



Alteration of Terrain (AoT) Permit Application

**25 Sandquist St.
Concord, NH
Proposed
Stormwater
Improvements**

Woodard & Curran, Inc.
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Andover, Massachusetts 01810
800.426.4262

November 7, 2025

woodardcurran.com

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ALTERATION OF TERRAIN PERMIT APPLICATION & CHECKLIST



ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division / Land Resources Management

[Check the status of your application](#)



RSA / Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)

Applicant Name: Radius Recycling		Contact Name: Gary Raddatz	
Email: graddatz@rdus.com		Daytime Telephone: 617-233-2664	
Mailing Address: 25 Sandquist Street			
Town/City: Concord		State: NH	ZIP Code: 03301

2. APPLICANT'S AGENT INFORMATION If none, check here: ☐

Agent's Name:		Contact Name:	
Email:		Daytime Telephone:	
Address:			
Town/City:		State:	ZIP Code:

3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT) Check here if more than one property owner, and attach additional sheets as necessary: ☐

Owner's Name:		Contact Name:	
Email:		Daytime Telephone:	
Mailing Address:			
Town/City:		State:	ZIP Code:

4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☐

Business Name:		Contact Name:	
Email:		Daytime Telephone:	
Address:			
Town/City:		State:	ZIP Code:

5. CONSULTANT INFORMATION If none, check here: ☐

Engineering Firm: Woodard & Curran		Contact Name: Ross Tsantoulis, PE	
Email: rtsantoulis@woodardcurran.com		Daytime Telephone: (978) 775-3042	
Address: 40 Shattuck Road, Suite 110			
Town/City: Andover		State: MA	ZIP Code: 01810

6. PROJECT TYPE

☐ Excavation Only ☐ Residential ☐ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☒ Other: Site Improvement

7. PROJECT LOCATION INFORMATION

Project Name: Radius Recycling Sandquist Facility Stormwater Improvements

Street/Road Address: 25 Sandquist Street

Town/City: Concord

County:

Tax Map: 793Z

Block: 9

Lot Number:

Unit: 9

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose:	☐ Yes ☐ Withdrawal ☐ Discharge ☒ No
2. Artificial pond created by impounding a stream or wetland Purpose:	☐ Yes ☐ Withdrawal ☐ Discharge ☒ No
3. Unlined pond dug into the water table Purpose:	☐ Yes ☐ Withdrawal ☐ Discharge ☒ No

Post-development, will the proposed project discharge to:

- Within one-quarter mile of a surface water impaired for phosphorus and/or nitrogen? ☒ No ☐ Yes
- Within one-quarter mile of a Class A surface water or within the watershed area of an Outstanding Resource Water?
☒ No ☐ Yes
- Within one-quarter mile of a lake or pond not covered previously? ☒ No ☐ Yes

Is the project a High Load area? ☒ Yes ☐ No

If yes, specify the type of high load land use or activity: Industrial facility subject to NPNHDES Multi-Sector General Permit

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☒ No

Is the project within a Groundwater Protection Area (GPA)? ☐ Yes ☒ No

Will the well setbacks identified in Env-Wq 1508.02 be met? ☐ Yes ☒ No

For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☒ No

If yes: Cut volume: cubic feet within the 100-year floodplain.

Fill volume: cubic feet within the 100-year floodplain.

☒ Project is within ¼ mile of a designated river Name of River: Merrimack River

☐ Project is not within ¼ mile of a designated river.

☐ Project is within a Coastal/Great Bay Region community.

☒ Project is not within a Coastal/Great Bay Region community.

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

Radius Recycling is a metals recycling facility located on 25 Sandquist Street in Concord, NH. The facility is regulated under the United States Environmental Protection Agency (EPA) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP). The intent of the project is to capture and treat the first inch of stormwater runoff from the areas of operation in the facility, and provide sufficient water quality treatment to consistently meet the MSGP benchmarks for total suspended solids (TSS), chemical oxygen demand (COD), and heavy metals.

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT.

N/A

10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality, as required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed):
(Attach proof of delivery)

B. Date a copy of the application was sent to the local river advisory committee, if required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river):
(Attach proof of delivery)

C. Type of plan required: ☒ Land Conversion ☐ Detailed Development ☐ Excavation, Grading and Reclamation
☐ Steep Slope

D. Additional plans required: ☒ Stormwater Drainage and Hydrologic Soil Groups ☐ Source Control
☐ Chloride Management

E. Total area of disturbance, in square feet 50,839.30

F. Additional impervious cover as a result of the project, in square feet (use “-” to indicate a net reduction in impervious coverage).
Total final impervious cover, in square feet 2,906

G. Total undisturbed cover, in square feet 249,884

H. Number of lots proposed: N/A

I. Total length of roadway, in linear feet: N/A

J. Name(s) of receiving water(s): Merrimack River

K. Identify all other NHDES permits required for the project. For each, indicate whether an application has been filed and is pending. If the required approval has been issued, provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Pending?	If Issued
1. Water Supply Approval	☐ Yes ☐ No ☒ N/A	☐	Permit number:
2. Wetlands Permit	☐ Yes ☐ No ☒ N/A	☐	Permit number:
3. Shoreland Permit	☒ Yes ☐ No ☐ N/A	☒ Yes	Registration date:
4. UIC Registration	☐ Yes ☐ No ☒ N/A	☐	Approval letter date:
5. Large/Small Community Well Approval	☐ Yes ☐ No ☒ N/A	☐	Permit number:
6. Large Groundwater Withdrawal Permit	☐ Yes ☐ No ☒ N/A	☐	Permit number:
7. Other:	☐ Yes ☒ No		

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern:
TBD

M. Using the NHDES [OneStop Data Mapper](#) with the [Surface Water Impairment layer](#) turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."

N/A

N. Did the applicant or applicant's agent have a pre-application meeting with Alteration of Terrain Bureau staff?



Yes



No

If yes, name of staff member: Mike Schlosser

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock in cubic yards:

If yes, [standard blasting Best Management Practices](#) notes must be placed on the plans.

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact Alteration of Terrain Bureau staff for additional detail.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN THE ORDER LISTED BELOW)**LOOSE:**

- ☒ Signed application form, with attached proof(s) of delivery.
- ☒ Check for the application fee, calculated using the [fee schedule](#) available on the NHDES [Land Development page](#).
- ☒ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale).
- ☐ If the applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BOUND, IN A REPORT, IN THE FOLLOWING ORDER:

- ☒ Copy of the signed application form and application checklist.
- ☒ Copy of the check.
- ☒ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale).
- ☒ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points.
- ☒ Printout of NHDES [OneStop Mapper](#) with "Surface Water Impairments" layer turned on.
- ☒ Printout of NHDES [OneStop Mapper](#) with Alteration of Terrain screening layers turned on.
- ☒ Printout of Natural Heritage Bureau [DataCheck Tool](#) letter and any relevant correspondence with New Hampshire Fish and Game.
- ☒ USDA [Web Soil Survey Map](#) with project's watershed outlined.
- ☒ Aerial photograph (1" = 2,000' scale with the site boundaries outlined).
- ☒ Photographs representative of the site.
- ☐ Groundwater recharge volume calculations (include one [Best Management Practices worksheet](#) per permit application).
- ☒ Drainage analysis, stamped by a professional engineer (see "Application Checklist" at the end of this document).
- ☐ Riprap apron or other energy dissipation or stability calculations. **Not Applicable**
- ☐ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the [Site Specific Soil Mapping standards](#) of the Society of Soil Scientists of Northern New England. **Not Applicable**
- ☐ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)]. **Not Applicable**
- ☐ [Registration and Notification Form](#) for [Stormwater](#) Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches). **Not Applicable**
- ☒ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)].
- ☒ Source control plan.

PLANS:

- ☒ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).
- ☒ Pre- and post-development color-coded soil plans on 11" x 17" (see Application Checklist for details).
- ☒ Pre- and post-construction drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).

100-YEAR FLOODPLAIN REPORT:

- ☐ All information required in Env-Wq 1503.09, submitted as a separate report. **Not Applicable**

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

- ☐ See Application Checklist (Attachment A) for details.

- ☒ **REVIEW APPLICATION FOR COMPLETENESS. CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

12. REQUIRED SIGNATURES

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641:3.

☒ **APPLICANT**

☐ **APPLICANT'S AGENT:**

Signature: 

Date: October 31, 2025

Name (print or type): Gary Raddatz

Title: Environmental Manager

☐ **PROPERTY OWNER**

☐ **PROPERTY OWNER'S AGENT:**

Signature: _____

Date: _____

Name (print or type): _____

Title: _____

ALTERATION OF TERRAIN PERMIT ATTACHMENT A: APPLICATION CHECKLIST

Check each box to indicate the item has been provided, or indicate why it does not apply.

DESIGN PLANS

- ☒ Plans printed on 34 - 36" by 22 - 24" white paper.
- ☒ Professional Engineer stamp.
- ☒ Wetland delineation.
- ☒ Temporary erosion control measures.
- ☒ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and nonresidential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the New Hampshire Stormwater Management Manual.
- ☒ Pre-existing 2-foot contours.
- ☒ Proposed 2-foot contours.
- ☒ Drainage easements protecting the drainage/treatment structures.
- ☐ Compliance with state statute governing fill and dredge in [wetlands](#), RSA 482- A. Note that artificial detention in wetlands is prohibited.
- ☒ Compliance with the New Hampshire [Shoreland Protection Act](#), RSA 483-B.
- ☐ Benching – needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.
- ☐ Check to see if any proposed ponds require [state dam permits](#).

DETAILS

- ☐ Typical roadway cross-section.
- ☐ Detention basin with inverts noted on the outlet structure.
- ☐ Stone berm level spreader.
- ☐ Outlet protection – riprap aprons.
- ☒ A general installation detail for an erosion control blanket.
- ☒ Silt fences or mulch berm.
- ☐ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.
- ☐ Hay bale barriers.
- ☒ Stone check dams.
- ☒ Gravel construction exit.
- ☐ Temporary sediment trap.
- ☒ The treatment BMPs proposed.
- ☒ Any innovative BMPs proposed.

CONSTRUCTION SEQUENCE / EROSION CONTROL

- ☐ Note that the project must be managed to meet the requirements and intent of RSA 430:53 and Agr 3800 relative to [invasive species](#).
- ☐ Note that perimeter controls shall be installed prior to earth moving operations.
- ☐ Note that temporary water diversion (swales, basins, etc.) must be used as necessary until areas are stabilized.
- ☐ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).
- ☐ Note that all ditches and swales shall be stabilized prior to directing runoff to them.
- ☐ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
- ☐ Note that all cut and fill slopes shall be seeded or loamed within 72 hours of achieving finished grade
- ☐ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.
- ☐ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

- ☐ Note the definition of the word “stable.”

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

- ☐ Note the limit of time an area may be exposed.

Example note: All areas shall be stabilized within 45 days of initial disturbance.

- ☐ Provide temporary and permanent seeding specifications. Note that although reed canary grass is listed in the Green Book; it is a problematic species according to the Wetlands Bureau and therefore should not be specified.
- ☐ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative 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.
- ☐ Note at the end of the construction sequence that “Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable.” – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please provide double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

- ☒ Professional Engineer stamp.
- ☒ Rainfall amount obtained from the [Northeast Regional Climate Center](#). Include extreme precipitation table as obtained from this source.
- ☒ Drainage analyses, in the following order:
 - Pre-development analysis: Drainage diagram.
 - Pre-development analysis: Area Listing and Soil Listing.
 - Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
 - Pre-development analysis: Full summary of the 10-year storm.
 - Post-development analysis: Drainage diagram.
 - Post-development analysis: Area Listing and Soil Listing.
 - Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
 - Post-development analysis: Full summary of the 10-year storm.
- ☒ Review the Area Listing and Soil Listing reports
 - Hydrologic Soil Groups (HSG) match the HSGs on the soil maps provided.
 - There is the same or less HSG A soil area after development (check for each HSG).
 - There is the same or less "woods" cover in the post-development.
 - Undeveloped land was assumed to be in "good" condition.
 - The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre-analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses or units proposed. Do these numbers make sense?

- ☒ Check the storage input used to model the ponds.
- ☐ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.
- ☒ Check the outlet structure proposed and make sure it matches that modeled.
- ☒ Check to see if the total areas in the pre and post analyses are same.
- ☒ Confirm the correct NRCS storm type was modeled (Coos, Carroll and Grafton counties are Type II, all others Type III).

PRE- AND POST-CONSTRUCTION DRAINAGE AREA PLANS

- ☒ Plans printed on 34 - 36" by 22 - 24" on white paper.
- ☒ Submit these plans separate from the soil plans.
- ☒ A north arrow.
- ☒ A scale.
- ☒ Labeled subcatchments, reaches and ponds.

- ☒ Tc lines.
- ☒ A clear delineation of the subcatchment boundaries.
- ☐ Roadway station numbers.
- ☐ Culverts and other conveyance structures.

PRE- AND POST-CONSTRUCTION COLOR-CODED SOIL PLANS

- ☒ 11" × 17" sheets suitable, as long as it is readable.
- ☒ Submit these plans separate from the drainage area plans.
- ☒ A north arrow.
- ☒ A scale.
- ☒ Name of the soil scientist who performed the survey and date the soil survey took place.
- ☒ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.
- ☒ Delineation of the soil boundaries and wetland boundaries.
- ☒ Delineation of the subcatchment boundaries.
- ☒ Soil series symbols (e.g., 26).
- ☒ A key or legend identifying each soil series symbol and its associated soil series name (for example: 26 = Windsor).
- ☒ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, and Impervious = gray).

Please note that excavation projects (including gravel pits) have similar requirements to those above, with the following common exceptions or additions:

- ☐ Drainage report is not needed if site does not have off-site flow.
- ☐ 5-foot contours are allowed rather than 2-foot.
- ☐ No Professional Engineer stamp is needed on the plans.
- ☐ Add a note to the plans that the applicant must provide NHDES a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.
- ☐ Add reclamation notes.
- ☐ A description of the subsurface conditions to the planned depth of excavation, including the elevation of the location of the Seasonal High Water Table (SHWT), as observed and described by a certified soil scientist, or an individual holding a valid permit as a permitted designer as issued by the department's Subsurface Systems Bureau.

For more resources, refer to the Natural Resources Conservation Service's [Vegetating New Hampshire Sand and Gravel Pits](#) publication.

APPENDIX A: COPY OF APPLICATION FEE CHECK

TD BANK, NA
PORTLAND, MAINE

52-7445
2112

385693



Woodard & Curran

October 30, 2025

Account #: TAX ID# 01-0363222

AMOUNT

Five Thousand and 00/100 Dollars

PAY
TO THE
ORDER
OF

STATE OF NEW HAMPSHIRE
NH DRA
PO BOX 1265
CONCORD, NH 03302-1265

5,000.00
D 512

⑈385693⑈ ⑆211274450⑆ 2427662588⑈



Woodard & Curran

12 Mountfort Street
Portland, ME 04101

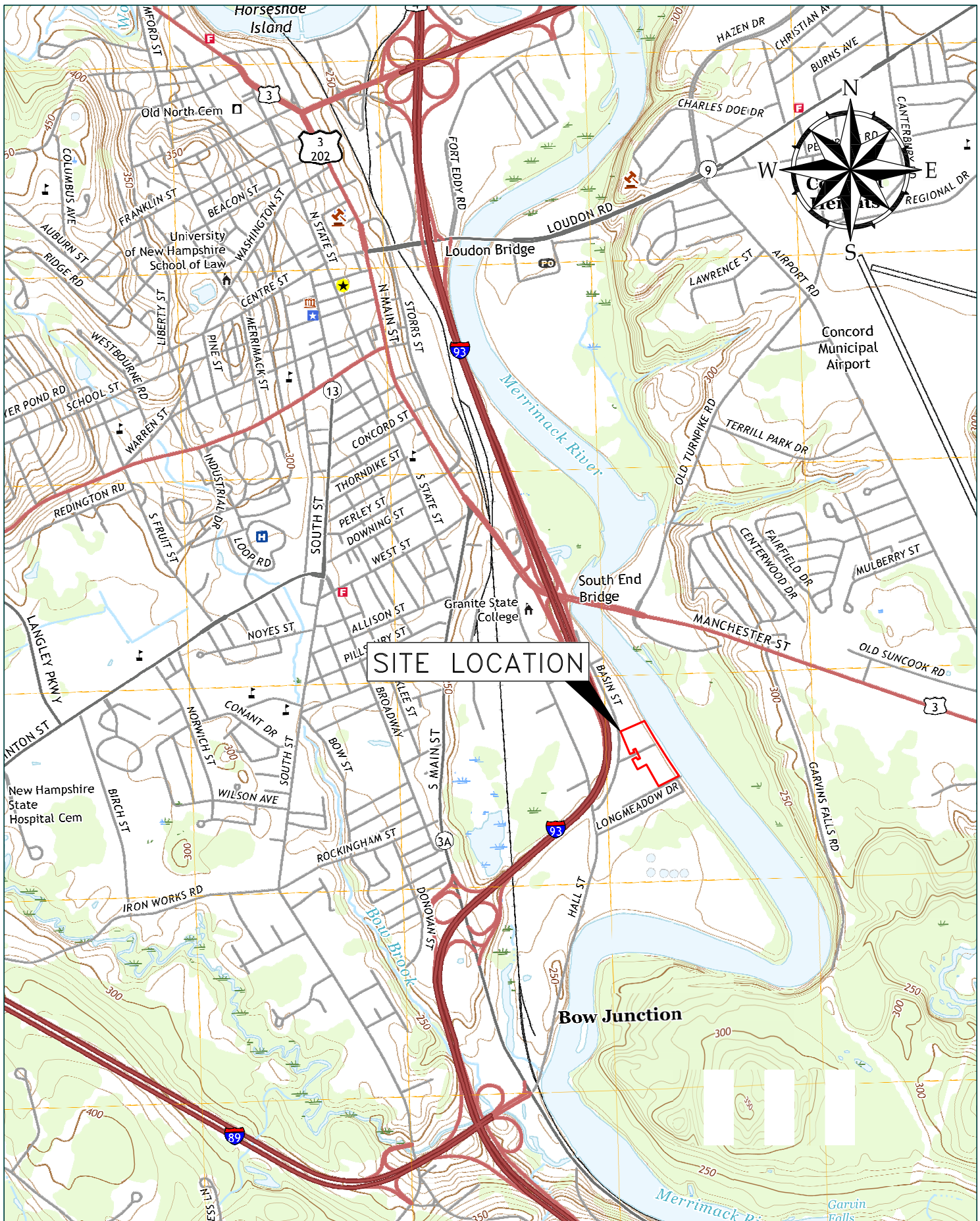
T 800.426.4262
T 207.774.2112

385693

Check Date: 10/30/2025

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
State of NH-1	10/29/2025	000000809717	5,000.00			5,000.00
STATE OF NEW HAMPSHIRE TOTAL			5,000.00			5,000.00
TDBANK AP - WC	2	067404				

APPENDIX B: USGS MAP



 Woodard & Curran	Client Info: RADIUS RECYCLING 25 SANDQUIST STREET CONCORD, NH 03301	Job No: 0224539.48 Date: July 2024 Scale: 1" = 2,000' Des by: JM Drn by: JM Chk by: YI	Drawing Title USGS MAP	Source USGS US TOPO 7.5 - MINUTE SERIES CONCORD QUADRANGLE - MERRIMACK COUNTY SCALE: 1:24,000 2021 VERSION
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APPENDIX C: PROJECT NARRATIVE AND DRAINAGE ANALYSIS

1. PROJECT NARRATIVE

1.1 Project Introduction

This Alteration of Terrain (AoT) permit application is for proposed stormwater management improvements at the existing facility for Radius Recycling (Applicant), located at 25 Sandquist St., Concord, NH. The facility is regulated under the United States Environmental Protection Agency (EPA) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) that became effective on March 1, 2021. The permit applies in areas of the country where EPA is the NPDES permitting authority, including New Hampshire. This project will replace the existing on-site stormwater infrastructure with new proposed conveyance, storage, and treatment systems to provide sufficient water quality treatment to consistently meet the MSGP benchmarks for target pollutants, which include total suspended solids (TSS), chemical oxygen demand (COD), and metals (aluminum, copper, lead, zinc) from runoff.

The Facility is located on a 6.9 acre parcel and includes approximately 5.1 acres of impervious area. The Facility is bounded to the north by an automotive salvage yard, to the west by commercial property, to the south by a residential neighborhood, and to the east by the Merrimack River. The Facility is used for activities related to scrap metal recycling. The Facility consists of an office, a processing building, a turning building, warehouse buildings, and covered storage areas. Portions of the property are unpaved, and therefore not subject to industrial operations, including the areas between the southern/southeastern edges of the paved area and the southern/southeastern property boundaries.

The total area of disturbance will be 1.2 acres, with an increase in impervious area by 2,906 square feet, as existing pervious areas on the southern portion of the property will be paved to accommodate the proposed stormwater storage and treatment infrastructure, as well as to provide a paved vehicular maintenance access pathway. No wetlands will be disturbed for this project; however, as the facility is within 250 feet of the shoreland, a shoreland protection permit will be required. The increase in impervious area for the site will be outside of the 250-foot shoreland protection buffer.

Pre-development and post-development drainage analyses have been prepared for this project. This report has been developed to demonstrate that the proposed stormwater improvements have been designed to match the pre-development conditions of the site in compliance with the AoT permit requirements. This includes pre-development and post-development drainage analyses and water quality treatment design calculations. Design calculations and drainage analyses are supplemented by the site plans which are appended in this report, and include typical construction details for erosion and sediment control and proposed drainage improvements and infrastructure.

1.2 Analysis Methods

In analyzing the impact of the proposed development on downstream waters, peak runoff rates were calculated for the 2, 10, and 50-year storm events over a 24-hour period, in accordance with Env-Wq 1504.09 of the Alteration of Terrain Permit section within the New Hampshire Code of Administrative rules. The calculations were performed to demonstrate the post-development runoff rates based on the proposed conditions were not in exceedance of the pre-development runoff rates under existing conditions for all modeled storm events.

Runoff depths for each storm event were calculated based upon standards set forth by the United States Department of Agriculture Soil Conservation Service (SCS) Technical Release 55, Urban Hydrology for Small

Watersheds (TR-55), dated June 1986 and the TR-20 method. The methodology set forth in TR-55 considers a multitude of characteristics for watershed areas including soil types, soil permeability, vegetative cover, time of concentration, topography, rainfall intensity, ponding areas, etc. The hydrologic model was created with HydroCAD version 10.20-2g. The model calculates the hydrologic analysis for each subcatchment of the watershed and develops peak flow rates and total runoff volume for each design storm event.

2. DRAINAGE ANALYSIS

2.1 Pre-Development Conditions

A pre-development conditions hydrologic model was established to determine the total stormwater runoff under the existing conditions of the site. The site is a total of 6.9 acres and the majority consists of impervious surfaces, with largely concrete pavement, covered buildings and an office. The southern areas are largely pervious areas with largely overgrown grass, with a run of vertically stacked conex containers that run from near the southwestern edge of the site to the 15' high metal fence on the eastern edge of the site that separates the facility from the bank along the Merrimack River to the east. An approximately 2' retaining wall runs from east to west along the southern portion of the site, and serves as a separation of the operational areas of the facility (i.e., metals recycling activity and logistics for vehicles) and the pervious area of the facility, where no operational activities are conducted.

Runoff from the paved areas flow to existing catch basins, and runoff areas from grassed areas currently discharge to the southwestern portion of the facility off-site. A total of 12 subcatchments were analyzed, with 11 subcatchments discharging to Design Point #1, to the City MS4, and one subcatchment for the runoff that discharge off-site, Design Point #2. The runoff from the grassed areas to the south of the paved areas are split, due to the existing stacked conex containers that also serve as a retaining wall. Runoff to the north of the conex containers runoff to the paved areas and enter the catch basins, and runoff to the south of the conext containers discharge off-site. The site consists of an existing 36" HDPE subsurface detention system and a diversion structure that also serves as an oil-separator for storage and treatment of the water quality volume. An existing drainage area map that provides drainage areas for each subcatchment, time of concentrations, and their flow paths is provided under Appendix Q of this report.

Table 1 below provides a pre-development conditions summary of the flow rates for each discharge point for the 2, 10, and 50-year storm events.

TABLE 1: PRE-DEVELOPMENT CONDITIONS PEAK FLOW SUMMARY

Discharge Point	2-year (cfs)	10-year (cfs)	50-year (cfs)
DP-1	13.45	19.92	29.94
DP-2	0.22	0.45	0.81
Total	13.67	20.37	30.75

2.2 Post-Development Conditions

The post-development conditions remain the same as the pre-development conditions for the majority of the site, as the areas north of the existing retaining wall will not include any net change of impervious surfaces. For the areas south of the existing retaining wall, the conex containers will be removed, the area will be regraded, and a collection of above-grade and below-grade stormwater infrastructure will be installed, along with a paved maintenance access pathway. The existing retaining wall will be replaced by a 15' tall precast barrier wall to serve as a separation between the operational areas of the facility and the proposed stormwater infrastructure.

Under the proposed conditions, stormwater runoff will be captured on site through a series of catch basins and routed to a diversion structure, where up to 1-inch runoff treatment volume will be pretreated by an oil-water separator and diverted to a lift station. The lift station will pump the treatment volume and be

conveyed to an aboveground storage tank. The aboveground storage tank will be sized to store 150% of the water quality volume. The captured volume in the storage tank will then be pumped to an above-grade advanced treatment facility (ATS) where stormwater will be treated to meet permit benchmarks and then be discharged to the local MS4 system. The diversion structure upstream of the lift station will allow stormwater flows exceeding the water quality event to bypass the storage tank and ATS. The treated stormwater from the ATS, as well as any bypassed flows, will then be discharged to the local existing MS4 infrastructure which discharges to the Merrimack River. A proposed drainage area map that provides drainage areas for each subcatchment, time of concentrations, and their flow paths is provided under Appendix R of this report.

Table 2 below provides a post-development conditions summary of the flow rates for each discharge point for the 2, 10, and 50-year storm events.

TABLE 2: POST-DEVELOPMENT CONDITIONS PEAK FLOW SUMMARY

Discharge Point	2-year (cfs)	10-year (cfs)	50-year (cfs)
DP-1	8.00	14.89	28.79
DP-2	0.01	0.05	0.12
Total	8.01	14.94	28.91

2.3 Pre vs Post-Development Conditions Comparison

Table 3 provides a comparison of the pre-development and post-development conditions flow rates for the 2, 10, and 50-year storm events. Based on the net reduction of peak flow rates for each analyzed storm events, the site has been designed to not have adverse impacts to downstream conditions and their discharge points. The analysis also demonstrates that due to the large amount of water quality volume that is captured by the aboveground storage tank (and, treated by the active treatment system), a significant reduction in peak flows for the 2-year and 10-year storm events are expected.

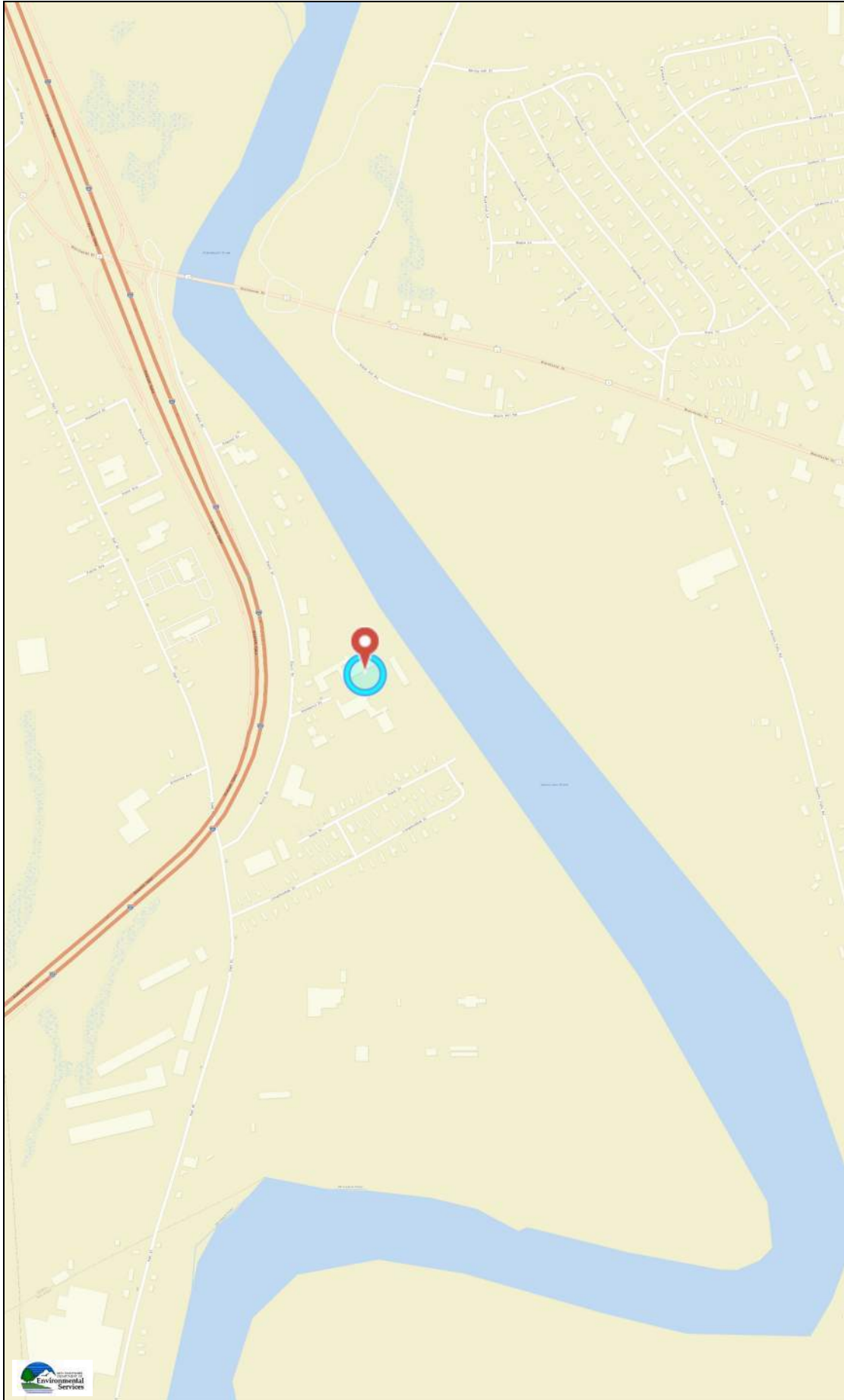
TABLE 3: PRE VS POST DEVELOPMENT FLOW RATE COMPARISON

Storm Event	Pre-Development Total (cfs)	Post-Development Total (cfs)	Net Total (cfs)	% Change (Pre vs. Post)
2-year	13.67	8.01	-5.66	-41%
10-year	20.37	14.94	-5.43	-27%
50-year	30.75	28.91	-1.84	-6%

In summary, the drainage analysis of the existing and proposed conditions indicate that the site will not experience an increase in peak runoff flow rate under the proposed conditions compared to the existing conditions. A complete HydroCAD report with analysis of each storm event for existing and proposed conditions is provided under Appendix J of this report.

APPENDIX D: SURFACE WATER IMPAIRMENTS

25 Sandquist Street - Surface Water Impairments



Legend

-  Surface Waters with Impairment with Quarter Mile Buffer

Map Scale

1: 10,000

© NH DES, <http://des.nh.gov>

Map Generated: 7/18/2024



Notes

APPENDIX E: ALTERATION OF TERRAIN SCREENING

25 Sandquist Street - Alteration of Terrain



Legend

- Remediation Sites
- Designated Rivers Quarter Buffer
- Wellhead Protection Areas

Map Scale

1: 10,000

© NH DES, <http://des.nh.gov>

Map Generated: 7/18/2024



Notes

APPENDIX F: NATIONAL HERITAGE BUREAU (NHB) DATACHECK

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Omar Perez
800 Westchester Ave
Suite N507
Rye Brook, NY 10573

From: NH Natural Heritage Bureau

Date: 8/6/2024 (valid until 8/6/2025)

Re: Review by NH Natural Heritage Bureau of request submitted 7/25/2024

Permits: NHDES - Alteration of Terrain Permit, NHDES - Shoreland Standard Permit

NHB ID: NHB24-2318

Applicant: Omar Perez

Location: Concord
25 Sandquist Street

Project

Description: This is a planned stormwater retrofit project that will consist of replacement of the existing stormwater conveyance system with the installation of new storm drain piping, an active stormwater treatment system and an aboveground storage tank. The limit of disturbance is approximately 56,760 square feet and is anticipated to begin construction in 2025.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 7/25/2024 3:39:04 PM, and cannot be used for any other project.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

New Hampshire Natural Heritage Bureau NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: **NHB24-2318**

NHB24-2318



APPENDIX G: WEB SOIL SURVEY



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Merrimack and Belknap Counties, New Hampshire

25 Sandquist Street



July 14, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

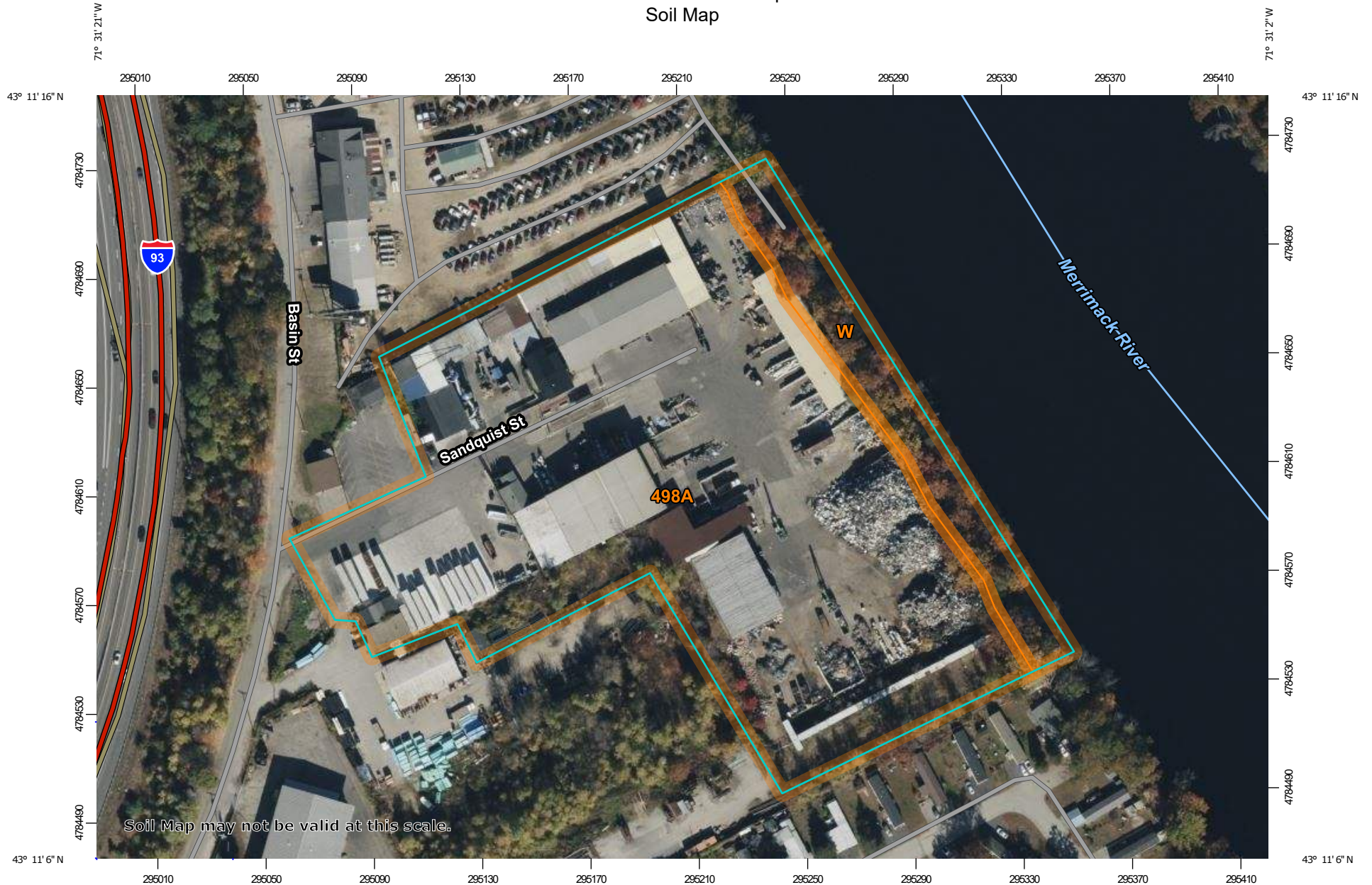
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,980 if printed on A landscape (11" x 8.5") sheet.

0 25 50 100 150 Meters

0 50 100 200 300 Feet

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

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire
Survey Area Data: Version 29, Aug 22, 2023

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

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
498A	Urban land-Pootatuck complex, 0 to 3 percent slopes	7.5	89.0%
W	Water	0.9	11.0%
Totals for Area of Interest		8.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Merrimack and Belknap Counties, New Hampshire

498A—Urban land-Pootatuck complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9dl7
Elevation: 200 to 1,970 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 45 percent
Pootatuck, occasionally flooded, and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Pootatuck, Occasionally Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and/or coarse-loamy alluvium derived from granite, gneiss or schist

Typical profile

H1 - 0 to 14 inches: very fine sandy loam
H2 - 14 to 60 inches: fine sandy loam
H3 - 60 to 65 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B

Ecological site: F144BY120ME - Small Floodplain Riparian Complex (reserved)

Hydric soil rating: No

Minor Components

Rippowam, frequently flooded

Percent of map unit: 7 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: Yes

Saco, frequently flooded

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Windsor

Percent of map unit: 5 percent

Landform: Terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Occum, occasionally flooded

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: wm74

Elevation: 200 to 2,610 feet

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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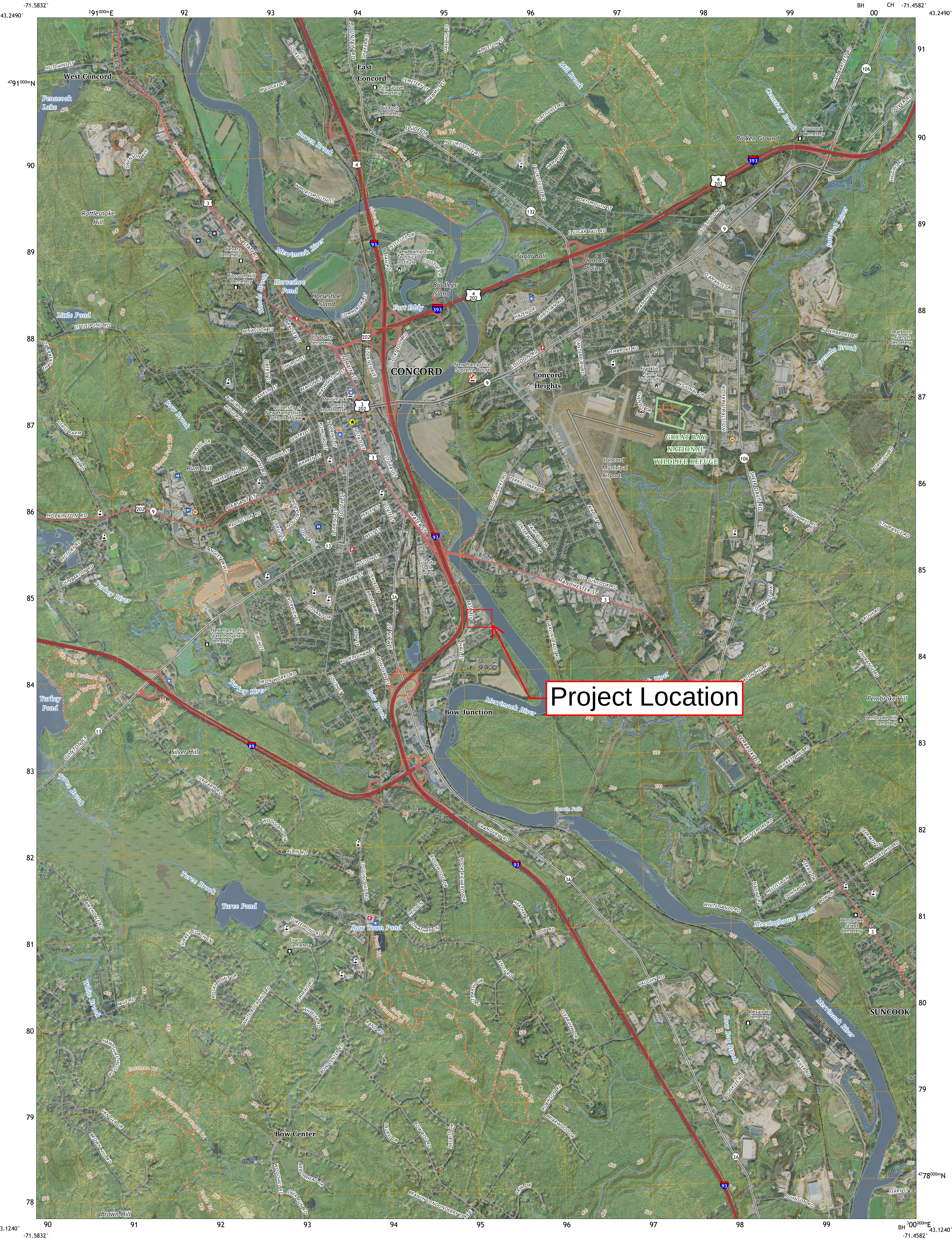
Custom Soil Resource Report

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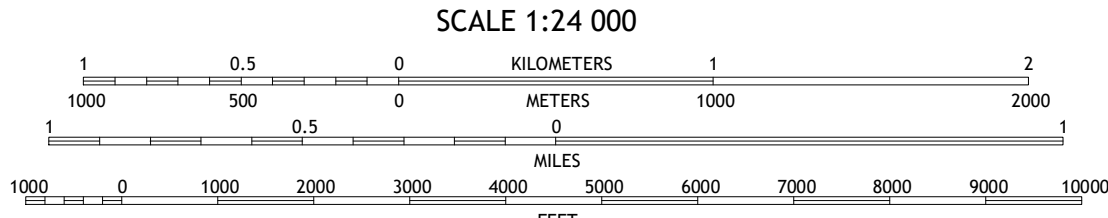
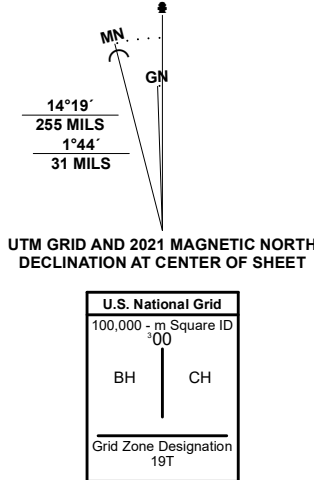
APPENDIX H: AERIAL IMAGERY



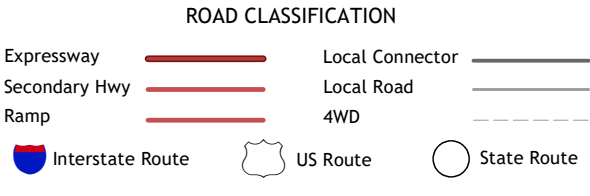
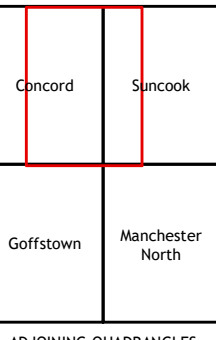
Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000 meter grid/Universal Transverse Mercator, Zone 17T
Data is provided by The National Map (TNM), is the best available at the time of map
generation, and includes data content from supporting themes of Elevation,
Hydrography, Geographic Names, Boundaries, Transportation, Structures, Land Cover,
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CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988
CONTOUR SMOOTHNESS = Medium



7.5-MINUTE TOPO, NH
2024

APPENDIX I: PHOTO LOGS

Site Photographs



Photo 1: Recycling scales, facing Northeast.



Photo 2: Two-story metal frame building, facing West.



Photo 3: One-story metal frame building, facing West.



Photo 4: Approximate location of existing subsurface stormwater system, facing Northeast.



Photo 5: Conex boxes, facing Northeast.



Photo 7: Refuse pile, facing East.

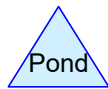
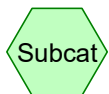
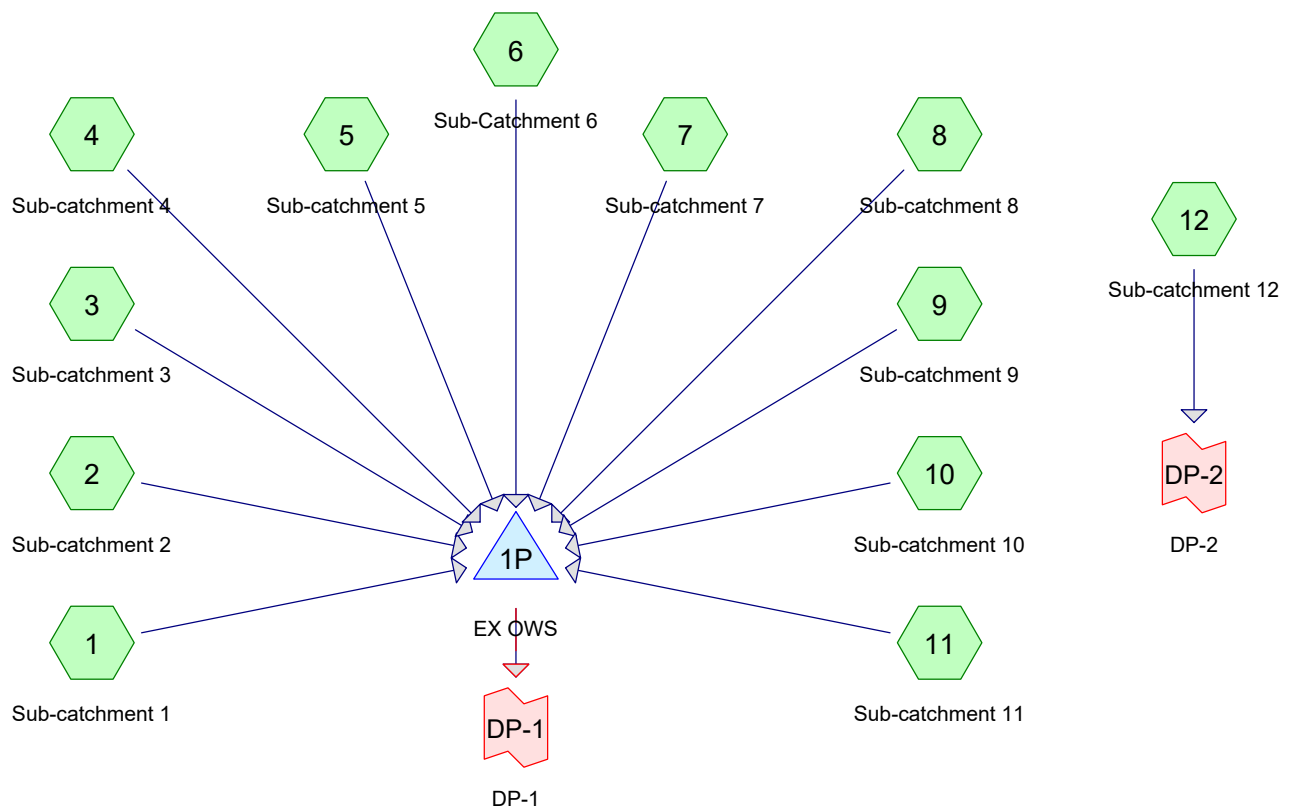


Photo 7: Eastern covered storage area, facing East.



Photo 8: Northern covered storage area and Two-story metal frame building, facing West.

**APPENDIX J: PRE-DEVELOPMENT AND POST-DEVELOPMENT
DRAINAGE ANALYSIS**



Routing Diagram for Sandquist Existing Conditions
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	NRCC 24-hr	D	Default	24.00	1	1.27	2
2	2-Year	NRCC 24-hr	D	Default	24.00	1	2.82	2
3	10-Year	NRCC 24-hr	D	Default	24.00	1	4.16	2
4	50-Year	NRCC 24-hr	D	Default	24.00	1	6.15	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
24,528	79	<50% Grass cover, Poor, HSG B (9, 10, 12)
45,609	98	Roofs, HSG B (1, 2, 3, 4, 5, 7, 8, 10, 11)
176,002	98	Unconnected pavement, HSG B (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12)
246,139	96	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
246,139	HSG B	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
0	HSG C	
0	HSG D	
0	Other	
246,139		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1P	227.14	227.10	36.0	0.0011	0.010	0.0	16.0	0.0	

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.84 cfs 2,951 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.19 cfs 656 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.18 cfs 625 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=1.44 cfs 5,060 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.36 cfs 1,257 cf
Subcatchment6: Sub-Catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.51 cfs 1,786 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.58 cfs 2,054 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.64 cfs 2,243 cf
Subcatchment9: Sub-catchment9	Runoff Area=11,753 sf 73.89% Impervious Runoff Depth=0.67" Tc=6.0 min CN=93 Runoff=0.20 cfs 656 cf
Subcatchment10: Sub-catchment10	Runoff Area=32,181 sf 67.40% Impervious Runoff Depth=0.61" Tc=6.0 min CN=92 Runoff=0.50 cfs 1,639 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=1.05" Tc=6.0 min CN=98 Runoff=0.05 cfs 160 cf
Subcatchment12: Sub-catchment12	Runoff Area=11,042 sf 0.67% Impervious Runoff Depth=0.16" Flow Length=285' Tc=13.6 min CN=79 Runoff=0.02 cfs 148 cf
Pond 1P: EX OWS	Peak Elev=230.19' Storage=3,570 cf Inflow=5.47 cfs 19,088 cf Primary=1.58 cfs 19,020 cf Secondary=0.30 cfs 68 cf Outflow=1.88 cfs 19,088 cf
Link DP-1: DP-1	Inflow=1.88 cfs 19,088 cf Primary=1.88 cfs 19,088 cf
Link DP-2: DP-2	Inflow=0.02 cfs 148 cf Primary=0.02 cfs 148 cf

Total Runoff Area = 246,139 sf Runoff Volume = 19,235 cf Average Runoff Depth = 0.94"
9.97% Pervious = 24,528 sf 90.03% Impervious = 221,611 sf

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NRCC 24-hr D WQV Rainfall=1.27"

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 0.84 cfs @ 12.13 hrs, Volume= 2,951 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

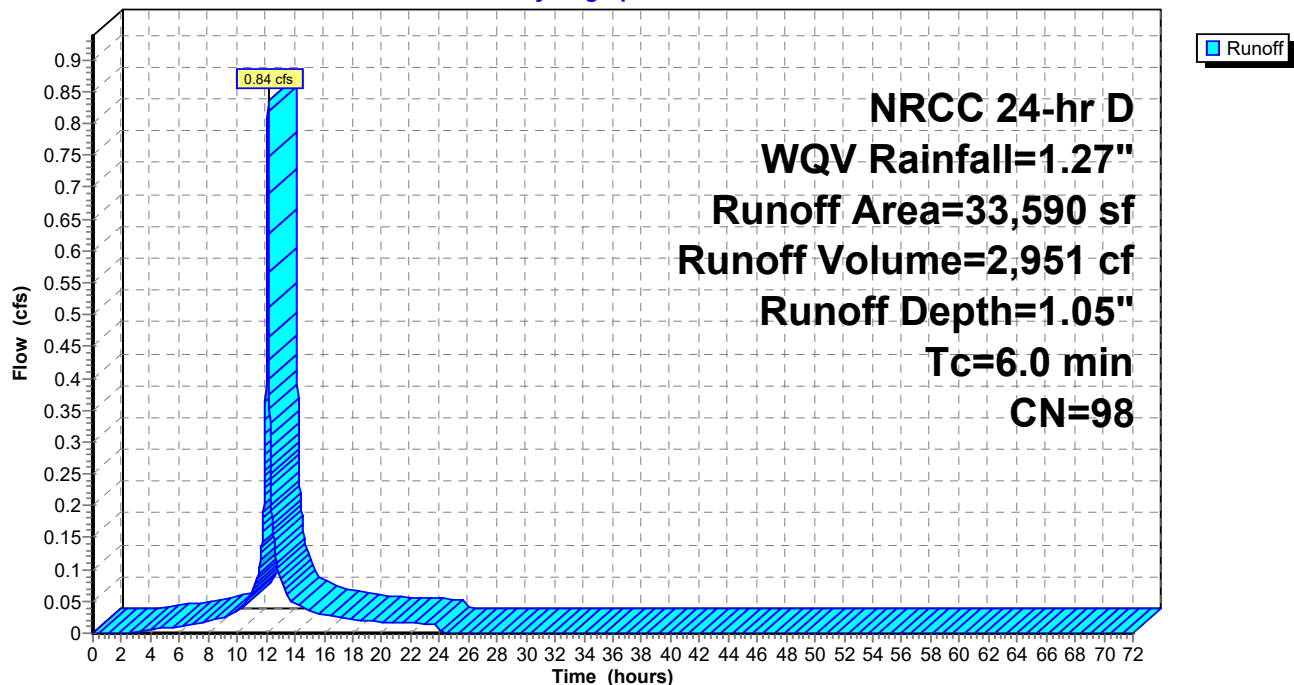
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

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

Subcatchment 1: Sub-catchment 1

Hydrograph



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.19 cfs @ 12.13 hrs, Volume= 656 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

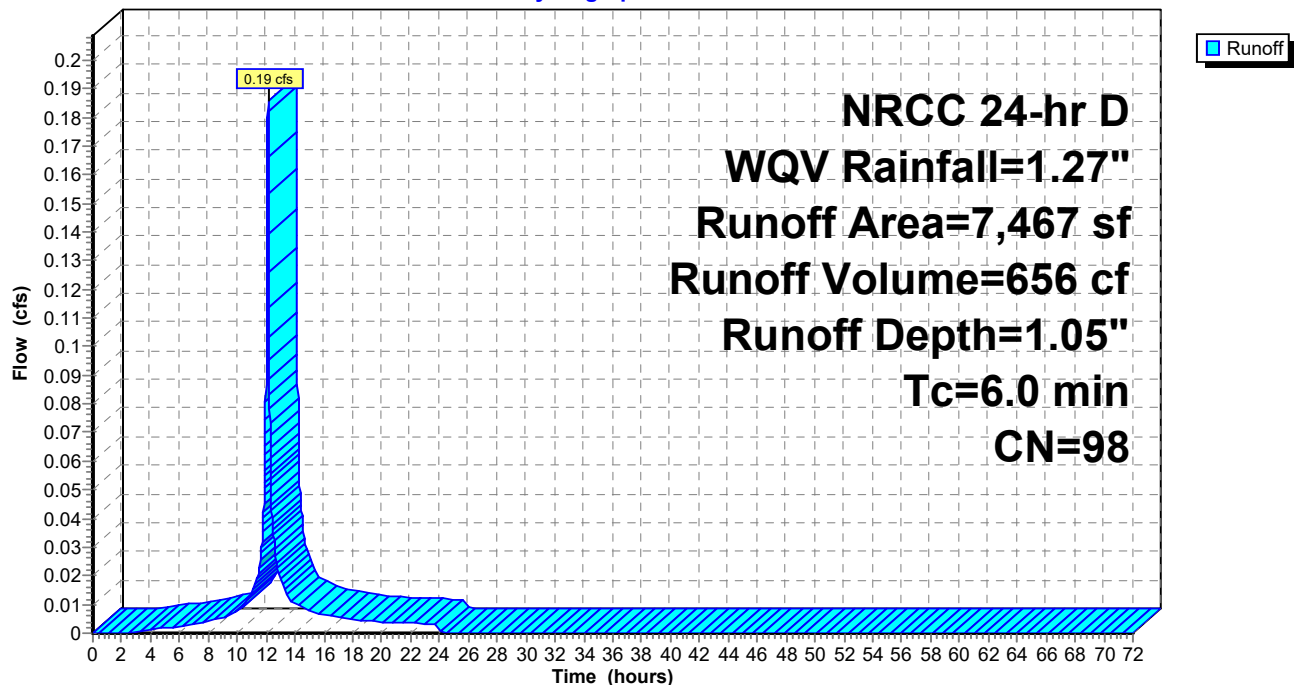
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

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

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.18 cfs @ 12.13 hrs, Volume= 625 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

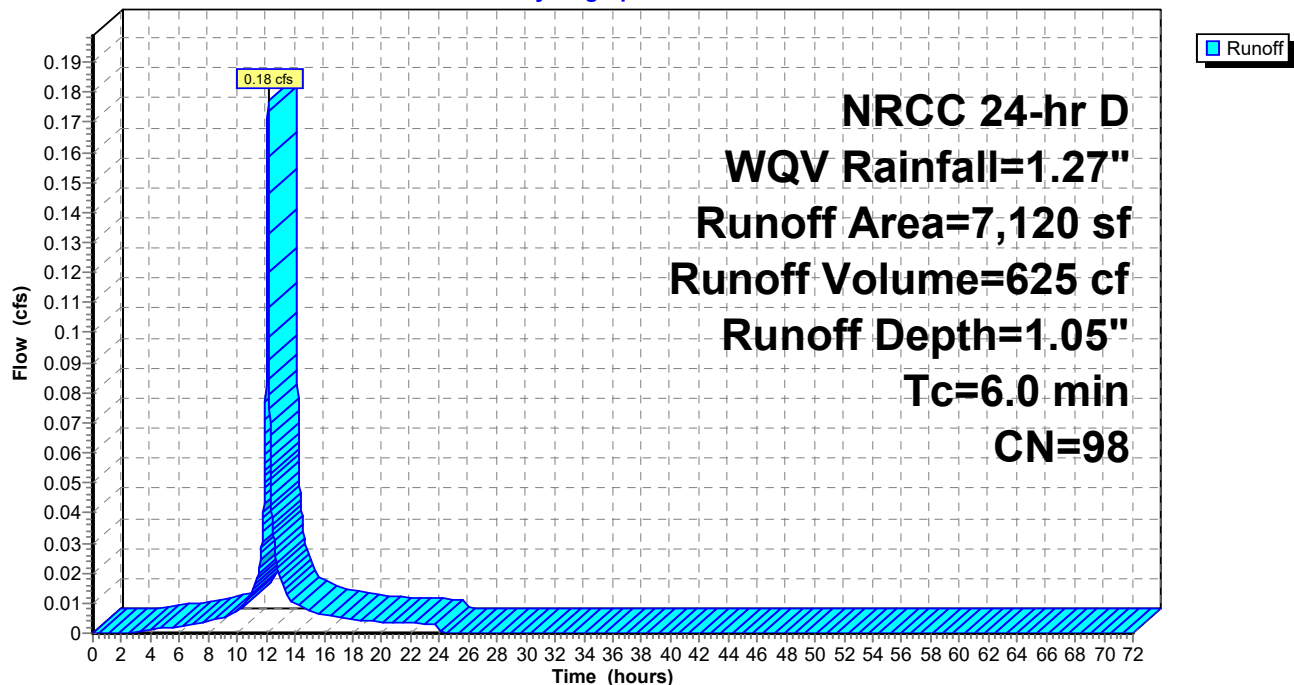
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

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

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 1.44 cfs @ 12.13 hrs, Volume= 5,060 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

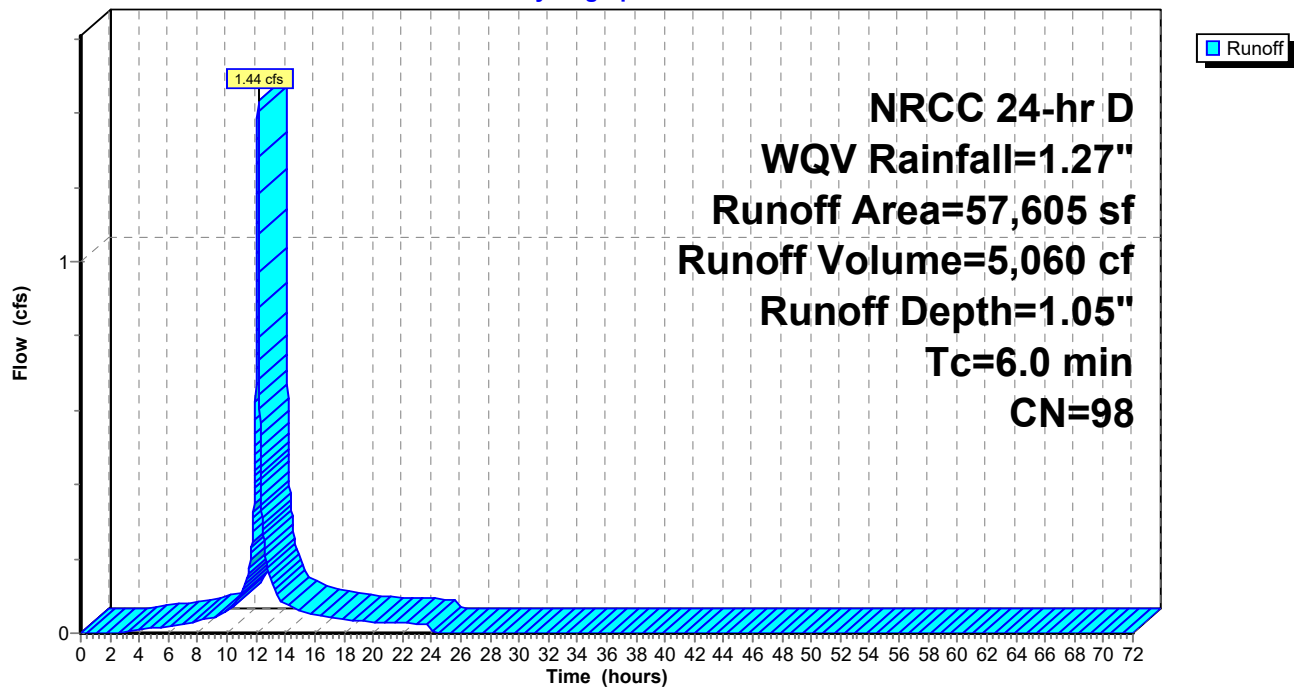
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
52,276	98	Unconnected pavement, HSG B
57,605	98	Weighted Average
57,605		100.00% Impervious Area
52,276		90.75% Unconnected

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

Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,257 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

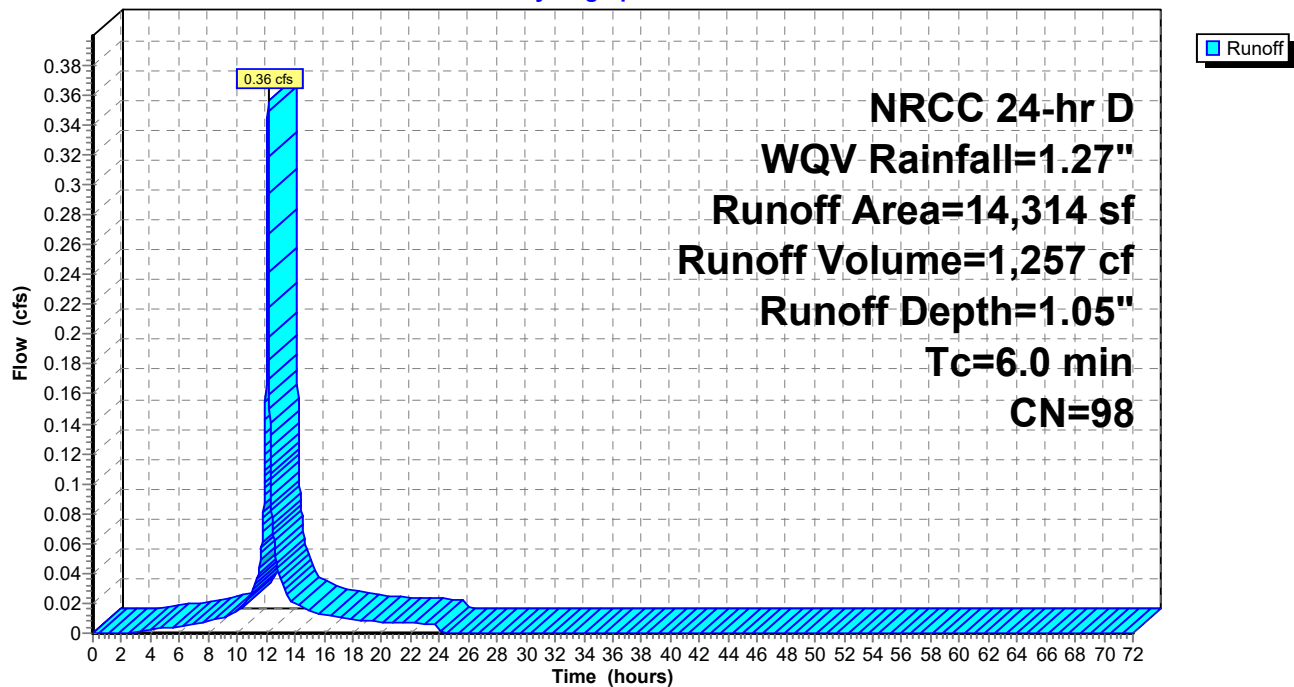
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

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

Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-Catchment 6

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 1,786 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

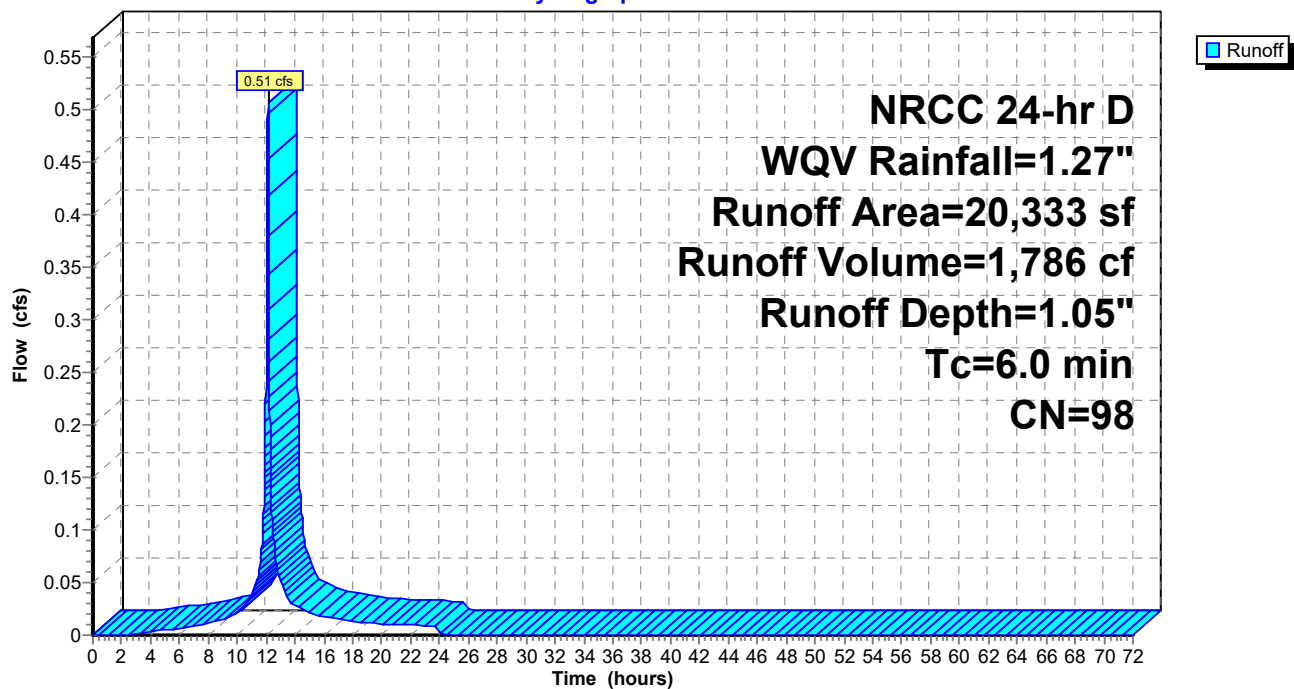
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

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

Subcatchment 6: Sub-Catchment 6

Hydrograph



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 0.58 cfs @ 12.13 hrs, Volume= 2,054 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

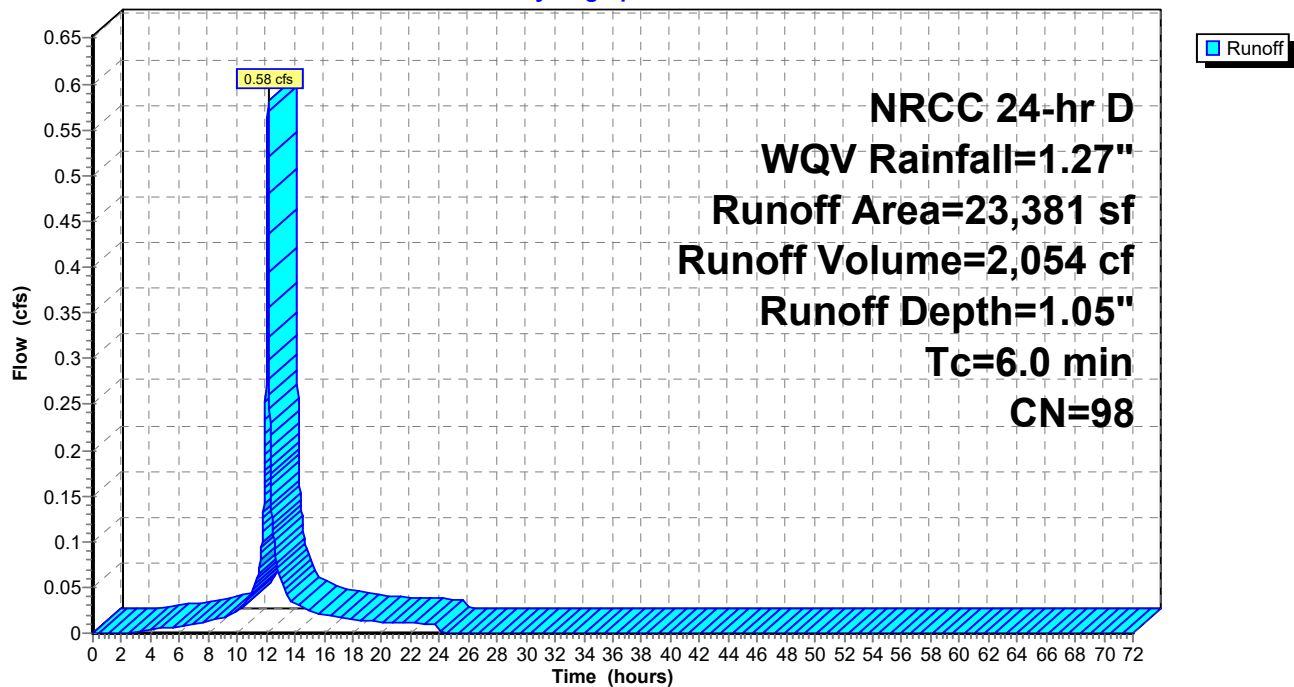
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
3,396	98	Roofs, HSG B
19,985	98	Unconnected pavement, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

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

Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,243 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

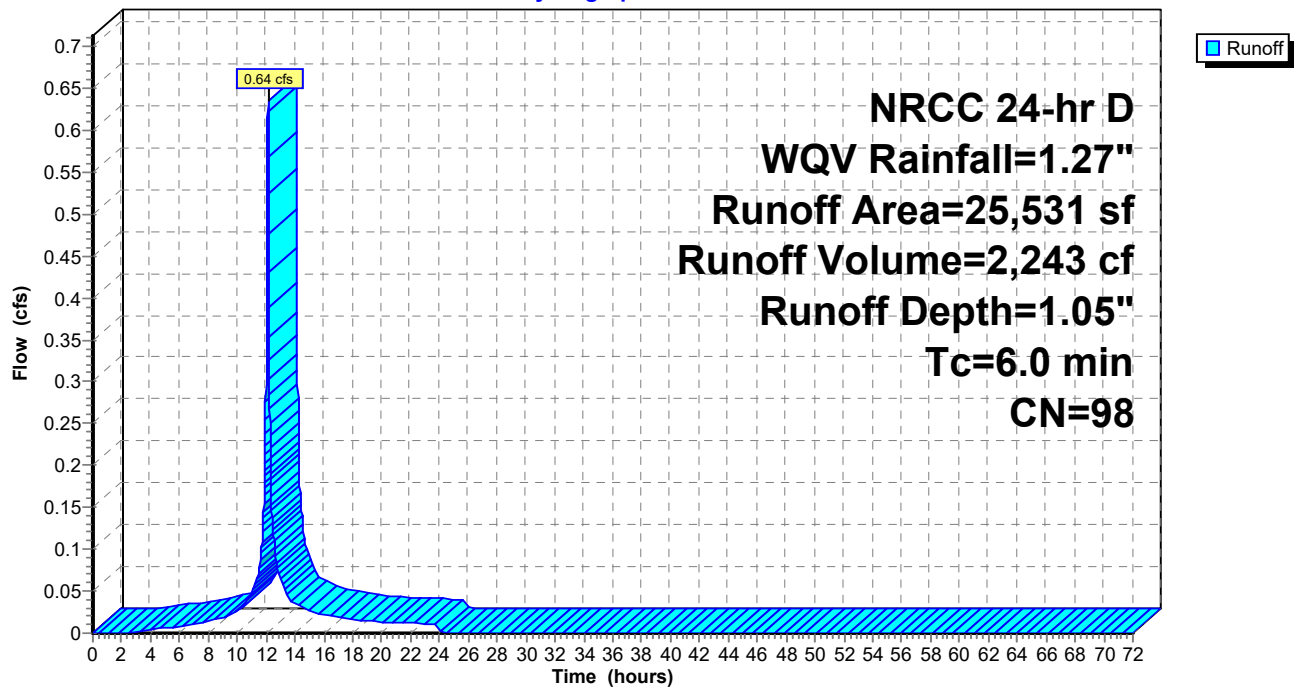
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
2,117	98	Roofs, HSG B
23,414	98	Unconnected pavement, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,414		91.71% Unconnected

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

Subcatchment 8: Sub-catchment 8

Hydrograph



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.20 cfs @ 12.13 hrs, Volume= 656 cf, Depth= 0.67"
Routed to Pond 1P : EX OWS

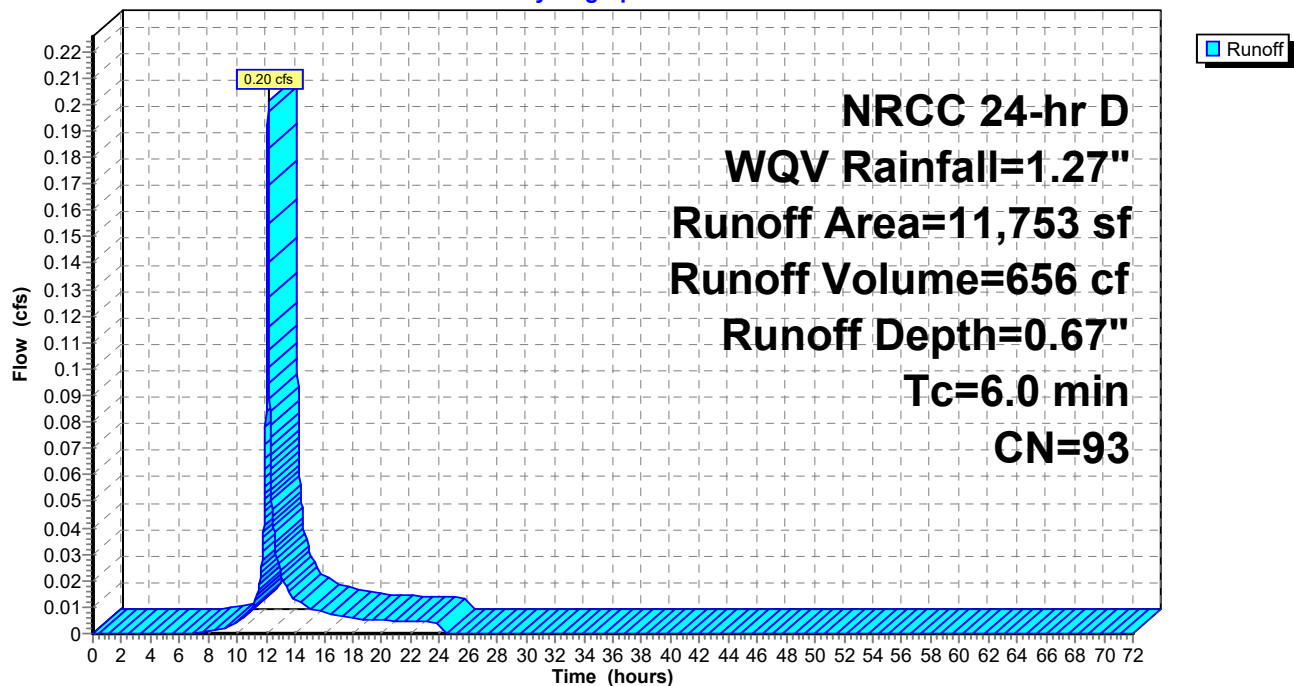
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
3,069	79	<50% Grass cover, Poor, HSG B
8,684	98	Unconnected pavement, HSG B
11,753	93	Weighted Average
3,069		26.11% Pervious Area
8,684		73.89% Impervious Area
8,684		100.00% Unconnected

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

Subcatchment 9: Sub-catchment 9

Hydrograph



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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 0.50 cfs @ 12.13 hrs, Volume= 1,639 cf, Depth= 0.61"
Routed to Pond 1P : EX OWS

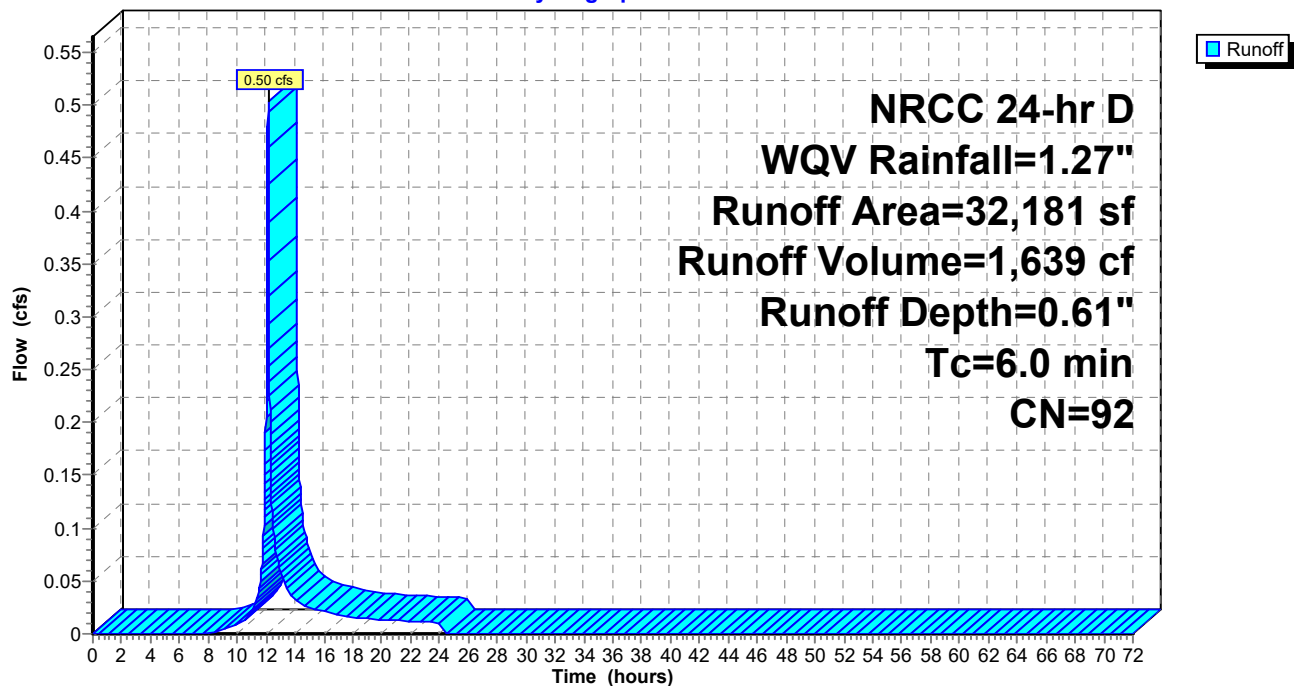
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
10,491	79	<50% Grass cover, Poor, HSG B
6,760	98	Roofs, HSG B
14,930	98	Unconnected pavement, HSG B
32,181	92	Weighted Average
10,491		32.60% Pervious Area
21,690		67.40% Impervious Area
14,930		68.83% Unconnected

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

Subcatchment 10: Sub-catchment 10

Hydrograph



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.05 cfs @ 12.13 hrs, Volume= 160 cf, Depth= 1.05"
Routed to Pond 1P : EX OWS

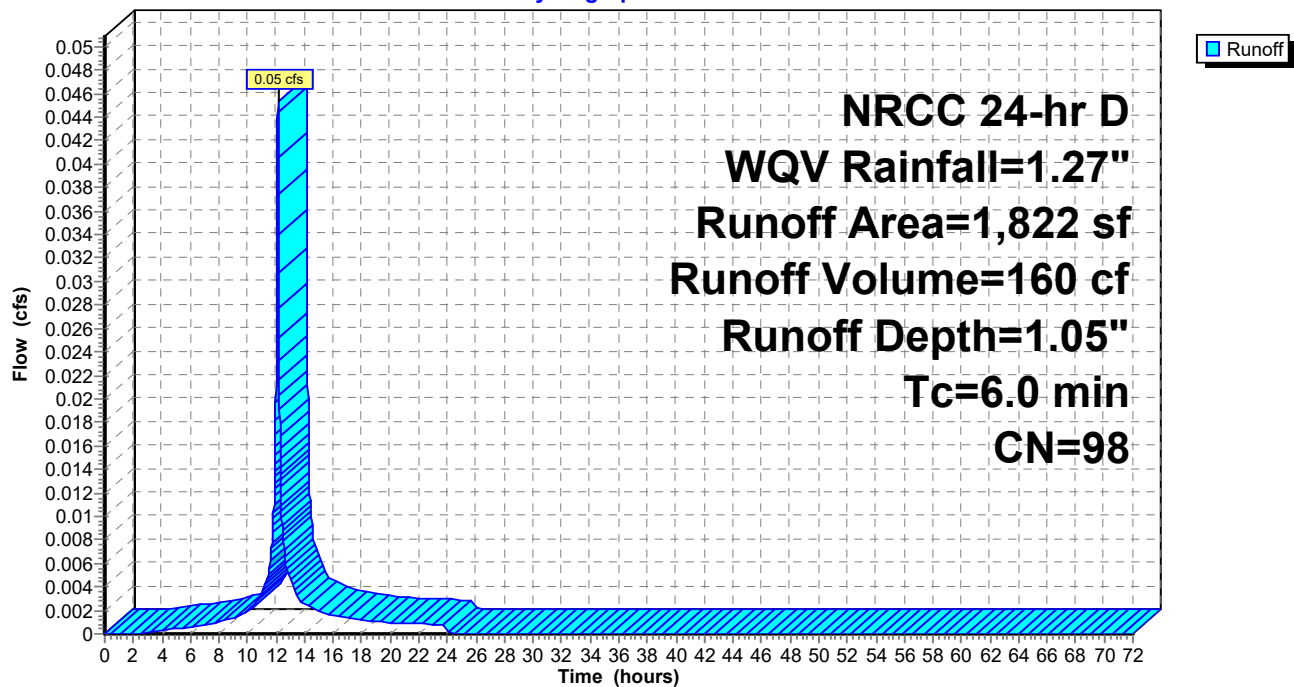
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
1,822	98	Roofs, HSG B
1,822		100.00% Impervious Area

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

Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.02 cfs @ 12.26 hrs, Volume= 148 cf, Depth= 0.16"
Routed to Link DP-2 : DP-2

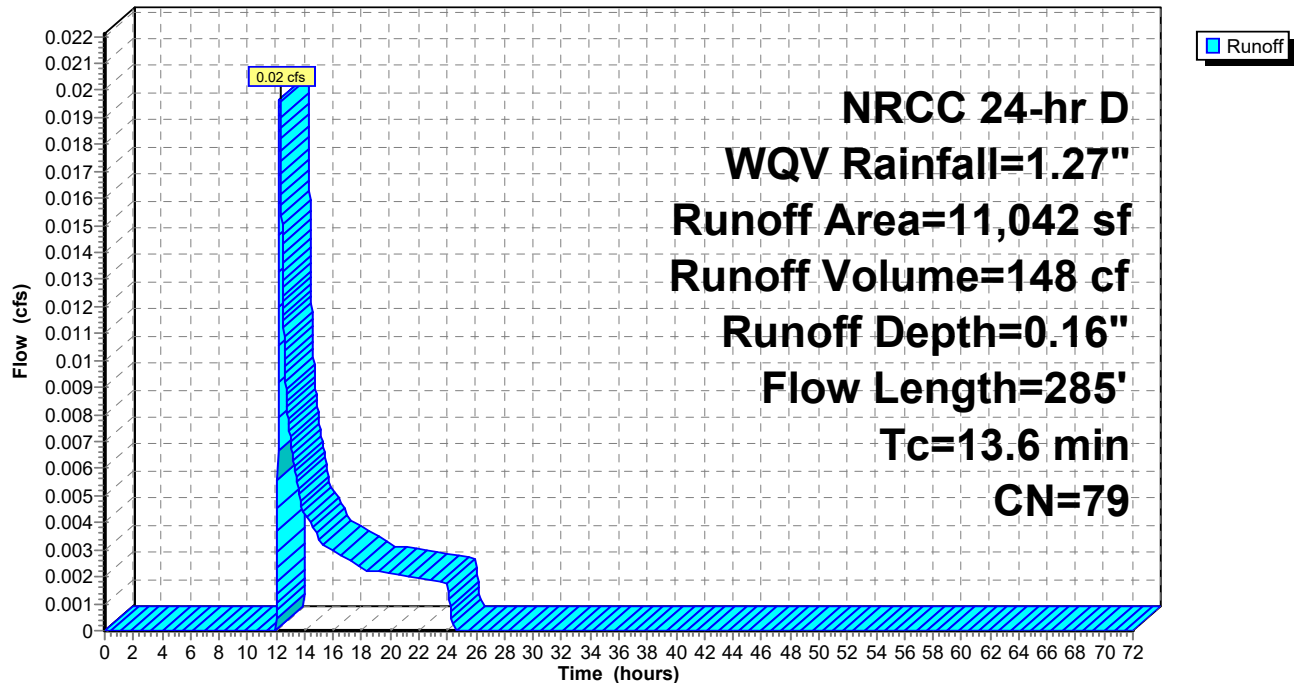
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
74	98	Unconnected pavement, HSG B
10,968	79	<50% Grass cover, Poor, HSG B
11,042	79	Weighted Average
10,968		99.33% Pervious Area
74		0.67% Impervious Area
74		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
1.6	185	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
13.6	285	Total			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Pond 1P: EX OWS

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 5.47 cfs @ 12.13 hrs, Volume= 19,088 cf
Outflow = 1.88 cfs @ 12.28 hrs, Volume= 19,088 cf, Atten= 66%, Lag= 9.3 min
Primary = 1.58 cfs @ 12.28 hrs, Volume= 19,020 cf
Routed to Link DP-1 : DP-1
Secondary = 0.30 cfs @ 12.28 hrs, Volume= 68 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 230.19' @ 12.28 hrs Surf.Area= 2,775 sf Storage= 3,570 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.7 min (812.0 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	227.14'	0 cf	53.75'W x 51.62'L x 4.00'H Field A 11,098 cf Overall - 4,587 cf Embedded = 6,511 cf x 0.0% Voids
#2A	227.14'	3,676 cf	ADS N-12 36" x 20 Inside #1 Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf Row Length Adjustment= +1.62' x 7.10 sf x 10 rows 50.75' Header x 7.10 sf x 2 = 720.6 cf Inside
		3,676 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Secondary	227.14'	16.0" Round Culvert L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 227.14' / 227.10' S= 0.0011 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.40 sf
#3	Device 2	230.14'	9.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.58 cfs @ 12.28 hrs HW=230.19' TW=0.00' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 1.58 cfs @ 8.06 fps)

Secondary OutFlow Max=0.29 cfs @ 12.28 hrs HW=230.19' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 0.29 cfs of 10.38 cfs potential flow)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 0.64 fps)

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Pond 1P: EX OWS - Chamber Wizard Field A

Chamber Model = ADS N-12 36" (ADS N-12® Pipe)

Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf

Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf

Row Length Adjustment= +1.62' x 7.10 sf x 10 rows

42.0" Wide + 21.0" Spacing = 63.0" C-C Row Spacing

2 Chambers/Row x 20.00' Long +1.62' Row Adjustment +3.50' Header x 2 = 48.62' Row Length +18.0"

End Stone x 2 = 51.62' Base Length

10 Rows x 42.0" Wide + 21.0" Spacing x 9 + 18.0" Side Stone x 2 = 53.75' Base Width

42.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 142.0 cf +1.62' Row Adjustment x 7.10 sf x 10 Rows + 50.75' Header x 7.10 sf x 2 =
3,675.7 cf Chamber Storage

20 Chambers x 177.1 cf +1.62' Row Adjustment x 8.86 sf x 10 Rows + 50.75' Header x 8.86 sf x 2 =
4,585.4 cf Displacement

11,098.3 cf Field - 4,585.4 cf Chambers = 6,512.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 3,675.7 cf = 0.084 af

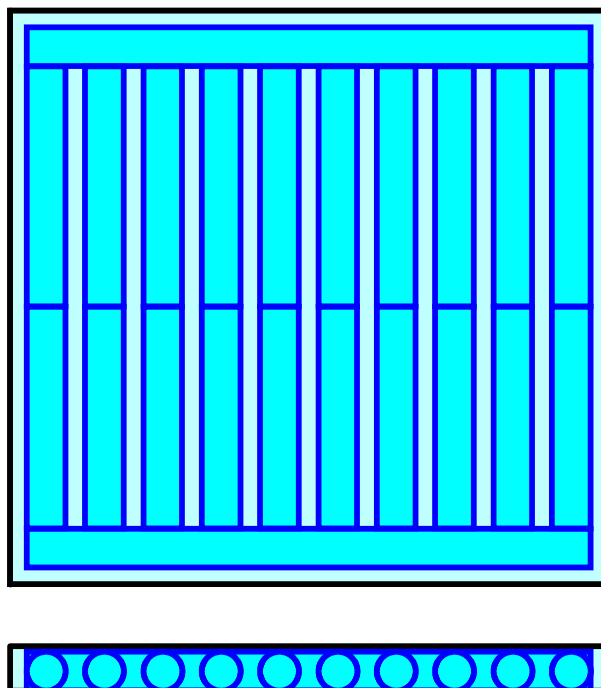
Overall Storage Efficiency = 33.1%

Overall System Size = 51.62' x 53.75' x 4.00'

20 Chambers

411.0 cy Field

241.2 cy Stone



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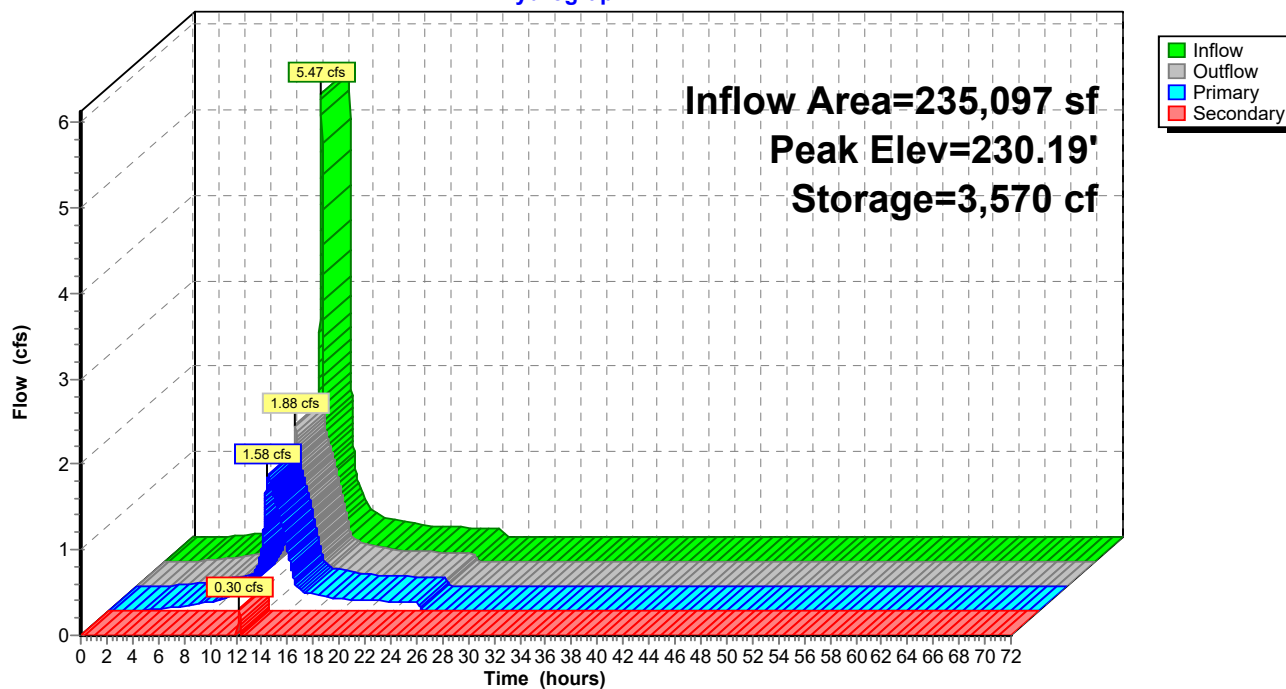
NRCC 24-hr D WQV Rainfall=1.27"

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Pond 1P: EX OWS

Hydrograph



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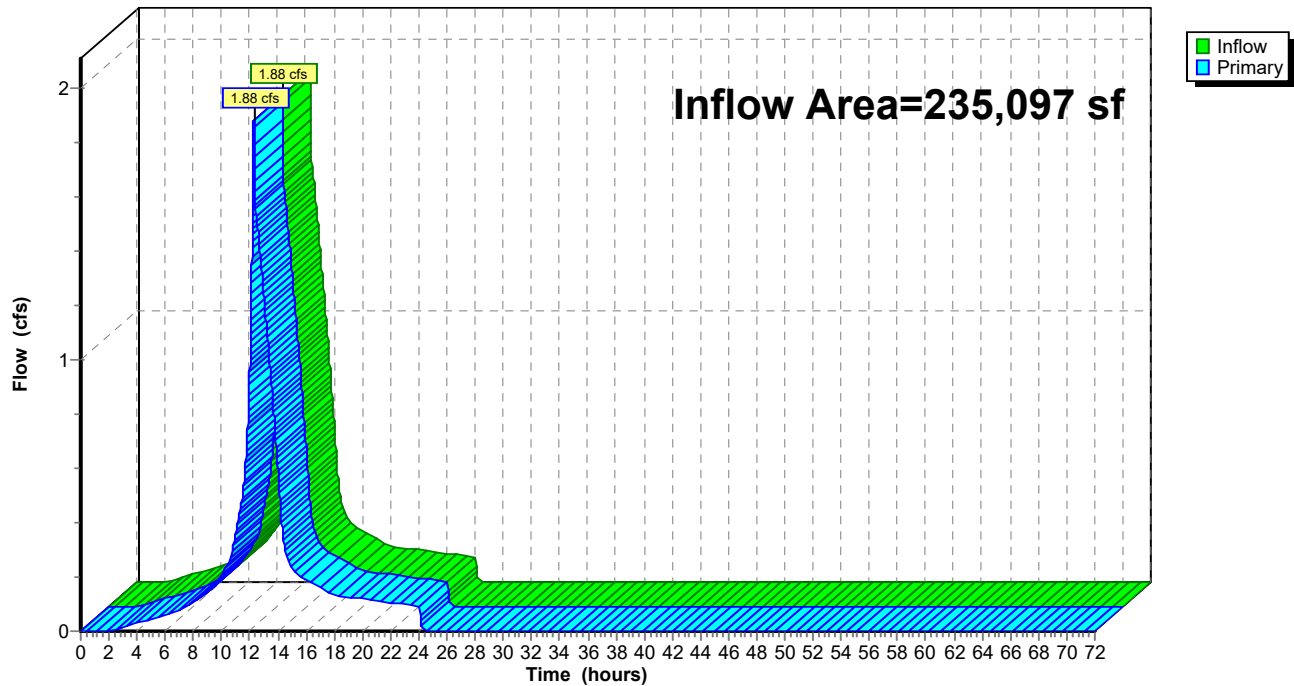
Summary for Link DP-1: DP-1

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 1.88 cfs @ 12.28 hrs, Volume= 19,088 cf
Primary = 1.88 cfs @ 12.28 hrs, Volume= 19,088 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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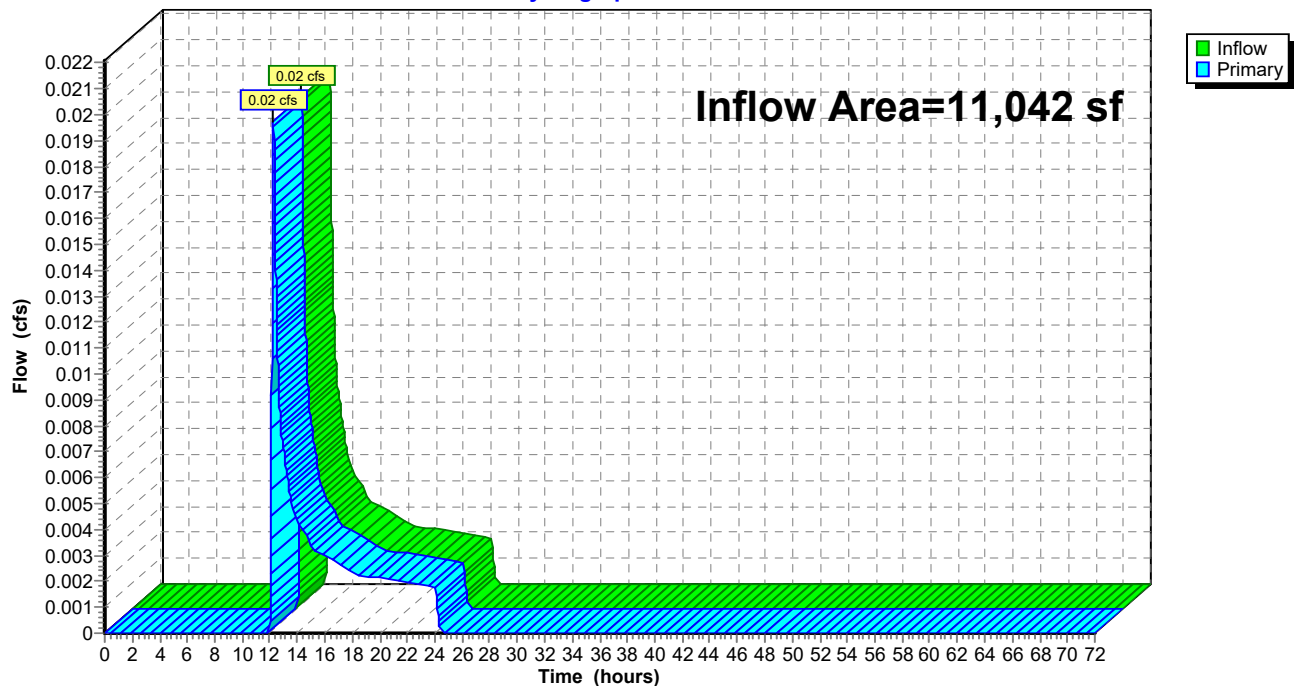
Summary for Link DP-2: DP-2

Inflow Area = 11,042 sf, 0.67% Impervious, Inflow Depth = 0.16" for WQV event
Inflow = 0.02 cfs @ 12.26 hrs, Volume= 148 cf
Primary = 0.02 cfs @ 12.26 hrs, Volume= 148 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=1.95 cfs 7,247 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=0.43 cfs 1,611 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=0.41 cfs 1,536 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=3.34 cfs 12,429 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=0.83 cfs 3,088 cf
Subcatchment6: Sub-Catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=1.18 cfs 4,387 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=1.36 cfs 5,045 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=1.48 cfs 5,508 cf
Subcatchment9: Sub-catchment9	Runoff Area=11,753 sf 73.89% Impervious Runoff Depth=2.08" Tc=6.0 min CN=93 Runoff=0.60 cfs 2,039 cf
Subcatchment10: Sub-catchment10	Runoff Area=32,181 sf 67.40% Impervious Runoff Depth=1.99" Tc=6.0 min CN=92 Runoff=1.59 cfs 5,341 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=2.59" Tc=6.0 min CN=98 Runoff=0.11 cfs 393 cf
Subcatchment12: Sub-catchment12	Runoff Area=11,042 sf 0.67% Impervious Runoff Depth=1.06" Flow Length=285' Tc=13.6 min CN=79 Runoff=0.22 cfs 974 cf
Pond 1P: EX OWS	Peak Elev=230.82' Storage=3,676 cf Inflow=13.29 cfs 48,625 cf Primary=1.75 cfs 38,587 cf Secondary=11.70 cfs 10,038 cf Outflow=13.45 cfs 48,625 cf
Link DP-1: DP-1	Inflow=13.45 cfs 48,625 cf Primary=13.45 cfs 48,625 cf
Link DP-2: DP-2	Inflow=0.22 cfs 974 cf Primary=0.22 cfs 974 cf

Total Runoff Area = 246,139 sf Runoff Volume = 49,599 cf Average Runoff Depth = 2.42"
9.97% Pervious = 24,528 sf 90.03% Impervious = 221,611 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 1.95 cfs @ 12.13 hrs, Volume= 7,247 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

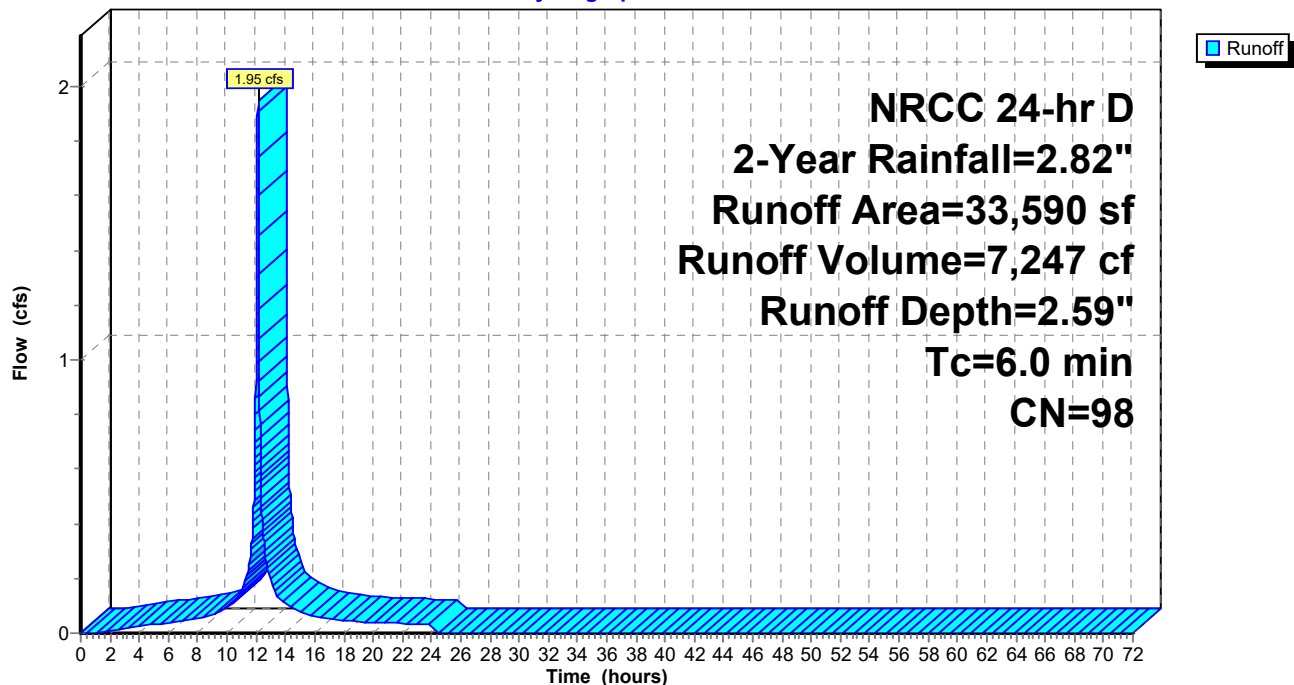
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

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

Subcatchment 1: Sub-catchment 1

Hydrograph



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.43 cfs @ 12.13 hrs, Volume= 1,611 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

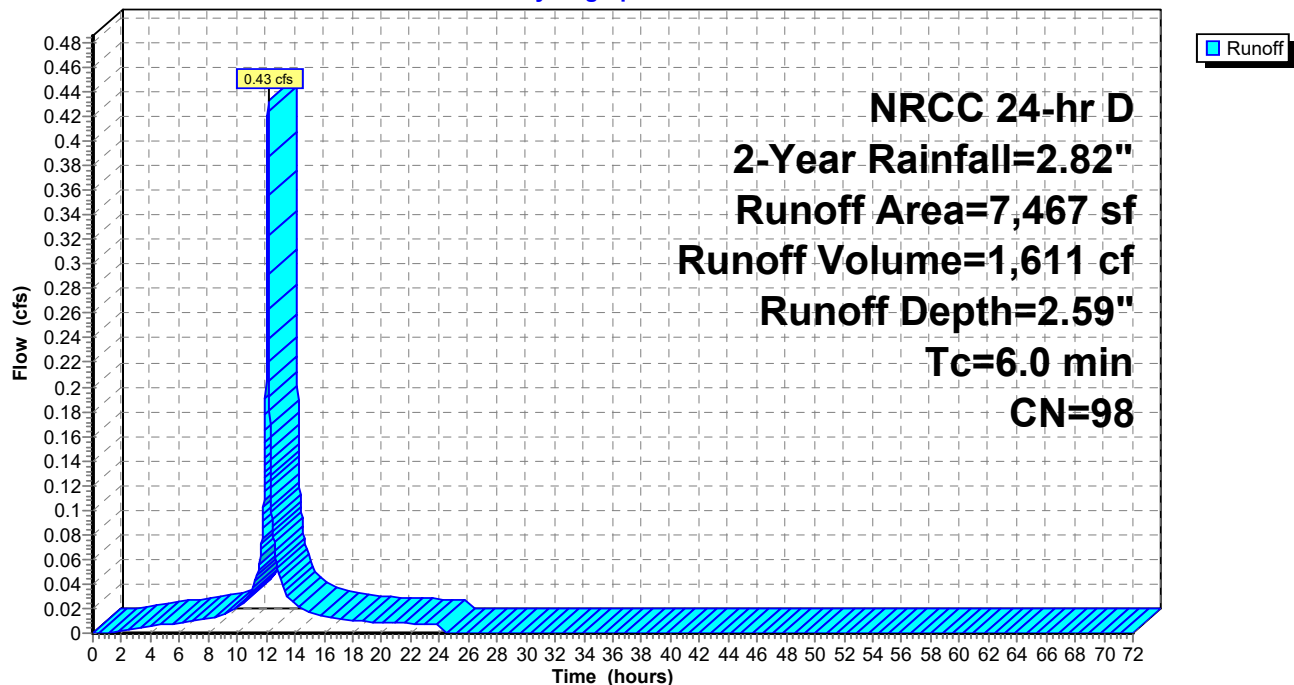
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

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

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,536 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

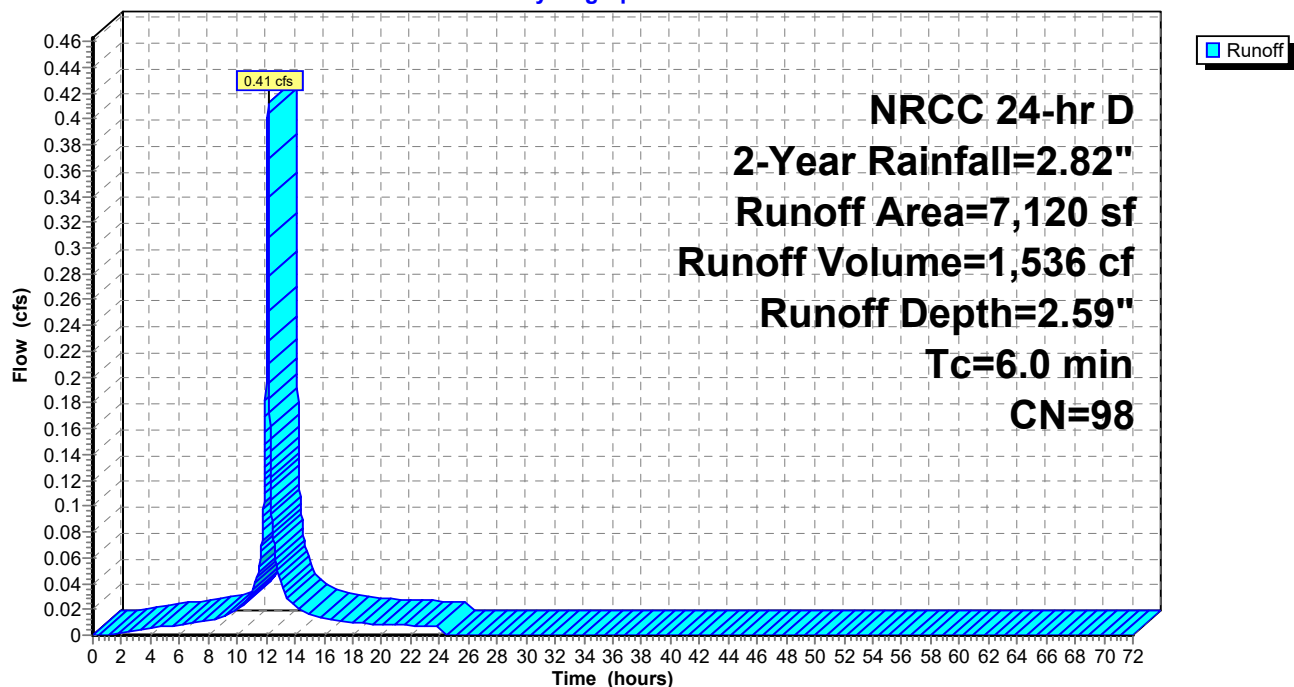
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

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

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 3.34 cfs @ 12.13 hrs, Volume= 12,429 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

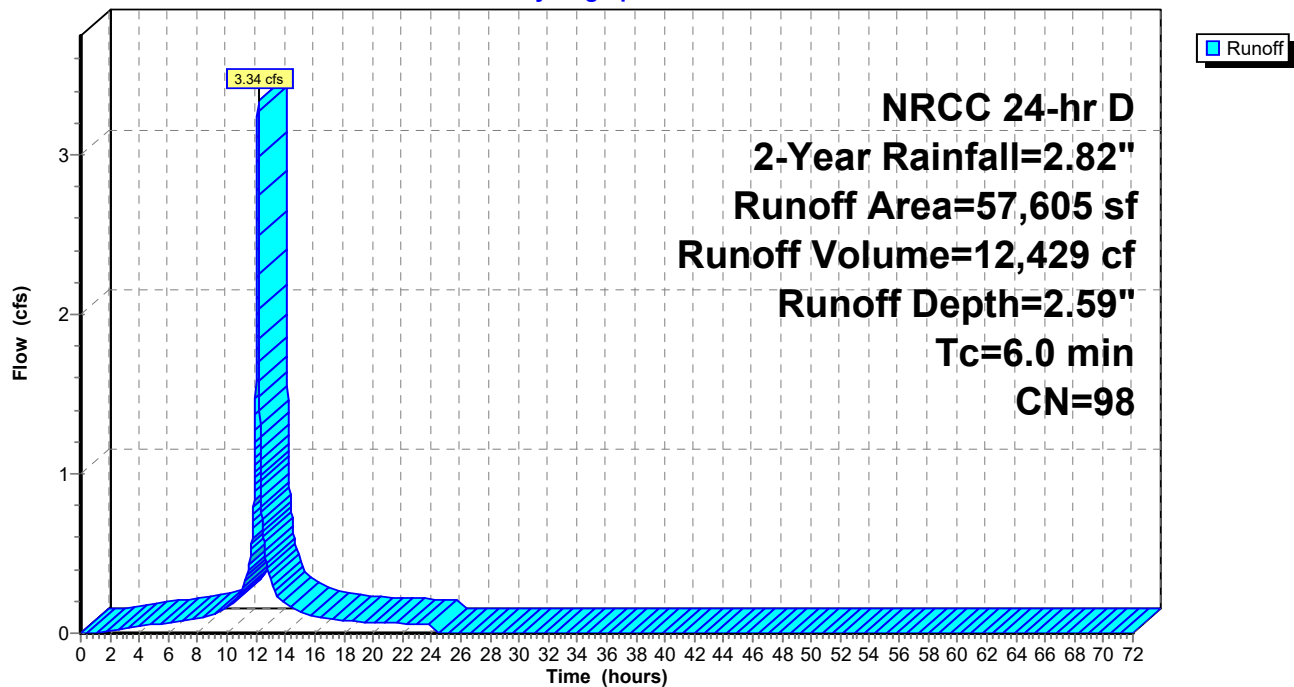
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
52,276	98	Unconnected pavement, HSG B
57,605	98	Weighted Average
57,605		100.00% Impervious Area
52,276		90.75% Unconnected

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

Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 0.83 cfs @ 12.13 hrs, Volume= 3,088 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

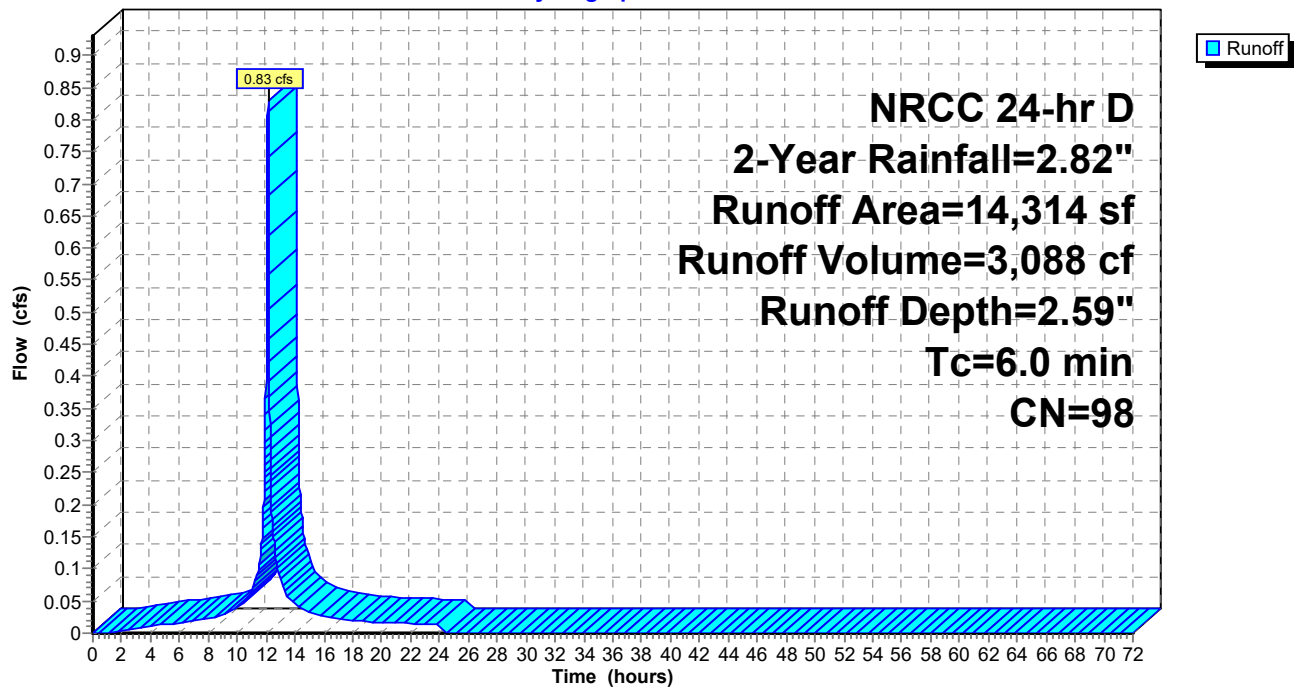
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

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

Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-Catchment 6

Runoff = 1.18 cfs @ 12.13 hrs, Volume= 4,387 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

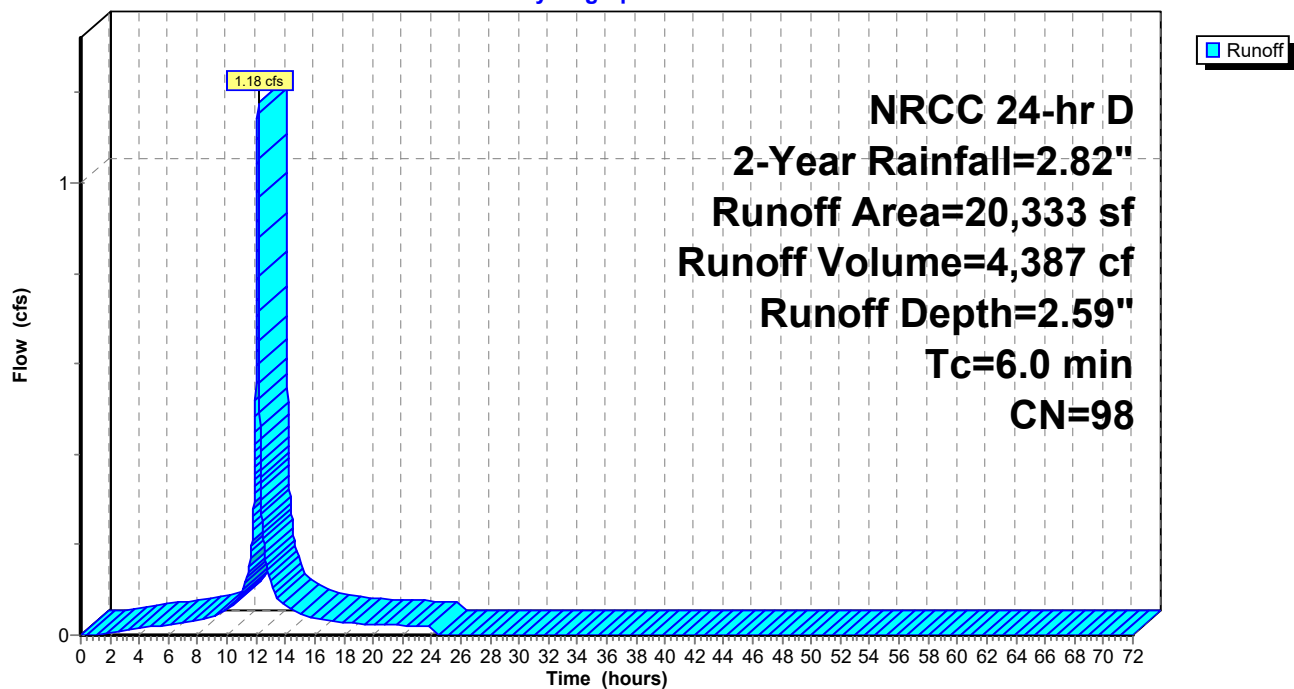
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

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

Subcatchment 6: Sub-Catchment 6

Hydrograph



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 1.36 cfs @ 12.13 hrs, Volume= 5,045 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

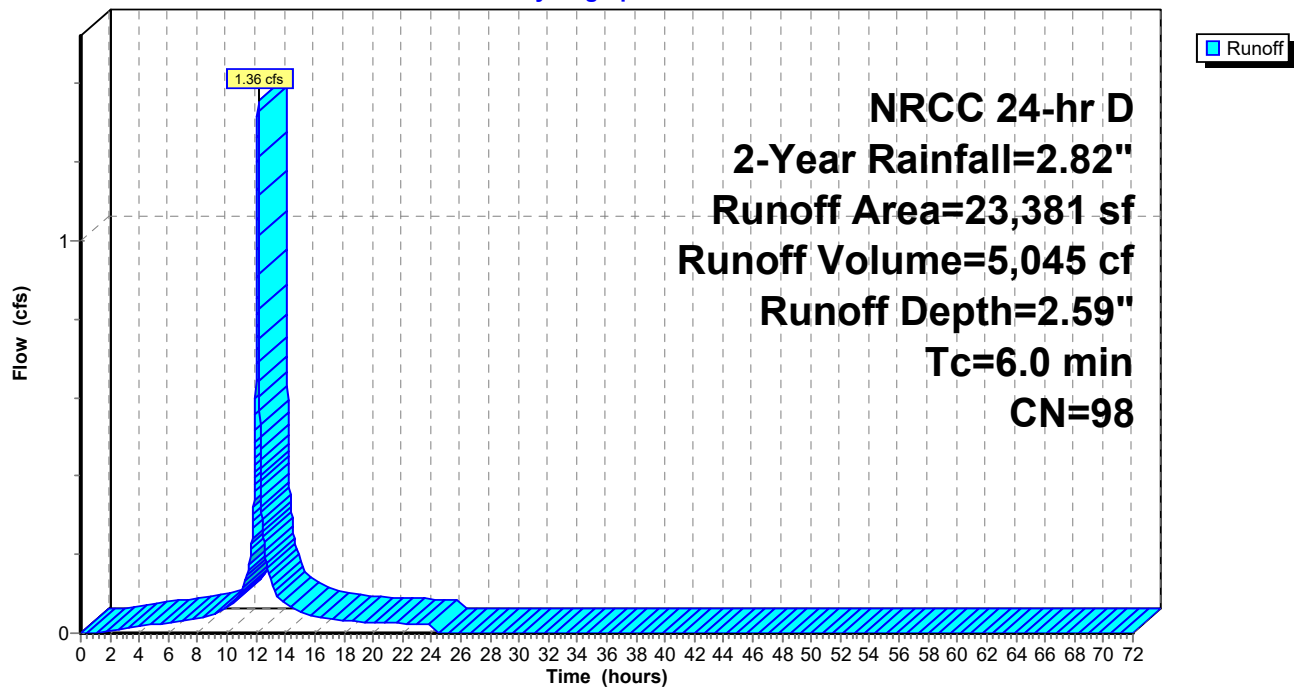
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
3,396	98	Roofs, HSG B
19,985	98	Unconnected pavement, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

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

Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 1.48 cfs @ 12.13 hrs, Volume= 5,508 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

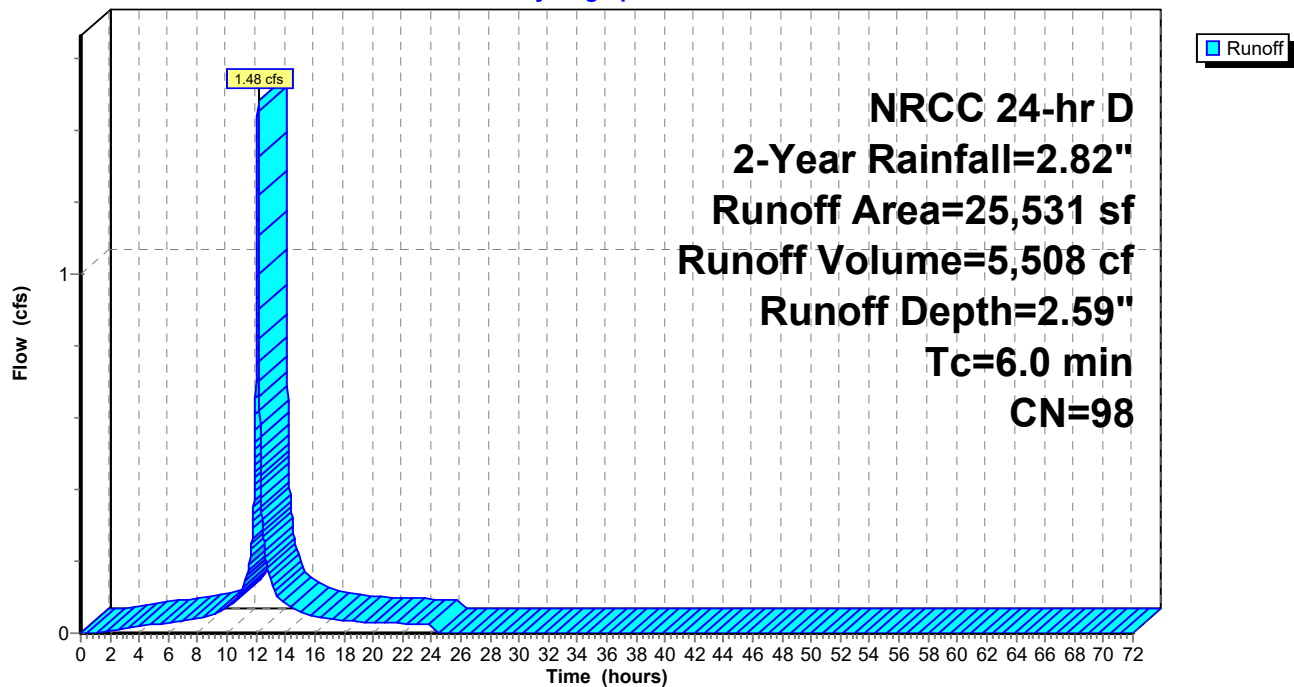
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
2,117	98	Roofs, HSG B
23,414	98	Unconnected pavement, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,414		91.71% Unconnected

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

Subcatchment 8: Sub-catchment 8

Hydrograph



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.60 cfs @ 12.13 hrs, Volume= 2,039 cf, Depth= 2.08"
Routed to Pond 1P : EX OWS

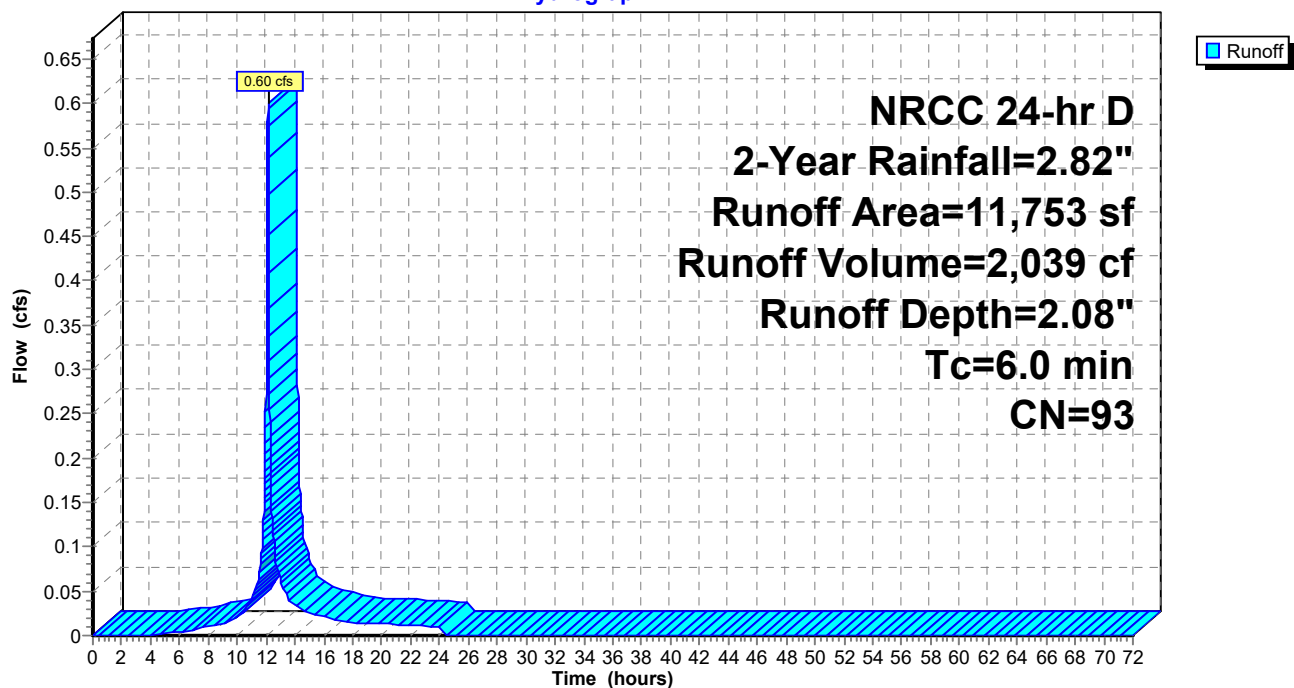
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
3,069	79	<50% Grass cover, Poor, HSG B
8,684	98	Unconnected pavement, HSG B
11,753	93	Weighted Average
3,069		26.11% Pervious Area
8,684		73.89% Impervious Area
8,684		100.00% Unconnected

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

Subcatchment 9: Sub-catchment 9

Hydrograph



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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 1.59 cfs @ 12.13 hrs, Volume= 5,341 cf, Depth= 1.99"
Routed to Pond 1P : EX OWS

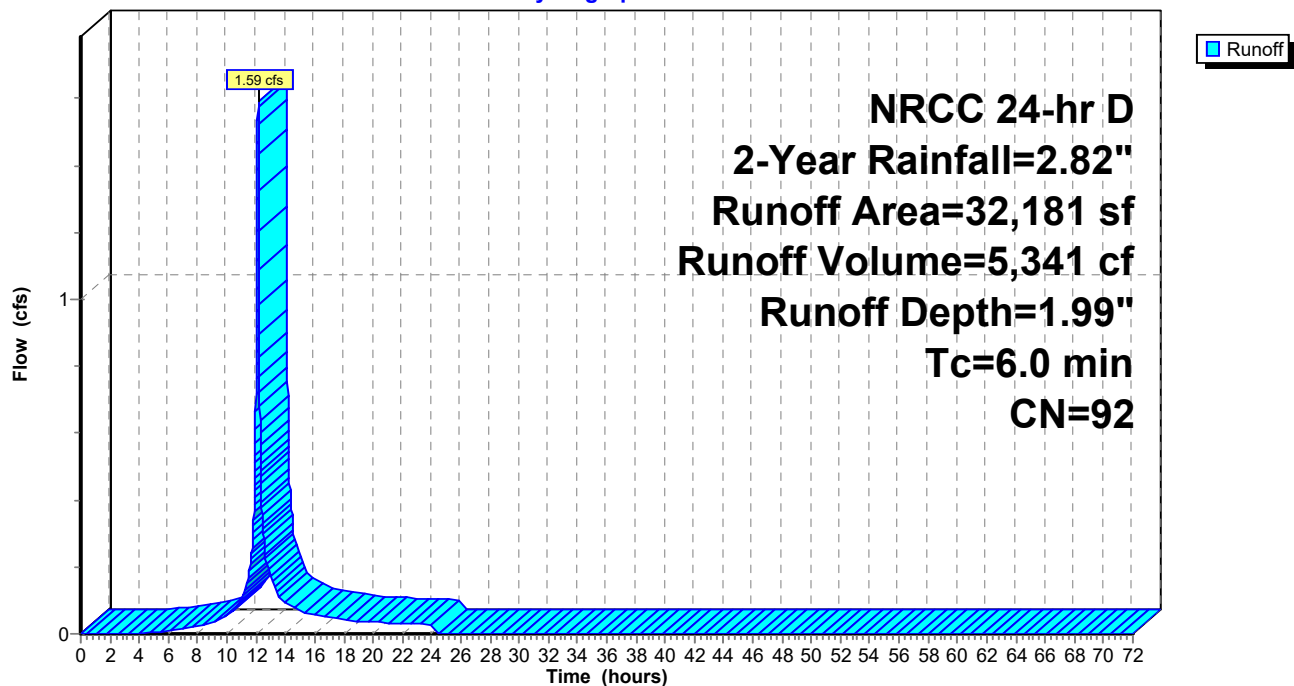
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
10,491	79	<50% Grass cover, Poor, HSG B
6,760	98	Roofs, HSG B
14,930	98	Unconnected pavement, HSG B
32,181	92	Weighted Average
10,491		32.60% Pervious Area
21,690		67.40% Impervious Area
14,930		68.83% Unconnected

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

Subcatchment 10: Sub-catchment 10

Hydrograph



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.11 cfs @ 12.13 hrs, Volume= 393 cf, Depth= 2.59"
Routed to Pond 1P : EX OWS

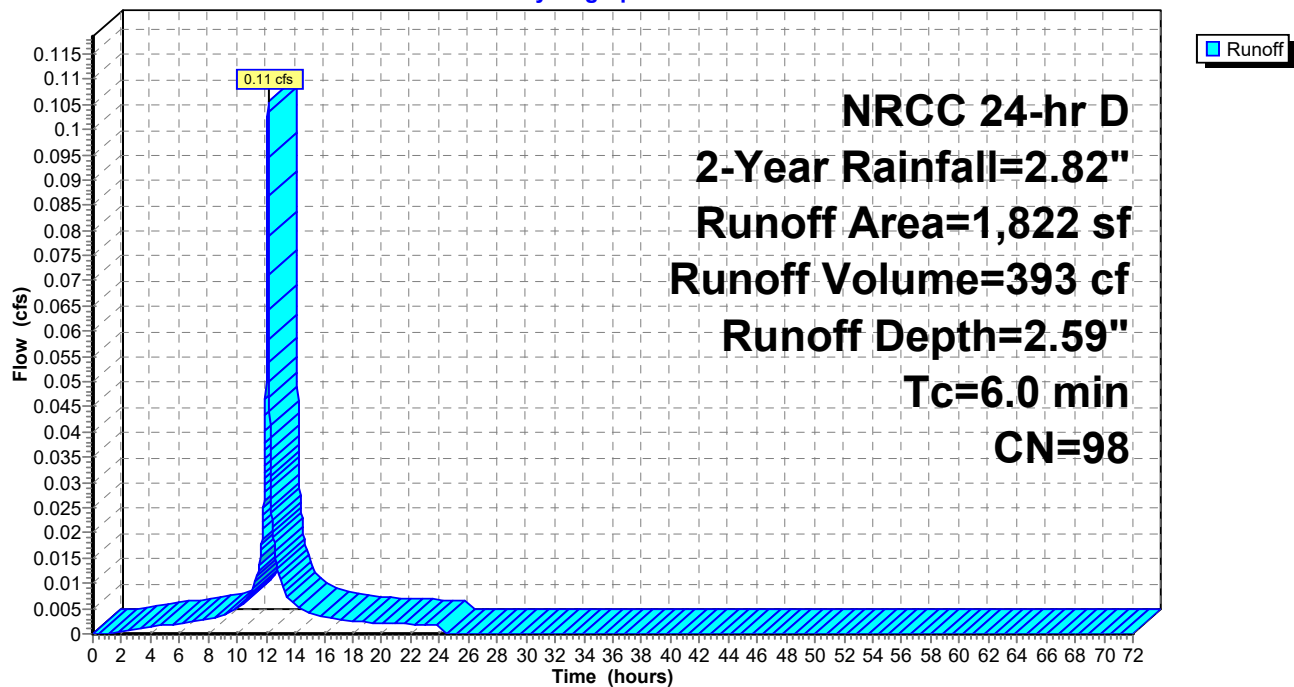
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
1,822	98	Roofs, HSG B
1,822		100.00% Impervious Area

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

Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.22 cfs @ 12.22 hrs, Volume= 974 cf, Depth= 1.06"
Routed to Link DP-2 : DP-2

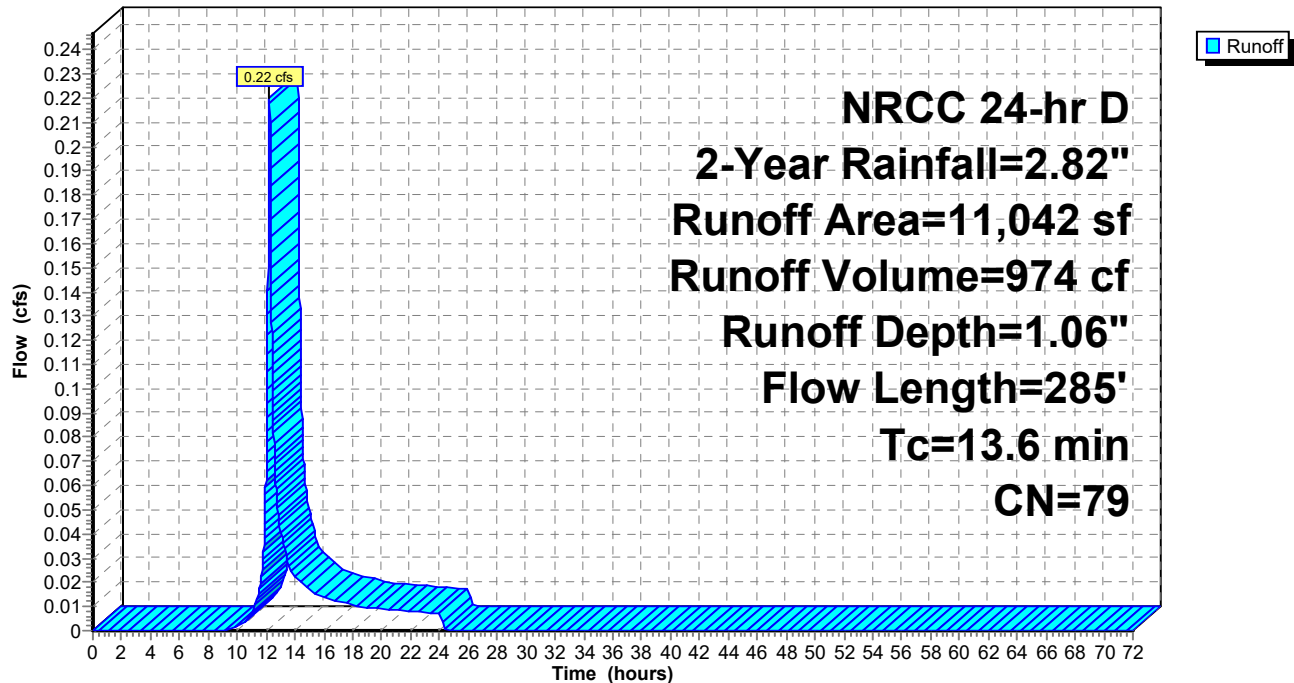
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
74	98	Unconnected pavement, HSG B
10,968	79	<50% Grass cover, Poor, HSG B
11,042	79	Weighted Average
10,968		99.33% Pervious Area
74		0.67% Impervious Area
74		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
1.6	185	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
13.6	285	Total			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Pond 1P: EX OWS

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 2.48" for 2-Year event
Inflow = 13.29 cfs @ 12.13 hrs, Volume= 48,625 cf
Outflow = 13.45 cfs @ 12.12 hrs, Volume= 48,625 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 12.12 hrs, Volume= 38,587 cf
Routed to Link DP-1 : DP-1
Secondary = 11.70 cfs @ 12.12 hrs, Volume= 10,038 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 230.82' @ 12.12 hrs Surf.Area= 2,775 sf Storage= 3,676 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.1 min (784.9 - 771.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	227.14'	0 cf	53.75'W x 51.62'L x 4.00'H Field A 11,098 cf Overall - 4,587 cf Embedded = 6,511 cf x 0.0% Voids
#2A	227.14'	3,676 cf	ADS N-12 36" x 20 Inside #1 Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf Row Length Adjustment= +1.62' x 7.10 sf x 10 rows 50.75' Header x 7.10 sf x 2 = 720.6 cf Inside
		3,676 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Secondary	227.14'	16.0" Round Culvert L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 227.14' / 227.10' S= 0.0011 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.40 sf
#3	Device 2	230.14'	9.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.75 cfs @ 12.12 hrs HW=230.82' TW=0.00' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 1.75 cfs @ 8.92 fps)

Secondary OutFlow Max=11.63 cfs @ 12.12 hrs HW=230.80' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 11.63 cfs @ 8.33 fps)

↑ **3=Broad-Crested Rectangular Weir** (Passes 11.63 cfs of 15.18 cfs potential flow)

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Pond 1P: EX OWS - Chamber Wizard Field A

Chamber Model = ADS N-12 36" (ADS N-12® Pipe)

Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf

Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf

Row Length Adjustment= +1.62' x 7.10 sf x 10 rows

42.0" Wide + 21.0" Spacing = 63.0" C-C Row Spacing

2 Chambers/Row x 20.00' Long +1.62' Row Adjustment +3.50' Header x 2 = 48.62' Row Length +18.0"

End Stone x 2 = 51.62' Base Length

10 Rows x 42.0" Wide + 21.0" Spacing x 9 + 18.0" Side Stone x 2 = 53.75' Base Width

42.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 142.0 cf +1.62' Row Adjustment x 7.10 sf x 10 Rows + 50.75' Header x 7.10 sf x 2 =
3,675.7 cf Chamber Storage

20 Chambers x 177.1 cf +1.62' Row Adjustment x 8.86 sf x 10 Rows + 50.75' Header x 8.86 sf x 2 =
4,585.4 cf Displacement

11,098.3 cf Field - 4,585.4 cf Chambers = 6,512.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 3,675.7 cf = 0.084 af

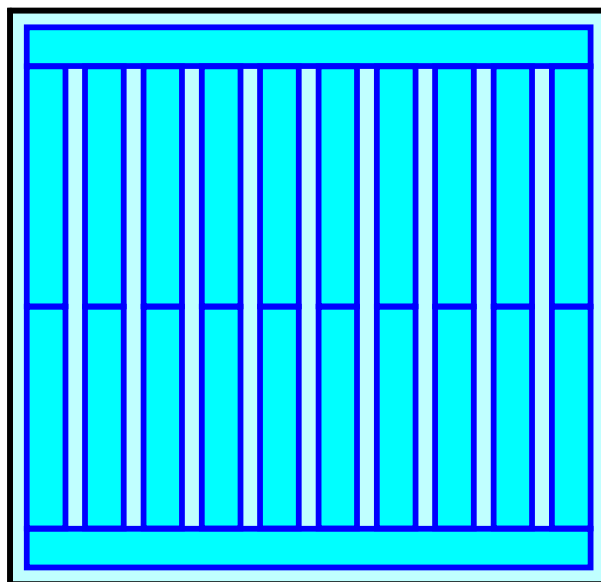
Overall Storage Efficiency = 33.1%

Overall System Size = 51.62' x 53.75' x 4.00'

20 Chambers

411.0 cy Field

241.2 cy Stone



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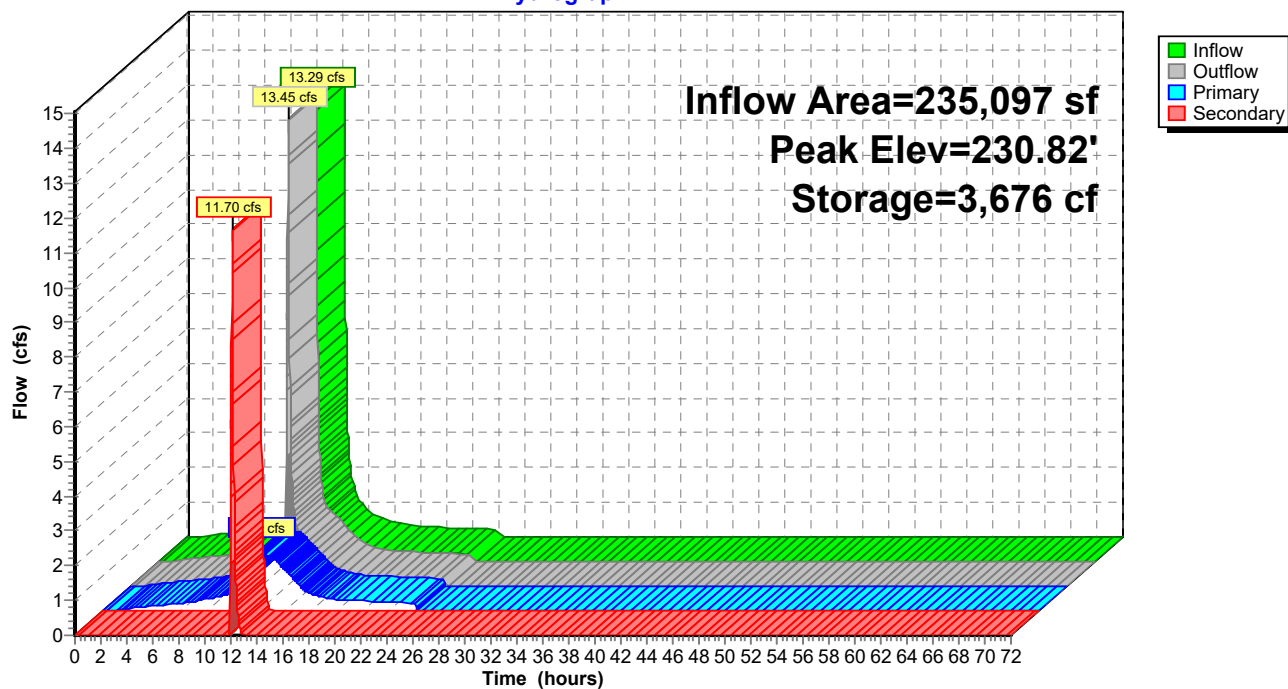
NRCC 24-hr D 2-Year Rainfall=2.82"

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Pond 1P: EX OWS

Hydrograph



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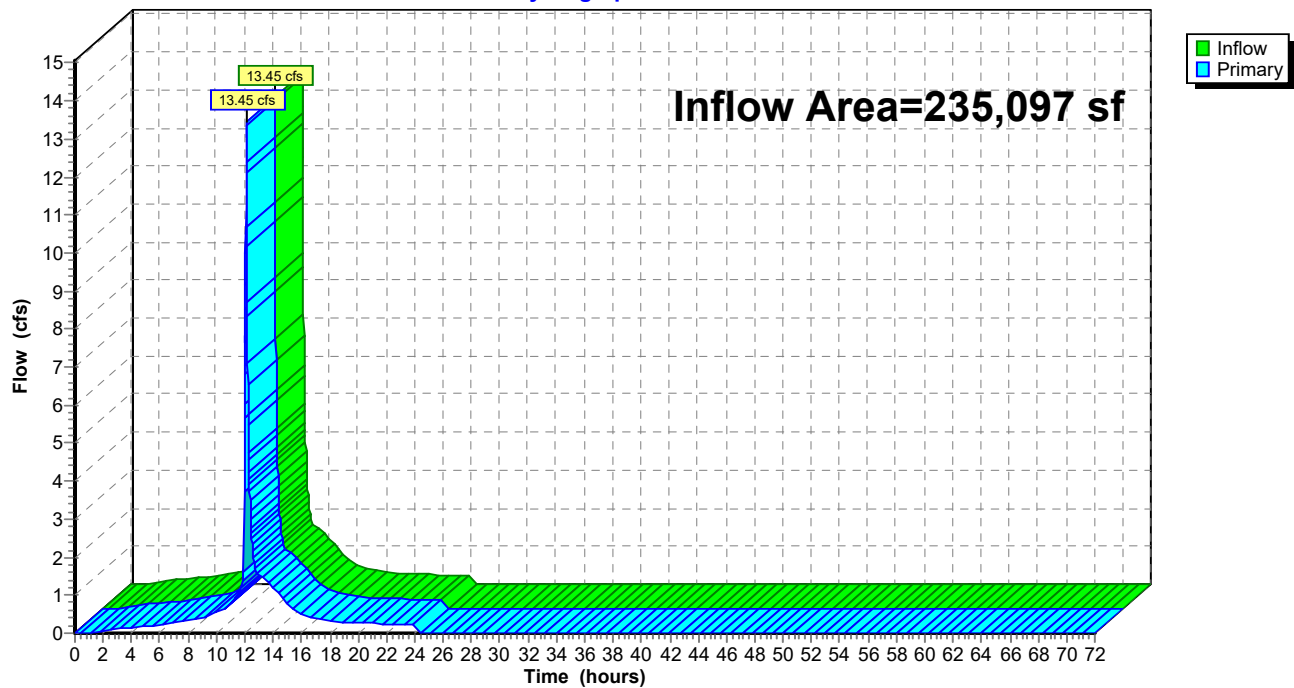
Summary for Link DP-1: DP-1

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 2.48" for 2-Year event
Inflow = 13.45 cfs @ 12.12 hrs, Volume= 48,625 cf
Primary = 13.45 cfs @ 12.12 hrs, Volume= 48,625 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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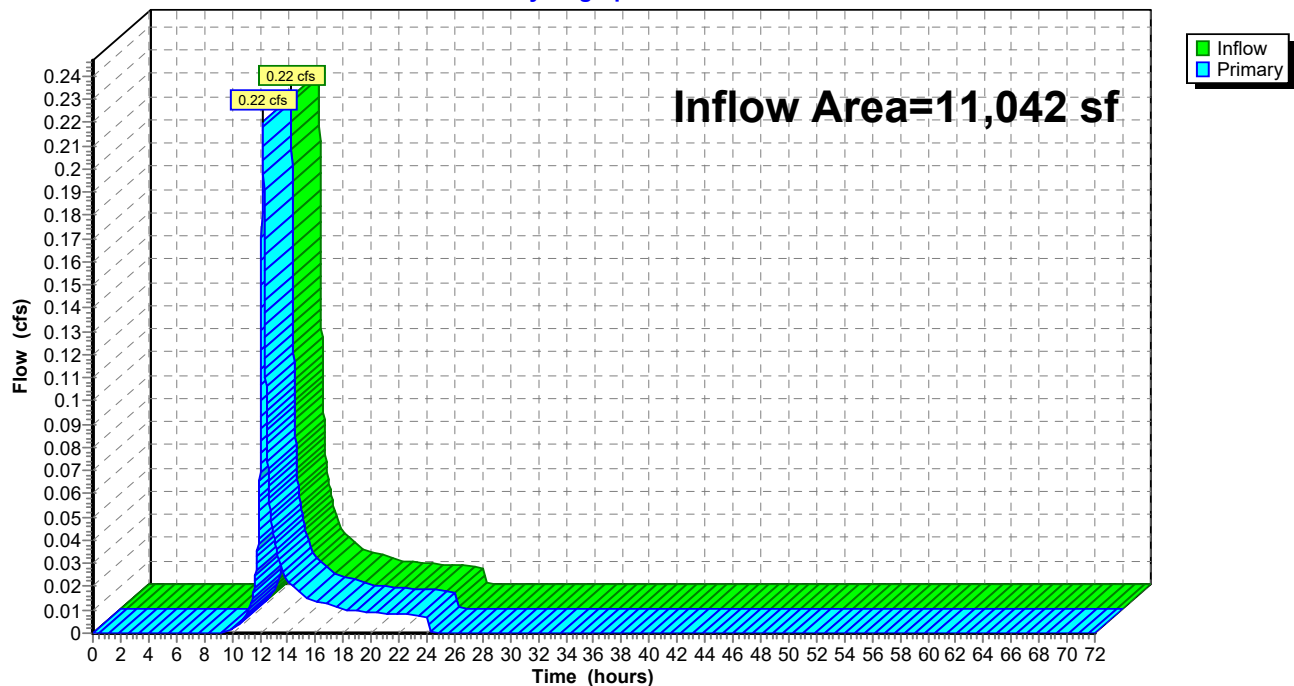
Summary for Link DP-2: DP-2

Inflow Area = 11,042 sf, 0.67% Impervious, Inflow Depth = 1.06" for 2-Year event
Inflow = 0.22 cfs @ 12.22 hrs, Volume= 974 cf
Primary = 0.22 cfs @ 12.22 hrs, Volume= 974 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1 Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=2.90 cfs 10,986 cf

Subcatchment2: Sub-catchment2 Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=0.64 cfs 2,442 cf

Subcatchment3: Sub-catchment3 Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=0.61 cfs 2,329 cf

Subcatchment4: Sub-catchment4 Runoff Area=57,605 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=4.97 cfs 18,840 cf

Subcatchment5: Sub-catchment5 Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=1.24 cfs 4,682 cf

Subcatchment6: Sub-Catchment6 Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=1.76 cfs 6,650 cf

Subcatchment7: Sub-catchment7 Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=2.02 cfs 7,647 cf

Subcatchment8: Sub-catchment8 Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=2.20 cfs 8,350 cf

Subcatchment9: Sub-catchment9 Runoff Area=11,753 sf 73.89% Impervious Runoff Depth=3.38"
Tc=6.0 min CN=93 Runoff=0.95 cfs 3,306 cf

Subcatchment10: Sub-catchment10 Runoff Area=32,181 sf 67.40% Impervious Runoff Depth=3.27"
Tc=6.0 min CN=92 Runoff=2.54 cfs 8,775 cf

Subcatchment11: Sub-catchment11 Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=98 Runoff=0.16 cfs 596 cf

Subcatchment12: Sub-catchment12 Runoff Area=11,042 sf 0.67% Impervious Runoff Depth=2.09"
Flow Length=285' Tc=13.6 min CN=79 Runoff=0.45 cfs 1,927 cf

Pond 1P: EX OWS Peak Elev=234.50' Storage=3,676 cf Inflow=19.99 cfs 74,604 cf
Primary=2.52 cfs 53,461 cf Secondary=17.40 cfs 21,144 cf Outflow=19.92 cfs 74,605 cf

Link DP-1: DP-1 Inflow=19.92 cfs 74,605 cf
Primary=19.92 cfs 74,605 cf

Link DP-2: DP-2 Inflow=0.45 cfs 1,927 cf
Primary=0.45 cfs 1,927 cf

Total Runoff Area = 246,139 sf Runoff Volume = 76,531 cf Average Runoff Depth = 3.73"
9.97% Pervious = 24,528 sf 90.03% Impervious = 221,611 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 2.90 cfs @ 12.13 hrs, Volume= 10,986 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

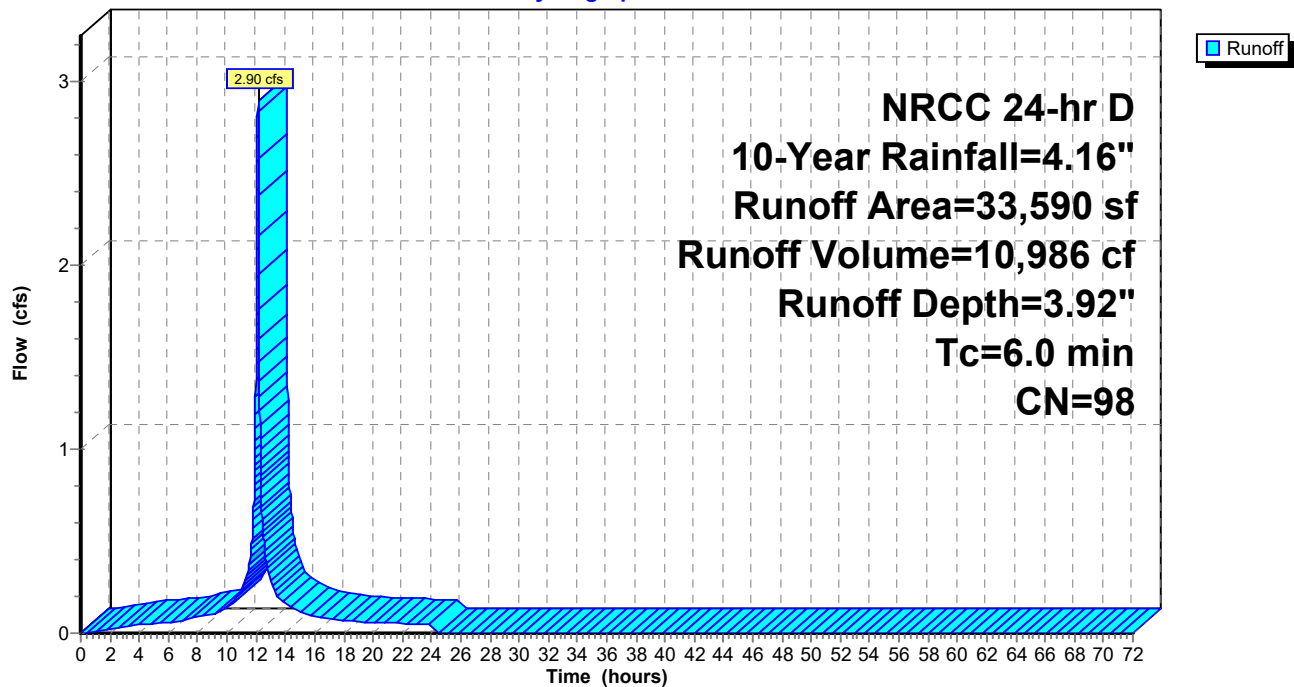
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

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

Subcatchment 1: Sub-catchment 1

Hydrograph



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,442 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

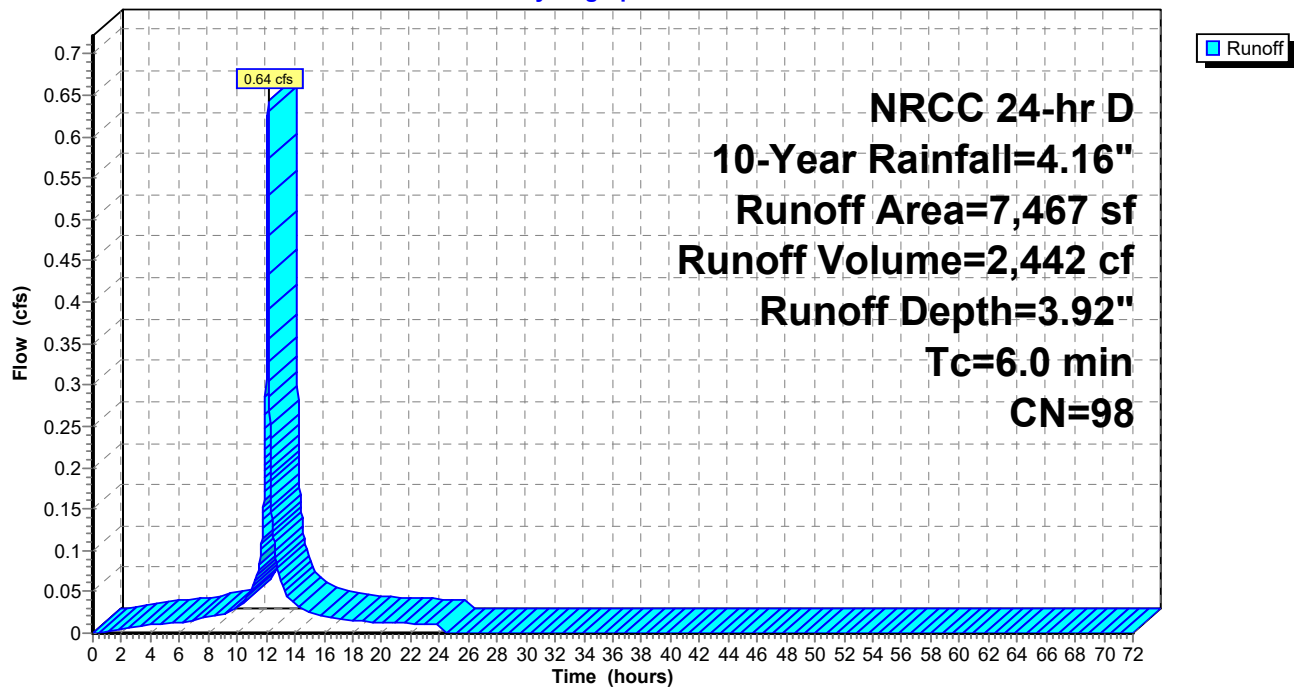
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

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

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.61 cfs @ 12.13 hrs, Volume= 2,329 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

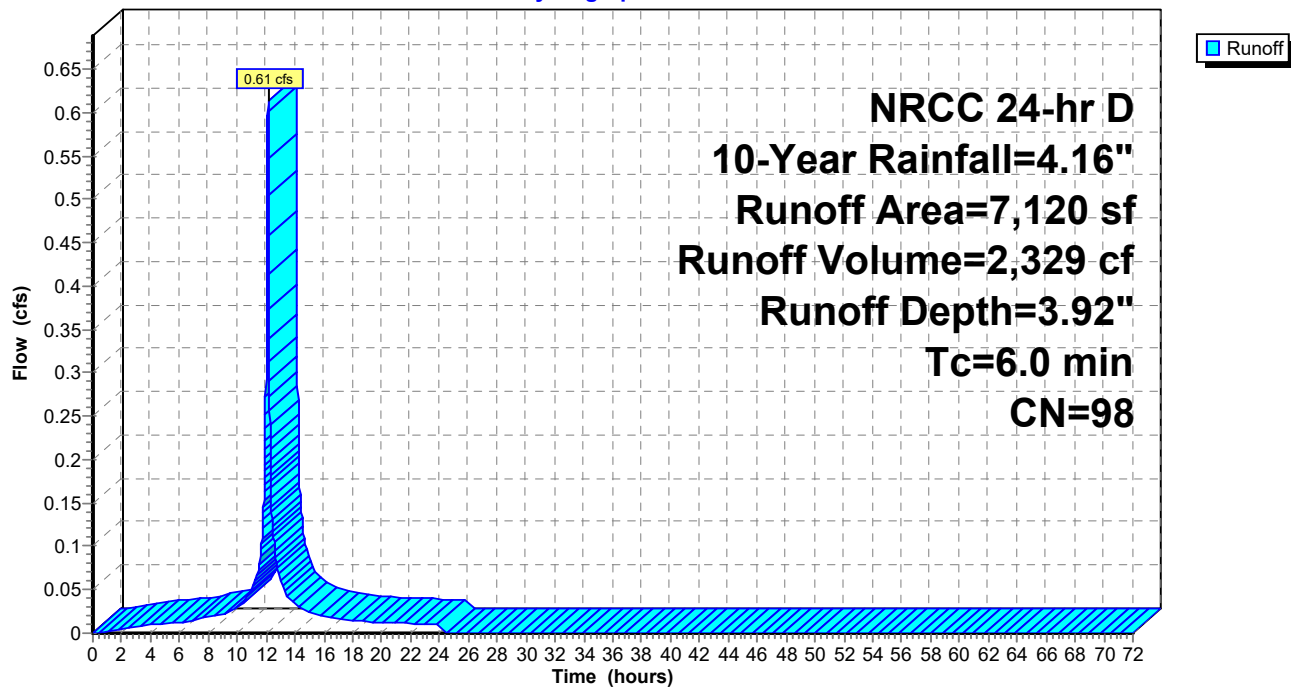
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

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

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 4.97 cfs @ 12.13 hrs, Volume= 18,840 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

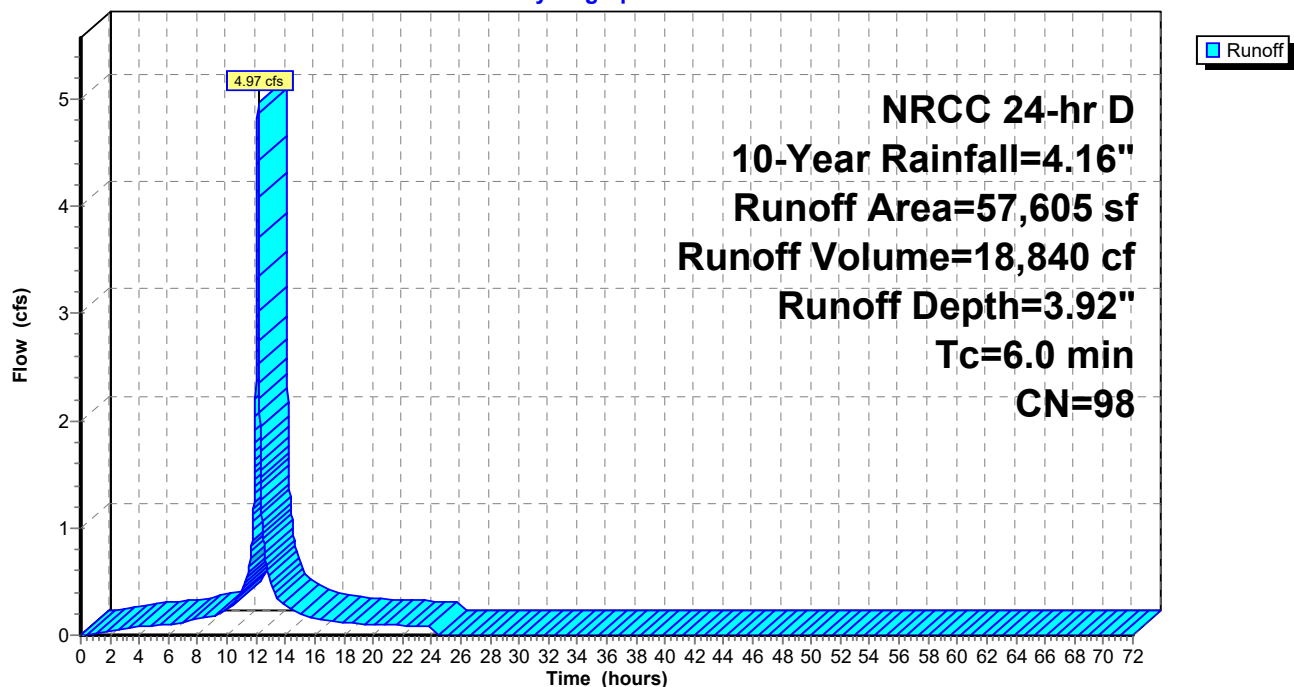
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
52,276	98	Unconnected pavement, HSG B
57,605	98	Weighted Average
57,605		100.00% Impervious Area
52,276		90.75% Unconnected

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

Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 1.24 cfs @ 12.13 hrs, Volume= 4,682 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

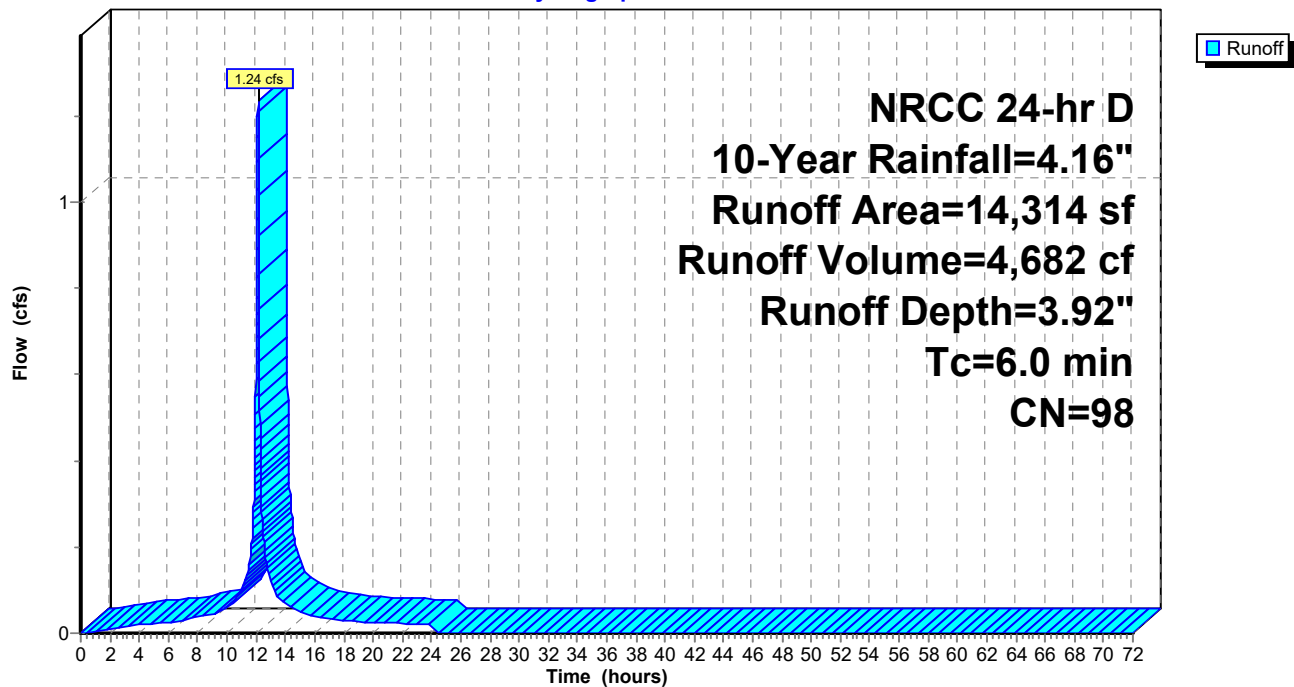
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

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

Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-Catchment 6

Runoff = 1.76 cfs @ 12.13 hrs, Volume= 6,650 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

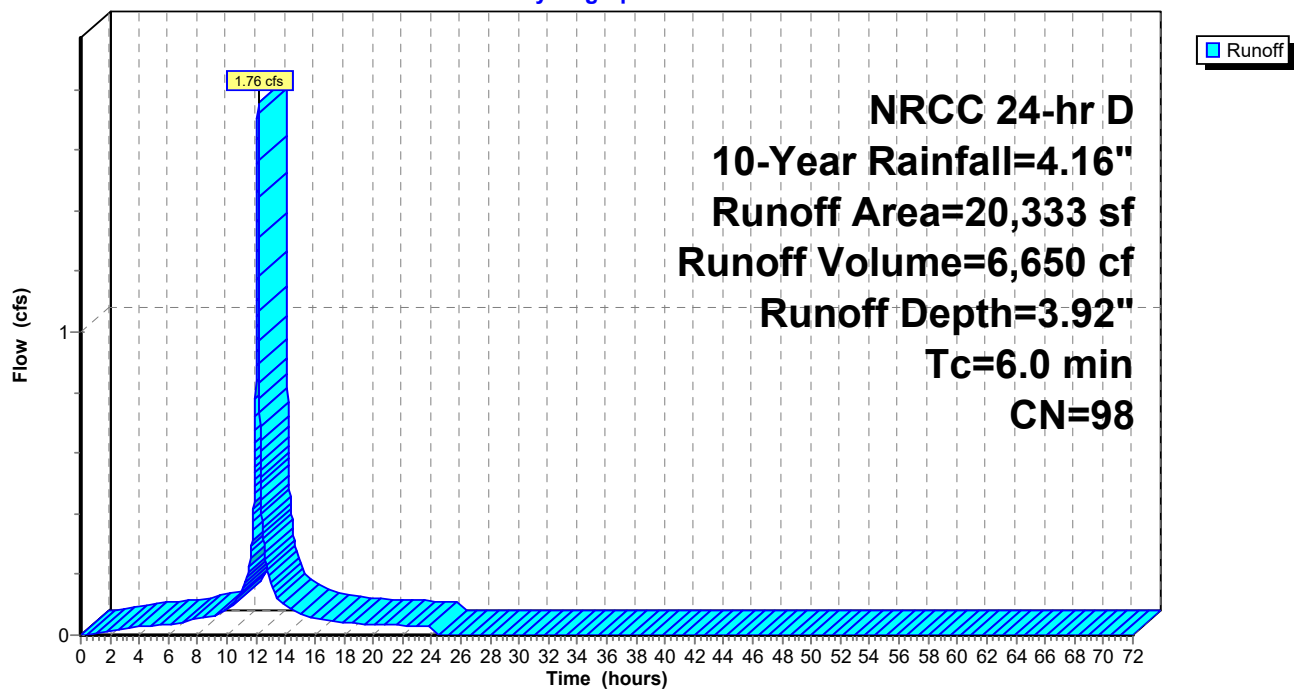
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

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

Subcatchment 6: Sub-Catchment 6

Hydrograph



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 2.02 cfs @ 12.13 hrs, Volume= 7,647 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

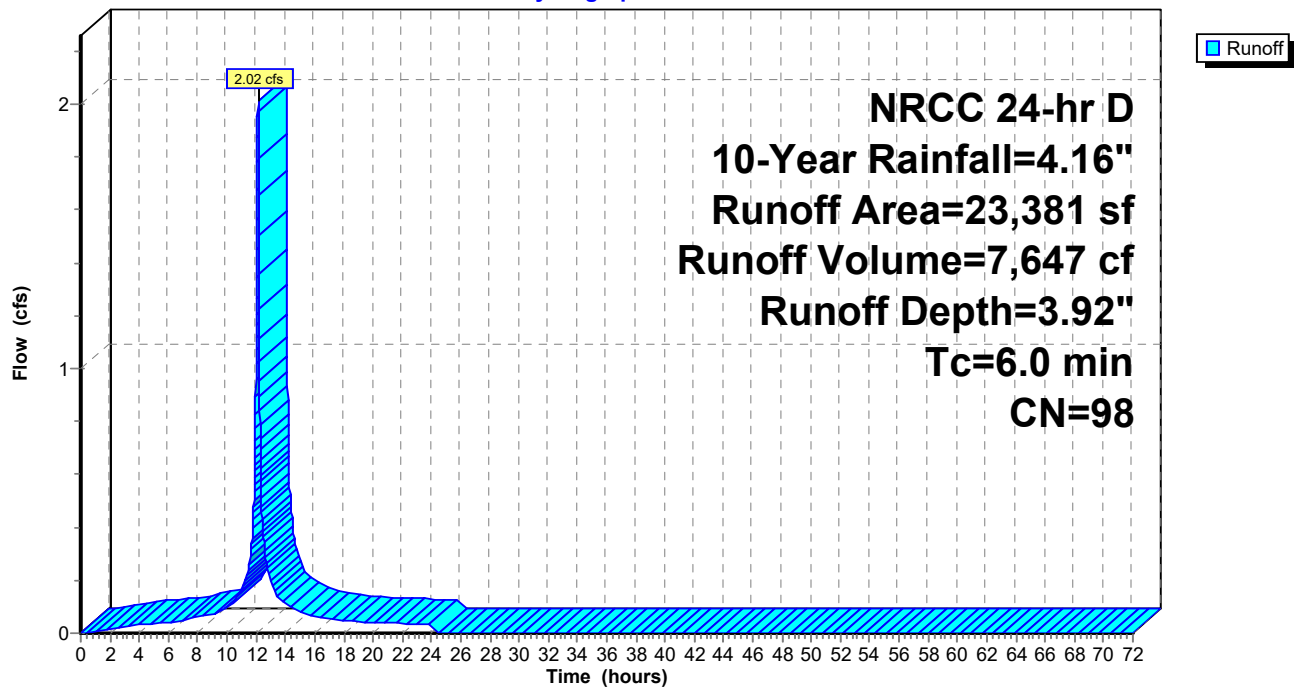
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
3,396	98	Roofs, HSG B
19,985	98	Unconnected pavement, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

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

Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 2.20 cfs @ 12.13 hrs, Volume= 8,350 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

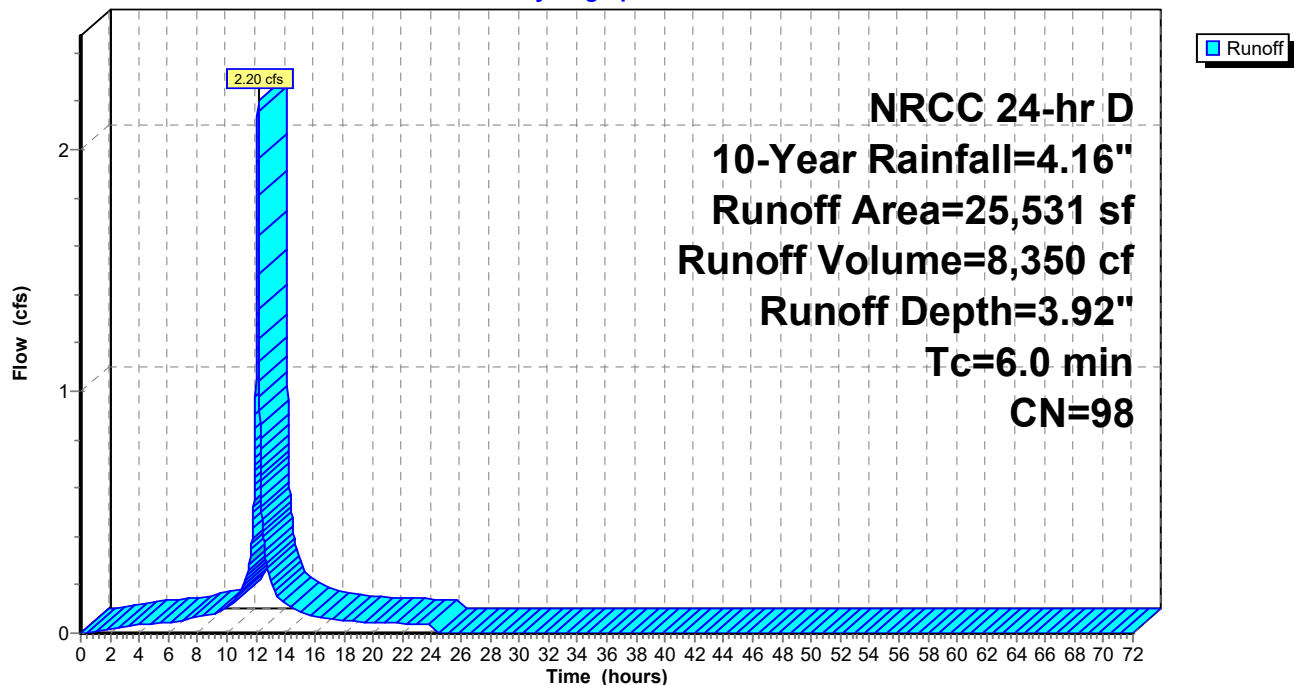
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
2,117	98	Roofs, HSG B
23,414	98	Unconnected pavement, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,414		91.71% Unconnected

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

Subcatchment 8: Sub-catchment 8

Hydrograph



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.95 cfs @ 12.13 hrs, Volume= 3,306 cf, Depth= 3.38"
Routed to Pond 1P : EX OWS

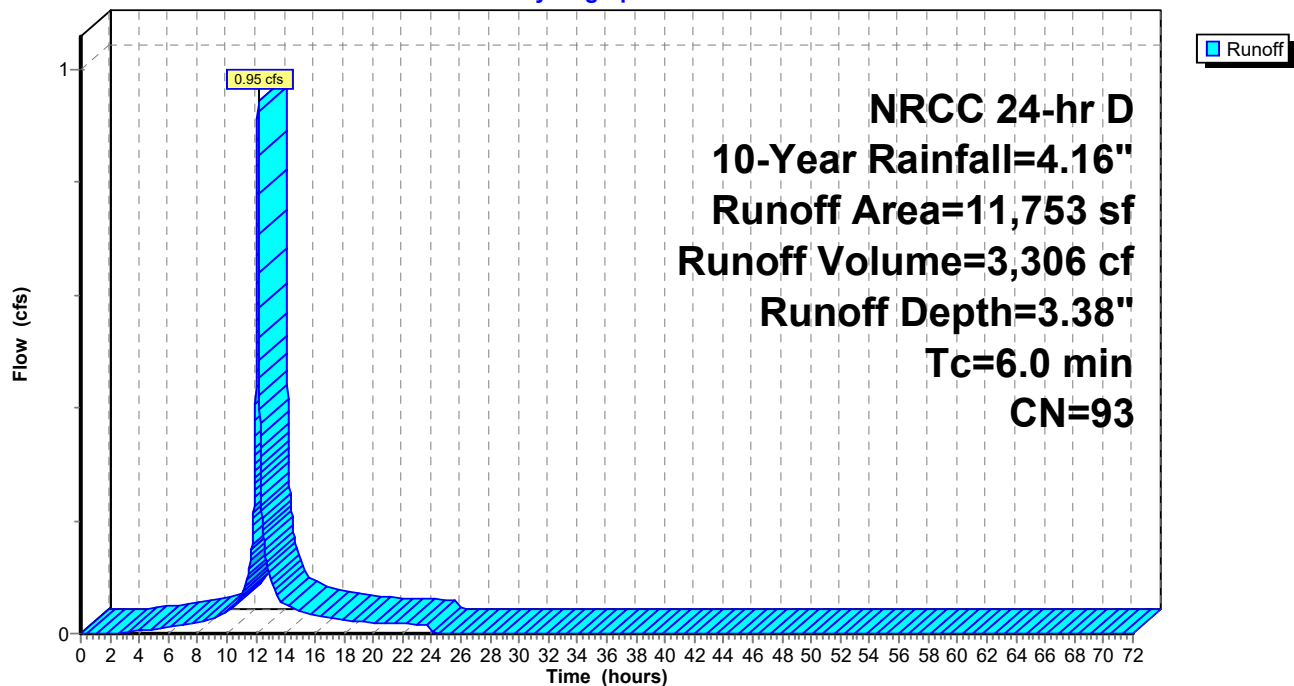
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
3,069	79	<50% Grass cover, Poor, HSG B
8,684	98	Unconnected pavement, HSG B
11,753	93	Weighted Average
3,069		26.11% Pervious Area
8,684		73.89% Impervious Area
8,684		100.00% Unconnected

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

Subcatchment 9: Sub-catchment 9

Hydrograph



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NRCC 24-hr D 10-Year Rainfall=4.16"

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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 2.54 cfs @ 12.13 hrs, Volume= 8,775 cf, Depth= 3.27"
Routed to Pond 1P : EX OWS

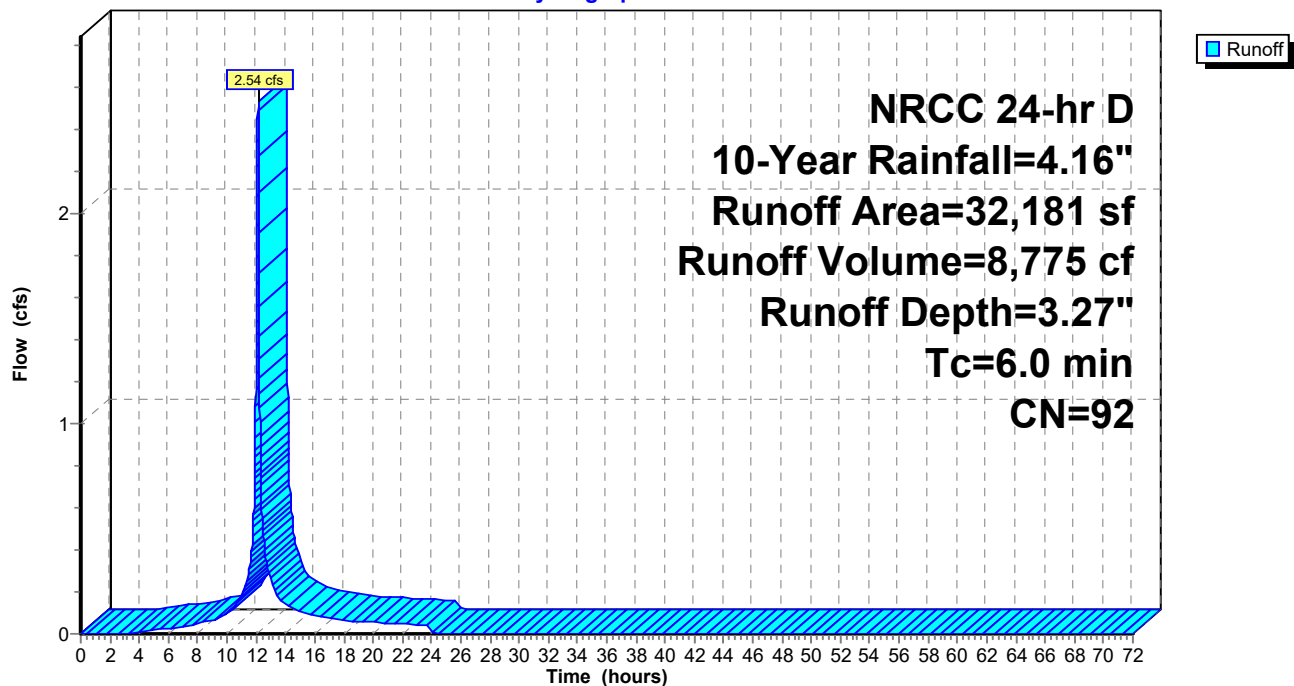
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
10,491	79	<50% Grass cover, Poor, HSG B
6,760	98	Roofs, HSG B
14,930	98	Unconnected pavement, HSG B
32,181	92	Weighted Average
10,491		32.60% Pervious Area
21,690		67.40% Impervious Area
14,930		68.83% Unconnected

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

Subcatchment 10: Sub-catchment 10

Hydrograph



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.16 cfs @ 12.13 hrs, Volume= 596 cf, Depth= 3.92"
Routed to Pond 1P : EX OWS

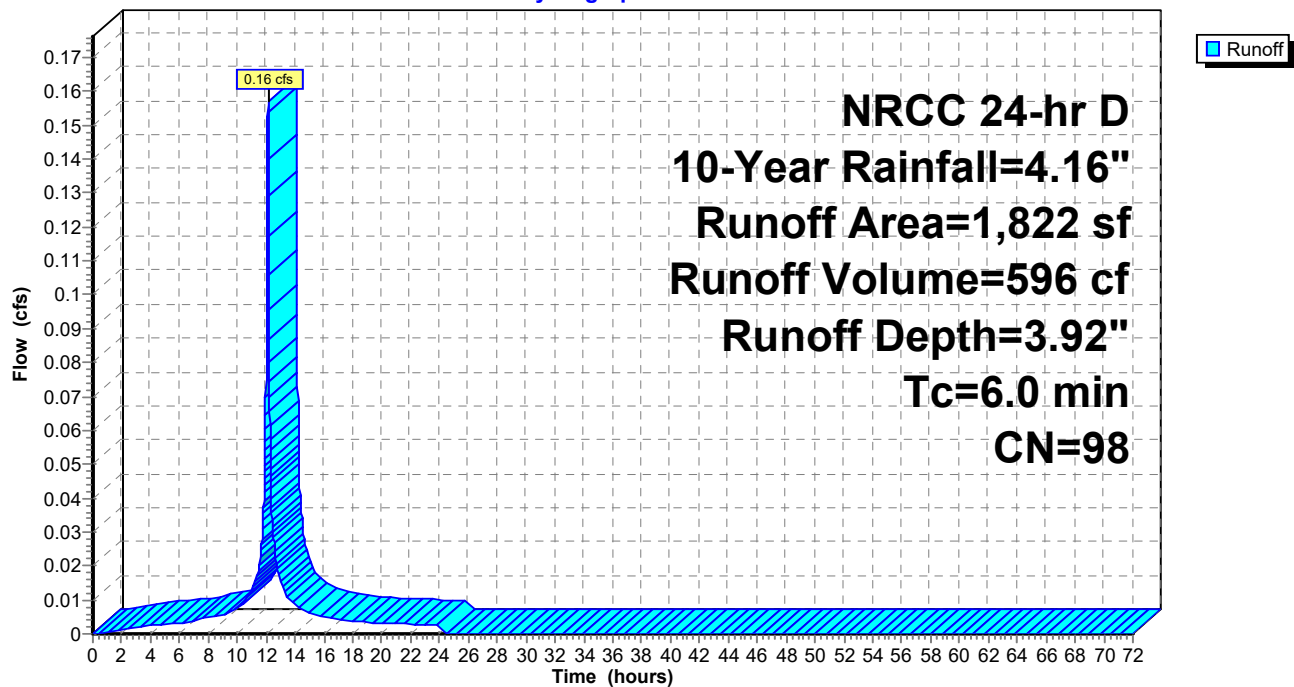
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
1,822	98	Roofs, HSG B
1,822		100.00% Impervious Area

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

Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.45 cfs @ 12.22 hrs, Volume= 1,927 cf, Depth= 2.09"
Routed to Link DP-2 : DP-2

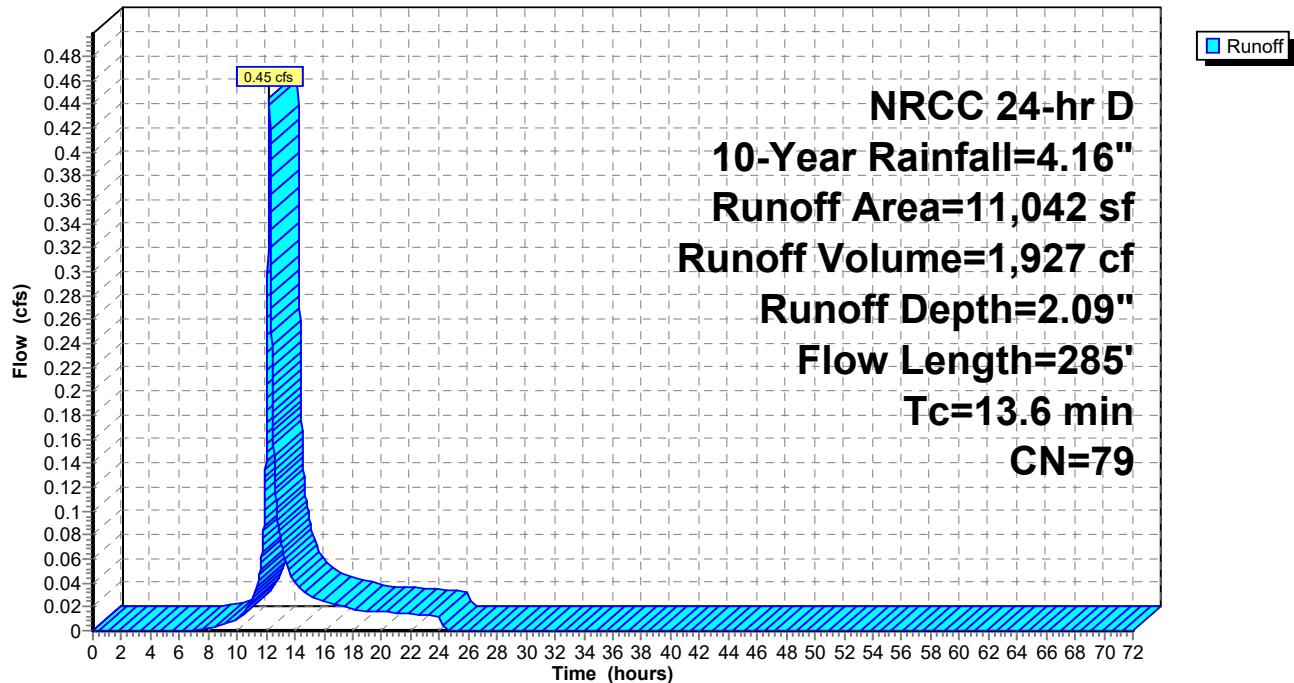
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
74	98	Unconnected pavement, HSG B
10,968	79	<50% Grass cover, Poor, HSG B
11,042	79	Weighted Average
10,968		99.33% Pervious Area
74		0.67% Impervious Area
74		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
1.6	185	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
13.6	285	Total			

Subcatchment 12: Sub-catchment 12

Hydrograph



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NRCC 24-hr D 10-Year Rainfall=4.16"

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Summary for Pond 1P: EX OWS

[93] Warning: Storage range exceeded by 3.36'

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 3.81" for 10-Year event
Inflow = 19.99 cfs @ 12.13 hrs, Volume= 74,604 cf
Outflow = 19.92 cfs @ 12.13 hrs, Volume= 74,605 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.52 cfs @ 12.13 hrs, Volume= 53,461 cf
Routed to Link DP-1 : DP-1
Secondary = 17.40 cfs @ 12.13 hrs, Volume= 21,144 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 234.50' @ 12.13 hrs Surf.Area= 2,775 sf Storage= 3,676 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.7 min (775.2 - 761.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	227.14'	0 cf	53.75'W x 51.62'L x 4.00'H Field A 11,098 cf Overall - 4,587 cf Embedded = 6,511 cf x 0.0% Voids
#2A	227.14'	3,676 cf	ADS N-12 36" x 20 Inside #1 Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf Row Length Adjustment= +1.62' x 7.10 sf x 10 rows 50.75' Header x 7.10 sf x 2 = 720.6 cf Inside
		3,676 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Secondary	227.14'	16.0" Round Culvert L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 227.14' / 227.10' S= 0.0011 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.40 sf
#3	Device 2	230.14'	9.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.52 cfs @ 12.13 hrs HW=234.49' TW=0.00' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 2.52 cfs @ 12.83 fps)

Secondary OutFlow Max=17.39 cfs @ 12.13 hrs HW=234.49' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 17.39 cfs @ 12.45 fps)

↑ **3=Broad-Crested Rectangular Weir** (Passes 17.39 cfs of 271.53 cfs potential flow)

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Pond 1P: EX OWS - Chamber Wizard Field A

Chamber Model = ADS N-12 36" (ADS N-12® Pipe)

Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf

Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf

Row Length Adjustment= +1.62' x 7.10 sf x 10 rows

42.0" Wide + 21.0" Spacing = 63.0" C-C Row Spacing

2 Chambers/Row x 20.00' Long +1.62' Row Adjustment +3.50' Header x 2 = 48.62' Row Length +18.0"

End Stone x 2 = 51.62' Base Length

10 Rows x 42.0" Wide + 21.0" Spacing x 9 + 18.0" Side Stone x 2 = 53.75' Base Width

42.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 142.0 cf +1.62' Row Adjustment x 7.10 sf x 10 Rows + 50.75' Header x 7.10 sf x 2 =
3,675.7 cf Chamber Storage

20 Chambers x 177.1 cf +1.62' Row Adjustment x 8.86 sf x 10 Rows + 50.75' Header x 8.86 sf x 2 =
4,585.4 cf Displacement

11,098.3 cf Field - 4,585.4 cf Chambers = 6,512.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 3,675.7 cf = 0.084 af

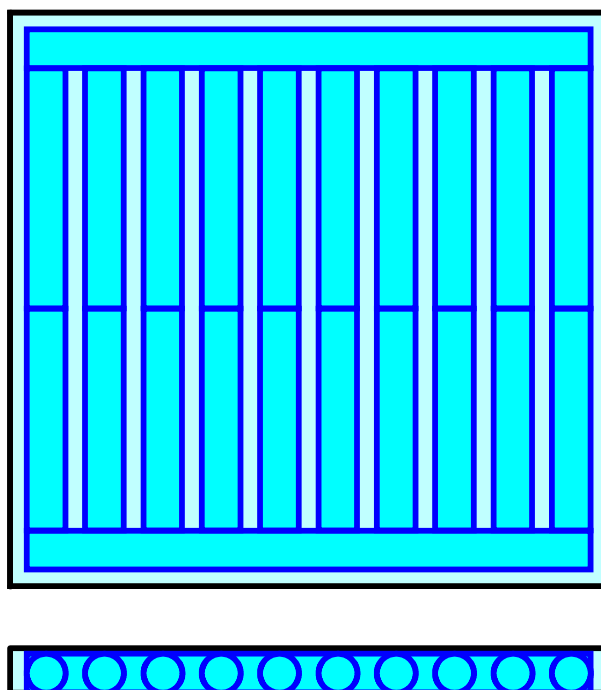
Overall Storage Efficiency = 33.1%

Overall System Size = 51.62' x 53.75' x 4.00'

20 Chambers

411.0 cy Field

241.2 cy Stone



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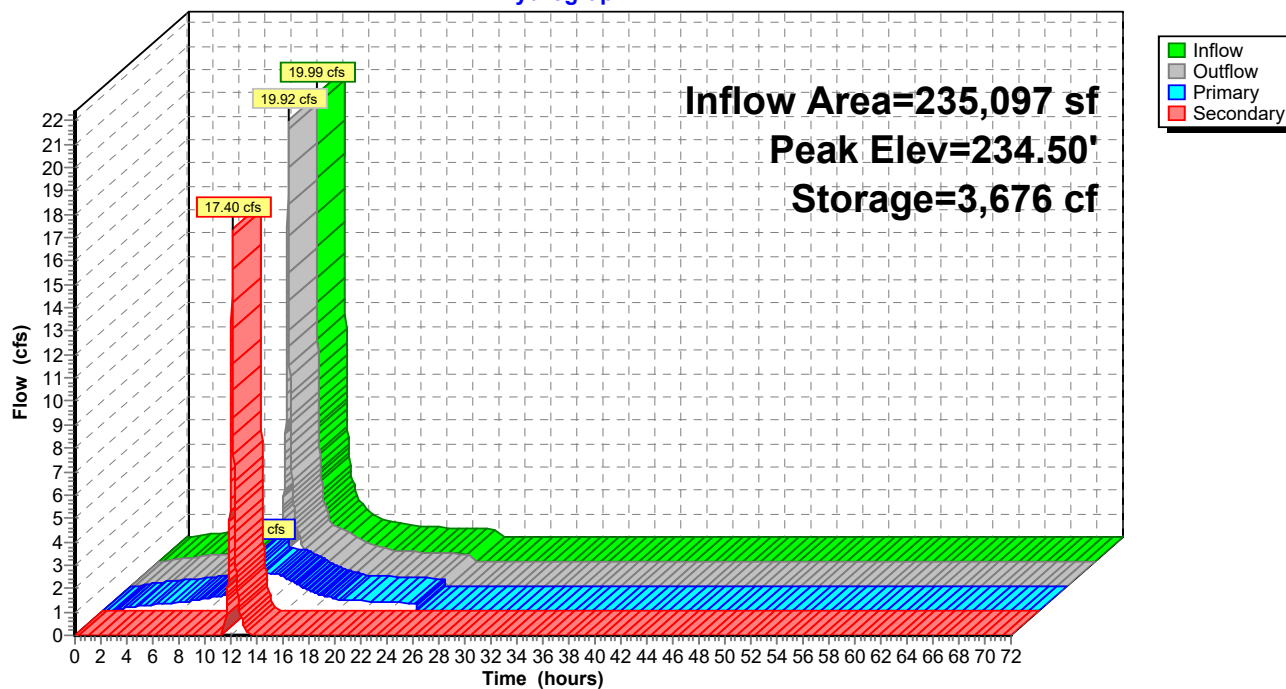
NRCC 24-hr D 10-Year Rainfall=4.16"

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Pond 1P: EX OWS

Hydrograph



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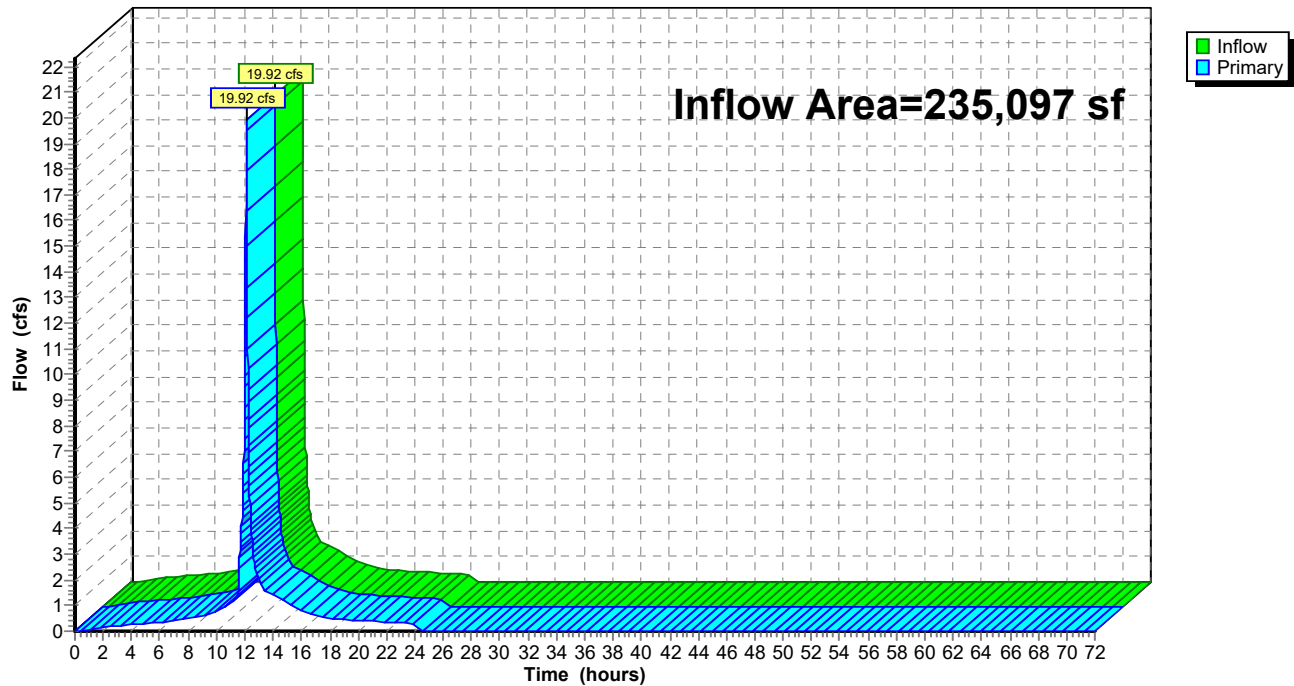
Summary for Link DP-1: DP-1

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 3.81" for 10-Year event
Inflow = 19.92 cfs @ 12.13 hrs, Volume= 74,605 cf
Primary = 19.92 cfs @ 12.13 hrs, Volume= 74,605 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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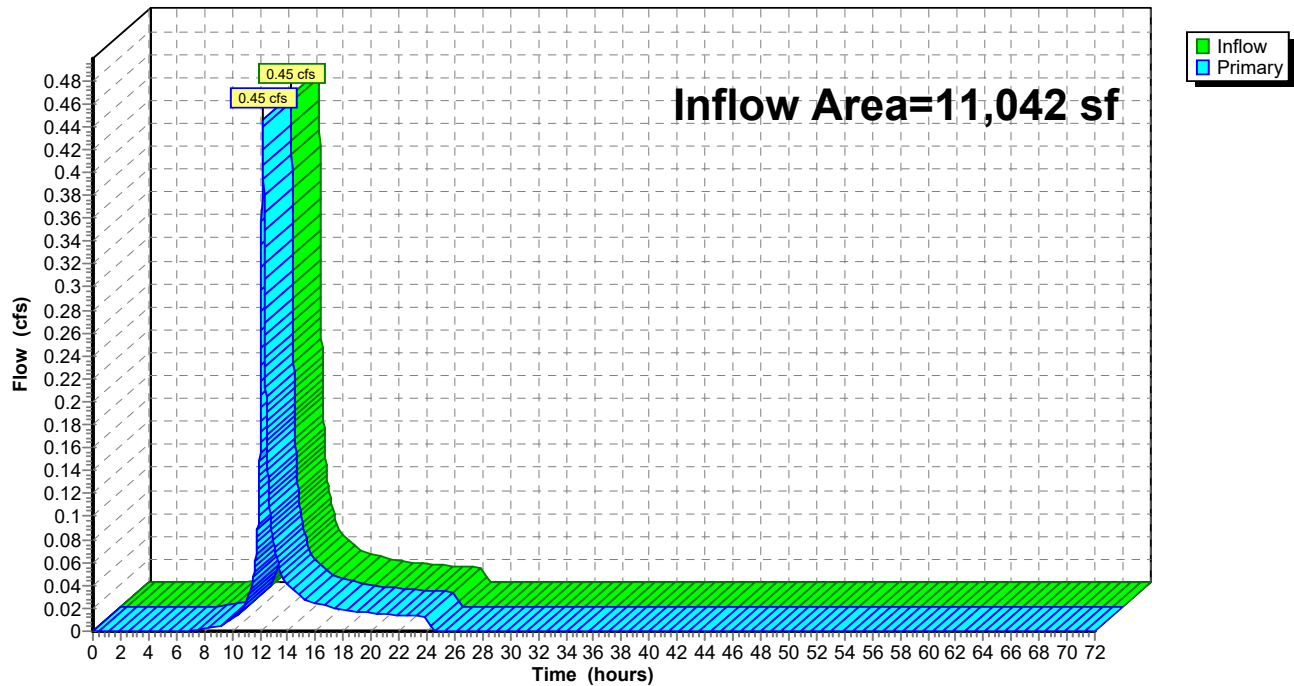
Summary for Link DP-2: DP-2

Inflow Area = 11,042 sf, 0.67% Impervious, Inflow Depth = 2.09" for 10-Year event
Inflow = 0.45 cfs @ 12.22 hrs, Volume= 1,927 cf
Primary = 0.45 cfs @ 12.22 hrs, Volume= 1,927 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=4.30 cfs 16,548 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=0.96 cfs 3,679 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=0.91 cfs 3,508 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=7.38 cfs 28,379 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=1.83 cfs 7,052 cf
Subcatchment6: Sub-Catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=2.61 cfs 10,017 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=3.00 cfs 11,518 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=3.27 cfs 12,578 cf
Subcatchment9: Sub-catchment9	Runoff Area=11,753 sf 73.89% Impervious Runoff Depth=5.33" Tc=6.0 min CN=93 Runoff=1.45 cfs 5,221 cf
Subcatchment10: Sub-catchment10	Runoff Area=32,181 sf 67.40% Impervious Runoff Depth=5.22" Tc=6.0 min CN=92 Runoff=3.93 cfs 13,991 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=5.91" Tc=6.0 min CN=98 Runoff=0.23 cfs 898 cf
Subcatchment12: Sub-catchment12	Runoff Area=11,042 sf 0.67% Impervious Runoff Depth=3.81" Flow Length=285' Tc=13.6 min CN=79 Runoff=0.81 cfs 3,509 cf
Pond 1P: EX OWS	Peak Elev=243.00' Storage=3,676 cf Inflow=29.88 cfs 113,386 cf Primary=3.74 cfs 73,058 cf Secondary=26.20 cfs 40,329 cf Outflow=29.94 cfs 113,387 cf
Link DP-1: DP-1	Inflow=29.94 cfs 113,387 cf Primary=29.94 cfs 113,387 cf
Link DP-2: DP-2	Inflow=0.81 cfs 3,509 cf Primary=0.81 cfs 3,509 cf

Total Runoff Area = 246,139 sf Runoff Volume = 116,896 cf Average Runoff Depth = 5.70"
9.97% Pervious = 24,528 sf 90.03% Impervious = 221,611 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 4.30 cfs @ 12.13 hrs, Volume= 16,548 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

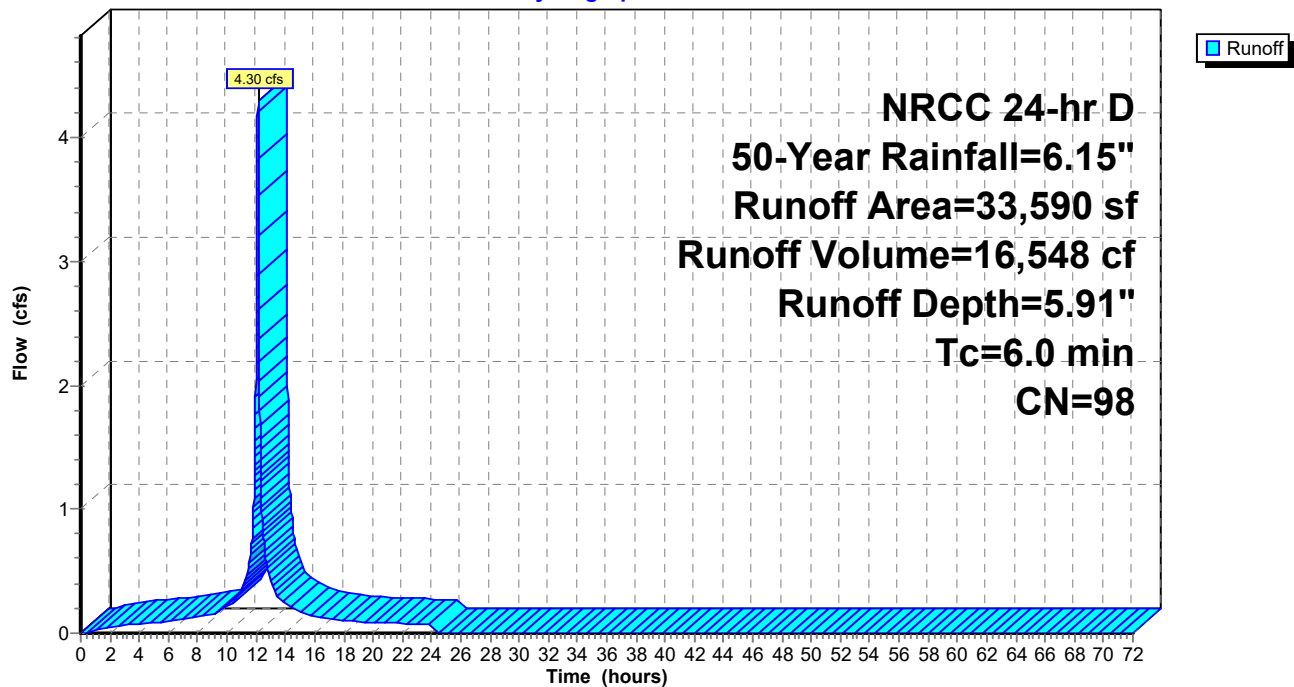
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

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

Subcatchment 1: Sub-catchment 1

Hydrograph



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 3,679 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

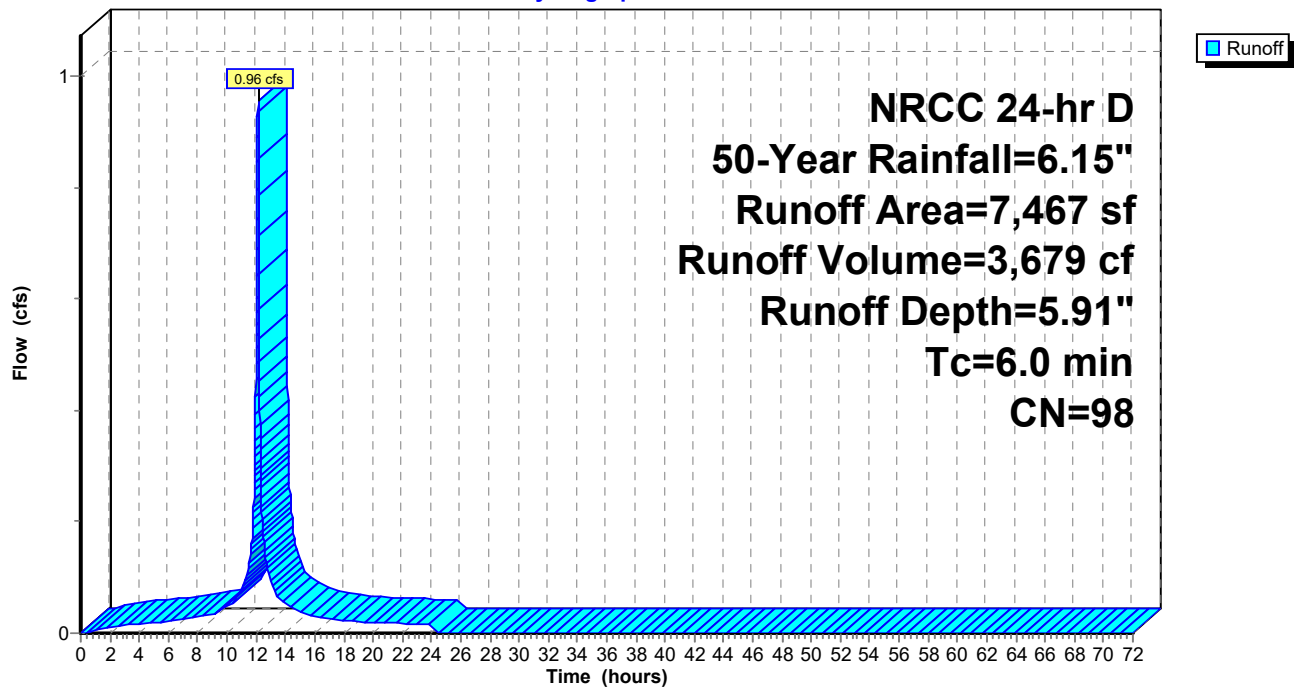
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

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

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.91 cfs @ 12.13 hrs, Volume= 3,508 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

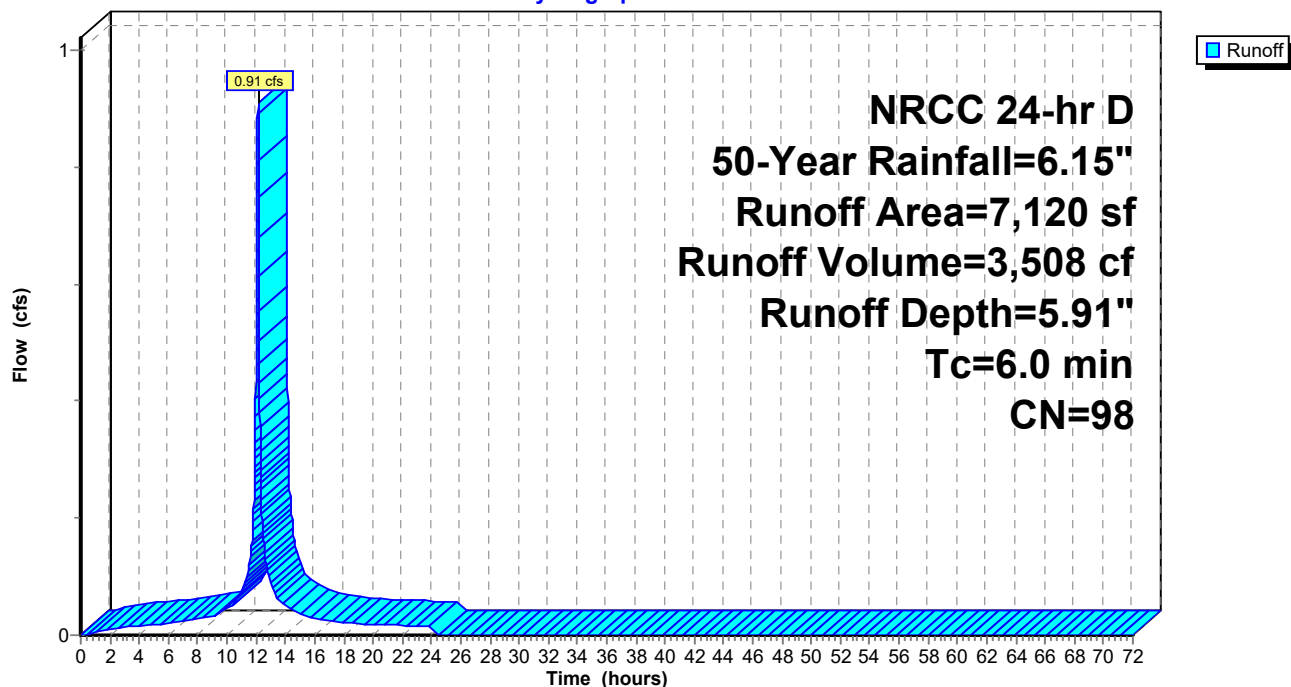
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

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

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 7.38 cfs @ 12.13 hrs, Volume= 28,379 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

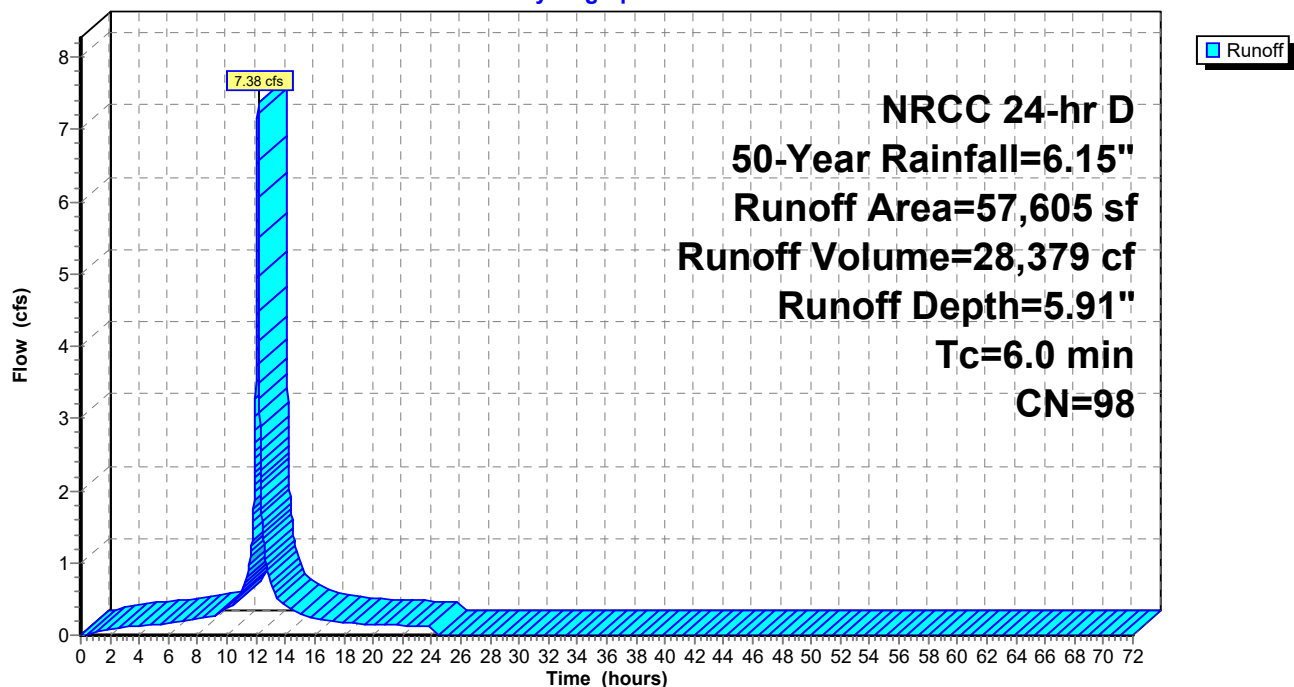
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
52,276	98	Unconnected pavement, HSG B
57,605	98	Weighted Average
57,605		100.00% Impervious Area
52,276		90.75% Unconnected

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

Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 1.83 cfs @ 12.13 hrs, Volume= 7,052 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

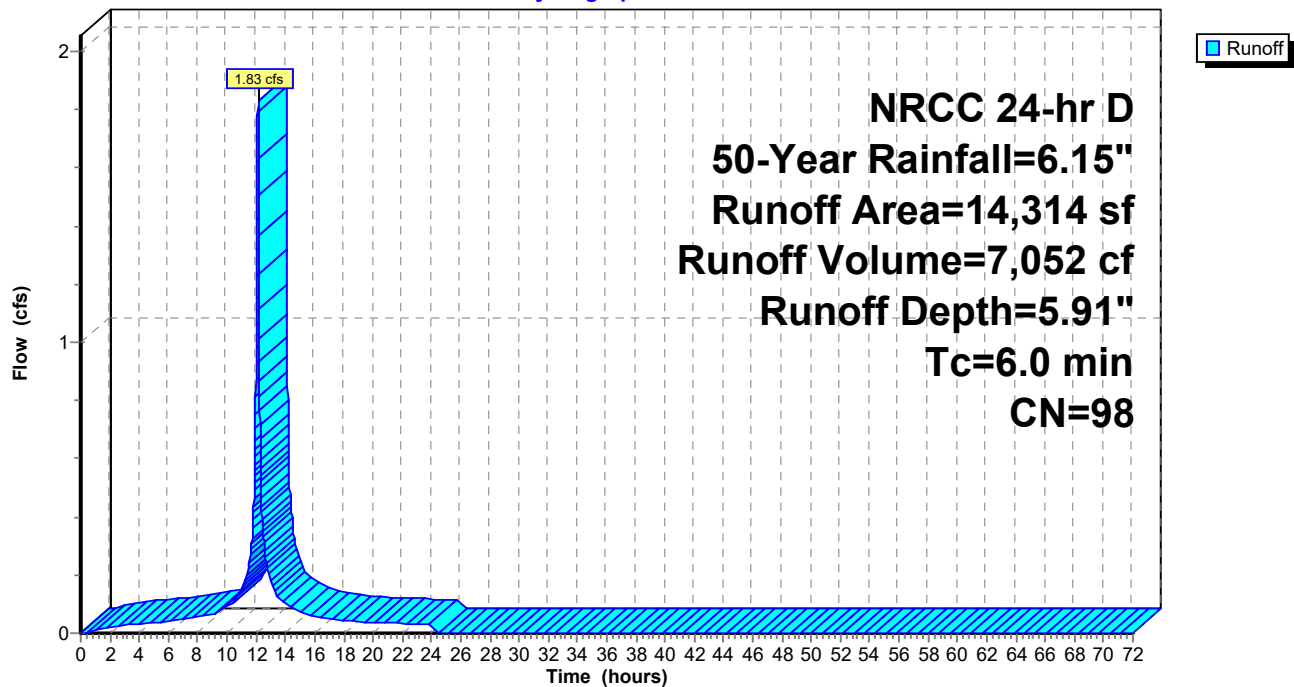
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

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

Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-Catchment 6

Runoff = 2.61 cfs @ 12.13 hrs, Volume= 10,017 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

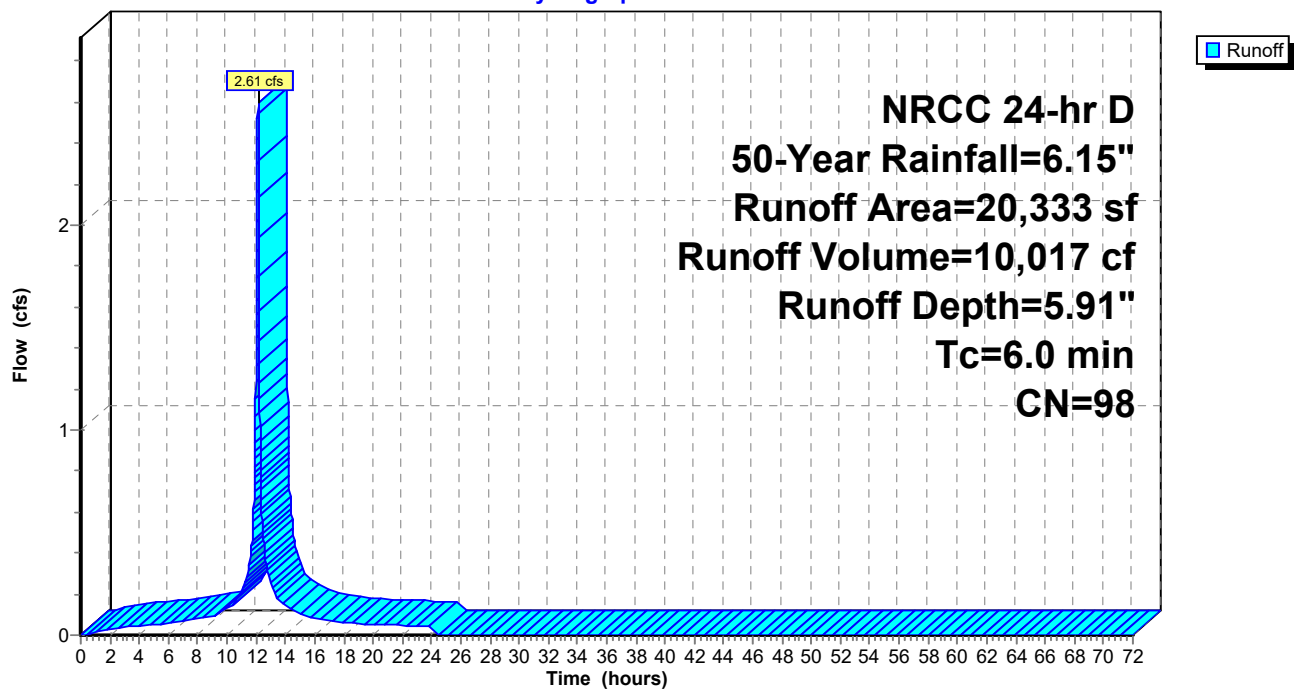
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

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

Subcatchment 6: Sub-Catchment 6

Hydrograph



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 3.00 cfs @ 12.13 hrs, Volume= 11,518 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

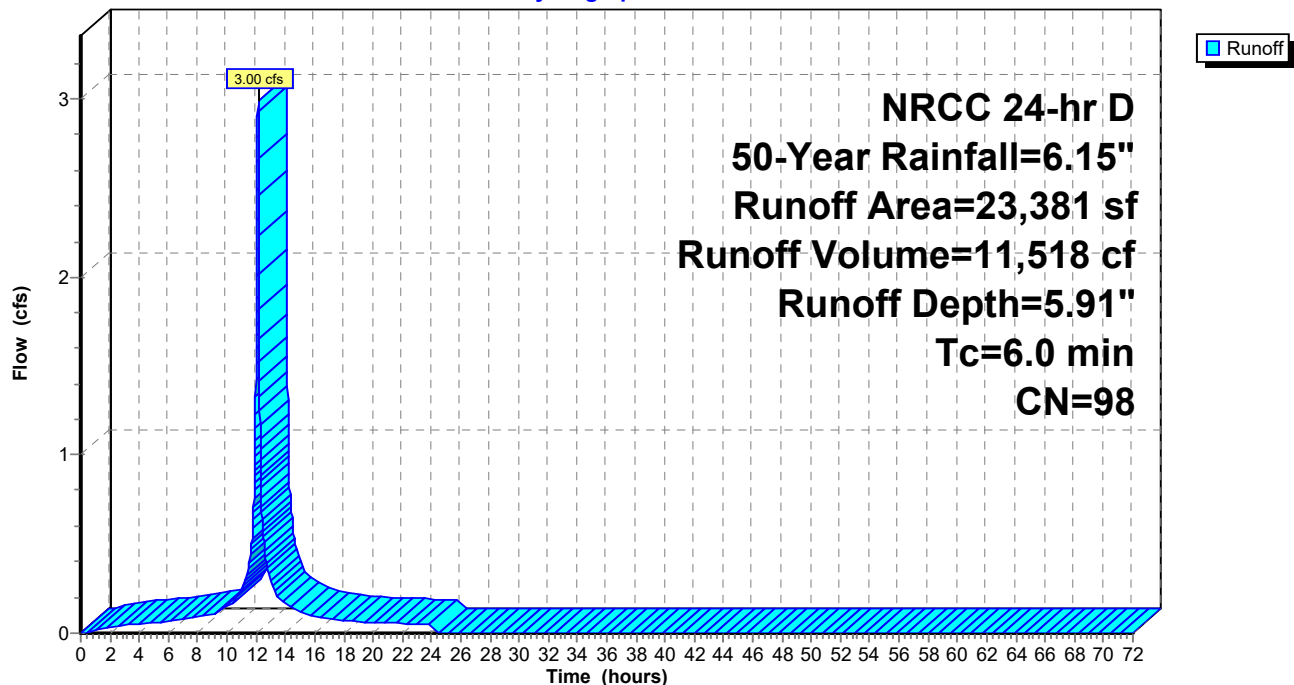
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
3,396	98	Roofs, HSG B
19,985	98	Unconnected pavement, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

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

Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 3.27 cfs @ 12.13 hrs, Volume= 12,578 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

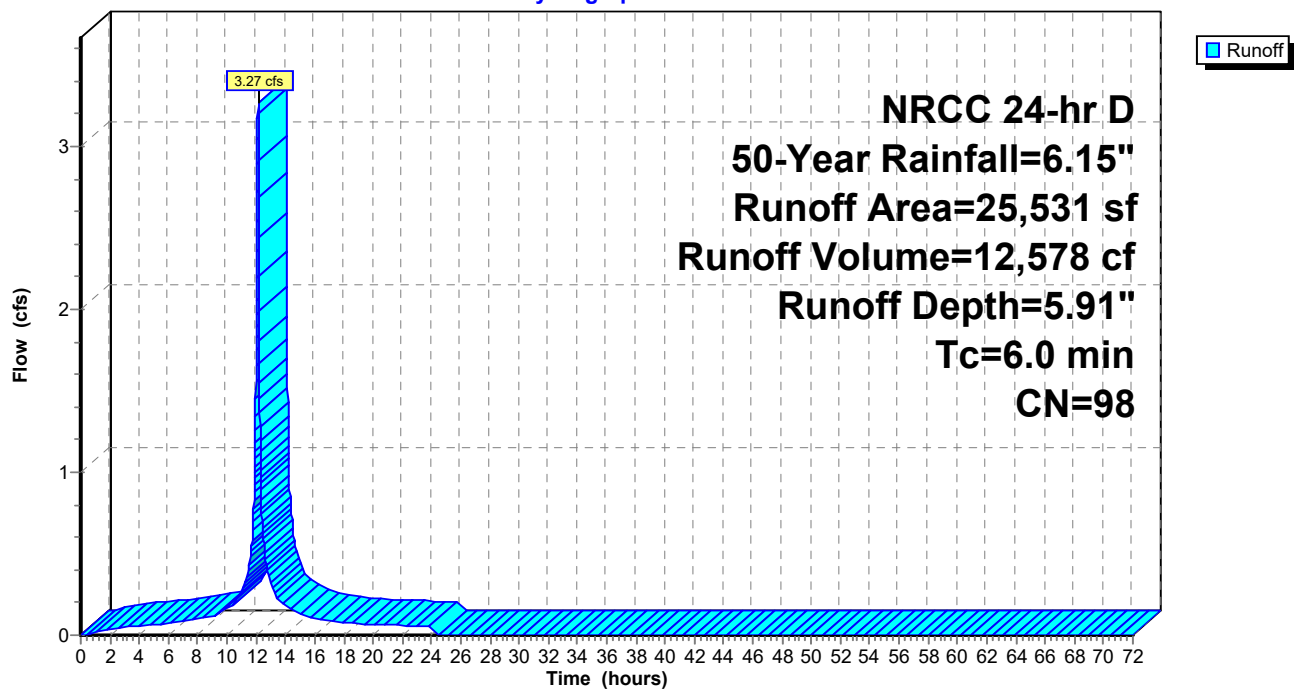
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
2,117	98	Roofs, HSG B
23,414	98	Unconnected pavement, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,414		91.71% Unconnected

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

Subcatchment 8: Sub-catchment 8

Hydrograph



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 1.45 cfs @ 12.13 hrs, Volume= 5,221 cf, Depth= 5.33"
Routed to Pond 1P : EX OWS

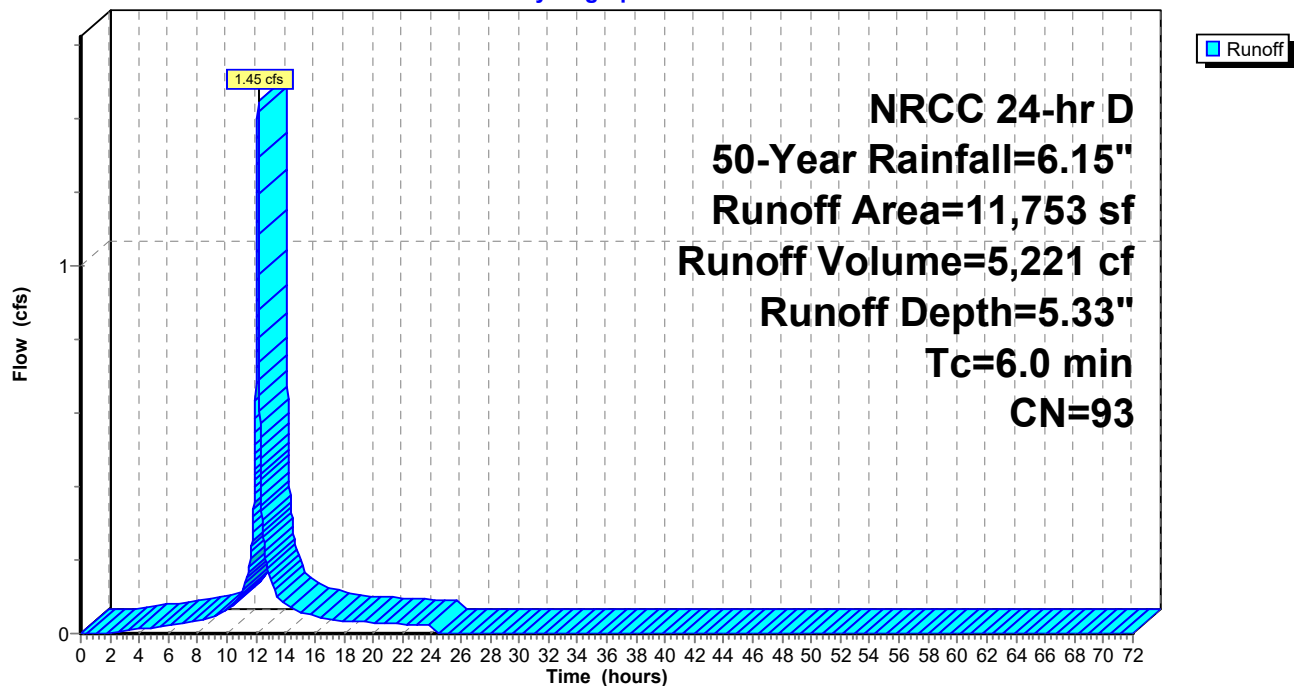
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
3,069	79	<50% Grass cover, Poor, HSG B
8,684	98	Unconnected pavement, HSG B
11,753	93	Weighted Average
3,069		26.11% Pervious Area
8,684		73.89% Impervious Area
8,684		100.00% Unconnected

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

Subcatchment 9: Sub-catchment 9

Hydrograph



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NRCC 24-hr D 50-Year Rainfall=6.15"

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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 3.93 cfs @ 12.13 hrs, Volume= 13,991 cf, Depth= 5.22"
Routed to Pond 1P : EX OWS

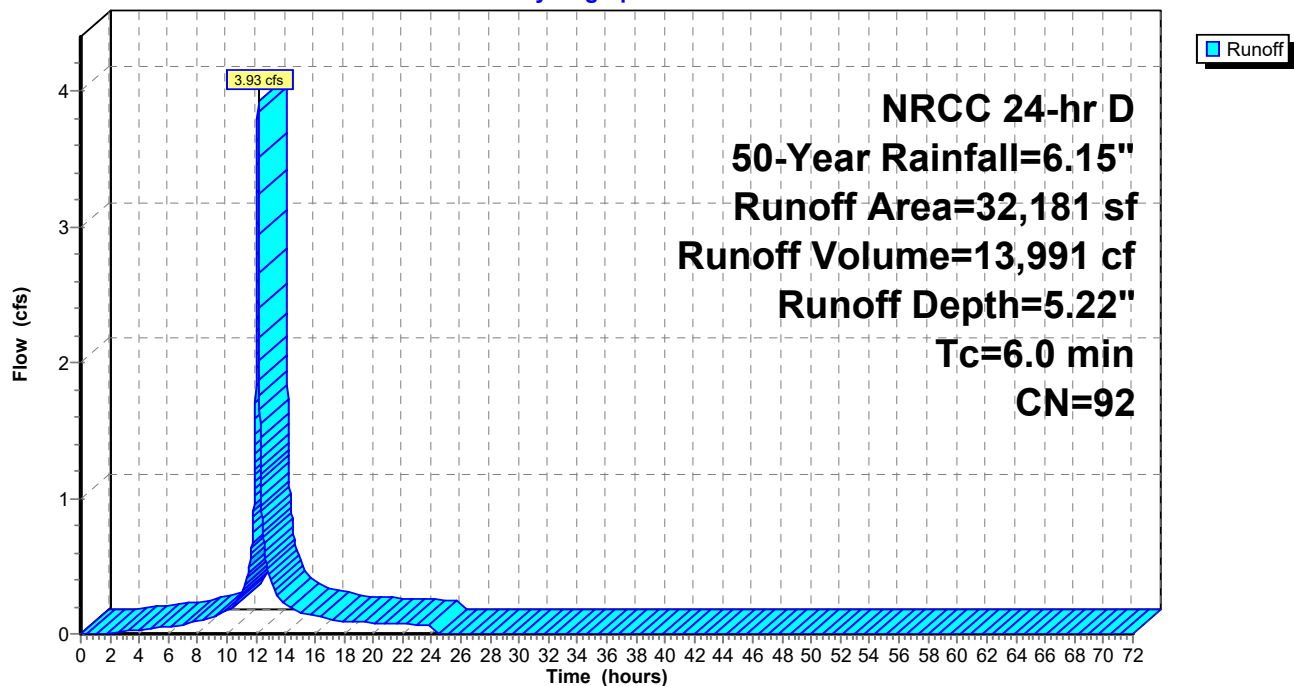
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
10,491	79	<50% Grass cover, Poor, HSG B
6,760	98	Roofs, HSG B
14,930	98	Unconnected pavement, HSG B
32,181	92	Weighted Average
10,491		32.60% Pervious Area
21,690		67.40% Impervious Area
14,930		68.83% Unconnected

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

Subcatchment 10: Sub-catchment 10

Hydrograph



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.23 cfs @ 12.13 hrs, Volume= 898 cf, Depth= 5.91"
Routed to Pond 1P : EX OWS

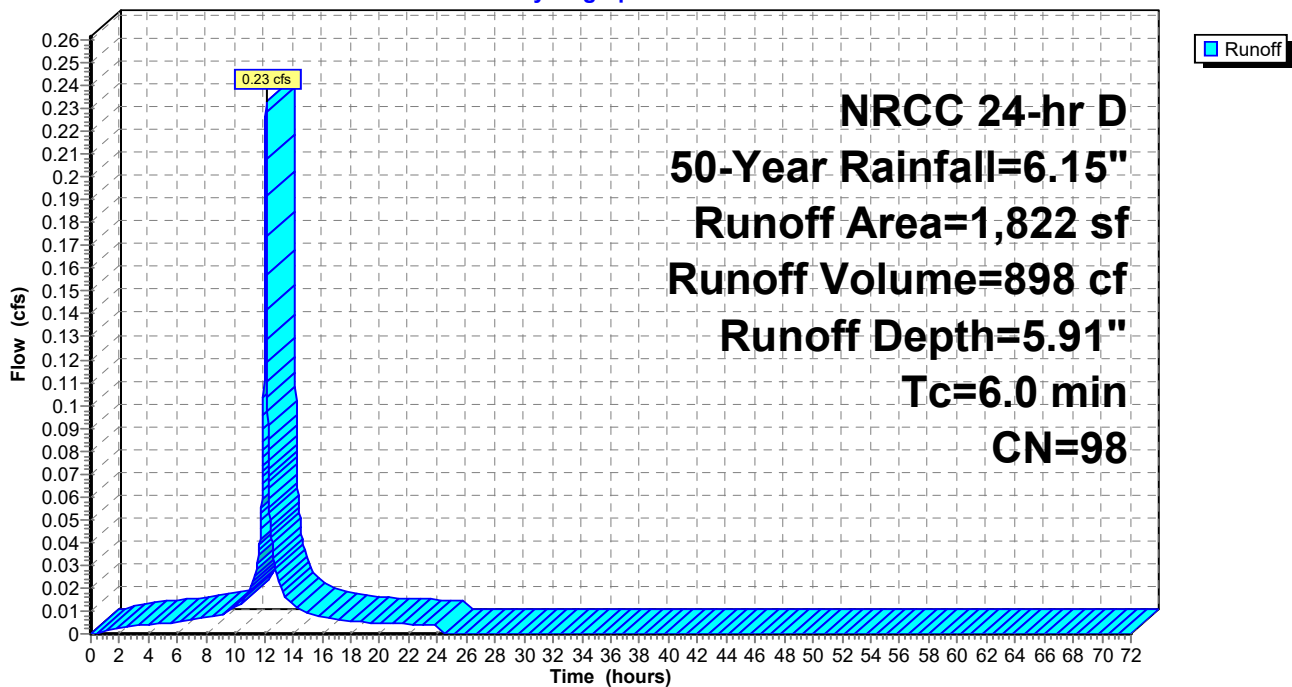
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
1,822	98	Roofs, HSG B
1,822		100.00% Impervious Area

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

Subcatchment 11: Sub-catchment 11

Hydrograph



Sandquist Existing Conditions

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NRCC 24-hr D 50-Year Rainfall=6.15"

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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.81 cfs @ 12.21 hrs, Volume= 3,509 cf, Depth= 3.81"
Routed to Link DP-2 : DP-2

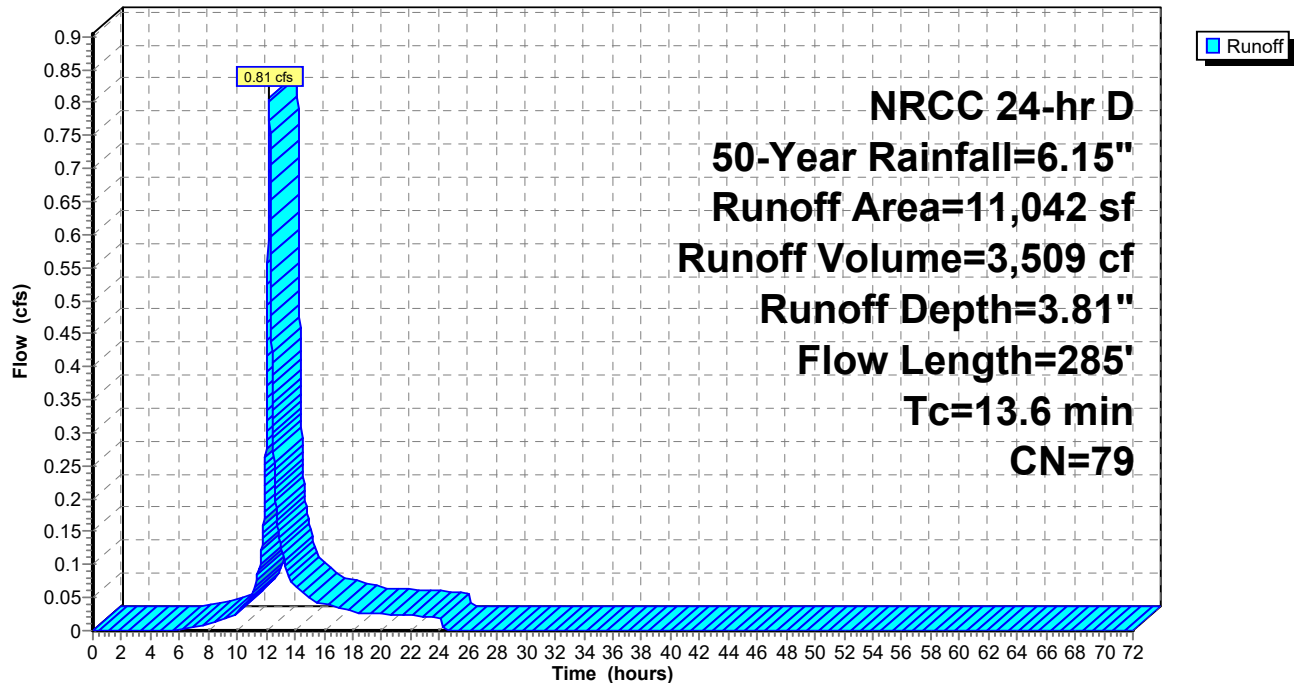
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
74	98	Unconnected pavement, HSG B
10,968	79	<50% Grass cover, Poor, HSG B
11,042	79	Weighted Average
10,968		99.33% Pervious Area
74		0.67% Impervious Area
74		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
1.6	185	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
13.6	285	Total			

Subcatchment 12: Sub-catchment 12

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Summary for Pond 1P: EX OWS

[93] Warning: Storage range exceeded by 11.86'

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 5.79" for 50-Year event
Inflow = 29.88 cfs @ 12.13 hrs, Volume= 113,386 cf
Outflow = 29.94 cfs @ 12.13 hrs, Volume= 113,387 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.74 cfs @ 12.13 hrs, Volume= 73,058 cf
Routed to Link DP-1 : DP-1
Secondary = 26.20 cfs @ 12.13 hrs, Volume= 40,329 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 243.00' @ 12.13 hrs Surf.Area= 2,775 sf Storage= 3,676 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 14.6 min (767.6 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	227.14'	0 cf	53.75'W x 51.62'L x 4.00'H Field A 11,098 cf Overall - 4,587 cf Embedded = 6,511 cf x 0.0% Voids
#2A	227.14'	3,676 cf	ADS N-12 36" x 20 Inside #1 Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf Row Length Adjustment= +1.62' x 7.10 sf x 10 rows 50.75' Header x 7.10 sf x 2 = 720.6 cf Inside
		3,676 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Secondary	227.14'	16.0" Round Culvert L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 227.14' / 227.10' S= 0.0011 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.40 sf
#3	Device 2	230.14'	9.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.73 cfs @ 12.13 hrs HW=242.96' TW=0.00' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 3.73 cfs @ 19.00 fps)

Secondary OutFlow Max=26.17 cfs @ 12.13 hrs HW=242.96' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 26.17 cfs @ 18.74 fps)

↑ **3=Broad-Crested Rectangular Weir** (Passes 26.17 cfs of 1,371.93 cfs potential flow)

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NRCC 24-hr D 50-Year Rainfall=6.15"

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Pond 1P: EX OWS - Chamber Wizard Field A

Chamber Model = ADS N-12 36" (ADS N-12® Pipe)

Inside= 36.1"W x 36.1"H => 7.10 sf x 20.00'L = 142.0 cf

Outside= 42.0"W x 42.0"H => 8.86 sf x 20.00'L = 177.1 cf

Row Length Adjustment= +1.62' x 7.10 sf x 10 rows

42.0" Wide + 21.0" Spacing = 63.0" C-C Row Spacing

2 Chambers/Row x 20.00' Long +1.62' Row Adjustment +3.50' Header x 2 = 48.62' Row Length +18.0"

End Stone x 2 = 51.62' Base Length

10 Rows x 42.0" Wide + 21.0" Spacing x 9 + 18.0" Side Stone x 2 = 53.75' Base Width

42.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

20 Chambers x 142.0 cf +1.62' Row Adjustment x 7.10 sf x 10 Rows + 50.75' Header x 7.10 sf x 2 =
3,675.7 cf Chamber Storage

20 Chambers x 177.1 cf +1.62' Row Adjustment x 8.86 sf x 10 Rows + 50.75' Header x 8.86 sf x 2 =
4,585.4 cf Displacement

11,098.3 cf Field - 4,585.4 cf Chambers = 6,512.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 3,675.7 cf = 0.084 af

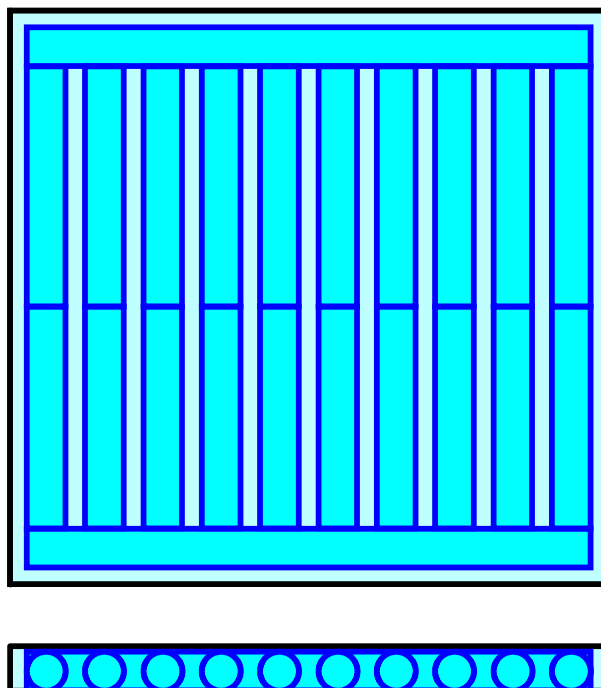
Overall Storage Efficiency = 33.1%

Overall System Size = 51.62' x 53.75' x 4.00'

20 Chambers

411.0 cy Field

241.2 cy Stone



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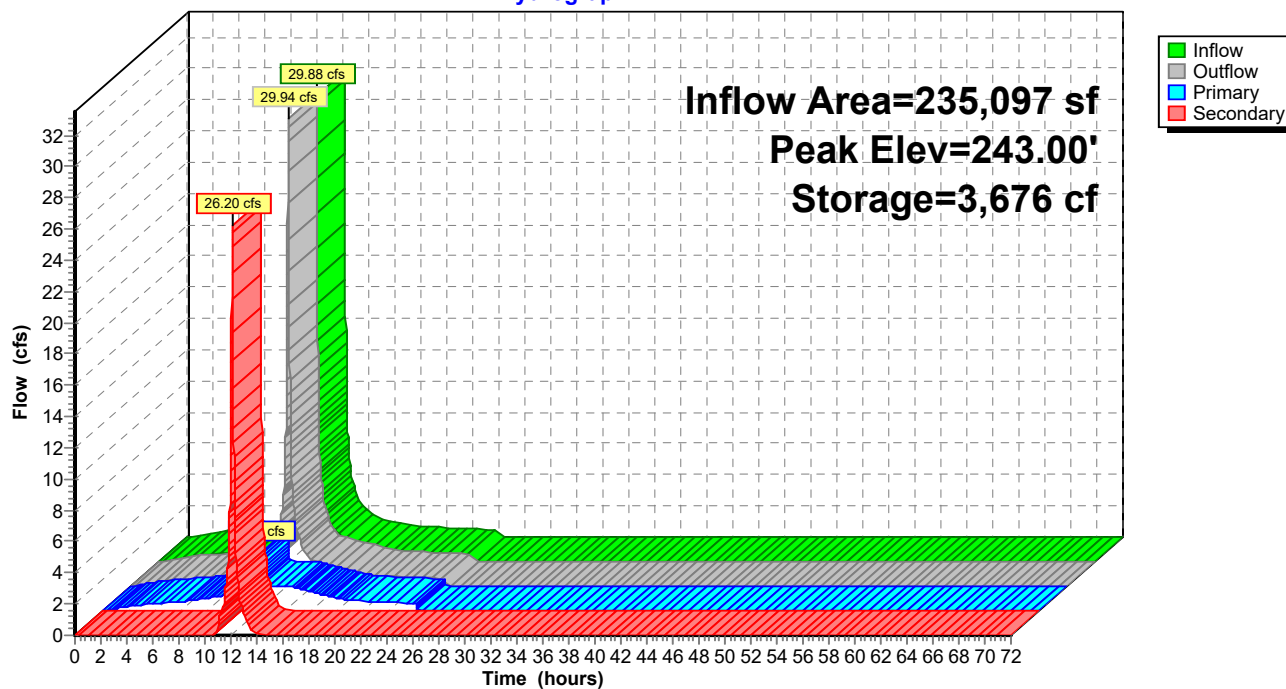
NRCC 24-hr D 50-Year Rainfall=6.15"

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Pond 1P: EX OWS

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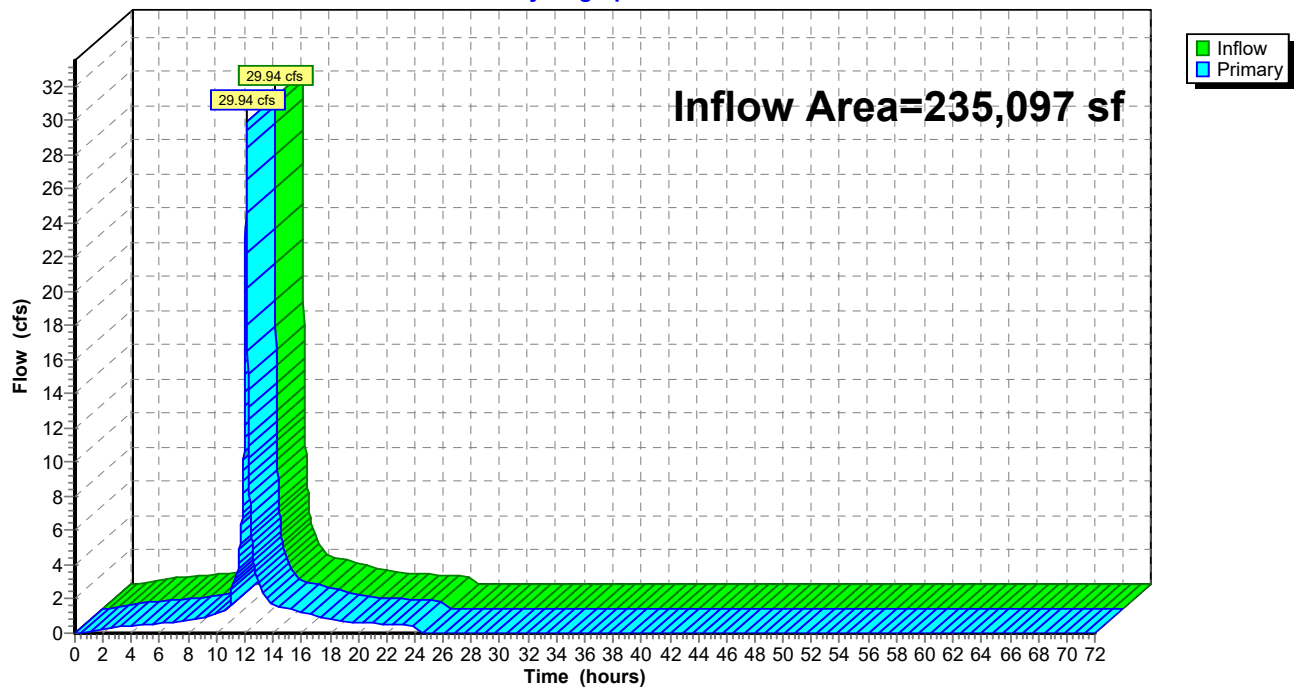
Summary for Link DP-1: DP-1

Inflow Area = 235,097 sf, 94.23% Impervious, Inflow Depth = 5.79" for 50-Year event
Inflow = 29.94 cfs @ 12.13 hrs, Volume= 113,387 cf
Primary = 29.94 cfs @ 12.13 hrs, Volume= 113,387 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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NRCC 24-hr D 50-Year Rainfall=6.15"

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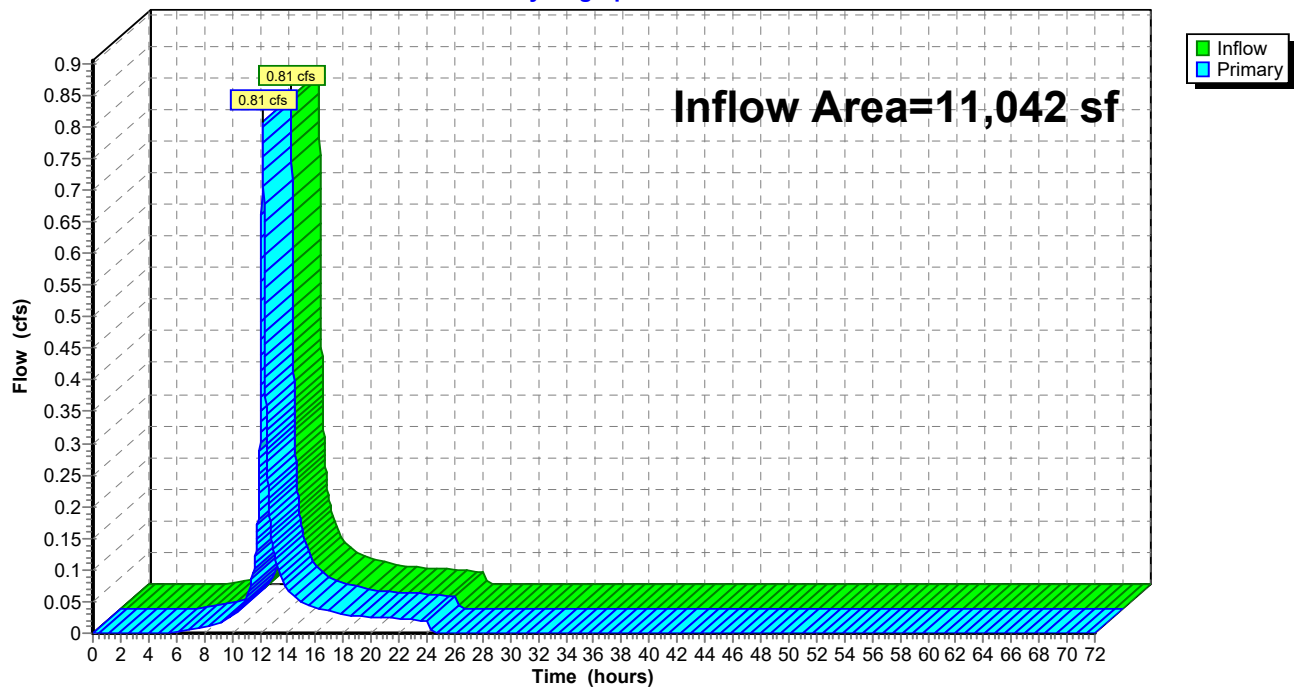
Summary for Link DP-2: DP-2

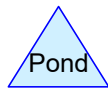
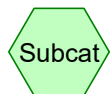
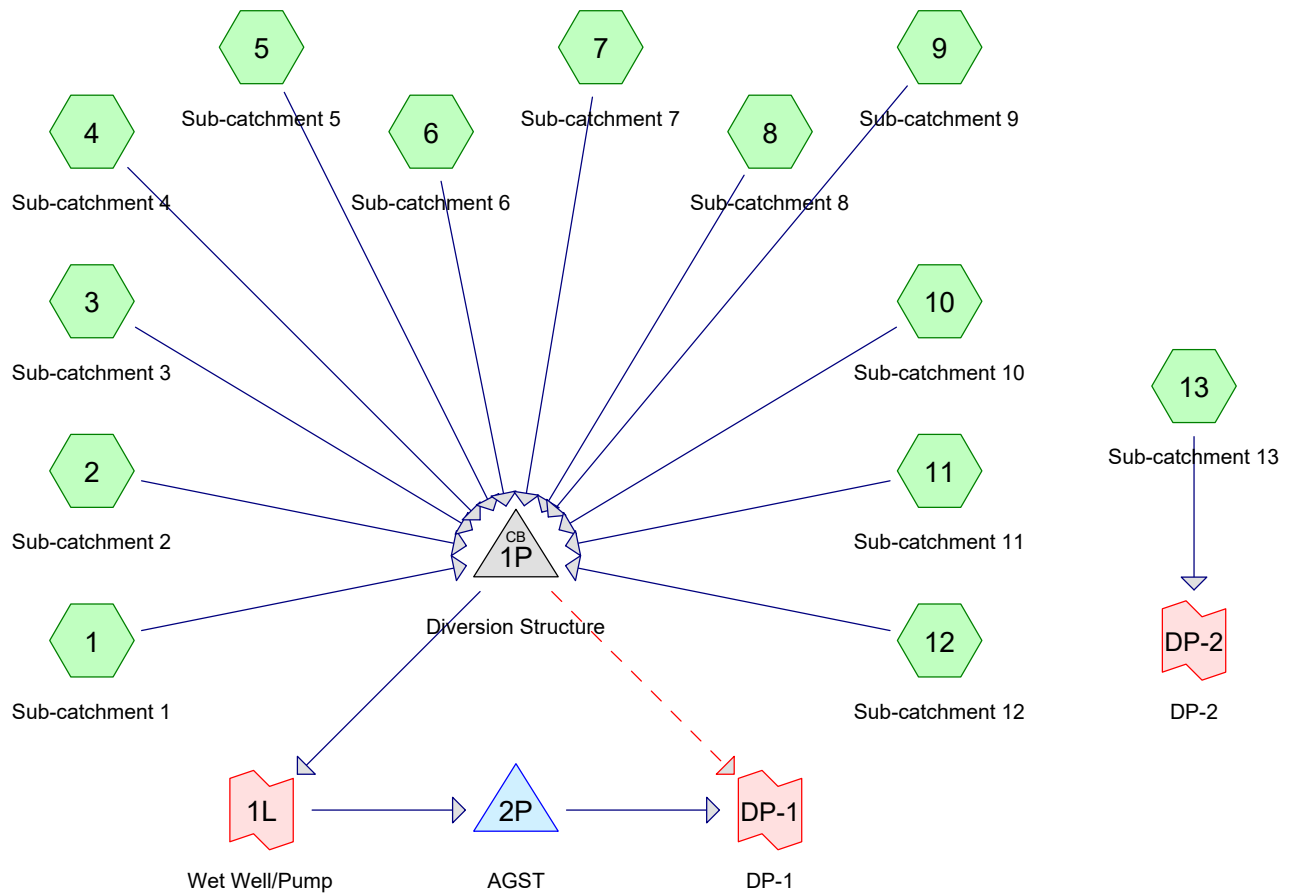
Inflow Area = 11,042 sf, 0.67% Impervious, Inflow Depth = 3.81" for 50-Year event
Inflow = 0.81 cfs @ 12.21 hrs, Volume= 3,509 cf
Primary = 0.81 cfs @ 12.21 hrs, Volume= 3,509 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph





Routing Diagram for Sandquist Proposed Conditions
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	NRCC 24-hr	D	Default	24.00	1	1.27	2
2	2-Year	NRCC 24-hr	D	Default	24.00	1	2.82	2
3	10-Year	NRCC 24-hr	D	Default	24.00	1	4.16	2
4	50-Year	NRCC 24-hr	D	Default	24.00	1	6.15	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
17,393	79	<50% Grass cover, Poor, HSG B (4, 10, 12)
4,231	61	>75% Grass cover, Good, HSG B (13)
43,788	98	Roofs, HSG B (1, 2, 3, 4, 5, 7, 8, 10)
180,727	98	Unconnected pavement, HSG B (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)
246,139	96	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
246,139	HSG B	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
0	HSG C	
0	HSG D	
0	Other	
246,139		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	1	0.00	0.00	257.0	0.0020	0.012	0.0	18.0	0.0	
2	1	0.00	0.00	85.0	0.0020	0.012	0.0	30.0	0.0	
3	1	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
4	1	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
5	1	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
6	1	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
7	1	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
8	1	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
9	2	0.00	0.00	80.0	0.0010	0.012	0.0	10.0	0.0	
10	2	0.00	0.00	76.0	0.0120	0.012	0.0	10.0	0.0	
11	2	0.00	0.00	47.0	0.0020	0.012	0.0	18.0	0.0	
12	2	0.00	0.00	257.0	0.0020	0.012	0.0	18.0	0.0	
13	2	0.00	0.00	85.0	0.0020	0.012	0.0	30.0	0.0	
14	2	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
15	2	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
16	2	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
17	2	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
18	2	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
19	2	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
20	3	0.00	0.00	10.0	0.0012	0.012	0.0	10.0	0.0	
21	3	0.00	0.00	76.0	0.0120	0.012	0.0	10.0	0.0	
22	3	0.00	0.00	47.0	0.0020	0.012	0.0	18.0	0.0	
23	3	0.00	0.00	257.0	0.0020	0.012	0.0	18.0	0.0	
24	3	0.00	0.00	85.0	0.0020	0.012	0.0	30.0	0.0	
25	3	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
26	3	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
27	3	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
28	3	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
29	3	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
30	3	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
31	4	0.00	0.00	10.0	0.0020	0.012	0.0	18.0	0.0	
32	4	0.00	0.00	85.0	0.0020	0.012	0.0	30.0	0.0	
33	4	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
34	4	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
35	4	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
36	4	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
37	4	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
38	4	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
39	5	0.00	0.00	85.0	0.0020	0.012	0.0	12.0	0.0	
40	5	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
41	5	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	

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Pipe Listing (all nodes) (continued)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
42	5	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
43	5	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
44	5	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
45	5	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
46	6	0.00	0.00	10.0	0.0050	0.012	0.0	10.0	0.0	
47	6	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
48	6	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
49	6	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
50	6	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
51	6	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
52	7	0.00	0.00	10.0	0.0050	0.012	0.0	18.0	0.0	
53	7	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
54	7	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
55	7	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
56	7	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
57	8	0.00	0.00	10.0	0.0050	0.012	0.0	18.0	0.0	
58	8	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
59	8	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
60	8	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
61	9	0.00	0.00	45.0	0.0050	0.012	0.0	12.0	0.0	
62	9	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
63	10	0.00	0.00	114.0	0.0050	0.012	0.0	12.0	0.0	
64	10	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
65	10	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
66	11	0.00	0.00	59.0	0.0020	0.012	0.0	12.0	0.0	
67	11	0.00	0.00	39.0	0.0050	0.012	0.0	15.0	0.0	
68	11	0.00	0.00	47.0	0.0020	0.012	0.0	18.0	0.0	
69	11	0.00	0.00	257.0	0.0020	0.012	0.0	18.0	0.0	
70	11	0.00	0.00	85.0	0.0020	0.012	0.0	30.0	0.0	
71	11	0.00	0.00	35.0	0.0020	0.012	0.0	30.0	0.0	
72	11	0.00	0.00	97.0	0.0020	0.012	0.0	30.0	0.0	
73	11	0.00	0.00	64.0	0.0020	0.012	0.0	30.0	0.0	
74	11	0.00	0.00	103.0	0.0200	0.012	0.0	30.0	0.0	
75	11	0.00	0.00	52.0	0.0200	0.012	0.0	30.0	0.0	
76	11	0.00	0.00	9.0	0.0200	0.012	0.0	30.0	0.0	
77	12	0.00	0.00	26.0	0.0050	0.012	0.0	12.0	0.0	
78	1P	226.32	226.28	7.7	0.0052	0.012	0.0	24.0	0.0	
79	1P	226.38	226.24	27.0	0.0052	0.012	0.0	30.0	0.0	

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NRCC 24-hr D WQV Rainfall=1.27"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=851' Tc=6.0 min CN=98 Runoff=0.84 cfs 2,951 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=946' Tc=6.0 min CN=98 Runoff=0.19 cfs 656 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=897' Tc=6.0 min CN=98 Runoff=0.18 cfs 625 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 97.94% Impervious Runoff Depth=1.05" Flow Length=632' Tc=6.0 min CN=98 Runoff=1.44 cfs 5,060 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=500' Tc=6.0 min CN=98 Runoff=0.36 cfs 1,257 cf
Subcatchment6: Sub-catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=490' Tc=6.0 min CN=98 Runoff=0.51 cfs 1,786 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=393' Tc=6.0 min CN=98 Runoff=0.58 cfs 2,054 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=359' Tc=6.0 min CN=98 Runoff=0.64 cfs 2,243 cf
Subcatchment9: Sub-catchment9	Runoff Area=7,621 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=216' Tc=6.0 min CN=98 Runoff=0.19 cfs 669 cf
Subcatchment10: Sub-catchment10	Runoff Area=29,279 sf 73.39% Impervious Runoff Depth=0.67" Flow Length=350' Tc=6.0 min CN=93 Runoff=0.50 cfs 1,633 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=1.05" Flow Length=900' Tc=6.0 min CN=98 Runoff=0.05 cfs 160 cf
Subcatchment12: Sub-catchment12	Runoff Area=13,845 sf 39.23% Impervious Runoff Depth=0.35" Flow Length=170' Tc=6.0 min CN=86 Runoff=0.12 cfs 400 cf
Subcatchment13: Sub-catchment13	Runoff Area=4,231 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=227' Slope=0.0100 '/' Tc=24.9 min CN=61 Runoff=0.00 cfs 0 cf
Pond 1P: Diversion Structure	Peak Elev=227.58' Inflow=5.57 cfs 19,496 cf Primary=5.57 cfs 19,496 cf Secondary=0.00 cfs 0 cf Outflow=5.57 cfs 19,496 cf
Pond 2P: AGST	Peak Elev=236.89' Storage=8,851 cf Inflow=5.57 cfs 19,496 cf Outflow=0.22 cfs 19,497 cf
Link 1L: Wet Well/Pump	Inflow=5.57 cfs 19,496 cf Primary=5.57 cfs 19,496 cf

Sandquist Proposed Conditions

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NRCC 24-hr D WQV Rainfall=1.27"

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Link DP-1: DP-1

Inflow=0.22 cfs 19,497 cf

Primary=0.22 cfs 19,497 cf

Link DP-2: DP-2

Inflow=0.00 cfs 0 cf

Primary=0.00 cfs 0 cf

Total Runoff Area = 246,139 sf Runoff Volume = 19,496 cf Average Runoff Depth = 0.95"
8.79% Pervious = 21,624 sf 91.21% Impervious = 224,515 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 0.84 cfs @ 12.13 hrs, Volume= 2,951 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.26		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.7	49	0.0030	1.11		Shallow Concentrated Flow , Paved Kv= 20.3 fps
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.8	851	Total, Increased to minimum Tc = 6.0 min			

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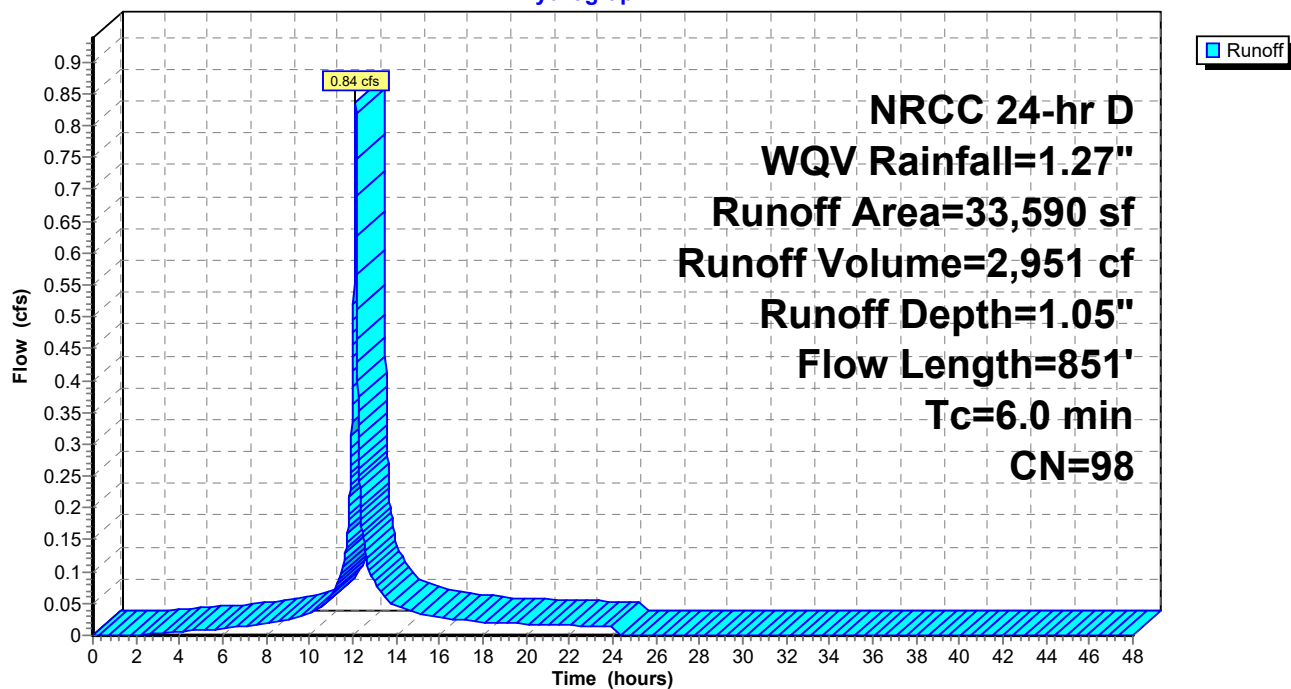
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Subcatchment 1: Sub-catchment 1

Hydrograph



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.19 cfs @ 12.13 hrs, Volume= 656 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	41	0.0140	1.00		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
1.0	80	0.0010	1.38	0.75	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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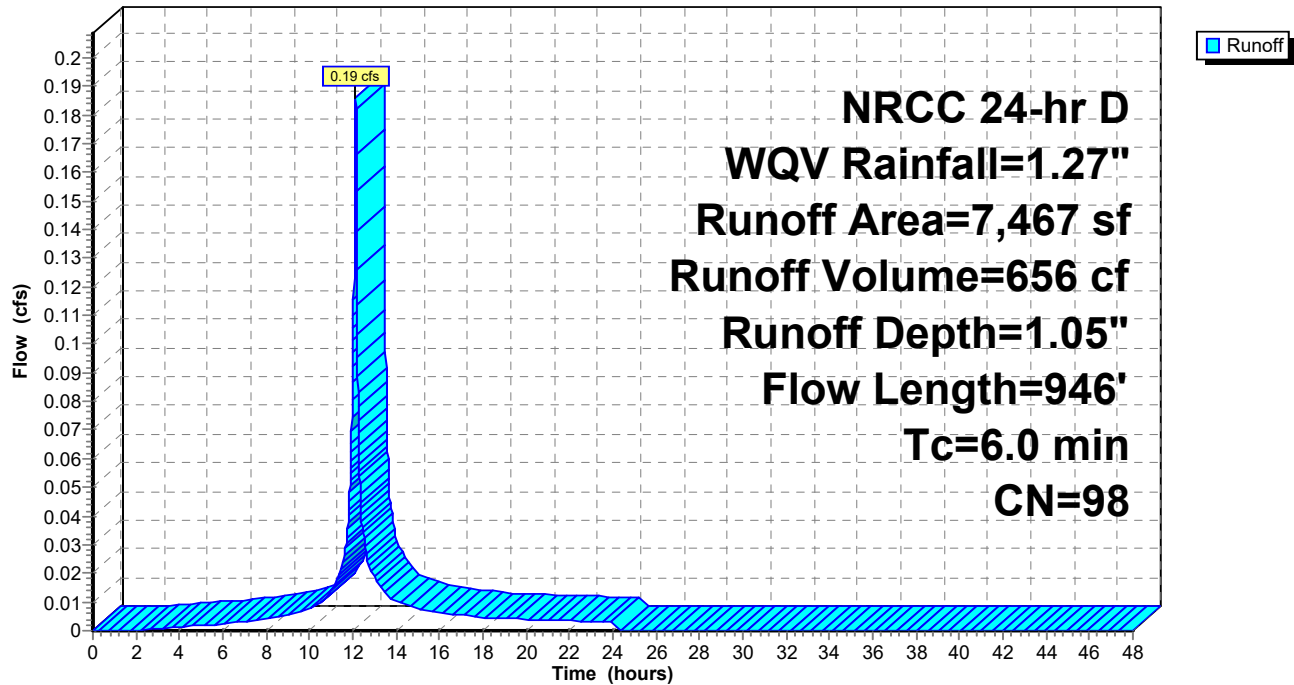
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n= 0.012 Concrete pipe, finished

5.1 946 Total, Increased to minimum Tc = 6.0 min

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.18 cfs @ 12.13 hrs, Volume= 625 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	62	0.0030	0.59		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.1	10	0.0012	1.51	0.82	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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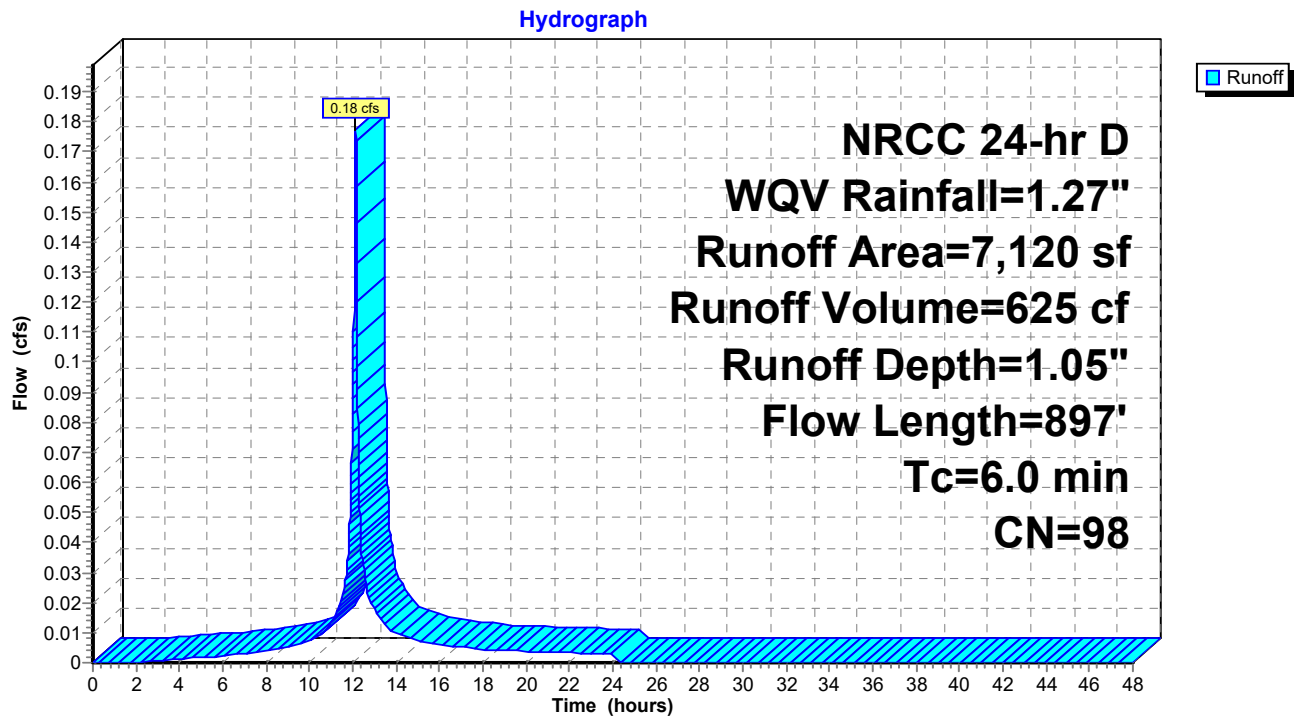
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n= 0.012 Concrete pipe, finished

5.3 897 Total, Increased to minimum Tc = 6.0 min

Subcatchment 3: Sub-catchment 3



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 1.44 cfs @ 12.13 hrs, Volume= 5,060 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
51,087	98	Unconnected pavement, HSG B
1,189	79	<50% Grass cover, Poor, HSG B
57,605	98	Weighted Average
1,189		2.06% Pervious Area
56,416		97.94% Impervious Area
51,087		90.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.12		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.4	77	0.0230	3.08		Shallow Concentrated Flow , Paved Kv= 20.3 fps
0.1	10	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.3	632	Total, Increased to minimum Tc = 6.0 min			

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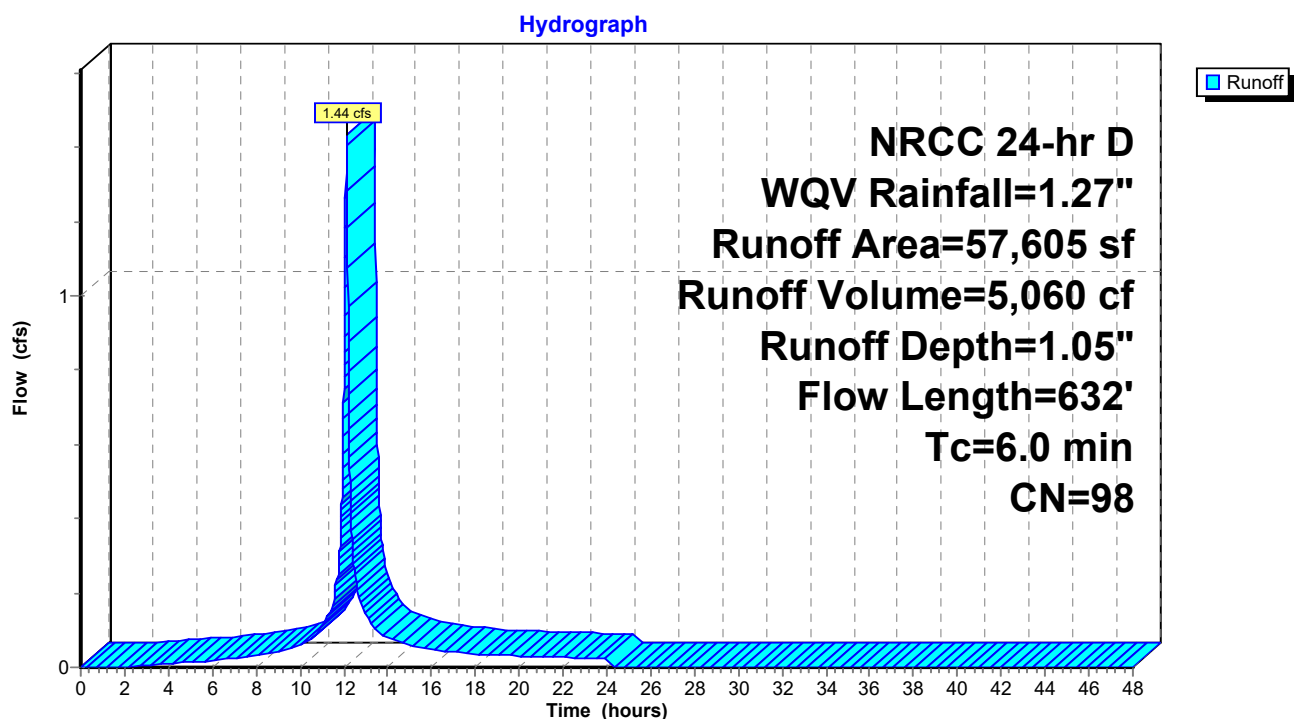
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Subcatchment 4: Sub-catchment 4



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,257 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	55	0.0550	1.83		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.1	500	Total, Increased to minimum Tc = 6.0 min			

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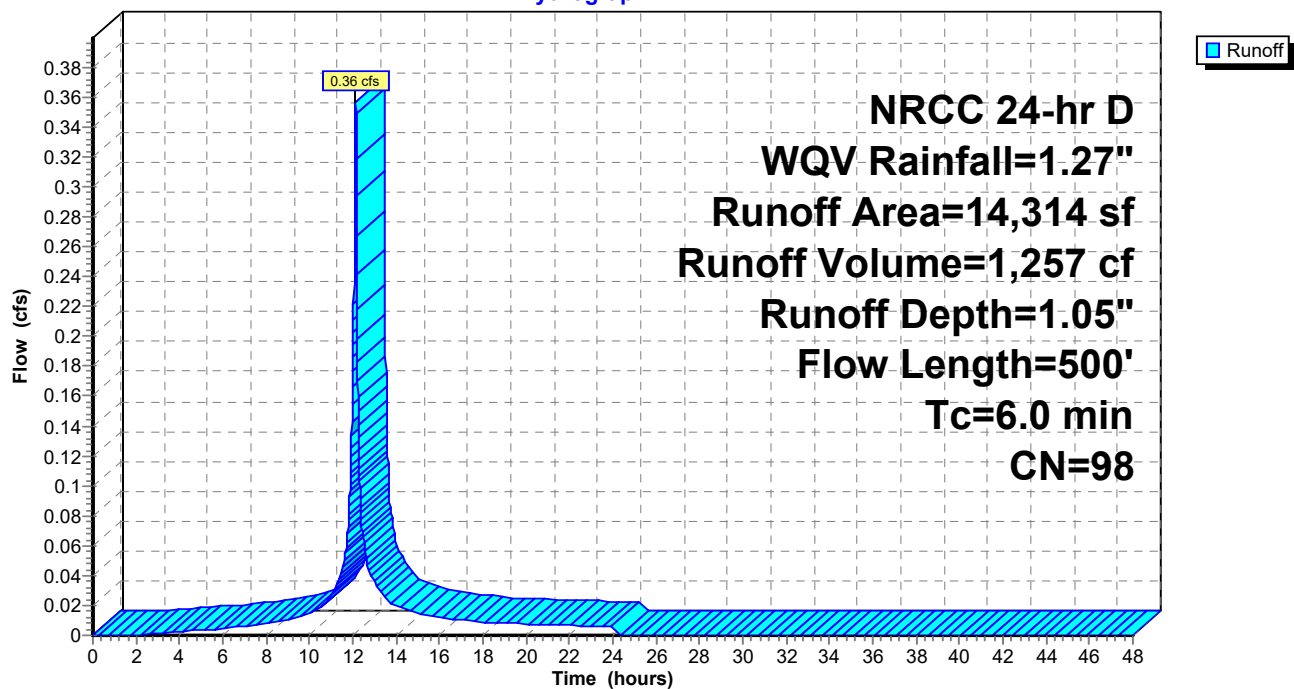
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Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-catchment 6

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 1,786 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0050	3.08	1.68	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.1	490	Total, Increased to minimum Tc = 6.0 min			

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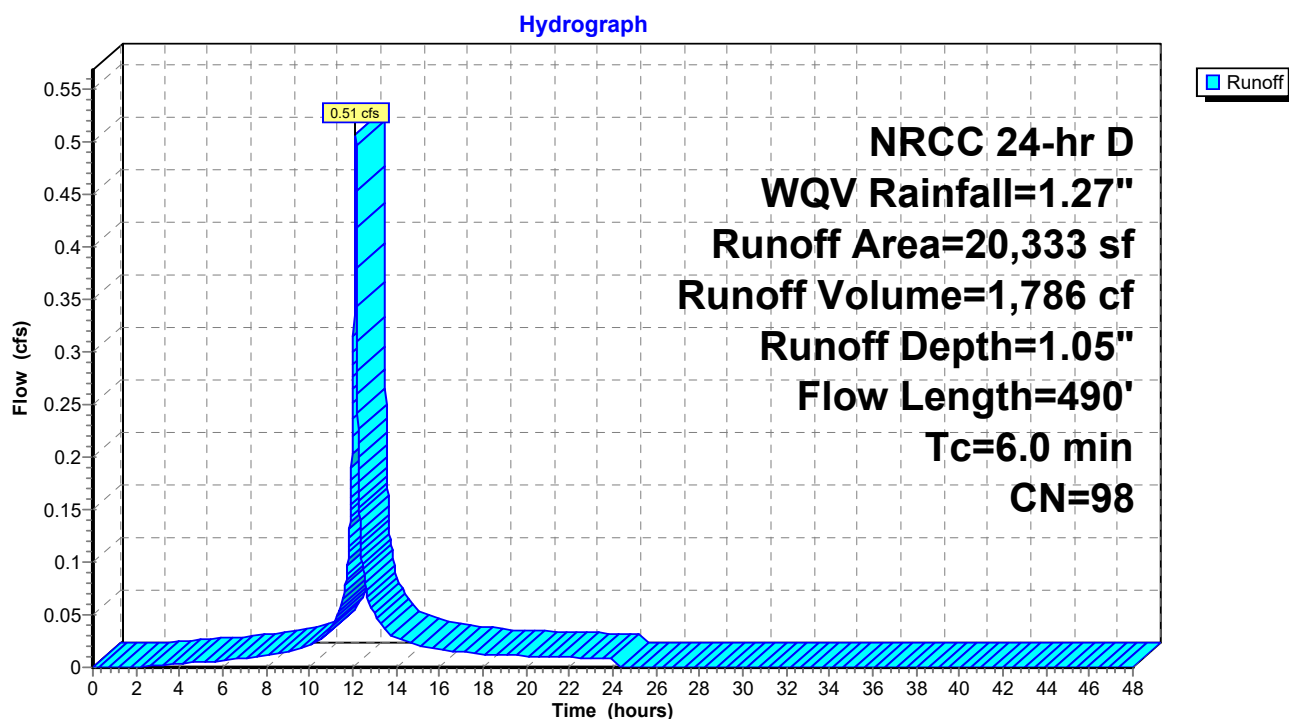
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Subcatchment 6: Sub-catchment 6



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 0.58 cfs @ 12.13 hrs, Volume= 2,054 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
19,985	98	Unconnected pavement, HSG B
3,396	98	Roofs, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	393	Total, Increased to minimum Tc = 6.0 min			

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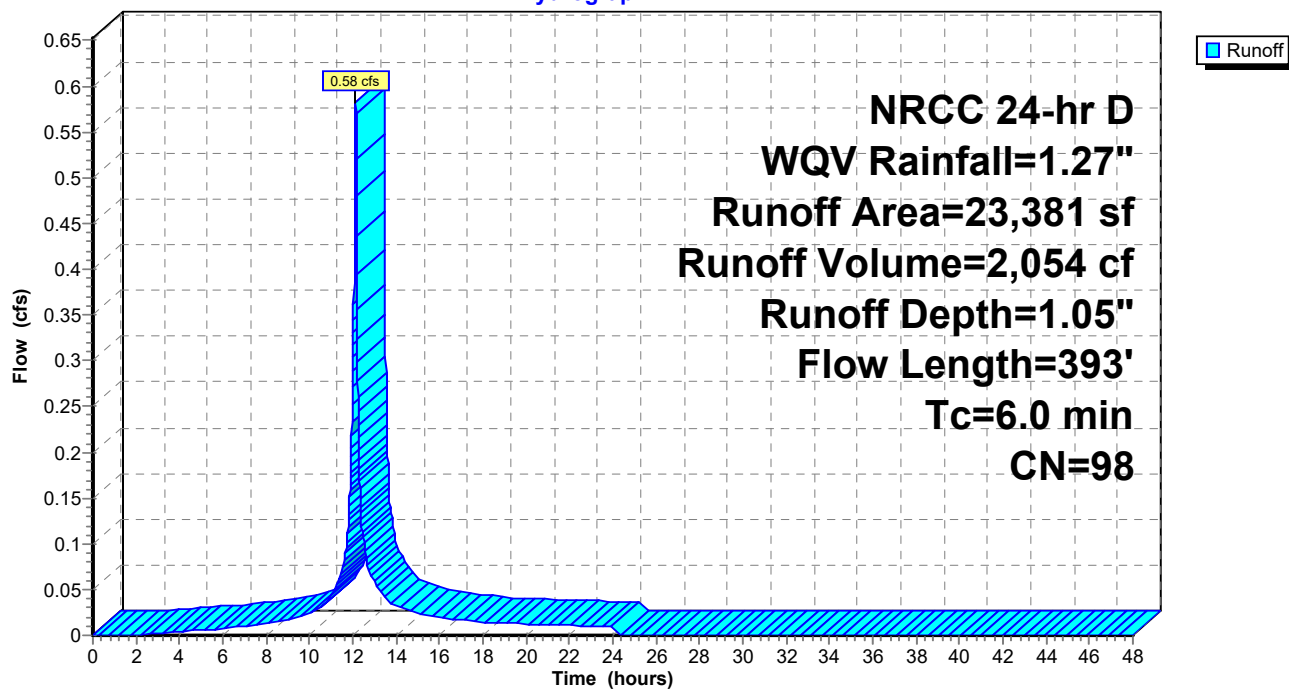
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Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,243 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
23,413	98	Unconnected pavement, HSG B
2,118	98	Roofs, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,413		91.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.90		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	359	Total, Increased to minimum Tc = 6.0 min			

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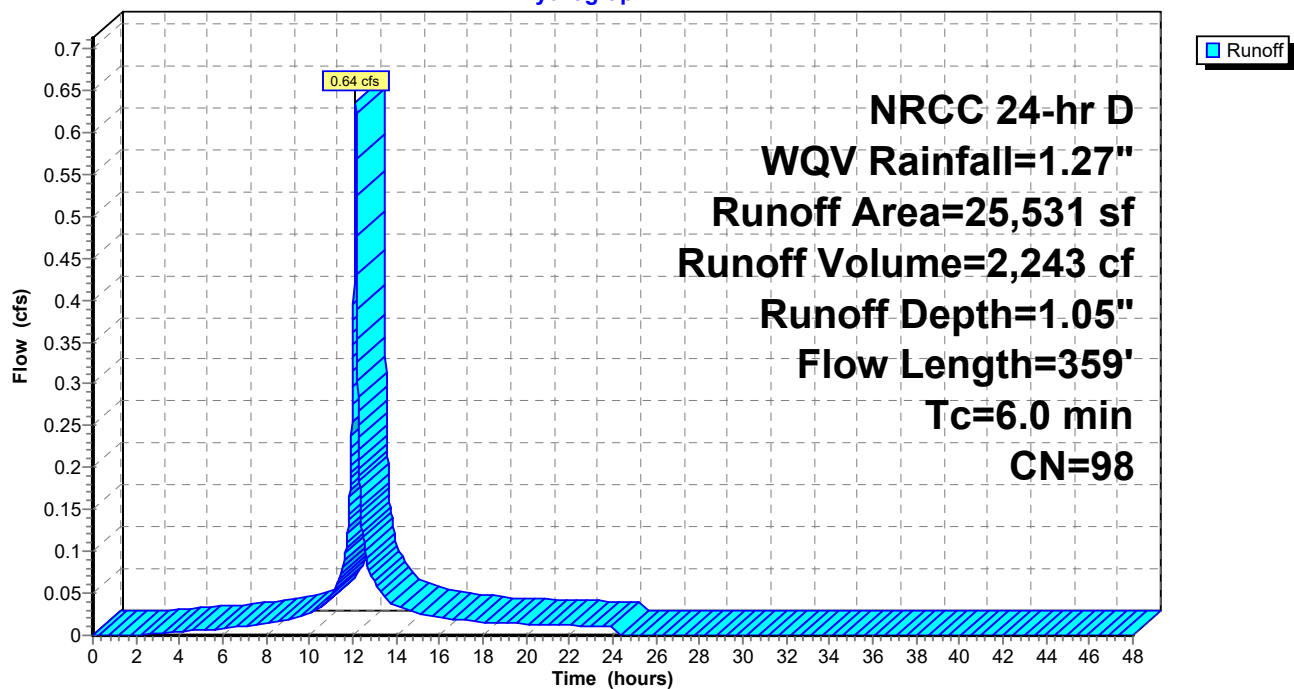
NRCC 24-hr D WQV Rainfall=1.27"

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Subcatchment 8: Sub-catchment 8

Hydrograph



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.19 cfs @ 12.13 hrs, Volume= 669 cf, Depth= 1.05"
Routed to Pond 1P : Diversion Structure

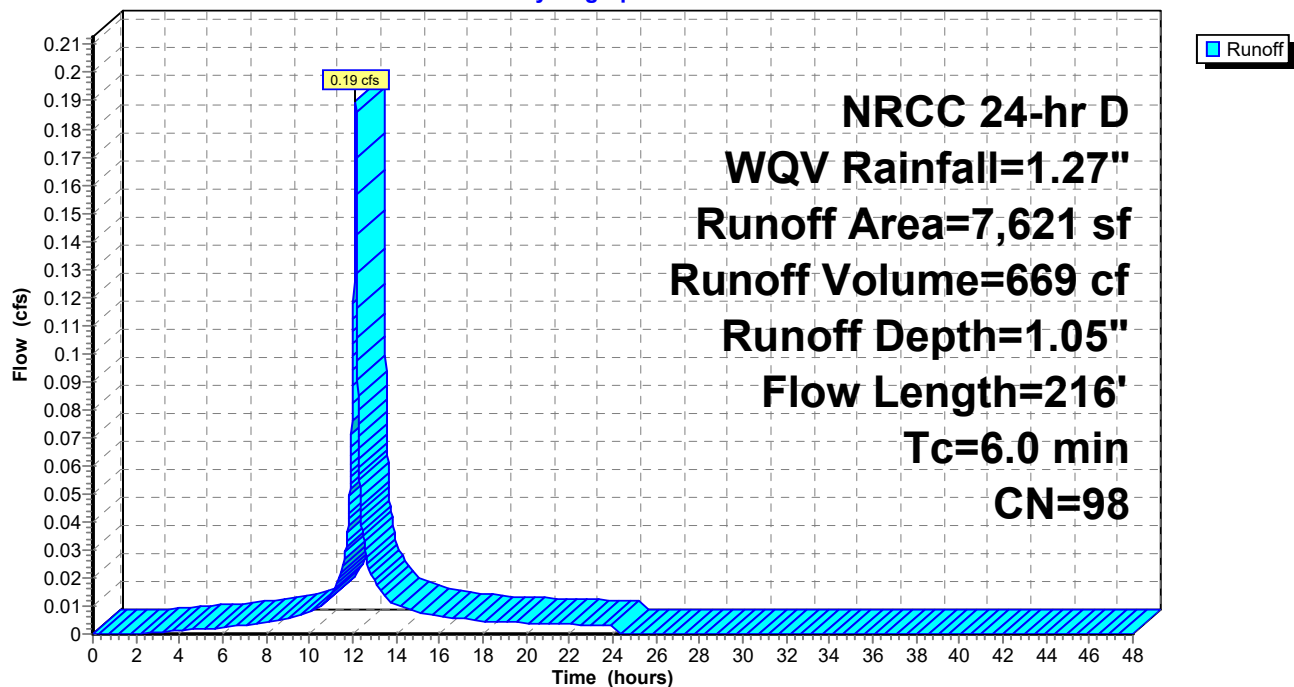
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
7,621	98	Unconnected pavement, HSG B
7,621		100.00% Impervious Area
7,621		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0090	1.00		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.7	62	0.0060	1.57		Shallow Concentrated Flow , Paved Kv= 20.3 fps
0.2	45	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	216	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 9: Sub-catchment 9

Hydrograph



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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 0.50 cfs @ 12.13 hrs, Volume= 1,633 cf, Depth= 0.67"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
14,729	98	Unconnected pavement, HSG B
6,760	98	Roofs, HSG B
7,790	79	<50% Grass cover, Poor, HSG B
29,279	93	Weighted Average
7,790		26.61% Pervious Area
21,489		73.39% Impervious Area
14,729		68.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	75	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	114	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.8	350	Total, Increased to minimum Tc = 6.0 min			

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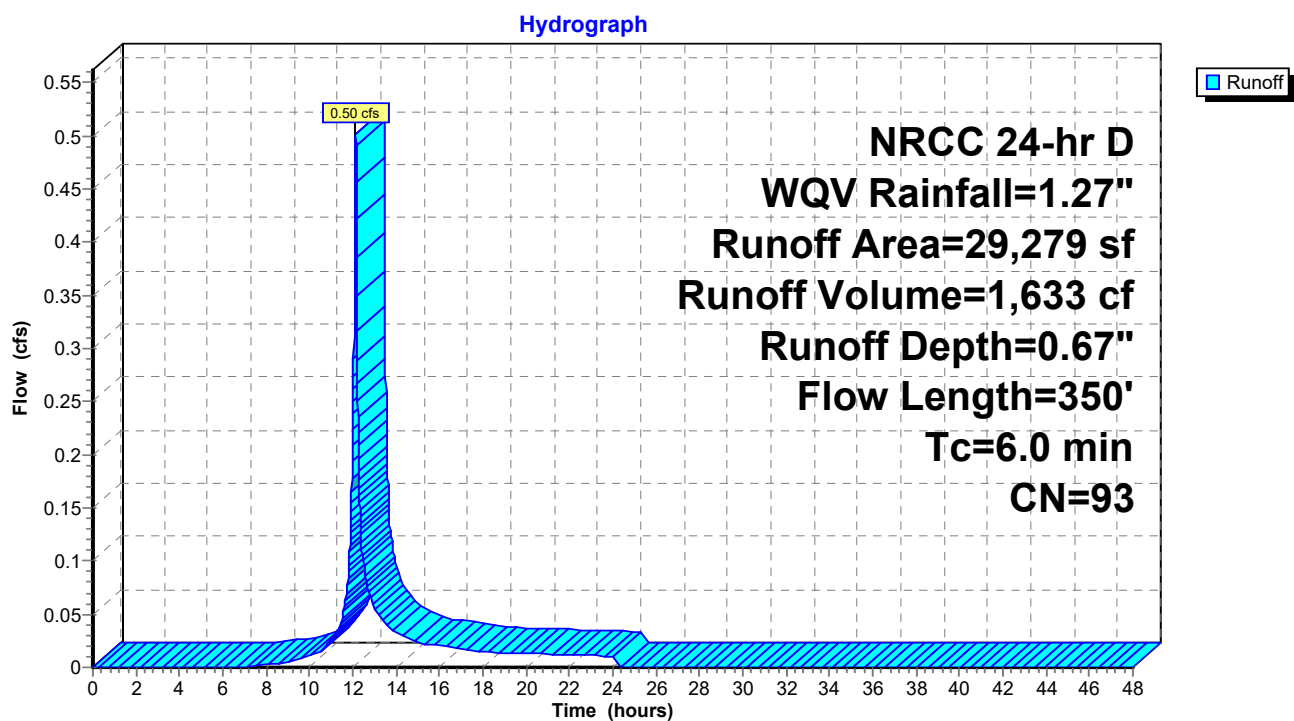
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Subcatchment 10: Sub-catchment 10



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.05 cfs @ 12.13 hrs, Volume= 160 cf, Depth= 1.05"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
1,822	98	Unconnected pavement, HSG B
1,822		100.00% Impervious Area
1,822		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	53	0.0690	1.99		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	59	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.2	39	0.0050	4.03	4.95	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.1	900	Total, Increased to minimum Tc = 6.0 min			

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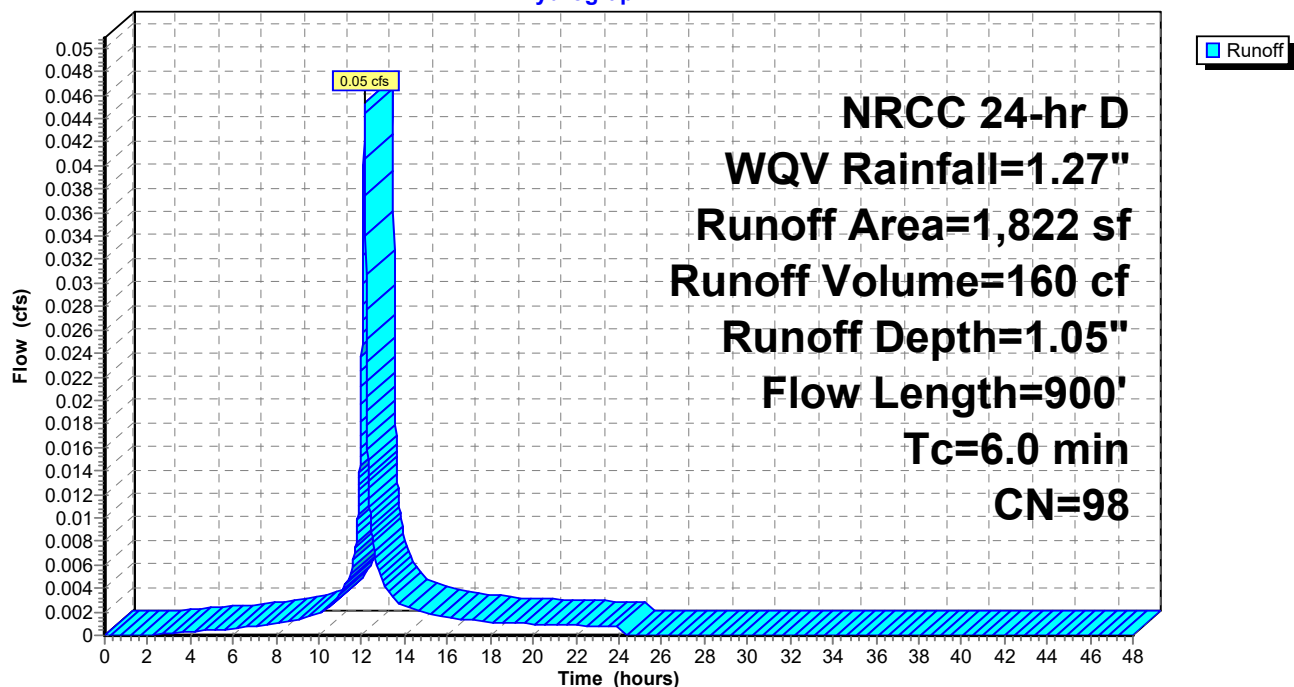
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Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.12 cfs @ 12.14 hrs, Volume= 400 cf, Depth= 0.35"
Routed to Pond 1P : Diversion Structure

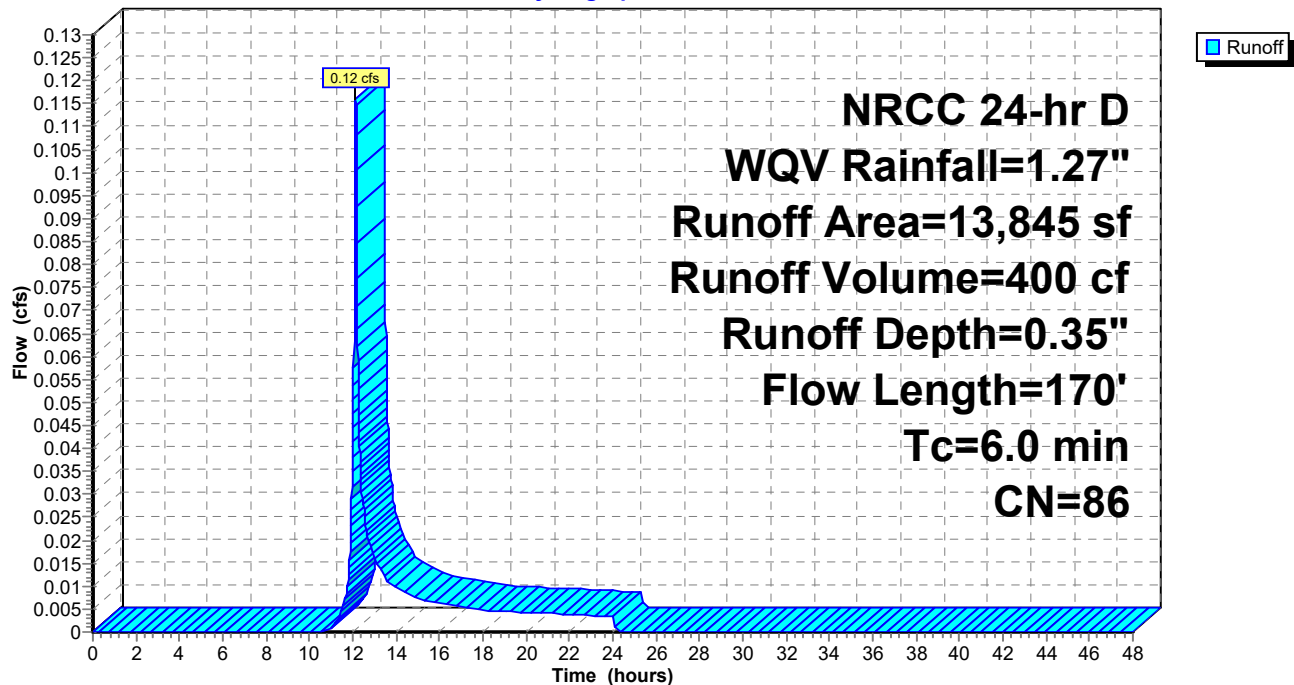
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
5,431	98	Unconnected pavement, HSG B
8,414	79	<50% Grass cover, Poor, HSG B
13,845	86	Weighted Average
8,414		60.77% Pervious Area
5,431		39.23% Impervious Area
5,431		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.2	44	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
1.9	170	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Subcatchment 13: Sub-catchment 13

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link DP-2 : DP-2

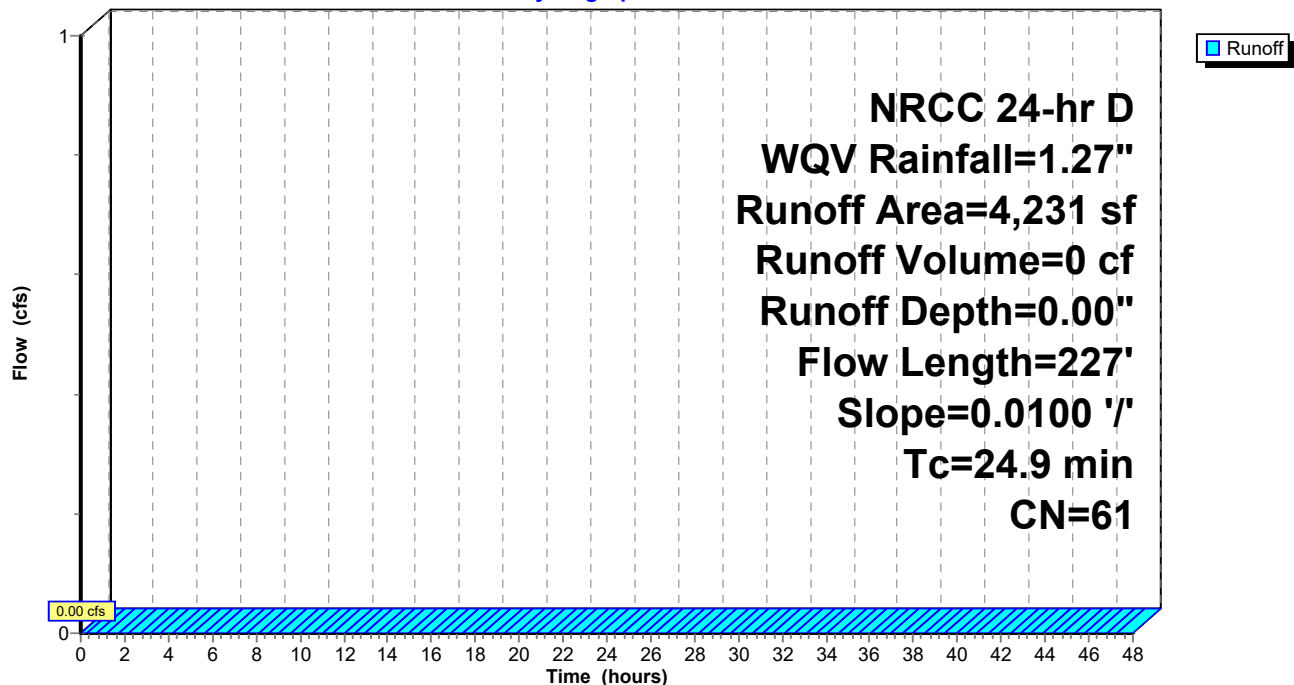
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQV Rainfall=1.27"

Area (sf)	CN	Description
4,231	61	>75% Grass cover, Good, HSG B
4,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	227	0.0100	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"

Subcatchment 13: Sub-catchment 13

Hydrograph



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NRCC 24-hr D WQV Rainfall=1.27"

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Summary for Pond 1P: Diversion Structure

[57] Hint: Peaked at 227.58' (Flood elevation advised)

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf
Outflow = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf
Routed to Link 1L : Wet Well/Pump
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 227.58' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	226.32'	24.0" Round Culvert L= 7.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.32' / 226.28' S= 0.0052 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Secondary	226.38'	30.0" Round Culvert L= 27.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.38' / 226.24' S= 0.0052 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#3	Device 2	228.99'	6.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Device 1	225.00'	Special & User-Defined Elev. (feet) 225.00 226.00 240.00 Disch. (cfs) 0.000 5.790 5.790

Primary OutFlow Max=5.57 cfs @ 12.13 hrs HW=227.58' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 5.57 cfs @ 3.80 fps)

↑ **4=Special & User-Defined** (Passes 5.57 cfs of 5.79 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=225.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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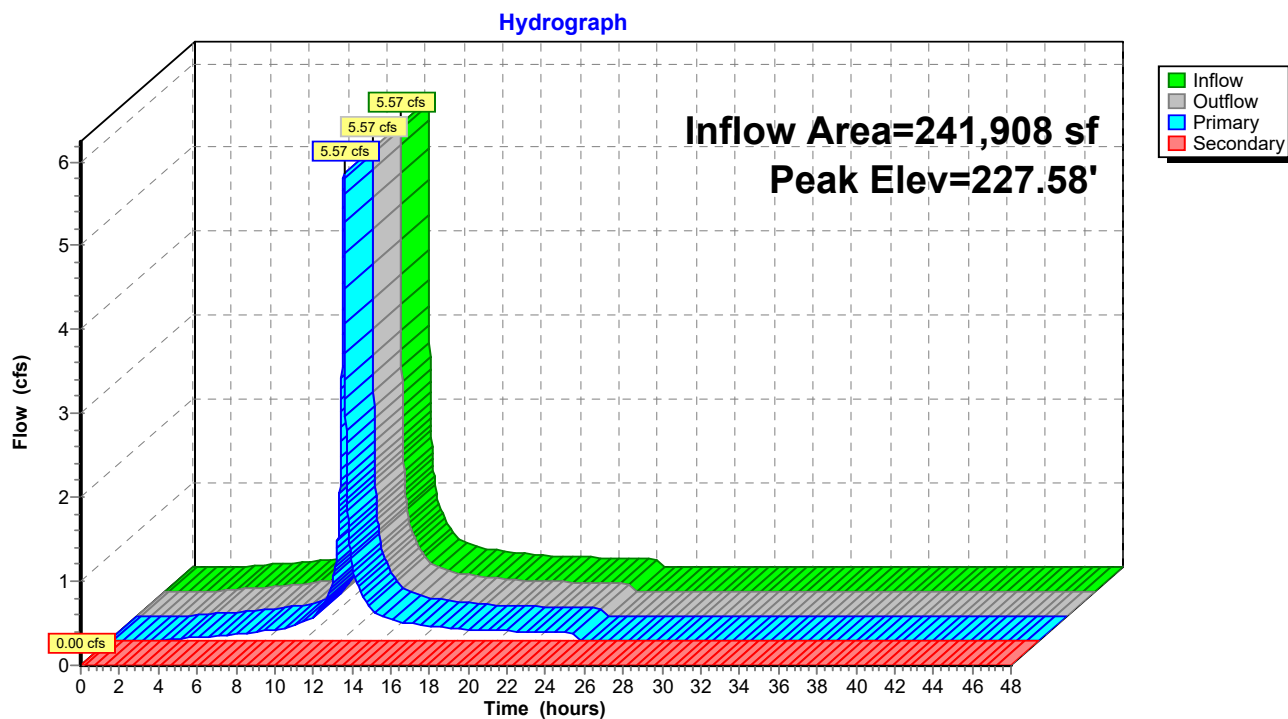
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Pond 1P: Diversion Structure



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Summary for Pond 2P: AGST

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf
Outflow = 0.22 cfs @ 11.19 hrs, Volume= 19,497 cf, Atten= 96%, Lag= 0.0 min
Primary = 0.22 cfs @ 11.19 hrs, Volume= 19,497 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 236.89' @ 15.07 hrs Surf.Area= 908 sf Storage= 8,851 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 361.9 min (1,159.6 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1	227.14'	38,133 cf	34.00'D x 42.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	0.223 cfs Constant Flow/Skimmer
#2	Primary	265.14'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

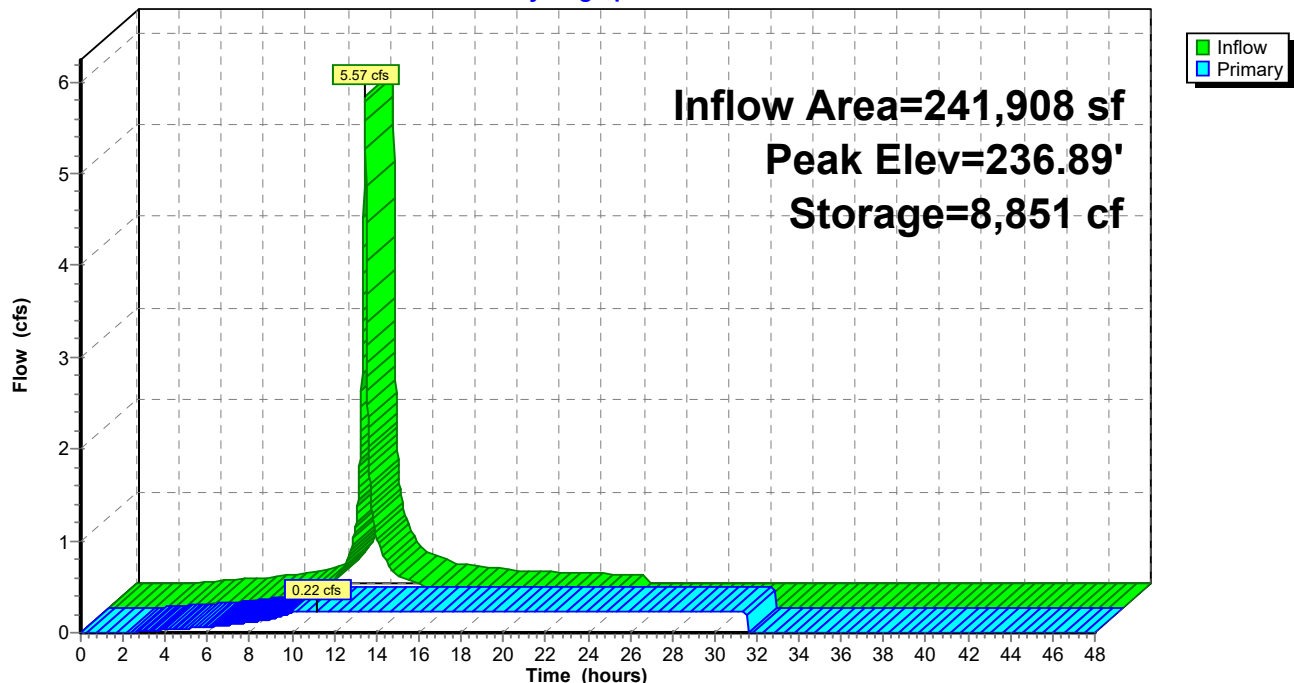
Primary OutFlow Max=0.22 cfs @ 11.19 hrs HW=227.56' TW=0.00' (Dynamic Tailwater)

1=Constant Flow/Skimmer (Constant Controls 0.22 cfs)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: AGST

Hydrograph



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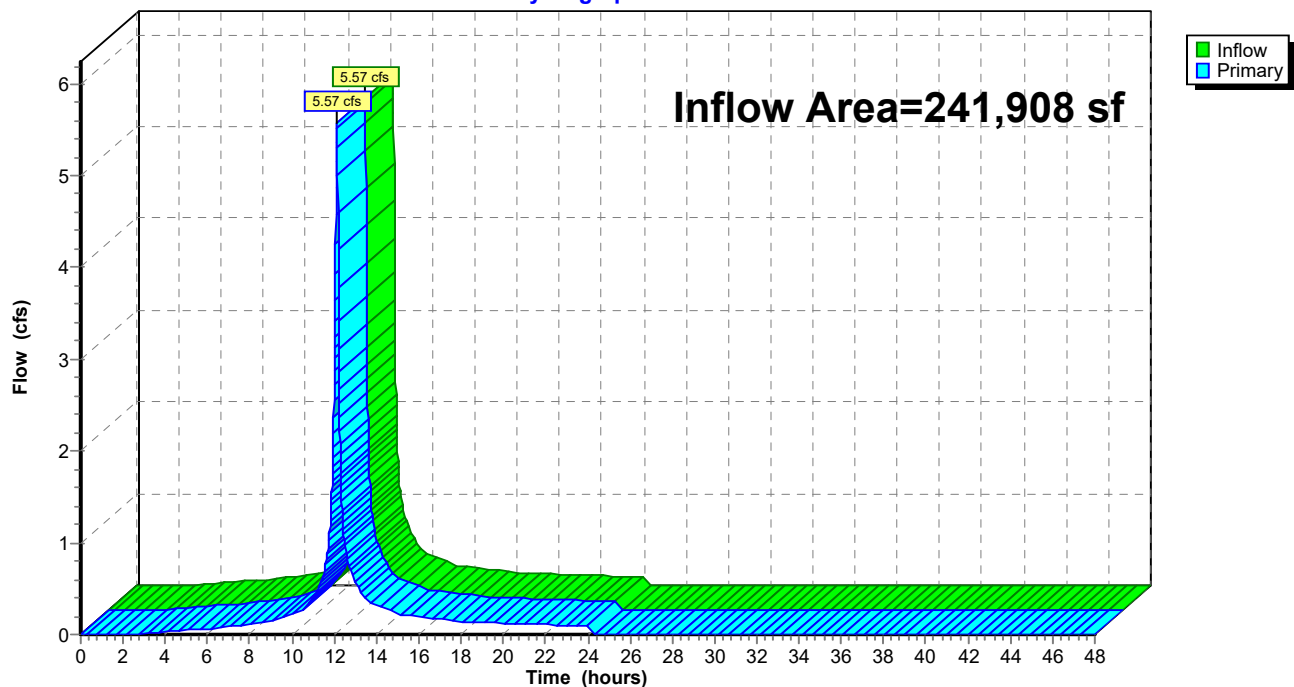
Summary for Link 1L: Wet Well/Pump

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf
Primary = 5.57 cfs @ 12.13 hrs, Volume= 19,496 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : AGST

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link 1L: Wet Well/Pump

Hydrograph



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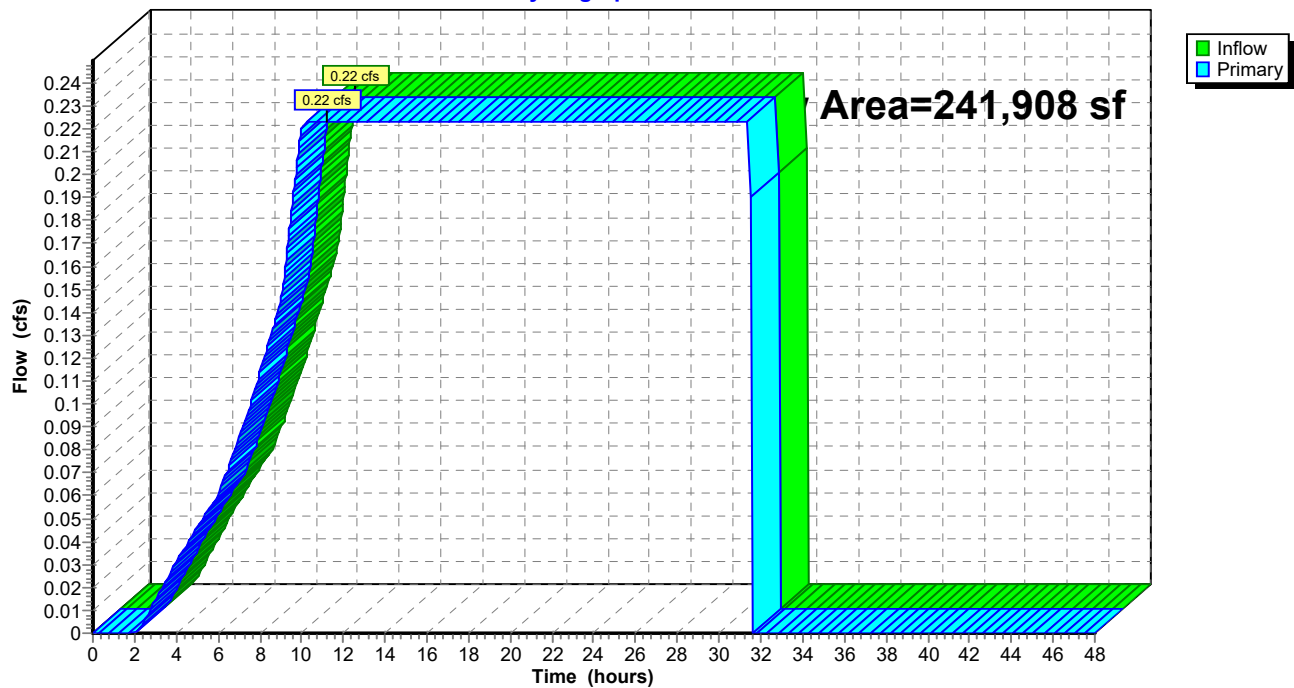
Summary for Link DP-1: DP-1

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 0.97" for WQV event
Inflow = 0.22 cfs @ 11.19 hrs, Volume= 19,497 cf
Primary = 0.22 cfs @ 11.19 hrs, Volume= 19,497 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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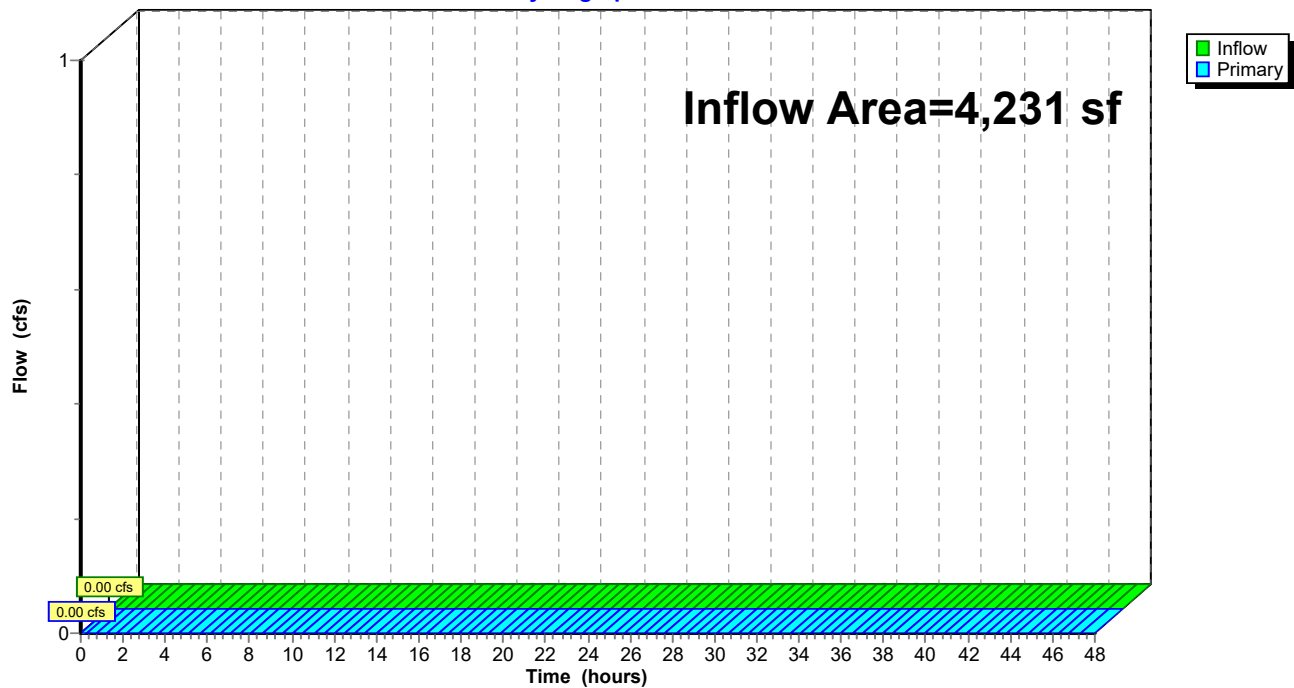
Summary for Link DP-2: DP-2

Inflow Area = 4,231 sf, 0.00% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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NRCC 24-hr D 2-Year Rainfall=2.82"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=851' Tc=6.0 min CN=98 Runoff=1.95 cfs 7,247 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=946' Tc=6.0 min CN=98 Runoff=0.43 cfs 1,611 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=897' Tc=6.0 min CN=98 Runoff=0.41 cfs 1,536 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 97.94% Impervious Runoff Depth=2.59" Flow Length=632' Tc=6.0 min CN=98 Runoff=3.34 cfs 12,429 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=500' Tc=6.0 min CN=98 Runoff=0.83 cfs 3,088 cf
Subcatchment6: Sub-catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=490' Tc=6.0 min CN=98 Runoff=1.18 cfs 4,387 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=393' Tc=6.0 min CN=98 Runoff=1.36 cfs 5,045 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=359' Tc=6.0 min CN=98 Runoff=1.48 cfs 5,508 cf
Subcatchment9: Sub-catchment9	Runoff Area=7,621 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=216' Tc=6.0 min CN=98 Runoff=0.44 cfs 1,644 cf
Subcatchment10: Sub-catchment10	Runoff Area=29,279 sf 73.39% Impervious Runoff Depth=2.08" Flow Length=350' Tc=6.0 min CN=93 Runoff=1.50 cfs 5,081 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=2.59" Flow Length=900' Tc=6.0 min CN=98 Runoff=0.11 cfs 393 cf
Subcatchment12: Sub-catchment12	Runoff Area=13,845 sf 39.23% Impervious Runoff Depth=1.51" Flow Length=170' Tc=6.0 min CN=86 Runoff=0.54 cfs 1,741 cf
Subcatchment13: Sub-catchment13	Runoff Area=4,231 sf 0.00% Impervious Runoff Depth=0.30" Flow Length=227' Slope=0.0100 '/' Tc=24.9 min CN=61 Runoff=0.01 cfs 106 cf
Pond 1P: Diversion Structure	Peak Elev=229.60' Inflow=13.57 cfs 49,711 cf Primary=5.79 cfs 45,927 cf Secondary=7.78 cfs 3,783 cf Outflow=13.57 cfs 49,711 cf
Pond 2P: AGST	Peak Elev=259.25' Storage=29,150 cf Inflow=5.79 cfs 45,927 cf Outflow=0.22 cfs 35,976 cf
Link 1L: Wet Well/Pump	Inflow=5.79 cfs 45,927 cf Primary=5.79 cfs 45,927 cf

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Link DP-1: DP-1

Inflow=8.00 cfs 39,759 cf

Primary=8.00 cfs 39,759 cf

Link DP-2: DP-2

Inflow=0.01 cfs 106 cf

Primary=0.01 cfs 106 cf

Total Runoff Area = 246,139 sf Runoff Volume = 49,816 cf Average Runoff Depth = 2.43"
8.79% Pervious = 21,624 sf 91.21% Impervious = 224,515 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 1.95 cfs @ 12.13 hrs, Volume= 7,247 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.26		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.7	49	0.0030	1.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.8	851	Total, Increased to minimum Tc = 6.0 min			

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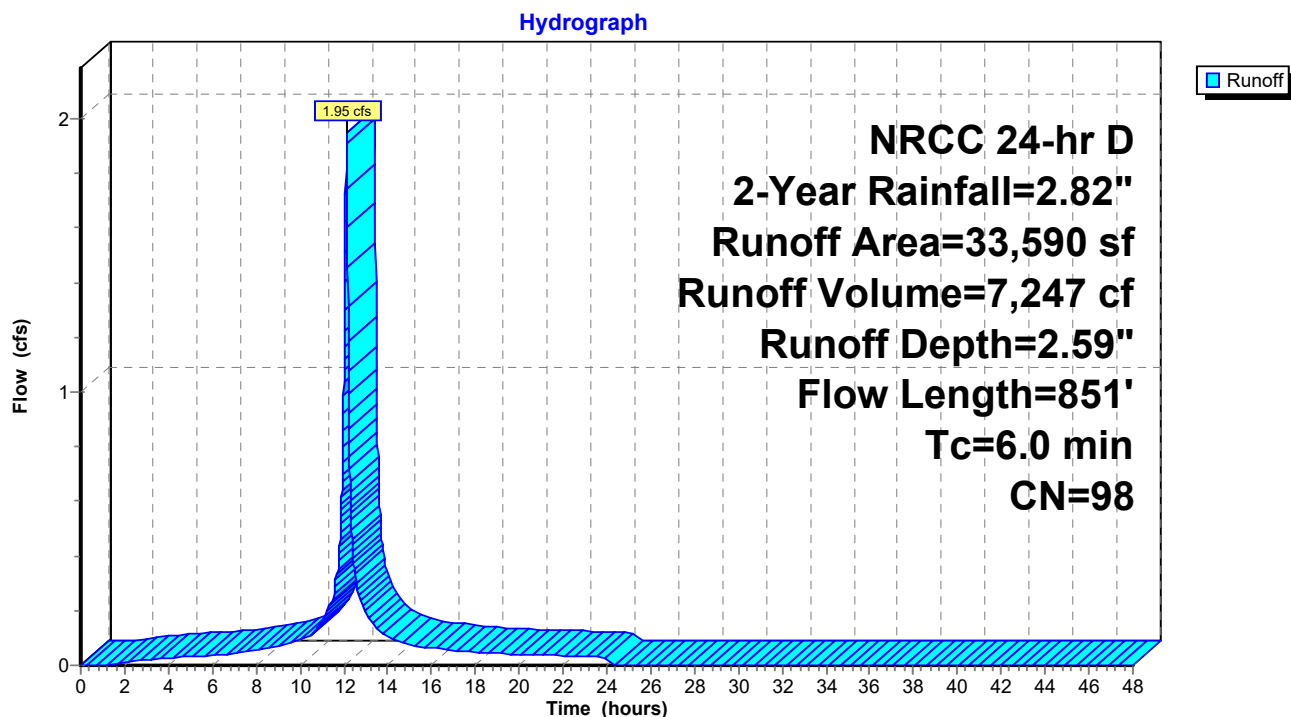
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Subcatchment 1: Sub-catchment 1



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.43 cfs @ 12.13 hrs, Volume= 1,611 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	41	0.0140	1.00		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
1.0	80	0.0010	1.38	0.75	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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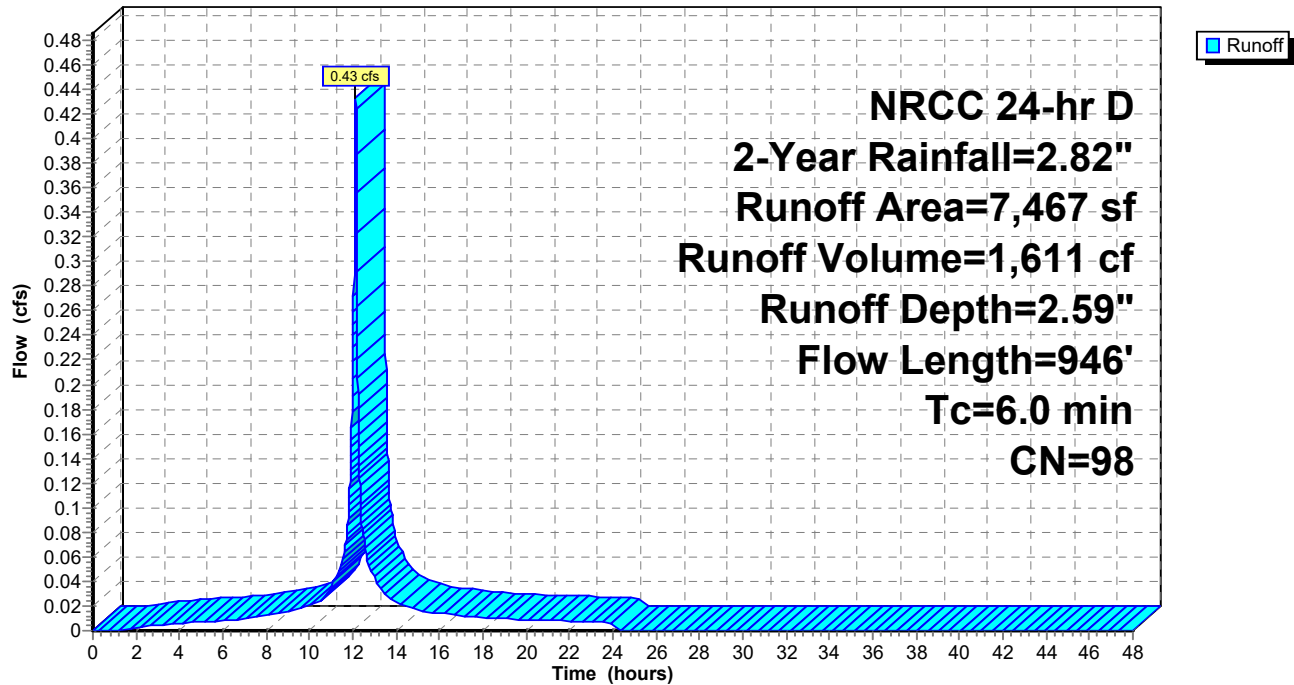
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n= 0.012 Concrete pipe, finished

5.1 946 Total, Increased to minimum Tc = 6.0 min

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,536 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	62	0.0030	0.59		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.1	10	0.0012	1.51	0.82	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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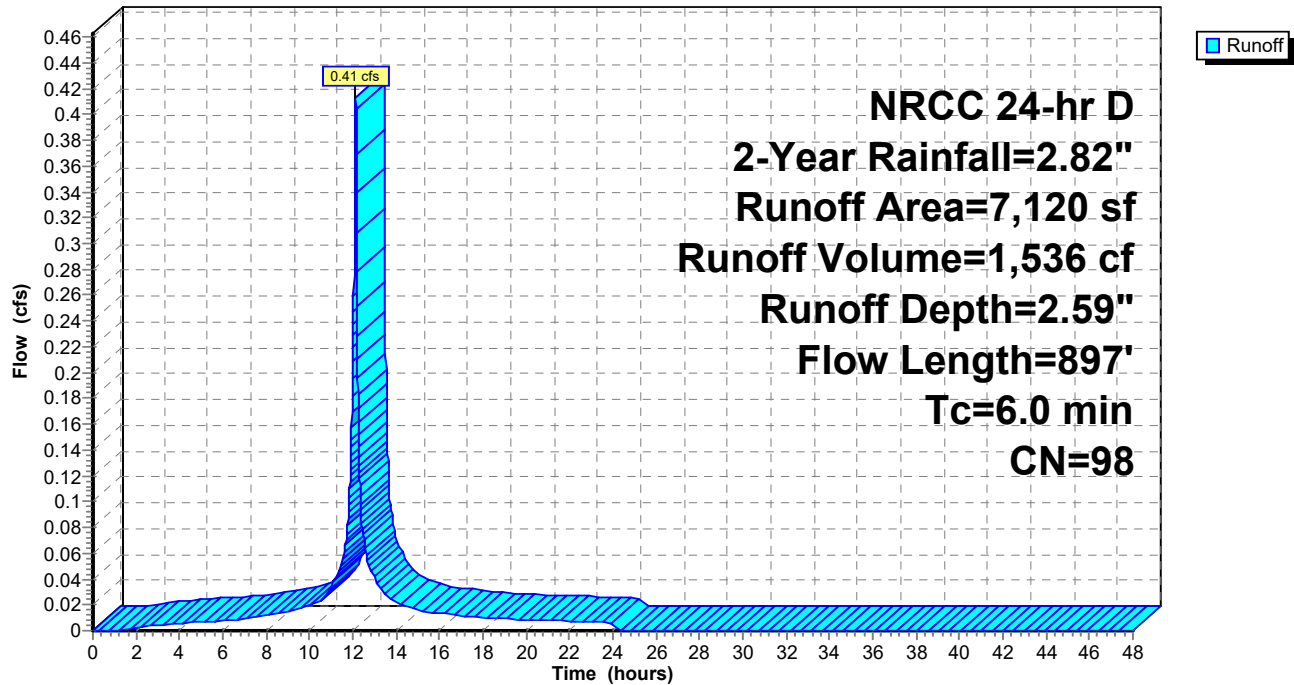
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n= 0.012 Concrete pipe, finished

5.3 897 Total, Increased to minimum Tc = 6.0 min

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 3.34 cfs @ 12.13 hrs, Volume= 12,429 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
51,087	98	Unconnected pavement, HSG B
1,189	79	<50% Grass cover, Poor, HSG B
57,605	98	Weighted Average
1,189		2.06% Pervious Area
56,416		97.94% Impervious Area
51,087		90.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.12		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	77	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.3	632	Total, Increased to minimum Tc = 6.0 min			

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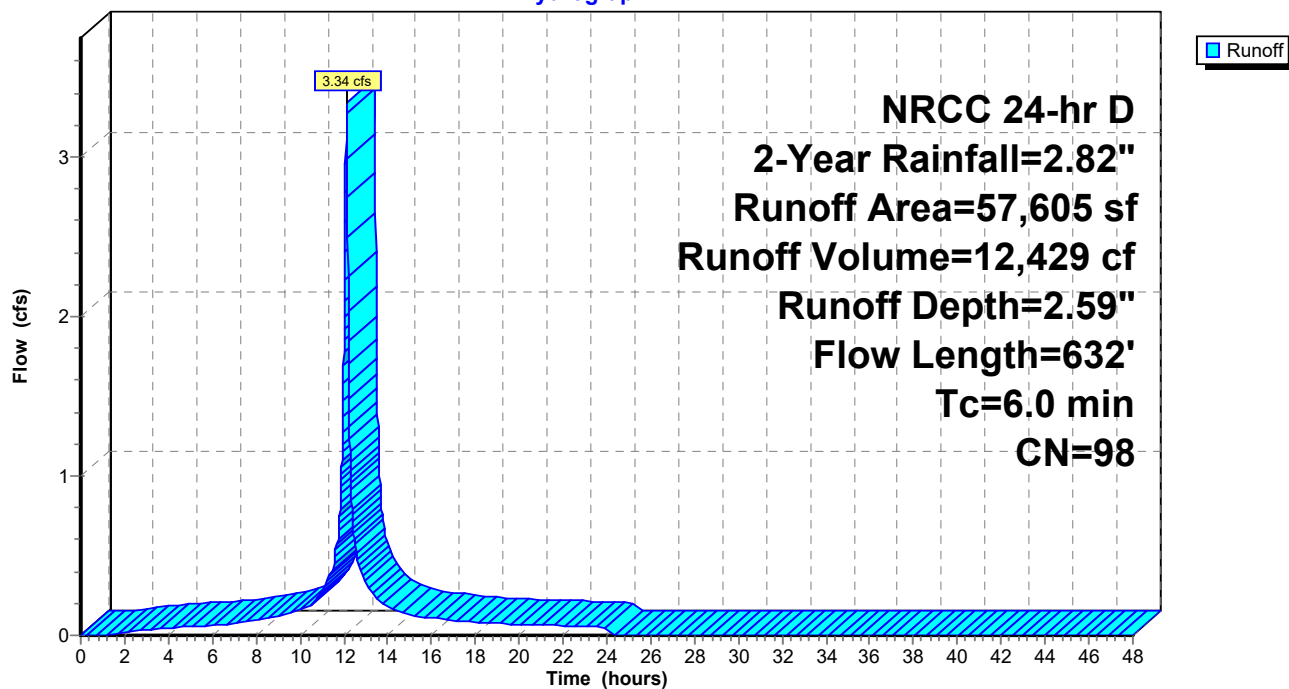
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Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 0.83 cfs @ 12.13 hrs, Volume= 3,088 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	55	0.0550	1.83		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.1	500	Total, Increased to minimum Tc = 6.0 min			

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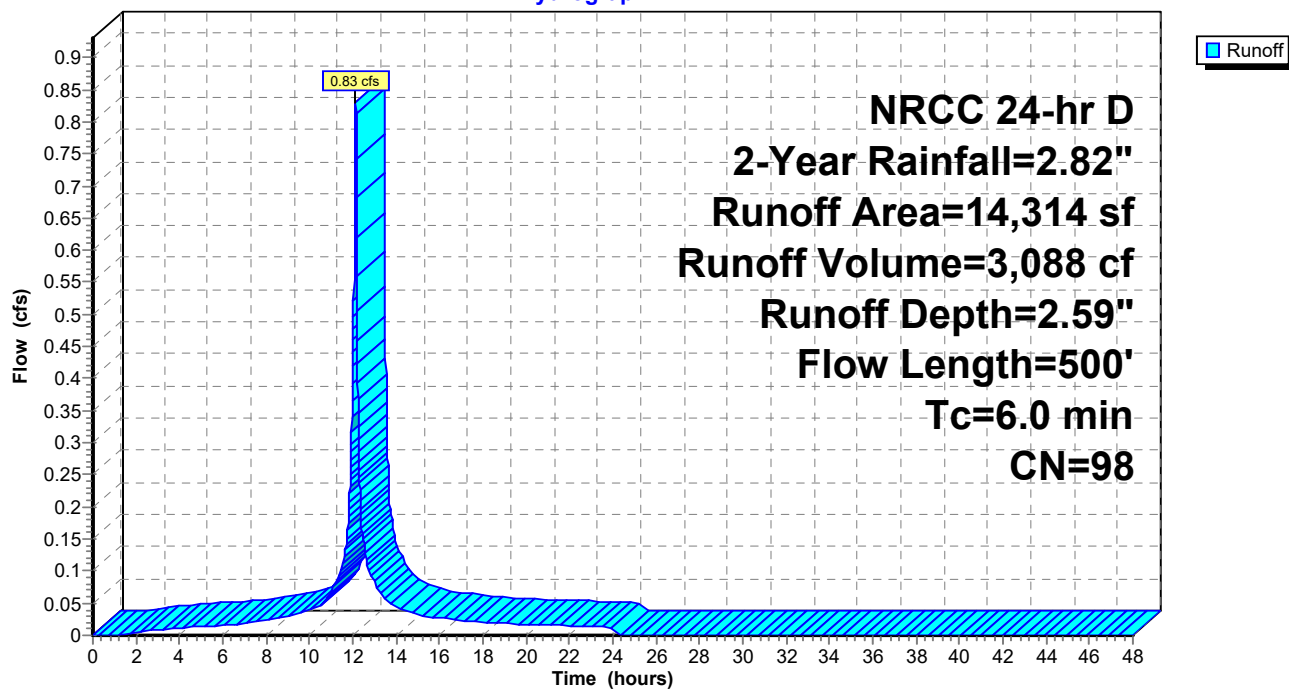
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Subcatchment 5: Sub-catchment 5

Hydrograph



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Summary for Subcatchment 6: Sub-catchment 6

Runoff = 1.18 cfs @ 12.13 hrs, Volume= 4,387 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0050	3.08	1.68	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.1	490	Total, Increased to minimum Tc = 6.0 min			

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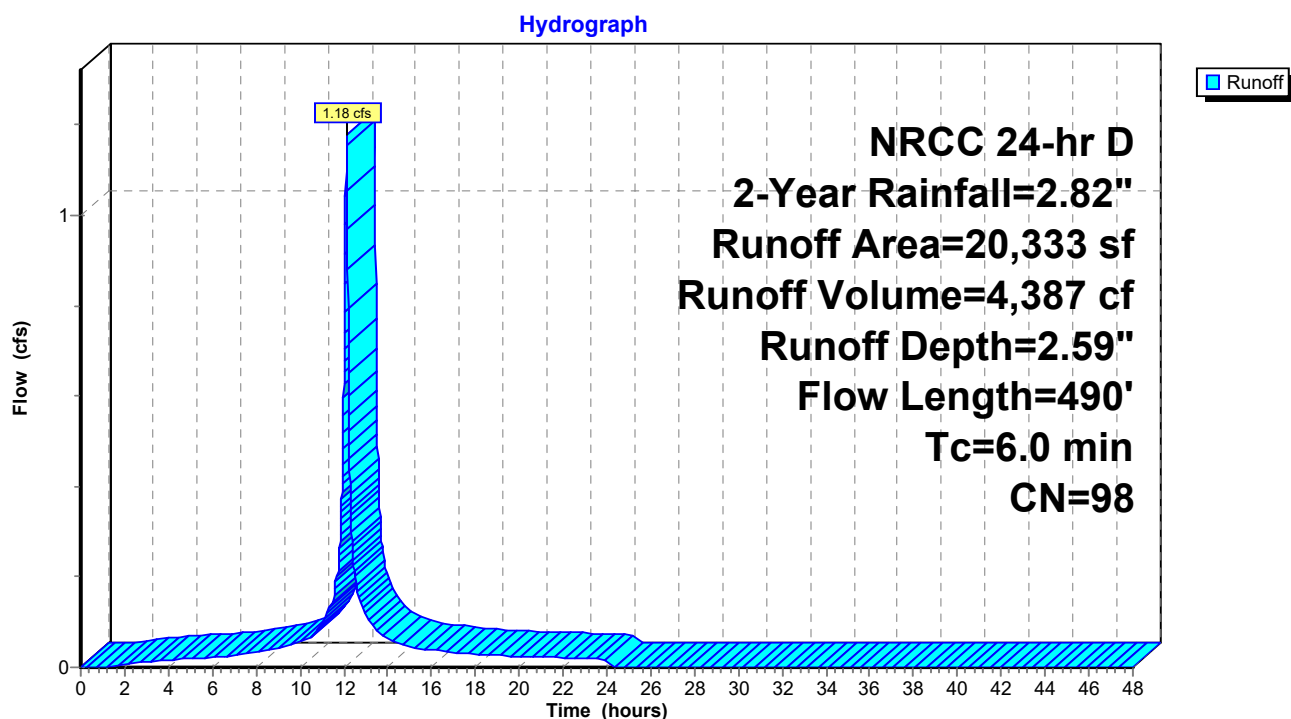
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Subcatchment 6: Sub-catchment 6



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 1.36 cfs @ 12.13 hrs, Volume= 5,045 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
19,985	98	Unconnected pavement, HSG B
3,396	98	Roofs, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	393	Total, Increased to minimum Tc = 6.0 min			

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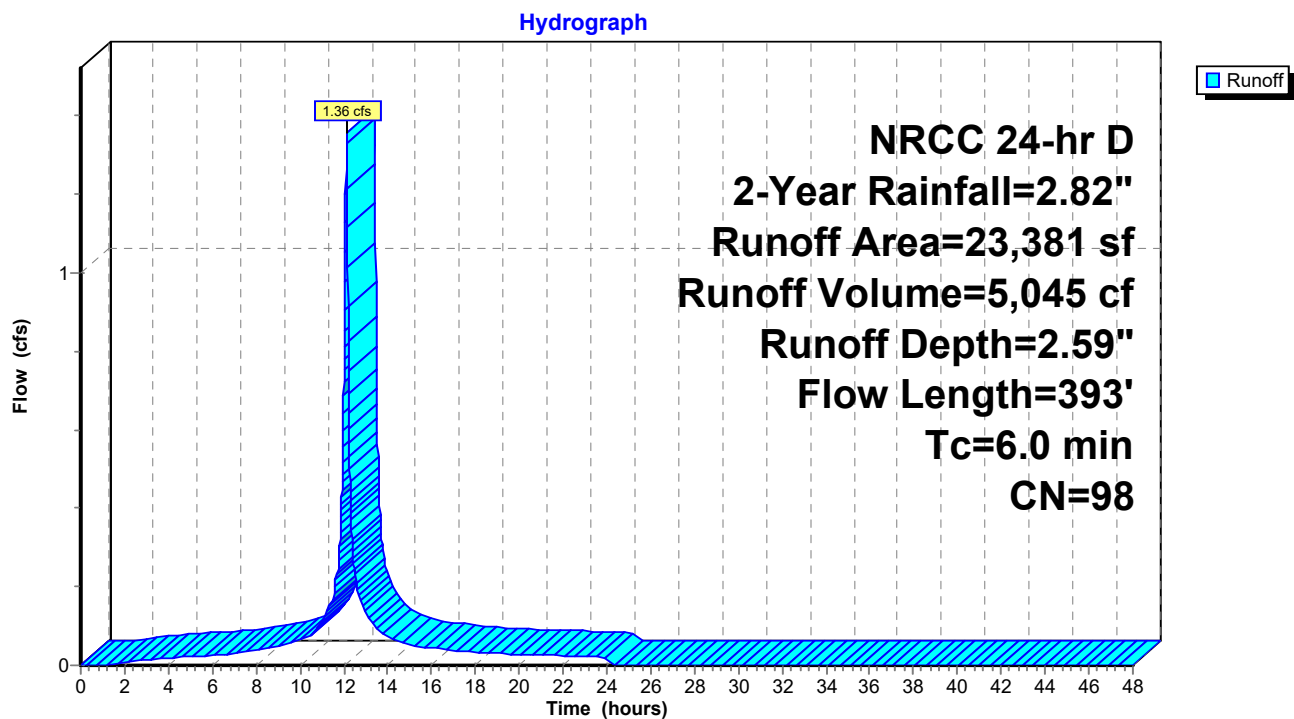
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Subcatchment 7: Sub-catchment 7



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 1.48 cfs @ 12.13 hrs, Volume= 5,508 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
23,413	98	Unconnected pavement, HSG B
2,118	98	Roofs, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,413		91.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.90		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	359	Total, Increased to minimum Tc = 6.0 min			

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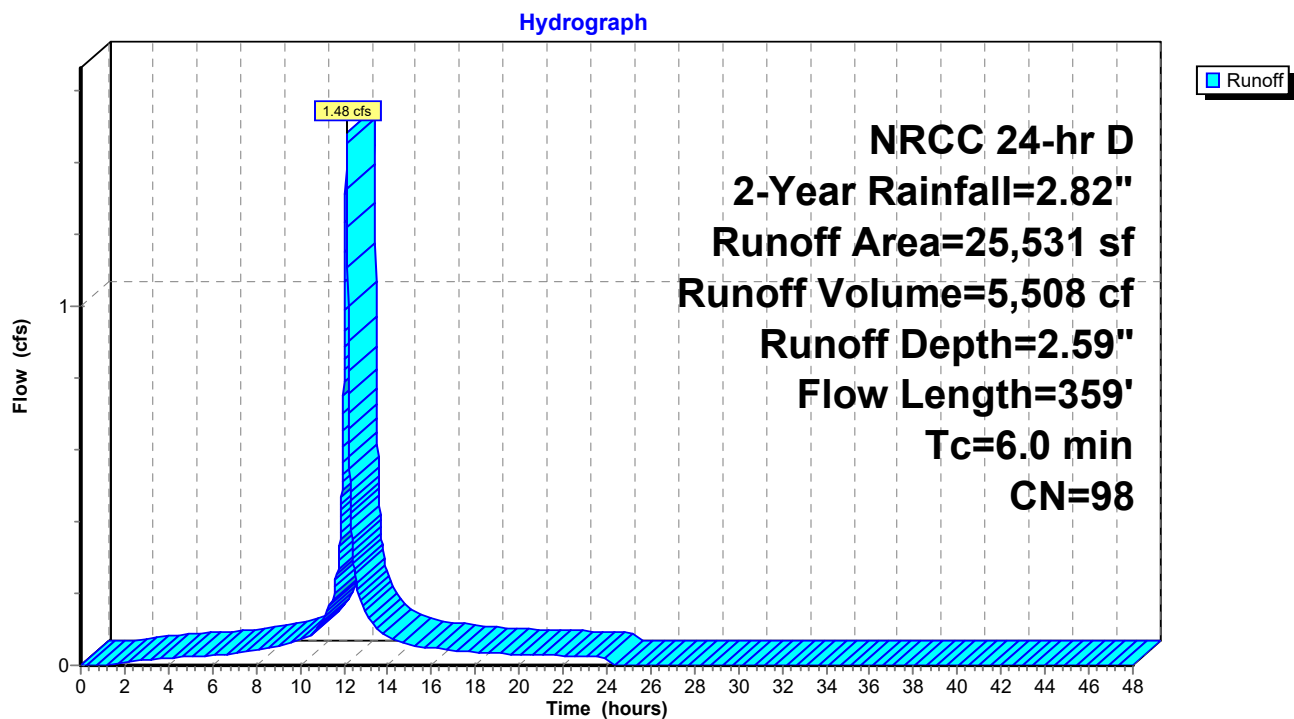
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Subcatchment 8: Sub-catchment 8



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.44 cfs @ 12.13 hrs, Volume= 1,644 cf, Depth= 2.59"
Routed to Pond 1P : Diversion Structure

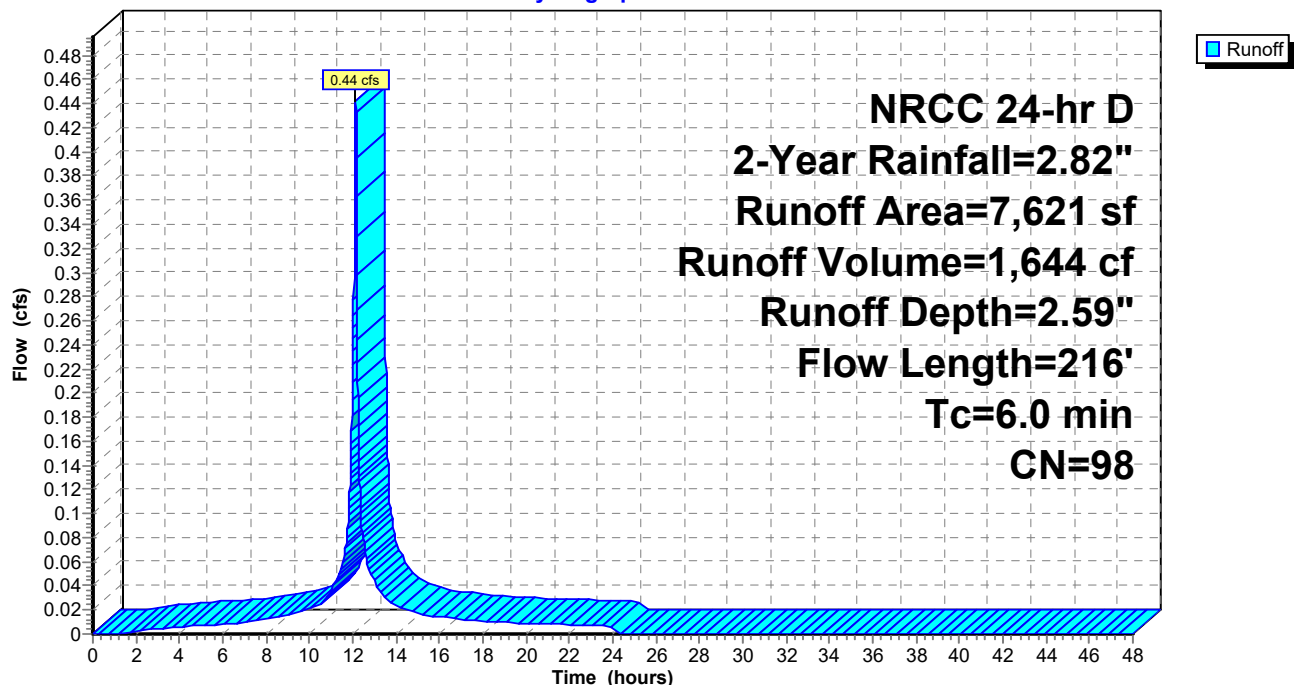
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
7,621	98	Unconnected pavement, HSG B
7,621		100.00% Impervious Area
7,621		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0090	1.00		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.7	62	0.0060	1.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	45	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	216	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 9: Sub-catchment 9

Hydrograph



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NRCC 24-hr D 2-Year Rainfall=2.82"

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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 1.50 cfs @ 12.13 hrs, Volume= 5,081 cf, Depth= 2.08"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
14,729	98	Unconnected pavement, HSG B
6,760	98	Roofs, HSG B
7,790	79	<50% Grass cover, Poor, HSG B
29,279	93	Weighted Average
7,790		26.61% Pervious Area
21,489		73.39% Impervious Area
14,729		68.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	75	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	114	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.8	350	Total, Increased to minimum Tc = 6.0 min			

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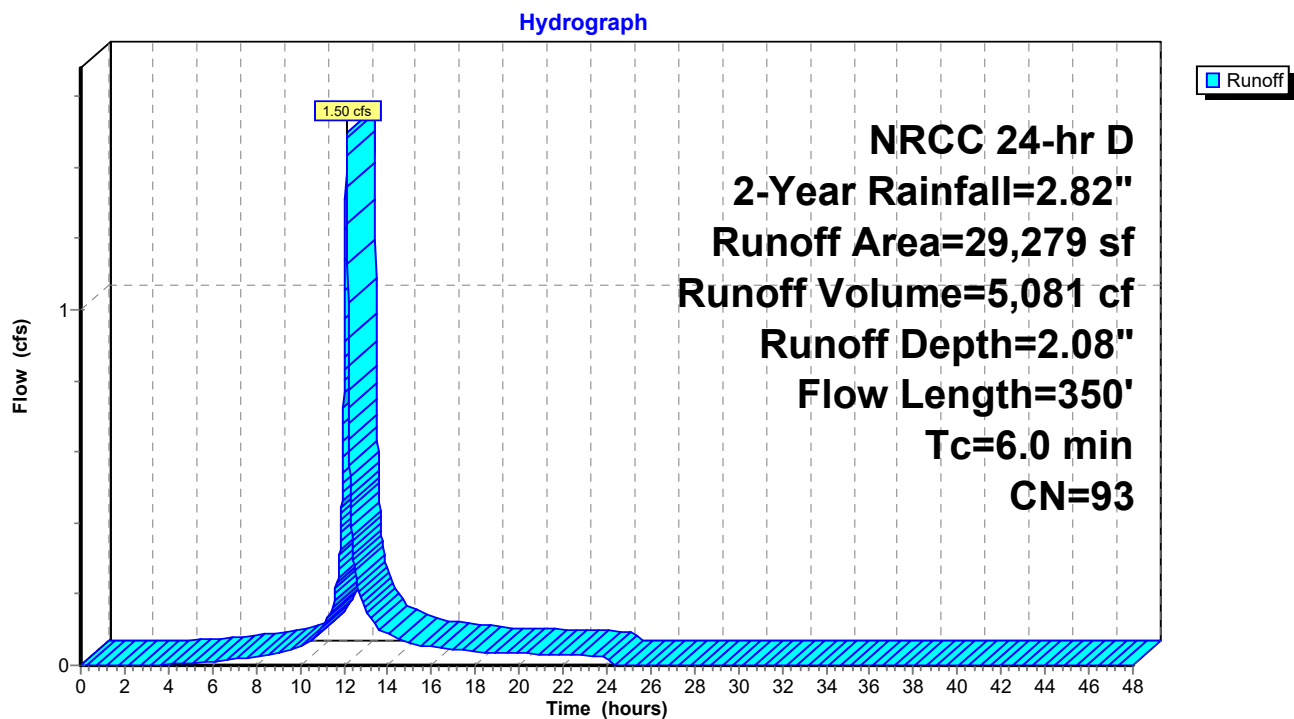
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NRCC 24-hr D 2-Year Rainfall=2.82"

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Subcatchment 10: Sub-catchment 10



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.11 cfs @ 12.13 hrs, Volume= 393 cf, Depth= 2.59"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
1,822	98	Unconnected pavement, HSG B
1,822		100.00% Impervious Area
1,822		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	53	0.0690	1.99		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	59	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.2	39	0.0050	4.03	4.95	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.1	900	Total, Increased to minimum Tc = 6.0 min			

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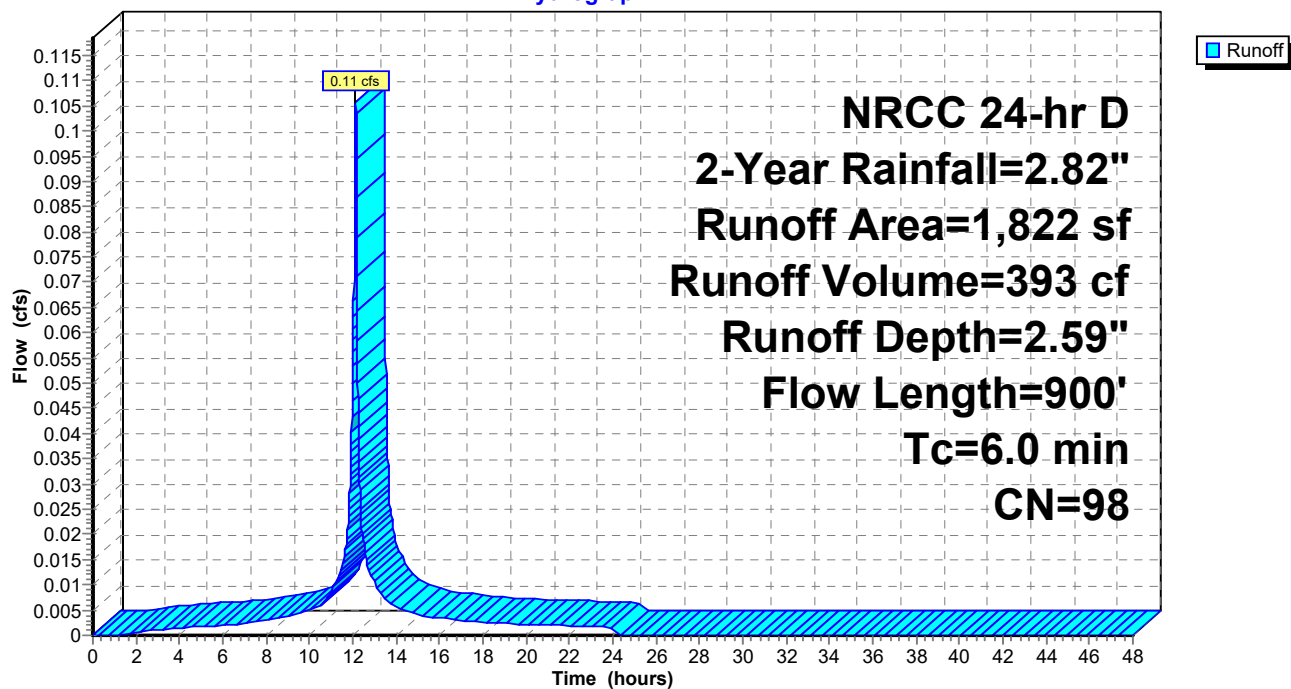
NRCC 24-hr D 2-Year Rainfall=2.82"

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Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.54 cfs @ 12.13 hrs, Volume= 1,741 cf, Depth= 1.51"
Routed to Pond 1P : Diversion Structure

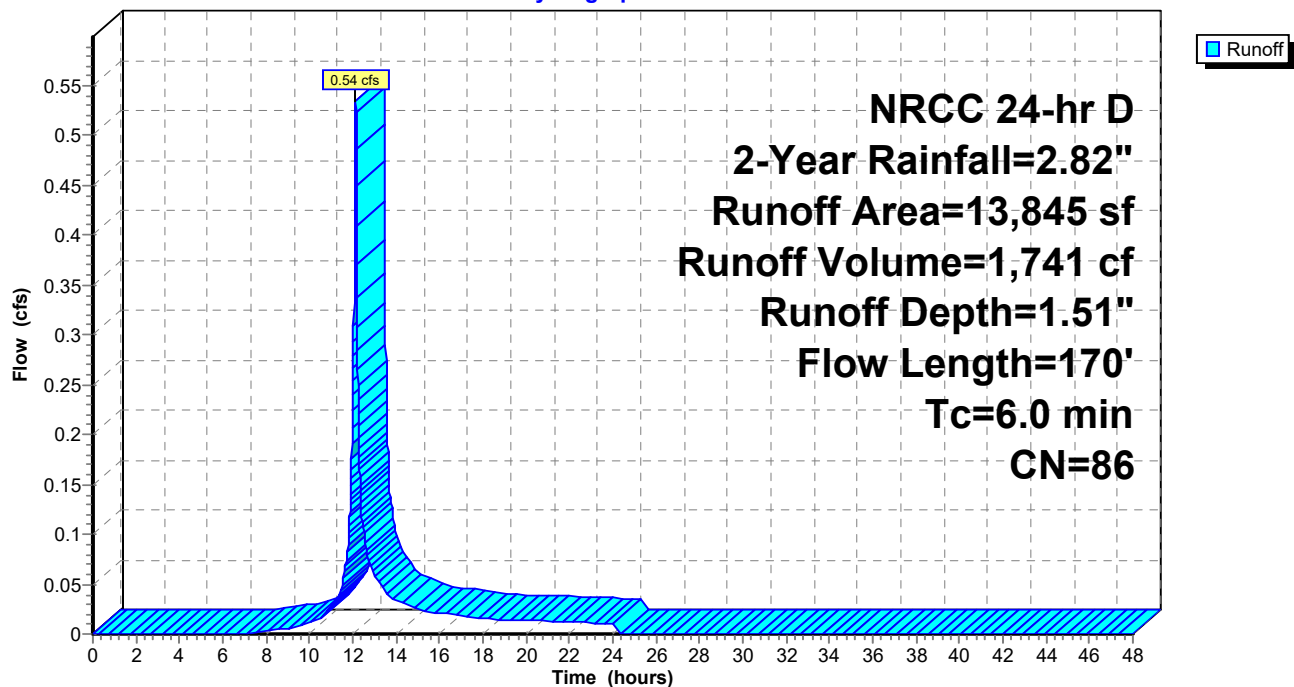
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
5,431	98	Unconnected pavement, HSG B
8,414	79	<50% Grass cover, Poor, HSG B
13,845	86	Weighted Average
8,414		60.77% Pervious Area
5,431		39.23% Impervious Area
5,431		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.2	44	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
1.9	170	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Subcatchment 13: Sub-catchment 13

Runoff = 0.01 cfs @ 12.48 hrs, Volume= 106 cf, Depth= 0.30"
Routed to Link DP-2 : DP-2

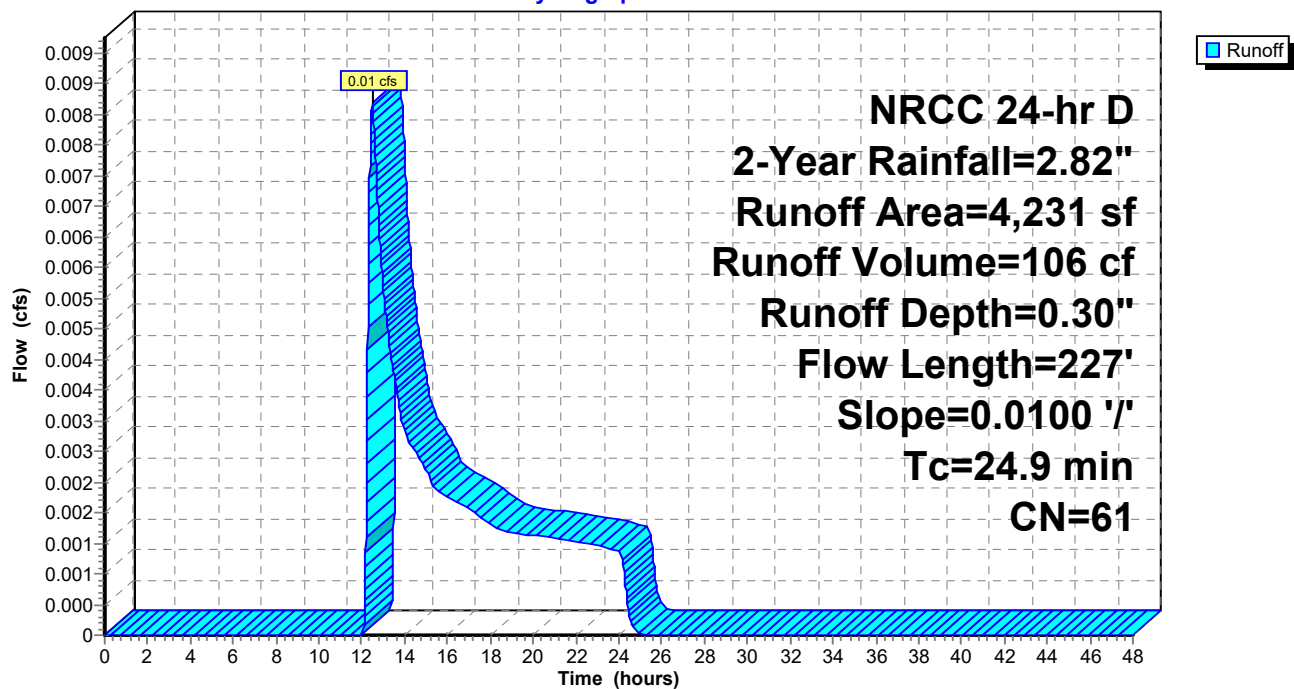
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=2.82"

Area (sf)	CN	Description
4,231	61	>75% Grass cover, Good, HSG B
4,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	227	0.0100	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"

Subcatchment 13: Sub-catchment 13

Hydrograph



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NRCC 24-hr D 2-Year Rainfall=2.82"

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Summary for Pond 1P: Diversion Structure

[57] Hint: Peaked at 229.60' (Flood elevation advised)

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 2.47" for 2-Year event
Inflow = 13.57 cfs @ 12.13 hrs, Volume= 49,711 cf
Outflow = 13.57 cfs @ 12.13 hrs, Volume= 49,711 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.79 cfs @ 11.97 hrs, Volume= 45,927 cf
Routed to Link 1L : Wet Well/Pump
Secondary = 7.78 cfs @ 12.13 hrs, Volume= 3,783 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 229.60' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	226.32'	24.0" Round Culvert L= 7.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.32' / 226.28' S= 0.0052 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Secondary	226.38'	30.0" Round Culvert L= 27.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.38' / 226.24' S= 0.0052 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#3	Device 2	228.99'	6.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Device 1	225.00'	Special & User-Defined Elev. (feet) 225.00 226.00 240.00 Disch. (cfs) 0.000 5.790 5.790

Primary OutFlow Max=5.79 cfs @ 11.97 hrs HW=229.03' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 5.79 cfs of 17.39 cfs potential flow)

↑ **4=Special & User-Defined** (Custom Controls 5.79 cfs)

Secondary OutFlow Max=7.77 cfs @ 12.13 hrs HW=229.59' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 7.77 cfs of 29.17 cfs potential flow)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 7.77 cfs @ 2.14 fps)

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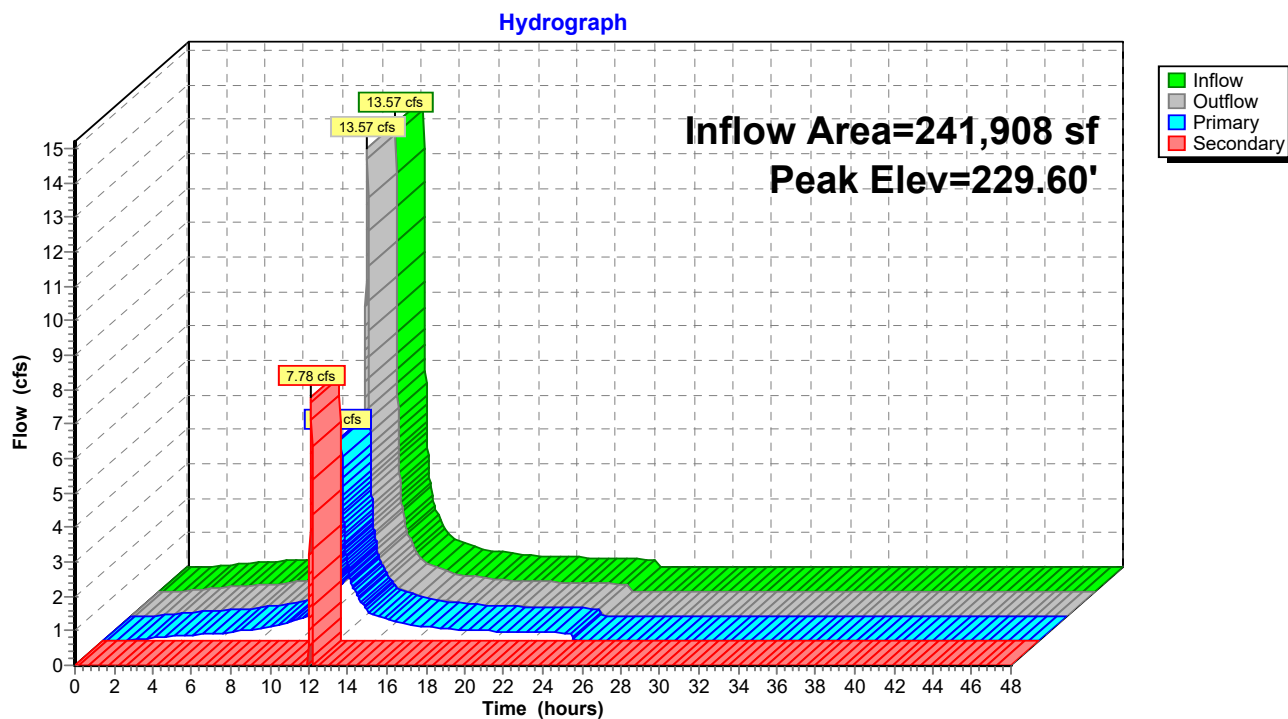
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Pond 1P: Diversion Structure



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NRCC 24-hr D 2-Year Rainfall=2.82"

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Summary for Pond 2P: AGST

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 2.28" for 2-Year event
Inflow = 5.79 cfs @ 11.97 hrs, Volume= 45,927 cf
Outflow = 0.22 cfs @ 7.87 hrs, Volume= 35,976 cf, Atten= 96%, Lag= 0.0 min
Primary = 0.22 cfs @ 7.87 hrs, Volume= 35,976 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 259.25' @ 23.69 hrs Surf.Area= 908 sf Storage= 29,150 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 759.1 min (1,534.5 - 775.4)

Volume	Invert	Avail.Storage	Storage Description
#1	227.14'	38,133 cf	34.00'D x 42.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	0.223 cfs Constant Flow/Skimmer
#2	Primary	265.14'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

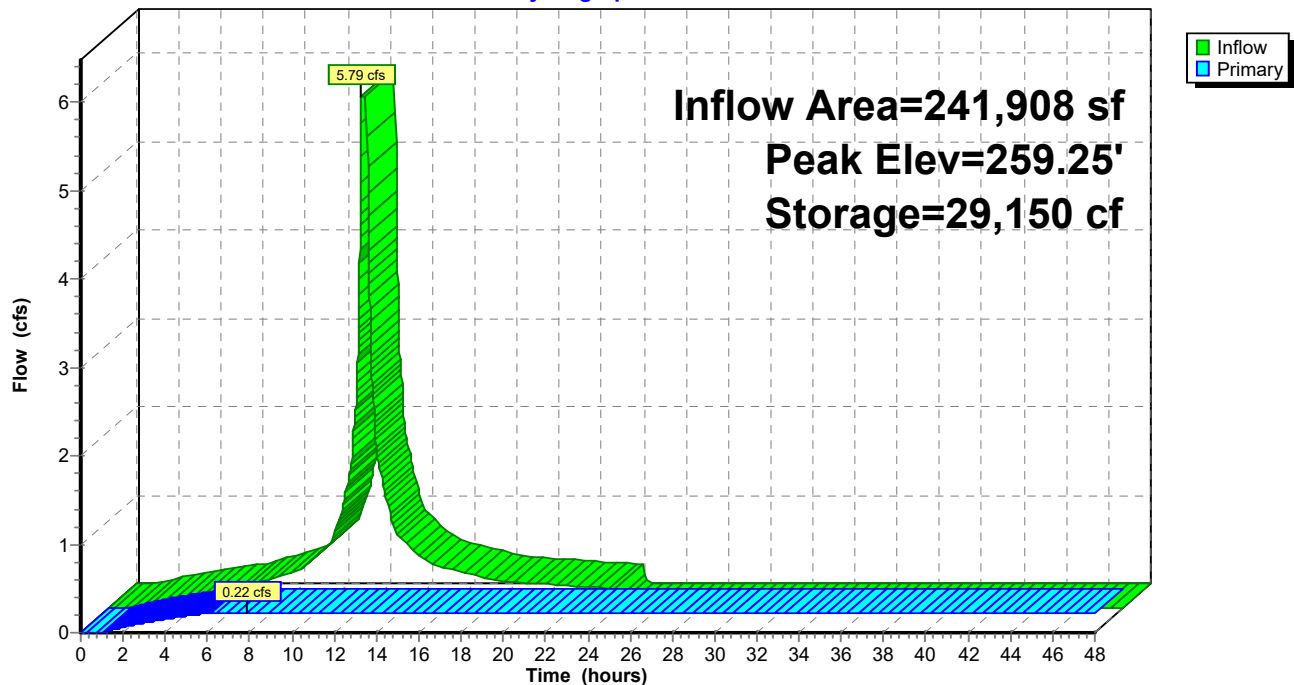
Primary OutFlow Max=0.22 cfs @ 7.87 hrs HW=227.56' TW=0.00' (Dynamic Tailwater)

1=Constant Flow/Skimmer (Constant Controls 0.22 cfs)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: AGST

Hydrograph



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NRCC 24-hr D 2-Year Rainfall=2.82"

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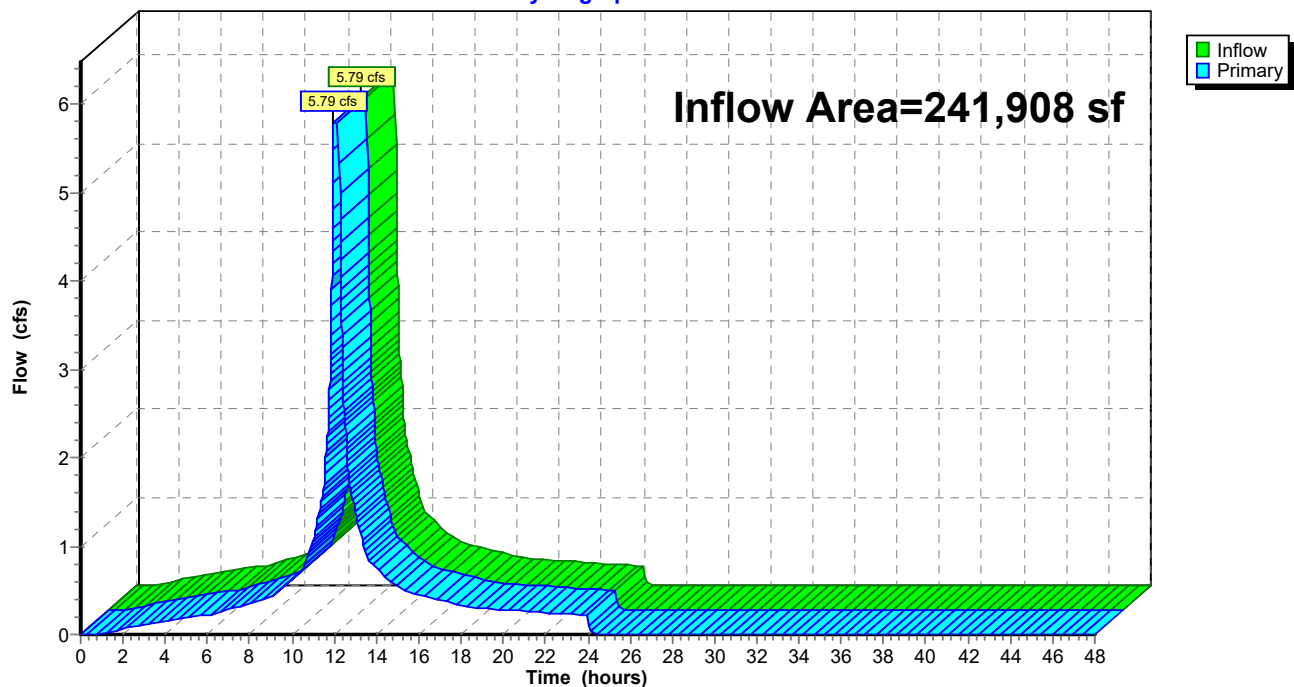
Summary for Link 1L: Wet Well/Pump

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 2.28" for 2-Year event
Inflow = 5.79 cfs @ 11.97 hrs, Volume= 45,927 cf
Primary = 5.79 cfs @ 11.97 hrs, Volume= 45,927 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : AGST

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link 1L: Wet Well/Pump

Hydrograph



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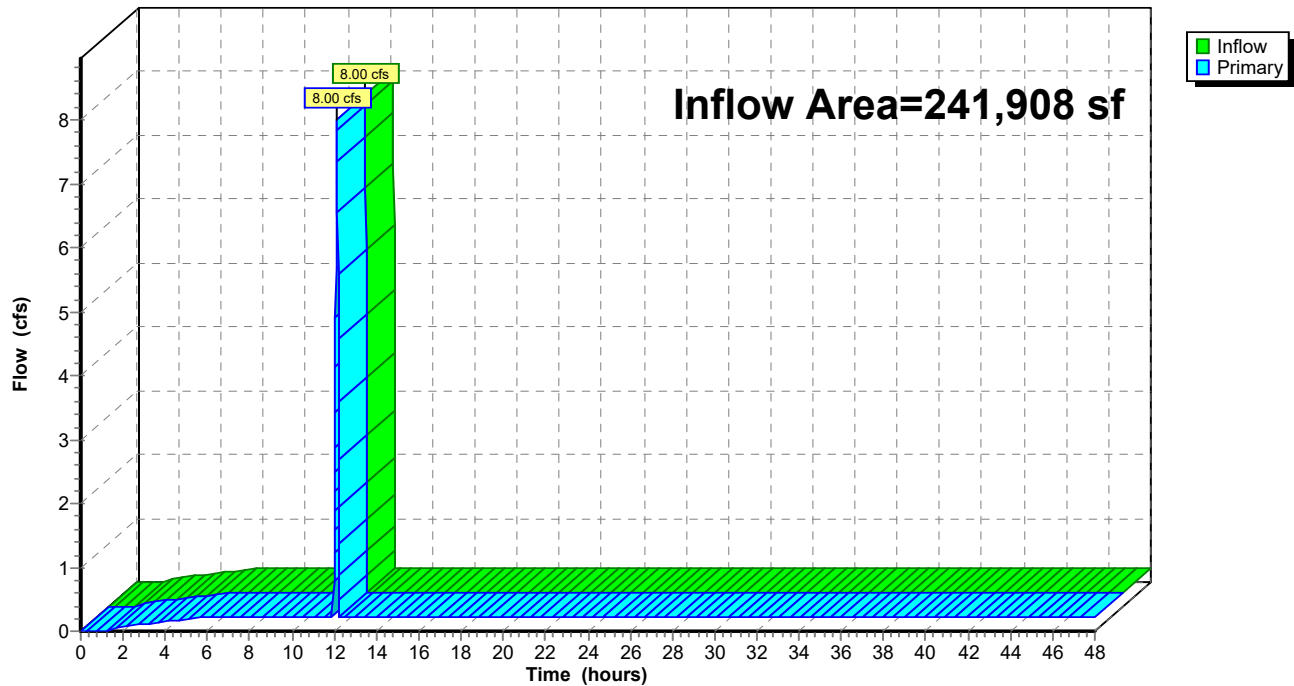
Summary for Link DP-1: DP-1

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth > 1.97" for 2-Year event
Inflow = 8.00 cfs @ 12.13 hrs, Volume= 39,759 cf
Primary = 8.00 cfs @ 12.13 hrs, Volume= 39,759 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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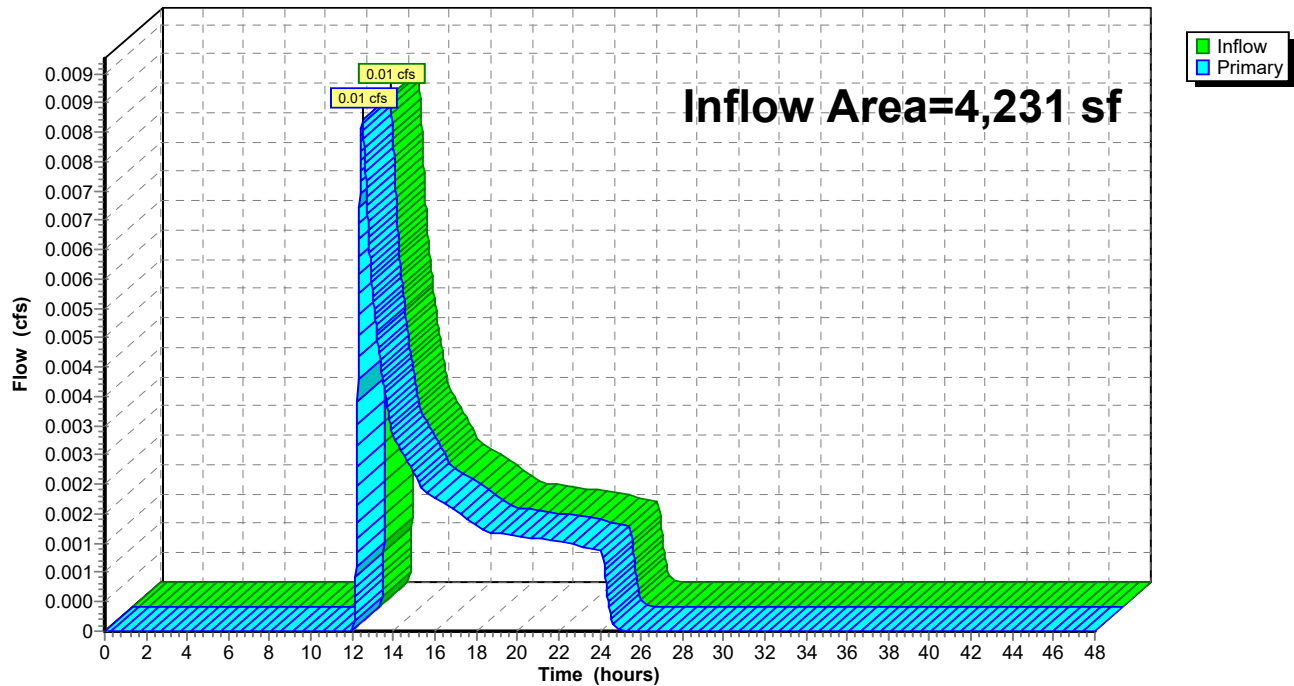
Summary for Link DP-2: DP-2

Inflow Area = 4,231 sf, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event
Inflow = 0.01 cfs @ 12.48 hrs, Volume= 106 cf
Primary = 0.01 cfs @ 12.48 hrs, Volume= 106 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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NRCC 24-hr D 10-Year Rainfall=4.16"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=851' Tc=6.0 min CN=98 Runoff=2.90 cfs 10,986 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=946' Tc=6.0 min CN=98 Runoff=0.64 cfs 2,442 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=897' Tc=6.0 min CN=98 Runoff=0.61 cfs 2,329 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 97.94% Impervious Runoff Depth=3.92" Flow Length=632' Tc=6.0 min CN=98 Runoff=4.97 cfs 18,840 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=500' Tc=6.0 min CN=98 Runoff=1.24 cfs 4,682 cf
Subcatchment6: Sub-catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=490' Tc=6.0 min CN=98 Runoff=1.76 cfs 6,650 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=393' Tc=6.0 min CN=98 Runoff=2.02 cfs 7,647 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=359' Tc=6.0 min CN=98 Runoff=2.20 cfs 8,350 cf
Subcatchment9: Sub-catchment9	Runoff Area=7,621 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=216' Tc=6.0 min CN=98 Runoff=0.66 cfs 2,493 cf
Subcatchment10: Sub-catchment10	Runoff Area=29,279 sf 73.39% Impervious Runoff Depth=3.38" Flow Length=350' Tc=6.0 min CN=93 Runoff=2.36 cfs 8,237 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=3.92" Flow Length=900' Tc=6.0 min CN=98 Runoff=0.16 cfs 596 cf
Subcatchment12: Sub-catchment12	Runoff Area=13,845 sf 39.23% Impervious Runoff Depth=2.69" Flow Length=170' Tc=6.0 min CN=86 Runoff=0.94 cfs 3,106 cf
Subcatchment13: Sub-catchment13	Runoff Area=4,231 sf 0.00% Impervious Runoff Depth=0.90" Flow Length=227' Slope=0.0100 '/' Tc=24.9 min CN=61 Runoff=0.05 cfs 316 cf
Pond 1P: Diversion Structure	Peak Elev=229.88' Inflow=20.46 cfs 76,357 cf Primary=5.79 cfs 66,953 cf Secondary=14.67 cfs 9,404 cf Outflow=20.46 cfs 76,357 cf
Pond 2P: AGST	Peak Elev=265.74' Storage=35,047 cf Inflow=5.79 cfs 66,953 cf Outflow=1.52 cfs 51,519 cf
Link 1L: Wet Well/Pump	Inflow=5.79 cfs 66,953 cf Primary=5.79 cfs 66,953 cf

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NRCC 24-hr D 10-Year Rainfall=4.16"

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Link DP-1: DP-1

Inflow=14.89 cfs 60,923 cf

Primary=14.89 cfs 60,923 cf

Link DP-2: DP-2

Inflow=0.05 cfs 316 cf

Primary=0.05 cfs 316 cf

Total Runoff Area = 246,139 sf Runoff Volume = 76,672 cf Average Runoff Depth = 3.74"
8.79% Pervious = 21,624 sf 91.21% Impervious = 224,515 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 2.90 cfs @ 12.13 hrs, Volume= 10,986 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.26		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.7	49	0.0030	1.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.8	851	Total, Increased to minimum Tc = 6.0 min			

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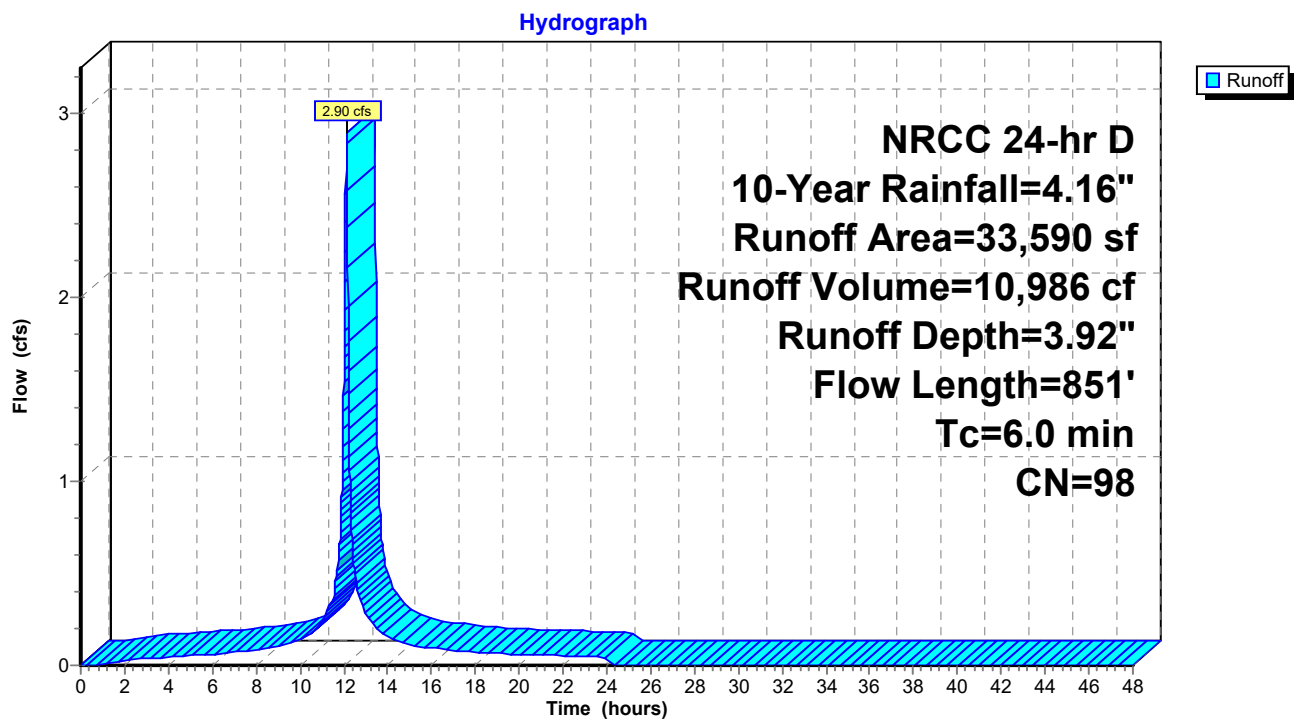
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NRCC 24-hr D 10-Year Rainfall=4.16"

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Subcatchment 1: Sub-catchment 1



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Summary for Subcatchment 2: Sub-catchment 2

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,442 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	41	0.0140	1.00		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
1.0	80	0.0010	1.38	0.75	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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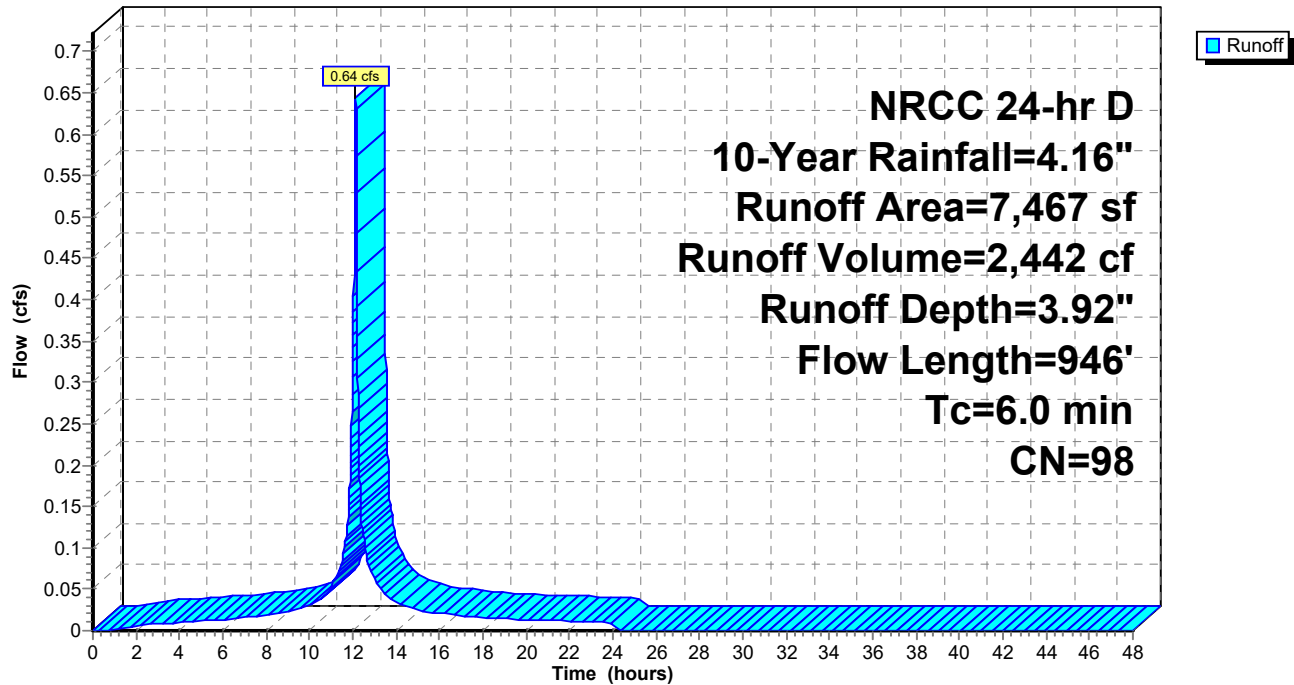
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n= 0.012 Concrete pipe, finished

5.1 946 Total, Increased to minimum Tc = 6.0 min

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

Runoff = 0.61 cfs @ 12.13 hrs, Volume= 2,329 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	62	0.0030	0.59		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.1	10	0.0012	1.51	0.82	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'

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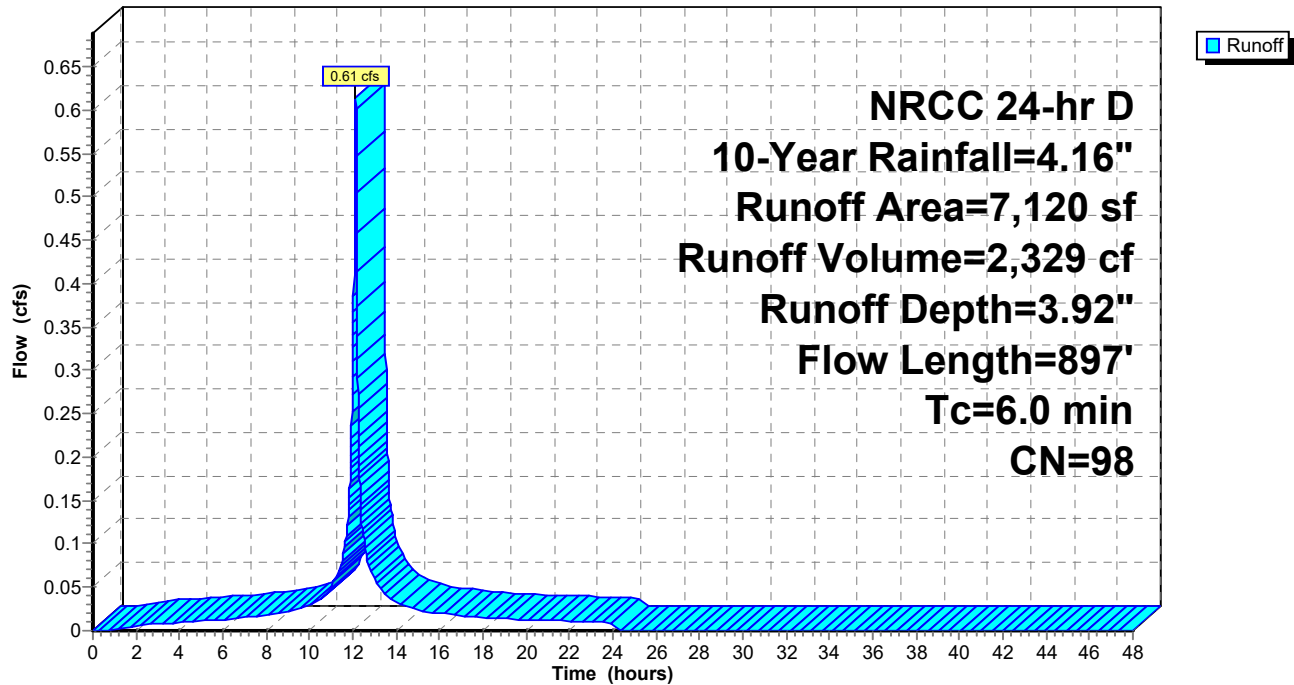
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n= 0.012 Concrete pipe, finished

5.3 897 Total, Increased to minimum Tc = 6.0 min

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

Runoff = 4.97 cfs @ 12.13 hrs, Volume= 18,840 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
51,087	98	Unconnected pavement, HSG B
1,189	79	<50% Grass cover, Poor, HSG B
57,605	98	Weighted Average
1,189		2.06% Pervious Area
56,416		97.94% Impervious Area
51,087		90.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.12		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	77	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.3	632	Total, Increased to minimum Tc = 6.0 min			

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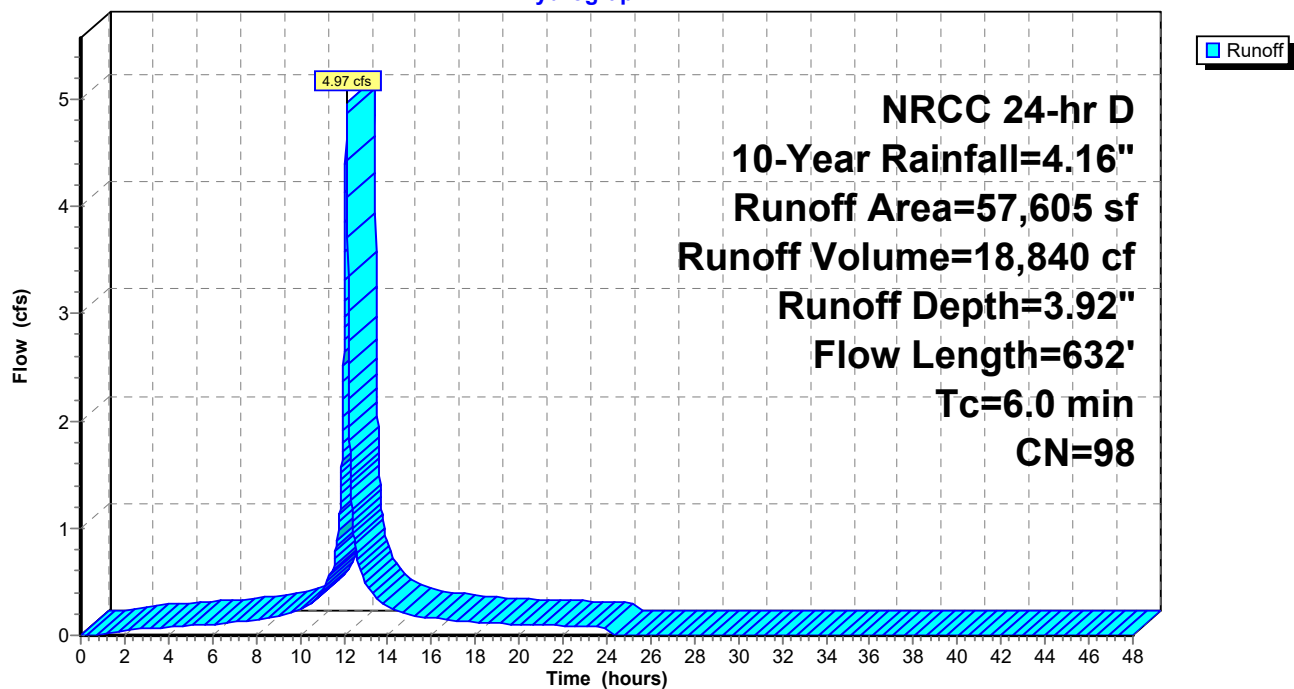
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Subcatchment 4: Sub-catchment 4

Hydrograph



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Summary for Subcatchment 5: Sub-catchment 5

Runoff = 1.24 cfs @ 12.13 hrs, Volume= 4,682 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	55	0.0550	1.83		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.1	500	Total, Increased to minimum Tc = 6.0 min			

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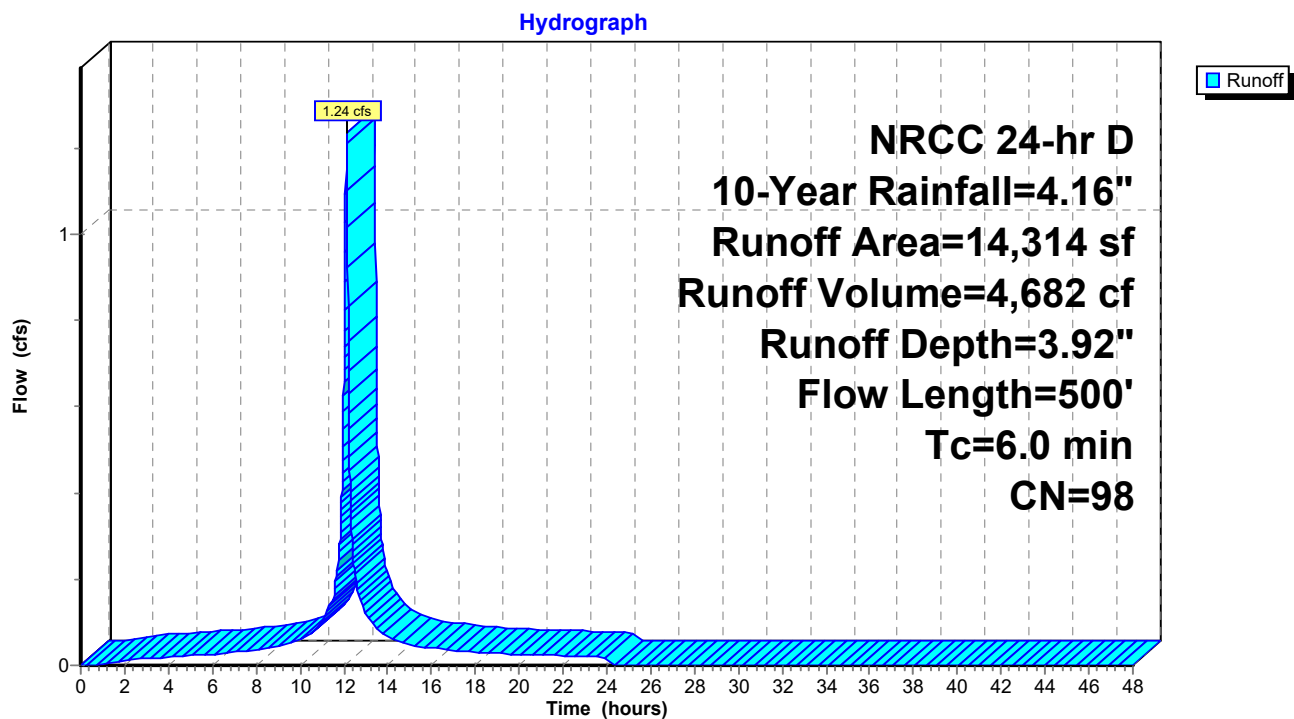
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Subcatchment 5: Sub-catchment 5



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Summary for Subcatchment 6: Sub-catchment 6

[47] Hint: Peak is 105% of capacity of segment #3

Runoff = 1.76 cfs @ 12.13 hrs, Volume= 6,650 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0050	3.08	1.68	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.1	490	Total, Increased to minimum Tc = 6.0 min			

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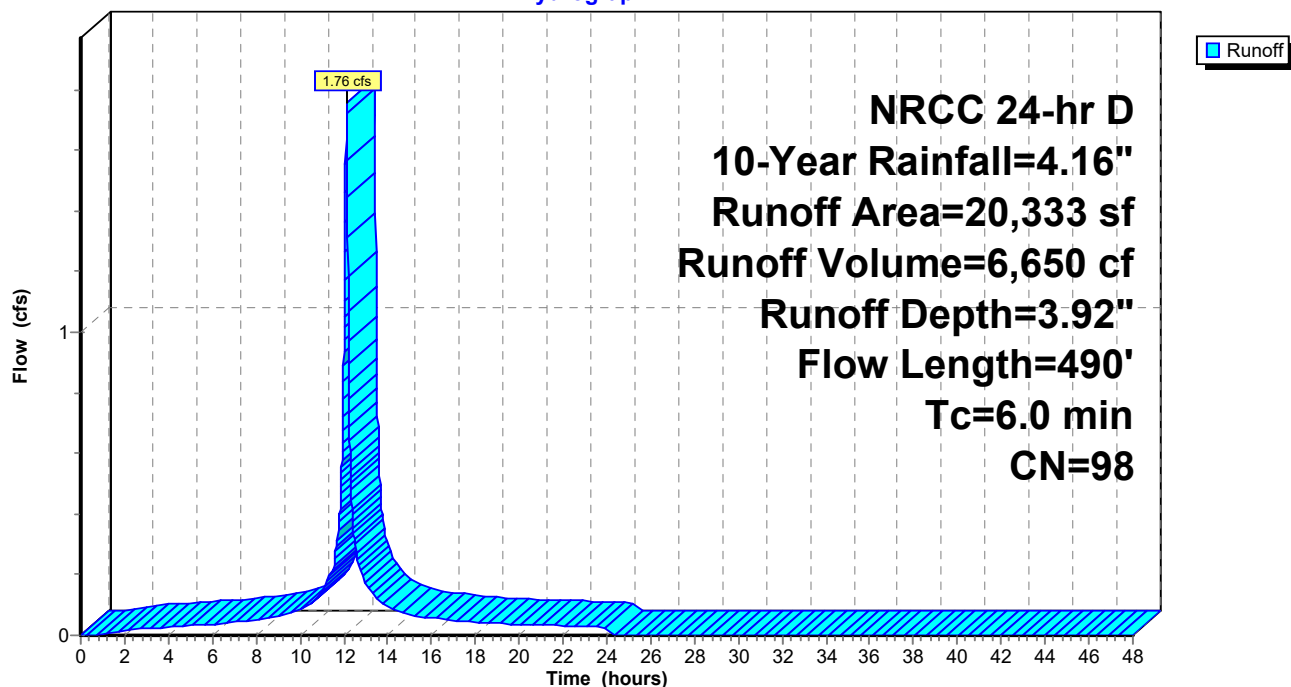
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Subcatchment 6: Sub-catchment 6

Hydrograph



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 2.02 cfs @ 12.13 hrs, Volume= 7,647 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
19,985	98	Unconnected pavement, HSG B
3,396	98	Roofs, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	393	Total, Increased to minimum Tc = 6.0 min			

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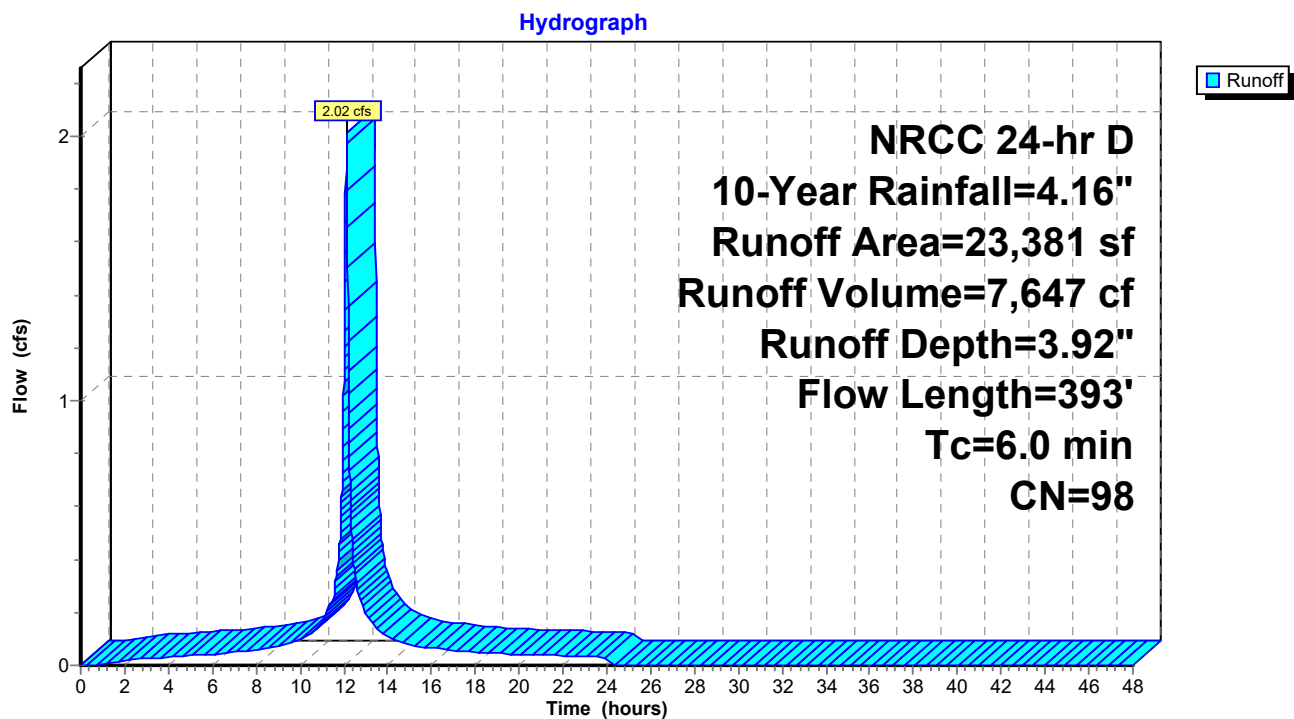
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Subcatchment 7: Sub-catchment 7



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 2.20 cfs @ 12.13 hrs, Volume= 8,350 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
23,413	98	Unconnected pavement, HSG B
2,118	98	Roofs, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,413		91.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.90		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	359	Total, Increased to minimum Tc = 6.0 min			

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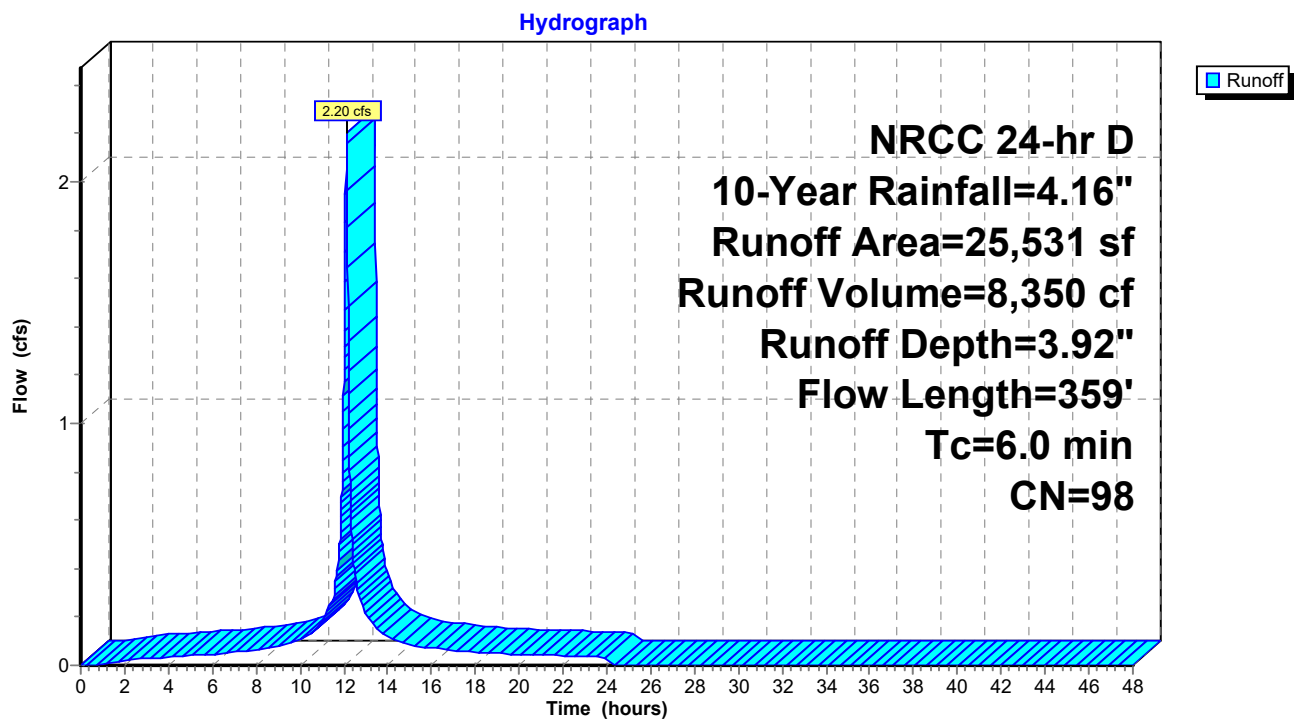
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Subcatchment 8: Sub-catchment 8



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.66 cfs @ 12.13 hrs, Volume= 2,493 cf, Depth= 3.92"
Routed to Pond 1P : Diversion Structure

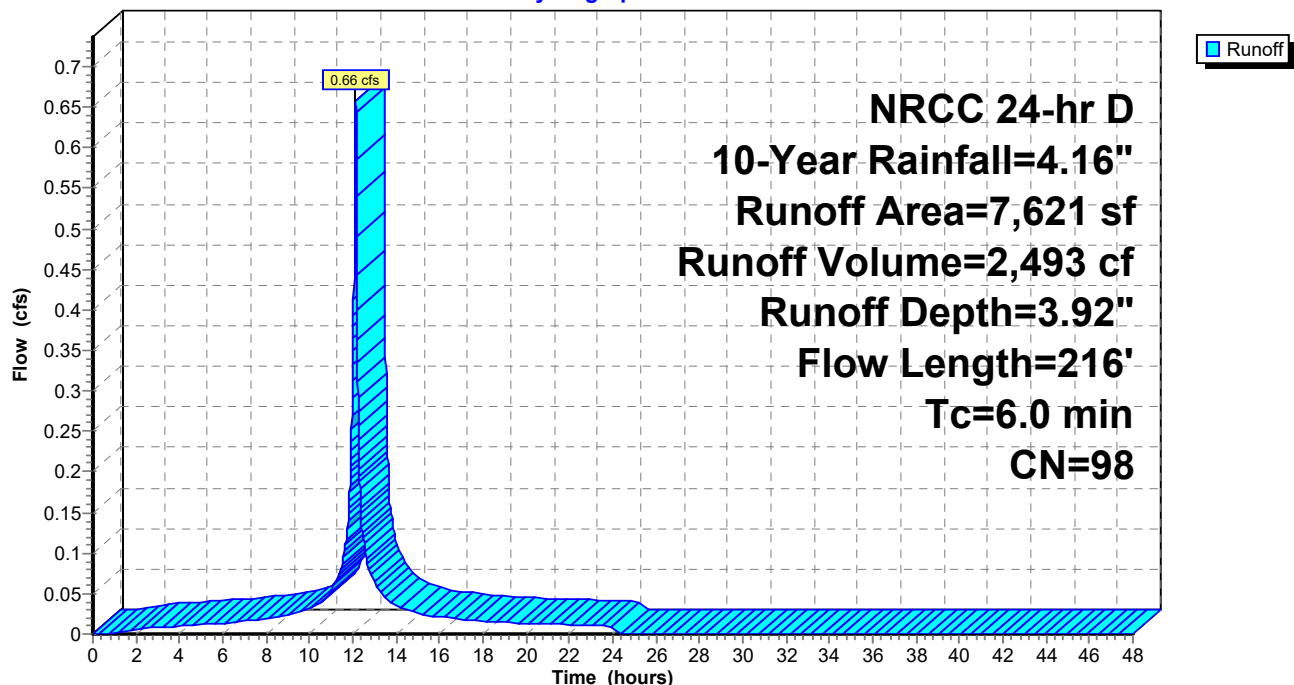
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
7,621	98	Unconnected pavement, HSG B
7,621		100.00% Impervious Area
7,621		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0090	1.00		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.7	62	0.0060	1.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.2	45	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	216	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 9: Sub-catchment 9

Hydrograph



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NRCC 24-hr D 10-Year Rainfall=4.16"

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Summary for Subcatchment 10: Sub-catchment 10

Runoff = 2.36 cfs @ 12.13 hrs, Volume= 8,237 cf, Depth= 3.38"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
14,729	98	Unconnected pavement, HSG B
6,760	98	Roofs, HSG B
7,790	79	<50% Grass cover, Poor, HSG B
29,279	93	Weighted Average
7,790		26.61% Pervious Area
21,489		73.39% Impervious Area
14,729		68.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	75	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	114	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.8	350	Total, Increased to minimum Tc = 6.0 min			

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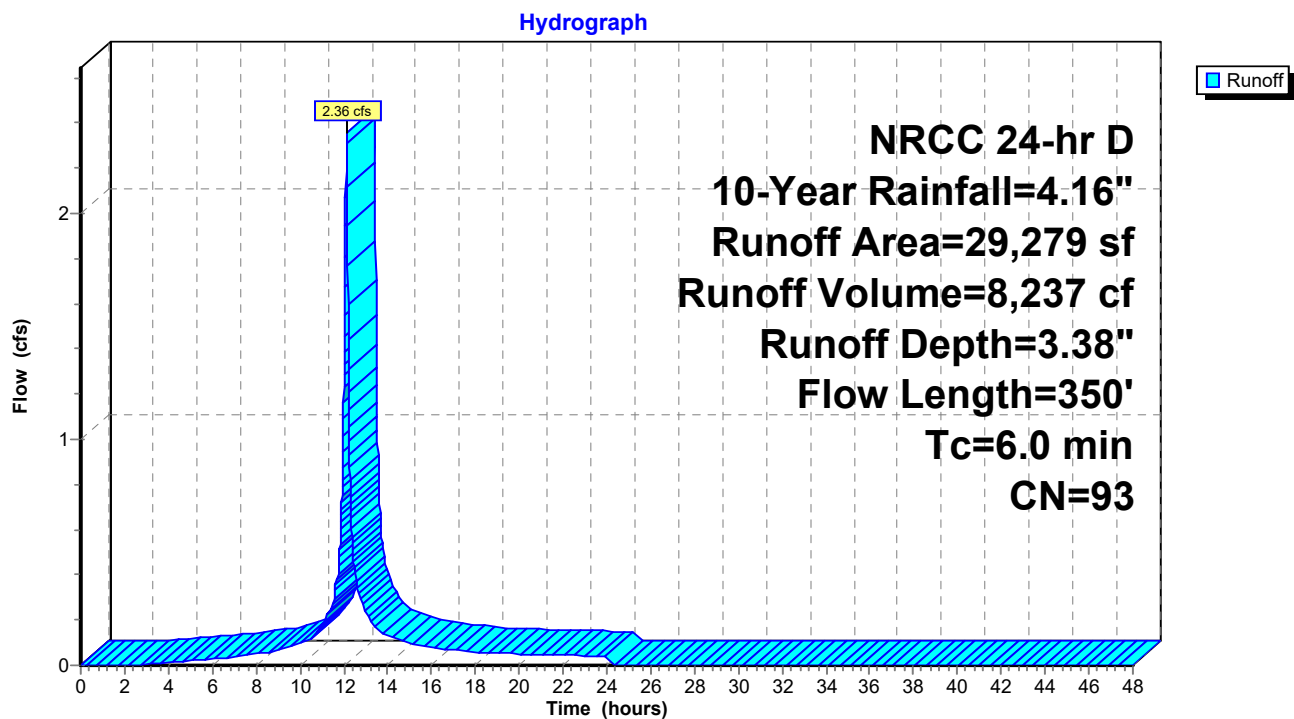
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Subcatchment 10: Sub-catchment 10



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.16 cfs @ 12.13 hrs, Volume= 596 cf, Depth= 3.92"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
1,822	98	Unconnected pavement, HSG B
1,822		100.00% Impervious Area
1,822		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	53	0.0690	1.99		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	59	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.2	39	0.0050	4.03	4.95	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.1	900	Total, Increased to minimum Tc = 6.0 min			

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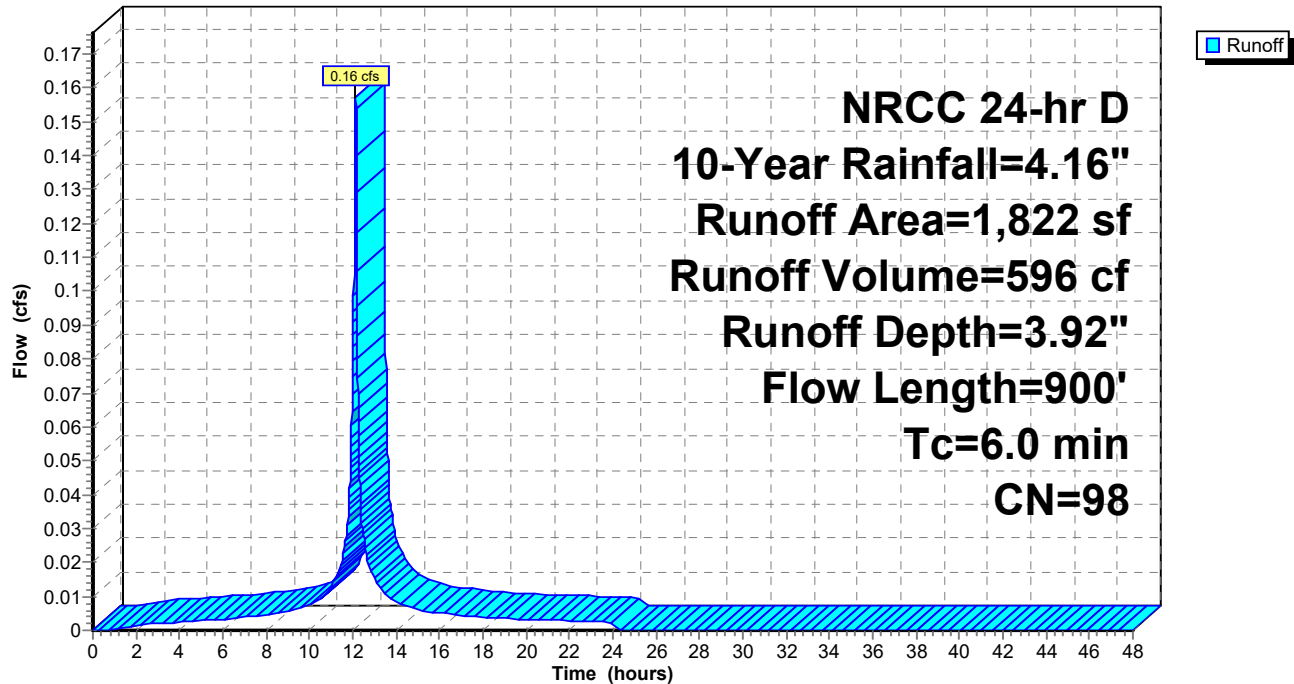
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Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 0.94 cfs @ 12.13 hrs, Volume= 3,106 cf, Depth= 2.69"
Routed to Pond 1P : Diversion Structure

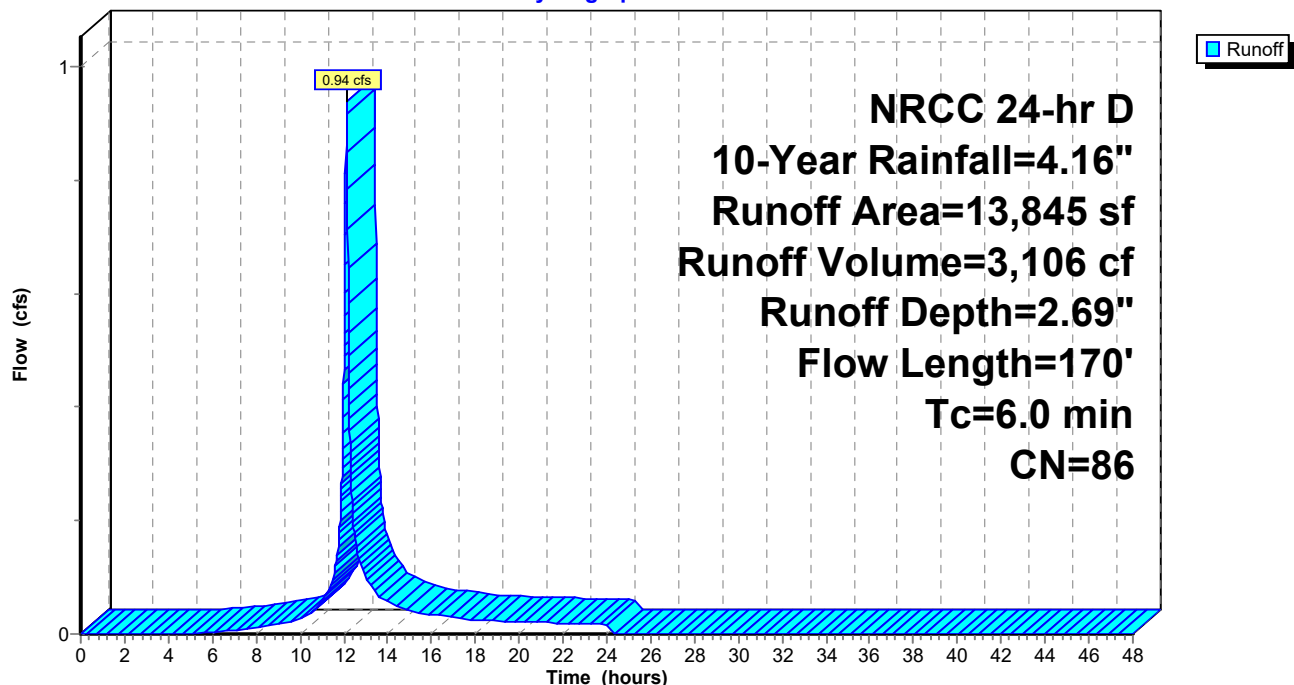
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
5,431	98	Unconnected pavement, HSG B
8,414	79	<50% Grass cover, Poor, HSG B
13,845	86	Weighted Average
8,414		60.77% Pervious Area
5,431		39.23% Impervious Area
5,431		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.2	44	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
1.9	170	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Subcatchment 13: Sub-catchment 13

Runoff = 0.05 cfs @ 12.39 hrs, Volume= 316 cf, Depth= 0.90"
Routed to Link DP-2 : DP-2

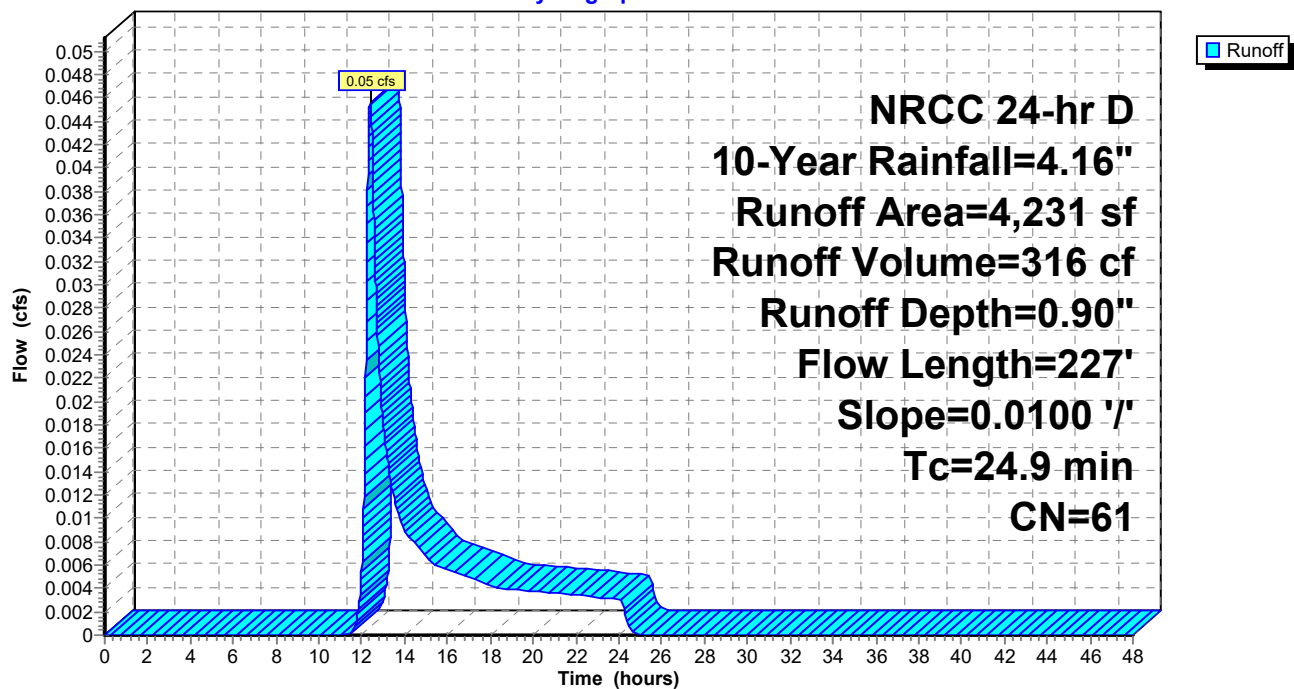
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.16"

Area (sf)	CN	Description
4,231	61	>75% Grass cover, Good, HSG B
4,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	227	0.0100	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"

Subcatchment 13: Sub-catchment 13

Hydrograph



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Summary for Pond 1P: Diversion Structure

[57] Hint: Peaked at 229.88' (Flood elevation advised)

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 3.79" for 10-Year event
Inflow = 20.46 cfs @ 12.13 hrs, Volume= 76,357 cf
Outflow = 20.46 cfs @ 12.13 hrs, Volume= 76,357 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.79 cfs @ 11.88 hrs, Volume= 66,953 cf
Routed to Link 1L : Wet Well/Pump
Secondary = 14.67 cfs @ 12.13 hrs, Volume= 9,404 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 229.88' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	226.32'	24.0" Round Culvert L= 7.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.32' / 226.28' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Secondary	226.38'	30.0" Round Culvert L= 27.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.38' / 226.24' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#3	Device 2	228.99'	6.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Device 1	225.00'	Special & User-Defined Elev. (feet) 225.00 226.00 240.00 Disch. (cfs) 0.000 5.790 5.790

Primary OutFlow Max=5.79 cfs @ 11.88 hrs HW=229.03' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 5.79 cfs of 17.41 cfs potential flow)
↑ **4=Special & User-Defined** (Custom Controls 5.79 cfs)

Secondary OutFlow Max=14.65 cfs @ 12.13 hrs HW=229.88' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 14.65 cfs of 32.13 cfs potential flow)
↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 14.65 cfs @ 2.74 fps)

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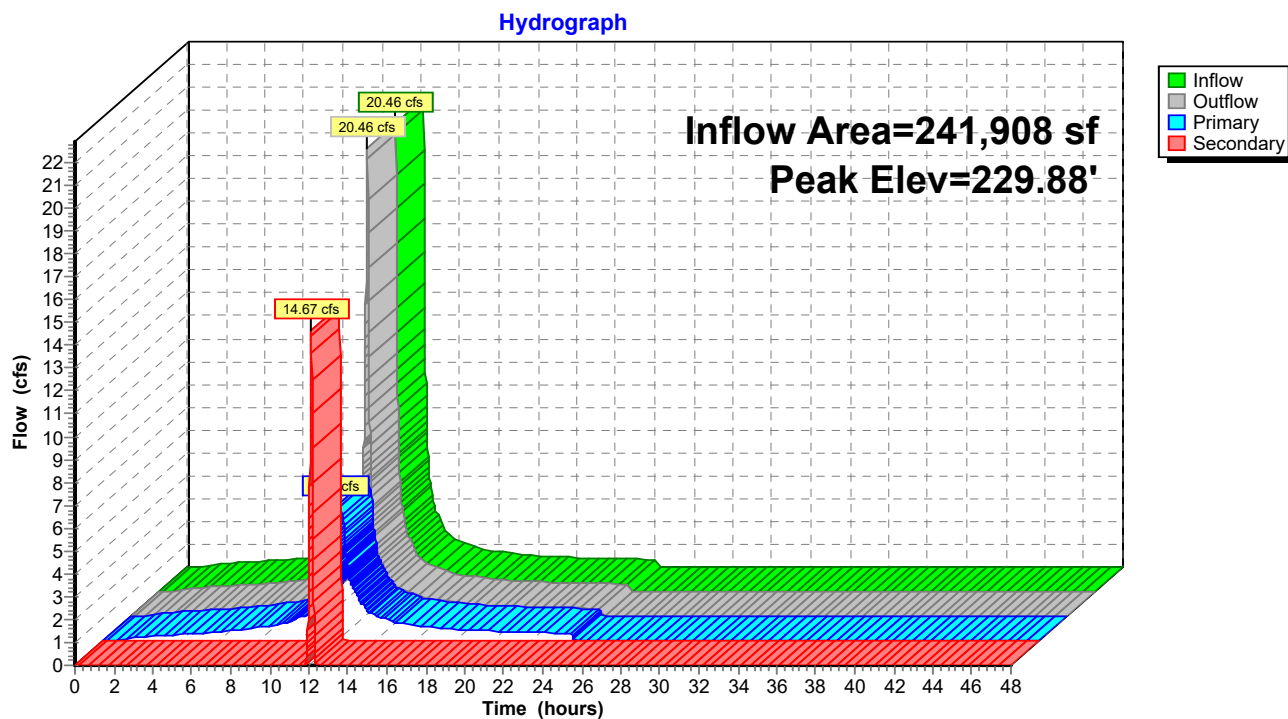
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Pond 1P: Diversion Structure



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Summary for Pond 2P: AGST

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 3.32" for 10-Year event
Inflow = 5.79 cfs @ 11.88 hrs, Volume= 66,953 cf
Outflow = 1.52 cfs @ 13.38 hrs, Volume= 51,519 cf, Atten= 74%, Lag= 90.1 min
Primary = 1.52 cfs @ 13.38 hrs, Volume= 51,519 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 265.74' @ 13.38 hrs Surf.Area= 908 sf Storage= 35,047 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 585.5 min (1,352.2 - 766.7)

Volume	Invert	Avail.Storage	Storage Description
#1	227.14'	38,133 cf	34.00'D x 42.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	0.223 cfs Constant Flow/Skimmer
#2	Primary	265.14'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

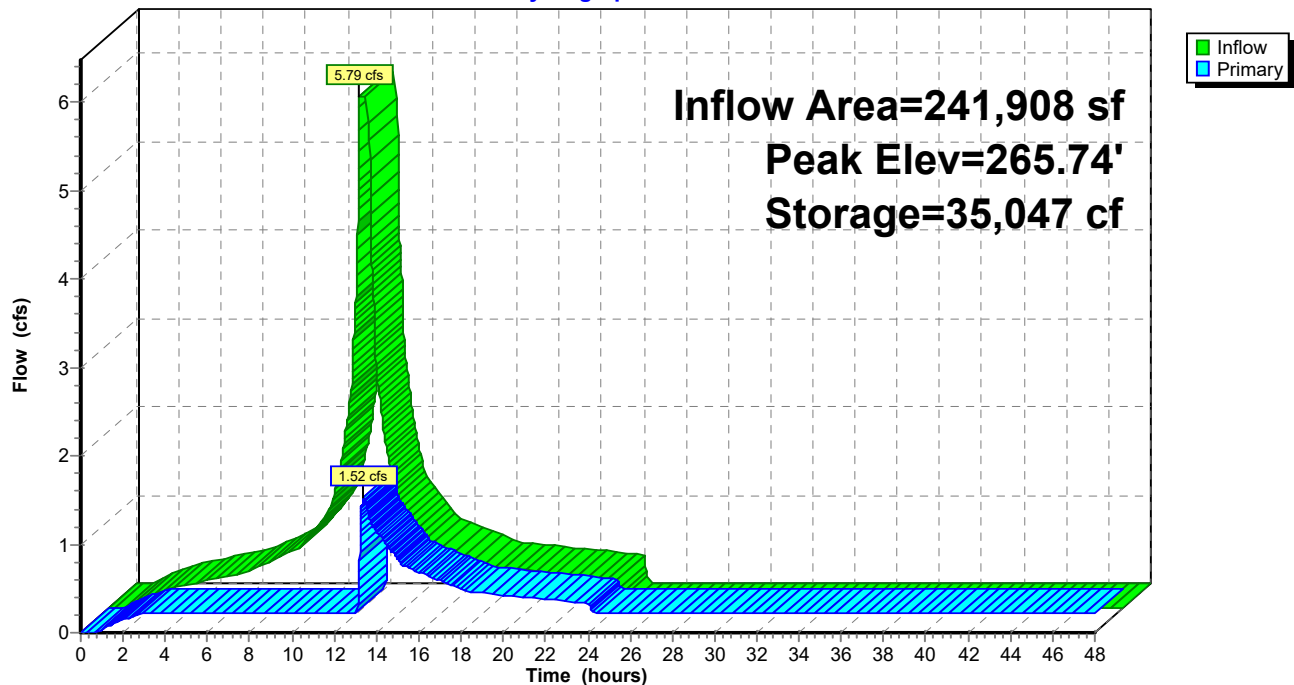
Primary OutFlow Max=1.52 cfs @ 13.38 hrs HW=265.74' TW=0.00' (Dynamic Tailwater)

1=Constant Flow/Skimmer (Constant Controls 0.22 cfs)

2=Orifice/Grate (Orifice Controls 1.30 cfs @ 2.64 fps)

Pond 2P: AGST

Hydrograph



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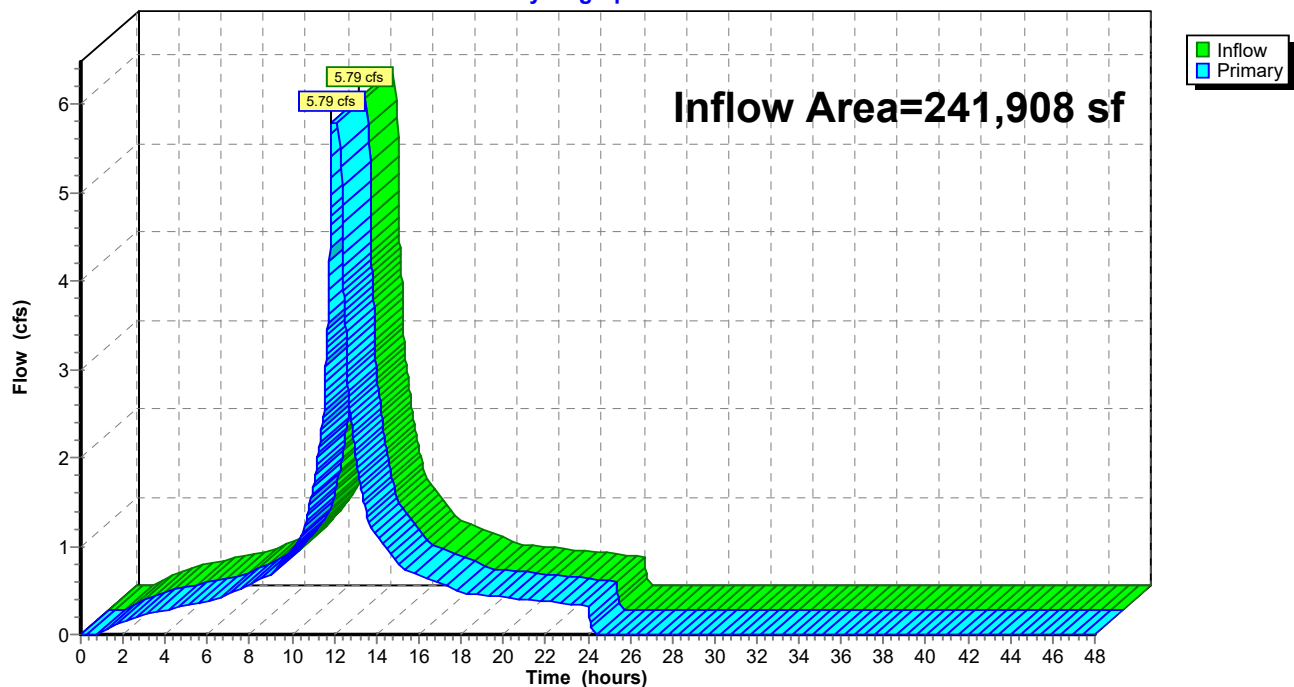
Summary for Link 1L: Wet Well/Pump

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 3.32" for 10-Year event
Inflow = 5.79 cfs @ 11.88 hrs, Volume= 66,953 cf
Primary = 5.79 cfs @ 11.88 hrs, Volume= 66,953 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : AGST

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link 1L: Wet Well/Pump

Hydrograph



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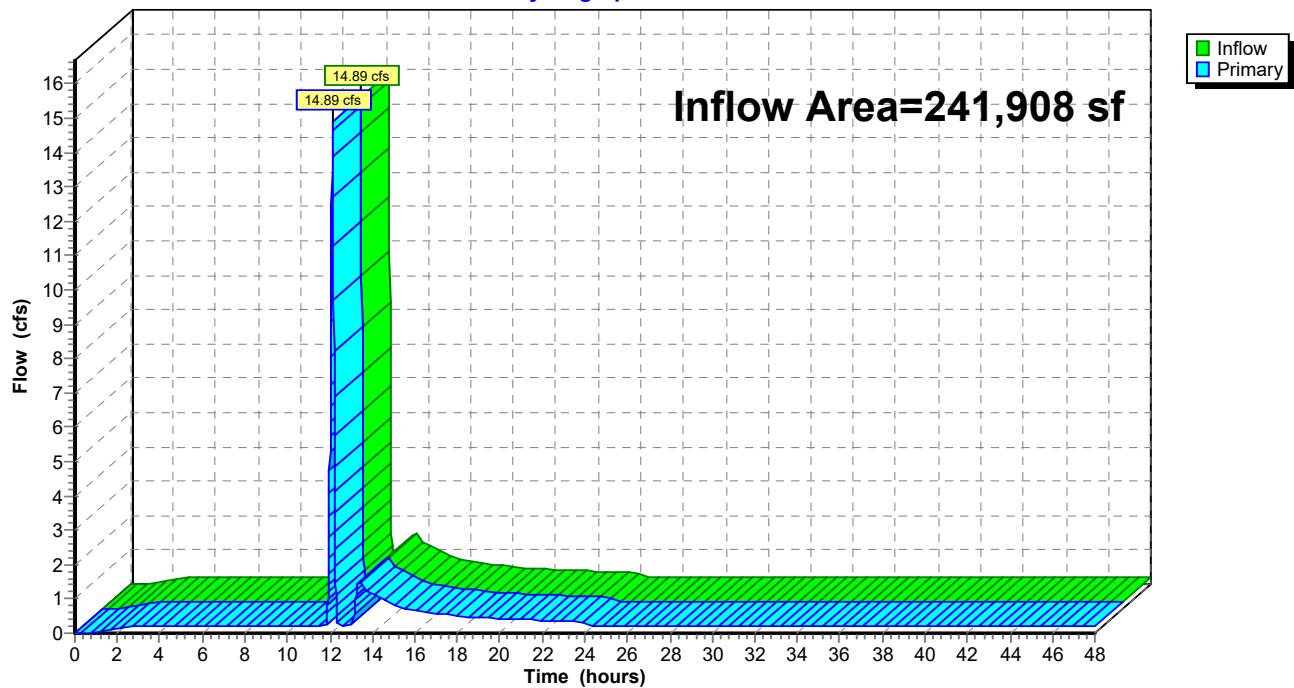
Summary for Link DP-1: DP-1

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth > 3.02" for 10-Year event
Inflow = 14.89 cfs @ 12.13 hrs, Volume= 60,923 cf
Primary = 14.89 cfs @ 12.13 hrs, Volume= 60,923 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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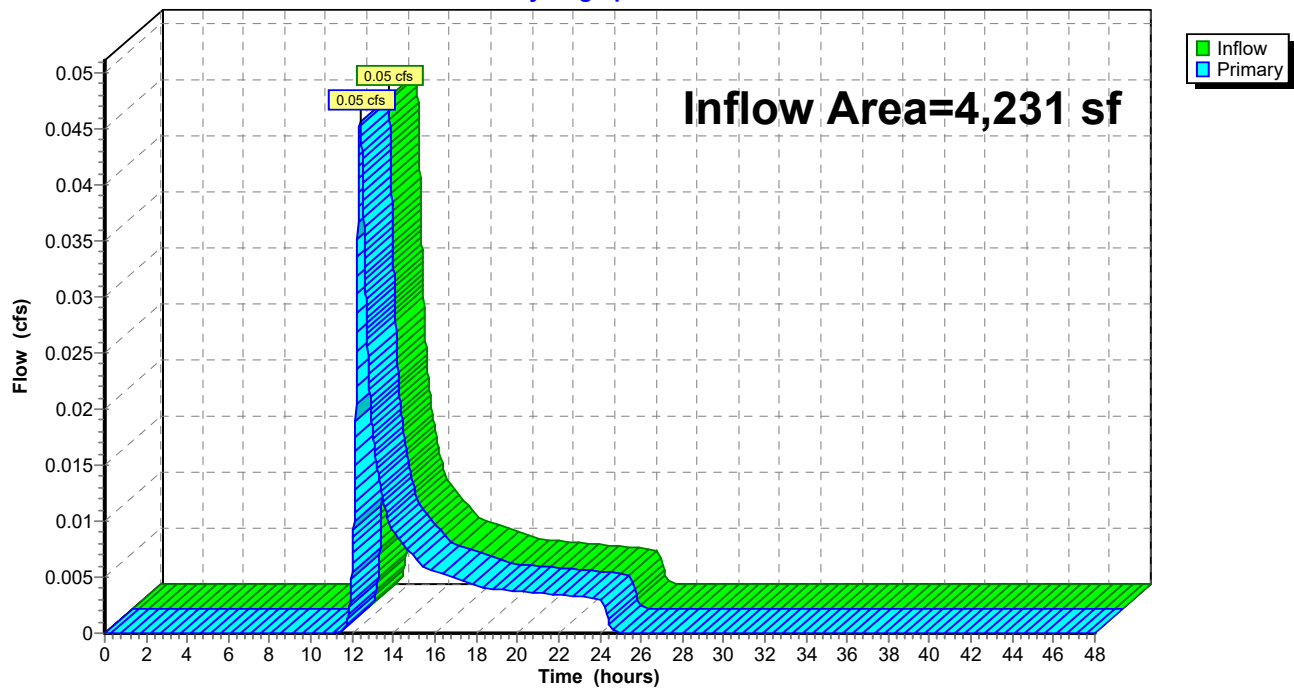
Summary for Link DP-2: DP-2

Inflow Area = 4,231 sf, 0.00% Impervious, Inflow Depth = 0.90" for 10-Year event
Inflow = 0.05 cfs @ 12.39 hrs, Volume= 316 cf
Primary = 0.05 cfs @ 12.39 hrs, Volume= 316 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



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NRCC 24-hr D 50-Year Rainfall=6.15"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Sub-catchment1	Runoff Area=33,590 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=851' Tc=6.0 min CN=98 Runoff=4.30 cfs 16,548 cf
Subcatchment2: Sub-catchment2	Runoff Area=7,467 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=946' Tc=6.0 min CN=98 Runoff=0.96 cfs 3,679 cf
Subcatchment3: Sub-catchment3	Runoff Area=7,120 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=897' Tc=6.0 min CN=98 Runoff=0.91 cfs 3,508 cf
Subcatchment4: Sub-catchment4	Runoff Area=57,605 sf 97.94% Impervious Runoff Depth=5.91" Flow Length=632' Tc=6.0 min CN=98 Runoff=7.38 cfs 28,379 cf
Subcatchment5: Sub-catchment5	Runoff Area=14,314 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=500' Tc=6.0 min CN=98 Runoff=1.83 cfs 7,052 cf
Subcatchment6: Sub-catchment6	Runoff Area=20,333 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=490' Tc=6.0 min CN=98 Runoff=2.61 cfs 10,017 cf
Subcatchment7: Sub-catchment7	Runoff Area=23,381 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=393' Tc=6.0 min CN=98 Runoff=3.00 cfs 11,518 cf
Subcatchment8: Sub-catchment8	Runoff Area=25,531 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=359' Tc=6.0 min CN=98 Runoff=3.27 cfs 12,578 cf
Subcatchment9: Sub-catchment9	Runoff Area=7,621 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=216' Tc=6.0 min CN=98 Runoff=0.98 cfs 3,754 cf
Subcatchment10: Sub-catchment10	Runoff Area=29,279 sf 73.39% Impervious Runoff Depth=5.33" Flow Length=350' Tc=6.0 min CN=93 Runoff=3.62 cfs 13,006 cf
Subcatchment11: Sub-catchment11	Runoff Area=1,822 sf 100.00% Impervious Runoff Depth=5.91" Flow Length=900' Tc=6.0 min CN=98 Runoff=0.23 cfs 898 cf
Subcatchment12: Sub-catchment12	Runoff Area=13,845 sf 39.23% Impervious Runoff Depth=4.55" Flow Length=170' Tc=6.0 min CN=86 Runoff=1.55 cfs 5,252 cf
Subcatchment13: Sub-catchment13	Runoff Area=4,231 sf 0.00% Impervious Runoff Depth=2.11" Flow Length=227' Slope=0.0100 '/' Tc=24.9 min CN=61 Runoff=0.12 cfs 743 cf
Pond 1P: Diversion Structure	Peak Elev=230.21' Inflow=30.64 cfs 116,188 cf Primary=5.79 cfs 96,333 cf Secondary=24.85 cfs 19,854 cf Outflow=30.64 cfs 116,188 cf
Pond 2P: AGST	Peak Elev=267.61' Storage=36,742 cf Inflow=5.79 cfs 96,333 cf Outflow=5.53 cfs 80,849 cf
Link 1L: Wet Well/Pump	Inflow=5.79 cfs 96,333 cf Primary=5.79 cfs 96,333 cf

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NRCC 24-hr D 50-Year Rainfall=6.15"

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Link DP-1: DP-1

Inflow=28.79 cfs 100,704 cf
Primary=28.79 cfs 100,704 cf

Link DP-2: DP-2

Inflow=0.12 cfs 743 cf
Primary=0.12 cfs 743 cf

Total Runoff Area = 246,139 sf Runoff Volume = 116,930 cf Average Runoff Depth = 5.70"
8.79% Pervious = 21,624 sf 91.21% Impervious = 224,515 sf

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Summary for Subcatchment 1: Sub-catchment 1

Runoff = 4.30 cfs @ 12.13 hrs, Volume= 16,548 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
15,206	98	Roofs, HSG B
18,384	98	Unconnected pavement, HSG B
33,590	98	Weighted Average
33,590		100.00% Impervious Area
18,384		54.73% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.26		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.7	49	0.0030	1.11		Shallow Concentrated Flow , Paved Kv= 20.3 fps
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.8	851	Total, Increased to minimum Tc = 6.0 min			

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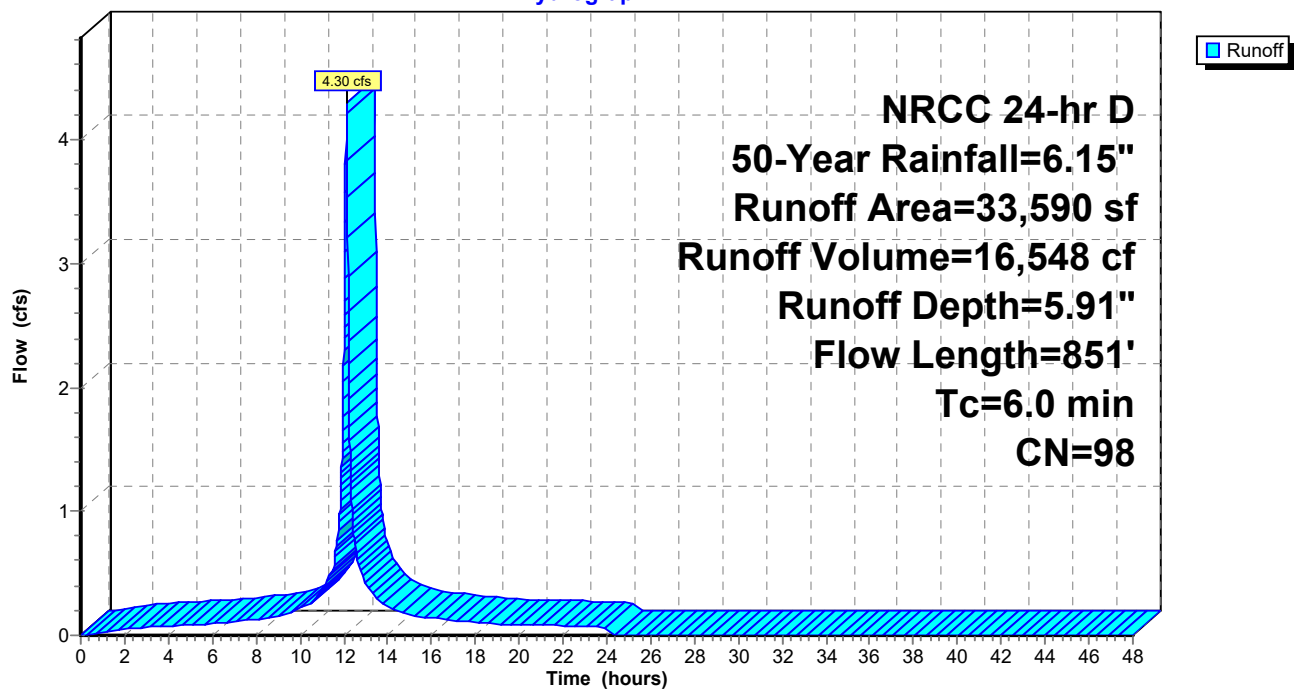
NRCC 24-hr D 50-Year Rainfall=6.15"

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Subcatchment 1: Sub-catchment 1

Hydrograph



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NRCC 24-hr D 50-Year Rainfall=6.15"

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Summary for Subcatchment 2: Sub-catchment 2

[47] Hint: Peak is 127% of capacity of segment #2

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 3,679 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
2,936	98	Roofs, HSG B
4,531	98	Unconnected pavement, HSG B
7,467	98	Weighted Average
7,467		100.00% Impervious Area
4,531		60.68% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	41	0.0140	1.00		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
1.0	80	0.0010	1.38	0.75	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished

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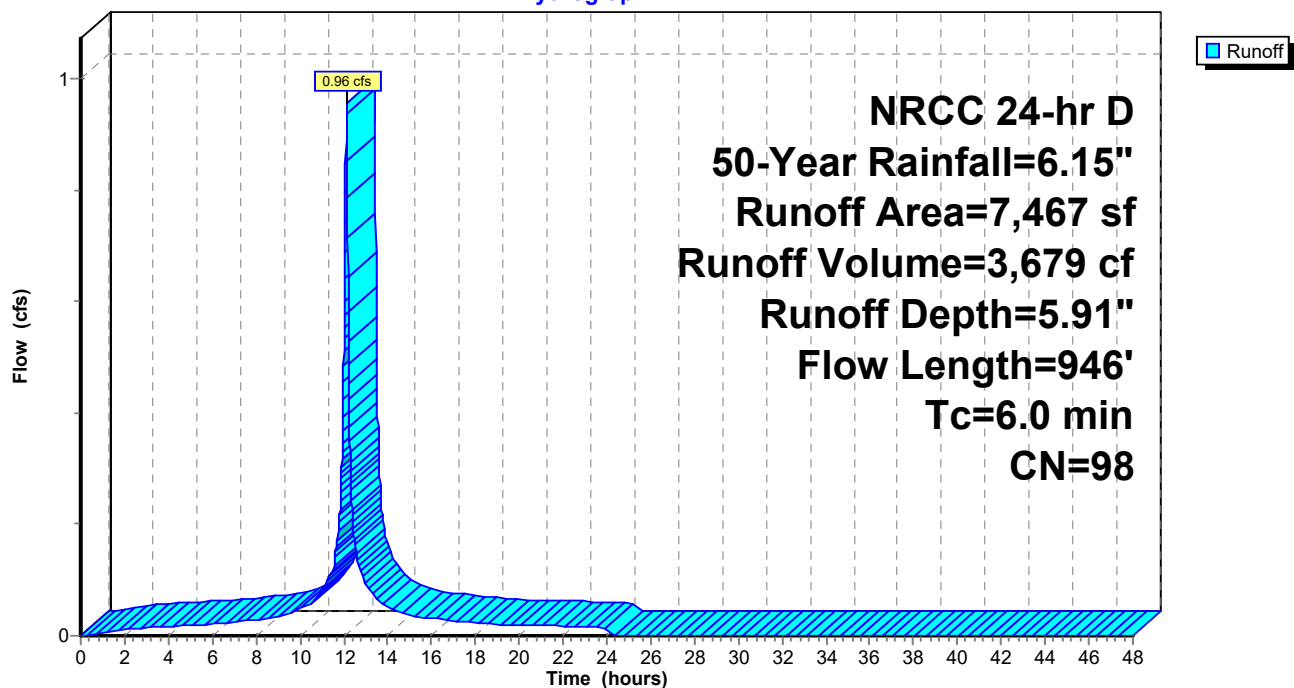
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0.0 9 0.0200 12.80 62.84 **Pipe Channel, RCP_Round 30"**
30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'
n= 0.012 Concrete pipe, finished

5.1 946 Total, Increased to minimum Tc = 6.0 min

Subcatchment 2: Sub-catchment 2

Hydrograph



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Summary for Subcatchment 3: Sub-catchment 3

[47] Hint: Peak is 111% of capacity of segment #2

Runoff = 0.91 cfs @ 12.13 hrs, Volume= 3,508 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
2,543	98	Roofs, HSG B
4,577	98	Unconnected pavement, HSG B
7,120	98	Weighted Average
7,120		100.00% Impervious Area
4,577		64.28% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	62	0.0030	0.59		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.1	10	0.0012	1.51	0.82	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	76	0.0120	4.77	2.60	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished

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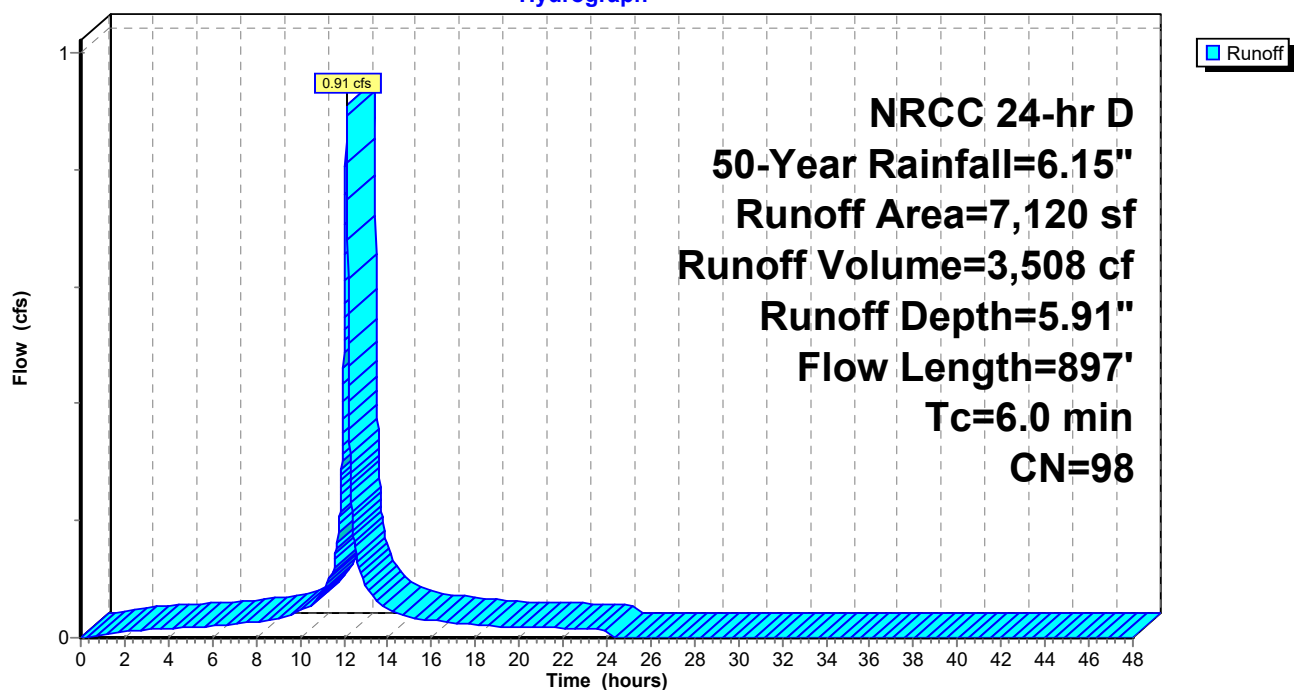
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0.0 9 0.0200 12.80 62.84 **Pipe Channel, RCP_Round 30"**
30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63'
n= 0.012 Concrete pipe, finished

5.3 897 Total, Increased to minimum Tc = 6.0 min

Subcatchment 3: Sub-catchment 3

Hydrograph



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Summary for Subcatchment 4: Sub-catchment 4

[47] Hint: Peak is 145% of capacity of segment #3

Runoff = 7.38 cfs @ 12.13 hrs, Volume= 28,379 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
5,329	98	Roofs, HSG B
51,087	98	Unconnected pavement, HSG B
1,189	79	<50% Grass cover, Poor, HSG B
57,605	98	Weighted Average
1,189		2.06% Pervious Area
56,416		97.94% Impervious Area
51,087		90.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.12		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	77	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.3	632	Total, Increased to minimum Tc = 6.0 min			

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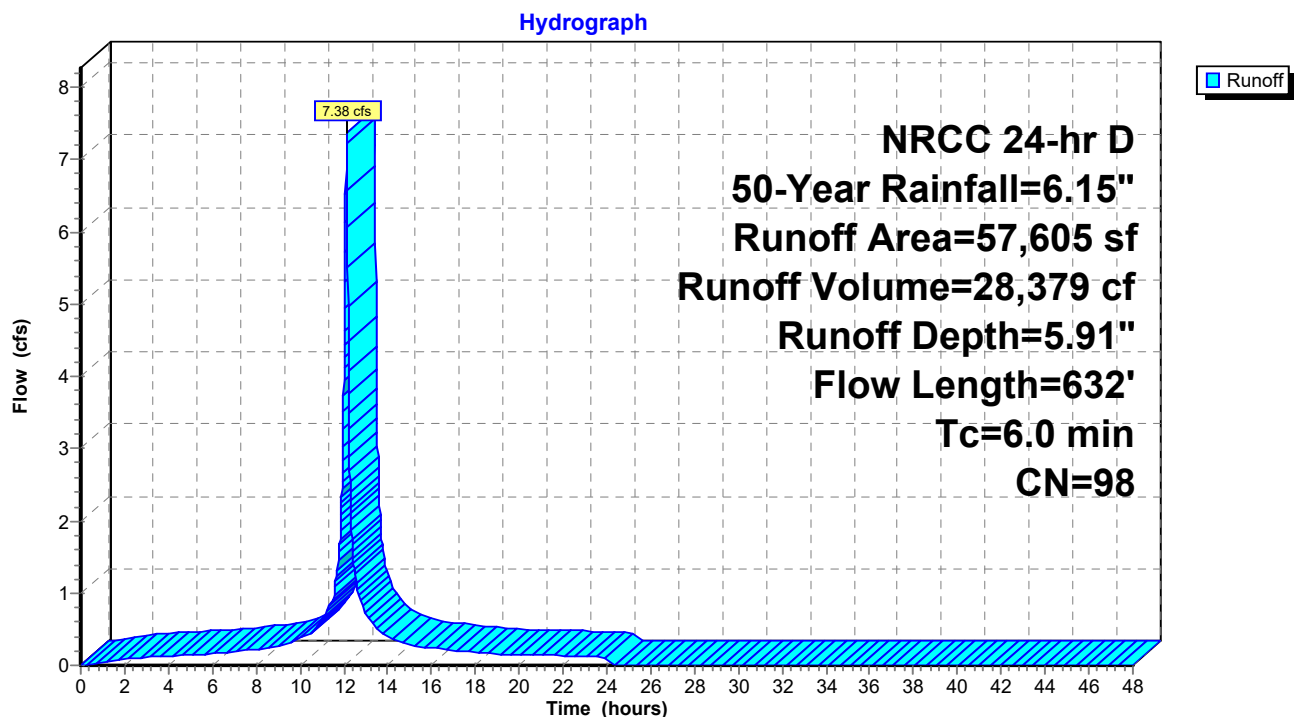
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Subcatchment 4: Sub-catchment 4



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Summary for Subcatchment 5: Sub-catchment 5

[47] Hint: Peak is 106% of capacity of segment #2

Runoff = 1.83 cfs @ 12.13 hrs, Volume= 7,052 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
5,500	98	Roofs, HSG B
8,814	98	Unconnected pavement, HSG B
14,314	98	Weighted Average
14,314		100.00% Impervious Area
8,814		61.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	55	0.0550	1.83		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.1	500	Total, Increased to minimum Tc = 6.0 min			

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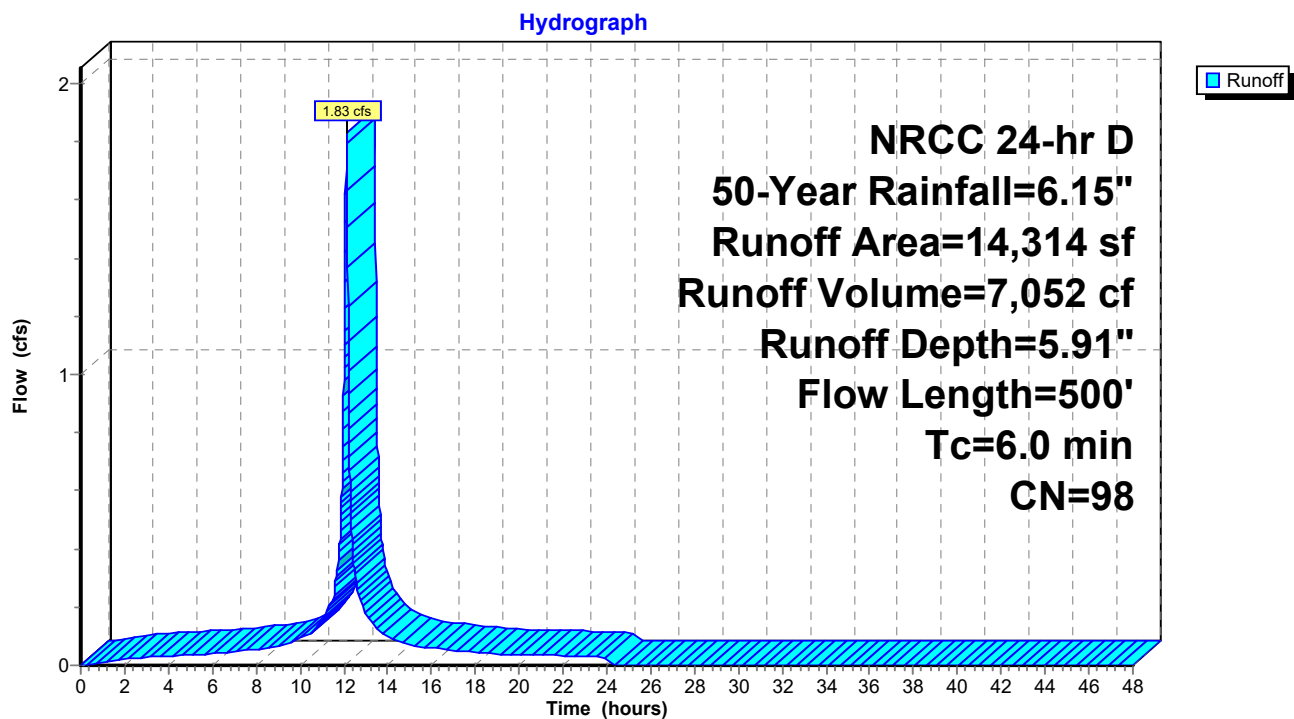
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Subcatchment 5: Sub-catchment 5



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Summary for Subcatchment 6: Sub-catchment 6

[47] Hint: Peak is 155% of capacity of segment #3

Runoff = 2.61 cfs @ 12.13 hrs, Volume= 10,017 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
20,333	98	Unconnected pavement, HSG B
20,333		100.00% Impervious Area
20,333		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	10	0.0050	3.08	1.68	Pipe Channel, RCP_Round 10" 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
3.1	490	Total, Increased to minimum Tc = 6.0 min			

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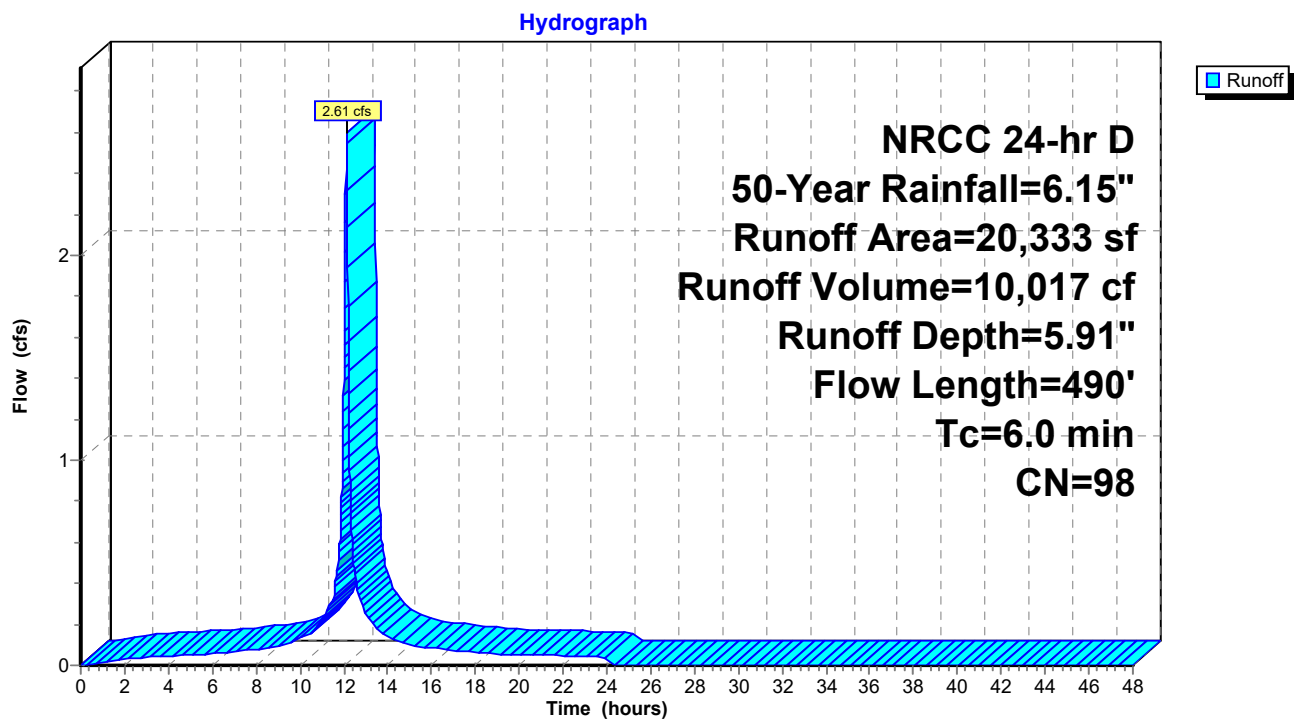
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Subcatchment 6: Sub-catchment 6



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Summary for Subcatchment 7: Sub-catchment 7

Runoff = 3.00 cfs @ 12.13 hrs, Volume= 11,518 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
19,985	98	Unconnected pavement, HSG B
3,396	98	Roofs, HSG B
23,381	98	Weighted Average
23,381		100.00% Impervious Area
19,985		85.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	55	0.0090	1.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	393	Total, Increased to minimum Tc = 6.0 min			

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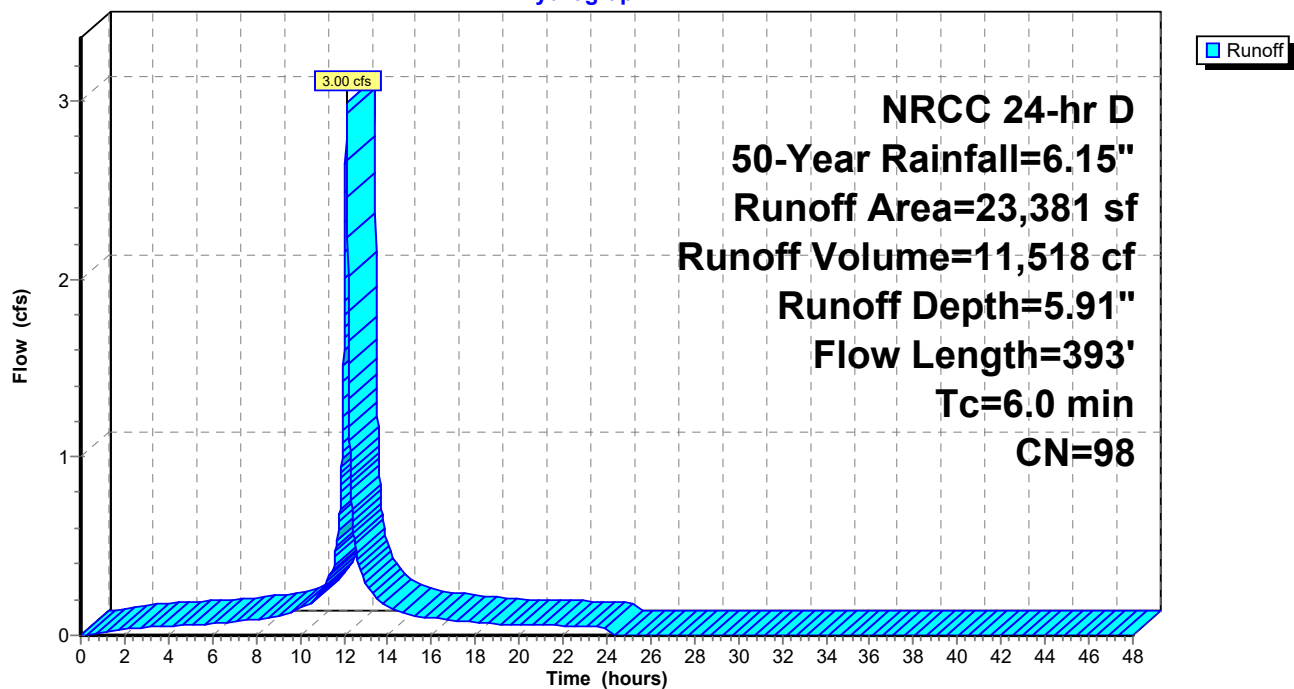
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Subcatchment 7: Sub-catchment 7

Hydrograph



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Summary for Subcatchment 8: Sub-catchment 8

Runoff = 3.27 cfs @ 12.13 hrs, Volume= 12,578 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
23,413	98	Unconnected pavement, HSG B
2,118	98	Roofs, HSG B
25,531	98	Weighted Average
25,531		100.00% Impervious Area
23,413		91.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	100	0.0070	0.90		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	85	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.0	10	0.0050	4.55	8.05	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	359	Total, Increased to minimum Tc = 6.0 min			

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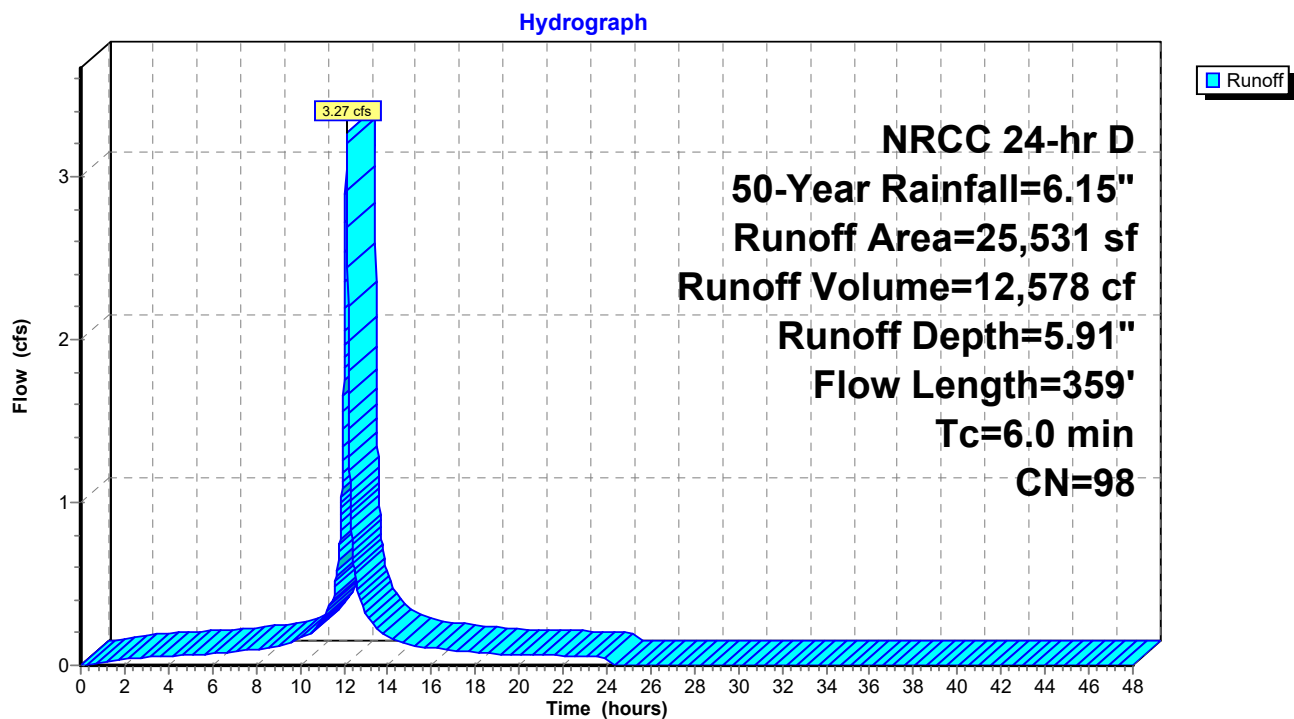
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Subcatchment 8: Sub-catchment 8



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Summary for Subcatchment 9: Sub-catchment 9

Runoff = 0.98 cfs @ 12.13 hrs, Volume= 3,754 cf, Depth= 5.91"
Routed to Pond 1P : Diversion Structure

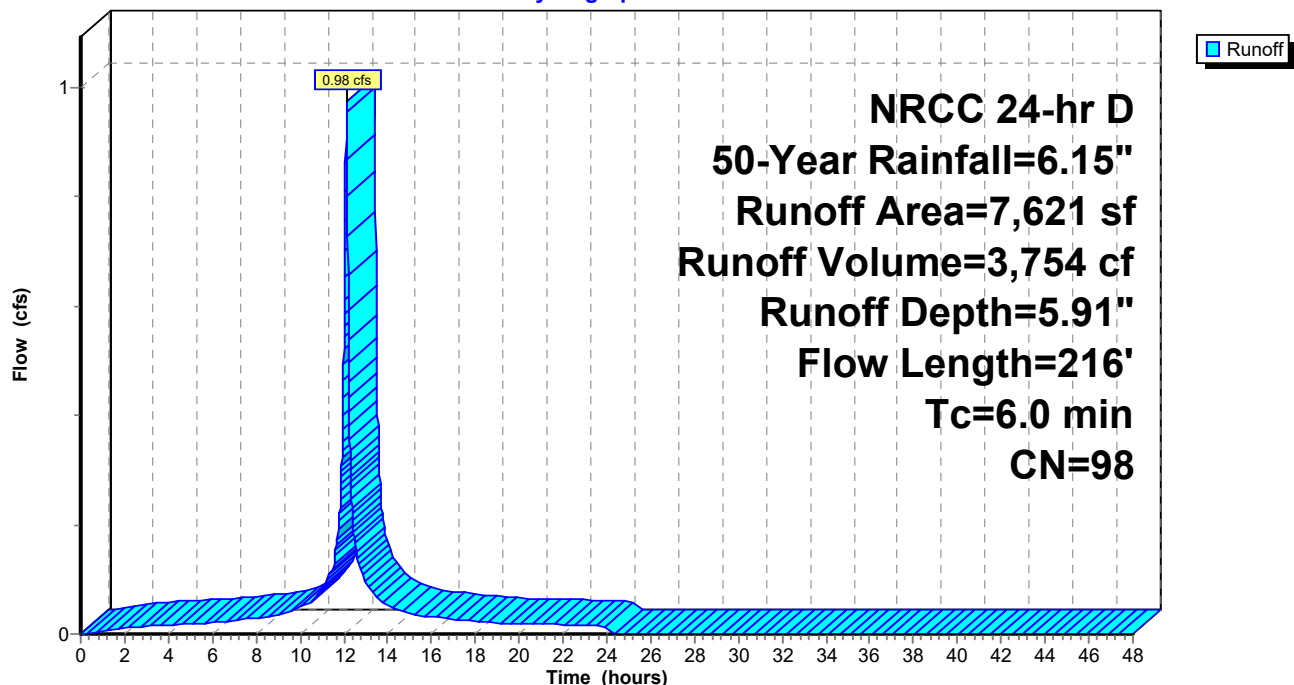
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
7,621	98	Unconnected pavement, HSG B
7,621		100.00% Impervious Area
7,621		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0090	1.00		Sheet Flow , Smooth surfaces n= 0.011 P2= 3.20"
0.7	62	0.0060	1.57		Shallow Concentrated Flow , Paved Kv= 20.3 fps
0.2	45	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.6	216	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 9: Sub-catchment 9

Hydrograph



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Summary for Subcatchment 10: Sub-catchment 10

[47] Hint: Peak is 133% of capacity of segment #3

Runoff = 3.62 cfs @ 12.13 hrs, Volume= 13,006 cf, Depth= 5.33"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
14,729	98	Unconnected pavement, HSG B
6,760	98	Roofs, HSG B
7,790	79	<50% Grass cover, Poor, HSG B
29,279	93	Weighted Average
7,790		26.61% Pervious Area
21,489		73.39% Impervious Area
14,729		68.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.6	75	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	114	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
2.8	350	Total, Increased to minimum Tc = 6.0 min			

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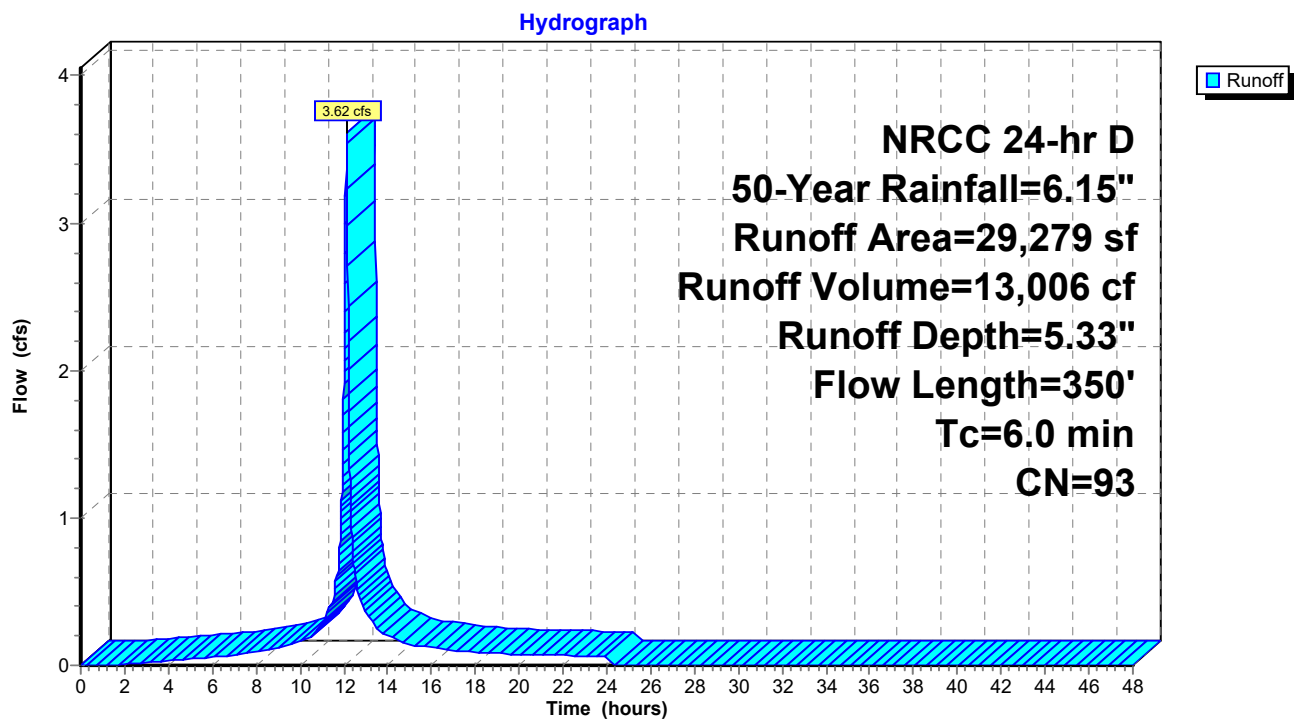
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Subcatchment 10: Sub-catchment 10



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Summary for Subcatchment 11: Sub-catchment 11

Runoff = 0.23 cfs @ 12.13 hrs, Volume= 898 cf, Depth= 5.91"
 Routed to Pond 1P : Diversion Structure

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
1,822	98	Unconnected pavement, HSG B
1,822		100.00% Impervious Area
1,822		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	53	0.0690	1.99		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.4	59	0.0020	2.20	1.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
0.2	39	0.0050	4.03	4.95	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.3	47	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
1.5	257	0.0020	2.88	5.09	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Concrete pipe, finished
0.3	85	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	35	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.4	97	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.3	64	0.0020	4.05	19.87	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	103	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.1	52	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
0.0	9	0.0200	12.80	62.84	Pipe Channel, RCP_Round 30" 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.012 Concrete pipe, finished
4.1	900	Total, Increased to minimum Tc = 6.0 min			

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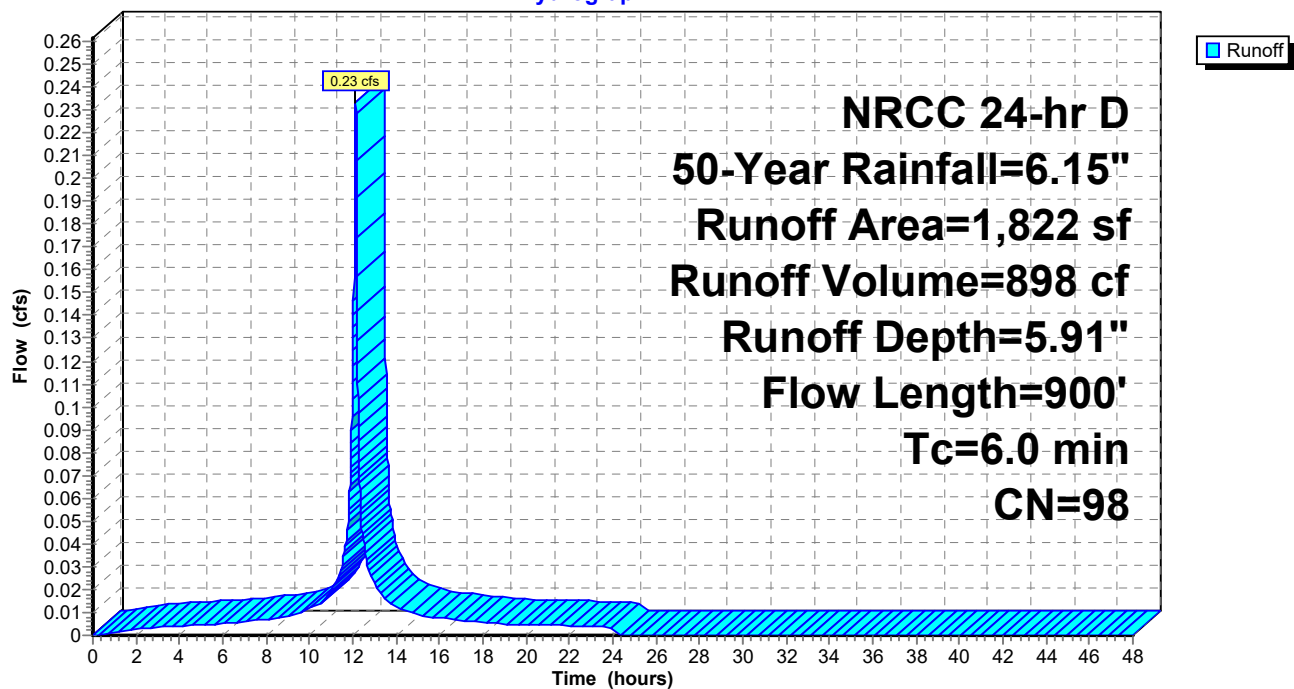
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Subcatchment 11: Sub-catchment 11

Hydrograph



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Summary for Subcatchment 12: Sub-catchment 12

Runoff = 1.55 cfs @ 12.13 hrs, Volume= 5,252 cf, Depth= 4.55"
Routed to Pond 1P : Diversion Structure

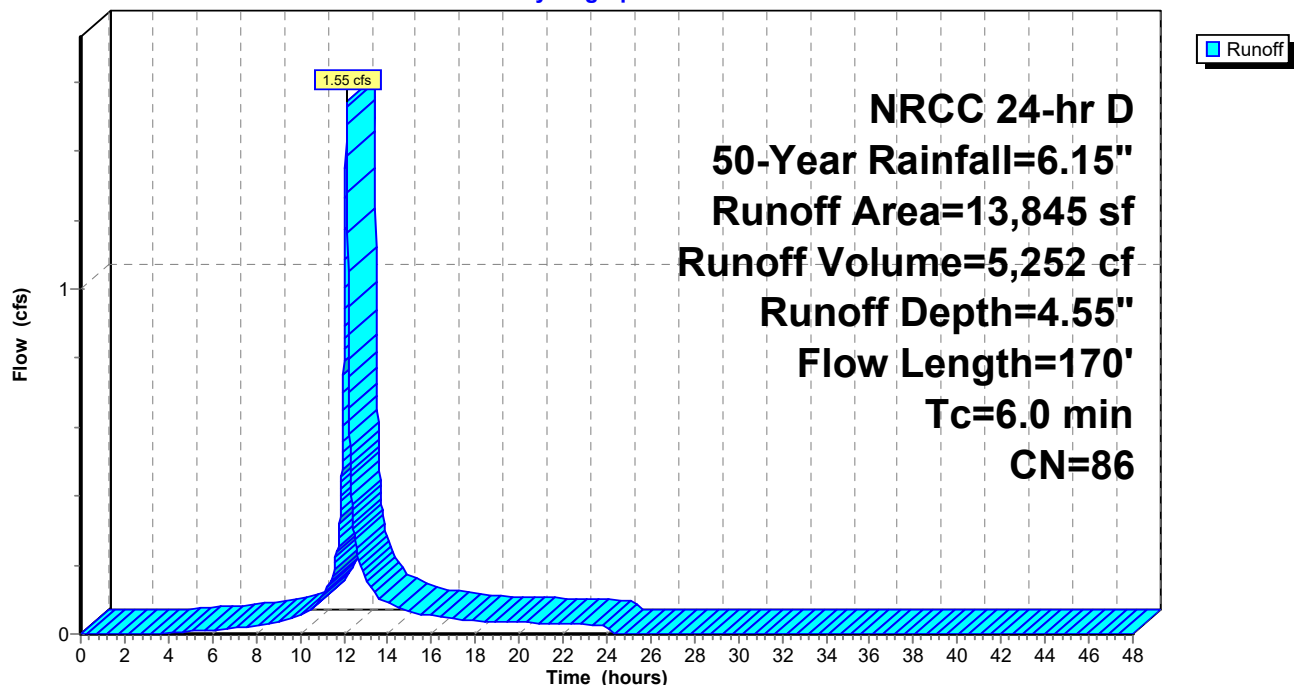
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
5,431	98	Unconnected pavement, HSG B
8,414	79	<50% Grass cover, Poor, HSG B
13,845	86	Weighted Average
8,414		60.77% Pervious Area
5,431		39.23% Impervious Area
5,431		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.04		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.2	44	0.0230	3.08		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	26	0.0050	3.47	2.73	Pipe Channel, RCP_Round 12" 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
1.9	170	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12: Sub-catchment 12

Hydrograph



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Summary for Subcatchment 13: Sub-catchment 13

Runoff = 0.12 cfs @ 12.37 hrs, Volume= 743 cf, Depth= 2.11"
Routed to Link DP-2 : DP-2

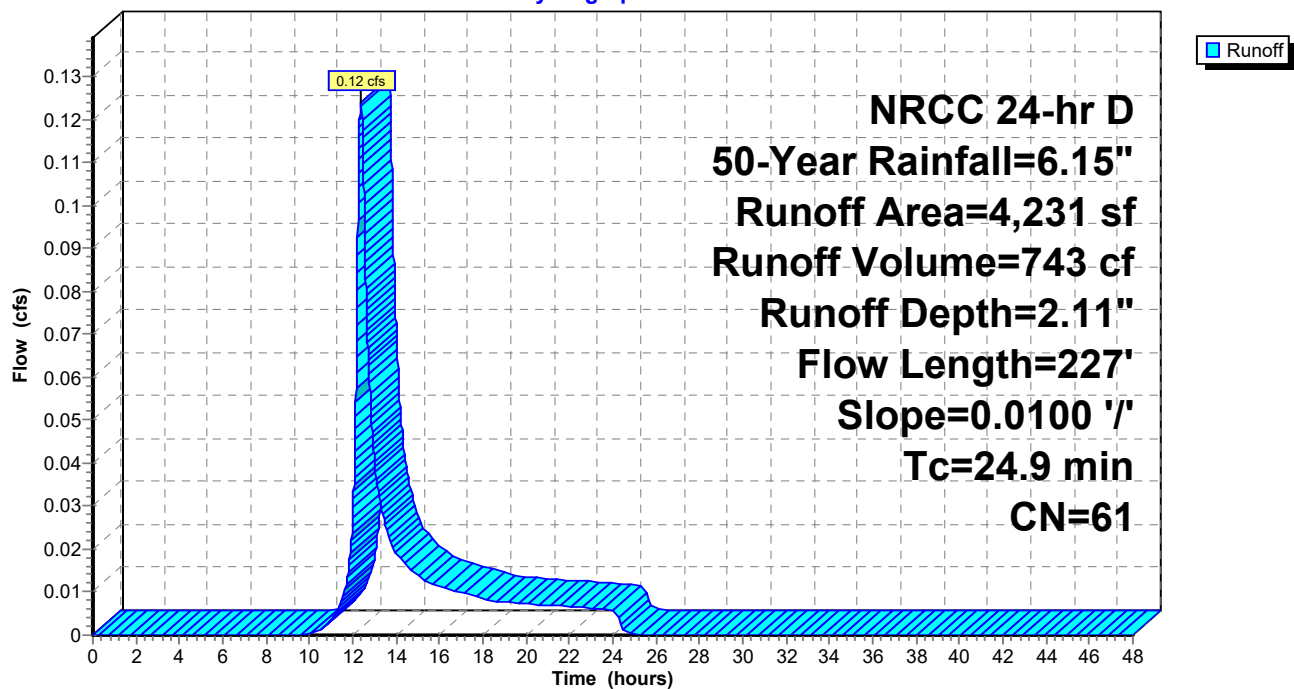
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 50-Year Rainfall=6.15"

Area (sf)	CN	Description
4,231	61	>75% Grass cover, Good, HSG B
4,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9	227	0.0100	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"

Subcatchment 13: Sub-catchment 13

Hydrograph



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Summary for Pond 1P: Diversion Structure

[57] Hint: Peaked at 230.21' (Flood elevation advised)

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 5.76" for 50-Year event
Inflow = 30.64 cfs @ 12.13 hrs, Volume= 116,188 cf
Outflow = 30.64 cfs @ 12.13 hrs, Volume= 116,188 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.79 cfs @ 11.76 hrs, Volume= 96,333 cf
Routed to Link 1L : Wet Well/Pump
Secondary = 24.85 cfs @ 12.13 hrs, Volume= 19,854 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 230.21' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	226.32'	24.0" Round Culvert L= 7.7' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.32' / 226.28' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Secondary	226.38'	30.0" Round Culvert L= 27.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 226.38' / 226.24' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#3	Device 2	228.99'	6.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Device 1	225.00'	Special & User-Defined Elev. (feet) 225.00 226.00 240.00 Disch. (cfs) 0.000 5.790 5.790

Primary OutFlow Max=5.79 cfs @ 11.76 hrs HW=229.02' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 5.79 cfs of 17.30 cfs potential flow)
↑ **4=Special & User-Defined** (Custom Controls 5.79 cfs)

Secondary OutFlow Max=24.81 cfs @ 12.13 hrs HW=230.20' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 24.81 cfs of 36.43 cfs potential flow)
↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 24.81 cfs @ 3.40 fps)

Sandquist Proposed Conditions

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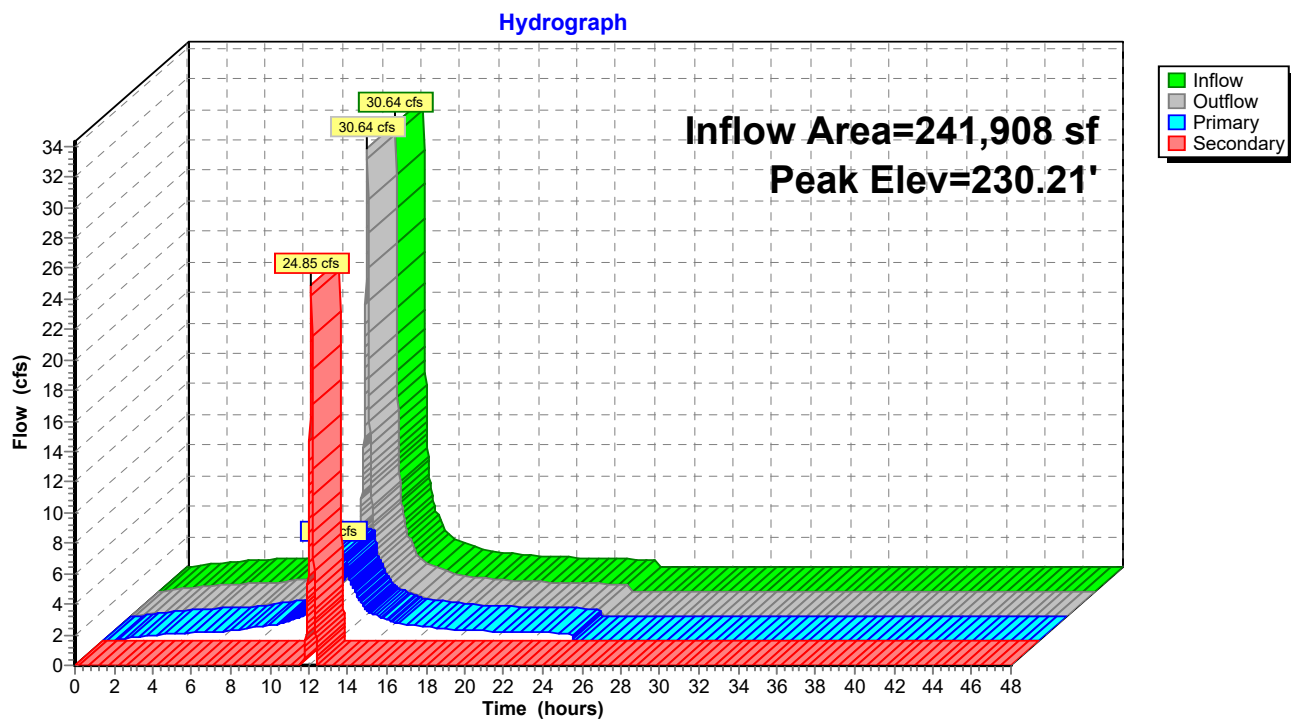
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Pond 1P: Diversion Structure



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Summary for Pond 2P: AGST

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 4.78" for 50-Year event
Inflow = 5.79 cfs @ 11.76 hrs, Volume= 96,333 cf
Outflow = 5.53 cfs @ 12.48 hrs, Volume= 80,849 cf, Atten= 5%, Lag= 43.0 min
Primary = 5.53 cfs @ 12.48 hrs, Volume= 80,849 cf
Routed to Link DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 267.61' @ 12.48 hrs Surf.Area= 908 sf Storage= 36,742 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 411.4 min (1,170.3 - 759.0)

Volume	Invert	Avail.Storage	Storage Description
#1	227.14'	38,133 cf	34.00'D x 42.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	227.14'	0.223 cfs Constant Flow/Skimmer
#2	Primary	265.14'	12.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

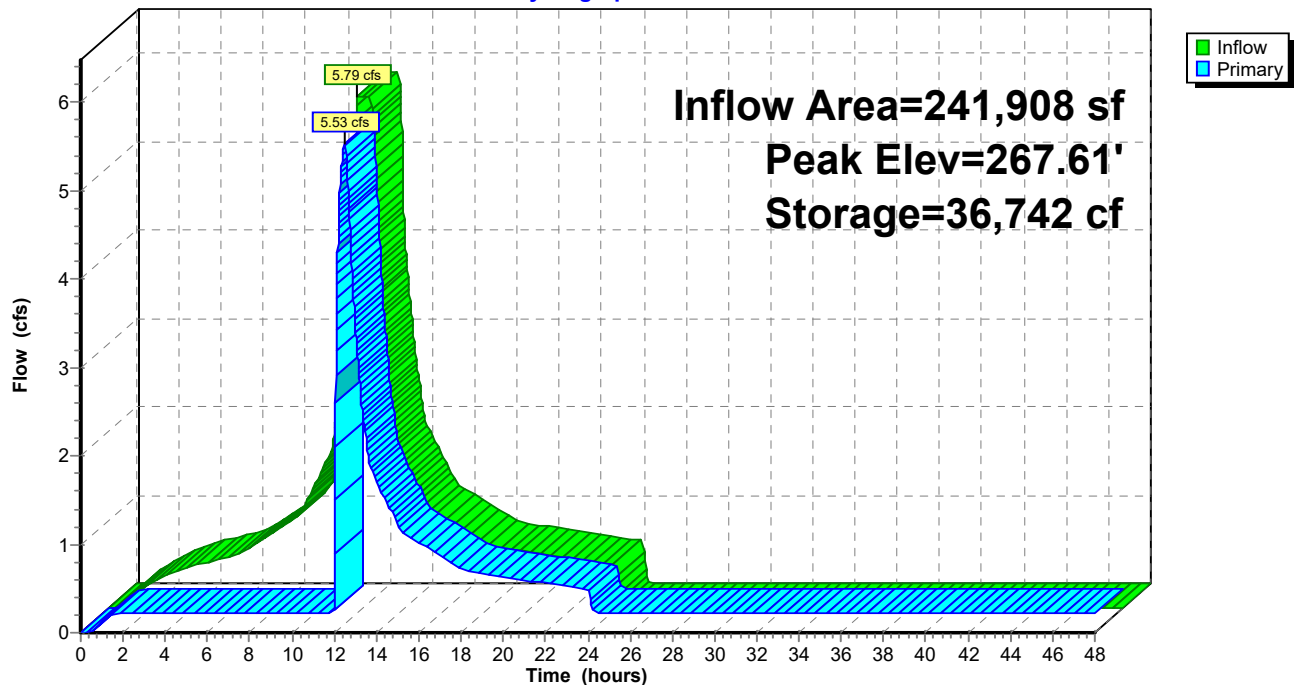
Primary OutFlow Max=5.53 cfs @ 12.48 hrs HW=267.61' TW=0.00' (Dynamic Tailwater)

1=Constant Flow/Skimmer (Constant Controls 0.22 cfs)

2=Orifice/Grate (Orifice Controls 5.31 cfs @ 6.76 fps)

Pond 2P: AGST

Hydrograph



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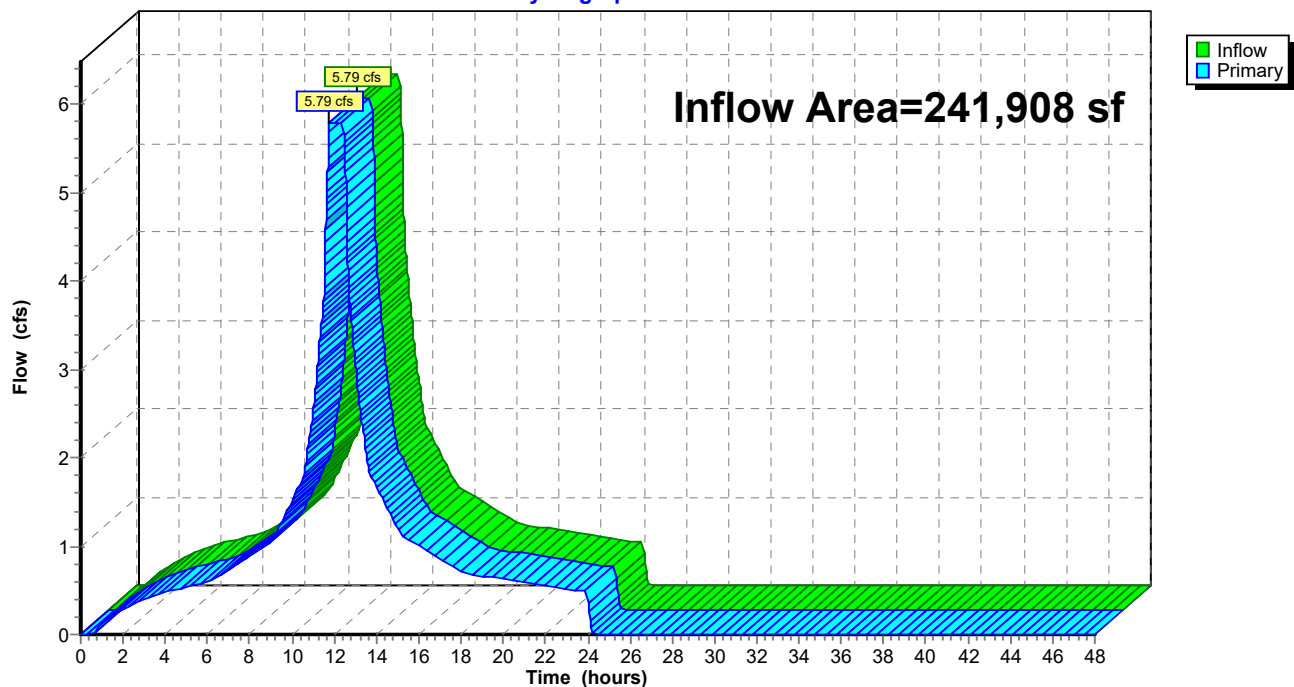
Summary for Link 1L: Wet Well/Pump

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth = 4.78" for 50-Year event
Inflow = 5.79 cfs @ 11.76 hrs, Volume= 96,333 cf
Primary = 5.79 cfs @ 11.76 hrs, Volume= 96,333 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : AGST

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link 1L: Wet Well/Pump

Hydrograph



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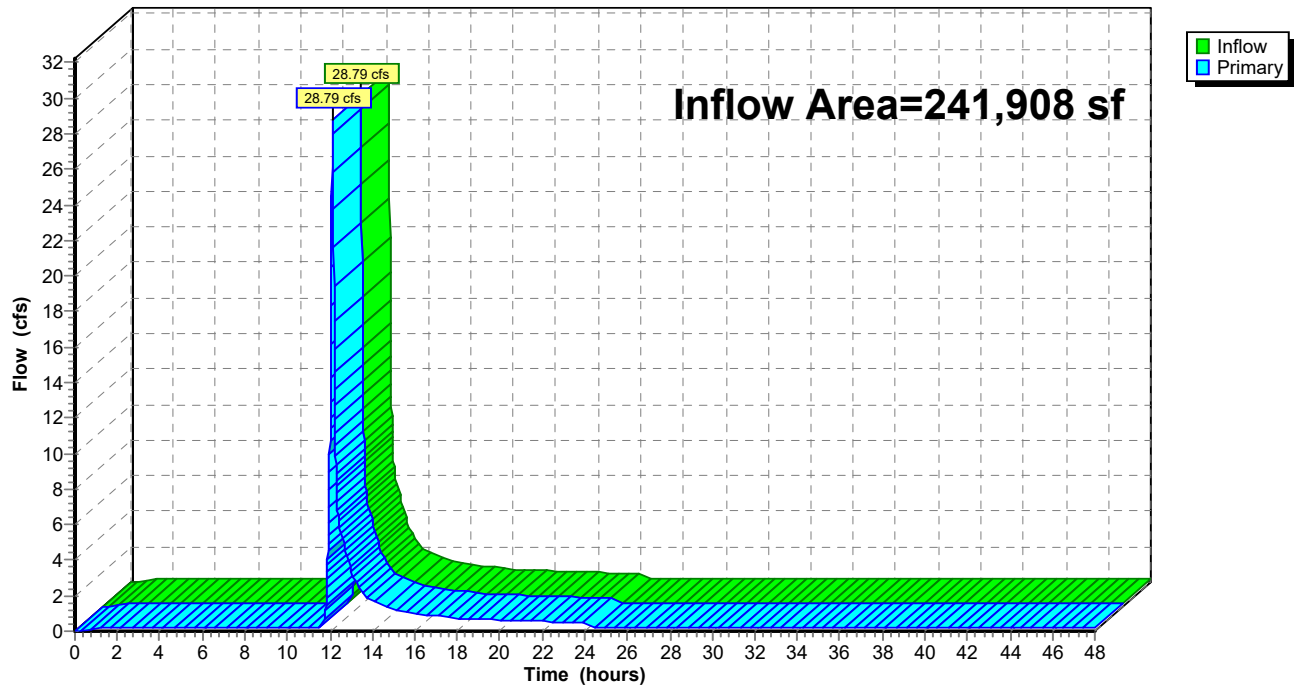
Summary for Link DP-1: DP-1

Inflow Area = 241,908 sf, 92.81% Impervious, Inflow Depth > 5.00" for 50-Year event
Inflow = 28.79 cfs @ 12.13 hrs, Volume= 100,704 cf
Primary = 28.79 cfs @ 12.13 hrs, Volume= 100,704 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: DP-1

Hydrograph



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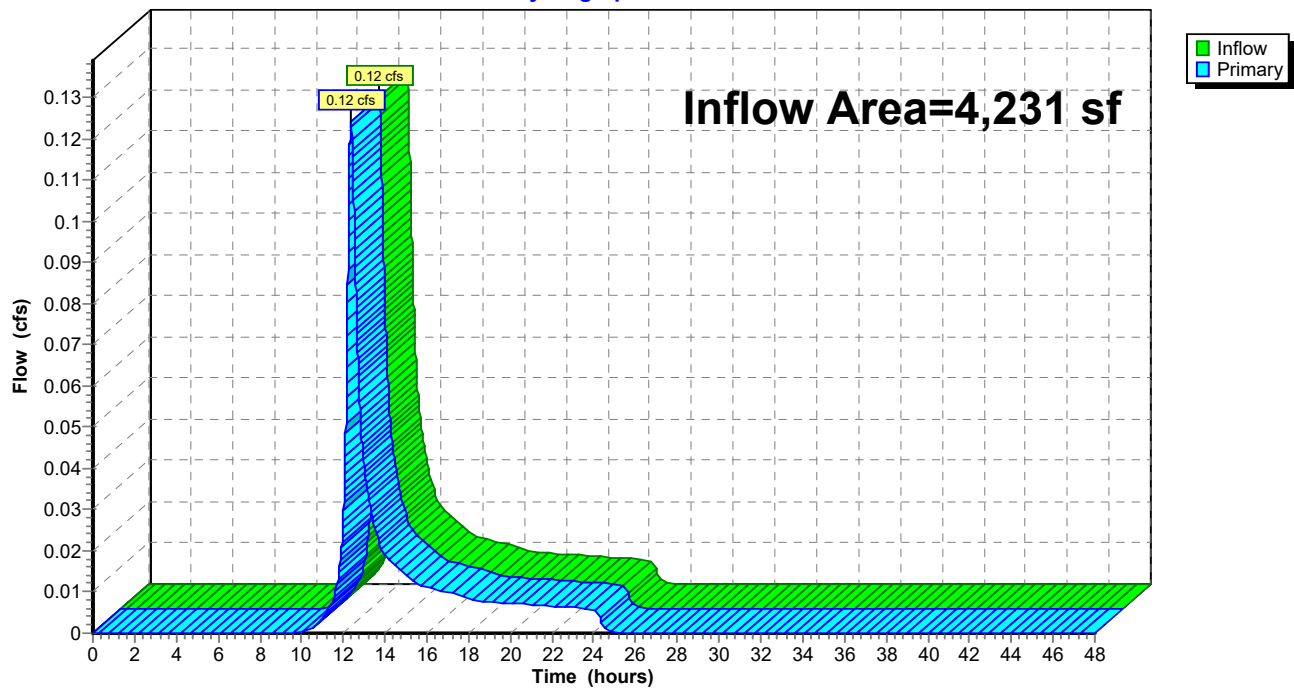
Summary for Link DP-2: DP-2

Inflow Area = 4,231 sf, 0.00% Impervious, Inflow Depth = 2.11" for 50-Year event
Inflow = 0.12 cfs @ 12.37 hrs, Volume= 743 cf
Primary = 0.12 cfs @ 12.37 hrs, Volume= 743 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: DP-2

Hydrograph



APPENDIX K: SITE SPECIFIC SOIL SURVEY WAIVER REQUEST

Via Electronic Submission

11/7/2025



DES Water Division
Attn: Alteration of Terrain Program
29 Hazen Drive
P.O. Box 95
Concord, New Hampshire 03302-0095

Re: Proposed Stormwater Improvements - 25 Sandquist St., Concord, NH
Formal Waiver Request – Site Specific Soil Survey

To Whom it May Concern:

On behalf of the Applicant, Radius Recycling, Woodard & Curran is respectfully seeking a waiver for the site-specific soil survey located in Concord, New Hampshire.

Requestor (Consultant):

Yuya Ishizuka, PE
Woodard & Curran
800 Westchester Ave.
Rye Brook, NY 10573
Phone: 914-246-2932
yishizuka@woodardcurran.com

Applicant:

Radius Recycling
Environmental Manager: Gary Raddatz
25 Sandquist St.
Concord, NH 03301
Phone: 617-233-2664
graddatz@rdus.com

Specific Section for which Waiver is sought:

Env-Wq 1503.08 (r) Additional Information Required for AOT Permit Applications

“A report to accompany hydrologic soil group plans, prepared in accordance with the Society of Soil Scientists of Northern New England (SSSNNE) Special Publication No. 3, Version 7.0, Site-Specific Soil Mapping Standards for New Hampshire and Vermont, July 2021, available as noted in Appendix B.”

Explanation of why a waiver is being requested:

The purpose of this project is to provide improvements to the existing stormwater system, and as a result, will increase the amount of impervious area for the overall site. The increase is associated with upgrades to the stormwater management system. Due to the fact that the site is located within a high-load area, and that the increase in impervious area is less than 3,000 SF, ground water recharge is not required, therefore, we are requesting a waiver from Env-Wq 1803.08 (r) in order to improve water quality and volume irrespective of a site-specific soil survey.



Explanation of Proposed Alternative:

The Requestor proposes that the drainage analysis has been prepared using delineations from the NRCS Web Soil Survey website, as an alternative to a site-specific soil map.

Explanation of why this meets the criteria in 1509.04:

The proposed stormwater system requires additional pavement to accommodate storage and treatment infrastructure, which would alleviate pollutant load to meet the Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity benchmarks. Due to the fact that the facility is used for activities related to scrap metal recycling, it is our belief that granting the request will not result in an adverse impact on the environment, public health, public safety, or abutting properties that is more significant than the impact that would result from complying with the rule as written.

Strict compliance with the rule in the circumstances presented will trigger the need for investigation of site-specific soil which we believe would be unnecessary provided the existing high load area does not require ground water recharge.

This waiver would not waive or modify a statutory requirement and does not waiver from any of the criteria for obtaining a permit specified in Env-Wq 1503.19.

Signatures:

I certify that (1) The information provided is true, complete, and not misleading to the knowledge and belief of the signer; and (2) The signer understands that any waiver granted based on false, incomplete, or misleading information shall be subject to revocation.

A handwritten signature in black ink, appearing to read "Yuya Ishizuka", written over a horizontal line.

Yuya Ishizuka, PE
Woodard & Curran

November 6, 2025

Date

A handwritten signature in black ink, appearing to read "Gary Raddatz", written over a horizontal line.

Gary Raddatz
Environmental Manager
Radius Recycling

Oct. 31, 2025

Date

APPENDIX L: BMP INSPECTION AND MAINTENANCE MANUALS

OPERATIONS AND MAINTENANCE PLAN

This Operation and Maintenance Plan outlines measures that are essential to minimize potential adverse impacts on stormwater quality runoff from the following:

*25 Sandquist St. Concord, NH Proposed Stormwater Improvements
Concord, New Hampshire*

herein referred to as “the Project area”.

RESPONSIBLE PARTY

The party responsible for implementing this Plan is as follows:

*Radius Recycling
25 Sandquist Street
Concord, New Hampshire*

GOOD HOUSEKEEPING

The project area will be maintained as clean and orderly. Routine inspections of the project area for debris and sediment accumulations shall be performed. Debris and sediment shall be disposed of in accordance with local and State requirements.

STORMWATER SYSTEM MAINTENANCE

Stormwater management systems at the project area are provided by diversion manholes, storm drainage piping, aboveground storage tank, oil-water separator, active stormwater treatment system, and pump station. These measures are illustrated on the project plans. Routine inspections and maintenance of the stormwater management system shall be performed in accordance with Table 1 of this report for the project area. These measures are recommended to prevent deficiencies with the system that may result in a poor quality of stormwater runoff.

INSPECTIONS & MAINTENANCE MEASURES

The stormwater management systems at the project area include diversion manholes, storm drainage piping, aboveground storage tank, oil-water separator, active stormwater treatment system, and pump station. These measures are illustrated on project drawings.

Attachment A provides the Inspection Form that is recommended for use during routine inspections of the stormwater management system. The form includes a table that outlines specific inspection and maintenance measures, in addition to the following information:

- Name of inspector

- Name of the project area and its location
- Date and time of inspection
- Weather conditions during inspection
- Outline of items inspected
- Condition of the stormwater management measures, including corrective measures taken to maintain the system

Completed Inspections Forms should be kept at the responsible party's office to enable both City staff and regulatory agencies to ensure that operation of the system complies with permit requirements.

Table 1 – Operations & Maintenance Measures – Aboveground Storage Tank

<i>Aboveground Storage Tank</i>	
<i>Objective: Maintain the storage capacity of the aboveground storage tank system.</i>	
<i>Frequency</i>	<i>Measure</i>
INSPECTION:	
Ongoing/As Needed	• Inspect the storage tank immediately after every major storm event. • Inspect contributing drainage areas for any sediment and debris. • Inspect the storage tank for any sediment, debris and other obstructions. • Inspect storage tank for structural damage. Repair as necessary.
MAINTENANCE:	
Ongoing/As Needed	• Remove trash, debris, sediment, and grass clippings from the storage tank during monthly inspections. • Storage tank should be inspected and cleaned in accordance with the Manufacturer's specifications. • Remove sediment and debris from contributing drainage areas. • Dispose of sediment in accordance with all applicable regulations. • Repair damage (if any) to infiltration basin/storm chamber system. • All repaired areas/infrastructure shall be restored according to original design specifications.
NOTIFICATION:	
As Needed	• Notify Owner of any system repairs needed and/or operational problems.

Table 2 – Operations & Maintenance Measures – Oil-Water Separator

Highland Tank Oil-Water Separator	
Objective: Maintain the treatment capacity of the oil-water separator.	
Frequency	Measure
INSPECTION:	
Ongoing/As Needed	- Inspect the inside of the oil-water separator for sand, trash, sludge, and oil build-up. - Inspect effluent for oils and other contaminants - Inspect the oil/water interface level by using a gauge stick and water finding paste - Inspect separator after a heavy rainfall event to check for signs of malfunction due to an excessive flow rate
MAINTENANCE:	
Ongoing/As Needed	- Remove oil and refill separator with clean water when oil/water interace level surpasses the high-oil level or 20% of separator’s working volume. - Remove accumulated oils and solids if combined oil and solids layers are equal to or greater than 20%. - Oil-water separator should be inspected and cleaned in accordance with the Manufacturer’s specifications. - Remove sediment and debris from contributing drainage areas. - Dispose of sediment in accordance with all applicable regulations. - Repair damage (if any) to oil-water separator. - All repaired areas/infrastructure shall be restored according to original design specifications.
NOTIFICATION:	
As Needed	Notify Owner of any system repairs needed and/or operational problems.

ATTACHMENT A – INSPECTION FORM & CORRECTIVE ACTION LOG

STORMWATER MANAGEMENT SYSTEM INSPECTION FORM
25 Sandquist St. Concord, NH Proposed Stormwater Improvements
Concord, New Hampshire

Name of Inspector: _____

Date/Time: _____

Weather: _____

Date of Last Inspection: _____

Items Inspected (Refer to Table 1. Provide additional sheets if necessary.):

Comments & Corrective Actions Taken (Provide additional sheets if necessary.):

Certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name: _____

Signature: _____

Date: _____

Corrective Action Log

Date of Discovery	Action (Response, Repair or Replacement)	Date of Action	Maintenance	Person(s) Completing Corrective Action

Date of Discovery	Action (Response, Repair or Replacement)	Date of Action	Maintenance	Person(s) Completing Corrective Action

APPENDIX M: SOURCE CONTROL PLAN



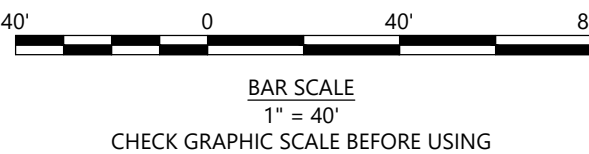
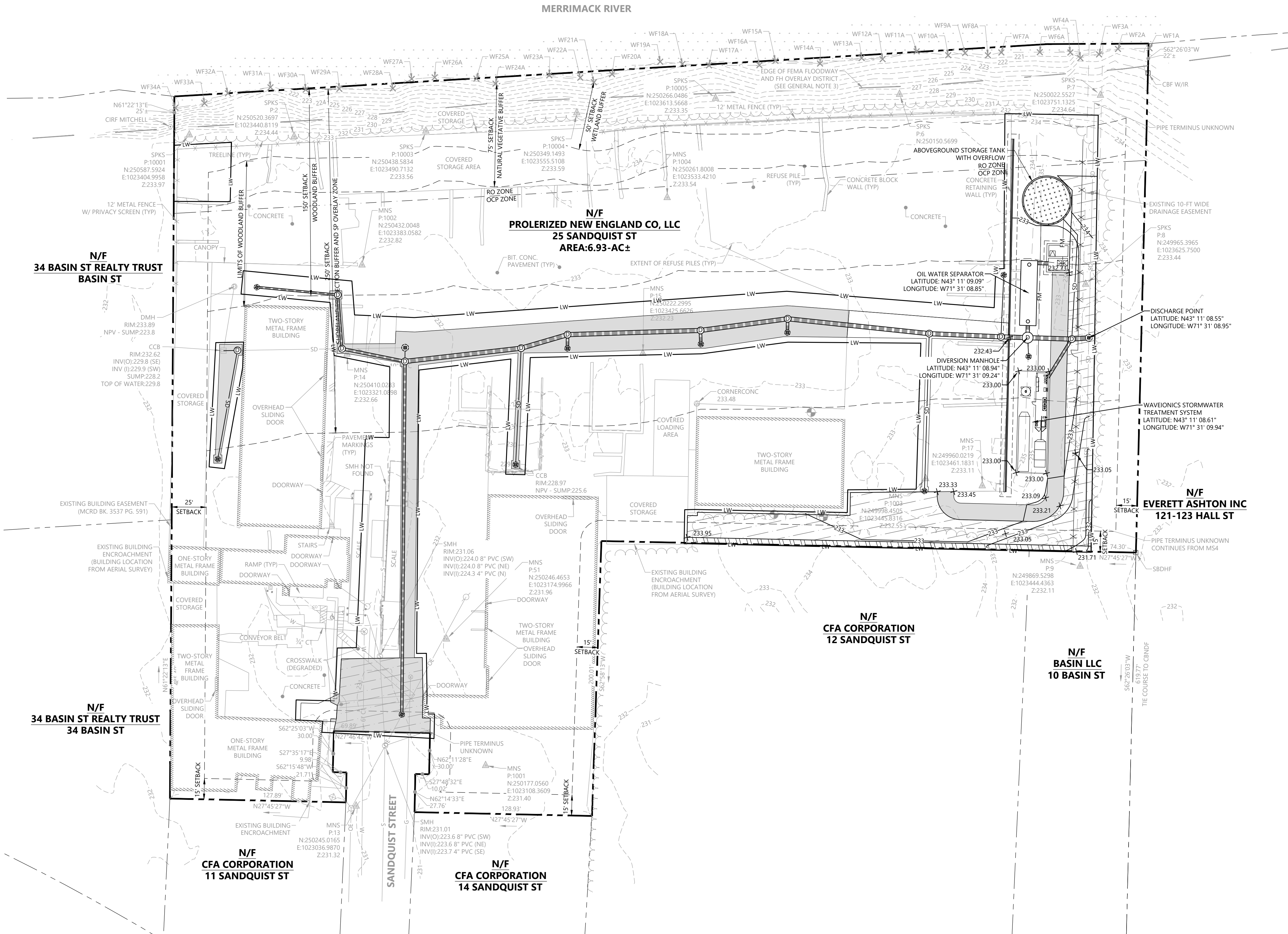
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SHEET GENERAL NOTES

1. THIS PLAN IS TO SHOW THE SOURCE CONTROL AND MAINTENANCE LOCATIONS FOR THE PROPOSED STORMWATER MANAGEMENT SYSTEM.
2. PLEASE REFER TO THE APPENDIX L OF THIS REPORT FOR INSTRUCTIONS ON SITE INSPECTION AND MAINTENANCE OF BMPs. THE OWNER SHALL BE RESPONSIBLE TO OBTAIN SERVICES TO INSPECTION AND MAINTAIN THE PROPOSED STORMWATER PRACTICES.
3. NO REGULATED SUBSTANCES ARE EXPECTED TO BE PRESENT ON THIS SITE.
4. GROUNDWATER PROTECTION AREAS ARE NOT PRESENT WITHIN 1,000 FEET OF THE SITE PERIMETER.
5. OWNER CONTACT INFORMATION - RADIUS RECYCLING (SANDQUIST)
CONTACT - GARY RADDAZ (ENVIRONMENTAL MANAGER)
ADDRESS - 24 SANDQUIST STREET, CONCORD, NH 03301
EMAIL - GRADDAZ@RDUS.COM
PHONE NUMBER - 617-233-2664



**DRAFT 60% DESIGN
NOT FOR CONSTRUCTION**

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	MM/DD/YY	DESCRIPTION
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JOB NO: 0224539.48

DATE: AUGUST 2024

SCALE: 1" = 40'

DESIGNED BY: YI

DRAWN BY: KC

CHECKED BY: YI/RT

FILENAME: 0224539.48-FIG 5-SOURCE*.dwg

DRAWING TITLE:

**CIVIL
SOURCE CONTROL PLAN**

DRAWING NO:

FIGURE 3

APPENDIX N: DRAWING SET

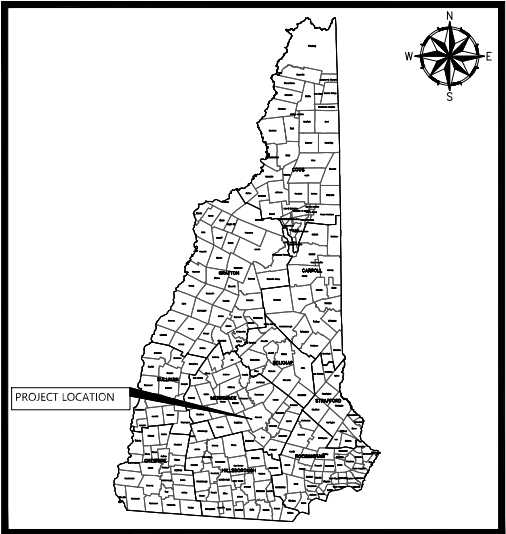
RADIUS RECYCLING

CONCORD, NH

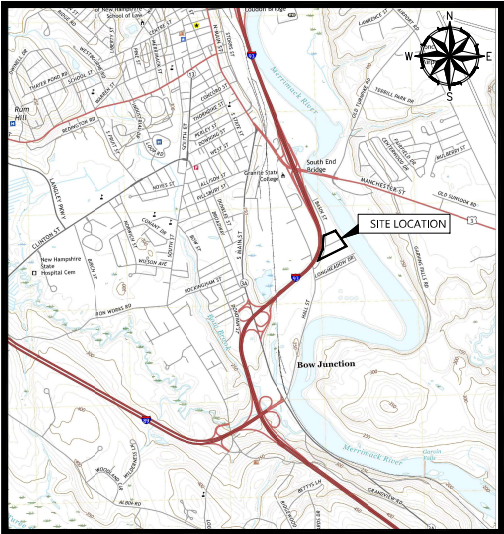
SANDQUIST FACILITY STORMWATER IMPROVEMENTS

DRAFT 60% DESIGN NOT FOR CONSTRUCTION

NOVEMBER 2025



PROJECT LOCATION MAP



SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE



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(800) 426-4262 | www.woodardcurran.com

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CURRY INFO:

RADIUS RECYCLING
CONCORD, NH
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: MM/DD/YY DESCRIPTION

JOB NO: 0224539-48

DATE: NOVEMBER 2025

SCALE: NO SCALE

DESIGNED BY: YL

DRAWN BY: KC

CHECKED BY: RT

FILENAME: 0224539-48-G-000.dwg

**GENERAL
COVER SHEET**

DRAWING NO:

G-000

\\woodardcurran.com\engineering\Projects\2025\25-08-Sandquist-Facility-Improvements\Drawings\General\G-001.dwg, last modified: 11/05/2025, 11:13 am by: C-000025-04

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G-001	SHEET INDEX
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C-002	GENERAL NOTES
C-100	EXISTING CONDITIONS PLAN
CD-100	SITE PREPARATION AND EROSION CONTROL PLAN
CD-101	STORMWATER TREATMENT AND STORAGE AREA SITE PREPARATION AND EROSION CONTROL PLAN
CI-100	OVERALL LAYOUT AND MATERIALS PLAN
CI-101	STORMWATER TREATMENT AND STORAGE AREA LAYOUT AND MATERIALS PLAN
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PROFESSIONAL SEAL:



Ross Tsantoulis
Professional Engineer
State of New Hampshire
No. 14122
Exp. 12/31/2026

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NOT FOR CONSTRUCTION**

CURRY INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	DATE	DESCRIPTION
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JOB NO.	0224539-48
DATE	NOVEMBER 2025
SCALE	NO SCALE
DESIGNED BY	YL
DRAWN BY	KC
CHECKED BY	RT
FILENAME	0224539-48-G-001.dwg

DRAWING TITLE:
**GENERAL
SHEET INDEX**

DRAWING NO.:
G-001

NOTE: THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR IN THE CONTRACT DOCUMENT

GENERAL NOTES 1. EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED FROM AN AERIAL SURVEY PERFORMED BY OUR DESIGN CONSULTANTS, INC. IN AUGUST 2022 AND A FIELD SURVEY PERFORMED BY SEC & ASSOCIATES INC. FIELD TESTING CONDITIONS PLAN FOR 25 SANDQUIST STREET, CONCORD, NH, DATED OCTOBER 2022 AND REVISED NOVEMBER 8, 2022. 2. EASEMENTS, RIGHTS AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH CONDUCTED BY THE MEMBERS OF OUR DESIGN CONSULTANTS, INC. OTHER RIGHTS, RESTRICTIONS AND EASEMENTS MAY EXIST WHICH A TITLE EXAMINATION OF THE SUBJECT PARCELS WOULD REVEAL. 3. BOUNDARY REFERENCES: MERRIMACK COUNTY REGISTRY OF DEEDS (M.C.R.D.) SURVEY DEED BK. 237 PL. 594 PLANS M.C.R.D. #4511 (12-1987) M.C.R.D. #4922 (03-1989) M.C.R.D. #4407 (05-1989) M.C.R.D. #516063003 (09-2016) 3. PROPERTY IS PARTIALLY LOCATED WITHIN A DESIGNATED REGULATORY FLOODWAY, ZONE "M" AS SHOWN WITH A PUBLISHED BASE FLOOD ELEVATION OF 230. REMAINDER OF PROPERTY IS LOCATED WITHIN A 0.2 PERCENT ANNUAL CHANCE FLOOD HAZARD ZONE "W" PER FLOOD INSURANCE RATE MAP NUMBER 33103C022E DATED APRIL 19, 2010. 4. MAN-MADE AND NATURAL, A RECREATIONAL WETLAND BOUNDARIES WERE DELINEATED BY MARC JACOBS, CERTIFIED WETLAND SCIENTIST, NUMBER 006, IN SEPTEMBER 2002, ACCORDING TO THE STANDARDS OF THE U.S. ARMY CORPS OF ENGINEERS - 1987 WETLANDS Delineation MANUAL; THE 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND Delineation MANUAL, NORTH-CENTRAL AND NORTH-EAST REGION; AND THE CODE OF ADMINISTRATIVE RULES, IN DEPARTMENT OF ENVIRONMENTAL SERVICES - WETLANDS BUREAU - 804-NY-100-000. PREVIOUSLY MARKED SOILS WERE REVISITED UTILIZING THE FIELD INDICATORS FOR IDENTIFYING WETLAND SOILS IN NEW ENGLAND, VERSION 4.0, JANUARY 2008, AND THE FIELD INDICATORS OF THE WETLAND SOILS IN THE UNITED STATES, VERSION 8.2016. THE STATUS OF VEGETATION AS HYDROPHYTE WAS DETERMINED ACCORDING TO THE U.S. ARMY CORPS OF ENGINEERS - NORTH-CENTRAL AND NORTH-EAST 2002 REGIONAL WETLAND PLANT LIST. COPIES OF SITE PLANS IDENTIFYING THE WETLAND DelineATION, WITH THE GOVERNING AUTHORITY'S SPECIFICATIONS AND SIGNATURE, ARE INDIVIDUALLY STAMPED, SIGNED, AND DATED. THIS NOTE HAS BEEN CUSTOMIZED FOR THIS PROJECT. 5. ELEVATIONS REFERENCED TO THE NORTH AMERICAN DATUM OF 1988 (NAD83). 6. ELEVATIONS REFERENCED TO NH STATE PLAIN, NAD83, AS DETERMINED BY G.P.Z. OBSERVATIONS. 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK. 8. EXISTING UTILITIES SHOWN ON THESE PLANS WERE COMPILED FROM A FIELD SURVEY PREPARED BY SEC & ASSOCIATES INC. AND RECORD DRAINAGE AND SEWER PLANS PROVIDED BY THE CONCORD DEPARTMENT OF PUBLIC WORKS. THESE PLANS DO NOT NECESSARILY IDENTIFY THE EXACT LOCATIONS OF ALL UTILITIES, WHICH MAY EXIST AT THE TIME WITHIN THE UTILITY LIMITS. THERE MAY BE EXISTING, INEFFECTIVE, OR OTHER THAN THOSE INDICATED, THE LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY UTILITY CONNECTIONS OR DISCONNECTIONS. PRIOR TO ANY EXISTING UTILITIES, THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IN WRITING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND ELEVATIONS OF THESE UTILITIES, NO SEPARATE OR ADDITIONAL CONSTRUCTION SHALL BE ALLOWED TO DISCREPANCIES. INFORMATION SHOWN IS BASED ON THE DATA SHOWN ON THE PLANS AND ACTUAL FIELD CONDITIONS. INCORRECTED. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPAIR OF THE UTILITIES AND THE LOCATION OF THE EXISTING UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE AND TO FACILITATE THE PROPOSED CONNECTIONS. 9. THESE DOCUMENTS HAVE BEEN PREPARED TO SATISFY ASEE 3000 MINIMUM UTILITY QUALITY LEVEL, C ONLY. ASEE 3000 MINIMUM UTILITY QUALITY LEVEL IS LIMITED TO THE COLLECTION AND REVIEW OF RECORD UTILITY DOCUMENTS AND A SITE FEATURES SURVEY TO MEASURE THE LOCATION AND ELEVATION OF THE EXISTING SEWER AND DRAIN SYSTEM. NO SUBSURFACE EXPLORATION IN THE FORM OF GPR, TEST PIT, BORING OR ANY OTHER GEOTECHNICAL METHODS WERE PERFORMED AS PART OF THIS SURVEY. ALL INFORMATION SHOWN IS BASED ON PROFESSIONAL JUDGMENT IN RELATION TO THE INFORMATION WITH AVAILABLE RECORD DOCUMENTATION. 10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE SET. THIS IS NOT LIMITED TO ALL UTILITIES, STORM INFRASTRUCTURE, SIGNAL, UTILITY POLES, FENCES, ETC. AS REQUIRED, ALL WORK SHALL BE IN ACCORDANCE WITH THE GOVERNING AUTHORITY'S SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCURRED BY THE CONTRACTOR. 11. THE CONTRACTOR SHALL CALL "THE SAFE NEW HAMPSHIRE" AT 1-800-344-7233 AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES. 12. PRIOR TO CONSTRUCTION, THE ENGINEER AND CONTRACTOR WILL REVIEW THE PERMITTED LIMITS OF WORK. 13. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR. 14. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, STREETS, PAVEMENTS, CURBS, TREES, PLANTING, LUMPS, FENCES TO REMAIN OR ON OR OFF THE PREMISES, AND SHALL REPAIR AND REPLACE AT OWNER'S OWN EXPENSE, AS DIRECTED BY THE ENGINEER, ANY ITEMS DAMAGED AS A RESULT OF THE CONTRACTOR'S WORK. 15. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, BRICK, GRASS, ETC.) UNLESS OTHERWISE NOTED ON PLANS. RESTORATION OF ALL AREAS DAMAGED BY CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT. 16. ALL SURFACES TO REMAIN THAT ARE DISTURBED BY THIS WORK SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, AS DETAILED, OR AS SPECIFIED BY THE ENGINEER. 17. ALL CURB DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AND SHALL CONFORM TO STATE DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS, CODES IS INCIDENTAL TO CONTRACT. 18. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY. 19. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE, LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC. PERMIT CONDITIONS RELATE TO THOSE OUTLINED IN THE CIVIL SPECIFICATIONS. 20. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS. 21. SAWCUTS IN EXISTING PAVEMENT SHALL BE SMOOTH AND STRAIGHT. 22. WORK WITHIN PUBLIC RIGHT-OF-WAY SHALL COMPLY WITH APPLICABLE MUNICIPAL AND STATE REQUIREMENTS. 23. IF REPORTED HILL MATERIAL IS REQUIRED, IT SHALL BE CATERED IN WRITING BY A STATE LICENSED PROFESSIONAL ENGINEER AS NON-CONTAMINATED, CLEAN FILL SUITABLE FOR THE INTENDED USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF ENVIRONMENTAL PARAMETERS AS OUTLINED IN THE PROJECT SPECIFICATIONS. 24. ALL STORMWATER MANAGEMENT AND SOIL EROSION AND SEDIMENT CONTROL FEATURES INCLUDED IN THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPP) ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE INCLUDES, BUT IS NOT LIMITED TO, SEDIMENT BARRIERS, STABILIZED CHANNELS, DRAINAGE, WATER QUALITY STRUCTURE, STORMWATER PREVENTION, SUBSURFACE DRAINAGE PIPES AND LAND GRASSING. 25. THE STORMWATER POLLUTION PREVENTION PLAN SHALL BE MONITORED BY A QUALIFIED PROFESSIONAL, A STATE TRAINED INDIVIDUAL POSSESSING A CERTIFICATION SHALL BE PRESENT AT ALL TIMES DURING CONSTRUCTION OF ALL THIS PERMITMENT TO THE SWPP. 26. PROPERTY PROTECT AND DO NOT DISTURB PROPERTY BIRDS, MONITORING WELLS AND MONUMENTS. IF DISTURBED, THE PROPERTY MANAGEMENT WILL BE REPAIR AT THE CONTRACTOR'S EXPENSE BY A REGISTERED LAND SURVEYOR APPROVED BY THE ENGINEER. 27. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED. 28. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION. 29. CLEAN AND/OR FLUSH ALL MANHOLES AND SITE PIPING AFTER THE WORK HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.	DEMOLITION NOTES 1. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND/OR APPROVALS FROM THE CITY OF CONCORD, AND ALL OTHER AUTHORITIES HAVING JURISDICTION. 2. CONSTRUCTION/DEMOLITION DEBRIS: NOT APPROVED FOR REUSE ON-SITE, SHALL BE REMOVED AND DISPOSED OF SITE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION. WASTE MANIFEST FORMS DOCUMENTING PROPER OFF-SITE DISPOSAL SHALL BE PROVIDED TO THE SITE/CITY ENGINEER AND THE CITY OF CONCORD. 3. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES TO BE DEMOLISHED AND TO REMAIN DURING DEMOLITION. IF ANY DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING OF THE CONFLICT. 4. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES TO REMAIN, ANY TEMPORARY SHUT DOWNS REQUIRED TO FACILITATE THE PROPOSED CONSTRUCTION, WHICH MAY AFFECT USGS ON ADJACENT PROPERTIES SHALL BE COORDINATED BY THE CONTRACTOR AND THE CITY OF CONCORD. 5. CONTRACTOR SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL PROCEED WITH CAUTION WHEN THE PROPOSED WORK AREA TO REMAIN AND/OR DISRUPTION TO EXISTING UTILITY SERVICE. 6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN IN ACCORDANCE WITH A LOCAL, STATE AND FEDERAL REQUIREMENTS. 7. CONTRACTOR SHALL COVER CONSTRUCTION DUMPSTERS AND ROLL-OFF CONTAINERS, AND STORE ALL CONSTRUCTION MATERIALS INSIDE THE CONSTRUCTION TRAILER OR UNDER A COVERED AREA DURING PERIODS WHEN CONSTRUCTION CEASES.	WINTER SEDIMENTATION & EROSION CONTROL NOTES THE CONTRACTOR SHALL FOLLOW WINTER CONSTRUCTION EROSION CONTROL MEASURES AFTER OCTOBER 15TH AS FOLLOWS: 1. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE COVER BY OCTOBER 15TH OR WHEN ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 4:1. EROSION CONTROL BLANKETS SHALL BE INSTALLED WITHIN 14 DAYS OF THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT ALLOW OVER ACCUMULATED SNOW OR ICE TO BUILD UP AND SHALL BE COMPLETED IN ADVANCE OF THEM ON SPRING MELT EVENTS. 2. RECOMPILE 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 INCHOT ITEM 304.3. LAYOUT AND MATERIALS NOTES 1. ALL DIMENSIONS AND RAOQ ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED. GRADING AND DRAINAGE NOTES 1. CASTINGS FOR EXISTING STRUCTURES TO REMAIN AND PROPOSED STRUCTURES SHALL BE SET TO THE PROPOSED ELEVATIONS SHOWN ON THE DRAWINGS. 2. THE FILLING OF SOIL OVER THE ROOTS OF TREES TO BE PRESERVED IS PROHIBITED. 3. UNSUITABLE FILL AND BACKFILL MATERIALS ARE MATERIALS CONTAINING EXCESSIVE AMOUNT OF WATER, PLASTIC, GLASS, VEGETATION, ORGANIC MATTER, STONE, PAINT, RUST, STONE OR Boulders OVER 6 INCHES IN GREATEST DIMENSION, FROZEN MATERIAL, AND MATERIAL WHICH, IN THE OPINION OF THE ENGINEER, WILL NOT PROVIDE A SATISFACTORY FOUNDATION OR SURFACE. 4. SUITABLE SOIL SHALL BE PLACED IN LAYERS TO THE REQUIRED ELEVATIONS AS SHOWN ON THE DRAWINGS. FILL BACKFILL AND COMPACT TO PRODUCE MINIMUM SUBSIDENT SETTLEMENT OF THE MATERIAL AND PROVIDE ADEQUATE SUPPORT FOR THE SURFACE TREATMENT OR STRUCTURE TO BE PLACED ON THE MATERIAL. PLACE MATERIAL IN APPROXIMATELY HORIZONTAL LAYERS OF BEGINNING AT LOWEST AREA TO BE FILLED, DO NOT EXCEED 18 INCHES OF FILL PER LAYER. TOPSOIL AS FILL MATERIAL. 5. CONTRACTOR SHALL PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 18 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT AND NOT MORE THAN 12 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. DO NOT PLACE BACKFILL OR FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST ORICE. 6. FOR GROUND SURFACE PREPARATION, CONTRACTOR SHALL REMOVE VEGETATION, DEBRIS, UNSUITABLE SOIL MATERIALS, OBSTRUCTIONS, AND DIFFERENT MATERIALS FROM GROUND SURFACE PRIOR TO PLACEMENT OF FILL. REMOVE MATERIAL TO THE FULL EXTENT OF ROOT PENETRATION. PROPOSED FILLING GROUND SURFACE PRIOR TO PLACEMENT OF FILL TO PROVIDE A CONSISTENT, STABLE BASE FOR THE FIRST LAYERS OF THE STRUCTURAL FILL. 7. CONTRACTOR SHALL COMPACT ALL MATERIAL TO THE FOLLOWING MINIMUM MODIFIED PROCTOR DENSITIES:<table><tr><th>FILL AND BACKFILL LOCATION</th><th>DENSITY</th></tr><tr><td>UNDER ROADWAY AND PARKING AREA</td><td>95%</td></tr><tr><td>LAWN AREAS</td><td>90%</td></tr></table> 8. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL DIG TEST PITS TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AT PROPOSED UTILITY CROSSINGS, AND ADVISE THE ENGINEER IN WRITING OF ANY DISCREPANCIES. 9. ALL PROPOSED UTILITIES AND THEIR CONNECTIONS, DISCONNECTION AND RELOCATION OF EXISTING UTILITIES SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY HAVING JURISDICTION, ANY COORDINATION WITH THE MUNICIPALITY AND/OR UTILITY COMPANY, PERMITS OR APPROVALS REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.	FILL AND BACKFILL LOCATION	DENSITY	UNDER ROADWAY AND PARKING AREA	95%	LAWN AREAS	90%	 Woodard & Curran 138 River Road, Suite 212 Andover, Massachusetts 01810 (802) 438-4332 www.woodardcurran.com THIS DOCUMENT IS THE PROPERTY OF WOODARD & CURRAN AND ITS CLIENT. REPRODUCTION OR REPRODUCTION WITHOUT WRITTEN PERMISSION IS PROHIBITED. PER SEAL:  Ross Tsantoulis Professional Engineer No. 4122 State of New Hampshire DRAFT 60% DESIGN NOT FOR CONSTRUCTION CITY/STATE: RADIUS RECYCLING CONCORD, NH SANDQUIST FACILITY STORMWATER IMPROVEMENTS <table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><td>REV</td><td>NO./DATE/YY</td><td>DESCRIPTION</td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> JOB NO.: 0224539-48 DATE: NOVEMBER 2025 SCALE: NO SCALE DESIGNED BY: YL DRAWN BY: KC CHECKED BY: RT FILE NAME: 0224539-48-C-002.dwg DRAWING TITLE: CIVIL GENERAL NOTES DRAWING NO.: C-002										REV	NO./DATE/YY	DESCRIPTION									
FILL AND BACKFILL LOCATION	DENSITY																													
UNDER ROADWAY AND PARKING AREA	95%																													
LAWN AREAS	90%																													
REV	NO./DATE/YY	DESCRIPTION																												



SHEET GENERAL NOTES

1. PROPERTY IS WITHIN THE ZONING DISTRICTS "OCF" (OPPORTUNITY CORRIDOR PERFORMANCE) AND "PO" (OPEN SPACE RESIDENTIAL DISTRICT).



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PR SEAL:



Drafting by Ross
Tsantoulis
Ross Tsantoulis
Professional Engineer
No. 4122
State of Massachusetts
Expires 12/31/2025

**DRAFT 60% DESIGN
NOT FOR CONSTRUCTION**

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: NAME/DATE DESCRIPTION

JOB NO.: 0224539-08

DATE: NOVEMBER 2025

SCALE: 1" = 40'

DESIGNED BY: VI

DRAWN BY: KC

CHECKED BY: RT

FILENAME: 0224539-08-C-100.dwg

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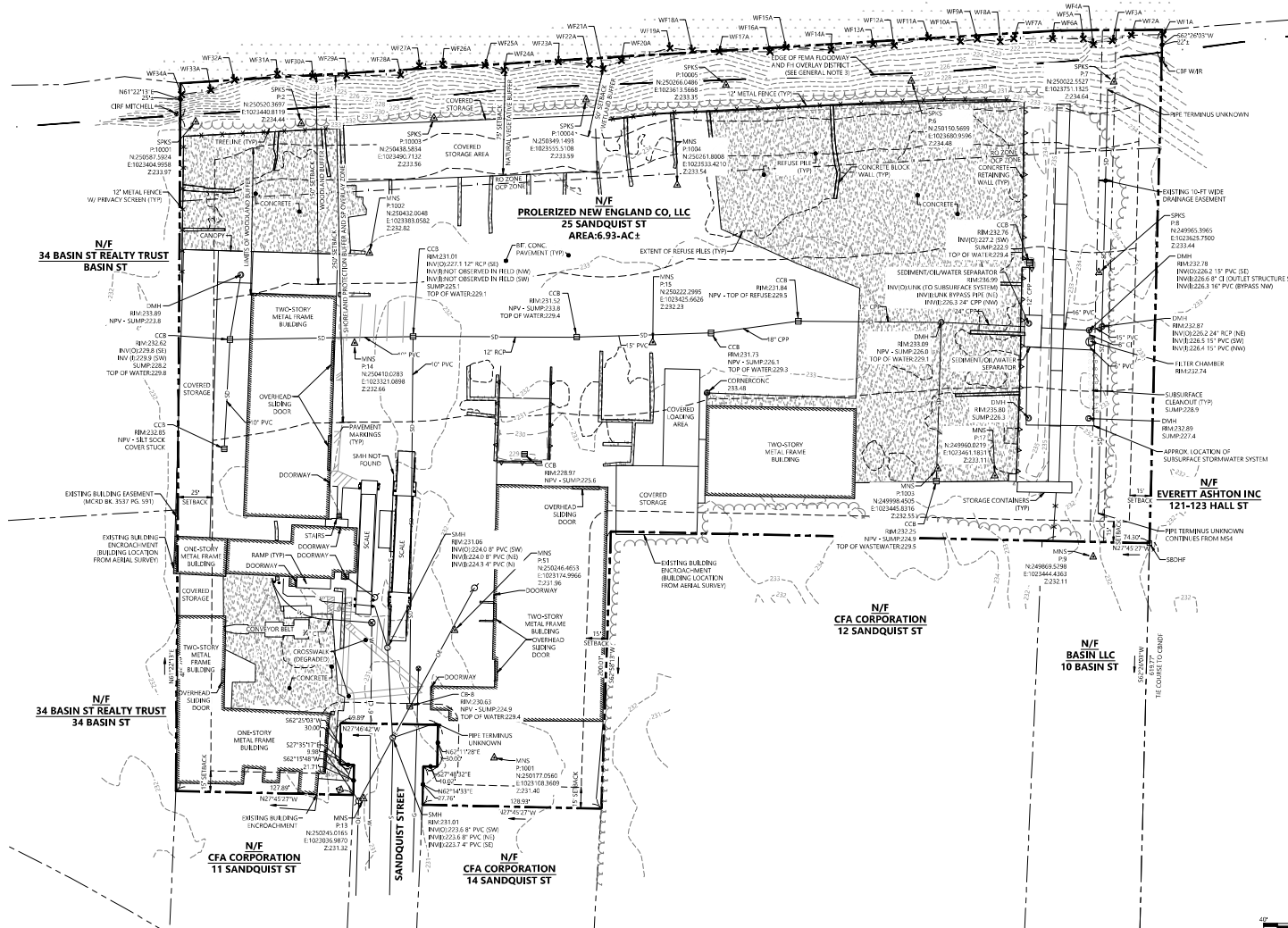
CIVIL

EXISTING CONDITIONS PLAN

DRAWING NO.:

C-100

MERRIMACK RIVER

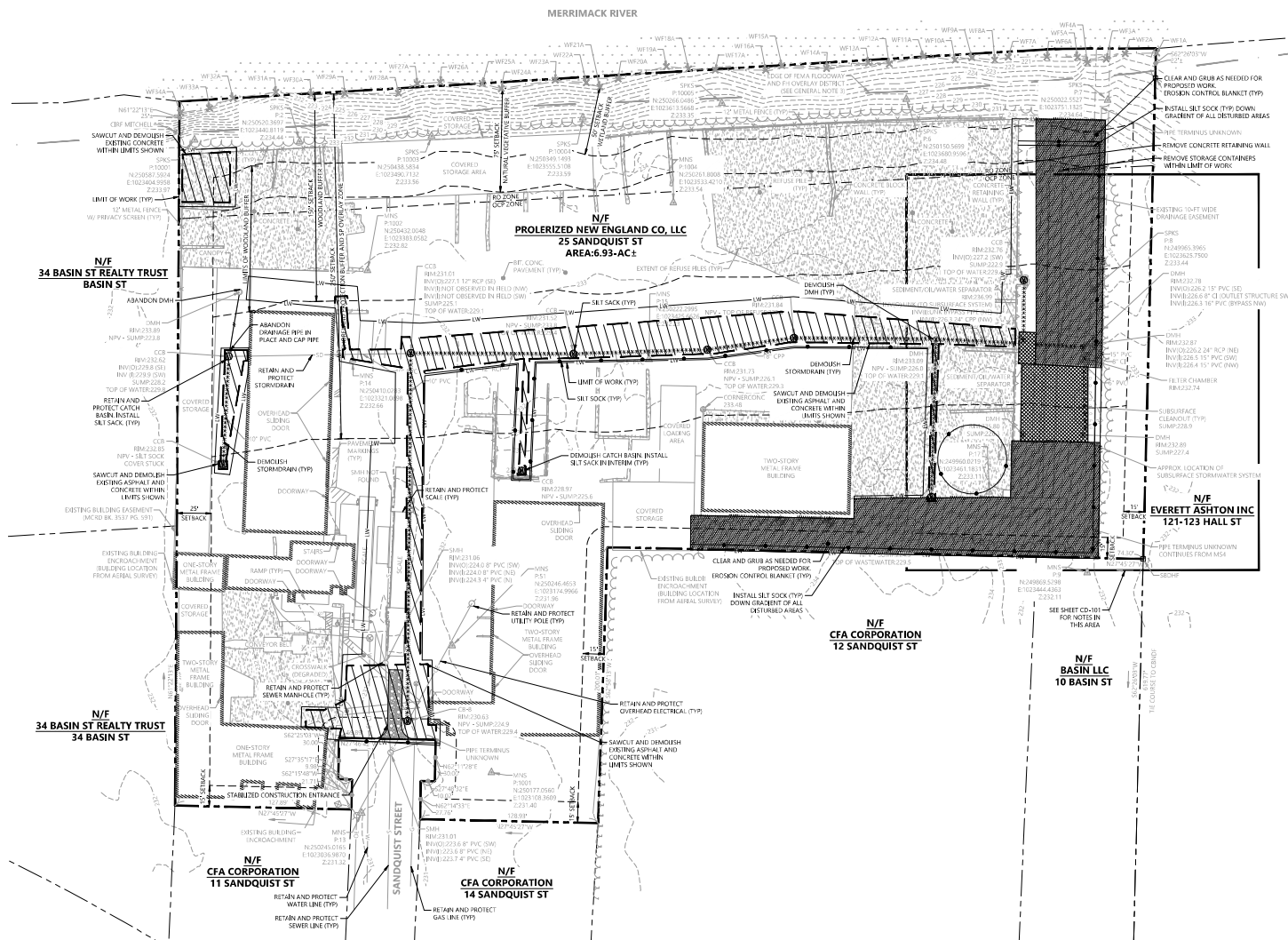


0' 20' 40' 60'

BAR SCALE

1" = 40'

CHECK GRAPHIC SCALE BEFORE USING



1. PROPERTY IS WITHIN THE ZONING DISTRICTS "OCP" (OPPORTUNITY CORRIDOR PERFORMANCE) AND "RO" (OPEN SPACE RESIDENTIAL DISTRICT).



PE SEAL



CONTENTS

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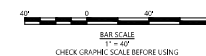
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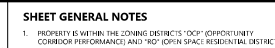
CIVIL

SITE PREPARATION AND

EROSION CONTROL PLAN

DRAWING NO:
CD-100





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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENT

REV	MM/DD/YY	DESCRIPTION
JOB NO: 0224559-08		
DATE: NOVEMBER 2025		
SCALE: 1" = 10'		
DESIGNED BY: VI		
DRAWN BY: KC		
CHECKED BY: RT		
FILENAME: 0224559-08-CD-101.dwg		
DRAWING TITLE:		
CIVIL STORMWATER TREATMENT AND STORAGE AREA SITE PREPARATION AND EROSION CONTROL PLAN		
DRAWING NO:		
CD-101		



SHEET GENERAL NOTES

1. PROPERTY IS WITHIN THE ZONING DISTRICTS "OCF" (OPPORTUNITY CORRIDOR PERFORMANCE) AND "PO" (OPEN SPACE RESERVATION DISTRICT).

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PRO SEAL

ROSS TSANTOULOS
Professional Engineer
No. 14122
State of Massachusetts
Civil Engineering

Designated by Area:
Professional Engineer
No. 14122
State of Massachusetts
Civil Engineering

**DRAFT 60% DESIGN
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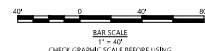
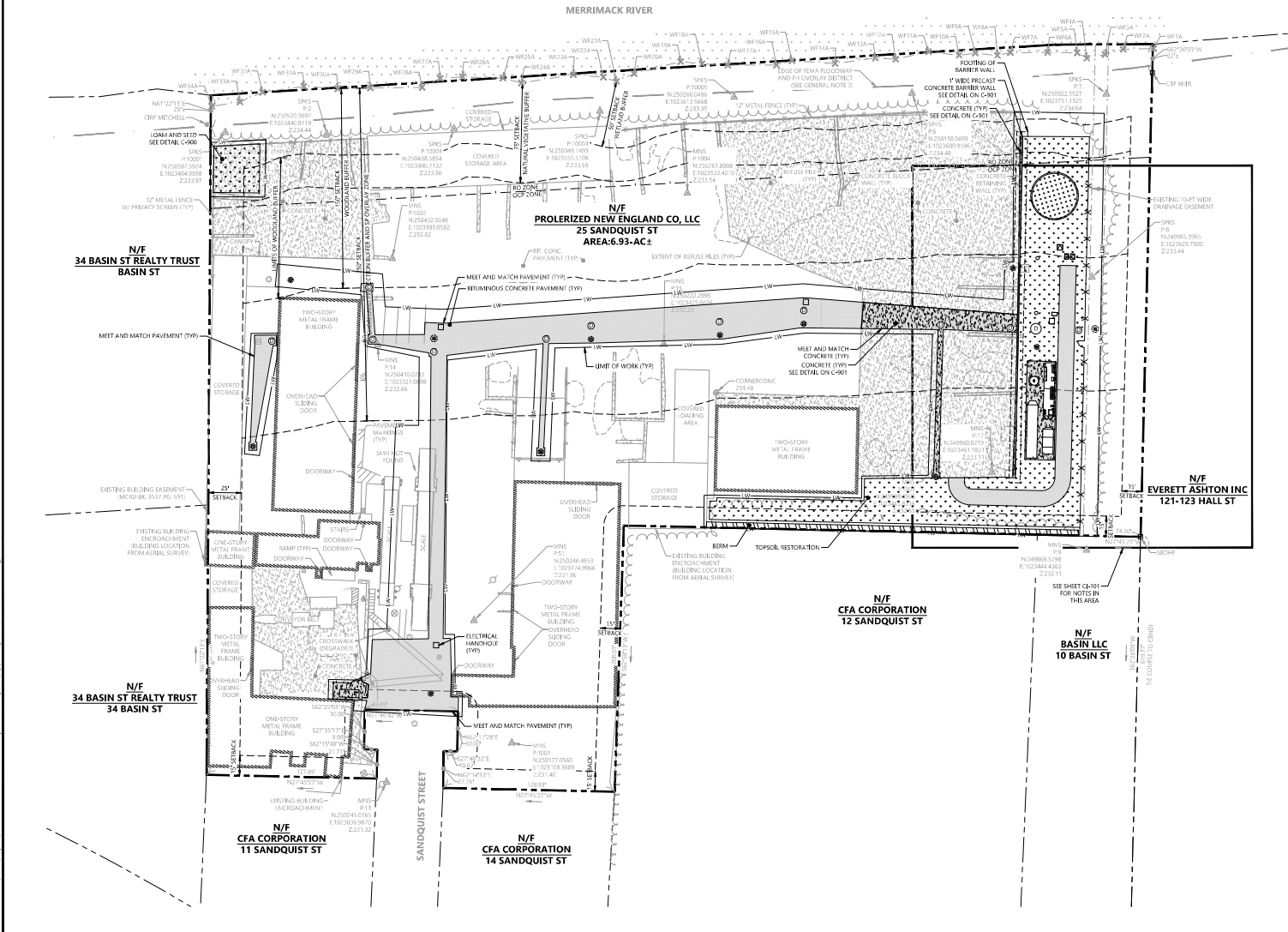
CITY: CONCORD, NH
PROJECT: SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	DATE	DESCRIPTION

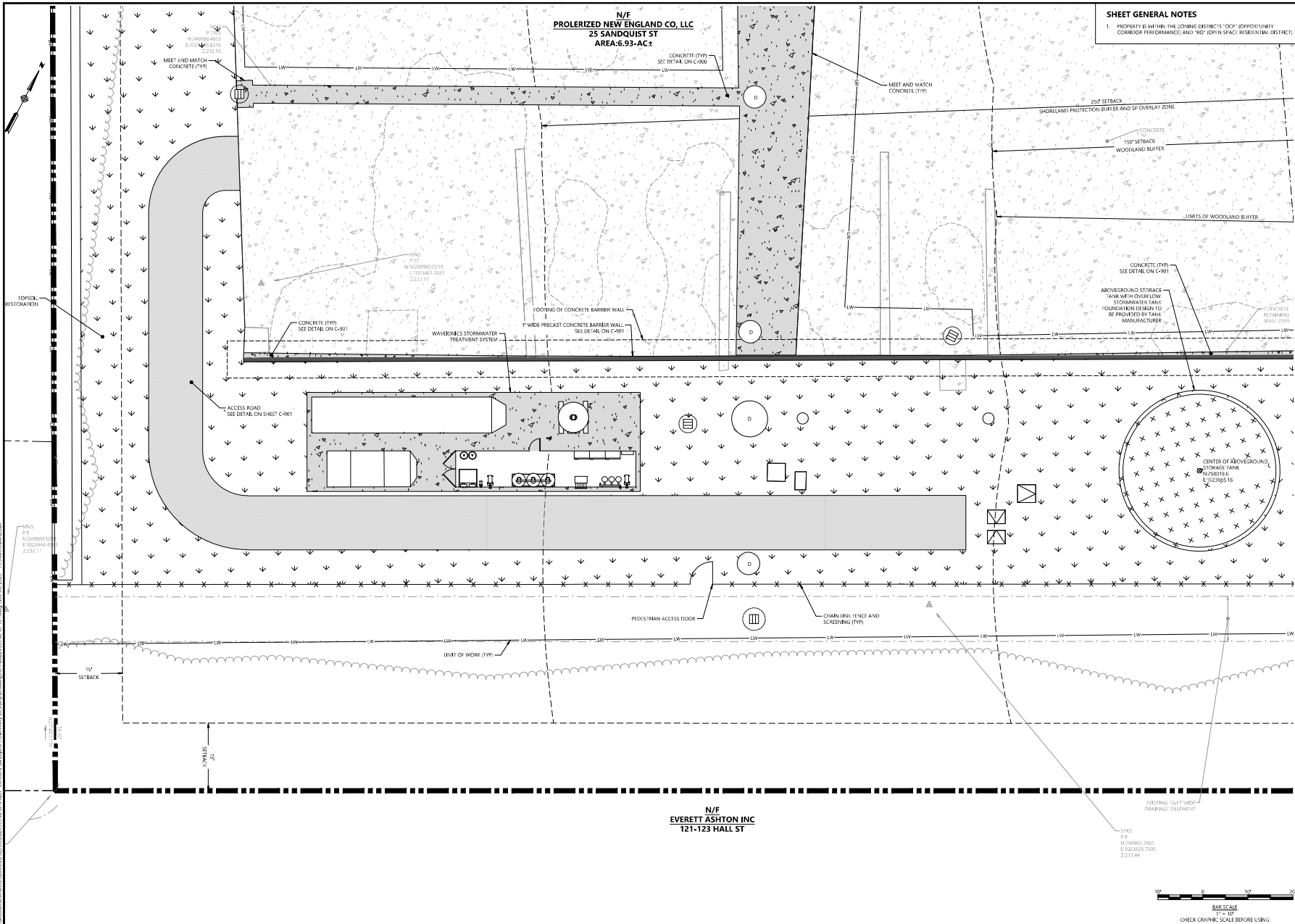
JOB NO.	0224539-48
DATE	NOVEMBER 2025
SCALE	1" = 40'
DESIGNED BY	VI
DRAWN BY	KC
CHECKED BY	RT
PREPARED BY	0224539-48-23-100.dwg

**CIVIL
OVERALL LAYOUT AND
MATERIALS PLAN**

DRAWING NO.: **CI-100**



WoodardCurran.com\Projects\0224539-48_Sandquist-Facility-Stormwater-Improvements\Drawings\CI-100.dwg, Nov 14, 2025, 11:16 AM, B.MATTHEW



- SHEET GENERAL NOTES**
- PROPERTY IS WITHIN THE ZONING DISTRICTS "DCP" (OPPORTUNITY CONDOMINIUM PERFORMANCE) AND "NO" (OPEN SPACE RESIDENTIAL DISTRICT).



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Ross Tsantoulis
Professional Engineer
No. 4122
State of Massachusetts

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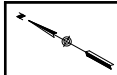
CLIENT INFO:
**RADIUS RECYCLING
CONCORD, NH**
**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV	DATE	DESCRIPTION

DRAWING TITLE:
**CIVIL
STORMWATER TREATMENT
AND STORAGE AREA
LAYOUT AND MATERIALS
PLAN**

DRAWING NO.:
CI-101

WoodardCurran\msh\land\stormwater\224539-48\Station - Concord\Geospatial\Professional\Drawings\DWG-CI-101.dwg Nov 04, 2025 - 11:34 AM BMA702A



SHEET GENERAL NOTES

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PE SEAL:



Ross Tsantoulis
Professional Engineer
State of New Hampshire
No. 4122

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: N/A/DO/YY DESCRIPTION:

JOB NO.: 0224539-48

DATE: NOVEMBER 2025

SCALE: 1" = 40'

DESIGNED BY: YI

DRAWN BY: KC

CHECKED BY: RT

PREPARED BY: 0224539-48-CCG-100 (log)

DRAWING TITLE:

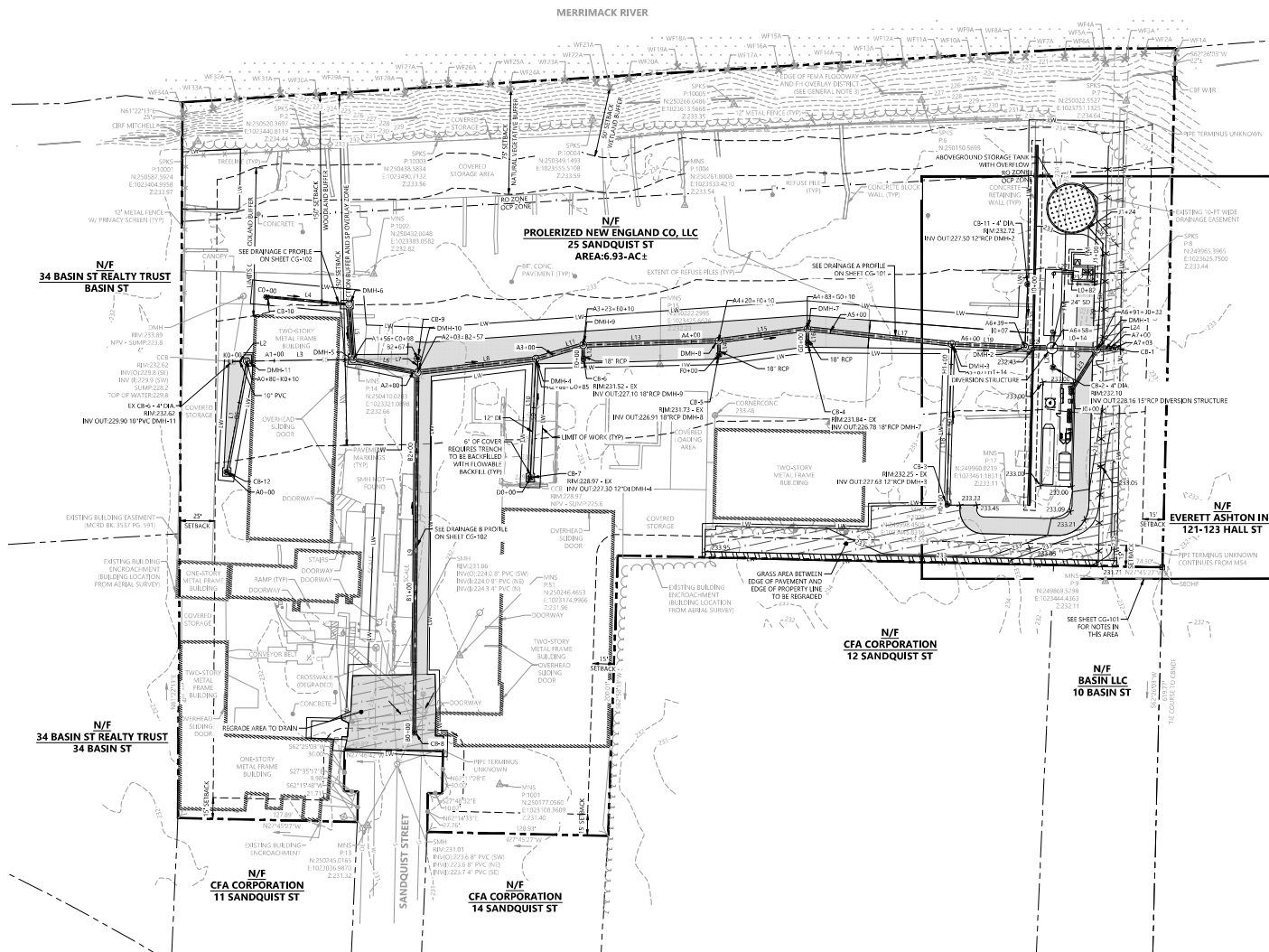
CIVIL

OVERALL GRADING AND

DRAINAGE PLAN

DRAWING NO.:

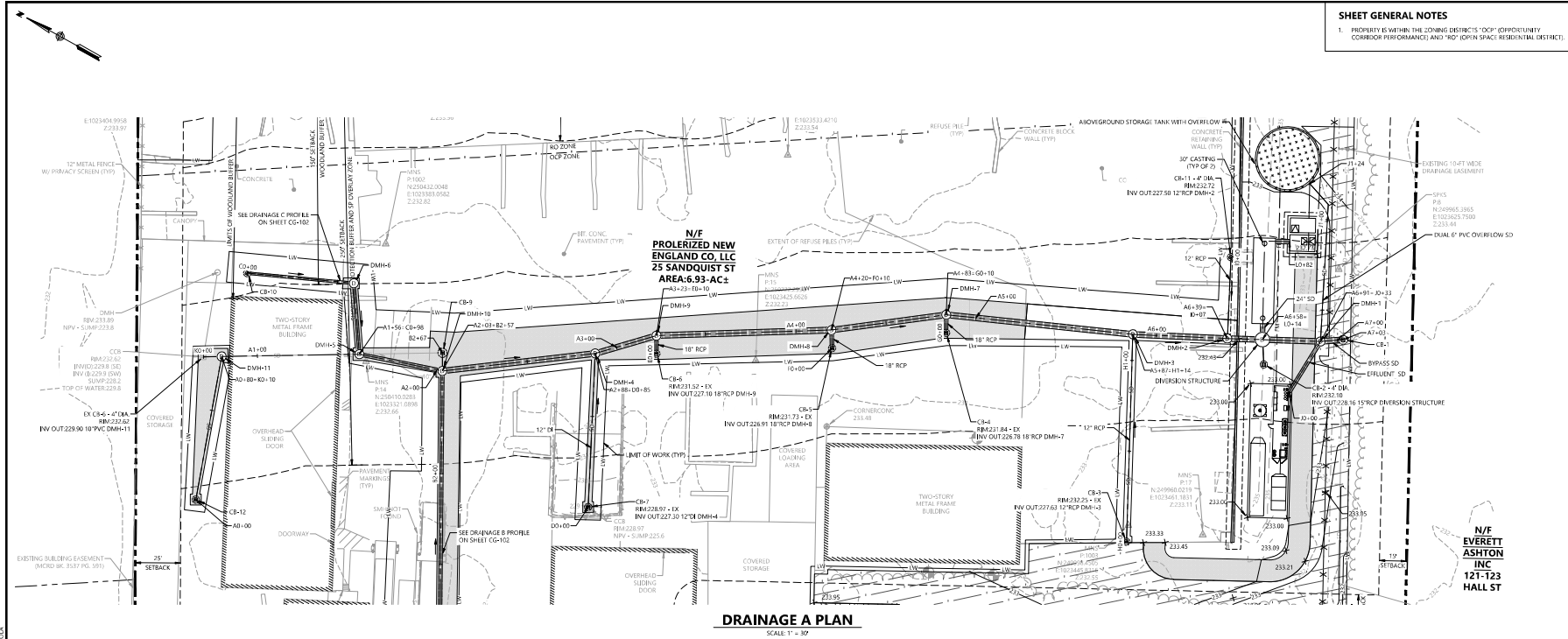
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BAR SCALE
1" = 40'

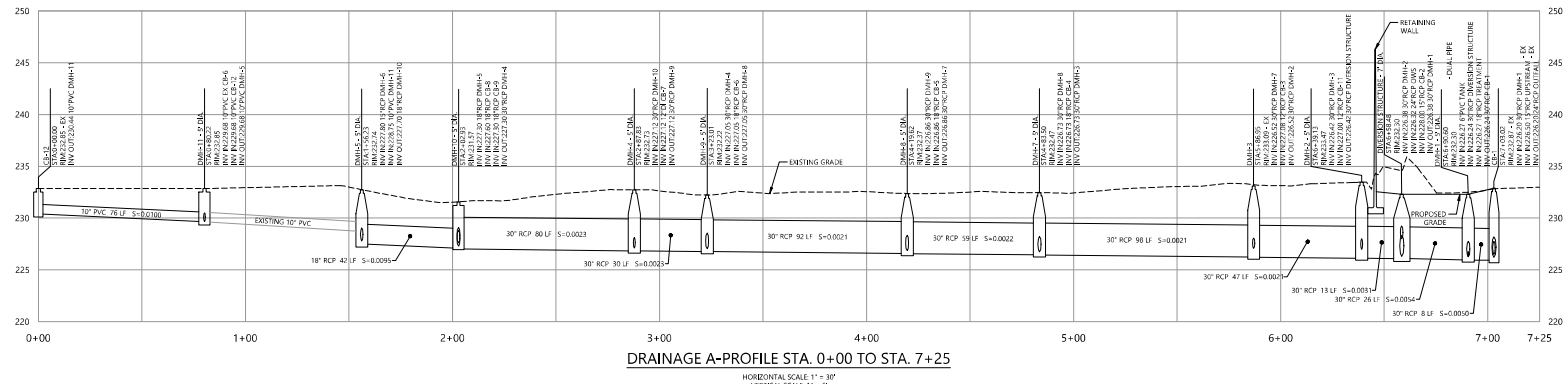
CHECK GRAPHIC SCALE BEFORE USING



DRAWING NO:
CG-101



DRAINAGE A-PROFILE STA. 0+00 TO STA. 7+25



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PE SEAL:



Ross Tsantoulis
Professional Engineer
Civil Engineering
No. 4122
State of Massachusetts

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: NAME/DATE DESCRIPTION

JOB NO: 0224539-48

DATE: NOVEMBER 2025

SCALE: AS NOTED

DESIGNED BY: VI

DRAWN BY: KC

CHECKED BY: RT

PREPARED BY: 0224539-48-CG-102.dwg

DRAWING TITLE:

CIVIL

GRADING AND DRAINAGE

PLAN AND PROFILE 1

DRAWING NO:

CG-102



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PER SEAL:



Ross Tsantoulis

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: MM/DD/YY

DESCRIPTION

JOB NO:	0224539-48
DATE:	NOVEMBER 2025
SCALE:	AS NOTED
DESIGNED BY:	VI
DRAWN BY:	KC
CHECKED BY:	RT
PREPARED BY:	0224539-48-CC-105.dwg

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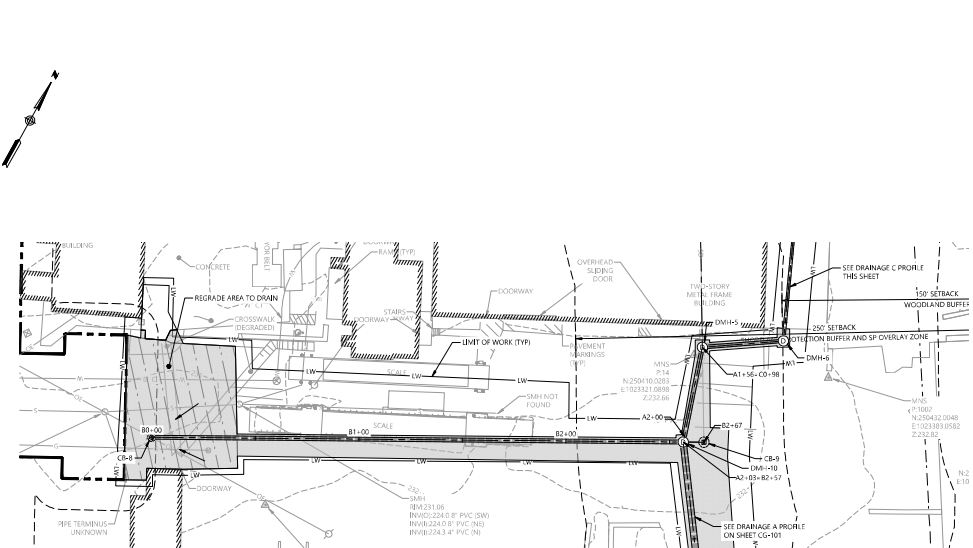
**CIVIL
GRADING AND DRAINAGE
PLAN AND PROFILE 2**

DRAWING NO.:

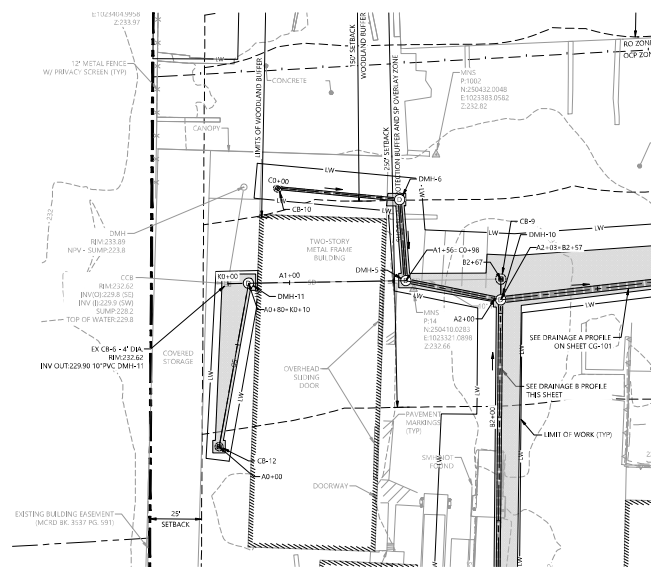
CG-103

SHEET GENERAL NOTES

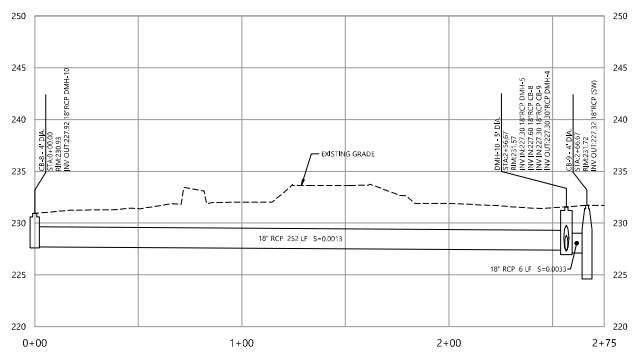
- PROPERTY IS WITHIN THE ZONING DISTRICTS "OCP" (OPPORTUNITY CONDOMINIUM PERFORMANCE) AND "PO" (OPEN SPACE RESIDENTIAL DISTRICT).



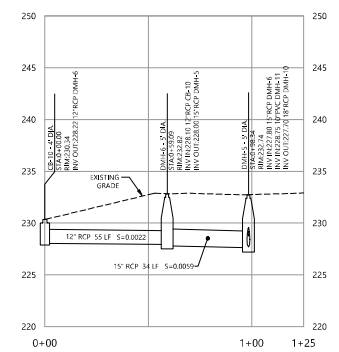
DRAINAGE B PLAN
SCALE: 1" = 30'



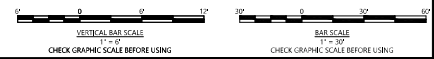
DRAINAGE C PLAN
SCALE: 1" = 30'



DRAINAGE B-PROFILE STA. 0+00 TO STA. 2+75
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 4'



DRAINAGE C-PROFILE STA. 0+00 TO STA. 1+25
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 4'



STRUCTURE TABLE						
NAME	CB#	IR#	INV IN/SEE/FROM	INV OUT/SEE/TO	STA/OFFSET	NORTHING EASTING
CS-1	4"	232.87	226.70/30"RCY/DMH-1 226.50/15"RCY/UPSTREAM	226.70/24"RCY/CUTFALL	A1+23.0/0"	249944.5538 1023592.6942
CS-2	4"	232.10		226.16/15"RCY/DIVERSION STRUCTURE	L0+00/0"	249976.2278 1023559.6069
CS-3	4"	232.25		227.63/12"RCY/DMH-3	H0+00/0"	249995.0353 1023437.3854
CS-4	4"	231.84		226.78/18"RCY/DMH-7	G0+00/0"	250137.0026 1023489.8873
CS-5	4"	231.73		226.91/18"RCY/DMH-8	F0+00/0"	250188.8362 1023452.8299
CS-6	4"	231.52		227.10/18"RCY/DMH-9	E0+00/0"	250272.1123 1023480.3452
CS-7	4"	228.97		227.30/12"CB/DMH-4	D0+00/0"	250264.0462 1023310.1462
CS-8	4"	236.93		227.92/18"RCY/DMH+10	H0+00/0"	250246.3743 1023111.2073
CS-9	4"	231.72		227.32/18"RCY/DMH+10	BL+07/0"	250375.5571 1023345.9595
CS-10	4"	236.34		228.22/12"RCY/DMH+6	CB+00/0"	250491.0807 1023331.8267
CS-11	4"	232.72		227.50/12"RCY/DMH+2	H+00/0"	250020.7315 1023602.6226
CS-12	4"	232.85		230.44/10"PVY/DMH+11	A0+10/0"	250455.3235 1023208.8003
DIVERSION STRUCTURE	7"	232.30	226.38/30"RCY/DMH-2 226.32/24"RCY/TOWNS 228.00/15"RCY/CB-2	226.30/30"RCY/DMH+1	A6+58/0.1" L+10+21/0.0"	249982.5331 1023571.2438
DMH-1	0"	232.30	226.27/0"PVY/TANK 226.24/30"RCY/DIVERSION STRUCTURE 226.27/18"RCY/TREATMENT	226.24/30"RCY/CB-1	A6+91/0.0" R+10+33/0.0"	249954.9452 1023585.8838
DMH-2	0"	232.47		226.42/30"RCY/DIVERSION STRUCTURE	A6+38/0.0" A0+07/0"	250000.7313 1023562.3710
DMH-3	0"	233.09	226.52/30"RCY/DMH-7 227.08/12"RCY/CB-3	226.52/30"RCY/DMH-2	A3+87/0.0" R+11+14/0.0"	250047.4478 1023539.1461
DMH-4	0"	232.73	227.12/30"RCY/DMH+10 227.12/12"CB/CB-7	227.12/30"RCY/DMH+9	A2+88/0.0" D0+85/0.0"	250101.6791 1023386.1250
DMH-5	0"	232.74	227.80/15"RCY/DMH+6 228.75/10"PVY/DMH-11	227.70/18"RCY/DMH+10	A1+56/0.0" C0+98/0.0"	250415.3059 1023322.6937
DMH-6	0"	232.82	228.10/12"RCY/CB-10	228.00/15"RCY/DMH-5	CB+59/0"	250426.9231 1023355.4602
DMH-7	0"	232.47	228.73/30"RCY/DMH-8 226.73/18"RCY/CB-4	226.73/30"RCY/DMH-3	A4+83/0.0" G0+10/0"	250142.6079 1023498.6897
DMH-8	0"	232.37	226.56/30"RCY/DMH+9 226.86/18"RCY/CB-5	226.86/30"RCY/DMH+7	A4+73/0.0" F0+10/0.0"	250193.9594 1023460.6119
DMH-9	0"	232.22	227.05/30"RCY/DMH-4 227.04/18"RCY/CB-6	227.05/30"RCY/DMH+8	A3+23/0.0" A0+10/0"	250276.9221 1023411.1125
DMH-10	0"	231.57	227.30/18"RCY/DMH+5 227.60/18"RCY/CB-8 227.30/18"RCY/CB-9	227.30/30"RCY/DMH+4	A2+03/0.0" A0+57/0"	250370.7870 1023336.8057
DMH-11	0"	232.85	229.68/10"PVY/CB-6 229.68/10"PVY/CB-7	229.68/10"PVY/DMH+5	A0+83/0.0" A0+10/0"	250481.1621 1023284.7499
EX CB-6	4"	232.62		229.90/10"PVY/DMH+11	H0+00/0"	250489.7518 1023279.7796

ALIGNMENT HORIZONTAL DATA									
NAME	LENGTH	ALIGNMENT NAME	LINE/CHORD DIRECTION	RPE START NORTHING	RPE START EASTING	RPE END NORTHING	RPE END EASTING	RPE START STATION	RPE END STATION
L1	80	A	N71° 12' 40.77"E	250455.2235	1023208.8003	1023284.7499	250481.1621	A0+00	A0+80
L2	10	K	S30° 01' 34.00"E	250489.7618	1023279.7796	1023284.7499	250481.1621	K0+00	R0+10
L3	76	A	S29° 54' 59.45"E	250481.1621	1023284.7499	1023322.6919	250415.3115	A0+80	A1+56
L4	59	C	S23° 34' 27.67"E	250491.0807	1023331.8267	1023355.4602	250436.9231	C0+00	C0+59
L5	39	C	S50° 39' 08.51"W	250436.9231	1023322.6937	250415.3059	250142.6079	C0+59	C0+98
L6	47	A	S17° 35' 16.56"E	250415.3115	1023322.6919	1023336.8055	250370.7873	A1+56	A2+03
L7	10	B	N61° 37' 59.53"E	250370.7952	1023336.8012	1023365.5959	250375.5571	B0+57	B2+07
L8	65	A	S30° 30' 48.37"E	250370.7873	1023336.8055	1023386.1250	250389.1791	A2+03	A2+68
L9	257	A	N61° 30' 41.06"E	250386.1748	1023311.2073	1023336.8012	250370.7952	B0+00	B3+57
L10	85	D	N62° 39' 07.47"E	250384.0462	1023376.1462	1023386.1250	250387.0791	D0+00	D0+85
L11	35	A	S45° 10' 55.80"E	250387.0791	1023386.1250	1023411.1125	250276.9221	A2+68	A3+23
L12	10	E	N61° 19' 01.47"E	250272.1123	1023402.3452	1023411.1125	250276.9221	E0+00	E0+10
L13	97	A	S30° 49' 20.02"E	250276.9221	1023411.1125	1023460.6119	250193.9594	A3+23	A4+20
L14	10	F	N39° 40' 53.89"E	250188.8362	1023402.3039	1023460.6119	250193.9594	F0+00	F0+10
L15	64	A	S30° 30' 23.21"E	250193.9594	1023460.6119	1023498.6897	250142.6079	A4+20	A4+83
L16	10	G	N61° 40' 16.12"E	250137.0026	1023489.8873	1023498.6897	250142.6079	G0+00	G0+10
L17	103	A	S23° 01' 09.49"E	250142.6079	1023498.6897	1023539.1461	250047.4478	A4+83	A5+87
L18	114	H	N62° 44' 56.23"E	249995.0353	1023437.3854	1023539.1461	250047.4478	H0+00	H1+14
L19	52	A	S20° 20' 02.49"E	250047.4478	1023539.1461	1023562.3710	250000.7313	A5+87	A6+39
L20	45	I	S63° 34' 41.00"W	250020.7315	1023602.6226	1023662.3710	250000.7313	I0+00	I0+45
L22	13	A	S27° 04' 04.41"E	250000.7313	1023562.3710	1023588.2389	249989.2484	A6+39	A6+52
L23	33	J	S87° 20' 47.14"E	249956.5131	1023553.2679	1023585.8497	249955.0031	J0+00	J0+33
L24	12	A	S33° 12' 30.81"E	249955.0031	1023585.8527	1023592.6942	249944.5538	A6+51	A7+03
L25	39	A	S27° 12' 17.45"E	249989.2484	1023588.2389	1023585.8527	249955.0031	A6+52	A6+91
L26	14	L	N67° 52' 59.24"E	249976.2278	1023559.6069	1023571.2438	249983.5331	L0+00	L0+14
L27	14	L	S27° 14' 52.20"E	250000.7313	1023619.3794	1023625.9190	249996.5053	L0+14	L0+42
L28	15	J	N119° 12' 27.47"E	249987.9217	1023654.1313	1023659.1422	250002.3049	J1+00	J1+24
L29	76	J	N64° 19' 40.39"E	249955.0031	1023585.8497	1023654.1313	249987.9217	J0+33	J1+08



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PER SEAL:



Digitally signed by Ross Tsantoulis
DN: cn=Ross Tsantoulis, o=Woodard & Curran, ou=Professional Engineer, email=ross@woodardcurran.com, c=US

DRAFT 60% DESIGN
NOT FOR CONSTRUCTION

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	NAME/DATE	DESCRIPTION
-----	-----------	-------------

JOB NO.:	0224539-48
DATE:	NOVEMBER 2025
SCALE:	NO SCALE
DESIGNED BY:	YL
DRAWN BY:	KC
CHECKED BY:	RT
PREPARED BY:	0224539-48-CC-104.dwg

DRAWING TITLE:
**CIVIL
DRAINAGE TABLES**

DRAWING NO.:
CG-104



SHEET GENERAL NOTES

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PE SEAL:



Design Prepared By:
Ross Tsantoulis
Title: Senior Engineer
Date: 11/14/2025
Check: [Signature]
Date: 11/14/2025
Project: SANDQUIST FACILITY STORMWATER IMPROVEMENTS

**DRAFT 60% DESIGN
NOT FOR CONSTRUCTION**

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: NAME/DATE DESCRIPTION

JOB NO.: 0224539-48

DATE: NOVEMBER 2025

SCALE: 1" = 40'

DESIGNED BY: YI

DRAWN BY: KC

CHECKED BY: RT

PREPARED BY: 0224539-48-CU-100-001

DRAWING TITLE:

CIVIL

OVERALL UTILITY PLAN

DRAWING NO.:

CU-100

0' 20' 40' 60'

BAR SCALE
1" = 40'

CHECK GRAPHIC SCALE BEFORE USING

MERRIMACK RIVER

N/F
PROLERIZED NEW ENGLAND CO, LLC
25 SANDQUIST ST
AREA: 6.93 AC±

N/F
34 BASIN ST REALTY TRUST
BASIN ST

DNH
RM 231.89
NPV - SUMP 231.8
CCB
RM 231.62
RM 231.62
RM 231.62 (SW)
SUMP 231.62
TOP OF WATER 231.6

N/F
34 BASIN ST REALTY TRUST
34 BASIN ST

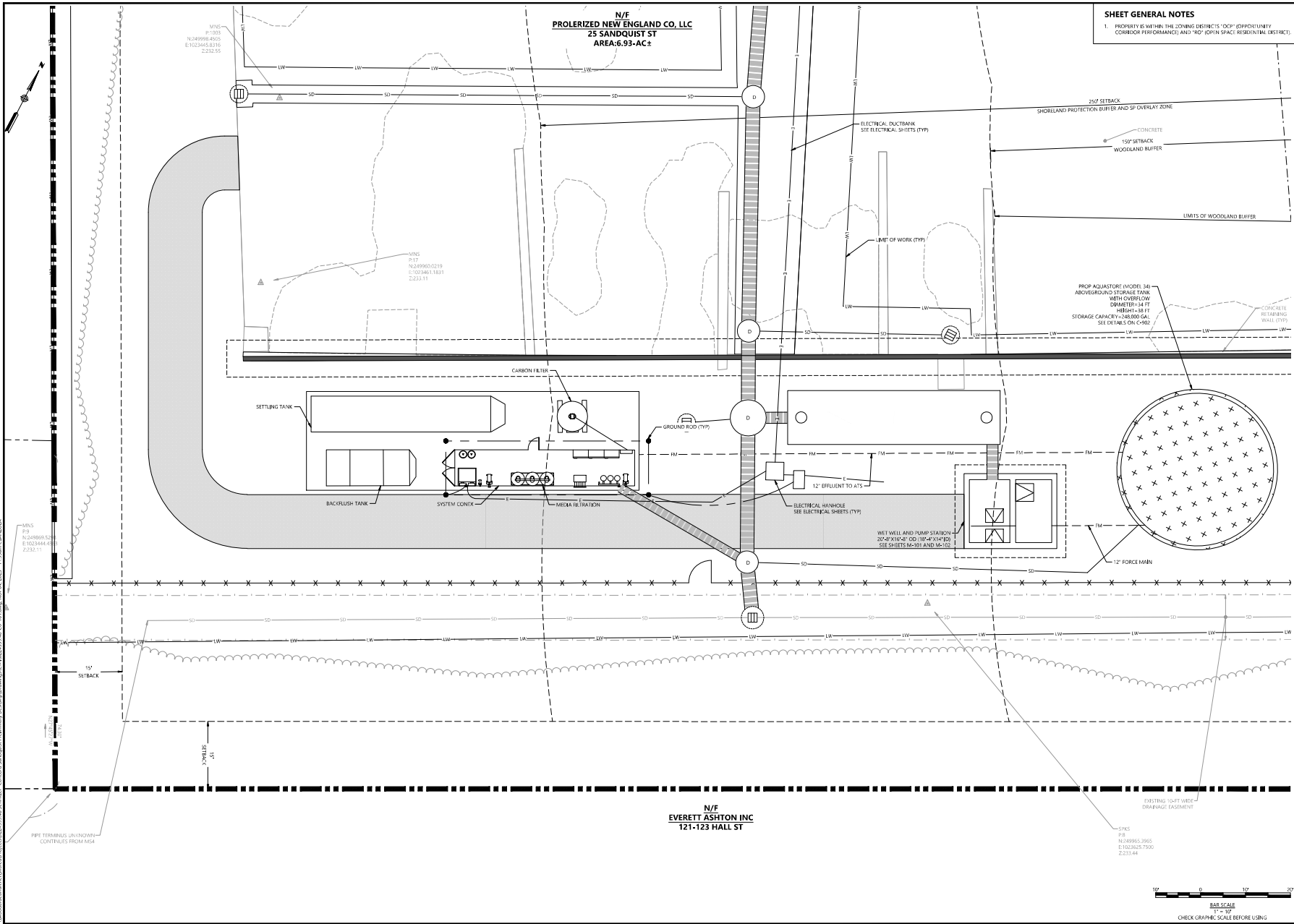
N/F
CFA CORPORATION
11 SANDQUIST ST

N/F
CFA CORPORATION
14 SANDQUIST ST

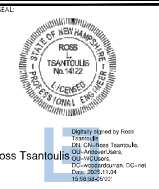
N/F
CFA CORPORATION
12 SANDQUIST ST

N/F
BASIN LLC
10 BASIN ST

N/F
EVERETT ASHTON INC
121-123 HALL ST



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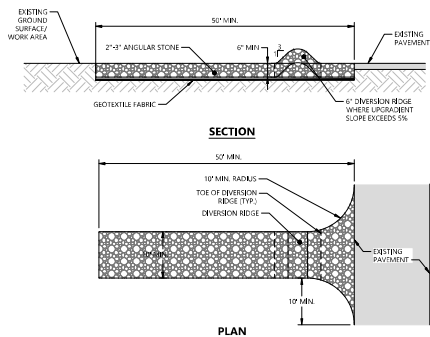
**DRAFT 60% DESIGN
NOT FOR CONSTRUCTION**

CLIENT INFO:
**RADIUS RECYCLING
CONCORD, NH**
**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV	DATE	DESCRIPTION

**CIVIL
STORMWATER TREATMENT
AND STORAGE AREA UTILITY
PLAN**

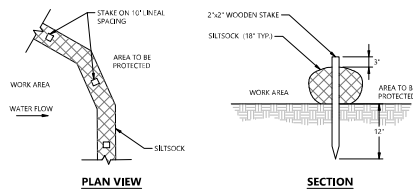
CU-101

**NOTES:**

1. GRADE TOWARDS SEDIMENT BARRIER WHEN NECESSARY TO MANAGE FLOW.
2. INCREASE MINIMUM LENGTH TO 100' WHERE TRACKED SEDIMENTS CONTAIN LESS THAN 80% SAND OR AS NECESSARY FOR HEAVY CONSTRUCTION.

STABILIZED CONSTRUCTION ENTRANCE/EXIT

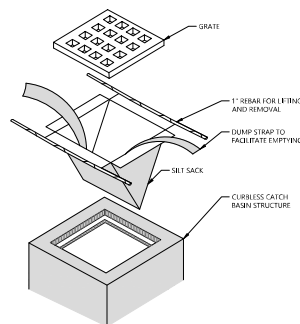
SCALE: NTS

**NOTE:**

1. WHEN STAKING IS NOT POSSIBLE, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT CONTROL TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.

SILT SOCK

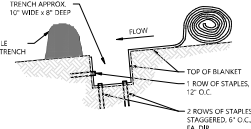
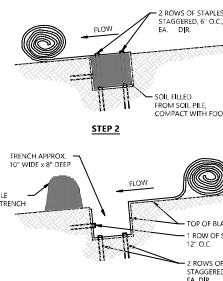
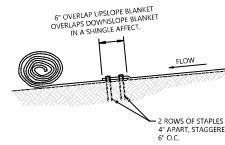
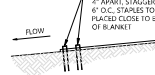
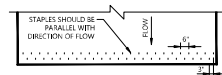
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**NOTES:**

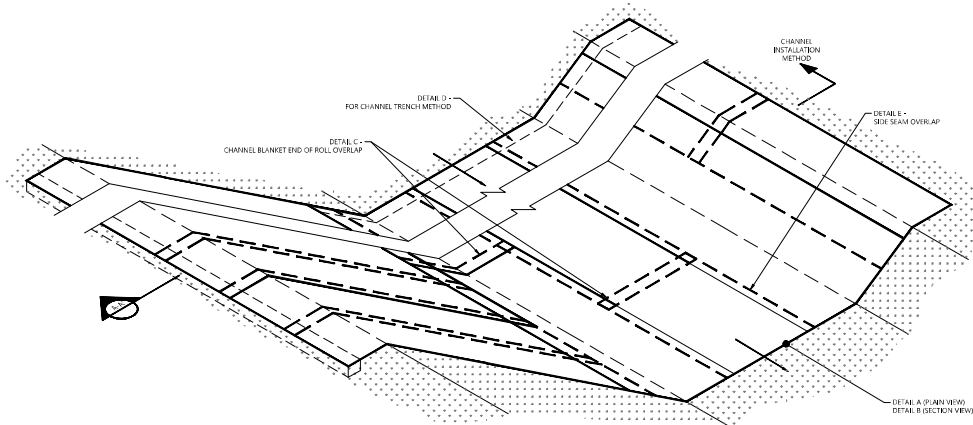
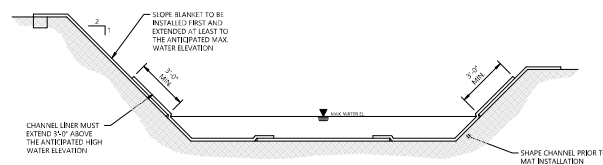
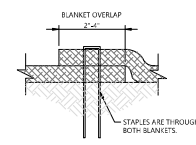
1. INSTALL SILT SACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
2. EMPTY OR REMOVE SEDIMENT FROM SILT SACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, WASH, AND REPLACE AS NEEDED.
3. SILT SACKS TO BE INSTALLED WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.

SILT SACK - CURBLESS INLET

SCALE: NTS

**DETAIL D - CHANNEL TRENCHING METHOD**

NOT TO SCALE

**NOTES:**

1. SEE MANUFACTURER'S RECOMMENDATION FOR PROPER SLOPE INSTALLATION.
2. STAPLE PATTERNING ARE DEPENDENT ON SITE CONDITIONS. INSTALL PER MANUFACTURER'S RECOMMENDATION.
3. E-STAPLES MAY BE USED IN PLACE OF WIRE STAPLES.

EROSION CONTROL BLANKET

SCALE: NTS



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PR SEAL:



Ross Tsantoulis
Professional Engineer
State of New Hampshire
No. 4122

DRAFT 60% DESIGN
NOT FOR CONSTRUCTION

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV: N/A/DO/AY

DESCRIPTION

JOB NO: 0224539-48

DATE: NOVEMBER 2025

SCALE: AS NOTED

DESIGNED BY: YL

DRAWN BY: KC

CHECKED BY: RT

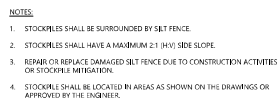
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DRAWING TITLE:

CIVIL**DETAILS 1**

DRAWING NO:

C-900



PERMANENT SEED AND MULCH

4" OF COMPACTED SCREENED LOAM

BACKFILL WITH COMPACTED SUITABLE MATERIAL AS NEEDED SUBGRADER

LOAM AND SEED

SCALE NTS

PLAN VIEW

783.75'

SECTION A-A

SECTION B-B

BERM

The diagram illustrates the construction of a berm. The cross-section (Section A-A) shows a top layer of 'PERMANENT SEED AND MULCH' above a '4" OF COMPACTED SCREENED LOAM' layer. Below this is a 'BACKFILL WITH COMPACTED SUITABLE MATERIAL AS NEEDED SUBGRADER'. The plan view shows a long, narrow berm with a width of 4 feet and a length of 783.75 feet. Section B-B is a cross-section perpendicular to the berm's length, showing a semi-circular profile with a height of 1.5 feet. The berm is labeled 'BERM'.

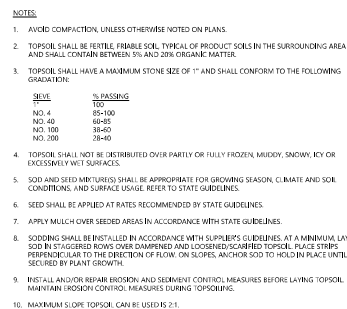


Figure 1 is a cross-sectional diagram of a concrete curb. The curb has a total width of 12 inches and a height of 12 inches. The top layer is 4 inches of concrete (5,000 psi). Below the concrete is a layer of 6x6 inch No. 10 welded wire mesh. The bottom layer is 3 inches of crushed stone. The curb is supported by compacted subgrade.

INFIBED GRADE (SURFACE VARIES)

1' BITUMINOUS CONCRETE TOP SURFACE

1' BITUMINOUS CONCRETE BINDER COURSE

1' BASE COURSE

COMPACTED SUBGRADE

18"

MEET AND WATCH EXISTING PAVEMENT AT SAWCUT, CURE SEAM WITH HOT ASPHALT CONCRETE SEALANT

TACK COAT

EXISTING CONCRETE PAVEMENT

EXISTING BASE COURSE

POST CAP (TYP)

TOP RAIL

POLYVINYL CHLORIDE (PVC) COATED STEEL CHAIN LINK FENCE (TYP)

INTERIOR BRACING SAME AS RAILS (TYP)

LOCKING GATE LATCH WITH PADLOCK

BOTTOM RAIL

EXISTING GROUND SURFACE

CONCRETE POST SETTING TO

2'-0"

8'-0"

NOTES:
1. GATE LATCH AND PADLOCK TO BE PROVIDED BY OTHER.

Figure 1 is an elevation view of a T-shaped reinforced concrete pier. The pier has a total height of 15'-4" and a base width of 8'-0". The stem width at the top is 4". The base slab has a thickness of 1'-2". The pier is shown with a cross-hatched pattern indicating reinforcement.

PE SEAL:

Seal of the State of New Hampshire Professional Engineer
ROSS
TSANTOULIS
No. 14122
LICENSED

Ross Tsantoulis

Digitally signed by Ross Tsantoulis
DN: cn=Ross Tsantoulis,
ou=AndrewTsantoulis,
o=AndrewTsantoulis,
c=United States of America
Date: 2016.10.14 16:45:30 -0400

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	MM/DD/YY	DESCRIPTION
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JOB NO:	0224539.48
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DATE:	NOVEMBER 2025
SCALE:	AS NOTED

DESIGNED BY:	YI
DRAWN BY:	KC

DRAWN BY:	RC
CHECKED BY:	RT

FILENAME: 022453948-C-900-903.dmg

DRAWING TITLE: **CIVIL**

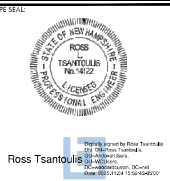
DETAILS 2

DRAWING NO: 000000

C-901



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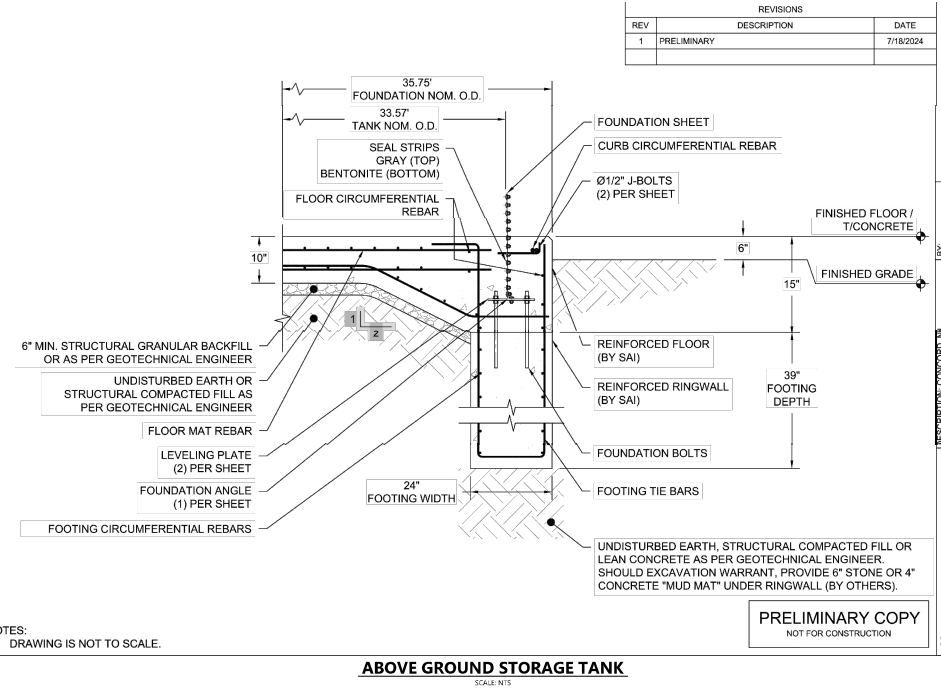
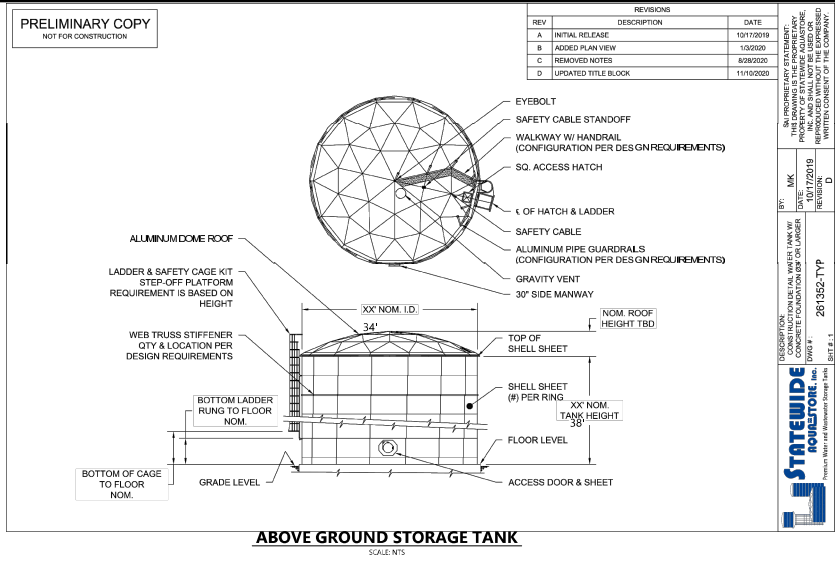
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	DATE	DESCRIPTION

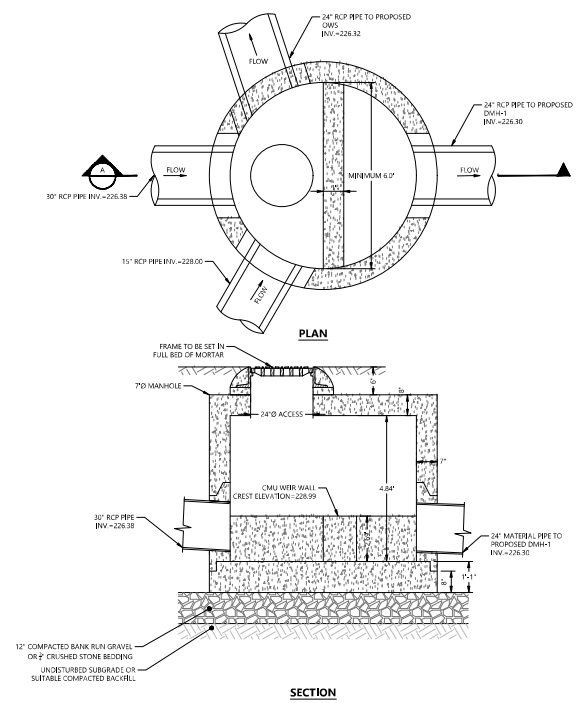
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DATE:	NOVEMBER 2025
SCALE:	AS NOTED
DESIGNED BY:	VI
DRAWN BY:	KC
CHECKED BY:	RT
PREPARED BY:	0224539-48-C-905-903.dwg

DRAWING TITLE:
**CIVIL
DETAILS 3**

DRAWING NO:
C-902

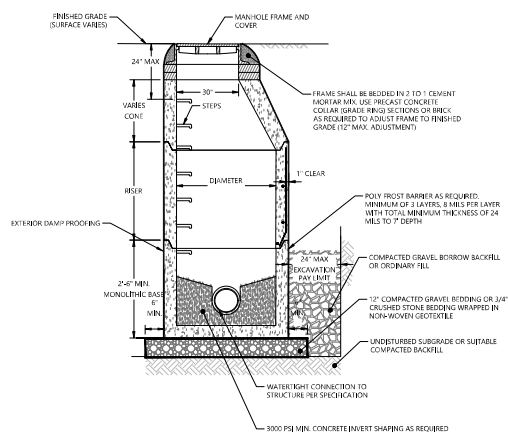
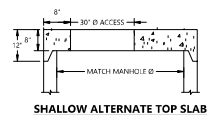
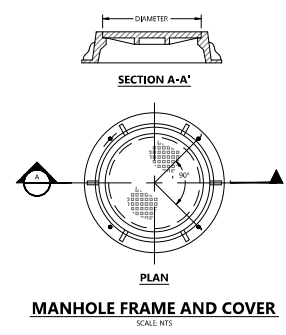


NOTES:
1. DRAWING IS NOT TO SCALE.



- MANHOLE DIVERSION STRUCTURE GENERAL NOTES**
1. MANUFACTURED TO MEET OR EXCEED ASTM C-478 & AASHTO M-199 SPECS.
 2. CONCRETE = 4,000 PSI MINIMUM CEMENT PER ASTM C-478 (6.1).
 3. REINFORCED STEEL CONFORMS TO LATEST ASTM A 185 SPECIFICATIONS, 0.24 SQ IN/IN LINEAR FT. AND 0.24 SQ IN/BOTHWAYS BASE BOTTOM.
 4. STEEL REINFORCEMENT TO MEET OR EXCEED AASHTO HS-20 LOADINGS.
 5. MANHOLE STEPS MEET LATEST OSHA REGULATION 29 CFR 1910.23, SECTION 16 OF ASTM SPECIFICATION C478 AND SECTION 10 OF ASTM SPECIFICATION C487.
 6. ONE FOUR MONOLITHIC BASE.

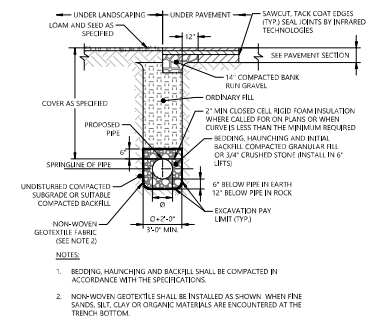
DIVERSION MANHOLE
SCALE: NTS



- NOTES:**
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-BD LOADINGS.
 2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
 3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
 4. MANHOLE FRAME AND GRATING SHALL MEET MUNICIPAL AND STATE SPECIFICATIONS WHEN APPLICABLE.
 5. REFER TO PROJECT SPECIFICATIONS FOR MORE DRAINAGE MANHOLE INFORMATION.
 6. JOINT SEALANT BETWEEN SECTIONS SHALL BE BUTYL RUBBER.
 7. PROVIDE ANTILOTTATION SLAB EXTENSION AS REQUIRED TO SATISFY ANTILOTTATION REQUIREMENTS.

PRECAST CONCRETE DRAINAGE MANHOLE

SCALE: NTS



TRENCH

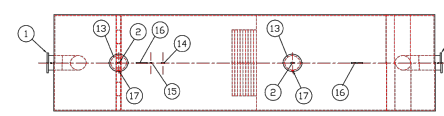
SCALE: NTS

GENERAL SPECIFICATIONS

NO. REQ'D: (1)
CAPACITY: 40000 GALLONS
TYPE: HTG. HIGHGUARD, SINGLE WALL
MATERIAL: MILS. CARBON STEEL
FLOW RATE: 4000 GPM
GRUZE: BASED ON 60\"/>

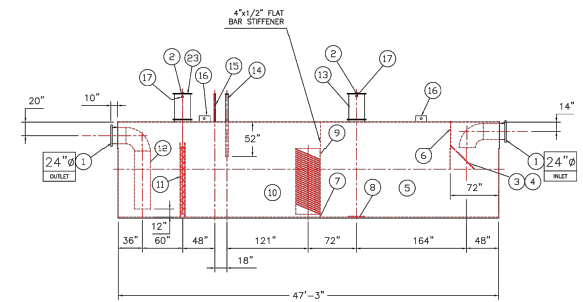
SURFACE PREP:
SSPC NO. 6 BLAST ALL EXTERIOR SURFACES
SSPC NO. 10 BLAST ALL INTERIOR SURFACES

COATING:
EXTERIOR: HIGHGUARD (75 MILS)
INTERIOR: CHEMLINE 4200 PW
CONSTRUCTION: LAP FIT & WELD ALL EXTERIOR SEAMS
OPERATING PRESSURE: 1 ATMOSPHERIC



PLAN

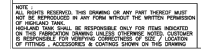
- PROVIDED EQUIPMENT**
1. 150# R.F.S.D. FLANGE W/ 2\"/>
- ANCILLARY PROVIDED EQUIPMENT**
- (4) 24\"/>
- NOTES**
1. POLYURETHANE HIGHGUARD TANK IS NOT APPROVED FOR THE STORAGE OF HEATED PRODUCTS
 2. ADD VENT RISER TO HEATED PRODUCTS
 3. 15000 VOLT SPARK TEST PROVIDED AT FACTORY



ELEVATION

HIGHLAND TANK OIL WATER SEPARATOR

SCALE: NTS



END VIEW

NOTES: THESE DRAWINGS ARE THE PROPERTY OF HIGHLAND TANK. NO PART OF THESE DRAWINGS MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF HIGHLAND TANK. THIS DRAWING IS THE PROPERTY OF HIGHLAND TANK. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN THE NECESSARY PERMITS AND APPROVALS FOR THE USE OF THIS DRAWING IN ANY PROJECT. HIGHLAND TANK IS NOT RESPONSIBLE FOR ANY DAMAGE OR LOSS OF DATA OR EQUIPMENT RESULTING FROM THE USE OF THIS DRAWING.

REVISIONS

NO.	DATE	DESCRIPTION
1	NOVEMBER 2025	AS NOTED

Highland Tank

U.S. Patent #4,782,880 Canadian Patent # 1,296,263

40000 GALLON OIL WATER SEPARATOR
HTC, HIGHGUARD, SINGLE WALL

CUSTOMER:

PROJECT:

QUOTE NO:

DATE:

SCALE:

DWG. BY:

DWG. NO:

40000HSWITCHDS

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PR SEAL:

Ross Tsantoulis

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CUSTOMER:

**RADIUS RECYCLING
CONCORD, NH**

**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV	DATE	DESCRIPTION
1	NOVEMBER 2025	AS NOTED

**CIVIL
DETAILS 4**

C-903

A. GENERAL STRUCTURAL NOTES

1. DESIGN IS IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE.
2. THESE NOTES SHALL APPLY TO ALL WORK, EXCEPT AS NOTED OTHERWISE.
3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL DISCIPLINES WHICH SHALL BE REFERRED TO FOR SITES AND LOCATIONS OF ALL OPENINGS, PENETRATIONS, DRAINS, PADS, CONDUIT, EQUIPMENT, AND PIPE SUPPORTS, ETC.
4. GEOTECHNICAL CONDITIONS AND DESIGN PARAMETERS ARE BASED ON OBSERVATIONS AND RECOMMENDATIONS FOUND IN GEOTECHNICAL ENGINEERING REPORT BY S.W. COLE, DATED JUNE 25, 2024.

B. SITE CONDITIONS, EXCAVATION, SHORING AND DEWATERING

1. GENERAL FINDING:
- a. SITE HAS PRESENT UNKNOWN RISK OF ADVERSE FOUNDATION PERFORMANCE. REMOVE AND REPLACE BELOW TASK FOUNDATION.
- b. GROUND WATER ENCOUNTERED 10-12 FEET BELOW GRADE CORRESPONDING WITH MERRIBACK RIVER ELEVATION FLUCTUATIONS IN GROUND WATER UNKNOWN.
- c. EARTHWORK AND FOUNDATION CONSTRUCTION ACTIVITIES SHOULD OCCUR DURING DRY, NON-FREEZING WEATHER OF SPRING, SUMMER, AND FALL. RUBBER TIED CONSTRUCTION EQUIPMENT SHOULD NOT OPERATE DIRECTLY ON THE NATIVE SOILS, WHEN WEIL EXCAVATION OF BEARING SURFACES SHOULD BE COMPLETED WITH A MODIFIED RIGID ROLLER TO LOOSEN SUBGRADE AND PRELUBRICATE.

C. SUBGRADE PREPARATION, BACKFILL, AND COMPACTION

1. SOIL UNDER TANK FOUNDATION AND AT 5' SHALL BE EXCAVATED TO PROPE DEPTH AND BACKFILLED WITH NON-ROD SUSCEPTIBLE STRUCTURAL FILL OR BE INSULATED TO PROTECT FROM ADVERSE FROST ACTION AS RECOMMENDED HEREIN.
2. EXISTING FILL WHERE DEPTHS TO DEPTHS OF 6-6.5' AT THE FOOTPRINT OF THE PROPOSED CONSTRUCTION AREA EXISTING FILL, ROIL, STRUCTURES, FOUNDATIONS, UTILITIES AND OTHER SHALL BE COMPLETELY REMOVED FROM BENEATH THE PROPOSED STRUCTURES AND SLAB AREAS. EXTENT OF REMOVAL TO BE 1' UP FIRST EDGE OF FOUNDATION ON ALL SLOES. THE OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH COMPACTED STRUCTURAL FILL. ALTERNATVELY THE EXISTING FILL MAY BE IMPROVED WITH STONE OR AGGREGATE PERS.

D. FOUNDATION AND SLAB DESIGN CRITERIA:

- | | | |
|----|--|--------------|
| 1. | ALL EXTERIOR FOOTINGS AND FOOTINGS WITH UNHEATED PORTIONS OF STRUCTURES SHALL BE CONSTRUCTED BELOW THE FIRST DEPTH OF AT LEAST 4'-6" BELOW THE LOWEST ADJACENT FINAL GRADE | |
| 2. | ALLOWABLE SOIL BEARING CAPACITY | = 3,000 PSF |
| 3. | MODULUS OF SUBGRADE REACTION | = 75 PCF |
| 4. | BASE FRICTION FACTOR | = 0.5 |
| 5. | TOTAL UNIT WEIGHT OF BACKFILL | = 125 PCF |
| 6. | INTERNAL FRICTION ANGLE | = 30 DEGREES |
| 7. | AT-REST LATERAL EARTH PRESSURE COEFFICIENT | = 0.5 |

E. EMBEDDED CONDUITS AND PIPES

1. REFER TO SHEET S-002

F. GENERAL REINFORCED CONCRETE REQUIREMENTS

1. REFER TO SHEET S-002

6. SEQUENCE OF WORK

1. REFER TO SHEET S402 FOR FORM REMOVAL, THERMAL PROTECTION PERIODS AND CURING REQUIREMENTS.
2. CONCRETE FOR TANK WALLS SHALL NOT BE PLACED UNTIL CONCRETE BASE SLABS HAVE ACHIEVED 75 PERCENT OF THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH AND NO SOONER THAN 7 DAYS AFTER THE FINAL TANK SLAB PLACEMENT.
3. CONCRETE TANK WALLS SHALL OBTAIN 100 PERCENT OF THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH BEFORE COMMENCEMENT OF FILLING THE STRUCTURE WITH WATER TO COMPLETE TIGHTNESS TESTING. CONTRACTOR'S CONSTRUCTION SCHEDULE MUST INCLUDE TIME TO PERFORM TIGHTNESS TESTING AND TIME TO PERFORM ALL TANK LEAK REPAIRS.
4. TANK WALLS SHALL NOT BE BACKFILLED UNTIL CONCRETE TANKS ARE TIGHTNESS TESTED AND ALL LEAKS IDENTIFIED DURING THE TIGHTNESS TEST ARE REPAIRED TO THE SATISFACTION OF THE ENGINEER, OWNER, AND OWNERS REPRESENTATIVE AT CONTRACTOR'S OWN EXPENSE.

H. EXISTING CONDITIONS:

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AS THEY RELATE TO NEW CONSTRUCTION. REPORT TO THE ENGINEER OF RECORD ALL OBSERVATIONS AND MEASUREMENTS. PROVIDE A SUMMARY OF ALL EXISTING CONDITIONS AND DIMENSIONS.
- WHERE DETAILS FOR SPECIFIC CONDITIONS ARE NOT SHOWN ON THESE PLANS, USE DETAILS FOR THE MOST NEARLY SIMILAR CONDITIONS SHOWN ON THE STRUCTURAL DRAWINGS. AS DETERMINED BY THE STRUCTURAL ENGINEER, REPORT ANY COORDINATION ISSUES IMMEDIATELY TO THE ENGINEER.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR A SAFE AND EFFICIENT METHOD OF SIGNAGE AND TRAFFIC CONTROL TO MAINTAIN THE FLOW OF TRAFFIC THROUGH THE PROJECT PHASES. SUBMIT AN OUTLINE OF PROPOSED CONDITIONS BEFORE CONSTRUCTION COMMENCES.
- STRUCTURAL MEMBERS SHALL NOT BE MODIFIED IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER. IN THE EVENT OF A CONSTRUCTION OR FABRICATION ERROR, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SUBMIT IT TO THE ENGINEER FOR APPROVAL PRIOR TO PERFORMING ANY CORRECTIVE WORK.
- VERIFY ALL EXISTING DIMENSIONS, LOCATIONS, AND GEOMETRY OF EXISTING STRUCTURES PRIOR TO CONSTRUCTION. ALL EXISTING DIMENSIONS AND APPROXIMATE ELEVATION THE ENGINEER HAS/BEAT/ON FILE SHALL BE MAINTAINED THROUGHOUT THE PROJECT.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE EXISTING BUILDING ELEMENTS TO REMAIN FROM DAMAGE. DO NOT CUT OR ALTER ANY OF THE EXISTING STRUCTURAL ELEMENTS OR ANY OTHER EXISTING BUILDING ELEMENTS. IF ANY DAMAGE TO EXISTING BUILDING ELEMENTS IS OBSERVED, PROVIDE PROTECTION FOR EXISTING WALLS, COLLARS, BRACES, AND OTHER BUILDING ELEMENTS TO REMAIN FROM FALLING. DURING, ANY DAMAGE TO EXISTING ELEMENTS TO REMAIN SHALL BE REPAIRED TO THE ORIGINAL CONDITION.

1. DESIGN LOADS AND BUILDING CODES:

- | | | |
|--|--|---|
| DESIGN LOADS ARE PER THE 2021 INTERNATIONAL BUILDING CODE AS AMENDED BY THE NEW HAMPSHIRE STATE BUILDING CODE. | | |
| 2. | <p>WIND CATEGORY: II</p> <p>WIND-EXPOSED DEPRESS. REGION: NO</p> | |
| 3. | <p>SLOI. LOADS PER ASCE 7-16:</p> <p>REFER TO FOUNDATION AND SLAB DESIGN CRITERIA. THIS SHEET.</p> | |
| 4. | <p>ROOF LIVE LOADS PER ASCE 7-16:</p> <p>20 PSF. NON-DECKABLE.</p> | |
| 5. | <p>SNOW LOADS PER ASCE 7-16:</p> <p>GROUNDING SNOW LOAD (S)
EXPOSURE FACTOR (Ce) = 1.0
THERMAL FACTOR (Ti) = 1.0
IMPORTANCE FACTOR (I) = 1.0</p> | <p>60 PSF</p> <p>1.0</p> <p>1.0</p> <p>1.0</p> |
| 6. | <p>WIND LOADS PER ASCE 7-16:</p> <p>DESIGN WIND SPEED (V) = 112 MPH
EXPOSURE CATEGORY = II
HURRICANE PRONE REGION = NO
DIRECTIONAL COEFFICIENT (Kd) = 1.0
TOPOGRAPHIC FACTOR (Kzt) = 1.0
OBSERVATION FACTOR (Kd1) = 0.85
VELOCITY PRESSURE (q) = 17.03 PSF</p> | <p>112 MPH</p> <p>II</p> <p>NO</p> <p>1.0</p> <p>1.0</p> <p>0.85</p> <p>17.03 PSF</p> |
| 7. | <p>FLOOD LOADS PER ASCE 7-16:</p> <p>FLOOD ZONE X</p> <p>FLOOD FLOOR SLT. WATER EL. = +1.07
NOT IN HAZARDOUS FLOOD ZONE</p> | |
| 8. | <p>SEISMIC LOADS PER ASCE 7-16:</p> <p>SPECTRAL RESPONSE ACCE (Sa) = 0.417
SITE CLASS: BTT CLASS
SEISMIC IMPORTANCE FACTOR (Im) = 1.0
SPECTRAL RESP COEF (Sds) = 0.57
SPECTRAL RESP COEF (Sdi) = 0.238
SEISMIC DESIGN CATEGORY (SDC) = D</p> | |
| ANALYST: PROJECT ENGINEER, EQUIPMENT, LAYOUT, FORCE (BY AGI 350.3) | | |
| RESPONSE MODIFICATION FACTOR (R) = 1.25 | | |

NOTE: THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DOCUMENTS.



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PESEA



Scott Michael Hawk
E-mail: shawk@woodlandcouncil.org
D-Woodland & Cummins, CN=Scott Michael Hawk

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NHSANDQUIST FACILITY
STORMWATER IMPROVEMENTS[illegible]

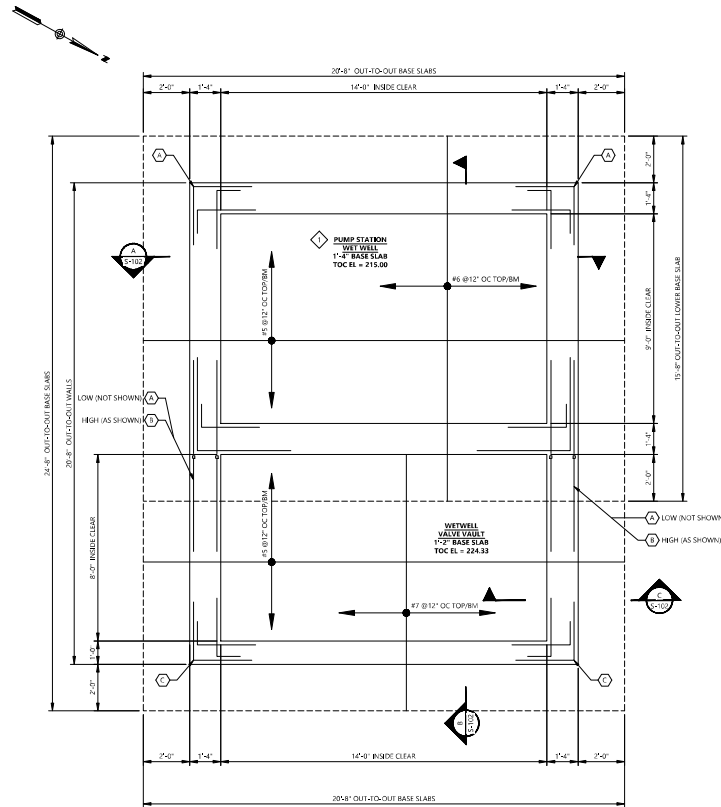
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DATE:	NOVEMBER 2025	
SCALE:	NO SCALE	
DESIGNED BY:	JBH	
DRAWN BY:	TPK	
CHECKED BY:	SJT	
FILENAME:		

DRAFTING TITLE

STRUCTURAL ABBREVIATIONS, NOTES AND DESIGN LOADS

DRAWING NO.

S-001



FOUNDATION PLAN
SCALE: 3/8" = 1' - 0"

STRUCTURAL GENERAL NOTES:

- CONTRACTOR MAY PROVIDE A PRECAST STRUCTURE PER SPECIFICATIONS AS AN ALTERNATE TO THE CAST-IN-PLACE CONSTRUCTION.

SHEET KEYNOTES:

- CONCRETE FILL USED TO SUPPORT THE FLOOR OF THE WET WELL WILL BE SHOWN ON THE FINAL DESIGN DRAWINGS.

CONCRETE TANK NOTES:

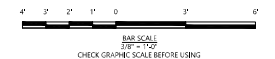
- REFER TO SHEET S-001 AND GEOTECHNICAL REPORT FOR SITE SUBGRADE PREPARATION, GROUNDWATER, DEWATERING, AND EXCAVATION REQUIREMENTS.
- "POCCUT" INDICATES ELEVATION OF CONCRETE FILL. REFER TO SHEET S-002 FOR CONCRETE FILL REQUIREMENTS.
- CONCRETE CONTAINMENT TANK SHALL BE TIGHTNESS TESTED IN ACCORDANCE WITH 408.150.1 AND NOTES ON SHEET S-002. UNLESS NOTED OTHERWISE ON THIS DRAWING, ALL EXTERIOR AND INTERIOR TANK WALLS SHALL OBTAIN SPECIFIED 28-DAY COMPRESSIVE STRENGTH PRIOR TO FILLING STRUCTURES WITH WATER TO COMMENCE TIGHTNESS TESTING.
- REFER TO SHEET S-002 FOR CONCRETE TANK STANDARD DETAILS. DETAILS SHOWN ON SHEET S-002 APPLY TO ALL WORK, UNLESS SPECIFICALLY NOTED OTHERWISE.
- ALL TANK SURGRADE CONDITIONS SHALL BE SITE INSPECTED AND APPROVED BY GEOTECHNICAL ENGINEER PRIOR TO PLACING SURF.
- REFER TO SHEET S-002 FOR CONCRETE TESTING REQUIREMENTS AND TESTING FREQUENCY.
- REFER TO CIVIL & MECHANICAL DRAWINGS FOR PIPE PENETRATION SIZES, LOCATIONS, ELEVATIONS AND QUANTITIES.
- CONCRETE CURING: MAINTAIN CONCRETE IN CONTINUOUSLY MOIST CONDITION FOR A MINIMUM OF 7 DAYS. CURING SHALL COMMENCE AS SOON AS POSSIBLE AFTER FINAL FINISHING WHEN IT WILL NOT WEAR OR DEGRADATE CURING COMPOUND SHALL BE APPLIED IMMEDIATELY AFTER FINISHING. WALLS SHALL BE CURED BY LEAVING FORMWORK IN-PLACE FOR 7 DAYS OR IF FORMS ARE REMOVED PRIOR TO 7 DAYS, WALL SURFACES SHALL BE IMMEDIATELY CURED WITH A CURING COMPOUND. NOT APPLYING CURING COMPOUND IN A TIMELY MANNER MAY INSTITUTE CRACKING. WAITING TO APPLY CURING COMPOUND TO THE DAY AFTER CONCRETE PLACEMENT OR STOPPING OF FORMWORKS NOT RECOMMENDED.
- TANK CONCRETE TOPPING WILL DEVELOP TEMPERATURE AND SHRINKAGE CRACKS WHICH ARE ACCEPTABLE AND NOT DETRIMENTAL TO THE PERFORMANCE OF THE TOPPING.

WALL CORNER BAR SCHEDULE:

MARK	DESCRIPTION	COMMENTS
A	(1) #7 x 4'-2" x 4'-2" @ 6" OC (2) #7 x 1'-2" x 4'-2" @ 6" OC	CORNER BARS
B	(1) #7 x 4'-2" x 4'-2" @ 6" OC (1) #7 x 1'-2" x 4'-2" @ 6" OC (1) #7 x 4'-2" x 4'-2" @ 6" OC	LUPPER TANK WALL INTERSECTION
C	(1) #6 x 2'-2" x 2'-2" @ 12" OC (2) #6 x 1'-2" x 2'-2" @ 12" OC	CORNER BARS

CORNER BAR SCHEDULE NOTES:

- TRIM BARS 2" CLR AT WALL OPENINGS/PENETRATIONS AND PROVIDE ADDITIONAL REINFORCEMENT PER STANDARD DETAIL.
- ALL REINFORCEMENT SHALL APPLY TO FULL HEIGHT OF ALL WALLS, UNDO.



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CURRY INFO:
RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV | MM/DD/YY | DESCRIPTION

JOB NO: 0224539-48
DATE: NOVEMBER 2025
SCALE: AS NOTED
DESIGNED BY: SMH
DRAWN BY: DMH
CHECKED BY: SIT
FILENAME: 0224539-48-S-102-100.dwg

DRAWING TITLE:
STRUCTURAL
PUMP STATION
FOUNDATION PLAN

DRAWING NO:
S-101



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PER SEAL:



DATE: 11/11/2025
BY: Scott Michael Hawk
FOR: Sandquist Facility Stormwater Improvements
PROJECT: 022453948-S-102-001.dwg

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**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV: 11/11/2025

DESCRIPTION:

DATE: 02/24/2025

SCALE: AS NOTED

DESIGNED BY: SMH

DRAWN BY: DMS

CHECKED BY: SRT

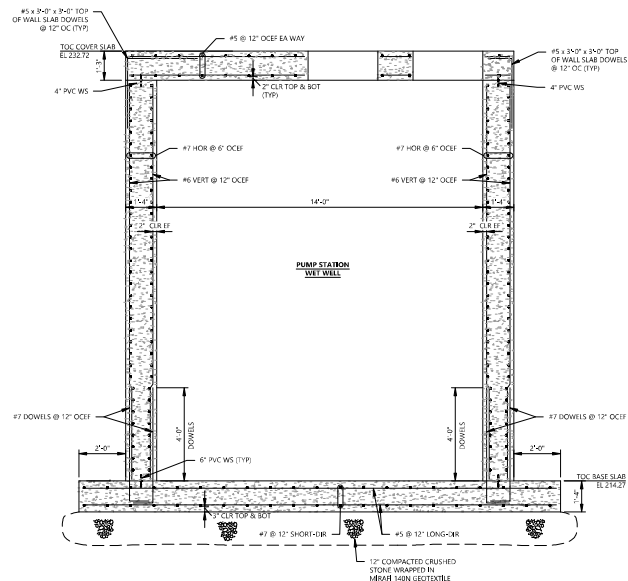
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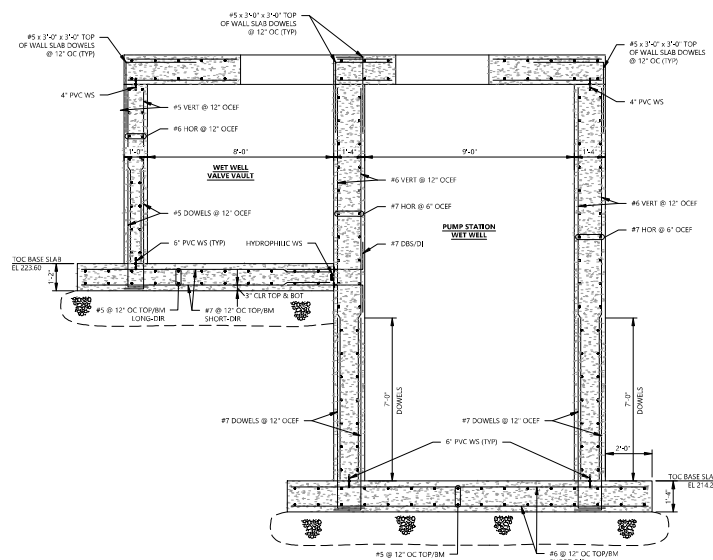
**STRUCTURAL
PUMP STATION
SECTIONS**

DRAWING NO.

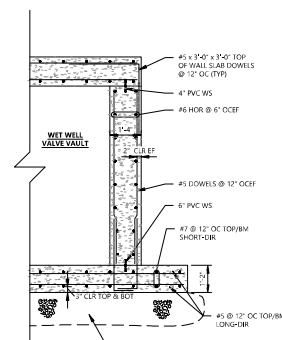
S-102



SECTION A
SCALE: 3/8" = 1'-0"



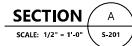
SECTION B
SCALE: 3/8" = 1'-0"



PARTIAL SECTION C
SCALE: 3/8" = 1'-0"



BAR SCALE
3/8" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING



1. NOT ALL MECHANICAL SYSTEMS, PIPING, UTILITIES, AND PENETRATIONS ARE SHOWN. REFER TO ALL OTHER DISCIPLINES FOR ADDITIONAL DETAILS.
2. REFER TO CIVIL PLANS FOR ELEVATIONS.
3. DESIGN LOADS:

SYSTEM CONNEX	12,000 LB
SETTLING TANK	180,000 LB
BACKWASH TANK	85,000 LB
MEDIA FILTRATION SYSTEM	26,000 LB
CARBON VESSEL	18,000 LB



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Scott Michael Hawk
DN: C=US,
E=shawk@woodardandcushman.com,
O=Woodard & Cushman, CN=Scott
Michael Hawk
Date: 2025.11.25 07:04:21 -0500

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[illegible]

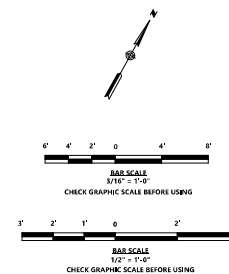
REV	MM/DD/YY	DESCRIPTION
JOB NO:	0224539.48	
DATE:	NOVEMBER 2025	
SCALE:	AS NOTED	
DESIGNED BY:	JBH	
DRAWN BY:	TPK	
CHECKED BY:	SJT	
FILE NAME:		

DRAWING TITLE:

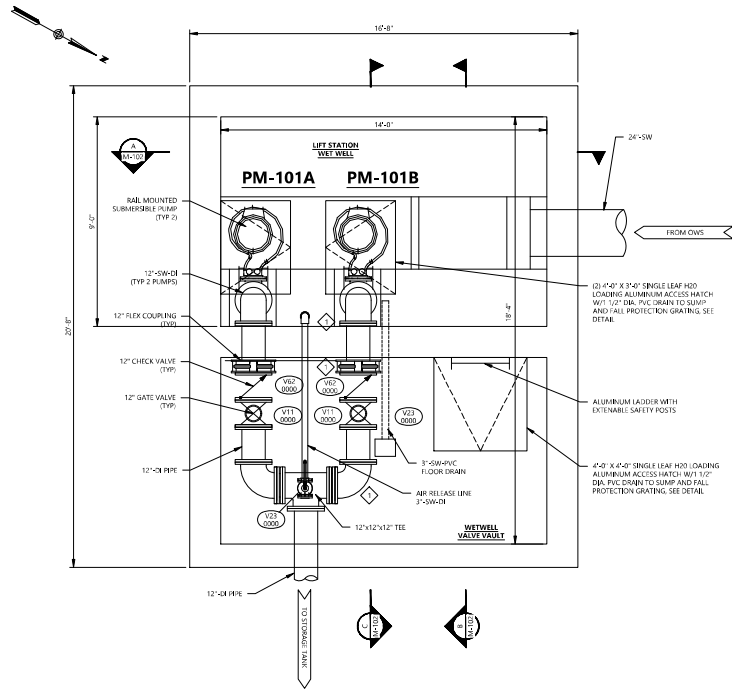
**STRUCTURAL
PAD PLAN & SECTION**

DRAWING NO:

S-201



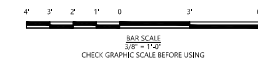
Revised: 2024-02-24 15:39:48 -5-ATS-PAD_cbarzo@woodwardclarran.com.rvt



PUMP STATION PLAN
SCALE: 3/8" = 1' - 0"

- SHEET GENERAL NOTES:**
1. PRESSURE GRADES NOT SHOWN FOR CLARITY.
 2. FLOW TRANSMITTER SHALL BE LOCATED AS SHOWN ON ELECTRICAL DRAWINGS.

- SHEET KEYNOTES:**
1. CONTRACTOR TO HEAT TRACE AND INSULATE ALL PIPING WITHIN THE VALVE VAULT FOR FREEZE PROTECTION.



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PER SEAL:



Jason D. Jancal

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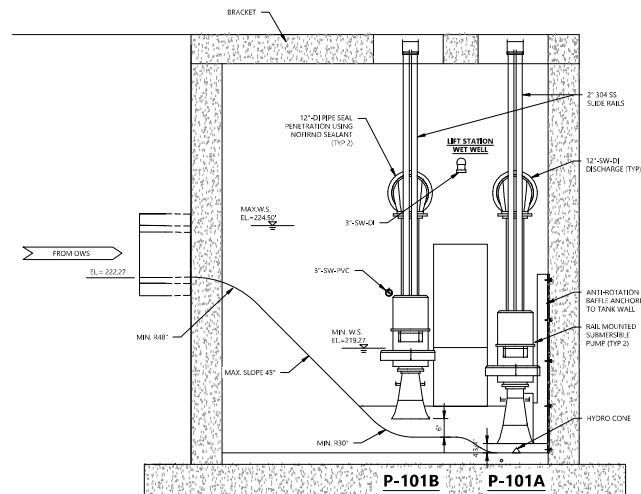
**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV	DATE	DESCRIPTION
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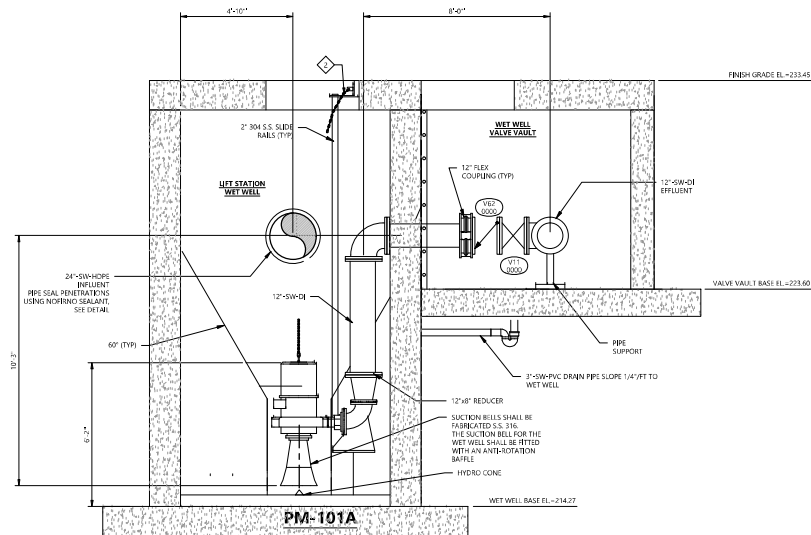
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DATE	NOVEMBER 2025
SCALE	AS NOTED
DESIGNED BY	----
DRAWN BY	EV
CHECKED BY	MC
PREPARED BY	0224539-08-M-100-1.dwg

DRAWING TITLE
**MECHANICAL
PUMP STATION
PLAN**

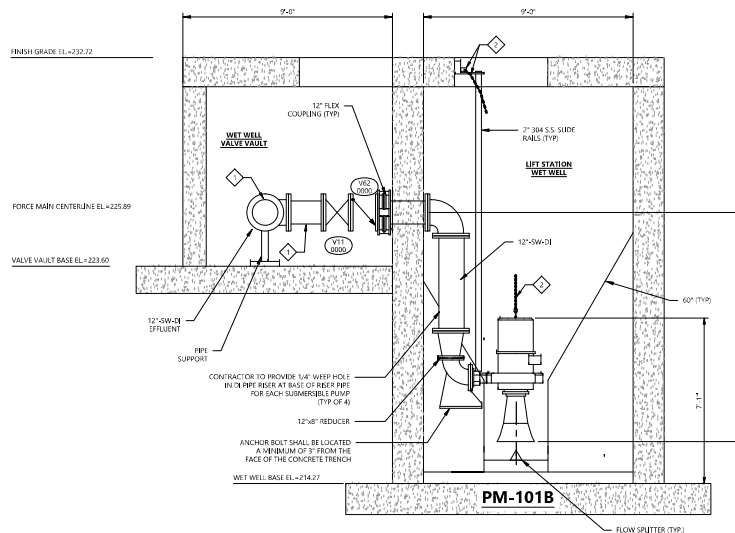
DRAWING NO.
M-101



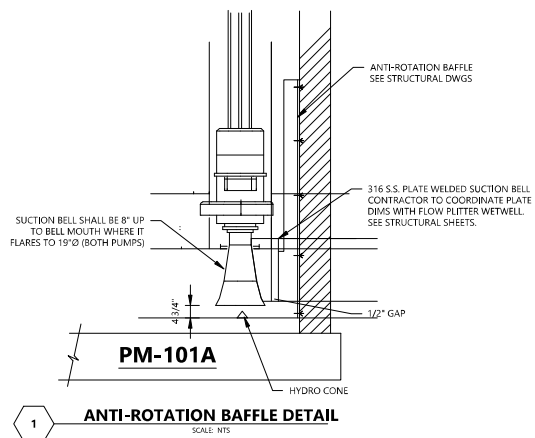
SECTION A
SCALE: 3/8" = 1' - 0"



SECTION C
SCALE: 3/8" = 1' - 0"



SECTION B
SCALE: 3/8" = 1' - 0"



ANTI-ROTATION BAFFLE DETAIL
SCALE: NTS

SHEET GENERAL NOTES:

1. PRESSURE GRADES NOT SHOWN FOR CLARITY.
2. FLOW TRANSMITTER SHALL BE LOCATED AS SHOWN ON ELECTRICAL DRAWINGS.
3. PROVIDE A MINIMUM 6" CLEAR BETWEEN PIPE PENETRATIONS AND STRUCTURE JOINTS.

SHEET KEYNOTES:

1. CONTRACTOR TO HEAT TRACE AND INSULATE ALL PIPING WITHIN THE VALVE VAULT FOR FREEZE PROTECTION.
2. INSTALL CHAIN BRACKET TO WALL OF WETWELL BRACKET TO BE MARINE GRADE STAINLESS STEEL. SECURE CHAIN TO BRACKET WITH MARINE GRADE STAINLESS STEEL SHACKLES. CHAIN SHALL BE MARINE GRADE STAINLESS STEEL RATED FOR 5000 LB LIFT (4000).

PUMP STATION CONTROL ELEVATIONS

FINISH GRADE	222.72
WET WELL INTERIOR DIMENSIONS	14'0"
VALVE VAULT INTERIOR DIMENSIONS	14'0"
FORCE MAIN CENTERLINE ELEVATION	225.89
VALVE VAULT BASE ELEVATION	223.60
INLET STORM DRAIN	222.27
HIGH HIGH LEVEL ALARM	227.30
HIGH LEVEL ALARM	226.30
LAC PUMP ON	225.30
LEAD PUMP ON	224.30
BOTH PUMPS OFF	220.30
LOW LEVEL ALARM	219.30
LOW LOW LEVEL ALARM	218.30
WW BASE ELEVATION	214.27



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Jason D. Jancovich
Professional Engineer
State of New Hampshire
No. 1047

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CLIENT/PO: RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	DATE	DESCRIPTION
1	11/06/2025	ISSUED FOR CONSTRUCTION

JOB NO.: 0224539-4B
DATE: NOVEMBER 2025
SCALE: AS NOTED
DESIGNED BY: JY
DRAWN BY: JY
CHECKED BY: MC
PREPARED BY: 0224539-4B M-102 (10/25)

**MECHANICAL
PUMP STATION
SECTIONS**

DRAWING NO.: **M-102**





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Jason D. Jancan
Professional Engineer
State of New Hampshire
No. 13047
Expires: 12/31/2025

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CURRY INFO:
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CONCORD, NH

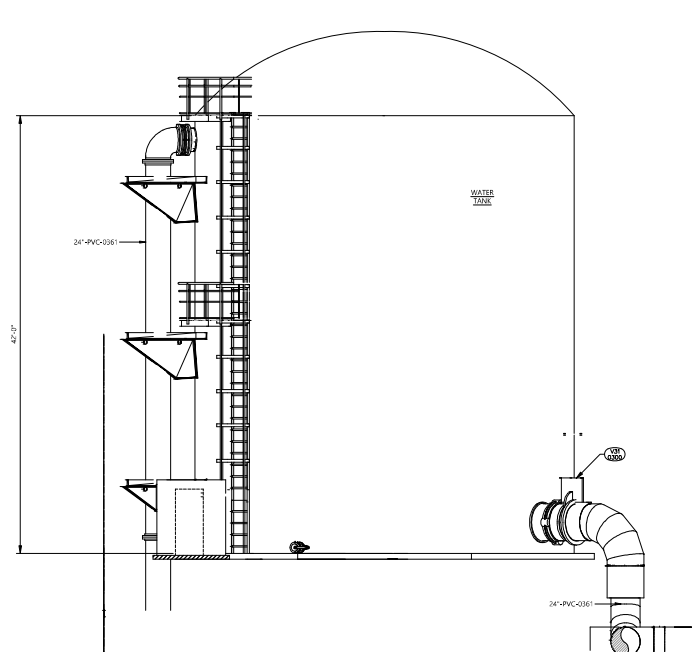
SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	MM/DD/YY	DESCRIPTION
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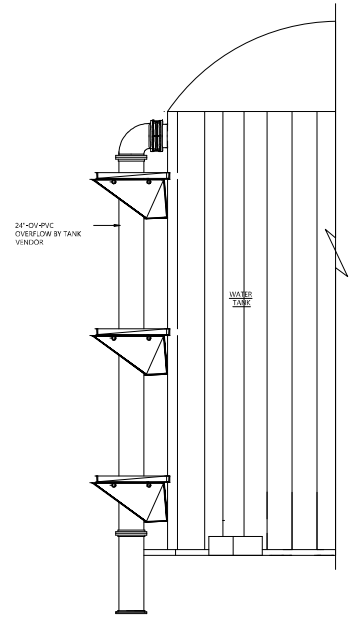
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DATE	NOVEMBER 2025
SCALE	AS NOTED
DESIGNED BY	----
DRAWN BY	EV
CHECKED BY	MC
FILENAME	0224539-4B-M-903.dwg

DRAWING TITLE
**MECHANICAL
PUMP STATION
DETAILS**

DRAWING NO.
M-903



1 **TANK PIPING LAYOUT DETAIL**
SCALE: NTS



2 **OVERFLOW PIPING SUPPORT DETAIL**
SCALE: NTS

[illegible]



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I am not making any statement
on this document
Date: 2025.11.05 09:29:25
Key: 9057-1-48-00-07-1-0000

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CONCORD, NH**

**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV: 11/06/2025

DESCRIPTION:

DATE: 02/24/2025

SCALE: AS NOTED

DESIGNED BY: TS

DRAWN BY: SAA

CHECKED BY: AIT

FILENAME: E-252.dwg

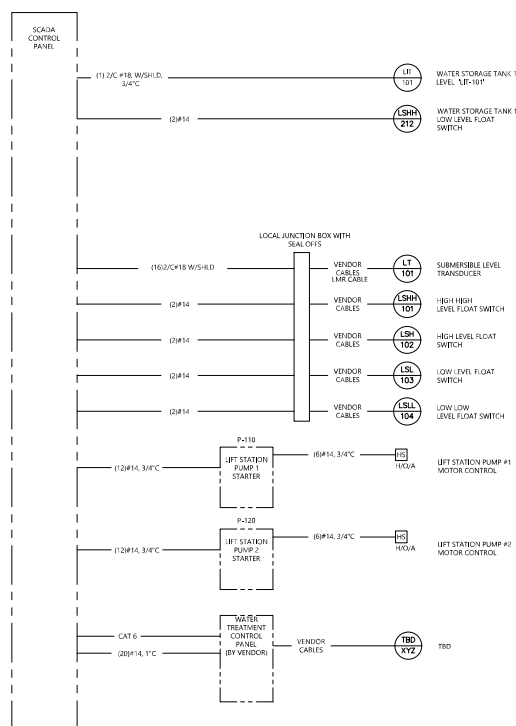
DRAWING TITLE:

**ELECTRICAL
RISER AND SCHEDULES**

DRAWING NO.:

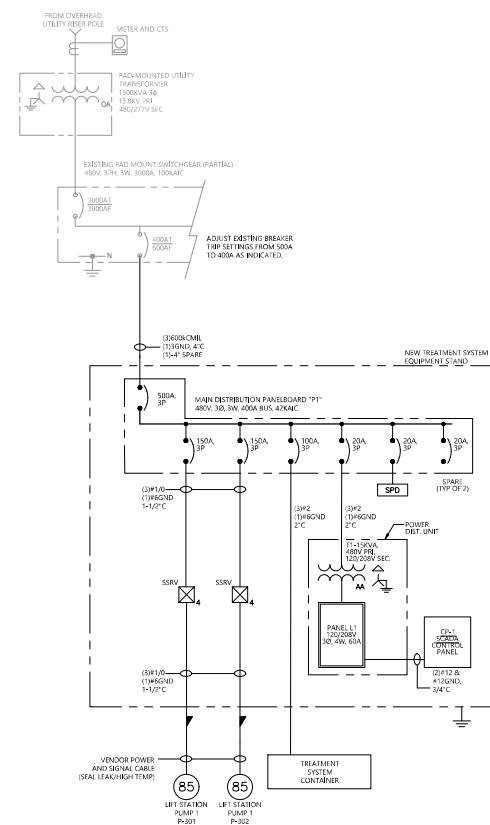
E-002

DIRECTORY	BRKR	POLE	CKT #	KVA	KVA LOADS			KVA	CKT #	POLE	BRKR	DIRECTORY
					A	B	C					
EXTERIOR LTG/RCP/S	20	1	1	0.36	0.36			0.00	2			
SCADA CP	20	1	3	0.36	0.36			0.00	4	3	30	SPD
SPARE	20	1	5				0.00	0.00	6			
SPARE	20	1	7		0.00				14		20	SPARE
SPARE	20	1	9			0.30			16		20	SPARE
SPARE	20	1	11				0.00		18		20	SPARE
SPARE	20	1	13		0.00				14		20	SPARE
SPARE	20	1	15			0.30			16		20	SPARE
SPARE	20	1	17				0.00		18		20	SPARE
SPARE	20	1	19		0.00				20		20	SPARE
SPARE	20	1	21			0.30			22		20	SPARE
SPARE	20	1	23				0.00		24		20	SPARE
SUBTOTAL				0.36	0.36	0.00	SUBTOTAL					
TOTAL KVA				0.72								
TOTAL AMPS				2								
PANEL NAME:				L1								
LOCATION:				EQUIPMENT STAND								
MOUNTING:				SURFACE								
AIC RATING:				10 KAIC								
VOLTAGE:				120/208								
MAIN BREAKER:				60								
BUSES:				100								
PH & WIRES:				3PH 4W								
NOTES: NEMA-4X												



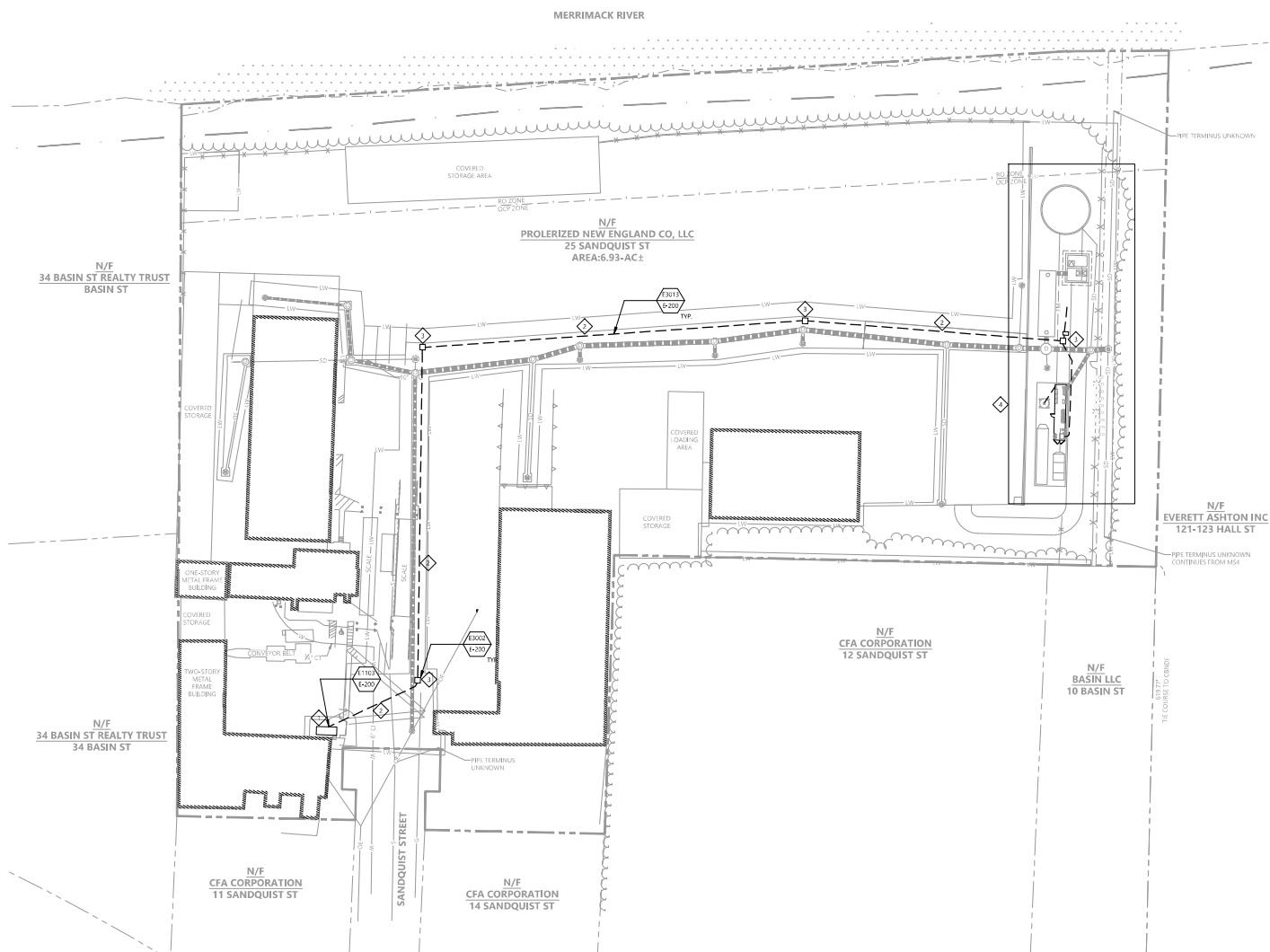
ELECTRICAL RISER DIAGRAM

SCALE: N.T.S.



ELECTRICAL ONE-LINE DIAGRAM

SCALE: N.T.S.



1. ALL ITEMS SHOWN WITH LIGHT DESIGNATION INDICATE EXISTING EQUIPMENT TO REMAIN OR NON-ELECTRICAL CONSTRUCTION.
2. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATE NEW EQUIPMENT, UNLESS SPECIFICALLY INDICATED OTHERWISE.
3. EQUIPMENT SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL COORDINATE AND FIELD VERIFY EXACT LOCATIONS PRIOR TO EXECUTION OF WORK.

1. EXISTING EXTERIOR PAD MOUNTED SERVICE SWITCHGEAR, 3000A, 480V, 3PH, 3W. UTILIZE AVAILABLE 600A FRAME SPARE CIRCUIT BREAKER TO PROVIDE POWER FEEDER TO NEW TREATMENT SYSTEM.
2. PROVIDE CONCRETE ENCASED UNDERGROUND CONDUIT DUCTBANK WITH (4)-4" CONDUITS.
3. PROVIDE 120 RADIAL PRECAST CONCRETE ELECTRICAL HANDHOLE.
4. REFER TO SHEET E-101 FOR TREATMENT AREA ENLARGED PLAN.



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Reason: I agree with the terms
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signature on this document
Contact Info: 800.436.4362
Date: 2025.11.25 09:02:55 -0500

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

[illegible]

REV	MM/DD/YY	DESCRIPTION
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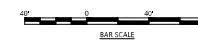
JOB NO:	0224539.48
DATE:	NOVEMBER 2025
SCALE:	AS NOTED
DESIGNED BY:	TR
DRAWN BY:	SAA
CHECKED BY:	AJF
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DRAWING TITLE

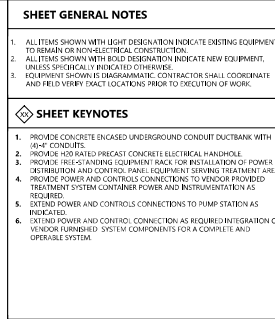
**ELECTRICAL
SITE PLAN**

DRAWING NO:

E-100



1" = 40'
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REV	MM/DD/YY	DESCRIPTION
JOB NO:	0224539.48	
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SCALE:	AS NOTED	
DESIGNED BY:	TR	
DRAWN BY:	SAA	
CHECKED BY:	AJF	
FILENAME:	F:\101.dwg	

DRAWING NO.

E-101

E3002 36X48 ELECTRICAL PULL BOX
SCALE: NTS

E3013 TYP. CONCRETE ENCASED UNDERGROUND DUCT BANK

GENERAL NOTES:

1. BACKBOARD TO BE MADE OF 3/4" PVC
2. ATTACH TO ALUMINUM FRAMING W/ 3/8" DIAMETER SS HARDWARE EVERY 12" ON CENTER.

E8001 ELECTRICAL EQUIPMENT STAND
SCALE: NTS

E1103 **CONDUIT STUB-UP**
SCALE: NTS

 **GROUNDING WELL**

[illegible]



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signature on this document.
Contact: 603.626.4262
cell: 603.626.4262
cell: 603.626.4262

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PROJECT: **RADIUS RECONCILING
CONCORD, NH**

**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

NO.	DATE	DESCRIPTION
1	02/24/2019	AS NOTED
2	NOVEMBER 2025	AS NOTED
3	NOVEMBER 2025	AS NOTED
4	NOVEMBER 2025	AS NOTED
5	NOVEMBER 2025	AS NOTED
6	NOVEMBER 2025	AS NOTED
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72	NOVEMBER 2025	AS NOTED
73	NOVEMBER 2025	AS NOTED
74	NOVEMBER 2025	AS NOTED
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95	NOVEMBER 2025	AS NOTED
96	NOVEMBER 2025	AS NOTED
97	NOVEMBER 2025	AS NOTED
98	NOVEMBER 2025	AS NOTED
99	NOVEMBER 2025	AS NOTED
100	NOVEMBER 2025	AS NOTED

DRAWING TITLE: **INSTRUMENTATION
NOTES & LEGEND**

DRAWING NO.: **I-101**

BILL OF MATERIAL

ITEM	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION	DESIGNATION
ENCLOSURE & RELATED EQUIPMENT					
1	1	HOFFMAN	CSD33012SS	ENCLOSURE, STAINLESS STEEL, 36.00.00" x 30.00" x 12.00"	ENCLOSURE
2	1	HOFFMAN	CP9830	BACK PANEL, 14.25" x 28.25"	SUB PANEL
3	1	HOFFMAN	CSBP9830	CONCEPT SWING OUT PANEL	
4	1	HOFFMAN	ALFSWD	DOOR SWITCH	INTRUSION SWITCH
5	1	HOFFMAN	CMFKSS	MOUNTING BRACKET KIT	
6	1	STECO	1150F10-00	THERMAL RELAY, NO	INCLUDED WITH ITEM 10
7	1	HOFFMAN	AZL TMRP	DUAL THERMOSTAT	
8	1	PFANNERBERG	1804015407	408 WATT, 115VAC HEATER WITH THERMOSTAT	
9	1	HOFFMAN	CWHPTD	PADLOCKABLE HANDLE	
10					
11					
12					
13					
14					
15					
PLC & RELATED EQUIPMENT					
16	1	ALLEN BRADLEY	1789-L2AER-QBFC1B	COMPACT LOGIX PLC PROCESSOR	PLC
17	1	ALLEN BRADLEY	1789-IQ16	16 POINT 24VDC SINKING/SOURCING INPUT MODULE	PLC, SLOT 1
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
OPERATOR INTERFACE EQUIPMENT					
36	1	AUTOMATION DIRECT	CMS-110W	OPERATOR INTERFACE, CO. OR TOUCHSCREEN, 10 INCH	
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
TERMINAL BLOCKS & RELATED EQUIPMENT					
50	45	ALLEN BRADLEY	1482-JD3	TERMINAL BLOCK 2 TIER	TB1
51	10	ALLEN BRADLEY	1482-EBJD3	TERMINAL BLOCK END BARRIER, 2 TIER	TB1
52	4	ALLEN BRADLEY	1482-EAJ3S	TERMINAL BLOCK END ANCHOR	PLC, TB1
53	3	ALLEN BRADLEY	1482-CAJ5-10	2 TIER TERMINAL BLOCK JUMPER, 10 POLE	TB1
54	7	ALLEN BRADLEY	1482-JD3	TERMINAL BLOCK, GROUNDING	TB1
55	1	ALLEN BRADLEY	199-D11	DIW RAIL, STANDARD, 1 METER	MISC. COMPONENT MOUNTING
56	1	ALLEN BRADLEY	1482-DR6	DIW RAIL, RAISED, 1 METER	TB1
57	5	ALLEN BRADLEY	1482-H4	FUSED TERMINAL BLOCK, NEON INDICATOR	FU1-FU5
58	3	ALLEN BRADLEY	1482-K37	FUSED TERMINAL BLOCK END BARRIER	FUS, FUS-A, FU15
59	2	ALLEN BRADLEY	1482-449	FUSE BLOCK SIDE JUMPER, 10 POLE	FU1-FU5, FUS-FU15
60	2	ALLEN BRADLEY	1482-SJS	FUSE BLOCK SIDE JUMPER, INSULATING SLEEVE	FU1-FU5, FUS-FU15
61	1	ALLEN BRADLEY	1482-MBX12	GROUNDING TERMINAL BLOCK BLANK MARKING TAGS, 144 CT.	TB1
62	1	ALLEN BRADLEY	1482-MBX8	TERMINAL BLOCK BLANK MARKING TAGS, 2 TIER, 114 CT.	TB1
63	1	ALLEN BRADLEY	1482-MBX12	FUSE BLOCK BLANK MARKING TAGS, 100 CT.	FU1-FU15
64	11	ALLEN BRADLEY	1482-HS	FUSED TERMINAL BLOCK, LED INDICATOR	FUS-A, FUS-FU15
65	4	ALLEN BRADLEY	1482-J4	TERMINAL BLOCK 1 TIER	TB1 (120VAC POWER)
66	2	ALLEN BRADLEY	1482-JG4	TERMINAL BLOCK GROUNDING	TB1 (120VAC POWER)
67	2	ALLEN BRADLEY	1482-EBJ3	TERMINAL BLOCK END BARRIER, 1 TIER	TB1 (120VAC POWER)
68	1	ALLEN BRADLEY	1482-MBX12	TERMINAL BLOCK BLANK MARKING TAGS, 1 TIER, 120 CT.	TB1 (120VAC POWER)
69	2	ALLEN BRADLEY	1482-CAJ6-2	1-TIER TERMINAL BLOCK JUMPER, 2 POLE	TB1 (120VAC POWER)
70	1	ALLEN BRADLEY	700-HL1L1	RELAY SPDT, 28VAC COIL	PFRR1
71	1	ALLEN BRADLEY	1482-MCBX10	RELAY BLANK MARKING TAGS	CR0 - CR5
72	6	ALLEN BRADLEY	700-HV121	RELAY SOCKET	CR0 - CR5, PLUS SPARE
73	7	ALLEN BRADLEY	700-HC36Z24.4	RELAY, SPDT, 24VDC COIL	FU2, FJ7, FUB, FU10 - FU15, PLUS SPARES
74	10	BJSSEMAN	AGC-1	FUSE, 1A, 250V FAST ACTING	FU2, FJ7, FUB, FU10 - FU15, PLUS SPARES
75	10	BJSSEMAN	AGC-1	FUSE, 1A, 250V FAST ACTING	FU2, FJ7, FUB, FU10 - FU15, PLUS SPARES
76	3	BJSSEMAN	AGC-2	FUSE, 2A, 250V FAST ACTING	FU3, P, US SPARE
77	2	BJSSEMAN	MDL-1	FUSE, 5A, 250V TIME DELAY	FU1, P, US SPARE
78	2	BJSSEMAN	MDL-1	FUSE, 1A, 250V TIME DELAY	FUS, P, US SPARE
79	2	BJSSEMAN	AGC-1S	FUSE, 15A, 120V FAST ACTING	FUS-A, PLUS SPARE
80	2	BJSSEMAN	MDL-2-1/2-R	FUSE, 2-1/2A, 250V, TIME DELAY	FU3, P, US SPARE
81	2	BJSSEMAN	AGC-1	FUSE, 5A, 250V FAST ACTING	FU4, P, US SPARE
82	1	ALLEN BRADLEY	1489-MFC200	CIRCUIT BREAKER, 20 AMP 1-POLE	CB1
83	2	PHOENIX CONTACT	2963S8	VALVE TRIP VRL SEC T3-15-15-PM 120VAC SURGE PROTECTOR	SUP1, PLUS SPARE
84	4	PHOENIX CONTACT	2966F78	TERMINAL BLOCK ANALOG LOOP SURGE PROTECTOR	SUP2, SUP3, SUP4, PLUS 1 SPARE
85	1	PHOENIX CONTACT	0808710	ANALOG LOOP SURGE PROTECTOR MARKING STRIP	SUP2, SUP3, SUP4
86					
87					
88					
89					
WIREDUCT					
93	6FT	PANDUIT	F1XLG6	WIRING DUCT, 1" W x 4" H	
94	6FT	PANDUIT	C1L6	WIRING DUCT COVER, 1" W	
95	12FT	PANDUIT	F1.5XLG6	WIRING DUCT, 1.5" W x 4" H	
96	12FT	PANDUIT	C1.5L36	WIRING DUCT COVER, 1.5" W	
97					

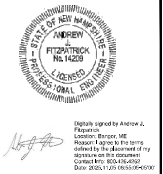
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WIREDUCT (CONT)					
98					
99					
100					
101					
102					
103					
104					
HIGH VOLTAGE RELATED EQUIPMENT					
108					
109					
110					
111					
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129					
POWER SUPPLIES					
138	1	ALLEN BRADLEY	866-XLE240EN	24VDC, 10 AMP POWER SUPPLY	PWS1
139	1	ALLEN BRADLEY	866-XL240-JPS	DC UPS MODULE	UPS1M
140	1	POWERSONIC	FS-1210BF2	SEALED RECHARGEABLE LEAD-ACID BATTERY, 12V, 18.3AH	
141	2	AMP	452048-2	FASTON 200 SERIES CRIMP-ON INSULATED RECEPTACLE TYPE LU	FOR BATTERY CONNECTIONS
142					
143					
144					
145					
COMMUNICATIONS					
146					
147					
148					
149					
150					
151	1	ALLEN BRADLEY	9783-LMS5	LIGHTLY MANAGED SWITCH, 1 PORT	
152	1	BLACK ECK	EVN5L41-0063	CATEGORY 5E STANDARD PATCH CORD LENGTH 3 FT.	SEE COMMUNICATIONS
153	1	BLACK ECK	EVN5L41-0066	CATEGORY 5E STANDARD PATCH CORD LENGTH 6 FT.	SEE COMMUNICATIONS
154					
155					
156					
157					
158					
159					
160					
161					
162					
MISCELLANEOUS PANEL EQUIPMENT					
164	1	PANDUIT	LG82-6-414-6	GROUND BAR	
165					
166	1	PANEL FABRICATOR		NAMEPLATE, PHENOLIC, ENGRAVED	SEE SCHEDULE ON EQUIPMENT LAYOUT
167					
168	1	ALLEN BRADLEY	1482-REC19G	GFCI RECEPTACLE, 15 AMP, DIN RAIL MOUNT	PROGRAMMING RECEPTACLE
169					
170					
171					
172					
173					
174					
175	1	EMECO	GS3743	WARNING LABEL "ARC FLASH AND SHOCK HAZARD"	
176	1	EMECO	SQS110	WARNING LABEL "DEVICE POWERED FROM SEVERAL SOURCES"	
177					
178					
179					
MISCELLANEOUS FIELD EQUIPMENT					
180					
181					
182					
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PROJECT:



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CLIENT INFO:
RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

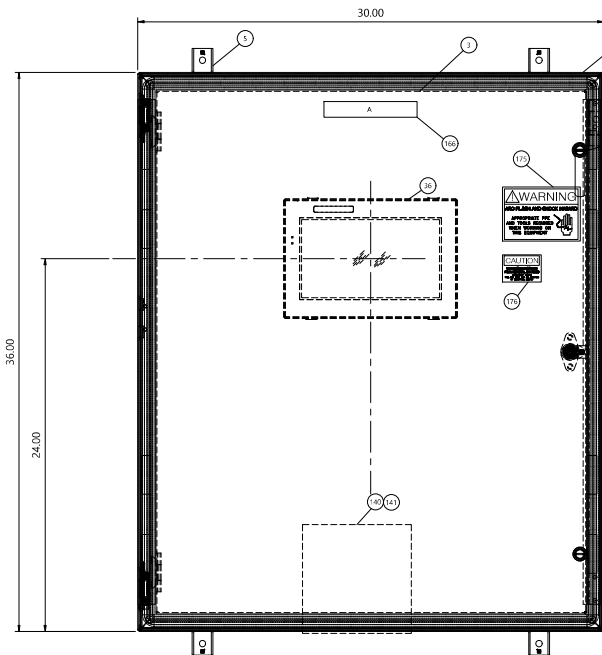
REV (MANDATORY) DESCRIPTION

JOB NO.:	0224539-48
DATE:	NOVEMBER 2025
SCALE:	AS NOTED
DESIGNED BY:	VC
CHECKED BY:	RPK
TECHNAME:	0224539-48 - 001 - (00% design)

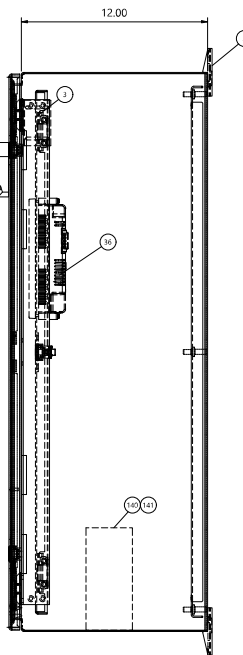
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INSTRUMENTATION
SCADA PANEL BILL OF MATERIAL

DRAWING NO.
I-102

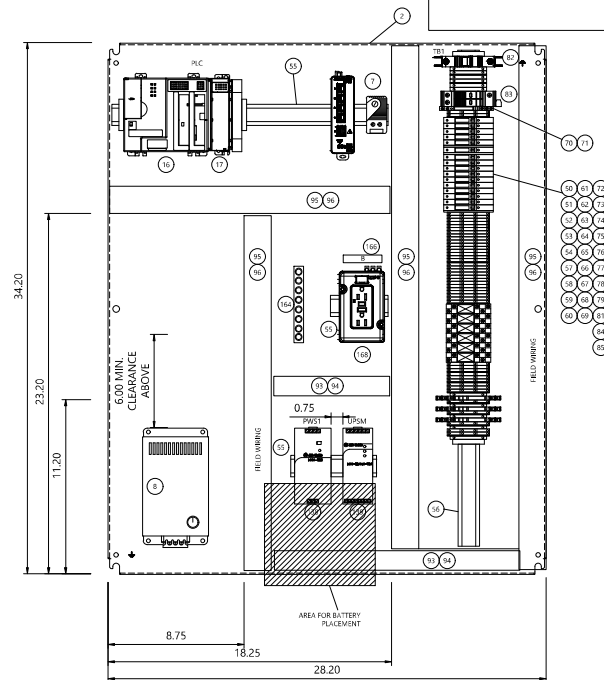
NAMEPLATE SCHEDULE			
ITEM	DIMENSION	DESCRIPTION	FABRICATION COMMENTS
A	5" x 1"	SCADA PANEL	NAMEPLATE TO BE BLACK WITH WHITE LETTERS WITH ADHESIVE BACK. TEXT SIZE TO BE .375
B	2.5" x 5"	FOR PROGRAMMING ONLY	NAMEPLATE TO BE RED WITH WHITE LETTERS WITH ADHESIVE BACK. TEXT SIZE TO BE .12



ENCLOSURE FRONT VIEW



ENCLOSURE RIGHT SIDE VIEW



SUB PANEL

SHEET GENERAL NOTES

1. CONTRACTOR SHALL USE CAUTION WHEN LANDING CONDUITS IN THE BOTTOM OF ENCLOSURES TO AVOID INTERFERING WITH BATTERY PLACEMENT. (ITEM #16)
2. PANEL FABRICATOR SHALL MAKE NECESSARY MODIFICATIONS TO SWING OUT PANEL. (ITEM #3) TO ACCOMMODATE INTERLOCK SWITCH (ITEM #2).
3. CONTRACTOR SHALL INSTALL ENCLOSURE SO THAT THE BOTTOM OF THE PANEL IS APPROXIMATELY 30" FROM GROUND LEVEL, AND POSITIONING THE OPERATOR INTERFACE TERMINAL. (ITEM #6) AT APPROXIMATELY 60" AT EYE LEVEL.



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Digitally signed by Andrew A.
Farnsworth
Location: Farnsworth, NH
Reason: I am the signatory
defined in the signature of the
signature on this document
Control No. 6224539-48
Date: 2025.11.05 08:30:00-0500

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CLIENT INFO:
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SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

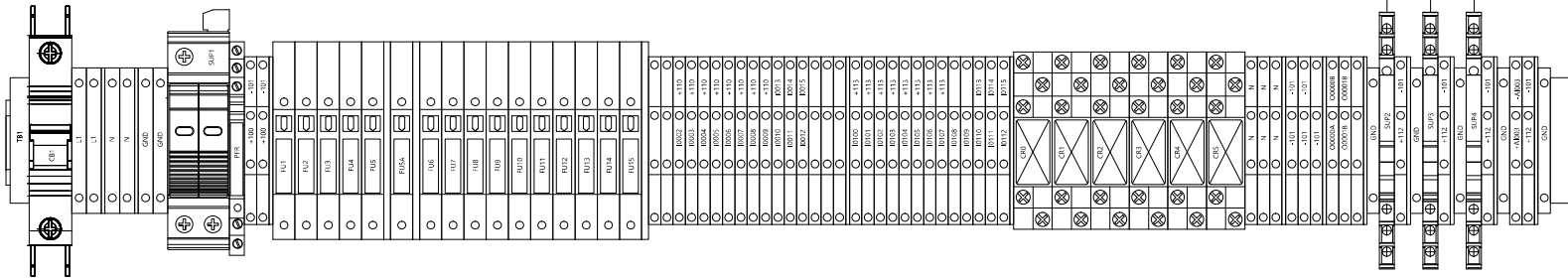
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1058 PROJ: 0224539-48
DATE: NOVEMBER 2025
SCALE: AS NOTED
DESIGNED BY: VC
DRAWN BY: RPH
CHECKED BY: RPH
REVISION: 0224539-48 - 001 - (001-Rev)

DRAWING TITLE:
INSTRUMENTATION
SCADA PANEL EQUIPMENT
LAYOUT

DRAWING NO:

I-103



- (1) 20 AMP CIRCUIT BREAKER
- (1) 120VAC SURGE ARRESTOR
- (45) 2-TIER TERMINALS
- (10) 2-TIER END BARRIERS
- (4) 1-TIER TERMINALS
- (2) 1-TIER END BARRIERS
- (1) GROUNDING TERMINALS
- (16) FUSE BLOCKS
- (3) FUSE BLOCK END BARRIERS
- (1) 120VAC RELAY
- (6) 24VDC RELAYS
- (1) ANALOG SURGE SUPPRESSOR
- (2) END ANCHORS

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Location: Ranger, NC
Reason: I agree to the terms defined by the placement of my signature in this document.
Contact info: 919.426.4362
Date: 2025.11.25 11:57:55-1900'

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CLIENT INFO:
RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	MM/DD/YY	DESCRIPTION
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JOB NO: 0224539.48

DATE:	NOVEMBER 2025
CC#:	161078

SCALE:	AS NOTED
DESIGNED BY:	VC

DRAWN BY: VC

CHECKED BY:	RPM
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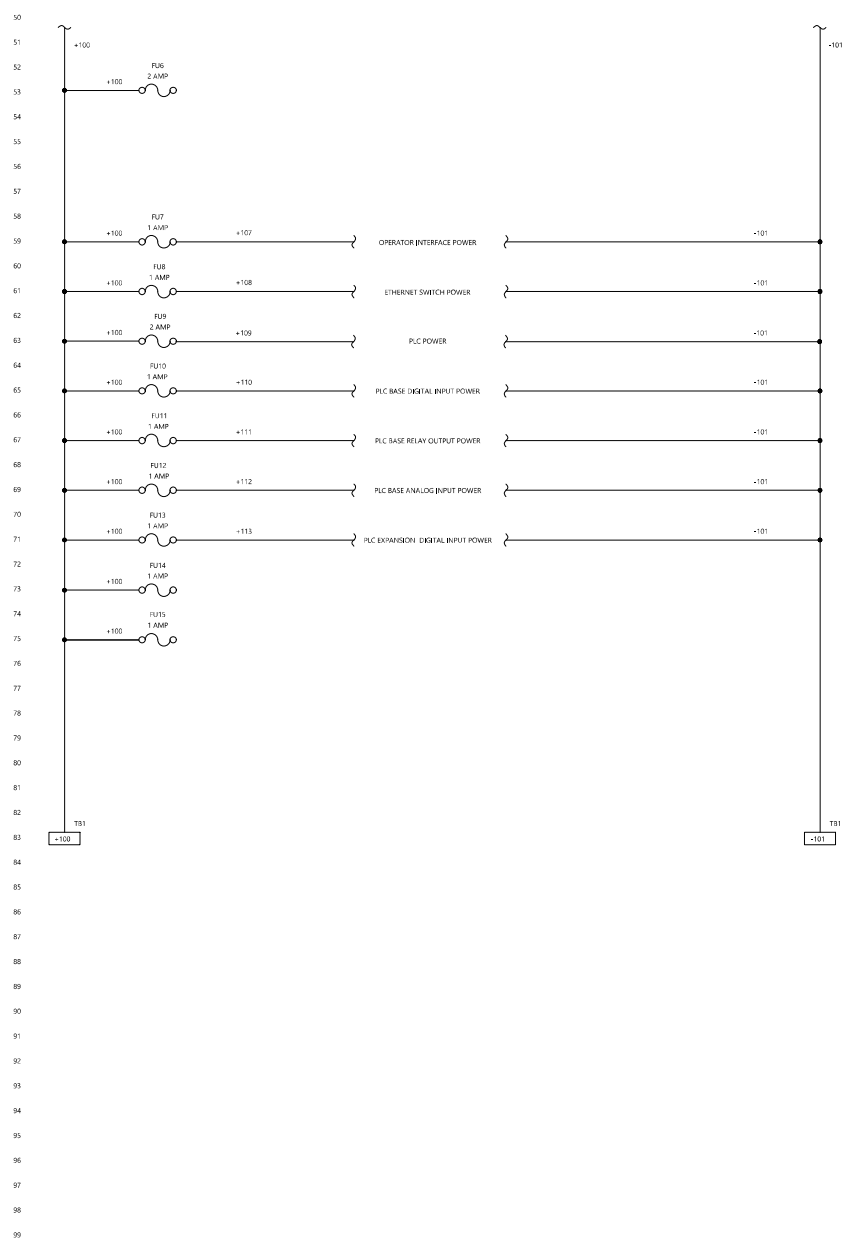
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DRAWING TITLE:
INSTRUMENTATION

SCADA PANEL TERMINAL BLOCK LAYOUT

DRAWING NO:

I-104





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CONCORD, NH**

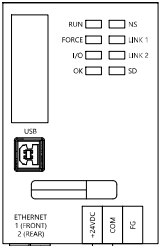
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STORMWATER IMPROVEMENTS**

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2	02/24/2018	REVISED FOR PERMIT
3	02/24/2018	REVISED FOR PERMIT
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5	02/24/2018	REVISED FOR PERMIT
6	02/24/2018	REVISED FOR PERMIT
7	02/24/2018	REVISED FOR PERMIT
8	02/24/2018	REVISED FOR PERMIT
9	02/24/2018	REVISED FOR PERMIT
10	02/24/2018	REVISED FOR PERMIT

DRAWING TITLE:
**INSTRUMENTATION
SCADA PANEL
COMMUNICATIONS**

DRAWING NO.:
I-106

**PLC
PROCESSOR/POWER SUPPLY**
ALLEN BRADLEY COMPACT LOGIX
1769-L24B-GBFC1B



IP ADDRESS: 192.168.100.XX
SUBNET MASK: 255.255.255.0

RUN ☐ NS
FORCE ☐ LINK 1
L/O ☐ LINK 2
OK ☐ SD



ETHERNET
1 (FRONT)
2 (REAR)

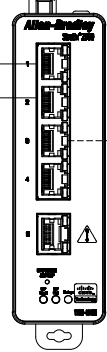
COM
PZ

+101 0VDC FROM TB1
+108 24VDC FROM FUB

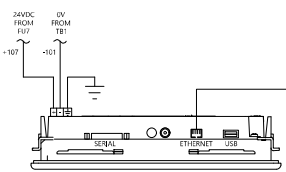
BLACK BOX
EVN051-0003
CAT5 ETHERNET
STANDARD PATCH CORD
LENGTH: 3 FT.

ETHERNET SWITCH
ALLEN BRADLEY
1783-MV55

24VDC FROM FUB
0VDC FROM TB1



TO VENDOR EQUIPMENT



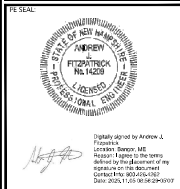
OPERATOR INTERFACE (OI)
AUTOMATION DIRECT C-9000-011 PORT DETAIL
C/S-110W

BLACK BOX
LV5054T-H006
CAT5 ETHERNET
PATCH CABLE
LENGTH: 6 FT.



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Fazzolari
DN: cn=Andrew J. Fazzolari, email=afazzolari@woodardcurran.com, o=Woodard & Curran, ou=Engineering, c=US
Date: 2025.10.29 10:49:48 -04'00'

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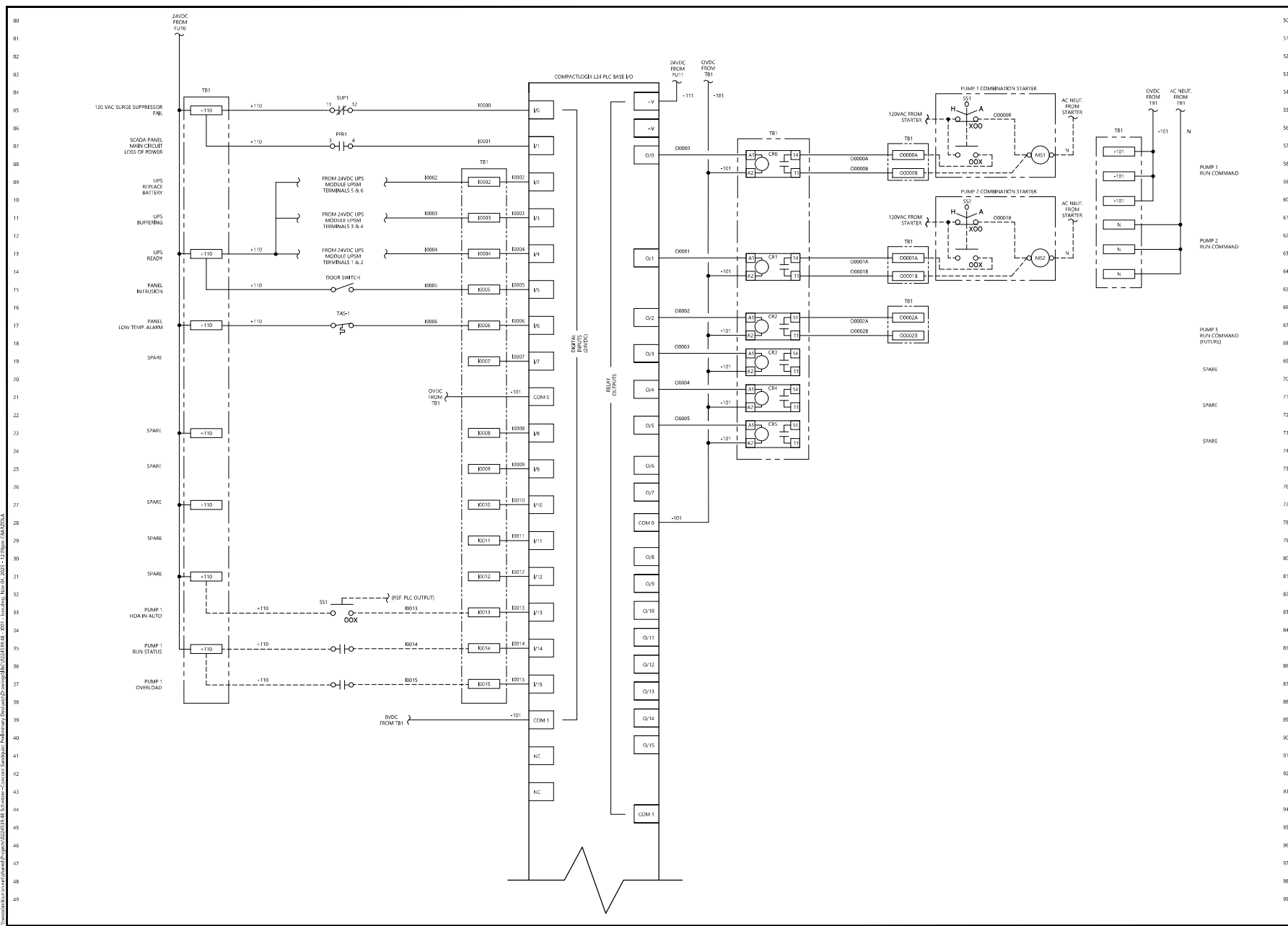
CLIENT INFO:
**RADIUS RECYCLING
CONCORD, NH**

**SANDQUIST FACILITY
STORMWATER IMPROVEMENTS**

REV	DATE	DESCRIPTION
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2	07/24/2018	REVISED FOR 60% DESIGN
3	11/08/2025	REVISED FOR 60% DESIGN

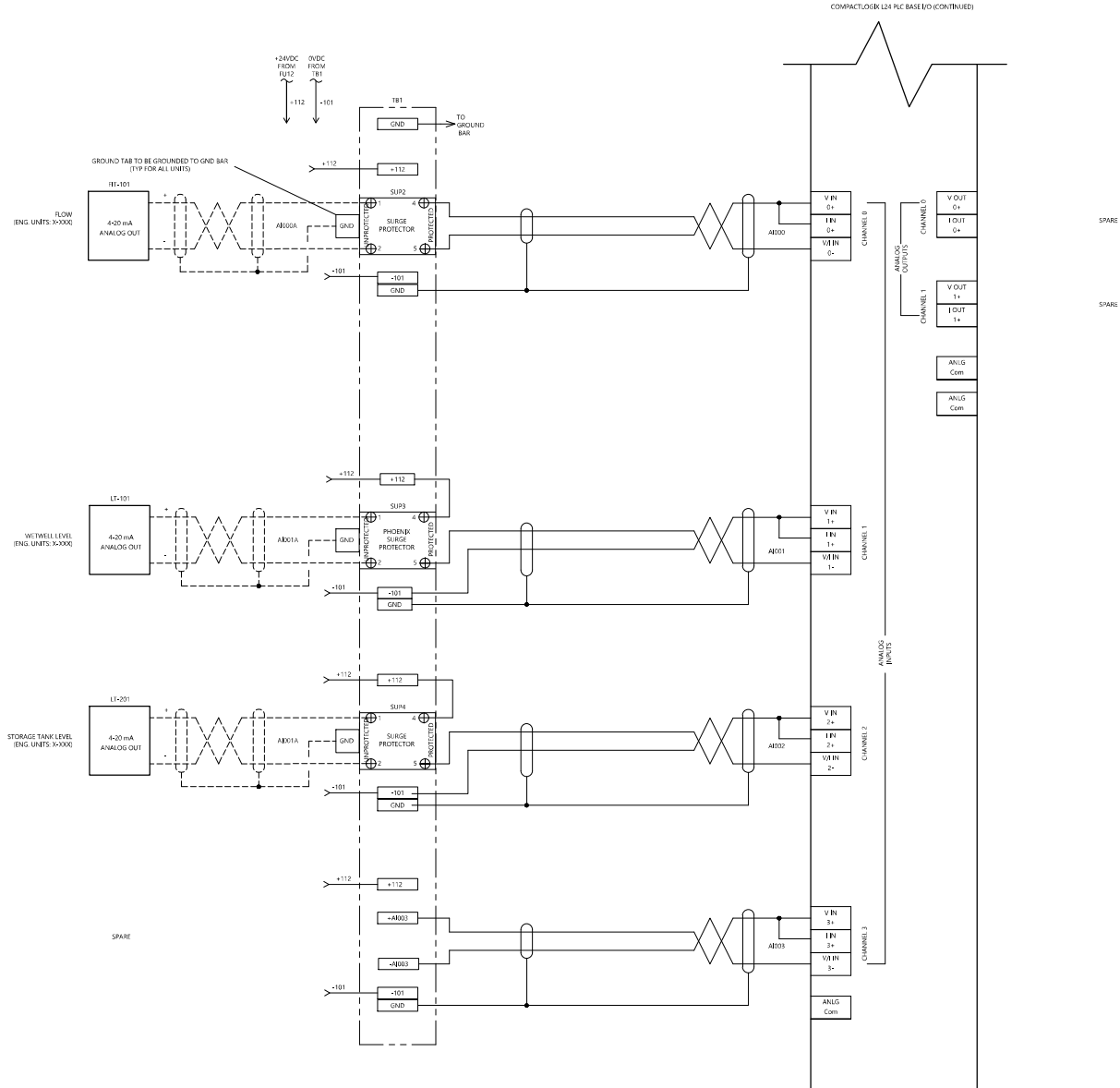
DRAWING TITLE:
**SCADA PANEL PLC BASE I/O:
DIGITAL INPUTS AND OUTPUTS**

DRAWING NO:
I-107



WoodardCurran.com\unpublished\pages\0224539-48-SCADA-Panel-PLC-Base-I-O-Digital-Inputs-and-Outputs.dwg 001 - Local, Nov 8, 2025 1:12 PM C:\AEC\AEC

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Location: Concord, NH
Reason: I am the signatory
Date: 2025.11.20 10:56:00 -0500

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CLIENT INFO:
RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	DATE	DESCRIPTION
1	07/24/2018	FOR NO.
2	NOVEMBER 2025	DATE
3	AS NOTED	SCALE
4	VC	DESIGNED BY
5	RPM	DRAWN BY
6	07/24/2018 - 001 - 000 (dwg)	CHECKED BY

DRAWING TITLE:
SCADA PANEL PLC BASE I/O:
ANALOG INPUTS

DRAWING NO.:
I-108



APPENDIX O: EXISTING CONDITIONS COLOR CODED SOILS PLANS



**ATTORNEY WORK PRODUCT -
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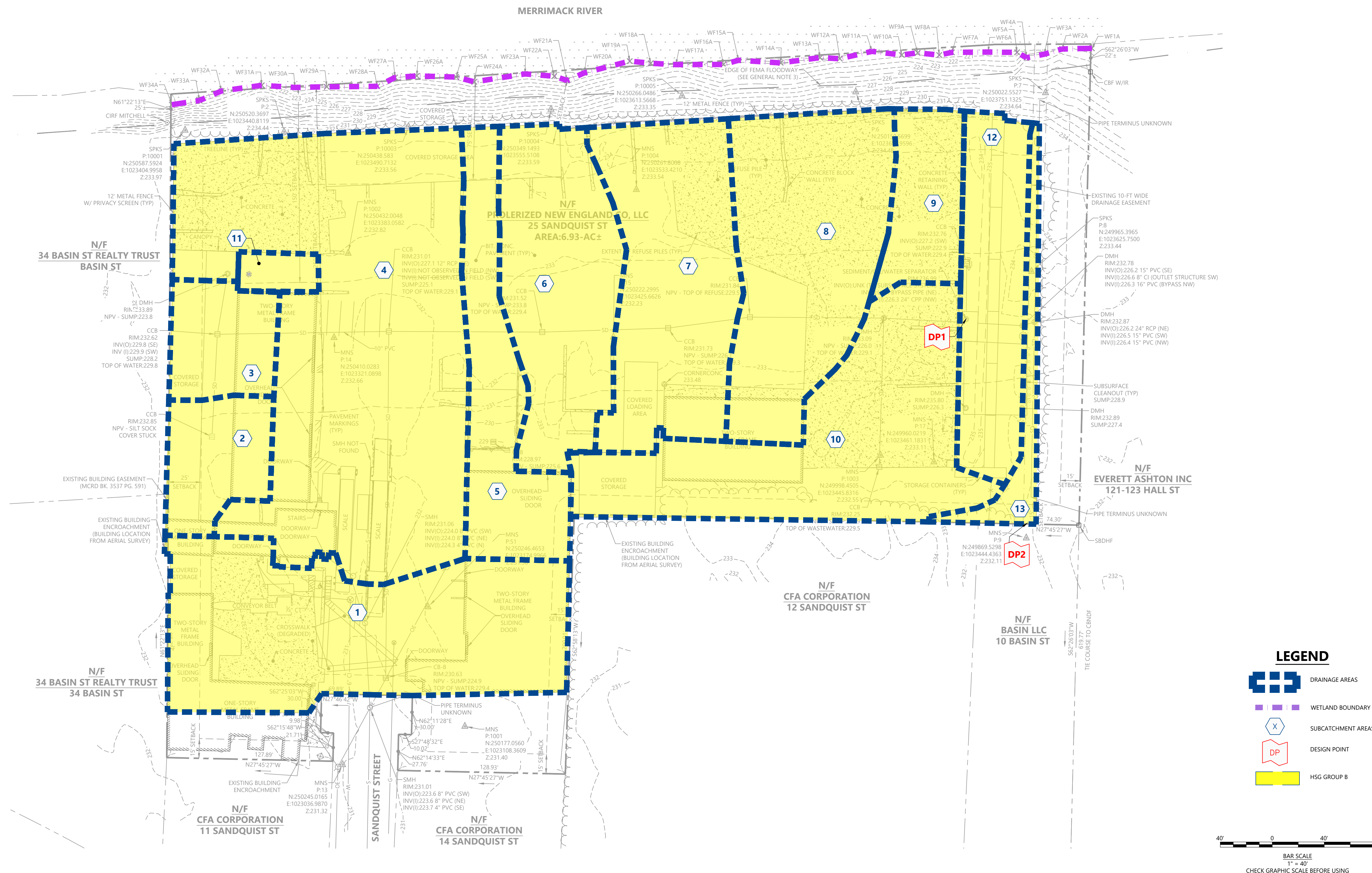
RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

JOB NO:	0224539.48
DATE:	JULY 2024
SCALE:	1" = 40'
DESIGNED BY:	YI
DRAWN BY:	JM
CHECKED BY:	YI/RT
FILENAME:	0224539.48-FIG 3-EX SOI*.dwg

DRAWING NO.

FIGURE 1



APPENDIX P: PROPOSED CONDITIONS COLOR CODED SOILS PLANS



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STORMWATER IMPROVEMENTS

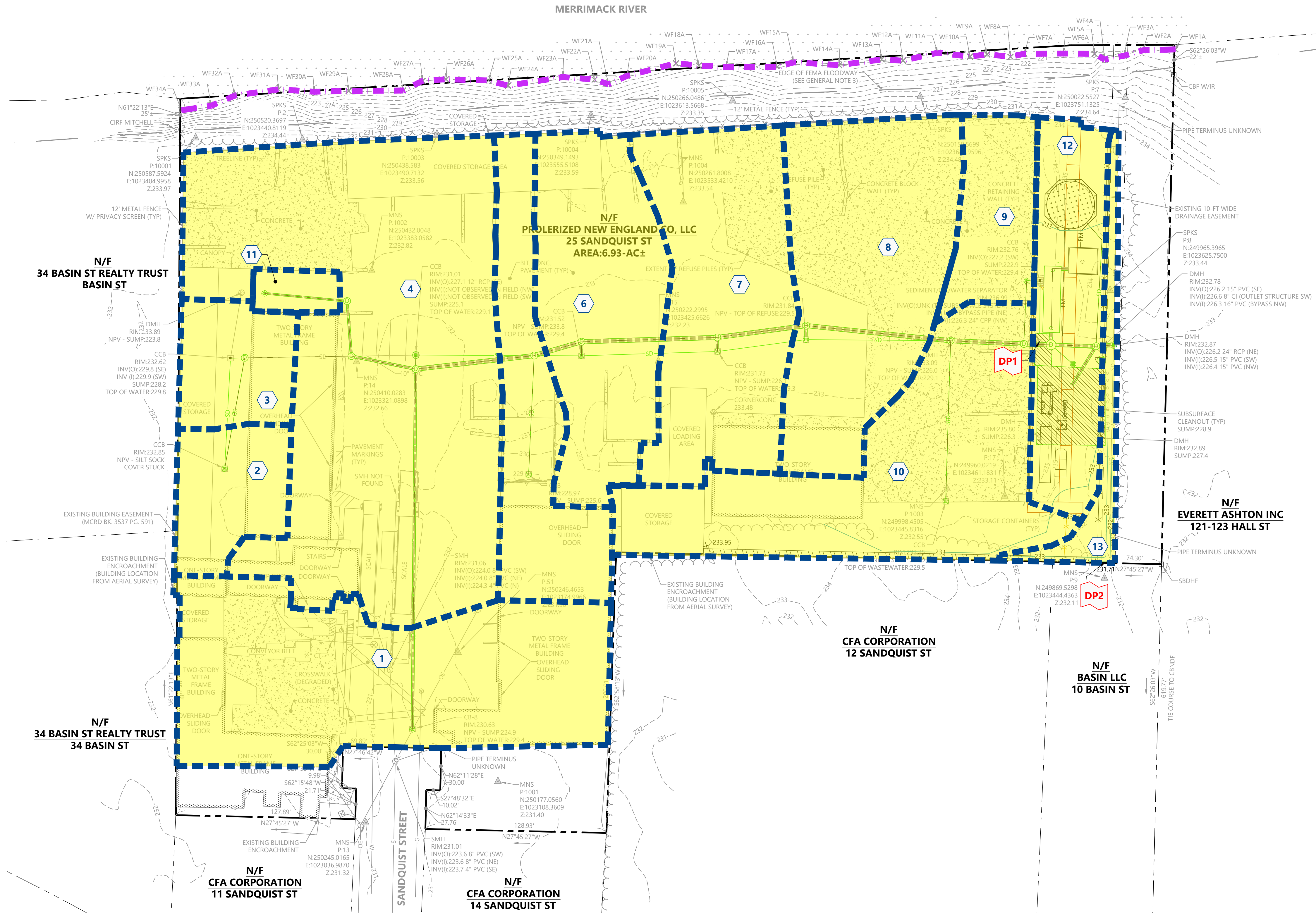
REV	MM/DD/YY	DESCRIPTION
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JOB NO:	0224539.48
DATE:	JULY 2024
SCALE:	1" = 40'
DESIGNED BY:	YI
DRAWN BY:	JM
CHECKED BY:	YI/RT
FILENAME:	0224539.48-FIG 4-PR SOI*.dwg

DRAWING TITLE:
**CIVIL
PROPOSED CONDITIONS
COLOR CODED SOILS MAP**

DRAWING NO:

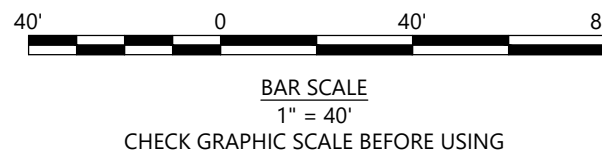
FIGURE 2



LEGEND

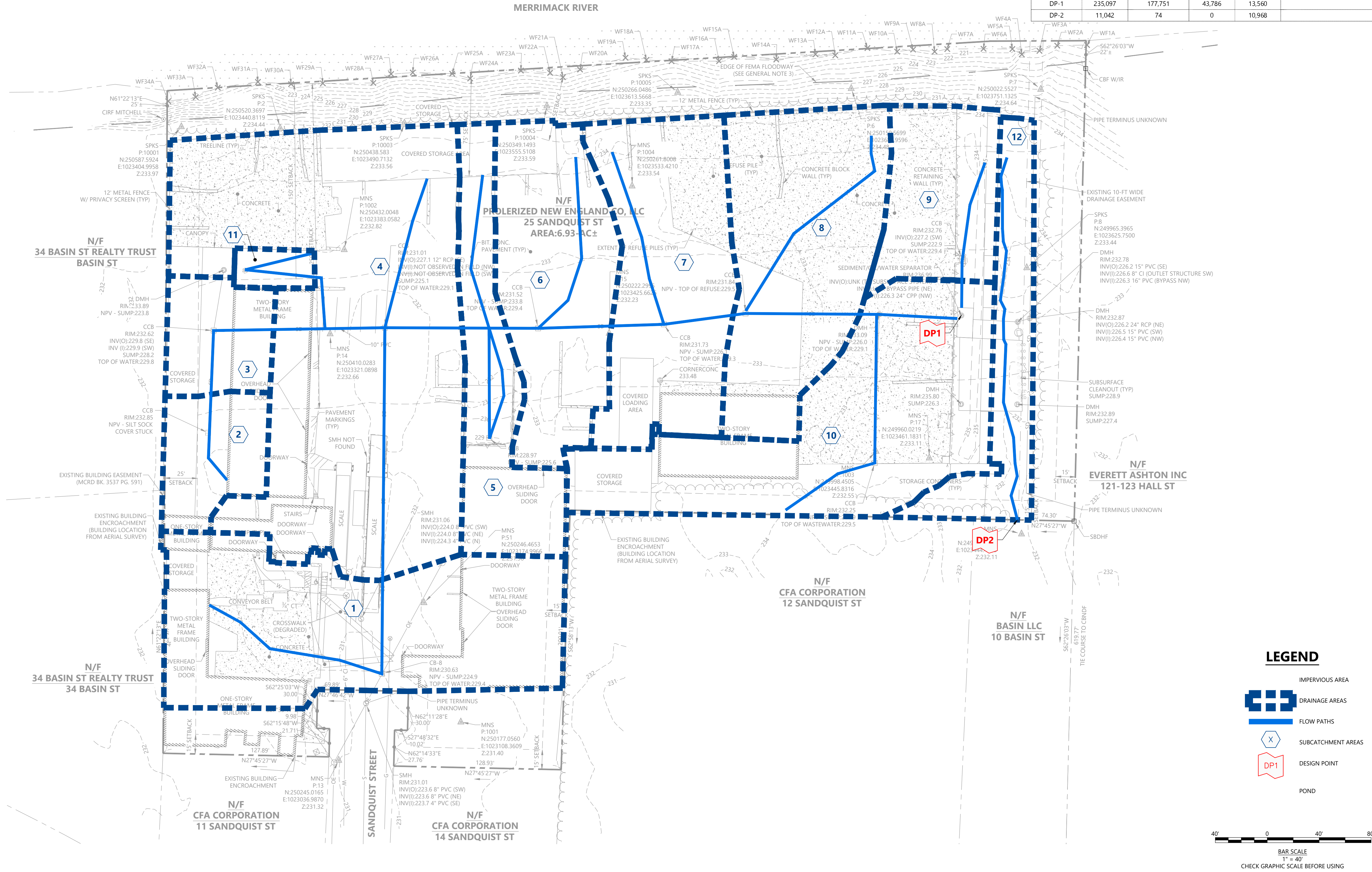
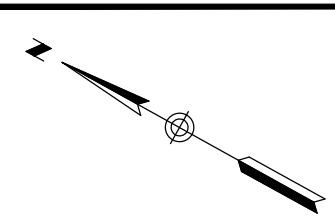


- DRAINAGE AREAS
- WETLAND BOUNDARY
- SUBCATCHMENT AREAS
- DESIGN POINT
- HSG GROUP B



APPENDIX Q: EXISTING CONDITIONS DRAINAGE AREA MAP

\\woodardcurran.net\shared\Project\0224539-48\Schmitzer-Concord Sandquist Preliminary Design\Drawings\Figures\Figures\0224539-48-Fig 1-EX Watershed.dwg, Aug 07, 2024, 10:43am YSH/ZLK/KA



EXISTING DRAINAGE AREA CALCULATIONS (TR-55)						
DRAINAGE AREA ID	TOTAL AREA (SF)	IMPERVIOUS AREA (CN=98)	ROOF AREA (CN=98)	GRASS AREA (CN=89)	CURVE NUMBER	Tc (MIN)
1	33,590	18,384	15,206	0	98	6.0
2	7,467	4,531	2,936	0	98	6.0
3	7,120	4,577	2,543	0	98	10.4
4	57,605	52,276	5,329	0	98	6.0
5	14,314	8,814	5,500	0	98	6.0
6	20,333	20,333	0	0	98	6.0
7	23,381	19,985	3,396	0	98	6.0
8	25,531	23,414	2,117	0	98	6.0
9	11,753	8,684	0	3,069	98	6.0
10	32,181	14,930	6,760	10,491	96	6.0
11	1,822	1,822	0	0	96	6.0
12	11,042	74	0	10,968	96	14.0
DP-1	235,097	177,751	43,786	13,560		
DP-2	11,042	74	0	10,968		



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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV	MM/DD/YY	DESCRIPTION
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JOB NO:	0224539-48
DATE:	AUGUST 2024
SCALE:	1" = 40'
DESIGNED BY:	YI
DRAWN BY:	HAO/OP
CHECKED BY:	YI/RT
FILENAME:	0224539-48-FIG 1-EX WAT*.dwg

DRAWING TITLE:

**CIVIL
EXISTING CONDITIONS
WATERSHED DELINEATION**

DRAWING NO:

EX-1

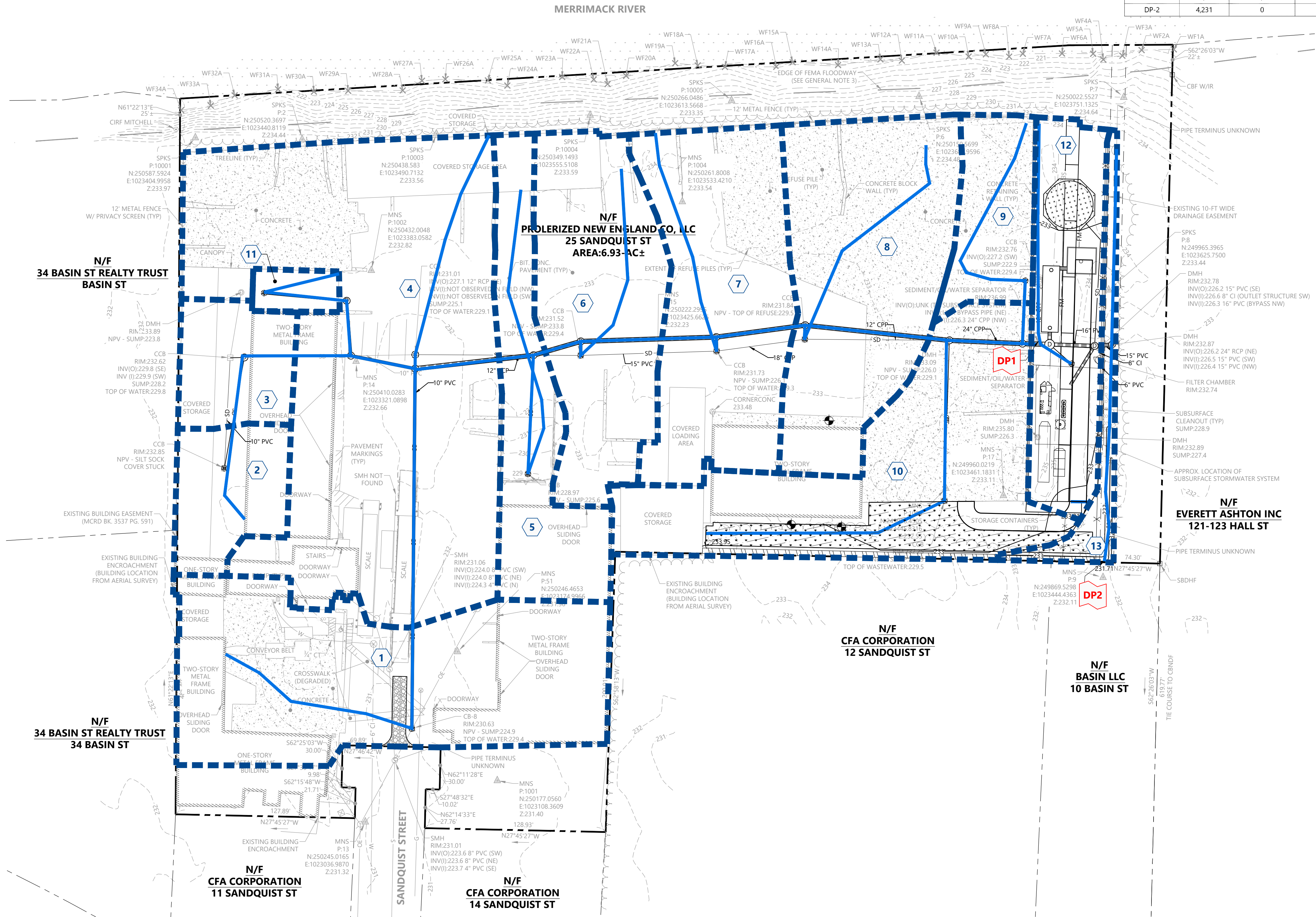
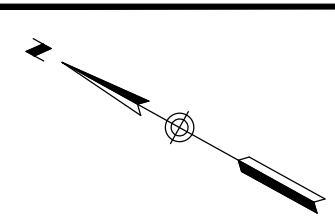
LEGEND



IMPERVIOUS AREA
DRAINAGE AREAS
FLOW PATHS
SUBCATCHMENT AREAS
DESIGN POINT
POND

APPENDIX R: PROPOSED CONDITIONS DRAINAGE AREA MAP

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PROPOSED DRAINAGE AREA CALCULATIONS (TR-55)						
DRAINAGE AREA ID	TOTAL AREA (SF)	IMPERVIOUS AREA (CN=98)	ROOF AREA (CN=98)	GRASS AREA (CN=89)	CURVE NUMBER	Tc (MIN)
1	33,590	18,384	15,206	0	98	6.0
2	7,467	4,531	2,936	0	98	6.0
3	7,120	4,577	2,543	0	98	10.4
4	57,605	51,575	5,329	701	98	6.0
5	14,314	8,814	5,500	0	98	6.0
6	20,333	20,333	0	0	98	6.0
7	23,381	19,985	3,396	0	98	6.0
8	25,531	23,413	2,117	0	98	6.0
9	7,621	7,621	0	0	98	6.0
10	29,279	14,729	6,760	7,790	96	6.0
11	1,822	1,822	0	0	98	6.0
12	13,845	4,945	0	8,900	91	6.0
13	4,231	0	0	4,231	91	6.0
DP-1	241,908	180,730	43,786	17,391		
DP-2	4,231	0	0	4,231		



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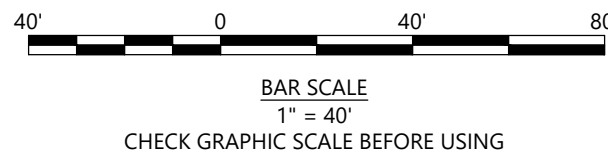
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SCALE:	1" = 40'
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DRAWN BY:	HAO/OP
CHECKED BY:	YI/RT
FILENAME:	0224539-48-FIG 2-PR WAT*.dwg

DRAWING TITLE:
**CIVIL
PROPOSED CONDITIONS
WATERSHED DELINEATION**

DRAWING NO:

PR-1





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