	0.00	0.18	0.00	0.00	0.18	*69.23*
					0.26	

BMP Selections

Practice	Credit Area (acres)	Runoff Reduction (ft3)	Downstream Practice
Bioretention, Level 2	0.25	**672**	

Total Impervious Cover Treated (acres)	0.18
Total Turf Area Treated (acres)	0.07

Drainage Area B Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.12	0.00	0.00	0.12	*46.15*
Impervious (acres)	0.00	0.13	0.00	0.00	0.13	*50.00*
					0.25	

BMP Selections

Practice	Credit Area (acres)	Runoff Reduction (ft3)	Downstream Practice
Bioretention, Level 2	0.16	**334**	

Total Impervious Cover Treated (acres)	0.08
Total Turf Area Treated (acres)	0.08

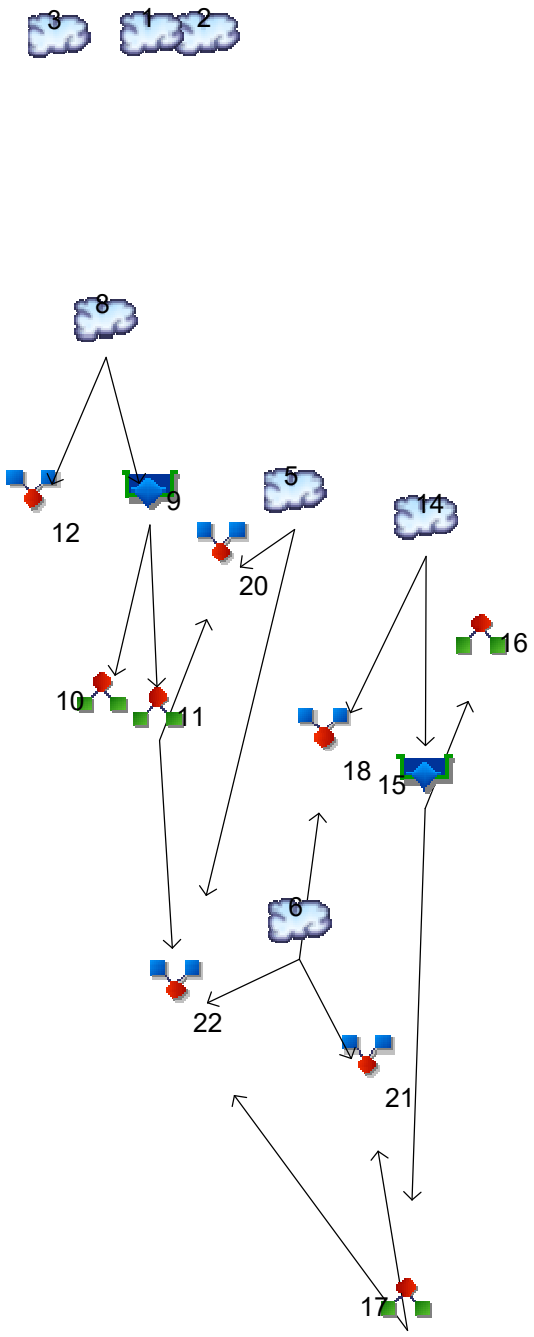
Channel and Flood Protection

	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		2.40	2.88	4.20
D.A. A CN	87	72	75	78
D.A. B CN	80	72	73	75
D.A. C CN	0	0	0	0
D.A. D CN	0	0	0	0
D.A. E CN	0	0	0	0

APPENDIX C

DESIGN CALCULATIONS – OVERALL AREA

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Pre-Dev DA-A
2	SCS Runoff	Pre-Dev DA-B
3	SCS Runoff	Pre-Dev Total
5	SCS Runoff	DA-A Bypass
6	SCS Runoff	DA-B Bypass
8	SCS Runoff	Post-Dev to Bioretention 1
9	Reservoir	Bioretention 1
10	Diversion1	INFILTRATION
11	Diversion2	OVERFLOW
12	Combine	Post-Dev DA-A W/O BMPS
14	SCS Runoff	Post-Dev to Bioretention 2
15	Reservoir	Bioretention 2
16	Diversion1	INFILTRATION
17	Diversion2	OVERFLOW
18	Combine	Post-Dev DA-B W/O BMPS
20	Combine	Post-Dev DA-A W/ BMPS
21	Combine	Post-Dev DA-B W/ BMPS
22	Combine	Combined Post-Dev W/ BMPS

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	0.179	0.350	-------	0.651	0.931	1.378	1.782	2.241	Pre-Dev DA-A
2	SCS Runoff	------	0.253	0.401	-------	0.650	0.873	1.224	1.538	1.880	Pre-Dev DA-B
3	SCS Runoff	------	0.452	0.779	-------	1.337	1.847	2.648	3.381	4.190	Pre-Dev Total
5	SCS Runoff	------	0.006	0.019	-------	0.047	0.075	0.119	0.161	0.207	DA-A Bypass
6	SCS Runoff	------	0.159	0.238	-------	0.367	0.480	0.657	0.814	0.984	DA-B Bypass
8	SCS Runoff	------	0.391	0.577	-------	0.879	1.151	1.565	1.927	2.318	Post-Dev to Bioretention 1
9	Reservoir	8	0.008	0.010	-------	0.086	0.465	1.257	1.789	2.251	Bioretention 1
10	Diversion1	9	0.008	0.010	-------	0.011	0.011	0.012	0.012	0.012	INFILTRATION
11	Diversion2	9	0.000	0.000	-------	0.075	0.454	1.245	1.777	2.238	OVERFLOW
12	Combine	8,	0.391	0.577	-------	0.879	1.151	1.565	1.927	2.318	Post-Dev DA-A W/O BMPS
14	SCS Runoff	------	0.188	0.298	-------	0.483	0.648	0.909	1.142	1.396	Post-Dev to Bioretention 2
15	Reservoir	14	0.005	0.006	-------	0.008	0.052	0.398	0.887	1.296	Bioretention 2
16	Diversion1	15	0.005	0.006	-------	0.008	0.008	0.009	0.009	0.009	INFILTRATION
17	Diversion2	15	0.000	0.000	-------	0.000	0.044	0.389	0.878	1.287	OVERFLOW
18	Combine	6, 14,	0.312	0.496	-------	0.804	1.082	1.511	1.891	2.306	Post-Dev DA-B W/O BMPS
20	Combine	5, 11,	0.006	0.019	-------	0.080	0.466	1.269	1.826	2.348	Post-Dev DA-A W/ BMPS
21	Combine	6, 17,	0.158	0.239	-------	0.374	0.493	0.678	1.025	1.720	Post-Dev DA-B W/ BMPS
22	Combine	5, 6, 11, 17,	0.162	0.259	-------	0.421	0.568	1.486	2.764	4.068	Combined Post-Dev W/ BMPS

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.179	2	722	646	------	------	------	Pre-Dev DA-A
2	SCS Runoff	0.253	2	722	724	------	------	------	Pre-Dev DA-B
3	SCS Runoff	0.452	2	722	1,407	------	------	------	Pre-Dev Total
5	SCS Runoff	0.006	2	720	28	------	------	------	DA-A Bypass
6	SCS Runoff	0.159	2	718	324	------	------	------	DA-B Bypass
8	SCS Runoff	0.391	2	722	1,057	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	0.008	2	1190	1,019	8	471.40	721	Bioretention 1
10	Diversion1	0.008	2	1190	1,019	9	------	------	INFILTRATION
11	Diversion2	0.000	2	2932	0	9	------	------	OVERFLOW
12	Combine	0.391	2	722	1,057	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	0.188	2	722	538	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.005	2	1150	501	14	470.97	333	Bioretention 2
16	Diversion1	0.005	2	1150	501	15	------	------	INFILTRATION
17	Diversion2	0.000	2	2320	0	15	------	------	OVERFLOW
18	Combine	0.312	2	720	861	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	0.006	2	720	28	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	0.158	2	718	323	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	0.162	2	718	351	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

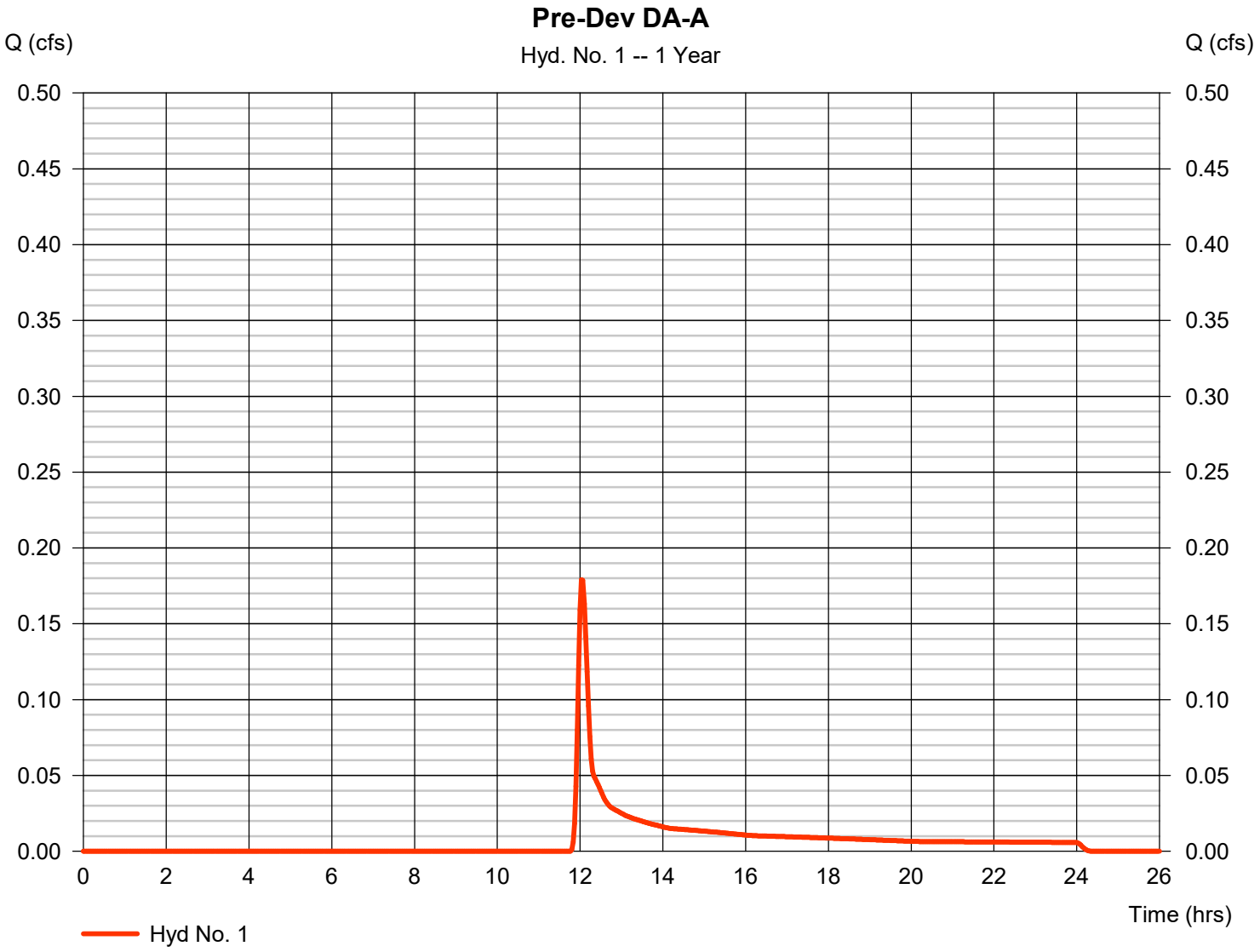
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.179 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 646 cuft
Drainage area	= 0.500 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 2.40 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



TR55 Tc Worksheet

Hyd. No. 1

Pre-Dev DA-A

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.88		0.00		0.00		
Land slope (%)	= 4.01		0.00		0.00		
Travel Time (min)	**= 11.39**	**+**	**0.00**	**+**	**0.00**	**=**	**11.39**
Shallow Concentrated Flow							
Flow length (ft)	= 110.00		0.00		0.00		
Watercourse slope (%)	= 0.93		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.56		0.00		0.00		
Travel Time (min)	**= 1.18**	**+**	**0.00**	**+**	**0.00**	**=**	**1.18**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 12.60 min

Hydrograph Report

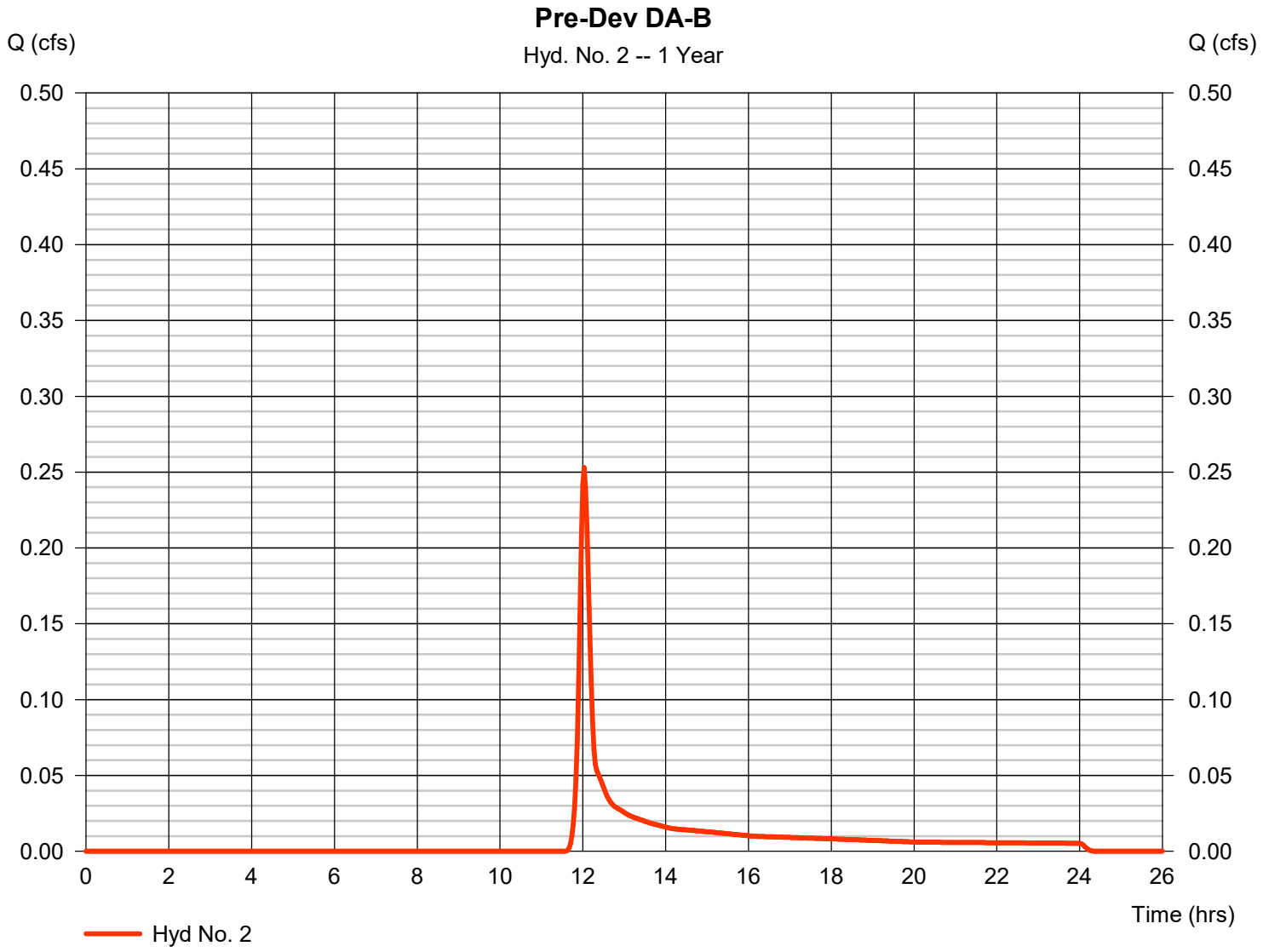
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.253 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 724 cuft
Drainage area	= 0.350 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.20 min
Total precip.	= 2.40 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



TR55 Tc Worksheet

Hyd. No. 2

Pre-Dev DA-B

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 88.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.88		0.00		0.00		
Land slope (%)	= 4.60		0.00		0.00		
Travel Time (min)	**= 9.73**	**+**	**0.00**	**+**	**0.00**	**=**	**9.73**
Shallow Concentrated Flow							
Flow length (ft)	= 103.00		4.00		0.00		
Watercourse slope (%)	= 3.77		3.77		0.00		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=3.95		3.13		0.00		
Travel Time (min)	**= 0.43**	**+**	**0.02**	**+**	**0.00**	**=**	**0.46**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 10.20 min

Hydrograph Report

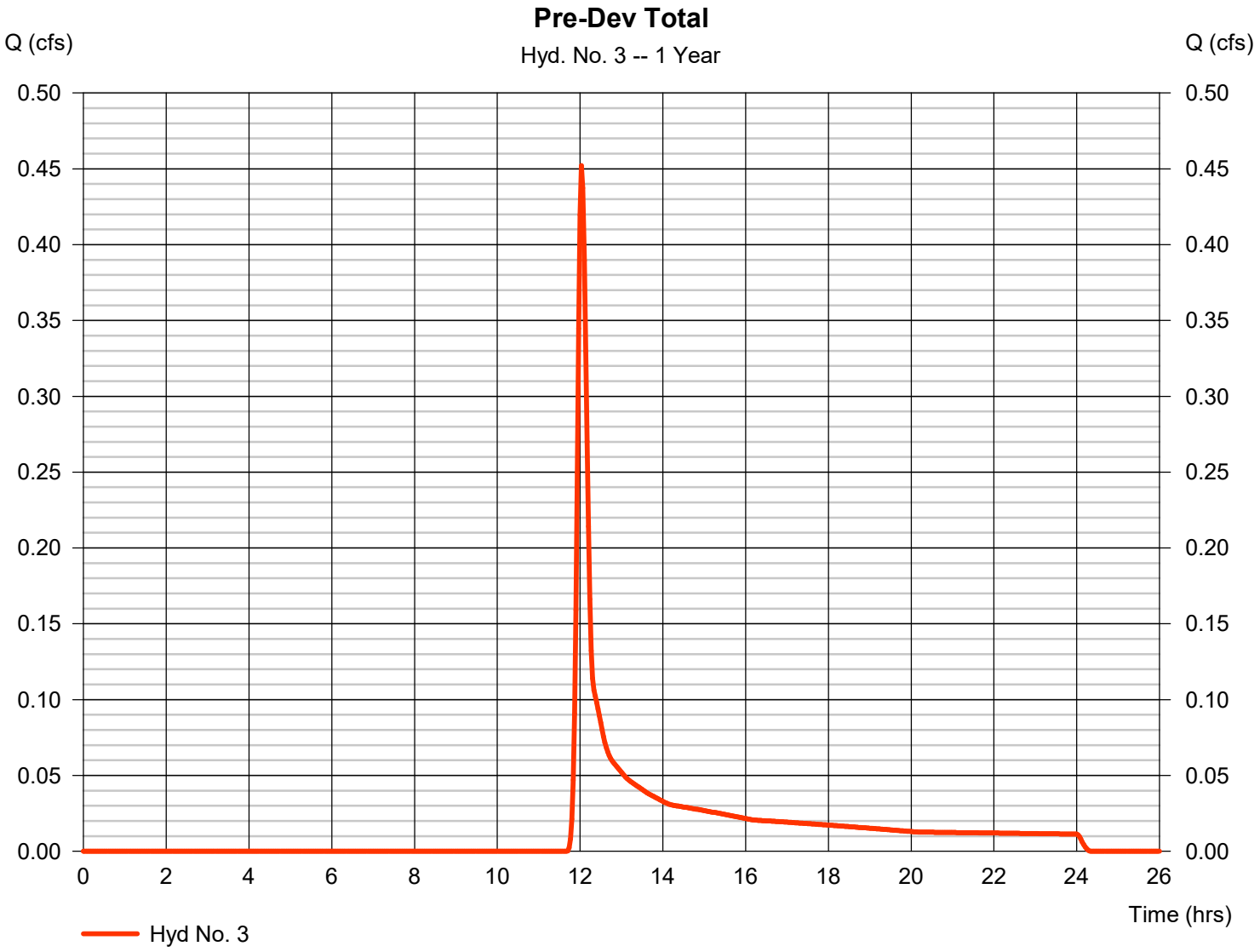
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 0.452 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,407 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 2.40 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



TR55 Tc Worksheet

Hyd. No. 3

Pre-Dev Total

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.88		0.00		0.00		
Land slope (%)	= 4.01		0.00		0.00		
Travel Time (min)	**= 11.39**	**+**	**0.00**	**+**	**0.00**	**=**	**11.39**
Shallow Concentrated Flow							
Flow length (ft)	= 110.00		0.00		0.00		
Watercourse slope (%)	= 0.93		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.56		0.00		0.00		
Travel Time (min)	**= 1.18**	**+**	**0.00**	**+**	**0.00**	**=**	**1.18**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 12.60 min

Hydrograph Report

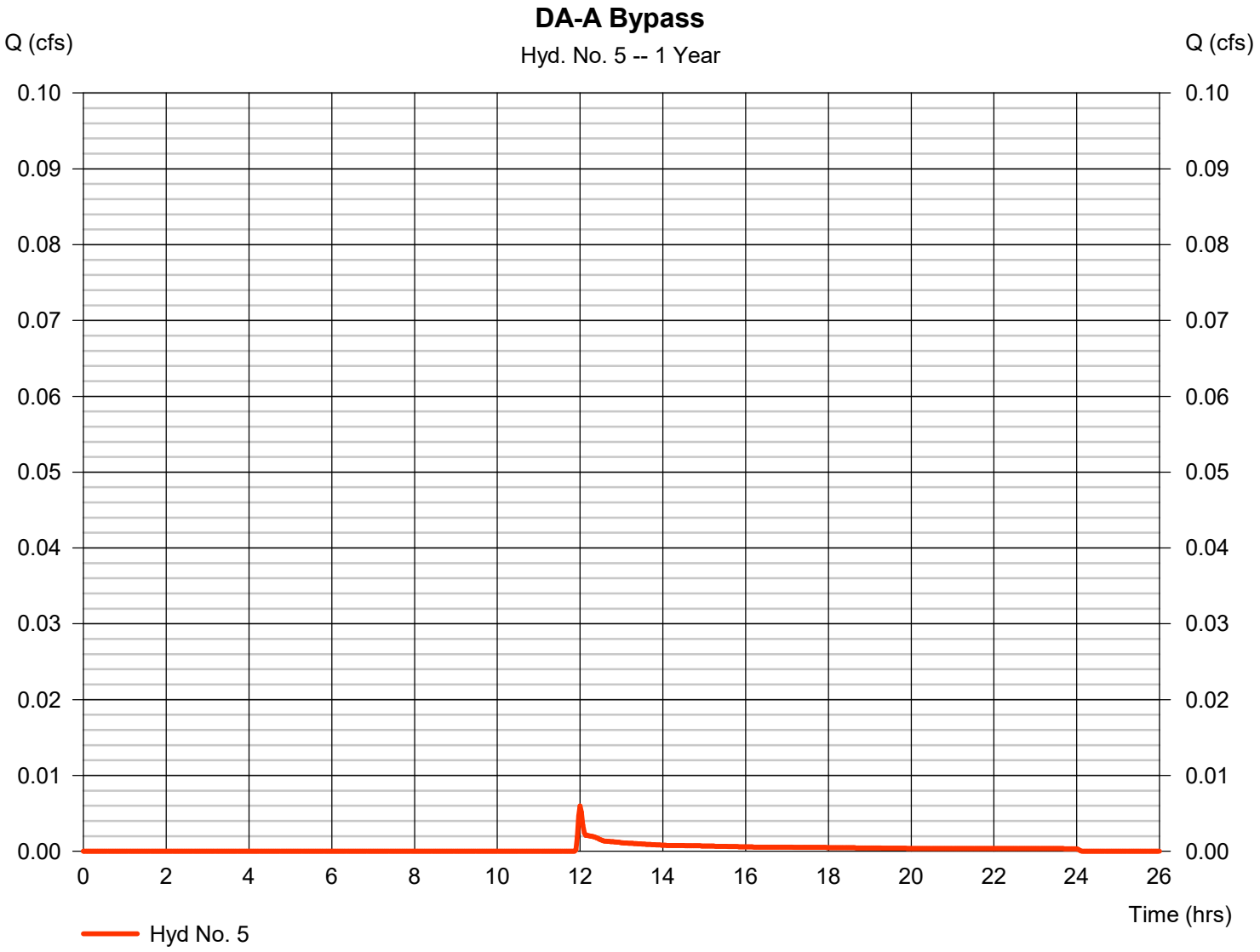
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.006 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	28 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.40 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

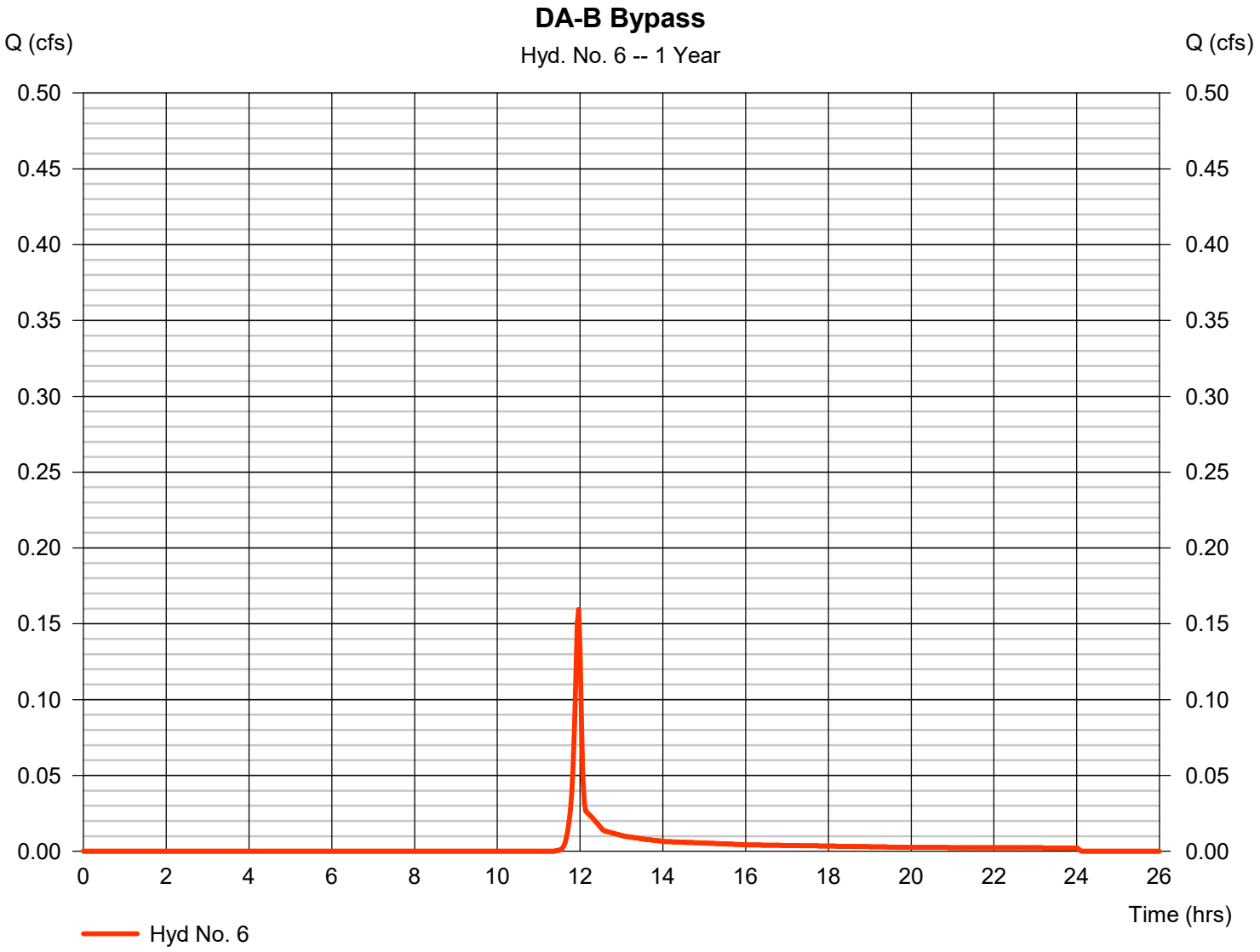
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.159 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	324 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.40 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

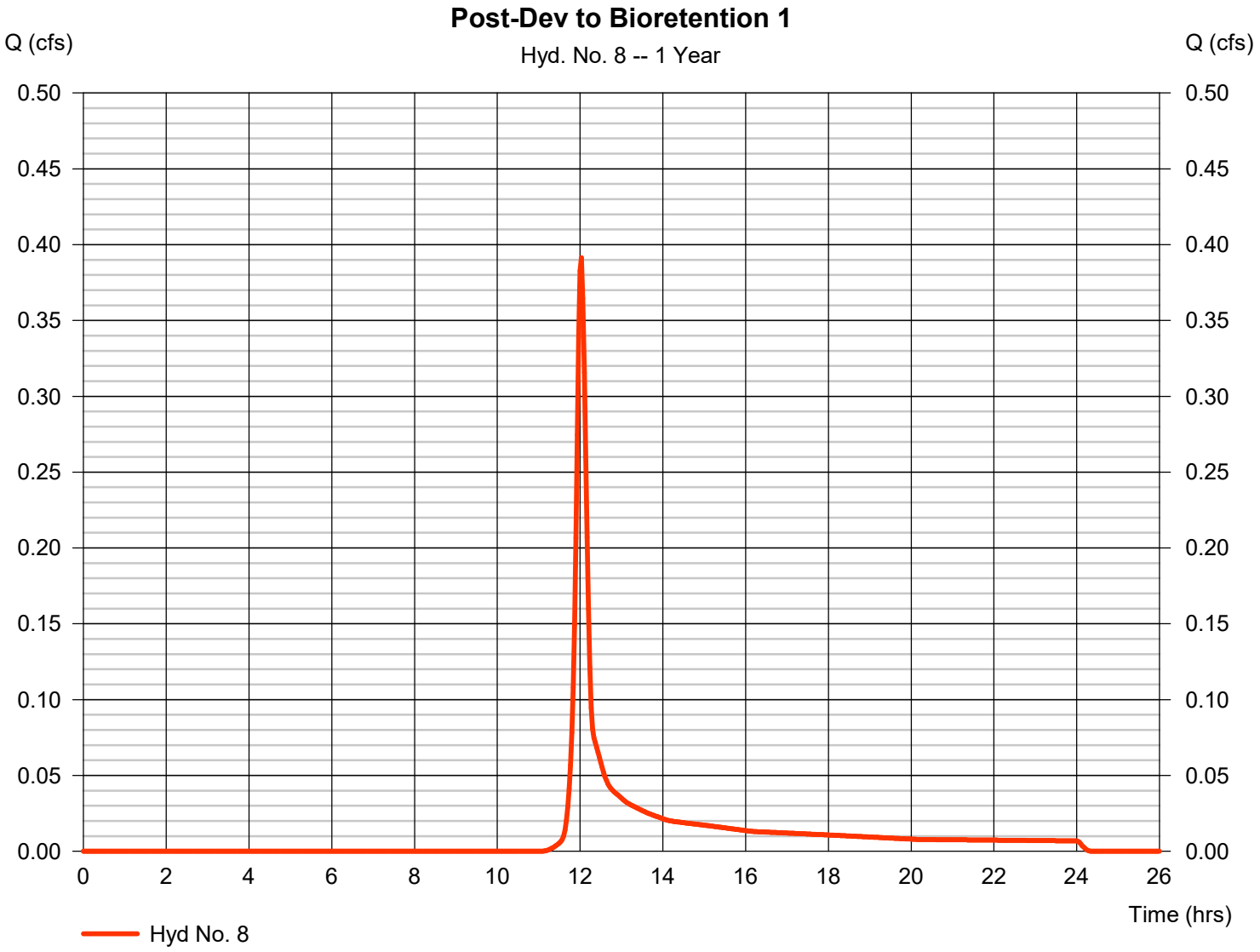
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.391 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,057 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 2.40 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



TR55 Tc Worksheet

Hyd. No. 8

Post-Dev to Bioretention 1

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 88.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.88		0.00		0.00		
Land slope (%)	= 4.01		0.00		0.00		
Travel Time (min)	**= 10.28**	**+**	**0.00**	**+**	**0.00**	**=**	**10.28**
Shallow Concentrated Flow							
Flow length (ft)	= 83.00		0.00		0.00		
Watercourse slope (%)	= 0.93		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.56		0.00		0.00		
Travel Time (min)	**= 0.89**	**+**	**0.00**	**+**	**0.00**	**=**	**0.89**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 11.20 min

Hydrograph Report

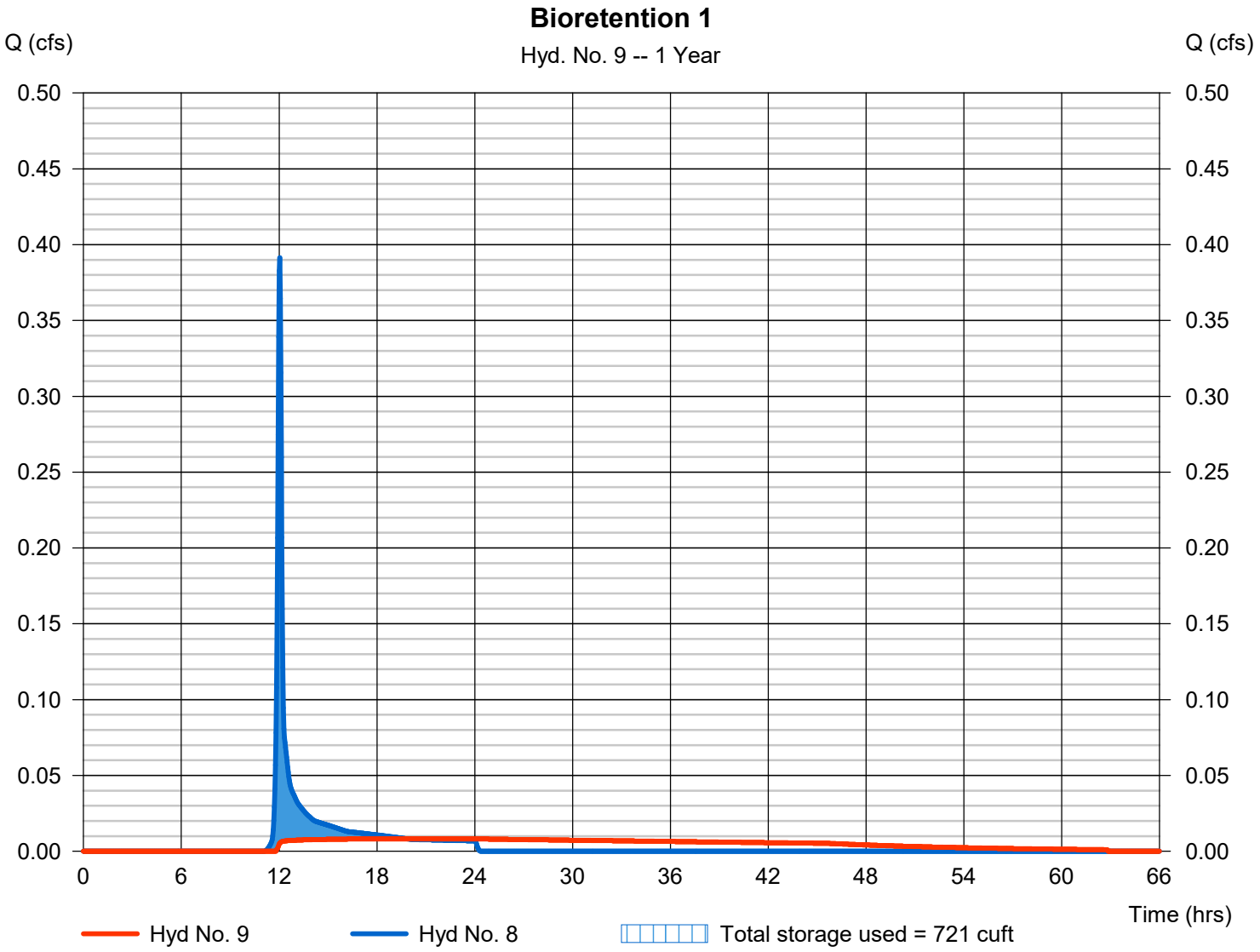
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	= Reservoir	Peak discharge	= 0.008 cfs
Storm frequency	= 1 yrs	Time to peak	= 19.83 hrs
Time interval	= 2 min	Hyd. volume	= 1,019 cuft
Inflow hyd. No.	= 8 - Post-Dev to Bioretention 1	Max. Elevation	= 471.40 ft
Reservoir name	= BMP ID 1 - Bioretention 1	Max. Storage	= 721 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Pond No. 1 - BMP ID 1 - Bioretention 1

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 470.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	470.00	330	0	0
0.50	470.50	452	196	196
1.00	471.00	588	260	456
1.50	471.50	739	332	787
2.00	472.00	902	410	1,198
2.50	472.50	1,188	523	1,720

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

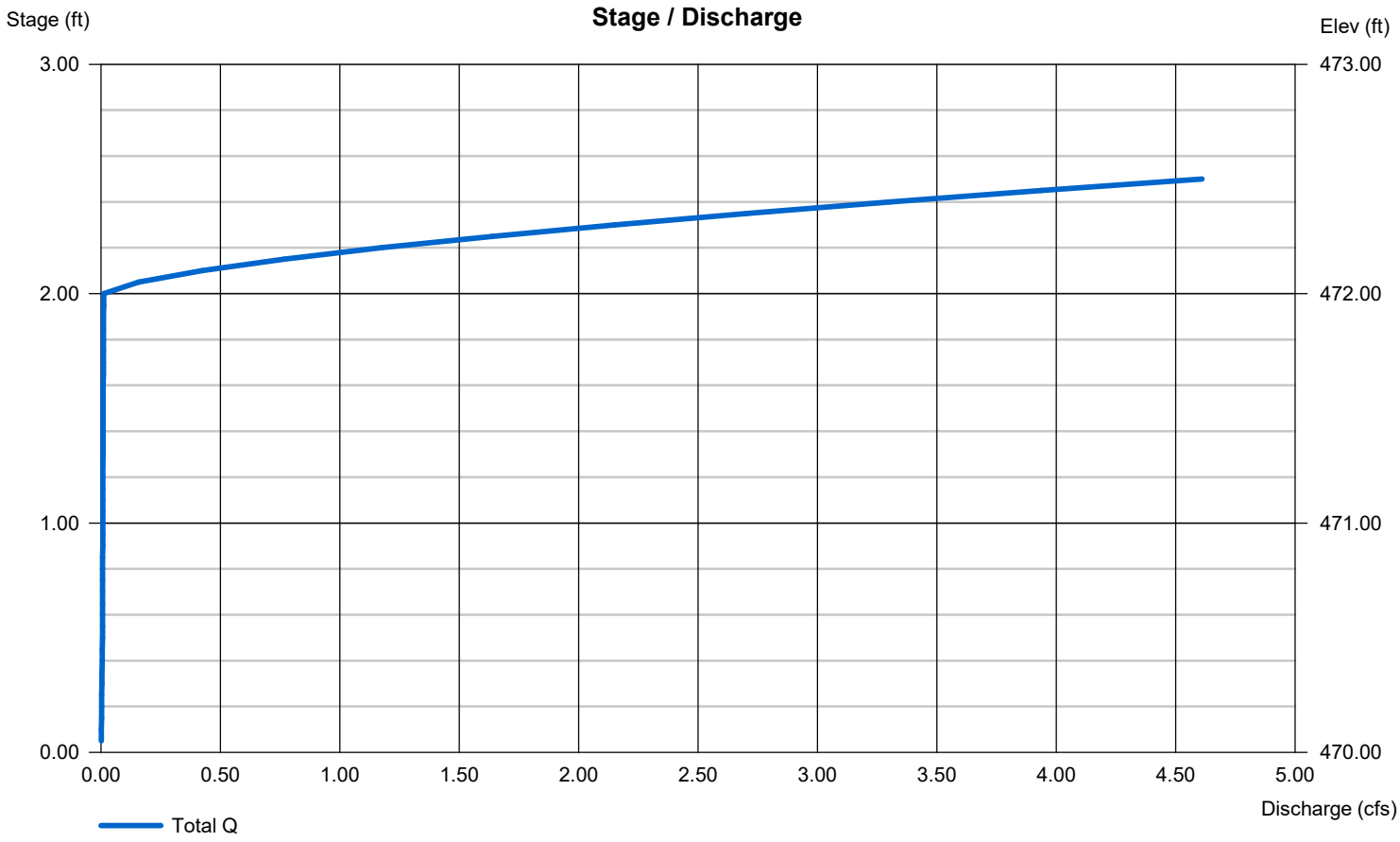
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 472.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.500 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



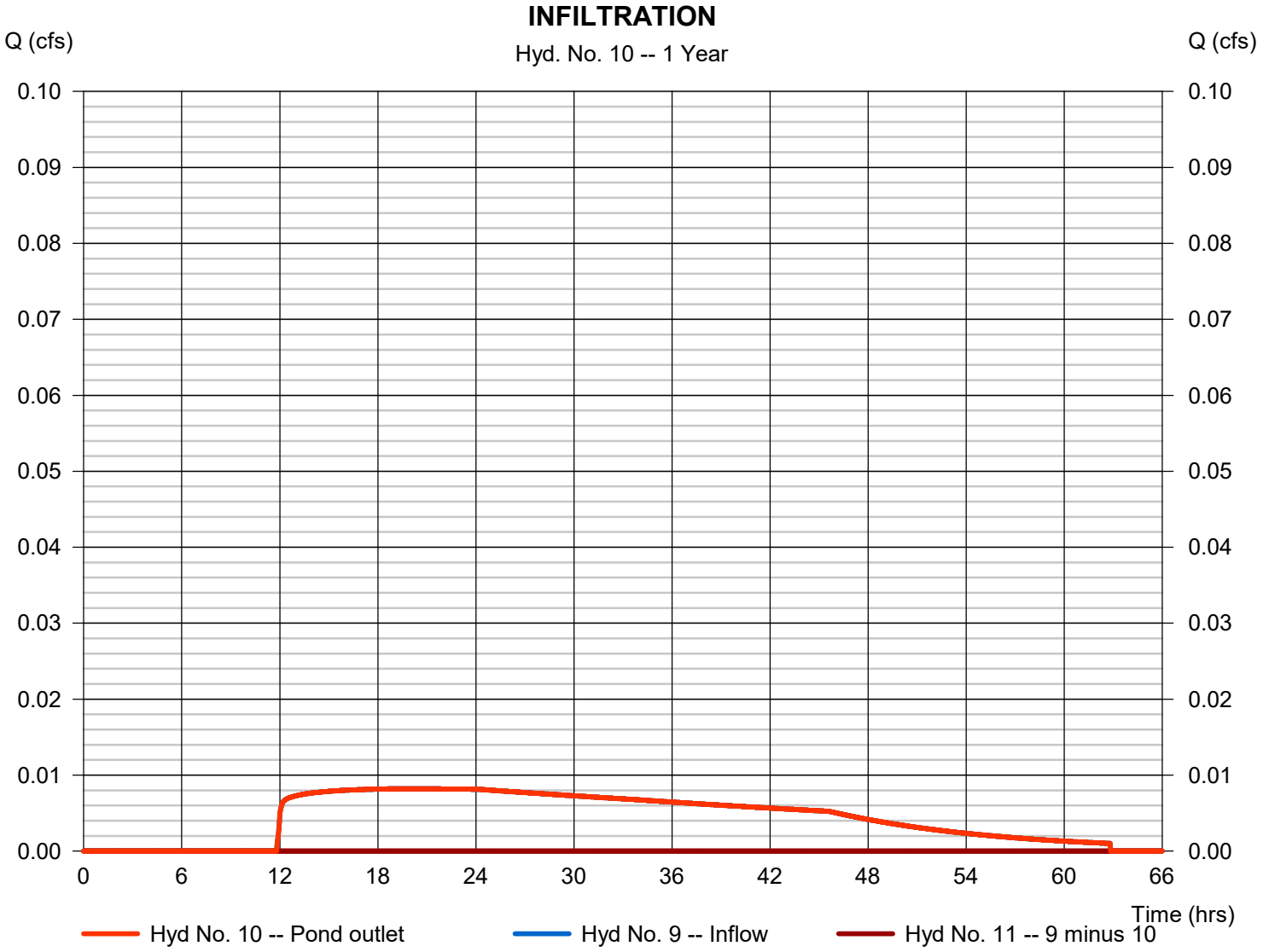
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.008 cfs
Storm frequency	= 1 yrs	Time to peak	= 19.83 hrs
Time interval	= 2 min	Hyd. volume	= 1,019 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



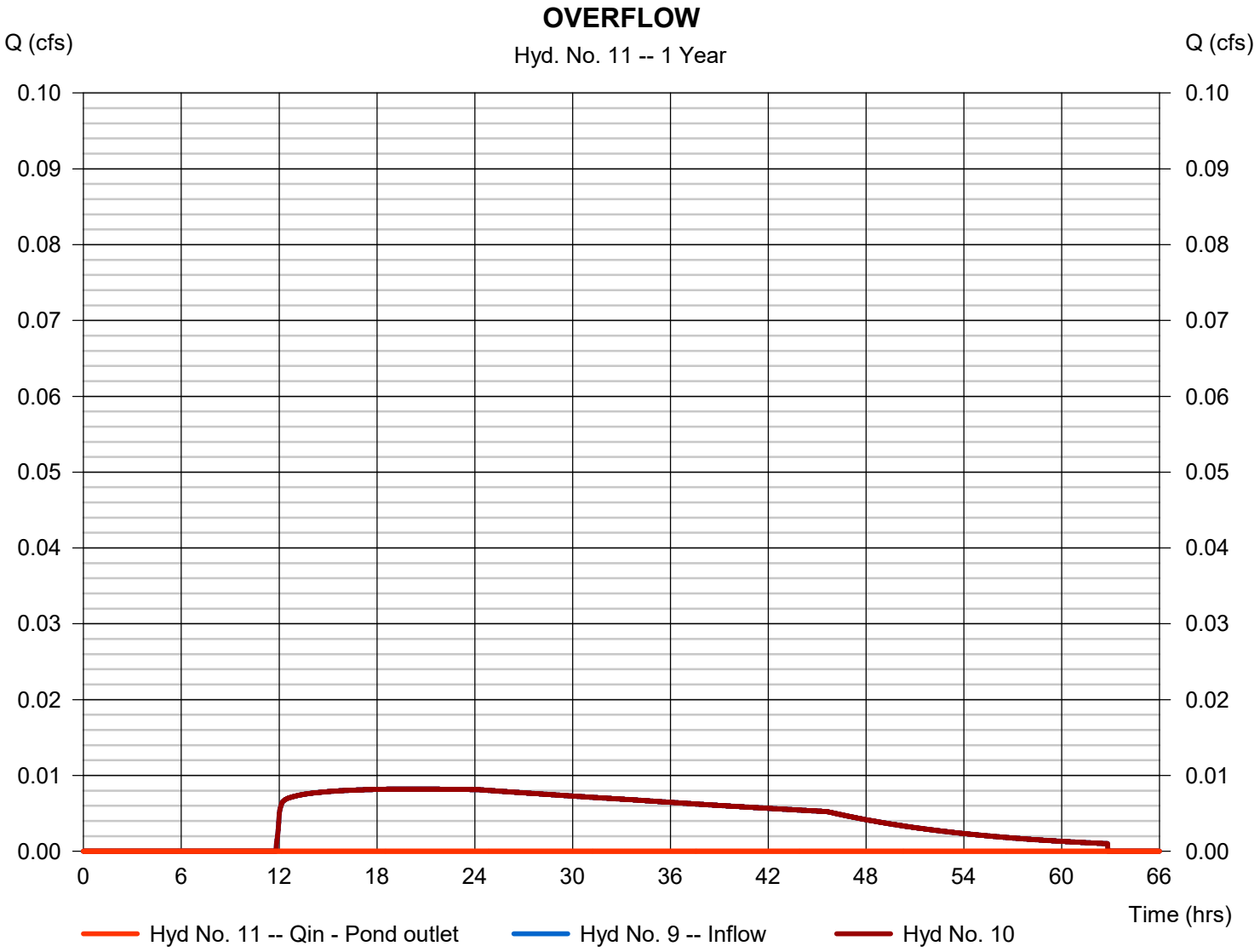
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 48.87 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



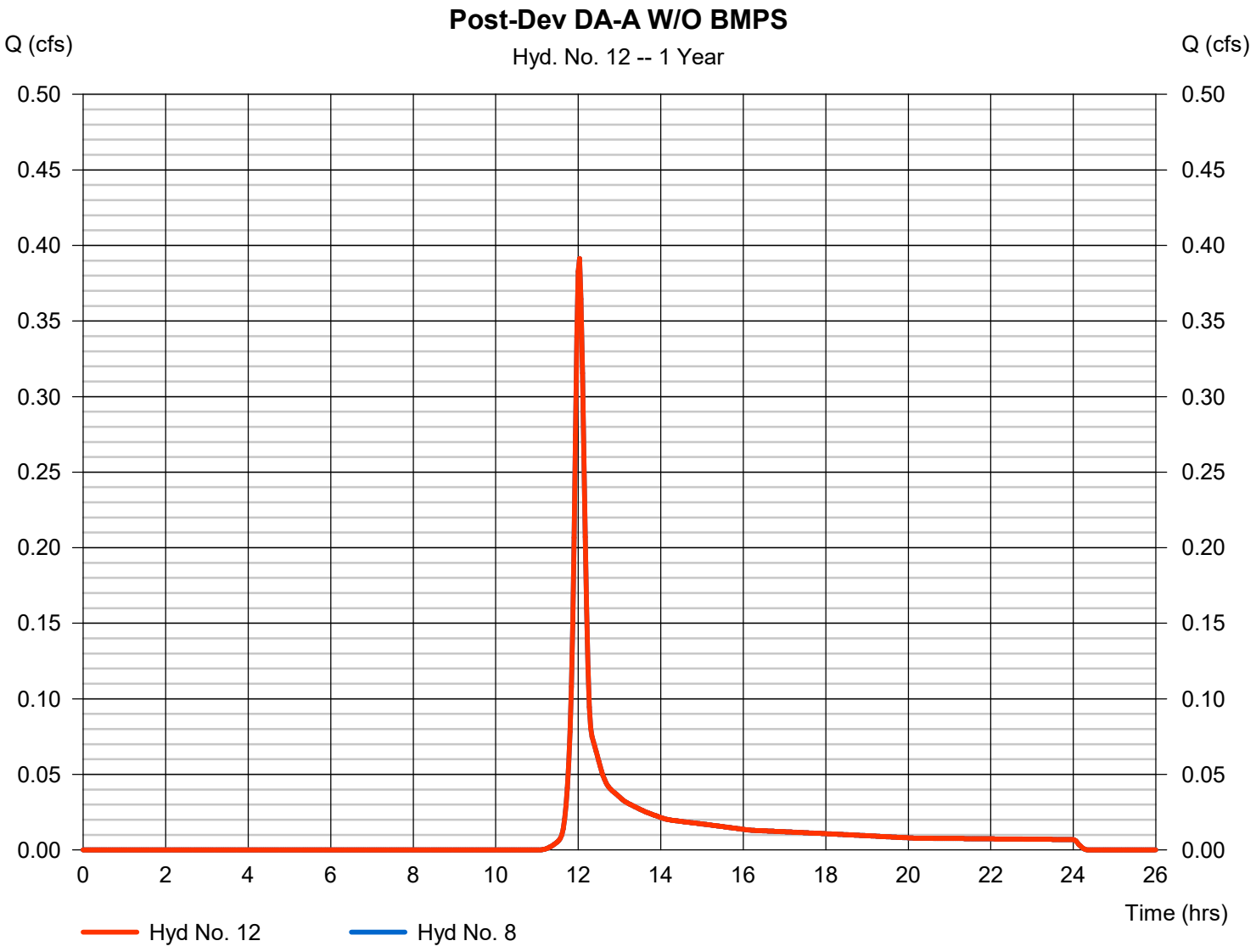
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.391 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,057 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

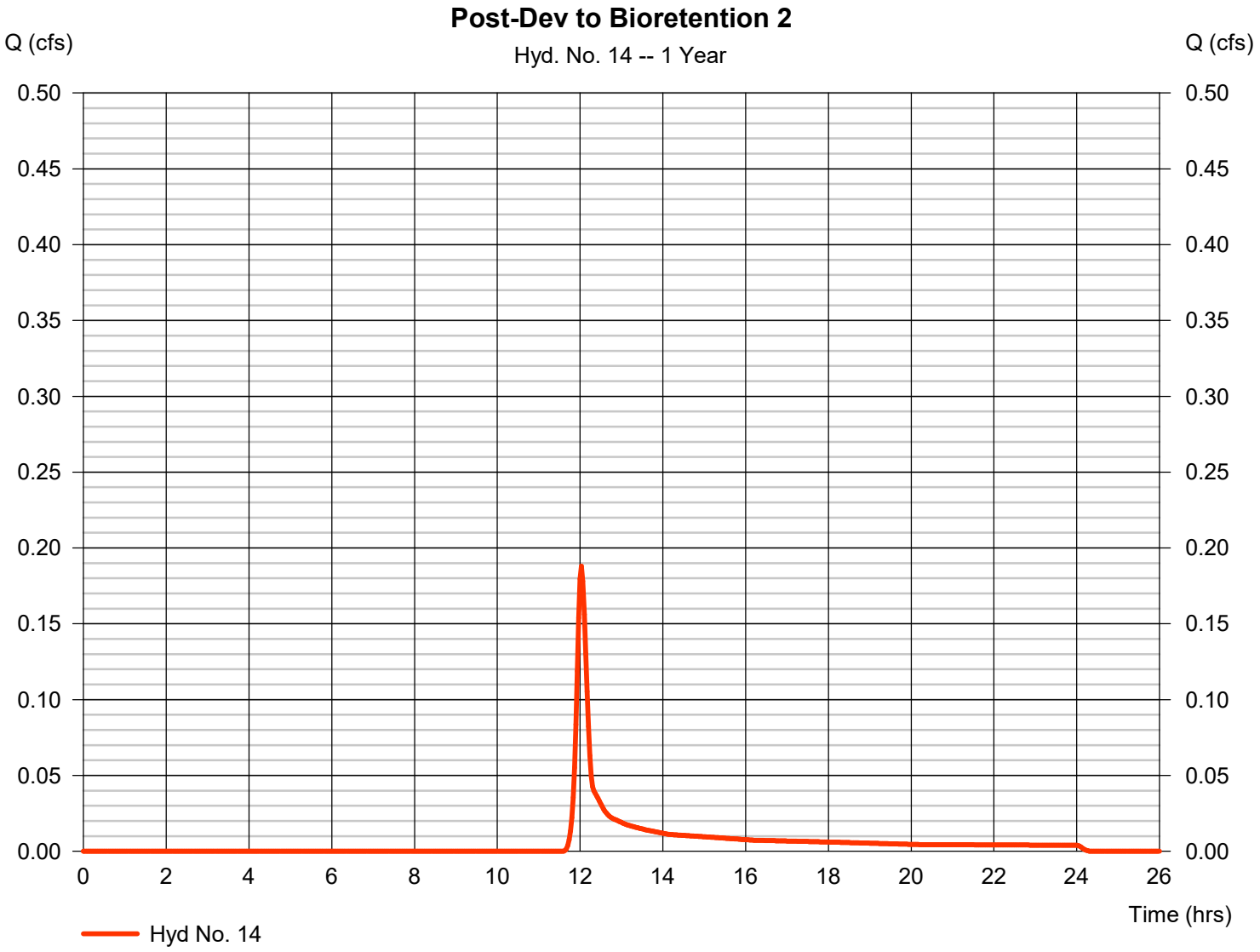
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.188 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 538 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 2.40 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



TR55 Tc Worksheet

Hyd. No. 14

Post-Dev to Bioretention 2

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 88.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.88		0.00		0.00		
Land slope (%)	= 4.60		0.00		0.00		
Travel Time (min)	**= 9.73**	**+**	**0.00**	**+**	**0.00**	**=**	**9.73**
Shallow Concentrated Flow							
Flow length (ft)	= 76.00		4.00		0.00		
Watercourse slope (%)	= 3.77		3.77		0.00		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=3.95		3.13		0.00		
Travel Time (min)	**= 0.32**	**+**	**0.02**	**+**	**0.00**	**=**	**0.34**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 10.10 min

Hydrograph Report

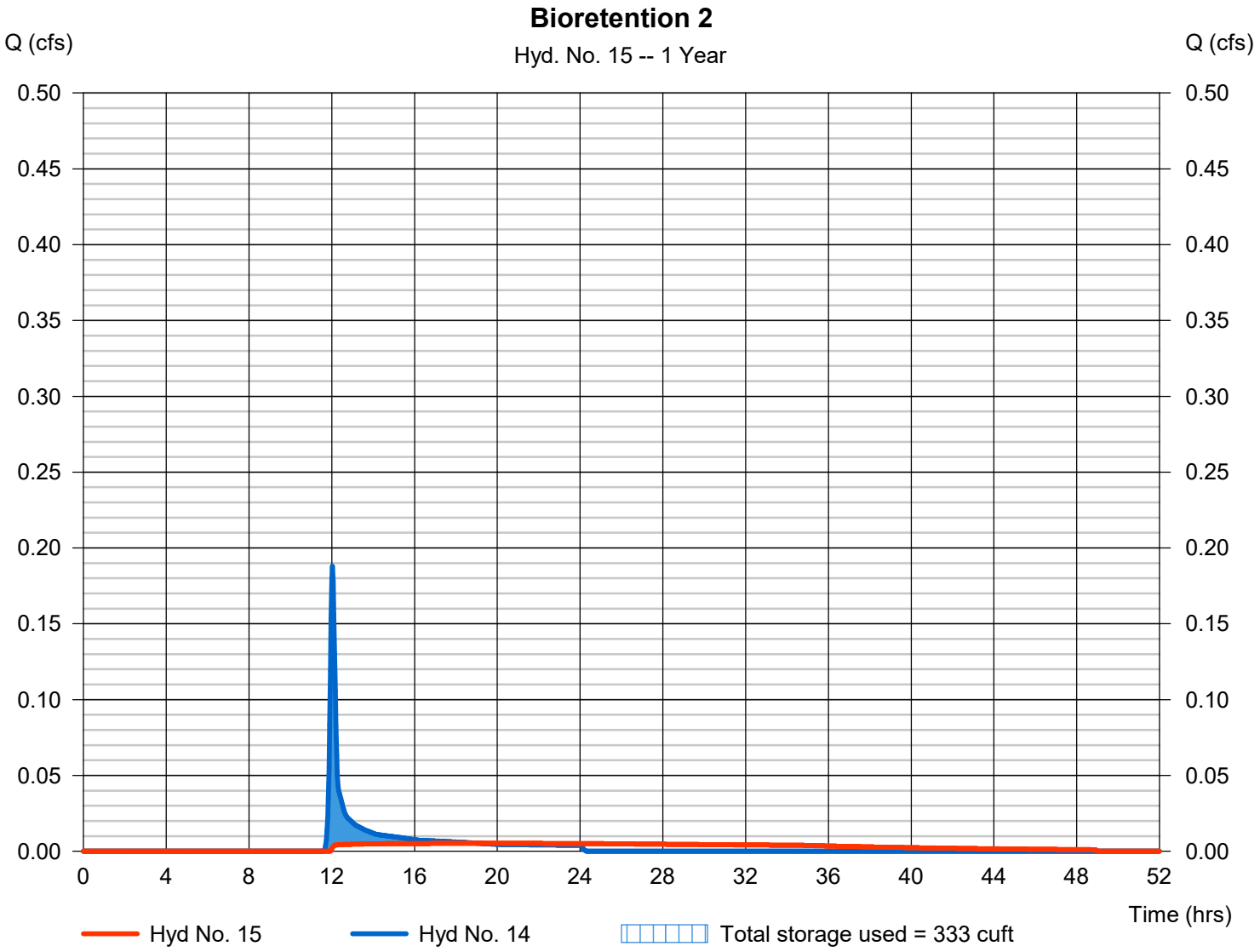
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 1 yrs	Time to peak	= 19.17 hrs
Time interval	= 2 min	Hyd. volume	= 501 cuft
Inflow hyd. No.	= 14 - Post-Dev to Bioretention 2	Max. Elevation	= 470.97 ft
Reservoir name	= BMP ID 2 - Bioretention 2	Max. Storage	= 333 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Pond No. 4 - BMP ID 2 - Bioretention 2

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 470.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	470.00	247	0	0
0.50	470.50	338	146	146
1.00	471.00	457	199	345
1.50	471.50	591	262	607
2.00	472.00	717	327	934
2.50	472.50	877	399	1,333

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

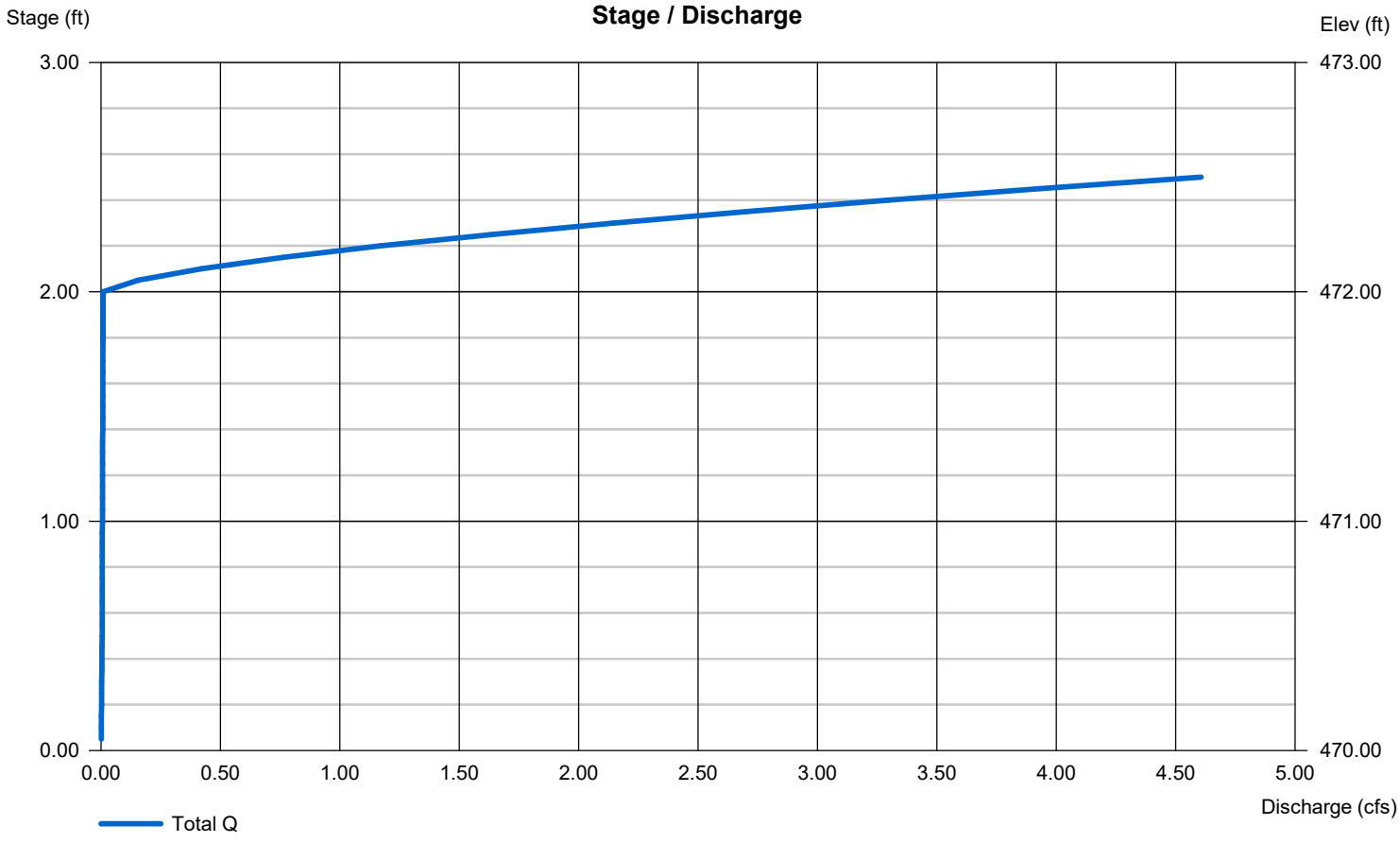
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 472.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.500 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



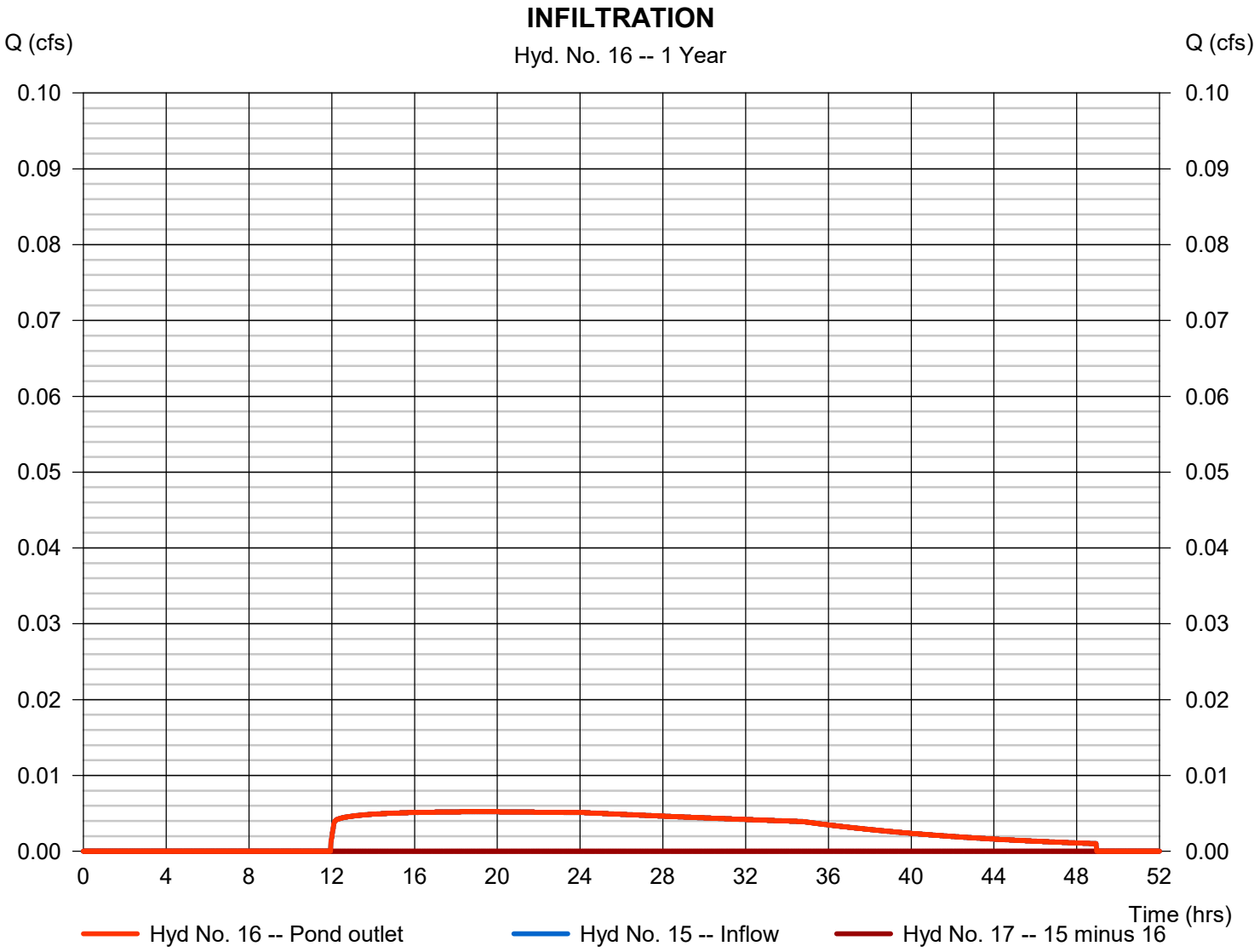
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.005 cfs
Storm frequency	= 1 yrs	Time to peak	= 19.17 hrs
Time interval	= 2 min	Hyd. volume	= 501 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



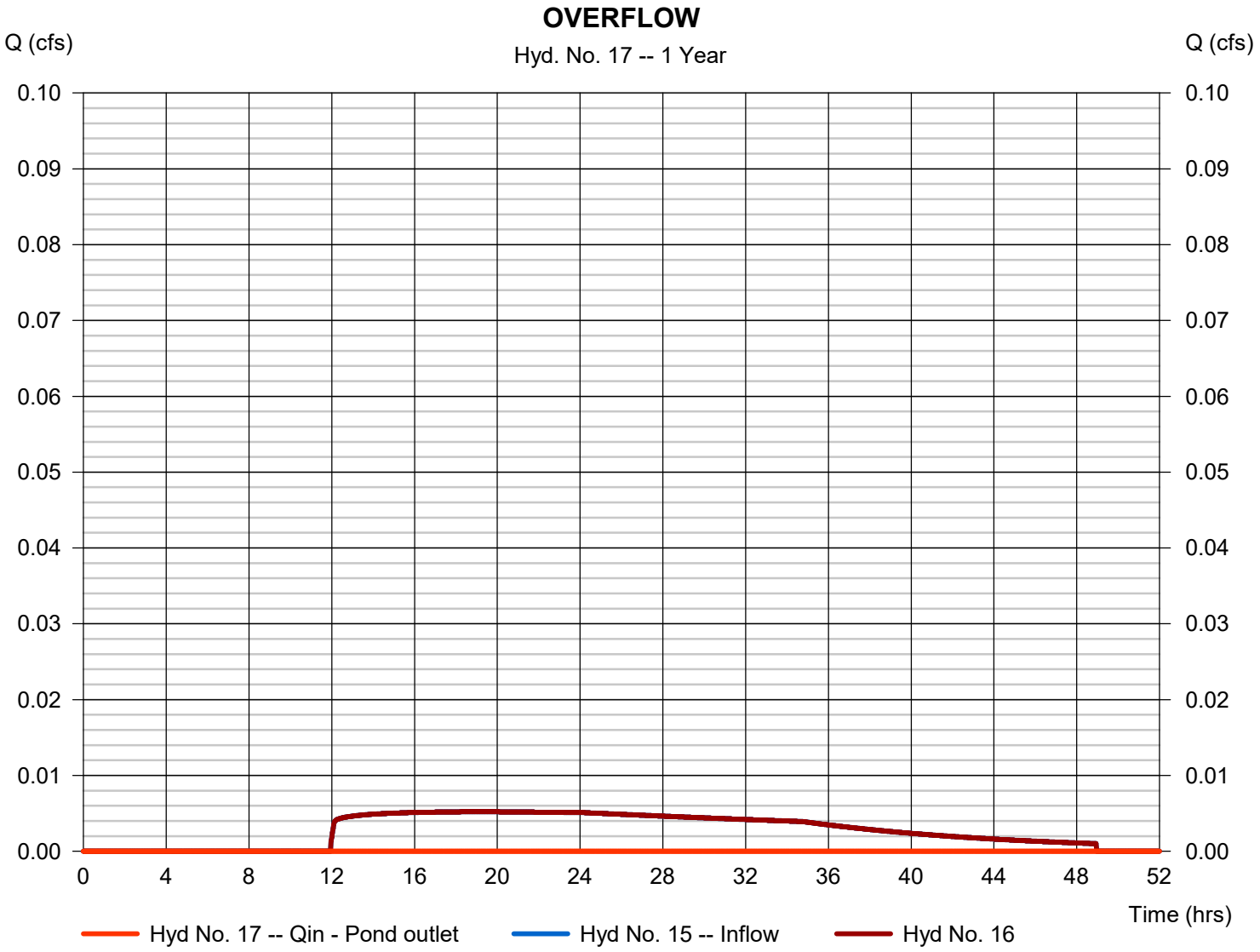
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 38.67 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



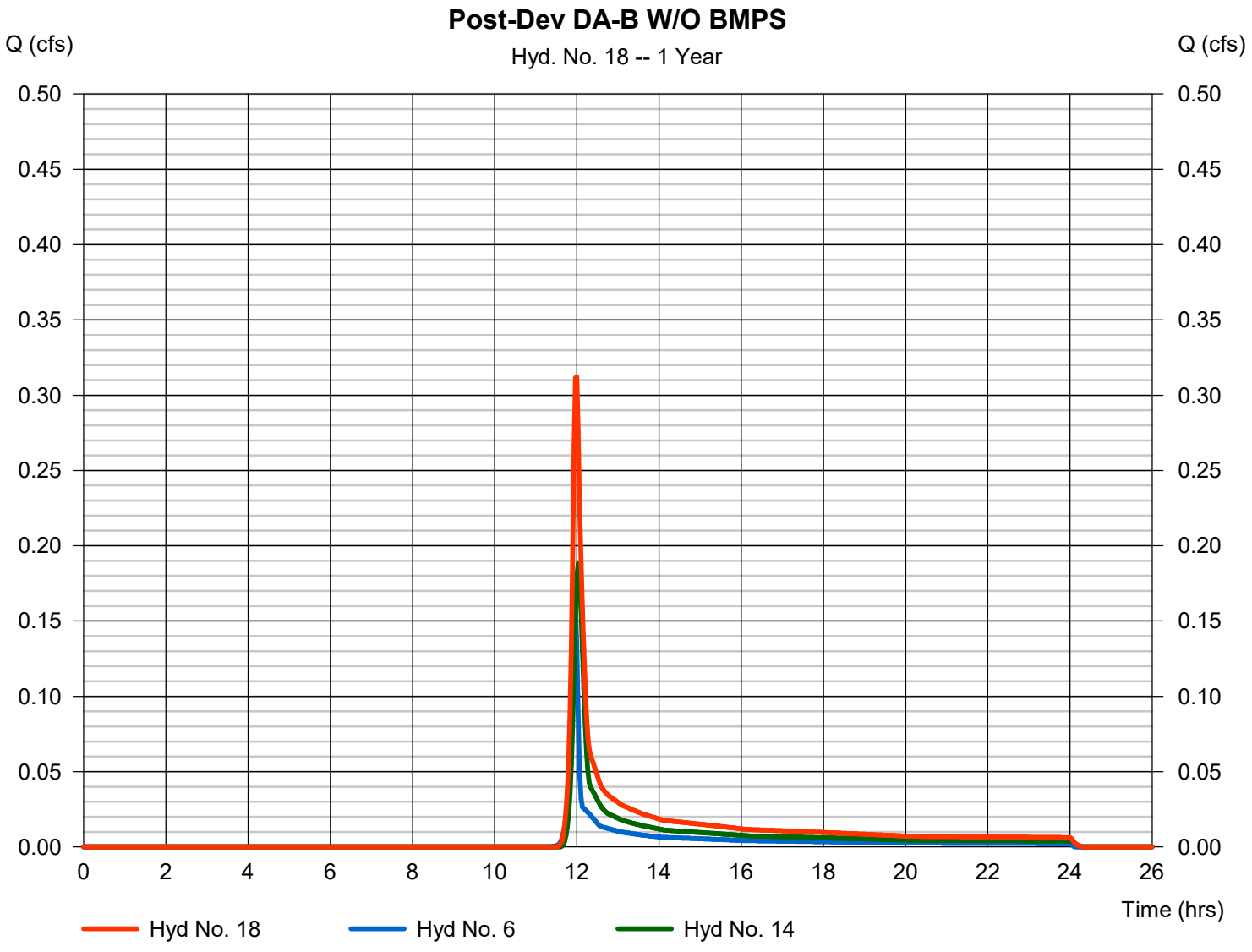
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.312 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 861 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac

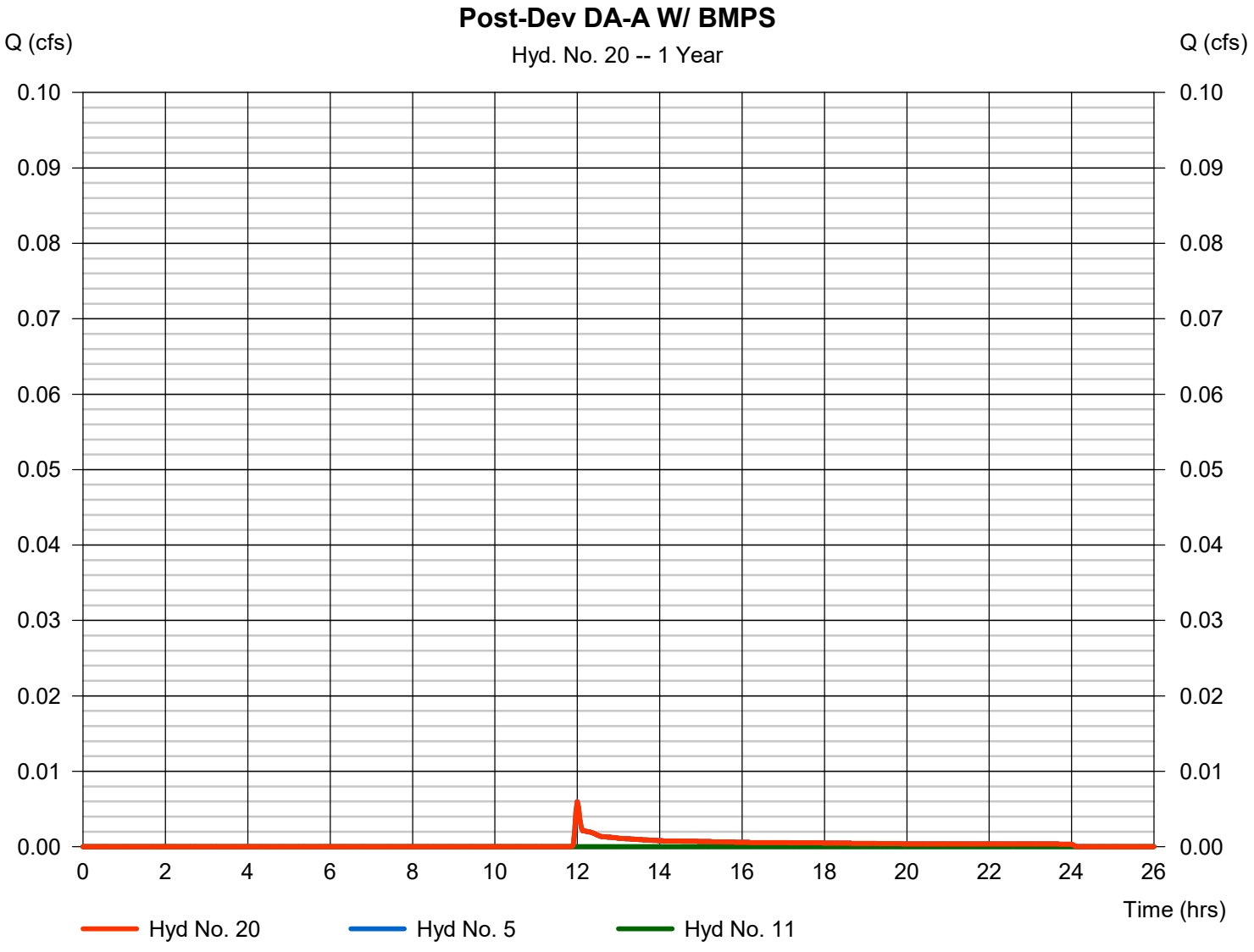


Hydrograph Report

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.006 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.050 ac



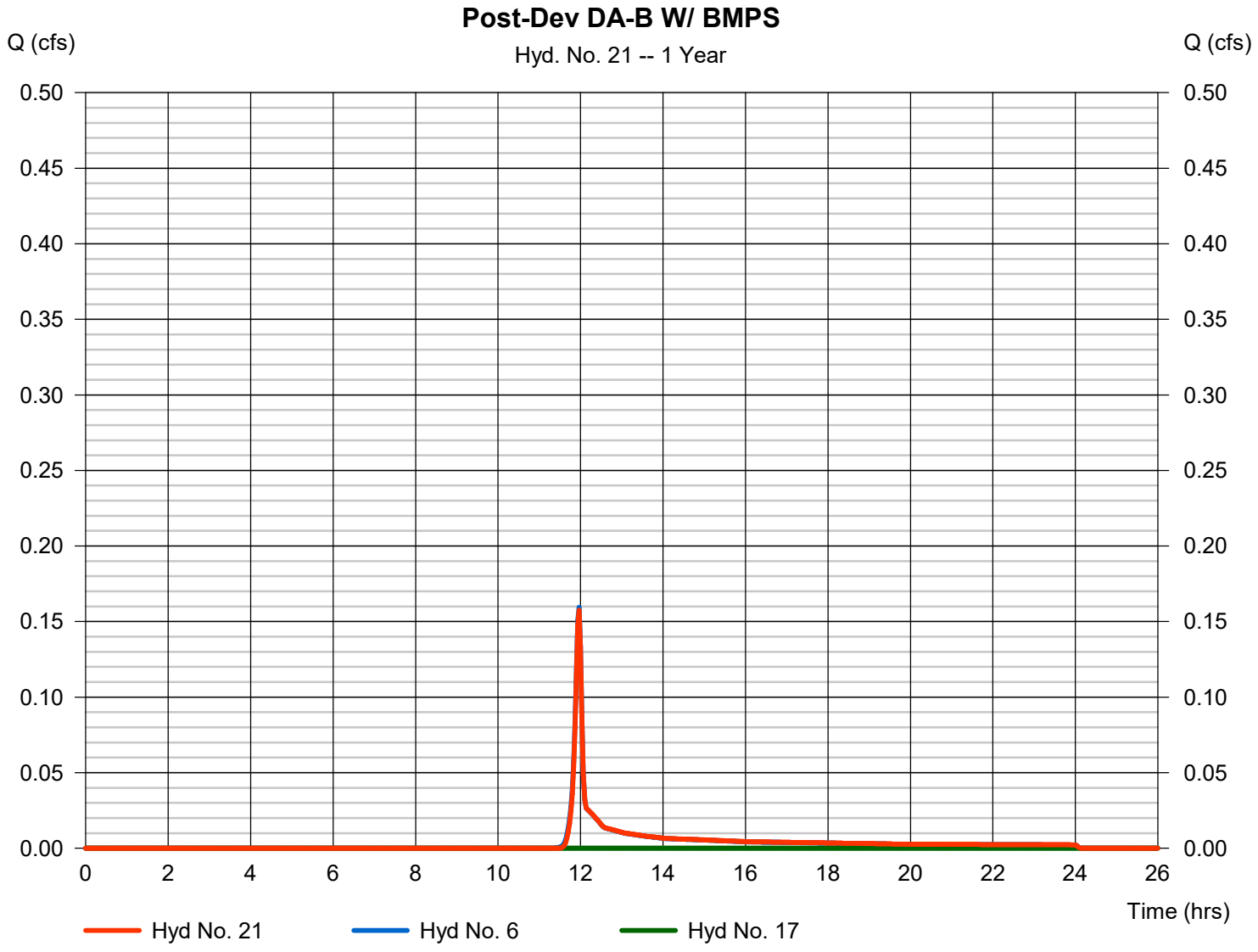
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.158 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 323 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac



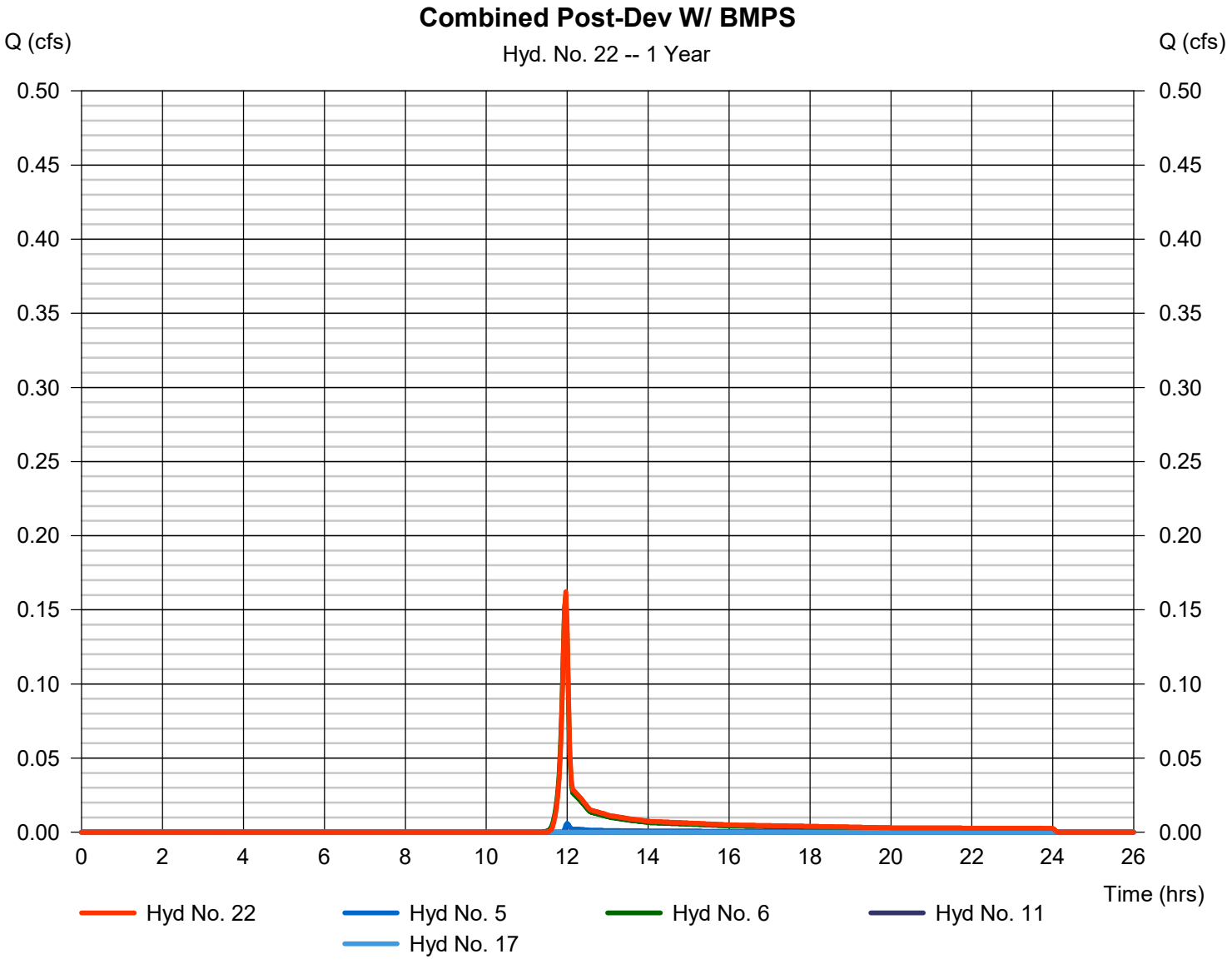
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.162 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 351 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.350	2	722	1,059	------	------	------	Pre-Dev DA-A
2	SCS Runoff	0.401	2	722	1,091	------	------	------	Pre-Dev DA-B
3	SCS Runoff	0.779	2	722	2,203	------	------	------	Pre-Dev Total
5	SCS Runoff	0.019	2	718	55	------	------	------	DA-A Bypass
6	SCS Runoff	0.238	2	718	477	------	------	------	DA-B Bypass
8	SCS Runoff	0.577	2	722	1,524	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	0.010	2	1270	1,487	8	471.89	1,104	Bioretention 1
10	Diversion1	0.010	2	1270	1,487	9	------	------	INFILTRATION
11	Diversion2	0.000	2	3658	0	9	------	------	OVERFLOW
12	Combine	0.577	2	722	1,524	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	0.298	2	722	811	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.006	2	1186	773	14	471.39	547	Bioretention 2
16	Diversion1	0.006	2	1186	773	15	------	------	INFILTRATION
17	Diversion2	0.000	2	2762	0	15	------	------	OVERFLOW
18	Combine	0.496	2	718	1,292	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	0.019	2	718	55	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	0.239	2	718	481	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	0.259	2	718	535	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

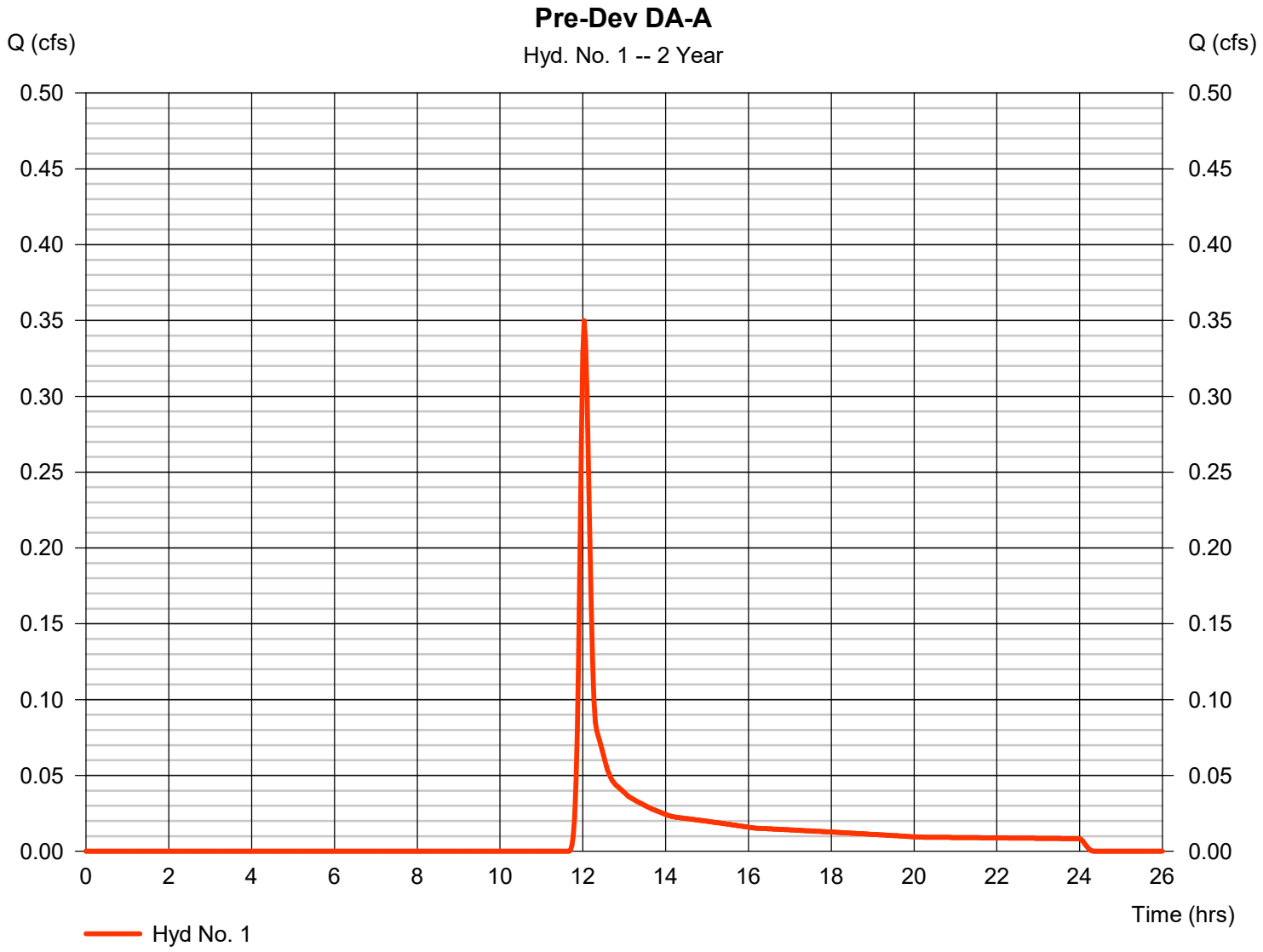
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.350 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	1,059 cuft
Drainage area	=	0.500 ac	Curve number	=	68*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.60 min
Total precip.	=	2.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

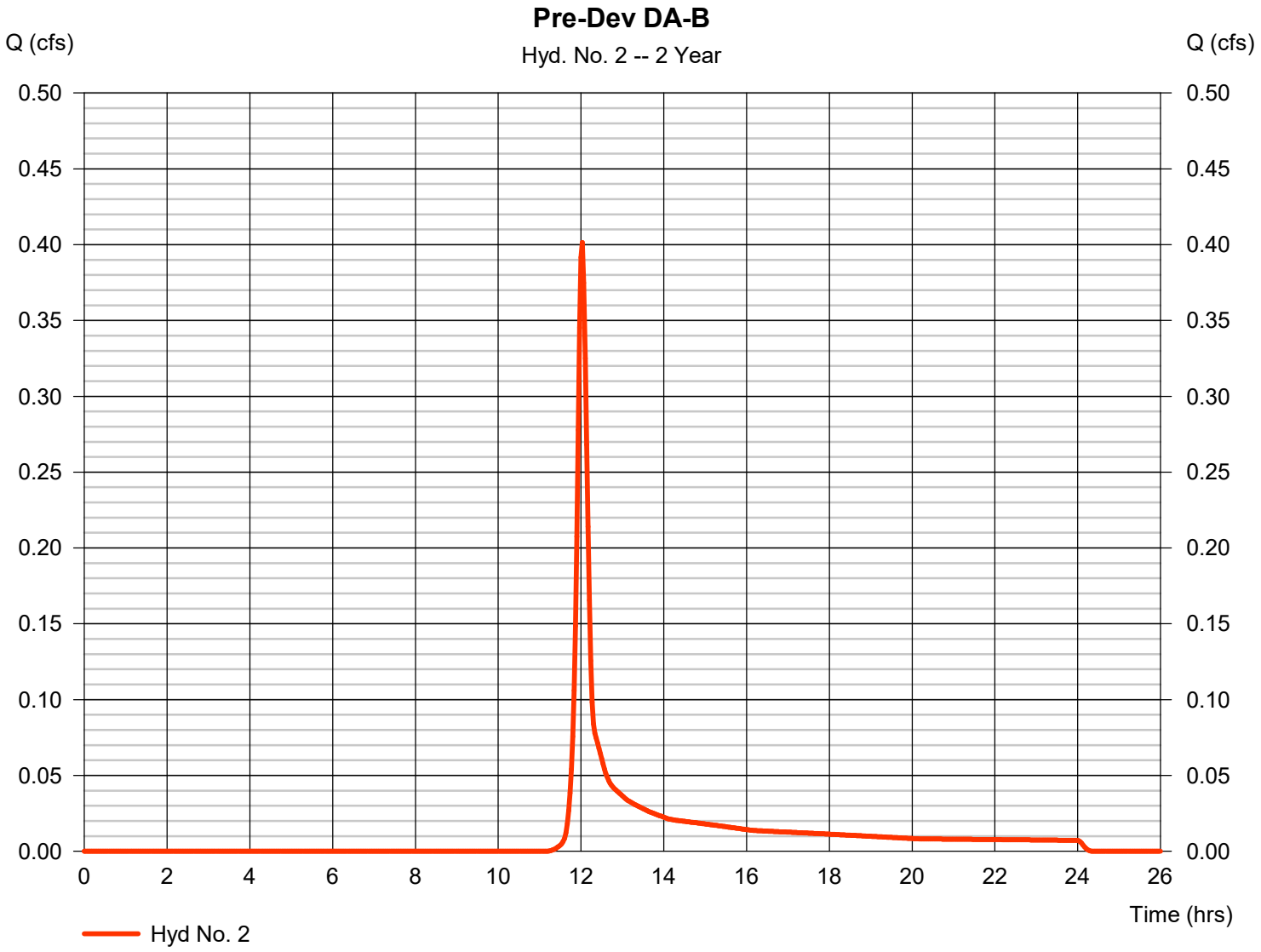
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.401 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	1,091 cuft
Drainage area	=	0.350 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	10.20 min
Total precip.	=	2.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

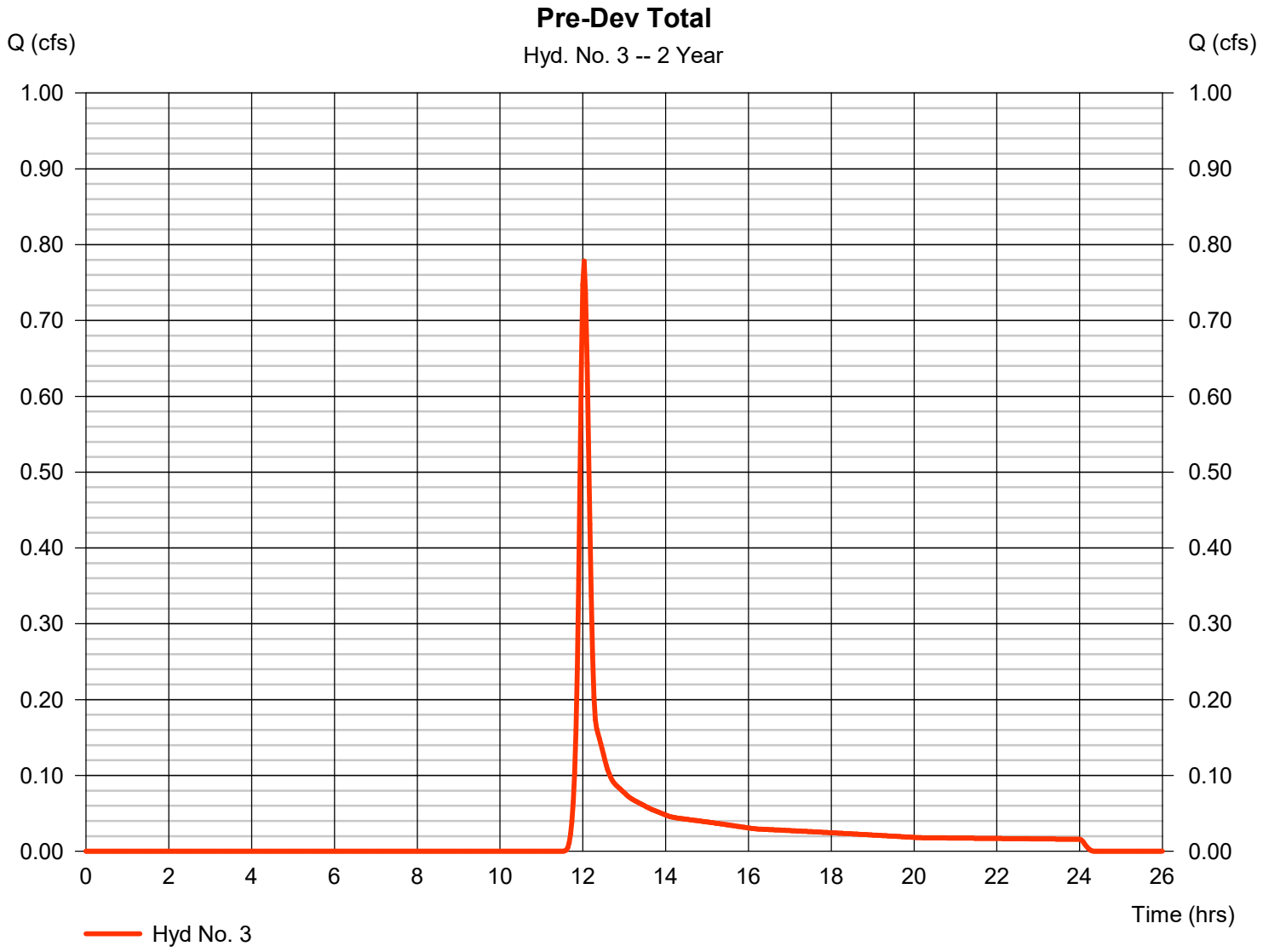
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 0.779 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,203 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 2.88 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

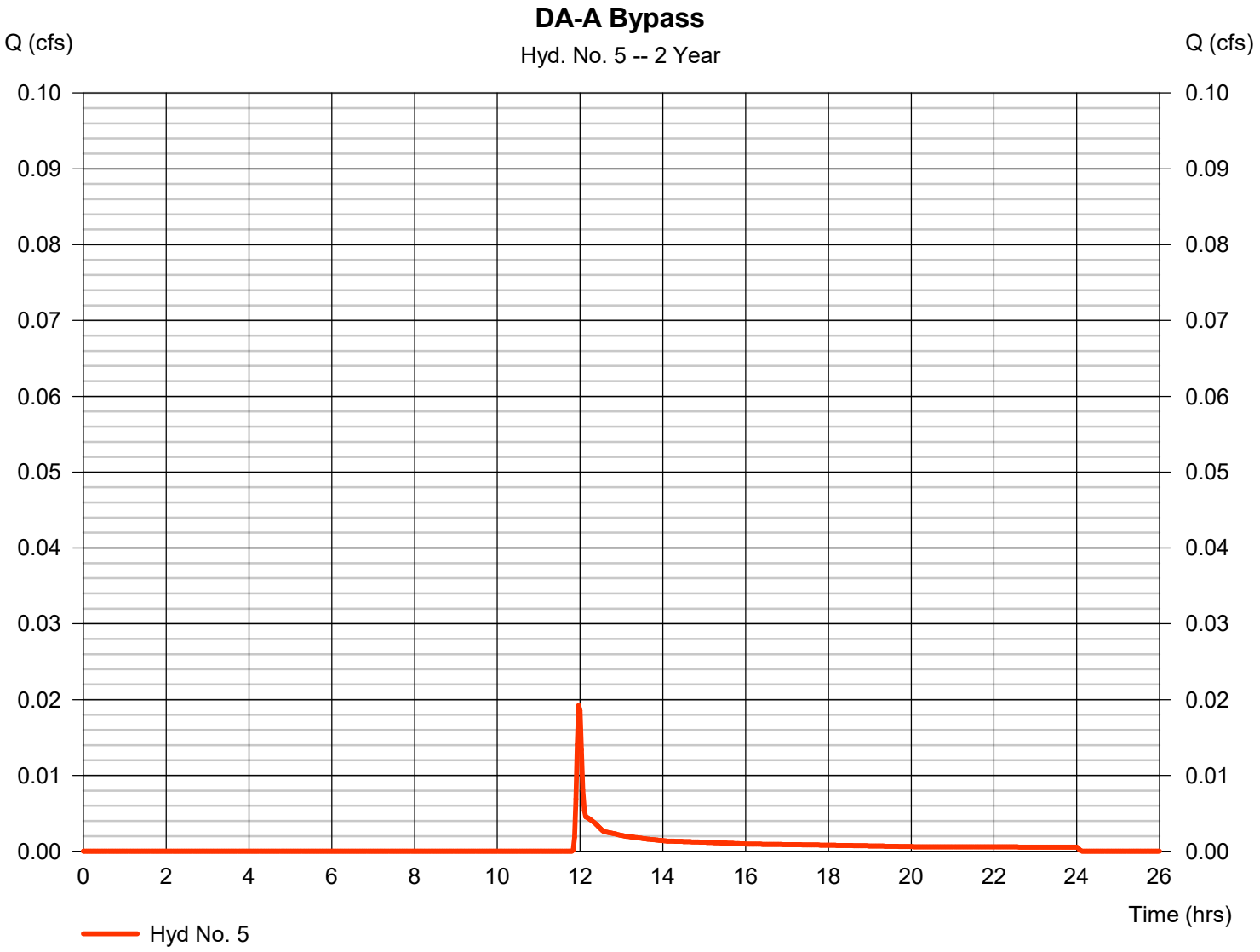
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.019 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	55 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

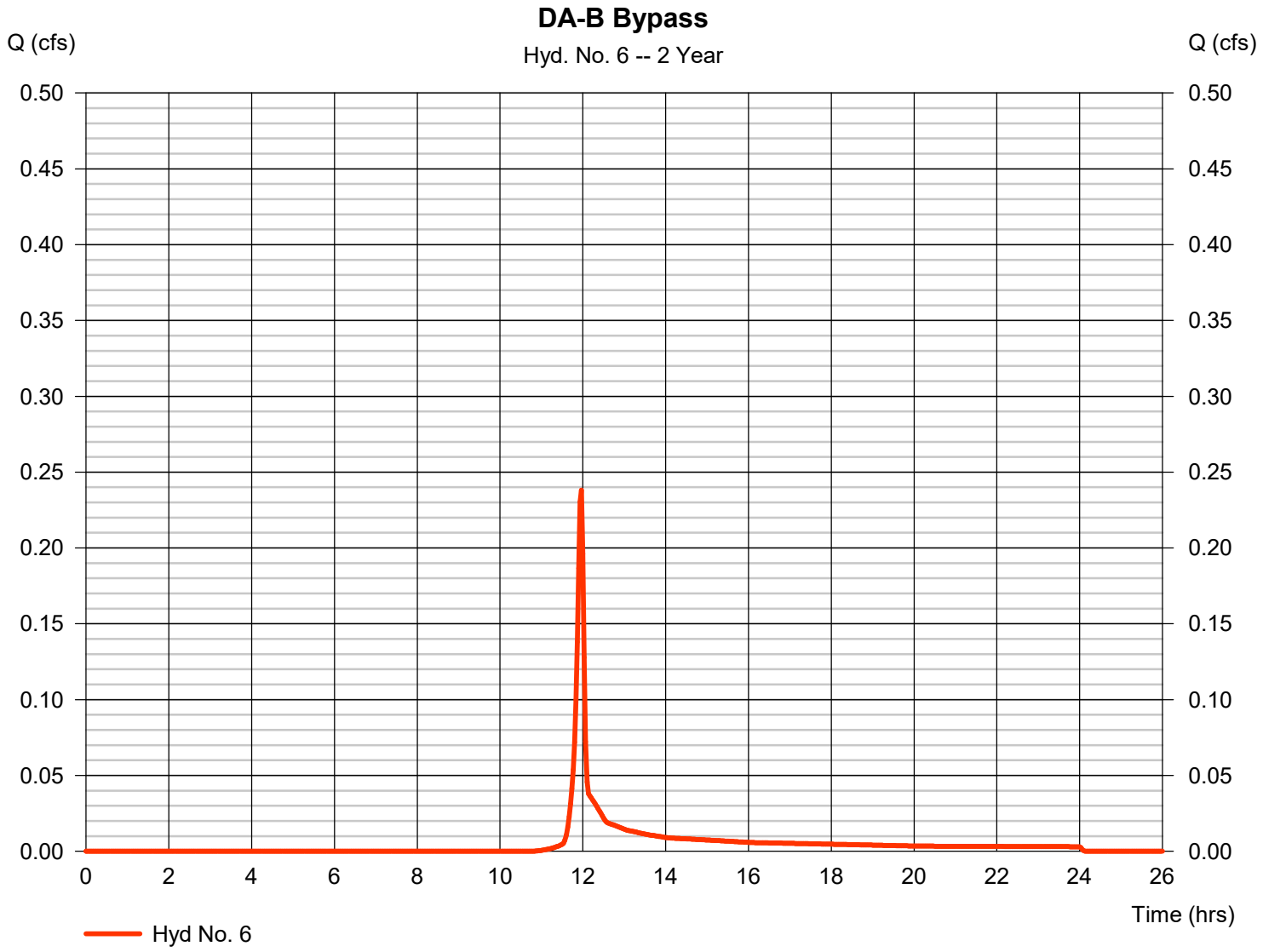
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.238 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	477 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.88 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

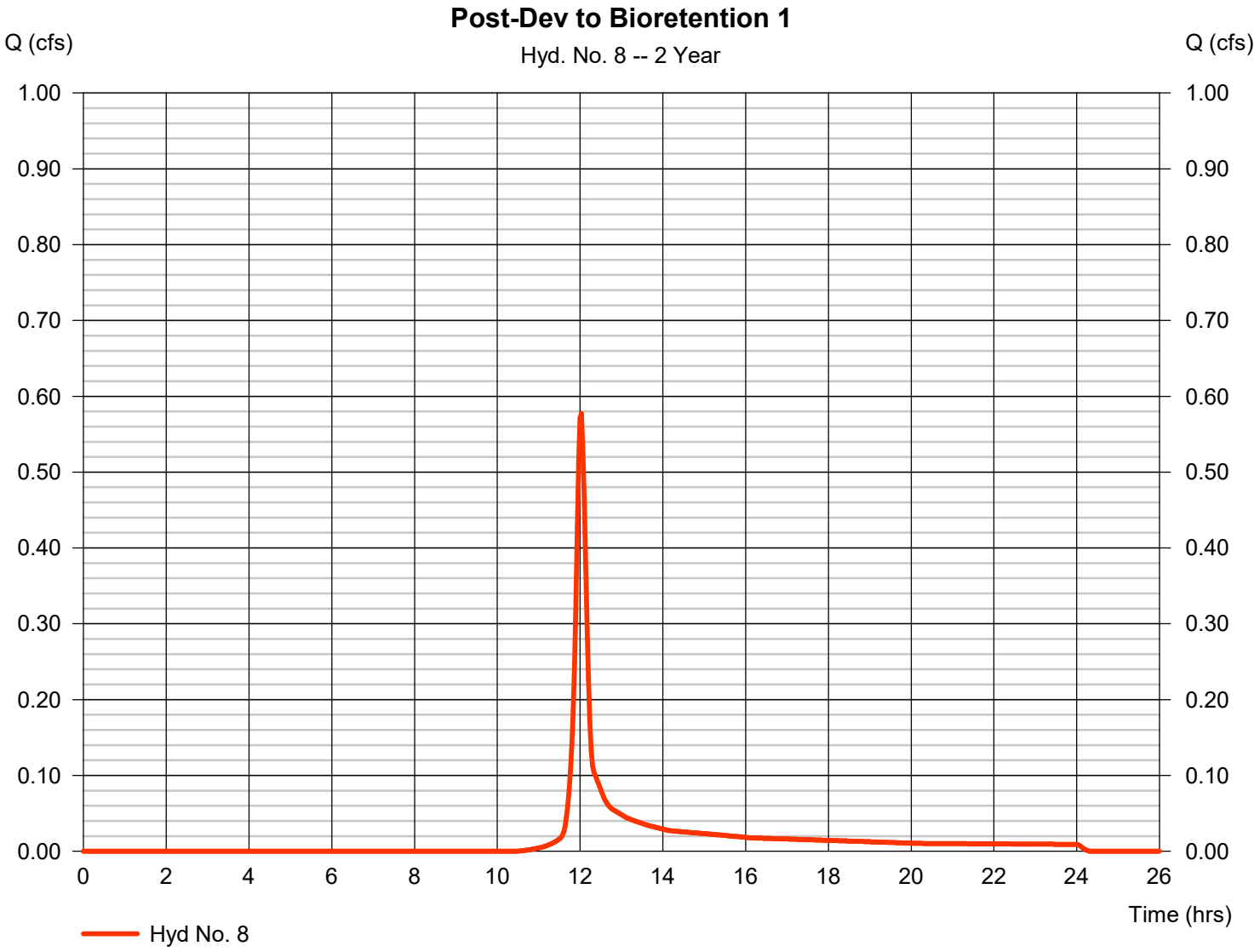
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.577 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,524 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 2.88 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

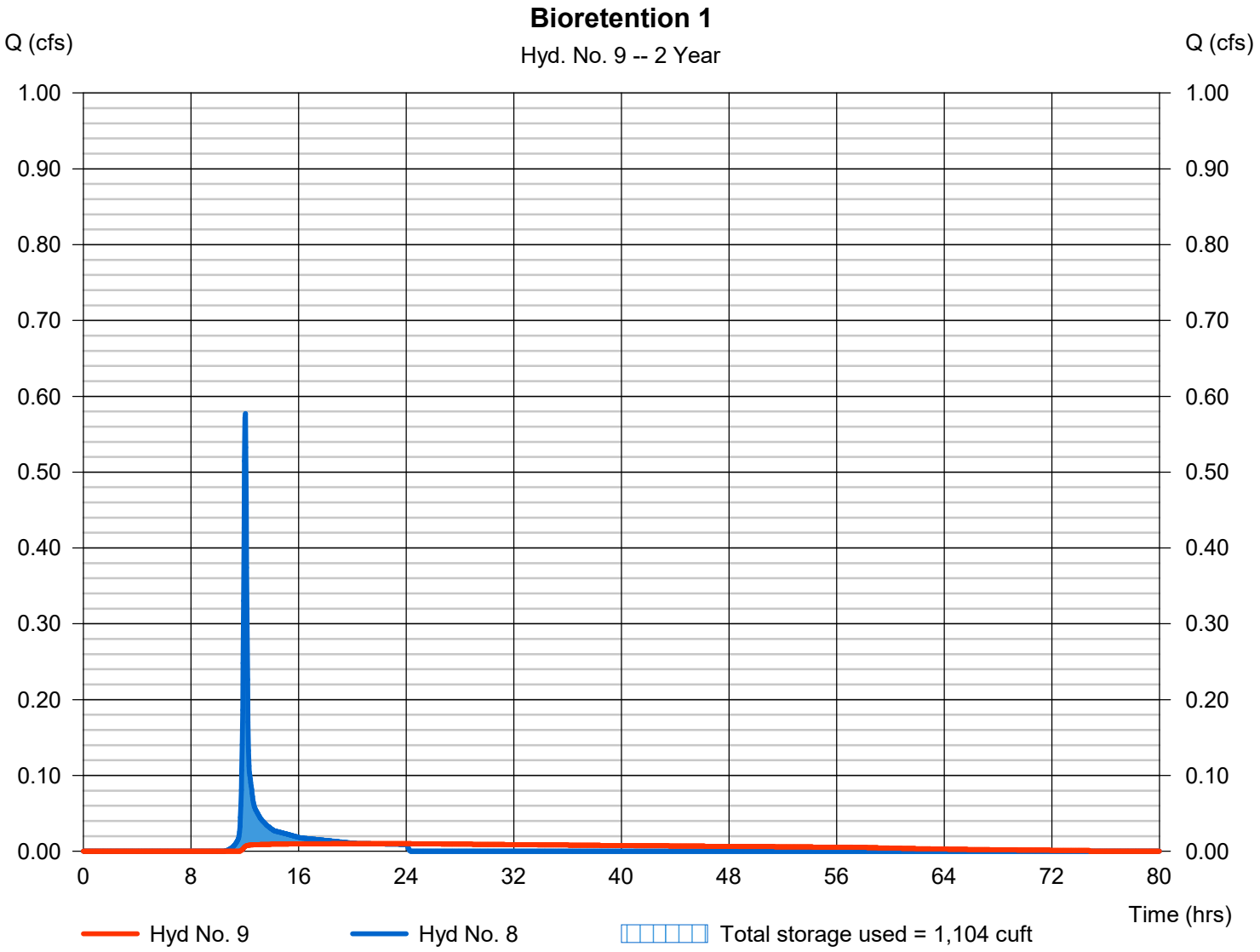
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	=	Reservoir	Peak discharge	=	0.010 cfs
Storm frequency	=	2 yrs	Time to peak	=	21.17 hrs
Time interval	=	2 min	Hyd. volume	=	1,487 cuft
Inflow hyd. No.	=	8 - Post-Dev to Bioretention 1	Max. Elevation	=	471.89 ft
Reservoir name	=	BMP ID 1 - Bioretention 1	Max. Storage	=	1,104 cuft

Storage Indication method used. Outflow includes exfiltration.



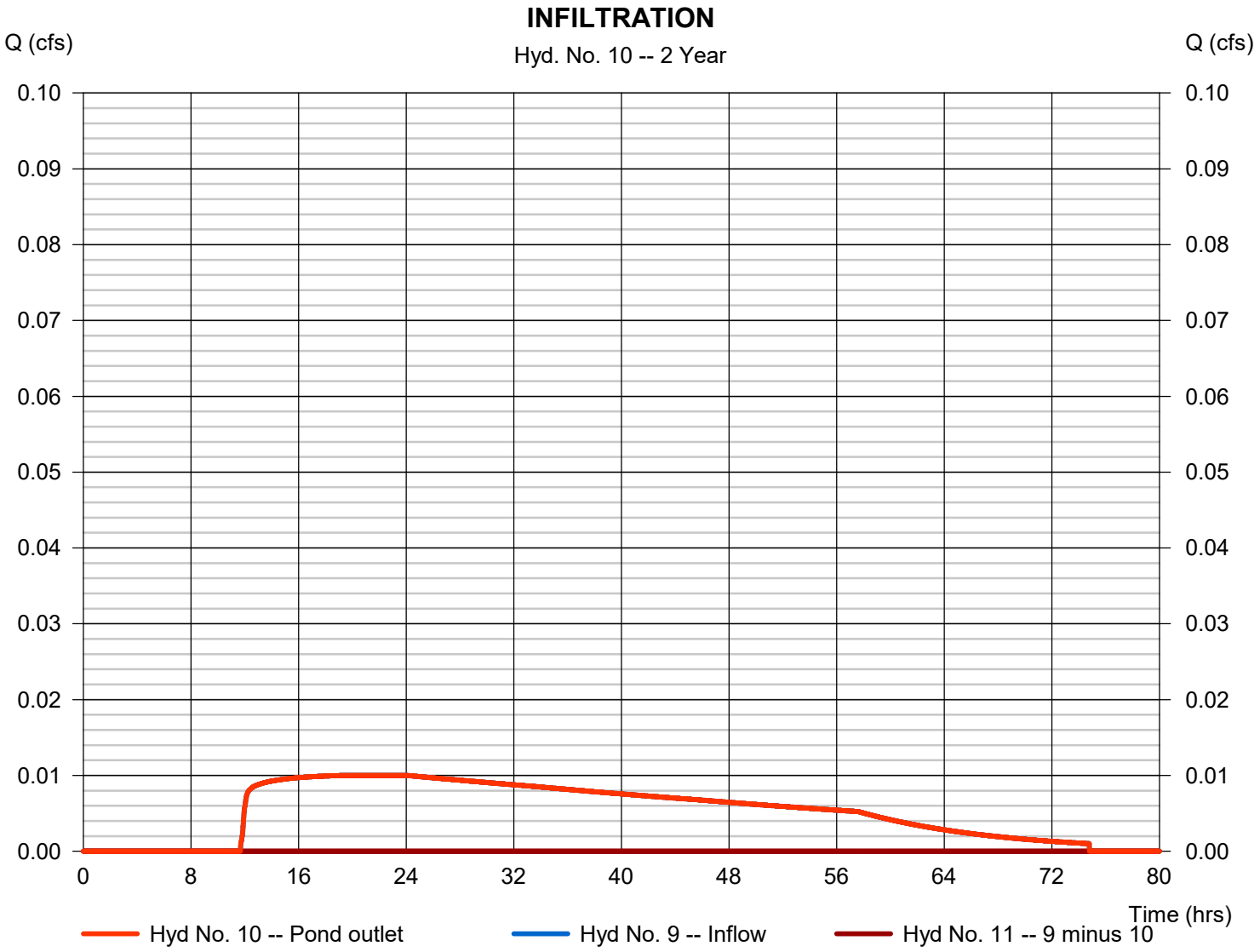
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.010 cfs
Storm frequency	= 2 yrs	Time to peak	= 21.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,487 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



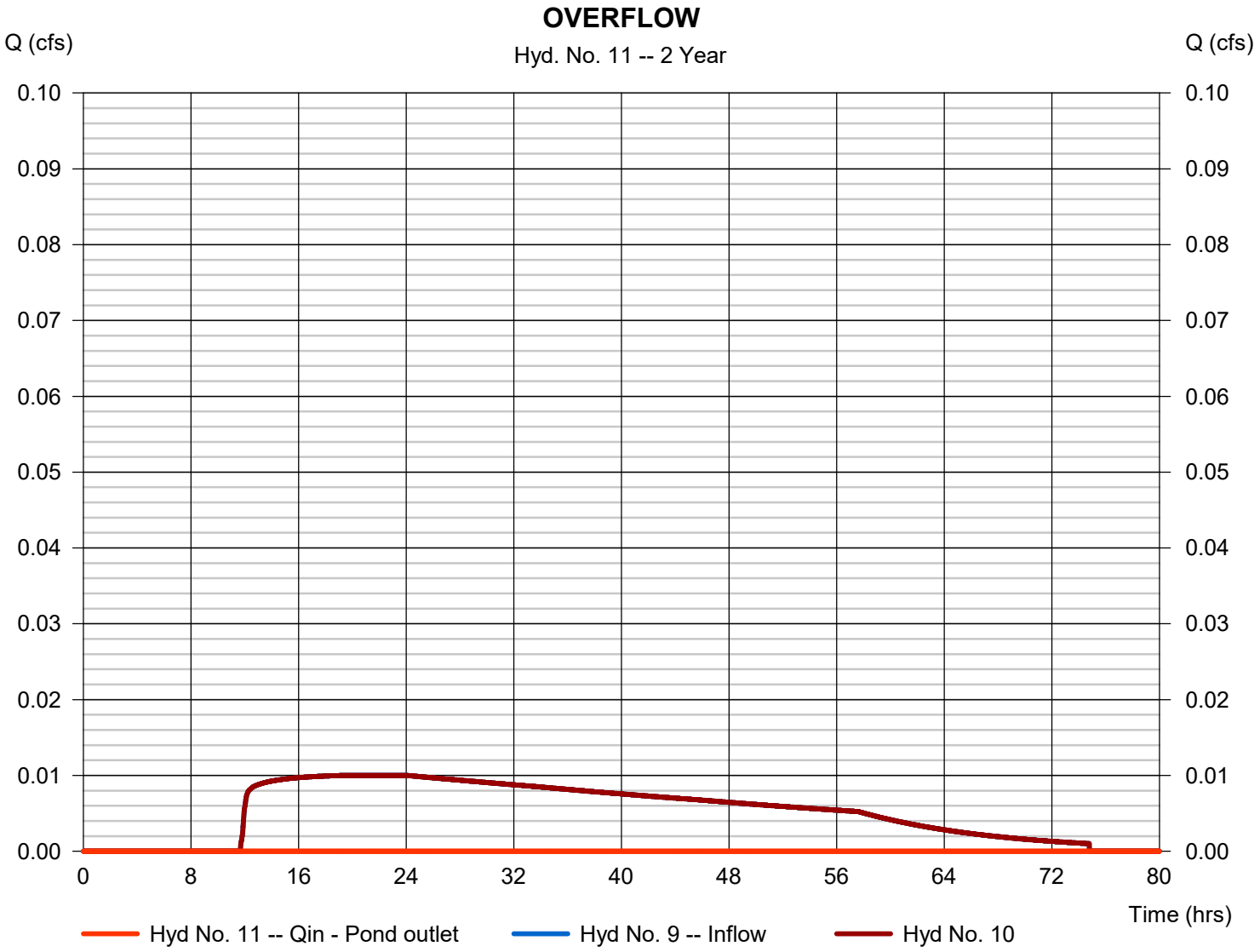
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 60.97 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



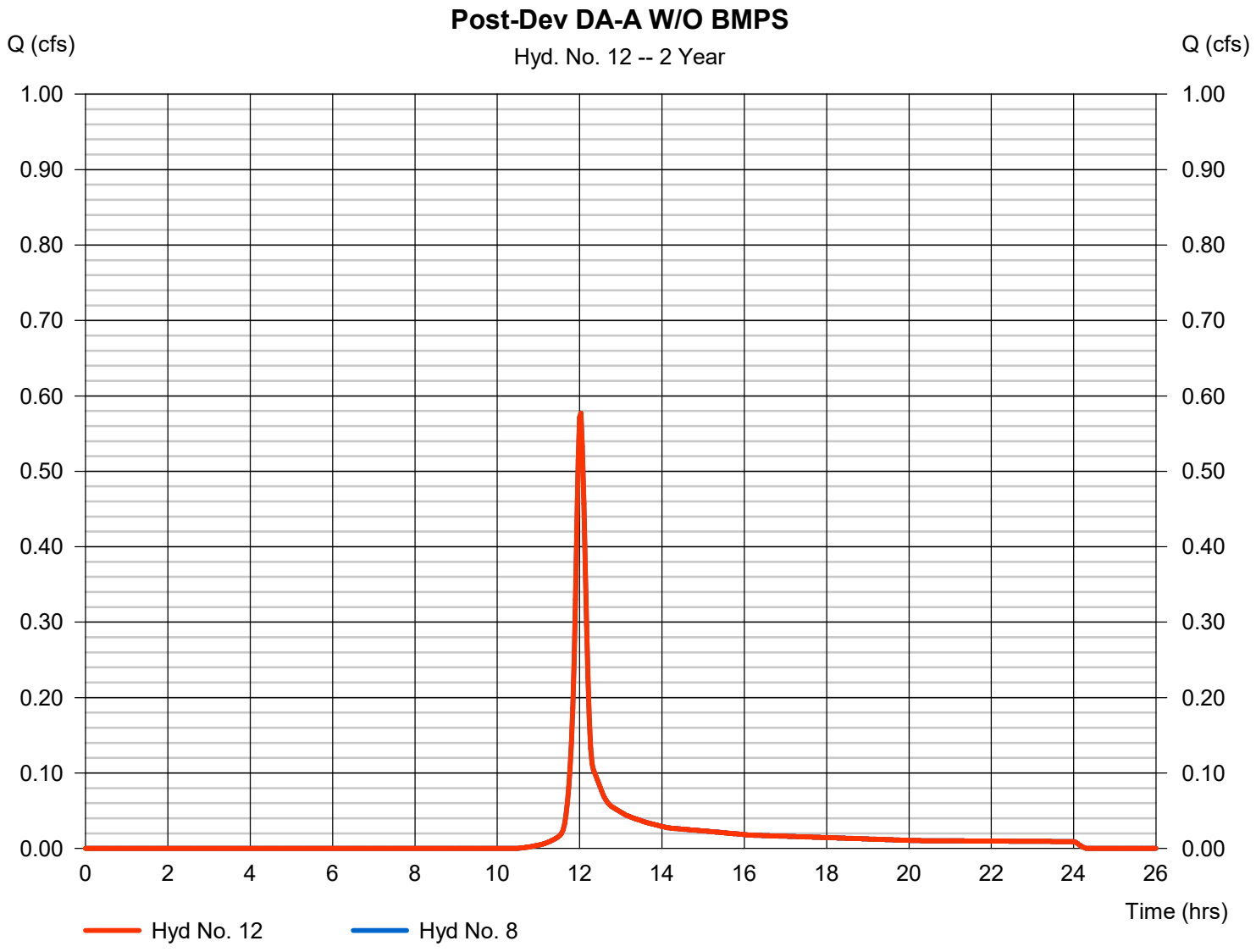
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.577 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,524 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

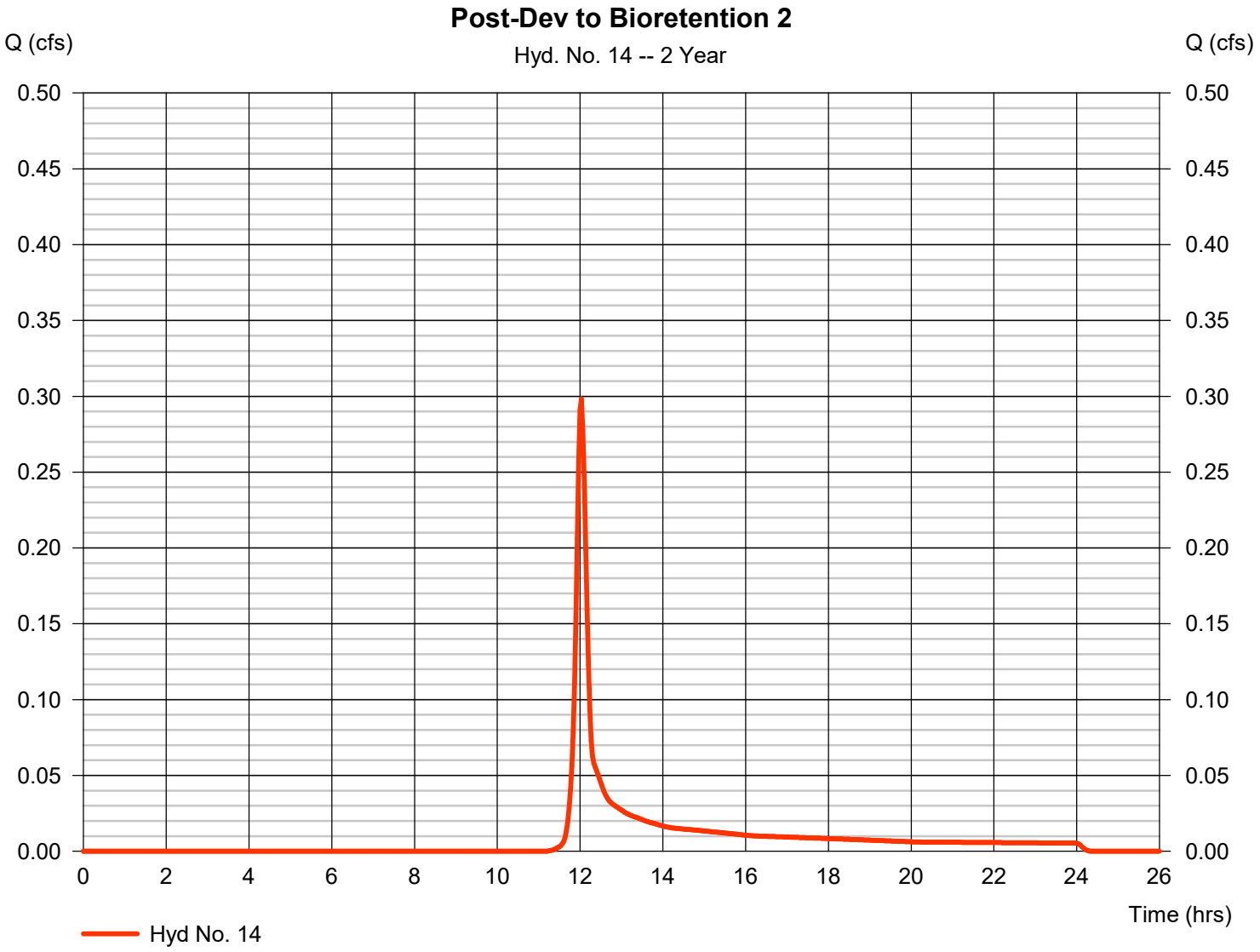
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.298 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 811 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 2.88 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

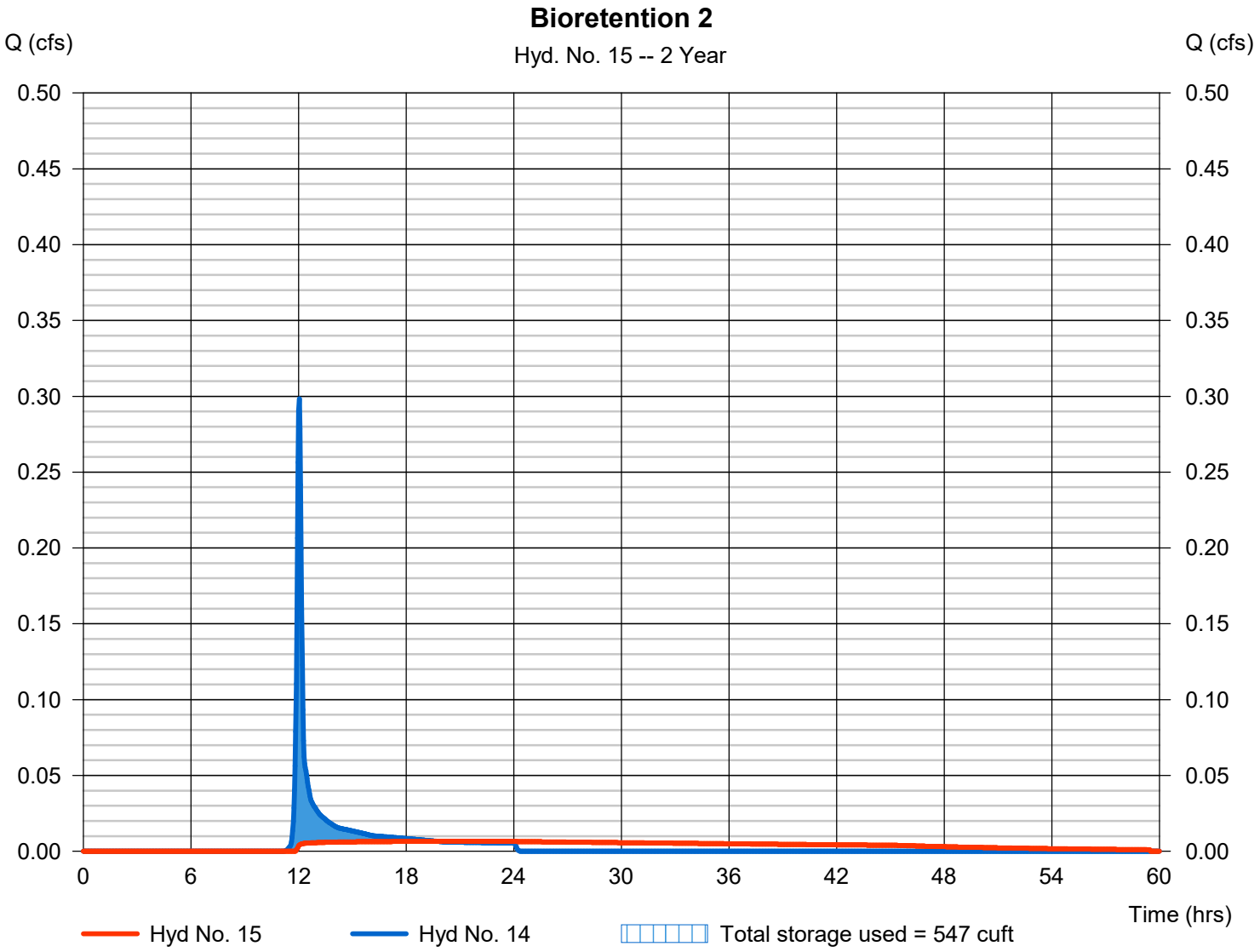
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	= Reservoir	Peak discharge	= 0.006 cfs
Storm frequency	= 2 yrs	Time to peak	= 19.77 hrs
Time interval	= 2 min	Hyd. volume	= 773 cuft
Inflow hyd. No.	= 14 - Post-Dev to Bioretention 2	Max. Elevation	= 471.39 ft
Reservoir name	= BMP ID 2 - Bioretention 2	Max. Storage	= 547 cuft

Storage Indication method used. Outflow includes exfiltration.



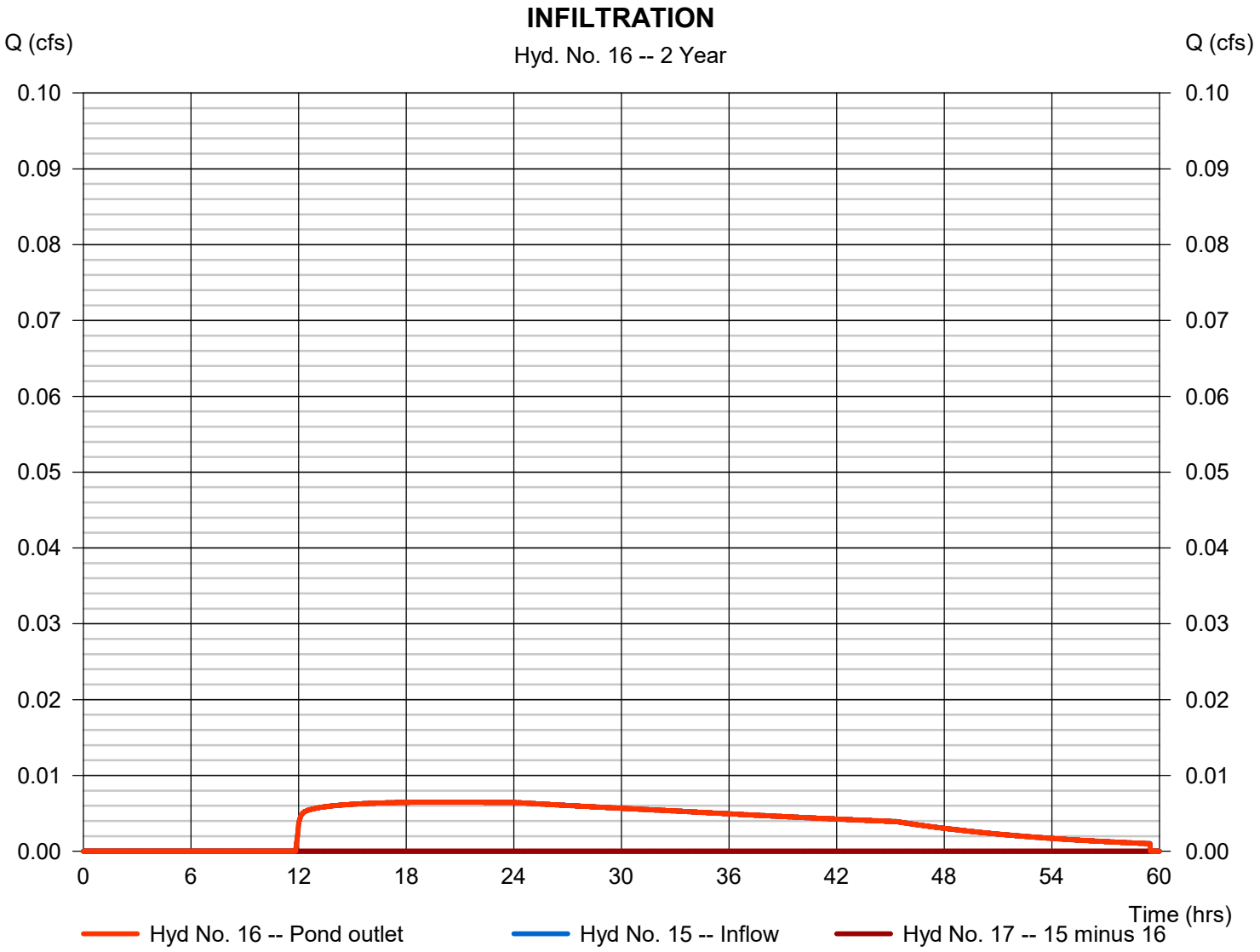
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.006 cfs
Storm frequency	= 2 yrs	Time to peak	= 19.77 hrs
Time interval	= 2 min	Hyd. volume	= 773 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



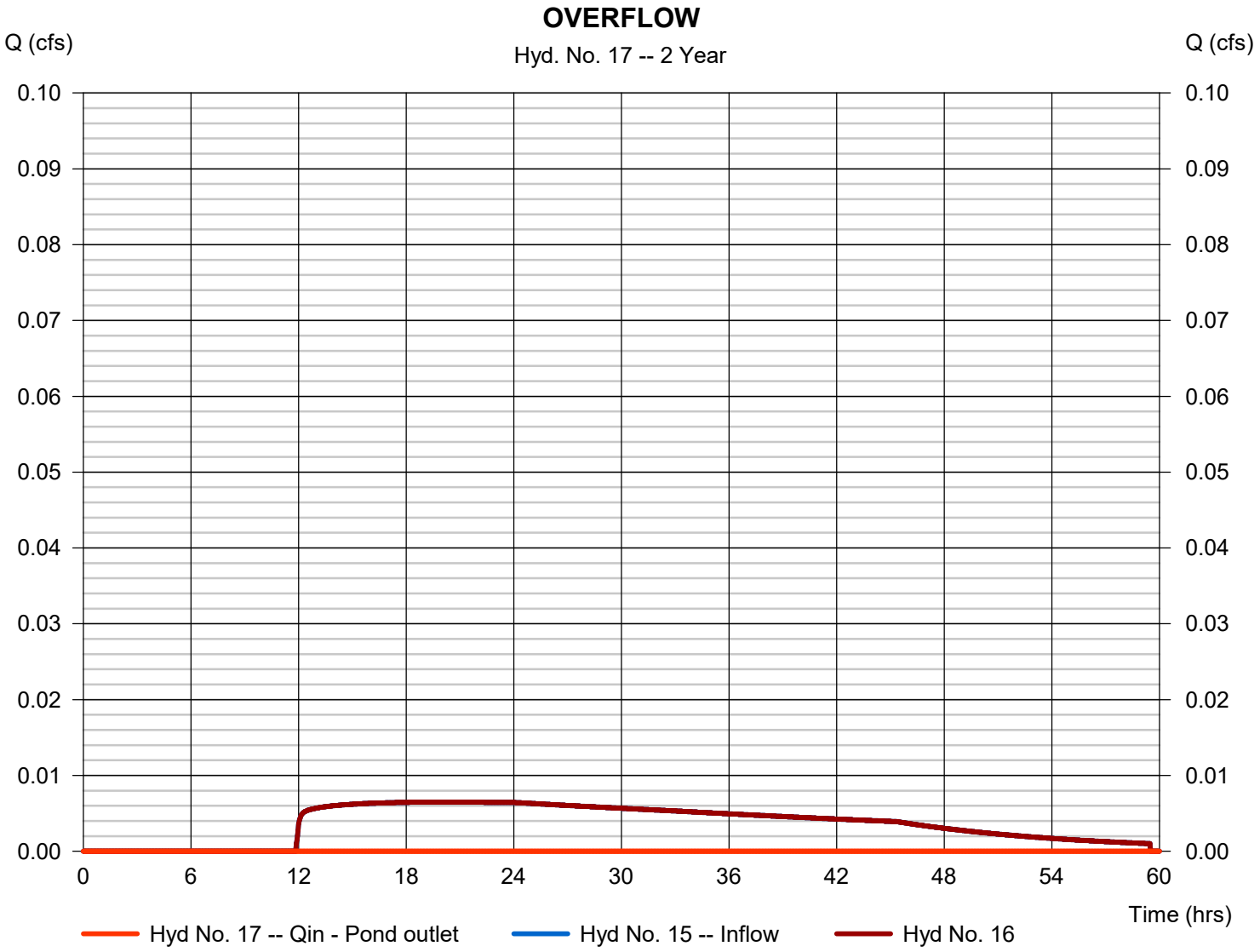
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 46.03 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



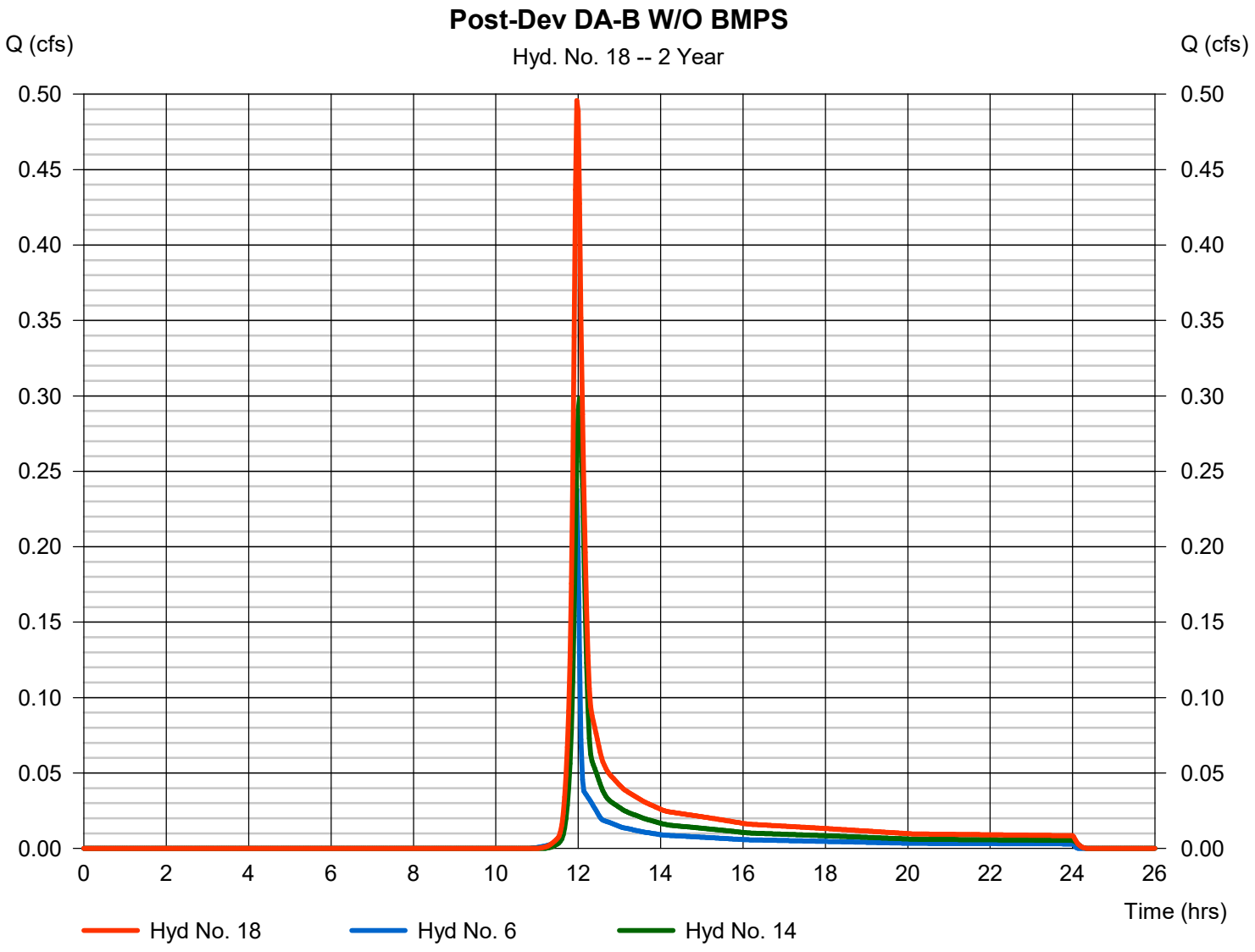
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.496 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,292 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



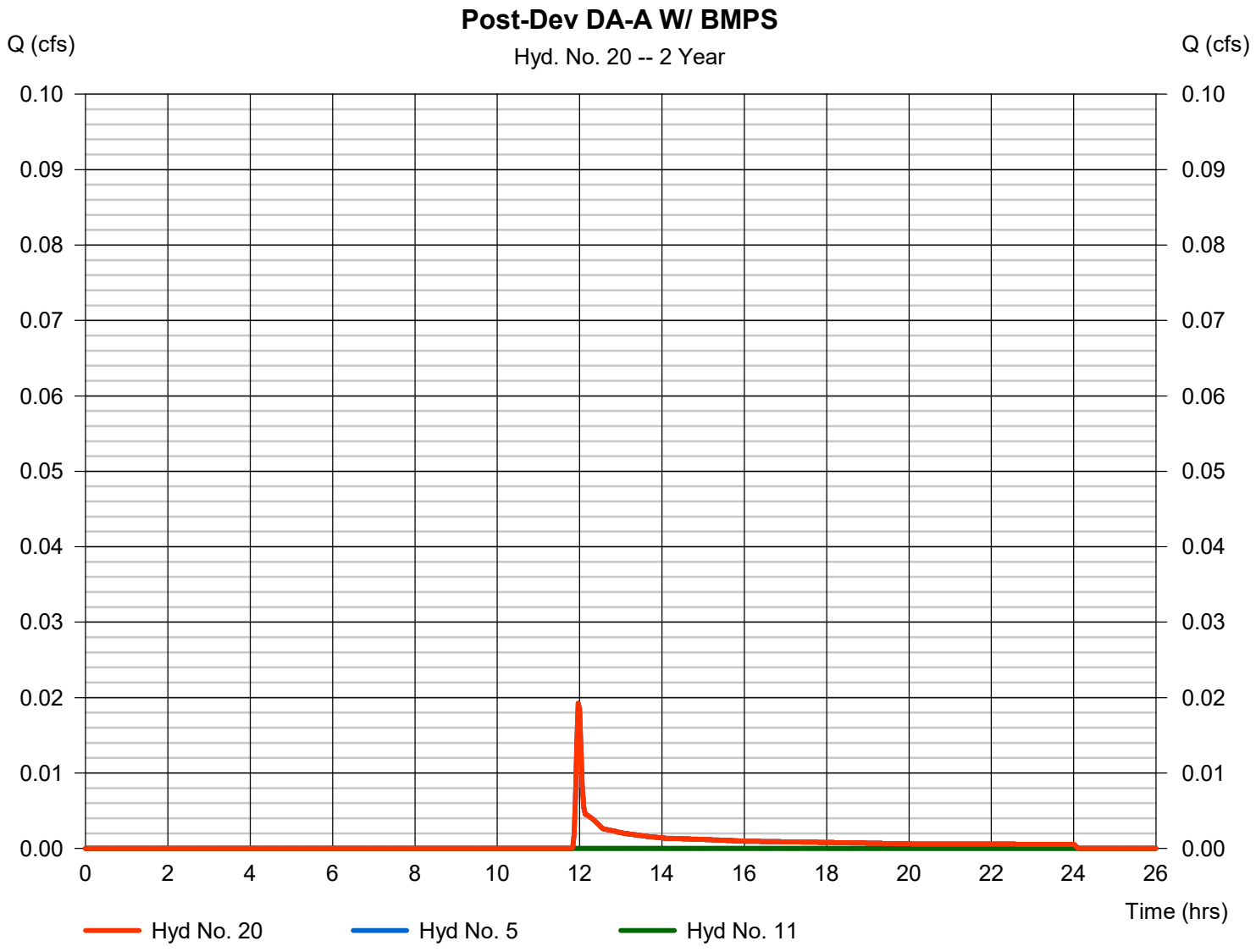
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.019 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 55 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.050 ac



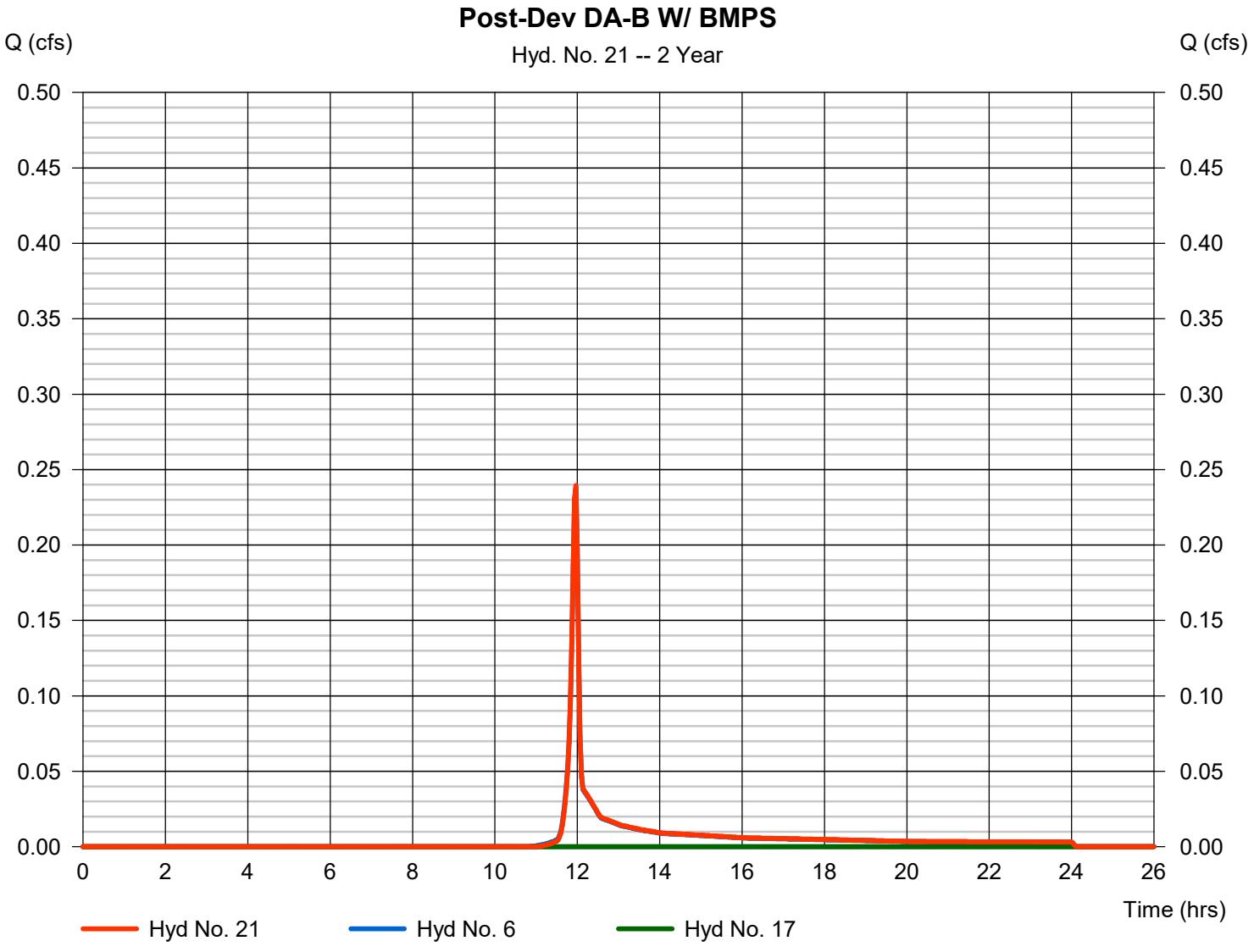
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.239 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 481 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac



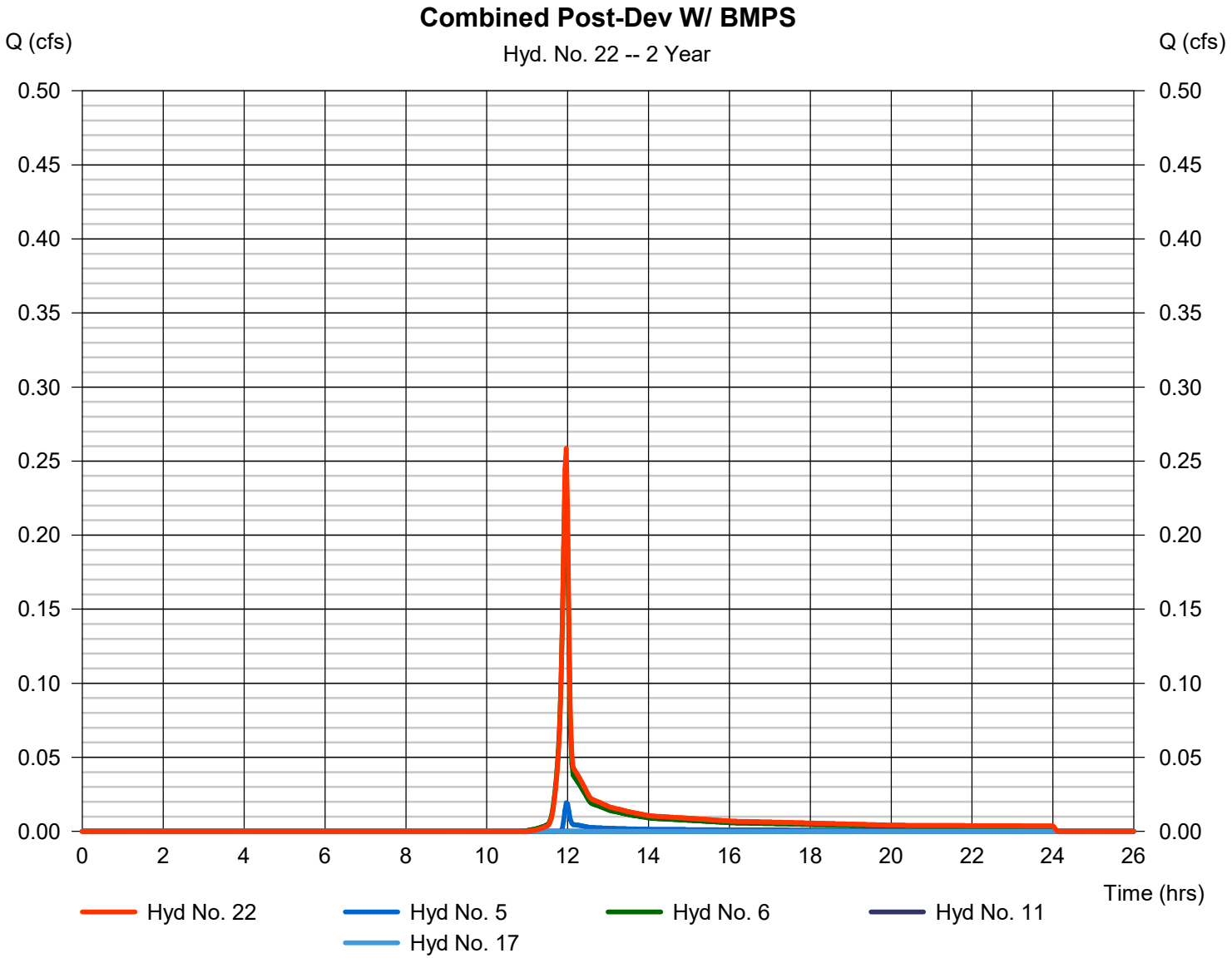
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.259 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 535 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.651	2	722	1,797	------	------	------	Pre-Dev DA-A
2	SCS Runoff	0.650	2	722	1,716	------	------	------	Pre-Dev DA-B
3	SCS Runoff	1.337	2	722	3,589	------	------	------	Pre-Dev Total
5	SCS Runoff	0.047	2	718	105	------	------	------	DA-A Bypass
6	SCS Runoff	0.367	2	718	734	------	------	------	DA-B Bypass
8	SCS Runoff	0.879	2	720	2,298	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	0.086	2	762	2,260	8	472.03	1,225	Bioretention 1
10	Diversion1	0.011	2	762	1,627	9	------	------	INFILTRATION
11	Diversion2	0.075	2	762	633	9	------	------	OVERFLOW
12	Combine	0.879	2	720	2,298	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	0.483	2	722	1,274	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.008	2	1290	1,237	14	471.99	927	Bioretention 2
16	Diversion1	0.008	2	1290	1,237	15	------	------	INFILTRATION
17	Diversion2	0.000	2	3658	0	15	------	------	OVERFLOW
18	Combine	0.804	2	718	2,022	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	0.080	2	762	739	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	0.374	2	718	748	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	0.421	2	718	1,486	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

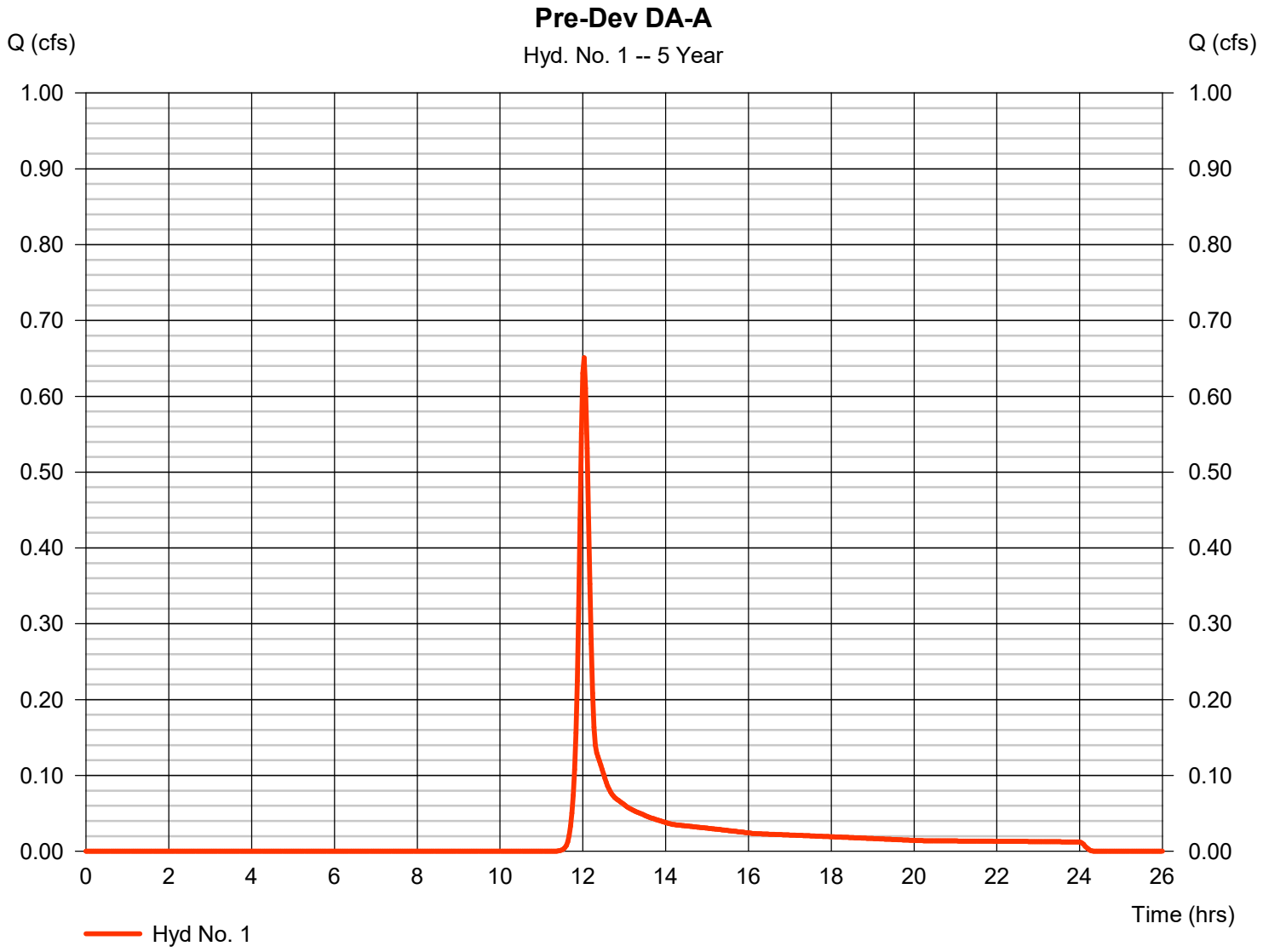
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.651 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,797 cuft
Drainage area	= 0.500 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

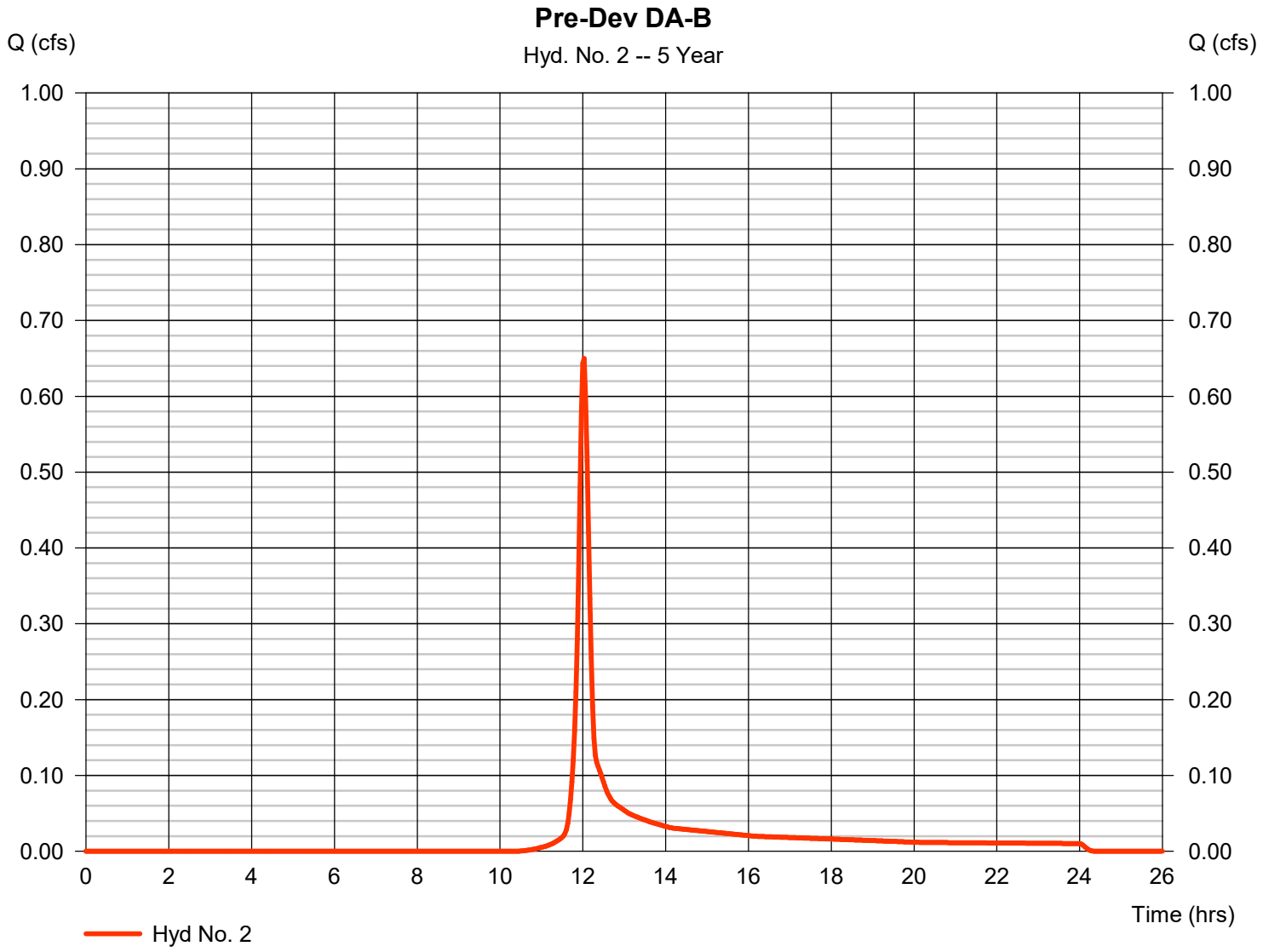
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.650 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,716 cuft
Drainage area	= 0.350 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.20 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

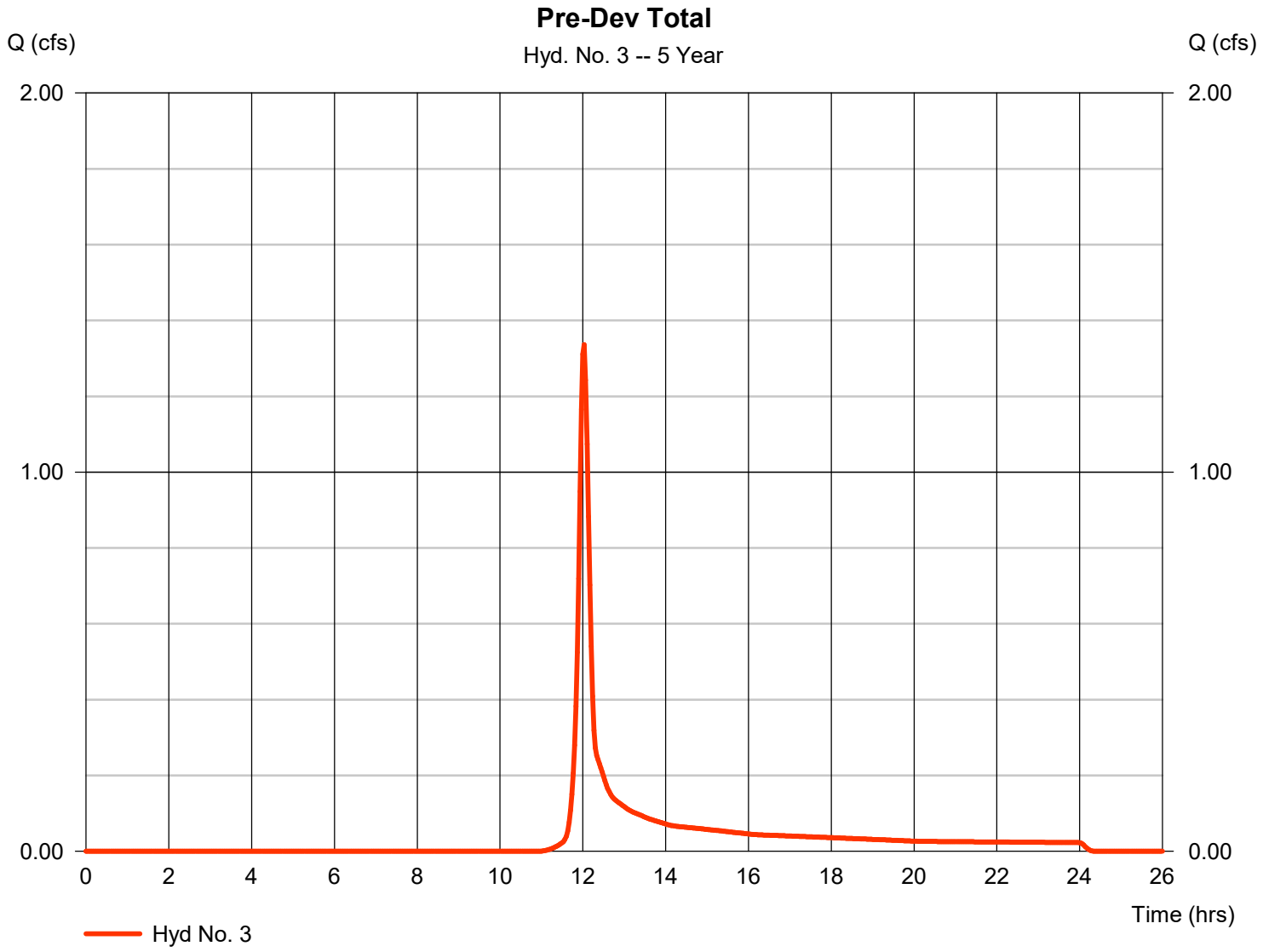
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 1.337 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 3,589 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

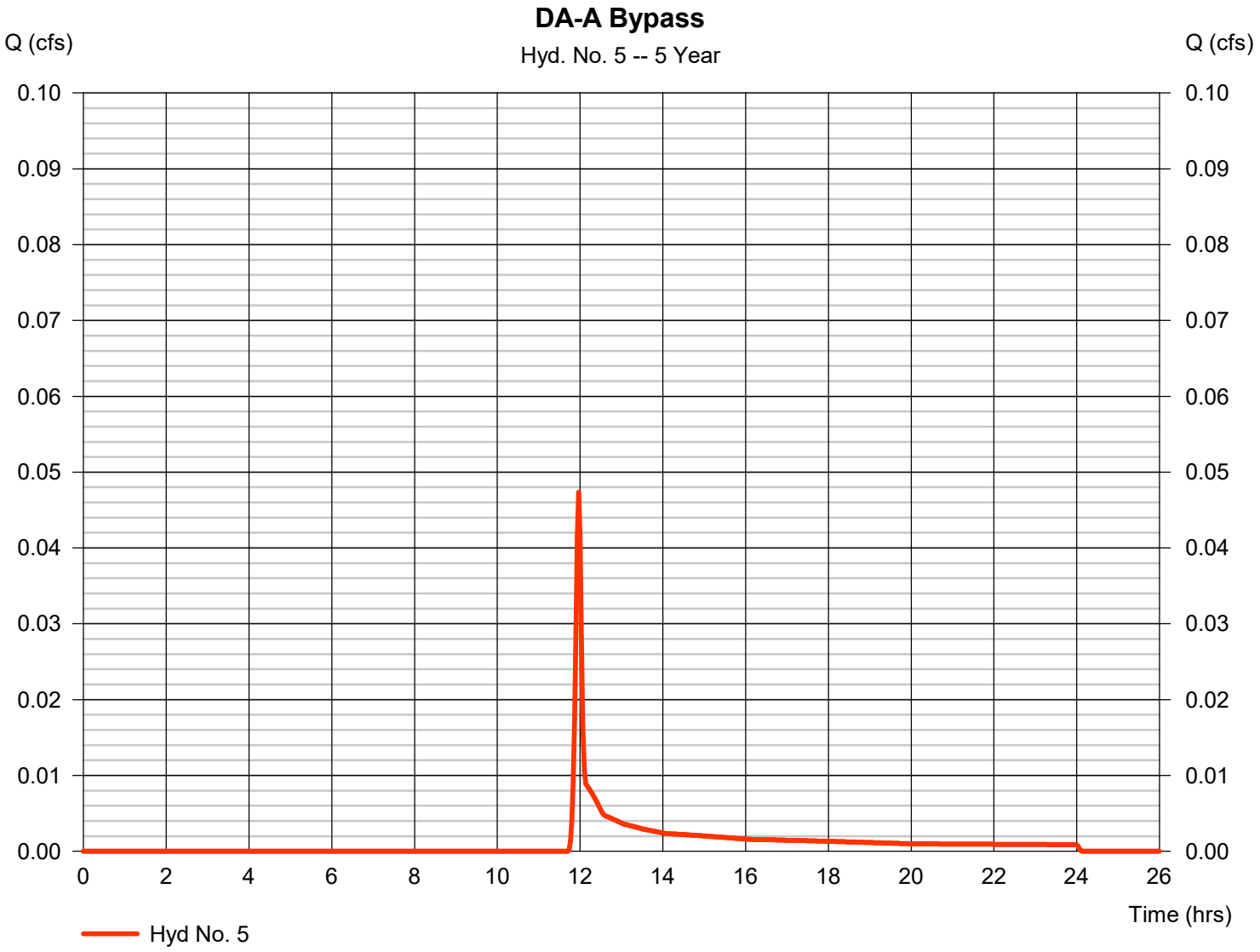
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.047 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	105 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

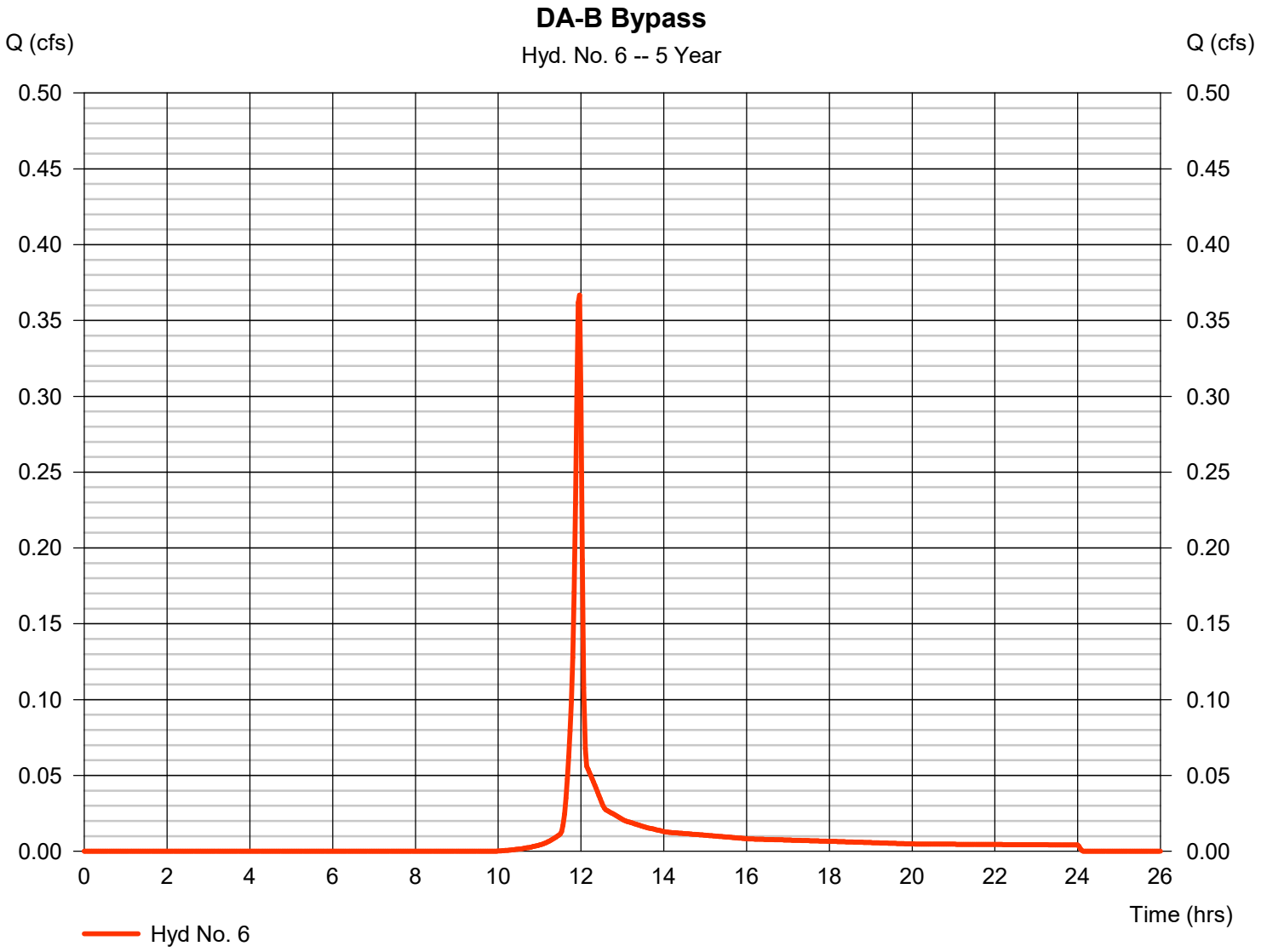
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.367 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	734 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

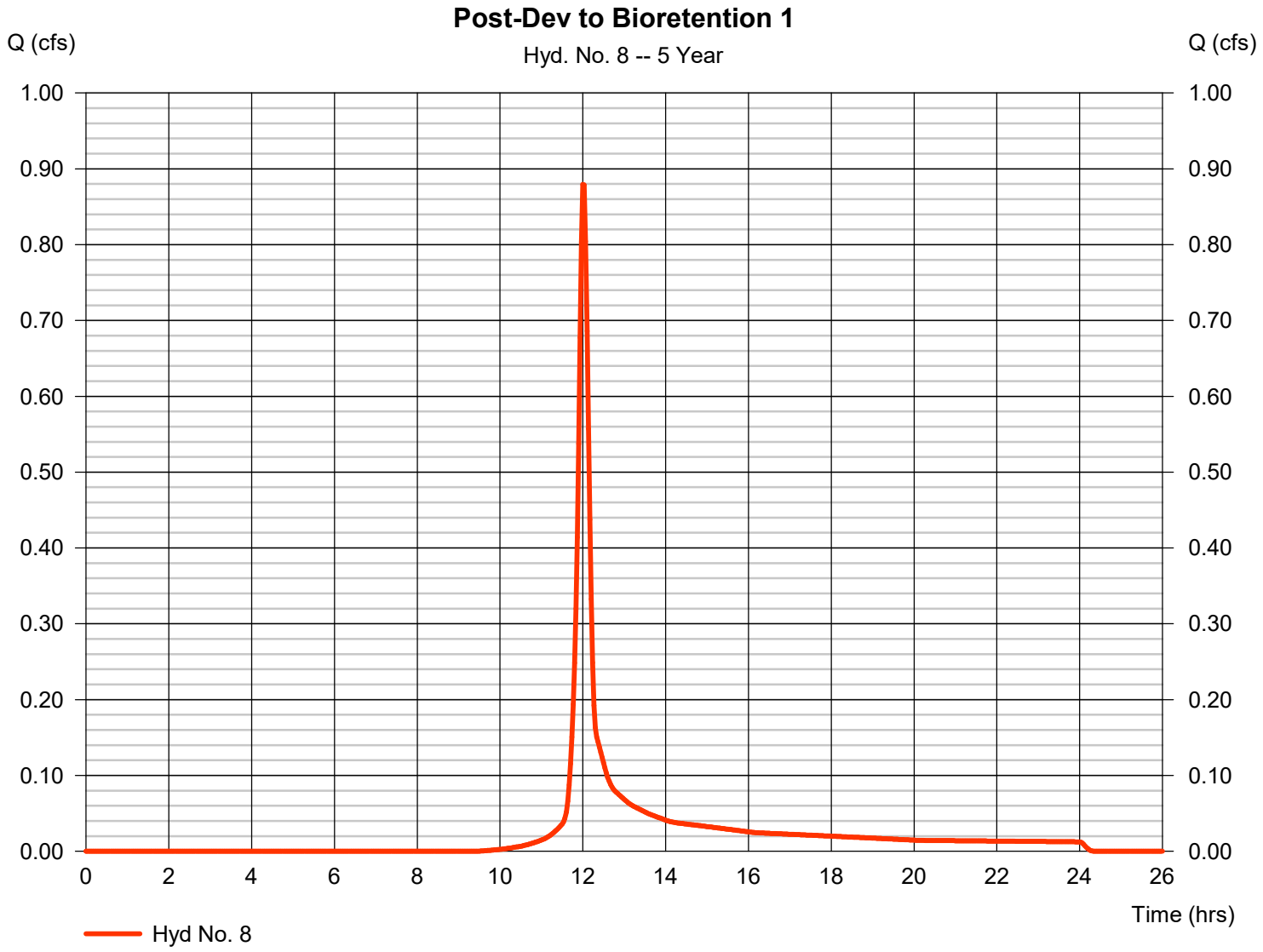
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.879 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,298 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

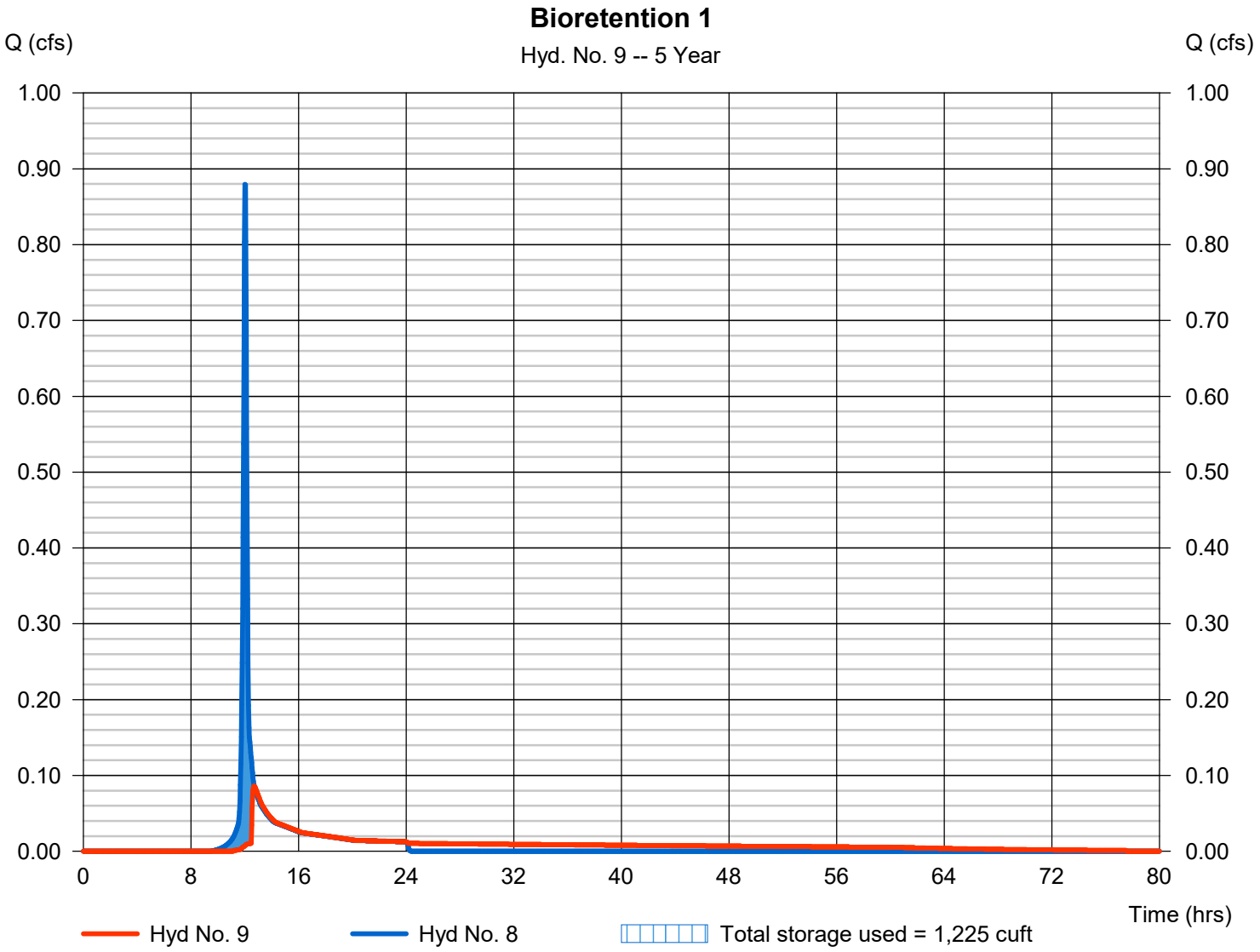
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	=	Reservoir	Peak discharge	=	0.086 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.70 hrs
Time interval	=	2 min	Hyd. volume	=	2,260 cuft
Inflow hyd. No.	=	8 - Post-Dev to Bioretention 1	Max. Elevation	=	472.03 ft
Reservoir name	=	BMP ID 1 - Bioretention 1	Max. Storage	=	1,225 cuft

Storage Indication method used. Outflow includes exfiltration.



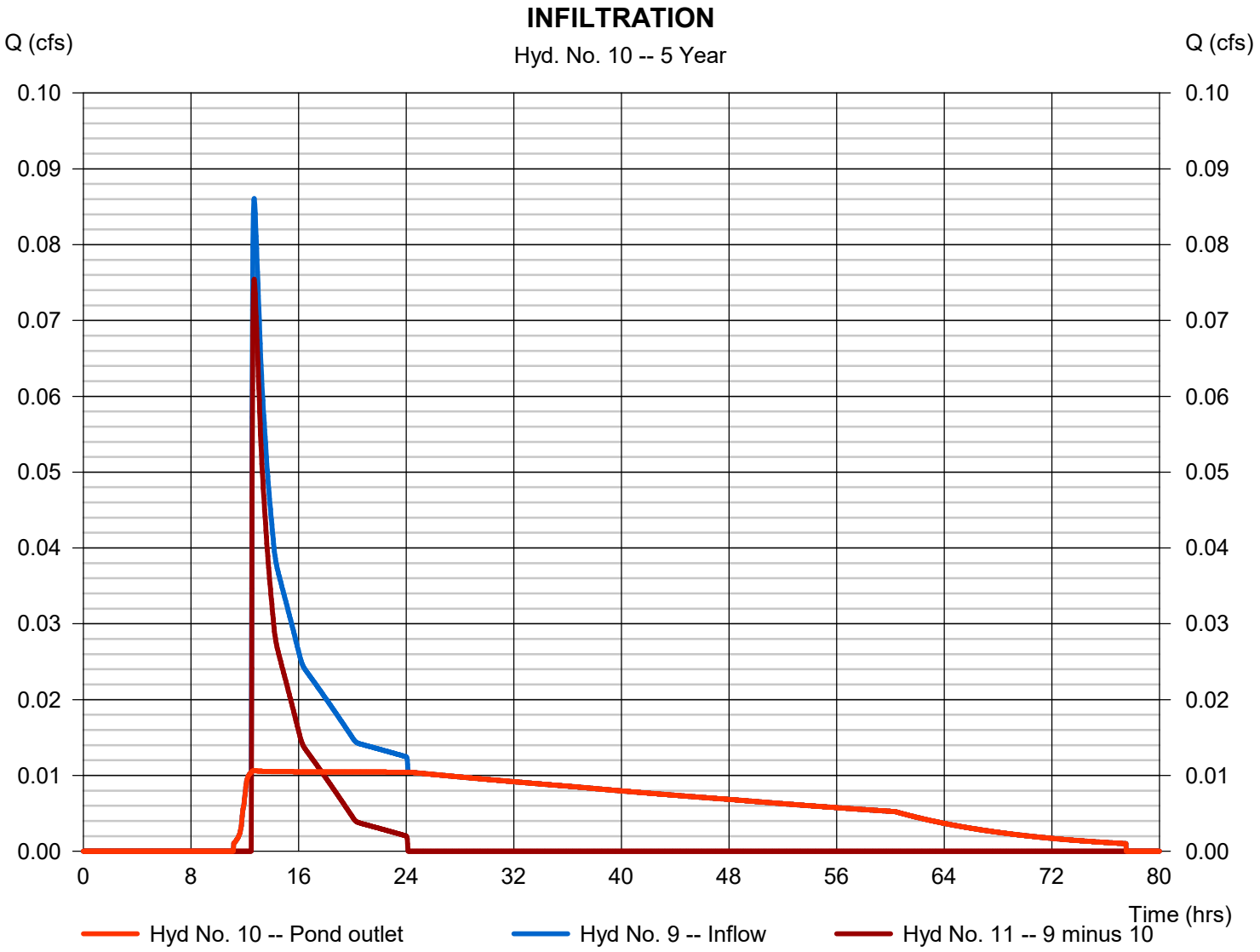
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.011 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 1,627 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



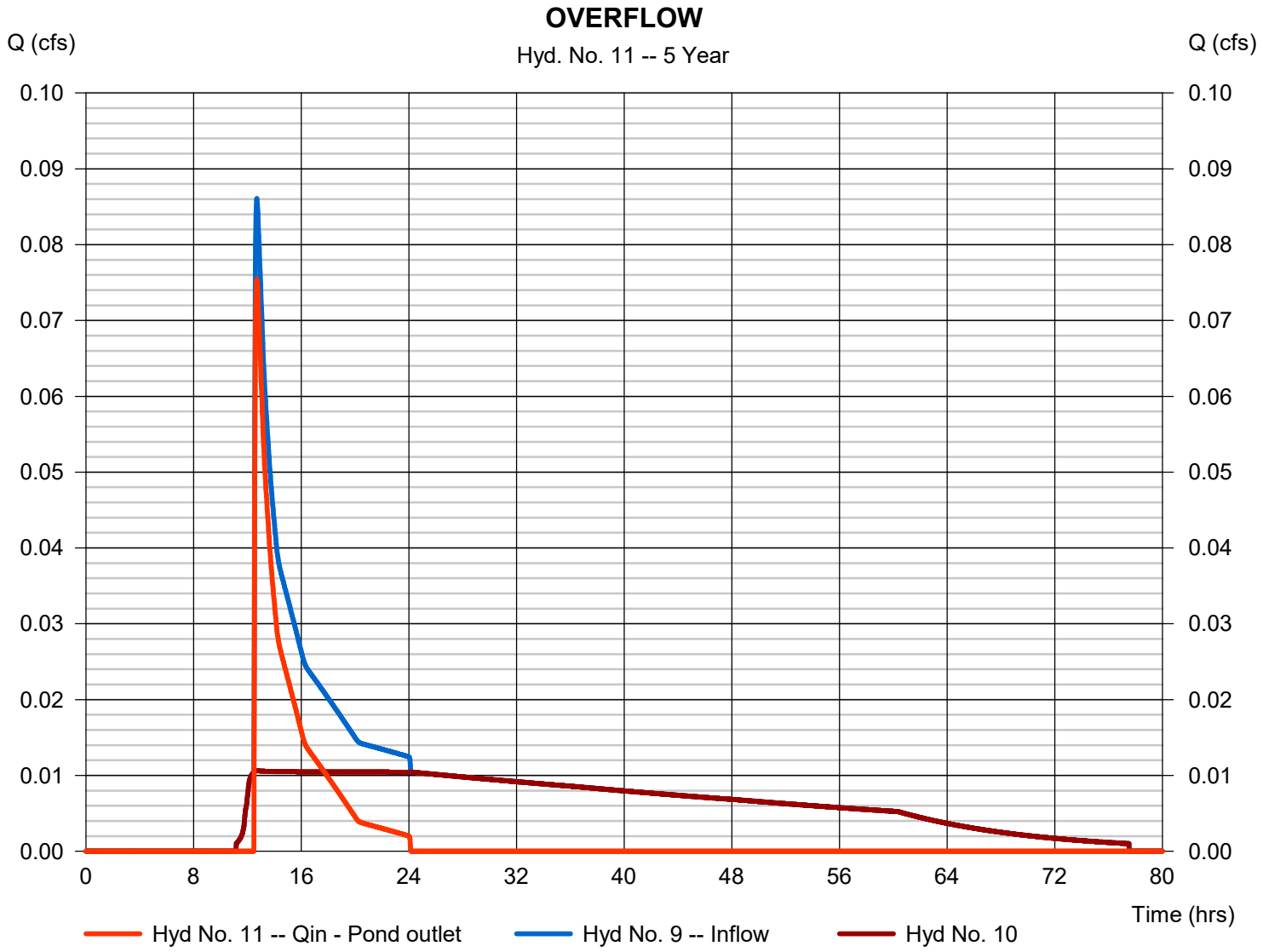
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.075 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 633 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



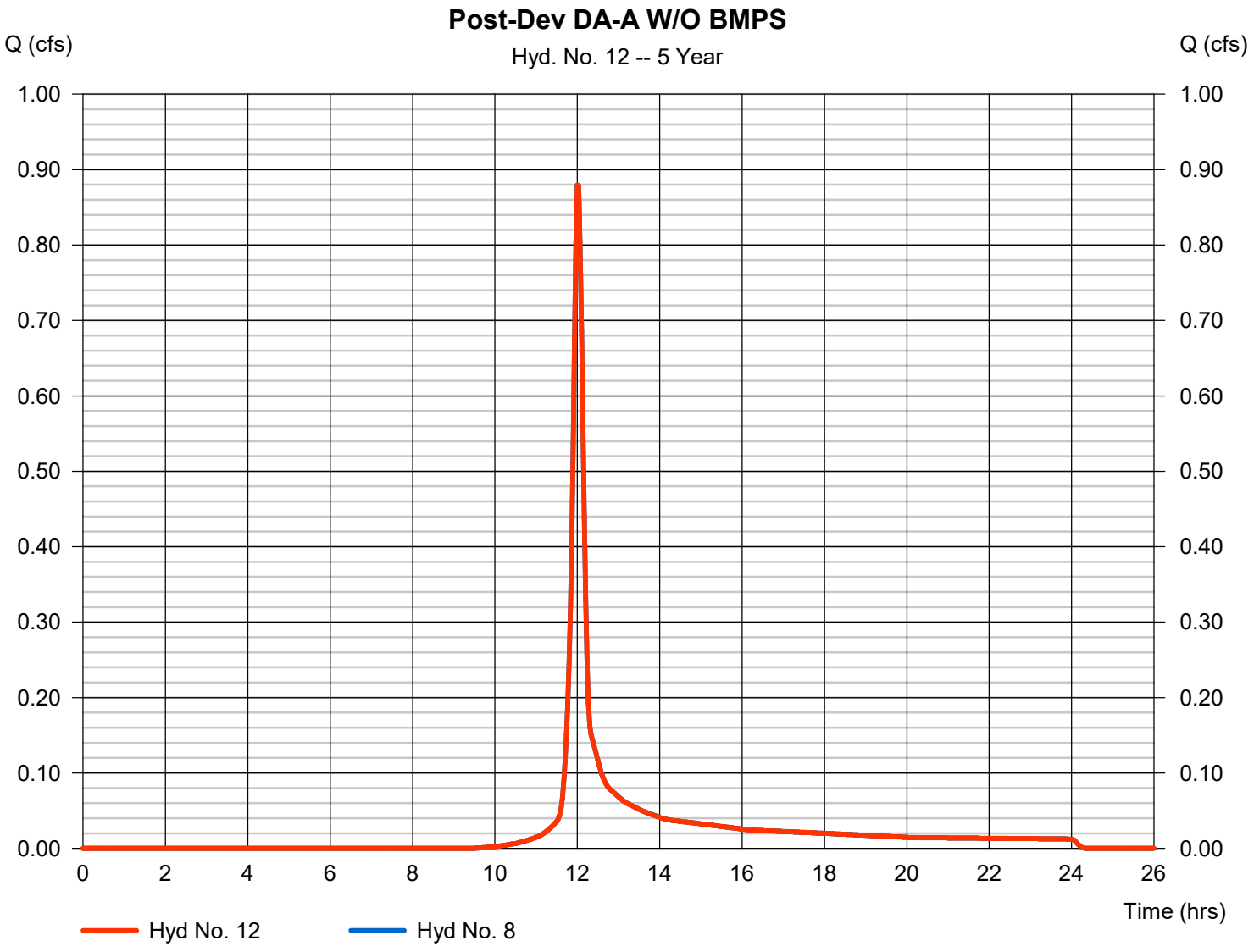
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.879 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,298 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

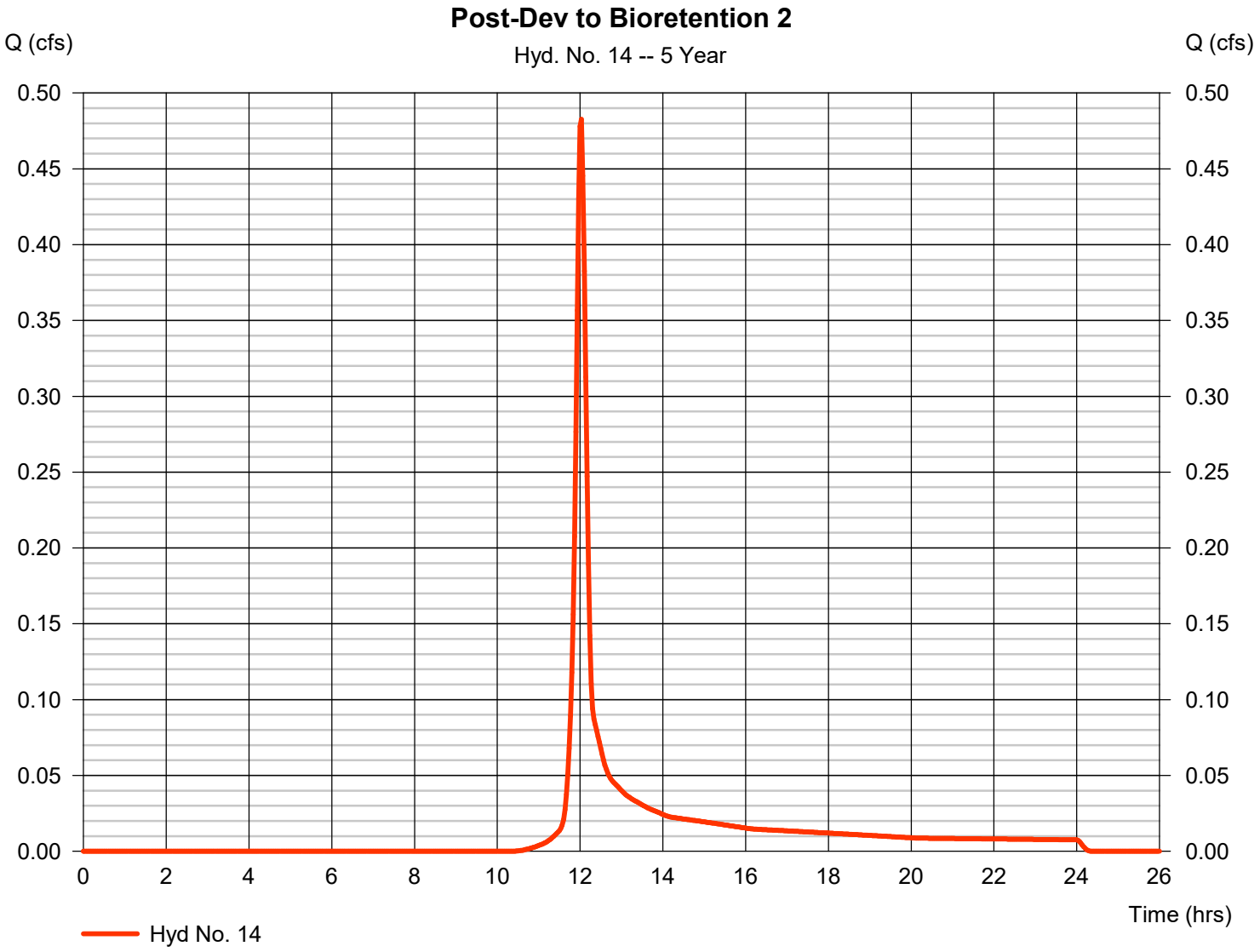
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.483 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,274 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

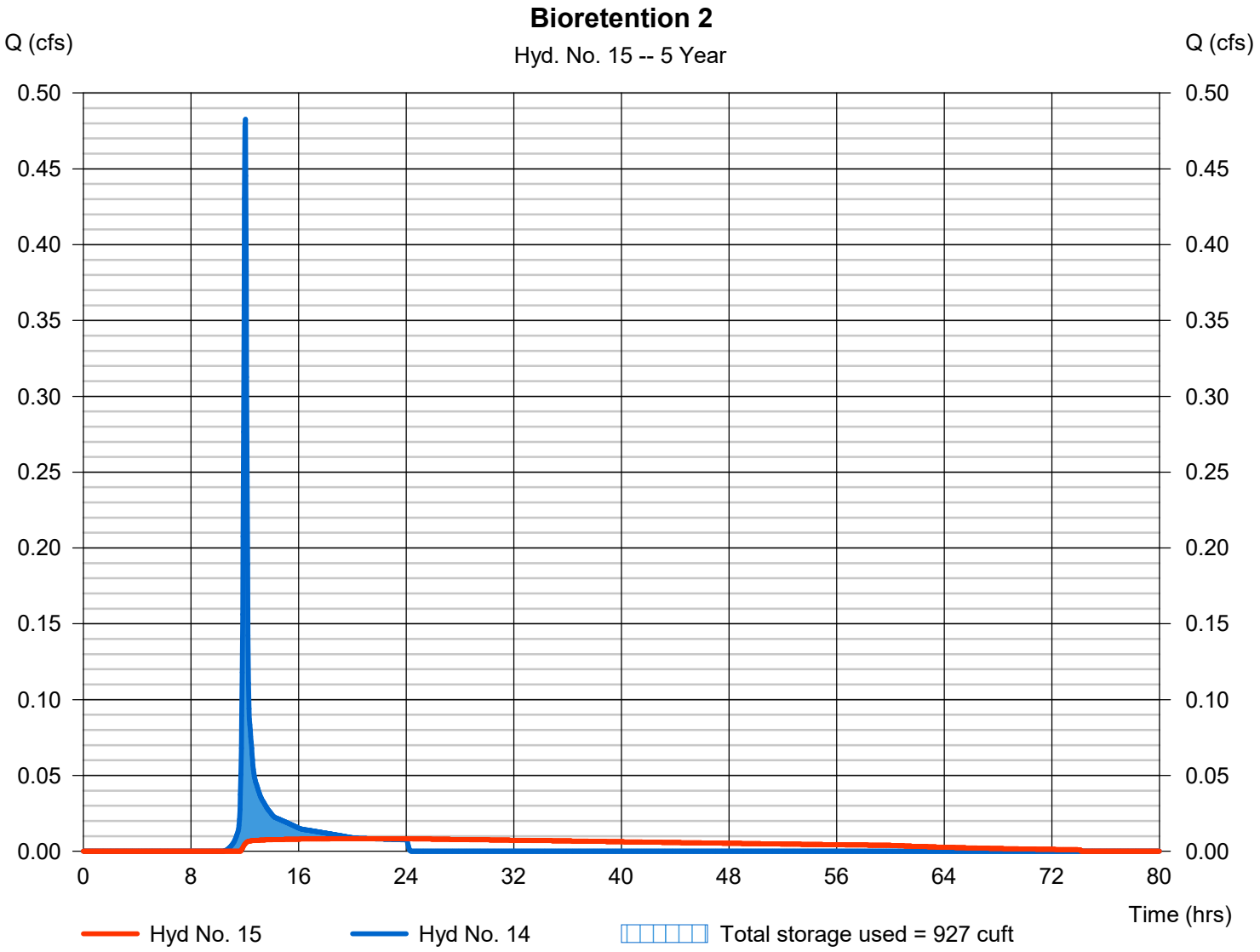
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.008 cfs
Storm frequency	=	5 yrs	Time to peak	=	21.50 hrs
Time interval	=	2 min	Hyd. volume	=	1,237 cuft
Inflow hyd. No.	=	14 - Post-Dev to Bioretention 2	Max. Elevation	=	471.99 ft
Reservoir name	=	BMP ID 2 - Bioretention 2	Max. Storage	=	927 cuft

Storage Indication method used. Outflow includes exfiltration.



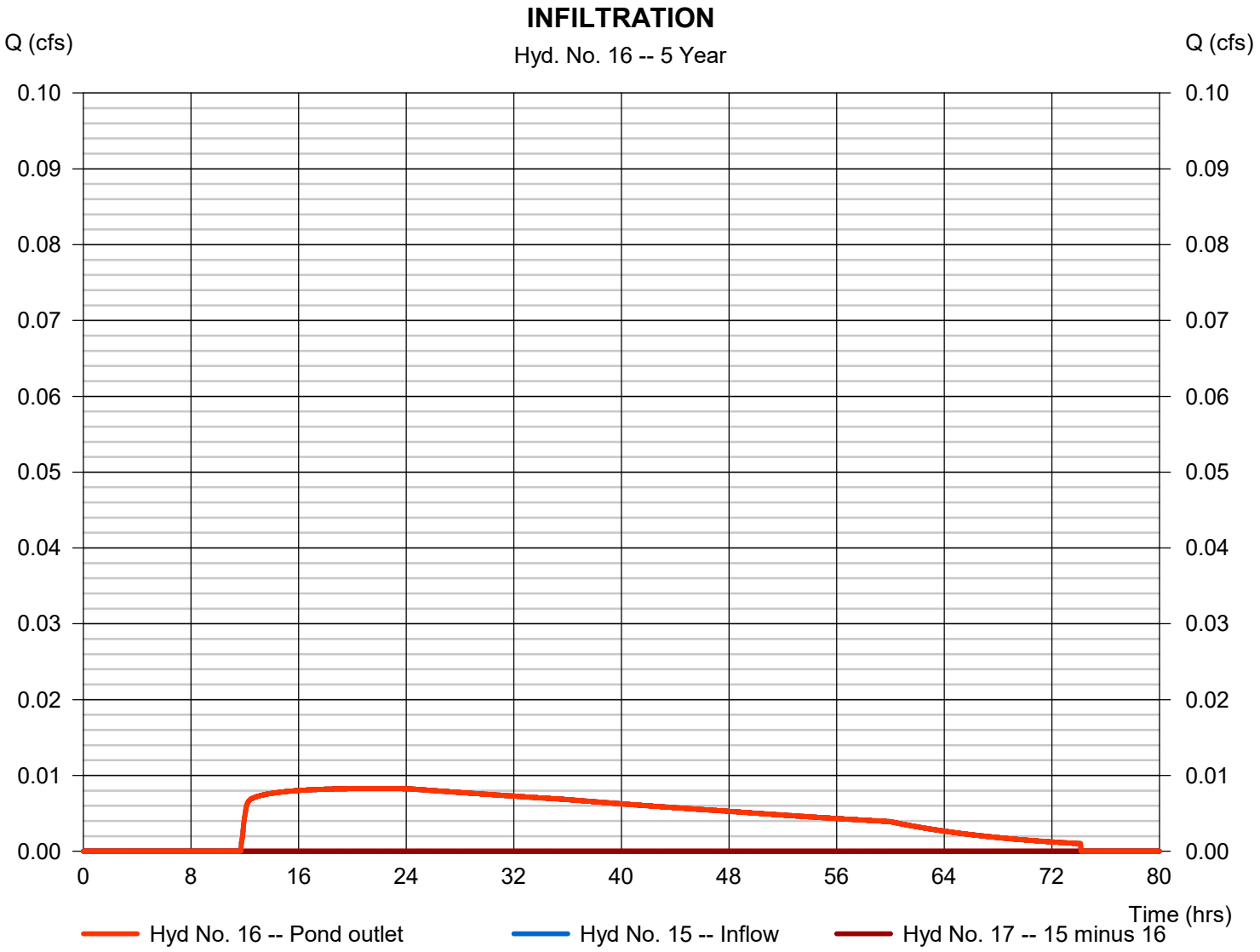
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.008 cfs
Storm frequency	= 5 yrs	Time to peak	= 21.50 hrs
Time interval	= 2 min	Hyd. volume	= 1,237 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



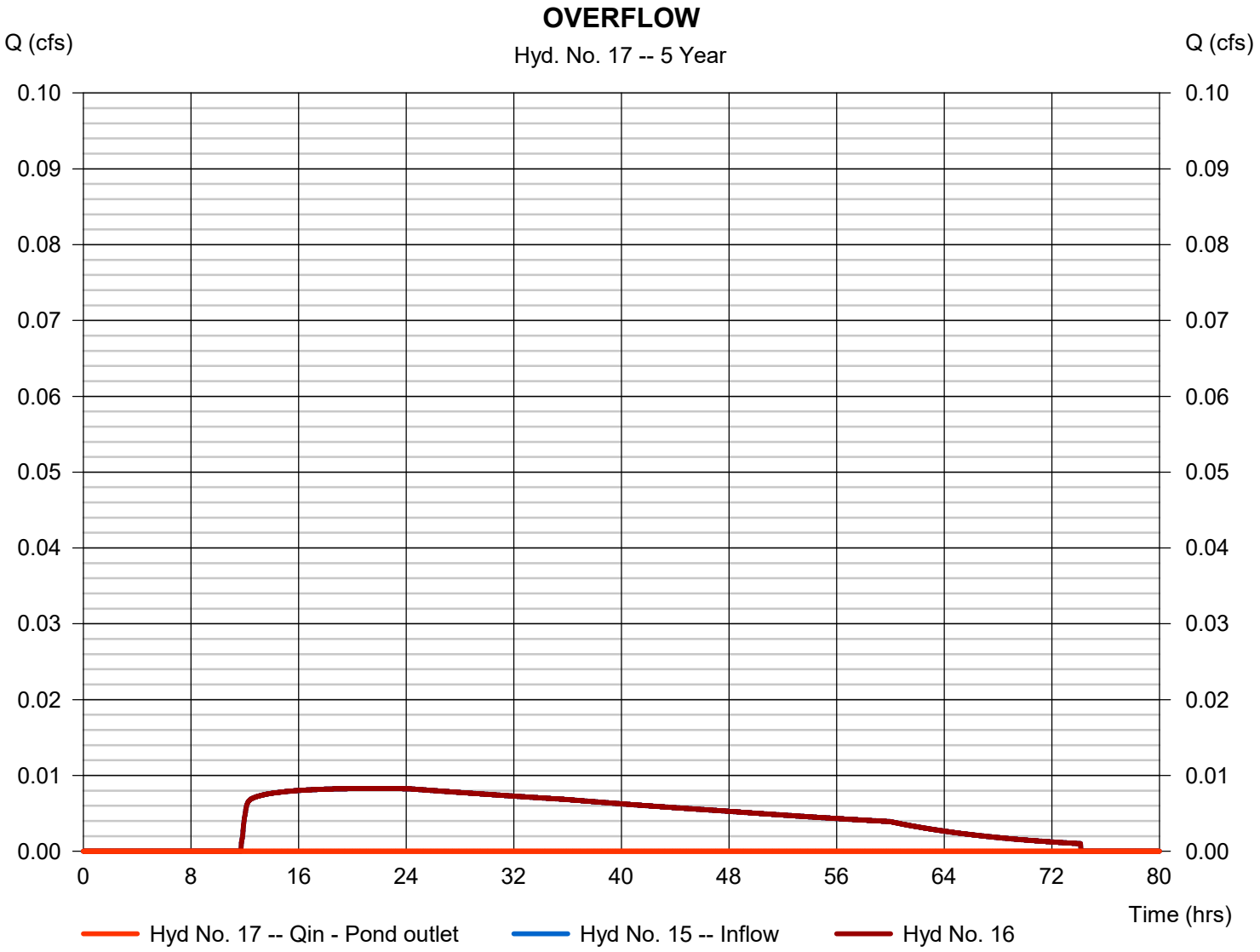
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 60.97 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration

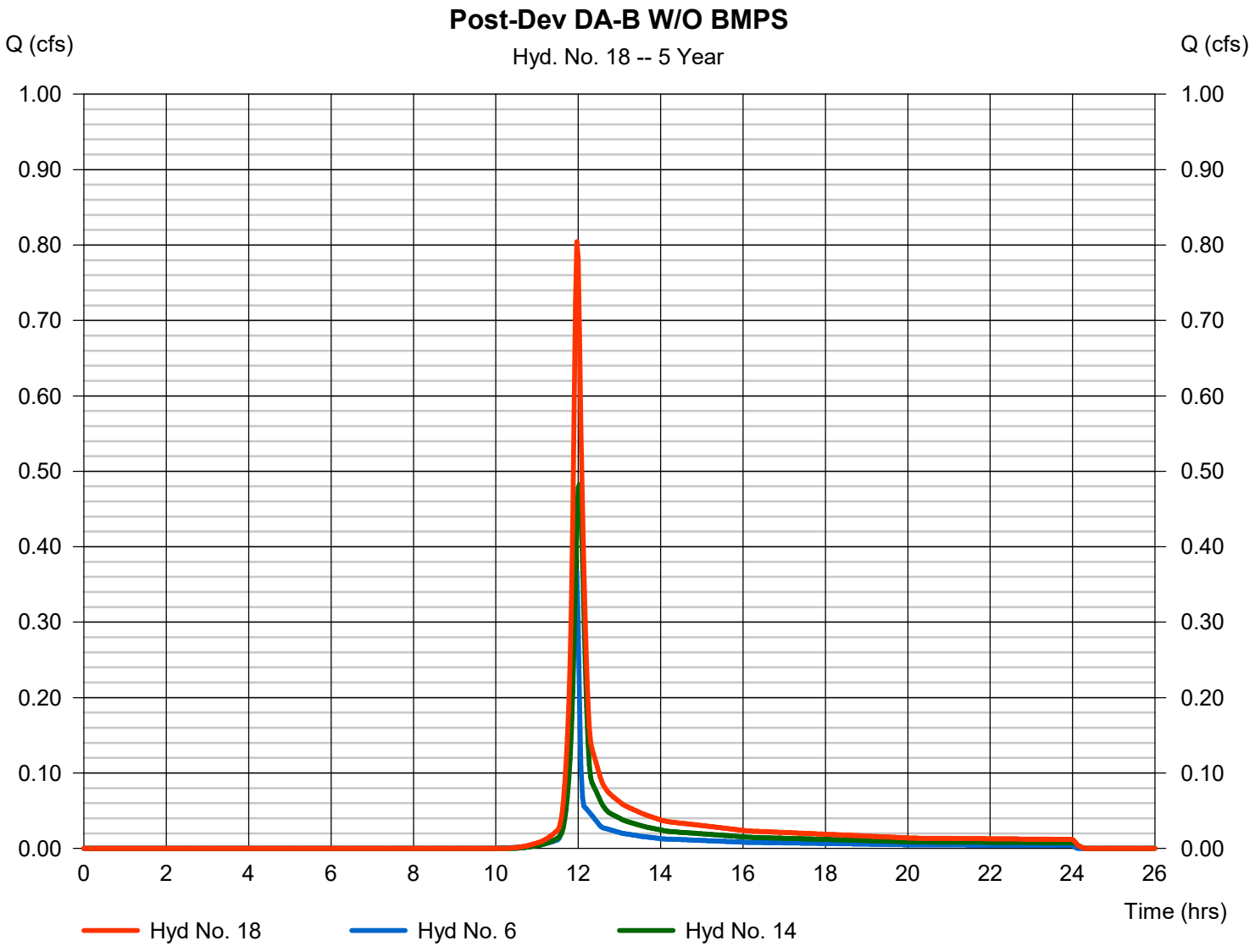


Hydrograph Report

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 0.804 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,022 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



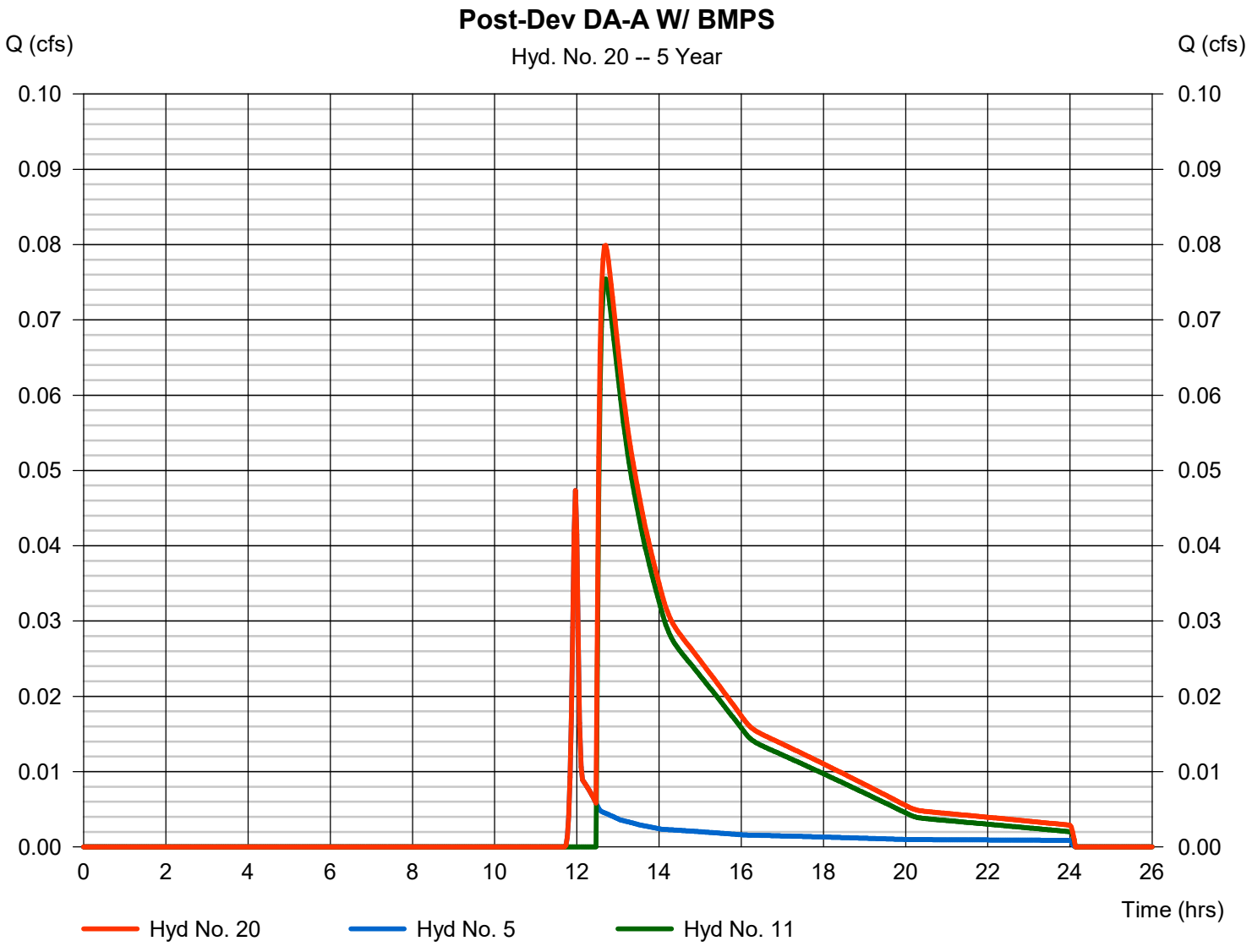
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	=	Combine	Peak discharge	=	0.080 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.70 hrs
Time interval	=	2 min	Hyd. volume	=	739 cuft
Inflow hyds.	=	5, 11	Contrib. drain. area	=	0.050 ac



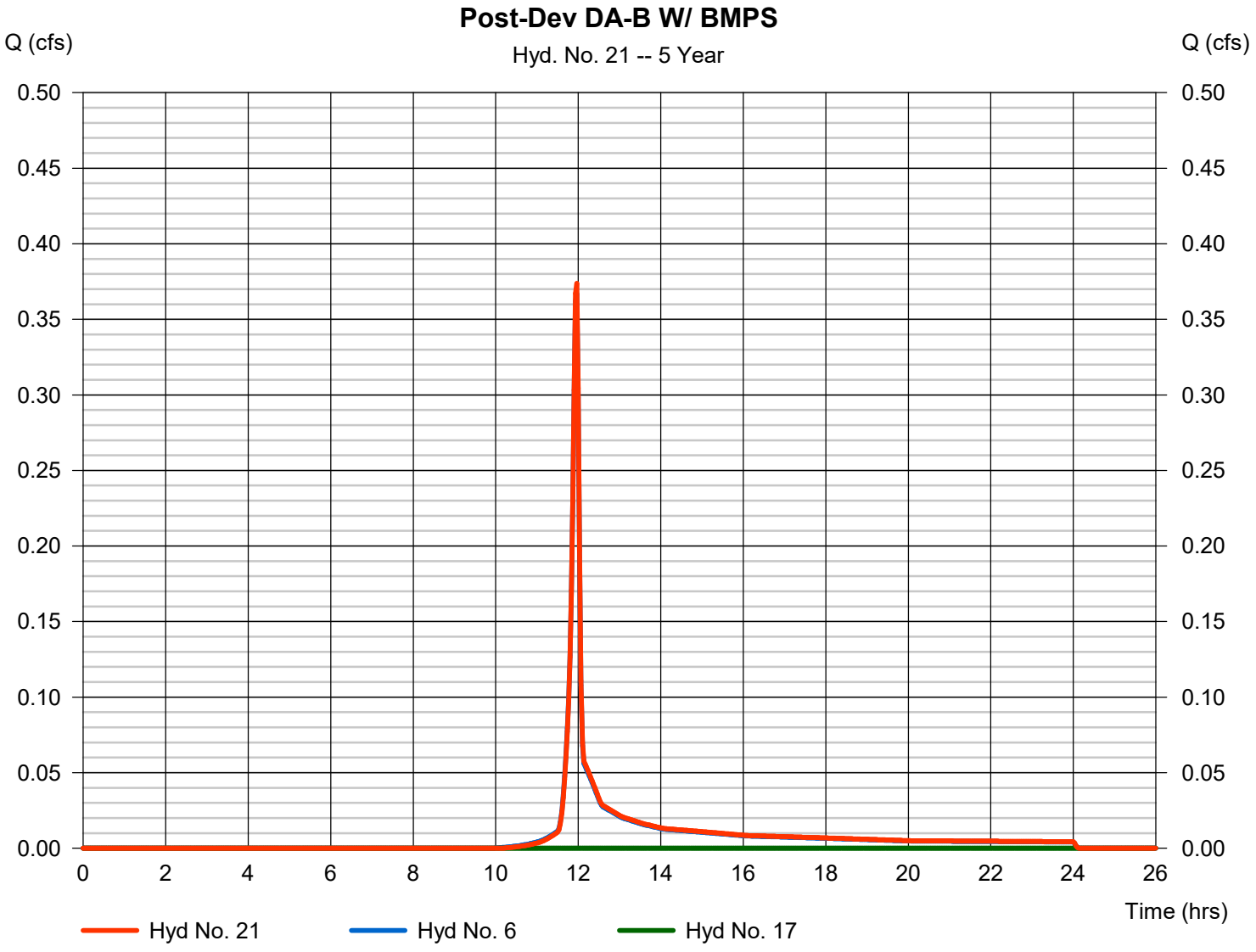
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.374 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 748 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac

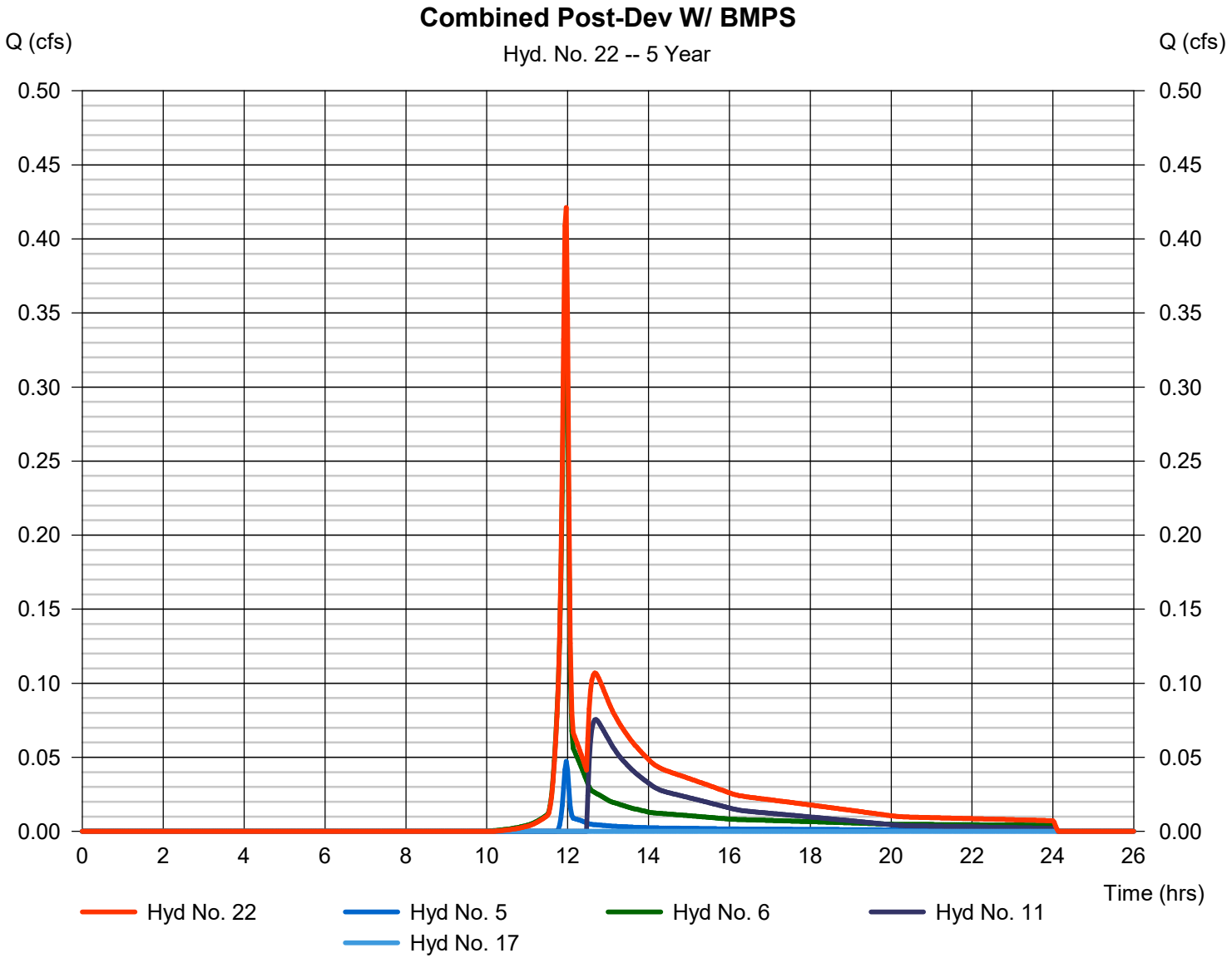


Hydrograph Report

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.421 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,486 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.931	2	722	2,496	------	------	------	Pre-Dev DA-A
2	SCS Runoff	0.873	2	722	2,286	------	------	------	Pre-Dev DA-B
3	SCS Runoff	1.847	2	722	4,877	------	------	------	Pre-Dev Total
5	SCS Runoff	0.075	2	718	156	------	------	------	DA-A Bypass
6	SCS Runoff	0.480	2	718	966	------	------	------	DA-B Bypass
8	SCS Runoff	1.151	2	720	2,989	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	0.465	2	732	2,952	8	472.11	1,309	Bioretention 1
10	Diversion1	0.011	2	732	1,638	9	------	------	INFILTRATION
11	Diversion2	0.454	2	732	1,314	9	------	------	OVERFLOW
12	Combine	1.151	2	720	2,989	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	0.648	2	722	1,698	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.052	2	778	1,661	14	472.02	946	Bioretention 2
16	Diversion1	0.008	2	778	1,264	15	------	------	INFILTRATION
17	Diversion2	0.044	2	778	396	15	------	------	OVERFLOW
18	Combine	1.082	2	718	2,688	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	0.466	2	732	1,470	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	0.493	2	718	1,386	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	0.568	2	718	2,856	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

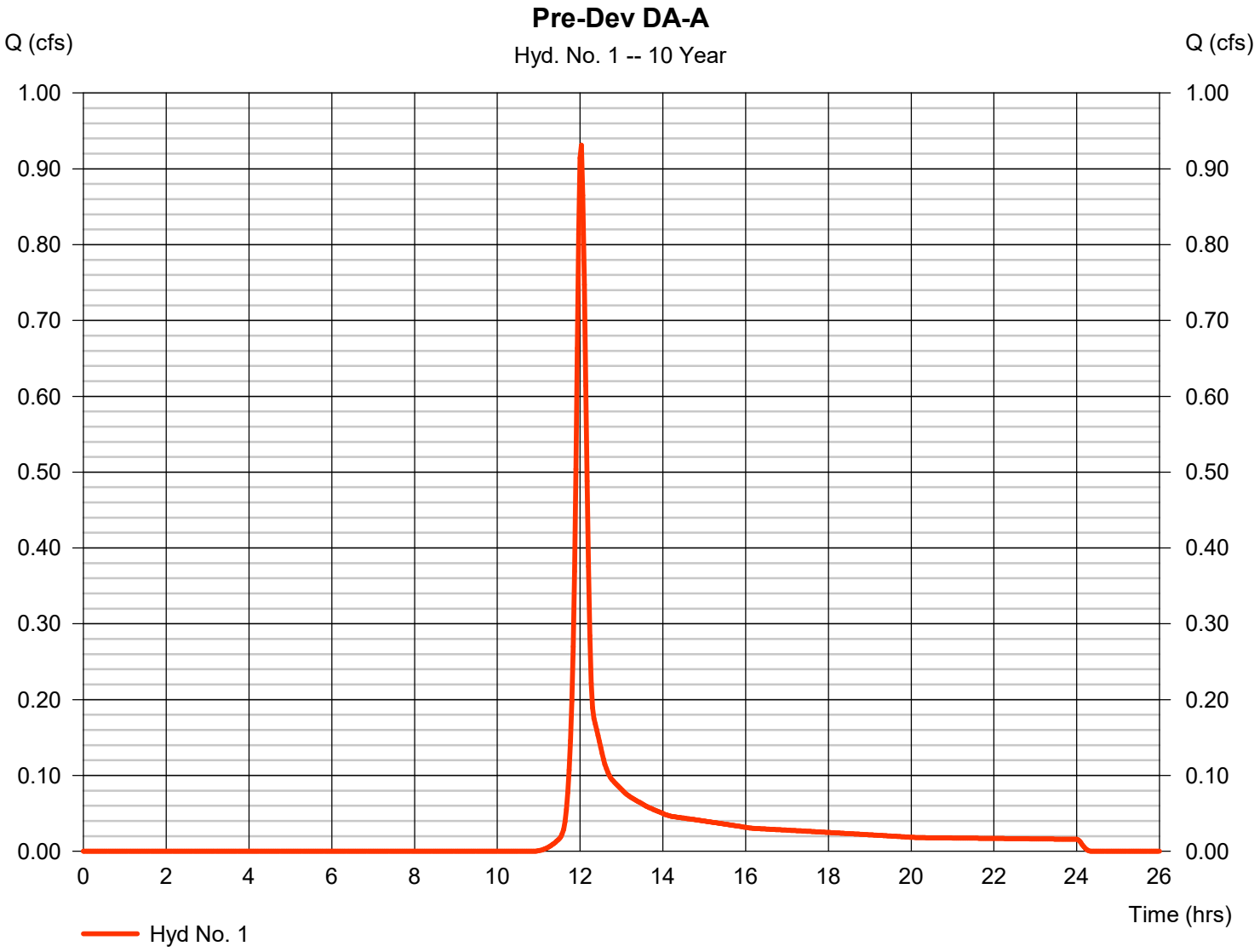
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.931 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,496 cuft
Drainage area	= 0.500 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 4.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

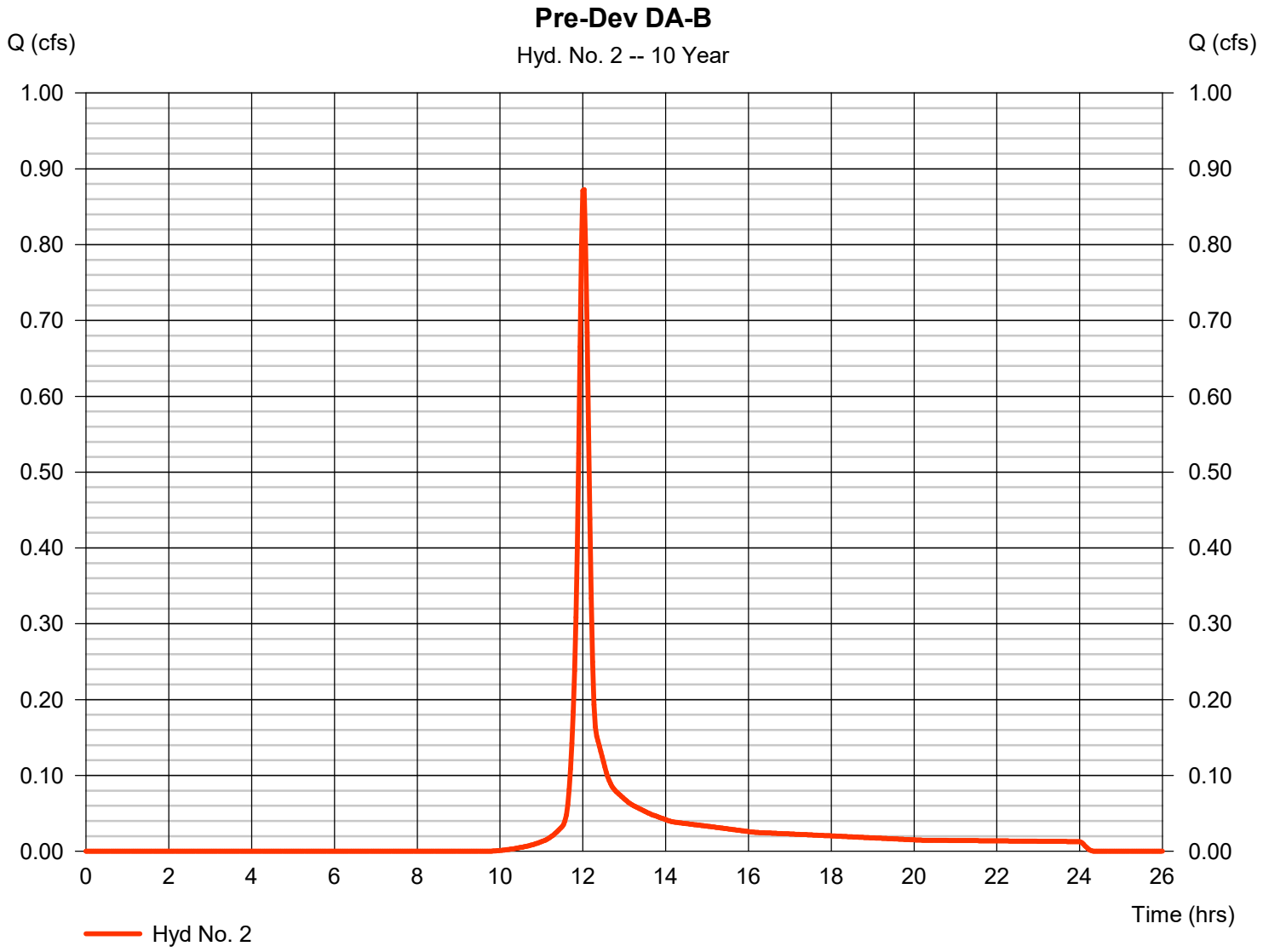
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.873 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,286 cuft
Drainage area	= 0.350 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.20 min
Total precip.	= 4.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

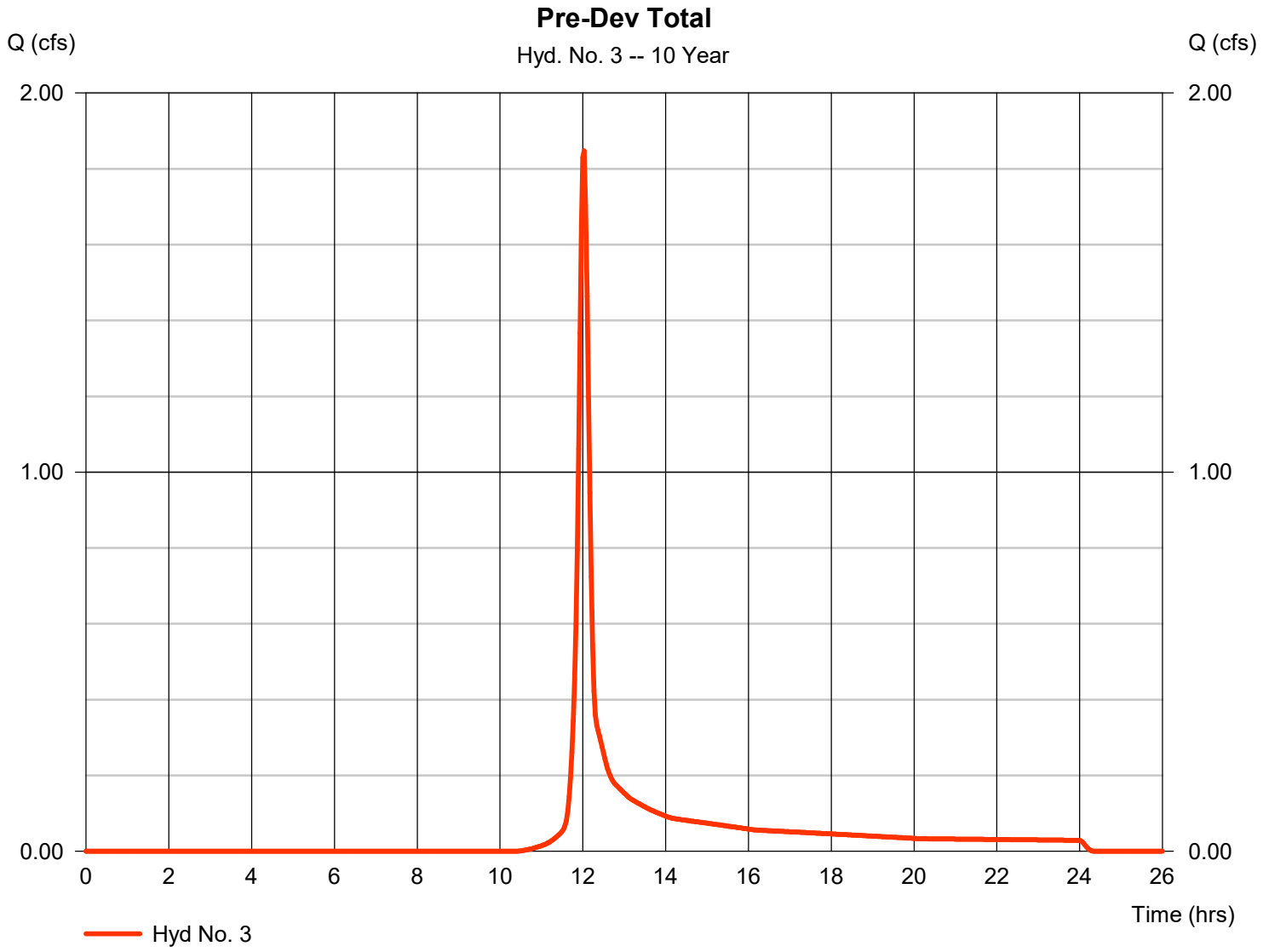
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 1.847 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,877 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 4.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

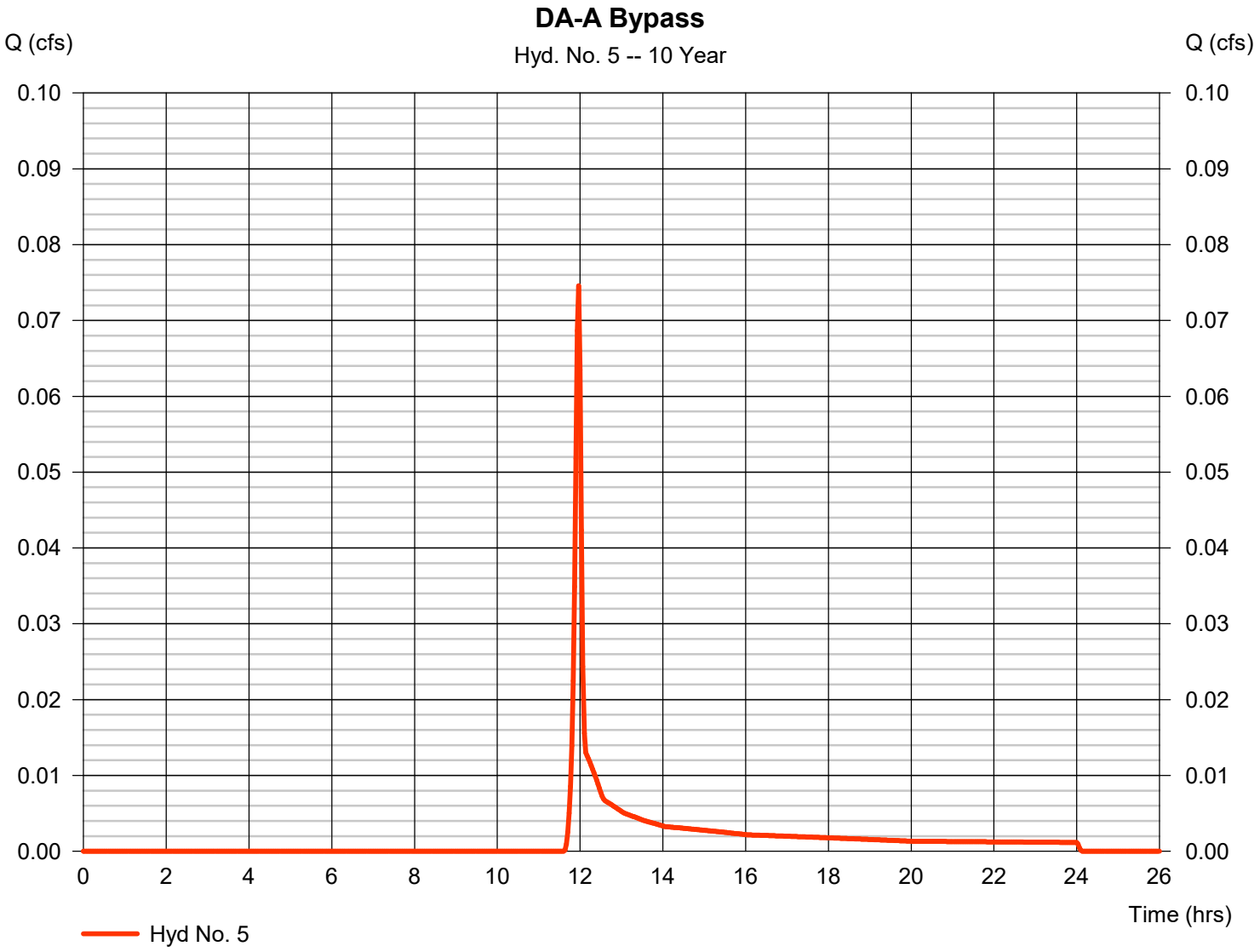
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.075 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	156 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

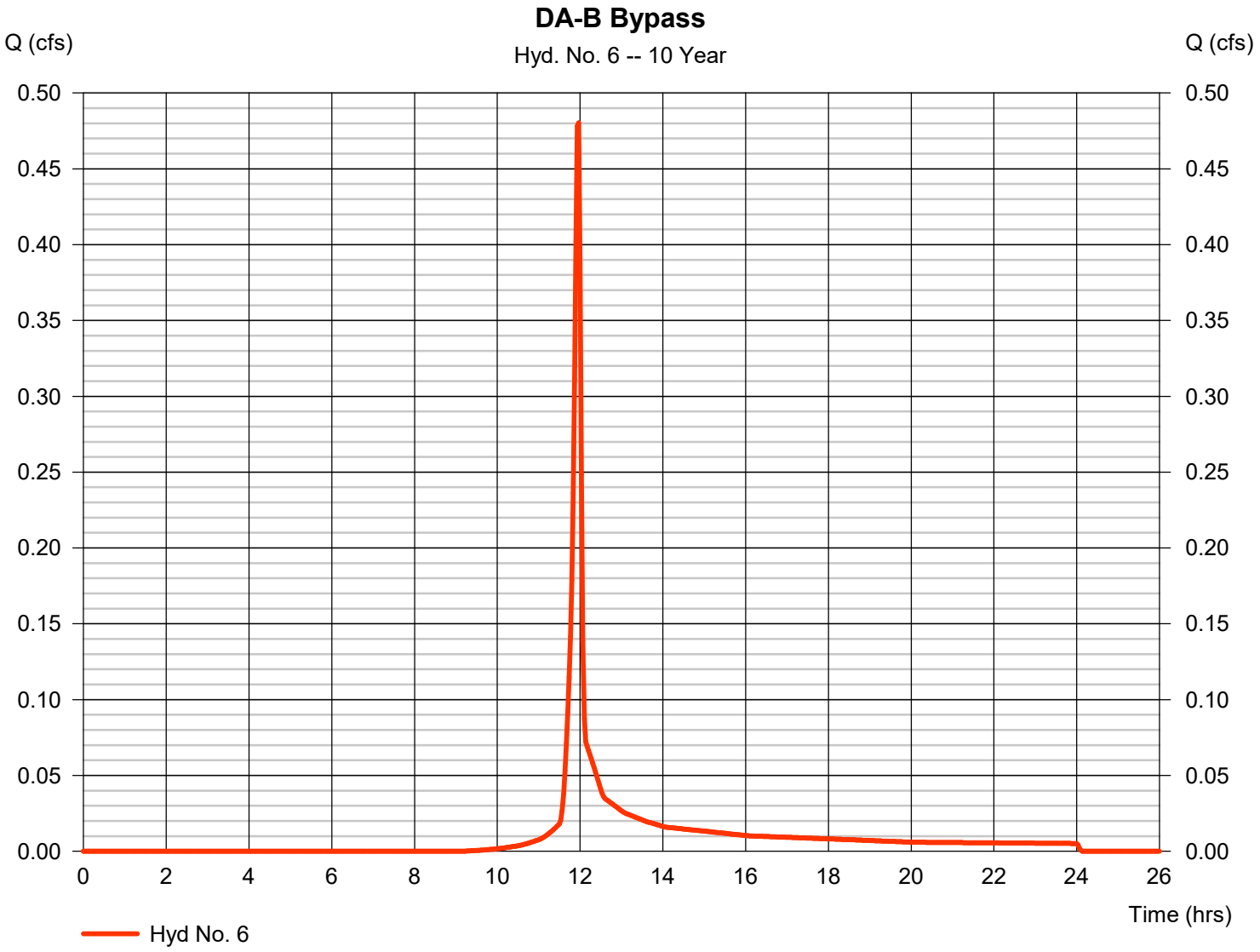
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.480 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	966 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

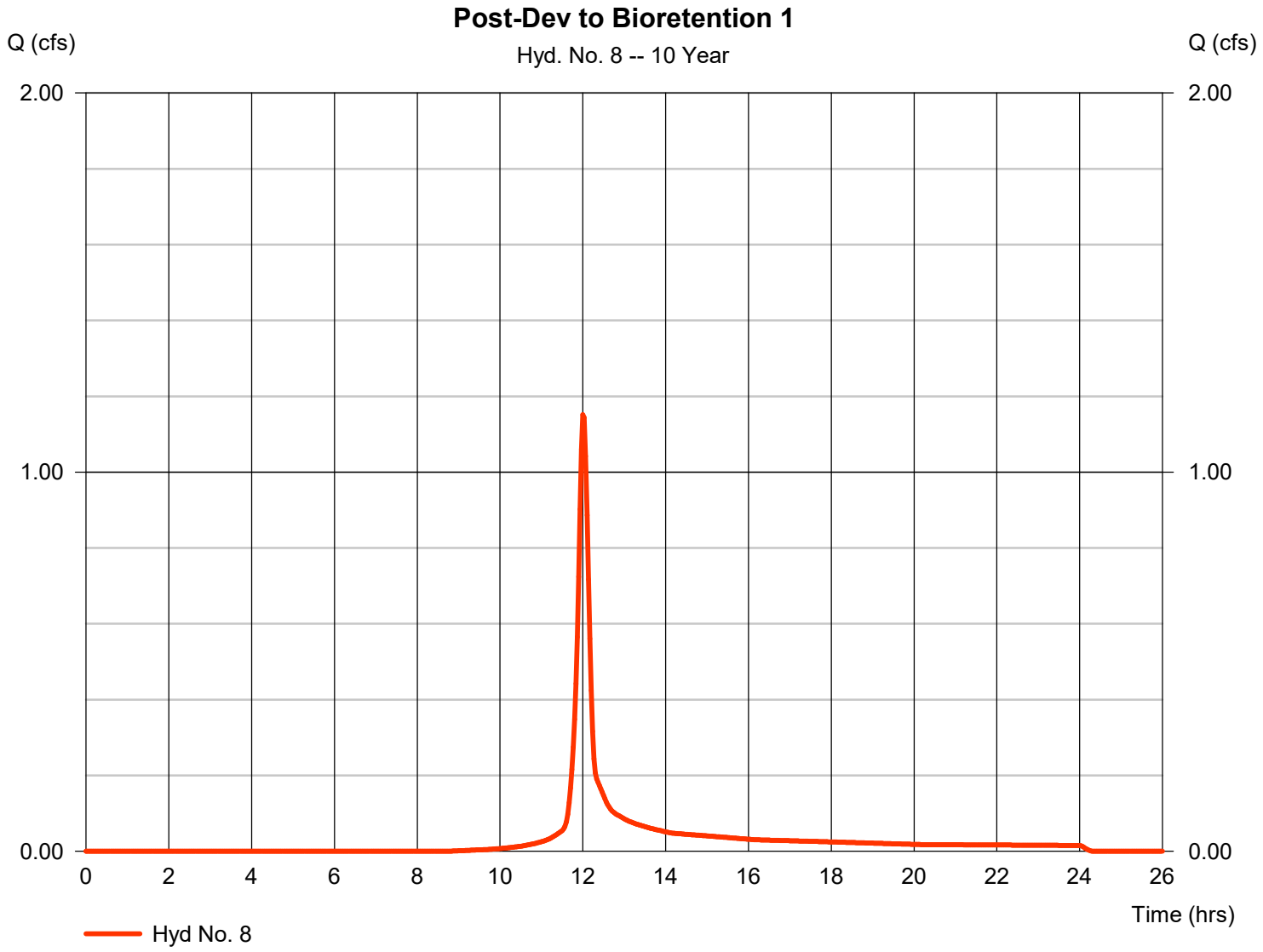
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.151 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,989 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 4.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

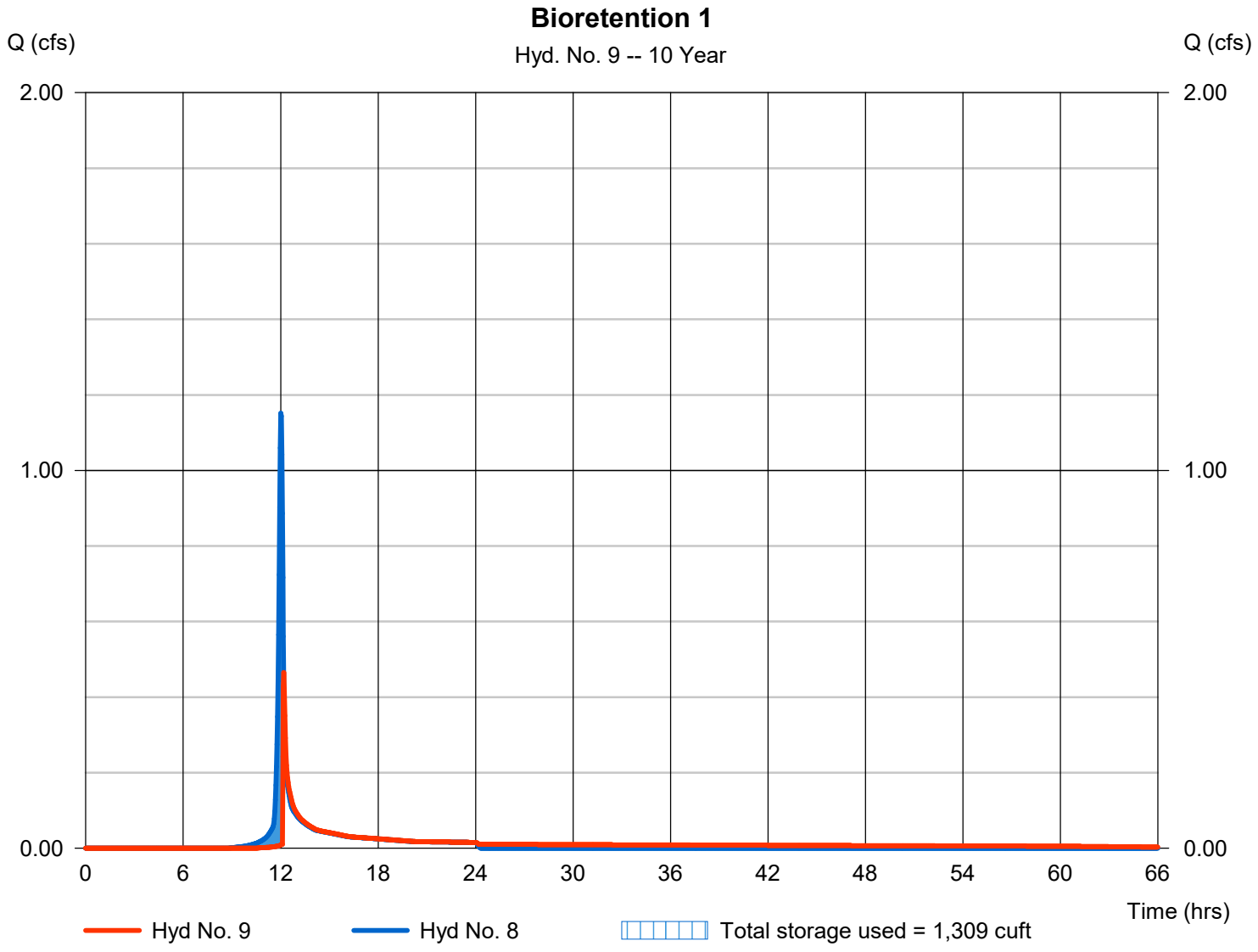
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	= Reservoir	Peak discharge	= 0.465 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 2,952 cuft
Inflow hyd. No.	= 8 - Post-Dev to Bioretention 1	Max. Elevation	= 472.11 ft
Reservoir name	= BMP ID 1 - Bioretention 1	Max. Storage	= 1,309 cuft

Storage Indication method used. Outflow includes exfiltration.



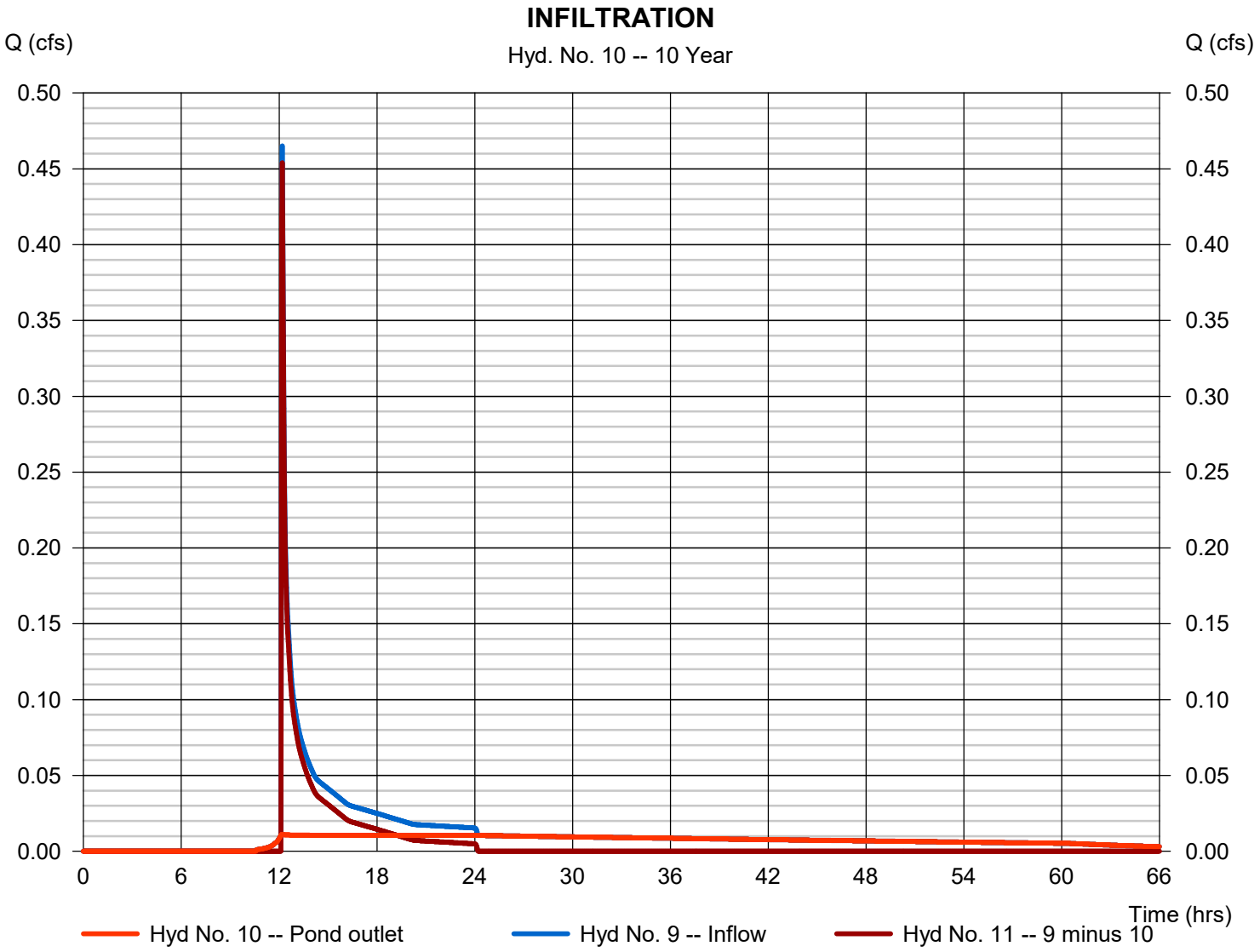
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.011 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,638 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



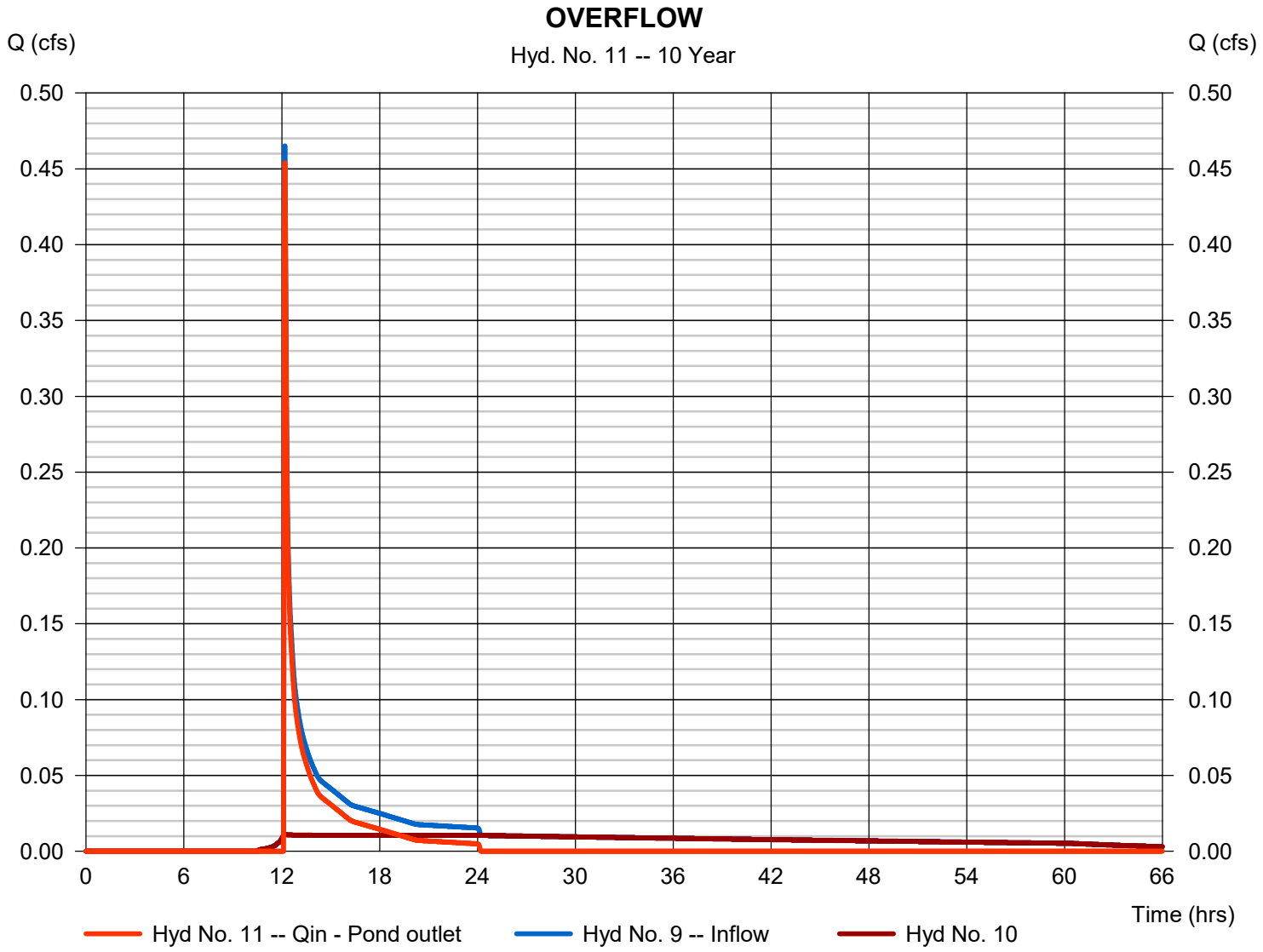
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.454 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,314 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



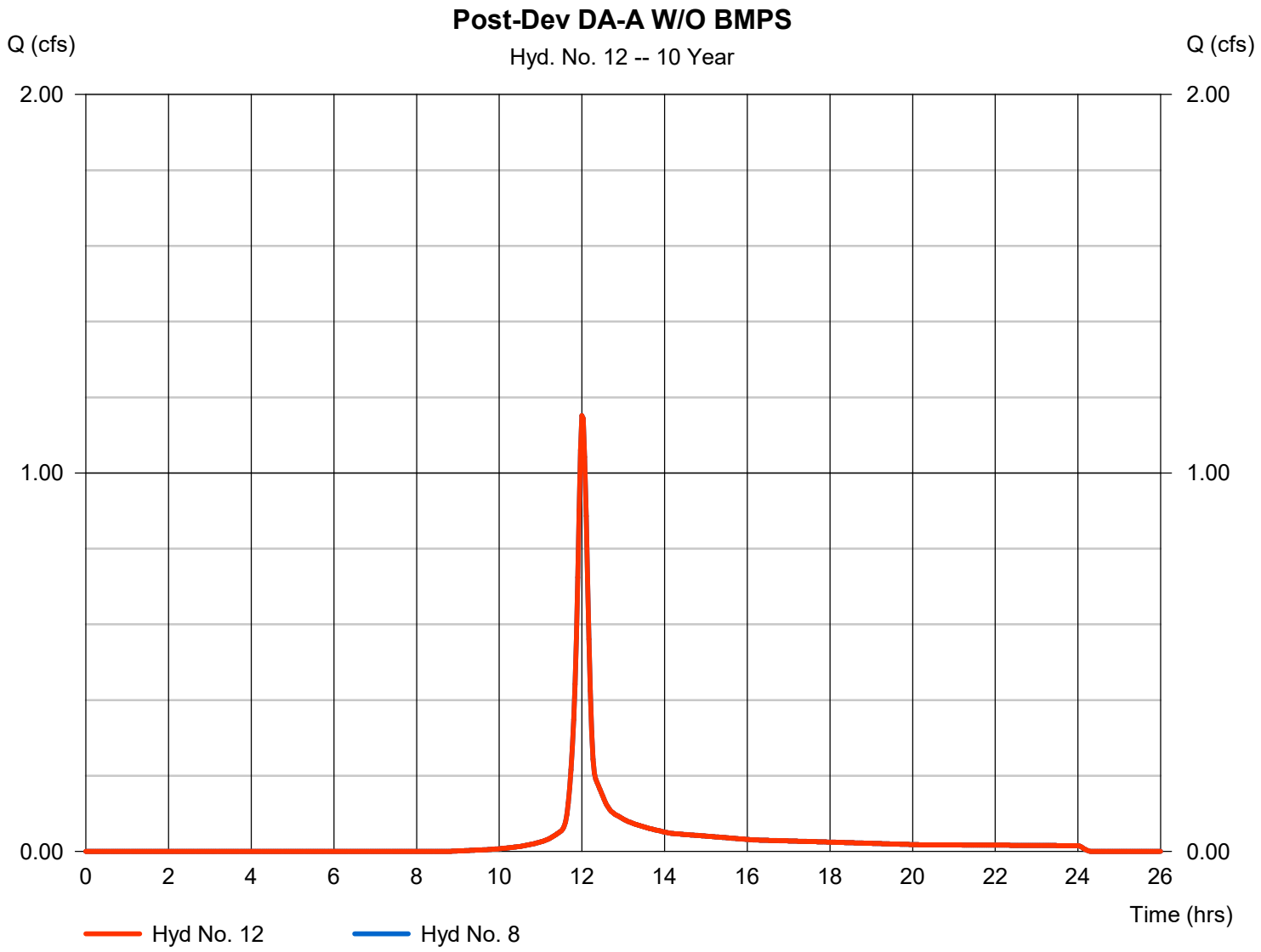
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.151 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,989 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

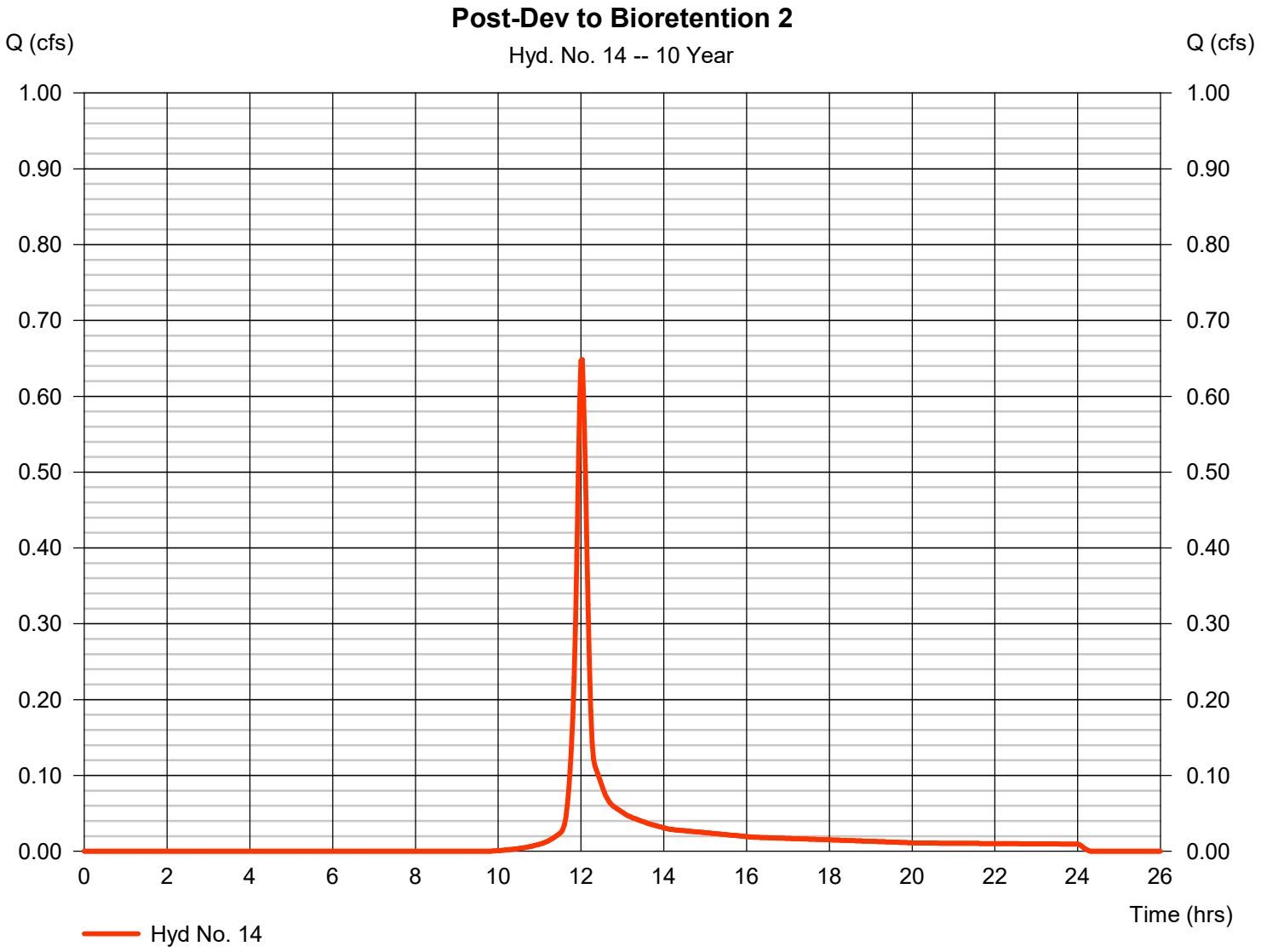
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.648 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,698 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 4.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

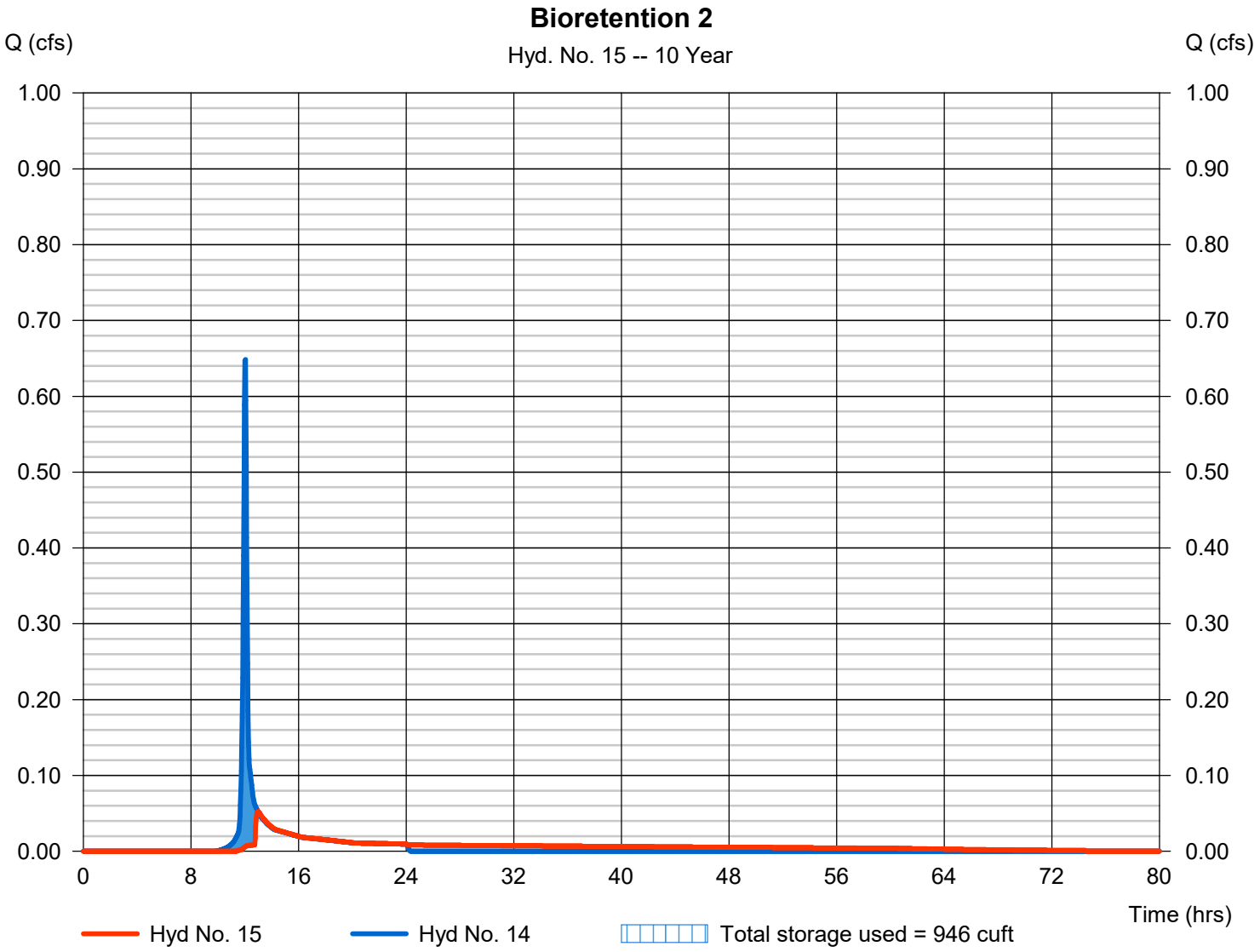
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	= Reservoir	Peak discharge	= 0.052 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,661 cuft
Inflow hyd. No.	= 14 - Post-Dev to Bioretention 2	Max. Elevation	= 472.02 ft
Reservoir name	= BMP ID 2 - Bioretention 2	Max. Storage	= 946 cuft

Storage Indication method used. Outflow includes exfiltration.



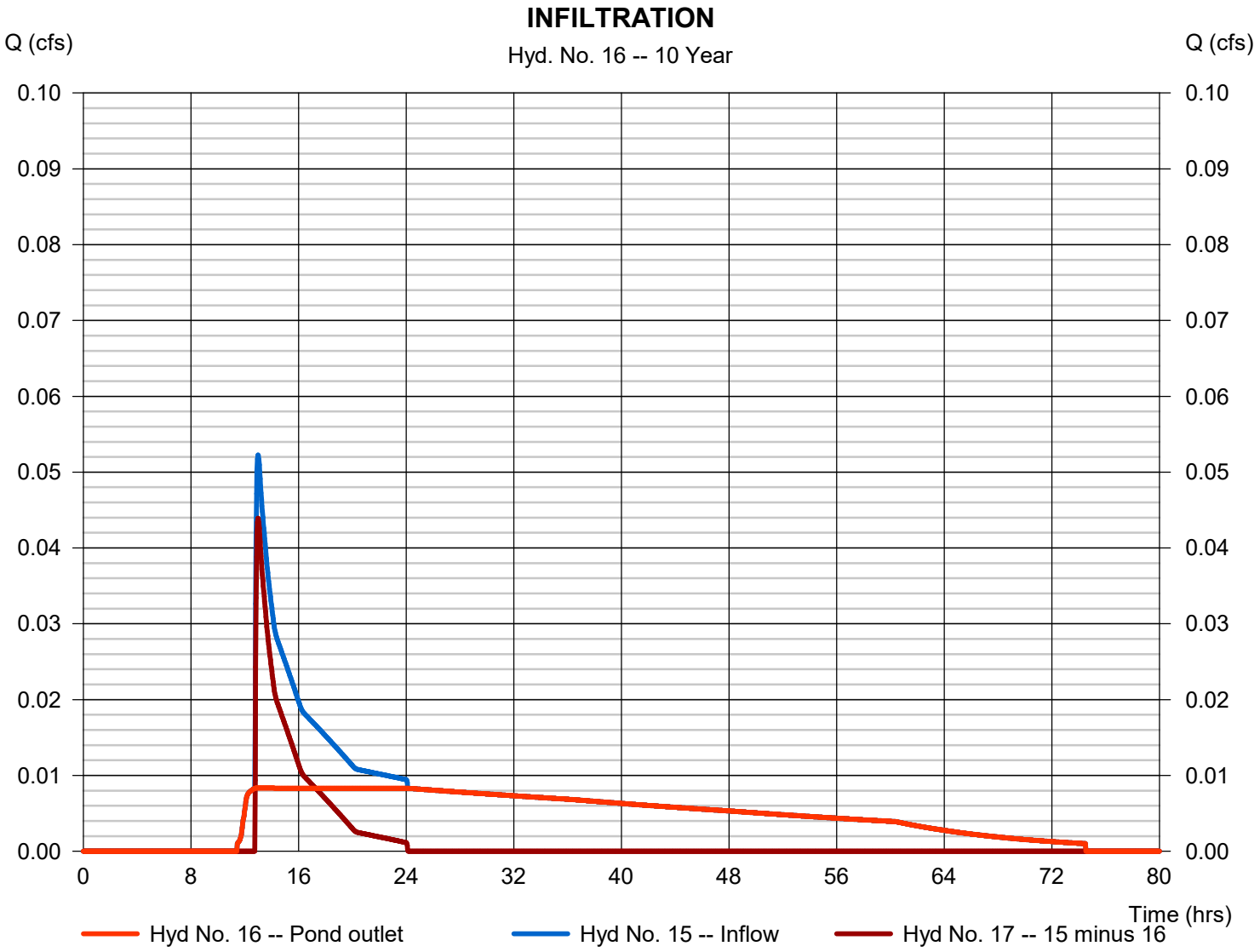
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.008 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,264 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



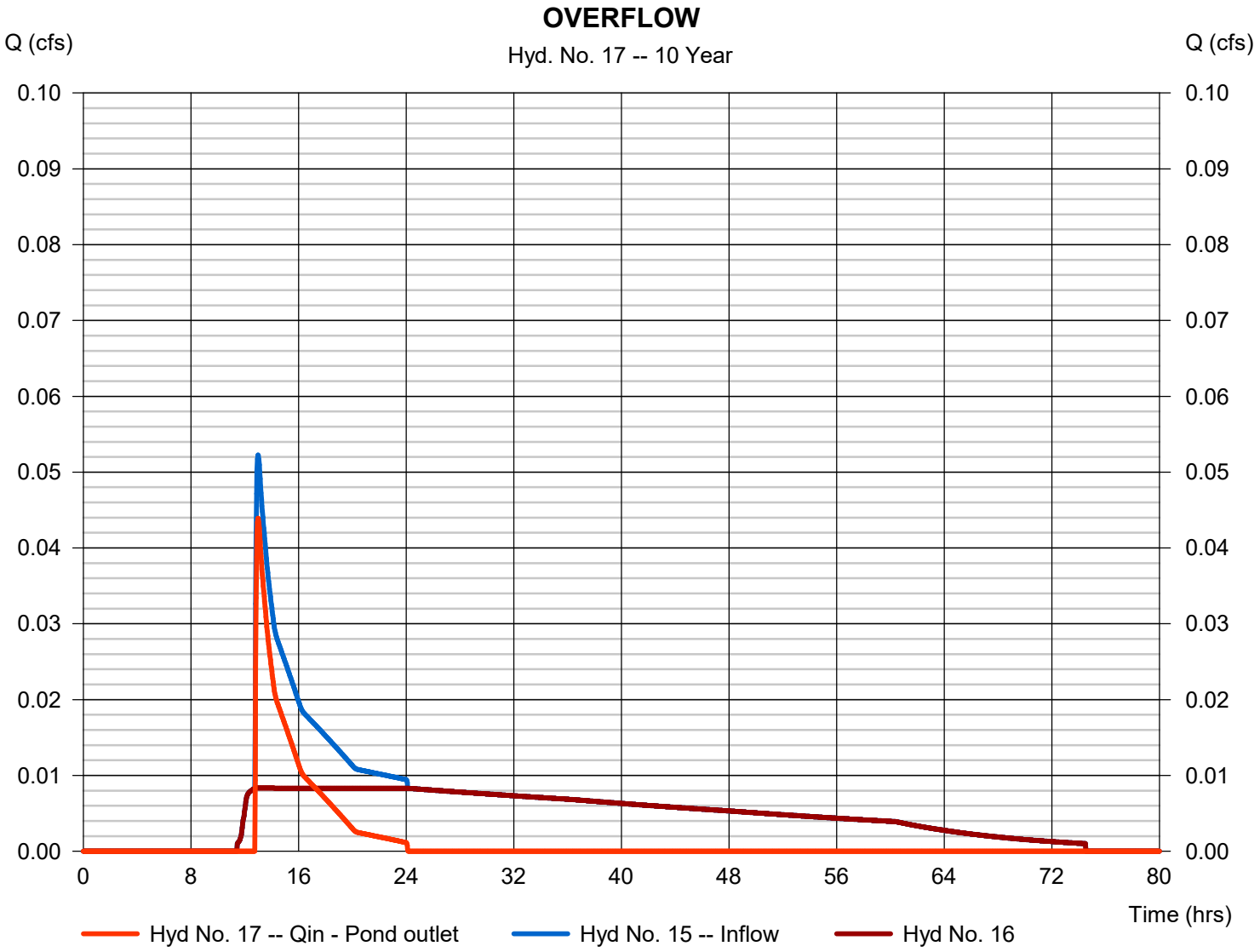
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.044 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.97 hrs
Time interval	= 2 min	Hyd. volume	= 396 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	2nd structure	= Exfiltration



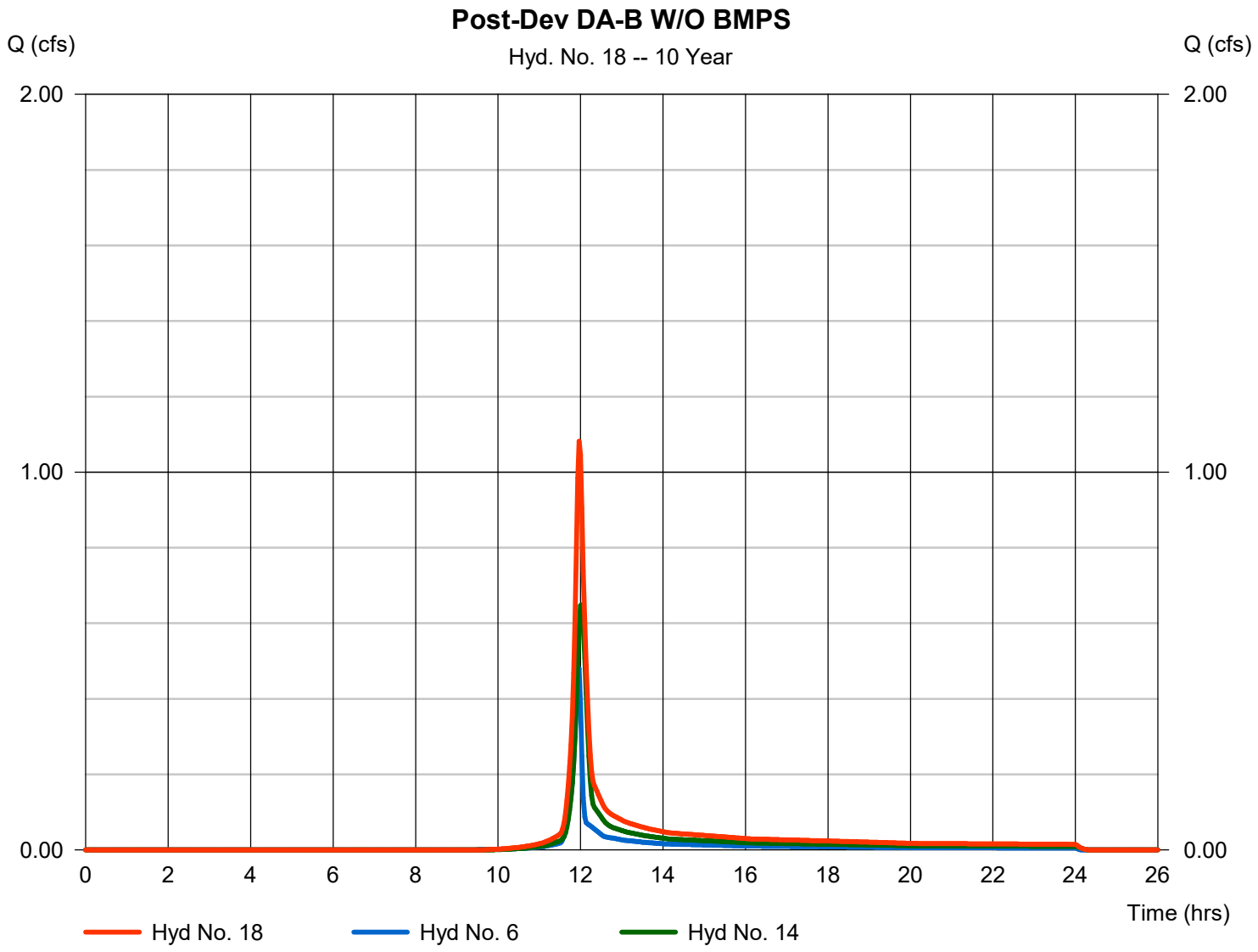
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.082 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,688 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



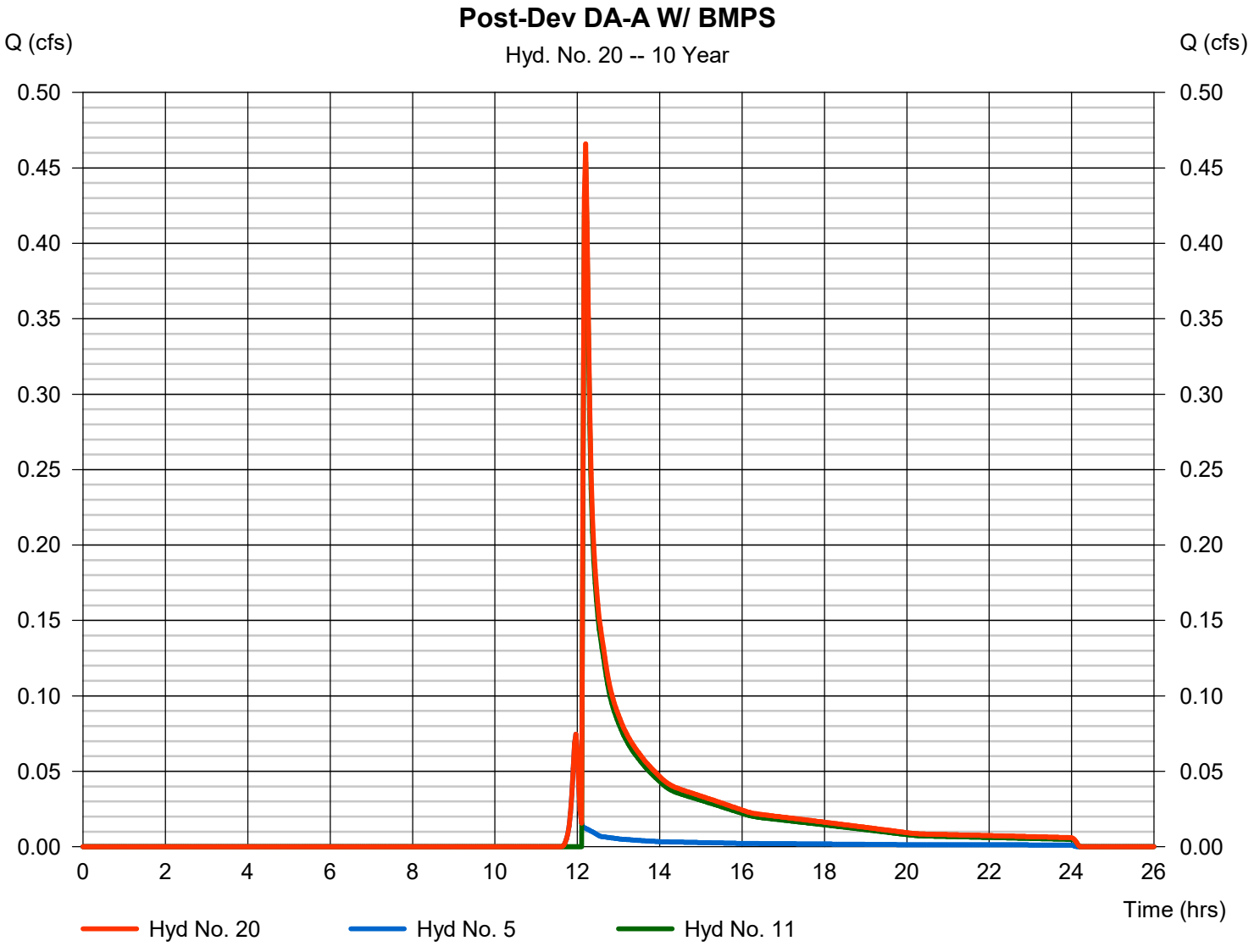
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.466 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,470 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.050 ac



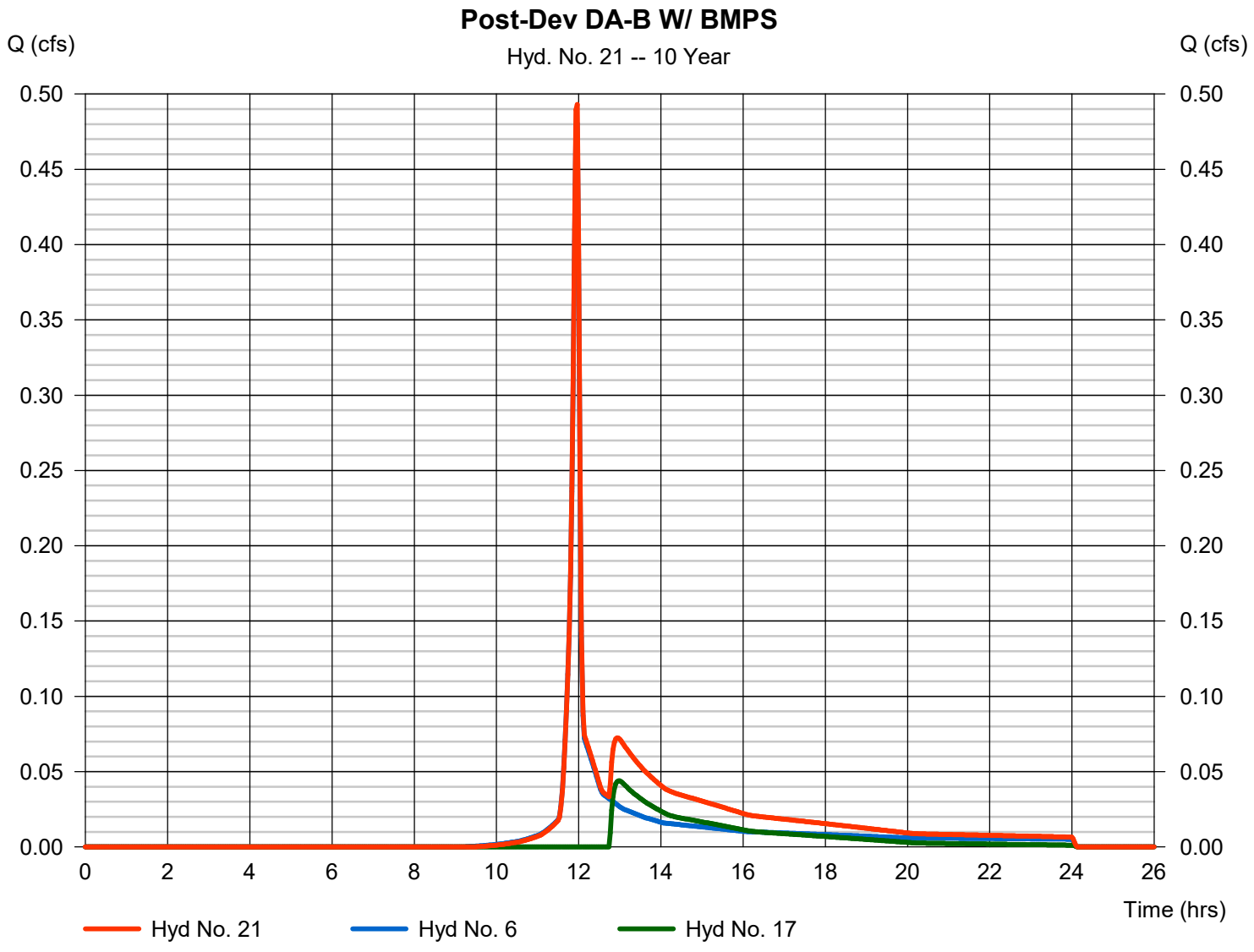
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.493 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,386 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac



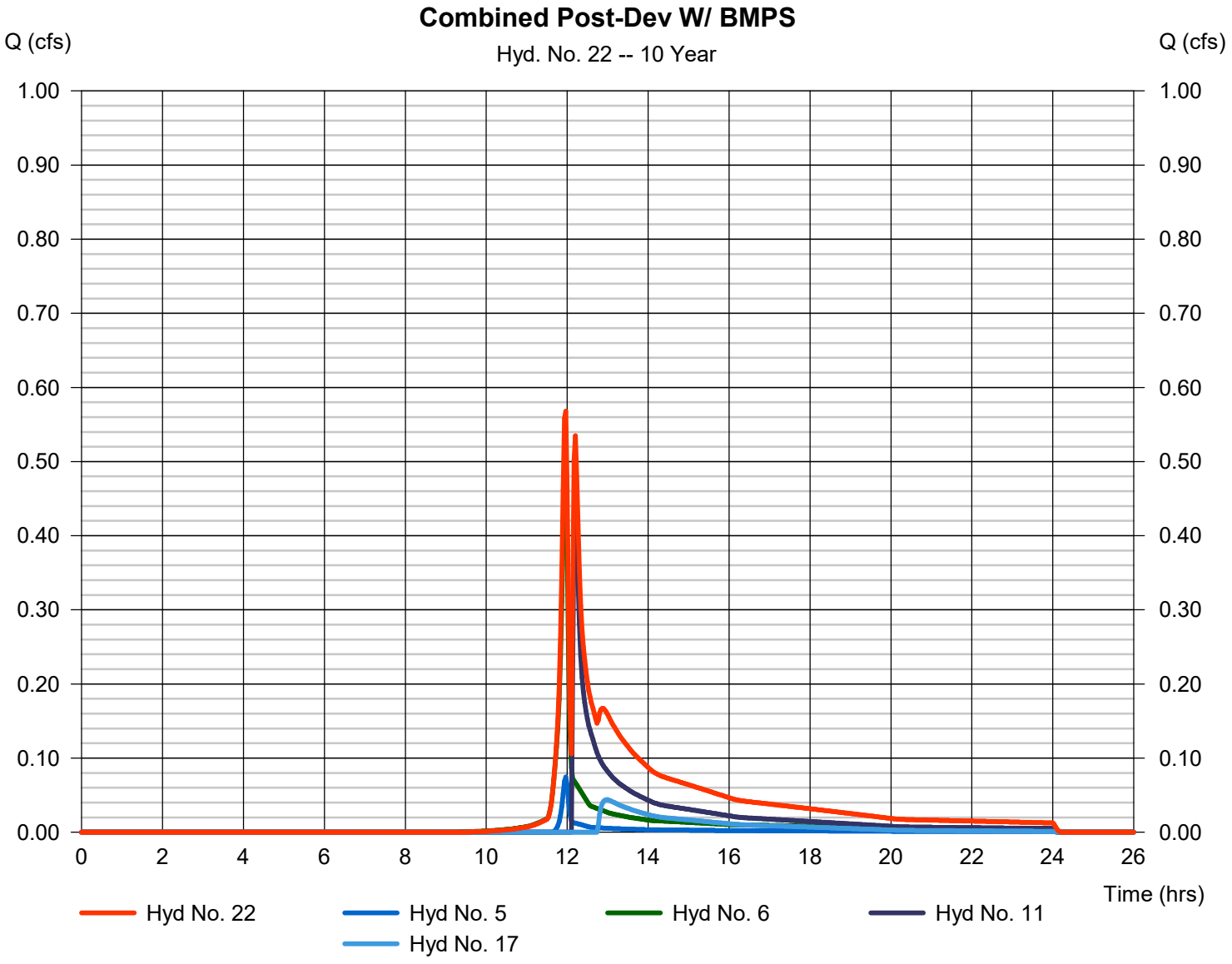
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.568 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,856 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.378	2	722	3,625	------	------	------	Pre-Dev DA-A
2	SCS Runoff	1.224	2	720	3,181	------	------	------	Pre-Dev DA-B
3	SCS Runoff	2.648	2	722	6,928	------	------	------	Pre-Dev Total
5	SCS Runoff	0.119	2	718	241	------	------	------	DA-A Bypass
6	SCS Runoff	0.657	2	716	1,328	------	------	------	DA-B Bypass
8	SCS Runoff	1.565	2	720	4,058	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	1.257	2	726	4,021	8	472.21	1,416	Bioretention 1
10	Diversion1	0.012	2	726	1,654	9	------	------	INFILTRATION
11	Diversion2	1.245	2	726	2,367	9	------	------	OVERFLOW
12	Combine	1.565	2	720	4,058	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	0.909	2	720	2,363	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.398	2	730	2,326	14	472.10	1,010	Bioretention 2
16	Diversion1	0.009	2	730	1,274	15	------	------	INFILTRATION
17	Diversion2	0.389	2	730	1,052	15	------	------	OVERFLOW
18	Combine	1.511	2	718	3,732	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	1.269	2	726	2,608	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	0.678	2	716	2,421	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	1.486	2	728	5,029	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

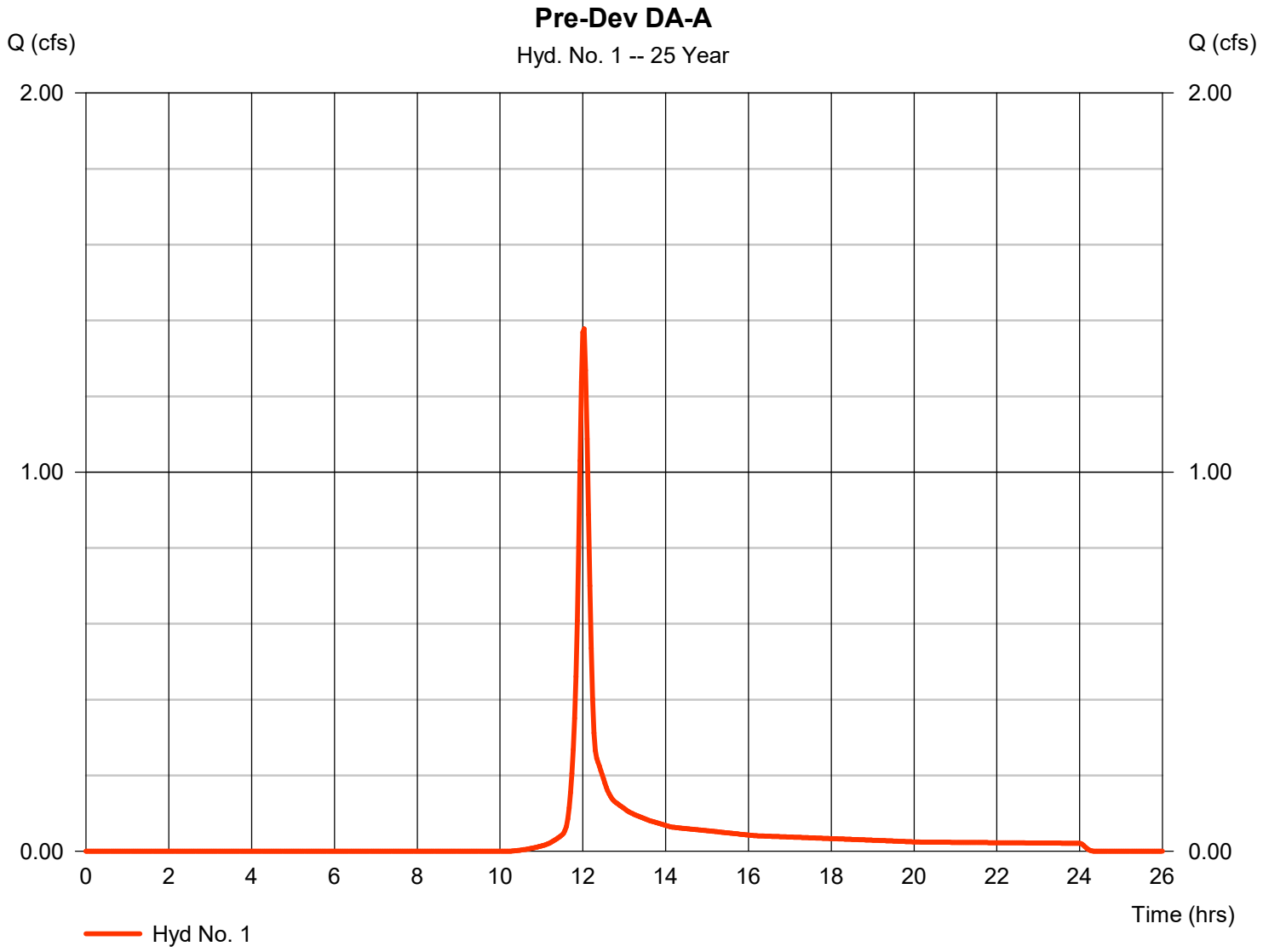
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.378 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	3,625 cuft
Drainage area	=	0.500 ac	Curve number	=	68*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.60 min
Total precip.	=	5.08 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

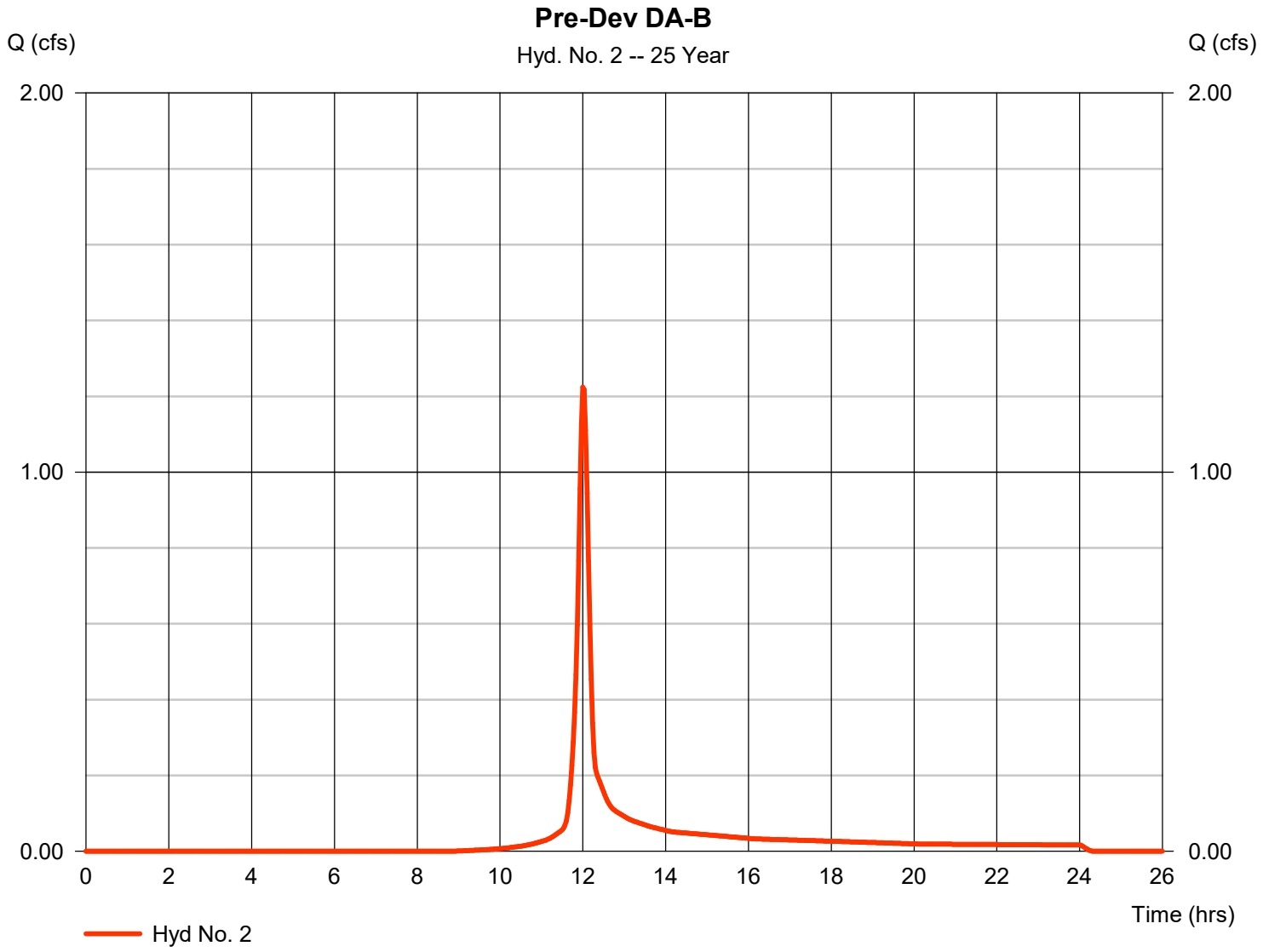
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.224 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 3,181 cuft
Drainage area	= 0.350 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.20 min
Total precip.	= 5.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

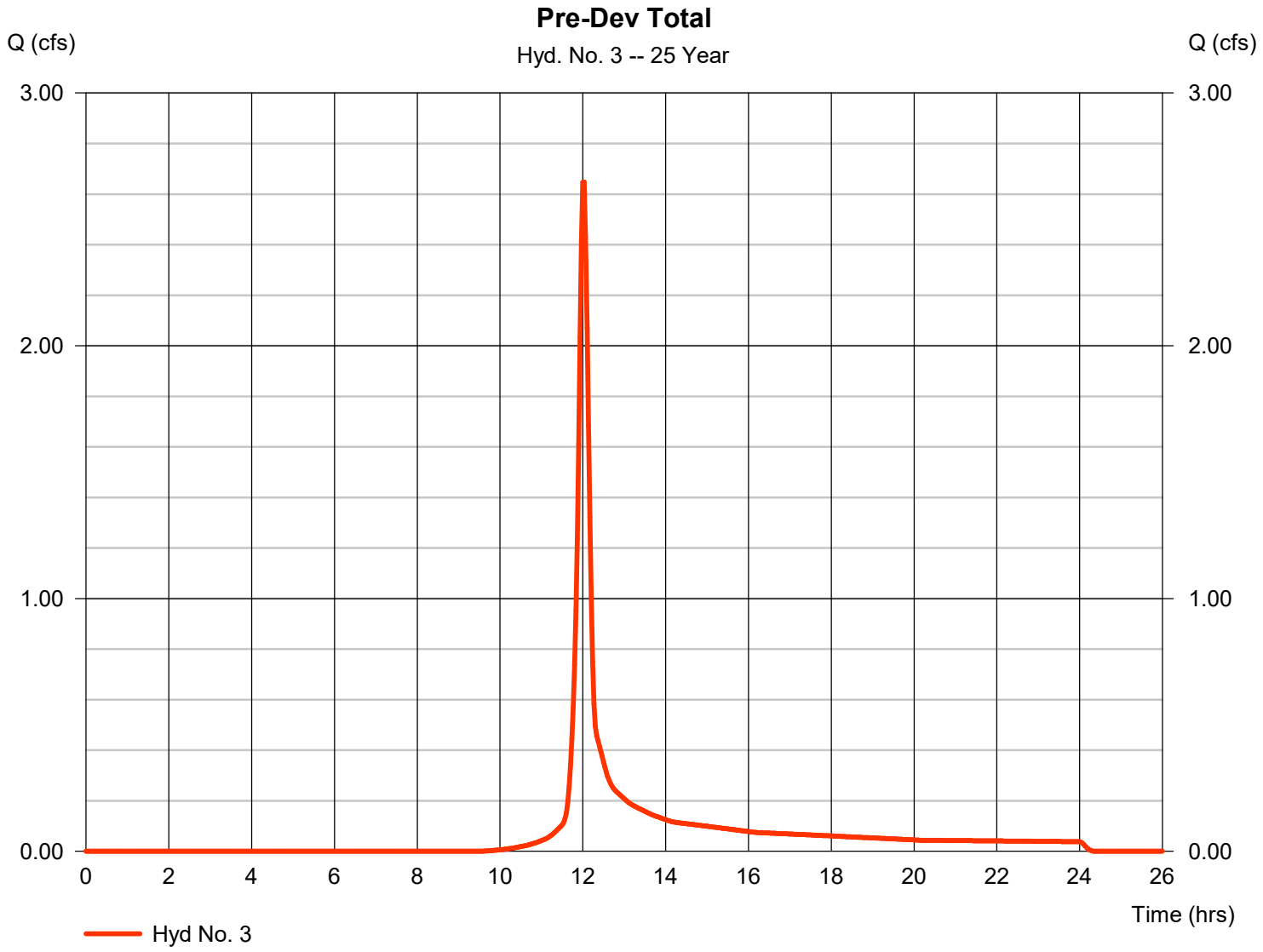
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 2.648 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 6,928 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 5.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

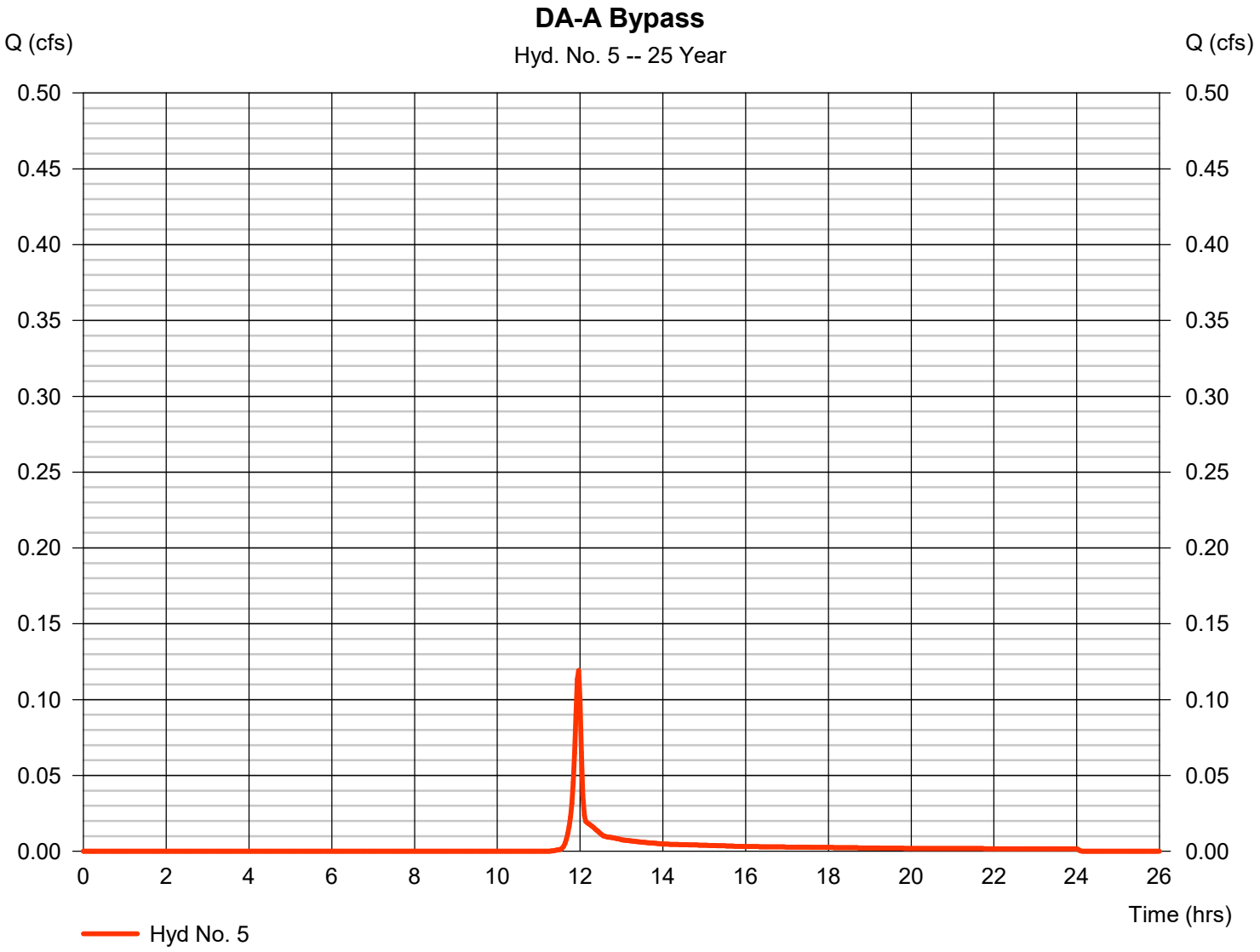
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.119 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	241 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.08 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

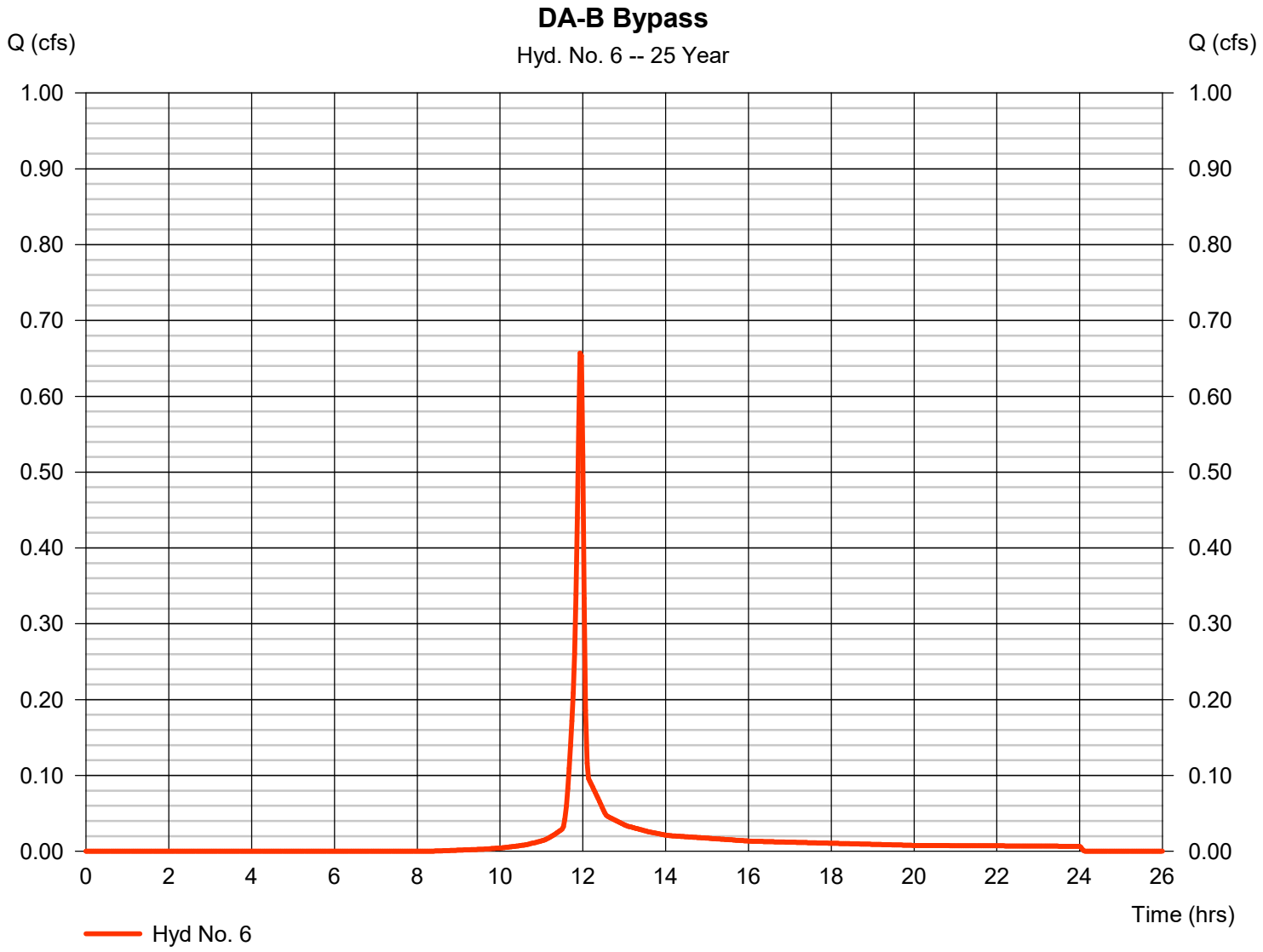
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.657 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,328 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.08 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

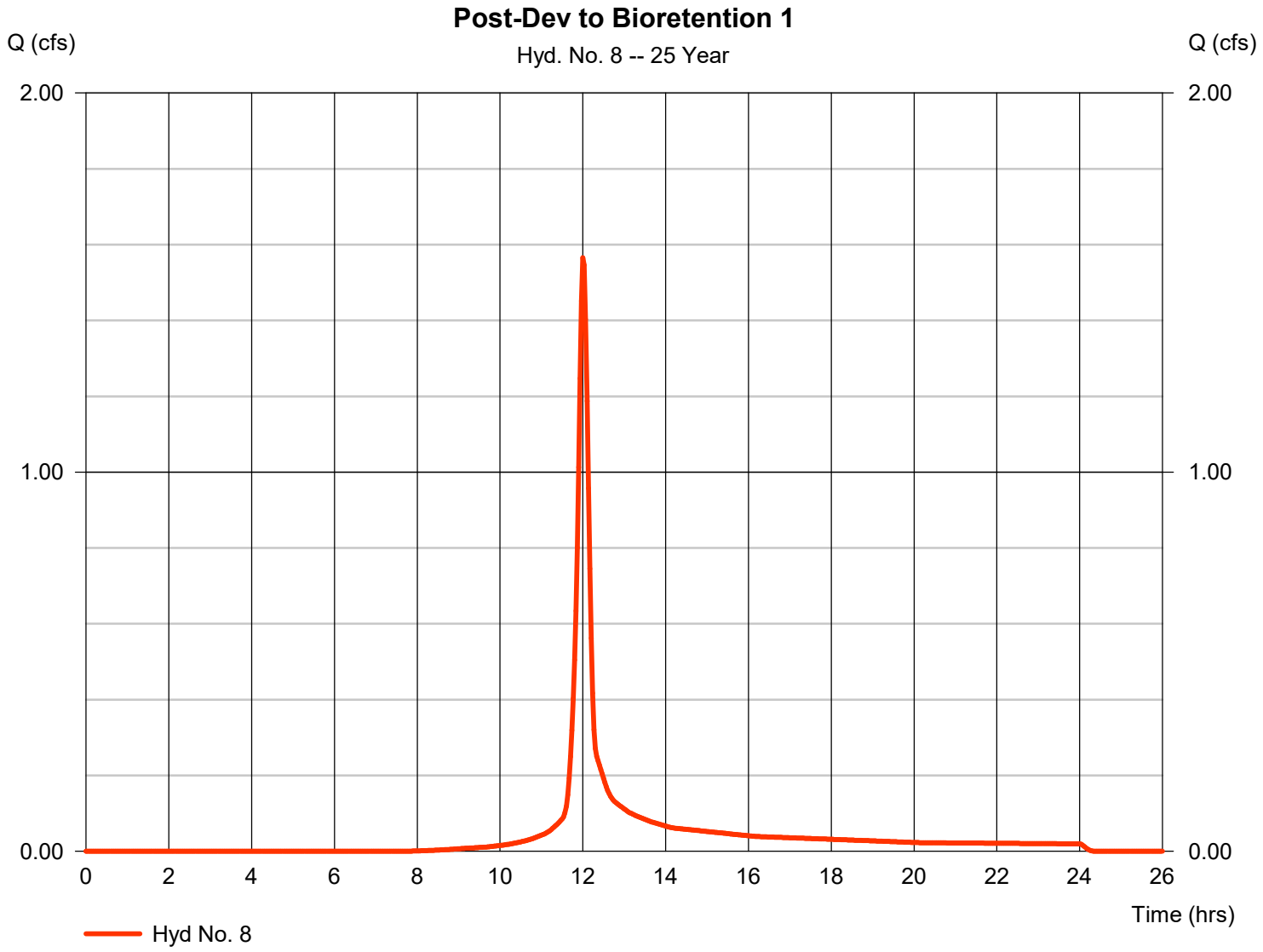
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.565 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,058 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 5.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

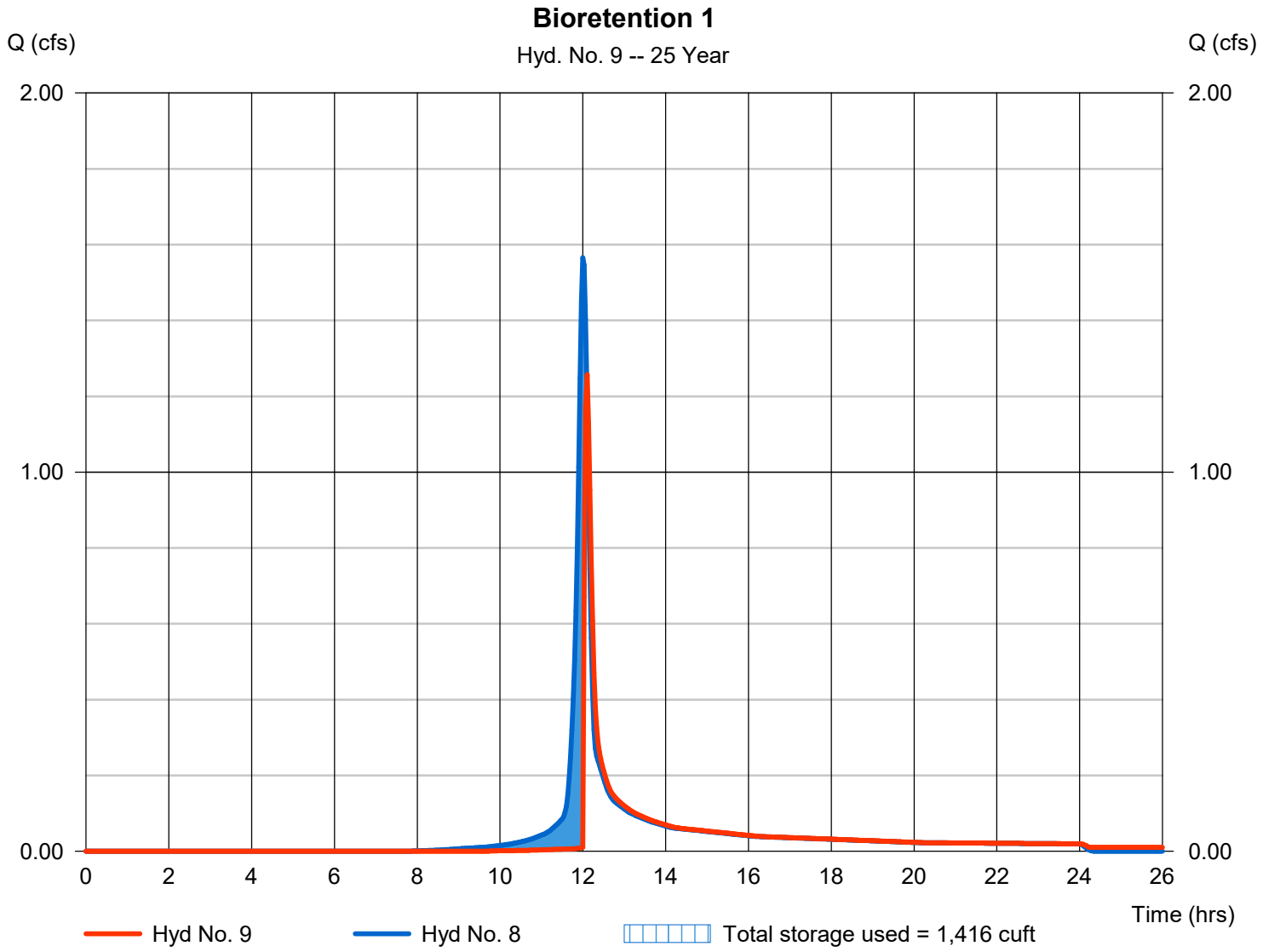
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	=	Reservoir	Peak discharge	=	1.257 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	4,021 cuft
Inflow hyd. No.	=	8 - Post-Dev to Bioretention 1	Max. Elevation	=	472.21 ft
Reservoir name	=	BMP ID 1 - Bioretention 1	Max. Storage	=	1,416 cuft

Storage Indication method used. Outflow includes exfiltration.



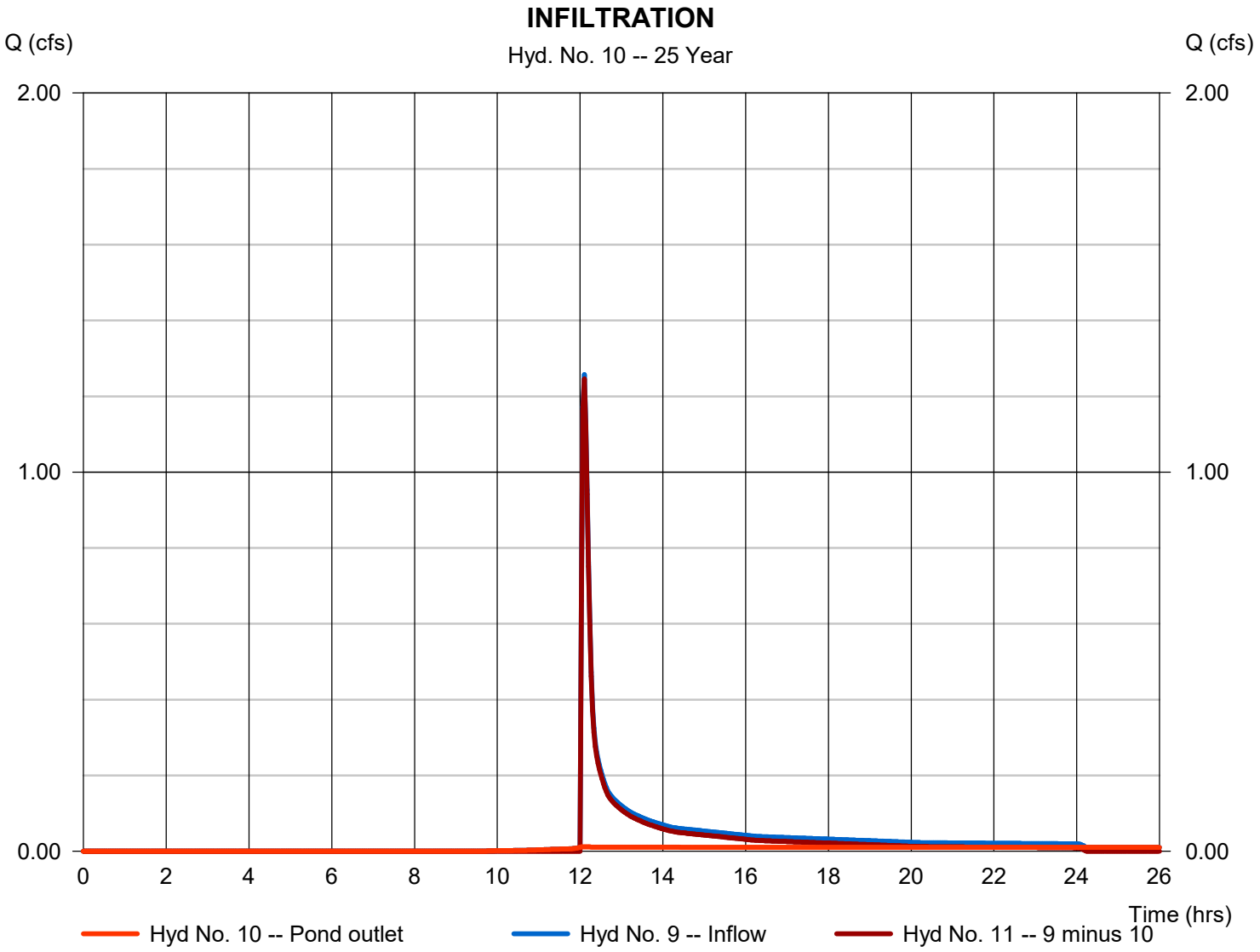
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.012 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,654 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



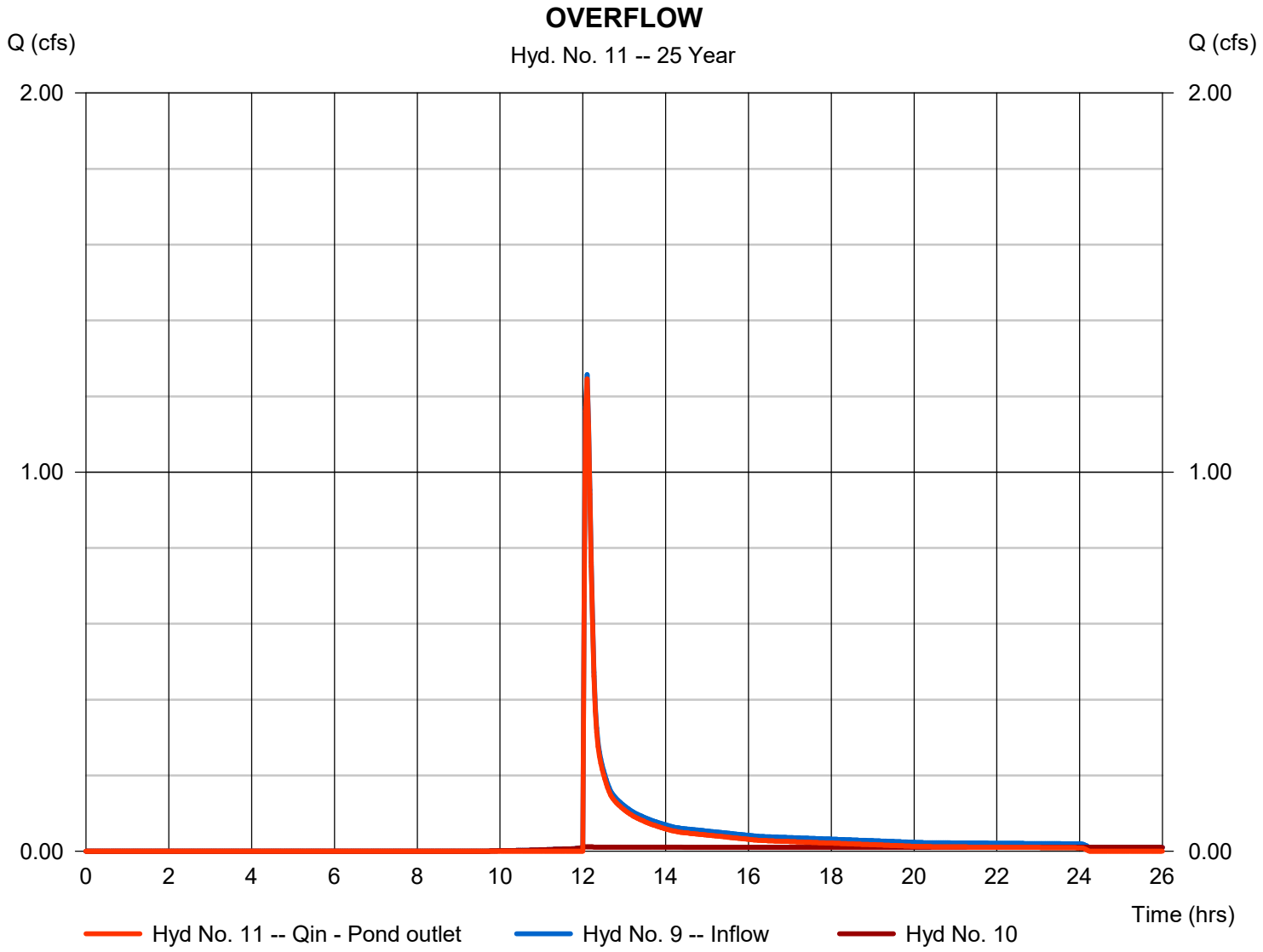
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 1.245 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 2,367 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



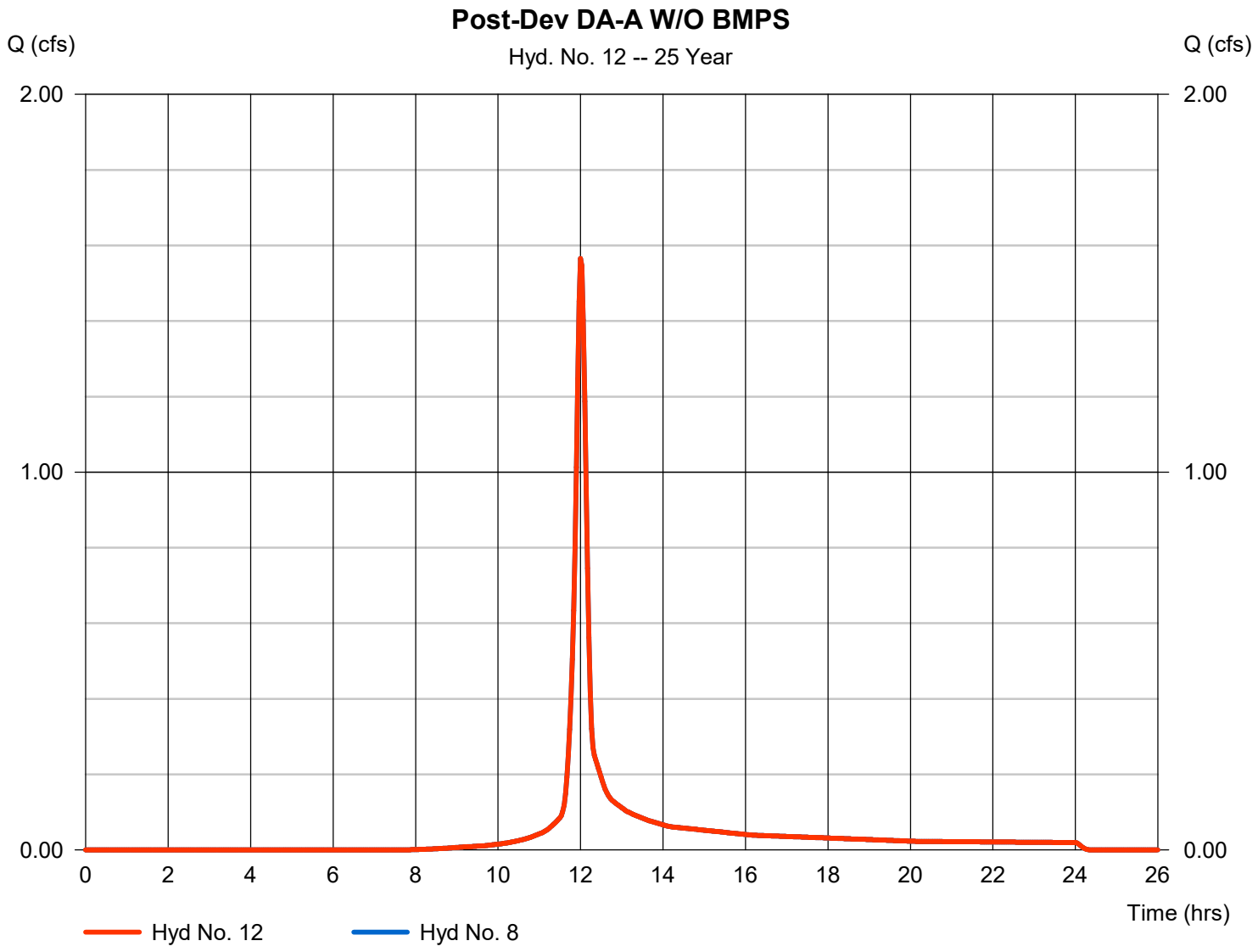
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.565 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,058 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

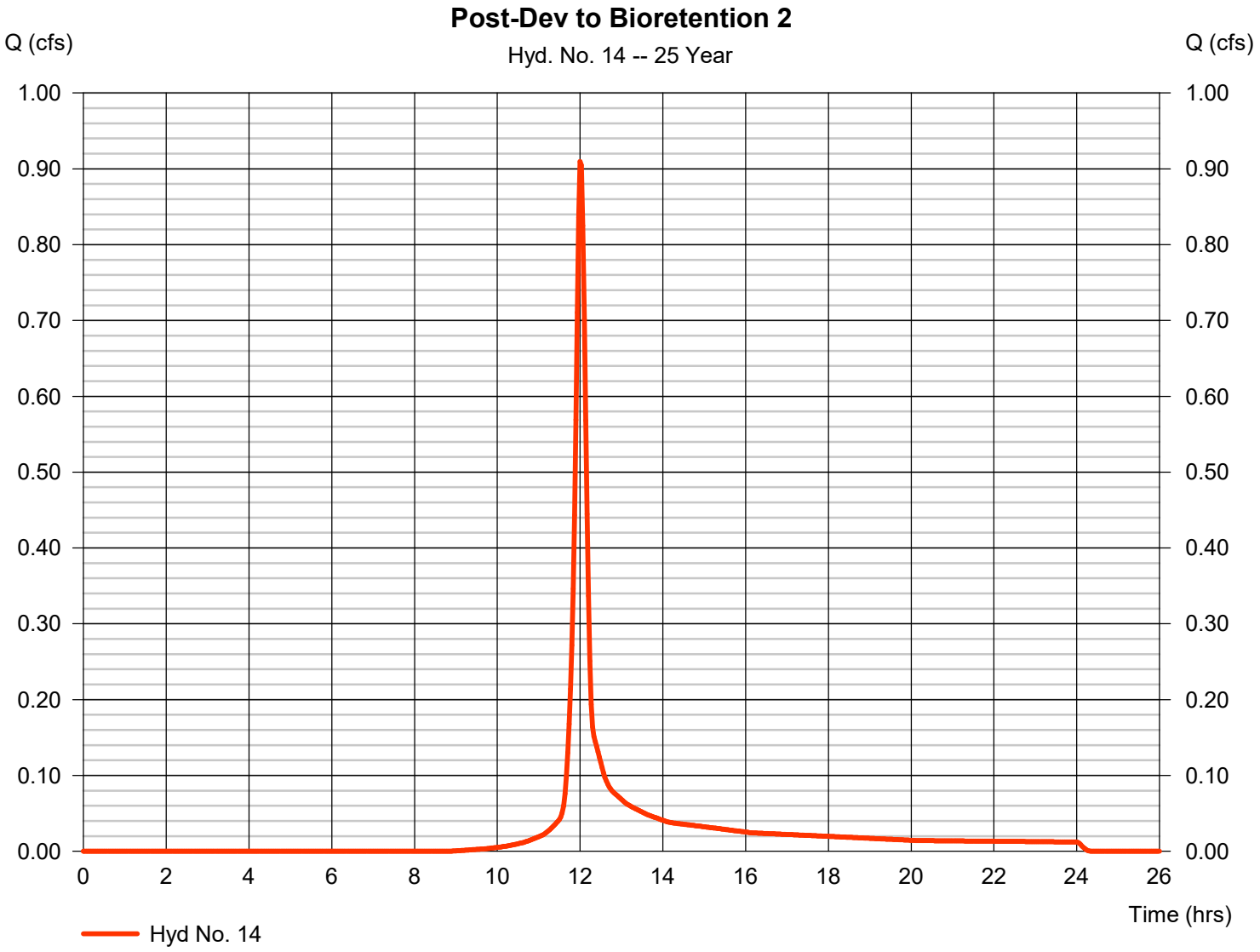
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.909 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 2,363 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 5.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

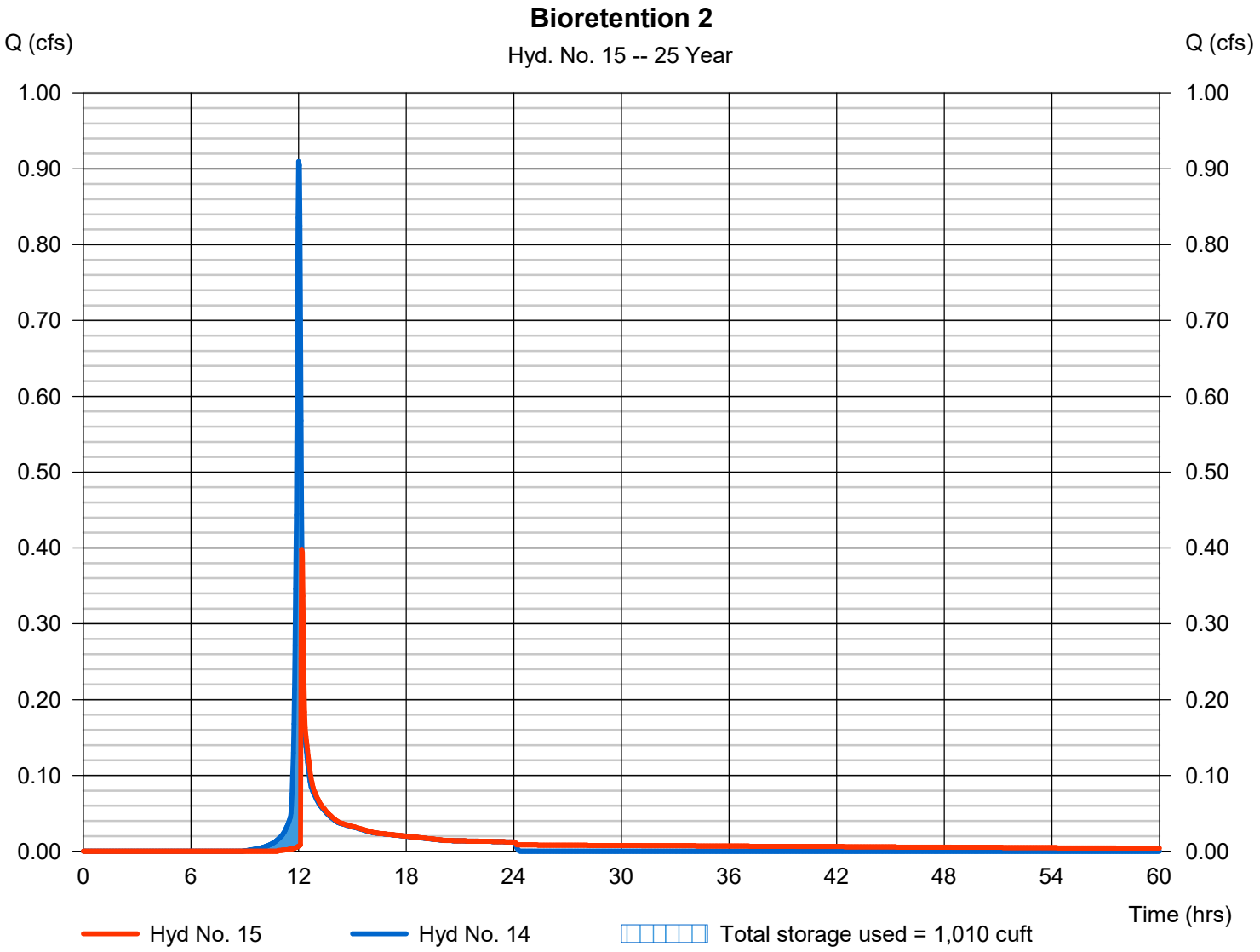
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	= Reservoir	Peak discharge	= 0.398 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,326 cuft
Inflow hyd. No.	= 14 - Post-Dev to Bioretention 2	Max. Elevation	= 472.10 ft
Reservoir name	= BMP ID 2 - Bioretention 2	Max. Storage	= 1,010 cuft

Storage Indication method used. Outflow includes exfiltration.



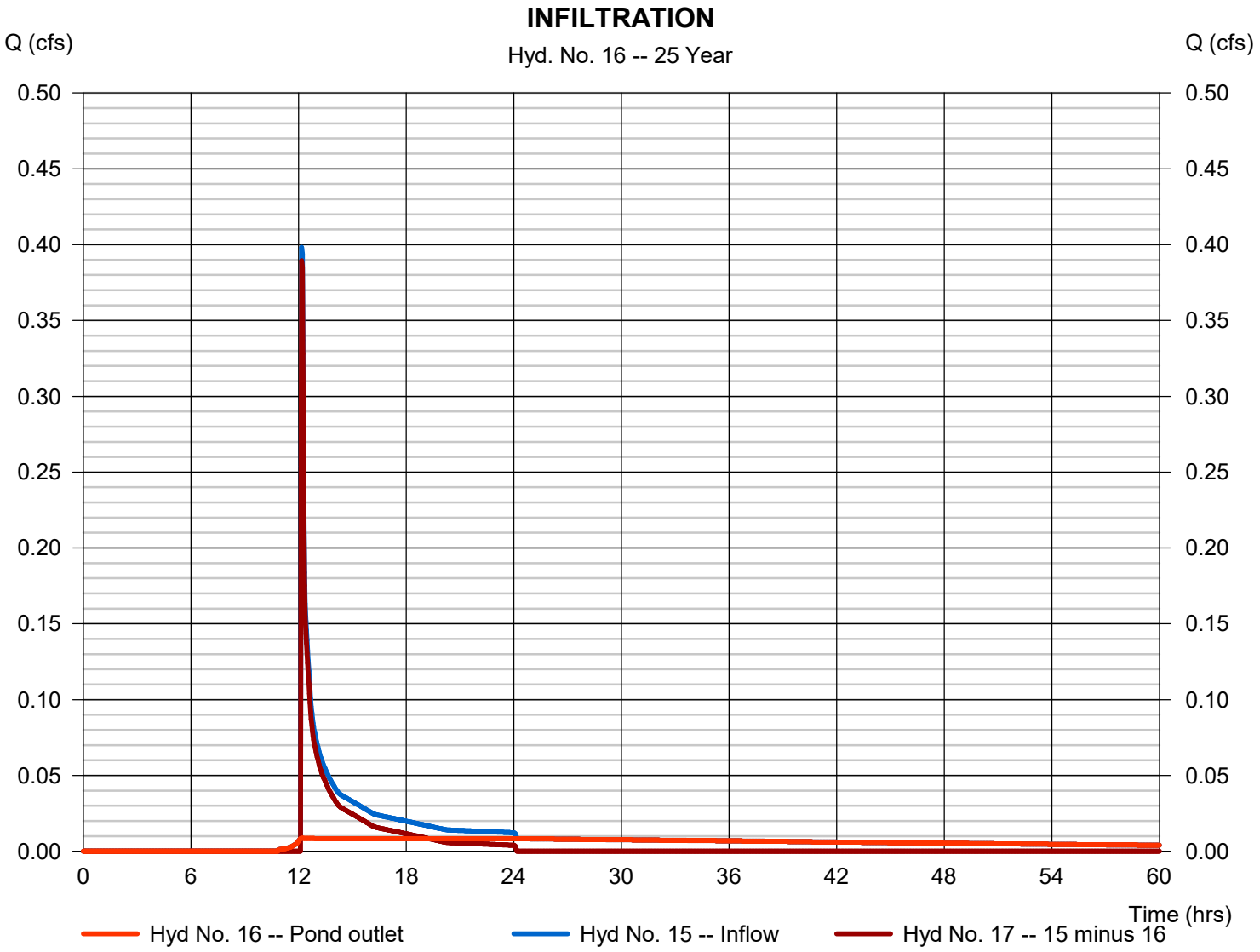
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.009 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,274 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



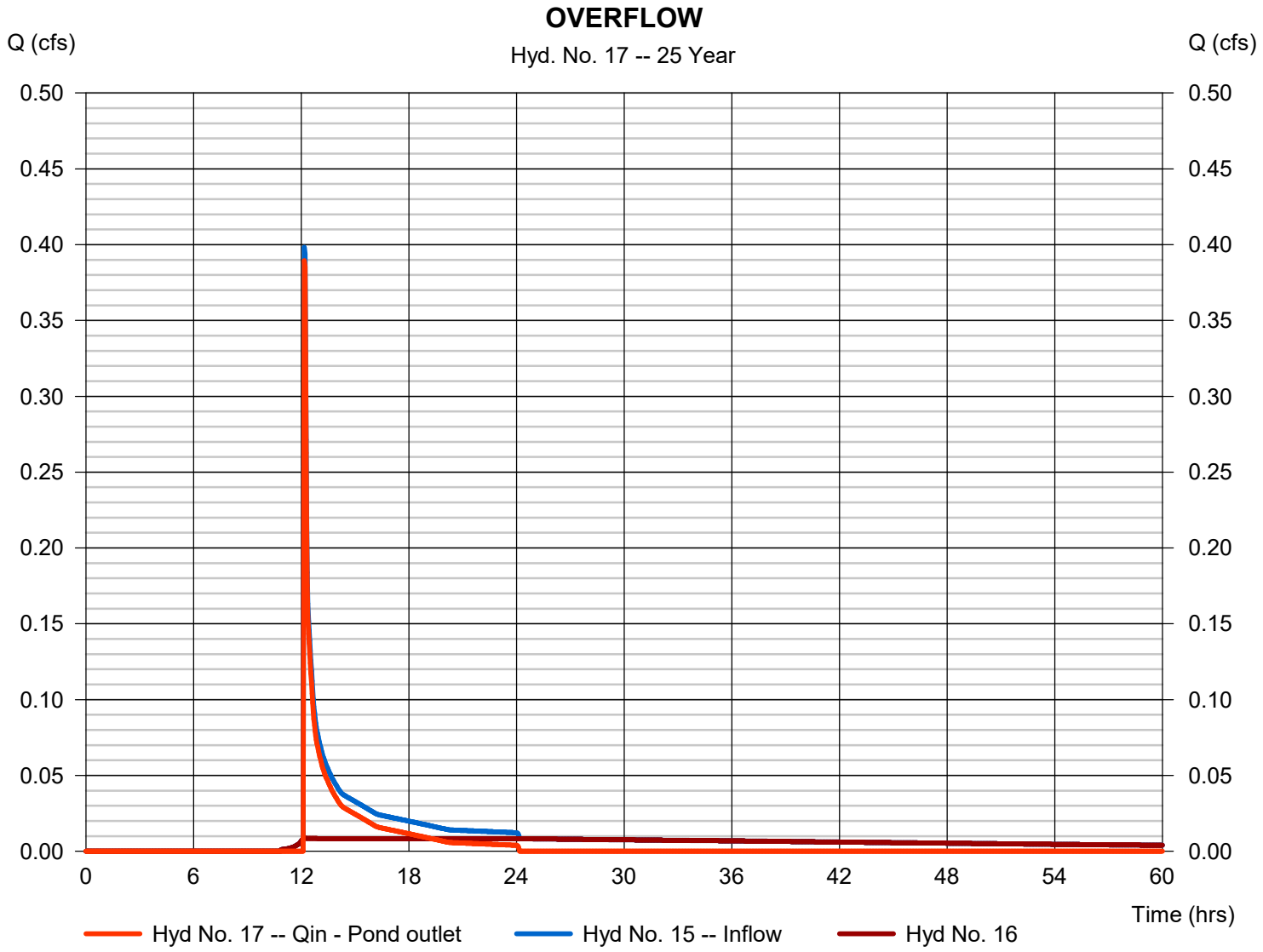
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.389 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,052 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



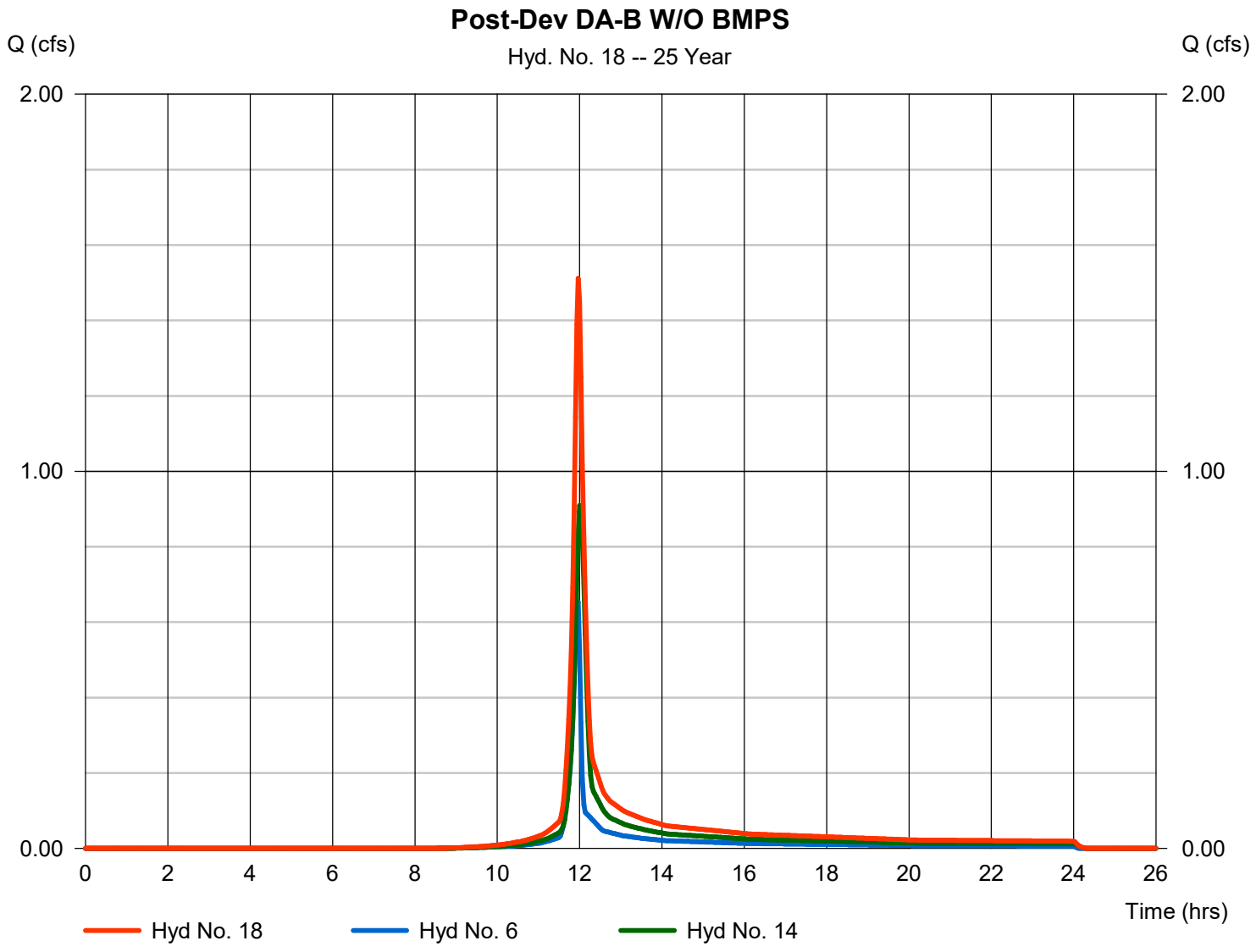
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.511 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,732 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



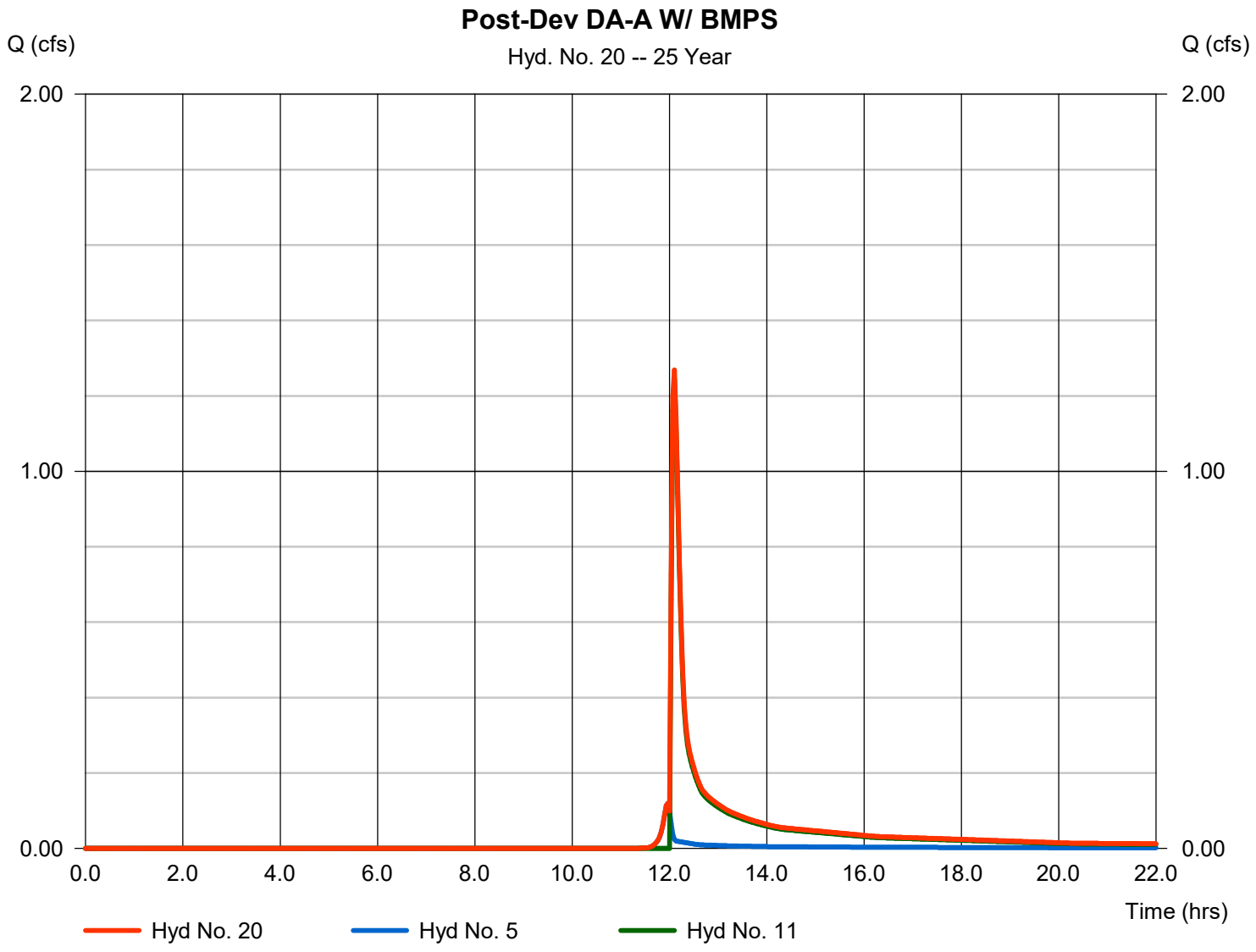
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 1.269 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 2,608 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.050 ac



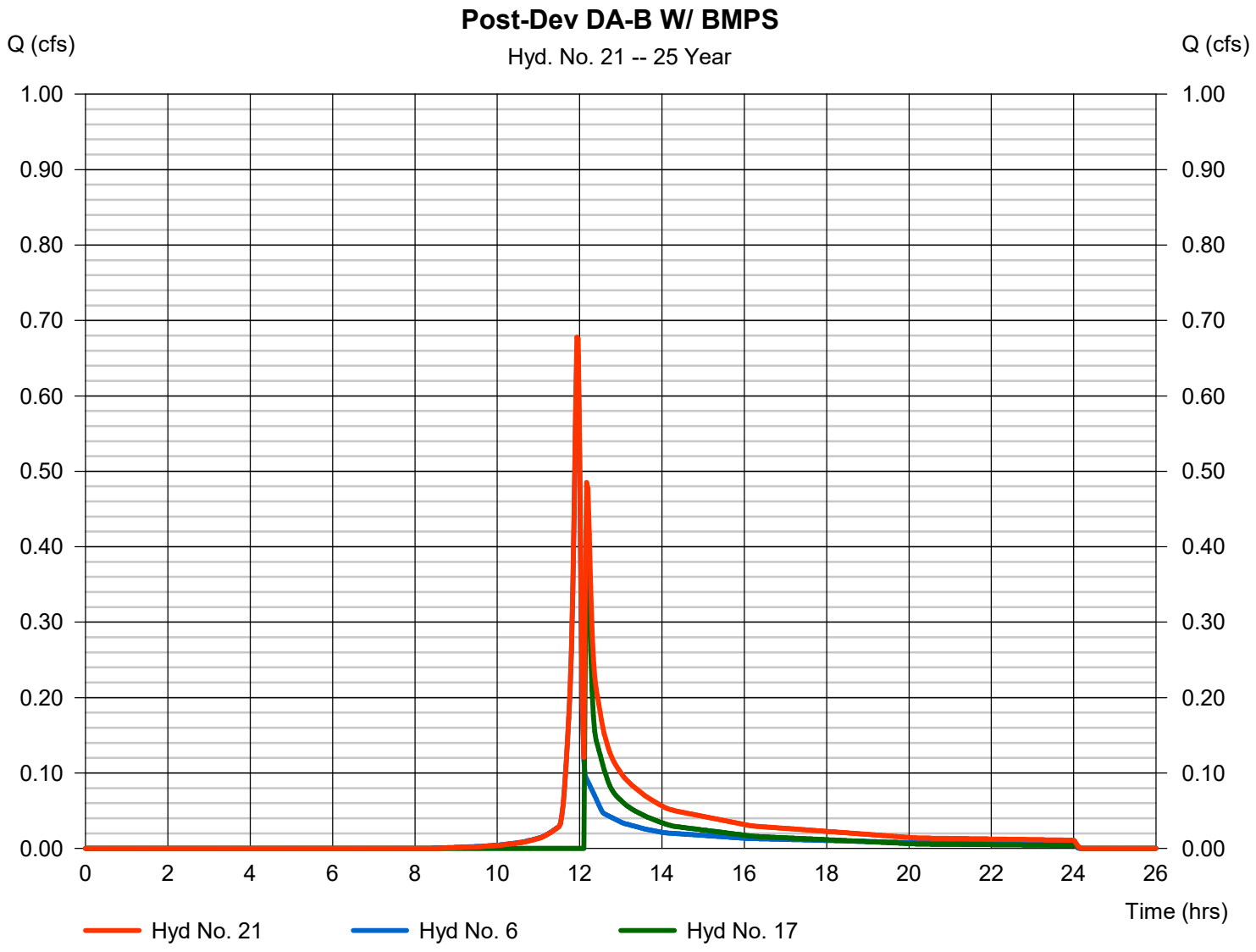
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 0.678 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,421 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac



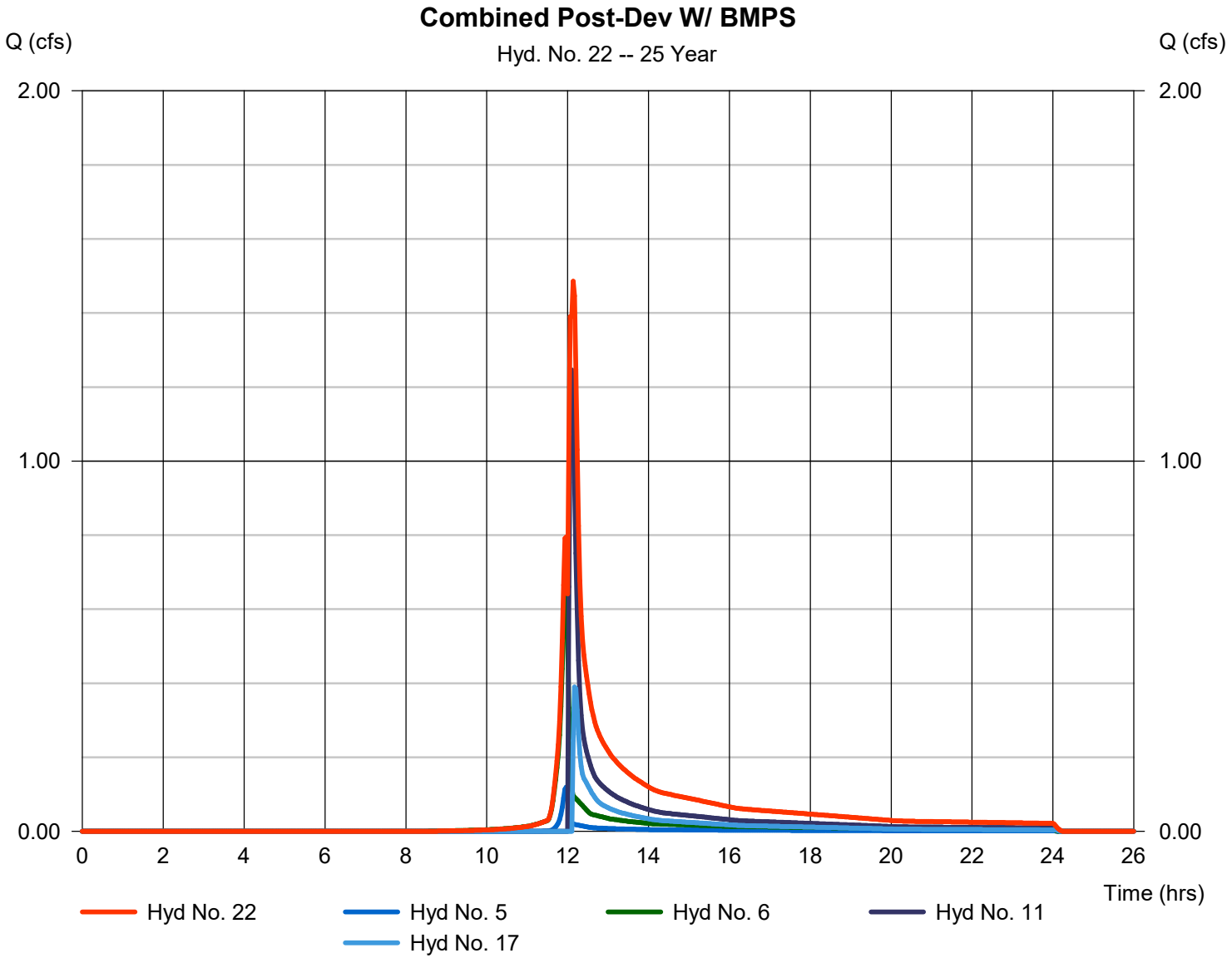
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 1.486 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 5,029 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.782	2	722	4,662	------	------	------	Pre-Dev DA-A
2	SCS Runoff	1.538	2	720	3,986	------	------	------	Pre-Dev DA-B
3	SCS Runoff	3.381	2	720	8,790	------	------	------	Pre-Dev Total
5	SCS Runoff	0.161	2	718	322	------	------	------	DA-A Bypass
6	SCS Runoff	0.814	2	716	1,651	------	------	------	DA-B Bypass
8	SCS Runoff	1.927	2	720	5,006	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	1.789	2	724	4,969	8	472.26	1,474	Bioretention 1
10	Diversion1	0.012	2	724	1,669	9	------	------	INFILTRATION
11	Diversion2	1.777	2	724	3,300	9	------	------	OVERFLOW
12	Combine	1.927	2	720	5,006	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	1.142	2	720	2,961	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	0.887	2	726	2,924	14	472.17	1,066	Bioretention 2
16	Diversion1	0.009	2	726	1,282	15	------	------	INFILTRATION
17	Diversion2	0.878	2	726	1,642	15	------	------	OVERFLOW
18	Combine	1.891	2	718	4,670	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	1.826	2	724	3,622	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	1.025	2	726	3,350	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	2.764	2	724	6,972	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

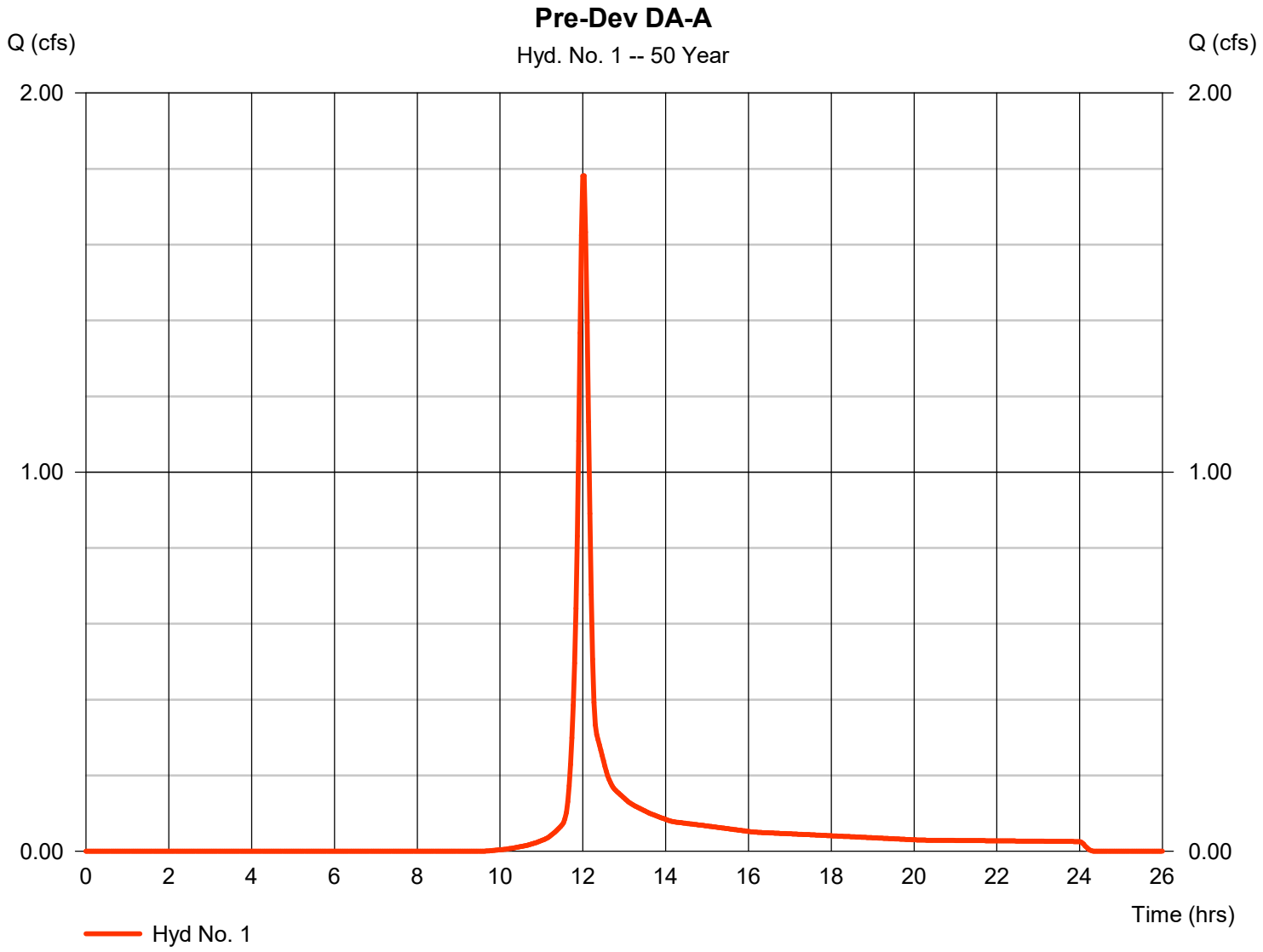
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.782 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,662 cuft
Drainage area	= 0.500 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

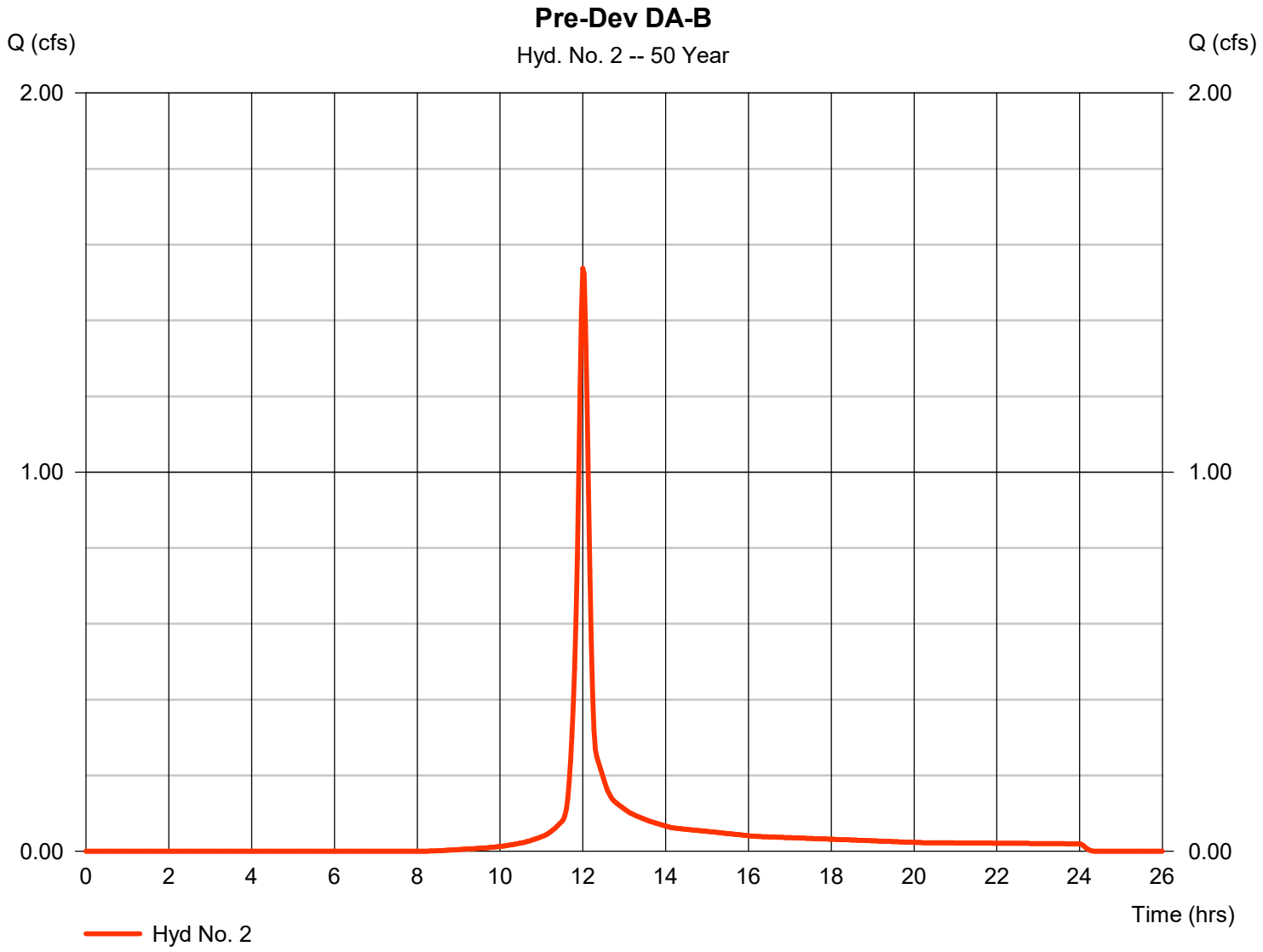
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.538 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	3,986 cuft
Drainage area	=	0.350 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	10.20 min
Total precip.	=	5.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

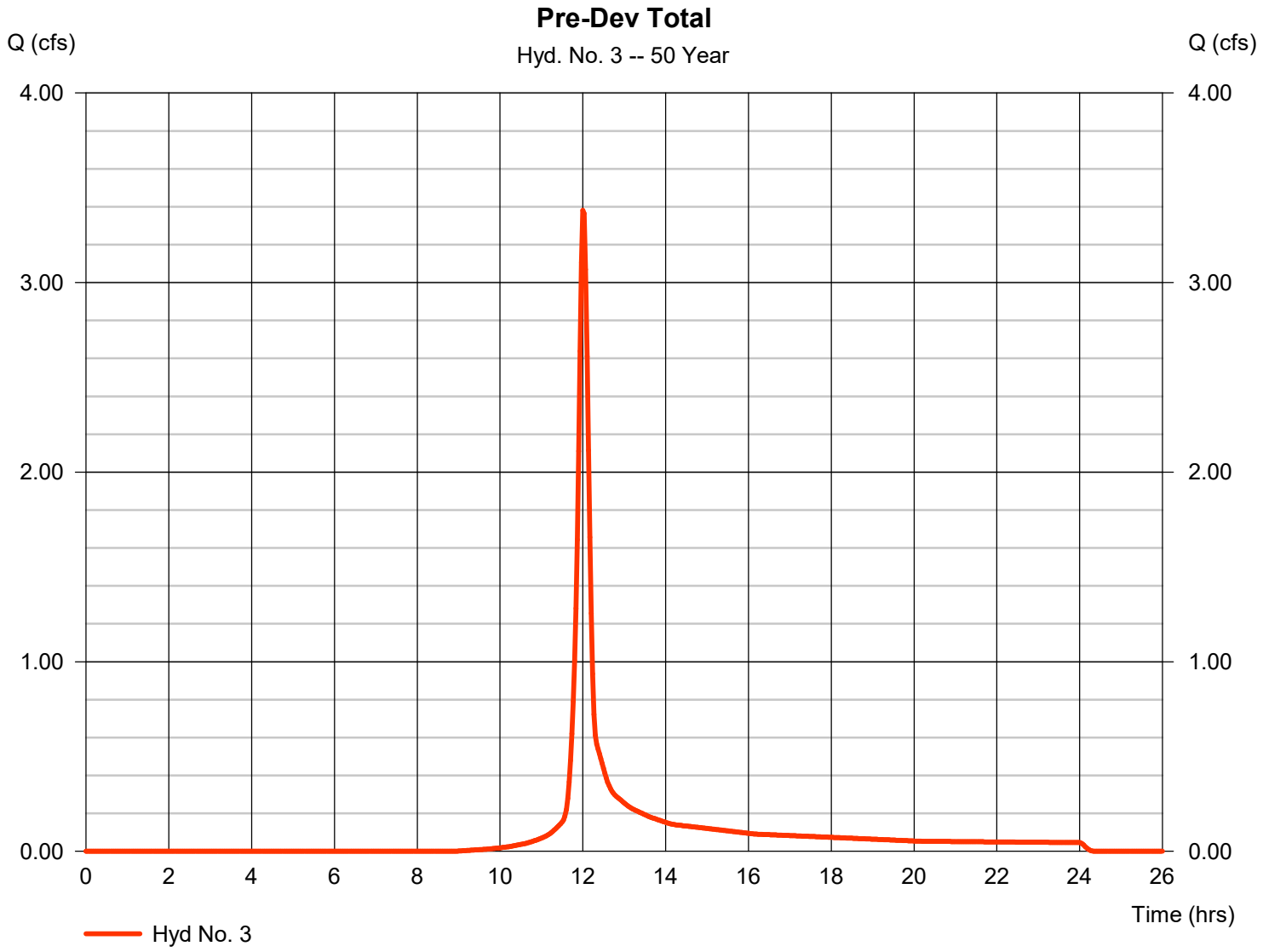
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 3.381 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 8,790 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

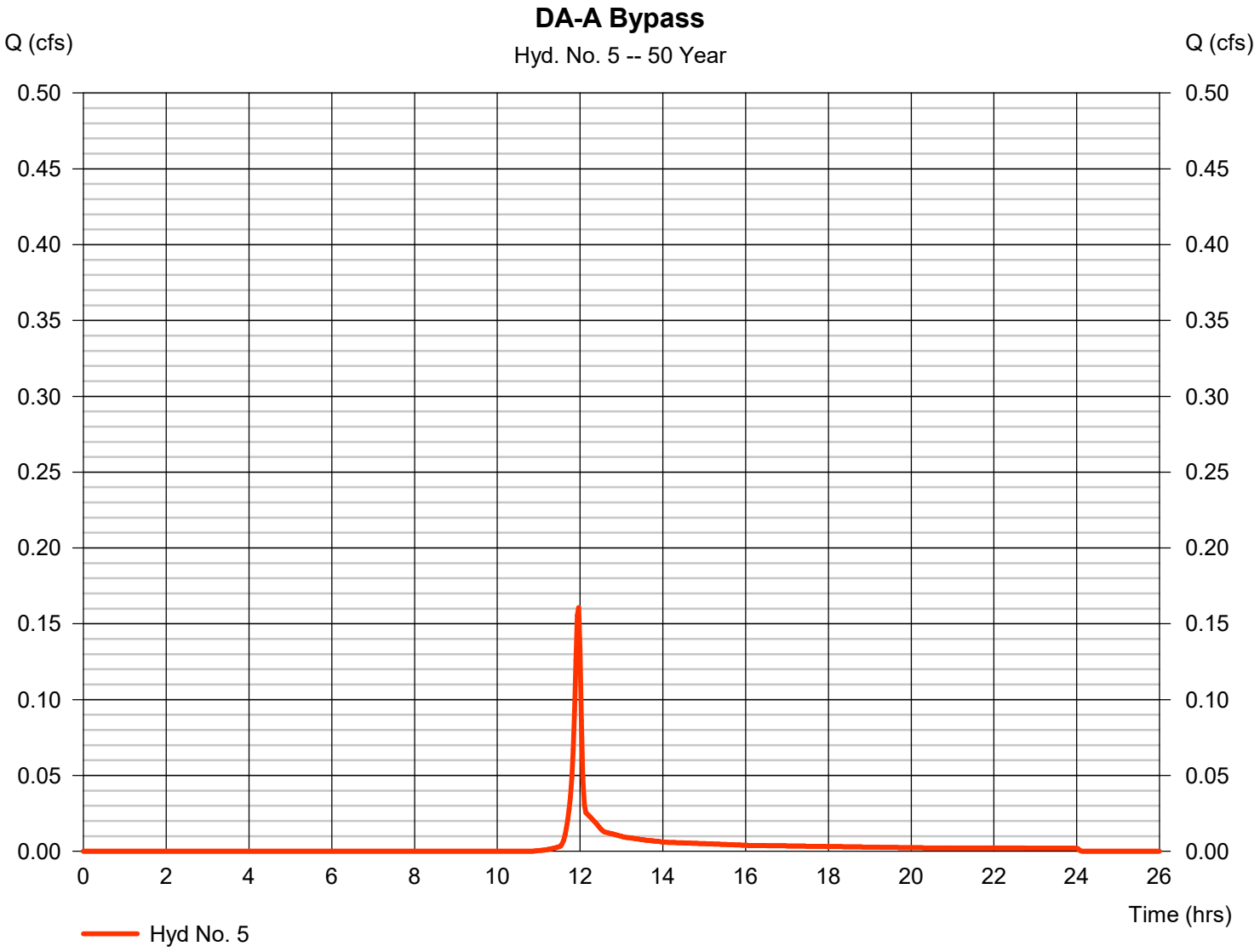
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.161 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	322 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

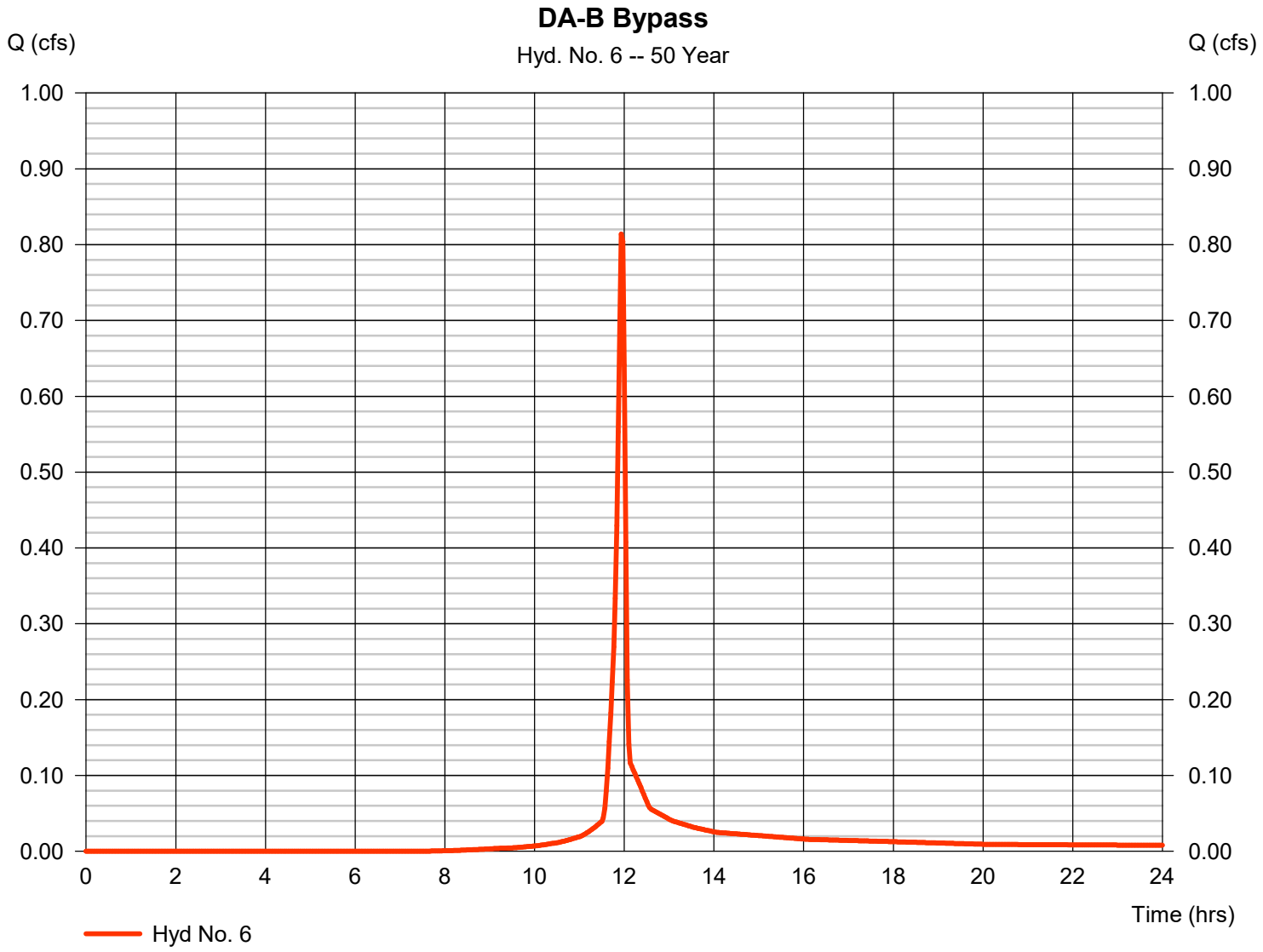
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.814 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	1,651 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

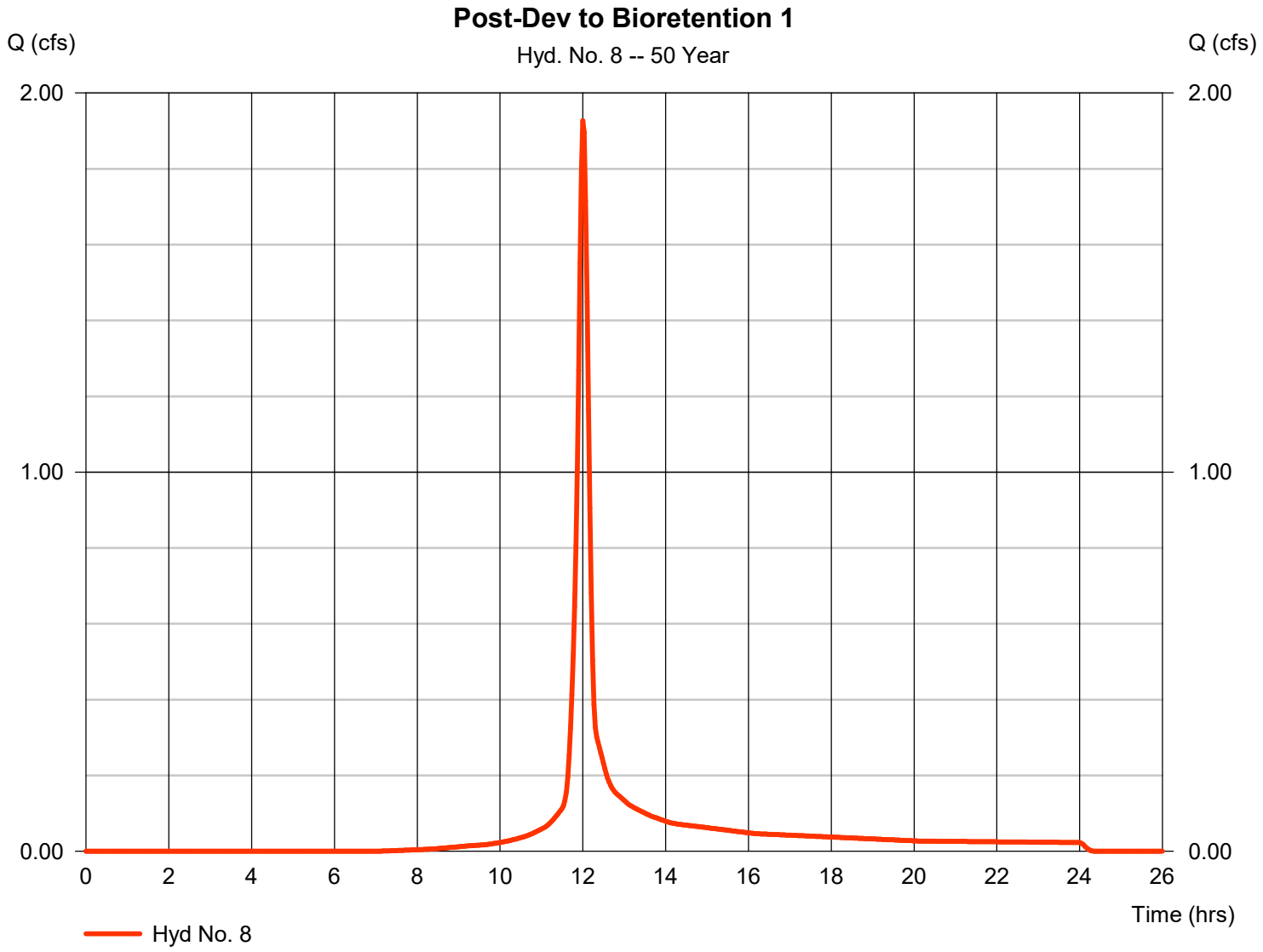
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.927 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 5,006 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

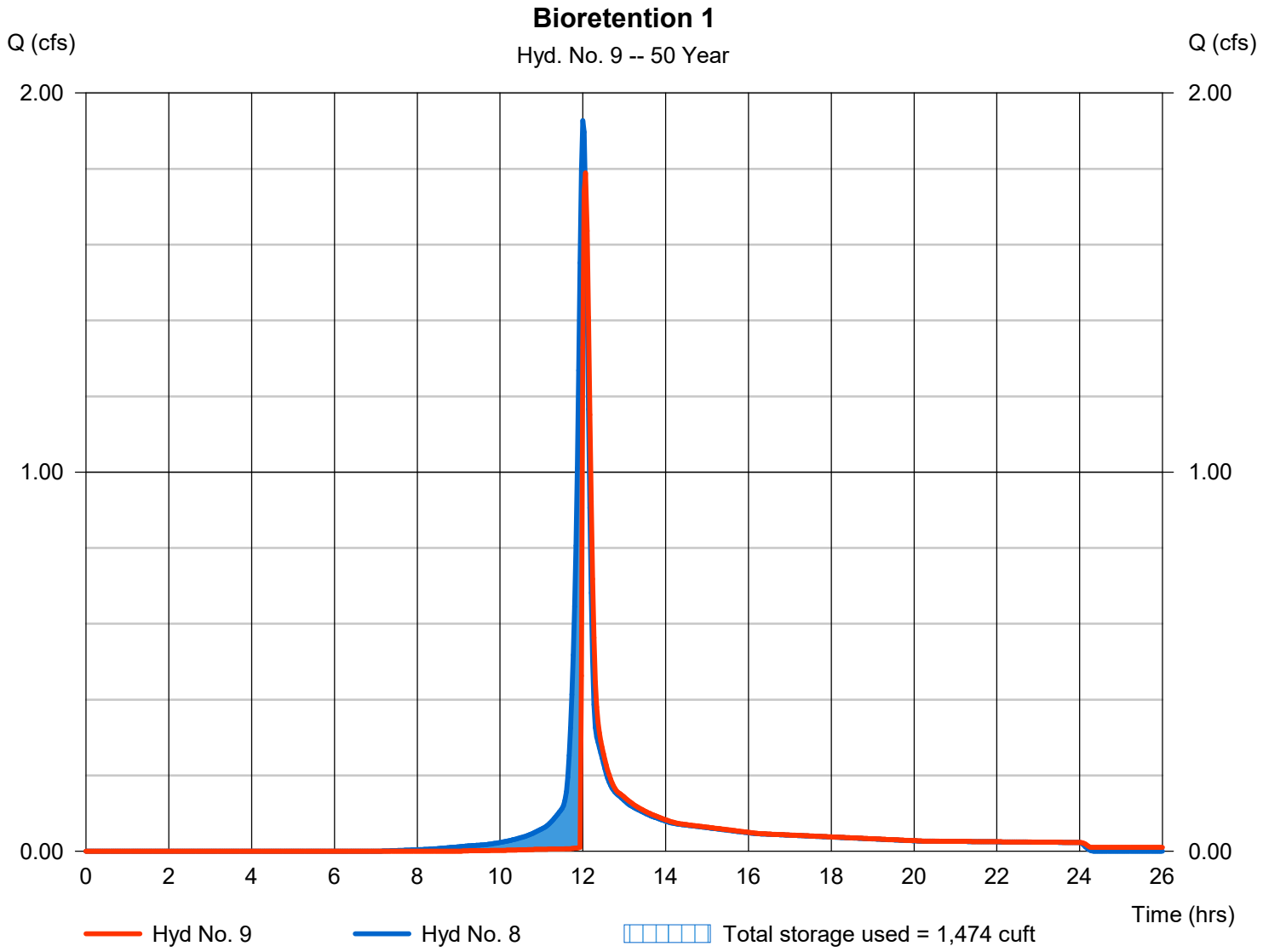
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	=	Reservoir	Peak discharge	=	1.789 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	4,969 cuft
Inflow hyd. No.	=	8 - Post-Dev to Bioretention 1	Max. Elevation	=	472.26 ft
Reservoir name	=	BMP ID 1 - Bioretention 1	Max. Storage	=	1,474 cuft

Storage Indication method used. Outflow includes exfiltration.



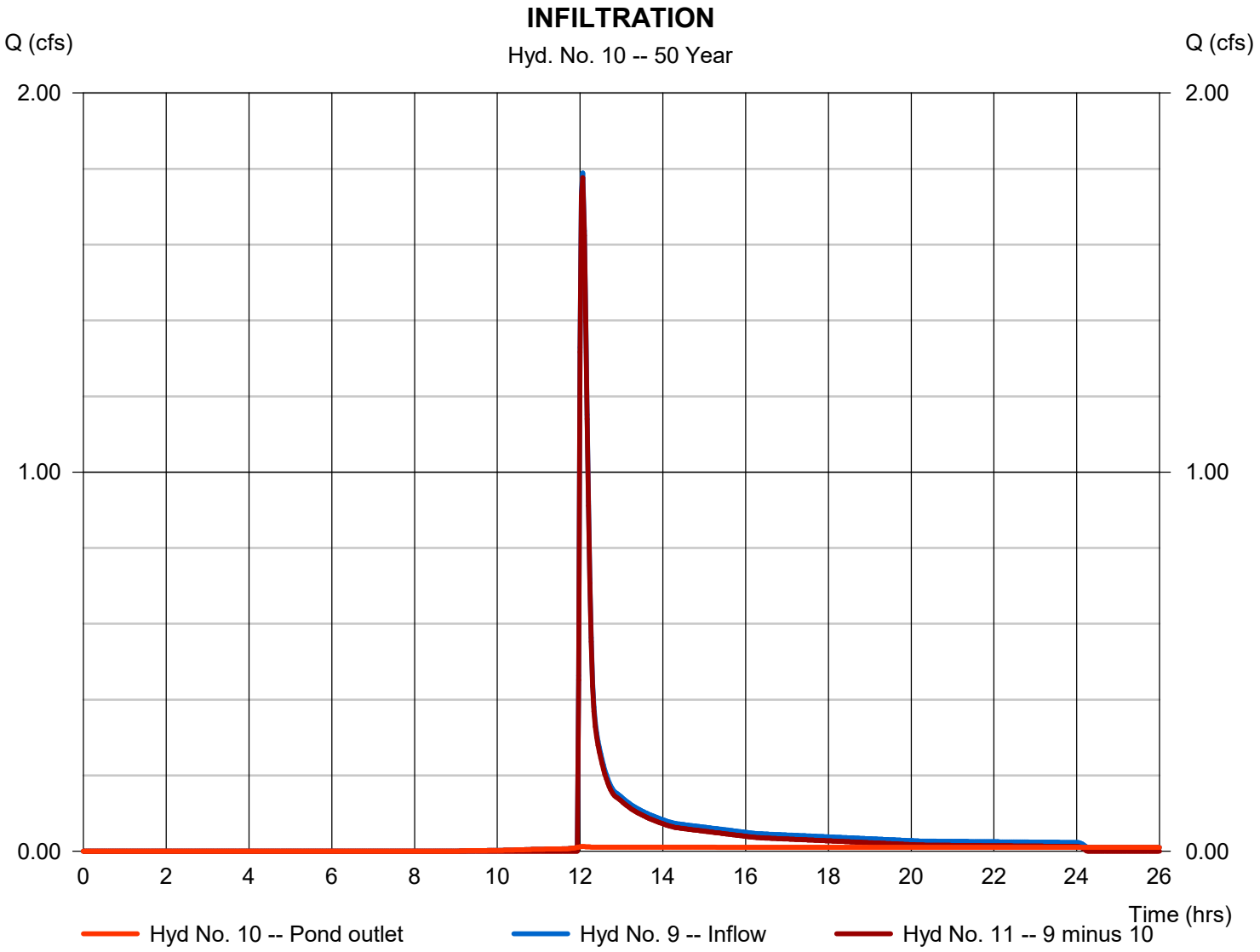
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.012 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,669 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



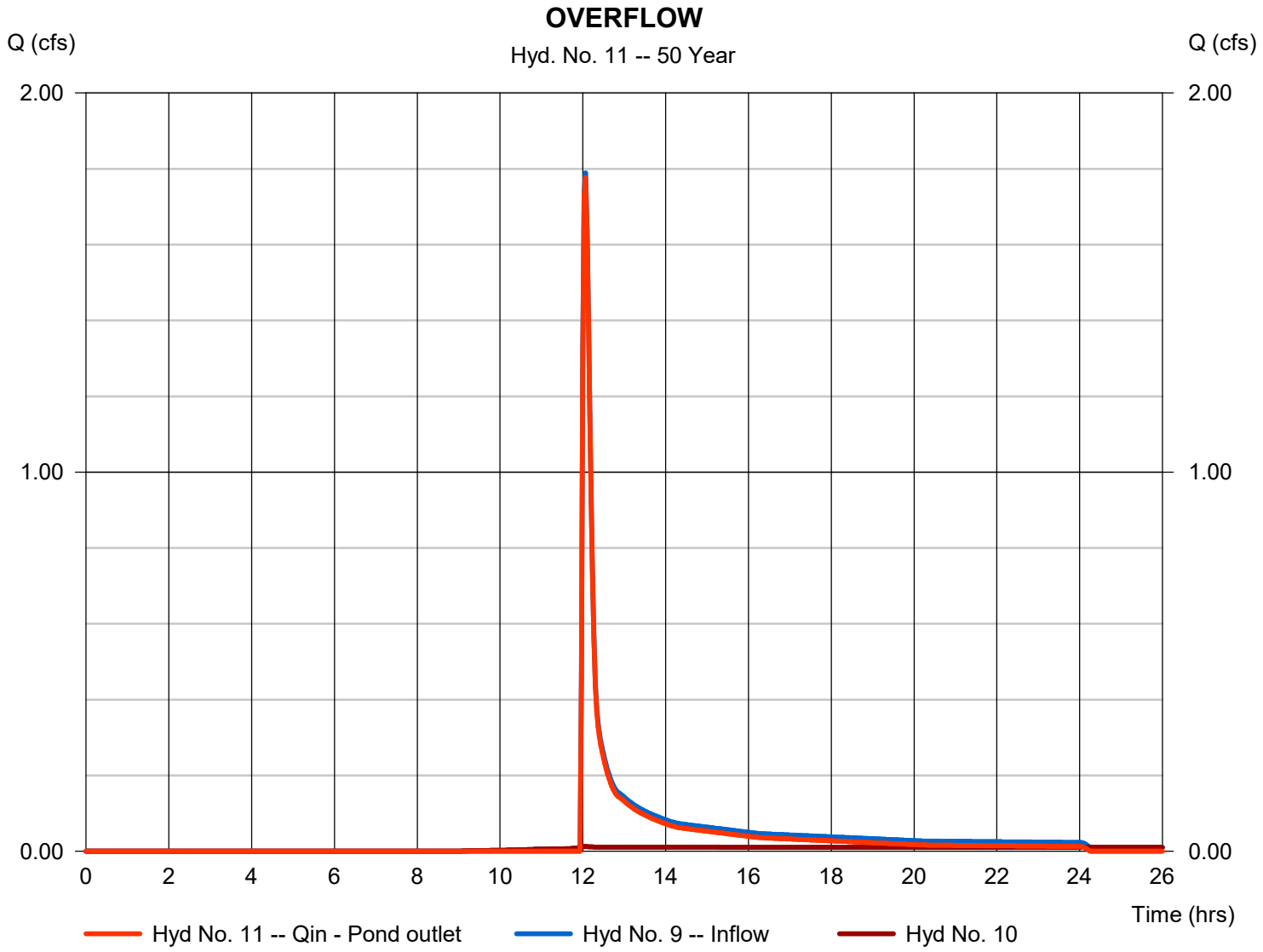
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 1.777 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,300 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



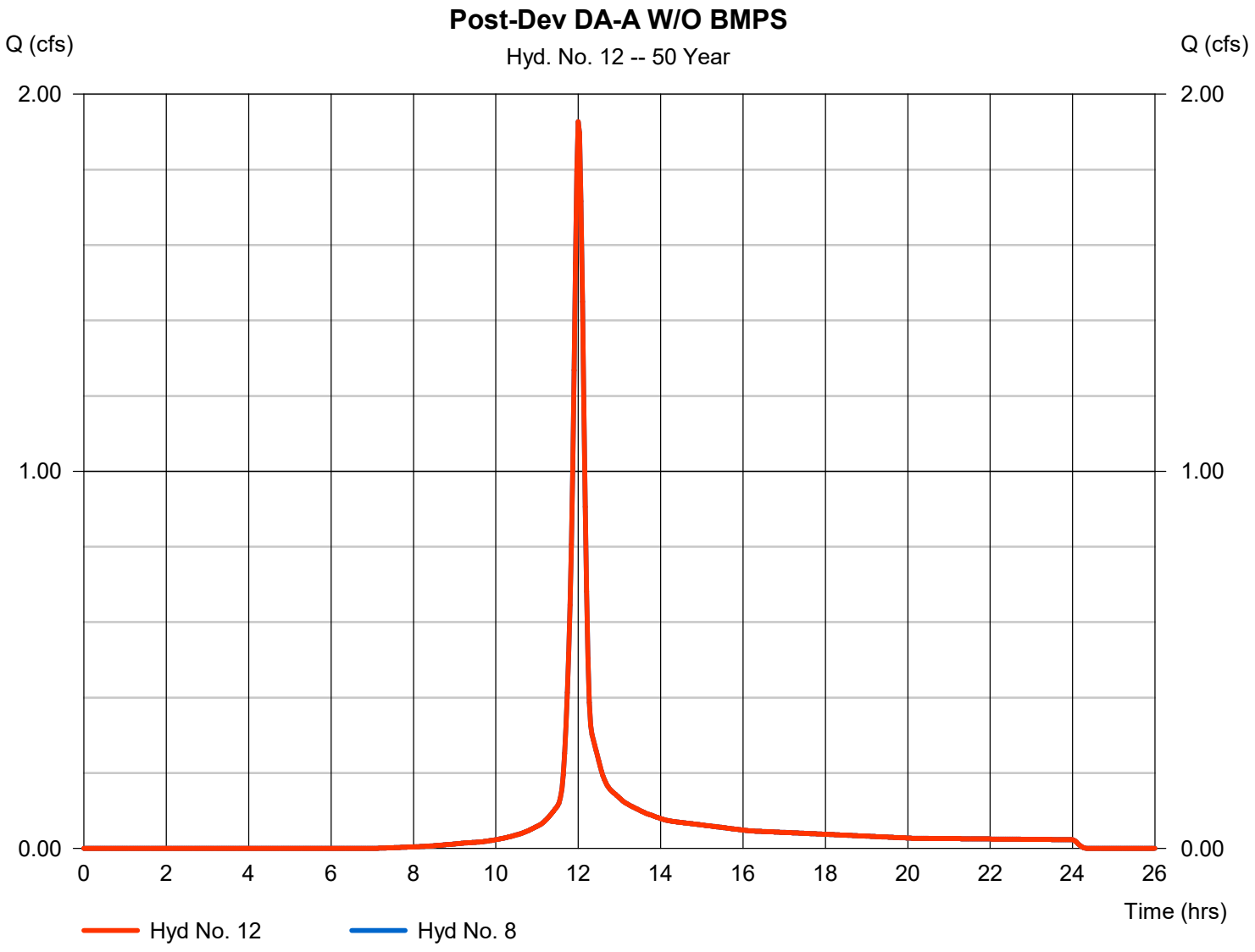
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.927 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 5,006 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

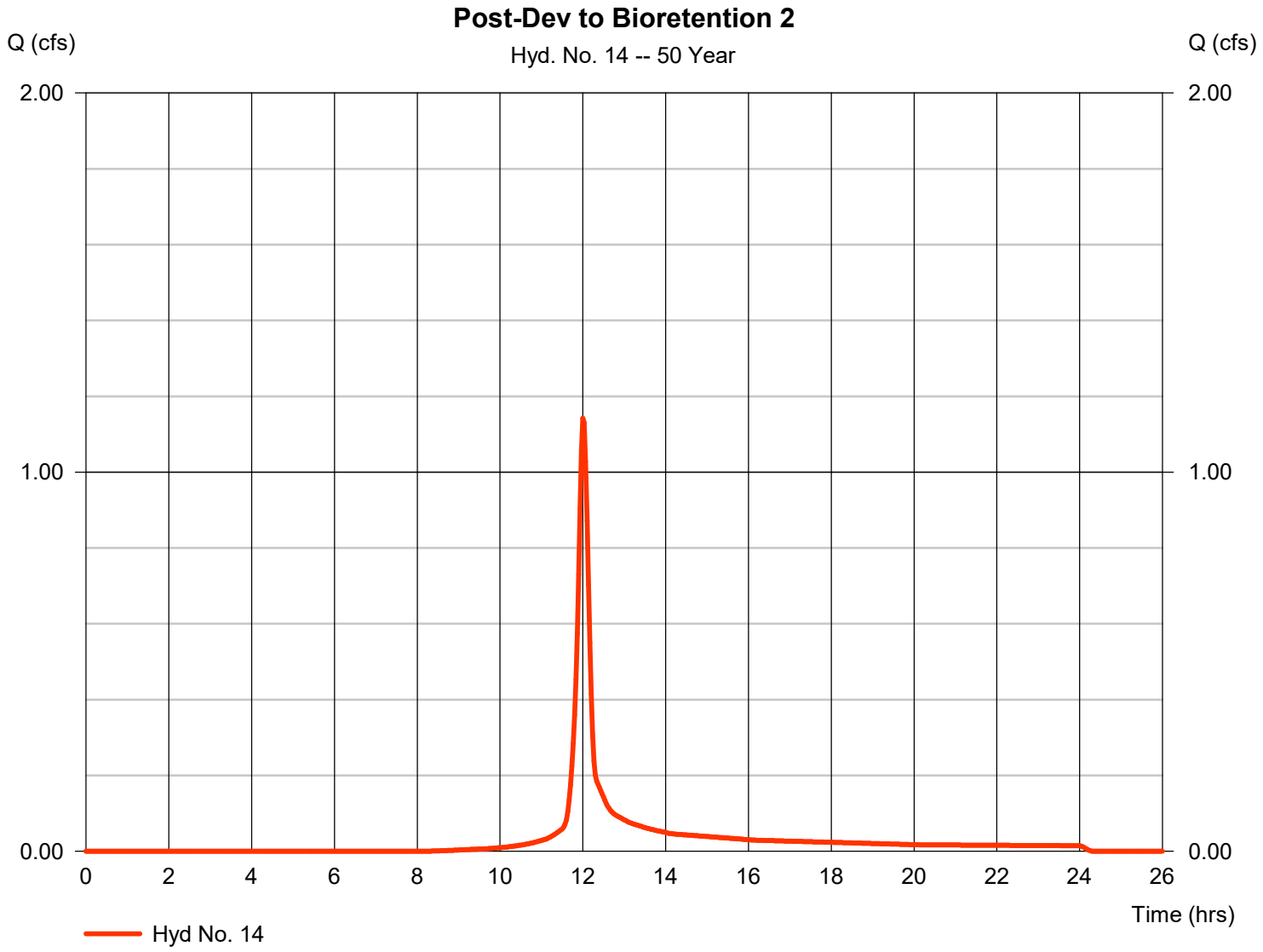
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.142 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	2,961 cuft
Drainage area	=	0.260 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	10.10 min
Total precip.	=	5.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

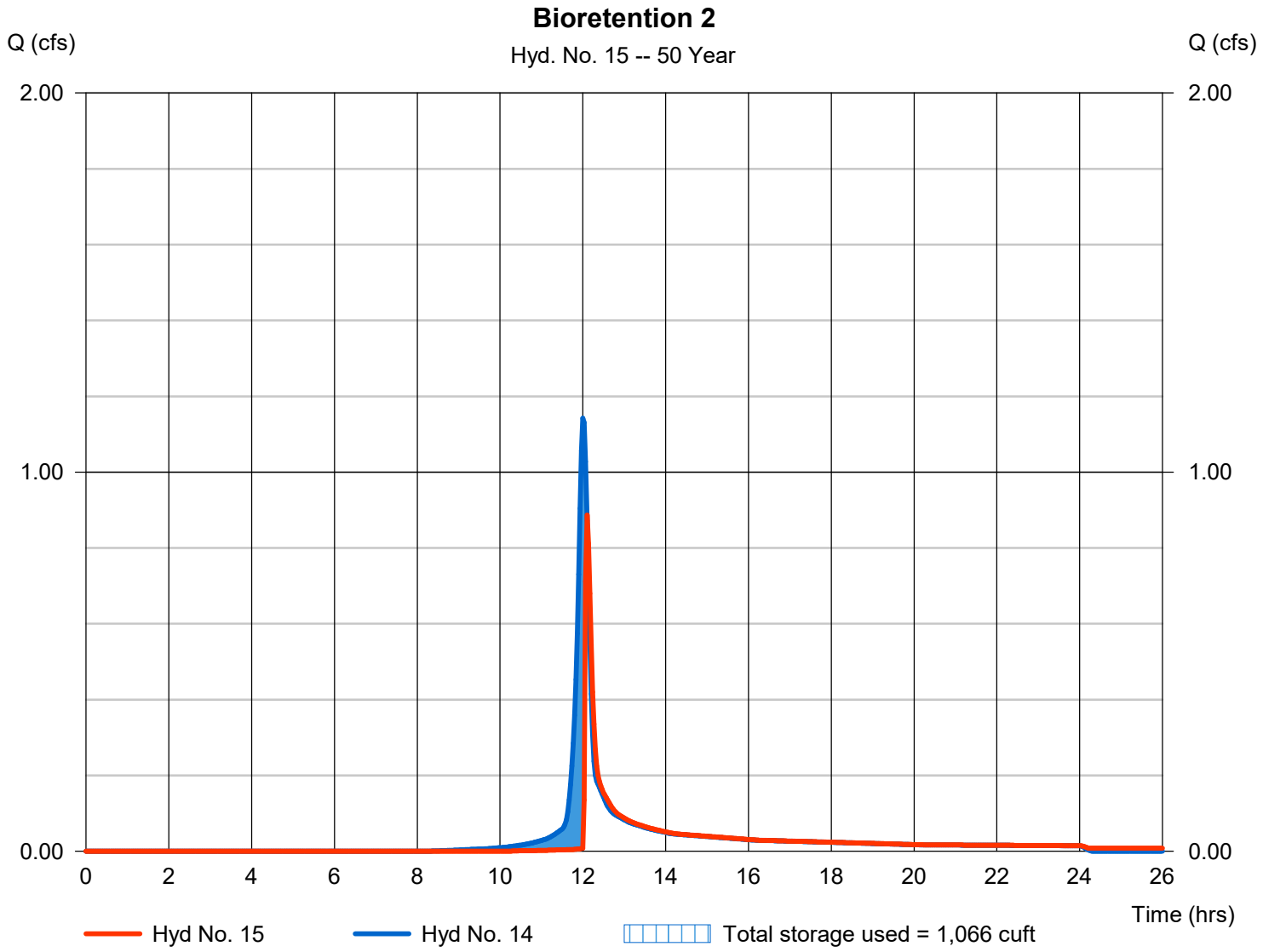
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	=	Reservoir	Peak discharge	=	0.887 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	2,924 cuft
Inflow hyd. No.	=	14 - Post-Dev to Bioretention 2	Max. Elevation	=	472.17 ft
Reservoir name	=	BMP ID 2 - Bioretention 2	Max. Storage	=	1,066 cuft

Storage Indication method used. Outflow includes exfiltration.



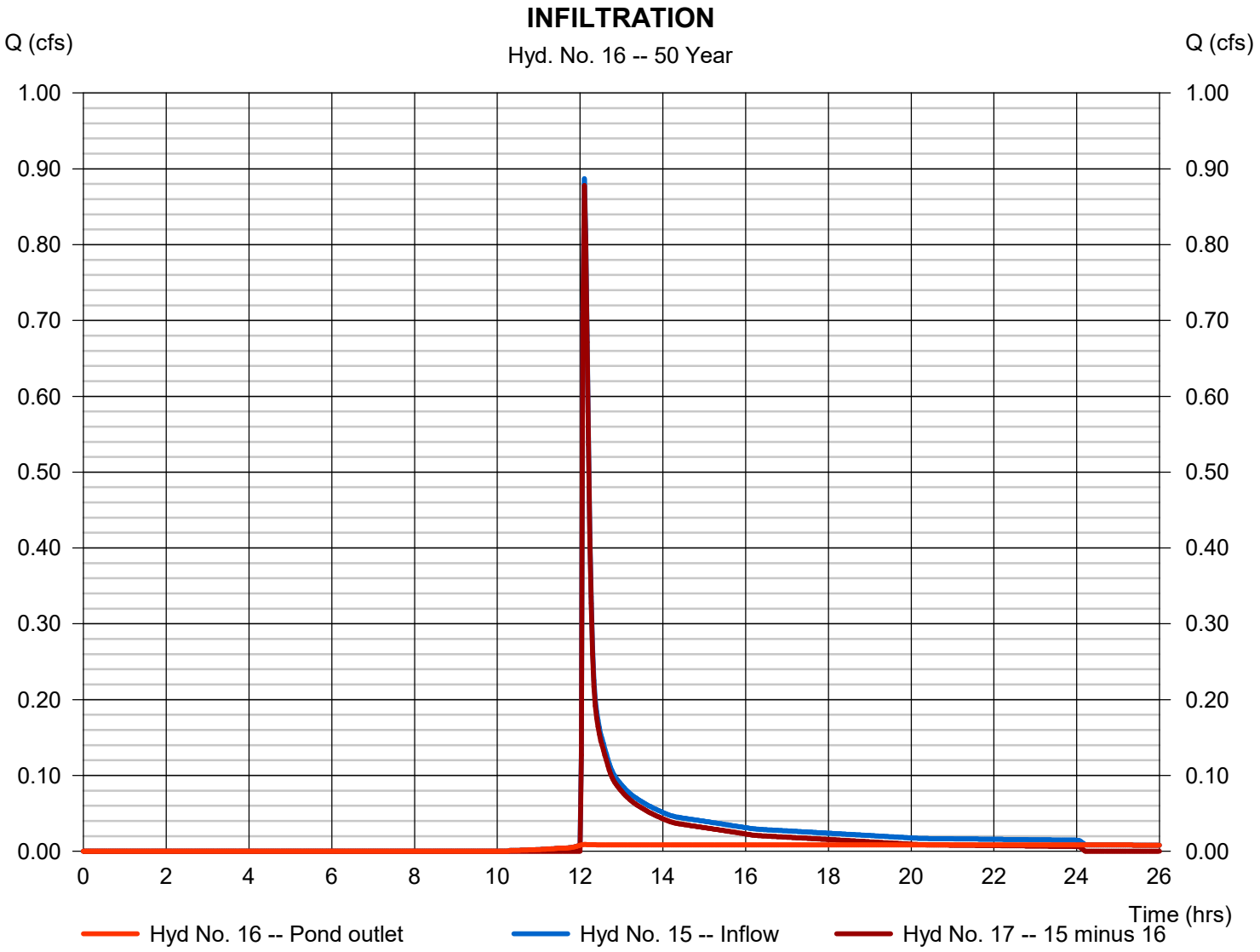
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	=	Diversion1	Peak discharge	=	0.009 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	1,282 cuft
Inflow hydrograph	=	15 - Bioretention 2	2nd diverted hyd.	=	17
Diversion method	=	Pond - BMP ID 2 - Bioretention 2	Pond structure	=	Exfiltration



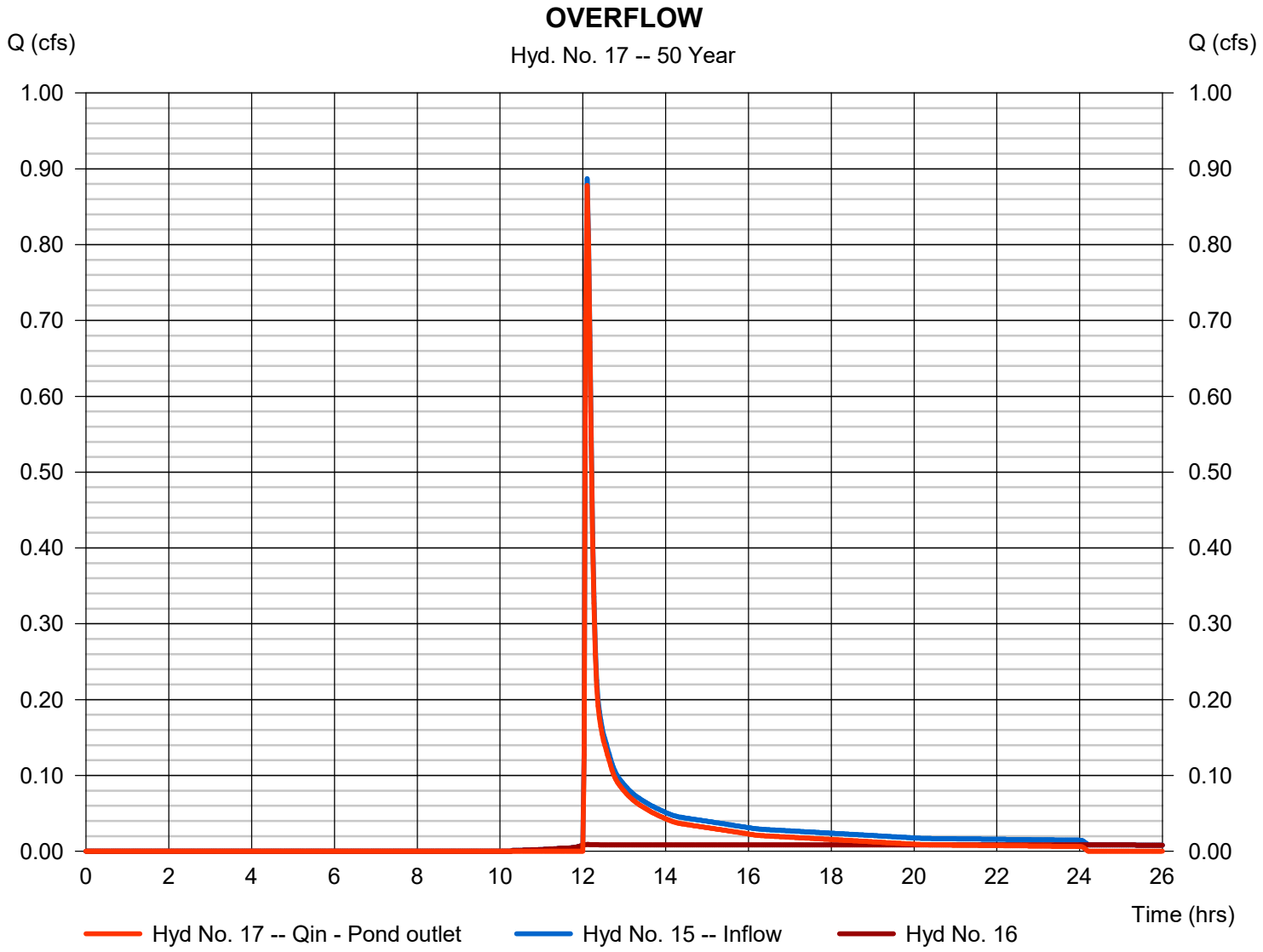
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 0.878 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,642 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



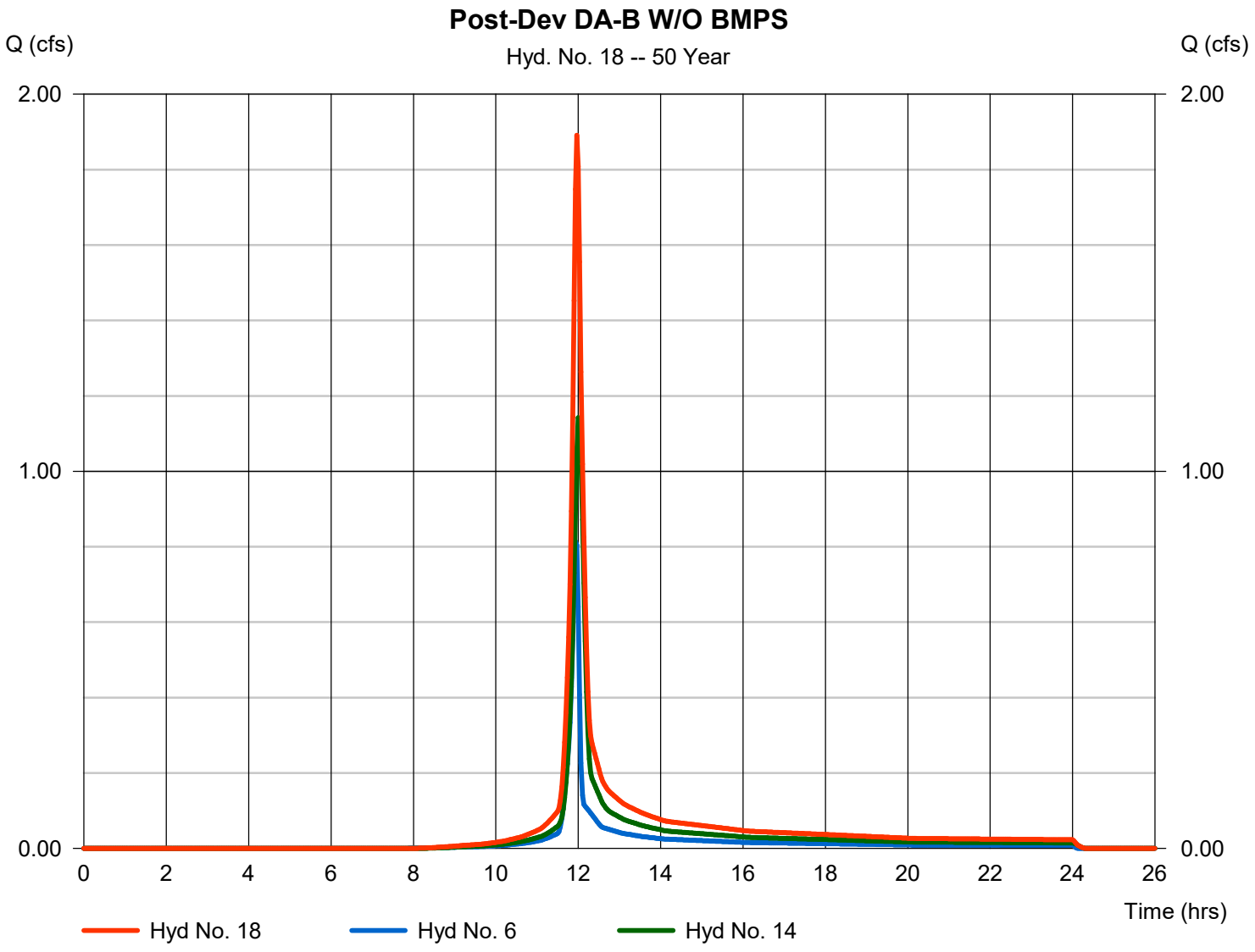
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 1.891 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,670 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



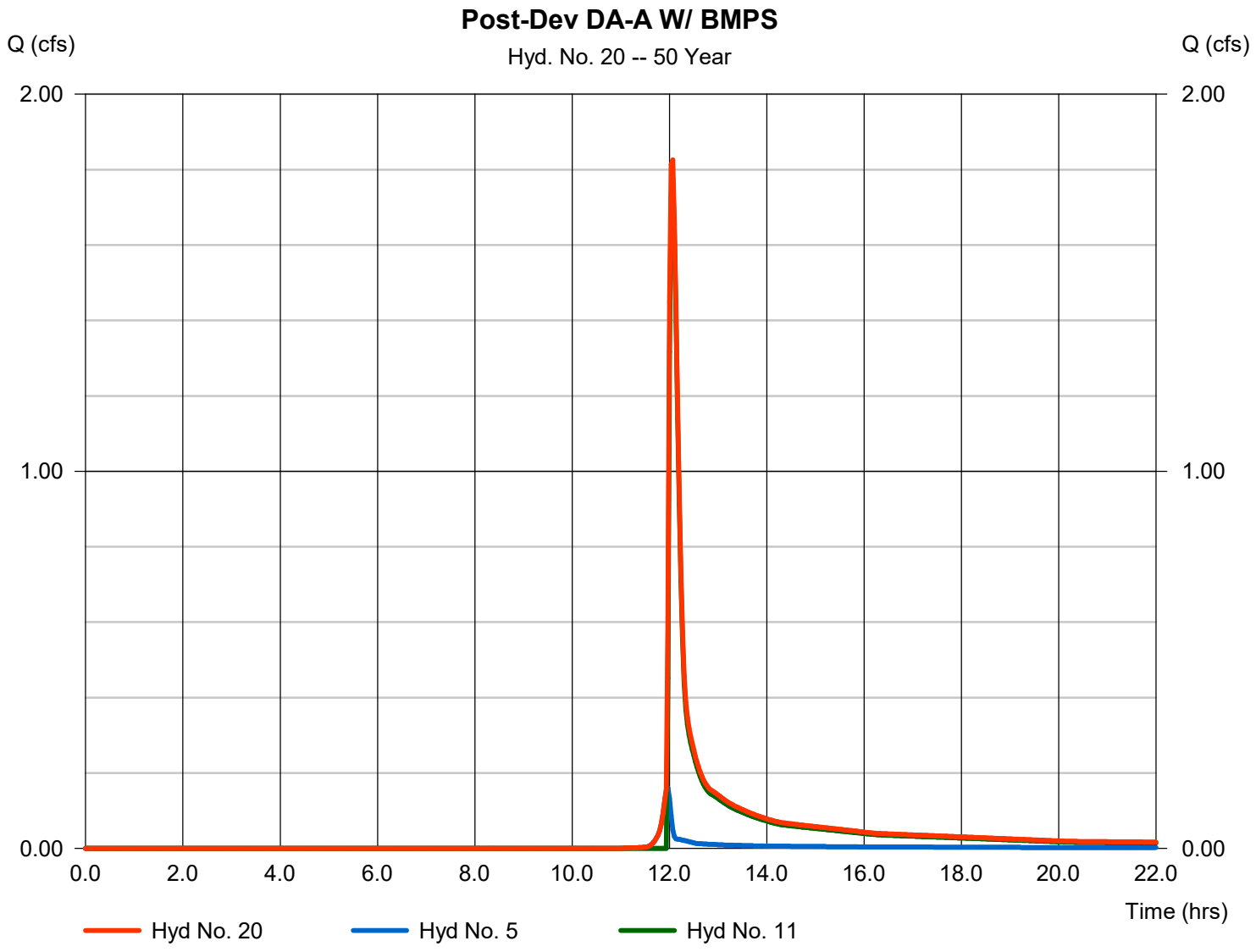
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	=	Combine	Peak discharge	=	1.826 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	3,622 cuft
Inflow hyds.	=	5, 11	Contrib. drain. area	=	0.050 ac



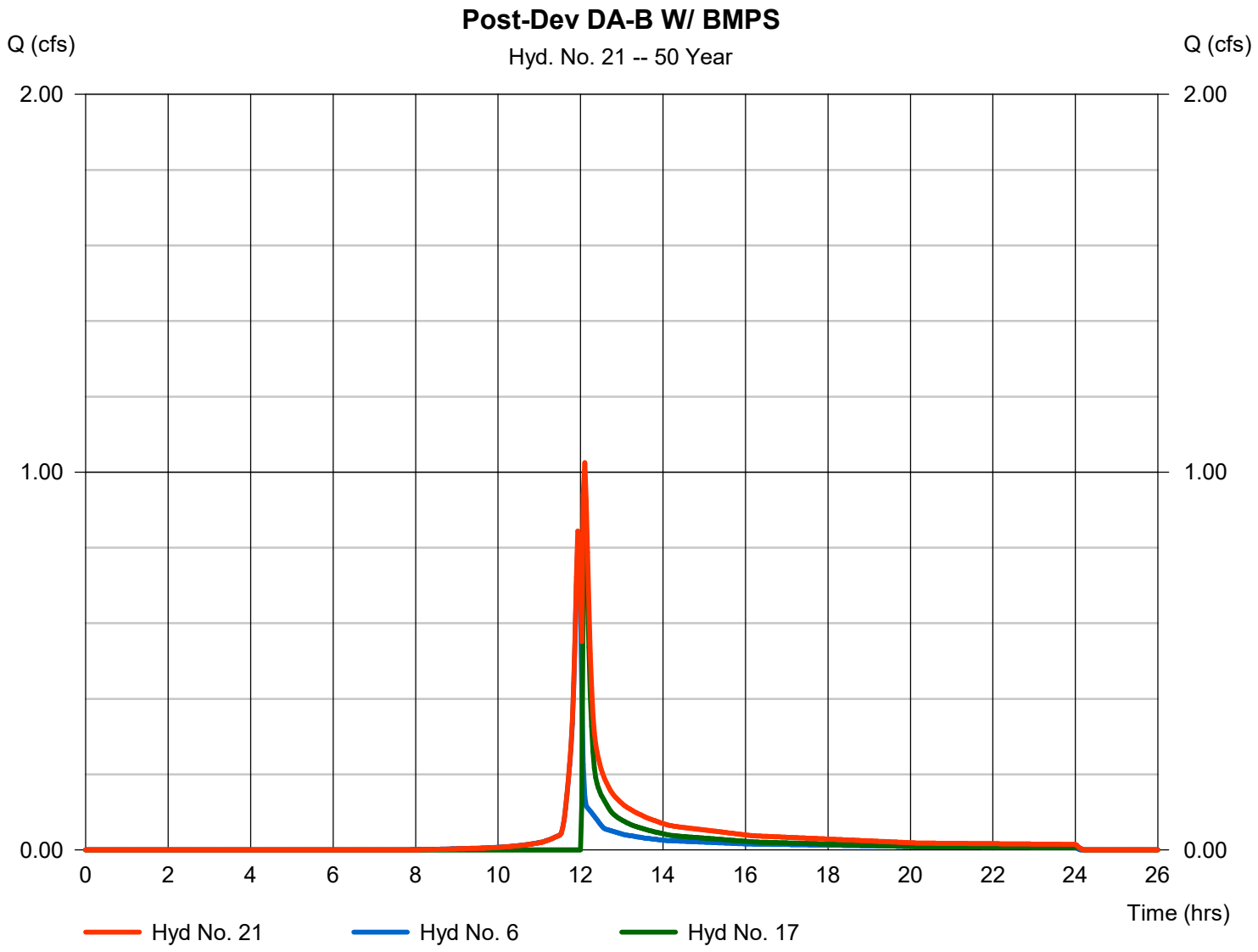
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 1.025 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 3,350 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac



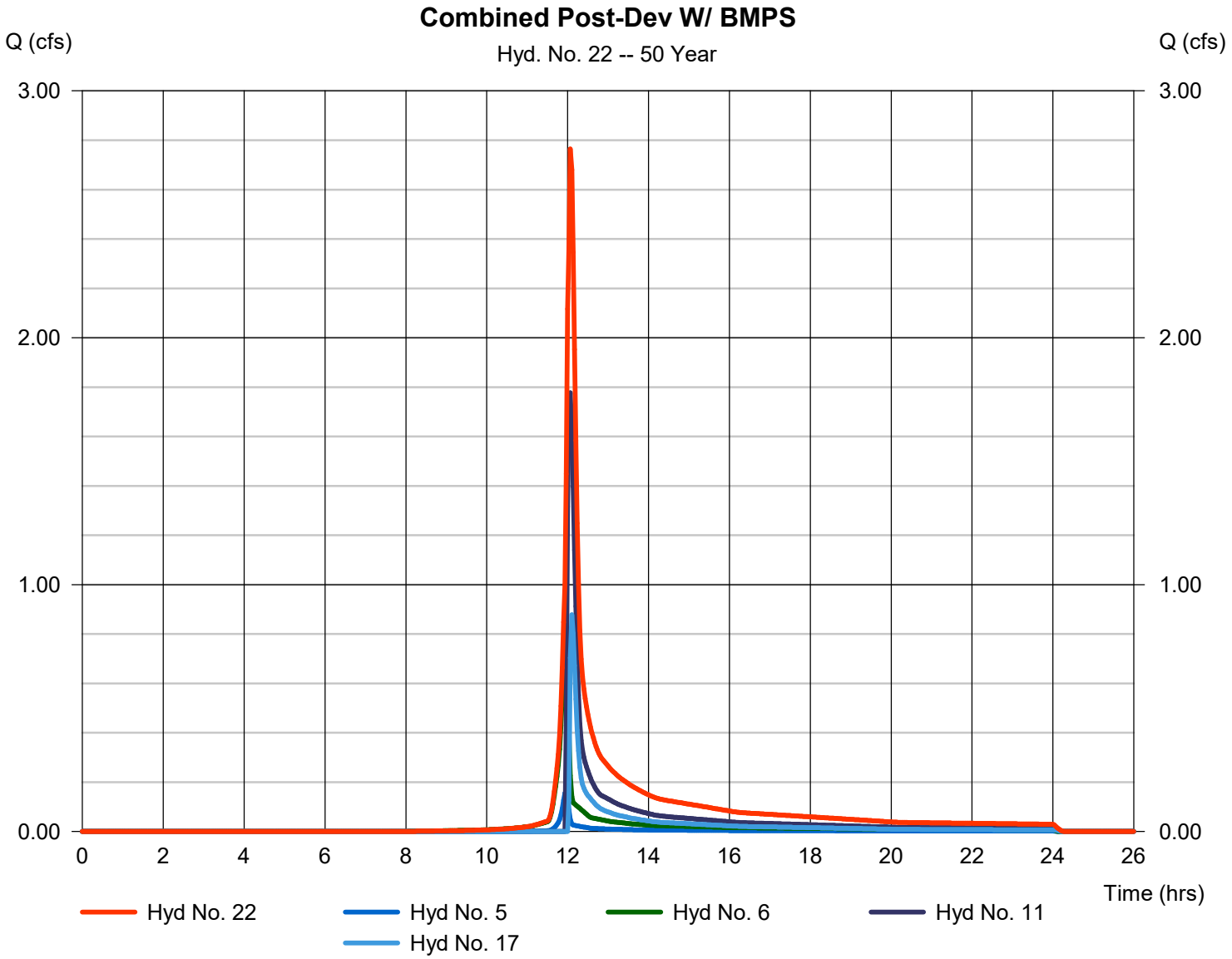
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 2.764 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,972 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.241	2	720	5,827	------	------	------	Pre-Dev DA-A
2	SCS Runoff	1.880	2	720	4,876	------	------	------	Pre-Dev DA-B
3	SCS Runoff	4.190	2	720	10,864	------	------	------	Pre-Dev Total
5	SCS Runoff	0.207	2	718	415	------	------	------	DA-A Bypass
6	SCS Runoff	0.984	2	716	2,006	------	------	------	DA-B Bypass
8	SCS Runoff	2.318	2	720	6,045	------	------	------	Post-Dev to Bioretention 1
9	Reservoir	2.251	2	722	6,008	8	472.31	1,521	Bioretention 1
10	Diversion1	0.012	2	722	1,686	9	------	------	INFILTRATION
11	Diversion2	2.238	2	722	4,322	9	------	------	OVERFLOW
12	Combine	2.318	2	720	6,045	8,	------	------	Post-Dev DA-A W/O BMPS
14	SCS Runoff	1.396	2	720	3,622	------	------	------	Post-Dev to Bioretention 2
15	Reservoir	1.296	2	724	3,585	14	472.21	1,104	Bioretention 2
16	Diversion1	0.009	2	724	1,292	15	------	------	INFILTRATION
17	Diversion2	1.287	2	724	2,293	15	------	------	OVERFLOW
18	Combine	2.306	2	718	5,705	6, 14,	------	------	Post-Dev DA-B W/O BMPS
20	Combine	2.348	2	722	4,737	5, 11,	------	------	Post-Dev DA-A W/ BMPS
21	Combine	1.720	2	722	4,376	6, 17,	------	------	Post-Dev DA-B W/ BMPS
22	Combine	4.068	2	722	9,113	5, 6, 11, 17,	------	------	Combined Post-Dev W/ BMPS

Hydrograph Report

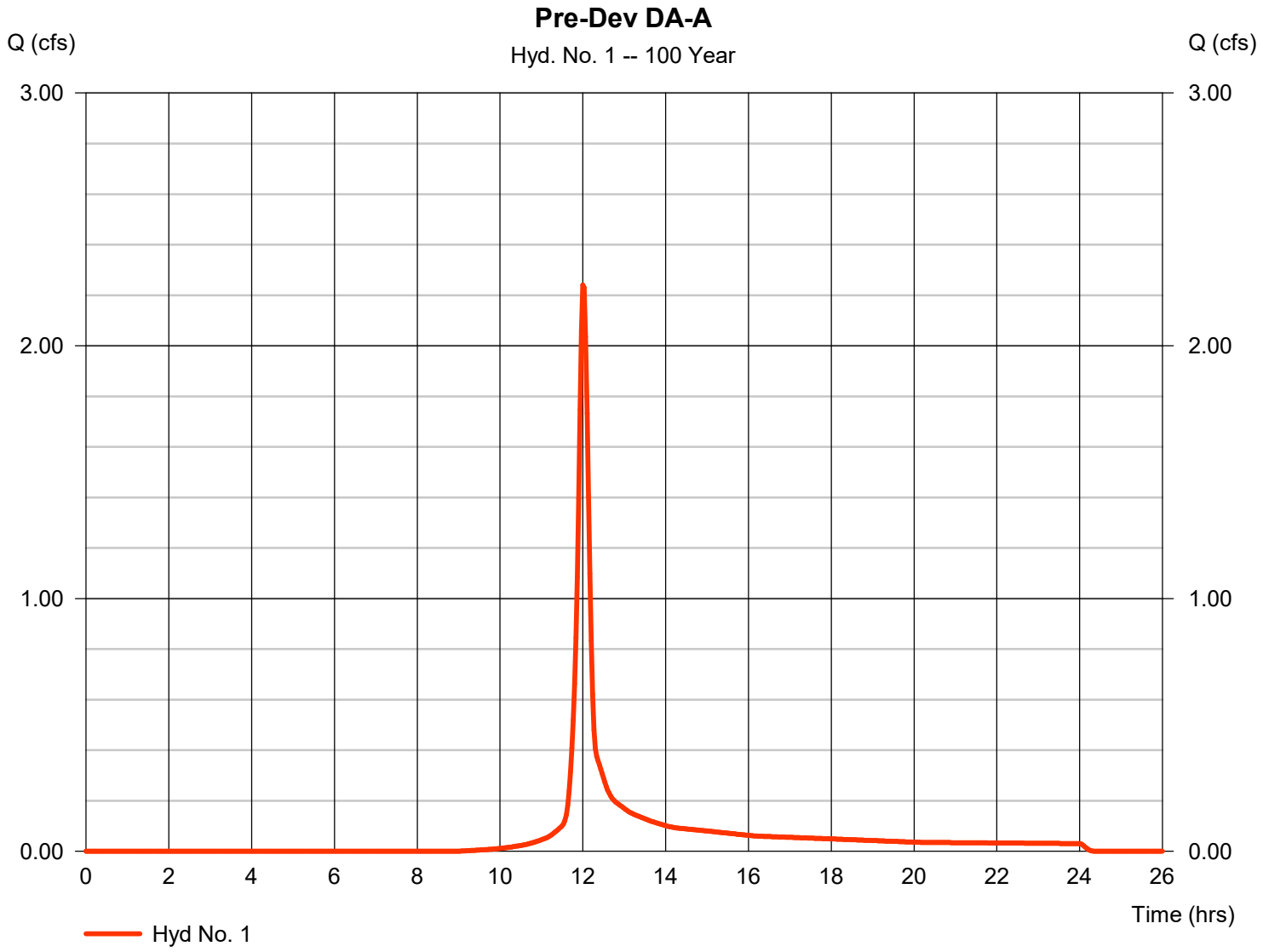
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 1

Pre-Dev DA-A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.241 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 5,827 cuft
Drainage area	= 0.500 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 6.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.100 x 98) + (0.400 x 61)] / 0.500



Hydrograph Report

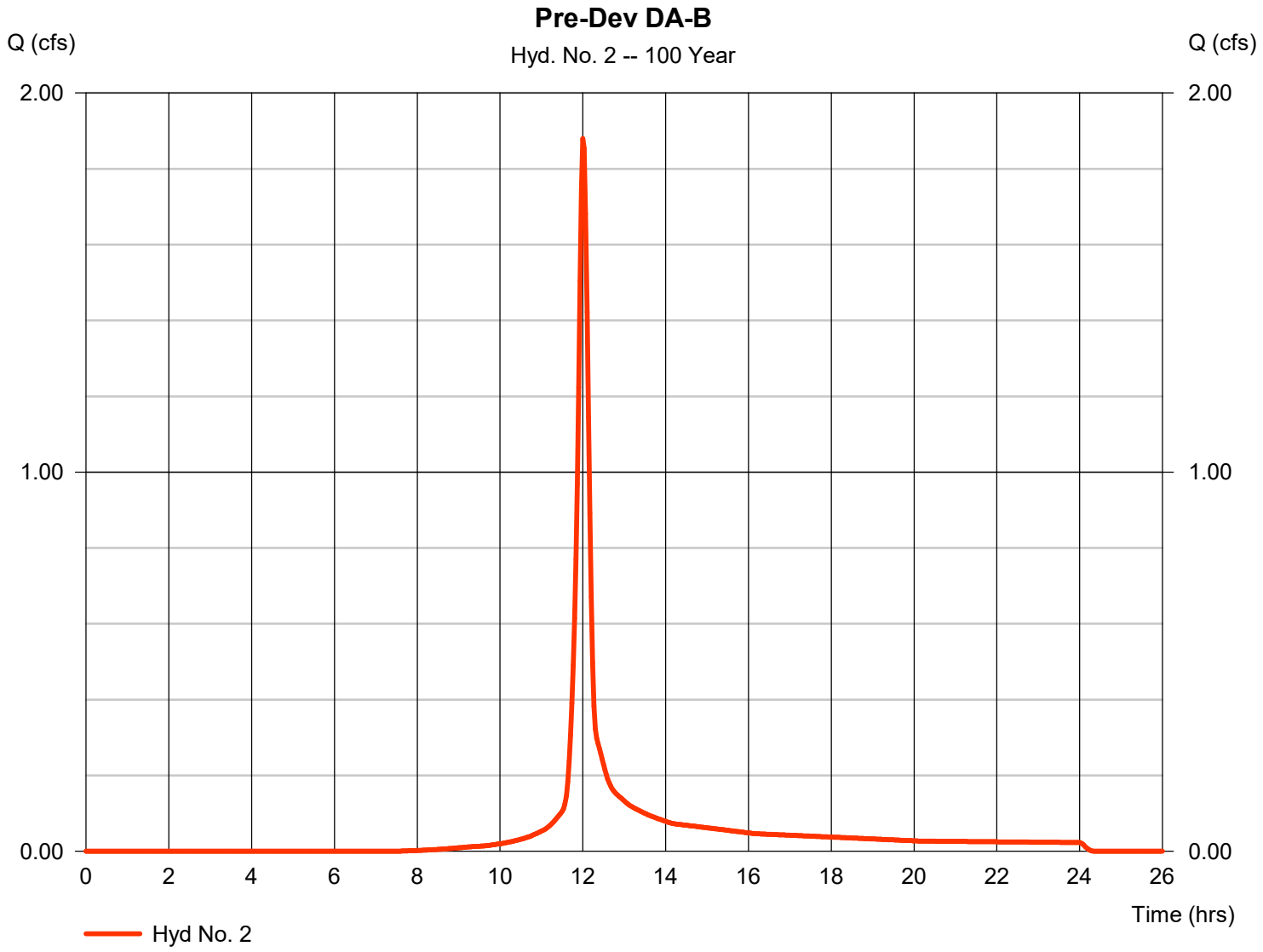
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 2

Pre-Dev DA-B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.880 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,876 cuft
Drainage area	= 0.350 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.20 min
Total precip.	= 6.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.120 x 98) + (0.230 x 61)] / 0.350



Hydrograph Report

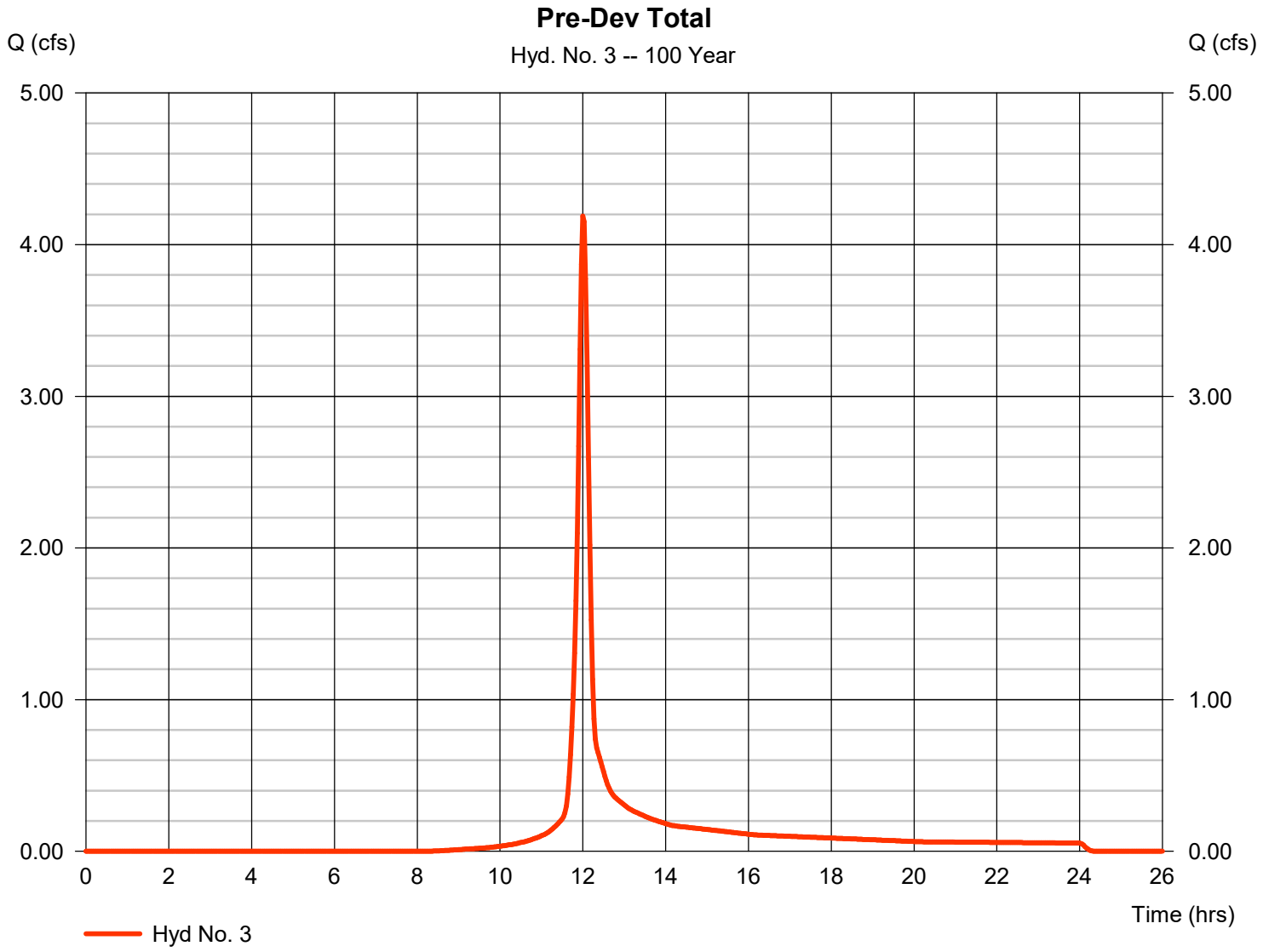
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 3

Pre-Dev Total

Hydrograph type	= SCS Runoff	Peak discharge	= 4.190 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 10,864 cuft
Drainage area	= 0.850 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.60 min
Total precip.	= 6.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.630 x 61)] / 0.850



Hydrograph Report

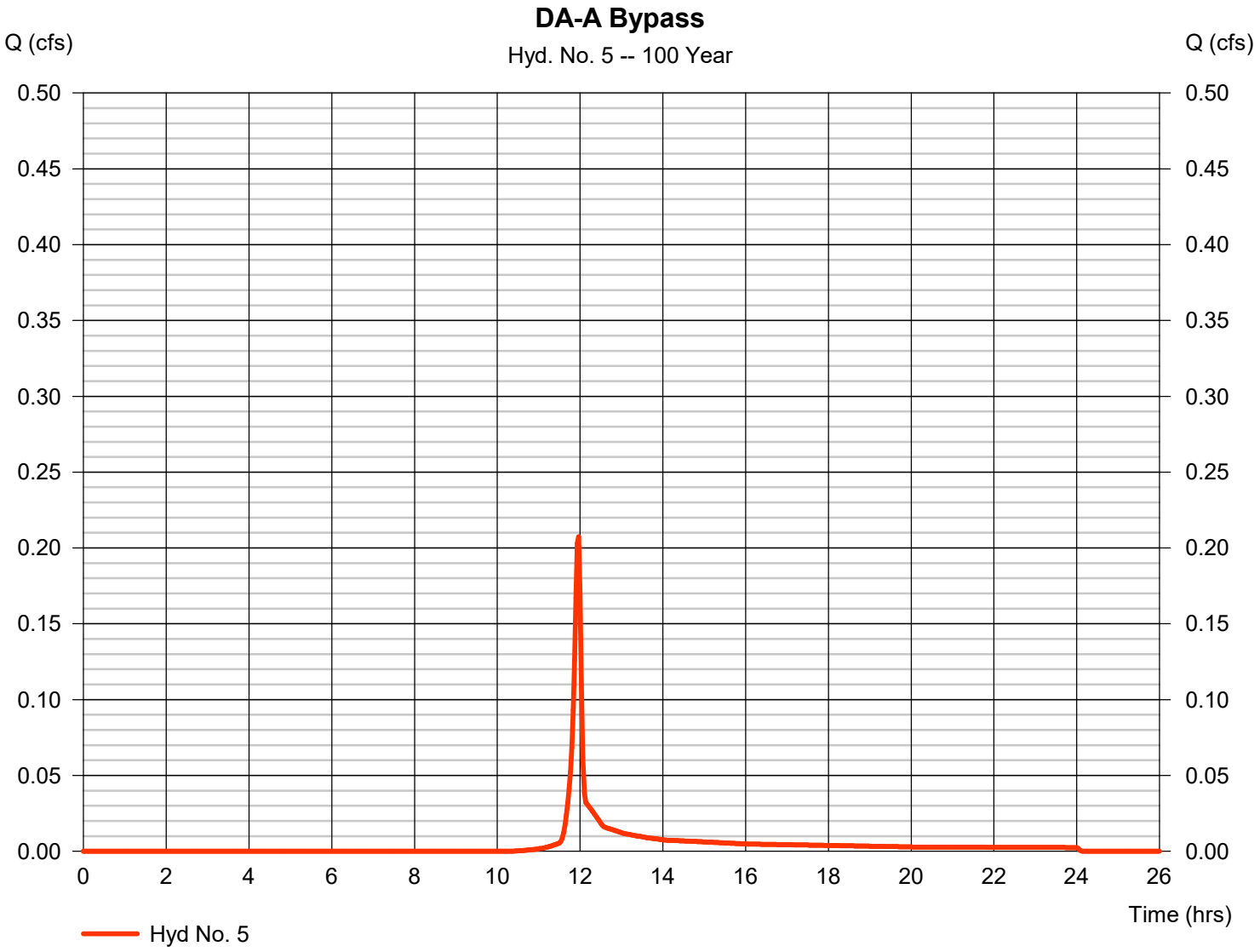
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 5

DA-A Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.207 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	415 cuft
Drainage area	=	0.050 ac	Curve number	=	61*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.63 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.050 x 61)] / 0.050



Hydrograph Report

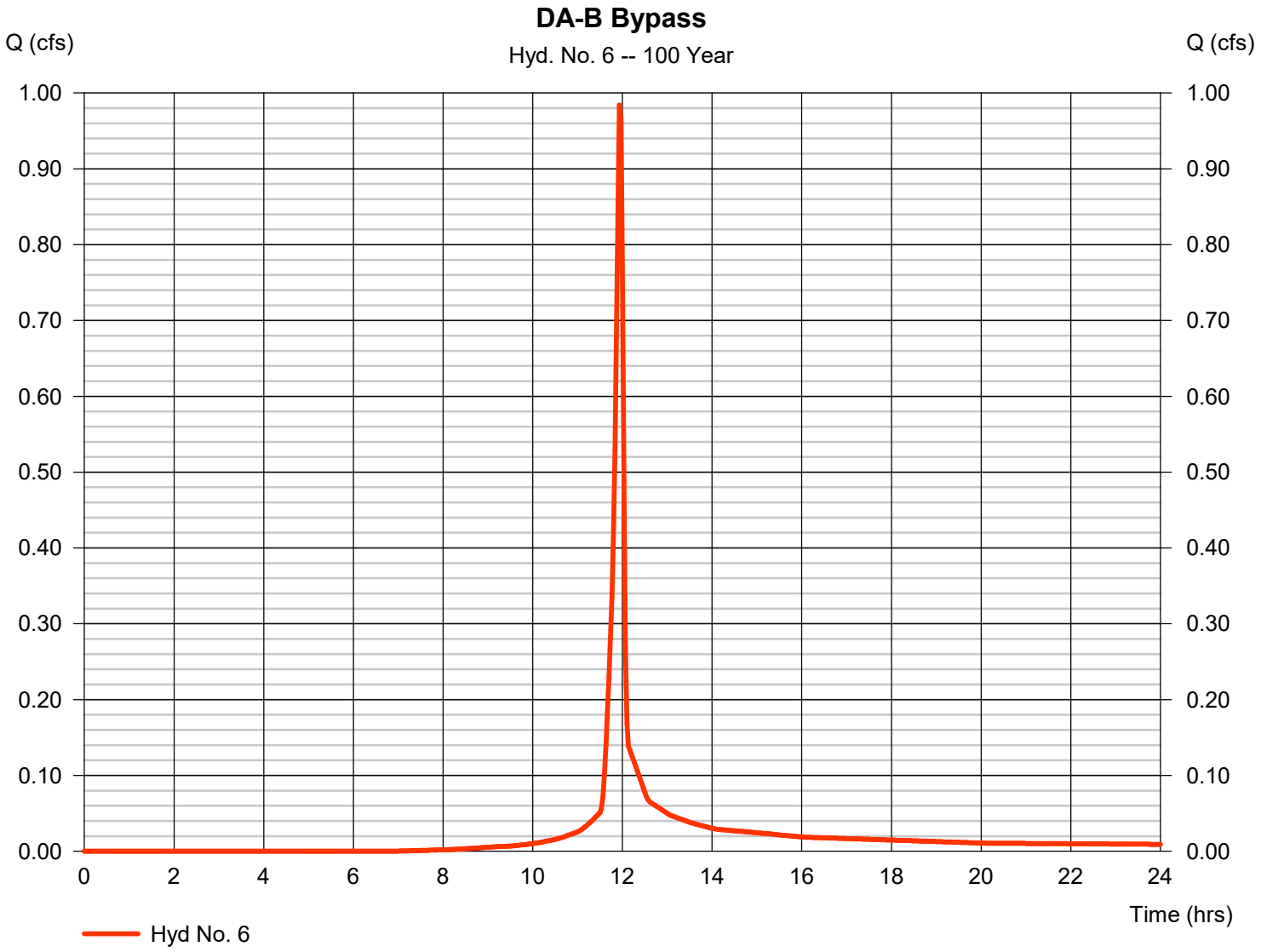
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 6

DA-B Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.984 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	2,006 cuft
Drainage area	=	0.150 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.63 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.090 x 61) + (0.060 x 98)] / 0.150



Hydrograph Report

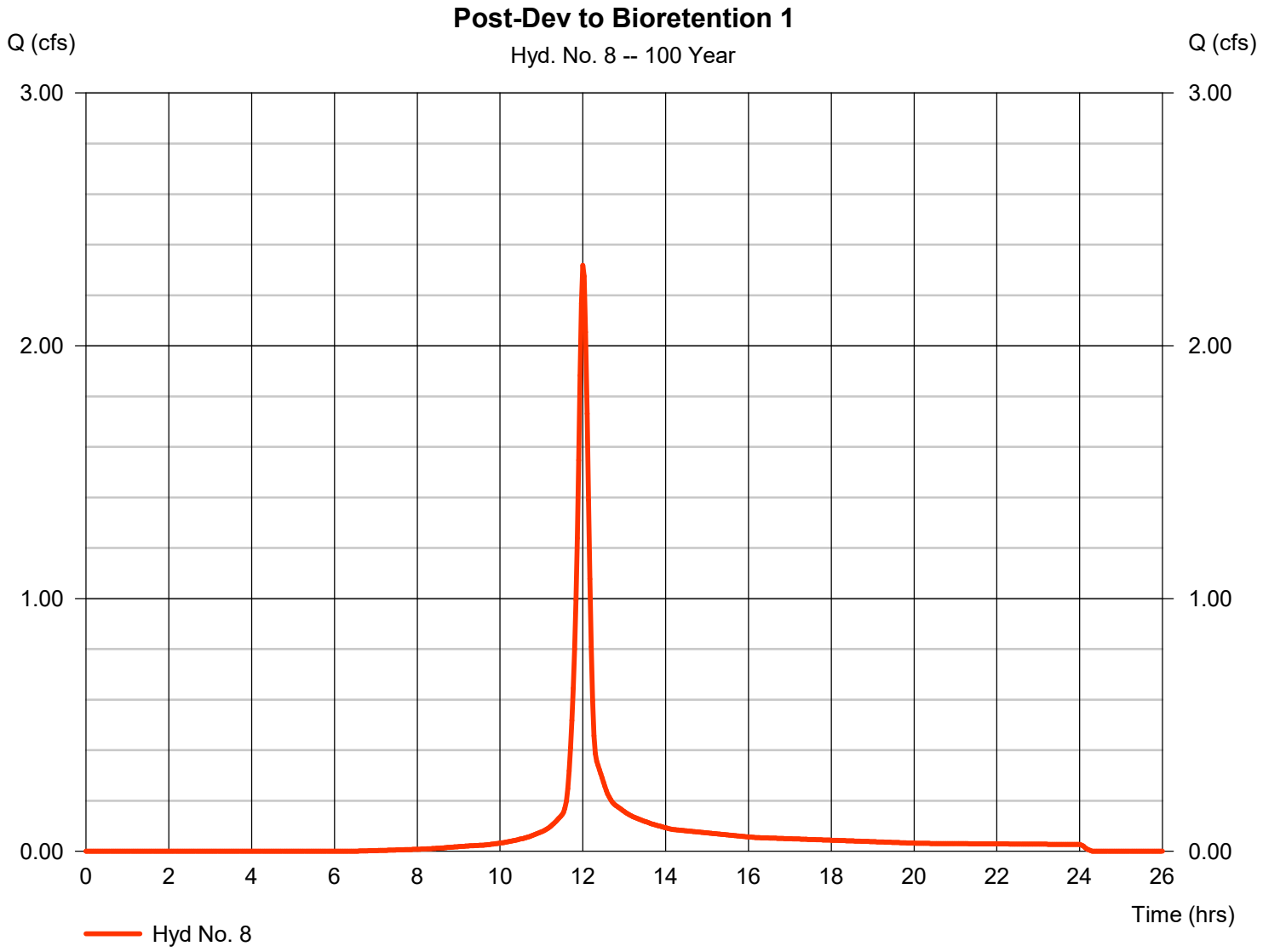
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 8

Post-Dev to Bioretention 1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.318 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 6,045 cuft
Drainage area	= 0.390 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.20 min
Total precip.	= 6.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.180 x 98) + (0.210 x 61)] / 0.390



Hydrograph Report

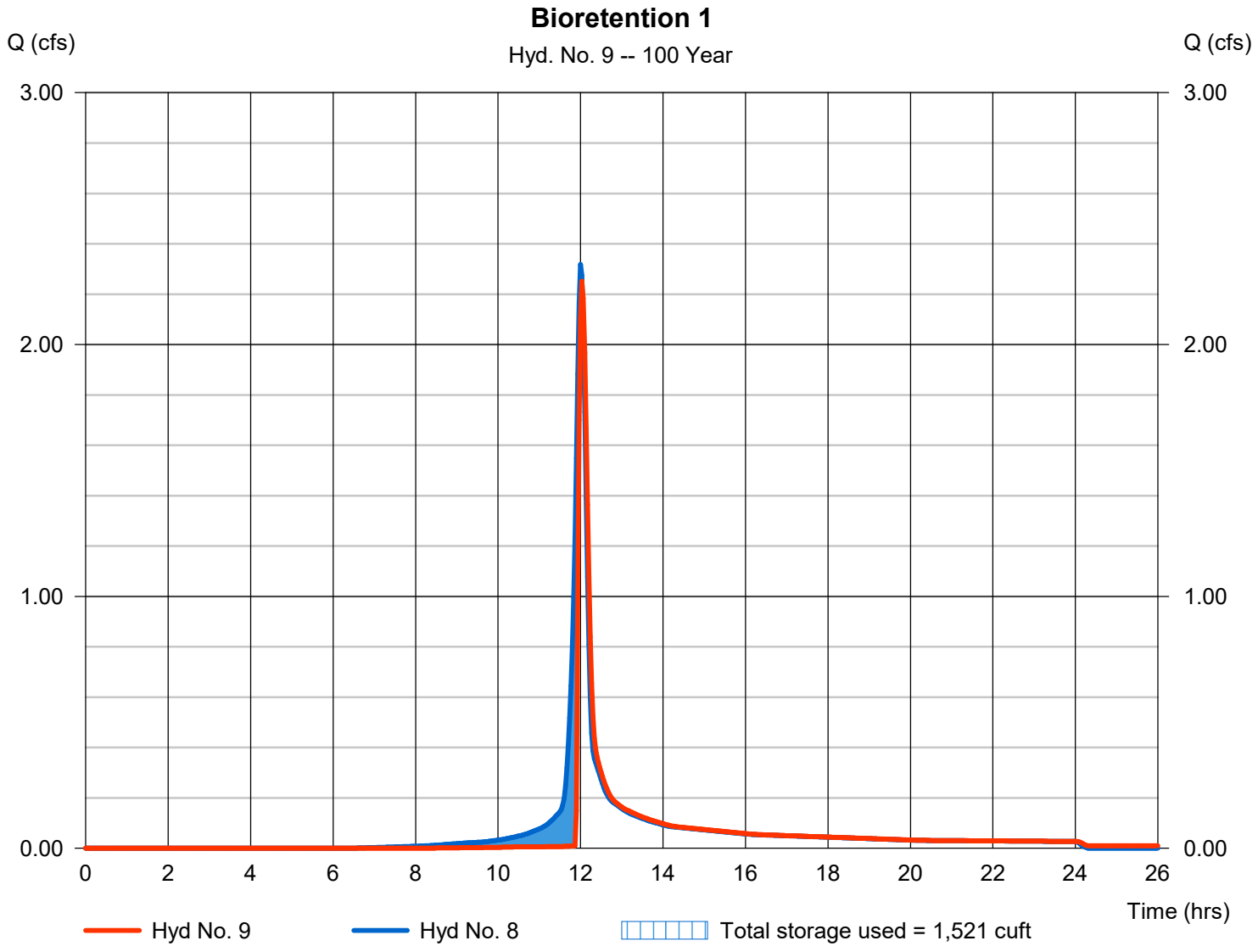
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 9

Bioretention 1

Hydrograph type	= Reservoir	Peak discharge	= 2.251 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 6,008 cuft
Inflow hyd. No.	= 8 - Post-Dev to Bioretention 1	Max. Elevation	= 472.31 ft
Reservoir name	= BMP ID 1 - Bioretention 1	Max. Storage	= 1,521 cuft

Storage Indication method used. Outflow includes exfiltration.



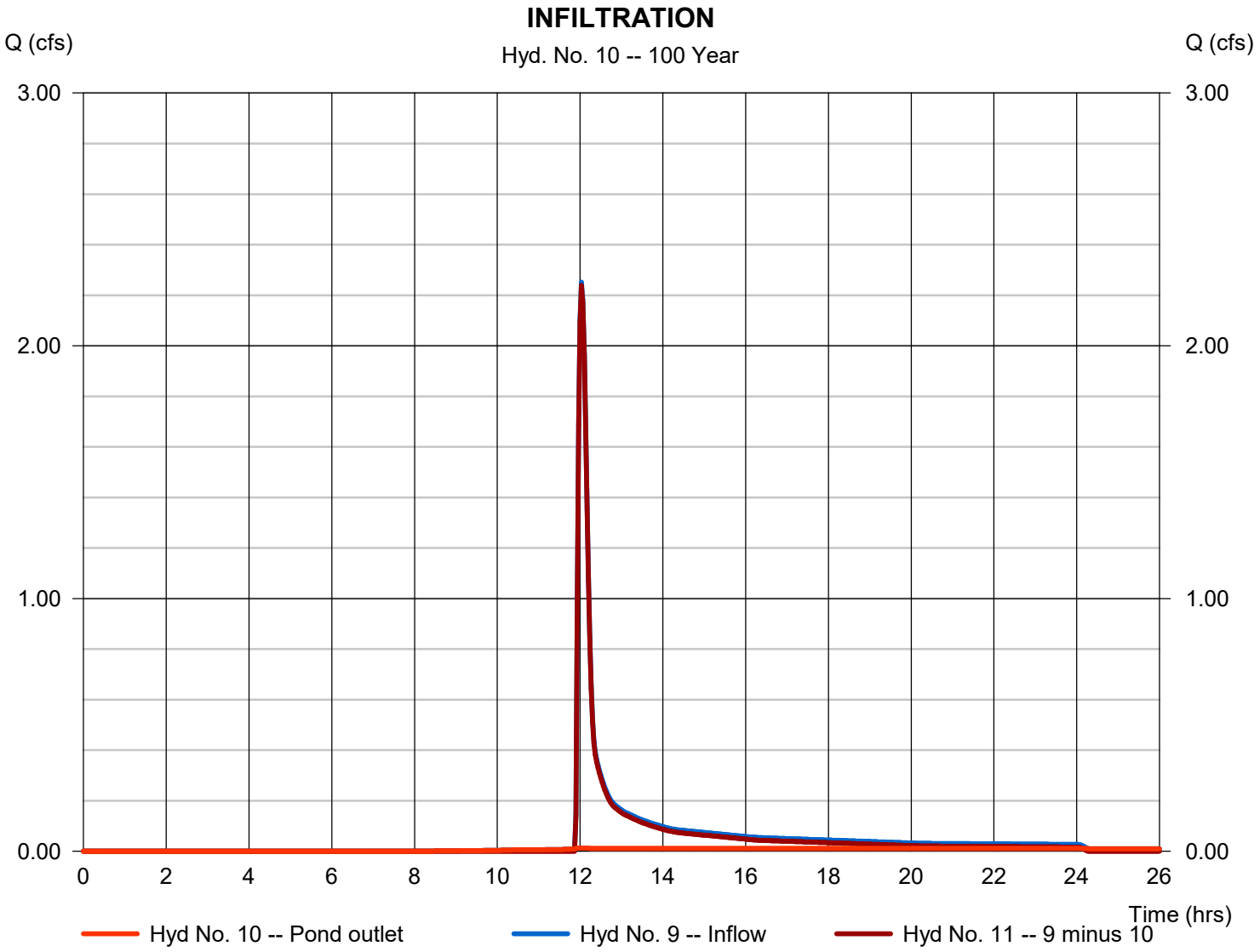
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 10

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.012 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 1,686 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 11
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



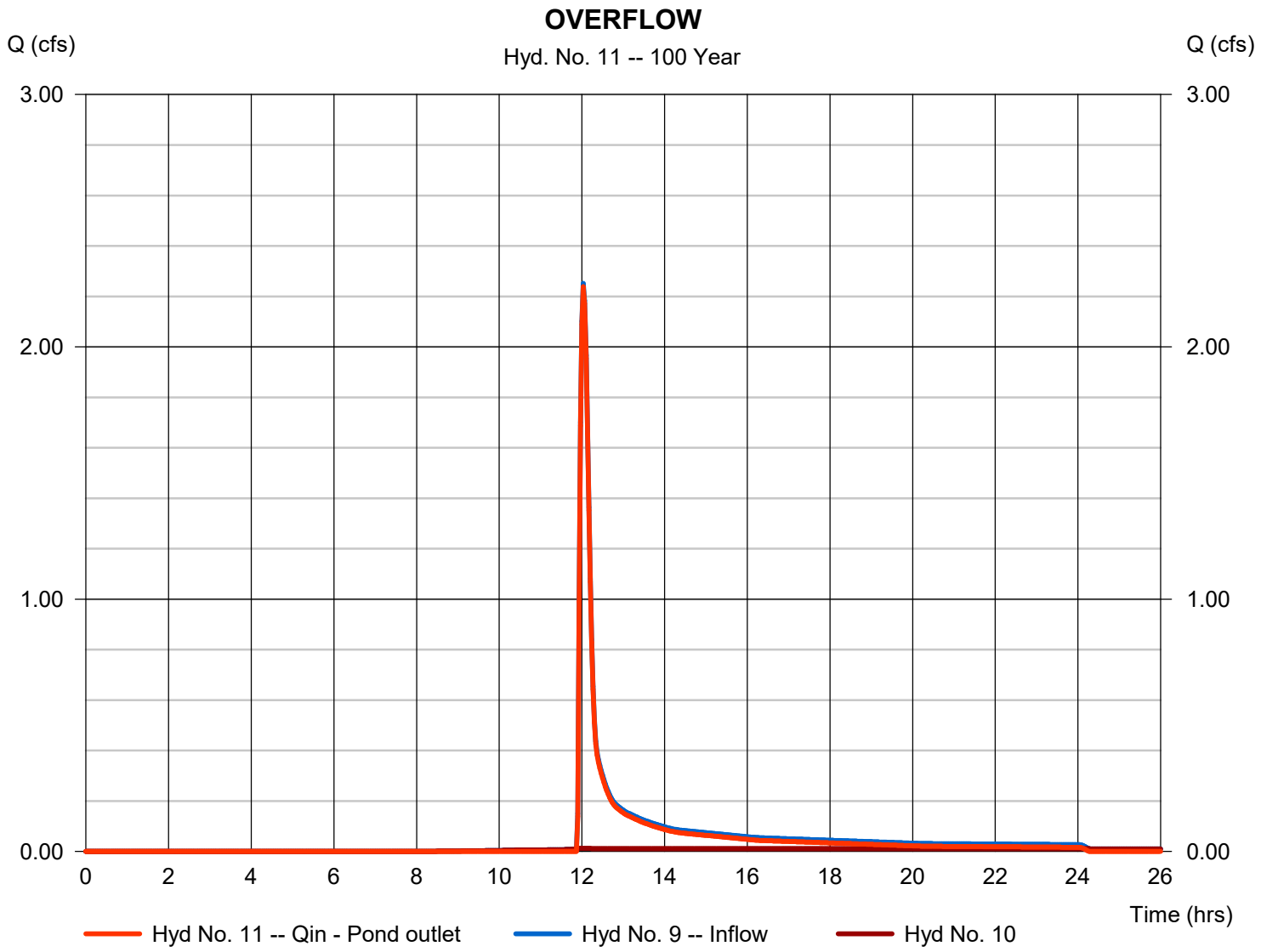
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 11

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 2.238 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,322 cuft
Inflow hydrograph	= 9 - Bioretention 1	2nd diverted hyd.	= 10
Diversion method	= Pond - BMP ID 1 - Bioretention1	Pond structure	= Exfiltration



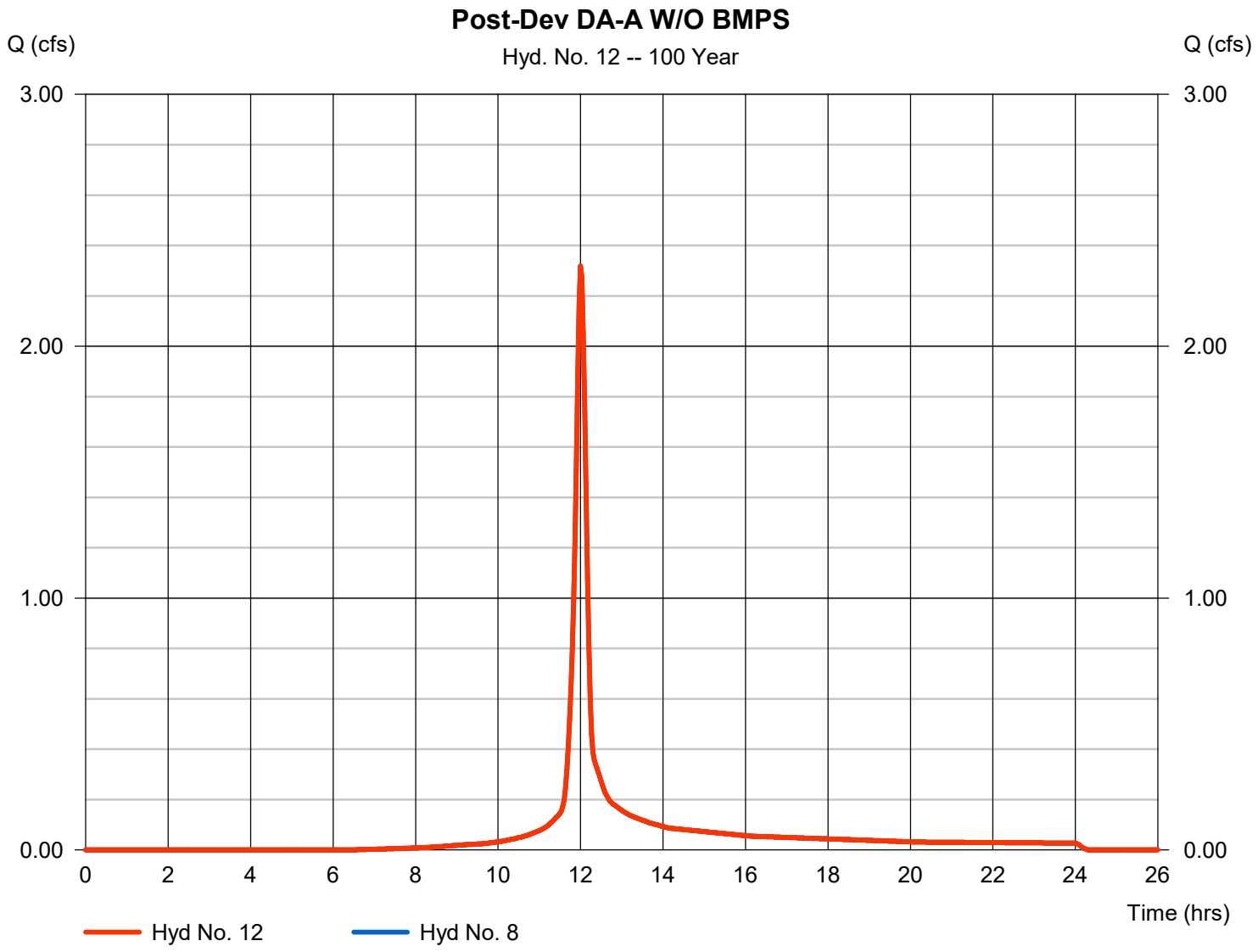
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 12

Post-Dev DA-A W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 2.318 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 6,045 cuft
Inflow hyds.	= 8	Contrib. drain. area	= 0.390 ac



Hydrograph Report

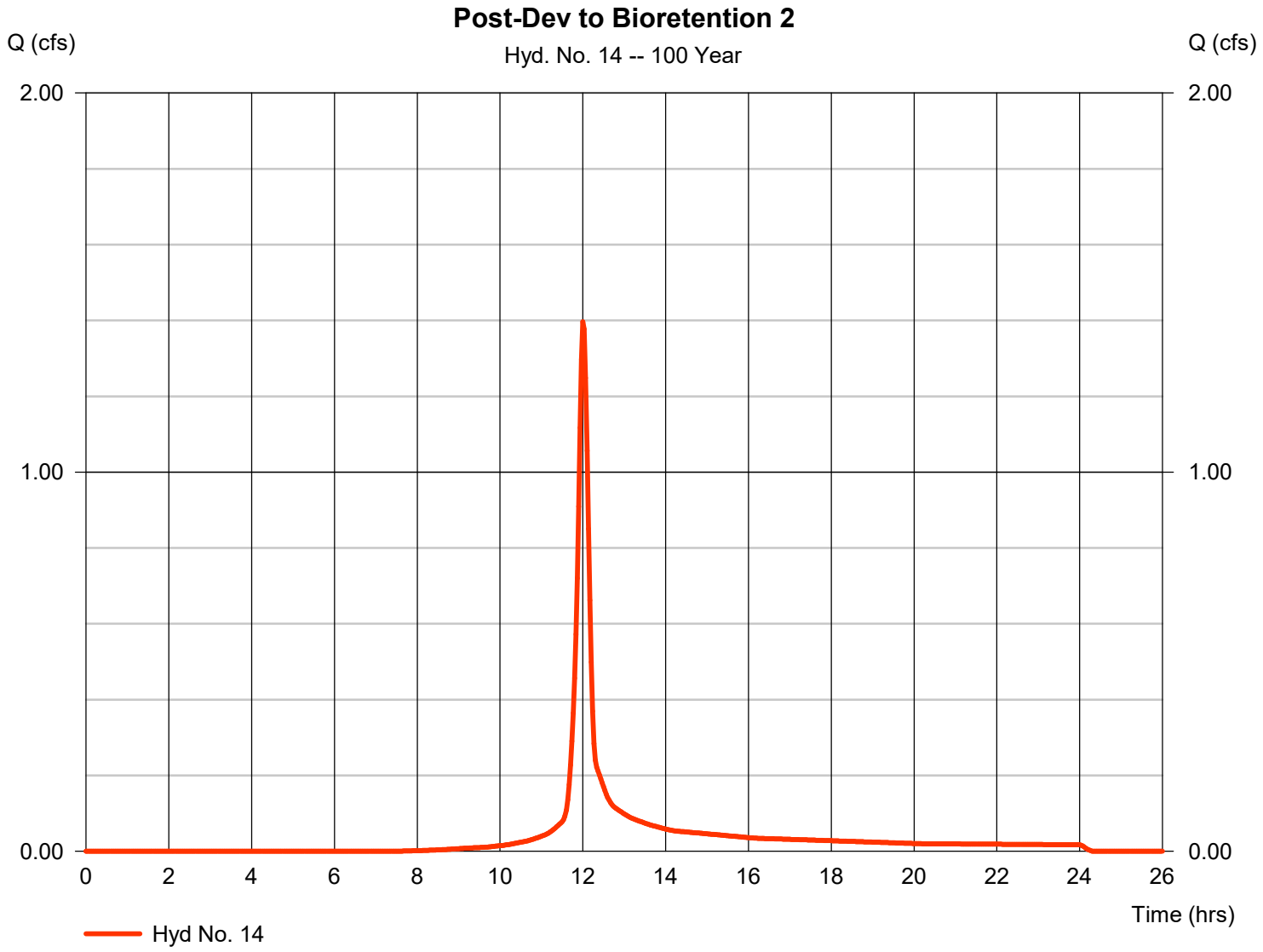
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 14

Post-Dev to Bioretention 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.396 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 3,622 cuft
Drainage area	= 0.260 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.10 min
Total precip.	= 6.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 98) + (0.170 x 61)] / 0.260



Hydrograph Report

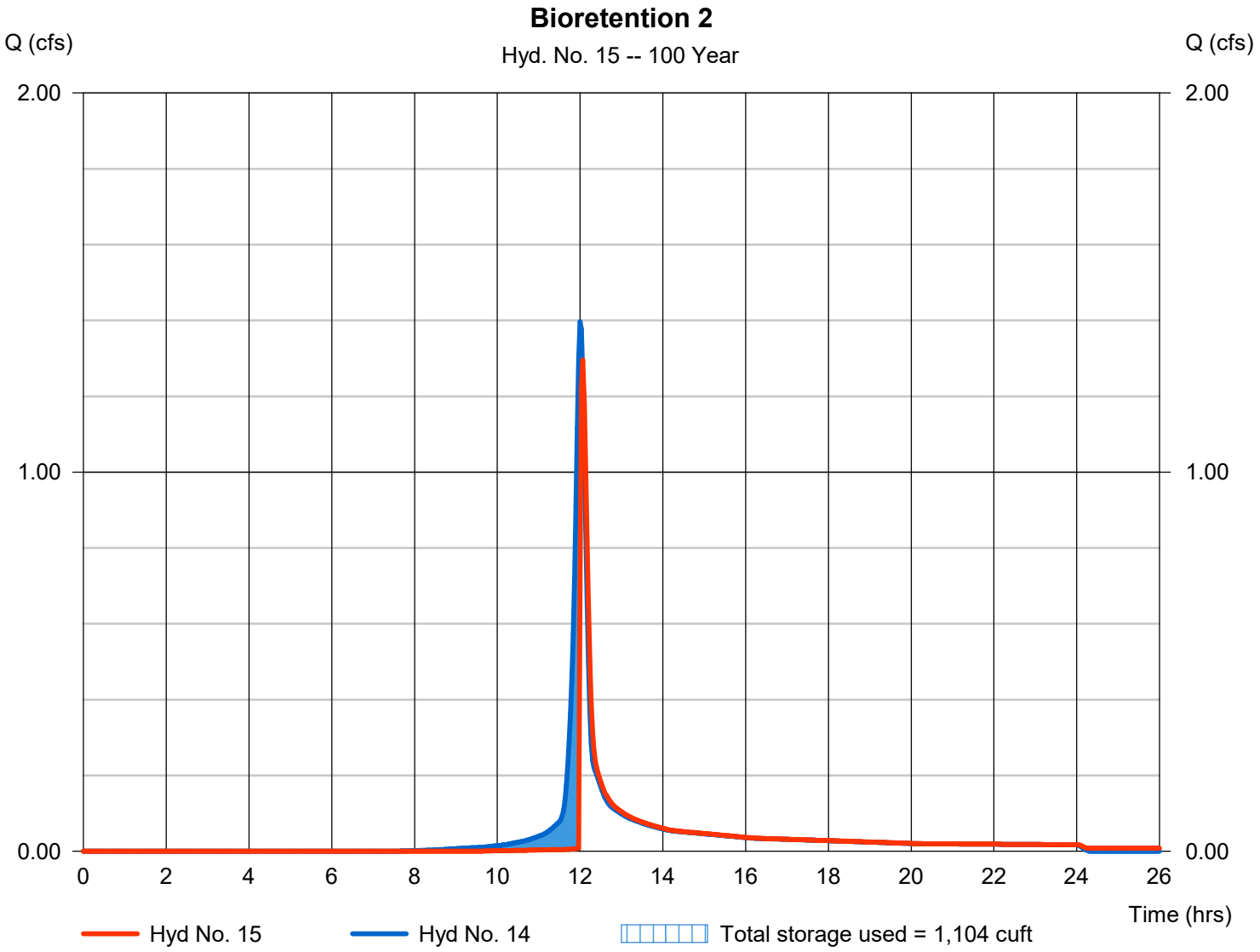
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 15

Bioretention 2

Hydrograph type	=	Reservoir	Peak discharge	=	1.296 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	3,585 cuft
Inflow hyd. No.	=	14 - Post-Dev to Bioretention 2	Max. Elevation	=	472.21 ft
Reservoir name	=	BMP ID 2 - Bioretention 2	Max. Storage	=	1,104 cuft

Storage Indication method used. Outflow includes exfiltration.



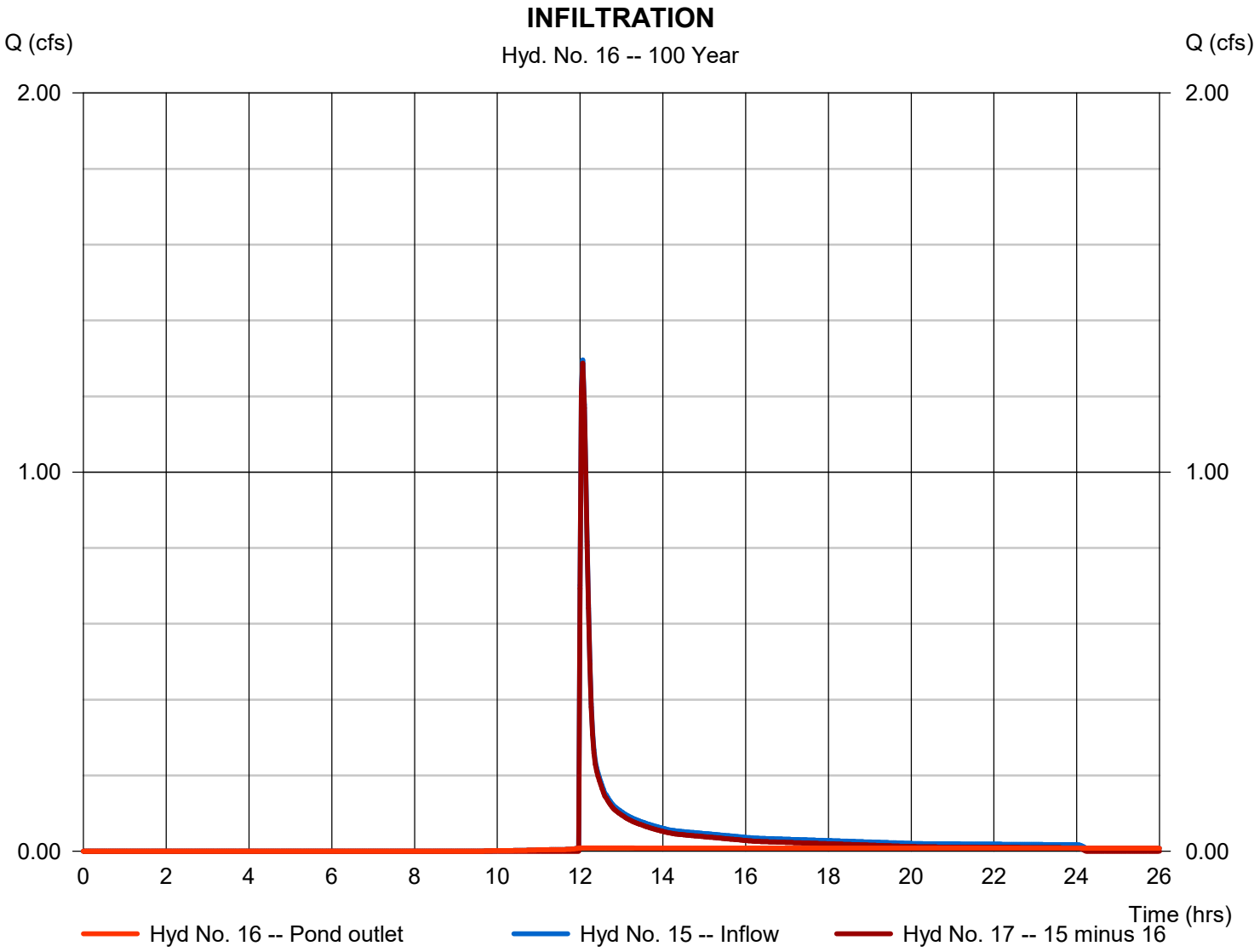
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 16

INFILTRATION

Hydrograph type	= Diversion1	Peak discharge	= 0.009 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,292 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 17
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



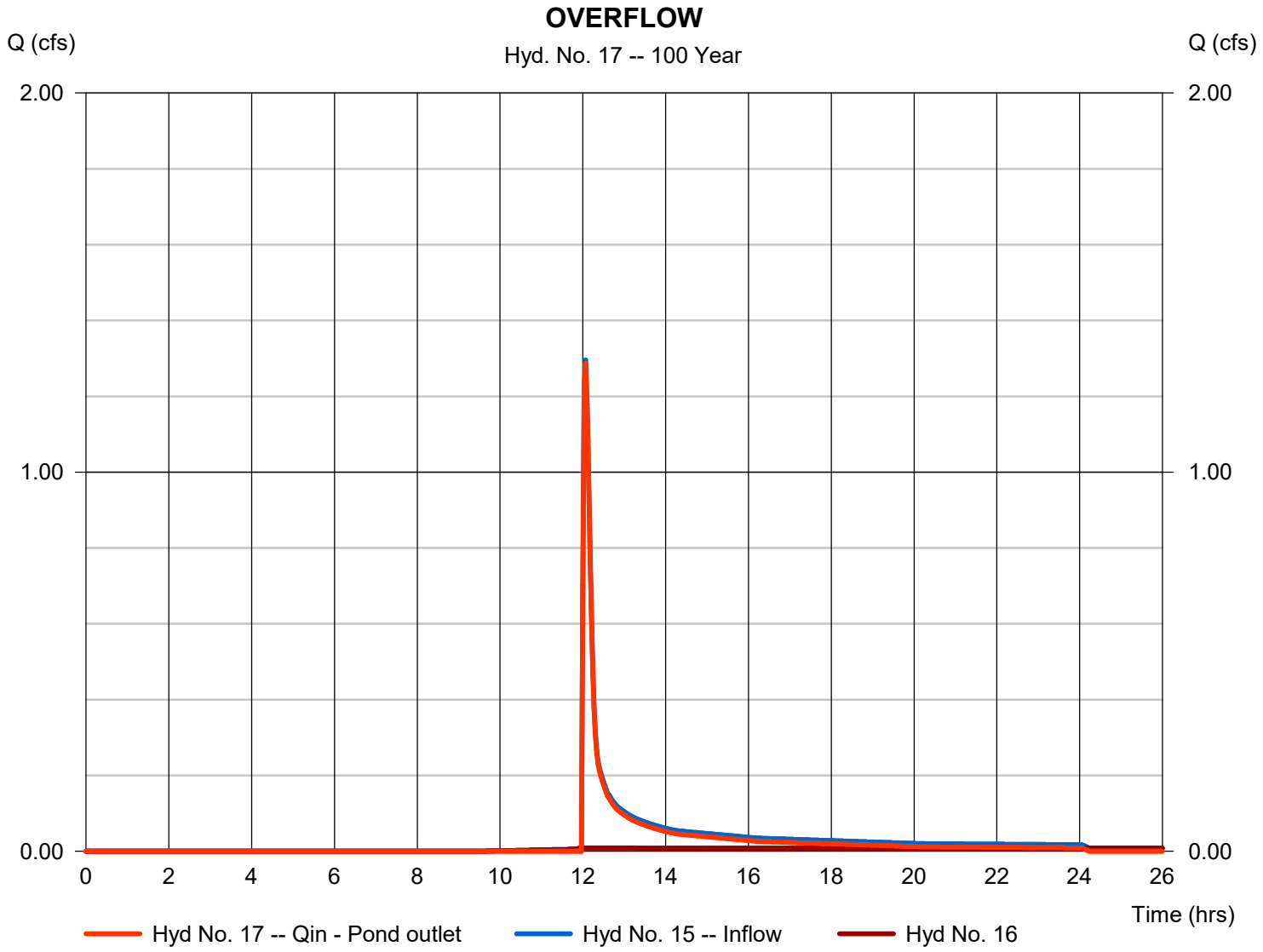
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 17

OVERFLOW

Hydrograph type	= Diversion2	Peak discharge	= 1.287 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,293 cuft
Inflow hydrograph	= 15 - Bioretention 2	2nd diverted hyd.	= 16
Diversion method	= Pond - BMP ID 2 - Bioretention 2	Pond structure	= Exfiltration



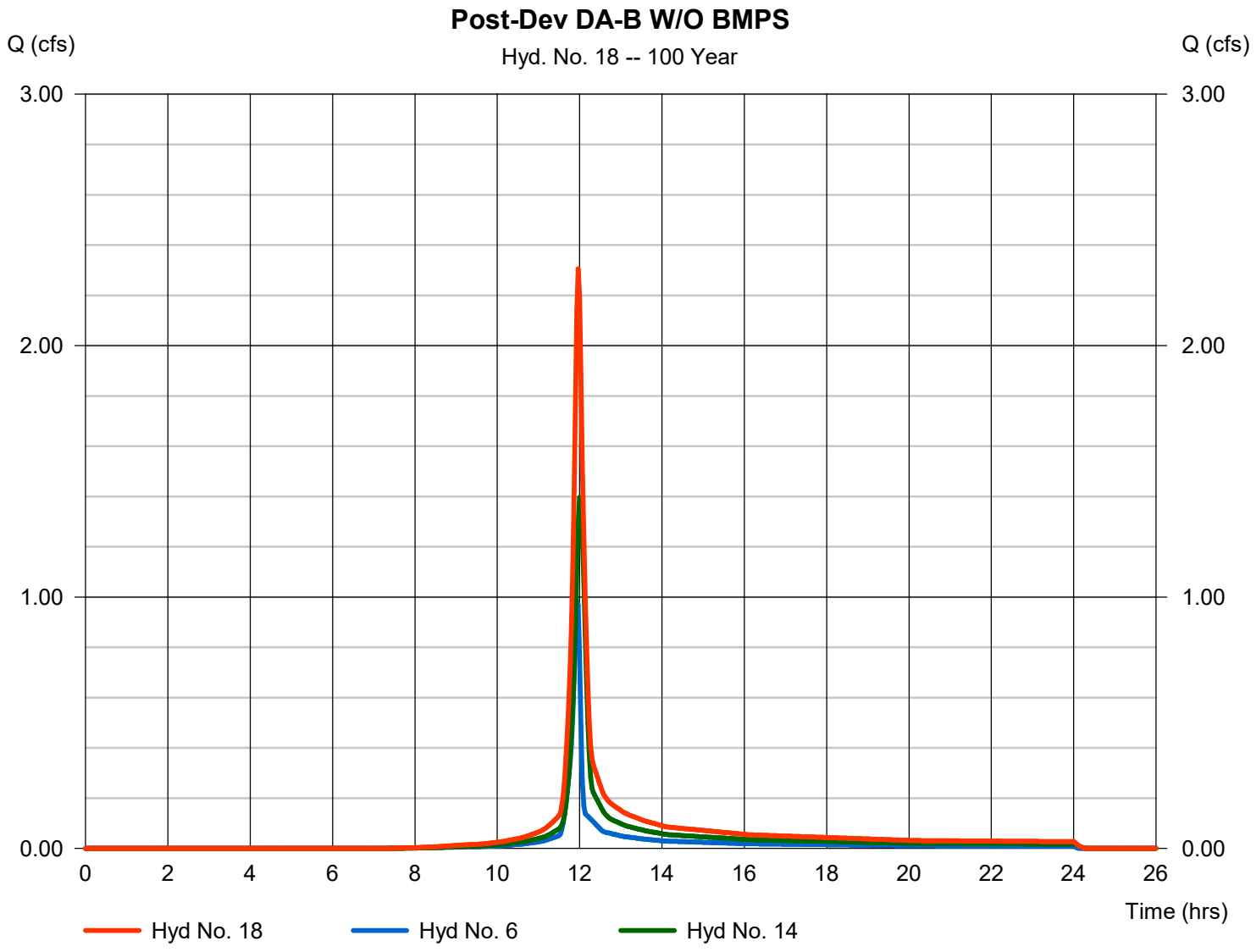
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 18

Post-Dev DA-B W/O BMPS

Hydrograph type	= Combine	Peak discharge	= 2.306 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 5,705 cuft
Inflow hyds.	= 6, 14	Contrib. drain. area	= 0.410 ac



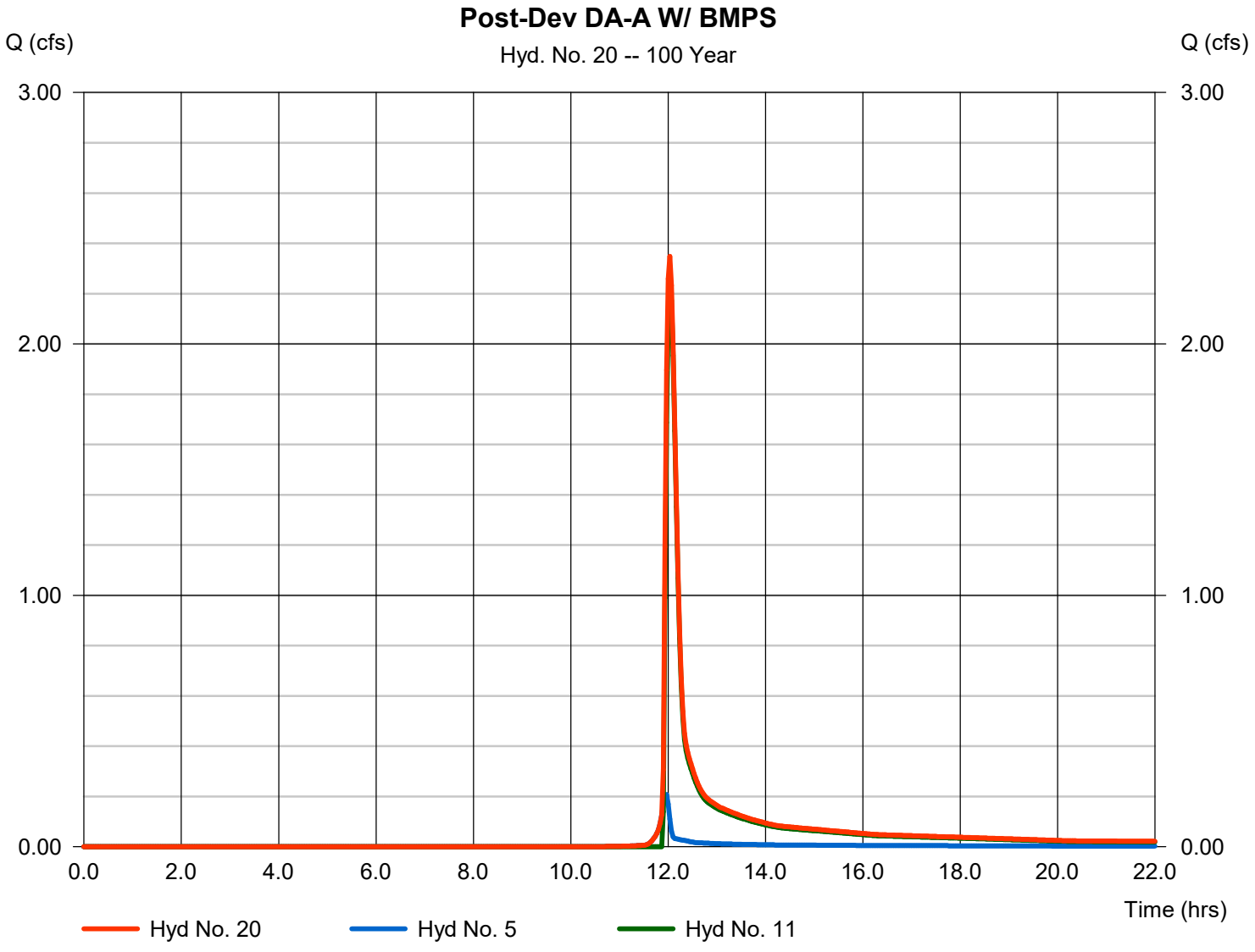
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 20

Post-Dev DA-A W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 2.348 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,737 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.050 ac



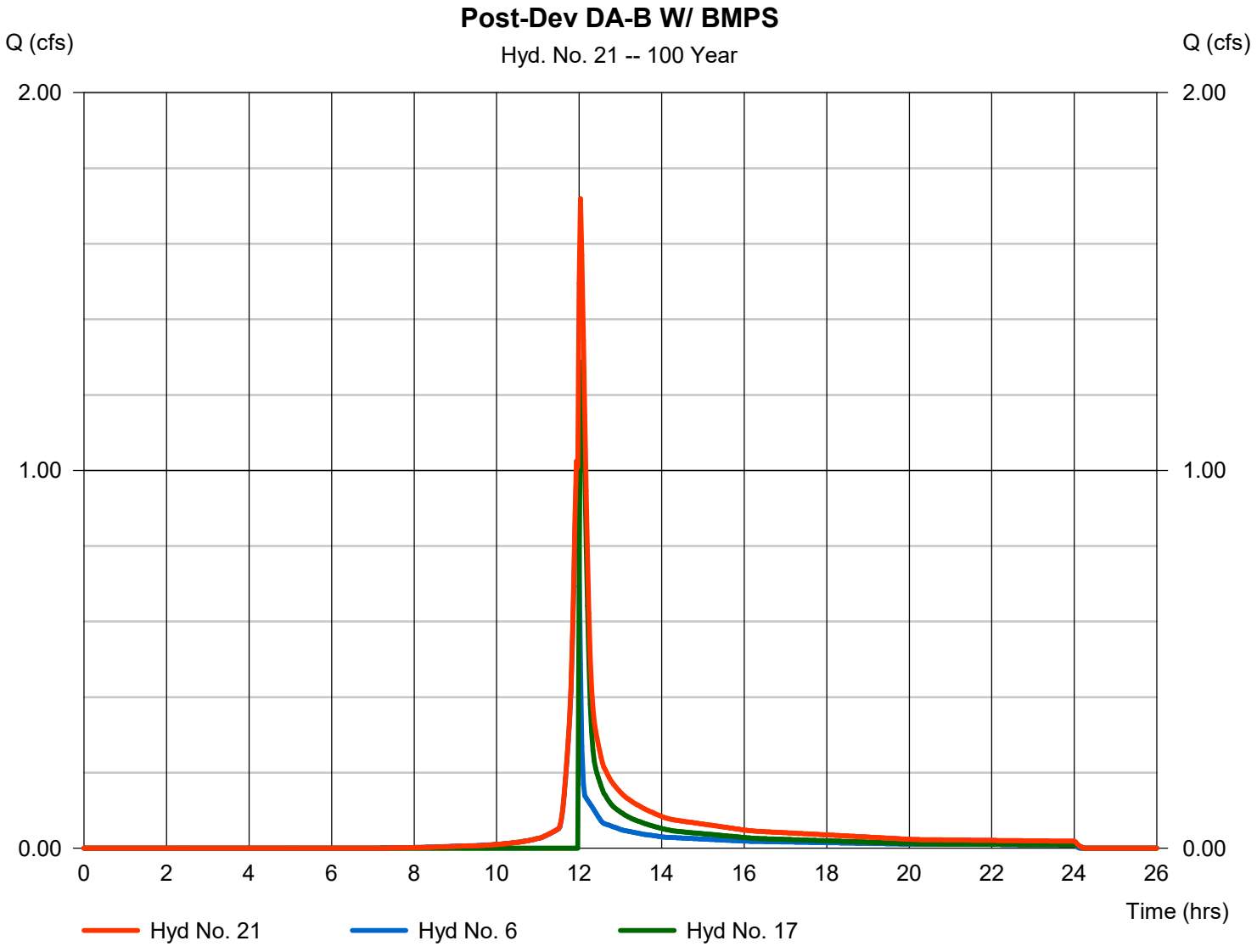
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 13 / 2023

Hyd. No. 21

Post-Dev DA-B W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 1.720 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,376 cuft
Inflow hyds.	= 6, 17	Contrib. drain. area	= 0.150 ac

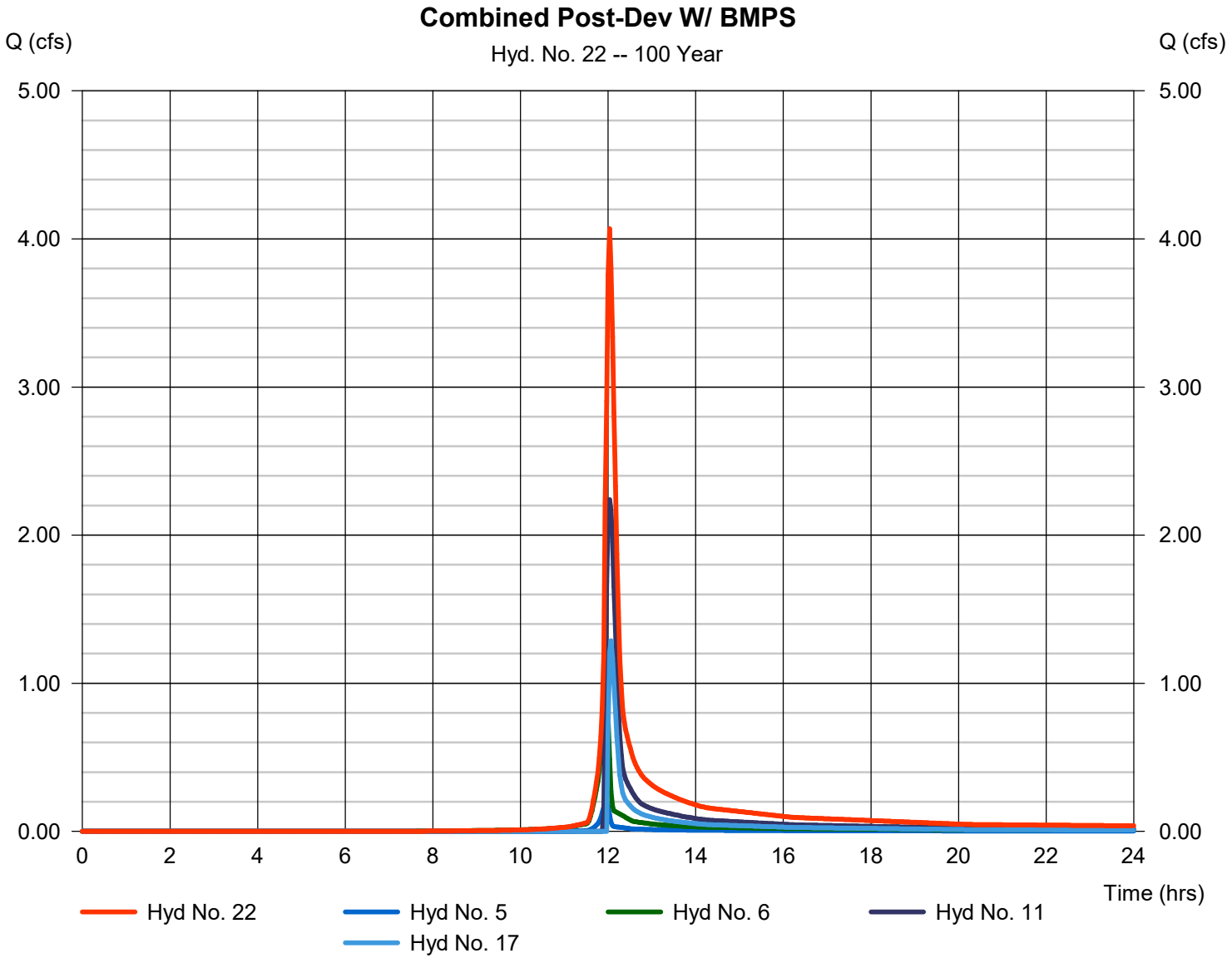


Hydrograph Report

Hyd. No. 22

Combined Post-Dev W/ BMPS

Hydrograph type	= Combine	Peak discharge	= 4.068 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 9,113 cuft
Inflow hyds.	= 5, 6, 11, 17	Contrib. drain. area	= 0.200 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	52.5591	10.8000	0.8721	--------
3	0.0000	0.0000	0.0000	--------
5	54.2595	10.1000	0.8262	--------
10	52.6392	9.3000	0.7849	--------
25	49.9660	8.2000	0.7322	--------
50	46.9724	7.1000	0.6908	--------
100	45.0324	6.3000	0.6539	--------

File name: Joan and Joe's.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.73	3.73	3.09	2.65	2.32	2.07	1.87	1.71	1.58	1.46	1.36	1.28
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.76	4.55	3.78	3.26	2.87	2.57	2.33	2.14	1.98	1.84	1.72	1.62
10	6.52	5.16	4.30	3.71	3.28	2.95	2.69	2.47	2.29	2.14	2.00	1.89
25	7.55	5.97	5.00	4.33	3.85	3.47	3.17	2.93	2.72	2.55	2.40	2.27
50	8.39	6.61	5.54	4.81	4.28	3.87	3.55	3.28	3.06	2.87	2.71	2.57
100	9.22	7.26	6.09	5.31	4.74	4.30	3.95	3.67	3.43	3.23	3.05	2.90

Tc = time in minutes. Values may exceed 60.

Precip. file name: R:\Projects\2022\2022-1685 Joan and Joe's Coffee - Site Plan\CALCS\1-SWM\Joan and Joe's.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.40	2.88	0.00	3.60	4.20	5.08	5.83	6.63
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX D

CONVEYANCE CALCULATIONS

North American Green
5401 St. Wendel-Cynthiana Rd.
Poseyville, Indiana 47633
Tel. 800.772.2040
>Fax 812.867.0247
www.nagreen.com
ECMDS v7.0

SPILLWAY ANALYSIS

> > > Bioretention Berm 1

Name	Bioretention Berm 1
Discharge	2.24
Peak Flow Period	24
Channel Slope	0.33
Channel Bottom Width	5
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Mix (Sod and Bunch)
Vegetation Density	Very Good 80-95%
Soil Type	Silt Loam (SM)

S200 - Class C - Mix (Sod & Bunch) - Very Good 80-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	2.24 cfs	5.6 ft/s	0.08 ft	0.027	2.3 lbs/ft2	1.62 lbs/ft2	1.42	STABLE	E
Underlying Substrate	Straight	2.24 cfs	5.6 ft/s	0.08 ft	0.027	1.68 lbs/ft2	1.58 lbs/ft2	1.07	STABLE	E
S200 Reinforced Vegetation	Straight	2.24 cfs	4.7 ft/s	0.09 ft	0.037	10 lbs/ft2	1.92 lbs/ft2	5.2	STABLE	E
Underlying Substrate	Straight	2.24 cfs	4.7 ft/s	0.09 ft	0.037	2.61 lbs/ft2	1.86 lbs/ft2	1.4	STABLE	E

North American Green
5401 St. Wendel-Cynthiana Rd.
Poseyville, Indiana 47633
Tel. 800.772.2040
>Fax 812.867.0247
www.nagreen.com
ECMDS v7.0

SPILLWAY ANALYSIS

> > > Bioretention Berm 2

Name	Bioretention Berm 2
Discharge	1.29
Peak Flow Period	24
Channel Slope	0.33
Channel Bottom Width	5
Low Flow Liner	
Retardence Class	C 6-12 in
Vegetation Type	Mix (Sod and Bunch)
Vegetation Density	Very Good 80-95%
Soil Type	Silt Loam (SM)

S200 - Class C - Mix (Sod & Bunch) - Very Good 80-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S200 Unvegetated	Straight	1.29 cfs	4.3 ft/s	0.06 ft	0.03	2.3 lbs/ft2	1.21 lbs/ft2	1.9	STABLE	E
Underlying Substrate	Straight	1.29 cfs	4.3 ft/s	0.06 ft	0.03	1.68 lbs/ft2	1.19 lbs/ft2	1.42	STABLE	E
S200 Reinforced Vegetation	Straight	1.29 cfs	3.56 ft/s	0.07 ft	0.041	10 lbs/ft2	1.47 lbs/ft2	6.81	STABLE	E
Underlying Substrate	Straight	1.29 cfs	3.56 ft/s	0.07 ft	0.041	3.22 lbs/ft2	1.43 lbs/ft2	2.25	STABLE	E

APPENDIX E

SUPPORTING DOCUMENTS

NOAA Atlas 14, Volume 2, Version 3
Location name: Charles Town, West Virginia, USA*
Latitude: 39.2724°, Longitude: -77.8455°
Elevation: 472 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.331** (0.295-0.372)	**0.395** (0.353-0.444)	**0.480** (0.427-0.538)	**0.544** (0.483-0.608)	**0.630** (0.555-0.701)	**0.700** (0.615-0.777)	**0.770** (0.672-0.854)	**0.843** (0.731-0.932)	**0.945** (0.812-1.05)	**1.03** (0.875-1.14)
10-min	**0.519** (0.462-0.583)	**0.621** (0.554-0.698)	**0.751** (0.668-0.842)	**0.848** (0.753-0.948)	**0.974** (0.859-1.08)	**1.07** (0.942-1.19)	**1.17** (1.02-1.30)	**1.28** (1.11-1.41)	**1.42** (1.22-1.57)	**1.52** (1.30-1.68)
15-min	**0.639** (0.569-0.719)	**0.765** (0.683-0.860)	**0.929** (0.826-1.04)	**1.05** (0.932-1.17)	**1.21** (1.07-1.35)	**1.34** (1.18-1.49)	**1.46** (1.28-1.62)	**1.60** (1.38-1.76)	**1.77** (1.52-1.96)	**1.91** (1.63-2.11)
30-min	**0.853** (0.759-0.959)	**1.03** (0.922-1.16)	**1.28** (1.14-1.44)	**1.48** (1.31-1.65)	**1.73** (1.53-1.93)	**1.94** (1.70-2.15)	**2.15** (1.88-2.38)	**2.37** (2.05-2.62)	**2.68** (2.30-2.96)	**2.92** (2.49-3.23)
60-min	**1.05** (0.933-1.18)	**1.28** (1.14-1.43)	**1.62** (1.44-1.82)	**1.89** (1.68-2.11)	**2.27** (2.00-2.52)	**2.57** (2.26-2.86)	**2.90** (2.53-3.21)	**3.24** (2.81-3.59)	**3.74** (3.21-4.13)	**4.14** (3.53-4.58)
2-hr	**1.24** (1.10-1.39)	**1.50** (1.34-1.69)	**1.92** (1.71-2.16)	**2.26** (2.00-2.52)	**2.74** (2.42-3.05)	**3.14** (2.76-3.49)	**3.58** (3.12-3.96)	**4.05** (3.50-4.48)	**4.74** (4.06-5.23)	**5.32** (4.52-5.86)
3-hr	**1.34** (1.20-1.51)	**1.62** (1.45-1.83)	**2.06** (1.84-2.31)	**2.41** (2.14-2.70)	**2.93** (2.58-3.27)	**3.36** (2.95-3.73)	**3.83** (3.34-4.24)	**4.34** (3.75-4.80)	**5.09** (4.36-5.62)	**5.72** (4.85-6.32)
6-hr	**1.67** (1.50-1.87)	**2.01** (1.80-2.25)	**2.52** (2.26-2.82)	**2.95** (2.63-3.28)	**3.56** (3.16-3.96)	**4.08** (3.60-4.52)	**4.65** (4.07-5.13)	**5.27** (4.57-5.80)	**6.18** (5.30-6.79)	**6.94** (5.90-7.62)
12-hr	**2.05** (1.85-2.29)	**2.46** (2.22-2.74)	**3.08** (2.78-3.42)	**3.60** (3.23-3.98)	**4.37** (3.89-4.82)	**5.03** (4.44-5.52)	**5.76** (5.05-6.31)	**6.56** (5.70-7.17)	**7.77** (6.65-8.46)	**8.80** (7.44-9.57)
24-hr	**2.40** (2.22-2.60)	**2.88** (2.67-3.12)	**3.60** (3.33-3.89)	**4.20** (3.88-4.54)	**5.08** (4.67-5.47)	**5.83** (5.32-6.26)	**6.63** (6.02-7.12)	**7.51** (6.76-8.04)	**8.78** (7.81-9.42)	**9.85** (8.66-10.6)
2-day	**2.76** (2.57-2.98)	**3.32** (3.09-3.59)	**4.15** (3.85-4.48)	**4.84** (4.48-5.22)	**5.85** (5.38-6.28)	**6.70** (6.12-7.19)	**7.62** (6.92-8.18)	**8.62** (7.76-9.25)	**10.1** (8.95-10.8)	**11.3** (9.92-12.1)
3-day	**2.95** (2.74-3.18)	**3.54** (3.30-3.82)	**4.41** (4.10-4.76)	**5.14** (4.76-5.54)	**6.20** (5.71-6.66)	**7.08** (6.49-7.60)	**8.04** (7.32-8.62)	**9.07** (8.19-9.74)	**10.6** (9.42-11.4)	**11.8** (10.4-12.7)
4-day	**3.13** (2.92-3.38)	**3.76** (3.50-4.06)	**4.68** (4.35-5.04)	**5.44** (5.04-5.86)	**6.54** (6.04-7.03)	**7.47** (6.86-8.02)	**8.46** (7.72-9.07)	**9.52** (8.62-10.2)	**11.1** (9.88-11.9)	**12.3** (10.9-13.3)
7-day	**3.64** (3.40-3.91)	**4.36** (4.06-4.68)	**5.36** (4.99-5.75)	**6.17** (5.73-6.61)	**7.31** (6.77-7.83)	**8.24** (7.60-8.82)	**9.22** (8.45-9.87)	**10.2** (9.34-11.0)	**11.7** (10.5-12.6)	**12.9** (11.5-13.9)
10-day	**4.16** (3.90-4.44)	**4.96** (4.65-5.30)	**6.01** (5.62-6.42)	**6.85** (6.40-7.31)	**8.03** (7.47-8.56)	**8.97** (8.32-9.56)	**9.94** (9.18-10.6)	**10.9** (10.1-11.7)	**12.3** (11.2-13.2)	**13.5** (12.2-14.4)
20-day	**5.62** (5.31-5.96)	**6.64** (6.27-7.04)	**7.82** (7.38-8.29)	**8.74** (8.24-9.27)	**9.95** (9.36-10.6)	**10.9** (10.2-11.6)	**11.8** (11.0-12.5)	**12.7** (11.9-13.5)	**13.9** (12.9-14.8)	**14.8** (13.7-15.8)
30-day	**6.90** (6.56-7.27)	**8.10** (7.71-8.55)	**9.38** (8.91-9.90)	**10.4** (9.84-10.9)	**11.7** (11.0-12.3)	**12.6** (11.9-13.3)	**13.6** (12.8-14.3)	**14.5** (13.6-15.3)	**15.6** (14.6-16.6)	**16.5** (15.4-17.5)
45-day	**8.64** (8.24-9.05)	**10.1** (9.66-10.6)	**11.6** (11.0-12.1)	**12.6** (12.0-13.2)	**14.0** (13.3-14.6)	**15.0** (14.2-15.7)	**15.9** (15.1-16.6)	**16.7** (15.8-17.5)	**17.7** (16.8-18.6)	**18.4** (17.4-19.4)
60-day	**10.3** (9.88-10.8)	**12.1** (11.5-12.6)	**13.6** (13.0-14.3)	**14.8** (14.1-15.4)	**16.2** (15.4-16.9)	**17.2** (16.4-17.9)	**18.1** (17.2-18.9)	**18.9** (17.9-19.8)	**19.8** (18.8-20.8)	**20.5** (19.4-21.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Jefferson County, West Virginia



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Jefferson County, West Virginia.....13
PmB—Poplimento silt loam, 3 to 8 percent slopes.....13
References.....14

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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: Jefferson County, West Virginia
Survey Area Data: Version 16, Sep 9, 2022

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

Date(s) aerial images were photographed: Sep 23, 2020—Nov 3, 2020

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PmB	Poplimento silt loam, 3 to 8 percent slopes	0.5	100.0%
Totals for Area of Interest		**0.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Jefferson County, West Virginia

PmB—Poplimento silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1vdnz
Elevation: 90 to 180 feet
Mean annual precipitation: 33 to 45 inches
Mean annual air temperature: 51 to 56 degrees F
Frost-free period: 141 to 168 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Poplimento, silt loam, and similar soils: 65 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Poplimento, Silt Loam

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and siltstone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 58 inches: clay
H3 - 58 to 72 inches: very channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY003PA - Mixed Limestone Upland
Other vegetative classification: Fertile Loams (FL2)
Hydric soil rating: No

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APPENDIX F

MAPS

WV ROUTE 115 - CHARLES TOWN ROAD
60' R/W

DP-B

TIME OF CONCENTRATION

DA TO DP-B
0.35 ACRES
0.21 ACRES LOD

EXISTING COFFEE SHOP
900 SF

EXISTING HOUSE TO BE
RENOVATED INTO PROPOSED
COFFEE SHOP
1745 SF

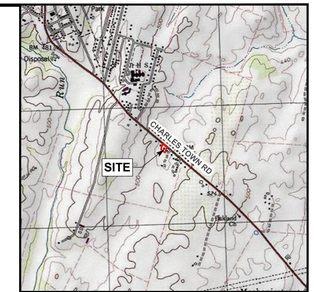
DP-A

DA TO DP-A
0.50 ACRES
0.30 ACRES LOD

TIME OF CONCENTRATION

DRAINAGE NOTE:
DRAINAGE AREAS DELINEATED WITH ADDITIONAL TOPOGRAPHY FROM DOLLAR GENERAL PLAN. SEE PLAN AFTER MAPS.

GRAPHIC SCALE: 1" = 20'
20 0 20 40



LOCATION MAP
SCALE: 1" = 2000'

NO.	DATE	DESCRIPTION	INT.
0	2023-07-07	FOR SUBMISSION	DMJ
1	2023-09-15	PER CITY ENGINEER COMMENTS	DMJ
2	2023-10-04	PER CITY ENGINEER COMMENTS	DMJ

CALL BEFORE YOU DIG!
WEST VIRGINIA LAW REQUIRES:
3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE
AND
10 WORKING DAYS IN DESIGN STATE
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West Virginia One Call System, Inc
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362 W. BURR BLVD. STE 3
KEARNEYSVILLE, WV 25430
PA • OH • NY • WV • VA • MD

PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

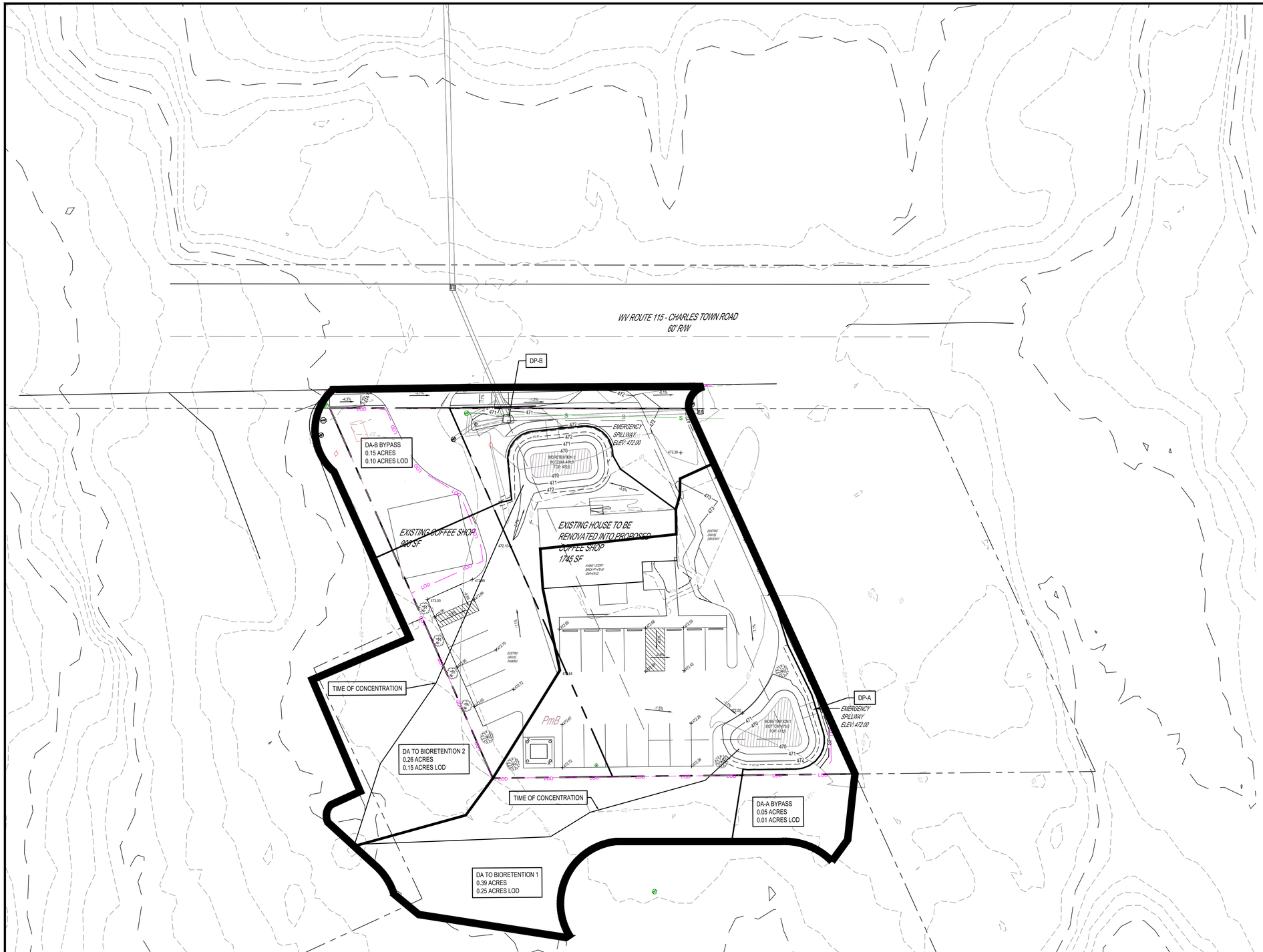
SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
PRE-DEVELOPMENT DRAINAGE AREA MAP

PLAN STATUS:	SHEET NO.
SITE PLAN	

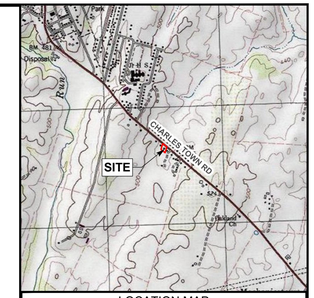
Oct 13, 2023 11:00am DJumper R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\Drainage Area Maps (2022-1685) 24X36.dwg
Layout: C-5.00 Pre-Dev Drainage Map

THESE DRAWINGS SHALL NOT BE UTILIZED BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE SPECIFIC WRITTEN PERMISSION OF JHA COMPANIES



DRAINAGE NOTE:
DRAINAGE AREAS DELINEATED WITH ADDITIONAL TOPOGRAPHY FROM DOLLAR GENERAL PLAN. SEE PLAN AFTER MAPS.

GRAPHIC SCALE: 1" = 20'
20 0 20 40



LOCATION MAP
SCALE: 1" = 2000'

NO.	DATE	DESCRIPTION	INT.
0	2023-07-07	FOR SUBMISSION	DMJ
1	2023-09-15	PER CITY ENGINEER COMMENTS	DMJ
2	2023-10-04	PER CITY ENGINEER COMMENTS	DMJ

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SEAL

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362 W. BURR BLVD. STE 3
KEARNEYSVILLE, WV 25430
PA • OH • NY • WV • VA • MD

PROJECT ID:	DRAWN:
2022-1685	DMJ
DATE:	DESIGN:
2023-07-07	JAB
SCALE:	CHECKED:
NOTED	JDH

SITE PLAN
FOR
JOAN AND JOE'S COFFEE
LOCATED IN
CHARLES TOWN,
JEFFERSON COUNTY,
WEST VIRGINIA

TITLE:
POST-DEVELOPMENT DRAINAGE AREA MAP

PLAN STATUS:	SHEET NO.
SITE PLAN	

Oct 13, 2023 9:53am Dlumper R:\Projects\2022\2022-1685 Joan and Joe's Coffee – Site Plan\CAD\SHEET FILES\Drainage Area Maps (2022-1685) 24X36.dwg
Layout: C-501 Post-Dev Drainage Map

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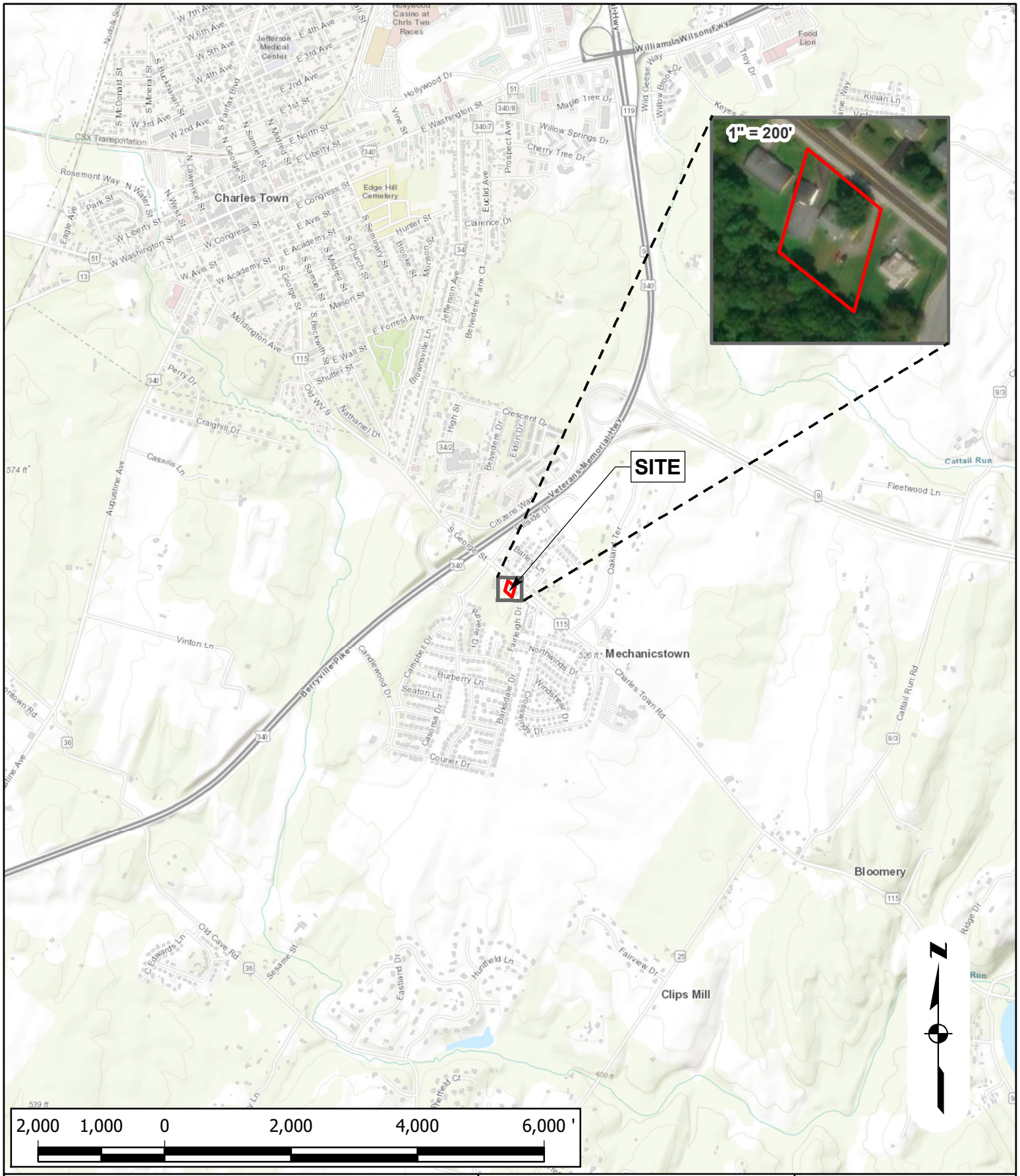

LOCATION MAP

PREPARED FOR

Joan and Joe's Coffee Shop

Charles Town District

Jefferson County, WV

Charles Town USGS Quadrangle

PROJECT -	2022-1685 Joan and Joe's Coffee Shop
DATE -	05/19/2023
SCALE -	1 " = 2,000 '
DRAWN -	JKANE
FILE -	USGS_Location_Map.mxd

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N/F
PEACH TREE INVESTMENTS, LLC
PARCEL B-1
DB 11017, PG 2
MAP 13- PT17
GENERAL COMMERCIAL
STORMWATER MANAGEMENT EASEMENT
TOP OF DIKE 473.35
INSTALL SUPER SILT FENCE.
INSTALL 31'W/ INLET CHANNEL W/ RIPRAP
MASTER DETENTION POND
TOP EL. 473.35
BOTTOM EL. 468.00
3:1 SIDE SLOPES
FUTURE DEVELOPMENT
AREA = ± 7 AC.
80% IMPERVIOUS AREA (MAX.)
1' DEEP / 2' BOTTOM / 2:1 SIDE SLOPE WITH TRM MATTING DIVERSION SWALE TO DISCHARGE INTO POND. SWALE WILL BE RELOCATED AS NECESSARY WHEN FUTURE DEVELOPMENT OCCURS.
STORMWATER MANAGEMENT EASEMENT
N/F
PEACH TREE INVESTMENTS, LLC
PARCEL B-4 & B-3
DB 1103, PG 492
DISTRICT 3
MAP 13- PT12.0
GENERAL COMMERCIAL
POND EMBANKMENT CENTER. SEE PROFILE ON SHEET 13.
OUTLET STRUCTURE (SEE DETAIL SHEET 9)
INV. = 466.46
W/ RIP RAP
FES-1
INSTALL TRP-RAP BAFFLE RING
BIO-CELL AREA:
SURFACE AREA OF MEDIA @ EL. 470.5 = 1,819 SQ.FT.
AREA OF 12" PONDING @ EL. 471.5 = 2,733 SQ.FT.
BIO-CELL INSTALL AFTER SITE IS STABILIZED AND PAVED. SEE DETAIL ON SHEET 9.
INSTALL SUPER SILT FENCE (SEE DETAIL SHEET 9)
STORMWATER MANAGEMENT EASEMENT
INSTALL 23'x10' EMERGENCY SPILLWAY (SEE DETAIL SHEET 9)
TOP OF DIKE 473.35
INSTALL 5'X70' EMERGENCY SPILLWAY WITH TYE WON BIODEGRADABLE TRM SOIL STABILIZATION MATTING
TOP OF DIKE 472.00
481.00 TOW
480.85 BOW
BIO-RETENTION AREA
20' STORM WATER MANAGEMENT ACCESS EASEMENT
CB (TYPE 2)
TOP ELEV. (W) 471.80 ±
ADS PIPE INV. IN = 467.25 15"
HDPE INV. OUT = 467.00
5' STORMWATER MANAGEMENT EASEMENT
PROPOSED 18" HDPE
127 LF - 4" ADS PERFORATED PIPE WRAP WITH FILTER CLOTH
INSTALL 8.9' x 22'x 4' DEPTH STONE 2" STONE SIZE.
INSTALL GRASS SWALE
N/F
MOHAMMAD MURTAZA
DISTRICT 2
MAP- 17-13.3
DEED BOOK 951 PAGE 514
CONCEPTUAL GRADE FOR FUTURE ACCESS
EX. 12' PRIVATE DRAINAGE EASEMENT DB 1122, PG 036
N/F
SCHOTTLER ROBERT J & SARAH W.
PARCEL B-3
DISTRICT 3
MAP 13- 12.1
GENERAL COMMERCIAL
INSTALL NAG S-75 OR EQUAL SLOPE FABRICE AND SEED 2:1 SLOPES WITH SWEPING LOVE GRASS
TEMPORARY GUARDRAIL TO BE INSTALLED UNTIL ALL UNITS ARE COMPLETED
INSTALL 2' WIDE x 1 DEPTH WITH CLEAN GRAVEL (SEE DETAIL SHEET 9)
PROPOSED DOLLAR GENERAL BUILDING FF=470.80
483.8 TOW
475.00 BOW
N/F
ARCADIA COMMUNITIES, INC.
DISTRICT 2
MAP 17- COMR
DEED BOOK 1119 PAGE 471
NEIGHBORHOOD RESIDENTIAL
NEW RETAINING WALL DESIGN BY OTHERS SEE SHEET 11 FOR SAFETY RAILING DETAIL
EXISTING INLET TO BE MODIFIED TO INCLUDE CONCRETE FLUME DISCHARGE INTO SIDE OF INLET. PLEASE USE (SHEET 8 FOR EXAMPLE)
15' SEWER EASEMENT
20' STORM WATER MANAGEMENT ACCESS EASEMENT
EX. 30' WATERLINE/UTILITY EASEMENT PLAT BOOK 19, PAGE 87
EX. INV DCH PERMANENT STORMWATER EASEMENT
EX. DROP INLET TO = 466.29' IC= 462.55'
INSTALL CONCRETE FLUME WITH 1:1 SIDE SLOPES
INSTALL CONCRETE FLUME WALL BASE WIDTH (SEE DETAIL SHEET 9)
STORM MH ABANDONED
PROPOSED MANHOLE (SEE DETAIL SHEET 9)
466.60 TOW
474.00 BOW
INSTALL RIP RAP WITH FABRIC TO BED AREA
EX CURB AND GUTTER TYP.
12.5' BEND
TOP=468.60
IE=460.27
20"HZ ACO 5300K POWERDRAIN TRENCH DRAIN
EXISTING
300
194

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

Public Hearing: TXA2023-07 Commercial Pad Site requirements

ATTACHMENTS:

- 1. Staff Report.pdf

TXA2023-07 Commercial requirements in Residential Zoning

Date: For the October 23, 2023 Planning Commission work session
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.

ISSUE

A text amendment to clarify the City's Ordinances requiring residential developments that have a required commercial component to have the pad sites graded and utilities made available. This is to be done by the completion of a certain amount of residential units.

COUNCIL ACTION

On August 7, 2023, City Council reviewed this item and referred it to Planning Commission.

PLANNING COMMISSION

The Planning Commission discussed this item a their September 25, 2023 work session.

ZONING DISTRICT COMPARISON TABLE

Zoning District	*Commercial Space Requirement*
Residential Low Density (R3)	No requirement
Residential Medium-High Density (R15)	No requirement
Neighborhood Residential (NR)	10% of total area must be Neighborhood Commercial uses. **Note:** *Does not specify that such uses must be commercial in nature.*
Neighborhood Commercial (NC)	No requirement
General Commercial (GC)	No requirement
Old Town Residential (OT-R)	No requirement
Old Town Mixed-Use Commercial (OT-MUC)	No requirement

ZONING DISTRICTS AFFECTED

This first draft of the text amendment will affect:

Neighborhood Residential (*The purpose of the NR District is to provide for a mix of housing types and related services and Uses, including Commercial Uses and office services*)

Neighborhood Commercial (*The purpose of the NC District is to provide for necessary Commercial Uses of a convenient nature within residential areas.*)

The other districts are either solely for residential development (*Residential Low Density, Residential Medium High Density*); designed for predominantly commercial use with little to no residential (*General Commercial*), or cover areas of the City not conducive to brand-new large scale mixed-use development (*Old Town Mixed Use Commercial, Old Town Residential*).

PROPOSED TEXT

Section 1322.08, Neighborhood Residential (NR) District

(a new subsection would be created)

F. ***Commercial Pad Sites.*** *To incentivize and attract commercial development within the City, all commercially zoned areas associated with the land development shall be prepared in a way that includes grading and utility installation. No more than 40% of residential dwelling units shall be built prior to the grading and utility installation of the commercial sites.*

Section 1322.09, Neighborhood Commercial (NC) District

(a new subsection would be created)

E. ***Commercial Pad Sites.*** *To incentivize and attract commercial development within the City, all commercially zoned areas associated with the land development shall be prepared in a way that includes grading and utility installation. No more than 40% of residential dwelling units shall be built prior to the grading and utility installation of the commercial sites.*

JURISDICTIONAL COMPARISON

Neither Martinsburg WV nor Jefferson County WV have similar regulations to what is proposed.

Leesburg VA
(https://www.leesburgva.gov/home/showpublisheddocument/9925/638282313544500000)

Development Phasing. Requests for (Mixed Use Business District) zoning or site plan approval for development in the (Mixed-Use) District shall be accompanied by a phasing plan that identifies the stages of development build-out. The phasing plan shall identify the sequence of development for all proposed land uses and include information regarding the phasing of internal and external traffic circulation systems, amenities, and utility improvements that will be constructed to support the proposed development.

The applicant shall provide assurances that all the use categories will be constructed and that the project will, in fact, result in the type of multi-use development proposed. The Town Council may require performance guarantees or such other measures, as it deems reasonable and necessary to assure the proper phasing of development and to assure the provision of public amenities and public facilities upon completion of each phase or upon full development. At no time shall the number of residential uses exceed the maximum ratio established in Sec. [1]-A.

(Emphasis added).

City of Frederick MD (https://www.cityoffrederickmd.gov/DocumentCenter/View/428/-Land-Management-Code---ARTICLE-4-Zoning---Section-423?bidId=)

Mixed Use Districts (MU1, MU2)

(d) *Phasing*

Construction of the MU project must be phased such that:

(1) Building permits for no more than 75% of the residential dwelling units may be issued until at least 25% of the non-residential floor area is constructed; and

(2) Building permits for no more than 75% of the non-residential floor area may be issued until record plats for at least 25% of the dwelling units have been recorded among the Land Records of Frederick County. For the residential units on a multifamily lot to be counted toward the 25% minimum, a site plan for those units must be unconditionally approved.

Planning Commission
101 East Washington Street
Charles Town, WV 25414

Meeting: 10/23/23
Department: Planning Commission
Category: Report
Initiator:

SCHEDULED

AGENDA ITEM (ID #)

Public Hearing: TXA 2023-10 Open Space requirements

ATTACHMENTS:

- 1. Staff Report.pdf

TXA2023-10 Open Space Requirements

Date: For the October 23, 2023 Planning Commission work session
Report by: James Newman, City Planner, Zoning/Subdivision Administrator.

ISSUE

How to reconcile open space requirements when a particular use and a particular zoning district may have differing open space requirements.

COUNCIL ACTION

A request on the City Council August 7, 2023 agenda for a referral to Planning Commission for clarification on the City's Ordinances for Open Space in mixed (SFH/TH) residential developments.

ZONING DISTRICT COMPARISON TABLE

Zoning District	*Minimum Open Space Requirement*
Residential Low Density (R3)	No requirement. Maximum lot coverage is 40%
Residential Medium-High Density (R15)	30% Open Space is required for Mobile Home Parks. 10% Open Space is required for all other Uses in the R-15 District.
Neighborhood Residential (NR)	10%
Neighborhood Commercial (NC)	No requirement. Maximum lot coverage is 90%
General Commercial (GC)	No requirement. Maximum lot coverage is 90%
Old Town Residential (OT-R)	No requirement. Maximum lot coverage is 70%
Old Town Mixed-Use Commercial (OT-MUC)	No requirement. Maximum lot coverage is 90%

PLANNED UNIT DEVELOPMENT

The purpose of Planned Unit Development (PUD) regulations is to encourage and allow more creative and imaginative design of land developments than is possible under district zoning regulations. Planned Unit Developments are intended to allow substantial flexibility in planning and designing a proposal.

…

Required Common Open Space. A minimum of twenty percent (20%) of the total usable land in residential Use in each phase shall be set aside for permanent common Open Space as defined herein.

MOBILE HOME PARKS

All Mobile Home Parks shall provide, and so indicate on the Plat of the Mobile Home Park, suitable areas for recreation and open space uses of at least 20% of the total area of the

Mobile Home Park, of which one-half (0.5) of the area shall be in one place. The remainder may be used to provide pedestrian connecting links to the recreation areas.

SINGLE FAMILY DETACHED REQUIREMENTS

There is no use standard for single-family detached housing that requires a certain percentage of open space when being built.

TOWNHOME REQUIREMENTS

Section 1333.20, Townhouse Development Standards

O. Required Open Space.

1. The difference between the Net Buildable Land Area of a townhouse Development and the total area of the dwelling unit Lots shall be allocated to open space common area as specified in Section 1333.20(B) above.

2. In the event that the Planning Commission, by waiver, permits dwelling unit Lots of less than the 2,000 square foot minimum specified in Section 1333.20(B), compensating open space must be established and provided within the project site equal to the aggregate area by which such Lots are under the 2,000 square foot minimum.

3. In a townhouse Development, open space for the Subdivision/Land Development must at least equal 30 percent of the Net Buildable Land Area of the Subdivision/Land Development.

DEFINITIONS

NET BUILDABLE LAND AREA – When determining the allowed density for any given Lot in the City, the Net Buildable Land Area of the Site is used. Net Buildable Land Area, for the purpose of determining the allowed Dwelling Units for a Site, shall be calculated by subtracting areas here building is prohibited or subject to significant restrictions from the gross Lot area. The area remaining after these exclusions from the gross Lot area represents the Net Buildable Land Area. The following shall be deducted from the gross Lot area to determine Net Buildable Land Area:

1. Sensitive areas including: Type I, II, III and IV wetlands, Riparian Buffers, floodplain area, and Sinkholes

2. Public right-of-ways and public easements, and private Streets and access corridors;

3. Areas dedicated to stormwater management

OPEN SPACE – One or more areas of land and/or bodies of water within a development intended for the use and enjoyment of the residents living within the development. No more than 50% of the required Open Space may be a water body or impervious area. Open Space is calculated as a percentage of the total usable area of land in the development, with the following items excluded in such calculation from both Open Space and the total usable land: Buffer Areas, Streets, Sidewalks, off-Street parking areas, areas dedicated for public use, traditional stormwater management areas, such as stormwater ponds (but stormwater

management areas of low impact design, such as bioretention basins (rain gardens) shall be included), and other areas not practically usable by residents.

PROPOSED LANGAUGE:

Proposed language is in red:

Section 1333.17, Park, Recreation and Open Space Amenity Standards

Creation of a new subsection:

J. Open Space- General Requirements

1. Pro-Rata Share. When there is a difference in open space requirements between a zoning district and a particular use, open space shall be established on a pro-rata basis.

…

Section 1333.20 Townhouse Development Standards

(O) Required Open Space.

1. The difference between the Net Buildable Land Area of a townhouse Development and the total area of the dwelling unit Lots shall be allocated to open space common area as specified in Section 1333.20(B) above.

2. In the event that the Planning Commission, by waiver, permits dwelling unit Lots of less than the 2,000 square foot minimum specified in Section 1333.20(B), compensating open space must be established and provided within the project site equal to the aggregate area by which such Lots are under the 2,000 square foot minimum.

3. In a townhouse Development, open space for the Subdivision/Land Development must at least equal 30 percent of the Net Buildable Land Area of the Subdivision/Land Development. To the fullest extent possible, open space for townhomes must be located near the townhomes.

JURISDICTIONAL COMPARISON

Leesburg (https://www.leesburgva.gov/Home/ShowDocument?id=4540)

Except as otherwise specifically provided in this Zoning Ordinance, the open space requirements for a given zoning district shall be considered as a minimum and shall be located on the same lot as the principal use of the property.

In mixed developments having both multi-family and single-family attached (townhouse) sections, density and any resulting active recreation facility requirements may be calculated separately for each respective dwelling category

No other jurisdiction searched (City of Frederick MD, Charleston WV, Morgantown WV, Martinsburg WV) had language similar to what the City is looking to implement.