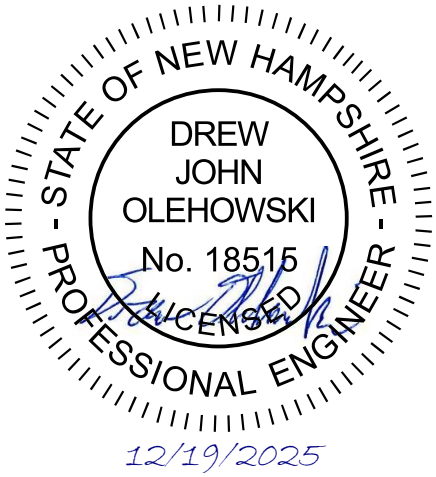
HALEY WARD

APPLICATION FOR SITE PLAN REVIEW

TO THE CITY OF PORTSMOUTH
FOR 1151 SAGAMORE AVENUE
Map 224, Lot 19 | Portsmouth, NH

APPLICANT:
1151 Sagamore Avenue CBC LLC
76 State Street, Newburyport, ME 01950



December 22, 2025
JN: 5010314.002

REPORT PREPARED BY:
Haley Ward, Inc.
200 Griffin Road, Unit 14 | Portsmouth, NH 03801

December 22, 2025

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Request for Site Plan Review at 1151 Sagamore Avenue, Tax Map 224, Lot 19

Dear Mr. Stith and Technical Advisory Committee (TAC) Members:

On behalf of 1151 Sagamore CBC LLC we are pleased to submit the attached plan set for **Site Plan Review and Approval** for the above-mentioned project and request that we be placed on the agenda for your **January 6, 2026,** meeting. The project is the demolition of the existing building and proposed new construction of four (4) standalone residential condominium units with the associated and required site improvements.

Within this application we have provided a drawing set that includes depictions of both the parcel's existing and proposed conditions. The proposed conditions include the four buildings, driveways, utilities, grading/stormwater, landscaping, and typical notes/details. This application includes submission items as required for Site Plan review per the City's Site Plan Review Checklist.

We look forward to TAC review of this submission and the Committees feedback on the proposed design.

Sincerely,
Haley Ward, Inc.

Drew Olehowski, PE
Project Manager

DJO-cba

200 GRIFFIN RD. UNIT 14, PORTSMOUTH, NH 03802 603.430.9282 | HALEYWARD.COM

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: 1151 Sagamore Ave CBC, LLC Date Submitted: 12/12/2025

Application # (in City's online permitting): TBD

Site Address: 1151 Sagamore Avenue Portsmouth, NH 03801 Map: 224 Lot: 19

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☐	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**	Online	N/A
☐	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**	Online and Delivered	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	TBD	
☐	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	Architects Plans	N/A
☐	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Proposed Site Plan	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Cover Page	N/A
☐	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	Proposed Site Plan	N/A
☐	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Page	N/A
☐	List of reference plans. **(2.5.3.1H)**	Cover Page	N/A
☐	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Cover Page	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☐	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☐	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Complies	N/A
☐	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☐	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	N/A	N/A
☐	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	All Pages	N/A
☐	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	All Pages	N/A
☐	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☐	Source and date of data displayed on the plan. **(2.5.4.2D)**	On Site Survey	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Existing Conditions Plan	
☐	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Architects Plans	
☐	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Proposed Site Plan	
☐	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Proposed Site Plan	
☐	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Utility Plan	
☐	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	Utility Plan	

☐	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Utility Plan	
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	City Pick Up General Notes Sheet	
☐	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Grading & Drainage Plan C6	
☐	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	No Exterior Lighting	
☐	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	N/A	
☐	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Landscape Plan	
☐	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading Plan	
☐	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Proposed Site Plan	
☐	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	N/A	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	N/A	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	Online	
☐	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Drainage Analysis	
☐	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☐	Stormwater Management and Erosion Control Plan. **(7.4)**	General Notes Sheet	
☐	Inspection and Maintenance Plan **(7.6.5)**	Drainage Analysis	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Cover Sheet	
☐	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Online	
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	TBD	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	Cover Sheet	
☐	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Proposed Site Plan	N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☐	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Proposed Site Plan	N/A

Applicant's Signature: _____ **Date:** 12/22/2025

HALEY WARD

August 22, 2025

To Whom It May Concern:

Please be advised that Haley Ward, Inc. is hereby authorized to act on behalf of 1151 Sagamore Avenue CBC, LLC, regarding the proposed residential development at 1151 Sagamore Avenue in Portsmouth, NH.

David Kennedy, its manager

Printed Name and Title

Signature

8/22/2025

Date

120 MAIN STREET, SUITE 132, SACO, ME 04072 207.283.9151 | HALEYWARD.COM

Property Information

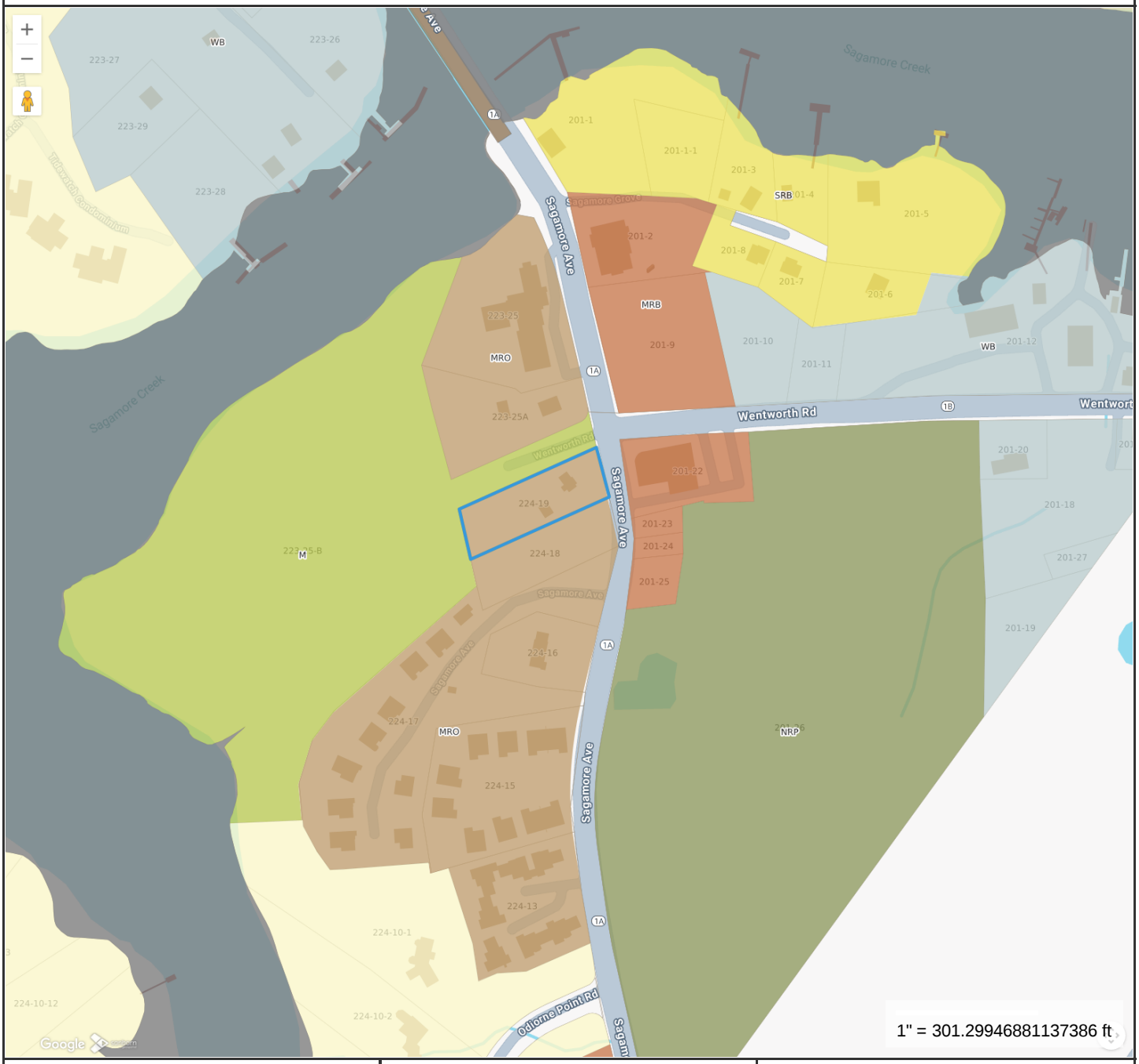
Property ID	0224-0019-0000
Location	1151 SAGAMORE AVE
Owner	1151 SAGAMORE AVENUE CBC LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/23/2025

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.



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Geometry updated 10/23/2025

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Map Theme Legends

Zoning

Environment One Corporation

Pressure Sewer Preliminary

Cost and Design Analysis

For

1151 Sagamore Ave

Portsmouth, NH

Prepared For:
Drew Olehowski Haley Ward
120 Main St Suite 132
Saco ME 04072
Tel: 207-576-6488
Fax:
Prepared By: D.Coppola
November 26, 2025

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

Prepared By:
D.Coppola

1151 Sagamore Ave
Portsmouth, NH

November 26, 2025

Zone Number	Connects to Zone	Number of Pumps in Zone	Accum Pumps in Zone	Gals/day per Pump	Max Flow Per Pump (gpm)	Max Sim Ops	Max Flow (GPM)	Pipe Size (inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100 ft)	Friction Loss This Zone	Accum Fric Loss (feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (feet)	Total Dynamic Head (ft)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE										Friction loss calculations were based on a Constant for inside roughness "C" of: 150							
1.00	1.00	4	4	200	11.00	3	33.00	2.00	3.57	274.00	2.52	6.90	6.90	32.00	28.00	4.00	10.90

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

\\CWMDFS02\Home - Remote\dcoppola\My Documents\EONE\New Hampshire\Portsmouth\1151 Sagamore Ave\1151 Sagamore Ave Design.EOne

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME (HR)

Prepared By:
D.Coppola

1151 Sagamore Ave
Portsmouth, NH

November 26, 2025

Zone Number	Connects to Zone	Accumulated Total of Pumps this Zone	Pipe Size (inches)	Gallons per 100 lineal feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
This spreadsheet was calculated using pipe diameters for:				SDR11HDPE				Gals per Day per Dwelling		200
1.00	1.00	4	2.00	15.40	274.00	42.20	800	18.96	1.27	1.27

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One

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"Green" Building Statement, 1155 Sagamore Ave., Portsmouth

Location and Transportation

Walkable Destinations: 1155 Sagamore is two miles from Wentworth-By-The-Sea, two miles from downtown Portsmouth, and less than one mile to the Rye border and the Atlantic Grill.

Bicycles: This area is a frequently used bicycle traffic route to beaches, downtown amenities, other points north and south and other popular locations. Hanging bicycle storage is provided within each garage space.

Ride sharing: Although this location is not serviced directly by public transportation, it enjoys easy access and is a quickly identifiable address for cabs or shared transportation services.

Site

Stormwater: Stormwater will be collected and treated in a proposed Rain Garden before discharge from the property. This Rain Garden provides advanced stormwater treatment where no treatment is currently provided.

Reuse: This site requires demolition of an outdated and underutilized structure. The new 4-unit townhouse structure will better utilize this location with a modern design, defined parking areas, non-polluting HVAC systems, and elimination of an existing multi-unit septic disposal system.

Landscaping: A professionally produced landscaping plan includes shrubbery, grass, and a multitude of trees that currently do not exist. An irrigation system to maintain grass and plantings is included.

Zoning: This project meets requirements in the MRO zone where it is located. No variances have been requested.

Utilities and fire protection

Water: All new water-saving plumbing fixtures will be installed as per the current plumbing code. Frost-free outside water taps are included at each living unit.

Sewer**:** The existing septic system is being replaced by a common E-one grinder/ejector system connected to the public sewer.

Electric: Eversource has indicated they will be installing a new transformer to service this property. All connections from the pole to this transformer and transformer to the electric meter bank will be underground. The current electric service is overhead. The transformer will be partially screened with landscaping.

Fire Protection: A fire suppression system governed by requirements of NFPA 13 will be installed in each townhouse. Additionally, full foundation to ridge firewalls will be installed between living units.

Gas or heating oil: None.

Energy:

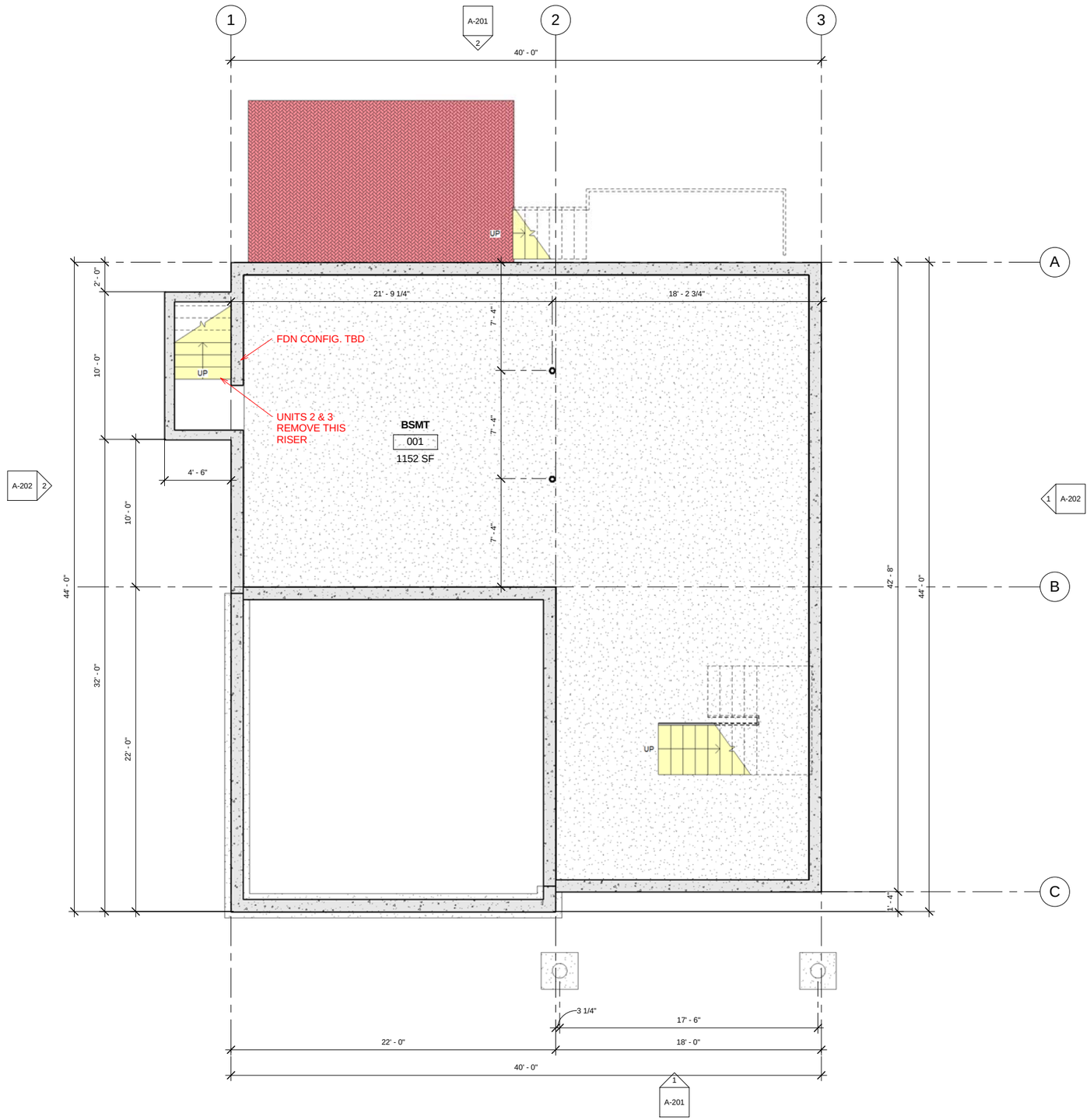
Heating and Air Conditioning: HVAC will be via either air-source or ground-source (geothermal) heat pump. No natural gas, propane gas or heating oil facilities are included in this design. No exhaust flues are required, nor greenhouse gases emitted. Further, the potential for carbon monoxide poisoning from a malfunctioning heating system is eliminated.

Insulation: The heated envelope will be insulated with spray-foam insulation to maximize insulation R-values, minimize air penetration and minimize acoustic noise from outdoors and between living units.

Lighting: LED lighting will be used throughout.

Kitchen Appliances: All kitchen appliances will be energy-star certified.

Fenestration: Very substantial windows and doors are state-of-the-art and shall have a U-value below .30, meeting or exceeding energy-star requirements.



1 0.0 BSMT
1/4" = 1'-0"

0' 2' 4' 8' 16'

William Frangos Architect

500 Cummings Center, Suite 6500
Beverly MA 01915

978 927 9419
978 927 9417 fax

CONSULTANTS

PROGRESS PRINT

NOT FOR CONSTRUCTION

PROJECT

1151 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

REVISION SCHEDULE		
No.	Date	Description

Project Phase	SCHEMATIC
Proj Issue Date	N/A
Project No.	2511

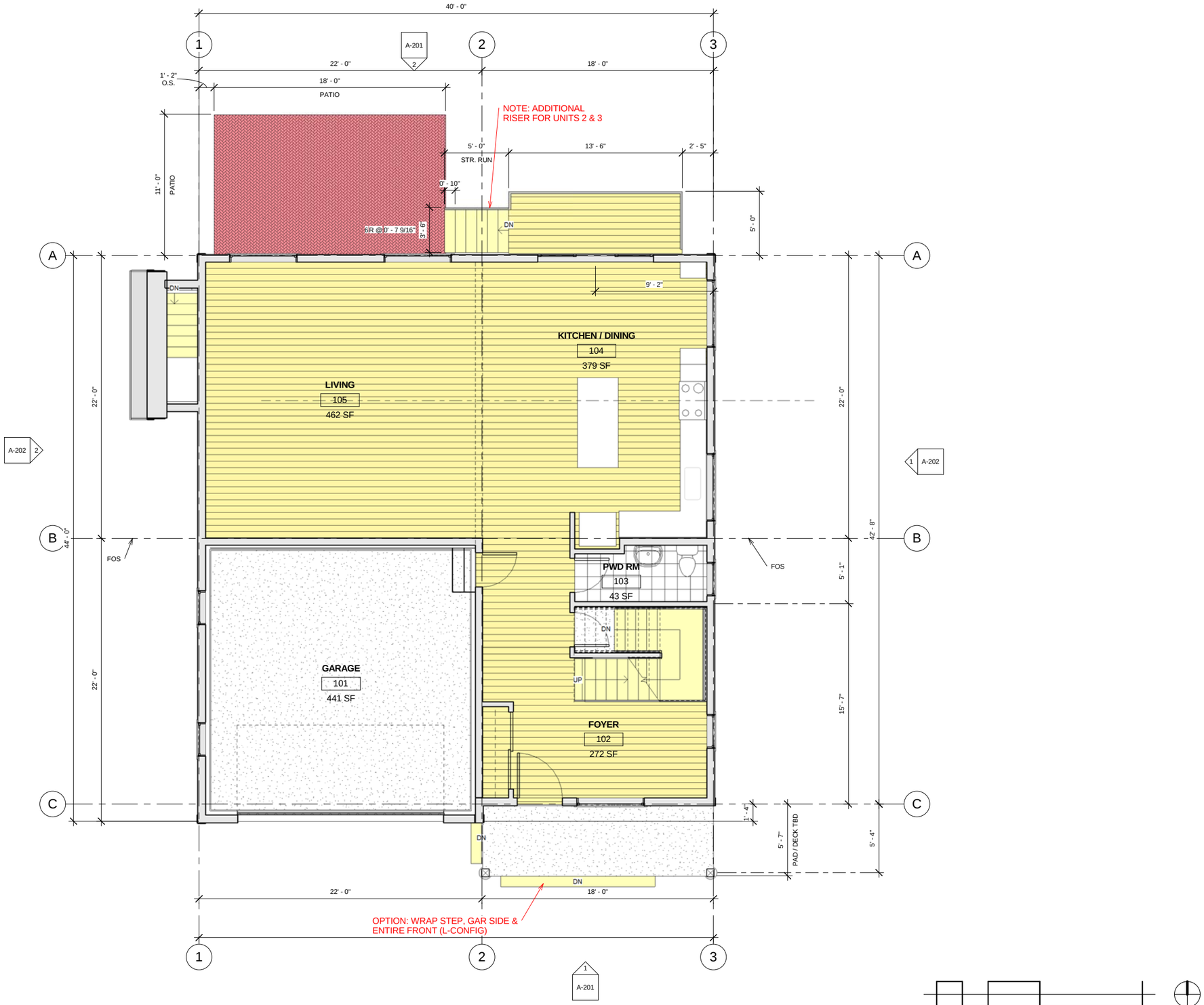
SHEET TITLE

Basement Plan

SHEET ISSUE DATE: 12/18/25

A-101

SHEET 4 OF



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REVISION SCHEDULE		
No.	Date	Description

Project Phase	SCHEMATIC
Proj Issue Date	N/A
Project No.	2511

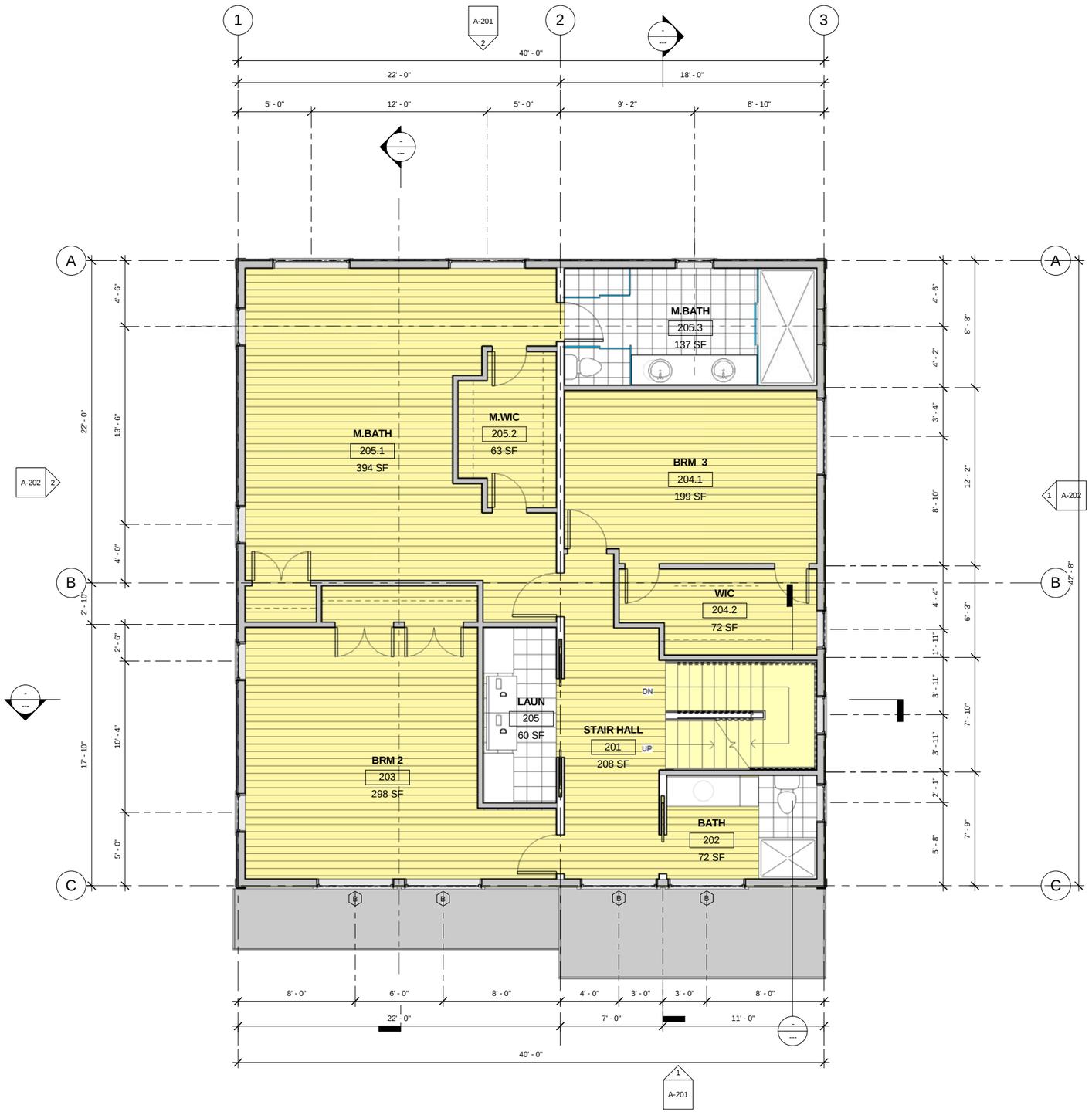
SHEET TITLE

First Floor Plan

SHEET ISSUE DATE: 12/18/25

A-102

SHEET 1 OF 4



1 2.0 FLR
1/4" = 1'-0"

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1151 SAGAMORE AVENUE

PORTSMOUTH NH

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REVISION SCHEDULE		
No.	Date	Description

Project Phase	SCHEMATIC
Proj Issue Date	N/A
Project No.	2511

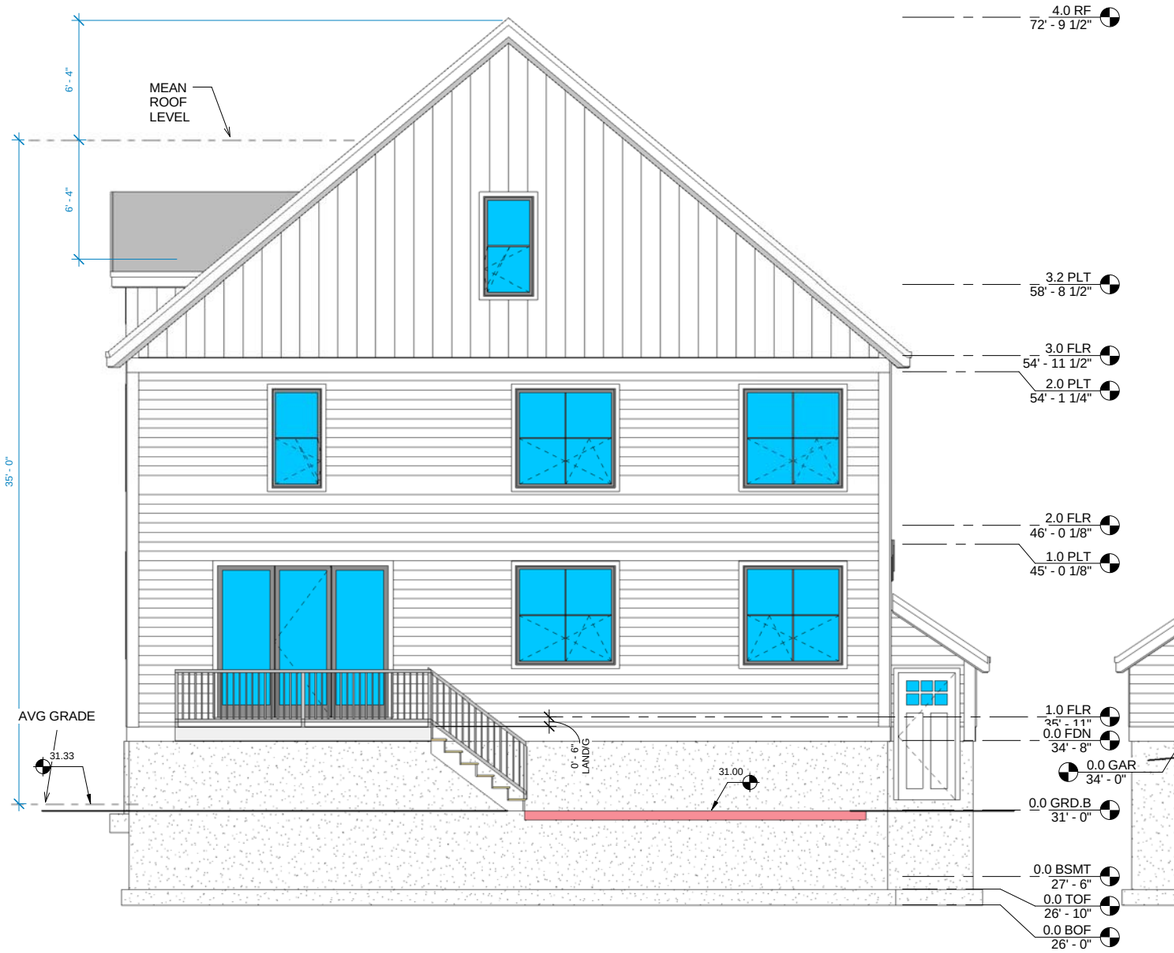
SHEET TITLE

Second Floor Plan

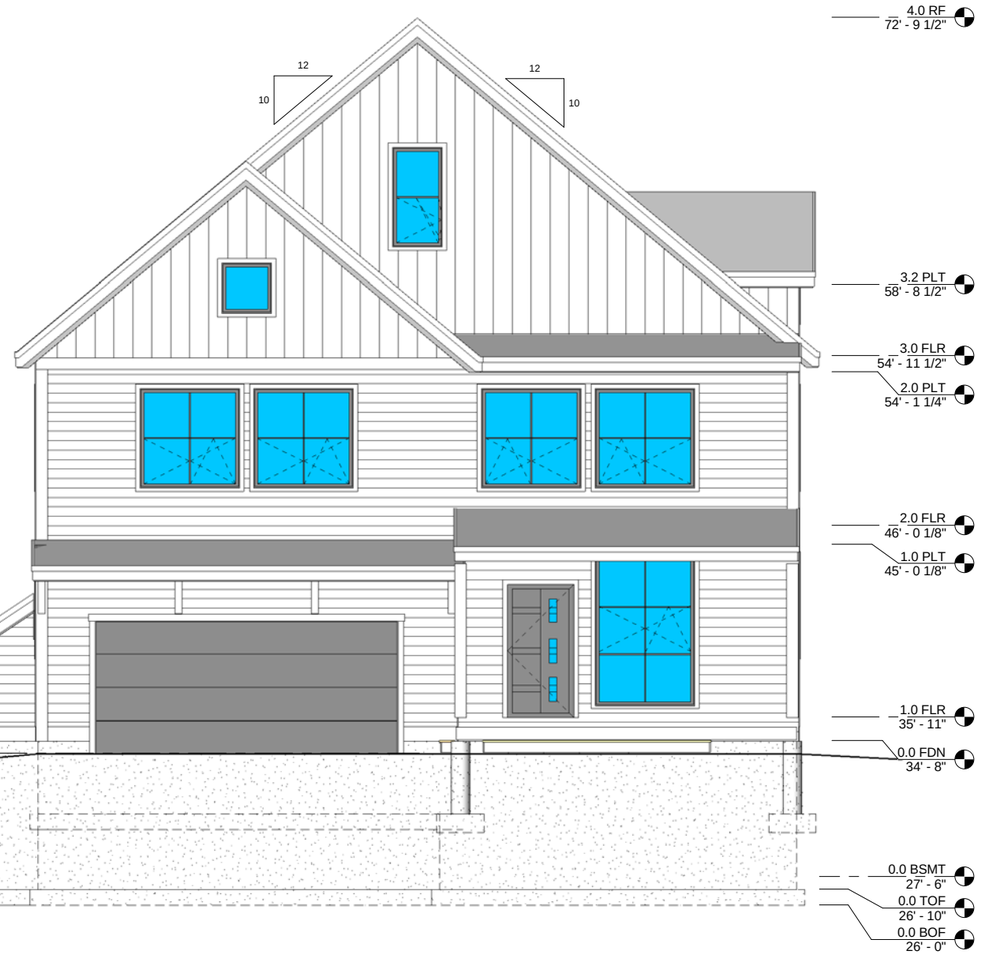
SHEET ISSUE DATE: 12/18/25

A-103

SHEET 2 OF 4



2 NORTH
1/4" = 1'-0"



1 SOUTH - FACADE
1/4" = 1'-0"

0' 2' 4' 8' 16'

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REVISION SCHEDULE		
No.	Date	Description

Project Phase	SCHEMATIC
Proj Issue Date	N/A
Project No.	2511

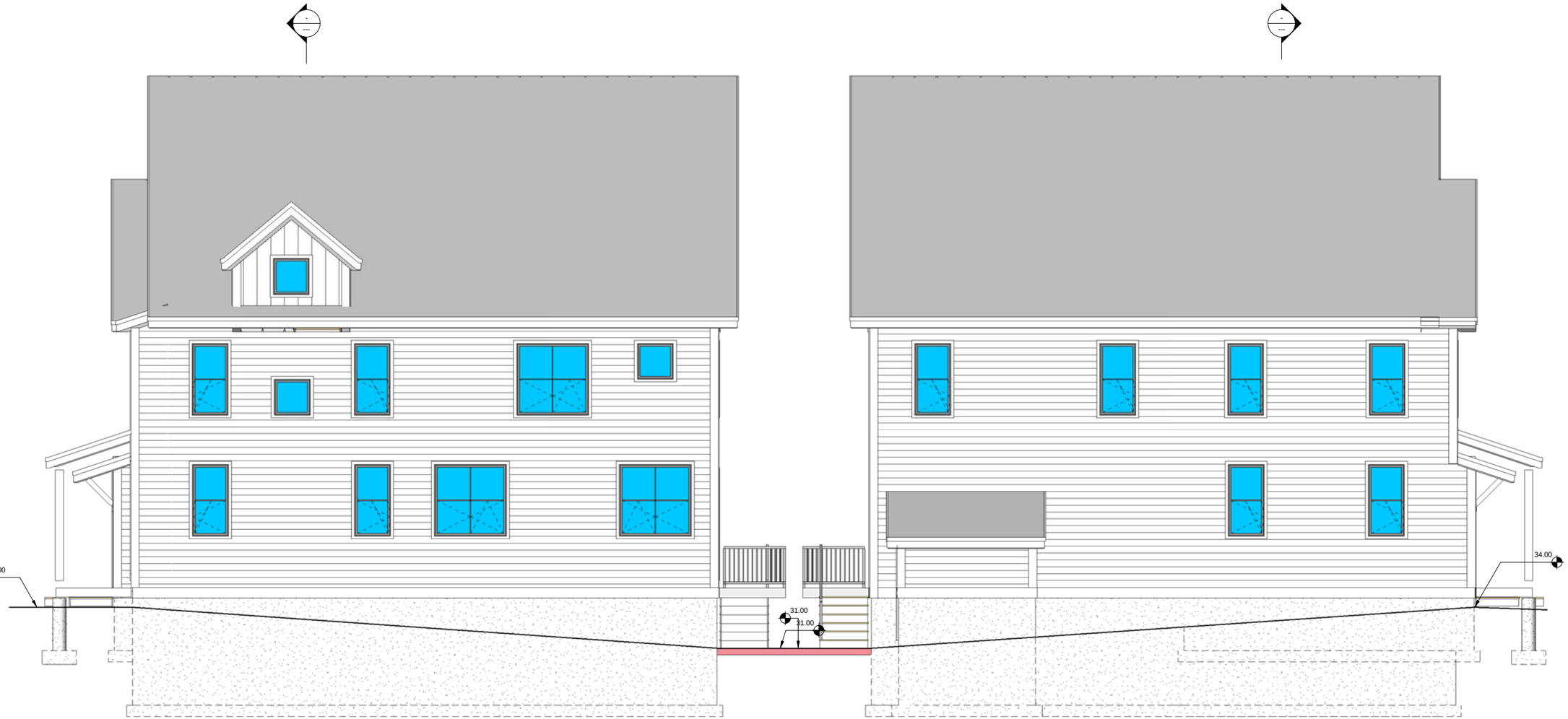
SHEET TITLE

Elevations

SHEET ISSUE DATE: 12/18/25

A-201

SHEET 3 OF 4



1 EAST
1/4" = 1'-0"

2 WEST
1/4" = 1'-0"

0' 2' 4' 8' 16'

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PROJECT

1151 SAGAMORE AVENUE

PORTSMOUTH NH

OWNER

Owner

REVISION SCHEDULE		
No.	Date	Description

Project Phase SCHEMATIC
Proj Issue Date N/A
Project No. 2511

SHEET TITLE

Elevations

SHEET ISSUE DATE: 12/18/25

A-202

SHEET 4 OF 4

PROJECT NAME & ADDRESS: 1151 Sagamore Ave

DATE: 11/7/2025

MAP & LOT: 224/19

Description	Quantity	Unit	Unit Price	Total	
***Yellow cells are the ONLY editable items**					
Site Preparation				**$ 17,406.20**	
Clearing & Grubbing	0	AC	$ 12,000.00	$ -	
Removal of Pipe Lines ≤ 24"		LF	$ 18.00	$ -	
Removal of Pipe Lines > 24"		LF	$ 36.00	$ -	
Common Excavation	500	CY	$ 16.00	$ 8,000.00	
Unsuitable Excavation		CY	$ 36.00	$ -	
Ledge Excavation	75	CY	$ 125.00	$ 9,375.00	
Saw Cut Pavement	12	LF	$ 2.60	$ 31.20	
Roads				**$ 147,264.00**	
Screened Sand	420	CY	$ 25.00	$ 10,500.00	Utility Trench fill material
Granular/Common Fill	2200	CY	$ 32.00	$ 70,400.00	Fill material to leve and grade site
Gravel Backfill (304.2)	700	CY	$ 36.00	$ 25,200.00	See Below*
Crushed Gravel (304.3)	131	CY	$ 36.00	$ 4,716.00	Asplhalt sub base
Crushed Stone - Fine Gradation (304.4)		CY	$ 40.00	$ -	
Crushed Stone - Coarse Gradation (304.5)		CY	$ 42.00	$ -	
Hot Bituminous Pavement - Hand Method		TON	$ 170.00	$ -	
Hot Bituminous Pavement - Machine Method	220	TON	$ 150.00	$ 33,000.00	
Pavement Prep for Top Coat if placed over 1-yr after Base Coat		SY	$ 1.00	$ -	
Cold Plane		SY	$ 6.50	$ -	
Reclaim Pavement		SY	$ 4.00	$ -	
Fine Grading	790	SY	$ 3.00	$ 2,370.00	
Concrete Sidewalk 4"		SY	$ 62.00	$ -	
Bituminous Sidewalk 3"		SY	$ 44.00	$ -	
Straight Granite Curb	250	LF	$ 40.00	$ 10,000.00	
Curved Granite Curb		LF	$ 50.00	$ -	
Reset Granite Curb		LF	$ 21.00	$ -	
Bituminous Curb, Type B 6" Reveal		LF	$ 12.00	$ -	
Traffic Sign with Post		EA	$ 320.00	$ -	
Lightpole Base and Fixture		EA	$ 12,000.00	$ -	
Cobra Head Light onto Existing Pole		EA	$ 1,170.00	$ -	
Conduit Duct Bank (4" SCH 80 - 2 Pipes)		LF	$ 80.00	$ -	
Conduit Duct Bank (4" SCH 80 - 3 Pipes)		LF	$ 100.00	$ -	
Conduit Duct Bank (4" SCH 80 - 4 Pipes)		LF	$ 120.00	$ -	
Traffic Loop Detectors		EA	$ 1,000.00	$ -	
Retroflective Paint Marking - 4" Line	310	LF	$ 1.20	$ 372.00	
Retroflective Paint Pavement Marking - Symbol or Word	6	EA	$ 51.00	$ 306.00	
Retroflective Thermoplastic Pavement Marking - ≤ 12" Line		LF	$ 3.20	$ -	
Retroflective Thermoplastic Pavement Marking - Symbol		EA	$ 130.00	$ -	
Obliterate Pavement Marking - ≤12" Line		LF	$ 1.00	$ -	
Guardrail (Steel rail and posts)	20	LF	$ 45.00	$ 900.00	
Structural				**$ -**	
Mechanically Stabilized Earth Retaining Wall		SF	$ 50.00	$ -	
Retaining Wall - Modular Block		SF	$ 54.00	$ -	
Utilities				**$ 129,339.00**	
Catch Basin with Frame, Grate & Hood	2	EA	$ 4,800.00	$ 9,600.00	
Special Catch Basins (i.e. Tree Box Filters)		EA	$ 5,600.00	$ -	
Box Culvert ≤ 36' x 60'		LF	$ 500.00	$ -	

Box Culvert ≥ 36' x 60'		LF	$	680.00	$	-
Drop Inlet		EA	$	3,200.00	$	-
MH - 4' Dia. w/ Base and Top		VF	$	480.00	$	-
MH - 5' Dia. w/ Base and Top		VF	$	520.00	$	-
MH - 6' Dia. w/ Base and Top		VF	$	640.00	$	-
MH - 8' Dia. w/ Base and Top		VF	$	940.00	$	-
Remove and Reset CB, DI Grate and Frame		EA	$	500.00	$	-
Reconstruct / Adjust Drainage Manholes		EA	$	1,000.00	$	-
Outlet/Inlet Control Structure	1	EA	$	6,100.00	$	6,100.00
Riprap		CY	$	64.00	$	-
Perf Underdrain ≤ 6"	375	LF	$	58.00	$	21,750.00
Perf Underdrain > 6"		LF	$	90.00	$	-
12" RC Pipe - Class III		LF	$	125.00	$	-
15" RC Pipe - Class IV		LF	$	140.00	$	-
18" RC Pipe - Class IV		LF	$	156.00	$	-
24" RC Pipe - Class IV		LF	$	204.00	$	-
30" RC Pipe - Class IV		LF	$	240.00	$	-
36" RC Pipe - Class IV		LF	$	285.00	$	-
48" RC Pipe - Class V		LF	$	400.00	$	-
12" RCP - End Sections		EA	$	780.00	$	-
15" RCP - End Sections		EA	$	880.00	$	-
18" RCP - End Sections		EA	$	980.00	$	-
24" RCP - End Sections		EA	$	1,200.00	$	-
30" RCP - End Sections		EA	$	1,300.00	$	-
36" RCP - End Sections		EA	$	1,500.00	$	-
48" RCP - End Sections		EA	$	1,800.00	$	-
12" Plastic Corrugated/Smooth Pipe	250	LF	$	85.00	$	21,250.00
15" Plastic Corrugated/Smooth Pipe		LF	$	98.00	$	-
18" Plastic Corrugated/Smooth Pipe		LF	$	120.00	$	-
24" Plastic Corrugated/Smooth Pipe		LF	$	180.00	$	-
30" Plastic Corrugated/Smooth Pipe		LF	$	200.00	$	-
36" Plastic Corrugated/Smooth Pipe		LF	$	260.00	$	-
12" Plastic Flared End Sections		EA	$	300.00	$	-
15" Plastic Flared End Sections		EA	$	310.00	$	-
18" Plastic Flared End Sections		EA	$	340.00	$	-
24" Plastic Flared End Sections		EA	$	400.00	$	-
30" Plastic Flared End Sections		EA	$	540.00	$	-
36" Plastic Flared End Sections		EA	$	610.00	$	-
PVC Sewer Gravity Main ≤ 8"		LF	$	130.00	$	-
PVC Sewer Gravity Main > 8"		LF	$	180.00	$	-
PVC Sewer Service Pipe and Fittings		LF	$	120.00	$	-
PVC Sewer Forcemain Pipe ≤ 3"	280	LF	$	36.00	$	10,080.00
PVC Sewer Forcemain Pipe > 3"		LF	$	61.00	$	-
Reconstruct / Adjust Sewer Manholes		EA	$	1,000.00	$	-
Manhole Covers and Frames (Drainage and Sewer)		EA	$	1,200.00	$	-
6" Cement Lined Ductile Iron Water Pipe CL 52		LF	$	150.00	$	-
8" Cement Lined Ductile Iron Water Pipe CL 52		LF	$	180.00	$	-
12" Cement Lined Ductile Iron Water Pipe CL 52		LF	$	210.00	$	-
20" Cement Lined Ductile Iron Water Pipe CL 52		LF	$	280.00	$	-
3/4" Copper Water Pipe		LF	$	65.00	$	-
1" Copper Water Pipe	36	LF	$	84.00	$	3,024.00
2" Copper Water Pipe		LF	$	120.00	$	-
3/4" PE Water Pipe	375	LF	$	45.00	$	16,875.00
1" PE Water Pipe		LF	$	81.00	$	-
2" PE Water Pipe	375	LF	$	100.00	$	37,500.00
Curb Stop w/ Box & Rod	6	EA	$	385.00	$	2,310.00
6" Gate Valve		EA	$	2,100.00	$	-
8" Gate Valve		EA	$	2,750.00	$	-
12" Gate Valve		EA	$	3,800.00	$	-

1" Water Service Tap & Corporation	2	EA	$	425.00	$	850.00
Chlorine Injection Tap		EA	$	1,400.00	$	-
Hydrant		EA	$	6,800.00	$	-
Subdivision Electrification (Cost from Utility)	1	LS	$	-	$	-
Site Stabilization/Stormwater/Landscaping					**$**	**36,494.50**
Silt Fence (or equal)	800	LF	$	4.70	$	3,760.00
Storm Water Pollution Prevention Plan (SWPPP)		EA	$	5,400.00	$	-
Monitor SWPPP		HR	$	90.00	$	-
Chain Link/Stockade Fence - 5'		LF	$	85.00	$	-
Permanent Dumpster Pad & Enclosure		EA	$	2,900.00	$	-
New Trees - Deciduous - General		EA	$	510.00	$	-
New Trees - Evergreen Cedar		EA	$	510.00	$	-
Shrubs - Large		EA	$	150.00	$	-
Shrubs - Small		EA	$	80.00	$	-
Rain Garden/Gravel Wetland (Volume of Storage)		CF	$	15.30	$	-
Infiltration/Detention Basin (Volume of Storage)	2100	CF	$	8.30	$	17,430.00
Subsurface Infiltration Chamber (Volume of Storage)		CF	$	85.60	$	-
Loam and Seed	1611	SY	$	9.50	$	15,304.50
Sod		SY	$	9.40	$	-
Mulch		CY	$	80.00	$	-
Hay Bales - Temporary Erosion Control		LF	$	22.00	$	-
Quality Control					**$**	**1,488.00**
Physical Testing Laboratory Services	0	AC	$	3,400.00	$	-
Officers - 4 hr min	8	HR	$	98.00	$	784.00
Flagger	16	HR	$	44.00	$	704.00
Project Documentation					**$**	**5,000.00**
As-Built Drawing ($3,000 min)	1	LS	$	5,000.00	$	5,000.00
Staking/Monumentation/Record Drawings Prep ($2,500 Min)	1	LS			$	-
Site Maintenance					**$**	**4,480.00**
Site Clean Up (Removal of Construction Materials/Debris)	0.7	AC	$	6,400.00	$	4,480.00
Clean Out Catch Basins ($400 Min)		EA	$	80.00	$	-
Dumpster (10 CY - 4 Ton)		WK	$	675.00	$	-
Demolition					**$**	**-**
Specialized or Site Specific Demolition ($1,200 Min)	1	LS			$	-
Specialty Requirements per N.O.D.					**$**	**16,000.00**
Requirement or Other Cost not Listed Above	1	LS	$	-	$	-
E-One grinder pumps	4	EA	$	4,000.00	$	16,000.00
	1	LS	$	-	$	-
	1	LS	$	-	$	-
	1	LS	$	-	$	-
	1	LS	$	-	$	-
Mobilization/Demobilization			**5% of total**		**$**	**17,873.59**

Subtotal:	**$**	**375,345.29**
10% Contingency:	**$**	**37,534.53**
Performance Guarantee (10% of total cost including 10% contingency):	**$**	**41,287.98**
Surety = 110% of the Uncompleted Work:	**$**	**412,879.81**

*Sub grade for building foundations. Stone backfill for sewer. Under drain. Roadway

City of Portsmouth Planning Department

Site Plan Review Application Fee – FY25

Project: **Map/Lot:**

Applicant:

All development

Base fee $600 $600.00

Plus $5.00 per $1,000 of site costs

Site costs $412,287 + $2,061.44

Plus $10.00 per 1,000 S.F. of site development area

Site development area 30,200 S.F. + $302.00

Fee **$2,963.44**

Maximum fee: $20,000.00

Fee received by: _____ Date: _____

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.

1151 SAGAMORE AVENUE CBC, LLC
SITE PLAN REVIEW

1151 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

PROJECT INFORMATION

CIVIL ENGINEER
HALEY WARD, INC.
ATTN: DREW OLEHOWSKI, PE.
200 GRIFFIN ROAD, UNIT 14
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.430.9282

OWNER / APPLICANT
1151 SAGAMORE AVENUE CBC, LLC
76 STATE STREET
NEWBURYPORT, MASSACHUSETTS 01950

SURVEYOR
HALEY WARD, INC.
ATTN: CHARLES ADAMS, LLS, PLS
200 GRIFFIN ROAD, UNIT 14
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.430.9282

LANDSCAPE ARCHITECT
TERRA FIRMA LANDSCAPE ARCHITECTURE
ATTN: TERRENCE PARKER
163.A COURT STREET
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.531.9109

UTILITY PROVIDERS

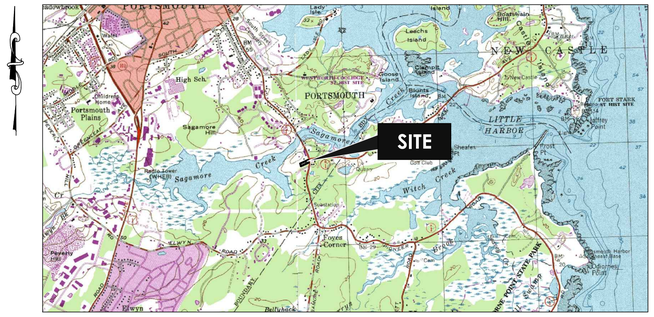
WATER & SEWER
CITY OF PORTSMOUTH DEPT. OF
PUBLIC WORKS
ATTN: JIM TOW
680 PEVERLY HILL ROAD
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.427.1530

ELECTRIC
EVERSOURCE
ATTN: MICHAEL BUSBY, P.E.
1700 LAFAYETTE ROAD
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.436.7708, EXT. 555.5678

CABLE
COMCAST
ATTN: MIKE COLLINS
155 COMMERCE WAY
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.679.5695, EXT. 1037

COMMUNICATIONS
CONSOLIDATED COMMINICATIONS
ATTN: JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, NEW HAMPSHIRE 03840
T: 603.427.5525

NATURAL GAS
UNITIL
ATTN: DAVE BEAULIEU
325 WEST ROAD
PORTSMOUTH, NEW HAMPSHIRE 03801
T: 603.294.5144



LOCATION MAP

ISSUED FOR PERMITTING
DECEMBER 22, 2025

INDEX OF DRAWINGS

PERMITS & APPROVALS
CITY OF PORTSMOUTH - SITE PLAN REVIEW: IN PROGRESS

PLAN REFERENCE
1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD, INC.

2. AS-BUILT SITE PLAN FOR BUILD AMERICA, PREPARED NOVEMBER 2025 BY AMBIT ENGINEERING, INC., A DIVISION OF HALEY WARD, INC.

3. SUPPLEMENTAL LIDAR TOPOGRAPHY OBTAINED FROM THE NOAA DIGITAL COAST DATA ACCESS VIEWER.

HALEY WARD
www.haleyward.com

CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

INSTALL SILT SOXX TO CONTROL EROSION AND SEDIMENTATION PRIOR TO ANY EARTH MOVING ACTIVITIES.

REMOVE EXISTING BUILDINGS AND OTHER SITE FEATURES TO BE REMOVED.

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.

CUT AND REMOVE ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND OTHER DEBRIS AND RUBBISH AS REQUIRED.

STRIP AND STOCKPILE LOAM FROM SITE. STOCKPILES SHALL BE SURROUNDED WITH SILT SOXX TO CONTROL SEDIMENT RUN OFF.

ROUGH GRADE SITE AND CONSTRUCT DRAINAGE STRUCTURES, RAIN GARDEN AND SWALES. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS SHOWN ON THE PLANS. ALL PERMANENT DITCHES, AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM. CONSTRUCT BUILDING FOUNDATIONS.

LOAM AND SEED DISTURBED AREAS IN ACCORDANCE WITH VEGETATIVE PRACTICE AND GENERAL CONSTRUCTION NOTES. CUT AND FILL SLOPES SHALL BE SEEDED IMMEDIATELY AFTER THEIR CONSTRUCTION.

CONSTRUCT UTILITIES, BUILDINGS AND PAVEMENT BASE COURSE.

PLANT LANDSCAPING.

CONSTRUCT PAVEMENT WEARING COURSE.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF FOUR HOUSING UNITS WITH ASSOCIATED PARKING AND UTILITIES.

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.695 ACRES.

BASED ON THE USCS WEB SOIL SURVEY THE SOILS ON SITE CONSIST OF CHATFIELD-HOLLIS-CANTON COMPLEX WHICH IS WELL DRAINED SOILS WITH A HYDROLOGIC SOIL GROUP RATING OF B.

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND DRAINAGE PATHWAYS WHICH ULTIMATELY FLOW TO THE SAGAMORE CREEK.

GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DUST CONTROL: DUST CONTROL MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.
IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
- IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.

STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA.

STABILIZATION MEASURES TO BE USED INCLUDE:
- TEMPORARY SEEDING;
- MULCHING.

1. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
2. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN THESE AREAS, SILTSOXX, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
3. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILTSOXX, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

MAINTENANCE AND PROTECTION

THE SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

SILTSOXX SHALL BE REMOVED ONCE SITE IS STABILIZED, AND DISTURBED AREAS RESULTING FROM SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

THE CATCH BASIN INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

WINTER NOTES

ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;

AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;

STOCKPILES

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

CONCRETE WASHOUT AREA

THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
1. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FAILITY;
2. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
3. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
4. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL

1. WASTE MATERIAL
   - ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   - NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   - ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE
   - ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   - SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE
   - ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

BLASTING NOTES

1. CONTRACTOR SHALL CONTACT THE NHDES AND/OR LOCAL JURISDICTION PRIOR TO COMMENCING ANY BLASTING ACTIVITIES.
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT A BLASTING PLAN THAT IDENTIFIES:
   - WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
   - THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
   - SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.

ABBREVIATIONS

@	AT	MAX.	MAXIMUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MDOT	MAINE DEPT. OF TRANSPORTATION
APPROX.±	APPROXIMATELY	MH	MANHOLE
		MIN	MINIMUM
BLDG	BUILDING		
		N	NORTHING
CL	CENTERLINE	NE	NORTHEAST
CB	CATCH BASIN	N.T.S.	NOT TO SCALE
		NWT	NON WOVEN GEOTEXTILE
CLR	CLEAR	OD	OUTSIDE DIAMETER
CMP	CORRUGATED METAL PIPE	O.C.	ON CENTER
CO	CLEANOUT	OH	OVERHEAD
CPE	CORRUGATED POLYETHYLENE	OZ	OUNCES
		PERF	PERFORATED
DI	DUCTILE IRON		
DIA.	DIAMETER	PSF	POUNDS PER SQUARE FOOT
		PSI	POUNDS PER SQUARE INCH
E	EASTING	PVC	POLYVINYL CHLORIDE
EL	ELEVATION	PL	PROPERTY LINE
EFM	EXISTING FORCE MAIN	POH	PROPOSED OVERHEAD ELECTRIC
EPS	EXTRUDED POLYSTYRENE	PUGE	PROPOSED UNDERGROUND ELECTRIC
FM	FORCEMAIN	R	RADIUS
GAL	GALLON	S	SLOPE
GALV	GALVANIZED	SCL	STORMWATER COLLECTION LINE
		SCS	STORMWATER COLLECTION SYSTEM
GPH	GALLONS PER HOUR	SDR	STANDARD DIMENSION RATIO
GPM	GALLONS PER MINUTE	SE	SOUTHEAST
		SHT	SHEET
HDPE	HIGH DENSITY POLYETHYLENE	SQ	SQUARE
HP	HORSEPOWER	SS	STAINLESS STEEL
		SY	SQUARE YARD
ID	INSIDE DIAMETER		
IN.	INCHES	TBM	TEMPORARY BENCH MARK
INT.	INTERSECTION	TOC	TOP OF CONCRETE
INV.	INVERT	TYP	TYPICAL

LEGEND:

ITEMS SHOWN MAY NOT APPEAR ON PLANS

DESCRIPTION	*EXISTING*	*PROPOSED*
PROPERTY LINE		
BENCHMARK		
SURVEY STATION		
IRON PIN		
DRILL HOLE		
BOUND		
TEST PIT	TP	
SEWER MANHOLE	S	S SV
GAS VALVE		
UTILITY POLE		
GUY ANCHOR		
ELECTRICAL MANHOLE	E	E
TRANSFORMER		TR
PULLBOX	P	P
WELL	W	W
WATER VALVE	WV	
WATER SHUTOFF		
HYDRANT		
AIR RELIEF VALVE		
DRAINAGE MANHOLE	D	D
CATCH BASIN		
CURB INLET		
PARKING LIGHT		
FLOOD LIGHT		
SITE LIGHT		
SIGN		
TRASH CAN		
FLAGPOLE		
MONITORING WELL	MW	MW
EDGE OF GRAVEL		
EDGE OF PAVEMENT		
CURBING		
MAJOR FOOT CONTOUR	100	100
MINOR FOOT CONTOUR	98	98
WATERLINE	W	W
STORM DRAIN	SD	SD
UNDER DRAIN		UD
SANITARY SEWER	SS	SS
FORCE MAIN		FM
OVERHEAD UTILITIES	OHU	OHU
UNDERGROUND UTILITIES	UGE	UGU
GAS LINE	GAS	GAS
CHAIN LINK FENCE	X	X
GUARDRAIL		
SILT FENCE		SF
TREE LINE		
GRAVEL SURFACE		
PAVED SURFACE		
CONCRETE SURFACE		
BUILDING FOOTPRINT		
WETLANDS	WET	
RIPRAP		
FILTER SURFACE		

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

GENREAL NOTES, LEGEND & ABBREVIATIONS

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER
DREW JOHN OLEHOWSKI
No. 18515
LICENSED
12/18/2025

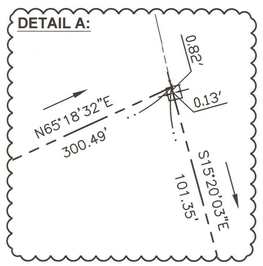
DATE: 2025.12.22	SCALE: NTS
DRAWN BY: BLQ/PJM	DESIGNED BY: BLQ/PJM
CHECKED BY: DJO	
PROJECT No.: 5010314.002	
DRAWING No.: C001	REV.

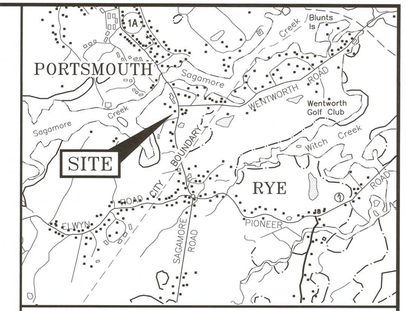
LEGEND:

DESCRIPTION	EXISTING
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
1234/123	DEED BOOK/PAGE
N/F	NOW OR FORMALLY
TYP.	TYPICAL
TBS	TO BE SET
INV.	INVERT
ELV.	ELEVATION
FF	FINISHED FLOOR
SWL	SINGLE WHITE LINE
DYL	DOUBLE YELLOW LINE
VGC	VERTICAL GRANITE CURB
MAP 21 LOT 8	21
BENCHMARK	
RAILROAD SPIKE	
BOUND	
IRON ROD/PIPE FOUND	
SET 5/8" REBAR WITH SURVEYOR'S CAP	
CATCH BASIN	
SEWER MANHOLE	S
DRAIN MANHOLE	D
UTILITY POLE	
GUY WIRE	
HYDRANT	
GATE VALVE	GGV WGV SGV
GAS/WATER SHUTOFF	
TREES	
GAS/ELECTRIC METER	E G
MAIL BOX	
SIGN	
SPOT GRADE	12x1
PROPERTY LINE	
APPROXIMATE EXTERIOR PROPERTY LINE	
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
MINOR FOOT CONTOUR	98
MAJOR FOOT CONTOUR	100
WETLAND FLAG/WETLAND	A1
FRESH WATER WETLAND LINE	
WETLAND BUFFER LINE	WB
TREELINE	
STORM DRAIN LINE	SD
OVERHEAD UTILITY LINE	OHU

PLAN REFERENCES:

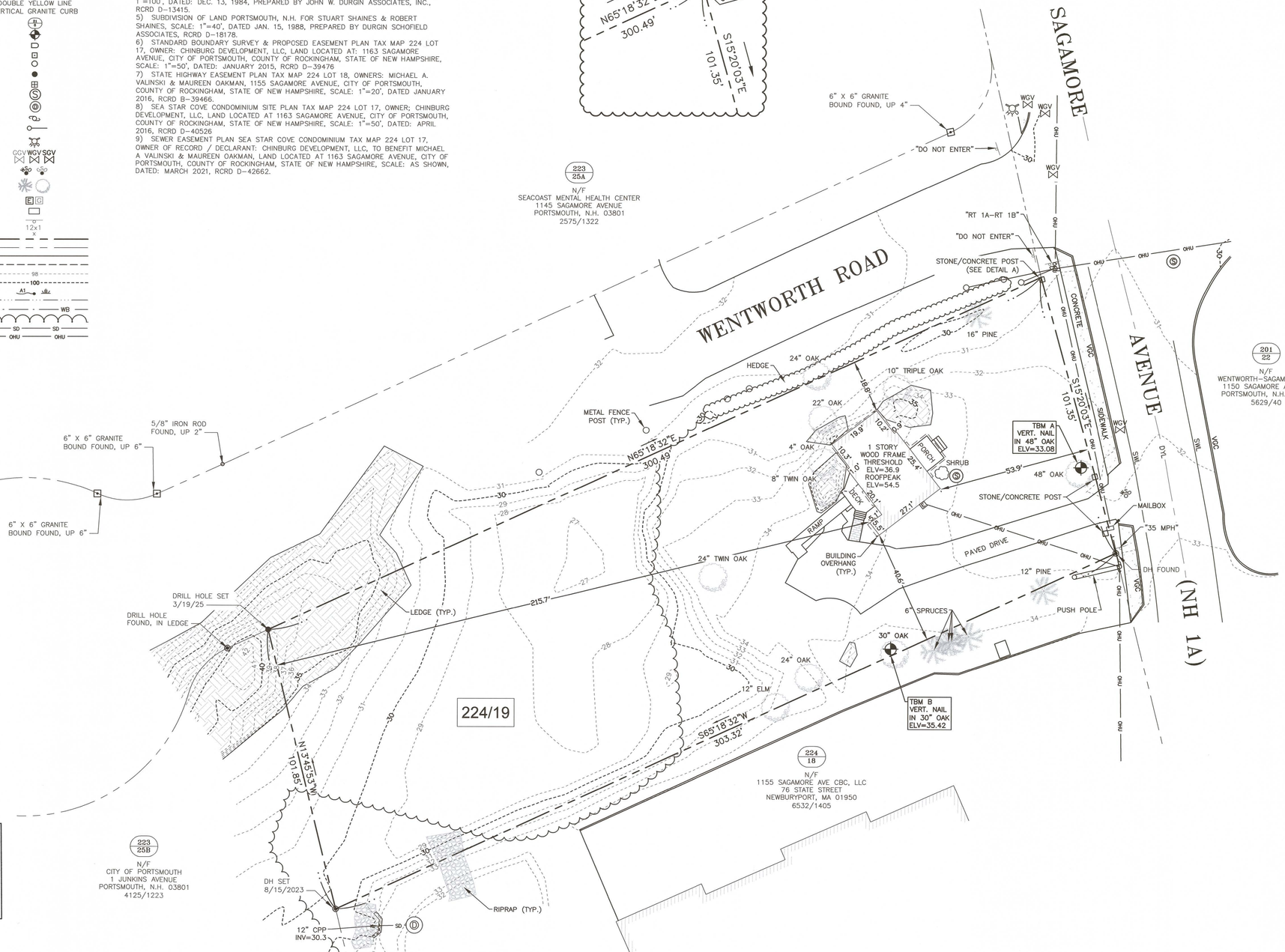
1) PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS, SURVEYED BY E.M.HUNT, JUN. ENGR., SCALE: 1"=1000', DATED: MARCH 1908, RCRD PLAN# 00254.
2) PLAN OF LAND PORTSMOUTH, N.H. FOR NORMAN J. & JANET S. SMITH, SCALE: 1IN.=100FT., DATED: NOV. 1964, PREPARE BY JOHN W. DURGIN CIVIL ENGINEERS, RCRD PLAN# 1549.
3) BOUNDARY LINE CHANGE LODGE 444 LOYAL ORDER OF MOOSE AND ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE, SCALE: 1"=50', DATED MAY 1984, PREPARED BY K.E.MOORE & B.G.STAPLES LAND SURVEYORS, RCRD D-13349.
4) SUBDIVISION OF LAND PORTSMOUTH & RYE, N.H. FOR R & S TRUST, SCALE: 1"=100', DATED: DEC. 13, 1984, PREPARED BY JOHN W. DURGIN ASSOCIATES, INC., RCRD D-13415.
5) SUBDIVISION OF LAND PORTSMOUTH, N.H. FOR STUART SHAINES & ROBERT SHAINES, SCALE: 1"=40', DATED JAN. 15, 1988, PREPARED BY DURGIN SCHOFIELD ASSOCIATES, RCRD D-18178.
6) STANDARD BOUNDARY SURVEY & PROPOSED EASEMENT PLAN TAX MAP 224 LOT 17, OWNER: CHINBURG DEVELOPMENT, LLC, LAND LOCATED AT: 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1"=50', DATED: JANUARY 2015, RCRD D-39476
7) STATE HIGHWAY EASEMENT PLAN TAX MAP 224 LOT 18, OWNERS: MICHAEL A. VALINSKI & MAUREEN OAKMAN, 1155 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1"=20', DATED JANUARY 2016, RCRD B-39466.
8) SEA STAR COVE CONDOMINIUM SITE PLAN TAX MAP 224 LOT 17, OWNER; CHINBURG DEVELOPMENT, LLC, LAND LOCATED AT 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1"=50', DATED: APRIL 2016, RCRD D-40526
9) SEWER EASEMENT PLAN SEA STAR COVE CONDOMINIUM TAX MAP 224 LOT 17, OWNER OF RECORD / DECLARANT: CHINBURG DEVELOPMENT, LLC, TO BENEFIT MICHAEL A VALINSKI & MAUREEN OAKMAN, LAND LOCATED AT 1163 SAGAMORE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: AS SHOWN, DATED: MARCH 2021, RCRD D-42662.





LOCATION MAP SCALE: 1" = 1,000'

NORTH (2011)
GRID NAD83



GRAPHIC SCALE
20 0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 224 AS LOT 19.

2) OWNER OF RECORD:
1151 SAGAMORE AVENUE CBC, LLC
76 STATE STREET
NEWBURYPORT, MA 01950
RCRD 6633/1720

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0286F. EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
30,191 S.F.
0.69 ACRES

5) PARCEL IS LOCATED IN MIXED RESIDENTIAL OFFICE (MRO) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:		7,500 S.F.
FRONTAGE:		100 FEET
SETBACKS:	FRONT	5 FEET
	SIDE	10 FEET
	REAR	15 FEET
MAXIMUM STRUCTURE HEIGHT:		40 FEET SLOPED ROOF 30 FEET FLAT ROOF
MAXIMUM BUILDING COVERAGE:		40%
MINIMUM OPEN SPACE:		25%

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITION ON ASSESSOR'S MAP 224 LOT 19 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

9) ABUTTER INFORMATION TAKEN FROM THE CITY OF PORTSMOUTH GIS WEBSITE.

REV.	DATE	DESCRIPTION	BY	CHK.
1	10/22/2025	OWNERSHIP NAME	PAY	PAY
0	3/26/25	ISSUED FOR COMMENT	RJB	PAY

DRAWING ISSUE STATUS

SITE SURVEY

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282
WWW.HALEYWARD.COM

PROJECT

BUILD AMERICA
1151 SAGAMORE AVENUE PORTSMOUTH, N.H.

TITLE

EXISTING CONDITIONS PLAN

DATE	FEBRUARY 2025
SCALE	1"=20'
DRAWN BY	RJB
DESIGNED BY	---
CHECKED BY	PAY
PROJECT No.	5010314.002
FIELD BOOK / PAGE	FB 450 PG 15
DRAWING No.	V101
REV.	1

STATE OF NEW HAMPSHIRE — No. 1122 — LICENSED LAND SURVEYOR — PHILLIP A. YETMAN — LLS

``I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

PHILIP A. YETMAN, LLS 1122 — DATE 10/23/2025

FILE LOCATION: NCS:\LOCAL\FILES\PROJECTS\NH\5010314-BUILD_AMERICA\002-1151 SAGAMORE AVE., PORTSMOUTH - PAY\02-CAD_FILES\5010314-002-V-EC.DWG, 2025.10.23, 11:21 AM

PARCEL INFORMATION

MAP - LOT:	224 - 19
LOT AREA (ACRES):	.69 ACRES
ZONE OR DISTRICT:	MRO - MIXED RESIDENTIAL OFFICE
EXISTING USE:	OFFICE
FLOOD ZONE (PNL 33015C0286F):	N/A
WATER:	PUBLIC
SEWER:	PUBLIC
RECORD OWNER:	1151 SAGAMORE AVENUE CBC, LLC
	76 STATE STREET
	NEWBURYPORT, MASSACHUSETTS 01950

SITE DEVELOPMENT DATA

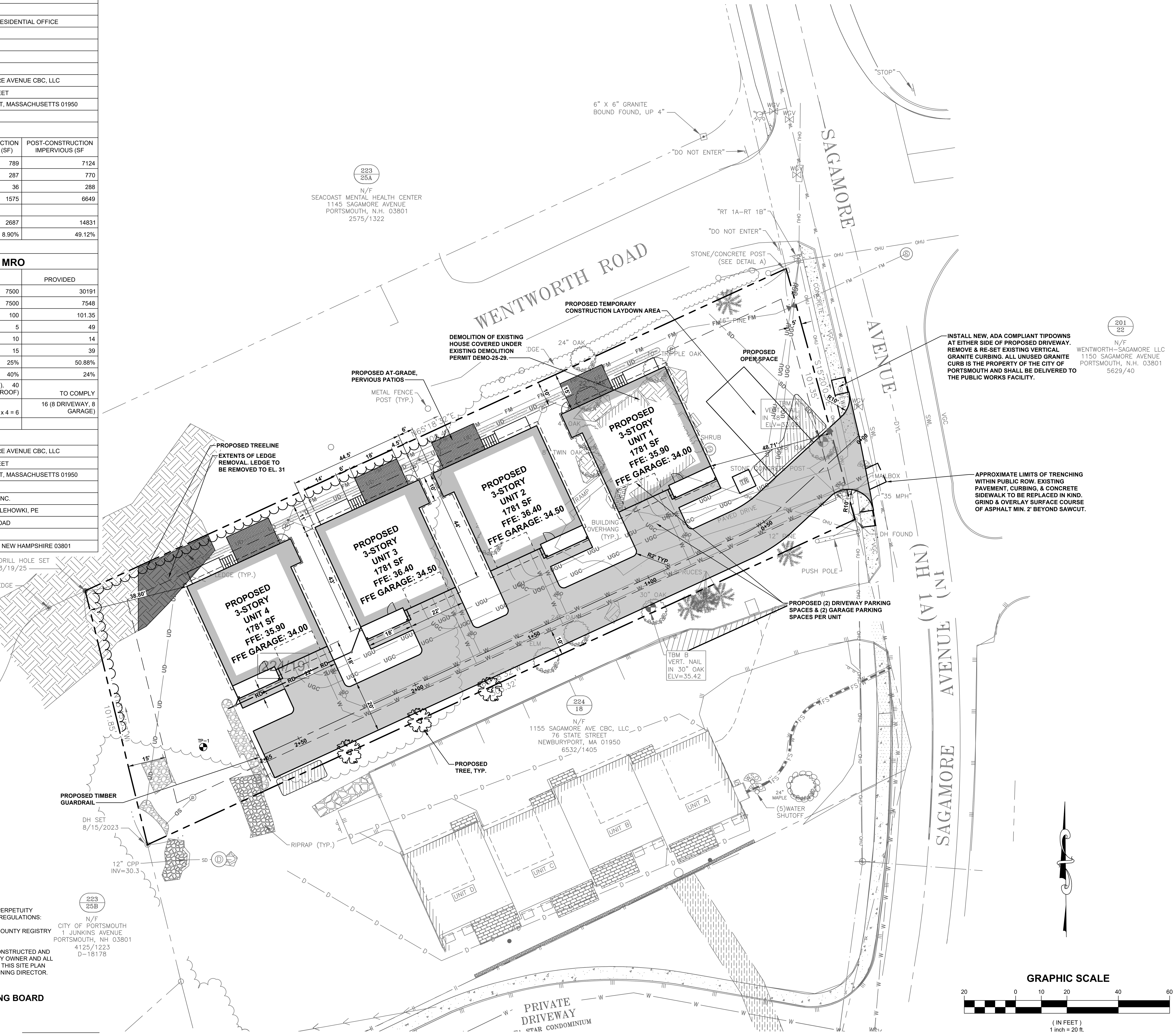
	PRE-CONSTRUCTION IMPERVIOUS (SF)	POST-CONSTRUCTION IMPERVIOUS (SF
MAIN STRUCTURE	789	7124
DECKS, STAIRS, & RAMPS	287	770
WALKWAYS	36	288
PAVEMENT	1575	6649
TOTAL IMPERVIOUS:	2687	14831
LOT COVERAGE:	8.90%	49.12%

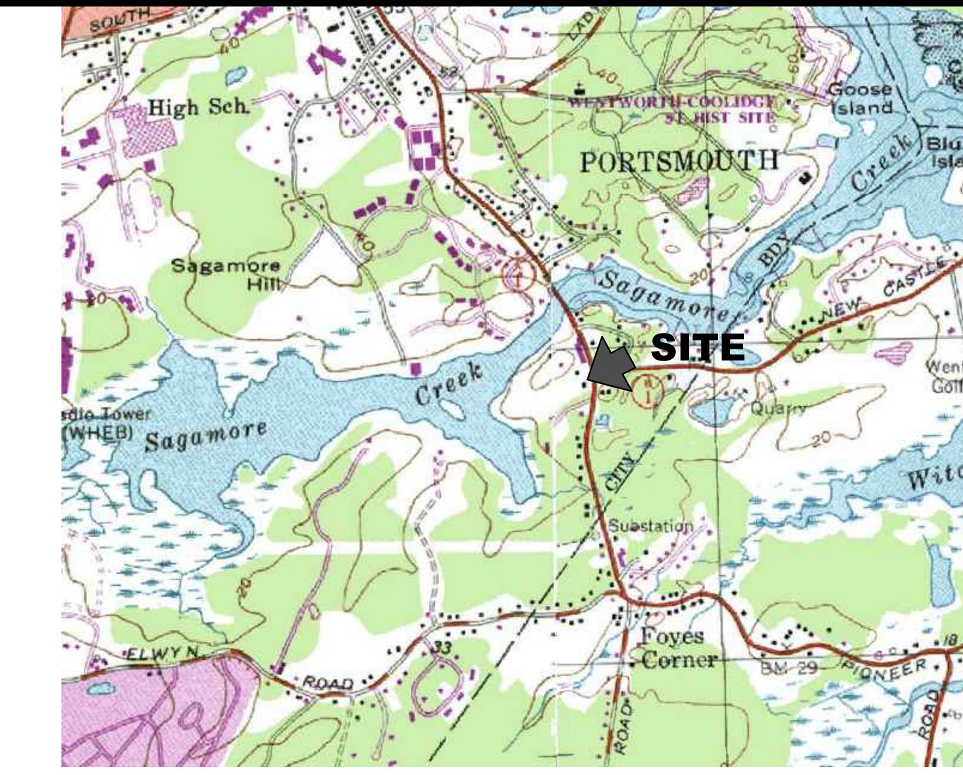
DESIGN STANDARDS - PORTSMOUTH MRO

	REQ'D	PROVIDED
MIN. LOT AREA (SF)	7500	30191
LOT AREA PER DWELLING UNIT (SF)	7500	7548
MINIMUM ROAD FRONTAGE (FT)	100	101.35
MINIMUM SETBACK, FRONT YARD (FT)	5	49
MINIMUM SETBACK, SIDE YARDS (FT)	10	14
MINIMUM SETBACK, REAR YARDS (FT)	15	39
MINIMUM OPEN SPACE	25%	50.88%
MAXIMUM STRUCTURE COVERAGE	40%	24%
MAXIMUM BUILDING HEIGHT (FT)	30 (FLAT ROOF), 40 (SLOPED ROOF)	TO COMPLY
PARKING:	1.3 PER UNIT x 4 = 6	16 (8 DRIVEWAY, 8 GARAGE)

PROJECT INFORMATION

APPLICANT:	1151 SAGAMORE AVENUE CBC, LLC
	76 STATE STREET
	NEWBURYPORT, MASSACHUSETTS 01950
ENGINEER:	HALEY WARD, INC.
	ATTN: DREW OLEHOWKI, PE
	200 GRIFFIN ROAD
	UNIT 4
	PORTSMOUTH, NEW HAMPSHIRE 03801





LOCATION MAP: USGS QUADRANGLE: KITTERY
SCALE: 1"=2000'
MAPTECH® USGS TOPOGRAPHIC SERIES™, ©MAPTECH®, INC. 978-933-3000 WWW.MAPTECH.COM/TOPO

NOTES:

1. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
2. TRASH PICKUP TO BE CURBSIDE.

PLAN REFERENCE:

1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD.

CONDITIONS OF APPROVAL:

1. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
2. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
3. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

PROPOSED SITE PLAN

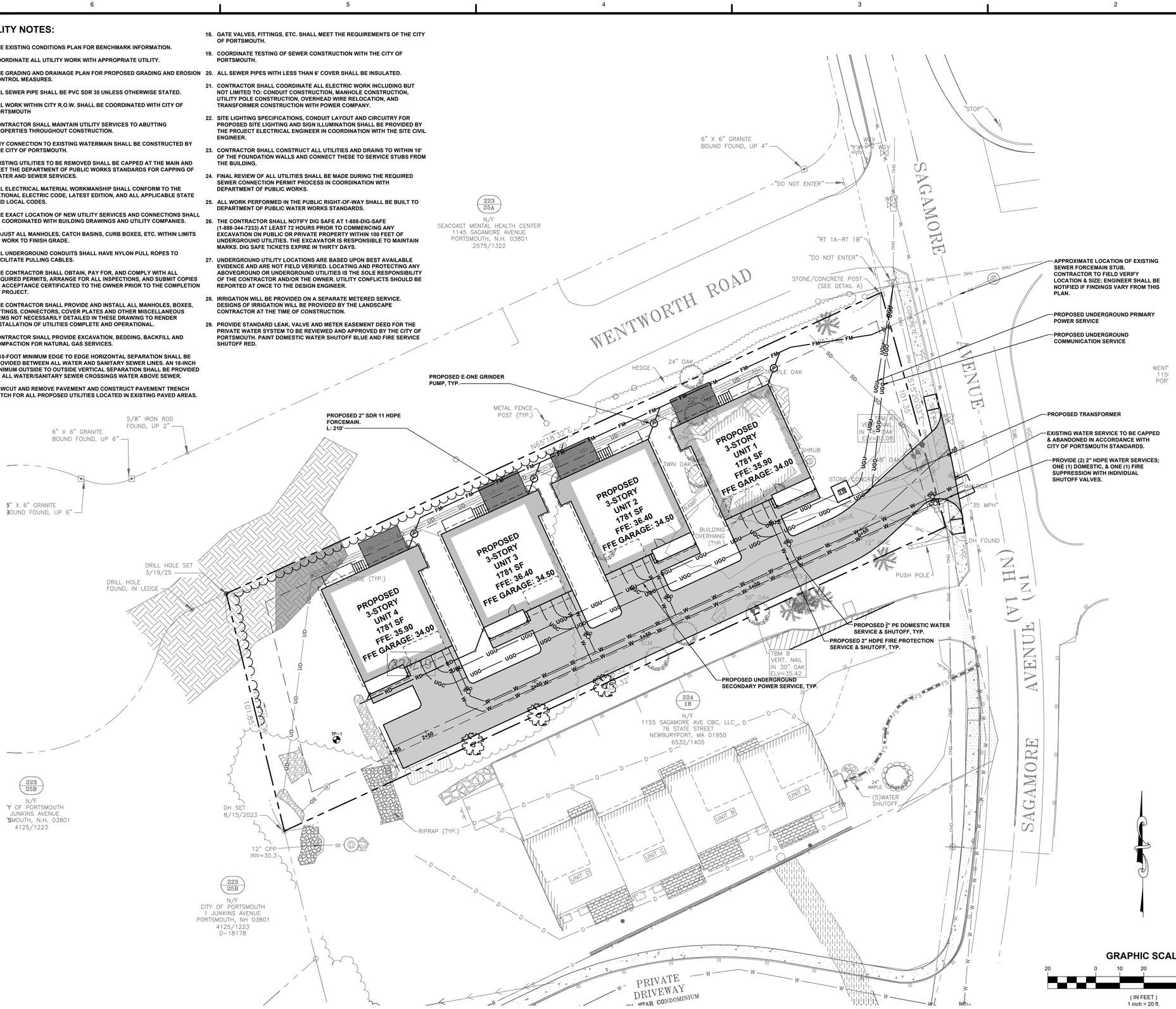
STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI No. 18516 LICENSED - PROFESSIONAL ENGINEER
12/18/2025

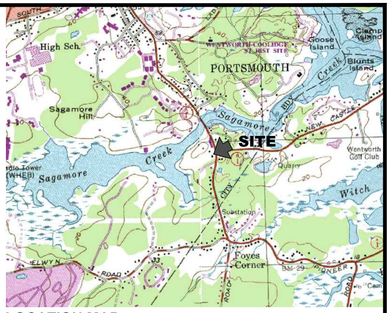
DATE	SCALE	
2025.12.22	1"=20'	
DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO
PROJECT No.		
5010314.002		
DRAWING No.		REV.
C101		

FILE LOCATION: P:\NH\5010314\BUILD_AMERICA\002-1151 SAGAMORE AVE., PORTSMOUTH - PAY\02-CAD_FILES\CIVIL\5010314.002-C-SP.DWG, 2025.12.18, 8:56 AM

UTILITY NOTES:

1. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.
3. SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
4. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
5. ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH
6. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
7. ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
8. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
9. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
10. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.
11. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
12. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
16. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS WATER ABOVE SEWER.
17. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVED AREAS.
18. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
19. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
20. ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER IN COORDINATION WITH THE SITE CIVIL ENGINEER.
23. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
24. FINAL REVIEW OF ALL UTILITIES SHALL BE MADE DURING THE REQUIRED SEWER CONNECTION PERMIT PROCESS IN COORDINATION WITH DEPARTMENT OF PUBLIC WORKS.
25. ALL WORK PERFORMED IN THE PUBLIC RIGHT-OF-WAY SHALL BE BUILT TO DEPARTMENT OF PUBLIC WATER WORKS STANDARDS.
26. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.
27. UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
28. IRRIGATION WILL BE PROVIDED ON A SEPARATE METERED SERVICE. DESIGNS OF IRRIGATION WILL BE PROVIDED BY THE LANDSCAPE CONTRACTOR AT THE TIME OF CONSTRUCTION.
29. PROVIDE STANDARD LEAK, VALVE AND METER EASEMENT DEED FOR THE PRIVATE WATER SYSTEM TO BE REVIEWED AND APPROVED BY THE CITY OF PORTSMOUTH. PAINT DOMESTIC WATER SHUTOFF BLUE AND FIRE SERVICE SHUTOFF RED.





LOCATION MAP: USGS QUADRANGLE: KITTERY
SCALE: 1"=2000'
MAPTECH® USGS TOPOGRAPHIC SERIES™, ©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO

NOTES:

1. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
2. TRASH PICKUP TO BE CURBSIDE.

PLAN REFERENCE:

1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD.

GRAPHIC SCALE
20 0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS
ISSUED FOR PERMITTING

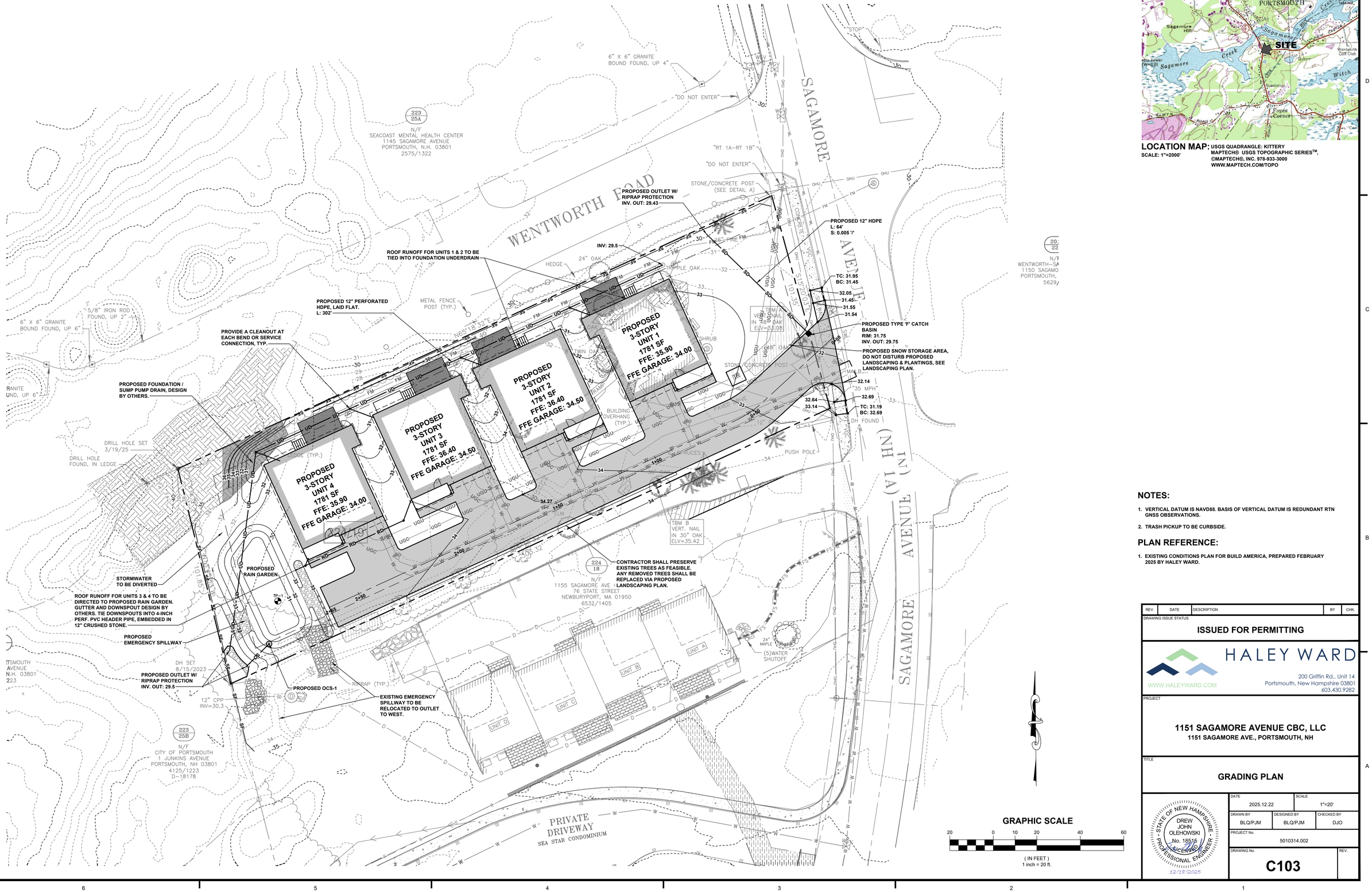
HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

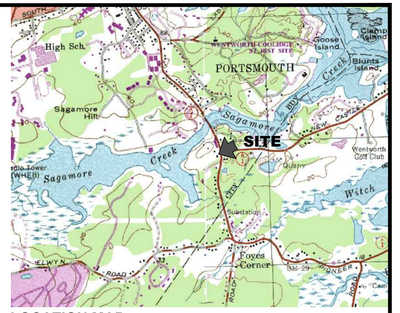
PROJECT
1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE
UTILITY PLAN

STATE OF NEW HAMPSHIRE – DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER – 12/18/2025

DATE	SCALE
2025.12.22	1"=20'
DRAWN BY: BLQ/PJM	DESIGNED BY: BLQ/PJM	CHECKED BY: DJO
PROJECT No. 5010314.002	
DRAWING No. **C102**	REV.





LOCATION MAP: USGS QUADRANGLE: KITTERY
MAPTECH® USGS TOPOGRAPHIC SERIES™,
©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO
SCALE: 1"=2000'

NOTES:

1. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
2. TRASH PICKUP TO BE CURBSIDE.

PLAN REFERENCE:

1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD.

GRAPHIC SCALE
20 0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS
ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT
1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

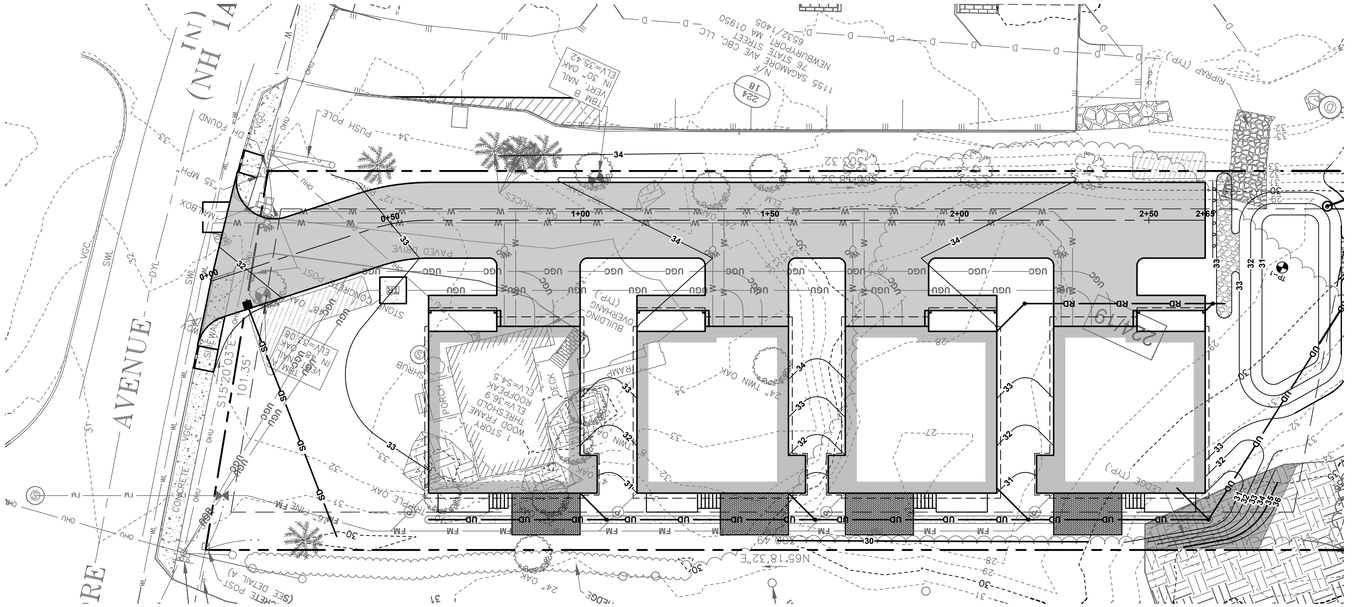
TITLE
GRADING PLAN

STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER
12/18/2025

DATE	SCALE
2025.12.22	1"=20'

DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002
DRAWING No. **C103**
REV.



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31.81	32.40	32.99	33.55	33.83	34.08	34.33	34.32	34.07	33.82	33.57	33.42

0+00 1+00 2+00 2+65

PROFILE VIEW OF PROPOSED DRIVEWAY - STA 0+00 TO 2+65
SCALE: H: 1"=40' / V: 1"=4'

LOCATION MAP: SCALE: 1"=2000'

USGS QUADRANGLE: KITTERY
MAPTECH® USGS TOPOGRAPHIC SERIES™,
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NOTES:

1. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
2. TRASH PICKUP TO BE CURBSIDE.

PLAN REFERENCE:

1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD.

GRAPHIC SCALE
20 0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS
ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

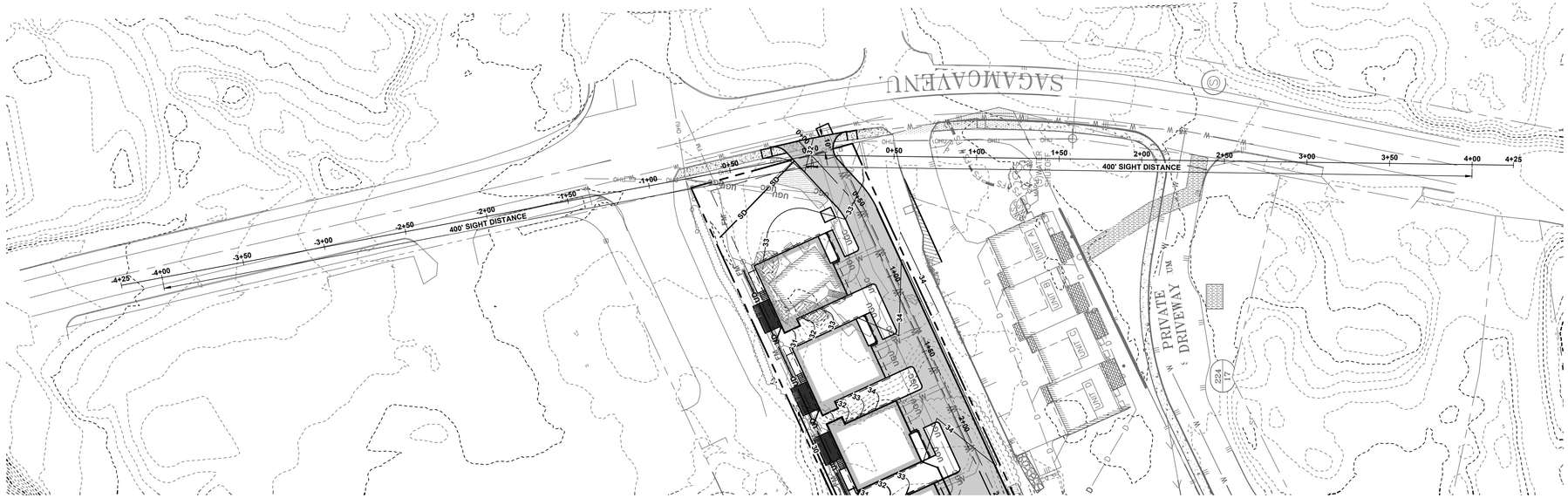
PROJECT
1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE
PROPOSED DRIVEWAY PLAN & PROFILE

DREW JOHN OLEHOWSKI
No. 18515
12/18/2025

DATE	2025.12.22
SCALE	1"=20'
DRAWN BY	BLQ/PJM
DESIGNED BY	BLQ/PJM
CHECKED BY	DJO
PROJECT No.	5010314.002
DRAWING No.	C201
REV.	

FILE LOCATION: P:\NH\5010314-BUILD_AMERICA\002-1151 SAGAMORE AVE., PORTSMOUTH - PAY\02-CAD_FILES\CIVIL\5010314.002-C-SP.DWG, 2025.12.18, 8:57 AM



LOCATION MAP: USGS QUADRANGLE: KITTERY
SCALE: 1"=2000'
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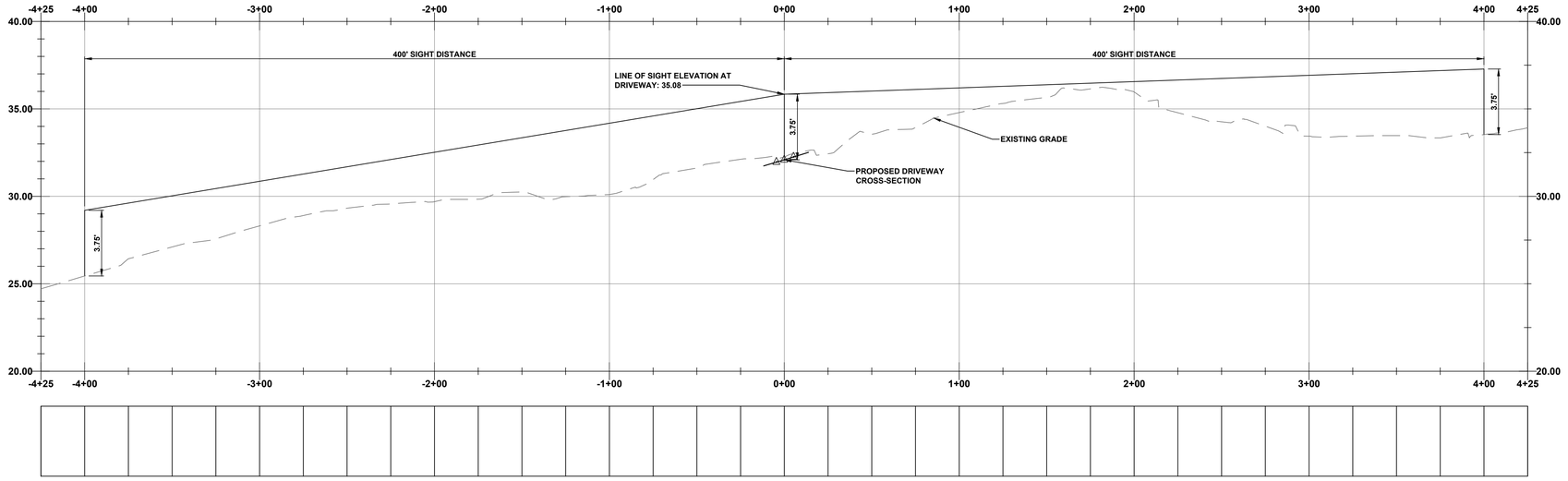


PROFILE VIEW OF SITE DISTANCE - STA -4+25 TO 4+25
SCALE: H: 1"=40' / V: 1"=4'

NOTES:

1. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
2. TRASH PICKUP TO BE CURBSIDE.

PLAN REFERENCE:

1. EXISTING CONDITIONS PLAN FOR BUILD AMERICA, PREPARED FEBRUARY 2025 BY HALEY WARD.

GRAPHIC SCALE
40 0 20 40 80 120
(IN FEET)
1 inch = 40 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS
ISSUED FOR PERMITTING

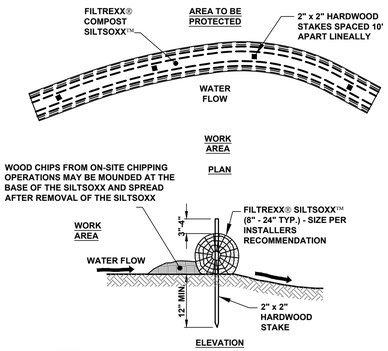
HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT
1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE
SITE DISTANCE PLAN & PROFILE

STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER
12/18/2025

DATE	SCALE
2025.12.22	1"=40'
DRAWN BY: BLQ/PJM	DESIGNED BY: BLQ/PJM	CHECKED BY: DJO
PROJECT No. 5010314.002	
DRAWING No. C202	REV.

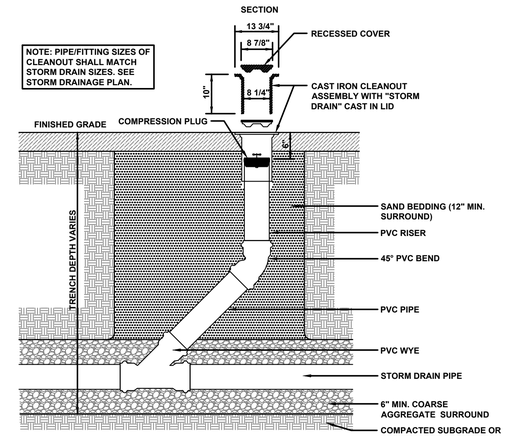


NOTES:

1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

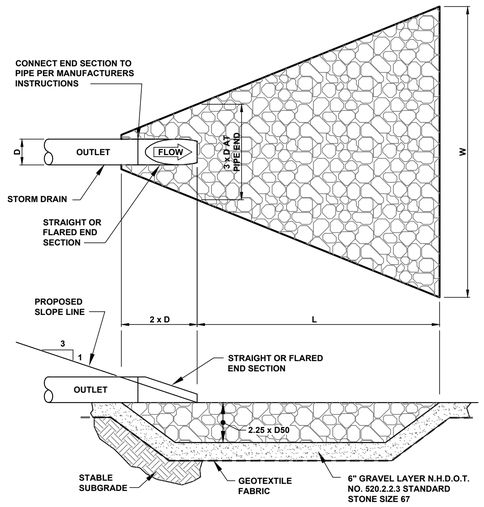
FILTREXX SILTSOXX DETAIL

NTS



STORM DRAIN CLEANOUT DETAIL

NTS



LENGTH TABLE			
D	L	W	D50
12"	14'	17"	3"
15"	16'	20'	4"
18"	20'	25'	6"
24"	30'	36'	8"

(REFER TO NOTE 1)

NOTES

1) USE d50 AS NOTED IN TABLE UNLESS SPECIFIED OTHERWISE ON PLANS.

2) UNDERLAY RIP-RAP WITH 6" OF SIZE 67 STONE FILL (N.H.D.O.T. NO. 520.2.2.3) & MIRAFI 700X OR APPROVED EQUAL GEOTEXTILE FABRIC.

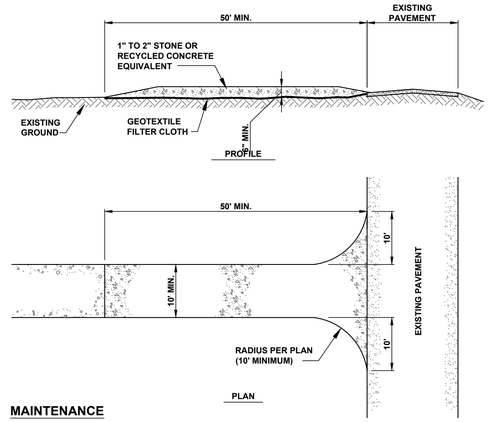
3) USE WIDTHS NOTED IN TABLE OR CONFORM TO NATURAL OR PROPOSED SWALE TOPOGRAPHY.

NHDOT NO. 520.2.2.3 STANDARD STONE SIZE 67

SIEVE SIZE	PERCENTAGE BY WEIGHT PASSING
1" (25.0mm)	100
3/4" (19.0mm)	90 - 100
3/8" (9.5mm)	20 - 25
No. 4 (4.75mm)	0 - 10
No. 8 (2.36mm)	0 - 5

CULVERT OUTLET PROTECTION

N.T.S.



MAINTENANCE

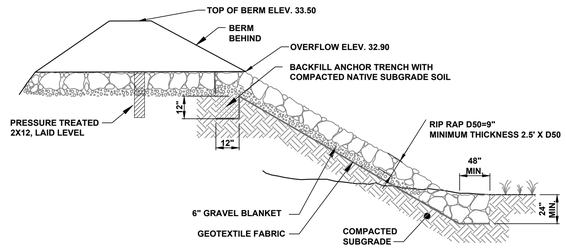
1) MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE GRAVEL AND THE EFFECTIVENESS OF THE GRAVEL PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOP DRESSED WITH NEW STONE. COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2) IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS

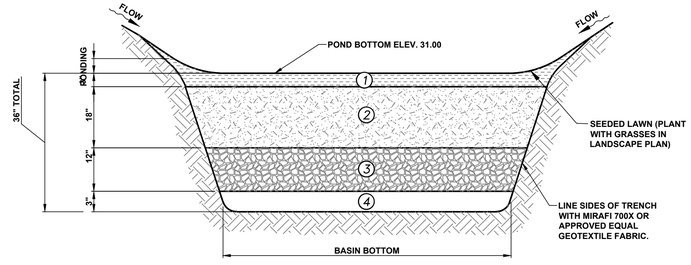
1) STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2) THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3) THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4) THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5) GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6) ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT 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, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8) WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

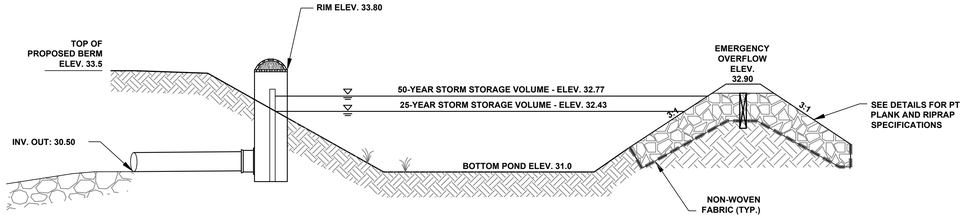
NTS



EMERGENCY SPILLWAY SECTION



RAIN GARDEN SECTION



RAIN GARDEN PROFILE

TYPICAL RAIN GARDEN DETAILS

N.T.S.

RAIN GARDEN MEDIA	
1	MULCH/GROWING MEDIUM: GRASS SEED MIX A WITH LOAM
2	SOIL FILTER LAYER: USE UNHSC BIORETENTION SOIL SPECIFICATIONS DATED FEBRUARY, 2017.20% – 30% MULCH BY VOLUME, MIXED THOROUGHLY WITH LOAMY, COARSE SAND (70% – 80% BY VOLUME) MEETING THE FOLLOWING GRADATION;

SIEVE NO.	% BY WEIGHT, PASSING
4	100
10	95
40	10 – 25
200	0 – 5

3	0.75"ø – 1.5"ø CRUSHED STONE, WASHED.
4	⅜" PEA GRAVEL

BIORETENTION MAINTENANCE

SOILS:
VISUALLY INSPECT AND REPAIR EROSION MONTHLY. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. CHECK THE pH ONCE OR TWICE A YEAR. APPLY AN ALKALINE PRODUCT, SUCH AS LIMESTONE, IF NEEDED.

MULCH:
REMULCH ANY VOID AREAS BY HAND AS NEEDED. EVERY 6 MONTHS, IN THE SPRING AND FALL, ADD A FRESH MULCH LAYER. ONCE EVERY 2 TO 3 YEARS, IN THE SPRING, REMOVE OLD MULCH LATER BEFORE APPLYING NEW ONE.

PLANTS:
IMMEDIATELY AFTER THE COMPLETION OF CELL CONSTRUCTION, WATER GRASS COVERING FOR 14 CONSECUTIVE DAYS UNLESS THERE IS SUFFICIENT NATURAL RAINFALL. ONCE A MONTH (MORE FREQUENTLY IN SUMMER), VISUALLY INSPECT VEGETATION FOR DISEASE OR PEST PROBLEMS. IF TREATMENT IS WARRANTED, USE THE LEAST TOXIC APPROACH. TWICE A YEAR, FROM MARCH 15TH TO APRIL 30TH AND OCTOBER 1ST TO NOVEMBER 30TH, REMOVE AND REPLACE ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. DURING TIMES OF EXTENDED DROUGHT, LOOK FOR PHYSICAL FEATURES OF STRESS (UNREVIVED WILTING, YELLOW, SPOTTED OR BROWN PATCHES ETC.). WATER IN THE EARLY MORNING AS NEEDED. WEED REGULARLY, IF NEEDED.

DETENTION POND OUTLET STRUCTURE DETAIL

NTS

NOTE:
A. CONCRETE SHALL BE 4,000 PSI AT 28 DAYS
B. DESIGN FOR H-20 WHEEL LOAD
C. REINFORCE CONCRETE TO 0.12 IN/S.F. L.F.

TYPICAL TYPE 'F' CATCH BASIN DETAIL

NTS

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

SITE DETAILS

STATE OF NEW HAMPSHIRE – DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER
12/18/2025

DATE	SCALE
2025.12.22	NTS

DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002

DRAWING No. **C501** REV.

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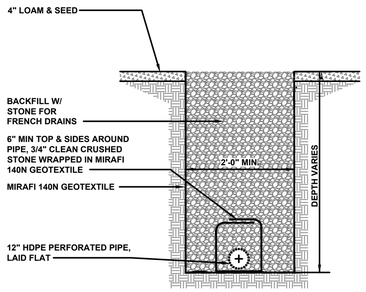
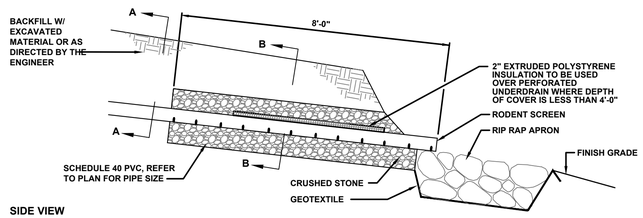
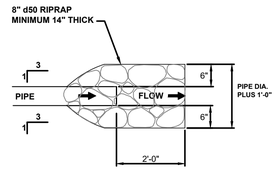


NOTES:
1. GEOTEXTILE SHALL OVERLAP A MIN. OF 12" AT SEAMS, TYP.
2. STONE BENEATH PIPE TO BE USED FOR SHIMMING ONLY, THICKNESS SHALL BE MINIMAL.

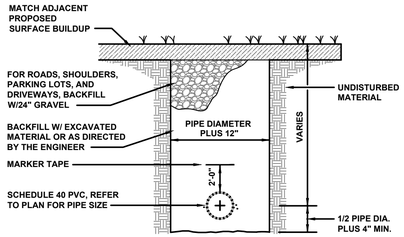
TYPICAL FRENCH DRAIN DETAIL
NTS



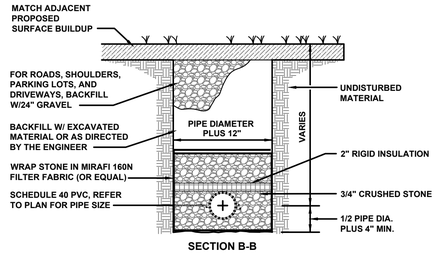
SIDE VIEW



RIP RAP APRON PLAN VIEW

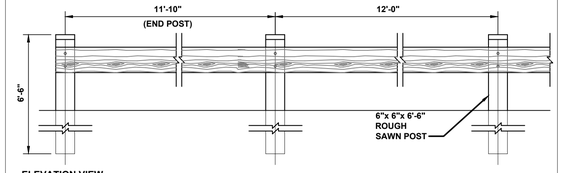


SECTION A-A

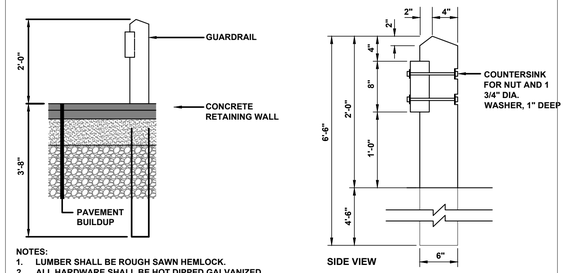


SECTION B-B

ROOF OR FOUNDATION DRAIN OUTLET DETAIL
NTS



ELEVATION VIEW

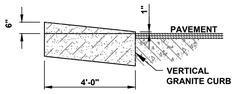


SIDE VIEW

NOTES:
1. LUMBER SHALL BE ROUGH SAWN HEMLOCK.
2. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED.

TYPICAL TIMBER GUARDRAIL DETAIL
NTS

VERTICAL GRANITE CURB



NOTE: JOINTS BETWEEN STONES TO BE MORTARED

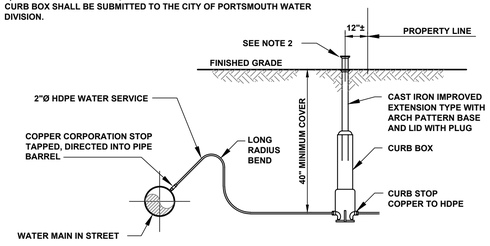
GRANITE CURB END FOR VERTICAL GRANITE CURB

TYPICAL VERTICAL GRANITE CURB DETAIL
NTS

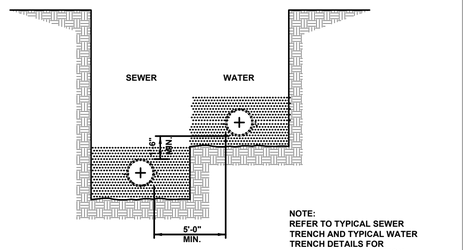
NOTES:
1) PAVEMENT SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS - SECTION 401.
2) CRUSHED GRAVEL AND GRAVEL SUBBASE SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS - SECTION 304, TABLE 1E, AND SHALL BE COMPACTED AS INDICATED IN SECTION 304, 3.6 COMPACTION, AND 3.7 DENSITY TESTING, AND CITY OF PORTSMOUTH CONSTRUCTION STANDARDS.

TYPICAL ASPHALT PAVEMENT GRINDING DETAIL
NTS

NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.



TYPICAL WATER SERVICE DETAIL
NTS

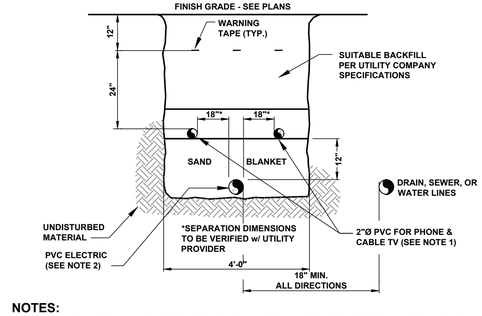


NOTE:
REFER TO TYPICAL SEWER TRENCH AND TYPICAL WATER TRENCH DETAILS FOR ADDITIONAL INFORMATION.

TYPICAL SEWER / WATER SEPARATION DETAIL
NTS

NOTES
1. SEE SHEET ``REQUIREMENTS FOR PADMOUNTED TRANSFORMER SLAB DETAILS".
2. ALL REINFORCING TO BE #6 BARS.
3. 1" PVC CONDUIT SLEEVE FOR GROUND GRID LEADS.
4. THE GROUND GRID SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER AND IS TO BE BURIED AT LEAST 12" BELOW GRADE. EIGHT FEET OF EXTRA WIRE FOR EACH GROUND GRID LEG SHALL BE LEFT EXPOSED IN THE CABLE COMPARTMENT TO ALLOW FOR THE CONNECTION TO THE TRANSFOMER. THE TWO 8' GROUND RODS MAY BE EITHER GALVANIZED STEEL OR COPPERWELD AND THEY SHALL BE CONNECTED TO THE GRID WITH NEC APPROVED CONNECTORS.

3 PHASE TRANSFORMER PAD DETAIL
NTS



NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR CMP ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

TYPICAL UNDERGROUND UTILITY TRENCH DETAIL
NTS

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
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PROJECT

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1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

SITE DETAILS

STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI - No. 18515 - LICENSED PROFESSIONAL ENGINEER
12/18/2025

DATE	SCALE
2025.12.22	NTS

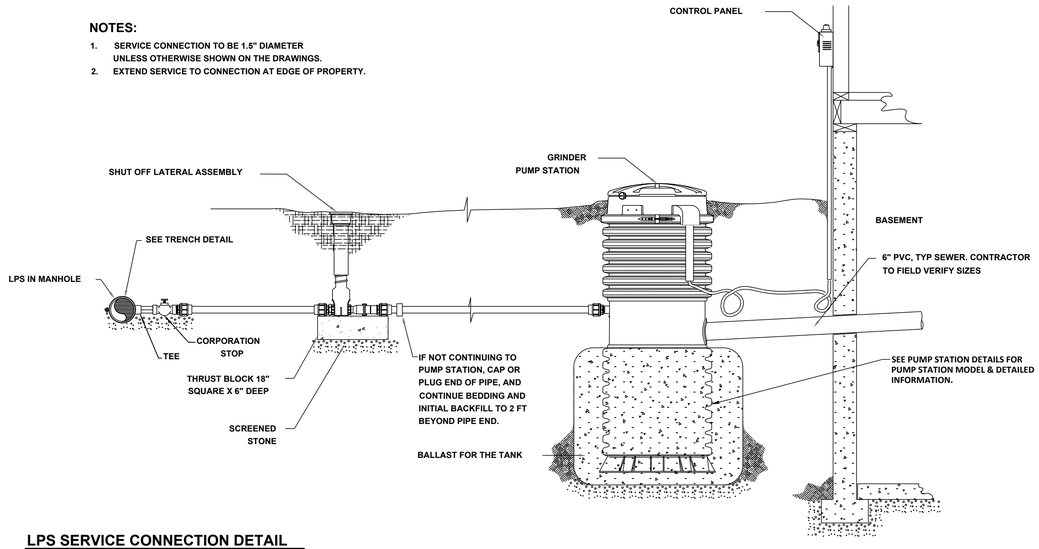
DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002

DRAWING No. **C502** REV.

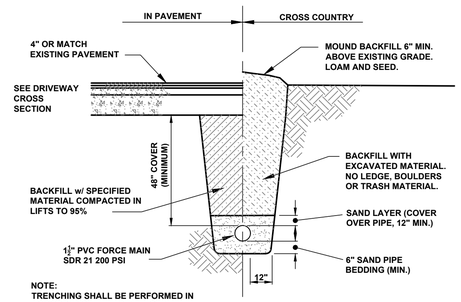
NOTES:

1. SERVICE CONNECTION TO BE 1.5" DIAMETER UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. EXTEND SERVICE TO CONNECTION AT EDGE OF PROPERTY.



LPS SERVICE CONNECTION DETAIL

NTS



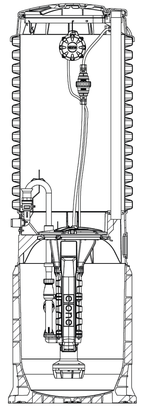
NOTE:
TRENCHING SHALL BE PERFORMED IN ACCORDANCE WITH STATE OF N.H. STANDARDS FOR SEWER CONSTRUCTION.

FORCE MAIN TRENCH DETAIL

NTS

E/ONE EXTREME SERIES

DH071



General Features

The model DH071 grinder pump station is a complete unit that includes: the grinder pump, check valve, HDPE (high density polyethylene) tank, controls, and alarm panel. A single DH071 is a popular choice for one, average single-family home and can also be used for up to two average single-family homes where codes allow and with consent of the factory.

- Rated for flows of 700 gpd (2650 lpd)
- 70 gallons (265 liters) of capacity
- Indoor or outdoor installation
- Standard outdoor heights range from 61 inches to 160 inches

The DH071 has a cable that connects the motor controls to the level controls through watertight penetrations.

Operational Information

Motor
1 hp, 1,725 rpm, high torque, capacitor start, thermally protected, 120/240V, 60 Hz, 1 phase

Inlet Connections
4-inch inlet grommet standard for DWV pipe. Other inlet configurations available from the factory.

Discharge Connections
Pump discharge terminates in 1.25-inch NPT female thread. Can easily be adapted to 1.25-inch PVC pipe or any other material required by local codes.

Discharge
15 gpm at 0 psig (0.95 lps at 0 m)
11 gpm at 40 psig (0.69 lps at 28 m)
7.8 gpm at 80 psig (0.49 lps at 56 m)

Accessories

E/One requires that the Uni-Lateral, E/One's own stainless steel check valve, be installed between the grinder pump station and the street main for added protection against backflow.

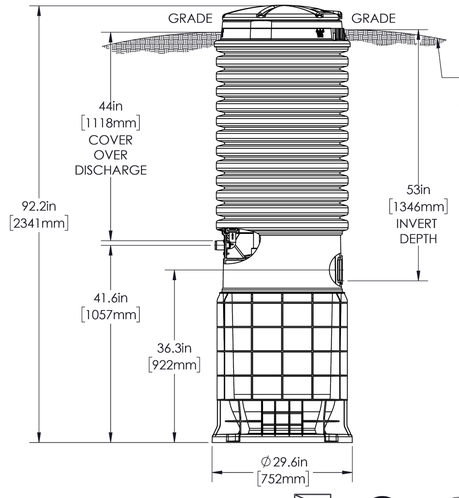
Alarm panels are available with a variety of options, from basic monitoring to advanced notice of service requirements.

The Remote Sentry is ideal for installations where the alarm panel may be hidden from view.

NA0050P01 Rev E

NA0050P06

DH071-93



NOTE: DIMENSIONS ARE FOR REF ONLY

CONCRETE BALLAST NOT REQUIRED

DISCHARGE: 1-1/4in FEMALE PIPE THREAD

INLET: EPDM GROMMET FOR 4in DWV PIPE (STANDARD)

BK	JG	10/13/2023	D	1:16
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

MODEL DH071-93
CUT SHEET

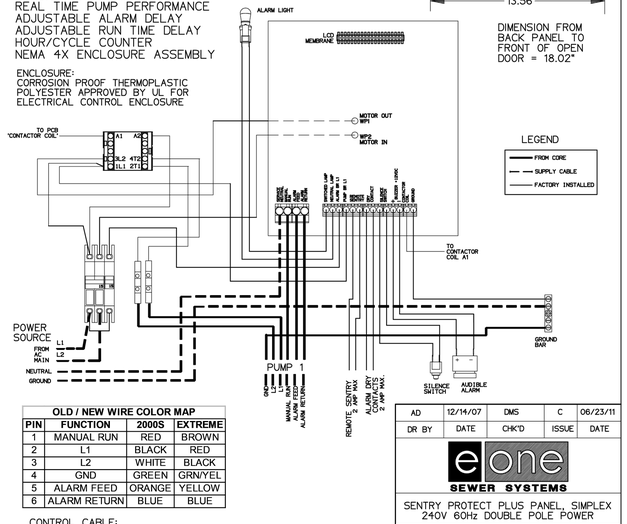
NA0050P06

SENTRY PROTECT PLUS SIMPLEX

REDUNDANT RUN (HIGH LEVEL)
EXTERNAL VISUAL & AUDIBLE ALARM
REMOTE SENTRY DRY CONTACTS FOR
OPTIONAL POWER LOSS HIGH LEVEL
ALARM (POWER LOSS ALARM FOR WIRELESS)
MANUAL ALARM SILENCE
MANUAL RUN
STATUS LED'S: NORMAL, PUMP RUNNING, HIGH LEVEL
TROUBLE INDICATIONS: RUN DRY, OVERPRESSURE, BROWNOUT, VOLTAGE, EXTENDED RUN TIME
DRY CONTACTS
CONFORMAL COATED CIRCUIT BOARD (BOTH SIDES)
PADLOCK
DEAD FRONT
PREDICTIVE ALARMS
REAL TIME PUMP PERFORMANCE
ADJUSTABLE ALARM DELAY
ADJUSTABLE RUN TIME DELAY
HOUR/CYCLE COUNTER
NEMA 4X ENCLOSURE ASSEMBLY

ENCLOSURE:
CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE

DIMENSION FROM BACK PANEL TO FRONT OF OPEN DOOR = 18.02"



OLD / NEW WIRE COLOR MAP			
PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
3	L2	WHITE	BLACK
4	GND	GREEN	GRN/YEL
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE

CONTROL CABLE:
TYPE TC: DIRECT BURIAL, SIX CONDUCTOR

AD	12/14/07	DMS	C	06/23/11
DR BY	DATE	CHK'D	ISSUE	DATE

e/one SEWER SYSTEMS

SENTRY PROTECT PLUS PANEL, SIMPLEX 240V 60Hz DOUBLE POLE POWER

NA0079P03

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

ISSUED FOR PERMITTING

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

SITE DETAILS

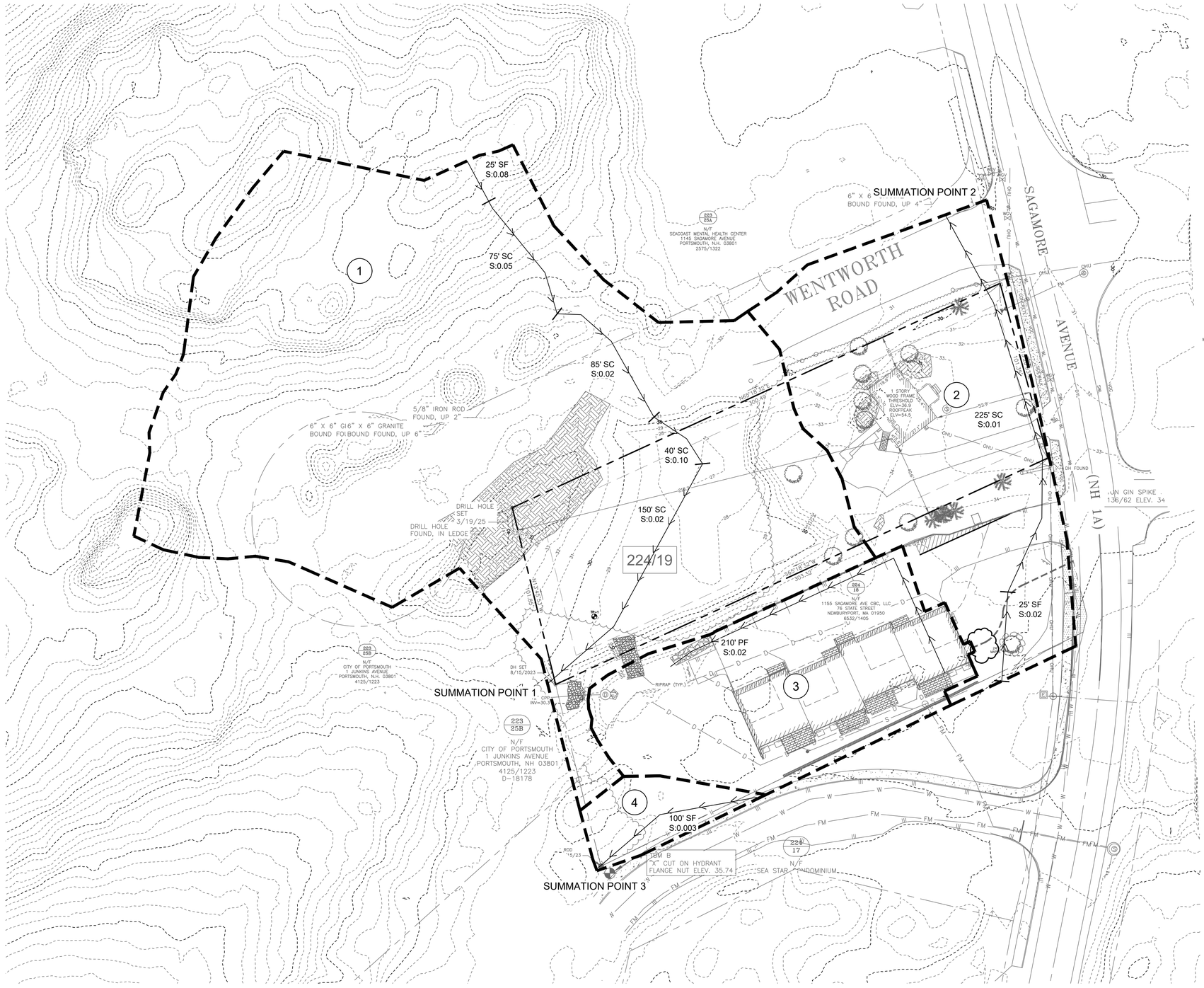
STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER - 12/18/2025

DATE	SCALE
2025.12.22	NTS

DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002

DRAWING No. **C503** REV.



LOCATION MAP: USGS QUADRANGLE: KITTERY
MAPTECH® USGS TOPOGRAPHIC SERIES™,
©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO
SCALE: 1"=2000'

PRE LEGEND:

	PROPERTY LINE
	WATERSHED BOUNDARY LINE
1	WATERSHED DESIGNATION
	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

GRAPHIC SCALE

40 0 20 40 80 120

(IN FEET)
1 inch = 40 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

PRE-DEVELOPMENT HYDROLOGY PLAN

STATE OF NEW HAMPSHIRE
DREW JOHN OLEHOWSKI
No. 18516
LICENSED
PROFESSIONAL ENGINEER
12.18.2025

DATE	SCALE
2025.12.22	1"=40'

DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002

DRAWING No. **C701** REV.

FILE LOCATION: P:\NH\5010314-BUILD_AMERICA\002-1151 SAGAMORE AVE., PORTSMOUTH - PAY\02-CAD_FILES\CIVIL\5010314.002-C-HY.DWG, 2025.12.18, 8:57 AM

LOCATION MAP: USGS QUADRANGLE: KITTERY
SCALE: 1"=2000'
MAPTECH® USGS TOPOGRAPHIC SERIES™,
©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO

POST LEGEND:

	PROPERTY LINE
	WATERSHED BOUNDARY LINE
1	WATERSHED DESIGNATION
	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

GRAPHIC SCALE

40 0 20 40 80 120

(IN FEET)
1 inch = 40 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

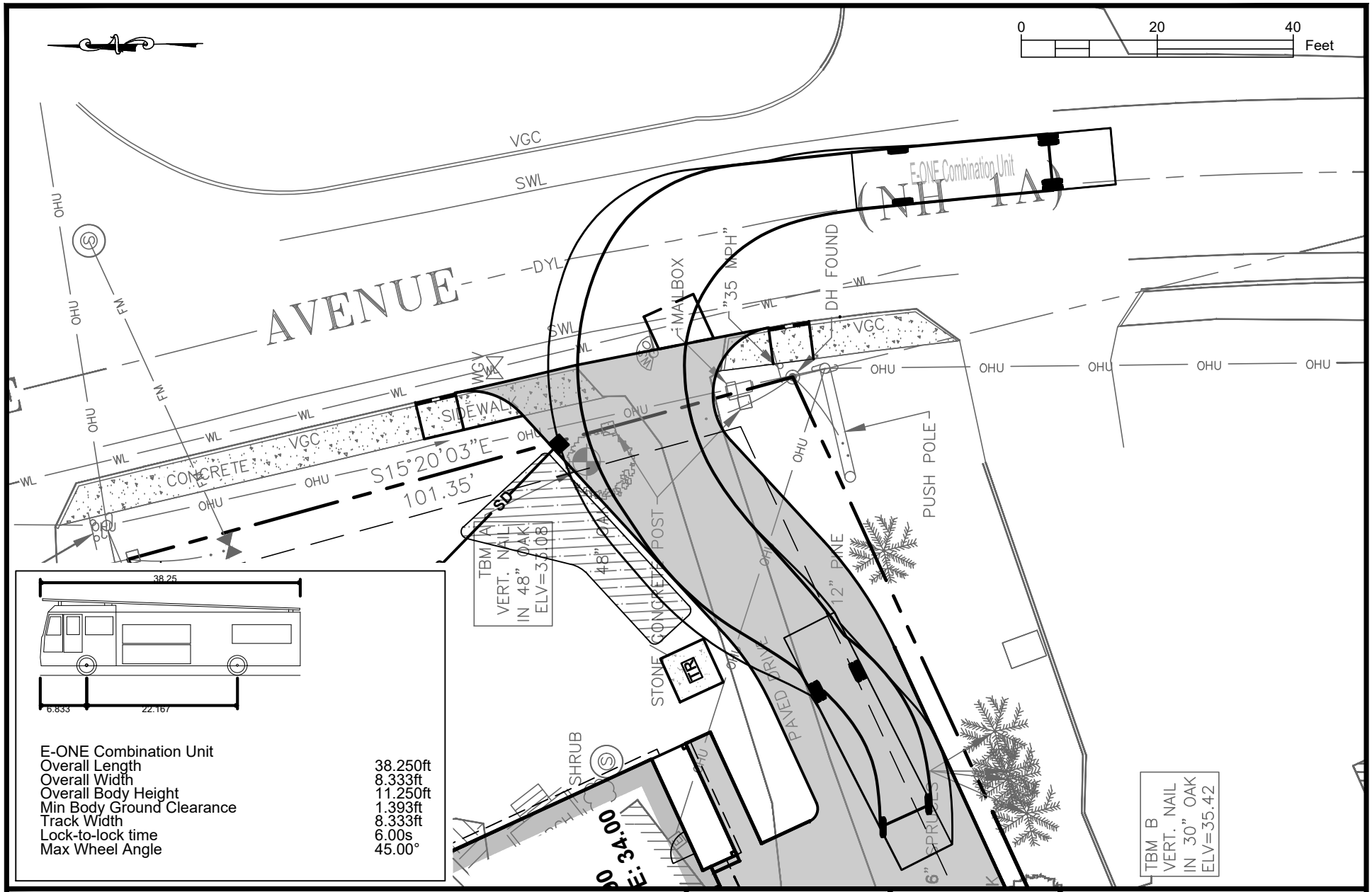
1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

POST DEVELOPMENT HYDROLOGY PLAN

STATE OF NEW HAMPSHIRE - DREW JOHN OLEHOWSKI No. 18515 LICENSED PROFESSIONAL ENGINEER - 12.18.2025

DATE	SCALE
2025.12.22	1"=40'
DRAWN BY: BLQ/PJM	DESIGNED BY: BLQ/PJM	CHECKED BY: DJO
PROJECT No. 5010314.002	
DRAWING No. **C702**	REV.



E-ONE Combination Unit	
Overall Length	38.250ft
Overall Width	8.333ft
Overall Body Height	11.250ft
Min Body Ground Clearance	1.393ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

PROJECT

1151 SAGAMORE AVENUE CBC, LLC

1151 SAGAMORE AVE., PORTSMOUTH NH

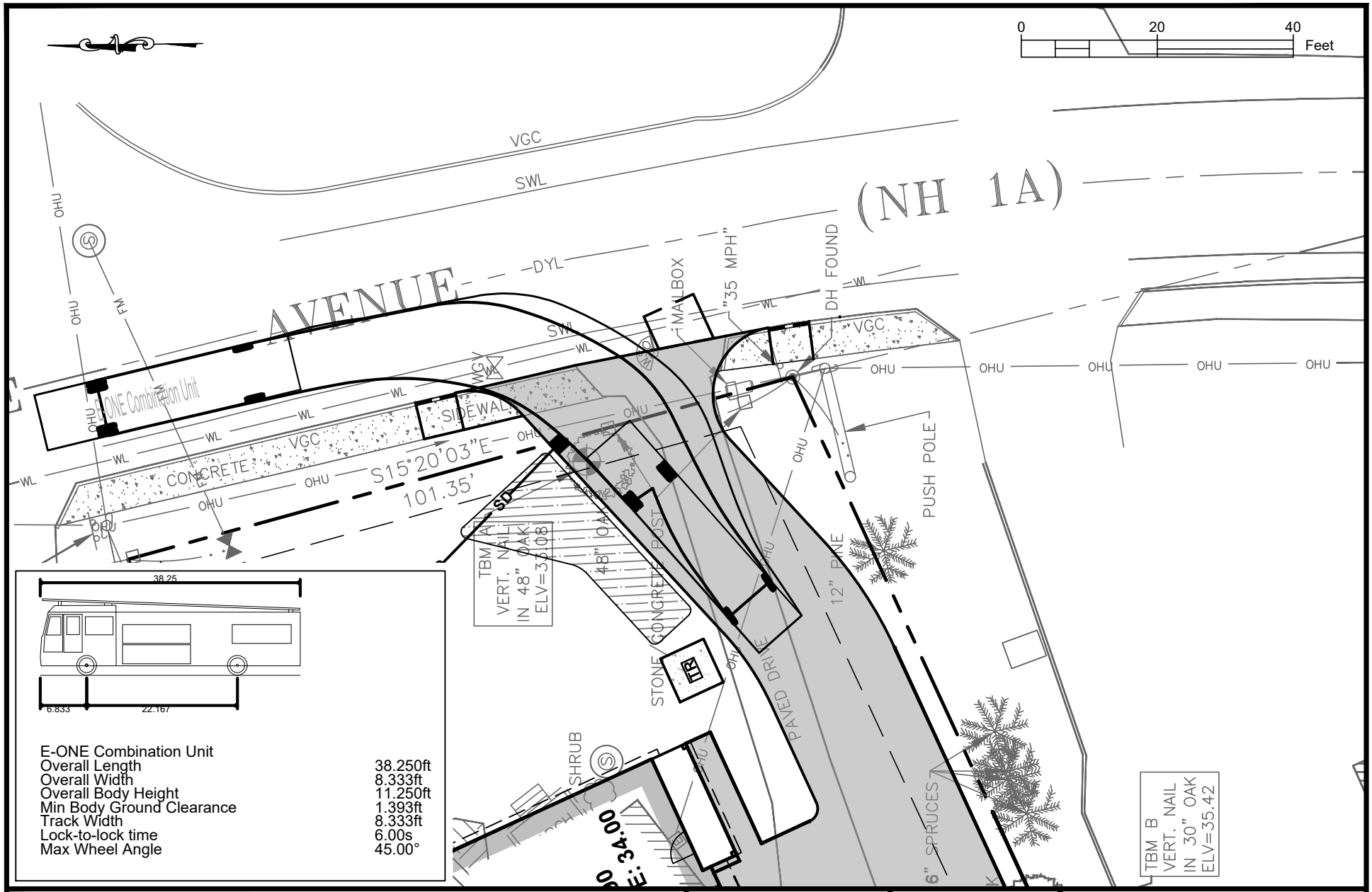
TITLE

TURNING EXHIBIT

LEFT TURN ENTERING COMPLEX

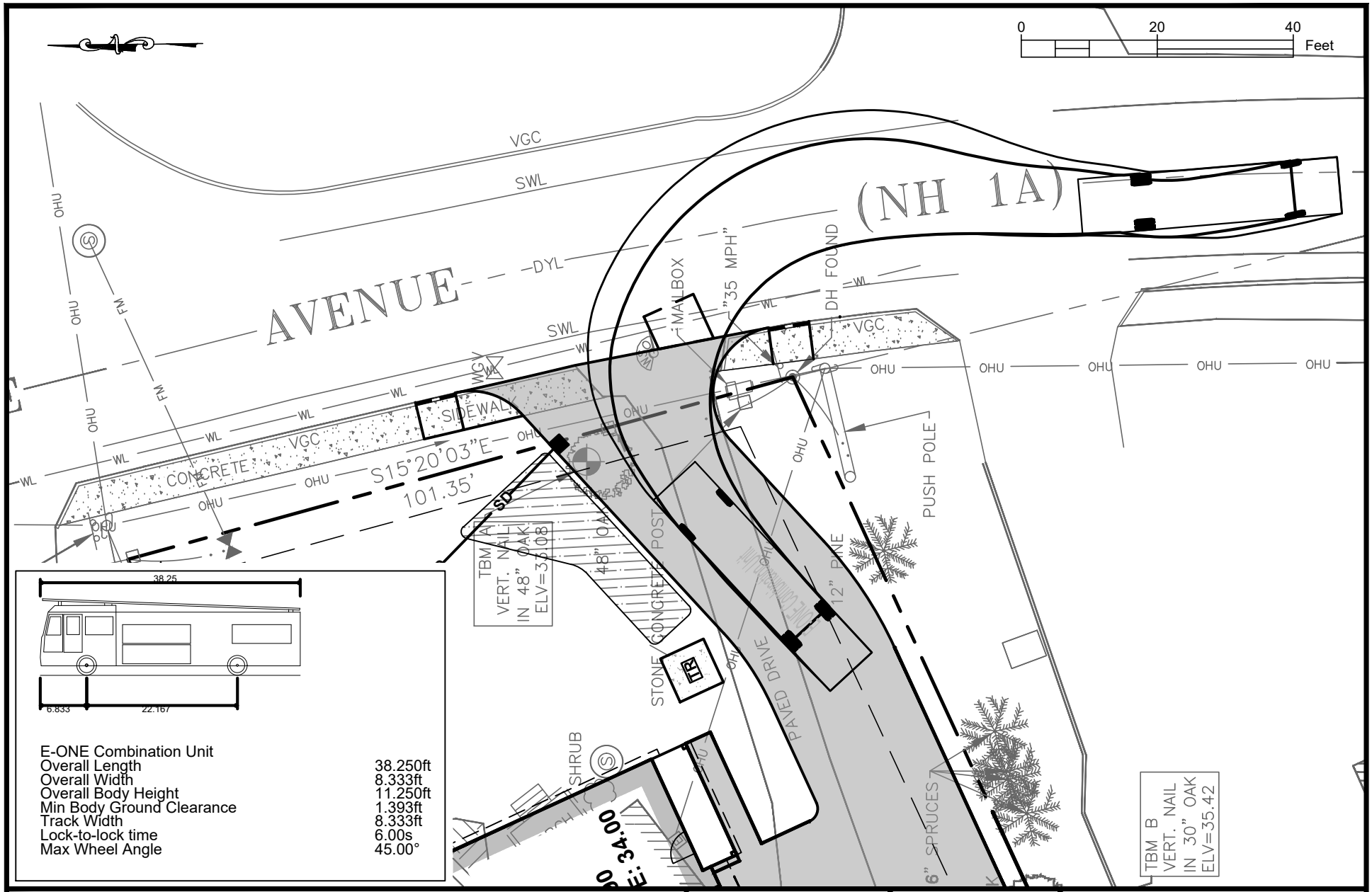
DWG No.	TR-1
JN	5010314.002
SCALE	1"=20'
BY	PJM
DATE	2025.12.22
REV.	
REV. DATE	

HALEY WARD



PROJECT **1151 SAGAMORE AVENUE CBC, LLC** **1151 SAGAMORE AVE., PORTSMOUTH NH**	DWG No. **TR-2**	BY PJM	
		DATE 2025.12.22	
TITLE **TURNING EXHIBIT** **RIGHT TURN ENTERING COMPLEX**	JN 5010314.002	REV.	
	SCALE 1"=20'	REV. DATE	

HALEY WARD



E-ONE Combination Unit	
Overall Length	38.250ft
Overall Width	8.333ft
Overall Body Height	11.250ft
Min Body Ground Clearance	1.393ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

PROJECT

1151 SAGAMORE AVENUE CBC, LLC

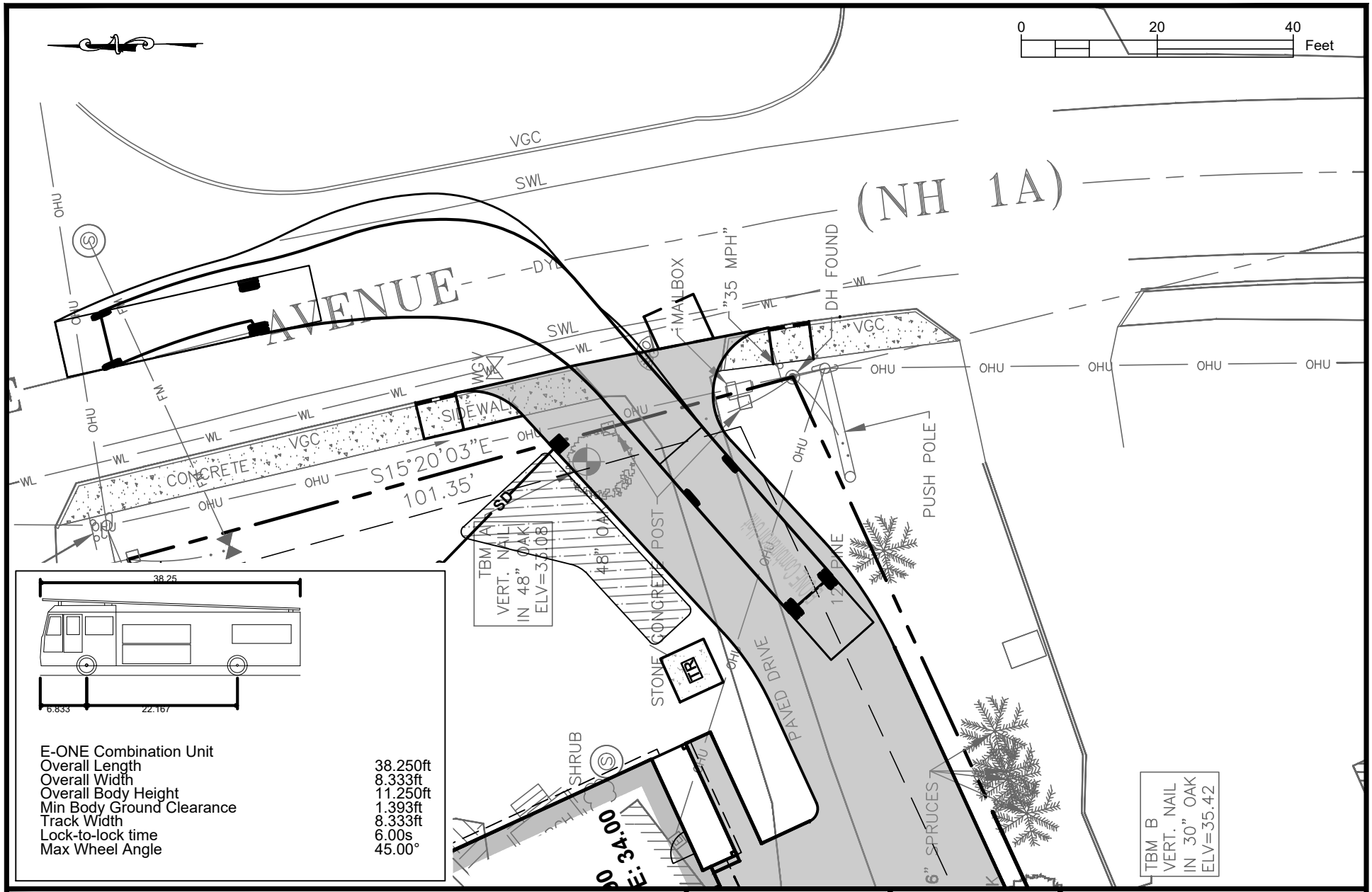
1151 SAGAMORE AVE., PORTSMOUTH NH

TITLE

TURNING EXHIBIT
RIGHT TURN EXITING COMPLEX

DWG No.	TR-3
JN	5010314.002
SCALE	1"=20'
BY	PJM
DATE	2025.12.22
REV.	
REV. DATE	

HALEY WARD



PROJECT **1151 SAGAMORE AVENUE CBC, LLC** **1151 SAGAMORE AVE., PORTSMOUTH NH**	DWG No. **TR-4**	BY PJM DATE 2025.12.22	HALEY WARD
TITLE **TURNING EXHIBIT** **LEFT TURN EXITING COMPLEX**	JN 5010314.002 SCALE 1"=20'	REV. REV. DATE	

Plant List - Trees and Shrubs

ID	Qty	Botanical Name	Common Name	Scheduled Size	Mature Height	Mature Width	Growth Habit	Tolerances	Requirements
ARB	6	Acer rubrum 'Bowhall'	Bowhall Maple	3" Cal.	40-60'	10-15'	Upright, Broadly Columnar	Urban, Wet Soil	Full, partial sun. Moist, well drained soils.
ASV	3	Acer rubrum 'Sun Valley'	Sun Valley Maple	3 1/2" Cal.	Height	Spread	Growth Habit	Tolerances	woody
GTH	2	Gleditsia triacanthos inermis 'Halka'	Halka Honeylocust	2" Cal.	30-40'	30-40'	Rounded	Urban, Salt, Drought, Wind, Heat	Full sun. Moist, well drained soils.
JBD	102	Juniperus communis depressa 'Blueberry Delight'	Blueberry Delight Juniper	2 Gal.	18-24"	4-5'	Spreading	Drought, Deer, Urban, Salt	Full, partial sun. Average, well drained soil.
PGD	3	Picea glauca 'Densata'	Black Hills Spruce	7-8' Ht.	20-30'	15-20'	Pyramidal	Drought, Deer, Wind	Full sun. Moist, well drained soils.
QB	5	Quercus bicolor	Swamp White Oak	3" Cal.	40-60'	40-60'	Broad	Drought, Moist Soil, Urban	Full sun, large space. Medium to wet, acidic soil.
RGL	100	Rhus aromatica 'Grow Low'	Grow Low Sumac	18-24"	18-24"	6-8'	Spreading	Drought, Urban, Salt	Full, partial sun. Dry to average, well drained soil.
TOS	7	Thuja occidentalis 'Smaragd'	American Arborvitae	7-8' Ht.	15-20'	5-6'	Upright, Pyramidal	Urban, Moist Soil	Full, partial sun. Average, well drained soil.
VBM	46	Viburnum dentatum 'Blue Muffin®'	Blue Muffin® Viburnum	3-4' Ht.	6-8'	4-5'	Compact	Deer, Moist Soil, Drought, Salt., Urban	Full, partial sun. Average, well drained soil.

Plant List - Perennials

ID	Qty	Botanical Name	Common Name	Scheduled Size	Mature Height	Mature Width	Growth Habit	Tolerances	Requirements
BAP	14	Baptisia australis	False Indigo	1 Gal.	36"	36"	Bushy	Salt, Drought, Urban	Sun, partial shade. Average soil.
PVS	15	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 Gal.	36"	30-48"	Clump	Drought, Wet soil, Urban, Salt	Sun, partial shade. Average to moist soil.

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: November 06, 2025

Rain Garden Grass Mix - ERNMX-180-1

	Botanical Name	Common Name
40.30 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype
17.80 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype
9.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga
6.00 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype
5.50 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype
0.70 %	*Juncus effusus*	Soft Rush
0.70 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype

100.00 %

Seeding Rate: 15 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre), Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Stormwater Management

Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: November 07, 2025

Conservation Shade Mix - ERNMX-129

	Botanical Name	Common Name
30.00 %	*Festuca rubra*	Creeping Red Fescue
30.00 %	*Festuca rubra ssp. commutata*	Chewings Fescue
20.00 %	*Lolium multiflorum*	Annual Ryegrass
10.00 %	*Poa pratensis, 'Baron'*	Kentucky Bluegrass, 'Baron'
10.00 %	*Poa trivialis*	Rough Bluegrass

100.00 %

Seeding Rate: 100-200 lb per acre, or 3-5 lb per 1,000 sq ft

Grasses & Grass-like Species - Herbaceous Perennial; Lawn & Turfgrass Sites

While designed for deep-shaded areas, this mix requires at least 2 hours of sunlight daily. The fescues and bluegrasses are shade tolerant and blend very well together. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

terra firma
landscape architecture
163.a Court Street Portsmouth, NH 03801
603.531.9109 | terrence@terrafirmalandarch.com

Build America

1151 Sagamore Ave.
Portsmouth, NH

Project Title

Landscape Architect
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

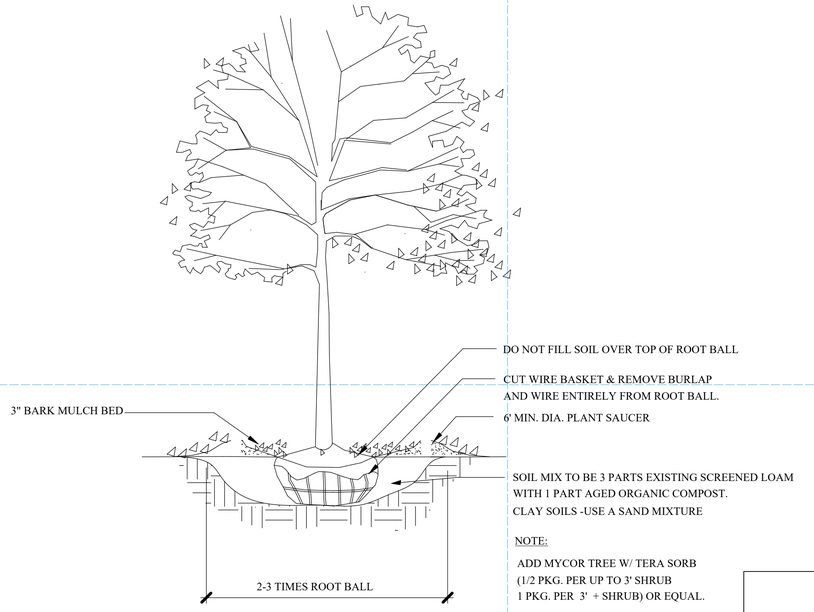
Consultant

REV.	DATE	DESCRIPTION
B	12/17/2025	
A	12/5/2025	Patio, Walkway, and Window Well Adjustments
NO.	DATE	ISSUE NOTE

Project Manager
Drawn By: TC
Date: November 2025
Reviewed By: TP
Project ID: 1151 Sagamore

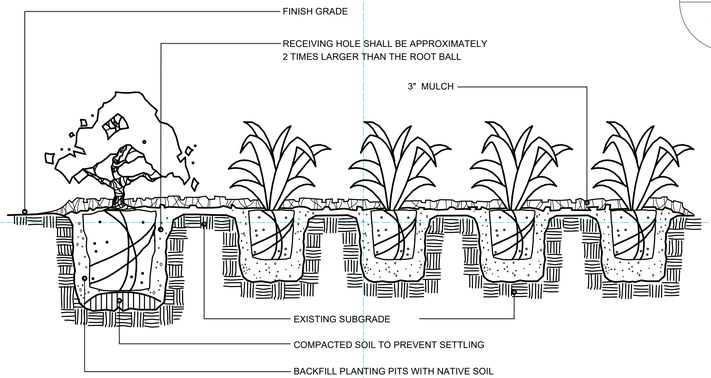
Sheet Title
Landscape Plan

Sheet No.
L-1



1 / L-5

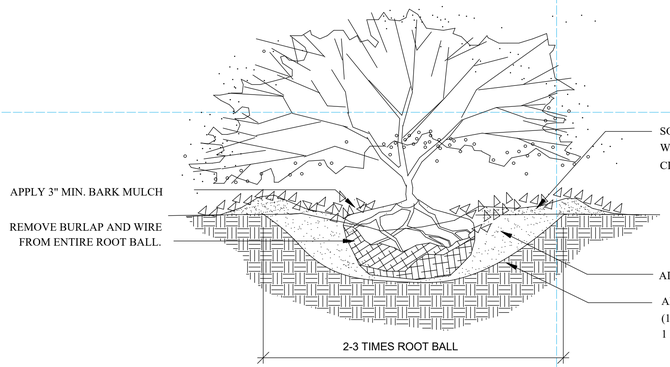
TREE PLANTING - 2"+ CAL.
SCALE: NTS



NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

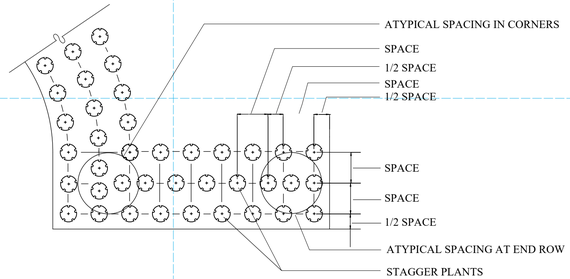
3 / L-5

SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS



4 / L-5

B&B SHRUB PLANTING
SCALE: NTS

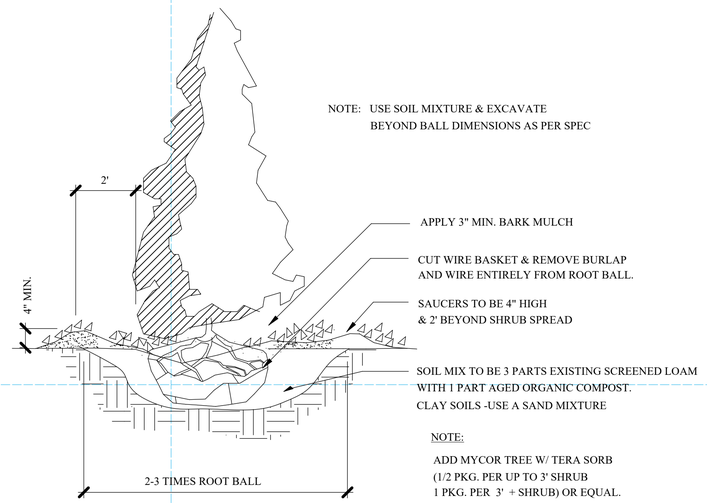


NOTES:

1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

5 / L-5

GROUND COVER SPACING DETAIL
SCALE: NTS



2 / L-5

PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE.

terra firma
landscape architecture
163.a Court Street Portsmouth, NH 03801
603.531.9109 | terrence@terrafirmalandarch.com

Project Title

Build America

1151 Sagamore Ave.
Portsmouth, NH

Landscape Architect
terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

REV.	DATE	DESCRIPTION

NO.	DATE	ISSUE NOTE

Project Manager
Drawn By: TC
Date: November 2025
Reviewed By: TP
Project ID: 1151 Sagamore

Sheet Title
Landscape Details

Sheet No.
L-2

Condominium Association Documents are not yet available but will be provided prior to final approval.

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HALEY WARD

STORMWATER MANAGEMENT AND EROSION CONTROL PLAN

TO THE CITY OF PORTSMOUTH
FOR 1151 SAGAMORE AVENUE
Map 224, Lot 19 | Portsmouth, NH

APPLICANT:
1151 Sagamore Avenue CBC LLC
76 State Street, Newburyport, ME 01950

December 22, 2025
JN: 5010314.002

REPORT PREPARED BY:
Haley Ward, Inc.
200 Griffin Road, Unit 14 | Portsmouth, NH 03801

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed residential redevelopment project at 1151 Sagamore Avenue in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 224 as Lot 19. The project proposes to replace an existing building with four (4) single family condominiums. The total size of the lot is 30,191 square-feet (0.69 acres). The size of the total drainage area is 38,239 square-feet (2.90 acres).

The development will provide for the construction of four (4) standalone condominium units, with associated landscaping, utilities, and driveways. The new buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no significant increase in peak runoff from the site as a result of this project.

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University), with a 15% increase to comply with local ordinance.

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 224 as Lot 19. Bounding the site to north is Wentworth Road. Bounding the site to east is Sagamore Avenue. Bounding the site to south is a condominium complex. Bounding the site to the west is a City owned conservation land.

The property is situated in the Mixed Residential Office Zone. A vicinity map is included in the Appendix to this report. The proposed building replacement will demolish an existing building and associated driveway.

This report includes information about the existing site necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre- development and post-development watersheds, subcatchment areas and

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calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management and treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. These values have been used in this analysis, with a 15% addition to comply with local ordinances.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.20 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.
The storm events used for the calculations in this report are the 2-year, 10-year, 25-year, and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Haley Ward and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of one soil type:

Soil Symbol	Soil Name and Slopes
140B	Chatfield-Hollis-Canton complex (0-8% slopes), rocky

Chatfield-Hollis-Canton complex is well drained with a stated depth to restrictive feature of 20-41 inches.

One test pit was dug on the site in the location of the proposed Rain Garden. A restrictive ledge layer was identified at 41-inches. There was no observed water table. The soil is described as fine, sandy loam, granular, friable, fill.

The physical characteristics of the site consist of flat (0-8%) grades that generally slope downward from the south to the north of the lot. Elevations on the site range from 30 to 35 feet above sea level. The existing site is developed and includes an existing building located in the front of the lot, with an asphalt driveway. Vegetation around the developed portion of the lot consists of established grasses, shrubs, and trees.

There are no protected natural resources on or directly adjacent to the subject property.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0286F (effective date January 29, 2021), the project site is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

CONSTRUCTION TIMING

Development of the site has been ongoing throughout 2025; completed activities include blasting/excavation to bring the site to foundation grade, and the exiting home has already been demolished. Construction of the proposed development is anticipated to begin in Spring 2026, pending receipt of required land use permits. Prior to further earth moving activities, the site will be stabilized via the proposed erosion control devices as shown on the Site Plan. These devices will not be removed until the site has been stabilized via permanent vegetation, which is expected to occur in Fall/Winter 2026.

LOW-IMPACT DEVELOPMENT STATEMENT

The proposed developed utilized Low-Impact Develeopment to the greatest extent practical. Primarily, runoff generated from the proposed driveway and building roofs is directed to a Rain Garden which has been designed per the New Hampshire Stormwater Manual. Impervious areas have been minimized by including garages within the proposed buildings, eliminating the need for additional outdoor parking spaces.

BUFFERS, SETBACKS, EXISTING FEATURES

The site will adhere to the applicable setbacks found within the City zoning ordinance. There are no setbacks related to protected natural resources. The site is not within a mapped floodplain. There are mature trees between the subject parcel and the abutting property to the south which will be protected as deemed practical. There are no known water quality concerns associated with this site.

WASTE

The majority of the site preparation, including demolition of the existing building, has already been completed at the time of this application's submission. Additional construction debris will be collected in a dumpster and will be disposed of off-site by a licensed hauler. Solid waste and wastewater generated by the proposed residential units will be handled via public systems.

PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as four (4) subcatchment watershed basins based on localized topography and discharge location. A Pre-Development Hydrology map and HydroCAD model results have been provided.

Subcatchment 1 (1S) represents the area to the north of the Site, including undeveloped wooded area and a portion of Wentworth Road. This area drains towards the center of the site and ultimately discharges to the southwest (Summation Point 1, SP1.)

Subcatchment 2 (2S) represents the front of the lot, including developed lawn area, the existing building, and existing driveway, as well as a portion of the abutting condominium site to the south. This area drains to the northeast corner of the site (Summation Point 2, SP2)

Subcatchment 3 (3S) represents the existing condominium site to the south. This area drains to an existing rain garden system, which outlets to SP 1. This area will not be altered by the proposed development.

Subcatchment 4 (4S) represents the existing condominium site to the south. This area drains to the southwest, Summation Point 3 (SP3.) This area will not be altered by the proposed development.

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as nine (9) subcatchment basins. A Post-Development Hydrology map and HydroCAD model results have been provided.

Subcatchment 1 (1S) continues to represent the area to the north of the site. This drainage area will be intercepted by a French drain proposed to be located on the north side of the proposed buildings. This drain will direct runoff around the buildings to Summation Point 1. This drain has been sized to accommodate the 10-year storm event.

Subctachment 2 (2S) continues to represent the front of the lot. Runoff in this area will continue to be directed to the northeast corner of the lot, Summation Point 2.

Subcatchments 3 and 4 (3S and 4S) continue to represent the abutting condominium property to the south. Flow patterns from these areas will not be altered by this development.

Subcatchment 5 (5S) represents the proposed driveway and landscaped areas. Runoff within this subcatchment will be directed as overland flow to a proposed rain garden at the rear of the site. This rain garden will release controlled follow to Summation Point 1.

Subcatchments 6,7,8, and 9 (6S, 7S, 8S, 9S) represent the roof areas of the four proposed buildings. Units 3 and 4 (6S and 7S) will be equipped with gutters and downspouts which will direct their runoff to the proposed rain garden. Units 1 and 2 (8S and 9S) will also have gutters and downspouts but will discharge to the French drain at the rear of the buildings. These areas all ultimately discharge to Summation Point 1.

RUNOFF COMPARISON

Table 1: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q50 (CFS)		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Description**
SP1	1.20	1.71	3.82	4.48	8.63	9.47	Southwest corner of property
SP2	1.01	0.94	2.14	1.90	4.02	3.46	Northeast corner of property/Sagamore Ave
SP3	0.04	0.04	0.13	0.13	0.30	0.30	Southwest corner of southern abutting property

As shown in Table 1, post-development runoff rates are similar to those observed under pre-development conditions. These rates have been reduced for flows directed towards Sagamore Avenue and are unchanged for those on the abutting lot to the south. Summation Point 1 represents discharge to the City-owned conservation area to the west. Runoff rates for this analysis point are shown to increase by less than 1 cfs, which is considered insignificant and not expected to create adverse impacts on downstream properties. It is unlikely that this abutting land will be developed due to its conservation designation, and so a <1 cfs increase will not have a detrimental impact on the existing wooded environment.

OFFSITE INFRASTRUCTURE CAPACITY

There is no Town infrastructure utilized in this project in regard to storm drainage. All retention and routing to the final destination of the stormwater is done on-site, therefore no impact to city infrastructure is anticipated.

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is moderate due to the presence of soils that are highly erodible. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Silt Soxx (or approved alternative) located at the toe of disturbed slopes
- Stabilized construction entrance at access point to the site
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping, and surfacing the access drives and parking areas with asphalt paving and other areas with impervious walkways.

CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the rain garden, the post- development runoff rates are effectively equivalent to the pre-development runoff rates. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

REFERENCES

1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.
3. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version*

   10.20 copyright 2013.

Property Information

Property ID	0224-0019-0000
Location	1151 SAGAMORE AVE
Owner	1151 SAGAMORE AVENUE CBC LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/23/2025

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.052 degrees North
Longitude	70.748 degrees West
Elevation	10 feet
Date/Time	Fri Aug 25 2023 11:03:42 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.67	2.94	**1yr**	2.36	2.82	3.24	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.30	**2yr**	0.89	1.18	1.52	1.94	2.49	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.08	4.60	**5yr**	3.61	4.42	5.07	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.90	**10yr**	1.26	1.73	2.24	2.91	3.76	4.88	5.55	**10yr**	4.32	5.34	6.12	7.14	8.01	**10yr**
25yr	0.48	0.77	0.97	1.34	1.78	2.35	**25yr**	1.54	2.15	2.79	3.65	4.76	6.19	7.13	**25yr**	5.48	6.85	7.85	9.07	10.09	**25yr**
50yr	0.54	0.87	1.11	1.55	2.09	2.78	**50yr**	1.80	2.54	3.31	4.35	5.69	7.42	8.62	**50yr**	6.56	8.29	9.48	10.87	12.02	**50yr**
100yr	0.60	0.98	1.26	1.79	2.44	3.28	**100yr**	2.10	3.00	3.93	5.19	6.80	8.88	10.42	**100yr**	7.86	10.02	11.46	13.03	14.33	**100yr**
200yr	0.68	1.11	1.44	2.07	2.85	3.87	**200yr**	2.46	3.54	4.66	6.17	8.12	10.65	12.60	**200yr**	9.42	12.11	13.85	15.63	17.08	**200yr**
500yr	0.81	1.33	1.73	2.51	3.52	4.81	**500yr**	3.03	4.42	5.82	7.76	10.28	13.53	16.20	**500yr**	11.97	15.58	17.81	19.89	21.57	**500yr**

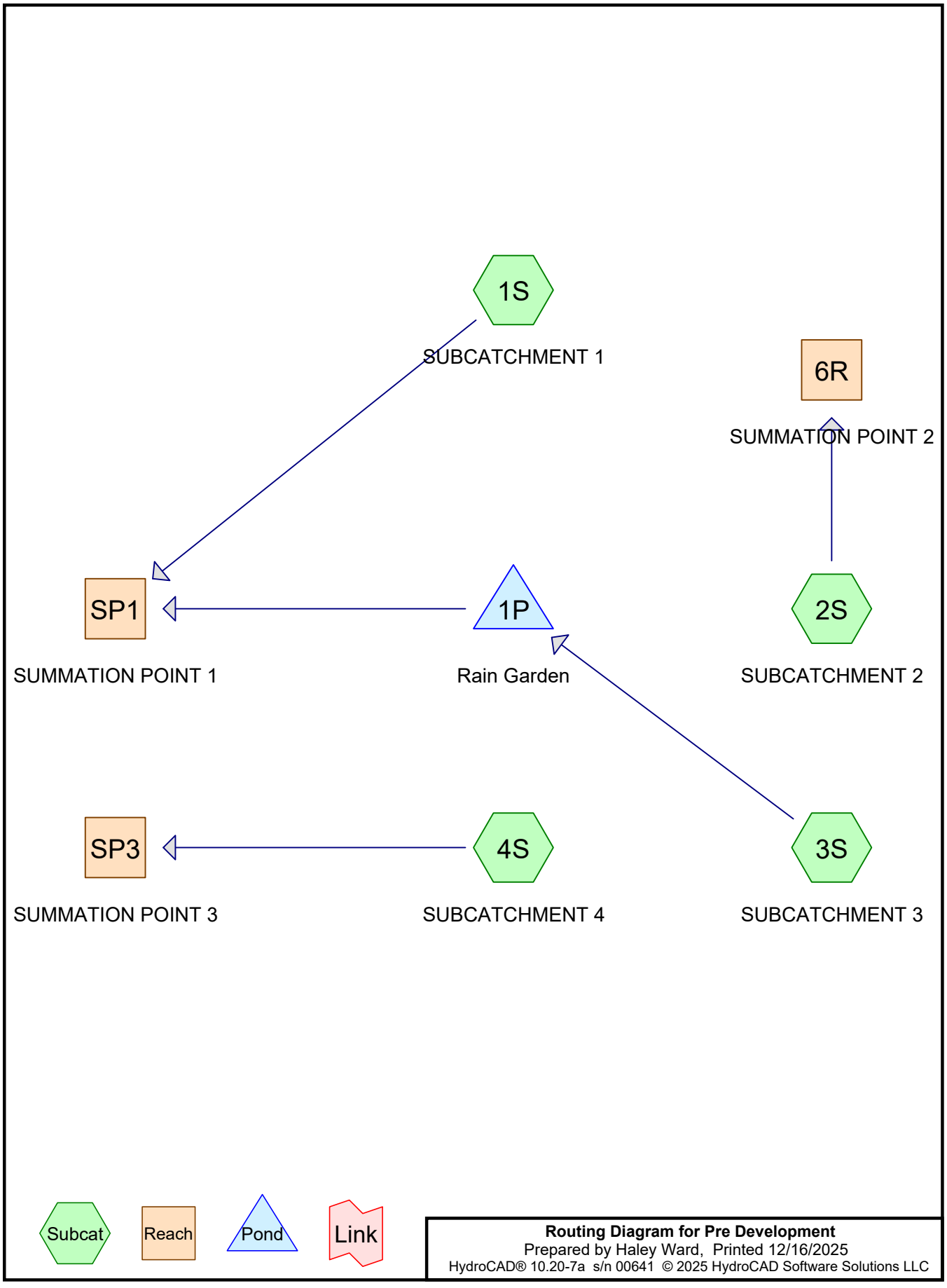
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.34	1.69	2.26	2.50	**1yr**	2.00	2.41	2.88	3.21	3.94	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.81	2.33	3.07	3.47	**2yr**	2.72	3.33	3.84	4.56	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.72	3.80	4.20	**5yr**	3.36	4.04	4.74	5.56	6.26	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.80	2.38	3.05	4.38	4.88	**10yr**	3.88	4.69	5.47	6.44	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.74	3.52	4.78	5.91	**25yr**	4.23	5.68	6.69	7.83	8.72	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.05	3.91	5.41	6.82	**50yr**	4.79	6.56	7.77	9.10	10.06	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.41	2.63	3.39	4.31	6.10	7.87	**100yr**	5.40	7.57	9.04	10.58	11.63	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.81	**200yr**	1.97	2.75	2.94	3.74	4.74	6.86	9.09	**200yr**	6.07	8.74	10.50	12.32	13.45	**200yr**
500yr	0.69	1.02	1.31	1.91	2.72	3.36	**500yr**	2.34	3.29	3.42	4.26	5.39	8.01	10.98	**500yr**	7.09	10.56	12.80	15.09	16.30	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.98	3.18	**1yr**	2.64	3.06	3.59	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.43	3.72	**2yr**	3.03	3.58	4.11	4.86	5.64	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.54	3.26	4.36	4.98	**5yr**	3.85	4.79	5.40	6.40	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.62	1.99	**10yr**	1.39	1.94	2.29	3.11	3.97	5.36	6.23	**10yr**	4.74	5.99	6.85	7.87	8.79	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.97	4.08	5.18	7.75	8.38	**25yr**	6.86	8.05	9.20	10.38	11.45	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.61	5.02	6.36	9.69	10.50	**50yr**	8.57	10.10	11.51	12.78	14.01	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.76	4.40	6.19	7.83	12.11	13.16	**100yr**	10.71	12.65	14.40	15.76	17.15	**100yr**
200yr	0.93	1.41	1.78	2.58	3.60	4.70	**200yr**	3.10	4.59	5.37	7.63	9.63	15.17	16.51	**200yr**	13.43	15.87	18.04	19.43	20.98	**200yr**
500yr	1.16	1.73	2.22	3.23	4.59	6.11	**500yr**	3.96	5.97	6.97	10.10	12.71	20.46	22.28	**500yr**	18.11	21.43	24.31	25.62	27.41	**500yr**

Powered by ACIS Northeast Regional Climate Center



Routing Diagram for Pre Development
Prepared by Haley Ward, Printed 12/16/2025

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=78,380 sf 5.34% Impervious Runoff Depth>0.53"
Flow Length=375' Tc=9.1 min CN=58 Runoff=0.65 cfs 0.080 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=27,769 sf 34.95% Impervious Runoff Depth>1.38"
Tc=5.0 min CN=74 Runoff=1.01 cfs 0.073 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=17,344 sf 56.79% Impervious Runoff Depth>1.95"
Tc=5.0 min CN=82 Runoff=0.91 cfs 0.065 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>0.66"
Tc=5.0 min CN=61 Runoff=0.04 cfs 0.004 af

Reach 6R: SUMMATION POINT 2 Inflow=1.01 cfs 0.073 af
Outflow=1.01 cfs 0.073 af

Reach SP1: SUMMATION POINT 1 Inflow=1.20 cfs 0.133 af
Outflow=1.20 cfs 0.133 af

Reach SP3: SUMMATION POINT 3 Inflow=0.04 cfs 0.004 af
Outflow=0.04 cfs 0.004 af

Pond 1P: Rain Garden Peak Elev=31.43' Storage=830 cf Inflow=0.91 cfs 0.065 af
Outflow=0.56 cfs 0.053 af

Total Runoff Area = 2.902 ac Runoff Volume = 0.221 af Average Runoff Depth = 0.92"
81.22% Pervious = 2.357 ac 18.78% Impervious = 0.545 ac

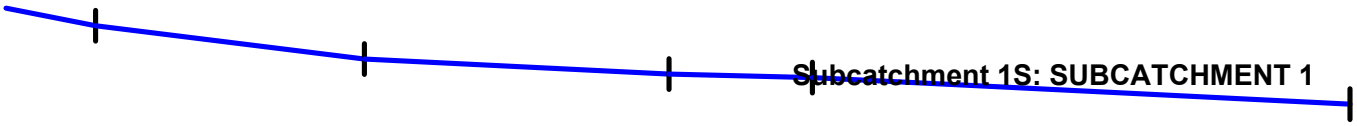
Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 0.65 cfs @ 12.17 hrs, Volume= 0.080 af, Depth> 0.53"
Routed to Reach SP1 : SUMMATION POINT 1

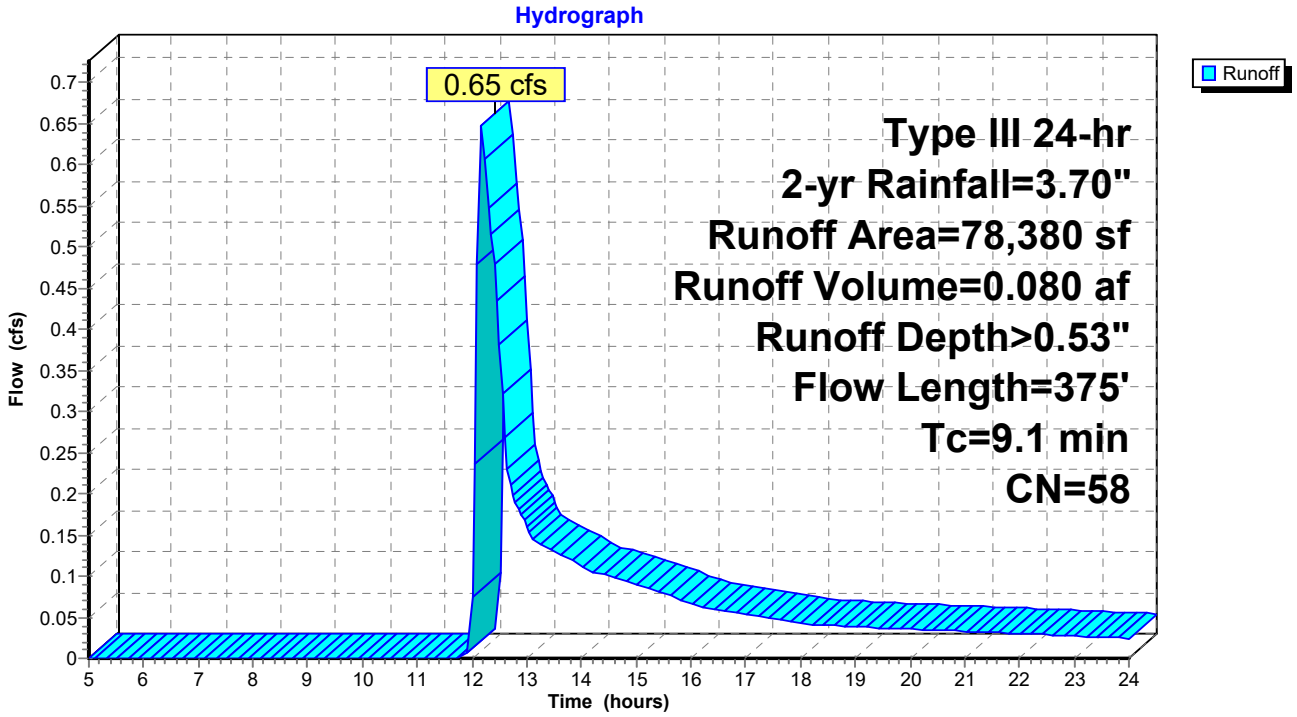
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	65,963	55	Woods, Good, HSG B
	8,235	61	>75% Grass cover, Good, HSG B
*	4,182	98	IMPERVIOUS
	78,380	58	Weighted Average
	74,198		94.66% Pervious Area
	4,182		5.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.2	150	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	375	Total			



Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

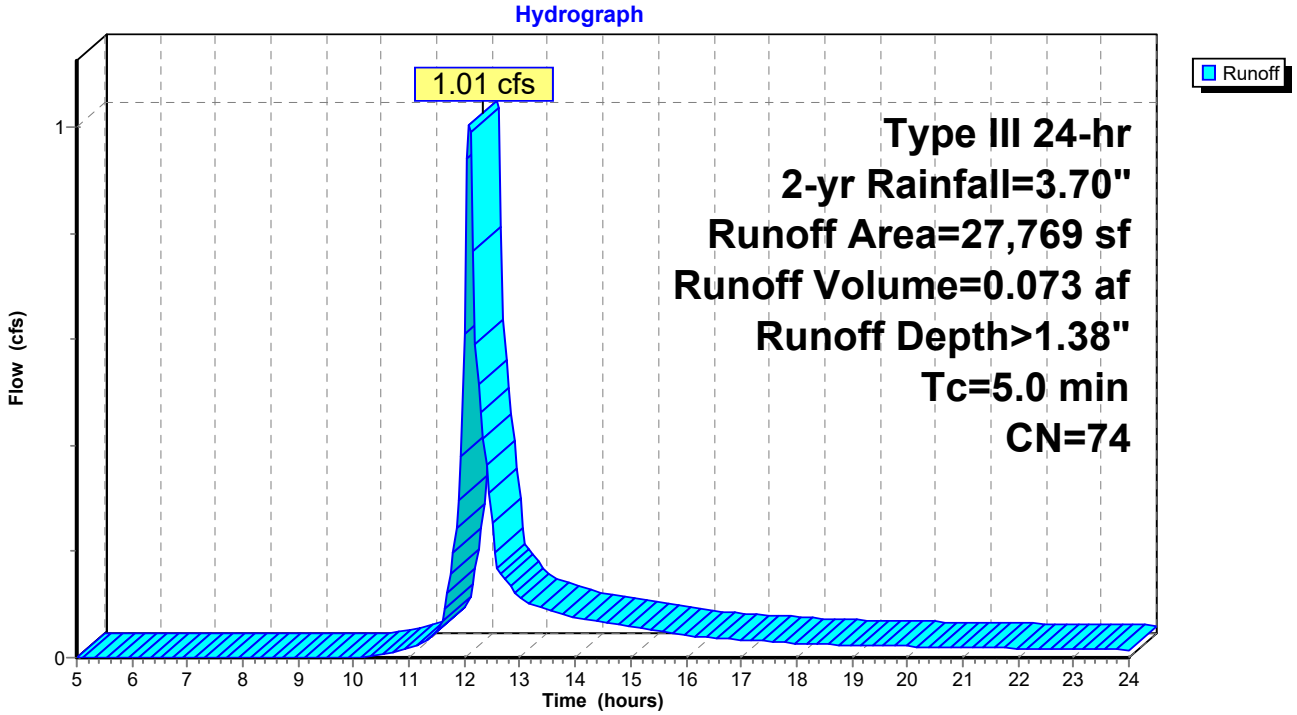
Runoff = 1.01 cfs @ 12.08 hrs, Volume= 0.073 af, Depth> 1.38"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	18,063	61	>75% Grass cover, Good, HSG B
*	9,706	98	IMPERVIOUS
	27,769	74	Weighted Average
	18,063		65.05% Pervious Area
	9,706		34.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

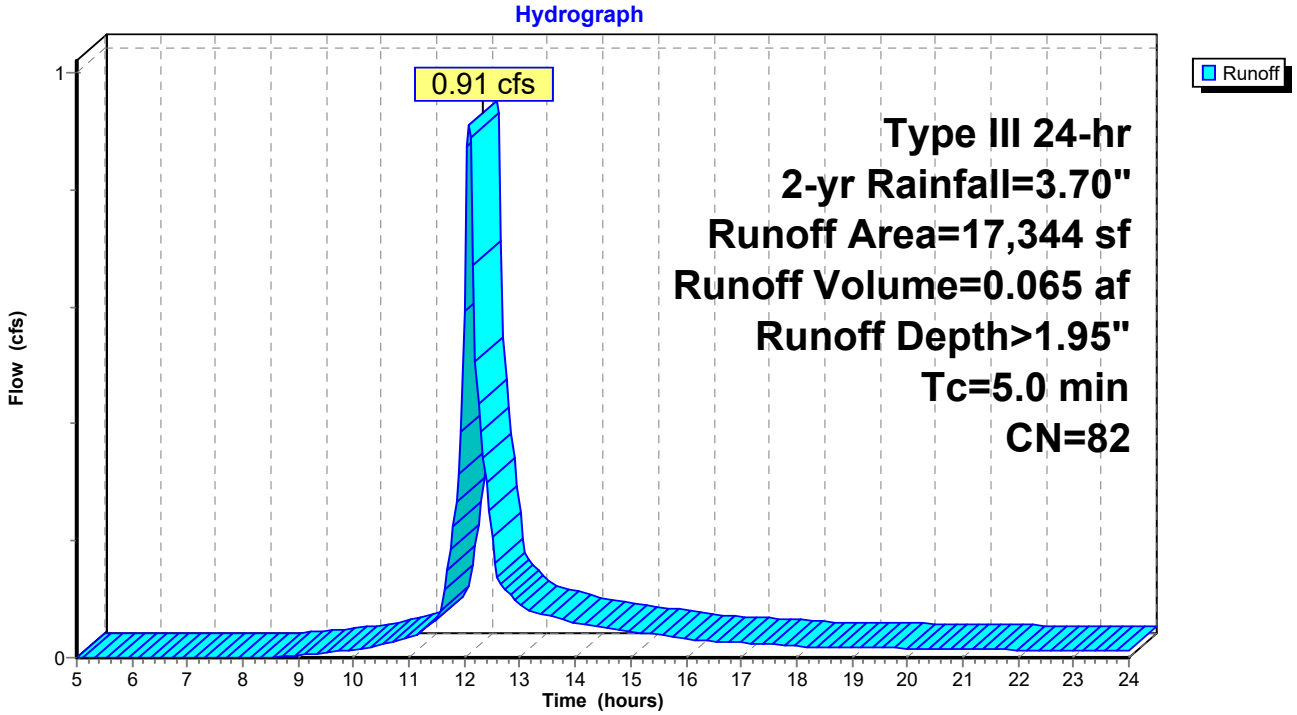
Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.065 af, Depth> 1.95"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	7,494	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	17,344	82	Weighted Average
	7,494		43.21% Pervious Area
	9,850		56.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

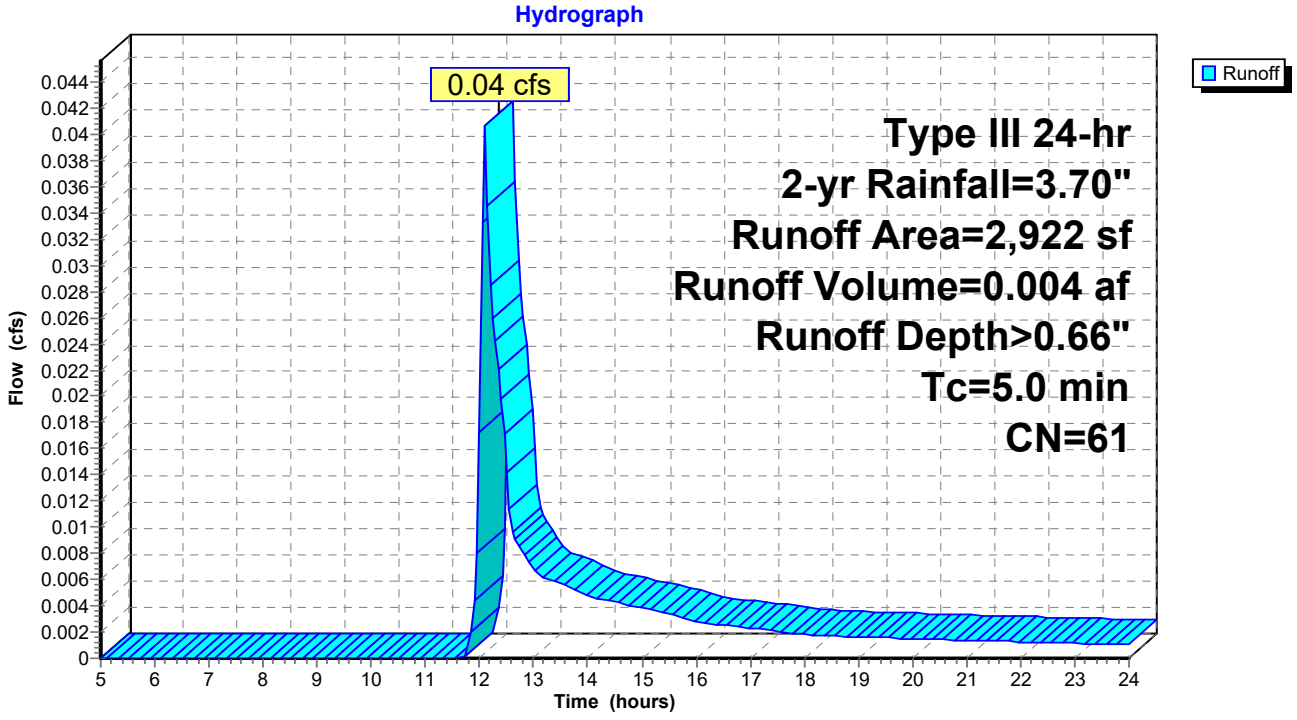
Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af, Depth> 0.66"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4

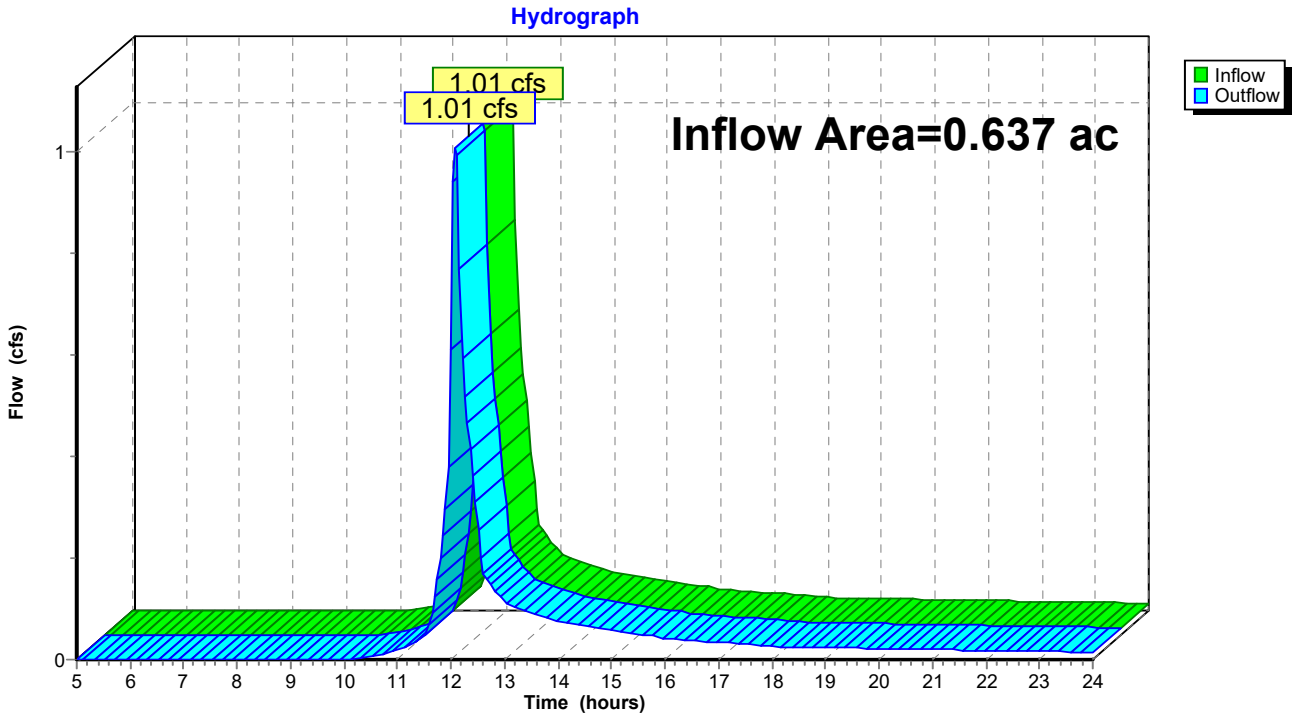


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.637 ac, 34.95% Impervious, Inflow Depth > 1.38" for 2-yr event
Inflow = 1.01 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 1.01 cfs @ 12.08 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

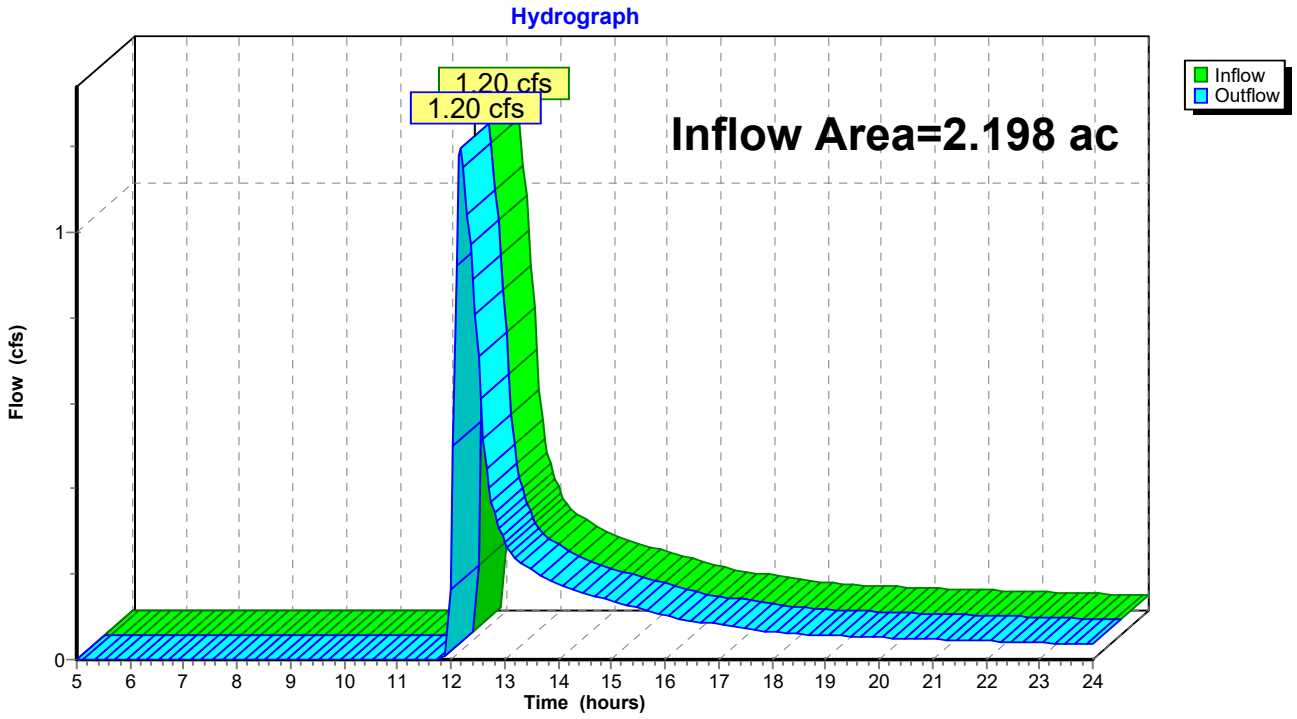


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.198 ac, 14.66% Impervious, Inflow Depth > 0.73" for 2-yr event
Inflow = 1.20 cfs @ 12.18 hrs, Volume= 0.133 af
Outflow = 1.20 cfs @ 12.18 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

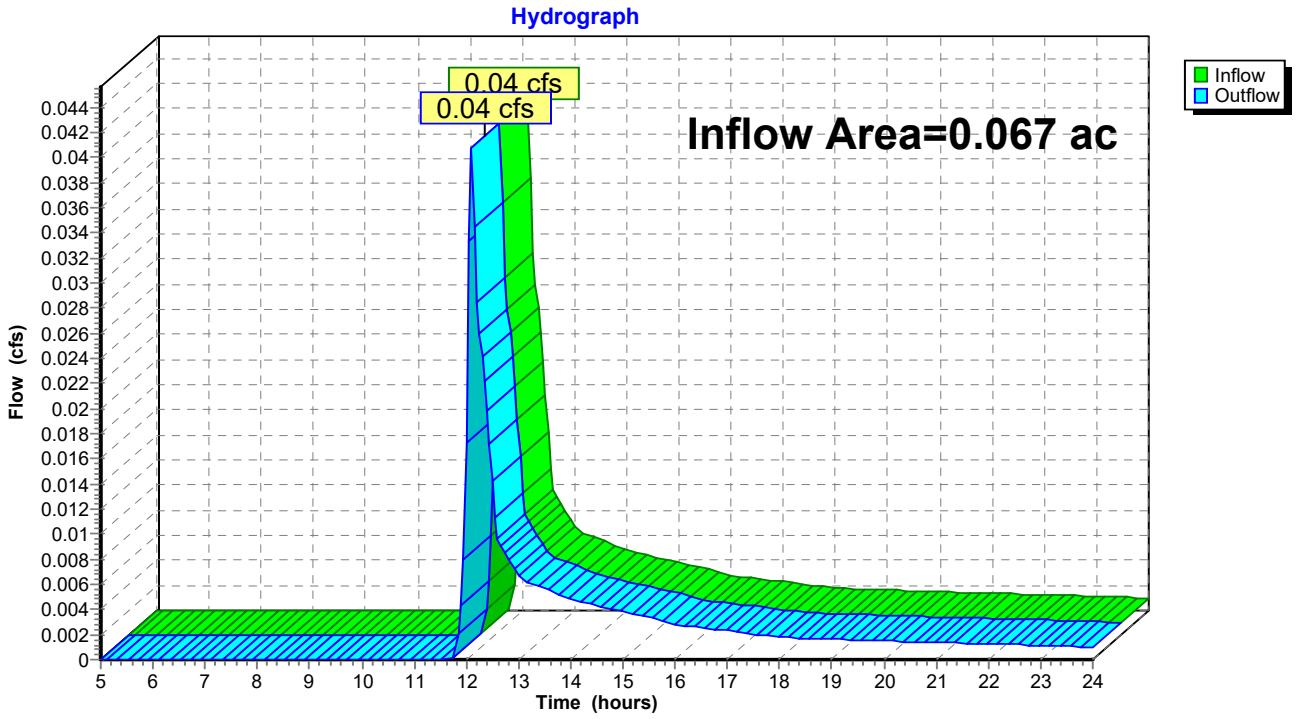


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 0.66" for 2-yr event
Inflow = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af
Outflow = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Rain Garden

Inflow Area = 0.398 ac, 56.79% Impervious, Inflow Depth > 1.95" for 2-yr event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.065 af
Outflow = 0.56 cfs @ 12.19 hrs, Volume= 0.053 af, Atten= 38%, Lag= 6.7 min
Primary = 0.56 cfs @ 12.19 hrs, Volume= 0.053 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.43' @ 12.19 hrs Surf.Area= 907 sf Storage= 830 cf

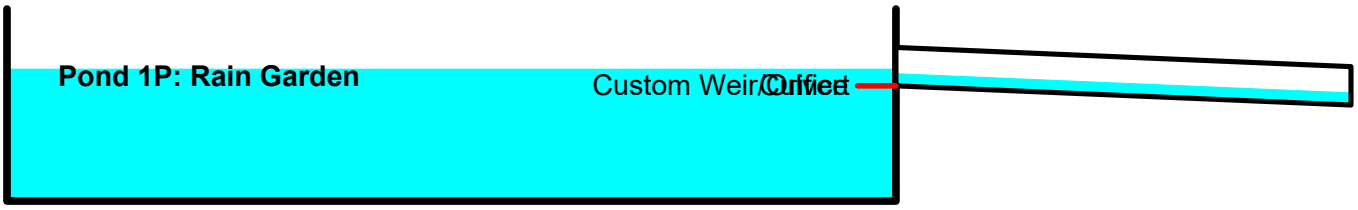
Plug-Flow detention time= 115.8 min calculated for 0.053 af (82% of inflow)
Center-of-Mass det. time= 43.3 min (871.3 - 828.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

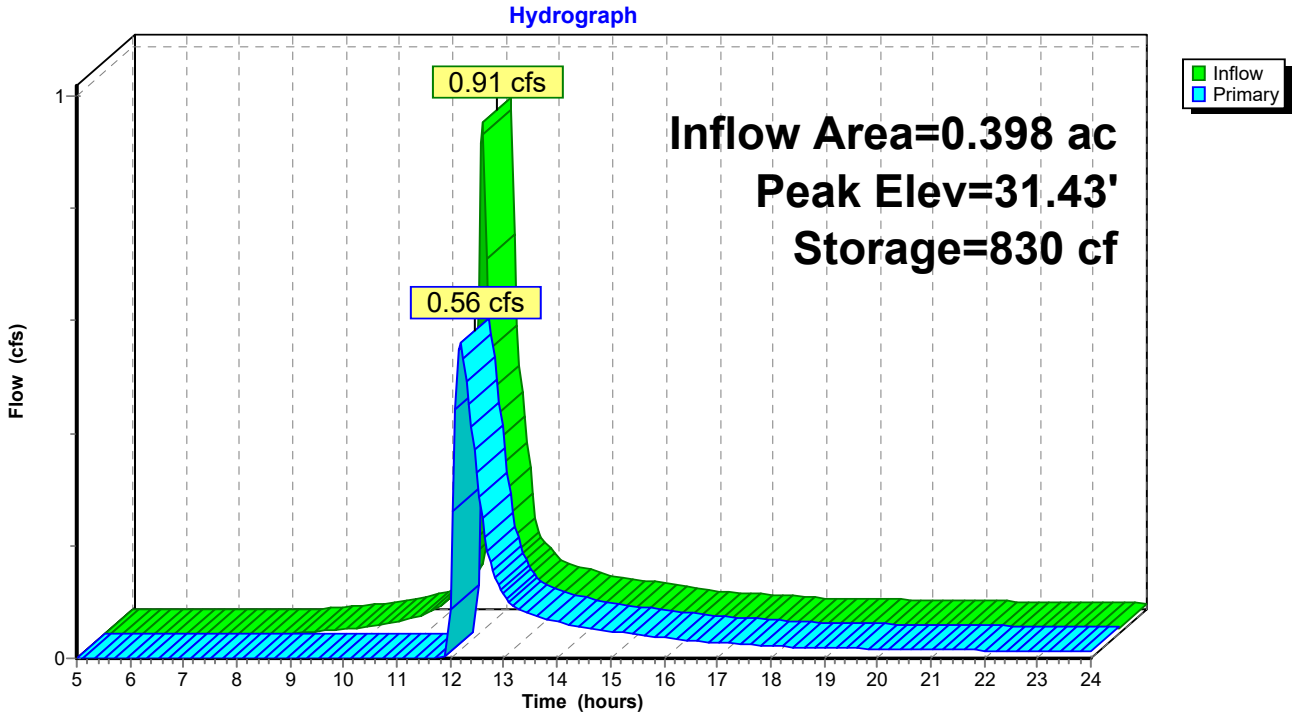
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=0.56 cfs @ 12.19 hrs HW=31.43' (Free Discharge)
└**1=Culvert** (Passes 0.56 cfs of 0.73 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 0.56 cfs @ 2.15 fps)



Pond 1P: Rain Garden



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=78,380 sf 5.34% Impervious Runoff Depth>1.52"
Flow Length=375' Tc=9.1 min CN=58 Runoff=2.57 cfs 0.227 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=27,769 sf 34.95% Impervious Runoff Depth>2.86"
Tc=5.0 min CN=74 Runoff=2.14 cfs 0.152 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=17,344 sf 56.79% Impervious Runoff Depth>3.63"
Tc=5.0 min CN=82 Runoff=1.69 cfs 0.120 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>1.75"
Tc=5.0 min CN=61 Runoff=0.13 cfs 0.010 af

Reach 6R: SUMMATION POINT 2 Inflow=2.14 cfs 0.152 af
Outflow=2.14 cfs 0.152 af

Reach SP1: SUMMATION POINT 1 Inflow=3.82 cfs 0.336 af
Outflow=3.82 cfs 0.336 af

Reach SP3: SUMMATION POINT 3 Inflow=0.13 cfs 0.010 af
Outflow=0.13 cfs 0.010 af

Pond 1P: Rain Garden Peak Elev=31.74' Storage=1,124 cf Inflow=1.69 cfs 0.120 af
Outflow=1.26 cfs 0.109 af

Total Runoff Area = 2.902 ac Runoff Volume = 0.509 af Average Runoff Depth = 2.11"
81.22% Pervious = 2.357 ac 18.78% Impervious = 0.545 ac

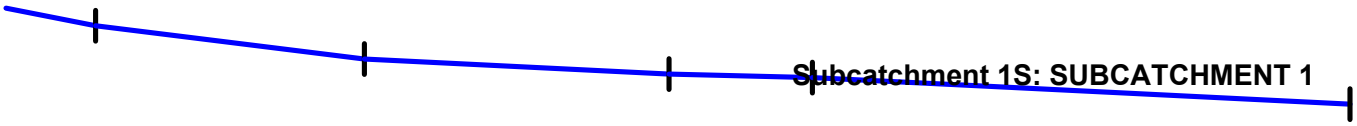
Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 2.57 cfs @ 12.15 hrs, Volume= 0.227 af, Depth> 1.52"
Routed to Reach SP1 : SUMMATION POINT 1

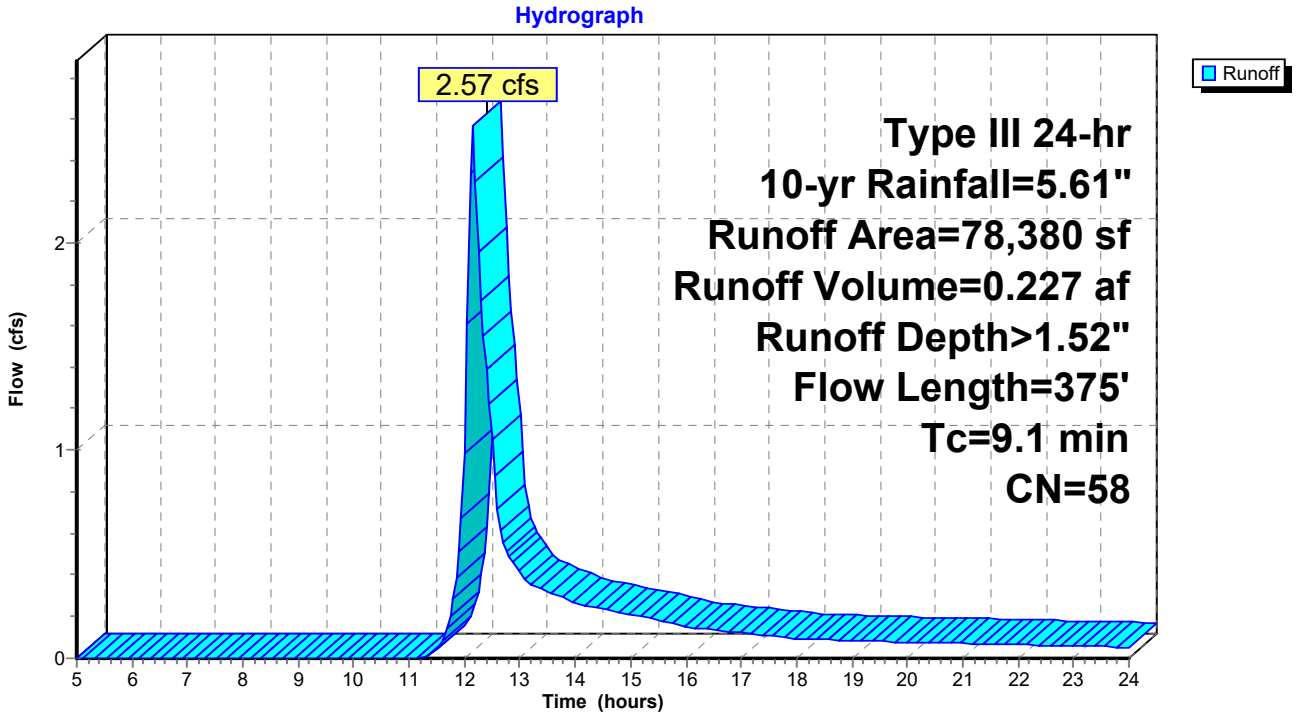
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	65,963	55	Woods, Good, HSG B
	8,235	61	>75% Grass cover, Good, HSG B
*	4,182	98	IMPERVIOUS
	78,380	58	Weighted Average
	74,198		94.66% Pervious Area
	4,182		5.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.2	150	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	375	Total			



Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

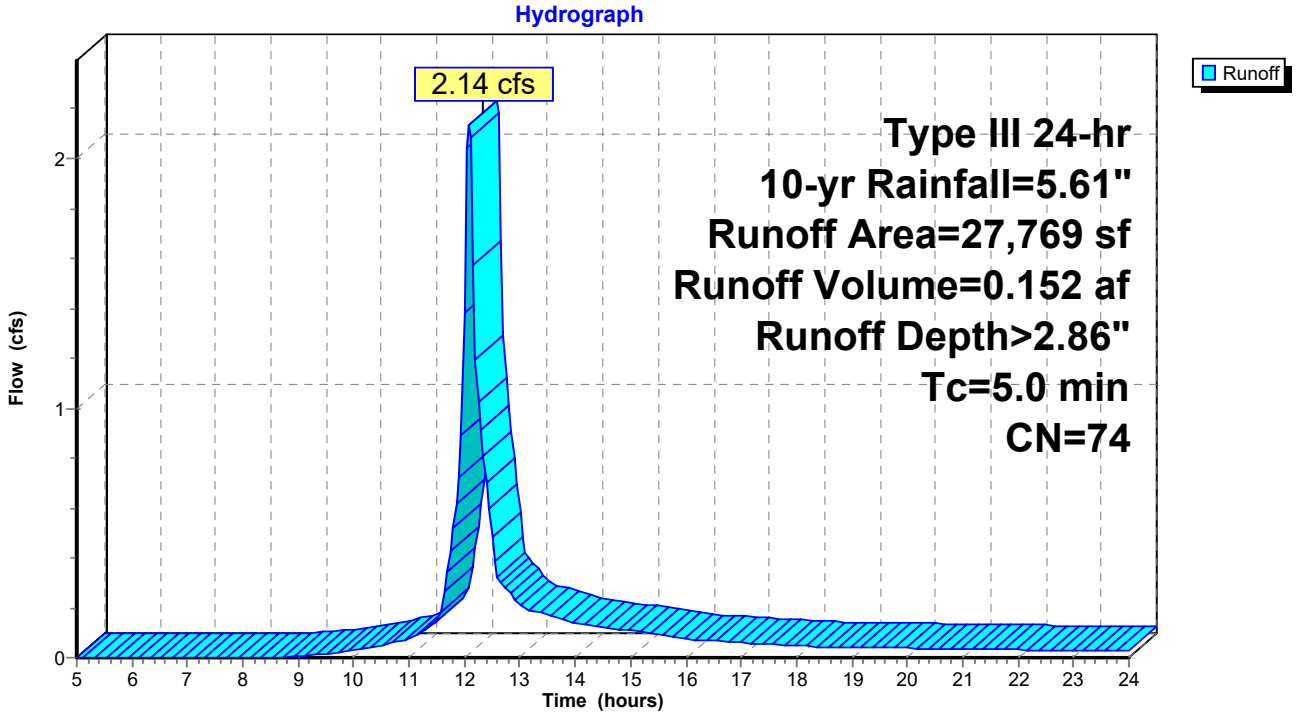
Runoff = 2.14 cfs @ 12.08 hrs, Volume= 0.152 af, Depth> 2.86"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	18,063	61	>75% Grass cover, Good, HSG B
*	9,706	98	IMPERVIOUS
	27,769	74	Weighted Average
	18,063		65.05% Pervious Area
	9,706		34.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

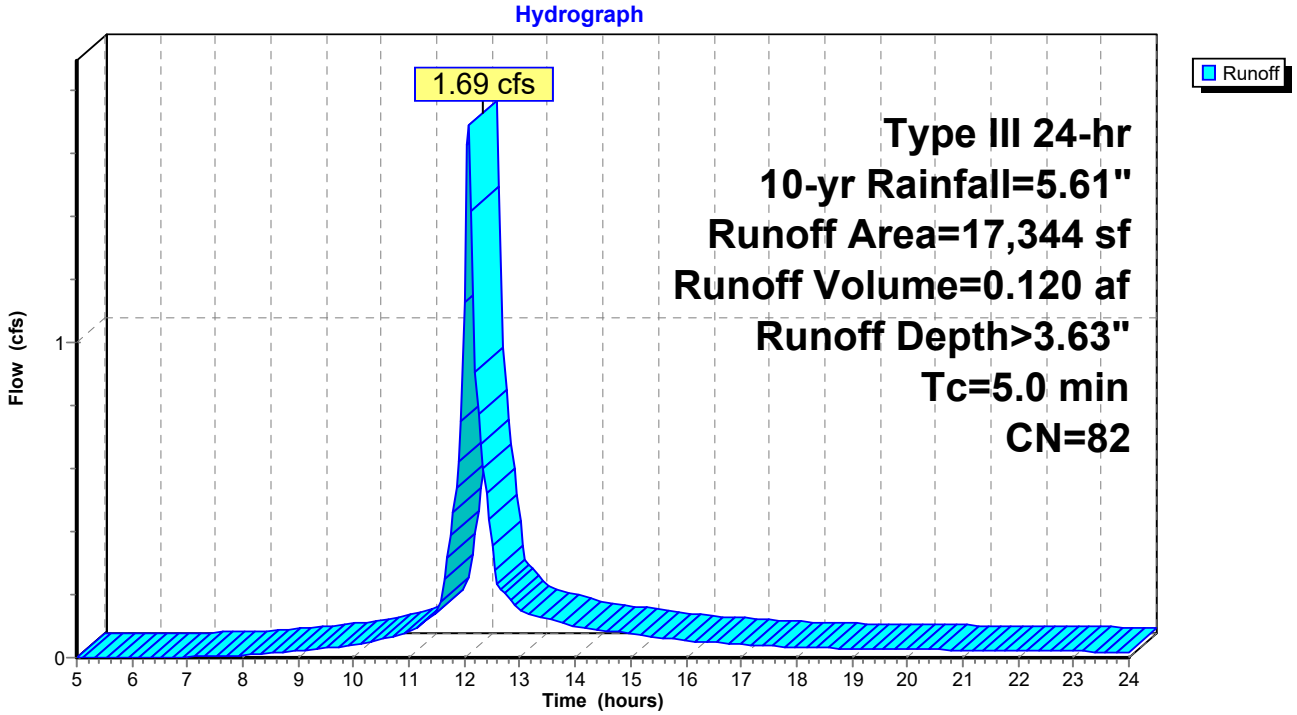
Runoff = 1.69 cfs @ 12.07 hrs, Volume= 0.120 af, Depth> 3.63"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	7,494	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	17,344	82	Weighted Average
	7,494		43.21% Pervious Area
	9,850		56.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

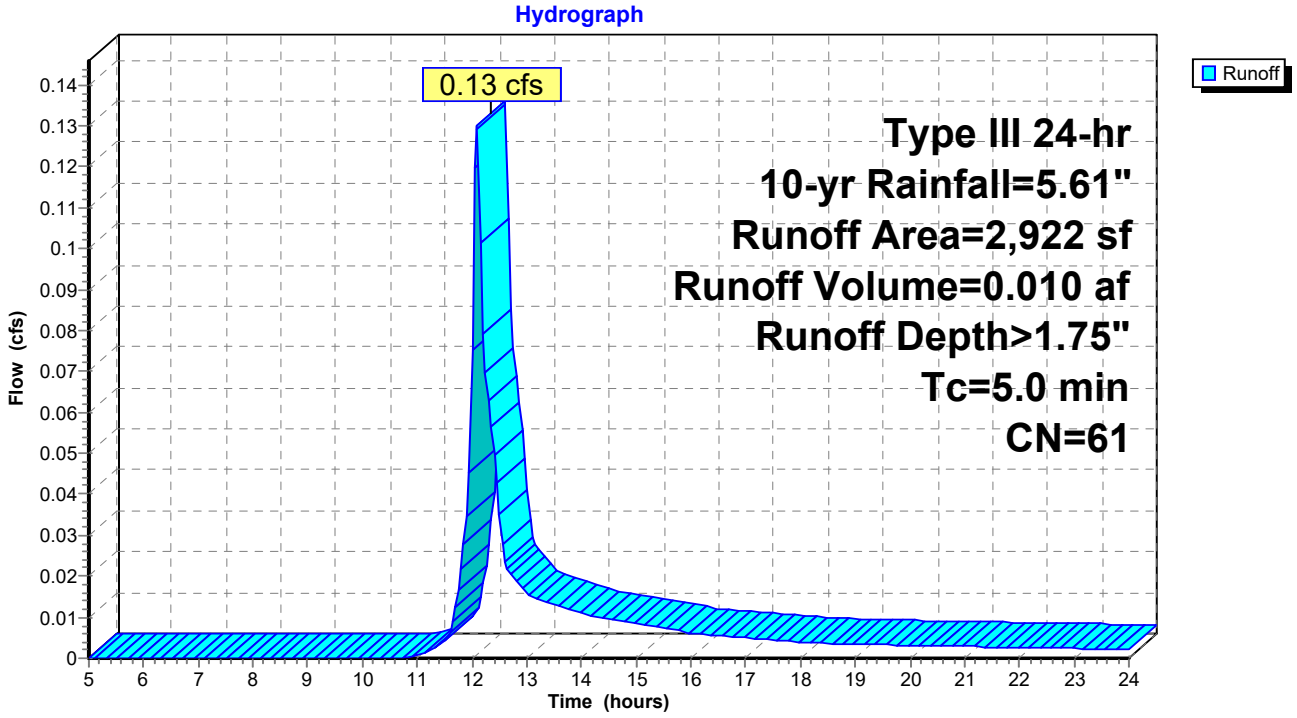
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 1.75"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4

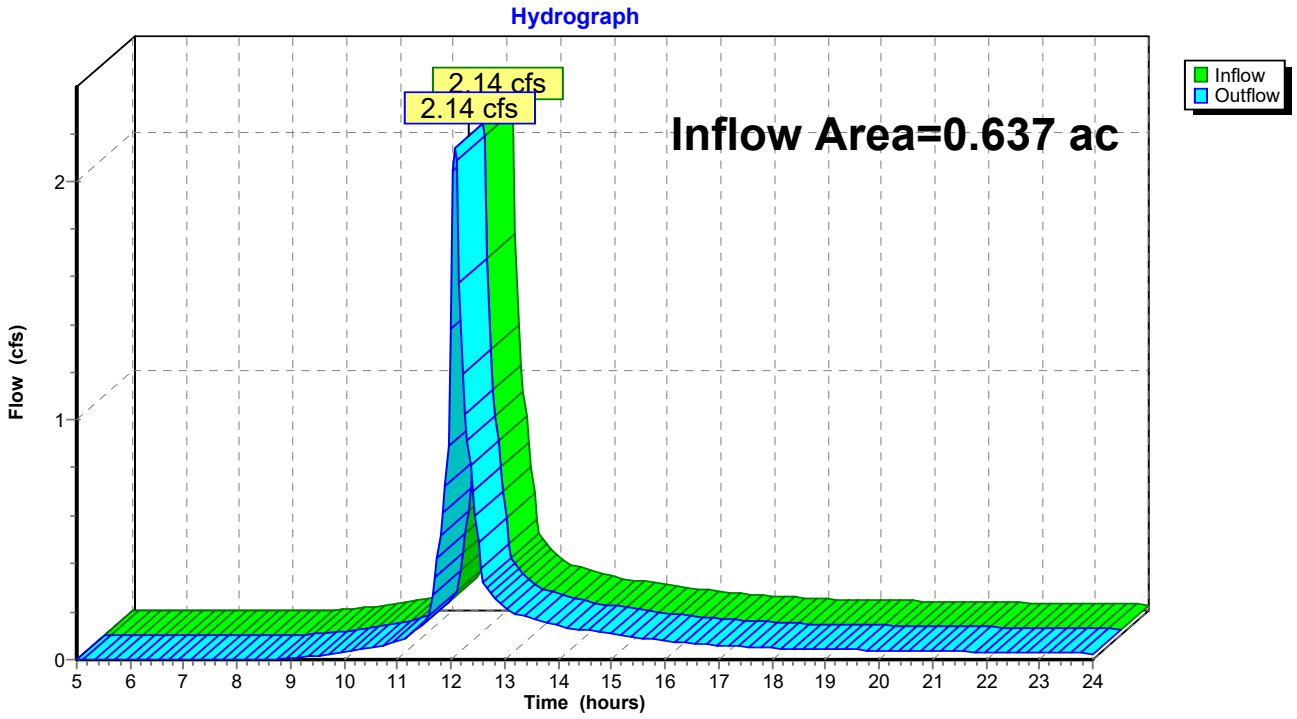


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.637 ac, 34.95% Impervious, Inflow Depth > 2.86" for 10-yr event
Inflow = 2.14 cfs @ 12.08 hrs, Volume= 0.152 af
Outflow = 2.14 cfs @ 12.08 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

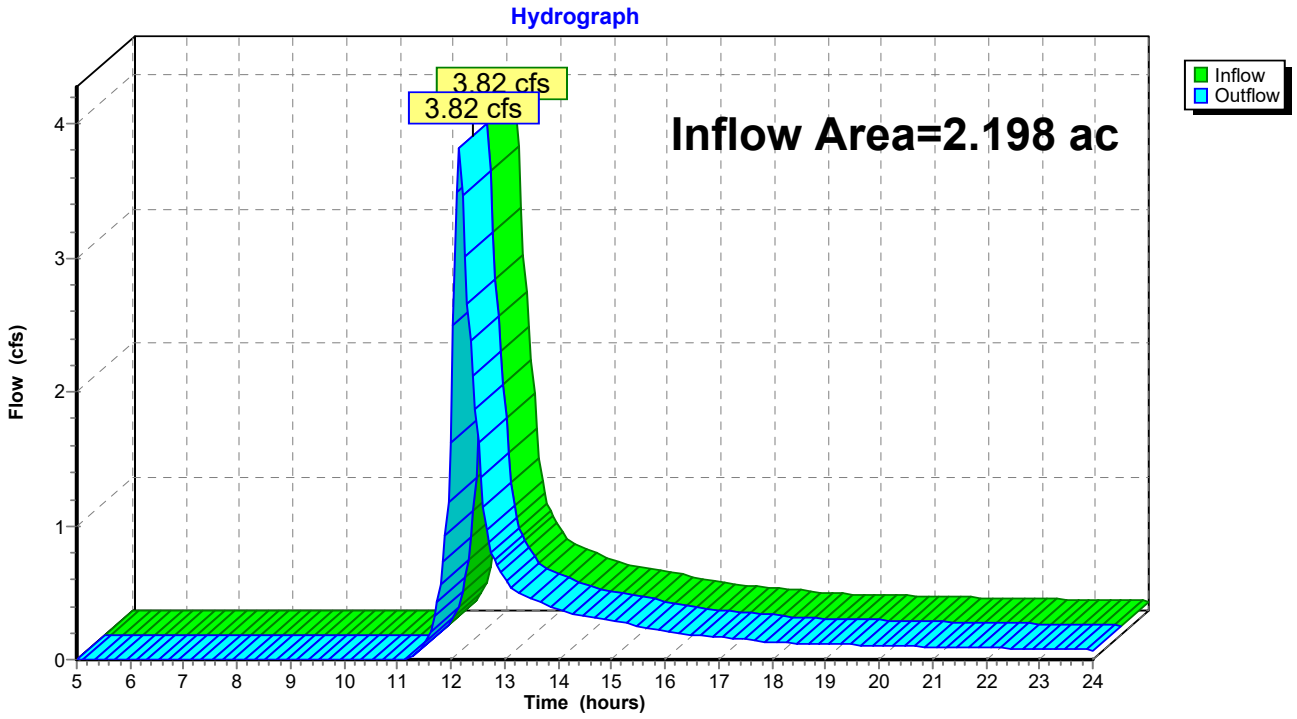


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.198 ac, 14.66% Impervious, Inflow Depth > 1.83" for 10-yr event
Inflow = 3.82 cfs @ 12.15 hrs, Volume= 0.336 af
Outflow = 3.82 cfs @ 12.15 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

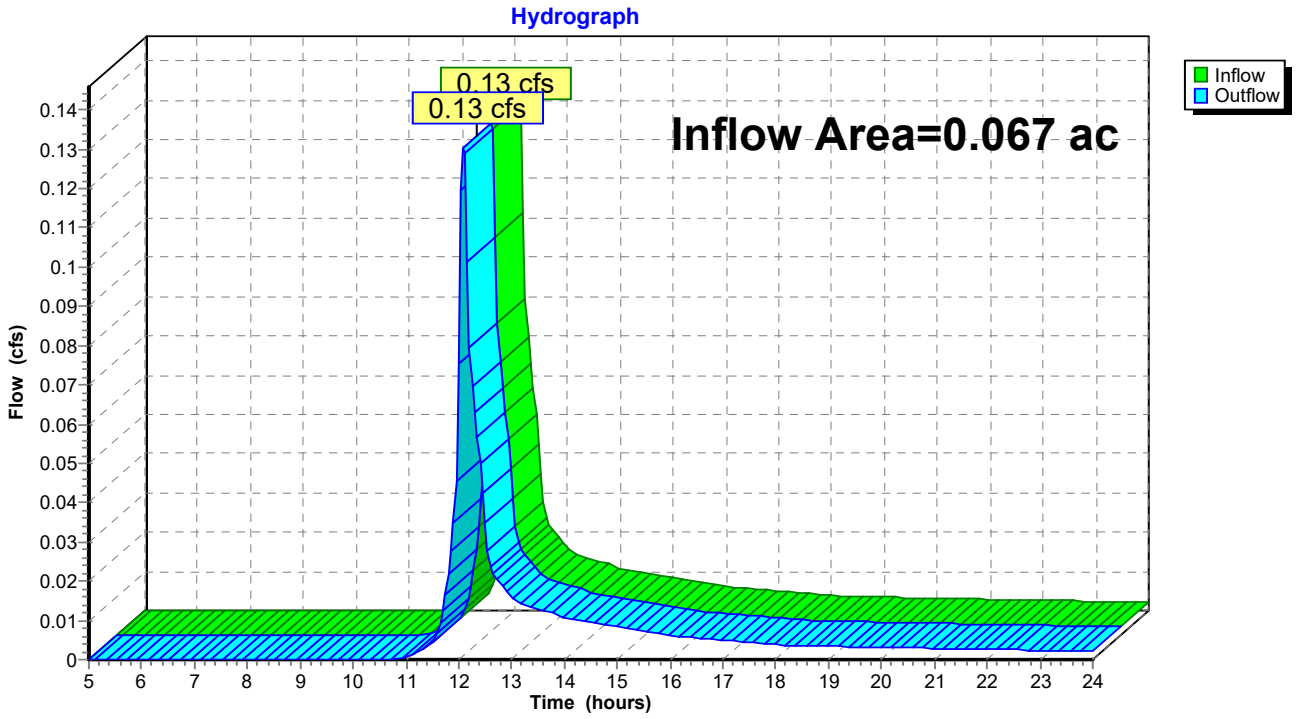


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 1.75" for 10-yr event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Rain Garden

Inflow Area = 0.398 ac, 56.79% Impervious, Inflow Depth > 3.63" for 10-yr event
Inflow = 1.69 cfs @ 12.07 hrs, Volume= 0.120 af
Outflow = 1.26 cfs @ 12.15 hrs, Volume= 0.109 af, Atten= 26%, Lag= 4.7 min
Primary = 1.26 cfs @ 12.15 hrs, Volume= 0.109 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.74' @ 12.15 hrs Surf.Area= 1,001 sf Storage= 1,124 cf

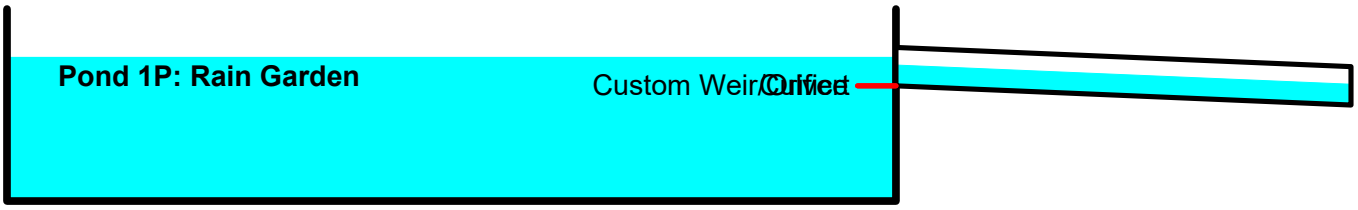
Plug-Flow detention time= 78.7 min calculated for 0.109 af (90% of inflow)
Center-of-Mass det. time= 31.5 min (841.7 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

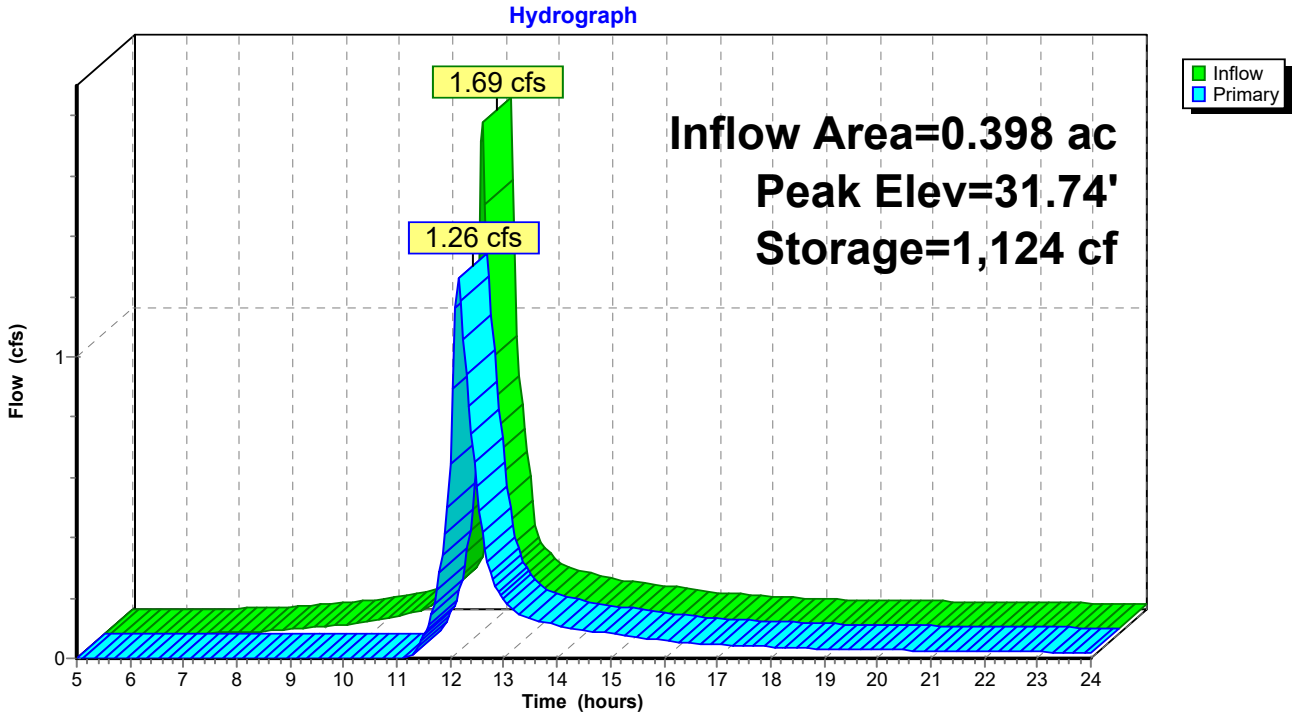
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=1.25 cfs @ 12.15 hrs HW=31.74' (Free Discharge)
↑**1=Culvert** (Passes 1.25 cfs of 1.82 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 1.25 cfs @ 2.82 fps)



Pond 1P: Rain Garden



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=78,380 sf 5.34% Impervious Runoff Depth>3.50"
Flow Length=375' Tc=9.1 min CN=58 Runoff=6.41 cfs 0.524 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=27,769 sf 34.95% Impervious Runoff Depth>5.40"
Tc=5.0 min CN=74 Runoff=4.02 cfs 0.287 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=17,344 sf 56.79% Impervious Runoff Depth>6.36"
Tc=5.0 min CN=82 Runoff=2.91 cfs 0.211 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>3.85"
Tc=5.0 min CN=61 Runoff=0.30 cfs 0.022 af

Reach 6R: SUMMATION POINT 2 Inflow=4.02 cfs 0.287 af
Outflow=4.02 cfs 0.287 af

Reach SP1: SUMMATION POINT 1 Inflow=8.63 cfs 0.723 af
Outflow=8.63 cfs 0.723 af

Reach SP3: SUMMATION POINT 3 Inflow=0.30 cfs 0.022 af
Outflow=0.30 cfs 0.022 af

Pond 1P: Rain Garden Peak Elev=32.09' Storage=1,488 cf Inflow=2.91 cfs 0.211 af
Outflow=2.23 cfs 0.199 af

Total Runoff Area = 2.902 ac Runoff Volume = 1.043 af Average Runoff Depth = 4.31"
81.22% Pervious = 2.357 ac 18.78% Impervious = 0.545 ac

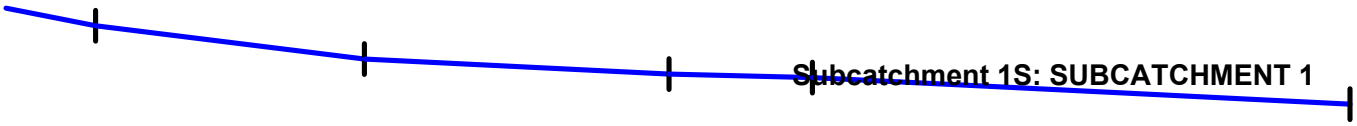
Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 6.41 cfs @ 12.14 hrs, Volume= 0.524 af, Depth> 3.50"
Routed to Reach SP1 : SUMMATION POINT 1

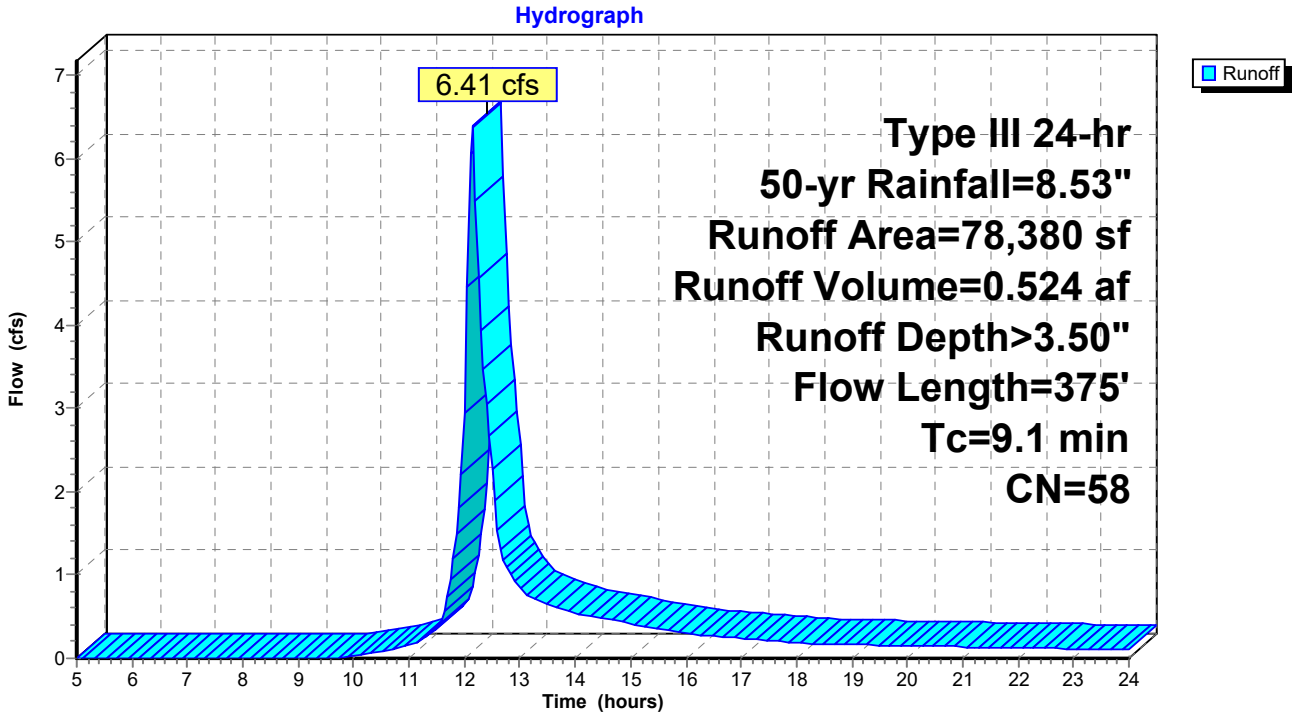
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	65,963	55	Woods, Good, HSG B
	8,235	61	>75% Grass cover, Good, HSG B
*	4,182	98	IMPERVIOUS
	78,380	58	Weighted Average
	74,198		94.66% Pervious Area
	4,182		5.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.2	150	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.1	375	Total			



Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

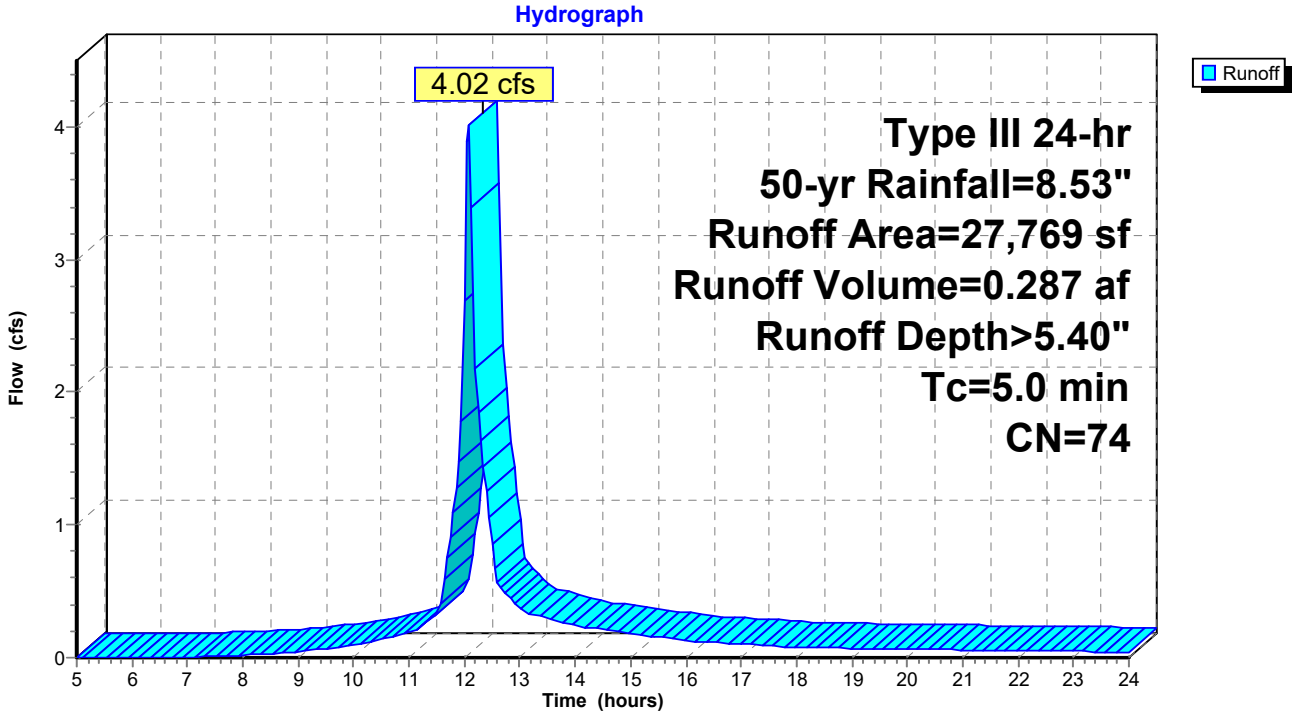
Runoff = 4.02 cfs @ 12.08 hrs, Volume= 0.287 af, Depth> 5.40"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	18,063	61	>75% Grass cover, Good, HSG B
*	9,706	98	IMPERVIOUS
	27,769	74	Weighted Average
	18,063		65.05% Pervious Area
	9,706		34.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

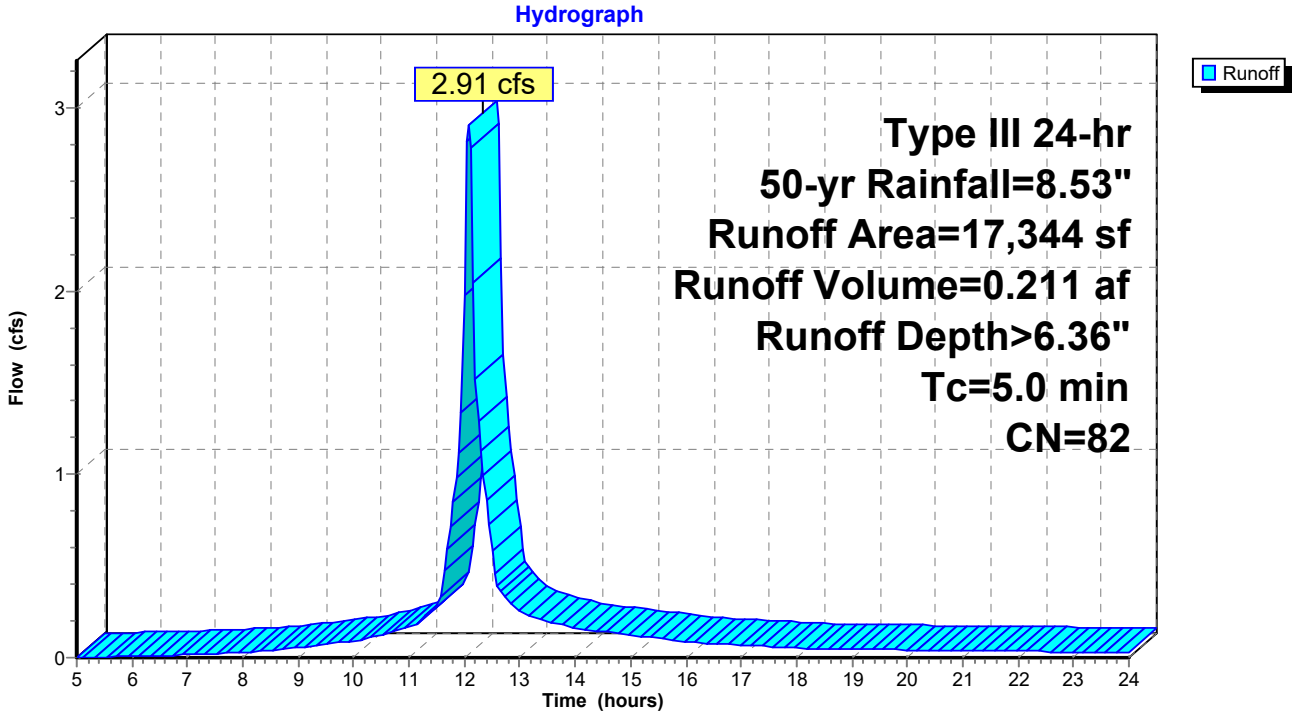
Runoff = 2.91 cfs @ 12.07 hrs, Volume= 0.211 af, Depth> 6.36"
Routed to Pond 1P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	7,494	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	17,344	82	Weighted Average
	7,494		43.21% Pervious Area
	9,850		56.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

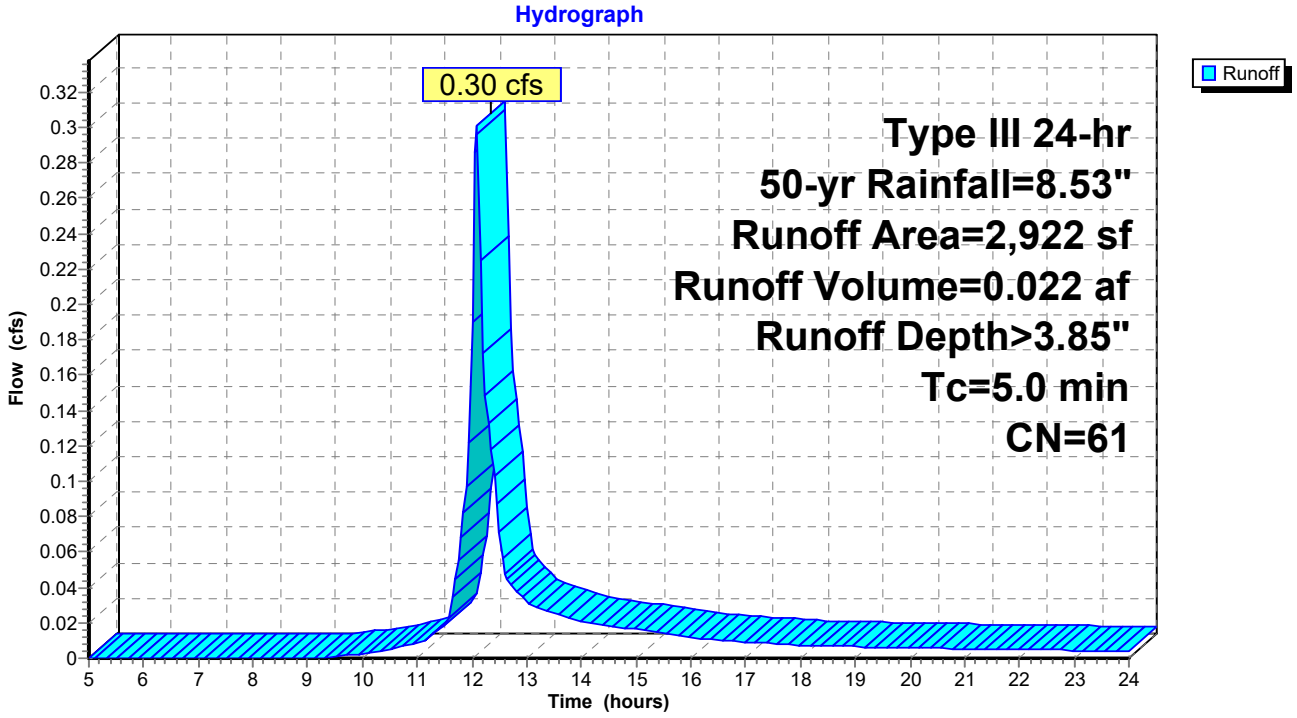
Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 3.85"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4

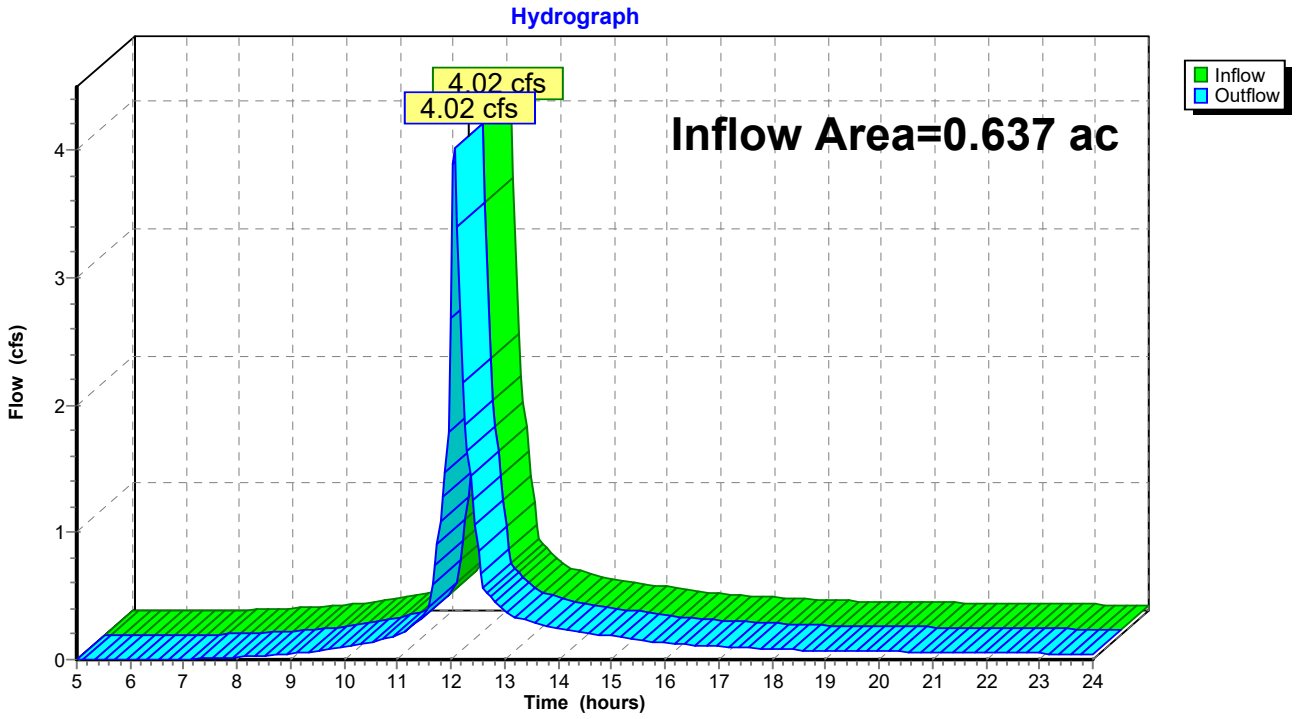


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.637 ac, 34.95% Impervious, Inflow Depth > 5.40" for 50-yr event
Inflow = 4.02 cfs @ 12.08 hrs, Volume= 0.287 af
Outflow = 4.02 cfs @ 12.08 hrs, Volume= 0.287 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

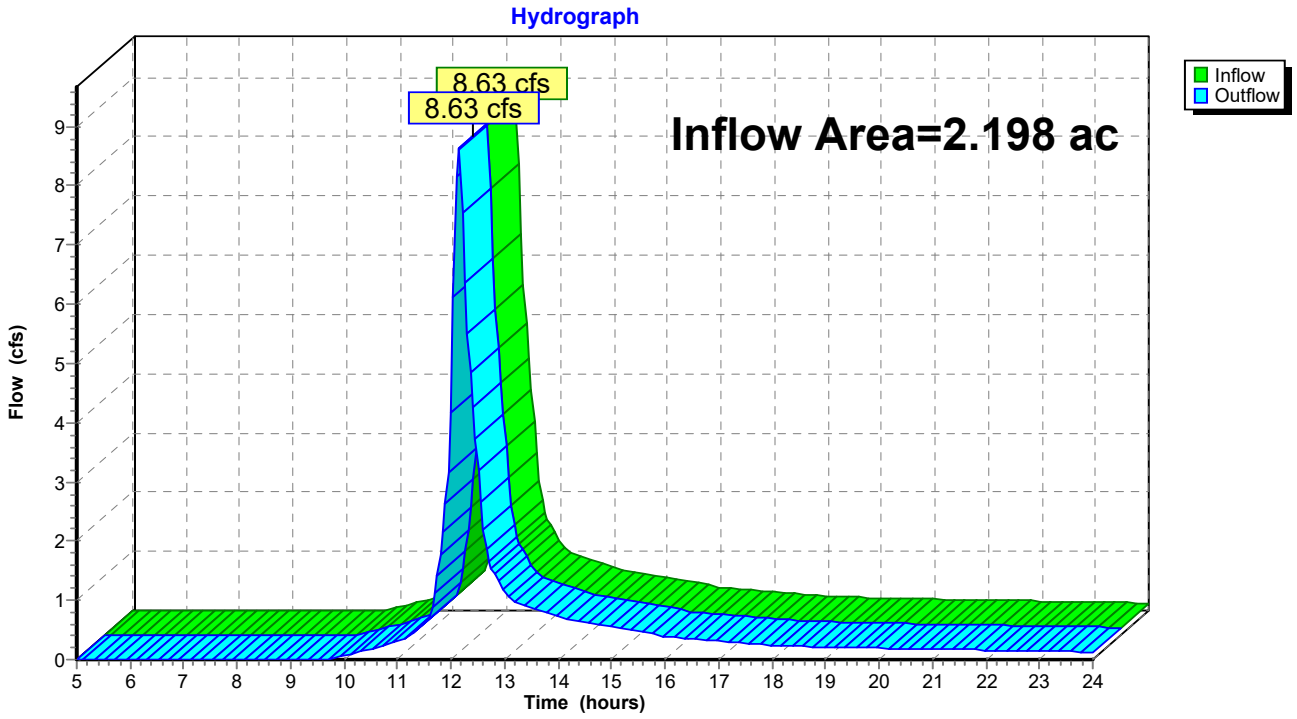


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.198 ac, 14.66% Impervious, Inflow Depth > 3.95" for 50-yr event
Inflow = 8.63 cfs @ 12.14 hrs, Volume= 0.723 af
Outflow = 8.63 cfs @ 12.14 hrs, Volume= 0.723 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

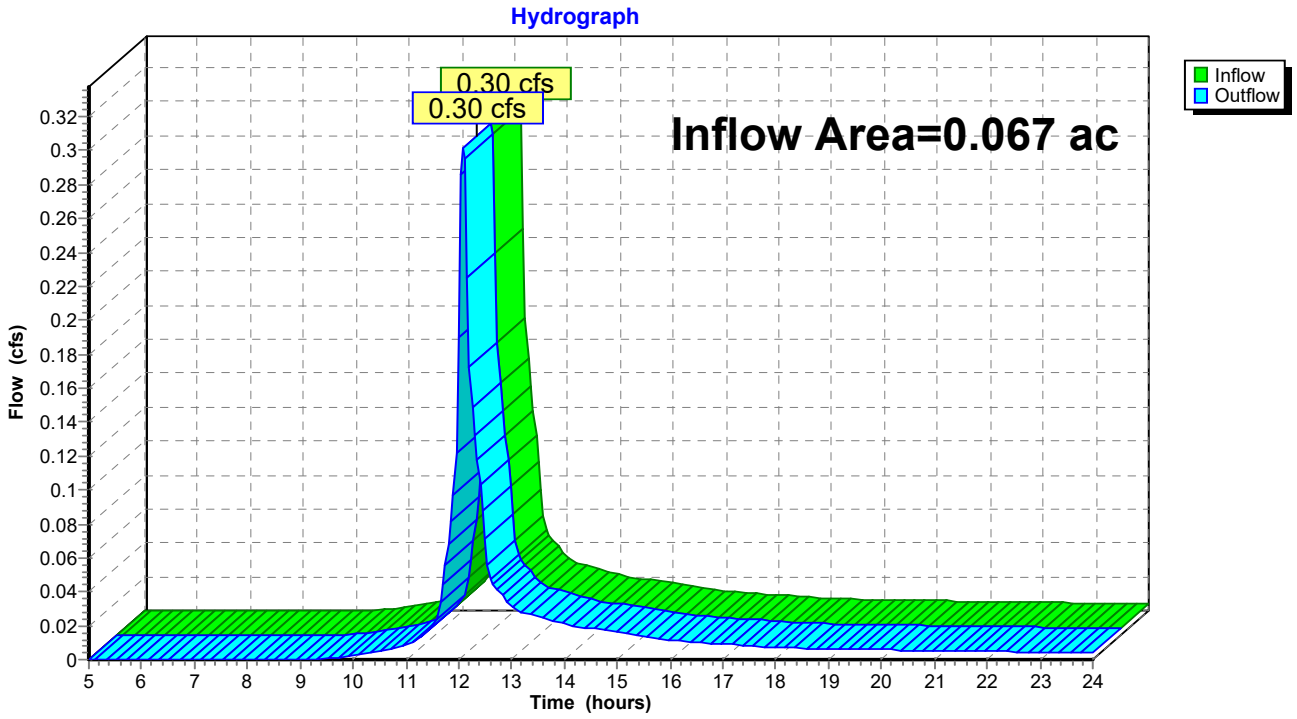


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 3.85" for 50-yr event
Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Rain Garden

Inflow Area = 0.398 ac, 56.79% Impervious, Inflow Depth > 6.36" for 50-yr event
Inflow = 2.91 cfs @ 12.07 hrs, Volume= 0.211 af
Outflow = 2.23 cfs @ 12.15 hrs, Volume= 0.199 af, Atten= 23%, Lag= 4.3 min
Primary = 2.23 cfs @ 12.15 hrs, Volume= 0.199 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.09' @ 12.15 hrs Surf.Area= 1,112 sf Storage= 1,488 cf

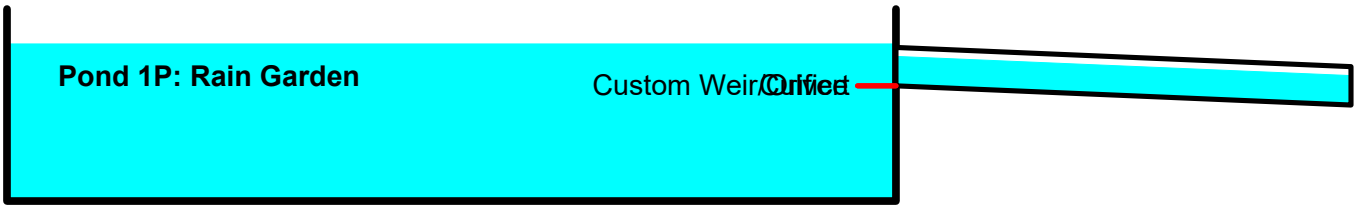
Plug-Flow detention time= 56.2 min calculated for 0.198 af (94% of inflow)
Center-of-Mass det. time= 25.4 min (820.0 - 794.5)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

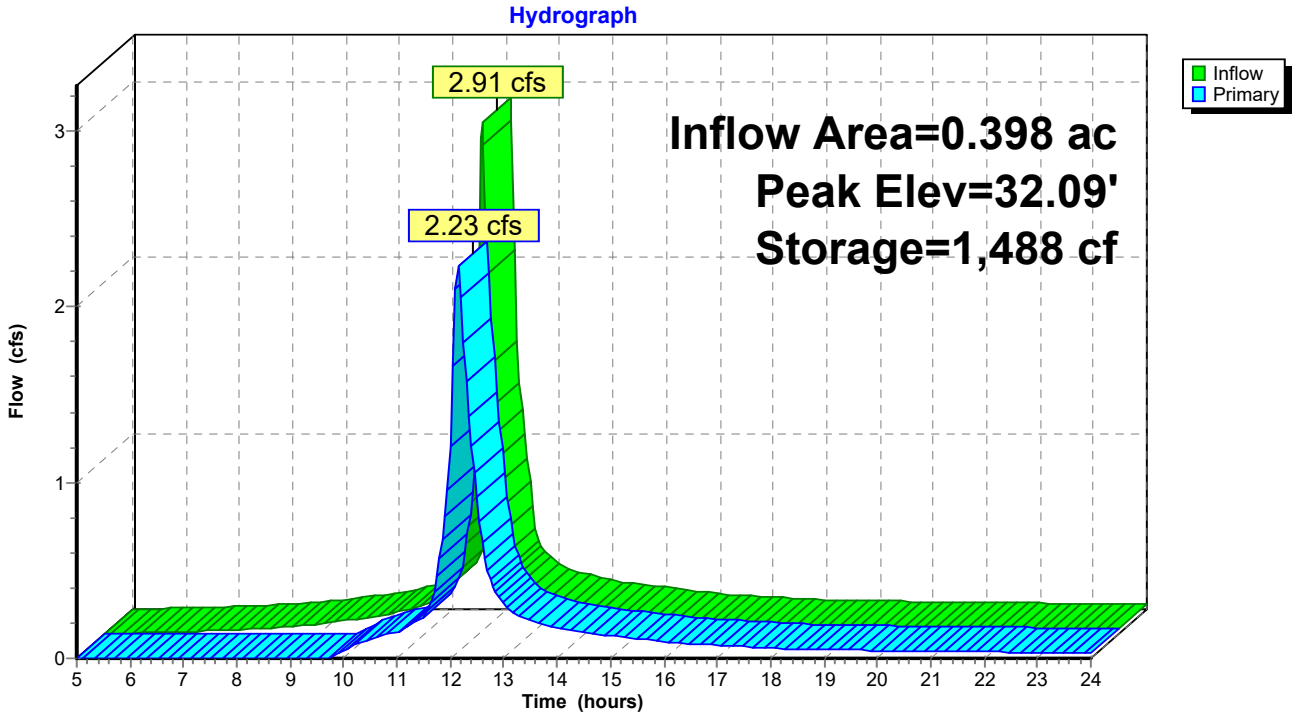
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

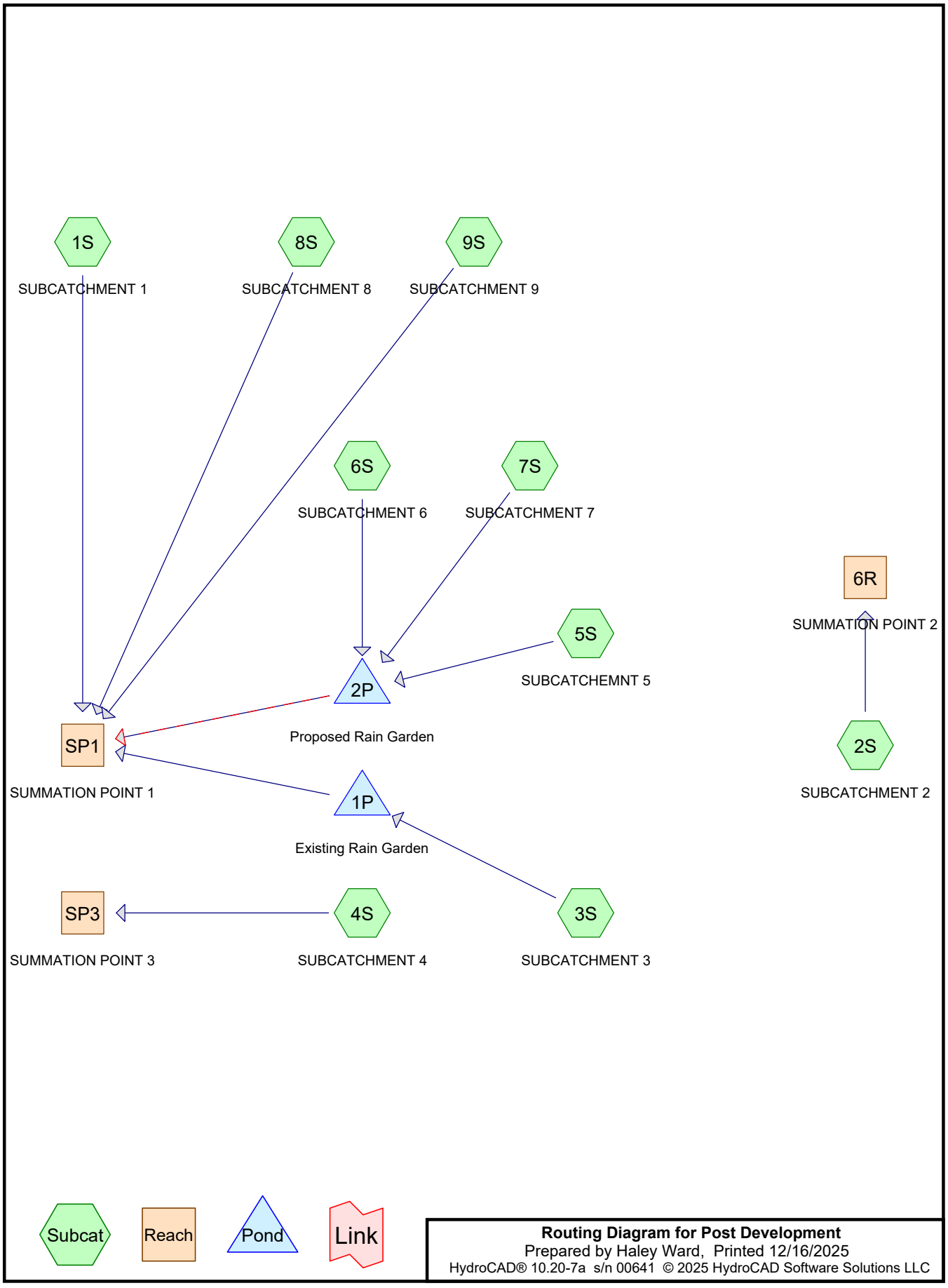
Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=2.22 cfs @ 12.15 hrs HW=32.08' (Free Discharge)
└**1=Culvert** (Passes 2.22 cfs of 2.89 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 2.22 cfs @ 3.41 fps)



Pond 1P: Rain Garden





Routing Diagram for Post Development
Prepared by Haley Ward, Printed 12/16/2025

Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=67,431 sf 8.92% Impervious Runoff Depth>0.62"
Flow Length=525' Tc=9.5 min CN=60 Runoff=0.72 cfs 0.080 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=22,420 sf 41.90% Impervious Runoff Depth>1.58"
Tc=5.0 min CN=77 Runoff=0.94 cfs 0.068 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=18,323 sf 53.76% Impervious Runoff Depth>1.87"
Tc=5.0 min CN=81 Runoff=0.92 cfs 0.066 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>0.66"
Tc=5.0 min CN=61 Runoff=0.04 cfs 0.004 af

Subcatchment5S: SUBCATCHEMNT5 Runoff Area=6,943 sf 41.05% Impervious Runoff Depth>1.51"
Tc=0.0 min CN=76 Runoff=0.32 cfs 0.020 af

Subcatchment6S: SUBCATCHMENT6 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>3.39"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment7S: SUBCATCHMENT7 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>3.39"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment8S: SUBCATCHMENT8 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>3.39"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment9S: SUBCATCHMENT9 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>3.39"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Reach 6R: SUMMATION POINT 2 Inflow=0.94 cfs 0.068 af
Outflow=0.94 cfs 0.068 af

Reach SP1: SUMMATION POINT 1 Inflow=1.71 cfs 0.187 af
Outflow=1.71 cfs 0.187 af

Reach SP3: SUMMATION POINT 3 Inflow=0.04 cfs 0.004 af
Outflow=0.04 cfs 0.004 af

Pond 1P: Existing Rain Garden Peak Elev=31.43' Storage=830 cf Inflow=0.92 cfs 0.066 af
Outflow=0.56 cfs 0.054 af

Pond 2P: Proposed Rain Garden Peak Elev=31.95' Storage=775 cf Inflow=0.60 cfs 0.047 af
Discarded=0.02 cfs 0.012 af Primary=0.23 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.039 af

Total Runoff Area = 2.902 ac Runoff Volume = 0.291 af Average Runoff Depth = 1.20"
71.14% Pervious = 2.064 ac 28.86% Impervious = 0.838 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

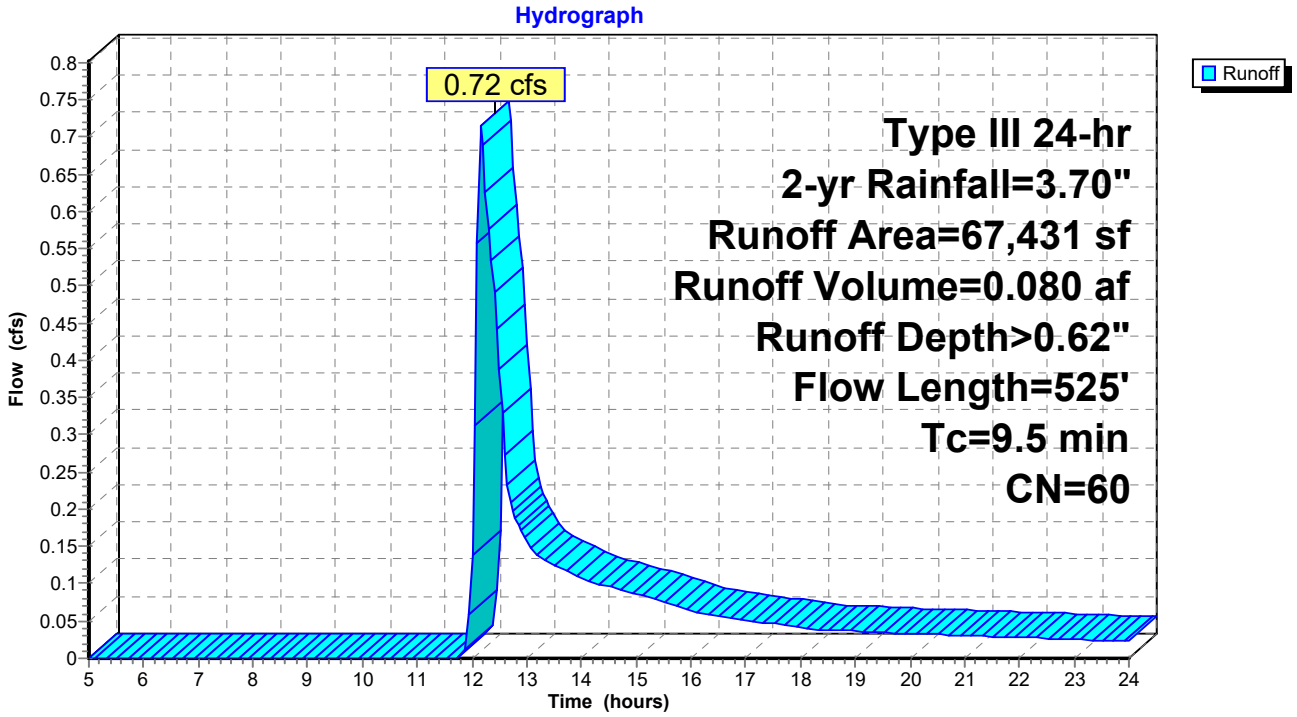
Runoff = 0.72 cfs @ 12.17 hrs, Volume= 0.080 af, Depth> 0.62"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	53,341	55	Woods, Good, HSG B
	8,072	61	>75% Grass cover, Good, HSG B
*	6,018	98	IMPERVIOUS
	67,431	60	Weighted Average
	61,413		91.08% Pervious Area
	6,018		8.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.6	300	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
9.5	525	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

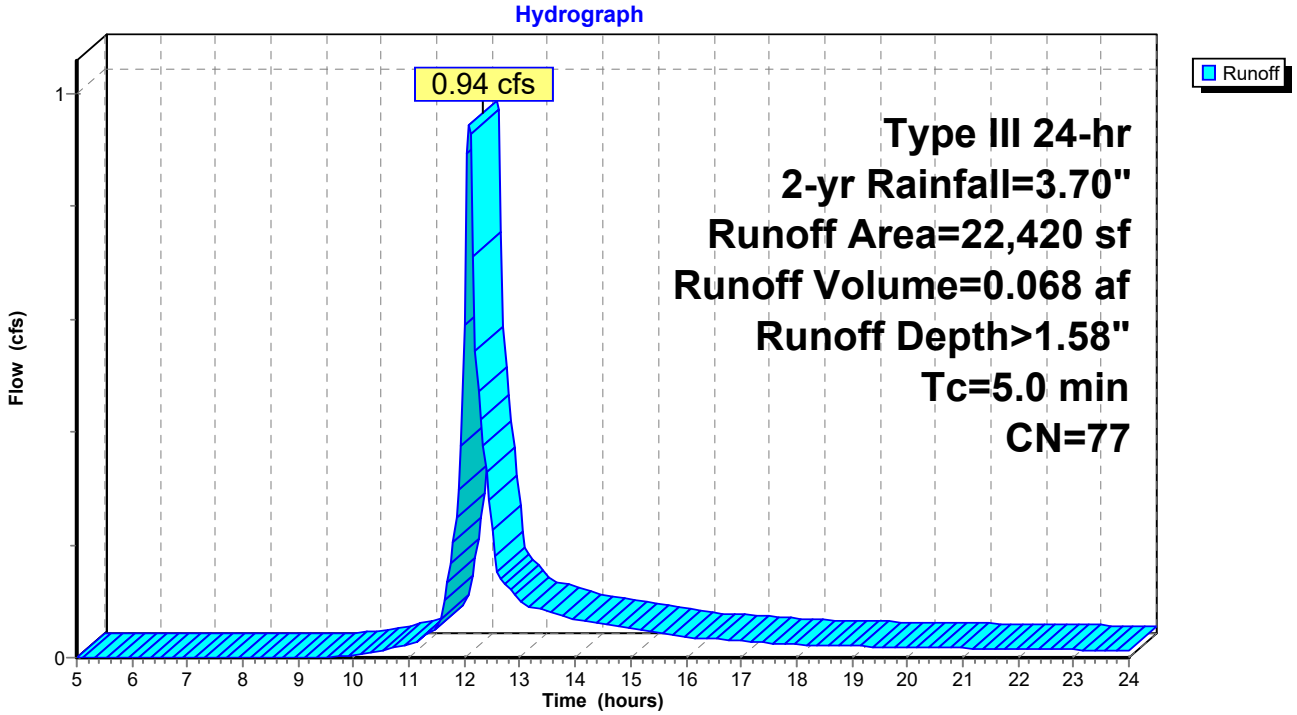
Runoff = 0.94 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 1.58"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	13,026	61	>75% Grass cover, Good, HSG B
*	9,394	98	IMPERVIOUS
	22,420	77	Weighted Average
	13,026		58.10% Pervious Area
	9,394		41.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

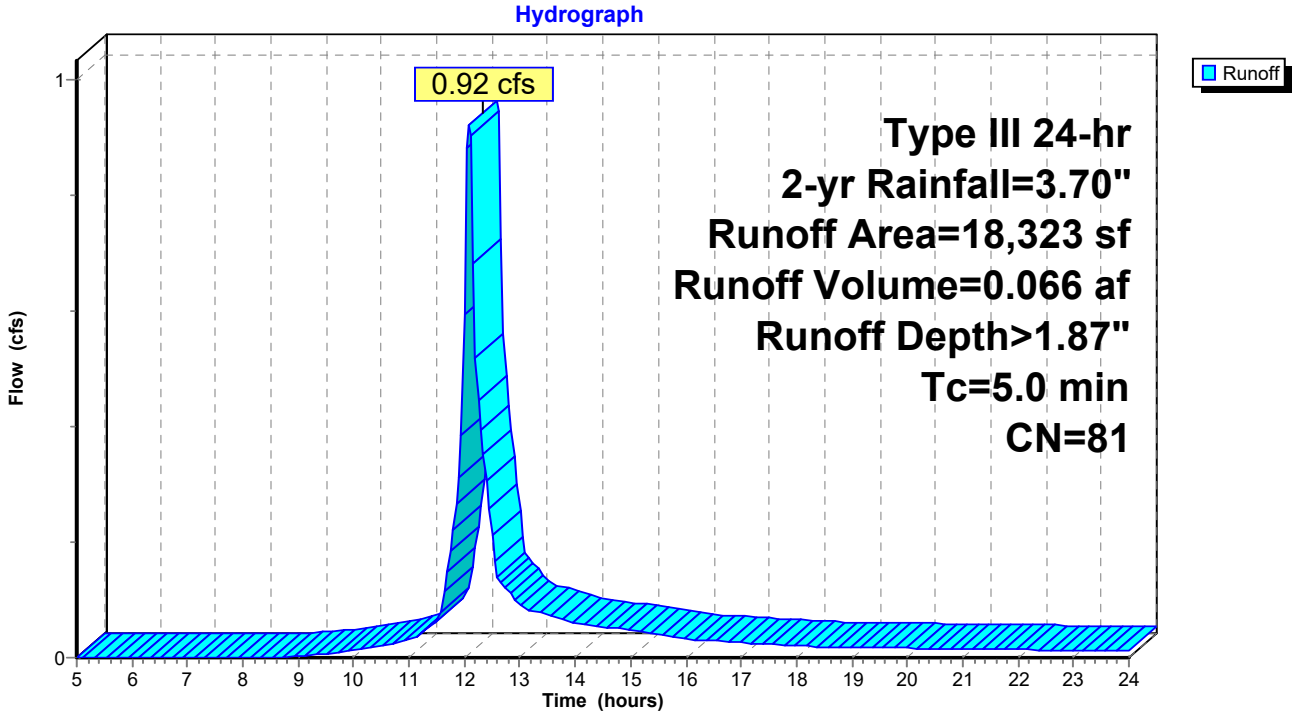
Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af, Depth> 1.87"
Routed to Pond 1P : Existing Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	8,473	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	18,323	81	Weighted Average
	8,473		46.24% Pervious Area
	9,850		53.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

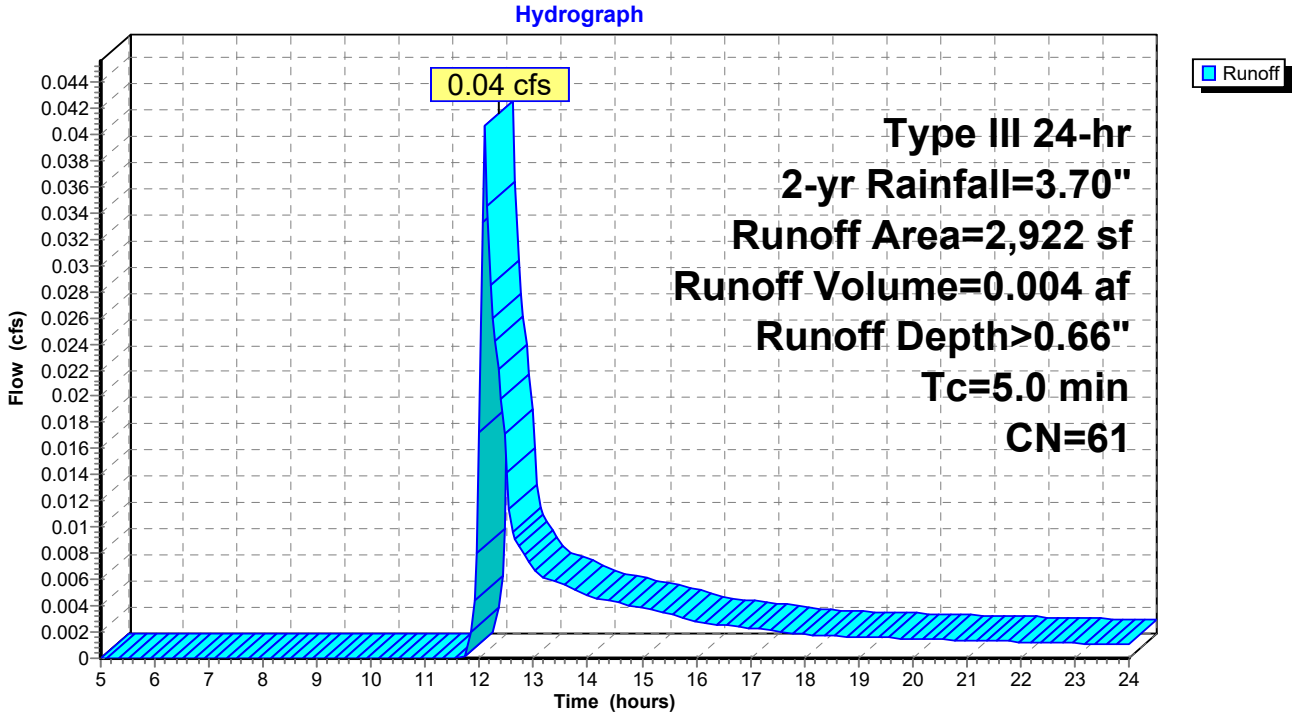
Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af, Depth> 0.66"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4



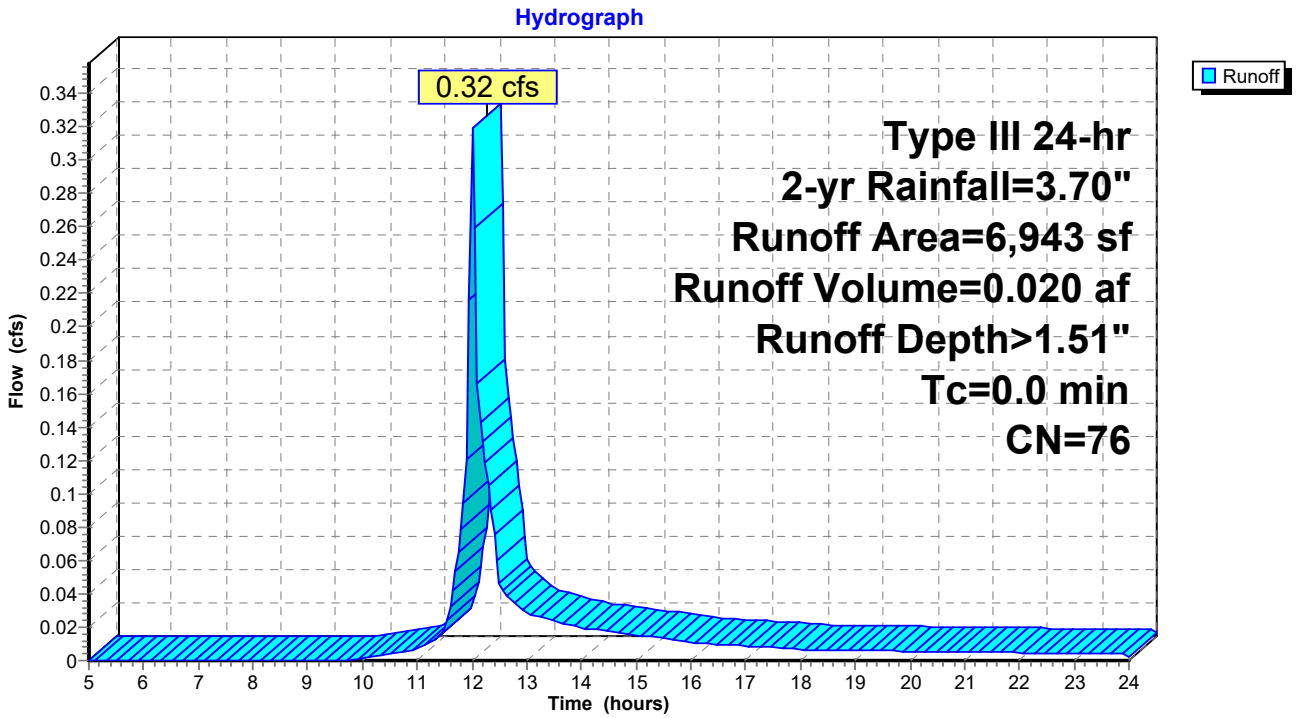
Summary for Subcatchment 5S: SUBCATCHEMNT 5

Runoff = 0.32 cfs @ 12.01 hrs, Volume= 0.020 af, Depth> 1.51"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
	4,093	61	>75% Grass cover, Good, HSG B
*	2,850	98	IMPERVIOUS
	6,943	76	Weighted Average
	4,093		58.95% Pervious Area
	2,850		41.05% Impervious Area

Subcatchment 5S: SUBCATCHEMNT 5



Summary for Subcatchment 6S: SUBCATCHMENT 6

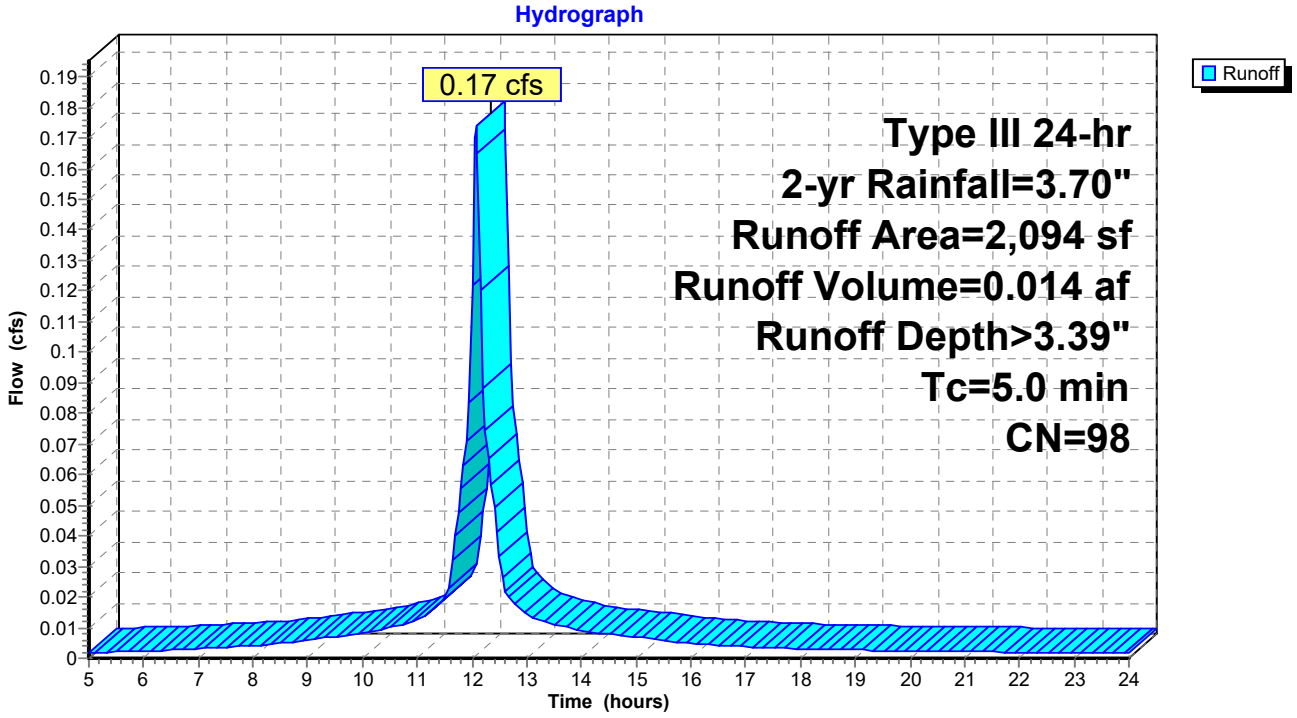
Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 3.39"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SUBCATCHMENT 6



Summary for Subcatchment 7S: SUBCATCHMENT 7

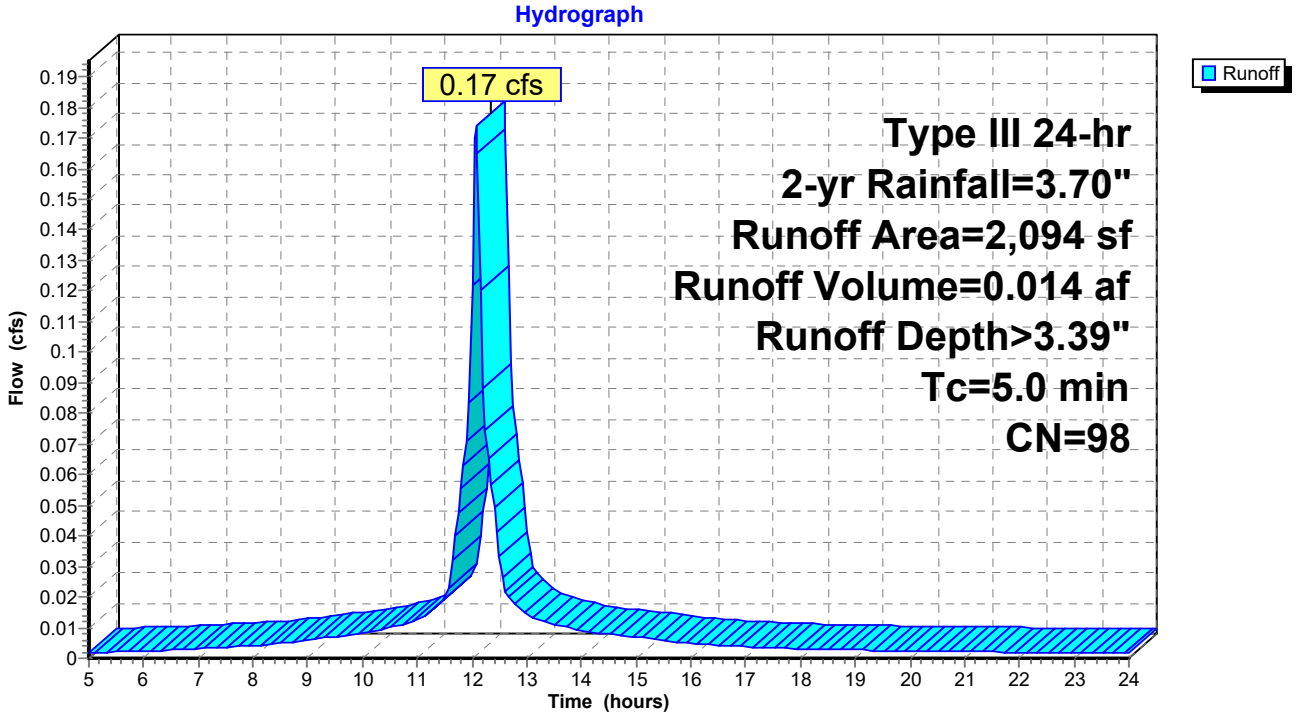
Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 3.39"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: SUBCATCHMENT 7



Summary for Subcatchment 8S: SUBCATCHMENT 8

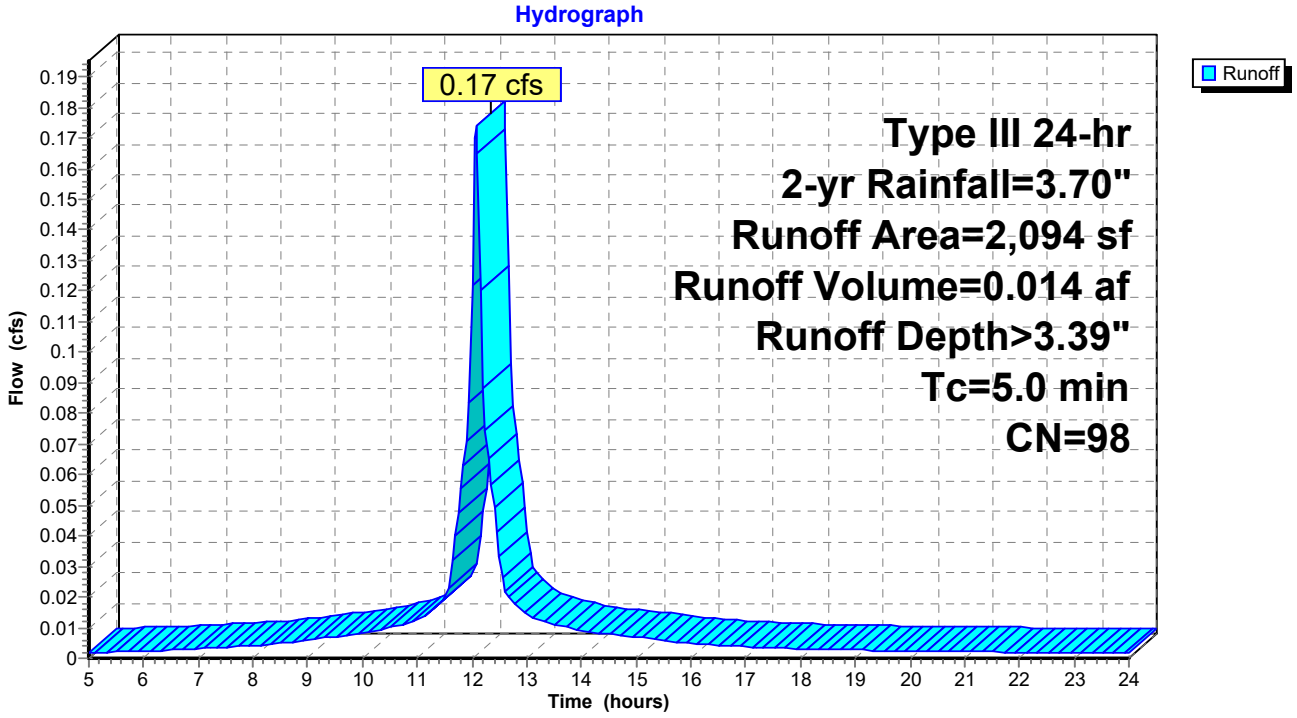
Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 3.39"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 8S: SUBCATCHMENT 8



Summary for Subcatchment 9S: SUBCATCHMENT 9

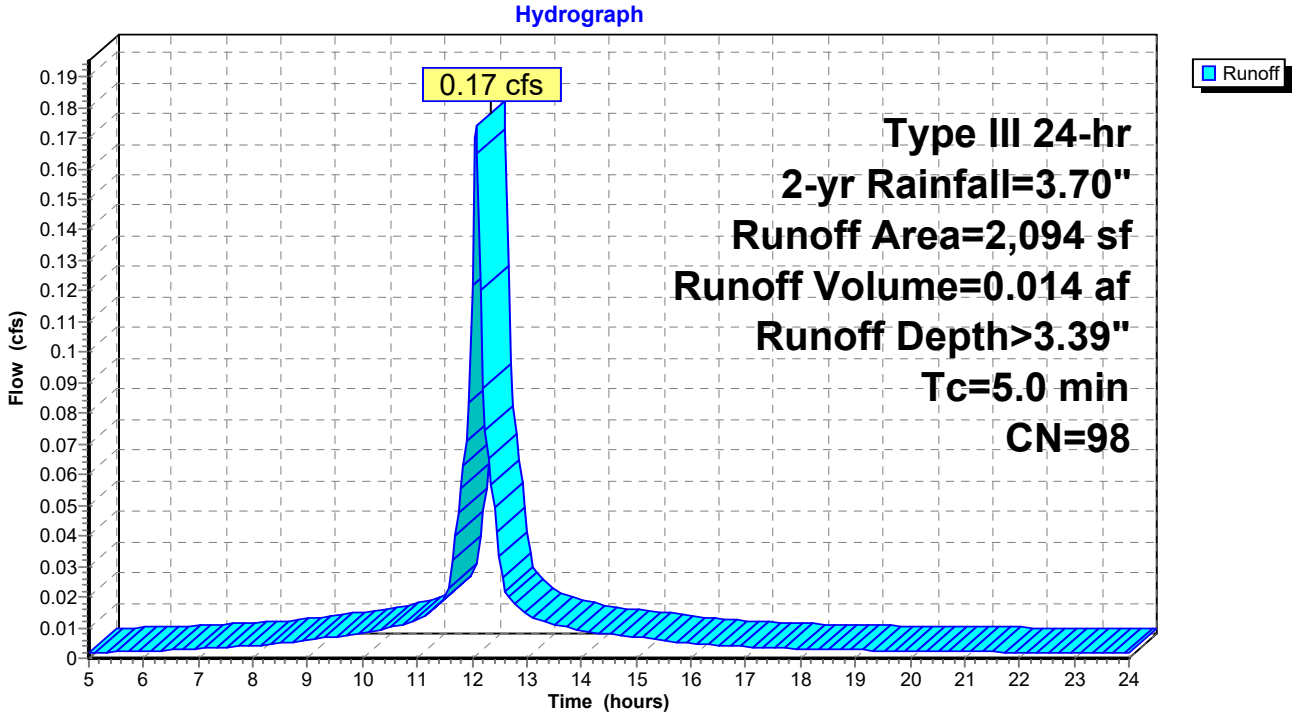
Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 3.39"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.70"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 9S: SUBCATCHMENT 9

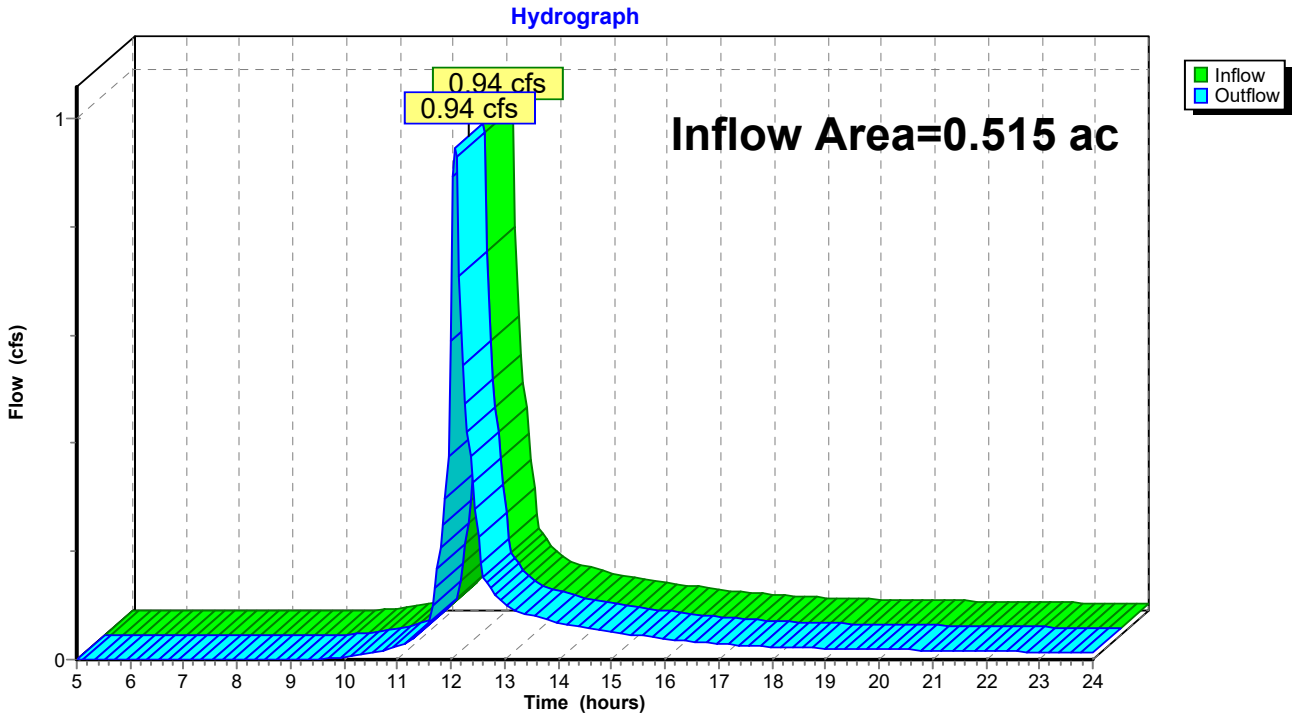


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.515 ac, 41.90% Impervious, Inflow Depth > 1.58" for 2-yr event
Inflow = 0.94 cfs @ 12.08 hrs, Volume= 0.068 af
Outflow = 0.94 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

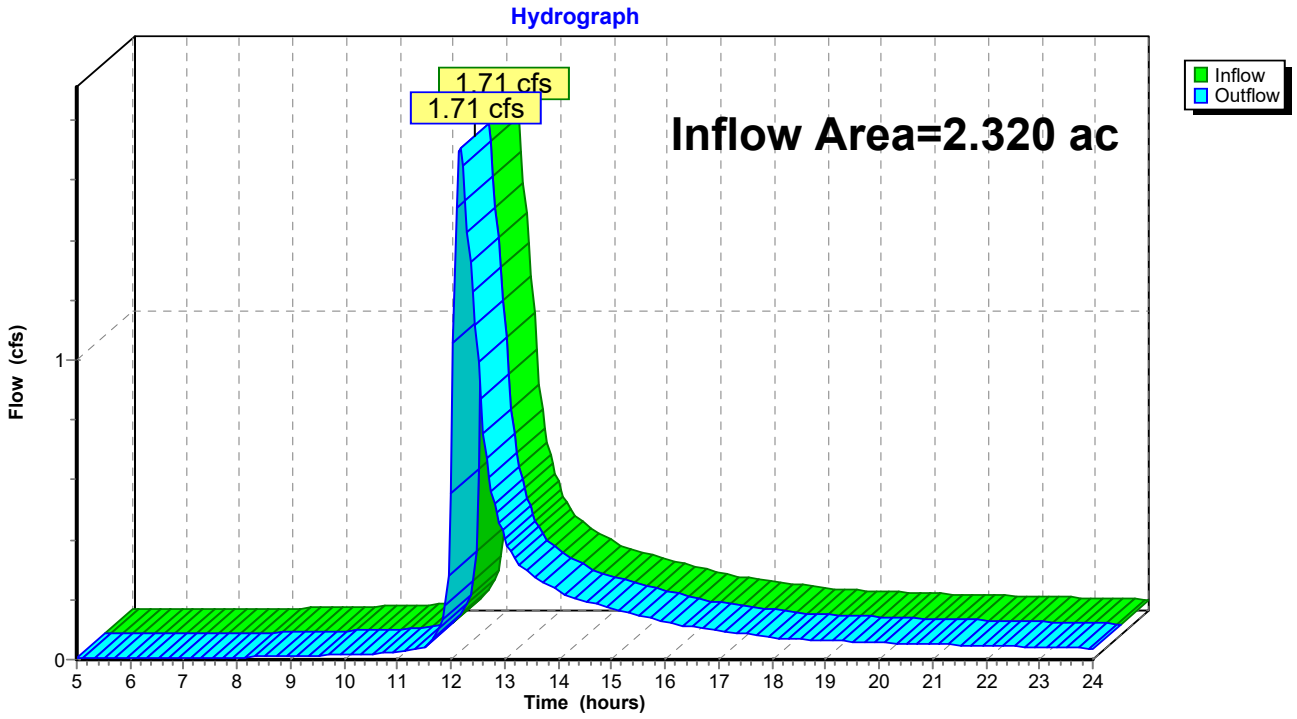


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.320 ac, 26.81% Impervious, Inflow Depth > 0.97" for 2-yr event
Inflow = 1.71 cfs @ 12.16 hrs, Volume= 0.187 af
Outflow = 1.71 cfs @ 12.16 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

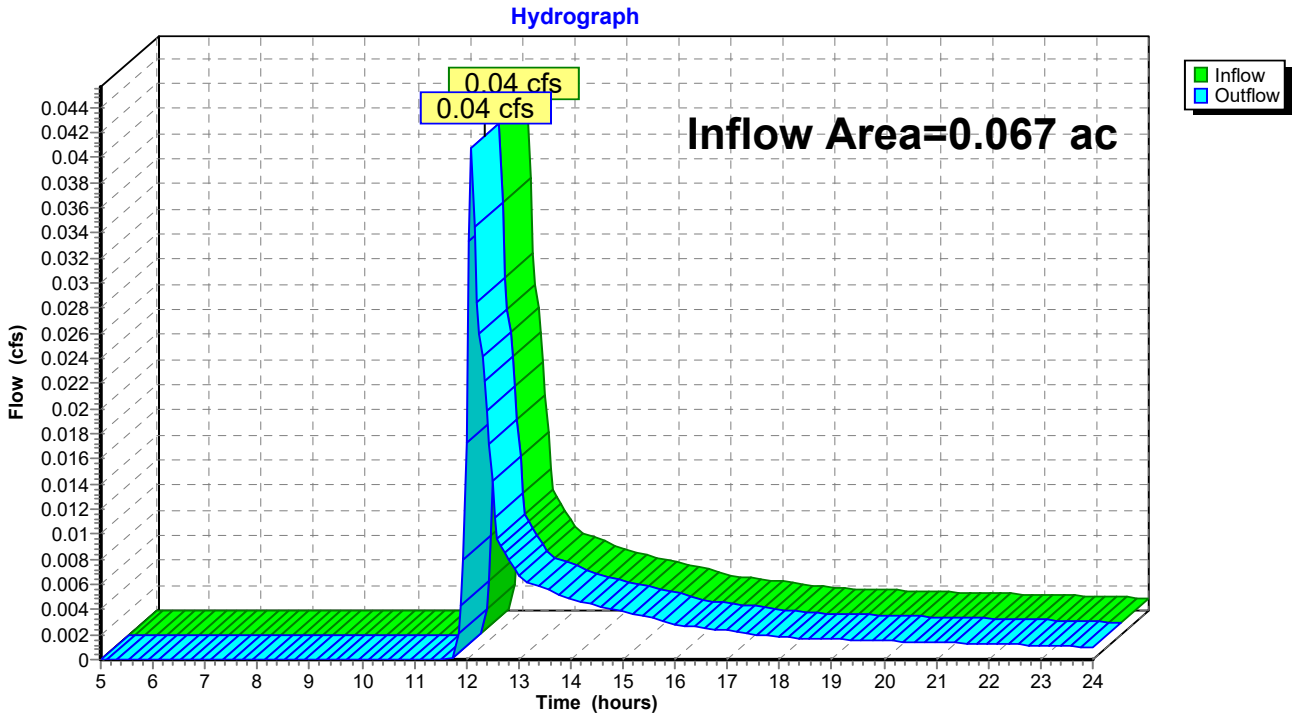


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 0.66" for 2-yr event
Inflow = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af
Outflow = 0.04 cfs @ 12.10 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Existing Rain Garden

Inflow Area = 0.421 ac, 53.76% Impervious, Inflow Depth > 1.87" for 2-yr event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.56 cfs @ 12.20 hrs, Volume= 0.054 af, Atten= 39%, Lag= 7.0 min
Primary = 0.56 cfs @ 12.20 hrs, Volume= 0.054 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.43' @ 12.20 hrs Surf.Area= 907 sf Storage= 830 cf

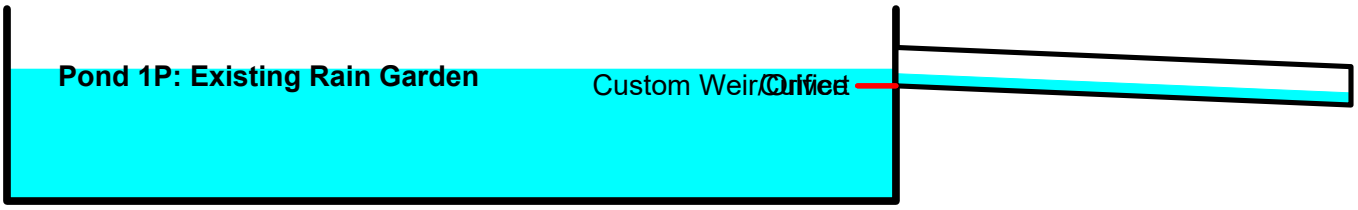
Plug-Flow detention time= 114.7 min calculated for 0.054 af (82% of inflow)
Center-of-Mass det. time= 42.5 min (873.6 - 831.1)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

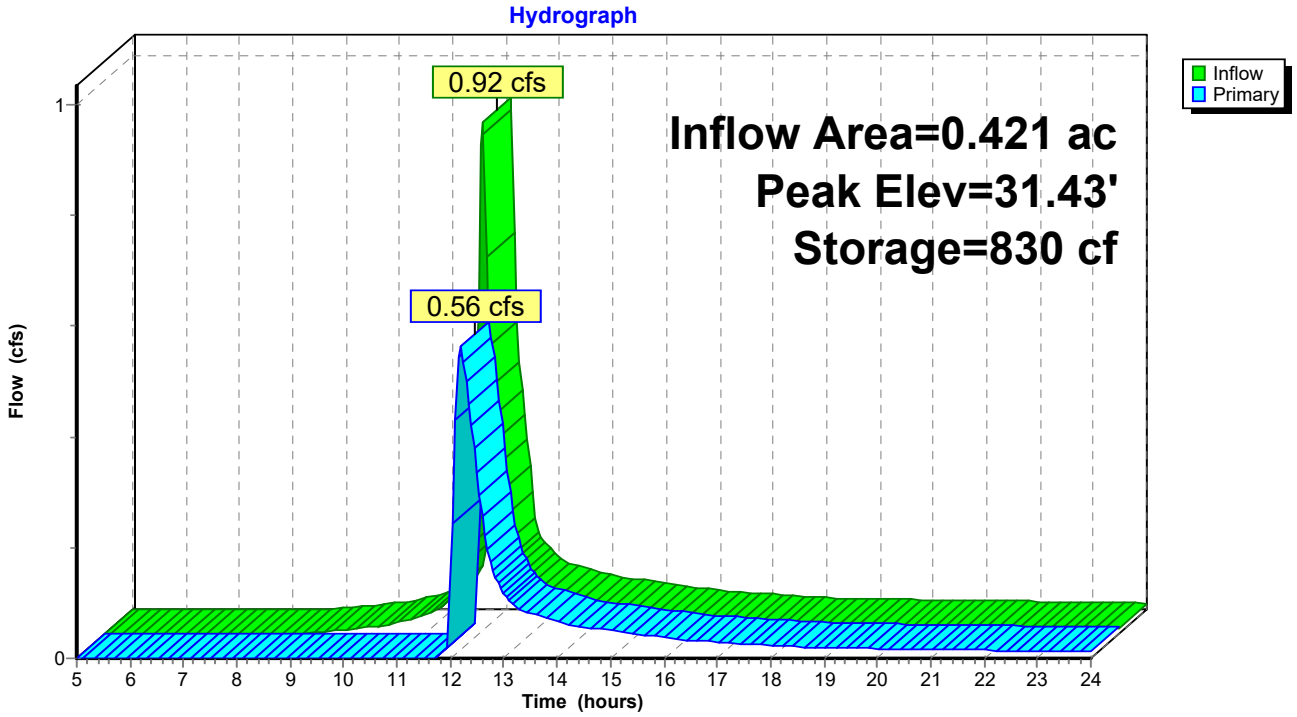
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=0.56 cfs @ 12.20 hrs HW=31.43' (Free Discharge)
└**1=Culvert** (Passes 0.56 cfs of 0.73 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 0.56 cfs @ 2.15 fps)



Pond 1P: Existing Rain Garden



Summary for Pond 2P: Proposed Rain Garden

Inflow Area = 0.256 ac, 63.23% Impervious, Inflow Depth > 2.22" for 2-yr event
Inflow = 0.60 cfs @ 12.04 hrs, Volume= 0.047 af
Outflow = 0.24 cfs @ 12.29 hrs, Volume= 0.039 af, Atten= 60%, Lag= 15.0 min
Discarded = 0.02 cfs @ 12.29 hrs, Volume= 0.012 af
Primary = 0.23 cfs @ 12.29 hrs, Volume= 0.027 af
Routed to Reach SP1 : SUMMATION POINT 1
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.95' @ 12.29 hrs Surf.Area= 974 sf Storage= 775 cf

Plug-Flow detention time= 143.7 min calculated for 0.039 af (82% of inflow)
Center-of-Mass det. time= 71.8 min (868.7 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	2,688 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

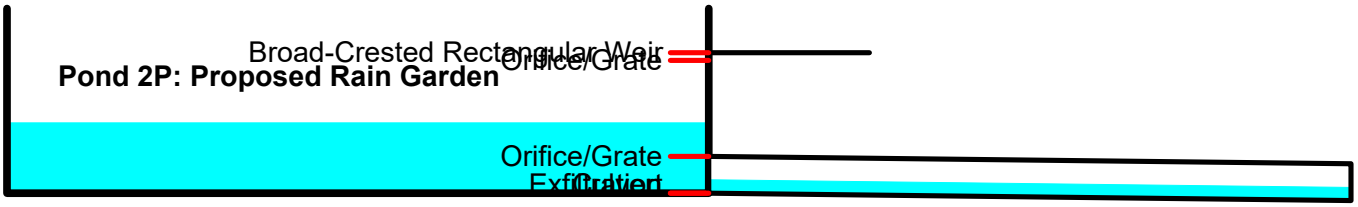
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	650	0	0
33.50	1,500	2,688	2,688

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	**2.400 in/hr Exfiltration over Surface area above 31.00'** Excluded Surface area = 650 sf
#2	Primary	31.00'	**6.0" Round Culvert** L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.00' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	31.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	32.80'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	32.90'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

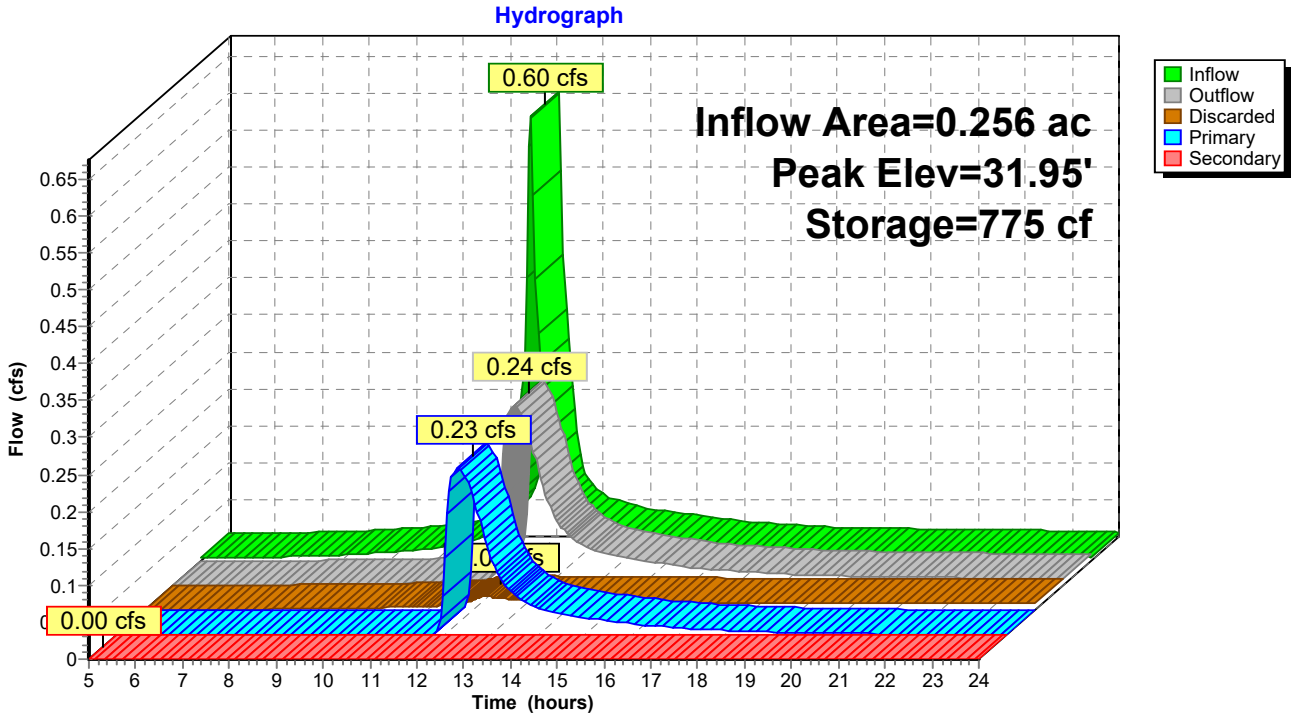
Discarded OutFlow Max=0.02 cfs @ 12.29 hrs HW=31.95' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.23 cfs @ 12.29 hrs HW=31.95' (Free Discharge)
└**2=Culvert** (Passes 0.23 cfs of 0.63 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.23 cfs @ 2.58 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=31.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 2P: Proposed Rain Garden



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=67,431 sf 8.92% Impervious Runoff Depth>1.67"
Flow Length=525' Tc=9.5 min CN=60 Runoff=2.46 cfs 0.215 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=22,420 sf 41.90% Impervious Runoff Depth>3.14"
Tc=5.0 min CN=77 Runoff=1.90 cfs 0.135 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=18,323 sf 53.76% Impervious Runoff Depth>3.53"
Tc=5.0 min CN=81 Runoff=1.73 cfs 0.124 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>1.75"
Tc=5.0 min CN=61 Runoff=0.13 cfs 0.010 af

Subcatchment5S: SUBCATCHEMNT5 Runoff Area=6,943 sf 41.05% Impervious Runoff Depth>3.05"
Tc=0.0 min CN=76 Runoff=0.65 cfs 0.040 af

Subcatchment6S: SUBCATCHMENT6 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>5.22"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment7S: SUBCATCHMENT7 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>5.22"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment8S: SUBCATCHMENT8 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>5.22"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment9S: SUBCATCHMENT9 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>5.22"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Reach 6R: SUMMATION POINT 2 Inflow=1.90 cfs 0.135 af
Outflow=1.90 cfs 0.135 af

Reach SP1: SUMMATION POINT 1 Inflow=4.48 cfs 0.427 af
Outflow=4.48 cfs 0.427 af

Reach SP3: SUMMATION POINT 3 Inflow=0.13 cfs 0.010 af
Outflow=0.13 cfs 0.010 af

Pond 1P: Existing Rain Garden Peak Elev=31.76' Storage=1,139 cf Inflow=1.73 cfs 0.124 af
Outflow=1.29 cfs 0.112 af

Pond 2P: Proposed Rain Garden Peak Elev=32.40' Storage=1,239 cf Inflow=1.06 cfs 0.082 af
Discarded=0.03 cfs 0.015 af Primary=0.36 cfs 0.058 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.073 af

Total Runoff Area = 2.902 ac Runoff Volume = 0.607 af Average Runoff Depth = 2.51"
71.14% Pervious = 2.064 ac 28.86% Impervious = 0.838 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

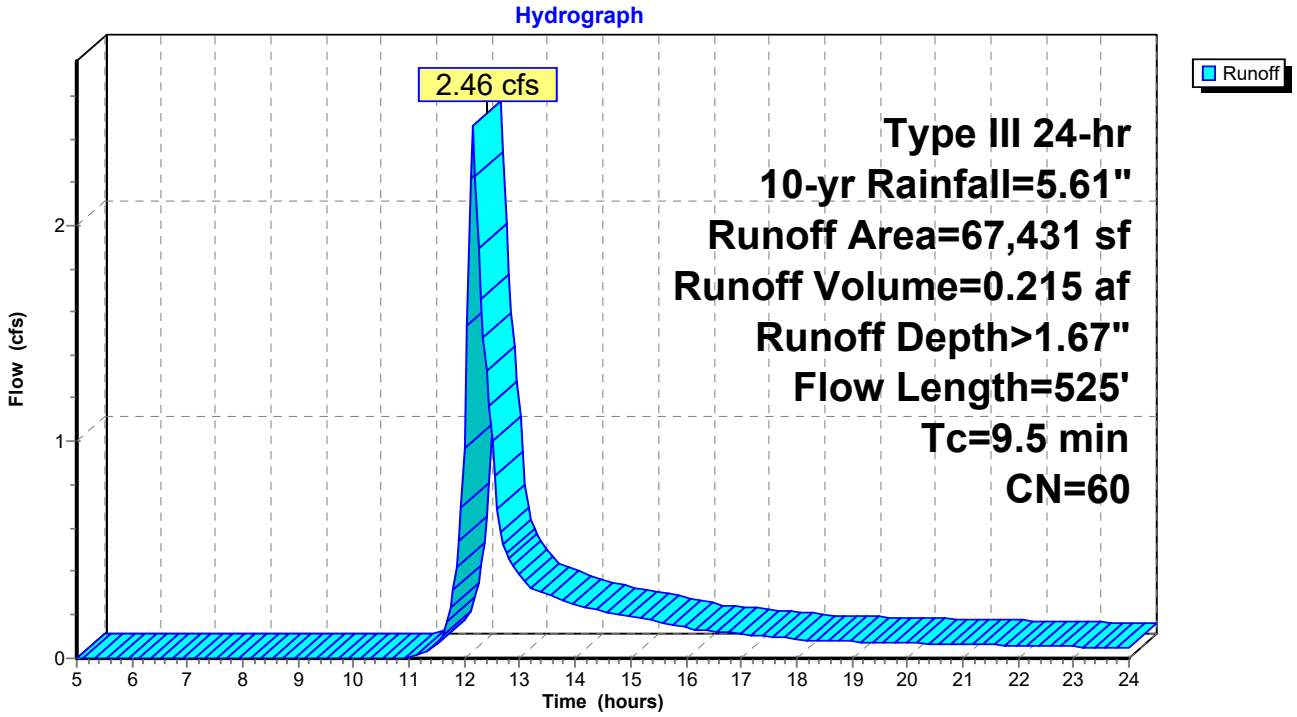
Runoff = 2.46 cfs @ 12.15 hrs, Volume= 0.215 af, Depth> 1.67"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	53,341	55	Woods, Good, HSG B
	8,072	61	>75% Grass cover, Good, HSG B
*	6,018	98	IMPERVIOUS
	67,431	60	Weighted Average
	61,413		91.08% Pervious Area
	6,018		8.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.6	300	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
9.5	525	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

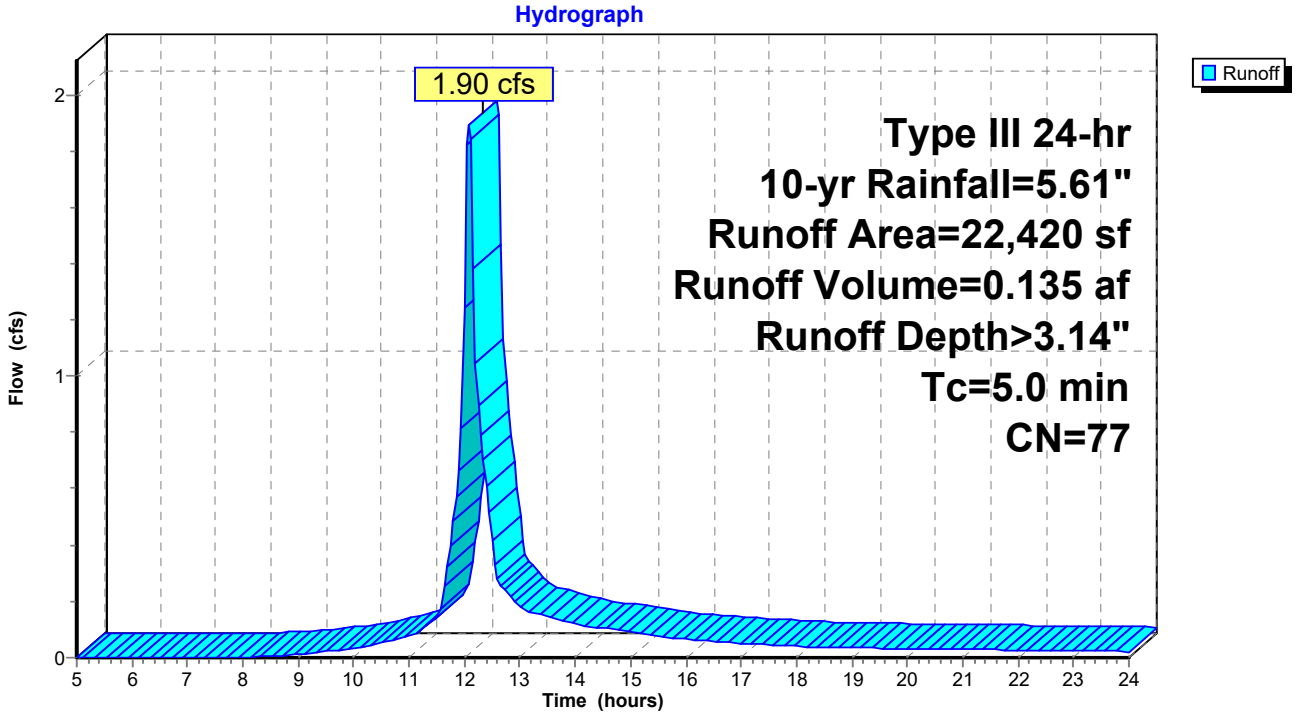
Runoff = 1.90 cfs @ 12.08 hrs, Volume= 0.135 af, Depth> 3.14"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	13,026	61	>75% Grass cover, Good, HSG B
*	9,394	98	IMPERVIOUS
	22,420	77	Weighted Average
	13,026		58.10% Pervious Area
	9,394		41.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

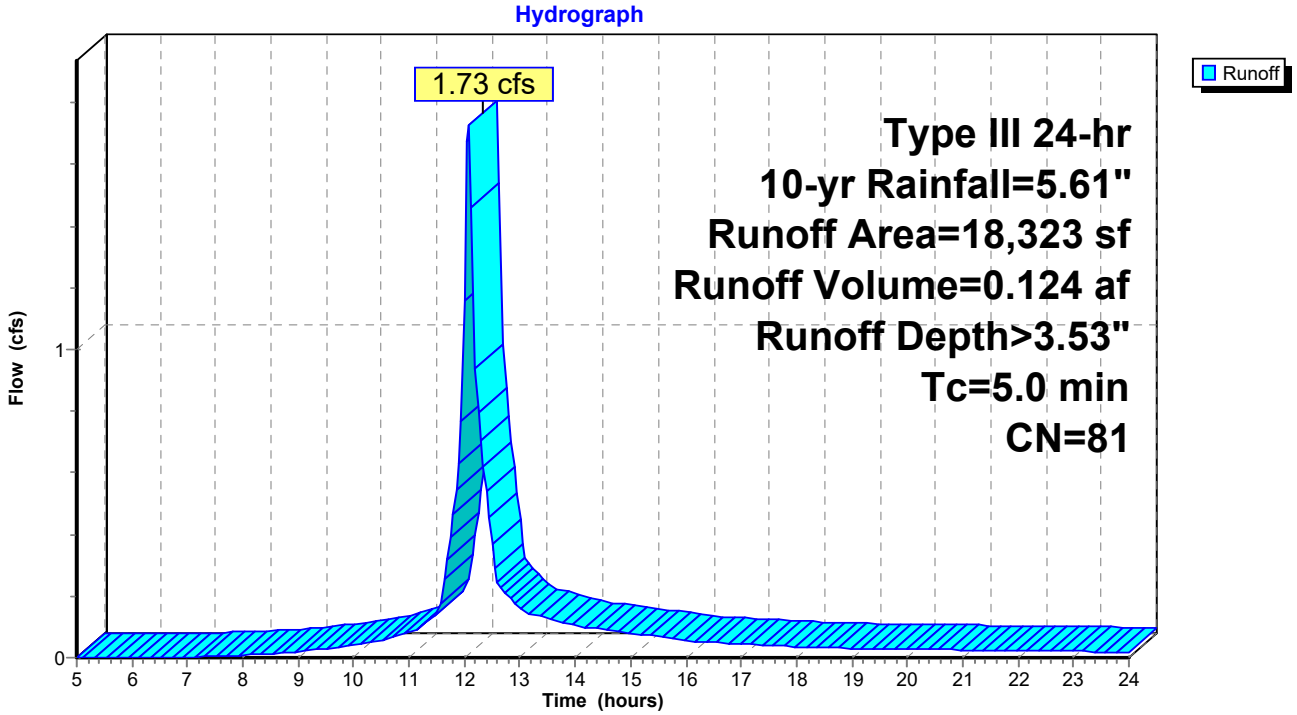
Runoff = 1.73 cfs @ 12.08 hrs, Volume= 0.124 af, Depth> 3.53"
Routed to Pond 1P : Existing Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	8,473	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	18,323	81	Weighted Average
	8,473		46.24% Pervious Area
	9,850		53.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

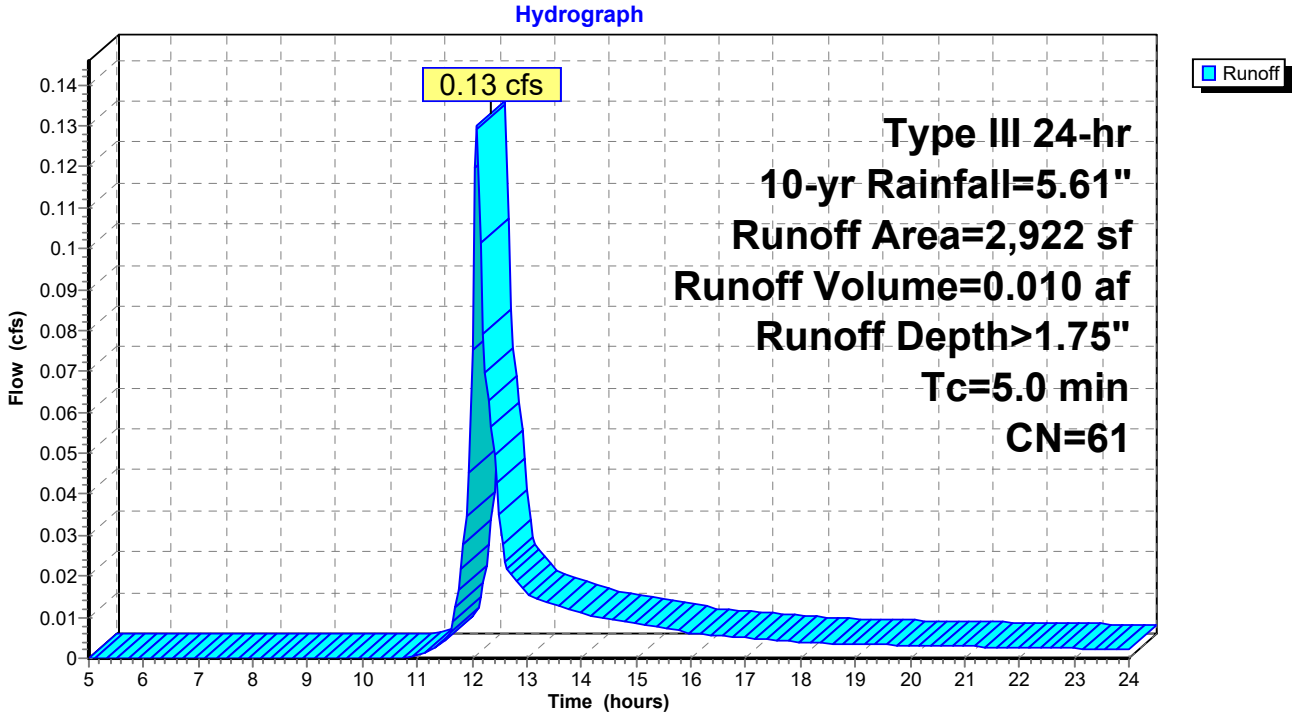
Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 1.75"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4



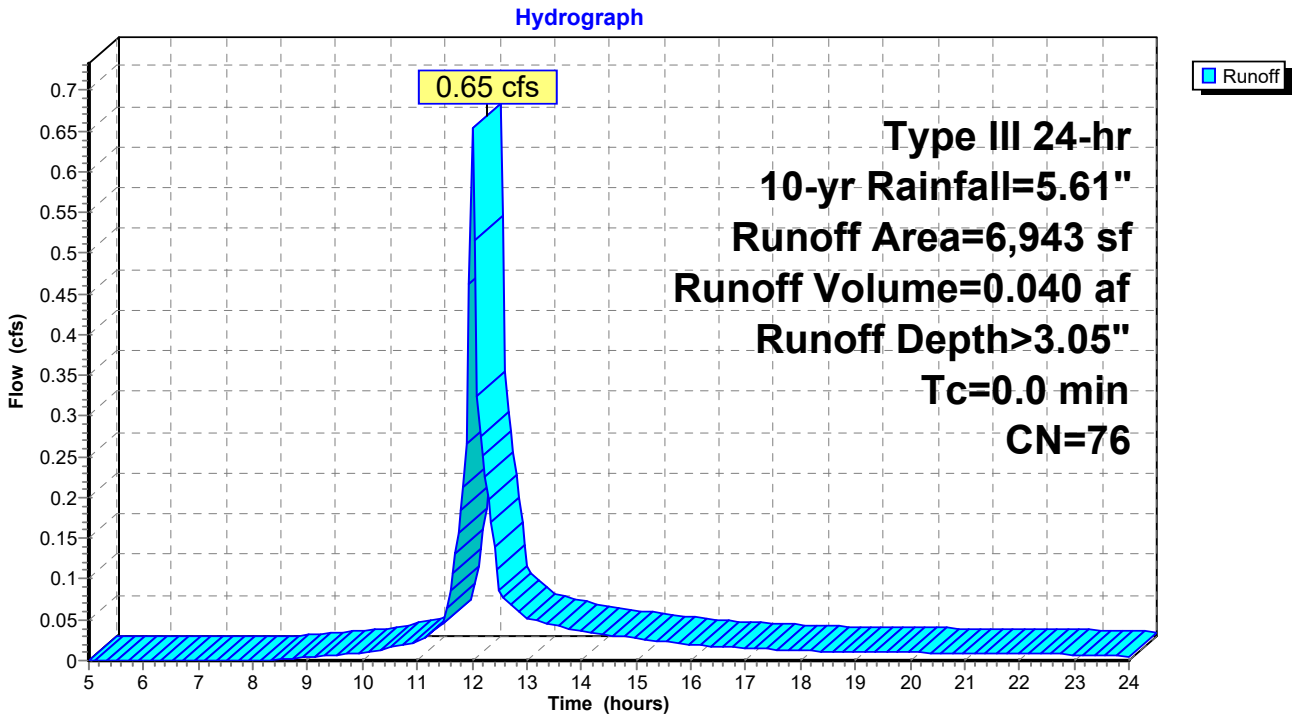
Summary for Subcatchment 5S: SUBCATCHEMNT 5

Runoff = 0.65 cfs @ 12.00 hrs, Volume= 0.040 af, Depth> 3.05"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
	4,093	61	>75% Grass cover, Good, HSG B
*	2,850	98	IMPERVIOUS
	6,943	76	Weighted Average
	4,093		58.95% Pervious Area
	2,850		41.05% Impervious Area

Subcatchment 5S: SUBCATCHEMNT 5



Summary for Subcatchment 6S: SUBCATCHMENT 6

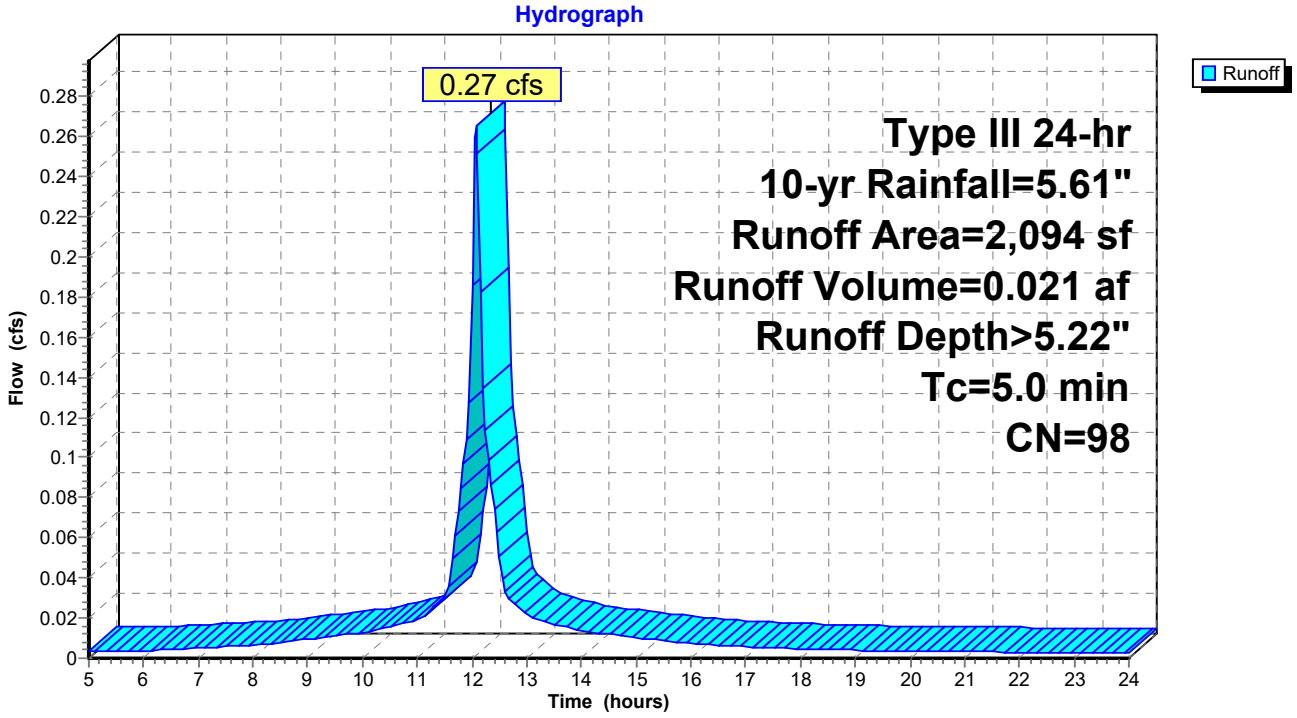
Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 5.22"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SUBCATCHMENT 6



Summary for Subcatchment 7S: SUBCATCHMENT 7

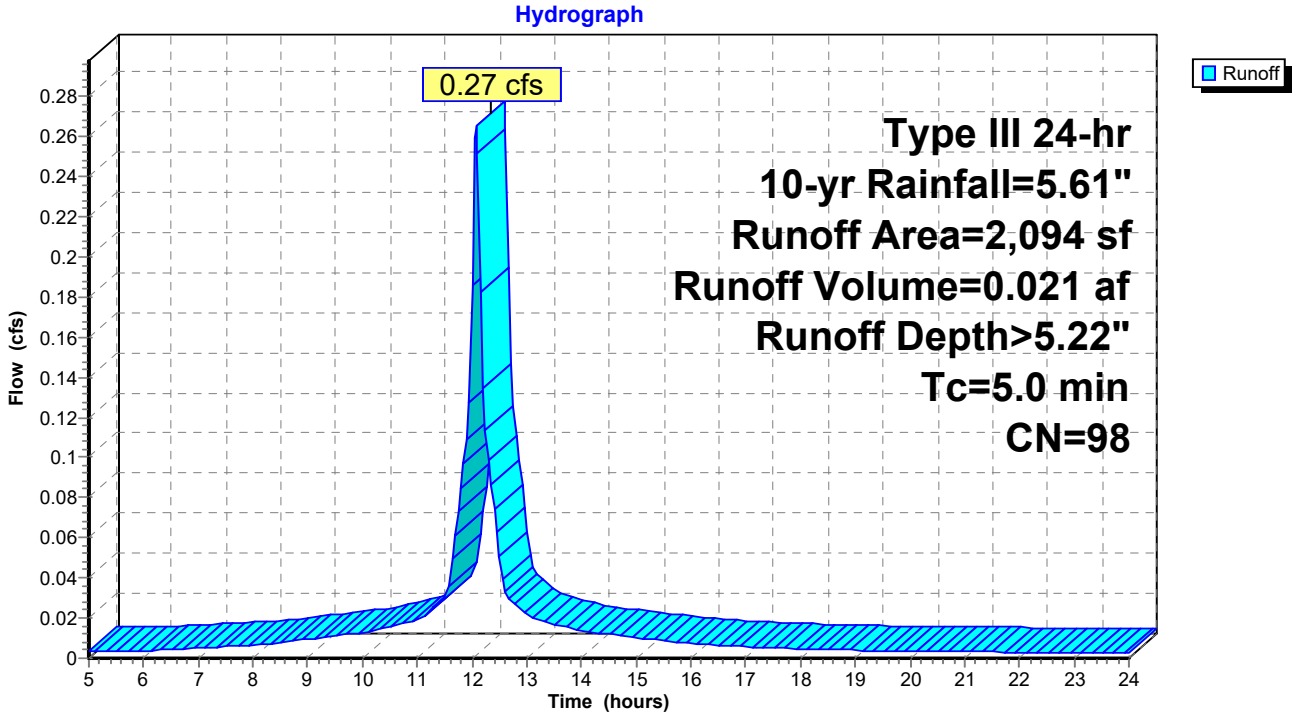
Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 5.22"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: SUBCATCHMENT 7



Summary for Subcatchment 8S: SUBCATCHMENT 8

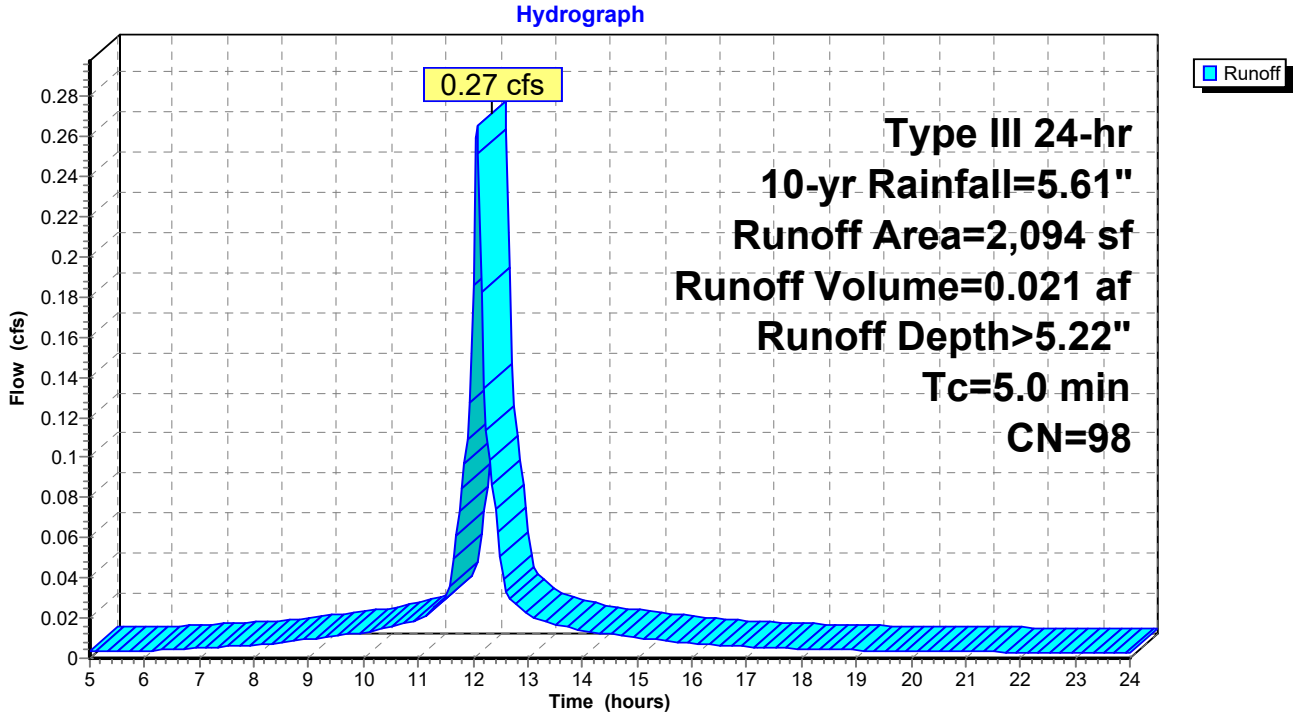
Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 5.22"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 8S: SUBCATCHMENT 8



Summary for Subcatchment 9S: SUBCATCHMENT 9

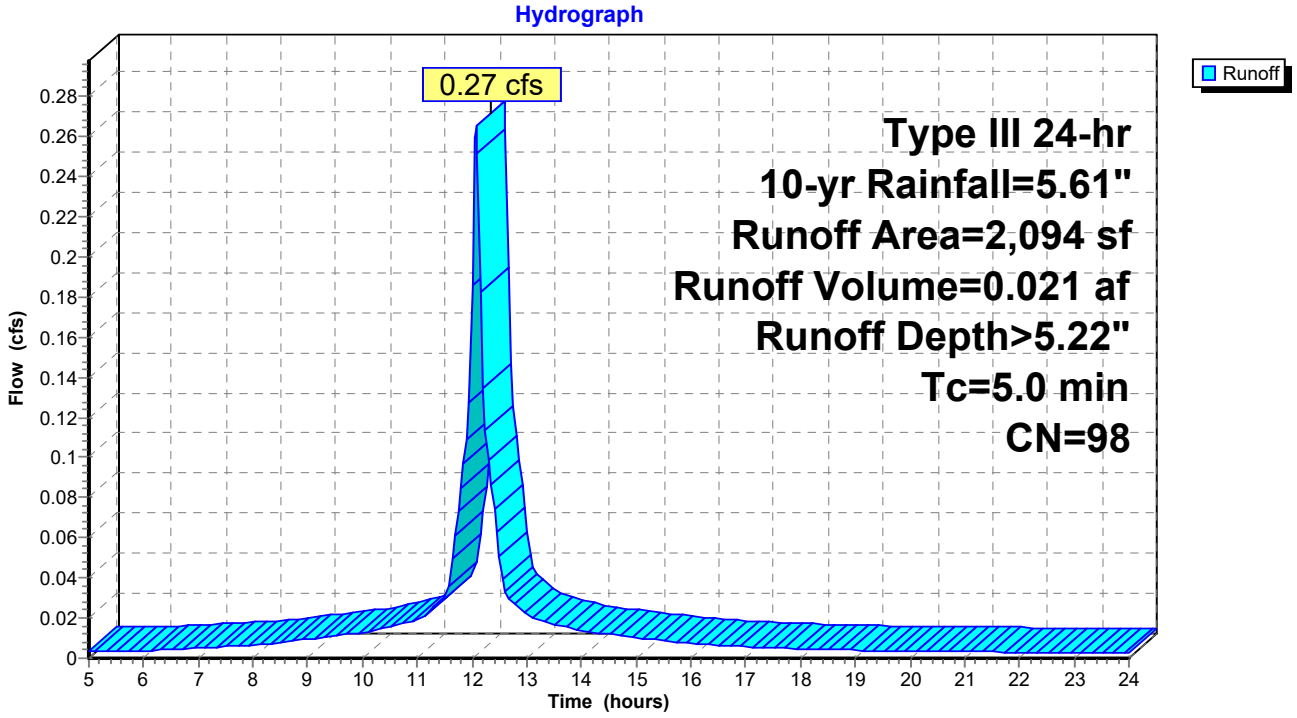
Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 5.22"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.61"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 9S: SUBCATCHMENT 9

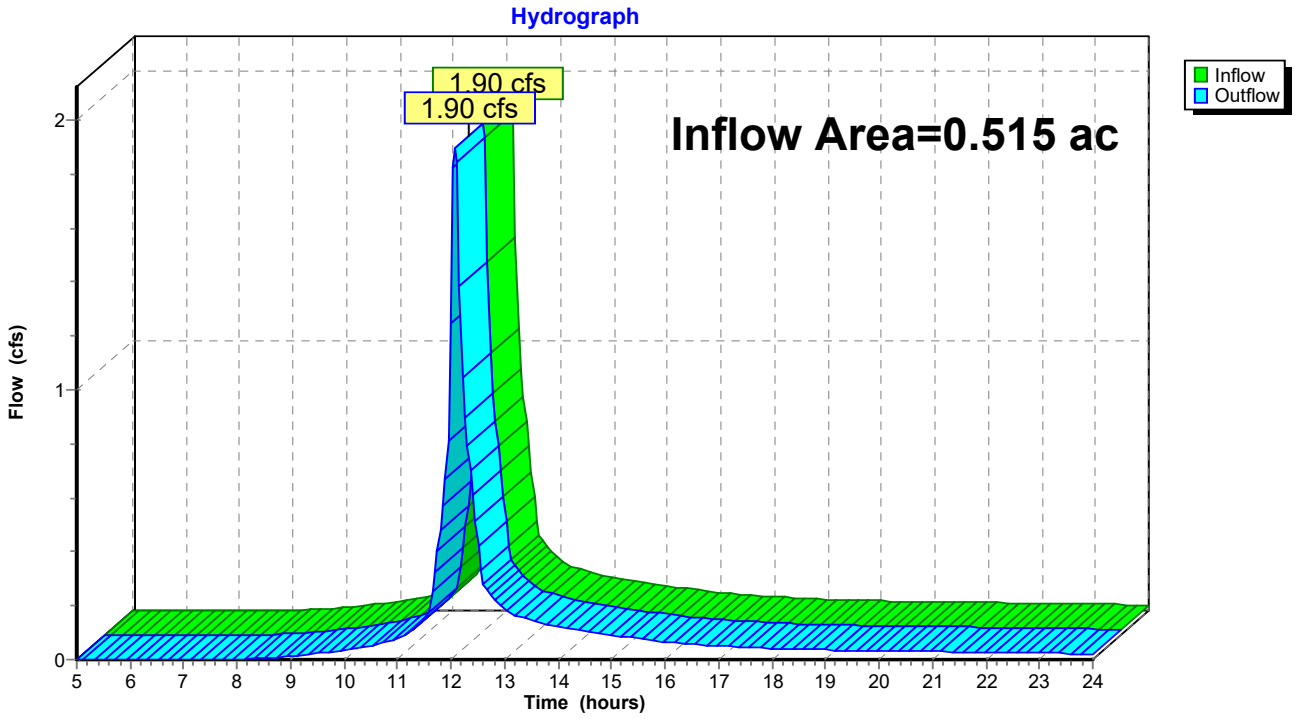


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.515 ac, 41.90% Impervious, Inflow Depth > 3.14" for 10-yr event
Inflow = 1.90 cfs @ 12.08 hrs, Volume= 0.135 af
Outflow = 1.90 cfs @ 12.08 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

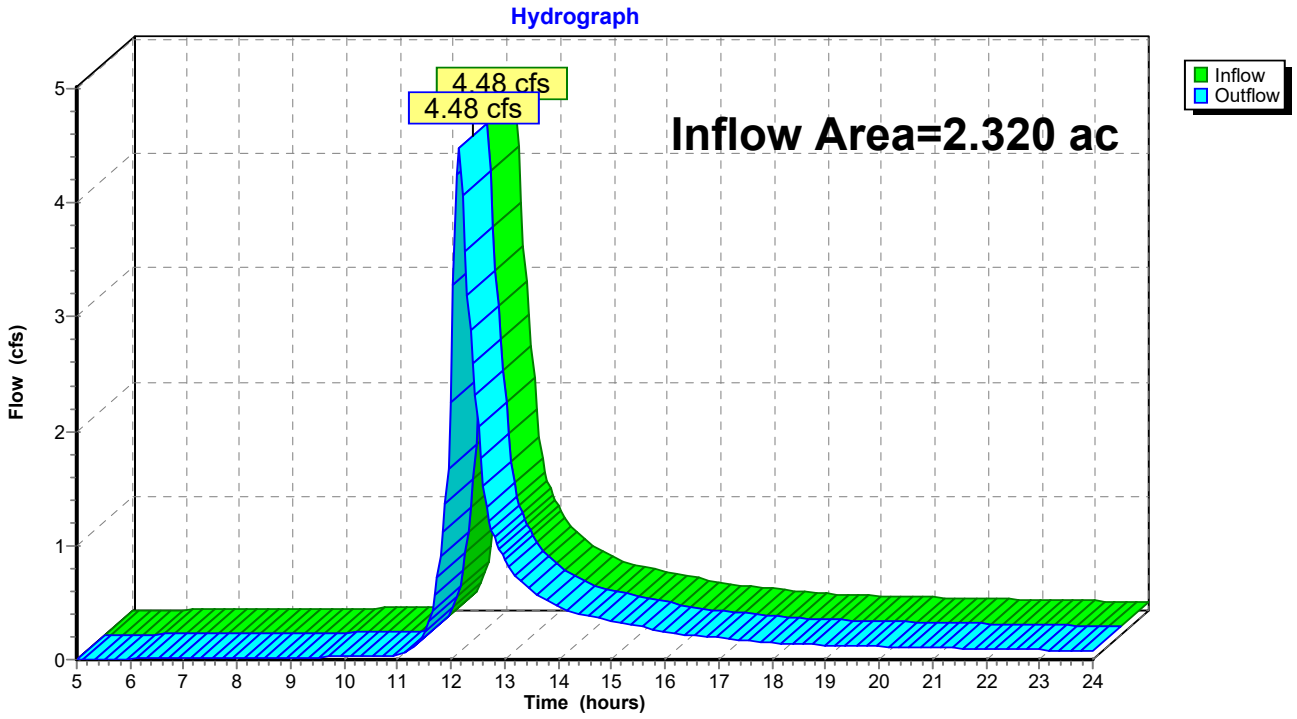


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.320 ac, 26.81% Impervious, Inflow Depth > 2.21" for 10-yr event
Inflow = 4.48 cfs @ 12.14 hrs, Volume= 0.427 af
Outflow = 4.48 cfs @ 12.14 hrs, Volume= 0.427 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

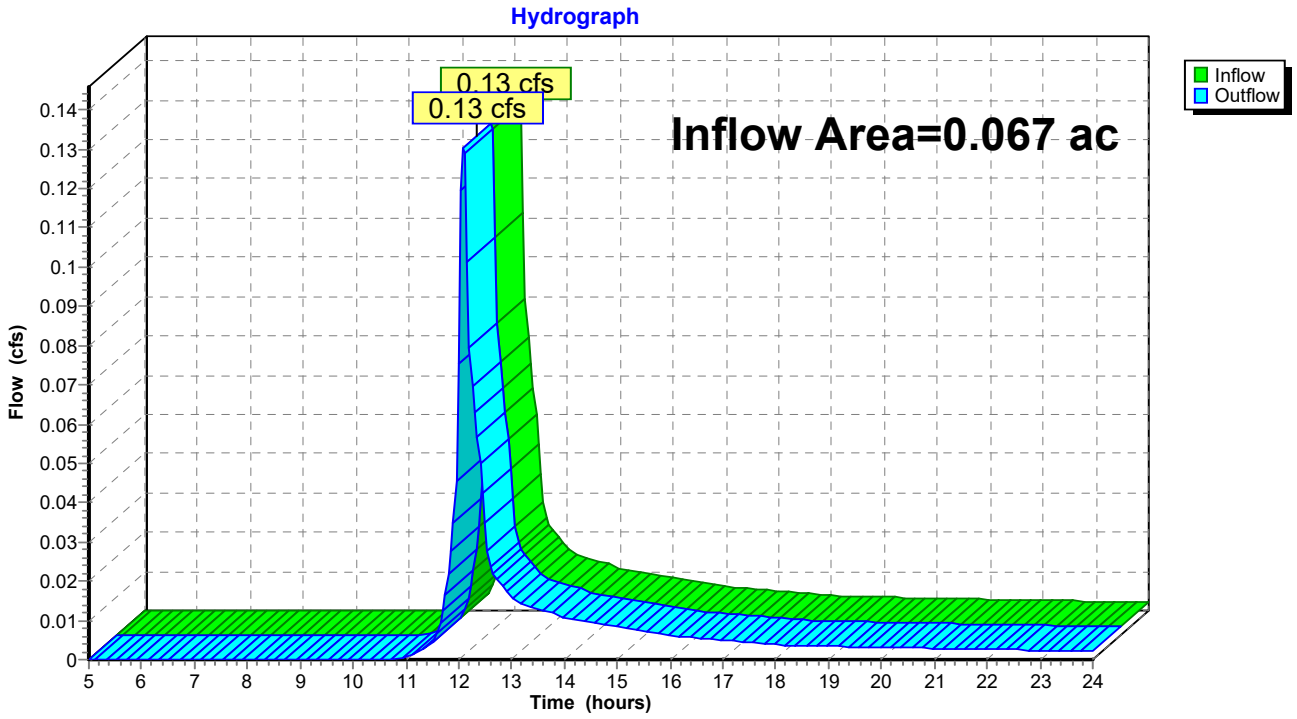


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 1.75" for 10-yr event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Existing Rain Garden

Inflow Area = 0.421 ac, 53.76% Impervious, Inflow Depth > 3.53" for 10-yr event
Inflow = 1.73 cfs @ 12.08 hrs, Volume= 0.124 af
Outflow = 1.29 cfs @ 12.15 hrs, Volume= 0.112 af, Atten= 25%, Lag= 4.7 min
Primary = 1.29 cfs @ 12.15 hrs, Volume= 0.112 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 31.76' @ 12.15 hrs Surf.Area= 1,005 sf Storage= 1,139 cf

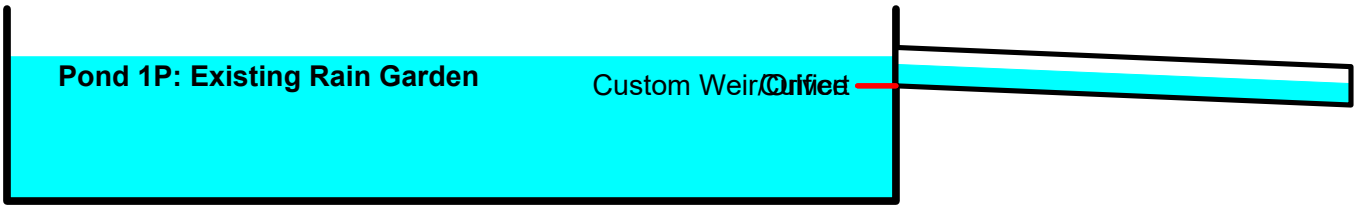
Plug-Flow detention time= 76.1 min calculated for 0.112 af (90% of inflow)
Center-of-Mass det. time= 30.4 min (843.3 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

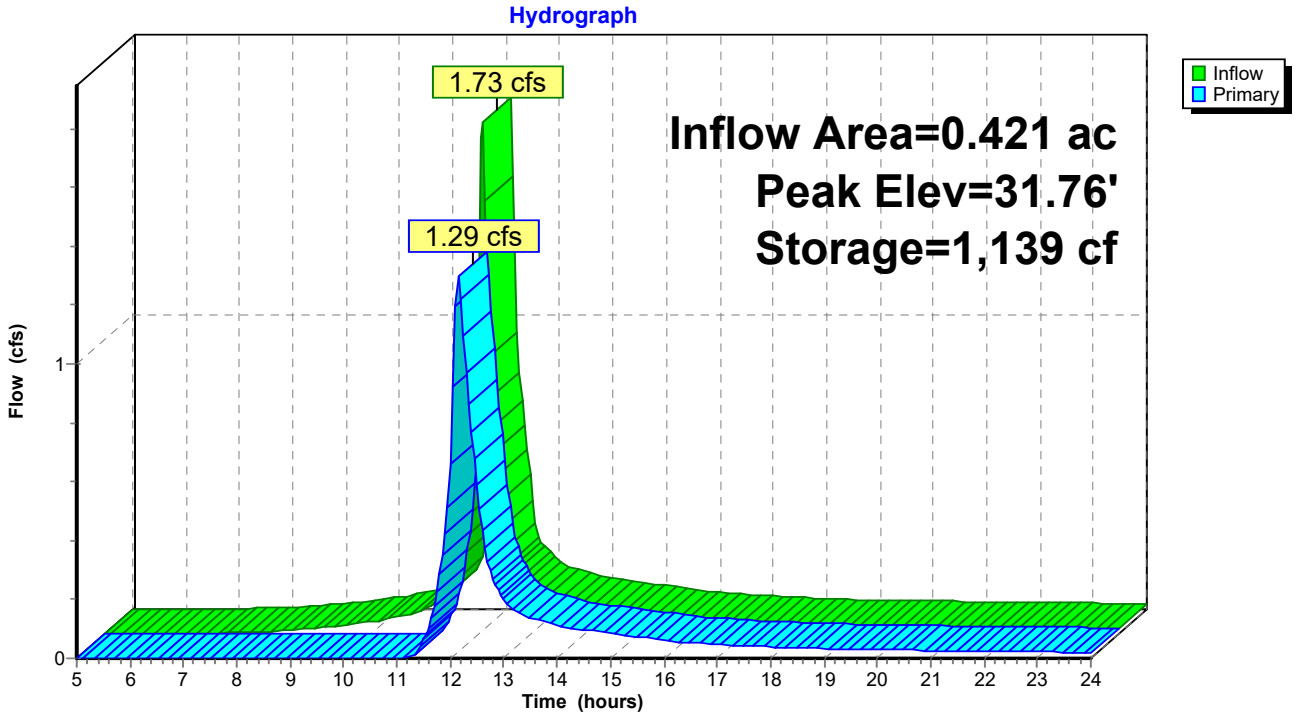
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=1.29 cfs @ 12.15 hrs HW=31.75' (Free Discharge)
↑**1=Culvert** (Passes 1.29 cfs of 1.88 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 1.29 cfs @ 2.85 fps)



Pond 1P: Existing Rain Garden



Summary for Pond 2P: Proposed Rain Garden

Inflow Area = 0.256 ac, 63.23% Impervious, Inflow Depth > 3.86" for 10-yr event
Inflow = 1.06 cfs @ 12.03 hrs, Volume= 0.082 af
Outflow = 0.39 cfs @ 12.31 hrs, Volume= 0.073 af, Atten= 64%, Lag= 17.0 min
Discarded = 0.03 cfs @ 12.31 hrs, Volume= 0.015 af
Primary = 0.36 cfs @ 12.31 hrs, Volume= 0.058 af
Routed to Reach SP1 : SUMMATION POINT 1
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.40' @ 12.31 hrs Surf.Area= 1,125 sf Storage= 1,239 cf

Plug-Flow detention time= 108.1 min calculated for 0.073 af (89% of inflow)
Center-of-Mass det. time= 56.2 min (846.8 - 790.6)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	2,688 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

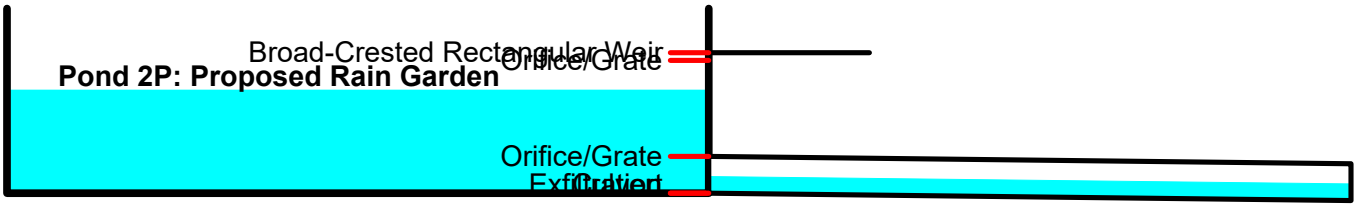
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	650	0	0
33.50	1,500	2,688	2,688

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	**2.400 in/hr Exfiltration over Surface area above 31.00'** Excluded Surface area = 650 sf
#2	Primary	31.00'	**6.0" Round Culvert** L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.00' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	31.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	32.80'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	32.90'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

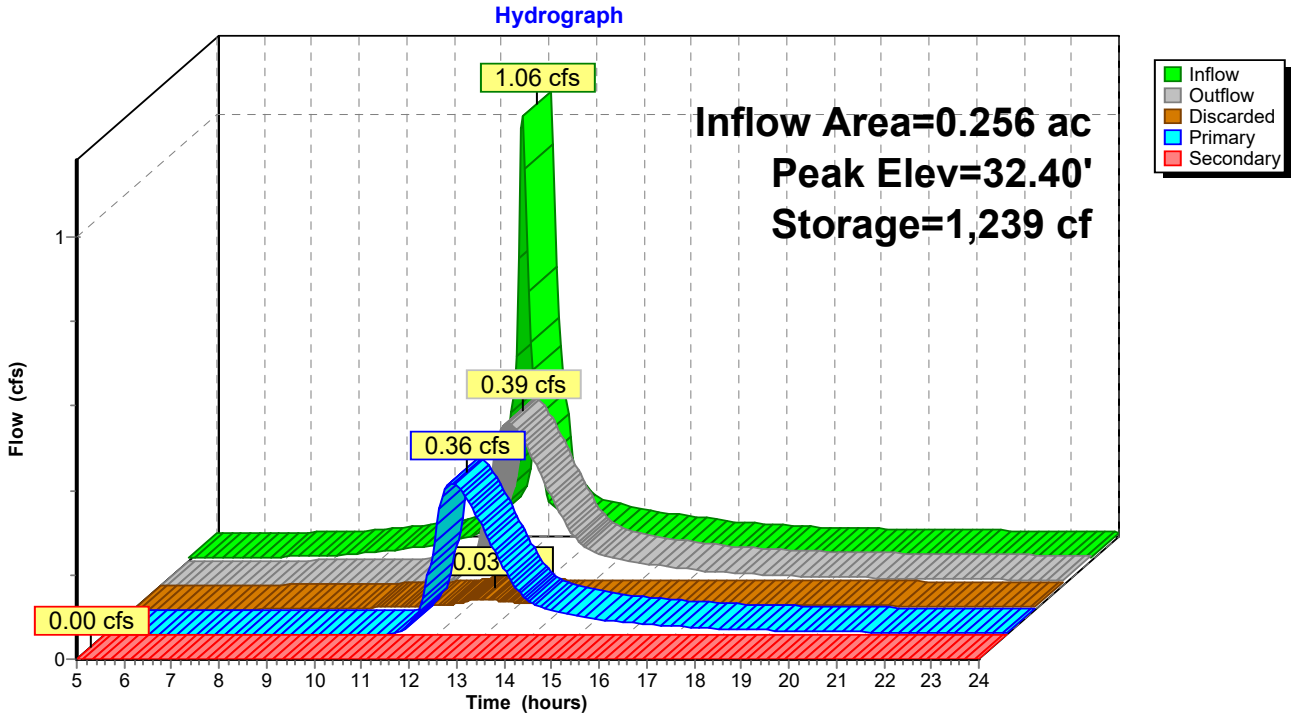
Discarded OutFlow Max=0.03 cfs @ 12.31 hrs HW=32.40' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.36 cfs @ 12.31 hrs HW=32.40' (Free Discharge)
└**2=Culvert** (Passes 0.36 cfs of 0.80 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.11 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=31.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 2P: Proposed Rain Garden



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=67,431 sf 8.92% Impervious Runoff Depth>3.73"
Flow Length=525' Tc=9.5 min CN=60 Runoff=5.86 cfs 0.481 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=22,420 sf 41.90% Impervious Runoff Depth>5.76"
Tc=5.0 min CN=77 Runoff=3.46 cfs 0.247 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=18,323 sf 53.76% Impervious Runoff Depth>6.24"
Tc=5.0 min CN=81 Runoff=3.03 cfs 0.219 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=2,922 sf 0.00% Impervious Runoff Depth>3.85"
Tc=5.0 min CN=61 Runoff=0.30 cfs 0.022 af

Subcatchment5S: SUBCATCHEMNT5 Runoff Area=6,943 sf 41.05% Impervious Runoff Depth>5.64"
Tc=0.0 min CN=76 Runoff=1.20 cfs 0.075 af

Subcatchment6S: SUBCATCHMENT6 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>7.99"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment7S: SUBCATCHMENT7 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>7.99"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment8S: SUBCATCHMENT8 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>7.99"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Subcatchment9S: SUBCATCHMENT9 Runoff Area=2,094 sf 100.00% Impervious Runoff Depth>7.99"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.032 af

Reach 6R: SUMMATION POINT 2 Inflow=3.46 cfs 0.247 af
Outflow=3.46 cfs 0.247 af

Reach SP1: SUMMATION POINT 1 Inflow=9.47 cfs 0.863 af
Outflow=9.47 cfs 0.863 af

Reach SP3: SUMMATION POINT 3 Inflow=0.30 cfs 0.022 af
Outflow=0.30 cfs 0.022 af

Pond 1P: Existing Rain Garden Peak Elev=32.12' Storage=1,522 cf Inflow=3.03 cfs 0.219 af
Outflow=2.32 cfs 0.207 af

Pond 2P: Proposed Rain Garden Peak Elev=32.91' Storage=1,856 cf Inflow=1.82 cfs 0.139 af
Discarded=0.04 cfs 0.018 af Primary=0.82 cfs 0.111 af Secondary=0.01 cfs 0.000 af Outflow=0.87 cfs 0.129 af

Total Runoff Area = 2.902 ac Runoff Volume = 1.171 af Average Runoff Depth = 4.84"
71.14% Pervious = 2.064 ac 28.86% Impervious = 0.838 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

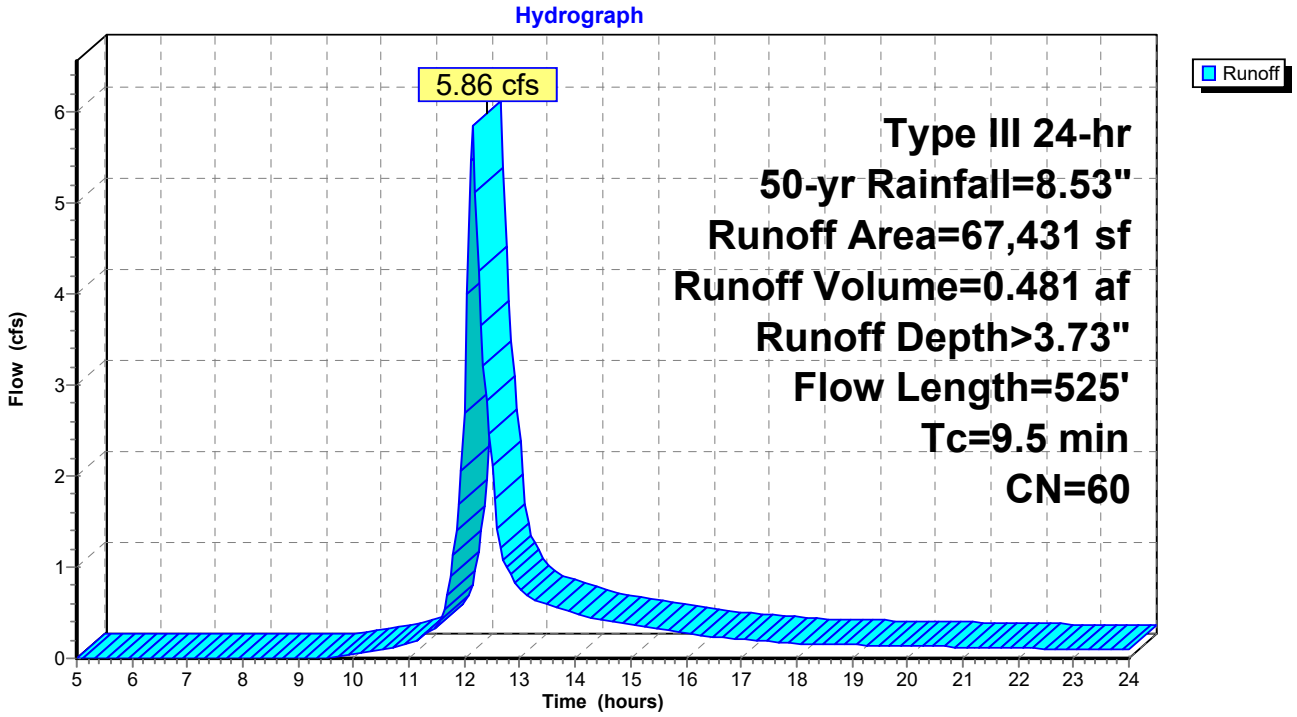
Runoff = 5.86 cfs @ 12.14 hrs, Volume= 0.481 af, Depth> 3.73"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	53,341	55	Woods, Good, HSG B
	8,072	61	>75% Grass cover, Good, HSG B
*	6,018	98	IMPERVIOUS
	67,431	60	Weighted Average
	61,413		91.08% Pervious Area
	6,018		8.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0800	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	85	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	40	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.6	300	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
9.5	525	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

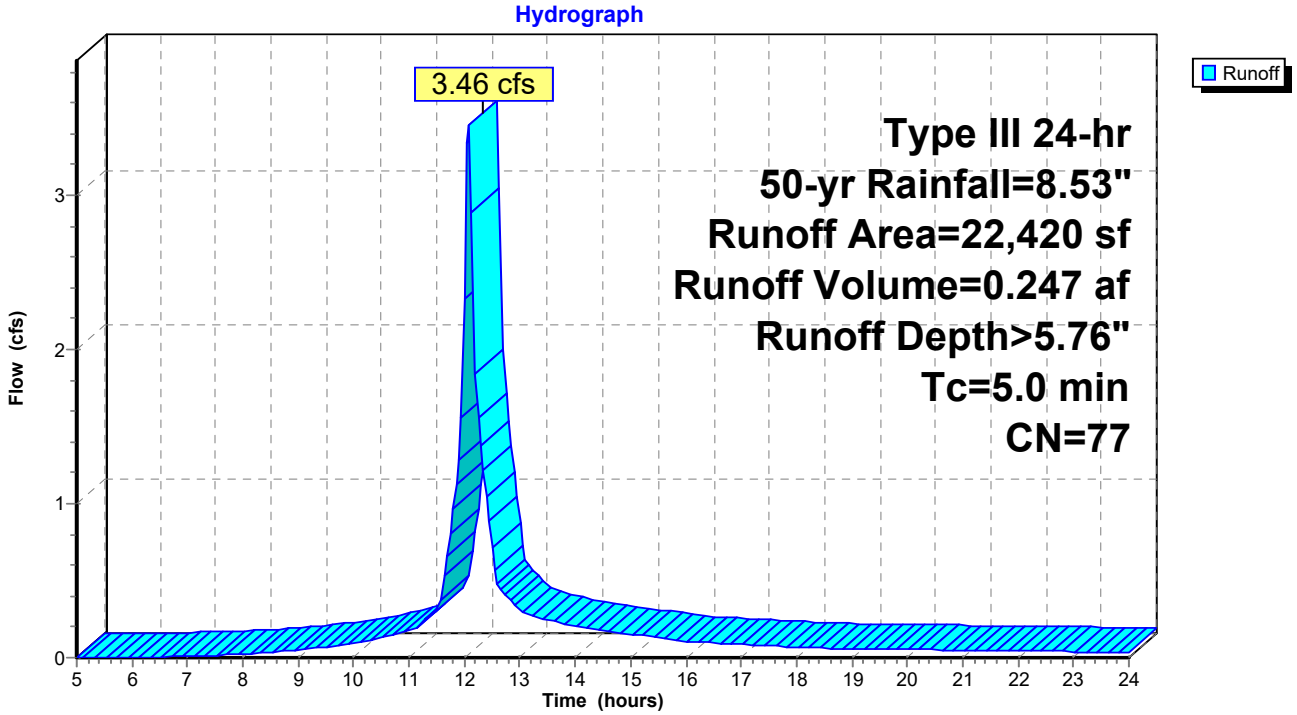
Runoff = 3.46 cfs @ 12.07 hrs, Volume= 0.247 af, Depth> 5.76"
Routed to Reach 6R : SUMMATION POINT 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	13,026	61	>75% Grass cover, Good, HSG B
*	9,394	98	IMPERVIOUS
	22,420	77	Weighted Average
	13,026		58.10% Pervious Area
	9,394		41.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

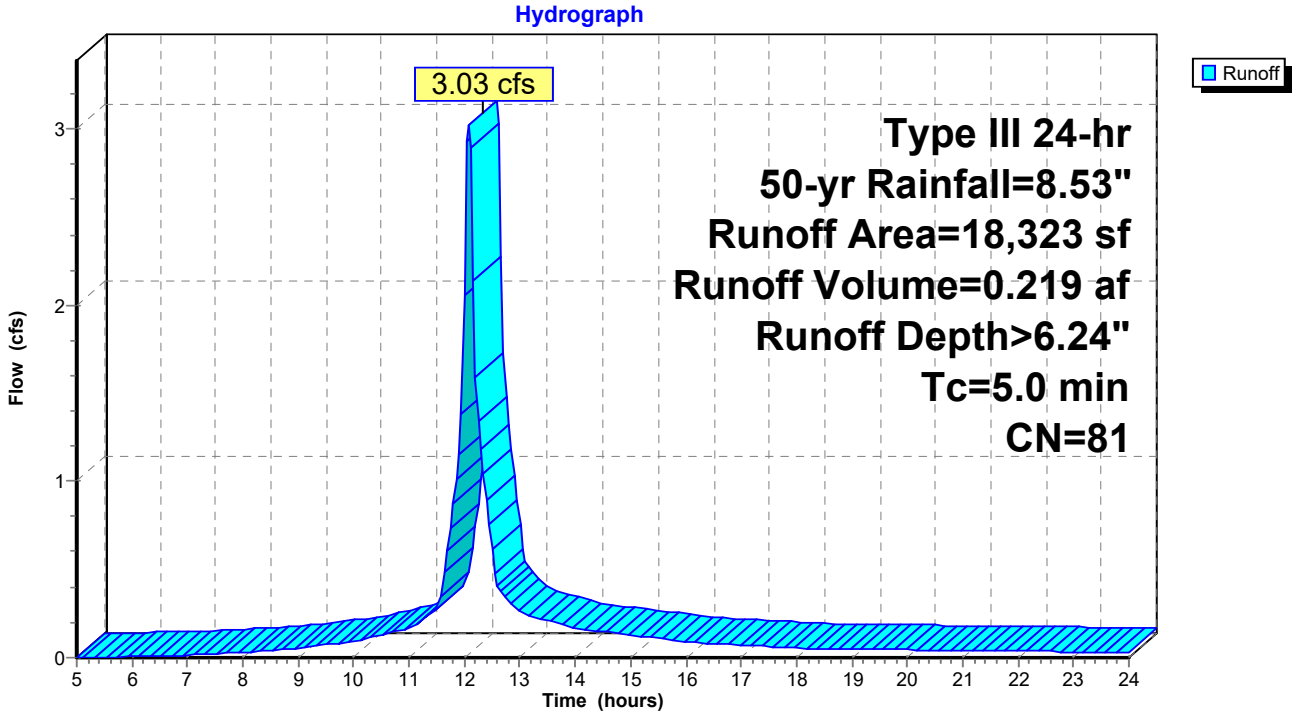
Runoff = 3.03 cfs @ 12.07 hrs, Volume= 0.219 af, Depth> 6.24"
Routed to Pond 1P : Existing Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	8,473	61	>75% Grass cover, Good, HSG B
*	9,850	98	IMPERVIOUS
	18,323	81	Weighted Average
	8,473		46.24% Pervious Area
	9,850		53.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

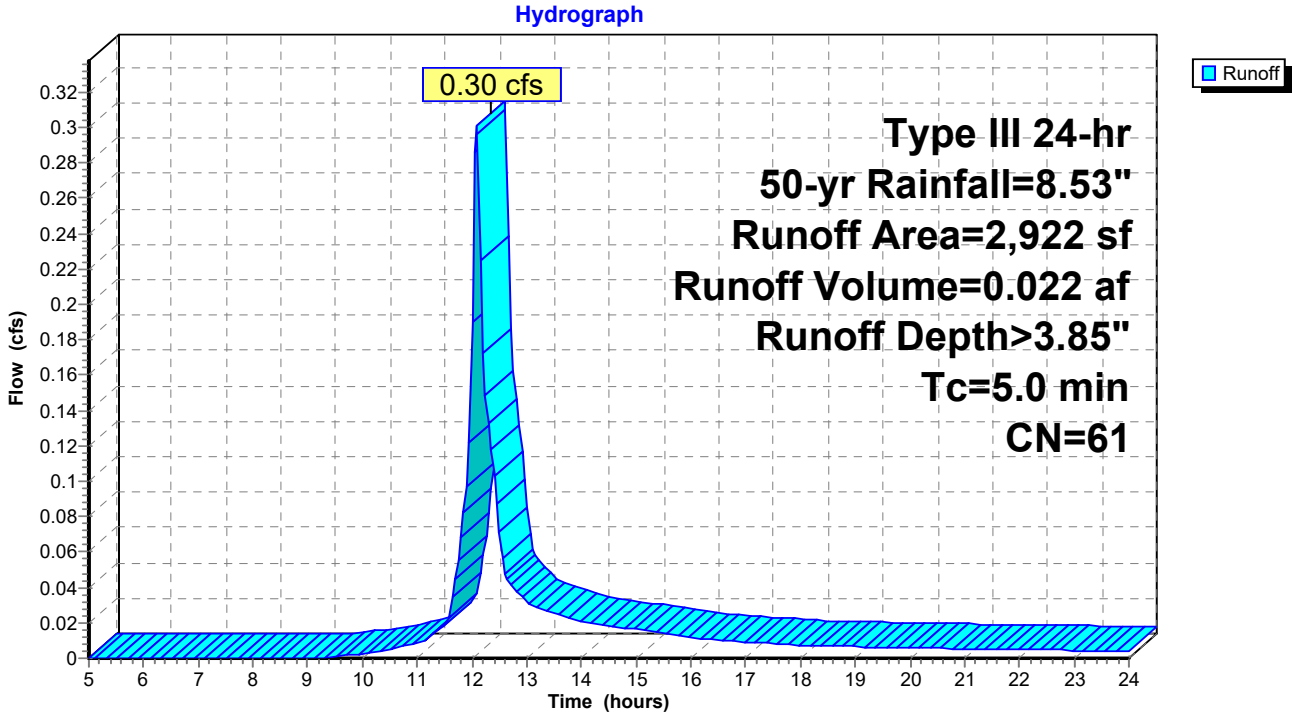
Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 3.85"
Routed to Reach SP3 : SUMMATION POINT 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

Area (sf)	CN	Description
2,922	61	>75% Grass cover, Good, HSG B
2,922		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: SUBCATCHMENT 4



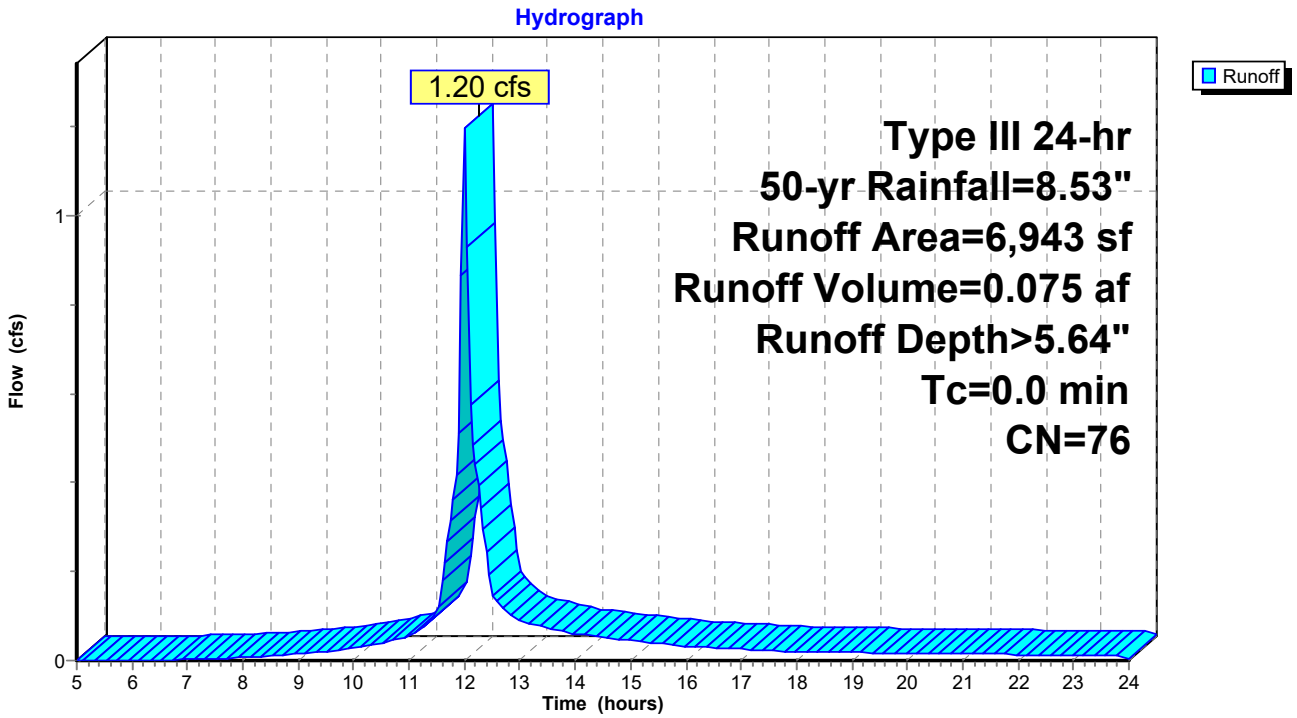
Summary for Subcatchment 5S: SUBCATCHEMNT 5

Runoff = 1.20 cfs @ 12.00 hrs, Volume= 0.075 af, Depth> 5.64"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
	4,093	61	>75% Grass cover, Good, HSG B
*	2,850	98	IMPERVIOUS
	6,943	76	Weighted Average
	4,093		58.95% Pervious Area
	2,850		41.05% Impervious Area

Subcatchment 5S: SUBCATCHEMNT 5



Summary for Subcatchment 6S: SUBCATCHMENT 6

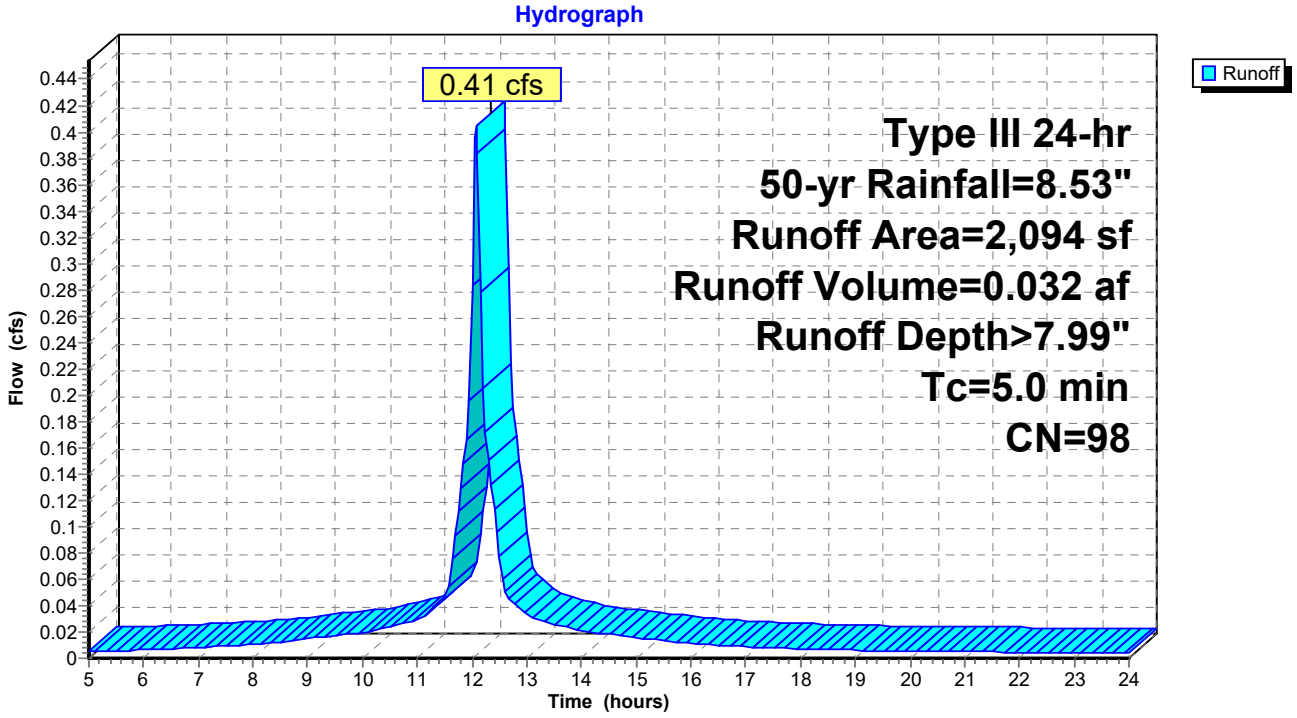
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.032 af, Depth> 7.99"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SUBCATCHMENT 6



Summary for Subcatchment 7S: SUBCATCHMENT 7

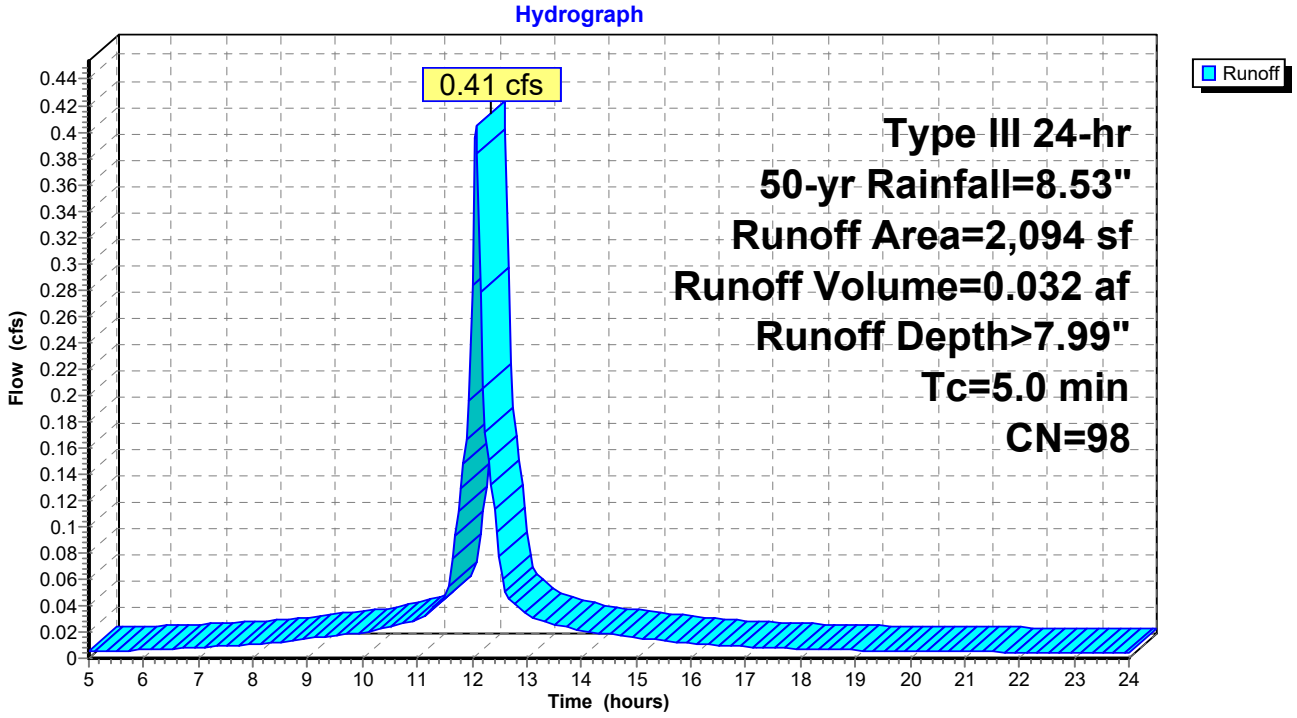
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.032 af, Depth> 7.99"
Routed to Pond 2P : Proposed Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: SUBCATCHMENT 7



Summary for Subcatchment 8S: SUBCATCHMENT 8

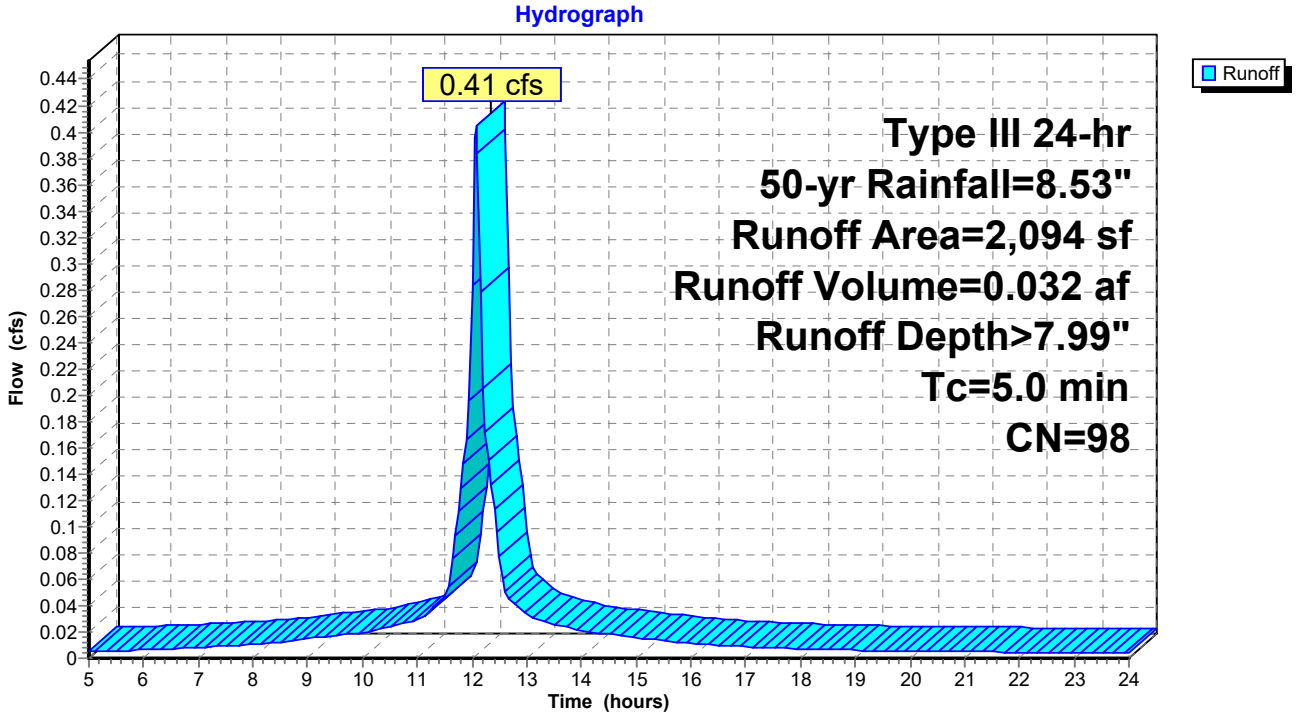
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.032 af, Depth> 7.99"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 8S: SUBCATCHMENT 8



Summary for Subcatchment 9S: SUBCATCHMENT 9

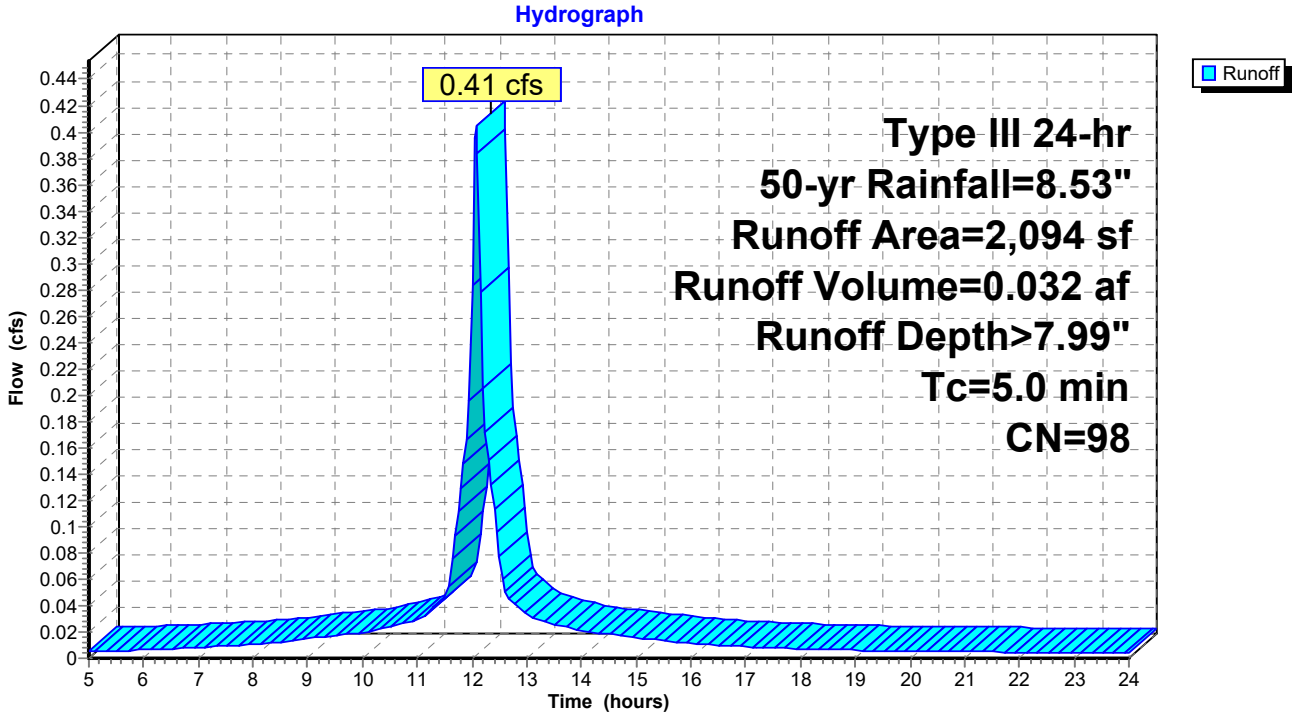
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.032 af, Depth> 7.99"
Routed to Reach SP1 : SUMMATION POINT 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.53"

	Area (sf)	CN	Description
*	2,094	98	IMPERVIOUS
	2,094		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 9S: SUBCATCHMENT 9

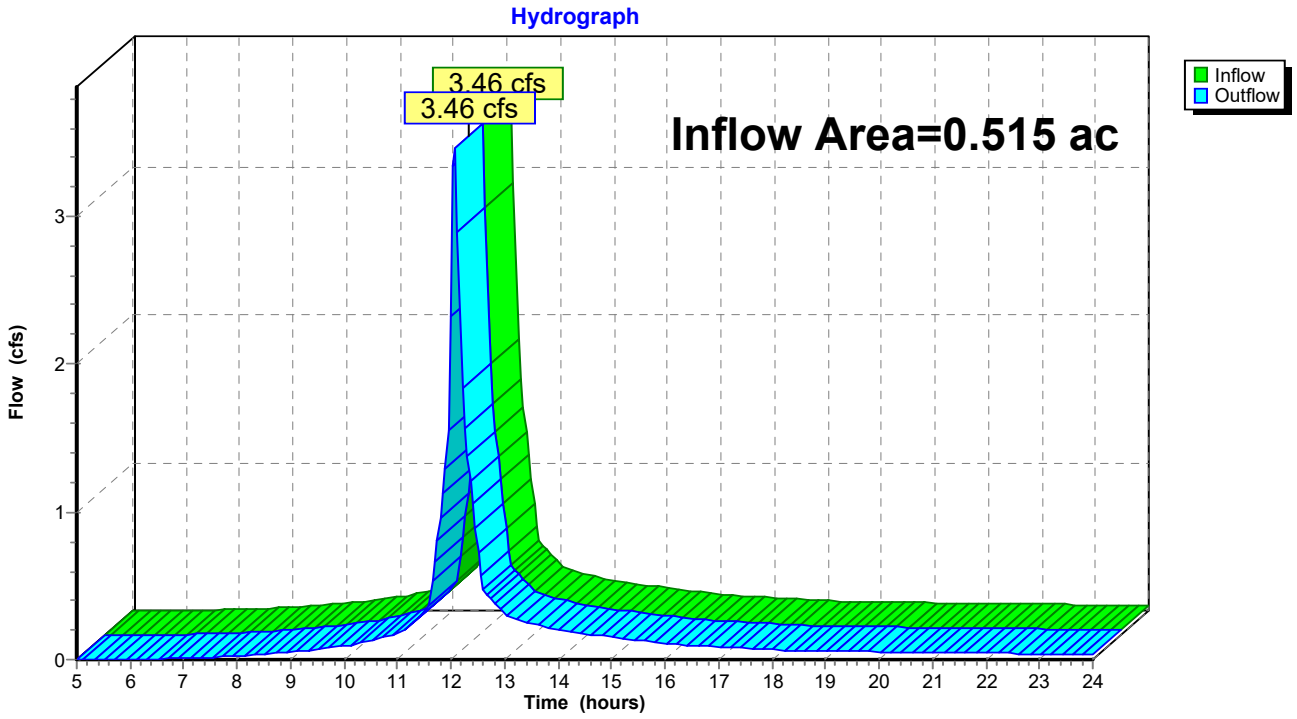


Summary for Reach 6R: SUMMATION POINT 2

Inflow Area = 0.515 ac, 41.90% Impervious, Inflow Depth > 5.76" for 50-yr event
Inflow = 3.46 cfs @ 12.07 hrs, Volume= 0.247 af
Outflow = 3.46 cfs @ 12.07 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach 6R: SUMMATION POINT 2

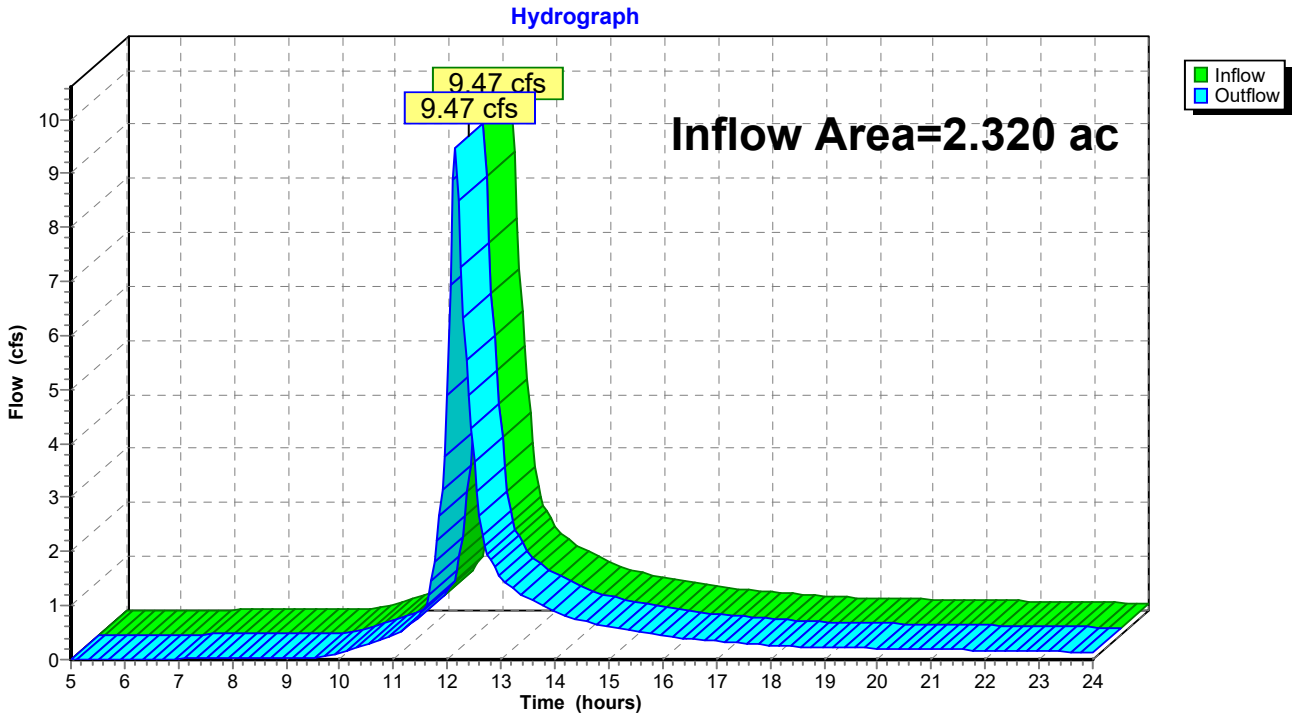


Summary for Reach SP1: SUMMATION POINT 1

Inflow Area = 2.320 ac, 26.81% Impervious, Inflow Depth > 4.46" for 50-yr event
Inflow = 9.47 cfs @ 12.14 hrs, Volume= 0.863 af
Outflow = 9.47 cfs @ 12.14 hrs, Volume= 0.863 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP1: SUMMATION POINT 1

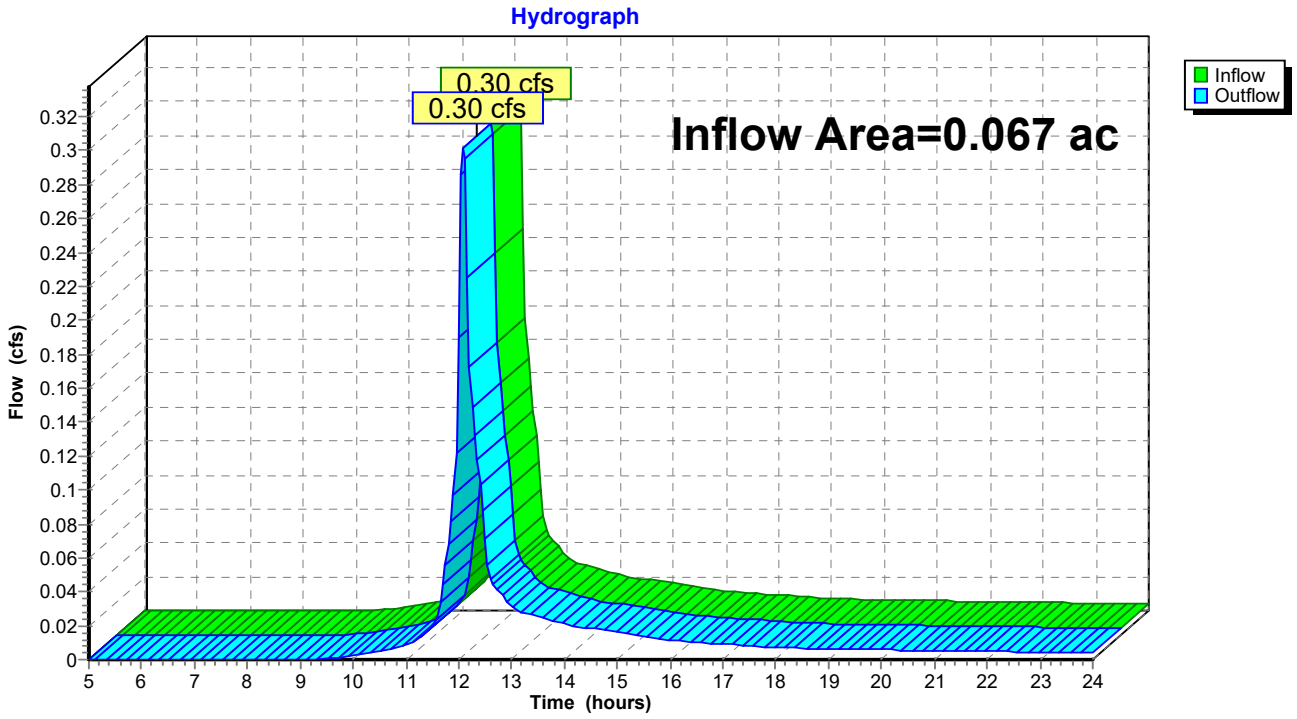


Summary for Reach SP3: SUMMATION POINT 3

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 3.85" for 50-yr event
Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af
Outflow = 0.30 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs

Reach SP3: SUMMATION POINT 3



Summary for Pond 1P: Existing Rain Garden

Inflow Area = 0.421 ac, 53.76% Impervious, Inflow Depth > 6.24" for 50-yr event
Inflow = 3.03 cfs @ 12.07 hrs, Volume= 0.219 af
Outflow = 2.32 cfs @ 12.15 hrs, Volume= 0.207 af, Atten= 23%, Lag= 4.3 min
Primary = 2.32 cfs @ 12.15 hrs, Volume= 0.207 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.12' @ 12.15 hrs Surf.Area= 1,123 sf Storage= 1,522 cf

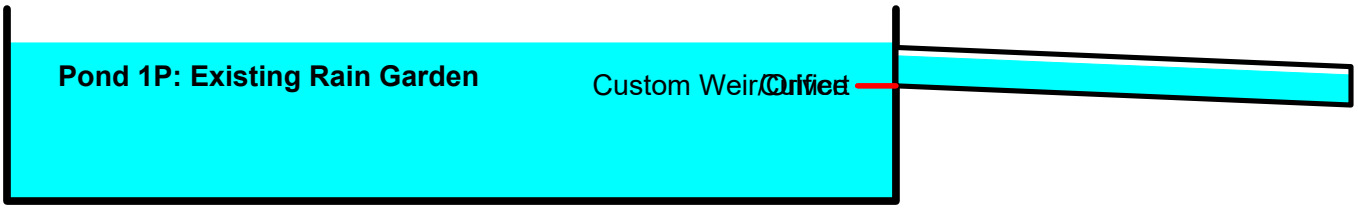
Plug-Flow detention time= 54.9 min calculated for 0.207 af (94% of inflow)
Center-of-Mass det. time= 24.5 min (821.4 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	2,657 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

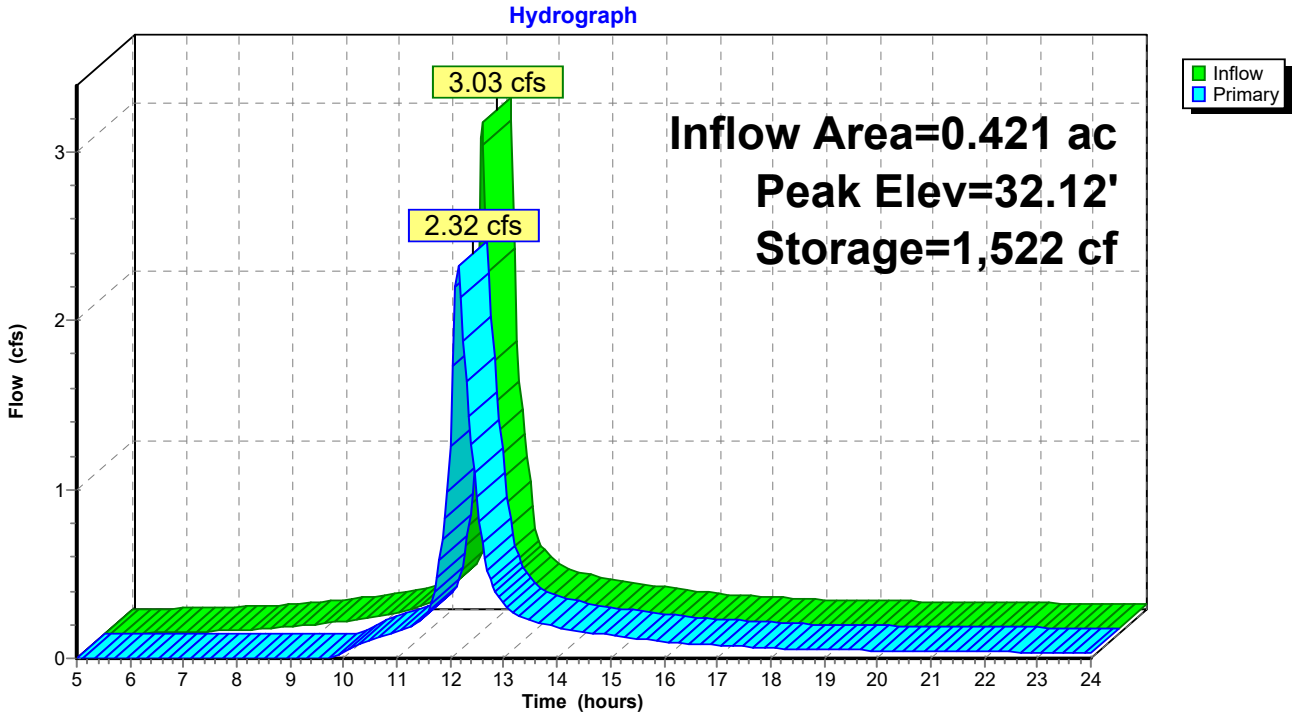
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	775	0.0	0	0
31.00	775	20.0	465	465
32.00	1,079	100.0	927	1,392
33.00	1,450	100.0	1,265	2,657

Device	Routing	Invert	Outlet Devices
#1	Primary	31.00'	**12.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.50' S= 0.0455 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	31.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 31.00 32.30 32.30 33.00 Width (feet) 0.60 0.60 4.00 4.00

Primary OutFlow Max=2.31 cfs @ 12.15 hrs HW=32.11' (Free Discharge)
↑**1=Culvert** (Passes 2.31 cfs of 2.96 cfs potential flow)
↑**2=Custom Weir/Orifice** (Weir Controls 2.31 cfs @ 3.46 fps)



Pond 1P: Existing Rain Garden



Summary for Pond 2P: Proposed Rain Garden

Inflow Area = 0.256 ac, 63.23% Impervious, Inflow Depth > 6.53" for 50-yr event
Inflow = 1.82 cfs @ 12.02 hrs, Volume= 0.139 af
Outflow = 0.87 cfs @ 12.21 hrs, Volume= 0.129 af, Atten= 52%, Lag= 11.4 min
Discarded = 0.04 cfs @ 12.21 hrs, Volume= 0.018 af
Primary = 0.82 cfs @ 12.21 hrs, Volume= 0.111 af
Routed to Reach SP1 : SUMMATION POINT 1
Secondary = 0.01 cfs @ 12.20 hrs, Volume= 0.000 af
Routed to Reach SP1 : SUMMATION POINT 1

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 32.91' @ 12.21 hrs Surf.Area= 1,298 sf Storage= 1,856 cf

Plug-Flow detention time= 85.2 min calculated for 0.129 af (93% of inflow)
Center-of-Mass det. time= 48.9 min (832.1 - 783.1)

Volume	Invert	Avail.Storage	Storage Description
#1	31.00'	2,688 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

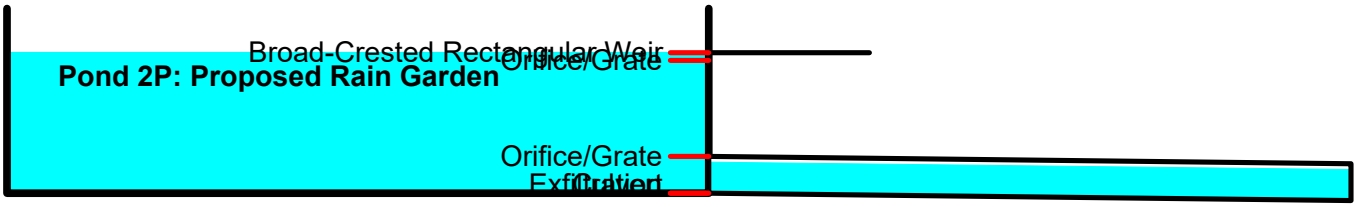
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.00	650	0	0
33.50	1,500	2,688	2,688

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.00'	**2.400 in/hr Exfiltration over Surface area above 31.00'** Excluded Surface area = 650 sf
#2	Primary	31.00'	**6.0" Round Culvert** L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.00' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	31.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	32.80'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	32.90'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

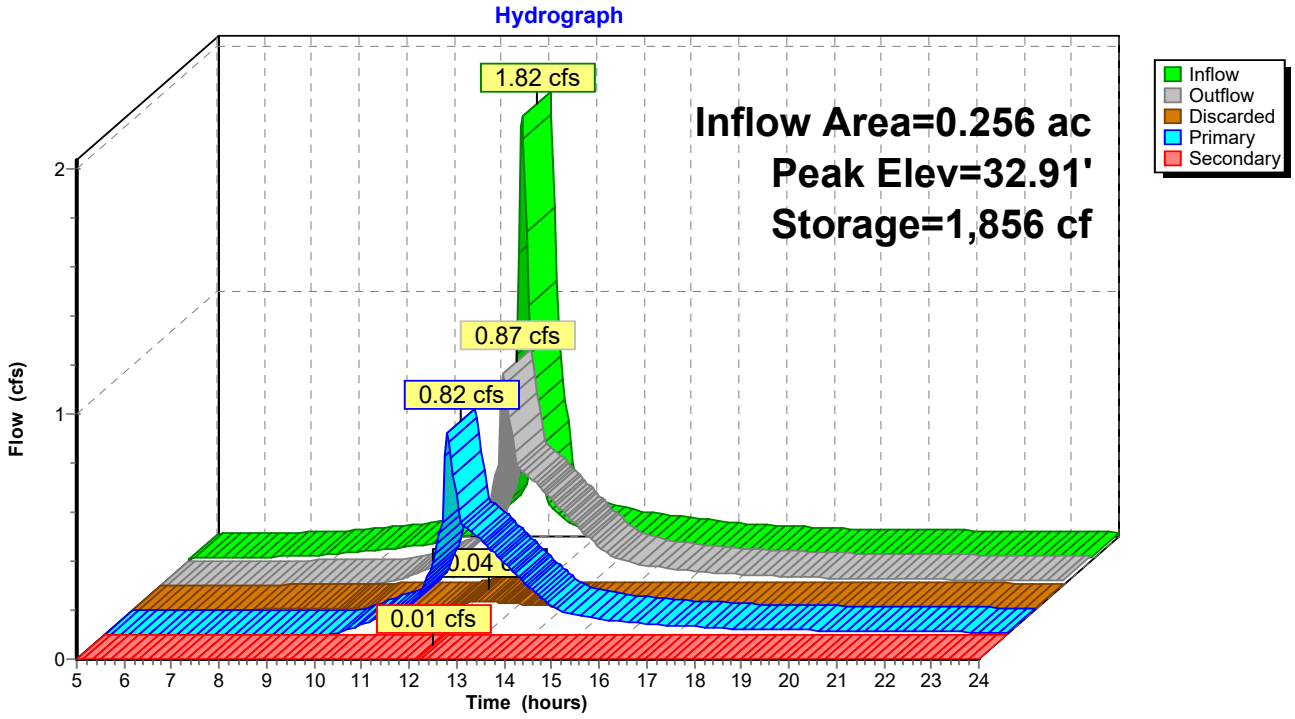
Discarded OutFlow Max=0.04 cfs @ 12.21 hrs HW=32.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

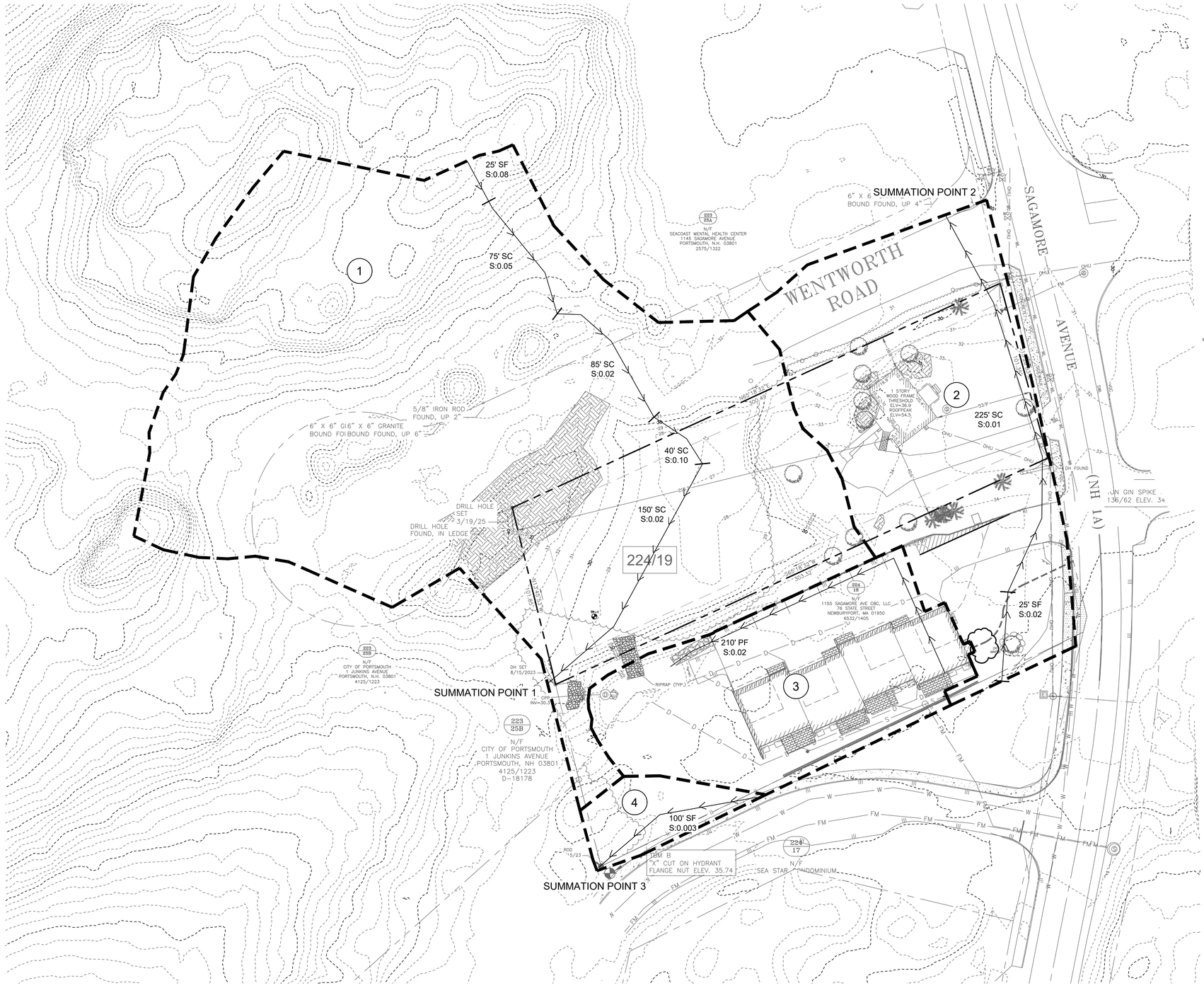
Primary OutFlow Max=0.81 cfs @ 12.21 hrs HW=32.90' (Free Discharge)
└**2=Culvert** (Passes 0.81 cfs of 0.96 cfs potential flow)
├**3=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.35 fps)
└**4=Orifice/Grate** (Weir Controls 0.34 cfs @ 1.05 fps)

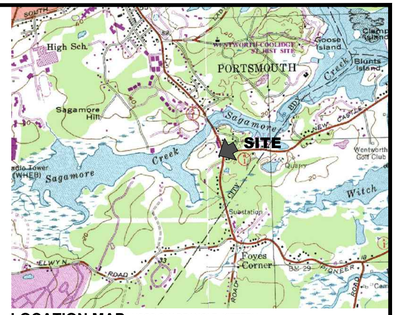
Secondary OutFlow Max=0.00 cfs @ 12.20 hrs HW=32.90' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.16 fps)



Pond 2P: Proposed Rain Garden







LOCATION MAP: USGS QUADRANGLE: KITTERY
MAPTECH® USGS TOPOGRAPHIC SERIES™,
©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO
SCALE: 1"=2000'

PRE LEGEND:

	PROPERTY LINE
	WATERSHED BOUNDARY LINE
1	WATERSHED DESIGNATION
	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

GRAPHIC SCALE

40 0 20 40 80 120

(IN FEET)
1 inch = 40 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

PRE-DEVELOPMENT HYDROLOGY PLAN

STATE OF NEW HAMPSHIRE
DREW JOHN OLEHOWSKI
No. 18516
LICENSED
PROFESSIONAL ENGINEER
12/16/2025

DATE	SCALE
2025.12.22	1"=40'

DRAWN BY	DESIGNED BY	CHECKED BY
BLQ/PJM	BLQ/PJM	DJO

PROJECT No. 5010314.002

DRAWING No. **C701** REV.

LOCATION MAP: USGS QUADRANGLE: KITTERY
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WWW.MAPTECH.COM/TOPO

SCALE: 1"=2000'

POST LEGEND:

— – – —	PROPERTY LINE
▬ ▬ ▬ ▬	WATERSHED BOUNDARY LINE
①	WATERSHED DESIGNATION
—>—>—	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

REV.	DATE	DESCRIPTION	BY	CHK.

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
200 Griffin Rd., Unit 14
Portsmouth, New Hampshire 03801
603.430.9282

PROJECT

1151 SAGAMORE AVENUE CBC, LLC
1151 SAGAMORE AVE., PORTSMOUTH, NH

TITLE

POST DEVELOPMENT HYDROLOGY PLAN

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER
DREW JOHN OLEHOWSKI
No. 18515
LICENSED
12/16/2025

DATE 2025.12.22		SCALE 1"=40'
DRAWN BY BLQ/PJM	DESIGNED BY BLQ/PJM	CHECKED BY DJO
PROJECT No. 5010314.002		
DRAWING No. **C702**		REV.

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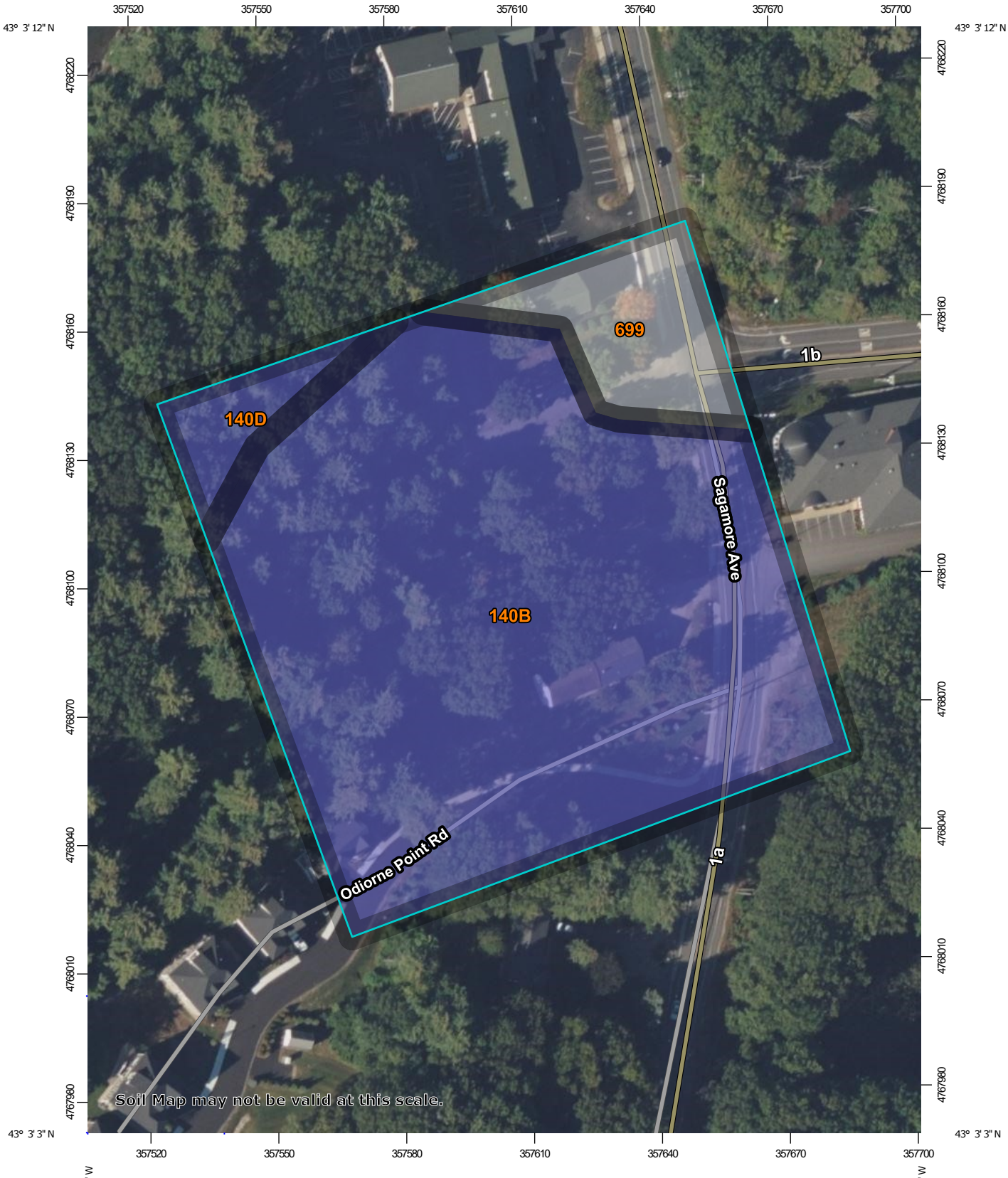

Map Scale: 1:1,260 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 28, Sep 9, 2025

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	B	3.5	84.8%
140D	Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky	B	0.2	4.9%
699	Urban land		0.4	10.3%
Totals for Area of Interest			**4.2**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

From the test pit observations taken 7/16/2025 and the Test Pit log created from this reading it is determined that the Soil Permeability Class for the Receiving Layer (0-16") to be Moderate to Moderately Rapid. This permeability Class equates to a permeability rate of 6 cm/hr. This is converted to 26 MPI.

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE & US FOREST SERVICE

NRCS-Soils-232-2A
JWH / 04-22

SOIL DESCRIPTION

Soil type:	Map Unit Symbol:	File No:
Area:	Date:	Described by:
Location		Photo Number:
Native Veg.		Climate:
Parent material		
Relief	% Slope	Aspect:
Elevation	Drainage	Gr. water
Additional notes:		

Soil Profile / Landscape Sketch

Horizon	Depth Inches	Color Moist	Color Redox Features	% Redox	Texture	Structure	Consistence Moist	Boundary	Roots	% Frags
B	0-10"	10YR 4/4	N/A	/	Silty Loam	Friable	Loose		Yes	
	11"-18"	10YR 4/6	N/A		Sandy Loam	Friable	Firming		No	
	18"-41"	10YR 4/6	18 = ESHWT		Sandy Loam	Sub Angular Blocky	Firm		↓	
Ledge	41"	Restrictive Ledge	10YR 5/6 2.5Y 6/2			Platy				

TABLE 17A

Visual indicators of permeability: structural characteristics of soil

Permeability class (Table 15)	*Structure, type and class (Sec 73) (1)*	*Structure, grade and consistency (Secs 72 + 80) (2)*	*Relationship of horizontal and vertical axes, overlap, cleavage, and its direction (3)*	*Porosity channels and cracks (4)*
Very slow permeability	Massive	Very strong		Without visible pores.
	Irregular blocky; often assuming a columnar structure	Clods are very strong and cannot be broken by hand. More force is required to break the blocks vertically than horizontally. Horizontal breakage is usually along the block faces and in some instances the small irregular angular blocks can be flaked off horizontally.	Where the irregular blocky structure dominates, the irregular fragments are very firmly developed with a longer horizontal than vertical axis and with sharp angles. These are meshed shingle-fashion with about 50 percent horizontal overlap. Under proper moisture conditions, the medium to coarse irregular angular blocks break along definite cleavage to fine irregular, angular blocky structure, the arrangement remaining the same regardless of size.	The individual blocks have no visible pores, but some tortuous vertical channels that seem to follow block faces are discernible, usually at 2- to 5-cm intervals which seldom extend more than 5-8 cm without a horizontal jog.
	Structureless	It is usually difficult to break into the mass, but once broken in, the small indurated lumps pulverize easily.		
Slow permeability	Fine to medium irregular blocky	More force is required to break the blocks along the vertical than the horizontal axis. The broken faces tend to assume a saw-toothed appearance.	The irregular angular blocks have sharp angles and the horizontal axes are longer than the vertical. The blocks are generally meshed shingle-fashion with about 40 percent horizontal overlap.	There are very few small pores discernible. The apparent vertical cracks which follow the block surfaces seldom extend more than a few cm before jogs of 2-5 cm appear.
	Usually platy, sometimes structureless	Plates broken horizontally fracture along straight smooth lines, the laminated layers seeming to be made of small flattish "chips" that can be easily removed by tweezers.	Horizontal bedding can be easily detected in "chip" form, generally lying in shingle-fashion with horizontal overlap of 40-50 percent or more. Sometimes the thin, laminated layers are continuous.	Only a few very fine vertical pores are visible. Flow of water follows apparently tortuous lines around the main chips.
Moderately slow permeability	Medium to fine irregular blocky, fragmental	The blocks (clods) and fragments are less firm and stable than those of the slower permeability classes. They can be more easily broken along the vertical axes.	The angle of the blocks and fragments is not sharp and often very slightly rounded. The horizontal axis is only slightly longer than the vertical. The structural fragments overlap 20-25 percent. If the overlap is oblique, the size of fragments may be larger and the overlap more than 25 percent.	Pores are fine but moderately numerous. The oblique overlap is indicative of freer air and water movement. Root penetration is noticeable.
Moderate permeability	Fine to medium subangular blocky (nut-like), partially rounded, some obtuse angles	Cohesion of soil materials is moderate and clods are easily broken by hand, but seldom fractured unless broken individually.	The clods or blocks overlap only slightly and many vertical fractures are almost straight. Cleavage generally occurs along the faces of the nuciform aggregates.	Pores are medium to fine and numerous.
Moderately rapid permeability	Medium subangular blocky (nuciform) coarse granular or crumb structure	The structural aggregates are not firmly developed and the cohesion of soil material is moderately weak.	Vertical cleavage is nearly always along aggregate faces and follows approximately straight vertical or oblique lines, with only occasional slight overlap of structural aggregates.	Pores in the aggregate are large and numerous.
Rapid permeability	Crumb structure (sometimes ranging toward a single-grain condition)	Consistency ranges from slightly plastic when wet to friable or crumbly when dry.		Pore space is large.
Very rapid permeability	Single-grain structure	Consistency ranges from non-plastic when wet to incoherent when moist or dry.		

TABLE 17 B
Visual Indicators of permeability: texture, physical behaviour and colour of soil

Permeability class (Table 15)	*Texture and profile*	*Physical behaviour*	*Colour and mottling*
Very slow permeability	Claypans, heavy clay, or in presence of very slowly permeable substratum	Soil cracks severely on drying with exception of hardpan or indurated layers which do not crack or fracture.	Generally mottled.
	Hardpan as distinguished from claypan	The hardpan layers associated with this class often consist of highly indurated layers of sand or sand and gravel. These usually give out a ringing sound when struck with a spade.	High degree of mottling.
Slow permeability	Clay or silty clay, claypans, moderately indurated layers	Shrinkage and cracking are less pronounced than in the very slowly permeable class.	Mottling is moderately strong.
	Silt, "siltpan"		Moderately strong mottling and greyish colour are indications of this type of structure.
Moderately slow permeability	Moderately fine-textured horizons, showing a small amount of granulation or a slight dispersion of particles	Shrinkage is usually not very pronounced and cracks are neither large nor numerous.	Mottling is moderate, but the colour is brighter than for the slow permeability class.
Moderate permeability	Moderately fine textures, slightly plastic when wet and moderately hard when dry		Mottling is generally slight.
Moderately rapid permeability	Moderately fine to medium-textured soils		Occasional mottling. Colour is generally moderately bright yellow.
Rapid permeability	Medium or moderately coarse-textured soils		There are no mottlings unless water-table is high. Colour is generally very bright. Organic matter content is usually moderate or low.
Very rapid permeability	Coarse-textured or gravelly soils		Colour is bright unless the water-table is high.

TABLE 15
Soil permeability classes for agriculture and conservation

Soil permeability classes	Permeability rates[1]	
	cm/hour	cm/day
Very slow	Less than 0.13	Less than 3
Slow	0.13 - 0.3	3 - 12
Moderately slow	0.5 - 2.0	12 - 48
Moderate	2.0 - 6.3	48 - 151
Moderately rapid	6.3 - 12.7	151 - 305
Rapid	12.7 - 25	305 - 600
Very rapid	More than 25	More than 600

Conversion Table: cm/h to min/inch

60 MPI Slowest Allowable Design

cm/hr	min/inch	cm/hr	min/inch
1	152.40	41	3.72
2	76.20	42	3.63
3	50.80	43	3.54
4	38.10	44	3.46
5	30.48	45	3.39
6	25.40	46	3.31
7	21.77	47	3.24
8	19.05	48	3.18
9	16.93	49	3.11
10	15.24	50	3.05
11	13.85	51	2.99
12	12.70	52	2.93
13	11.72	53	2.88
14	10.89	54	2.82
15	10.16	55	2.77
16	9.53	56	2.72
17	8.96	57	2.67
18	8.47	58	2.63
19	8.02	59	2.58
20	7.62	60	2.54
21	7.26	61	2.50
22	6.93	62	2.46
23	6.63	63	2.42
24	6.35	64	2.38
25	6.10	65	2.34

National Flood Hazard Layer FIRMette

FEMA

70°45'12"W 43°3'21"N

70°44'35"W 43°2'54"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/27/2023 at 1:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

INSPECTION & LONG-TERM MAINTENANCE PLAN FOR PROPOSED RESIDENTIAL DEVELOPMENT

1151 SAGAMORE AVENUE
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide 1151 Sagamore Avenue CBC, LLC (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the Rain Garden and associated structures on the project site (collectively referred to as the "Stormwater Management System"). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the City of Portsmouth Public Works Department, as required.

Inspection & Maintenance Checklist/Log

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

200 GRIFFIN RD. UNIT 14, PORTSMOUTH, NH 03802 603.430.9282 | HALEYWARD.COM

Stormwater Management System Components

The Stormwater Management System is designed to mitigate both the quantity and quality of site- generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMPs

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to:

- Temporary and Permanent mulching
- Temporary and Permanent grass cover
- Trees
- Shrubs and ground covers
- Miscellaneous landscape plantings
- Dust control
- Tree protection
- Topsoiling
- Sediment barriers
- Stabilized construction entrance
- Vegetated buffer area

Structural BMPs

Structural BMPs are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to:

- Rain Garden
- Outlet Control Structures and Storm Drains

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMPs that may be found on this project.

1. **Grassed areas (until established):** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.

2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year.

   Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.

3. **Vegetated buffer area:** Check for scour or sediment buildup in buffer area, at least annually. Replace any vegetation removed by scour or sediment buildup with similar vegetation.

4. **Rain Garden:** After installation of the rain garden, perform the following inspections on a monthly basis:

   a. Monitor for excessive or concentrated accumulations of debris, or excessive erosion below the various pipe inlets. Remove debris as required and replace or add inlet fabric strips or rip rap stones.
   b. Monitor the outflow for problems with erosion. Repair as required.
   c. After significant rainfalls, monitor rain garden surfaces for ponding of water. If water remains flooded over the surface 24 hours after a 1" rainfall, then investigate the cause, if not related to overflow blockage, then excavate and replace filter media.
   d. Monitor vegetation on rain garden and replace dead or dying vegetation as required.
   e. Monitor rain garden for rodent borrows and repair as required; remove persistent occupiers.
   f. Monitor side slopes of rain garden for damage or erosion—repair, as necessary.

5. **Outlet Control Structures and Storm Drains:** Monitor accumulation of debris in outlet control structures monthly or after significant rain events. Remove sediments when they accumulate within the yard drains and outlet pipe. During construction, maintain inlet protection until the site has been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.

Pollution Prevention

The following pollution prevention activities shall be undertaken to minimize potential impacts on stormwater runoff quality. The Contractor is responsible for all activities during construction. The Owner is responsible thereafter.

Spill Procedures: Any discharge of waste oil or other pollutant shall be reported immediately to the New Hampshire Department of Environmental Services (NHDES). The Contractor/Owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the stormwater system, and may be required by NHDES to remediate incidents that may impact groundwater quality. If the property ownership is transferred, the new owner will be informed of the legal responsibilities associated with operation of the stormwater system, as indicated above.

Sanitary Facilities: Sanitary facilities shall be provided during all phases of construction.

Material Storage: No on site trash facility is provided until homes are constructed. The contractors are required to remove trash from the site. Hazardous material storage is prohibited.

Material Disposal: All waste material, trash, sediment, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Removed sediments shall be if necessary dewatered prior to disposal.

Invasive Species

Monitor the Stormwater Management System for signs of invasive species growth. If caught early, their eradication is much easier. The most likely places where invasions start is in wetter, disturbed soils or detention ponds. Species such as phragmites and purple loose-strife are common invaders in these wetter areas. If they are found, the owner shall refer to the fact-sheet created by the University of New Hampshire Cooperative Extension (or other source) or contact a wetlands scientist with experience in invasive species control to implement a plan of action for eradication. Measures that do not require the application of chemical herbicides should be the first line of defense.

Figure 1: Lythrum salicaria, Purple Loosestrife. Photo by Liz West.

Figure 2: Phragmites australis. Photo by Le Loup Gris

RAIN GARDEN MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Inspect pond surface for the occurrence of sediment, trash, debris, or structural damage.	Bi-Yearly and following major storm events	*-Remove sediments, trash, and debris, as necessary.* *-Repair outlet structures and appurtenances, as necessary.*
-Check to see if pond drains within 72 hours of rainfall. *-Check vegetation health.*	Annually	*-If system does not drain within 72 hours of a rainfall event, consult a qualified professional about restoration of function of the dry well.* *-Vegetation should be maintained and pruned.* *-Dead or diseased vegetation should be removed, as well as any invasive species.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Outlet Control Structures *-Drain Manholes* *-Catch Basins*	Monthly for 1 year following construction, Every other Month thereafter	*Check for erosion or short-circuiting* *Check for sediment accumulation* *Check for floatable contaminants*
-Drainage Pipes	Monthly for 1 year following construction, 1 time per 2 years thereafter	*Check for sediment accumulation/clogging, or soiled runoff.* *Check for erosion at outlets.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

STABILIZED CONSTRUCTION ENTRANCE CONSTRUCTION MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
ENTRANCE SURFACE *-Check for sediment accumulation/clogging of stone*	After heavy rains, as necessary	*-Top dress pad with new stone.* *-Replace stone completely if completely clogged.*
WASHING FACILITIES (if applicable) *-Monitor Sediment Accumulation*	As often as necessary	*-Remove Sediments from traps.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	