STORMWATER REPORT

FOR A

DEFINITIVE SUBDIVISION
PEPPERELL ROAD

IN

GROTON,
MASSACHUSETTS

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CDG PROJECT # 5454

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CIVIL DESIGN GROUP
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A Stormwater Report Prepared for:

Maple Realty Trust
PO Box 381
Groton, Massachusetts

Proposed Definitive Subdivision – "Hayes Woods"
Pepperell Road
Groton, Massachusetts

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1.0 Project Narrative

1.1 Project Type

The proposed project consists of a subdivision serving nine (9) single-family house lots on Pepperell Road in the Town of Groton. The entire site will be serviced by town water, but each site will require a private septic system.

1.2 Purpose and Scope

This report has been prepared to comply with the requirements of the Stormwater Management Standards incorporated in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00 and the Town of Groton Stormwater Management Regulations. These standards are intended to promote increased groundwater recharge and prevent stormwater discharges from causing or contributing to the pollution of surface waters and ground waters of the Commonwealth. The standards aim to accomplish these goals by encouraging the greater use of low impact development techniques and improving the operation and maintenance of stormwater best management practices.

This report addresses compliance of the proposed development with each of the ten stormwater standards, provides calculations to support the compliance information, and provides an Operation and Maintenance Plan and Long-Term Pollution Prevention Plan for the stormwater management system.

1.3 Proposed Development

As mentioned, the proposed project consists of nine (9) single-family dwellings, served by a proposed subdivision road accessed off Pepperell Road. The proposed road has been designed to conform to the Town of Groton's subdivision standards. Six (6) of the proposed lots will be served by private driveways with access from the proposed road. The remaining three (3) dwellings will be accessed by a shared driveway at the end of the proposed road, which terminates with a T-turnaround. Each lot will be serviced by a private septic system and will have access to Town water. A water main extension is proposed from the existing intersection of Pepperell Road and Hill Road to serve the proposed development. Each lot will have a 1" service connection off the proposed water main.

1.4 LID Measures

Care has been taken to lay out the proposed site in a manner that works with existing topography. BMPs such as level spreaders and stormwater basins areas are used to manage stormwater runoff. Individual roof Infiltration areas are provided on each lot to collect stormwater from roof areas before discharging back to the groundwater. Stormwater from the impervious areas is routed via

swales, and storm drains to stormwater management areas. These systems will be used to promote groundwater recharge and limit the runoff.

1.5 Site Description

The proposed project area is part of an 80.33-acre parcel that is being subdivided into ANR lots with access on Maple Avenue, open space in the middle of the site, and the proposed subdivision described above. Due to a large portion of the overall site remaining undisturbed, a reduced portion of the site has been analyzed for all stormwater calculations and discussions provided in this report. Portions of the existing site were logged several years ago, and the cart paths used for access still exist on the site. These areas were heavily trafficked with equipment and were not restored at the end of the logging activities. The end landcover result was a poor mix of topsoil and clay. These areas are identified on the Pre-development watershed map.

The proposed project area drains primarily toward Pepperell Road, with a smaller portion of the subdivision area draining toward the open space area provided as part of the overall development of the site.

The site is comprised primarily of Canton fine sandy loam and Quonset sandy loam. These soils fall within Hydrologic Soils Group (HSG) A & B. On-site Soil testing confirmed these classifications. The proposed development area is located on the portion of the site that belongs primarily to HSG A. HSG A has a high-medium rate of water transmission (low runoff potential).

1.6 Proposed Stormwater Management System

Runoff from the proposed impervious areas will be conveyed and treated through a combination of BMP's and infiltrated to the groundwater. The infiltration will help to recharge the groundwater and ensure that the proposed development will not cause any off-site flooding. The following is a brief discussion of each conveyance and treatment BMP proposed.

<u>Stormwater Basin</u>

Several stormwater basins are proposed to collect runoff from portions of pavement and grassed areas. The basins have been designed to accommodate the runoff associated with the 100-year storm event. Most basins will be equipped with either a broad-crested weir or an outlet control structure. Due to site layout & grading constraints, some stormwater basins do not have an outlet control structure but have been designed to provide a minimum of 1-foot of freeboard from the top of the berm to the peak elevation for the 100-year storm event. Additionally, all basins have been designed to drain within 72 hours.

Stone Recharge Trench

Stone recharge trenches are proposed along portions of the property line, specifically in drainage areas that drain towards Design Point B. The proposed trenches have been situated to capture, provide storage, and provide infiltration of stormwater runoff associated with pavement and restored grass areas. The recharge trenches will consist of a 3-foot-wide trench filled with crushed stone with a 4" perforated PVC pipe along the bottom to encourage exfiltration and route stormwater through the entirety of the trench. Each trench will reduce erosion and washout by reducing the velocity of stormwater along the edge of the developed area.

1.7 Methods of Analysis

United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil cover complex methods (TR-20) were employed to compute runoff quantities for the subject property and, where appropriate, adjacent property that drains toward a common discharge point with runoff from the subject site. HydroCAD 10.10 computer software was employed in this hydrologic analysis.

Due to the existing topography of the site, all runoff from the proposed development area collects at one of two low points on the site. A pre- and post-development analysis was performed to determine that there will be no flooding at either design point during the 24-hour rainfall events of the 2-, 10-, 25-, and 100-year return frequencies. Watershed boundaries for existing conditions are depicted on the attached Pre-development Watershed Plan. Post-developed watershed boundaries are indicated on the Post-Development Watershed Plan.

2.0 Stormwater Standards Compliance

2.1 Standard 1 – Untreated Discharges

The stormwater management system for the proposed development will not result in any new discharges of untreated stormwater to wetland resource areas. Stormwater management structures have been designed such that there is no erosion or scour to wetland resource areas or waters of the Commonwealth.

2.2 Standard 2 – Peak Rate Attenuation

The stormwater management system for the proposed development will employ level spreaders, roof infiltration trenches, and above ground stormwater management areas (stormwater basins) that have been sized to retain and recharge the runoff related to a 100-year, 24-hour rainfall event.

Hydrologic calculations for existing and proposed site conditions are included in Appendices D and E respectively. Calculations for 24-hour rainfall events of 2-, 10-, 25-, and 100-year return frequencies are provided. For all rainfall events considered, the proposed stormwater management system will control runoff from the development such that corresponding water levels at the existing low points will not cause any off or on-site flooding. Per Groton Stormwater Regulations, water velocities in pipes and proposed gutters shall be between 2 and 10 feet per second, and not more than five feet per second on unpaved surfaces.

	Pre-Developed	**Post-Developed**	**Delta**
Design Point "A"			
2-Year	0.00 cfs	0.00 cfs	-
10-Year	0.02 cfs	0.02 cfs	-
25-Year	0.12 cfs	0.08 cfs	-0.04 cfs
100-Year	0.85 cfs	0.71 cfs	-0.14 cfs
Design Point "B"			
2-Year	0.00 cfs	0.00 cfs	-
10-Year	0.08 cfs	0.03 cfs	-0.05 cfs
25-Year	0.26 cfs	0.10 cfs	-0.16 cfs
100-Year	0.90 cfs	0.89 cfs	-0.01 cfs
Overall Design Point			
2-Year	0.00 cfs	0.00 cfs	-
10-Year	0.10 cfs	0.05 cfs	-0.05 cfs
25-Year	0.38 cfs	0.18 cfs	-0.20 cfs
100-Year	1.75 cfs	1.60 cfs	-0.15 cfs

2.3 Standard 3 – Recharge

As discussed in the Introduction, Natural Resource Conservation Service data indicates that the areas within the proposed development consist of soils from Hydrologic Soil Group A & B. Several stormwater management areas are proposed to provide infiltration of runoff associated with pavement and grassed areas. The contractor is proposing to capture runoff associated with the proposed roofs by installing either a drywell or a dripline recharge trench at each dwelling, both of which will be sized to accommodate the flows associated with the 100-year design storm.

2.4 Standard 4 – Water Quality

A total of 85% TSS removal was achieved using BMPs. The proposed Stormwater Management Areas combined with the proposed pre-treatment devices (Grassed Swales & sediment forebay). A 2.41 Rawls Rate was used for exfiltration for the proposed soil. Water will drain through a Loamy Sand before discharging to soils with faster recharge rates (Find Loamy Sands). This was confirmed by the on-site soil testing performed by Dillis & Roy.

2.5 Standard 5 – Land Uses with Higher Pollutant Loads

The current and proposed uses of the subject site do not constitute land use with higher potential pollutant load, thus Standard 5 does not apply to the proposed project.

2.6 Standard 6 – Critical Areas

The proposed project does not involve a stormwater discharge within or near to any of the areas defined as “Critical Areas” at 314 CMR 9.02 and 310 CMR 10.04.

2.7 Standard 7 – Redevelopment

The project does not qualify for redevelopment provisions.

2.8 Standard 8 – Construction Period Pollution Prevention and Erosion and Sediment Control

The project is subject to the filing of an Environmental Protection Agency Notice of Intent (EPA NOI), the Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction. This document will be prepared to satisfy the requirements of the EPA NOI and the Standard 8 Construction Period Pollution

prevention and Erosion and Sedimentation Control Plan.

2.9 Standard 9 – Operation and Maintenance Plan

Refer to Appendix G for a complete copy of the Stormwater Operation and Maintenance Plan.

2.10 Standard 10 – Prohibition of Illicit Discharges

An illicit discharge statement will be prepared after approvals are received and prior to construction.

APPENDIX A

Locus Map

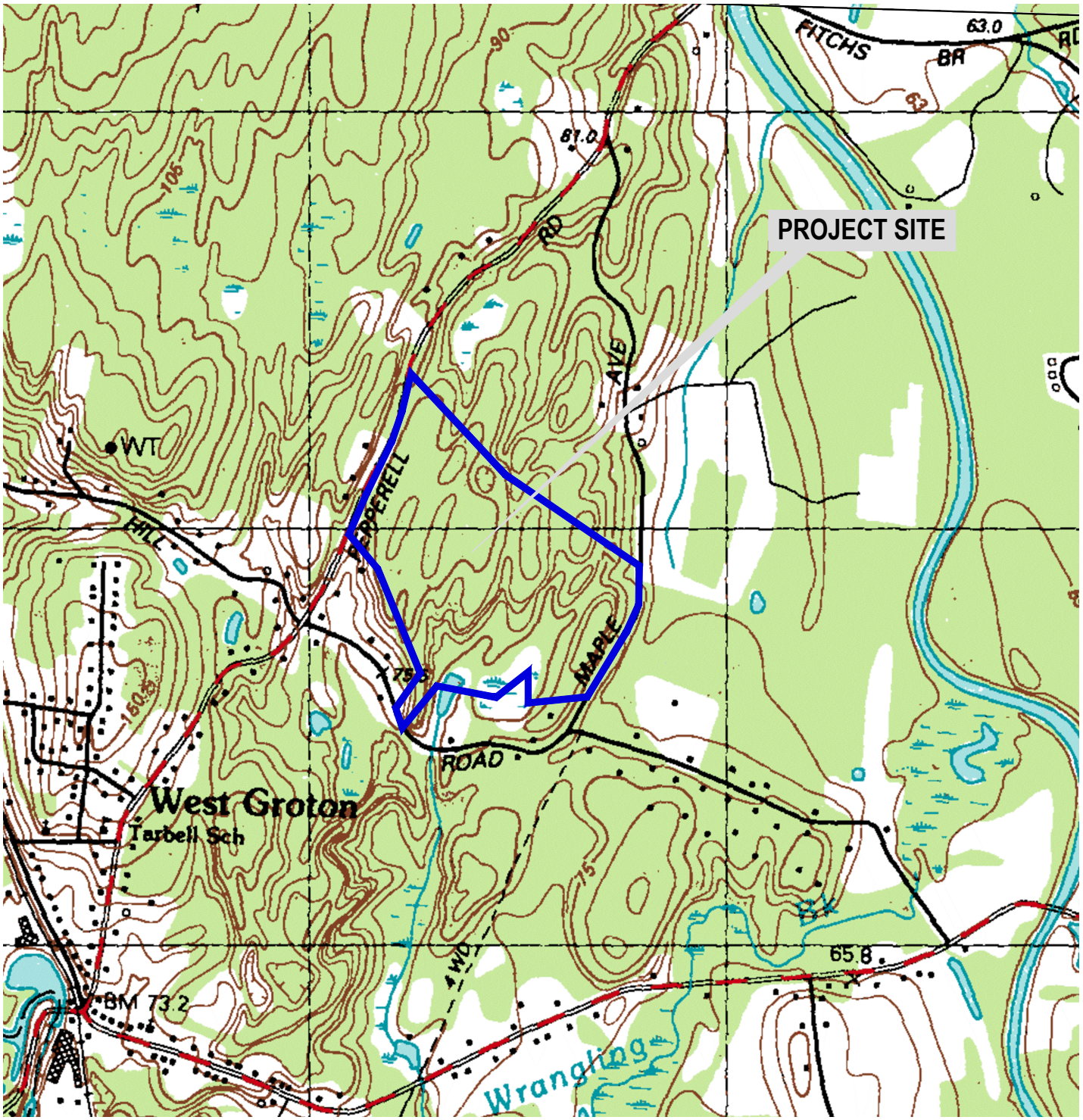

FIGURE 1 - LOCUS MAP

1"=1,000'

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References: 1988 USGS Fitchburg & Ayer Massachusetts Topographic Map

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APPENDIX B

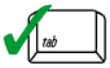
Checklist for Stormwater Report

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

12/12/2022

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☒ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☒ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☒ Other (describe): Infiltration Basins, Recharge Trench, Drip line recharge trenches for roofs

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX C

NRCS Soils Data

Map Scale: 1:6,810 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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: Middlesex County, Massachusetts
Survey Area Data: Version 19, Sep 12, 2019

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

Date(s) aerial images were photographed: May 22, 2015—Sep 29, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2A	Pootatuck fine sandy loam, 0 to 3 percent slopes	B	2.6	1.0%
4A	Rippowam fine sandy loam, 0 to 3 percent slopes	A/D	2.4	1.0%
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	7.1	2.9%
30B	Raynham silt loam, 0 to 5 percent slopes	C/D	3.7	1.5%
32B	Wareham loamy fine sand, 0 to 5 percent slopes	A/D	3.6	1.5%
51A	Swansea muck, 0 to 1 percent slopes	B/D	8.3	3.4%
52A	Freetown muck, 0 to 1 percent slopes	B/D	1.9	0.8%
53A	Freetown muck, ponded, 0 to 1 percent slopes	B/D	6.1	2.5%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A	3.8	1.5%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	7.4	3.0%
103D	Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	13.1	5.3%
104C	Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	D	27.8	11.3%
255A	Windsor loamy sand, 0 to 3 percent slopes	A	0.0	0.0%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	4.5	1.8%
262B	Quonset sandy loam, 3 to 8 percent slopes	A	12.8	5.2%
262C	Quonset sandy loam, 8 to 15 percent slopes	A	37.0	15.1%
262D	Quonset sandy loam, 15 to 25 percent slopes	A	32.9	13.4%
420C	Canton fine sandy loam, 8 to 15 percent slopes	B	26.1	10.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
420D	Canton fine sandy loam, 15 to 25 percent slopes	A	43.9	17.9%
Totals for Area of Interest			**245.0**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

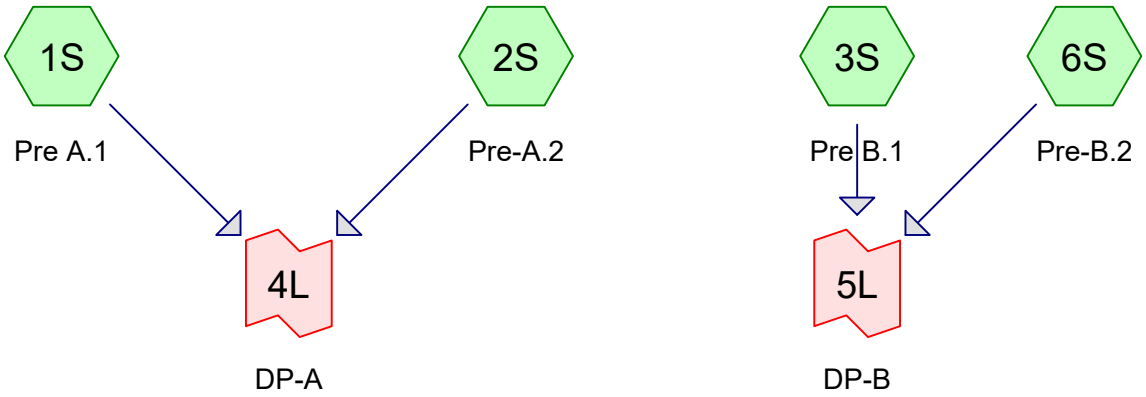
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX D

Existing Conditions – Hydrologic Calculations



Subcat Reach Pond Link

Routing Diagram for 5454-Pepperell Road - PRE

Prepared by {enter your company name here}, Printed 12/16/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.10	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.74	2
3	25-yr	Type III 24-hr		Default	24.00	1	5.77	2
4	100-yr	Type III 24-hr		Default	24.00	1	7.35	2

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre A.1 Runoff Area=51,766 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=421' Tc=10.5 min CN=31 Runoff=0.00 cfs 0.000 af

Subcatchment2S: Pre-A.2 Runoff Area=344,605 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=501' Tc=17.1 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment3S: Pre B.1 Runoff Area=69,992 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=270' Tc=6.6 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment6S: Pre-B.2 Runoff Area=37,599 sf 0.00% Impervious Runoff Depth=0.01"
Tc=6.0 min CN=43 Runoff=0.00 cfs 0.001 af

Link 4L: DP-A Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 5L: DP-B Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

Total Runoff Area = 11.569 ac Runoff Volume = 0.001 af Average Runoff Depth = 0.00"
100.00% Pervious = 11.569 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre A.1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
50,412	30	Woods, Good, HSG A
1,354	68	<50% Grass cover, Poor, HSG A
51,766	31	Weighted Average
51,766		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.1600	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	371	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	421	Total			

Summary for Subcatchment 2S: Pre-A.2

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
330,496	30	Woods, Good, HSG A
14,109	68	<50% Grass cover, Poor, HSG A
344,605	32	Weighted Average
344,605		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.05"
7.3	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	451	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	501	Total			

Summary for Subcatchment 3S: Pre B.1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
69,992	30	Woods, Good, HSG A
69,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.2800	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
2.2	220	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.6	270	Total			

Summary for Subcatchment 6S: Pre-B.2

Runoff = 0.00 cfs @ 21.24 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
19,388	30	Woods, Good, HSG A
14,658	55	Woods, Good, HSG B
3,553	68	<50% Grass cover, Poor, HSG A
37,599	43	Weighted Average
37,599		100.00% Pervious Area

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

Summary for Link 4L: DP-A

Inflow Area = 9.099 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.470 ac, 0.00% Impervious, Inflow Depth = 0.01" for 2-yr event
Inflow = 0.00 cfs @ 21.24 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 21.24 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre A.1 Runoff Area=51,766 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=421' Tc=10.5 min CN=31 Runoff=0.00 cfs 0.000 af

Subcatchment2S: Pre-A.2 Runoff Area=344,605 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=501' Tc=17.1 min CN=32 Runoff=0.01 cfs 0.007 af

Subcatchment3S: Pre B.1 Runoff Area=69,992 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=270' Tc=6.6 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment6S: Pre-B.2 Runoff Area=37,599 sf 0.00% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=43 Runoff=0.08 cfs 0.020 af

Link 4L: DP-A Inflow=0.02 cfs 0.008 af
Primary=0.02 cfs 0.008 af

Link 5L: DP-B Inflow=0.08 cfs 0.020 af
Primary=0.08 cfs 0.020 af

Total Runoff Area = 11.569 ac Runoff Volume = 0.028 af Average Runoff Depth = 0.03"
100.00% Pervious = 11.569 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre A.1

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
50,412	30	Woods, Good, HSG A
1,354	68	<50% Grass cover, Poor, HSG A
51,766	31	Weighted Average
51,766		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.1600	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	371	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	421	Total			

Summary for Subcatchment 2S: Pre-A.2

Runoff = 0.01 cfs @ 22.79 hrs, Volume= 0.007 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
330,496	30	Woods, Good, HSG A
14,109	68	<50% Grass cover, Poor, HSG A
344,605	32	Weighted Average
344,605		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.05"
7.3	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	451	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	501	Total			

Summary for Subcatchment 3S: Pre B.1

Runoff = 0.00 cfs @ 23.98 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
69,992	30	Woods, Good, HSG A
69,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.2800	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
2.2	220	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.6	270	Total			

Summary for Subcatchment 6S: Pre-B.2

Runoff = 0.08 cfs @ 12.39 hrs, Volume= 0.020 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
19,388	30	Woods, Good, HSG A
14,658	55	Woods, Good, HSG B
3,553	68	<50% Grass cover, Poor, HSG A
37,599	43	Weighted Average
37,599		100.00% Pervious Area

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

Summary for Link 4L: DP-A

Inflow Area = 9.099 ac, 0.00% Impervious, Inflow Depth = 0.01" for 10-yr event
Inflow = 0.02 cfs @ 22.95 hrs, Volume= 0.008 af
Primary = 0.02 cfs @ 22.95 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.470 ac, 0.00% Impervious, Inflow Depth = 0.10" for 10-yr event
Inflow = 0.08 cfs @ 12.39 hrs, Volume= 0.020 af
Primary = 0.08 cfs @ 12.39 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre A.1 Runoff Area=51,766 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=421' Tc=10.5 min CN=31 Runoff=0.01 cfs 0.007 af

Subcatchment2S: Pre-A.2 Runoff Area=344,605 sf 0.00% Impervious Runoff Depth=0.10"
Flow Length=501' Tc=17.1 min CN=32 Runoff=0.10 cfs 0.067 af

Subcatchment3S: Pre B.1 Runoff Area=69,992 sf 0.00% Impervious Runoff Depth=0.05"
Flow Length=270' Tc=6.6 min CN=30 Runoff=0.01 cfs 0.007 af

Subcatchment6S: Pre-B.2 Runoff Area=37,599 sf 0.00% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=43 Runoff=0.26 cfs 0.043 af

Link 4L: DP-A Inflow=0.12 cfs 0.074 af
Primary=0.12 cfs 0.074 af

Link 5L: DP-B Inflow=0.26 cfs 0.049 af
Primary=0.26 cfs 0.049 af

Total Runoff Area = 11.569 ac Runoff Volume = 0.124 af Average Runoff Depth = 0.13"
100.00% Pervious = 11.569 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre A.1

Runoff = 0.01 cfs @ 15.50 hrs, Volume= 0.007 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
50,412	30	Woods, Good, HSG A
1,354	68	<50% Grass cover, Poor, HSG A
51,766	31	Weighted Average
51,766		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.1600	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	371	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	421	Total			

Summary for Subcatchment 2S: Pre-A.2

Runoff = 0.10 cfs @ 15.25 hrs, Volume= 0.067 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
330,496	30	Woods, Good, HSG A
14,109	68	<50% Grass cover, Poor, HSG A
344,605	32	Weighted Average
344,605		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.05"
7.3	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	451	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	501	Total			

Summary for Subcatchment 3S: Pre B.1

Runoff = 0.01 cfs @ 16.86 hrs, Volume= 0.007 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
69,992	30	Woods, Good, HSG A
69,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.2800	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
2.2	220	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.6	270	Total			

Summary for Subcatchment 6S: Pre-B.2

Runoff = 0.26 cfs @ 12.15 hrs, Volume= 0.043 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
19,388	30	Woods, Good, HSG A
14,658	55	Woods, Good, HSG B
3,553	68	<50% Grass cover, Poor, HSG A
37,599	43	Weighted Average
37,599		100.00% Pervious Area

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

Summary for Link 4L: DP-A

Inflow Area = 9.099 ac, 0.00% Impervious, Inflow Depth = 0.10" for 25-yr event
Inflow = 0.12 cfs @ 15.29 hrs, Volume= 0.074 af
Primary = 0.12 cfs @ 15.29 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.470 ac, 0.00% Impervious, Inflow Depth = 0.24" for 25-yr event
Inflow = 0.26 cfs @ 12.15 hrs, Volume= 0.049 af
Primary = 0.26 cfs @ 12.15 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre A.1 Runoff Area=51,766 sf 0.00% Impervious Runoff Depth=0.33"
Flow Length=421' Tc=10.5 min CN=31 Runoff=0.09 cfs 0.033 af

Subcatchment2S: Pre-A.2 Runoff Area=344,605 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=501' Tc=17.1 min CN=32 Runoff=0.77 cfs 0.260 af

Subcatchment3S: Pre B.1 Runoff Area=69,992 sf 0.00% Impervious Runoff Depth=0.28"
Flow Length=270' Tc=6.6 min CN=30 Runoff=0.07 cfs 0.037 af

Subcatchment6S: Pre-B.2 Runoff Area=37,599 sf 0.00% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=43 Runoff=0.90 cfs 0.088 af

Link 4L: DP-A Inflow=0.85 cfs 0.293 af
Primary=0.85 cfs 0.293 af

Link 5L: DP-B Inflow=0.90 cfs 0.126 af
Primary=0.90 cfs 0.126 af

Total Runoff Area = 11.569 ac Runoff Volume = 0.419 af Average Runoff Depth = 0.43"
100.00% Pervious = 11.569 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre A.1

Runoff = 0.09 cfs @ 12.52 hrs, Volume= 0.033 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
50,412	30	Woods, Good, HSG A
1,354	68	<50% Grass cover, Poor, HSG A
51,766	31	Weighted Average
51,766		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.1600	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	371	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	421	Total			

Summary for Subcatchment 2S: Pre-A.2

Runoff = 0.77 cfs @ 12.58 hrs, Volume= 0.260 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
330,496	30	Woods, Good, HSG A
14,109	68	<50% Grass cover, Poor, HSG A
344,605	32	Weighted Average
344,605		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	25	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.05"
7.3	25	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
5.0	451	0.0900	1.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	501	Total			

Summary for Subcatchment 3S: Pre B.1

Runoff = 0.07 cfs @ 12.50 hrs, Volume= 0.037 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
69,992	30	Woods, Good, HSG A
69,992		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.2800	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.05"
2.2	220	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.6	270	Total			

Summary for Subcatchment 6S: Pre-B.2

Runoff = 0.90 cfs @ 12.12 hrs, Volume= 0.088 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
19,388	30	Woods, Good, HSG A
14,658	55	Woods, Good, HSG B
3,553	68	<50% Grass cover, Poor, HSG A
37,599	43	Weighted Average
37,599		100.00% Pervious Area

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

Summary for Link 4L: DP-A

Inflow Area = 9.099 ac, 0.00% Impervious, Inflow Depth = 0.39" for 100-yr event
Inflow = 0.85 cfs @ 12.57 hrs, Volume= 0.293 af
Primary = 0.85 cfs @ 12.57 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

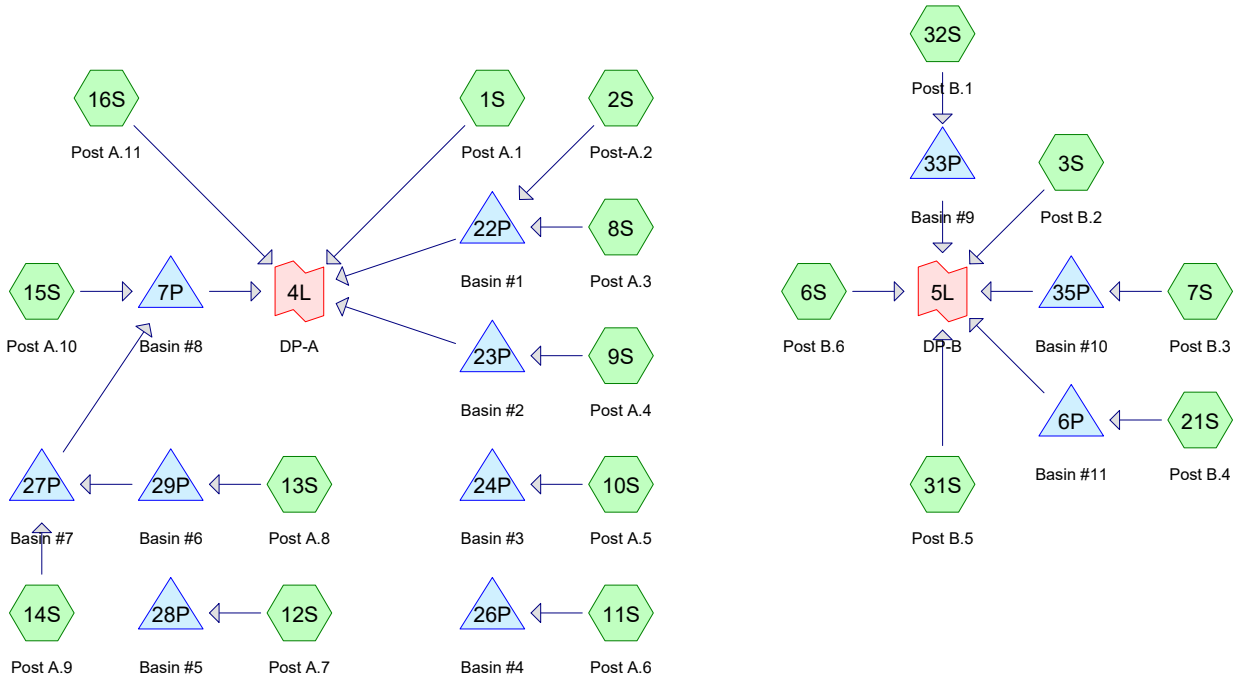
Summary for Link 5L: DP-B

Inflow Area = 2.470 ac, 0.00% Impervious, Inflow Depth = 0.61" for 100-yr event
Inflow = 0.90 cfs @ 12.12 hrs, Volume= 0.126 af
Primary = 0.90 cfs @ 12.12 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX E

Proposed Conditions – Hydrologic Calculations



Subcat Reach Pond Link

Routing Diagram for 5454-Pepperell Road - POST

Prepared by {enter your company name here}, Printed 12/16/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.10	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.74	2
3	25-yr	Type III 24-hr		Default	24.00	1	5.77	2
4	100-yr	Type III 24-hr		Default	24.00	1	7.35	2

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post A.1 Runoff Area=28,666 sf 5.99% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=38 Runoff=0.00 cfs 0.000 af

Subcatchment2S: Post-A.2 Runoff Area=28,248 sf 25.03% Impervious Runoff Depth=0.20"
Tc=6.0 min CN=54 Runoff=0.04 cfs 0.011 af

Subcatchment3S: Post B.2 Runoff Area=6,445 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment6S: Post B.6 Runoff Area=59,456 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=296' Tc=6.0 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment7S: Post B.3 Runoff Area=7,145 sf 0.00% Impervious Runoff Depth=0.11"
Tc=6.0 min CN=50 Runoff=0.00 cfs 0.001 af

Subcatchment8S: Post A.3 Runoff Area=8,218 sf 30.99% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=57 Runoff=0.02 cfs 0.004 af

Subcatchment9S: Post A.4 Runoff Area=15,239 sf 0.47% Impervious Runoff Depth=0.00"
Flow Length=209' Tc=6.9 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment10S: Post A.5 Runoff Area=12,396 sf 21.82% Impervious Runoff Depth=0.15"
Tc=6.0 min CN=52 Runoff=0.01 cfs 0.004 af

Subcatchment11S: Post A.6 Runoff Area=13,646 sf 25.00% Impervious Runoff Depth=0.13"
Tc=6.0 min CN=51 Runoff=0.01 cfs 0.003 af

Subcatchment12S: Post A.7 Runoff Area=72,201 sf 13.88% Impervious Runoff Depth=0.05"
Tc=6.0 min CN=46 Runoff=0.01 cfs 0.006 af

Subcatchment13S: Post A.8 Runoff Area=47,055 sf 9.69% Impervious Runoff Depth=0.01"
Flow Length=318' Slope=0.0220 '/' Tc=9.8 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment14S: Post A.9 Runoff Area=11,479 sf 19.64% Impervious Runoff Depth=0.11"
Tc=6.0 min CN=50 Runoff=0.00 cfs 0.002 af

Subcatchment15S: Post A.10 Runoff Area=33,752 sf 3.52% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment16S: Post A.11 Runoff Area=94,313 sf 2.47% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=34 Runoff=0.00 cfs 0.000 af

Subcatchment21S: Post B.4 Runoff Area=14,635 sf 0.00% Impervious Runoff Depth=0.11"
Tc=6.0 min CN=50 Runoff=0.01 cfs 0.003 af

Subcatchment31S: Post B.5 Runoff Area=17,216 sf 5.43% Impervious Runoff Depth=0.01"
Tc=6.0 min CN=42 Runoff=0.00 cfs 0.000 af

Subcatchment32S: Post B.1 Runoff Area=8,323 sf 4.96% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=40 Runoff=0.00 cfs 0.000 af

Pond 6P: Basin #11 Peak Elev=292.01' Storage=3 cf Inflow=0.01 cfs 0.003 af
Discarded=0.01 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond 7P: Basin #8 Peak Elev=273.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 22P: Basin #1 Peak Elev=276.46' Storage=123 cf Inflow=0.07 cfs 0.015 af
Discarded=0.02 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.015 af

Pond 23P: Basin #2 Peak Elev=270.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 24P: Basin #3 Peak Elev=293.05' Storage=6 cf Inflow=0.01 cfs 0.004 af
Outflow=0.01 cfs 0.004 af

Pond 26P: Basin #4 Peak Elev=290.02' Storage=9 cf Inflow=0.01 cfs 0.003 af
Outflow=0.01 cfs 0.003 af

Pond 27P: Basin #7 Peak Elev=284.20' Storage=104 cf Inflow=0.00 cfs 0.002 af
Outflow=0.00 cfs 0.000 af

Pond 28P: Basin #5 Peak Elev=275.03' Storage=9 cf Inflow=0.01 cfs 0.006 af
Outflow=0.01 cfs 0.006 af

Pond 29P: Basin #6 Peak Elev=287.15' Storage=32 cf Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.000 af

Pond 33P: Basin #9 Peak Elev=296.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 35P: Basin #10 Peak Elev=295.01' Storage=1 cf Inflow=0.00 cfs 0.001 af
Discarded=0.00 cfs 0.001 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.001 af

Link 4L: DP-A Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 5L: DP-B Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 10.983 ac Runoff Volume = 0.036 af Average Runoff Depth = 0.04"
91.80% Pervious = 10.083 ac 8.20% Impervious = 0.900 ac

Summary for Subcatchment 1S: Post A.1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
13,424	30	Woods, Good, HSG A
13,525	39	>75% Grass cover, Good, HSG A
1,717	98	Paved parking, HSG A
28,666	38	Weighted Average
26,949		94.01% Pervious Area
1,717		5.99% Impervious Area

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

Summary for Subcatchment 2S: Post-A.2

Runoff = 0.04 cfs @ 12.38 hrs, Volume= 0.011 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
20,556	39	>75% Grass cover, Good, HSG A
7,071	98	Paved parking, HSG A
621	30	Woods, Good, HSG A
28,248	54	Weighted Average
21,177		74.97% Pervious Area
7,071		25.03% Impervious Area

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

Summary for Subcatchment 3S: Post B.2

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
6,115	30	Woods, Good, HSG A
330	39	>75% Grass cover, Good, HSG A
6,445	30	Weighted Average
6,445		100.00% Pervious Area

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

Summary for Subcatchment 6S: Post B.6

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
11,152	39	>75% Grass cover, Good, HSG A
48,304	30	Woods, Good, HSG A
59,456	32	Weighted Average
59,456		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	50	0.1600	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
1.6	246	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	296	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Post B.3

Runoff = 0.00 cfs @ 13.63 hrs, Volume= 0.001 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,903	39	>75% Grass cover, Good, HSG A
469	30	Woods, Good, HSG A
3,171	61	>75% Grass cover, Good, HSG B
602	55	Woods, Good, HSG B
7,145	50	Weighted Average
7,145		100.00% Pervious Area

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

Summary for Subcatchment 8S: Post A.3

Runoff = 0.02 cfs @ 12.30 hrs, Volume= 0.004 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,547	98	Paved parking, HSG A
5,671	39	>75% Grass cover, Good, HSG A
8,218	57	Weighted Average
5,671		69.01% Pervious Area
2,547		30.99% Impervious Area

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

Summary for Subcatchment 9S: Post A.4

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
72	98	Paved parking, HSG A
13,934	39	>75% Grass cover, Good, HSG A
1,233	30	Woods, Good, HSG A
15,239	39	Weighted Average
15,167		99.53% Pervious Area
72		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
0.9	159	0.1700	2.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	209	Total			

Summary for Subcatchment 10S: Post A.5

Runoff = 0.01 cfs @ 12.43 hrs, Volume= 0.004 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
9,691	39	>75% Grass cover, Good, HSG A
2,705	98	Paved parking, HSG A
12,396	52	Weighted Average
9,691		78.18% Pervious Area
2,705		21.82% Impervious Area

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

Summary for Subcatchment 11S: Post A.6

Runoff = 0.01 cfs @ 12.47 hrs, Volume= 0.003 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
6,085	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
4,149	30	Woods, Good, HSG A
13,646	51	Weighted Average
10,234		75.00% Pervious Area
3,412		25.00% Impervious Area

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

Summary for Subcatchment 12S: Post A.7

Runoff = 0.01 cfs @ 15.28 hrs, Volume= 0.006 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
55,124	39	>75% Grass cover, Good, HSG A
10,023	98	Paved parking, HSG A
7,054	30	Woods, Good, HSG A
72,201	46	Weighted Average
62,178		86.12% Pervious Area
10,023		13.88% Impervious Area

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

Summary for Subcatchment 13S: Post A.8

Runoff = 0.00 cfs @ 22.42 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
26,655	39	>75% Grass cover, Good, HSG A
4,561	98	Paved parking, HSG A
15,839	30	Woods, Good, HSG A
47,055	42	Weighted Average
42,494		90.31% Pervious Area
4,561		9.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	268	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	50	0.0220	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
9.8	318	Total			

Summary for Subcatchment 14S: Post A.9

Runoff = 0.00 cfs @ 13.63 hrs, Volume= 0.002 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
2,255	98	Paved parking, HSG A
8,527	39	>75% Grass cover, Good, HSG A
697	30	Woods, Good, HSG A
11,479	50	Weighted Average
9,224		80.36% Pervious Area
2,255		19.64% Impervious Area

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

Summary for Subcatchment 15S: Post A.10

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
23,757	39	>75% Grass cover, Good, HSG A
1,188	98	Paved parking, HSG A
8,807	30	Woods, Good, HSG A
33,752	39	Weighted Average
32,564		96.48% Pervious Area
1,188		3.52% Impervious Area

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

Summary for Subcatchment 16S: Post A.11

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
27,987	39	>75% Grass cover, Good, HSG A
2,327	98	Paved parking, HSG A
63,999	30	Woods, Good, HSG A
94,313	34	Weighted Average
91,986		97.53% Pervious Area
2,327		2.47% Impervious Area

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

Summary for Subcatchment 21S: Post B.4

Runoff = 0.01 cfs @ 13.63 hrs, Volume= 0.003 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
7,389	39	>75% Grass cover, Good, HSG A
6,373	61	>75% Grass cover, Good, HSG B
873	55	Woods, Good, HSG B
14,635	50	Weighted Average
14,635		100.00% Pervious Area

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

Summary for Subcatchment 31S: Post B.5

Runoff = 0.00 cfs @ 22.40 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
934	98	Paved parking, HSG A
5,536	39	>75% Grass cover, Good, HSG A
369	61	>75% Grass cover, Good, HSG B
7,109	30	Woods, Good, HSG A
3,268	55	Woods, Good, HSG B
17,216	42	Weighted Average
16,282		94.57% Pervious Area
934		5.43% Impervious Area

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

Summary for Subcatchment 32S: Post B.1

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.10"

Area (sf)	CN	Description
1,989	30	Woods, Good, HSG A
5,921	39	>75% Grass cover, Good, HSG A
413	98	Paved parking, HSG A
8,323	40	Weighted Average
7,910		95.04% Pervious Area
413		4.96% Impervious Area

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

Summary for Pond 6P: Basin #11

Inflow Area = 0.336 ac, 0.00% Impervious, Inflow Depth = 0.11" for 2-yr event
Inflow = 0.01 cfs @ 13.63 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 13.77 hrs, Volume= 0.003 af, Atten= 0%, Lag= 8.6 min
Discarded = 0.01 cfs @ 13.77 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 292.01' @ 13.77 hrs Surf.Area= 210 sf Storage= 3 cf
Flood Elev= 295.00' Surf.Area= 210 sf Storage= 420 cf

Plug-Flow detention time= 8.8 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 8.8 min (1,030.5 - 1,021.6)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	420 cf	**3.00'W x 70.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	293.90'	**54.0' 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

Discarded OutFlow Max=0.01 cfs @ 13.77 hrs HW=292.01' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=292.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7P: Basin #8

Inflow Area = 2.119 ac, 8.67% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 273.00' @ 0.00 hrs Surf.Area= 289 sf Storage= 0 cf
Flood Elev= 278.50' Surf.Area= 3,585 sf Storage= 6,926 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	6,926 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	289	86.0	0	0	289
274.00	592	108.0	432	432	642
275.00	982	132.0	779	1,210	1,116
276.00	1,410	151.0	1,190	2,400	1,567
277.00	2,073	194.0	1,731	4,131	2,760
278.00	3,585	327.0	2,795	6,926	8,280

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 267.00'
#2	Primary	277.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=273.00' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.02 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=273.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 22P: Basin #1

Inflow Area = 0.837 ac, 26.38% Impervious, Inflow Depth = 0.21" for 2-yr event
Inflow = 0.07 cfs @ 12.36 hrs, Volume= 0.015 af
Outflow = 0.02 cfs @ 14.93 hrs, Volume= 0.015 af, Atten= 70%, Lag= 154.1 min
Discarded = 0.02 cfs @ 14.93 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 276.46' @ 14.93 hrs Surf.Area= 307 sf Storage= 123 cf
Flood Elev= 280.00' Surf.Area= 1,342 sf Storage= 3,043 cf

Plug-Flow detention time= 65.9 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 65.9 min (1,030.1 - 964.2)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	3,043 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	226	90.0	0	0	226
277.00	418	103.0	317	317	448
278.00	802	122.0	600	917	806
279.00	1,060	135.0	928	1,845	1,101
280.00	1,342	148.0	1,198	3,043	1,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'
#2	Primary	279.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.02 cfs @ 14.93 hrs HW=276.46' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: Basin #2

Inflow Area = 0.350 ac, 0.47% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 270.00' @ 0.00 hrs Surf.Area= 90 sf Storage= 0 cf
Flood Elev= 273.00' Surf.Area= 1,107 sf Storage= 1,482 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	1,482 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	90	44.0	0	0	90
271.00	295	78.0	183	183	426
272.00	620	112.0	448	630	948
273.00	1,107	162.0	852	1,482	2,047

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 266.00'

#2 Primary 272.50' **10.0' long x 3.0' breadth Broad-Crested Rectangular Weir**
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 24P: Basin #3

Inflow Area = 0.285 ac, 21.82% Impervious, Inflow Depth = 0.15" for 2-yr event
Inflow = 0.01 cfs @ 12.43 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.87 hrs, Volume= 0.004 af, Atten= 35%, Lag= 26.0 min
Discarded = 0.01 cfs @ 12.87 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.05' @ 12.87 hrs Surf.Area= 124 sf Storage= 6 cf
Flood Elev= 296.50' Surf.Area= 1,607 sf Storage= 2,171 cf

Plug-Flow detention time= 10.3 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 10.4 min (1,004.5 - 994.1)

Volume	Invert	Avail.Storage	Storage Description
#1	293.00'	2,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
293.00	114	45.0	0	0	114
294.00	428	79.0	254	254	455
295.00	931	112.0	663	918	966
296.00	1,607	145.0	1,254	2,171	1,653

Device	Routing	Invert	Outlet Devices
#1	Discarded	293.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.00'

Discarded OutFlow Max=0.01 cfs @ 12.87 hrs HW=293.05' (Free Discharge)
└**1=Exfiltration** (Controls 0.01 cfs)

Summary for Pond 26P: Basin #4

Inflow Area = 0.313 ac, 25.00% Impervious, Inflow Depth = 0.13" for 2-yr event
Inflow = 0.01 cfs @ 12.47 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 13.86 hrs, Volume= 0.003 af, Atten= 30%, Lag= 83.5 min
Discarded = 0.01 cfs @ 13.86 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 290.02' @ 13.86 hrs Surf.Area= 440 sf Storage= 9 cf
Flood Elev= 294.00' Surf.Area= 1,614 sf Storage= 2,918 cf

Plug-Flow detention time= 27.6 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 27.3 min (1,034.4 - 1,007.1)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	2,918 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	434	95.0	0	0	434
291.00	763	118.0	591	591	838
292.00	1,152	138.0	951	1,542	1,265
293.00	1,614	160.0	1,377	2,918	1,808

Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'

Discarded OutFlow Max=0.01 cfs @ 13.86 hrs HW=290.02' (Free Discharge)
↑**1=Exfiltration** (Controls 0.01 cfs)

Summary for Pond 27P: Basin #7

Inflow Area = 1.344 ac, 11.64% Impervious, Inflow Depth = 0.02" for 2-yr event
Inflow = 0.00 cfs @ 13.63 hrs, Volume= 0.002 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 284.20' @ 24.40 hrs Surf.Area= 557 sf Storage= 104 cf
Flood Elev= 289.50' Surf.Area= 1,117 sf Storage= 1,586 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	284.00'	1,586 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
284.00	507	83.0	0	0	507
285.00	784	133.0	640	640	1,373
286.00	1,117	121.0	946	1,586	1,647

Device	Routing	Invert	Outlet Devices
#1	Primary	283.10'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 283.10' / 279.00' S= 0.0513 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

#2 Device 1 285.60' **18.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=284.00' (Free Discharge)
↑**1=Culvert** (Passes 0.00 cfs of 1.90 cfs potential flow)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 28P: Basin #5

Inflow Area = 1.658 ac, 13.88% Impervious, Inflow Depth = 0.05" for 2-yr event
Inflow = 0.01 cfs @ 15.28 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 15.57 hrs, Volume= 0.006 af, Atten= 1%, Lag= 17.3 min
Discarded = 0.01 cfs @ 15.57 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 275.03' @ 15.57 hrs Surf.Area= 360 sf Storage= 9 cf
Flood Elev= 281.00' Surf.Area= 4,620 sf Storage= 9,290 cf

Plug-Flow detention time= 16.4 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 16.5 min (1,117.9 - 1,101.5)

Volume	Invert	Avail.Storage	Storage Description
#1	275.00'	9,290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
275.00	351	95.0	0	0	351
276.00	800	148.0	560	560	1,383
277.00	1,366	168.0	1,070	1,631	1,910
278.00	1,995	224.0	1,671	3,301	3,668
279.00	2,732	256.0	2,354	5,655	4,914
280.00	4,620	347.0	3,635	9,290	9,291

Device	Routing	Invert	Outlet Devices
#1	Discarded	275.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'

Discarded OutFlow Max=0.02 cfs @ 15.57 hrs HW=275.03' (Free Discharge)
↑**1=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 29P: Basin #6

Inflow Area = 1.080 ac, 9.69% Impervious, Inflow Depth = 0.01" for 2-yr event
Inflow = 0.00 cfs @ 22.42 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 287.15' @ 24.60 hrs Surf.Area= 233 sf Storage= 32 cf
Flood Elev= 290.00' Surf.Area= 1,689 sf Storage= 2,606 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	287.00'	2,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
287.00	186	90.0	0	0	186
288.00	599	150.0	373	373	1,338
289.00	1,112	183.0	842	1,215	2,228
290.00	1,689	201.0	1,390	2,606	2,811

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 286.50' / 285.40' S= 0.0157 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	289.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=287.00' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 0.75 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 33P: Basin #9

Inflow Area = 0.191 ac, 4.96% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Atten= 1%, Lag= 0.0 min
Discarded = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 296.00' @ 23.99 hrs Surf.Area= 283 sf Storage= 0 cf
Flood Elev= 298.00' Surf.Area= 921 sf Storage= 1,159 cf

Plug-Flow detention time= 5.8 min calculated for 0.000 af (100% of inflow)
Center-of-Mass det. time= 5.8 min (1,382.9 - 1,377.0)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	1,159 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	283	76.0	0	0	283
297.00	572	89.0	419	419	473
298.00	921	126.0	740	1,159	1,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	296.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.50'
#2	Primary	297.75'	**8.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.02 cfs @ 23.99 hrs HW=296.00' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 35P: Basin #10

Inflow Area = 0.164 ac, 0.00% Impervious, Inflow Depth = 0.11" for 2-yr event
Inflow = 0.00 cfs @ 13.63 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 13.73 hrs, Volume= 0.001 af, Atten= 0%, Lag= 6.0 min
Discarded = 0.00 cfs @ 13.73 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 295.01' @ 13.73 hrs Surf.Area= 162 sf Storage= 1 cf
Flood Elev= 297.00' Surf.Area= 162 sf Storage= 324 cf

Plug-Flow detention time= 5.9 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 6.0 min (1,027.6 - 1,021.6)

Volume	Invert	Avail.Storage	Storage Description
#1	295.00'	324 cf	**3.00'W x 54.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	296.90'	**54.0' 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

Discarded OutFlow Max=0.01 cfs @ 13.73 hrs HW=295.01' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 4L: DP-A

Inflow Area = 6.129 ac, 8.14% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.599 ac, 1.19% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 22.40 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 22.40 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post A.1 Runoff Area=28,666 sf 5.99% Impervious Runoff Depth=0.12"
Tc=6.0 min CN=38 Runoff=0.01 cfs 0.007 af

Subcatchment2S: Post-A.2 Runoff Area=28,248 sf 25.03% Impervious Runoff Depth=0.80"
Tc=6.0 min CN=54 Runoff=0.44 cfs 0.043 af

Subcatchment3S: Post B.2 Runoff Area=6,445 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment6S: Post B.6 Runoff Area=59,456 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=296' Tc=6.0 min CN=32 Runoff=0.00 cfs 0.001 af

Subcatchment7S: Post B.3 Runoff Area=7,145 sf 0.00% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=50 Runoff=0.06 cfs 0.008 af

Subcatchment8S: Post A.3 Runoff Area=8,218 sf 30.99% Impervious Runoff Depth=0.97"
Tc=6.0 min CN=57 Runoff=0.17 cfs 0.015 af

Subcatchment9S: Post A.4 Runoff Area=15,239 sf 0.47% Impervious Runoff Depth=0.15"
Flow Length=209' Tc=6.9 min CN=39 Runoff=0.01 cfs 0.004 af

Subcatchment10S: Post A.5 Runoff Area=12,396 sf 21.82% Impervious Runoff Depth=0.69"
Tc=6.0 min CN=52 Runoff=0.15 cfs 0.016 af

Subcatchment11S: Post A.6 Runoff Area=13,646 sf 25.00% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=51 Runoff=0.14 cfs 0.017 af

Subcatchment12S: Post A.7 Runoff Area=72,201 sf 13.88% Impervious Runoff Depth=0.40"
Tc=6.0 min CN=46 Runoff=0.29 cfs 0.056 af

Subcatchment13S: Post A.8 Runoff Area=47,055 sf 9.69% Impervious Runoff Depth=0.25"
Flow Length=318' Slope=0.0220 '/' Tc=9.8 min CN=42 Runoff=0.07 cfs 0.022 af

Subcatchment14S: Post A.9 Runoff Area=11,479 sf 19.64% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=50 Runoff=0.10 cfs 0.013 af

Subcatchment15S: Post A.10 Runoff Area=33,752 sf 3.52% Impervious Runoff Depth=0.15"
Tc=6.0 min CN=39 Runoff=0.02 cfs 0.010 af

Subcatchment16S: Post A.11 Runoff Area=94,313 sf 2.47% Impervious Runoff Depth=0.04"
Tc=6.0 min CN=34 Runoff=0.01 cfs 0.007 af

Subcatchment21S: Post B.4 Runoff Area=14,635 sf 0.00% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=50 Runoff=0.13 cfs 0.016 af

Subcatchment31S: Post B.5 Runoff Area=17,216 sf 5.43% Impervious Runoff Depth=0.25"
Tc=6.0 min CN=42 Runoff=0.03 cfs 0.008 af

Subcatchment32S: Post B.1 Runoff Area=8,323 sf 4.96% Impervious Runoff Depth=0.18"
Tc=6.0 min CN=40 Runoff=0.01 cfs 0.003 af

Pond 6P: Basin #11 Peak Elev=293.13' Storage=236 cf Inflow=0.13 cfs 0.016 af
Discarded=0.02 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.017 af

Pond 7P: Basin #8 Peak Elev=273.05' Storage=15 cf Inflow=0.02 cfs 0.010 af
Discarded=0.02 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.010 af

Pond 22P: Basin #1 Peak Elev=278.04' Storage=949 cf Inflow=0.61 cfs 0.058 af
Discarded=0.07 cfs 0.058 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.058 af

Pond 23P: Basin #2 Peak Elev=270.13' Storage=13 cf Inflow=0.01 cfs 0.004 af
Discarded=0.01 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.004 af

Pond 24P: Basin #3 Peak Elev=293.85' Storage=196 cf Inflow=0.15 cfs 0.016 af
Outflow=0.03 cfs 0.016 af

Pond 26P: Basin #4 Peak Elev=290.52' Storage=266 cf Inflow=0.14 cfs 0.017 af
Outflow=0.02 cfs 0.017 af

Pond 27P: Basin #7 Peak Elev=284.90' Storage=564 cf Inflow=0.10 cfs 0.013 af
Outflow=0.00 cfs 0.000 af

Pond 28P: Basin #5 Peak Elev=276.03' Storage=588 cf Inflow=0.29 cfs 0.056 af
Outflow=0.07 cfs 0.056 af

Pond 29P: Basin #6 Peak Elev=288.77' Storage=972 cf Inflow=0.07 cfs 0.022 af
Outflow=0.00 cfs 0.000 af

Pond 33P: Basin #9 Peak Elev=296.01' Storage=2 cf Inflow=0.01 cfs 0.003 af
Discarded=0.01 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond 35P: Basin #10 Peak Elev=295.61' Storage=98 cf Inflow=0.06 cfs 0.008 af
Discarded=0.01 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.008 af

Link 4L: DP-A Inflow=0.02 cfs 0.013 af
Primary=0.02 cfs 0.013 af

Link 5L: DP-B Inflow=0.03 cfs 0.009 af
Primary=0.03 cfs 0.009 af

Total Runoff Area = 10.983 ac Runoff Volume = 0.247 af Average Runoff Depth = 0.27"
91.80% Pervious = 10.083 ac 8.20% Impervious = 0.900 ac

Summary for Subcatchment 1S: Post A.1

Runoff = 0.01 cfs @ 14.65 hrs, Volume= 0.007 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
13,424	30	Woods, Good, HSG A
13,525	39	>75% Grass cover, Good, HSG A
1,717	98	Paved parking, HSG A
28,666	38	Weighted Average
26,949		94.01% Pervious Area
1,717		5.99% Impervious Area

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

Summary for Subcatchment 2S: Post-A.2

Runoff = 0.44 cfs @ 12.12 hrs, Volume= 0.043 af, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
20,556	39	>75% Grass cover, Good, HSG A
7,071	98	Paved parking, HSG A
621	30	Woods, Good, HSG A
28,248	54	Weighted Average
21,177		74.97% Pervious Area
7,071		25.03% Impervious Area

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

Summary for Subcatchment 3S: Post B.2

Runoff = 0.00 cfs @ 23.98 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
6,115	30	Woods, Good, HSG A
330	39	>75% Grass cover, Good, HSG A
6,445	30	Weighted Average
6,445		100.00% Pervious Area

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

Summary for Subcatchment 6S: Post B.6

Runoff = 0.00 cfs @ 22.60 hrs, Volume= 0.001 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
11,152	39	>75% Grass cover, Good, HSG A
48,304	30	Woods, Good, HSG A
59,456	32	Weighted Average
59,456		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	50	0.1600	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
1.6	246	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	296	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Post B.3

Runoff = 0.06 cfs @ 12.14 hrs, Volume= 0.008 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
2,903	39	>75% Grass cover, Good, HSG A
469	30	Woods, Good, HSG A
3,171	61	>75% Grass cover, Good, HSG B
602	55	Woods, Good, HSG B
7,145	50	Weighted Average
7,145		100.00% Pervious Area

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

Summary for Subcatchment 8S: Post A.3

Runoff = 0.17 cfs @ 12.11 hrs, Volume= 0.015 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
2,547	98	Paved parking, HSG A
5,671	39	>75% Grass cover, Good, HSG A
8,218	57	Weighted Average
5,671		69.01% Pervious Area
2,547		30.99% Impervious Area

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

Summary for Subcatchment 9S: Post A.4

Runoff = 0.01 cfs @ 13.74 hrs, Volume= 0.004 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
72	98	Paved parking, HSG A
13,934	39	>75% Grass cover, Good, HSG A
1,233	30	Woods, Good, HSG A
15,239	39	Weighted Average
15,167		99.53% Pervious Area
72		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
0.9	159	0.1700	2.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	209	Total			

Summary for Subcatchment 10S: Post A.5

Runoff = 0.15 cfs @ 12.12 hrs, Volume= 0.016 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
9,691	39	>75% Grass cover, Good, HSG A
2,705	98	Paved parking, HSG A
12,396	52	Weighted Average
9,691		78.18% Pervious Area
2,705		21.82% Impervious Area

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

Summary for Subcatchment 11S: Post A.6

Runoff = 0.14 cfs @ 12.13 hrs, Volume= 0.017 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
6,085	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
4,149	30	Woods, Good, HSG A
13,646	51	Weighted Average
10,234		75.00% Pervious Area
3,412		25.00% Impervious Area

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

Summary for Subcatchment 12S: Post A.7

Runoff = 0.29 cfs @ 12.31 hrs, Volume= 0.056 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
55,124	39	>75% Grass cover, Good, HSG A
10,023	98	Paved parking, HSG A
7,054	30	Woods, Good, HSG A
72,201	46	Weighted Average
62,178		86.12% Pervious Area
10,023		13.88% Impervious Area

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

Summary for Subcatchment 13S: Post A.8

Runoff = 0.07 cfs @ 12.48 hrs, Volume= 0.022 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
26,655	39	>75% Grass cover, Good, HSG A
4,561	98	Paved parking, HSG A
15,839	30	Woods, Good, HSG A
47,055	42	Weighted Average
42,494		90.31% Pervious Area
4,561		9.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	268	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	50	0.0220	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
9.8	318	Total			

Summary for Subcatchment 14S: Post A.9

Runoff = 0.10 cfs @ 12.14 hrs, Volume= 0.013 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
2,255	98	Paved parking, HSG A
8,527	39	>75% Grass cover, Good, HSG A
697	30	Woods, Good, HSG A
11,479	50	Weighted Average
9,224		80.36% Pervious Area
2,255		19.64% Impervious Area

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

Summary for Subcatchment 15S: Post A.10

Runoff = 0.02 cfs @ 13.73 hrs, Volume= 0.010 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
23,757	39	>75% Grass cover, Good, HSG A
1,188	98	Paved parking, HSG A
8,807	30	Woods, Good, HSG A
33,752	39	Weighted Average
32,564		96.48% Pervious Area
1,188		3.52% Impervious Area

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

Summary for Subcatchment 16S: Post A.11

Runoff = 0.01 cfs @ 17.01 hrs, Volume= 0.007 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
27,987	39	>75% Grass cover, Good, HSG A
2,327	98	Paved parking, HSG A
63,999	30	Woods, Good, HSG A
94,313	34	Weighted Average
91,986		97.53% Pervious Area
2,327		2.47% Impervious Area

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

Summary for Subcatchment 21S: Post B.4

Runoff = 0.13 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
7,389	39	>75% Grass cover, Good, HSG A
6,373	61	>75% Grass cover, Good, HSG B
873	55	Woods, Good, HSG B
14,635	50	Weighted Average
14,635		100.00% Pervious Area

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

Summary for Subcatchment 31S: Post B.5

Runoff = 0.03 cfs @ 12.42 hrs, Volume= 0.008 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
934	98	Paved parking, HSG A
5,536	39	>75% Grass cover, Good, HSG A
369	61	>75% Grass cover, Good, HSG B
7,109	30	Woods, Good, HSG A
3,268	55	Woods, Good, HSG B
17,216	42	Weighted Average
16,282		94.57% Pervious Area
934		5.43% Impervious Area

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

Summary for Subcatchment 32S: Post B.1

Runoff = 0.01 cfs @ 12.49 hrs, Volume= 0.003 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.74"

Area (sf)	CN	Description
1,989	30	Woods, Good, HSG A
5,921	39	>75% Grass cover, Good, HSG A
413	98	Paved parking, HSG A
8,323	40	Weighted Average
7,910		95.04% Pervious Area
413		4.96% Impervious Area

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

Summary for Pond 6P: Basin #11

Inflow Area = 0.336 ac, 0.00% Impervious, Inflow Depth = 0.59" for 10-yr event
Inflow = 0.13 cfs @ 12.14 hrs, Volume= 0.016 af
Outflow = 0.02 cfs @ 15.19 hrs, Volume= 0.017 af, Atten= 85%, Lag= 182.5 min
Discarded = 0.02 cfs @ 15.19 hrs, Volume= 0.017 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 293.13' @ 15.19 hrs Surf.Area= 210 sf Storage= 236 cf
Flood Elev= 295.00' Surf.Area= 210 sf Storage= 420 cf

Plug-Flow detention time= 155.4 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 155.4 min (1,077.6 - 922.1)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	420 cf	**3.00'W x 70.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	293.90'	**54.0' 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

Discarded OutFlow Max=0.02 cfs @ 15.19 hrs HW=293.13' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=292.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 7P: Basin #8

Inflow Area = 2.119 ac, 8.67% Impervious, Inflow Depth = 0.06" for 10-yr event
Inflow = 0.02 cfs @ 13.73 hrs, Volume= 0.010 af
Outflow = 0.02 cfs @ 13.99 hrs, Volume= 0.010 af, Atten= 2%, Lag= 15.8 min
Discarded = 0.02 cfs @ 13.99 hrs, Volume= 0.010 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 273.05' @ 13.99 hrs Surf.Area= 302 sf Storage= 15 cf
Flood Elev= 278.50' Surf.Area= 3,585 sf Storage= 6,926 cf

Plug-Flow detention time= 15.9 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 15.9 min (1,046.6 - 1,030.6)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	6,926 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	289	86.0	0	0	289
274.00	592	108.0	432	432	642
275.00	982	132.0	779	1,210	1,116
276.00	1,410	151.0	1,190	2,400	1,567
277.00	2,073	194.0	1,731	4,131	2,760
278.00	3,585	327.0	2,795	6,926	8,280

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 267.00'
#2	Primary	277.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.02 cfs @ 13.99 hrs HW=273.05' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=273.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 22P: Basin #1

Inflow Area = 0.837 ac, 26.38% Impervious, Inflow Depth = 0.84" for 10-yr event
Inflow = 0.61 cfs @ 12.11 hrs, Volume= 0.058 af
Outflow = 0.07 cfs @ 14.53 hrs, Volume= 0.058 af, Atten= 89%, Lag= 144.8 min
Discarded = 0.07 cfs @ 14.53 hrs, Volume= 0.058 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 278.04' @ 14.53 hrs Surf.Area= 812 sf Storage= 949 cf
Flood Elev= 280.00' Surf.Area= 1,342 sf Storage= 3,043 cf

Plug-Flow detention time= 197.5 min calculated for 0.058 af (100% of inflow)
Center-of-Mass det. time= 197.6 min (1,096.6 - 899.0)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	3,043 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	226	90.0	0	0	226
277.00	418	103.0	317	317	448
278.00	802	122.0	600	917	806
279.00	1,060	135.0	928	1,845	1,101
280.00	1,342	148.0	1,198	3,043	1,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'
#2	Primary	279.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.07 cfs @ 14.53 hrs HW=278.04' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: Basin #2

Inflow Area = 0.350 ac, 0.47% Impervious, Inflow Depth = 0.15" for 10-yr event
Inflow = 0.01 cfs @ 13.74 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 15.55 hrs, Volume= 0.004 af, Atten= 13%, Lag= 108.4 min
Discarded = 0.01 cfs @ 15.55 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 270.13' @ 15.55 hrs Surf.Area= 110 sf Storage= 13 cf
Flood Elev= 273.00' Surf.Area= 1,107 sf Storage= 1,482 cf

Plug-Flow detention time= 18.4 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 18.4 min (1,049.9 - 1,031.5)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	1,482 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	90	44.0	0	0	90
271.00	295	78.0	183	183	426
272.00	620	112.0	448	630	948
273.00	1,107	162.0	852	1,482	2,047

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 266.00'

#2	Primary	272.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.01 cfs @ 15.55 hrs HW=270.13' (Free Discharge)
↳**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.00' (Free Discharge)
↳**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 24P: Basin #3

Inflow Area = 0.285 ac, 21.82% Impervious, Inflow Depth = 0.69" for 10-yr event
Inflow = 0.15 cfs @ 12.12 hrs, Volume= 0.016 af
Outflow = 0.03 cfs @ 13.58 hrs, Volume= 0.016 af, Atten= 83%, Lag= 87.4 min
Discarded = 0.03 cfs @ 13.58 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.85' @ 13.58 hrs Surf.Area= 370 sf Storage= 196 cf
Flood Elev= 296.50' Surf.Area= 1,607 sf Storage= 2,171 cf

Plug-Flow detention time= 96.9 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 96.9 min (1,008.4 - 911.5)

Volume	Invert	Avail.Storage	Storage Description
#1	293.00'	2,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
293.00	114	45.0	0	0	114
294.00	428	79.0	254	254	455
295.00	931	112.0	663	918	966
296.00	1,607	145.0	1,254	2,171	1,653

Device	Routing	Invert	Outlet Devices
#1	Discarded	293.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.00'

Discarded OutFlow Max=0.03 cfs @ 13.58 hrs HW=293.85' (Free Discharge)
↳**1=Exfiltration** (Controls 0.03 cfs)

Summary for Pond 26P: Basin #4

Inflow Area = 0.313 ac, 25.00% Impervious, Inflow Depth = 0.64" for 10-yr event
Inflow = 0.14 cfs @ 12.13 hrs, Volume= 0.017 af
Outflow = 0.02 cfs @ 15.40 hrs, Volume= 0.017 af, Atten= 88%, Lag= 195.9 min
Discarded = 0.02 cfs @ 15.40 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 290.52' @ 15.40 hrs Surf.Area= 593 sf Storage= 266 cf
Flood Elev= 294.00' Surf.Area= 1,614 sf Storage= 2,918 cf

Plug-Flow detention time= 193.2 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 193.2 min (1,109.8 - 916.7)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	2,918 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	434	95.0	0	0	434
291.00	763	118.0	591	591	838
292.00	1,152	138.0	951	1,542	1,265
293.00	1,614	160.0	1,377	2,918	1,808

Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'

Discarded OutFlow Max=0.02 cfs @ 15.40 hrs HW=290.52' (Free Discharge)
↑**1=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 27P: Basin #7

Inflow Area = 1.344 ac, 11.64% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.10 cfs @ 12.14 hrs, Volume= 0.013 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 284.90' @ 24.40 hrs Surf.Area= 754 sf Storage= 564 cf
Flood Elev= 289.50' Surf.Area= 1,117 sf Storage= 1,586 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	284.00'	1,586 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
284.00	507	83.0	0	0	507
285.00	784	133.0	640	640	1,373
286.00	1,117	121.0	946	1,586	1,647

Device	Routing	Invert	Outlet Devices
#1	Primary	283.10'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 283.10' / 279.00' S= 0.0513 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

#2 Device 1 285.60' **18.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=284.00' (Free Discharge)
↑**1=Culvert** (Passes 0.00 cfs of 1.90 cfs potential flow)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 28P: Basin #5

Inflow Area = 1.658 ac, 13.88% Impervious, Inflow Depth = 0.40" for 10-yr event
Inflow = 0.29 cfs @ 12.31 hrs, Volume= 0.056 af
Outflow = 0.07 cfs @ 14.80 hrs, Volume= 0.056 af, Atten= 75%, Lag= 149.5 min
Discarded = 0.07 cfs @ 14.80 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 276.03' @ 14.80 hrs Surf.Area= 817 sf Storage= 588 cf
Flood Elev= 281.00' Surf.Area= 4,620 sf Storage= 9,290 cf

Plug-Flow detention time= 106.3 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 106.3 min (1,055.2 - 948.9)

Volume	Invert	Avail.Storage	Storage Description
#1	275.00'	9,290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
275.00	351	95.0	0	0	351
276.00	800	148.0	560	560	1,383
277.00	1,366	168.0	1,070	1,631	1,910
278.00	1,995	224.0	1,671	3,301	3,668
279.00	2,732	256.0	2,354	5,655	4,914
280.00	4,620	347.0	3,635	9,290	9,291

Device	Routing	Invert	Outlet Devices
#1	Discarded	275.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'

Discarded OutFlow Max=0.07 cfs @ 14.80 hrs HW=276.03' (Free Discharge)
↑**1=Exfiltration** (Controls 0.07 cfs)

Summary for Pond 29P: Basin #6

Inflow Area = 1.080 ac, 9.69% Impervious, Inflow Depth = 0.25" for 10-yr event
Inflow = 0.07 cfs @ 12.48 hrs, Volume= 0.022 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 288.77' @ 24.60 hrs Surf.Area= 978 sf Storage= 972 cf
Flood Elev= 290.00' Surf.Area= 1,689 sf Storage= 2,606 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	287.00'	2,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
287.00	186	90.0	0	0	186
288.00	599	150.0	373	373	1,338
289.00	1,112	183.0	842	1,215	2,228
290.00	1,689	201.0	1,390	2,606	2,811

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 286.50' / 285.40' S= 0.0157 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	289.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=287.00' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 0.75 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 33P: Basin #9

Inflow Area = 0.191 ac, 4.96% Impervious, Inflow Depth = 0.18" for 10-yr event
Inflow = 0.01 cfs @ 12.49 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 12.91 hrs, Volume= 0.003 af, Atten= 13%, Lag= 25.4 min
Discarded = 0.01 cfs @ 12.91 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 296.01' @ 12.91 hrs Surf.Area= 284 sf Storage= 2 cf
Flood Elev= 298.00' Surf.Area= 921 sf Storage= 1,159 cf

Plug-Flow detention time= 5.9 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 5.8 min (1,020.3 - 1,014.5)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	1,159 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	283	76.0	0	0	283
297.00	572	89.0	419	419	473
298.00	921	126.0	740	1,159	1,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	296.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.50'
#2	Primary	297.75'	**8.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.02 cfs @ 12.91 hrs HW=296.01' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 35P: Basin #10

Inflow Area = 0.164 ac, 0.00% Impervious, Inflow Depth = 0.59" for 10-yr event
Inflow = 0.06 cfs @ 12.14 hrs, Volume= 0.008 af
Outflow = 0.01 cfs @ 14.62 hrs, Volume= 0.008 af, Atten= 83%, Lag= 148.3 min
Discarded = 0.01 cfs @ 14.62 hrs, Volume= 0.008 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 295.61' @ 14.62 hrs Surf.Area= 162 sf Storage= 98 cf
Flood Elev= 297.00' Surf.Area= 162 sf Storage= 324 cf

Plug-Flow detention time= 100.9 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 101.1 min (1,023.2 - 922.1)

Volume	Invert	Avail.Storage	Storage Description
#1	295.00'	324 cf	**3.00'W x 54.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	296.90'	**54.0' 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

Discarded OutFlow Max=0.01 cfs @ 14.62 hrs HW=295.61' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 4L: DP-A

Inflow Area = 6.129 ac, 8.14% Impervious, Inflow Depth = 0.03" for 10-yr event
Inflow = 0.02 cfs @ 15.58 hrs, Volume= 0.013 af
Primary = 0.02 cfs @ 15.58 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.599 ac, 1.19% Impervious, Inflow Depth = 0.04" for 10-yr event
Inflow = 0.03 cfs @ 12.42 hrs, Volume= 0.009 af
Primary = 0.03 cfs @ 12.42 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post A.1 Runoff Area=28,666 sf 5.99% Impervious Runoff Depth=0.33"
Tc=6.0 min CN=38 Runoff=0.07 cfs 0.018 af

Subcatchment2S: Post-A.2 Runoff Area=28,248 sf 25.03% Impervious Runoff Depth=1.31"
Tc=6.0 min CN=54 Runoff=0.84 cfs 0.071 af

Subcatchment3S: Post B.2 Runoff Area=6,445 sf 0.00% Impervious Runoff Depth=0.05"
Tc=6.0 min CN=30 Runoff=0.00 cfs 0.001 af

Subcatchment6S: Post B.6 Runoff Area=59,456 sf 0.00% Impervious Runoff Depth=0.10"
Flow Length=296' Tc=6.0 min CN=32 Runoff=0.02 cfs 0.012 af

Subcatchment7S: Post B.3 Runoff Area=7,145 sf 0.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=50 Runoff=0.15 cfs 0.014 af

Subcatchment8S: Post A.3 Runoff Area=8,218 sf 30.99% Impervious Runoff Depth=1.54"
Tc=6.0 min CN=57 Runoff=0.30 cfs 0.024 af

Subcatchment9S: Post A.4 Runoff Area=15,239 sf 0.47% Impervious Runoff Depth=0.38"
Flow Length=209' Tc=6.9 min CN=39 Runoff=0.05 cfs 0.011 af

Subcatchment10S: Post A.5 Runoff Area=12,396 sf 21.82% Impervious Runoff Depth=1.17"
Tc=6.0 min CN=52 Runoff=0.31 cfs 0.028 af

Subcatchment11S: Post A.6 Runoff Area=13,646 sf 25.00% Impervious Runoff Depth=1.10"
Tc=6.0 min CN=51 Runoff=0.32 cfs 0.029 af

Subcatchment12S: Post A.7 Runoff Area=72,201 sf 13.88% Impervious Runoff Depth=0.77"
Tc=6.0 min CN=46 Runoff=0.87 cfs 0.107 af

Subcatchment13S: Post A.8 Runoff Area=47,055 sf 9.69% Impervious Runoff Depth=0.54"
Flow Length=318' Slope=0.0220 '/' Tc=9.8 min CN=42 Runoff=0.26 cfs 0.048 af

Subcatchment14S: Post A.9 Runoff Area=11,479 sf 19.64% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=50 Runoff=0.24 cfs 0.023 af

Subcatchment15S: Post A.10 Runoff Area=33,752 sf 3.52% Impervious Runoff Depth=0.38"
Tc=6.0 min CN=39 Runoff=0.11 cfs 0.025 af

Subcatchment16S: Post A.11 Runoff Area=94,313 sf 2.47% Impervious Runoff Depth=0.17"
Tc=6.0 min CN=34 Runoff=0.05 cfs 0.030 af

Subcatchment21S: Post B.4 Runoff Area=14,635 sf 0.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=50 Runoff=0.31 cfs 0.029 af

Subcatchment31S: Post B.5 Runoff Area=17,216 sf 5.43% Impervious Runoff Depth=0.54"
Tc=6.0 min CN=42 Runoff=0.10 cfs 0.018 af

Subcatchment32S: Post B.1 Runoff Area=8,323 sf 4.96% Impervious Runoff Depth=0.43"
Tc=6.0 min CN=40 Runoff=0.03 cfs 0.007 af

Pond 6P: Basin #11 Peak Elev=293.90' Storage=399 cf Inflow=0.31 cfs 0.029 af
Discarded=0.02 cfs 0.025 af Primary=0.05 cfs 0.004 af Outflow=0.07 cfs 0.029 af

Pond 7P: Basin #8 Peak Elev=274.02' Storage=445 cf Inflow=0.11 cfs 0.041 af
Discarded=0.04 cfs 0.041 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.041 af

Pond 22P: Basin #1 Peak Elev=278.96' Storage=1,801 cf Inflow=1.15 cfs 0.095 af
Discarded=0.10 cfs 0.095 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.095 af

Pond 23P: Basin #2 Peak Elev=270.72' Storage=110 cf Inflow=0.05 cfs 0.011 af
Discarded=0.01 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Pond 24P: Basin #3 Peak Elev=294.31' Storage=407 cf Inflow=0.31 cfs 0.028 af
Outflow=0.04 cfs 0.028 af

Pond 26P: Basin #4 Peak Elev=290.98' Storage=574 cf Inflow=0.32 cfs 0.029 af
Outflow=0.02 cfs 0.029 af

Pond 27P: Basin #7 Peak Elev=285.61' Storage=1,179 cf Inflow=0.24 cfs 0.043 af
Outflow=0.04 cfs 0.016 af

Pond 28P: Basin #5 Peak Elev=276.88' Storage=1,467 cf Inflow=0.87 cfs 0.107 af
Outflow=0.14 cfs 0.107 af

Pond 29P: Basin #6 Peak Elev=289.02' Storage=1,236 cf Inflow=0.26 cfs 0.048 af
Outflow=0.05 cfs 0.021 af

Pond 33P: Basin #9 Peak Elev=296.07' Storage=21 cf Inflow=0.03 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 35P: Basin #10 Peak Elev=296.65' Storage=267 cf Inflow=0.15 cfs 0.014 af
Discarded=0.01 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.014 af

Link 4L: DP-A Inflow=0.08 cfs 0.048 af
Primary=0.08 cfs 0.048 af

Link 5L: DP-B Inflow=0.10 cfs 0.034 af
Primary=0.10 cfs 0.034 af

Total Runoff Area = 10.983 ac Runoff Volume = 0.493 af Average Runoff Depth = 0.54"
91.80% Pervious = 10.083 ac 8.20% Impervious = 0.900 ac

Summary for Subcatchment 1S: Post A.1

Runoff = 0.07 cfs @ 12.40 hrs, Volume= 0.018 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
13,424	30	Woods, Good, HSG A
13,525	39	>75% Grass cover, Good, HSG A
1,717	98	Paved parking, HSG A
28,666	38	Weighted Average
26,949		94.01% Pervious Area
1,717		5.99% Impervious Area

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

Summary for Subcatchment 2S: Post-A.2

Runoff = 0.84 cfs @ 12.11 hrs, Volume= 0.071 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
20,556	39	>75% Grass cover, Good, HSG A
7,071	98	Paved parking, HSG A
621	30	Woods, Good, HSG A
28,248	54	Weighted Average
21,177		74.97% Pervious Area
7,071		25.03% Impervious Area

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

Summary for Subcatchment 3S: Post B.2

Runoff = 0.00 cfs @ 16.84 hrs, Volume= 0.001 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
6,115	30	Woods, Good, HSG A
330	39	>75% Grass cover, Good, HSG A
6,445	30	Weighted Average
6,445		100.00% Pervious Area

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

Summary for Subcatchment 6S: Post B.6

Runoff = 0.02 cfs @ 15.08 hrs, Volume= 0.012 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
11,152	39	>75% Grass cover, Good, HSG A
48,304	30	Woods, Good, HSG A
59,456	32	Weighted Average
59,456		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	50	0.1600	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
1.6	246	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	296	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Post B.3

Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.014 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
2,903	39	>75% Grass cover, Good, HSG A
469	30	Woods, Good, HSG A
3,171	61	>75% Grass cover, Good, HSG B
602	55	Woods, Good, HSG B
7,145	50	Weighted Average
7,145		100.00% Pervious Area

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

Summary for Subcatchment 8S: Post A.3

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.024 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
2,547	98	Paved parking, HSG A
5,671	39	>75% Grass cover, Good, HSG A
8,218	57	Weighted Average
5,671		69.01% Pervious Area
2,547		30.99% Impervious Area

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

Summary for Subcatchment 9S: Post A.4

Runoff = 0.05 cfs @ 12.38 hrs, Volume= 0.011 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
72	98	Paved parking, HSG A
13,934	39	>75% Grass cover, Good, HSG A
1,233	30	Woods, Good, HSG A
15,239	39	Weighted Average
15,167		99.53% Pervious Area
72		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
0.9	159	0.1700	2.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	209	Total			

Summary for Subcatchment 10S: Post A.5

Runoff = 0.31 cfs @ 12.11 hrs, Volume= 0.028 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
9,691	39	>75% Grass cover, Good, HSG A
2,705	98	Paved parking, HSG A
12,396	52	Weighted Average
9,691		78.18% Pervious Area
2,705		21.82% Impervious Area

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

Summary for Subcatchment 11S: Post A.6

Runoff = 0.32 cfs @ 12.11 hrs, Volume= 0.029 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
6,085	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
4,149	30	Woods, Good, HSG A
13,646	51	Weighted Average
10,234		75.00% Pervious Area
3,412		25.00% Impervious Area

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

Summary for Subcatchment 12S: Post A.7

Runoff = 0.87 cfs @ 12.13 hrs, Volume= 0.107 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
55,124	39	>75% Grass cover, Good, HSG A
10,023	98	Paved parking, HSG A
7,054	30	Woods, Good, HSG A
72,201	46	Weighted Average
62,178		86.12% Pervious Area
10,023		13.88% Impervious Area

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

Summary for Subcatchment 13S: Post A.8

Runoff = 0.26 cfs @ 12.35 hrs, Volume= 0.048 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
26,655	39	>75% Grass cover, Good, HSG A
4,561	98	Paved parking, HSG A
15,839	30	Woods, Good, HSG A
47,055	42	Weighted Average
42,494		90.31% Pervious Area
4,561		9.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	268	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	50	0.0220	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
9.8	318	Total			

Summary for Subcatchment 14S: Post A.9

Runoff = 0.24 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
2,255	98	Paved parking, HSG A
8,527	39	>75% Grass cover, Good, HSG A
697	30	Woods, Good, HSG A
11,479	50	Weighted Average
9,224		80.36% Pervious Area
2,255		19.64% Impervious Area

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

Summary for Subcatchment 15S: Post A.10

Runoff = 0.11 cfs @ 12.37 hrs, Volume= 0.025 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
23,757	39	>75% Grass cover, Good, HSG A
1,188	98	Paved parking, HSG A
8,807	30	Woods, Good, HSG A
33,752	39	Weighted Average
32,564		96.48% Pervious Area
1,188		3.52% Impervious Area

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

Summary for Subcatchment 16S: Post A.11

Runoff = 0.05 cfs @ 13.81 hrs, Volume= 0.030 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
27,987	39	>75% Grass cover, Good, HSG A
2,327	98	Paved parking, HSG A
63,999	30	Woods, Good, HSG A
94,313	34	Weighted Average
91,986		97.53% Pervious Area
2,327		2.47% Impervious Area

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

Summary for Subcatchment 21S: Post B.4

Runoff = 0.31 cfs @ 12.11 hrs, Volume= 0.029 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
7,389	39	>75% Grass cover, Good, HSG A
6,373	61	>75% Grass cover, Good, HSG B
873	55	Woods, Good, HSG B
14,635	50	Weighted Average
14,635		100.00% Pervious Area

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

Summary for Subcatchment 31S: Post B.5

Runoff = 0.10 cfs @ 12.29 hrs, Volume= 0.018 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
934	98	Paved parking, HSG A
5,536	39	>75% Grass cover, Good, HSG A
369	61	>75% Grass cover, Good, HSG B
7,109	30	Woods, Good, HSG A
3,268	55	Woods, Good, HSG B
17,216	42	Weighted Average
16,282		94.57% Pervious Area
934		5.43% Impervious Area

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

Summary for Subcatchment 32S: Post B.1

Runoff = 0.03 cfs @ 12.34 hrs, Volume= 0.007 af, Depth= 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.77"

Area (sf)	CN	Description
1,989	30	Woods, Good, HSG A
5,921	39	>75% Grass cover, Good, HSG A
413	98	Paved parking, HSG A
8,323	40	Weighted Average
7,910		95.04% Pervious Area
413		4.96% Impervious Area

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

Summary for Pond 6P: Basin #11

Inflow Area = 0.336 ac, 0.00% Impervious, Inflow Depth = 1.03" for 25-yr event
Inflow = 0.31 cfs @ 12.11 hrs, Volume= 0.029 af
Outflow = 0.07 cfs @ 12.77 hrs, Volume= 0.029 af, Atten= 76%, Lag= 39.1 min
Discarded = 0.02 cfs @ 12.75 hrs, Volume= 0.025 af
Primary = 0.05 cfs @ 12.77 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 293.90' @ 12.75 hrs Surf.Area= 210 sf Storage= 399 cf
Flood Elev= 295.00' Surf.Area= 210 sf Storage= 420 cf

Plug-Flow detention time= 202.3 min calculated for 0.029 af (100% of inflow)
Center-of-Mass det. time= 201.9 min (1,100.2 - 898.4)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	420 cf	**3.00'W x 70.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	293.90'	**54.0' 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

Discarded OutFlow Max=0.02 cfs @ 12.75 hrs HW=293.90' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.01 cfs @ 12.77 hrs HW=293.90' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir**(Weir Controls 0.01 cfs @ 0.13 fps)

Summary for Pond 7P: Basin #8

Inflow Area = 2.119 ac, 8.67% Impervious, Inflow Depth = 0.23" for 25-yr event
Inflow = 0.11 cfs @ 12.37 hrs, Volume= 0.041 af
Outflow = 0.04 cfs @ 23.31 hrs, Volume= 0.041 af, Atten= 65%, Lag= 656.4 min
Discarded = 0.04 cfs @ 23.31 hrs, Volume= 0.041 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 274.02' @ 23.31 hrs Surf.Area= 600 sf Storage= 445 cf
Flood Elev= 278.50' Surf.Area= 3,585 sf Storage= 6,926 cf

Plug-Flow detention time= 151.5 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 151.6 min (1,235.5 - 1,083.9)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	6,926 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	289	86.0	0	0	289
274.00	592	108.0	432	432	642
275.00	982	132.0	779	1,210	1,116
276.00	1,410	151.0	1,190	2,400	1,567
277.00	2,073	194.0	1,731	4,131	2,760
278.00	3,585	327.0	2,795	6,926	8,280

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 267.00'
#2	Primary	277.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.04 cfs @ 23.31 hrs HW=274.02' (Free Discharge)
1=Exfiltration (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=273.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 22P: Basin #1

Inflow Area = 0.837 ac, 26.38% Impervious, Inflow Depth = 1.36" for 25-yr event
Inflow = 1.15 cfs @ 12.11 hrs, Volume= 0.095 af
Outflow = 0.10 cfs @ 14.70 hrs, Volume= 0.095 af, Atten= 91%, Lag= 155.6 min
Discarded = 0.10 cfs @ 14.70 hrs, Volume= 0.095 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 278.96' @ 14.70 hrs Surf.Area= 1,049 sf Storage= 1,801 cf
Flood Elev= 280.00' Surf.Area= 1,342 sf Storage= 3,043 cf

Plug-Flow detention time= 253.0 min calculated for 0.095 af (100% of inflow)
Center-of-Mass det. time= 253.1 min (1,134.1 - 881.0)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	3,043 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	226	90.0	0	0	226
277.00	418	103.0	317	317	448
278.00	802	122.0	600	917	806
279.00	1,060	135.0	928	1,845	1,101
280.00	1,342	148.0	1,198	3,043	1,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'
#2	Primary	279.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.10 cfs @ 14.70 hrs HW=278.96' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: Basin #2

Inflow Area = 0.350 ac, 0.47% Impervious, Inflow Depth = 0.38" for 25-yr event
Inflow = 0.05 cfs @ 12.38 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 15.38 hrs, Volume= 0.011 af, Atten= 71%, Lag= 180.0 min
Discarded = 0.01 cfs @ 15.38 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 270.72' @ 15.38 hrs Surf.Area= 225 sf Storage= 110 cf
Flood Elev= 273.00' Surf.Area= 1,107 sf Storage= 1,482 cf

Plug-Flow detention time= 101.3 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 101.2 min (1,070.6 - 969.4)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	1,482 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	90	44.0	0	0	90
271.00	295	78.0	183	183	426
272.00	620	112.0	448	630	948
273.00	1,107	162.0	852	1,482	2,047

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 266.00'

#2 Primary 272.50' **10.0' long x 3.0' breadth Broad-Crested Rectangular Weir**
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.01 cfs @ 15.38 hrs HW=270.72' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 24P: Basin #3

Inflow Area = 0.285 ac, 21.82% Impervious, Inflow Depth = 1.17" for 25-yr event
Inflow = 0.31 cfs @ 12.11 hrs, Volume= 0.028 af
Outflow = 0.04 cfs @ 13.51 hrs, Volume= 0.028 af, Atten= 87%, Lag= 84.2 min
Discarded = 0.04 cfs @ 13.51 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 294.31' @ 13.51 hrs Surf.Area= 563 sf Storage= 407 cf
Flood Elev= 296.50' Surf.Area= 1,607 sf Storage= 2,171 cf

Plug-Flow detention time= 132.7 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 132.7 min (1,023.2 - 890.5)

Volume	Invert	Avail.Storage	Storage Description
#1	293.00'	2,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
293.00	114	45.0	0	0	114
294.00	428	79.0	254	254	455
295.00	931	112.0	663	918	966
296.00	1,607	145.0	1,254	2,171	1,653

Device	Routing	Invert	Outlet Devices
#1	Discarded	293.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.00'

Discarded OutFlow Max=0.04 cfs @ 13.51 hrs HW=294.31' (Free Discharge)
1=Exfiltration (Controls 0.04 cfs)

Summary for Pond 26P: Basin #4

Inflow Area = 0.313 ac, 25.00% Impervious, Inflow Depth = 1.10" for 25-yr event
Inflow = 0.32 cfs @ 12.11 hrs, Volume= 0.029 af
Outflow = 0.02 cfs @ 15.66 hrs, Volume= 0.029 af, Atten= 92%, Lag= 212.8 min
Discarded = 0.02 cfs @ 15.66 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 290.98' @ 15.66 hrs Surf.Area= 755 sf Storage= 574 cf
Flood Elev= 294.00' Surf.Area= 1,614 sf Storage= 2,918 cf

Plug-Flow detention time= 307.9 min calculated for 0.029 af (100% of inflow)
Center-of-Mass det. time= 308.0 min (1,202.4 - 894.3)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	2,918 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	434	95.0	0	0	434
291.00	763	118.0	591	591	838
292.00	1,152	138.0	951	1,542	1,265
293.00	1,614	160.0	1,377	2,918	1,808

Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'

Discarded OutFlow Max=0.02 cfs @ 15.66 hrs HW=290.98' (Free Discharge)
↑**1=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 27P: Basin #7

Inflow Area = 1.344 ac, 11.64% Impervious, Inflow Depth = 0.39" for 25-yr event
Inflow = 0.24 cfs @ 12.11 hrs, Volume= 0.043 af
Outflow = 0.04 cfs @ 18.42 hrs, Volume= 0.016 af, Atten= 84%, Lag= 378.2 min
Primary = 0.04 cfs @ 18.42 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 285.61' @ 18.42 hrs Surf.Area= 981 sf Storage= 1,179 cf
Flood Elev= 289.50' Surf.Area= 1,117 sf Storage= 1,586 cf

Plug-Flow detention time= 465.2 min calculated for 0.016 af (38% of inflow)
Center-of-Mass det. time= 238.7 min (1,257.3 - 1,018.6)

Volume	Invert	Avail.Storage	Storage Description
#1	284.00'	1,586 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
284.00	507	83.0	0	0	507
285.00	784	133.0	640	640	1,373
286.00	1,117	121.0	946	1,586	1,647

Device	Routing	Invert	Outlet Devices
#1	Primary	283.10'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 283.10' / 279.00' S= 0.0513 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

#2 Device 1 285.60' **18.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 18.42 hrs HW=285.61' (Free Discharge)
↑**1=Culvert** (Passes 0.02 cfs of 4.23 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.35 fps)

Summary for Pond 28P: Basin #5

Inflow Area = 1.658 ac, 13.88% Impervious, Inflow Depth = 0.77" for 25-yr event
Inflow = 0.87 cfs @ 12.13 hrs, Volume= 0.107 af
Outflow = 0.14 cfs @ 14.43 hrs, Volume= 0.107 af, Atten= 84%, Lag= 137.7 min
Discarded = 0.14 cfs @ 14.43 hrs, Volume= 0.107 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 276.88' @ 14.43 hrs Surf.Area= 1,288 sf Storage= 1,467 cf
Flood Elev= 281.00' Surf.Area= 4,620 sf Storage= 9,290 cf

Plug-Flow detention time= 151.3 min calculated for 0.107 af (100% of inflow)
Center-of-Mass det. time= 151.4 min (1,068.5 - 917.1)

Volume	Invert	Avail.Storage	Storage Description
#1	275.00'	9,290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
275.00	351	95.0	0	0	351
276.00	800	148.0	560	560	1,383
277.00	1,366	168.0	1,070	1,631	1,910
278.00	1,995	224.0	1,671	3,301	3,668
279.00	2,732	256.0	2,354	5,655	4,914
280.00	4,620	347.0	3,635	9,290	9,291

Device	Routing	Invert	Outlet Devices
#1	Discarded	275.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'

Discarded OutFlow Max=0.14 cfs @ 14.43 hrs HW=276.88' (Free Discharge)
↑**1=Exfiltration** (Controls 0.14 cfs)

Summary for Pond 29P: Basin #6

Inflow Area = 1.080 ac, 9.69% Impervious, Inflow Depth = 0.54" for 25-yr event
Inflow = 0.26 cfs @ 12.35 hrs, Volume= 0.048 af
Outflow = 0.05 cfs @ 15.79 hrs, Volume= 0.021 af, Atten= 81%, Lag= 206.4 min
Primary = 0.05 cfs @ 15.79 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 289.02' @ 15.79 hrs Surf.Area= 1,121 sf Storage= 1,236 cf
Flood Elev= 290.00' Surf.Area= 1,689 sf Storage= 2,606 cf

Plug-Flow detention time= 380.9 min calculated for 0.021 af (42% of inflow)
Center-of-Mass det. time= 205.5 min (1,151.4 - 946.0)

Volume	Invert	Avail.Storage	Storage Description
#1	287.00'	2,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
287.00	186	90.0	0	0	186
288.00	599	150.0	373	373	1,338
289.00	1,112	183.0	842	1,215	2,228
290.00	1,689	201.0	1,390	2,606	2,811

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 286.50' / 285.40' S= 0.0157 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	289.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 15.79 hrs HW=289.02' (Free Discharge)
↑—**1=Culvert** (Passes 0.04 cfs of 4.24 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.04 cfs @ 0.44 fps)

Summary for Pond 33P: Basin #9

Inflow Area = 0.191 ac, 4.96% Impervious, Inflow Depth = 0.43" for 25-yr event
Inflow = 0.03 cfs @ 12.34 hrs, Volume= 0.007 af
Outflow = 0.02 cfs @ 12.63 hrs, Volume= 0.007 af, Atten= 47%, Lag= 17.0 min
Discarded = 0.02 cfs @ 12.63 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 296.07' @ 12.63 hrs Surf.Area= 300 sf Storage= 21 cf
Flood Elev= 298.00' Surf.Area= 921 sf Storage= 1,159 cf

Plug-Flow detention time= 8.6 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 8.6 min (967.6 - 958.9)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	1,159 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	283	76.0	0	0	283
297.00	572	89.0	419	419	473
298.00	921	126.0	740	1,159	1,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	296.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.50'
#2	Primary	297.75'	**8.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.02 cfs @ 12.63 hrs HW=296.07' (Free Discharge)
1=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 35P: Basin #10

Inflow Area = 0.164 ac, 0.00% Impervious, Inflow Depth = 1.03" for 25-yr event
Inflow = 0.15 cfs @ 12.11 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 15.70 hrs, Volume= 0.014 af, Atten= 92%, Lag= 215.1 min
Discarded = 0.01 cfs @ 15.70 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 296.65' @ 15.70 hrs Surf.Area= 162 sf Storage= 267 cf
Flood Elev= 297.00' Surf.Area= 162 sf Storage= 324 cf

Plug-Flow detention time= 265.2 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 265.1 min (1,163.4 - 898.4)

Volume	Invert	Avail.Storage	Storage Description
#1	295.00'	324 cf	**3.00'W x 54.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	296.90'	**54.0' 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

Discarded OutFlow Max=0.01 cfs @ 15.70 hrs HW=296.65' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 4L: DP-A

Inflow Area = 6.129 ac, 8.14% Impervious, Inflow Depth = 0.09" for 25-yr event
Inflow = 0.08 cfs @ 13.63 hrs, Volume= 0.048 af
Primary = 0.08 cfs @ 13.63 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.599 ac, 1.19% Impervious, Inflow Depth = 0.16" for 25-yr event
Inflow = 0.10 cfs @ 12.29 hrs, Volume= 0.034 af
Primary = 0.10 cfs @ 12.29 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post A.1 Runoff Area=28,666 sf 5.99% Impervious Runoff Depth=0.82"
Tc=6.0 min CN=38 Runoff=0.30 cfs 0.045 af

Subcatchment2S: Post-A.2 Runoff Area=28,248 sf 25.03% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=54 Runoff=1.58 cfs 0.122 af

Subcatchment3S: Post B.2 Runoff Area=6,445 sf 0.00% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=30 Runoff=0.01 cfs 0.003 af

Subcatchment6S: Post B.6 Runoff Area=59,456 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=296' Tc=6.0 min CN=32 Runoff=0.16 cfs 0.045 af

Subcatchment7S: Post B.3 Runoff Area=7,145 sf 0.00% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=50 Runoff=0.31 cfs 0.025 af

Subcatchment8S: Post A.3 Runoff Area=8,218 sf 30.99% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=57 Runoff=0.53 cfs 0.040 af

Subcatchment9S: Post A.4 Runoff Area=15,239 sf 0.47% Impervious Runoff Depth=0.90"
Flow Length=209' Tc=6.9 min CN=39 Runoff=0.19 cfs 0.026 af

Subcatchment10S: Post A.5 Runoff Area=12,396 sf 21.82% Impervious Runoff Depth=2.06"
Tc=6.0 min CN=52 Runoff=0.62 cfs 0.049 af

Subcatchment11S: Post A.6 Runoff Area=13,646 sf 25.00% Impervious Runoff Depth=1.96"
Tc=6.0 min CN=51 Runoff=0.64 cfs 0.051 af

Subcatchment12S: Post A.7 Runoff Area=72,201 sf 13.88% Impervious Runoff Depth=1.49"
Tc=6.0 min CN=46 Runoff=2.34 cfs 0.206 af

Subcatchment13S: Post A.8 Runoff Area=47,055 sf 9.69% Impervious Runoff Depth=1.14"
Flow Length=318' Slope=0.0220 '/' Tc=9.8 min CN=42 Runoff=0.85 cfs 0.103 af

Subcatchment14S: Post A.9 Runoff Area=11,479 sf 19.64% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=50 Runoff=0.51 cfs 0.041 af

Subcatchment15S: Post A.10 Runoff Area=33,752 sf 3.52% Impervious Runoff Depth=0.90"
Tc=6.0 min CN=39 Runoff=0.43 cfs 0.058 af

Subcatchment16S: Post A.11 Runoff Area=94,313 sf 2.47% Impervious Runoff Depth=0.53"
Tc=6.0 min CN=34 Runoff=0.44 cfs 0.095 af

Subcatchment21S: Post B.4 Runoff Area=14,635 sf 0.00% Impervious Runoff Depth=1.86"
Tc=6.0 min CN=50 Runoff=0.64 cfs 0.052 af

Subcatchment31S: Post B.5 Runoff Area=17,216 sf 5.43% Impervious Runoff Depth=1.14"
Tc=6.0 min CN=42 Runoff=0.36 cfs 0.038 af

Subcatchment32S: Post B.1 Runoff Area=8,323 sf 4.96% Impervious Runoff Depth=0.98"
Tc=6.0 min CN=40 Runoff=0.13 cfs 0.016 af

Pond 6P: Basin #11 Peak Elev=293.92' Storage=404 cf Inflow=0.64 cfs 0.052 af
Discarded=0.02 cfs 0.029 af Primary=0.56 cfs 0.022 af Outflow=0.58 cfs 0.052 af

Pond 7P: Basin #8 Peak Elev=276.26' Storage=2,795 cf Inflow=0.43 cfs 0.147 af
Discarded=0.11 cfs 0.147 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.147 af

Pond 22P: Basin #1 Peak Elev=279.80' Storage=2,784 cf Inflow=2.11 cfs 0.162 af
Discarded=0.13 cfs 0.142 af Primary=0.30 cfs 0.020 af Outflow=0.43 cfs 0.162 af

Pond 23P: Basin #2 Peak Elev=271.53' Storage=381 cf Inflow=0.19 cfs 0.026 af
Discarded=0.03 cfs 0.026 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.026 af

Pond 24P: Basin #3 Peak Elev=294.91' Storage=834 cf Inflow=0.62 cfs 0.049 af
Outflow=0.07 cfs 0.049 af

Pond 26P: Basin #4 Peak Elev=291.67' Storage=1,180 cf Inflow=0.64 cfs 0.051 af
Outflow=0.04 cfs 0.051 af

Pond 27P: Basin #7 Peak Elev=285.66' Storage=1,232 cf Inflow=0.51 cfs 0.116 af
Outflow=0.27 cfs 0.089 af

Pond 28P: Basin #5 Peak Elev=278.09' Storage=3,486 cf Inflow=2.34 cfs 0.206 af
Outflow=0.24 cfs 0.206 af

Pond 29P: Basin #6 Peak Elev=289.07' Storage=1,293 cf Inflow=0.85 cfs 0.103 af
Outflow=0.31 cfs 0.075 af

Pond 33P: Basin #9 Peak Elev=296.45' Storage=153 cf Inflow=0.13 cfs 0.016 af
Discarded=0.03 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.016 af

Pond 35P: Basin #10 Peak Elev=296.91' Storage=309 cf Inflow=0.31 cfs 0.025 af
Discarded=0.01 cfs 0.018 af Primary=0.20 cfs 0.008 af Outflow=0.21 cfs 0.026 af

Link 4L: DP-A Inflow=0.71 cfs 0.160 af
Primary=0.71 cfs 0.160 af

Link 5L: DP-B Inflow=0.89 cfs 0.117 af
Primary=0.89 cfs 0.117 af

Total Runoff Area = 10.983 ac Runoff Volume = 1.015 af Average Runoff Depth = 1.11"
91.80% Pervious = 10.083 ac 8.20% Impervious = 0.900 ac

Summary for Subcatchment 1S: Post A.1

Runoff = 0.30 cfs @ 12.16 hrs, Volume= 0.045 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
13,424	30	Woods, Good, HSG A
13,525	39	>75% Grass cover, Good, HSG A
1,717	98	Paved parking, HSG A
28,666	38	Weighted Average
26,949		94.01% Pervious Area
1,717		5.99% Impervious Area

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

Summary for Subcatchment 2S: Post-A.2

Runoff = 1.58 cfs @ 12.10 hrs, Volume= 0.122 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
20,556	39	>75% Grass cover, Good, HSG A
7,071	98	Paved parking, HSG A
621	30	Woods, Good, HSG A
28,248	54	Weighted Average
21,177		74.97% Pervious Area
7,071		25.03% Impervious Area

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

Summary for Subcatchment 3S: Post B.2

Runoff = 0.01 cfs @ 12.49 hrs, Volume= 0.003 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
6,115	30	Woods, Good, HSG A
330	39	>75% Grass cover, Good, HSG A
6,445	30	Weighted Average
6,445		100.00% Pervious Area

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

Summary for Subcatchment 6S: Post B.6

Runoff = 0.16 cfs @ 12.41 hrs, Volume= 0.045 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
11,152	39	>75% Grass cover, Good, HSG A
48,304	30	Woods, Good, HSG A
59,456	32	Weighted Average
59,456		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	50	0.1600	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
1.6	246	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	296	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Post B.3

Runoff = 0.31 cfs @ 12.10 hrs, Volume= 0.025 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
2,903	39	>75% Grass cover, Good, HSG A
469	30	Woods, Good, HSG A
3,171	61	>75% Grass cover, Good, HSG B
602	55	Woods, Good, HSG B
7,145	50	Weighted Average
7,145		100.00% Pervious Area

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

Summary for Subcatchment 8S: Post A.3

Runoff = 0.53 cfs @ 12.10 hrs, Volume= 0.040 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
2,547	98	Paved parking, HSG A
5,671	39	>75% Grass cover, Good, HSG A
8,218	57	Weighted Average
5,671		69.01% Pervious Area
2,547		30.99% Impervious Area

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

Summary for Subcatchment 9S: Post A.4

Runoff = 0.19 cfs @ 12.16 hrs, Volume= 0.026 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
72	98	Paved parking, HSG A
13,934	39	>75% Grass cover, Good, HSG A
1,233	30	Woods, Good, HSG A
15,239	39	Weighted Average
15,167		99.53% Pervious Area
72		0.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
0.9	159	0.1700	2.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	209	Total			

Summary for Subcatchment 10S: Post A.5

Runoff = 0.62 cfs @ 12.10 hrs, Volume= 0.049 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
9,691	39	>75% Grass cover, Good, HSG A
2,705	98	Paved parking, HSG A
12,396	52	Weighted Average
9,691		78.18% Pervious Area
2,705		21.82% Impervious Area

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

Summary for Subcatchment 11S: Post A.6

Runoff = 0.64 cfs @ 12.10 hrs, Volume= 0.051 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
6,085	39	>75% Grass cover, Good, HSG A
3,412	98	Paved parking, HSG A
4,149	30	Woods, Good, HSG A
13,646	51	Weighted Average
10,234		75.00% Pervious Area
3,412		25.00% Impervious Area

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

Summary for Subcatchment 12S: Post A.7

Runoff = 2.34 cfs @ 12.11 hrs, Volume= 0.206 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
55,124	39	>75% Grass cover, Good, HSG A
10,023	98	Paved parking, HSG A
7,054	30	Woods, Good, HSG A
72,201	46	Weighted Average
62,178		86.12% Pervious Area
10,023		13.88% Impervious Area

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

Summary for Subcatchment 13S: Post A.8

Runoff = 0.85 cfs @ 12.18 hrs, Volume= 0.103 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
26,655	39	>75% Grass cover, Good, HSG A
4,561	98	Paved parking, HSG A
15,839	30	Woods, Good, HSG A
47,055	42	Weighted Average
42,494		90.31% Pervious Area
4,561		9.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	268	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.5	50	0.0220	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.05"
9.8	318	Total			

Summary for Subcatchment 14S: Post A.9

Runoff = 0.51 cfs @ 12.10 hrs, Volume= 0.041 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
2,255	98	Paved parking, HSG A
8,527	39	>75% Grass cover, Good, HSG A
697	30	Woods, Good, HSG A
11,479	50	Weighted Average
9,224		80.36% Pervious Area
2,255		19.64% Impervious Area

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

Summary for Subcatchment 15S: Post A.10

Runoff = 0.43 cfs @ 12.15 hrs, Volume= 0.058 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
23,757	39	>75% Grass cover, Good, HSG A
1,188	98	Paved parking, HSG A
8,807	30	Woods, Good, HSG A
33,752	39	Weighted Average
32,564		96.48% Pervious Area
1,188		3.52% Impervious Area

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

Summary for Subcatchment 16S: Post A.11

Runoff = 0.44 cfs @ 12.35 hrs, Volume= 0.095 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
27,987	39	>75% Grass cover, Good, HSG A
2,327	98	Paved parking, HSG A
63,999	30	Woods, Good, HSG A
94,313	34	Weighted Average
91,986		97.53% Pervious Area
2,327		2.47% Impervious Area

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

Summary for Subcatchment 21S: Post B.4

Runoff = 0.64 cfs @ 12.10 hrs, Volume= 0.052 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
7,389	39	>75% Grass cover, Good, HSG A
6,373	61	>75% Grass cover, Good, HSG B
873	55	Woods, Good, HSG B
14,635	50	Weighted Average
14,635		100.00% Pervious Area

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

Summary for Subcatchment 31S: Post B.5

Runoff = 0.36 cfs @ 12.12 hrs, Volume= 0.038 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
934	98	Paved parking, HSG A
5,536	39	>75% Grass cover, Good, HSG A
369	61	>75% Grass cover, Good, HSG B
7,109	30	Woods, Good, HSG A
3,268	55	Woods, Good, HSG B
17,216	42	Weighted Average
16,282		94.57% Pervious Area
934		5.43% Impervious Area

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

Summary for Subcatchment 32S: Post B.1

Runoff = 0.13 cfs @ 12.13 hrs, Volume= 0.016 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.35"

Area (sf)	CN	Description
1,989	30	Woods, Good, HSG A
5,921	39	>75% Grass cover, Good, HSG A
413	98	Paved parking, HSG A
8,323	40	Weighted Average
7,910		95.04% Pervious Area
413		4.96% Impervious Area

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

Summary for Pond 6P: Basin #11

Inflow Area = 0.336 ac, 0.00% Impervious, Inflow Depth = 1.86" for 100-yr event
Inflow = 0.64 cfs @ 12.10 hrs, Volume= 0.052 af
Outflow = 0.58 cfs @ 12.21 hrs, Volume= 0.052 af, Atten= 10%, Lag= 6.4 min
Discarded = 0.02 cfs @ 12.20 hrs, Volume= 0.029 af
Primary = 0.56 cfs @ 12.21 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 293.92' @ 12.20 hrs Surf.Area= 210 sf Storage= 404 cf
Flood Elev= 295.00' Surf.Area= 210 sf Storage= 420 cf

Plug-Flow detention time= 145.8 min calculated for 0.052 af (99% of inflow)
Center-of-Mass det. time= 141.4 min (1,018.3 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	292.00'	420 cf	**3.00'W x 70.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	292.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	293.90'	**54.0' 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

Discarded OutFlow Max=0.02 cfs @ 12.20 hrs HW=293.92' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.47 cfs @ 12.21 hrs HW=293.92' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.47 cfs @ 0.41 fps)

Summary for Pond 7P: Basin #8

Inflow Area = 2.119 ac, 8.67% Impervious, Inflow Depth = 0.83" for 100-yr event
Inflow = 0.43 cfs @ 12.15 hrs, Volume= 0.147 af
Outflow = 0.11 cfs @ 17.86 hrs, Volume= 0.147 af, Atten= 74%, Lag= 342.7 min
Discarded = 0.11 cfs @ 17.86 hrs, Volume= 0.147 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 276.26' @ 17.86 hrs Surf.Area= 1,573 sf Storage= 2,795 cf
Flood Elev= 278.50' Surf.Area= 3,585 sf Storage= 6,926 cf

Plug-Flow detention time= 356.2 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 356.1 min (1,331.8 - 975.7)

Volume	Invert	Avail.Storage	Storage Description
#1	273.00'	6,926 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
273.00	289	86.0	0	0	289
274.00	592	108.0	432	432	642
275.00	982	132.0	779	1,210	1,116
276.00	1,410	151.0	1,190	2,400	1,567
277.00	2,073	194.0	1,731	4,131	2,760
278.00	3,585	327.0	2,795	6,926	8,280

Device	Routing	Invert	Outlet Devices
#1	Discarded	273.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 267.00'
#2	Primary	277.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.11 cfs @ 17.86 hrs HW=276.26' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=273.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 22P: Basin #1

Inflow Area = 0.837 ac, 26.38% Impervious, Inflow Depth = 2.32" for 100-yr event
Inflow = 2.11 cfs @ 12.10 hrs, Volume= 0.162 af
Outflow = 0.43 cfs @ 12.60 hrs, Volume= 0.162 af, Atten= 80%, Lag= 30.1 min
Discarded = 0.13 cfs @ 12.60 hrs, Volume= 0.142 af
Primary = 0.30 cfs @ 12.60 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 279.80' @ 12.60 hrs Surf.Area= 1,284 sf Storage= 2,784 cf
Flood Elev= 280.00' Surf.Area= 1,342 sf Storage= 3,043 cf

Plug-Flow detention time= 264.2 min calculated for 0.162 af (100% of inflow)
Center-of-Mass det. time= 264.1 min (1,127.8 - 863.7)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	3,043 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	226	90.0	0	0	226
277.00	418	103.0	317	317	448
278.00	802	122.0	600	917	806
279.00	1,060	135.0	928	1,845	1,101
280.00	1,342	148.0	1,198	3,043	1,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'
#2	Primary	279.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.13 cfs @ 12.60 hrs HW=279.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=0.29 cfs @ 12.60 hrs HW=279.80' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 0.56 fps)

Summary for Pond 23P: Basin #2

Inflow Area = 0.350 ac, 0.47% Impervious, Inflow Depth = 0.90" for 100-yr event
Inflow = 0.19 cfs @ 12.16 hrs, Volume= 0.026 af
Outflow = 0.03 cfs @ 15.07 hrs, Volume= 0.026 af, Atten= 84%, Lag= 174.5 min
Discarded = 0.03 cfs @ 15.07 hrs, Volume= 0.026 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 271.53' @ 15.07 hrs Surf.Area= 454 sf Storage= 381 cf
Flood Elev= 273.00' Surf.Area= 1,107 sf Storage= 1,482 cf

Plug-Flow detention time= 177.0 min calculated for 0.026 af (100% of inflow)
Center-of-Mass det. time= 177.1 min (1,101.3 - 924.2)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	1,482 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	90	44.0	0	0	90
271.00	295	78.0	183	183	426
272.00	620	112.0	448	630	948
273.00	1,107	162.0	852	1,482	2,047

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 266.00'

#2	Primary	272.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.03 cfs @ 15.07 hrs HW=271.53' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 24P: Basin #3

Inflow Area = 0.285 ac, 21.82% Impervious, Inflow Depth = 2.06" for 100-yr event
Inflow = 0.62 cfs @ 12.10 hrs, Volume= 0.049 af
Outflow = 0.07 cfs @ 13.48 hrs, Volume= 0.049 af, Atten= 89%, Lag= 82.6 min
Discarded = 0.07 cfs @ 13.48 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 294.91' @ 13.48 hrs Surf.Area= 877 sf Storage= 834 cf
Flood Elev= 296.50' Surf.Area= 1,607 sf Storage= 2,171 cf

Plug-Flow detention time= 170.3 min calculated for 0.049 af (100% of inflow)
Center-of-Mass det. time= 170.3 min (1,041.4 - 871.0)

Volume	Invert	Avail.Storage	Storage Description
#1	293.00'	2,171 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
293.00	114	45.0	0	0	114
294.00	428	79.0	254	254	455
295.00	931	112.0	663	918	966
296.00	1,607	145.0	1,254	2,171	1,653

Device	Routing	Invert	Outlet Devices
#1	Discarded	293.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.00'

Discarded OutFlow Max=0.07 cfs @ 13.48 hrs HW=294.91' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Summary for Pond 26P: Basin #4

Inflow Area = 0.313 ac, 25.00% Impervious, Inflow Depth = 1.96" for 100-yr event
Inflow = 0.64 cfs @ 12.10 hrs, Volume= 0.051 af
Outflow = 0.04 cfs @ 15.81 hrs, Volume= 0.051 af, Atten= 94%, Lag= 222.1 min
Discarded = 0.04 cfs @ 15.81 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 291.67' @ 15.81 hrs Surf.Area= 1,013 sf Storage= 1,180 cf
Flood Elev= 294.00' Surf.Area= 1,614 sf Storage= 2,918 cf

Plug-Flow detention time= 429.1 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 428.8 min (1,302.8 - 873.9)

Volume	Invert	Avail.Storage	Storage Description
#1	290.00'	2,918 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
290.00	434	95.0	0	0	434
291.00	763	118.0	591	591	838
292.00	1,152	138.0	951	1,542	1,265
293.00	1,614	160.0	1,377	2,918	1,808

Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 288.00'

Discarded OutFlow Max=0.04 cfs @ 15.81 hrs HW=291.67' (Free Discharge)
↑**1=Exfiltration** (Controls 0.04 cfs)

Summary for Pond 27P: Basin #7

Inflow Area = 1.344 ac, 11.64% Impervious, Inflow Depth = 1.04" for 100-yr event
Inflow = 0.51 cfs @ 12.10 hrs, Volume= 0.116 af
Outflow = 0.27 cfs @ 13.10 hrs, Volume= 0.089 af, Atten= 47%, Lag= 59.7 min
Primary = 0.27 cfs @ 13.10 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 285.66' @ 13.10 hrs Surf.Area= 999 sf Storage= 1,232 cf
Flood Elev= 289.50' Surf.Area= 1,117 sf Storage= 1,586 cf

Plug-Flow detention time= 158.6 min calculated for 0.089 af (77% of inflow)
Center-of-Mass det. time= 65.1 min (1,009.7 - 944.6)

Volume	Invert	Avail.Storage	Storage Description
#1	284.00'	1,586 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
284.00	507	83.0	0	0	507
285.00	784	133.0	640	640	1,373
286.00	1,117	121.0	946	1,586	1,647

Device	Routing	Invert	Outlet Devices
#1	Primary	283.10'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 283.10' / 279.00' S= 0.0513 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

#2 Device 1 285.60' **18.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Primary OutFlow Max=0.25 cfs @ 13.10 hrs HW=285.66' (Free Discharge)
↑**1=Culvert** (Passes 0.25 cfs of 4.29 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.25 cfs @ 0.83 fps)

Summary for Pond 28P: Basin #5

Inflow Area = 1.658 ac, 13.88% Impervious, Inflow Depth = 1.49" for 100-yr event
Inflow = 2.34 cfs @ 12.11 hrs, Volume= 0.206 af
Outflow = 0.24 cfs @ 14.23 hrs, Volume= 0.206 af, Atten= 90%, Lag= 127.4 min
Discarded = 0.24 cfs @ 14.23 hrs, Volume= 0.206 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 278.09' @ 14.23 hrs Surf.Area= 2,057 sf Storage= 3,486 cf
Flood Elev= 281.00' Surf.Area= 4,620 sf Storage= 9,290 cf

Plug-Flow detention time= 201.8 min calculated for 0.206 af (100% of inflow)
Center-of-Mass det. time= 201.9 min (1,092.3 - 890.4)

Volume	Invert	Avail.Storage	Storage Description
#1	275.00'	9,290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
275.00	351	95.0	0	0	351
276.00	800	148.0	560	560	1,383
277.00	1,366	168.0	1,070	1,631	1,910
278.00	1,995	224.0	1,671	3,301	3,668
279.00	2,732	256.0	2,354	5,655	4,914
280.00	4,620	347.0	3,635	9,290	9,291

Device	Routing	Invert	Outlet Devices
#1	Discarded	275.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 274.00'

Discarded OutFlow Max=0.24 cfs @ 14.23 hrs HW=278.09' (Free Discharge)
↑**1=Exfiltration** (Controls 0.24 cfs)

Summary for Pond 29P: Basin #6

Inflow Area = 1.080 ac, 9.69% Impervious, Inflow Depth = 1.14" for 100-yr event
Inflow = 0.85 cfs @ 12.18 hrs, Volume= 0.103 af
Outflow = 0.31 cfs @ 12.67 hrs, Volume= 0.075 af, Atten= 64%, Lag= 29.0 min
Primary = 0.31 cfs @ 12.67 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 289.07' @ 12.67 hrs Surf.Area= 1,148 sf Storage= 1,293 cf
Flood Elev= 290.00' Surf.Area= 1,689 sf Storage= 2,606 cf

Plug-Flow detention time= 176.1 min calculated for 0.075 af (73% of inflow)
Center-of-Mass det. time= 70.8 min (981.6 - 910.7)

Volume	Invert	Avail.Storage	Storage Description
#1	287.00'	2,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
287.00	186	90.0	0	0	186
288.00	599	150.0	373	373	1,338
289.00	1,112	183.0	842	1,215	2,228
290.00	1,689	201.0	1,390	2,606	2,811

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 286.50' / 285.40' S= 0.0157 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	289.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.67 hrs HW=289.07' (Free Discharge)
↑—**1=Culvert** (Passes 0.30 cfs of 4.29 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 0.85 fps)

Summary for Pond 33P: Basin #9

Inflow Area = 0.191 ac, 4.96% Impervious, Inflow Depth = 0.98" for 100-yr event
Inflow = 0.13 cfs @ 12.13 hrs, Volume= 0.016 af
Outflow = 0.03 cfs @ 13.11 hrs, Volume= 0.016 af, Atten= 78%, Lag= 58.3 min
Discarded = 0.03 cfs @ 13.11 hrs, Volume= 0.016 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 296.45' @ 13.11 hrs Surf.Area= 401 sf Storage= 153 cf
Flood Elev= 298.00' Surf.Area= 921 sf Storage= 1,159 cf

Plug-Flow detention time= 55.1 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 55.1 min (972.6 - 917.6)

Volume	Invert	Avail.Storage	Storage Description
#1	296.00'	1,159 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	283	76.0	0	0	283
297.00	572	89.0	419	419	473
298.00	921	126.0	740	1,159	1,115

Device	Routing	Invert	Outlet Devices
#1	Discarded	296.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.50'
#2	Primary	297.75'	**8.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.03 cfs @ 13.11 hrs HW=296.45' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=296.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 35P: Basin #10

Inflow Area =	0.164 ac,	0.00% Impervious,	Inflow Depth =	1.86" for 100-yr event
Inflow =	0.31 cfs @	12.10 hrs,	Volume=	0.025 af
Outflow =	0.21 cfs @	12.37 hrs,	Volume=	0.026 af, Atten= 32%, Lag= 15.7 min
Discarded =	0.01 cfs @	12.35 hrs,	Volume=	0.018 af
Primary =	0.20 cfs @	12.37 hrs,	Volume=	0.008 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 296.91' @ 12.35 hrs Surf.Area= 162 sf Storage= 309 cf
Flood Elev= 297.00' Surf.Area= 162 sf Storage= 324 cf

Plug-Flow detention time= 209.9 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 218.0 min (1,095.0 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	295.00'	324 cf	**3.00'W x 54.00'L x 2.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 290.00'
#2	Primary	296.90'	**54.0' 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

Discarded OutFlow Max=0.01 cfs @ 12.35 hrs HW=296.91' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.11 cfs @ 12.37 hrs HW=296.91' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.25 fps)

Summary for Link 4L: DP-A

Inflow Area = 6.129 ac, 8.14% Impervious, Inflow Depth = 0.31" for 100-yr event
Inflow = 0.71 cfs @ 12.57 hrs, Volume= 0.160 af
Primary = 0.71 cfs @ 12.57 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link 5L: DP-B

Inflow Area = 2.599 ac, 1.19% Impervious, Inflow Depth = 0.54" for 100-yr event
Inflow = 0.89 cfs @ 12.21 hrs, Volume= 0.117 af
Primary = 0.89 cfs @ 12.21 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

APPENDIX F

Recharge Volume / Water Quality Volume / TSS Removal / Mounding Calculations

Pepperell Road
Groton, MA

December 12, 2022
5454

Stormwater Management Area #1

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.221	0.6	0.011
Total	**0.221**		**0.011**

Total Recharge Volume Required = 0.011 Ac-ft
Total Recharge Volume Required (Rv) = 481 C.ft
Recharge Vol. Provided (from Infil. Basin) = 2,784.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.221 Ac
Required Sediment Forebay vol, Fv= 80 C.ft

Sediment Volume Provided = 264 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 220 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 2,784 C.ft
Drawdown: 63.01 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

Pepperell Road
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Stormwater Management Area #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.002	0.6	0.000
Total	**0.002**		**0.000**

Total Recharge Volume Required = 0.000 Ac-ft
Total Recharge Volume Required (Rv) = 4 C.ft
Recharge Vol. Provided (from SWMA 1) = 381.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.002 Ac
Required Sediment Forebay vol, Fv= 1 C.ft

Sediment Volume Provided = 0 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 110 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 381 C.ft
Drawdown: 17.25 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

Pepperell Road
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Level Spreader #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.060	0.6	0.003
Total	**0.060**		**0.003**

Total Recharge Volume Required = 0.003 Ac-ft
Total Recharge Volume Required (Rv) = 131 C.ft
Recharge Vol. Provided (from Infil. Basin) = 834.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.060 Ac
Required Sediment Forebay vol, Fv= 22 C.ft

Sediment Volume Provided = 240 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 168 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 834 C.ft
Drawdown: 24.72 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

Pepperell Road
Groton, MA

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Level Spreader #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.080	0.6	0.004
Total	**0.080**		**0.004**

Total Recharge Volume Required = 0.004 Ac-ft
Total Recharge Volume Required (Rv) = 174 C.ft
Recharge Vol. Provided (from Infil. Basin) = 1,180.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.080 Ac
Required Sediment Forebay vol, Fv= 29 C.ft

Sediment Volume Provided = 120 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 434 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 1,180 C.ft
Drawdown: 13.54 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

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Level Spreader #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.230	0.6	0.012
Total	**0.230**		**0.012**

Total Recharge Volume Required = 0.012 Ac-ft
Total Recharge Volume Required (Rv) = 501 C.ft
Recharge Vol. Provided (from Infil. Basin) = 3,486.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.230 Ac
Required Sediment Forebay vol, Fv= 83 C.ft

Sediment Volume Provided = 0 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 350 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 3,486 C.ft
Drawdown: 49.59 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

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Level Spreader #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.100	0.6	0.005
Total	**0.100**		**0.005**

Total Recharge Volume Required = 0.005 Ac-ft
Total Recharge Volume Required (Rv) = 218 C.ft
Recharge Vol. Provided (from Infil. Basin) = 1,263.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.100 Ac
Required Sediment Forebay vol, Fv= 36 C.ft

Sediment Volume Provided = 47 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 186 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 1,263 C.ft
Drawdown: 33.81 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

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Stormwater Management Area #1

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.050	0.6	0.003
Total	**0.050**		**0.003**

Total Recharge Volume Required = 0.003 Ac-ft
Total Recharge Volume Required (Rv) = 109 C.ft
Recharge Vol. Provided (from Infil. Basin) = 199.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.050 Ac
Required Sediment Forebay vol, Fv= 18 C.ft

Sediment Volume Provided = 40 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 507 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 199 C.ft
Drawdown: 1.95 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

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Stormwater Management Area #2

Stormwater Recharge Calculations

CALCULATIONS

Recharge Volume, Rv:

$R_v = A_C x F$

Hydrologic Soil Group	Impervious Area (Ac) [1]	Target Depth (F)	Recharge Volume (Rv) Ac-feet
A	0.027	0.6	0.001
Total	**0.027**		**0.001**

Total Recharge Volume Required = 0.001 Ac-ft
Total Recharge Volume Required (Rv) = 59 C.ft
Recharge Vol. Provided (from SWMA 1) = 2,142.0

Required Sediment Forebay vol, Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.027 Ac
Required Sediment Forebay vol, Fv= 10 C.ft

Sediment Volume Provided = 78 **C.ft**

REFERENCES

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

NRCS Hydrologic Soil Group	Approx. Soil Texture	Target Depth Factor (F)
A	sand	0.6 inch
B	loam	0.35 inch
C	silty loam	0.25 inch
D	clay	0.1 inch

Drawdown Calculations

CALCULATIONS

Proposed Infiltration Area Calculations:

$$Drawdown = \frac{R_V}{(Rawls\ Rate)(Bottom\ Area)}$$

Drawdown Calculations:

Soil Texture: 2 Loamy Sand

Bottom Surface Area (A): 288 SF
Rawls Rate: 2.41 in/hr
Total Recharge Volume Provided= 2,142 C.ft
Drawdown: 37.03 hr
Drawdown is less than 72 Hours as Required

REFERENCES

Table 2.3.3: 1982 Rawls Rates

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate
1 Sand	A	8.27 in/hr
2 Loamy Sand	A	2.41 in/hr
3 Sandy Loam	B	1.02 in/hr
4 Loam	B	0.52 in/hr
5 Silt Loam	C	0.27 in/hr
6 Sandy Clay Loam	C	0.17 in/hr
7 Clay Loam	D	0.09 in/hr
8 Silty Clay Loam	D	0.06 in/hr
9 Sandy Clay	D	0.05 in/hr
10 Silty Clay	D	0.04 in/hr
11 Clay	D	0.02 in/hr

NOTES:

Input Values

[1] = Refer to Proposed Conditions HydroCAD modeling report

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Adjusted Recharge/WQV Calcs

Stormwater Recharge Calculations

Capture Area Adjustment, Rvadj:

$$R_v adj = \frac{A_t}{A_p} x R_v$$

[1] Imp. area captured by ponds, Ap =	0.77	Ac	
[1] Total impervious area on site, AT =	0.900	Ac	*total impverious excludes roof areas as they are fully infiltrated
Recharge volume required, Rv =	1,960	C.ft	
Capture Rate=	**86%**	OK	
Capture Area Adjustment Factor=	**1.17**		
Adjusted Recharge Volume Required Rvadj =	**2,291**	**C.ft**	
[1] Total Recharge Volume Provided =	12,269.0	**C.ft**	

NOTES:

Input Values

[1] = Sum of Recharge Vol. Provided from Infil. Area 1, Infil. Area 2, Infil. Area 3 and Infil. Basin

Water Quality Calculations

CALCULATIONS

Water Quality Calculation:

$$V_{WQ} = D_{WQ}(ft) x\ A_T(ft^2)$$

Water Quality Depth =	1	in
Water Quality Depth , DWQ =	**0.08**	**ft.**
Total impervious area on site, AT =	0.900	Ac.
AT =	**39,204**	**ft²**
Required Water Quality Volume, VWQ =	**3,267**	**C.ft.**

REFERENCES

1 inch depth
Zone II discharges
IWPA discharges
Critical Area
Runoff from LUHPPL
Infiltration rate >2.4 inches/hour
1/2 inch depth
Discharge to other ares
8 inch
9 inch
10 inch
11 inch

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Post A.3, A.5, A.6

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Grass Channel	0.50	1.00	0.50	0.50
Sediment Forebay	0.25	0.50	0.13	0.38
	0.00	0.38	0.00	0.38
	0.00	0.38	0.00	0.38
	0.00	0.38	0.00	0.38

Total TSS Removal = 63%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5454-Maple Realty Trust
Prepared By: RWP
Date: 12-Dec-22

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Post A.2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Sediment Forebay	0.25	0.75	0.19	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56

Total TSS Removal = 44%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5454-Maple Realty Trust
Prepared By: RWP
Date: 12-Dec-22

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Post A.8, A.9

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
Sediment Forebay	0.25	0.75	0.19	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56
	0.00	0.56	0.00	0.56

Total TSS Removal = 44%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5454-Maple Realty Trust
Prepared By: RWP
Date: 12-Dec-22

*Equals remaining load from previous BMP (E) which enters the BMP

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Post A.8, A.9

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Grass Channel	0.50	1.00	0.50	0.50
Infiltration Basin	0.80	0.50	0.40	0.10
	0.00	0.10	0.00	0.10
	0.00	0.10	0.00	0.10
	0.00	0.10	0.00	0.10

Total TSS Removal = 90%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5454-Maple Realty Trust
Prepared By: RWP
Date: 12-Dec-22

*Equals remaining load from previous BMP (E) which enters the BMP

APPENDIX G

Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE MANUAL

FOR A

DEFINITIVE SUBDIVISION
PEPPERELL ROAD

IN

GROTON,
MASSACHUSETTS

PREPARED BY: DILLIS & ROY
CIVIL DESIGN GROUP, INC.
1 Main Street, Suite 1
Lunenburg, MA 01462

PREPARED FOR: MAPLE REALTY TRUST
P.O. Box 381
Groton, Massachusetts

DECEMBER 12TH, 2022

CDG PROJECT # 5454

DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

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1.0 Project Narrative

1.1 Overview of Drainage System
1.2 Routine Operation & Maintenance Tasks
1.3 O&M Schedule

2.0 Appendices

Appendix A – Stormwater Management System Owners/Operators

1.0 Project Narrative

1.1 Proposed Stormwater Management System

Runoff from the proposed development will be conveyed and treated through a combination of Best Management Practices (BMP's). The following is a brief discussion of each conveyance and treatment BMP proposed.

Stormwater Basins

Multiple stormwater basins are proposed to capture and provide infiltration of runoff associated with the proposed pavement and grassed areas. Stormwater basins will be constructed with an emergency spillway or outlet control structure. If an outlet cannot be provided due to site grading constrains, the basin will be designed to provide a minimum of 1-foot of freeboard from the top of the berm to the 100-year peak ponding elevation. Additionally, all basins have been designed to drain within 72 hours of the design storm.

Recharge Trenches

Multiple recharge trenches are proposed along the roadway and along the residential driveways. The recharge trenches will capture runoff associated with portions of pavement and grassed areas, providing exfiltration and storage of stormwater throughout the entire trench. Each trench will have a 4" pvc, perforated pipe along the bottom centerline to encourage exfiltration and to evenly distribute stormwater throughout the entire trench.

Drip Line Recharge Trenches

Drip line recharge trenches are proposed along the foundations of each dwelling to collect and mitigate any stormwater runoff associated with the proposed roofs. The recharge trenches will consist of ¾" trap stone laid on filter fabric to prevent sediment buildup. The recharge trenches have been designed to accommodate the runoff volume associated with the 100-year storm.

1.2 Operation & Maintenance Tasks

The following activities shall be performed routinely to allow for proper functioning of the stormwater system. The following are guidelines referring to each major component of the stormwater management system.

1.2.1 Street Sweeping

Street sweeping shall be performed at least annually. For most effective results, sweeping shall be performed by a vacuum style truck in the early

spring before spring rain events can wash silt and sediment into the stormwater system. Silt and sediment shall be disposed of in accordance with local, state and federal guidelines for hazardous waste.

1.2.2 Stormwater Basin

The stormwater basins shall be monitored and maintained regularly to ensure no obstructions in the system are present. The basin shall be monitored for the buildup of sedimentation. If the depth of sedimentation begins to impair the basin's ability to infiltrate water, the basin will need to be cleaned out.

The riprap used for the spillway and sediment forebay shall be inspected regularly for sediment build up, clogging or other unwanted materials such as trash. The riprap shall be cleaned as required.

1.2.3 Sediment Forebay

A sediment forebay is required as a pretreatment device prior to discharging stormwater to the infiltration basin. The sediment forebay will provide pretreatment by slowing stormwater runoff and increasing settlement of the sediment. The sediment forebay shall be inspected monthly and cleaned of accumulated sediment on a quarterly basis. After sediment removal, repair any damaged vegetation by reseeding or re-sodding. Grass shall be maintained at a height of 4-6 inches.

1.2.5 Storm Drain Lines

Storm drainage inlets and outlets shall be inspected incidentally with all structure inspections. Evidence of debris intrusion or excessive siltation or sedimentation could result in the need to clean a storm drain line. Flushing or jetting shall be performed as required. All flushing and jetting shall be performed in the direction away from any outlet devices. A vacuum truck shall be used at the opposite end of the flushing or jetting to remove any silt or sediment that is cleaned from the storm drain.

1.2.6 Recharge Trenches

Perform preventive maintenance at least twice a year. Inspect and clean pretreatment BMPs every six months and after every major storm event (2-year return frequency). Remove accumulated sediment, trash, debris, leaves, and grass clippings from mowing. Remove tree seedlings, before they become firmly established. Inspect the infiltration trench after the first several rainfall events, after all major storms, and on regularly scheduled dates twice a year. If the top of the trench is grassed, it must be mowed on a seasonal basis. Grass height must be maintained to be no

more than four inches. Routinely remove grass clippings leaves and accumulated sediment from the surface of the trench. Inspect the trench 24 hours or several days after a rain event, to look for ponded water. If there is ponded water at the surface of the trench, it is likely that the trench surface is clogged. To address surface clogging, remove and replace the topsoil or first layer of stone aggregate and the filter fabric. If water is ponded inside the trench, it may indicate that the bottom of the trench has failed. To rehabilitate a failed trench, all accumulated sediment must be stripped from the bottom, the bottom of the trench must be scarified and tilled to induce infiltration, and all of the stone aggregate and filter fabric or media must be removed and replaced.

Infiltration structures shall be inspected on a routine basis (at least semiannually) and after a major storm event. Important items to examine include: differential settlement, cracking, erosion, leakage or tree growth on the embankment, and sediment accumulation and the density of grass. Site design shall be reevaluated shall clogging occur to determine the factors responsible for the problem.

These inspections shall be used to determine the effectiveness of the regular maintenance schedule as well as to determine the timing of corrective maintenance procedures.

Buffers, side slopes, and basin floors shall be mowed at least twice a year. A routine shall be developed for the removal of trash and debris. Grading and landscaping around facility inlets shall be designed to facilitate mowing, trimming, removal and other general maintenance. Grass clippings and accumulated organic matter must be removed to prevent the formation of an impervious organic layer or mat. Trees, shrubs and other vegetative cover also require periodic maintenance such as fertilizing, pruning and pest control to maintain healthy growth.

Please refer to the attached Stormwater Operation & Maintenance Diagram for locations of each stormwater management area. The diagram outlines where and what procedures to follow as indicated in this manual.

O&M Schedule

O&M Task		Monthly	Quarterly	Spring	Fall	2-years	As-required
1.	**Stormwater Basin**						
	Inspection			**x**	**x**		**x**
	Mowing	**3-4 times during the growing season**					
	Remove Debris			**x**	**x**		**x**
	Remove Sediment						**x**
	Re-seed						**x**
2.	**Sediment Forebay**						
	Inspection	**x**		**x**	**x**		**x**
	Mowing	**3-4 times during the growing season**					
	Remove Debris		**x**				**x**
	Remove Sediment		**x**				**x**
	Re-seed						**x**
3.	**Stone Rip Rap**						
	Inspection			**x**			
	Remove Debris			**x**			**x**
	Remove Silt/Sediment					**x**	**x**
	Repair						**x**
4.	**Storm drain Lines**						
	Inspection			**x**			**x**
	Clean						**x**
5.	**Recharge Trench**						
	Inspection			**x**	**x**		
	Remove Debris			**x**	**x**		**x**
	Remove Silt/Sediment					**x**	**x**
	Mowing	**3-4 times during the growing season**					

APPENDIX A

Stormwater Management System Owners/Operators

1.	Stormwater Management System Owners:	To be determined
2.	Current and future operators:	To be determined
3.	Emergency contact information:	To be determined
4.	Change of trustee:	To be determined
5.	Financial Responsible Party:	To be determined
6.	Routine Maintenance:	To be determined
7.	O&M activities:	To be determined
8.	Record keeping	To be determined

APPENDIX H

Long Term Pollution Prevention Plan

LONG-TERM POLLUTION PREVENTION PLAN

FOR

A DEFINITIVE SUBDIVISION
PEPPERELL ROAD

IN

GROTON,
MASSACHUSETTS

PREPARED BY: DILLIS & ROY
CIVIL DESIGN GROUP, INC.
1 Main Street, Suite 1
Lunenburg, MA 01462

PREPARED FOR: MAPLE REALTY TRUST
P.O. Box #381
Groton, Massachusetts 01450

DECEMBER 12TH, 2022

CDG PROJECT # 5454

1.0 Summary

This Long-Term Pollution Prevention Plan (LTPPP) has been prepared by Dillis & Roy Civil Design Group, Inc. pursuant to the Massachusetts Stormwater Regulations. The proposed project includes the construction of a subdivision road providing access to nine (9) single-family homes, each of which will be serviced by town water and a private septic system.

The layout of the proposed site has been carefully planned to reduce the amount of stormwater leaving the site. The stormwater management system has been designed in accordance with the Massachusetts Stormwater Regulations to provide pretreatment of the stormwater prior to discharge.

2.0 Spill Prevention Plan

No hazardous materials other than normal cleaning items are expected to be stored on site after the construction period has ended.

It is expected that normal DEP notification procedures would be triggered for major spills such as heating oil or propane and natural gas leaks.

3.0 Stormwater System O&M

A Stormwater Operation & Maintenance plan has been prepared for the proposed stormwater management system. Refer to this document for details pertaining to the required inspections, routine maintenance and operation details.

4.0 Fertilizers, herbicides, and pesticides

Application of fertilizer, herbicides and pesticides shall be performed in a manner consistent with the industry standards for the application.

No application of chemicals is to be performed within the stormwater management areas on the site.

5.0 Snow/Salt Management

5.1 Snow Plowing

It is expected that the site will be plowed by the Groton DPW once the road is accepted.

5.2 Salt/Sand Usage

It is expected that sanding and salting will be performed on an infrequent basis

during times when unusually icy conditions persist for periods of time.

5.3 Street Sweeping

The Stormwater Operation & Maintenance Plan calls for the road and parking areas to be swept in the spring, after the threat of winter precipitation has passed.

6.0 Waste Management

6.1 Solid Waste

A dumpster will be located on the site during construction. This area will be the primary area for the on-site storage of solid waste prior to pick-up by a waste management company.