NOTICE OF INTENT DRAWINGS
256 FREEPORT STREET
DORCHESTER, MA.
OPERATION & MAINTENANCE PLAN

256 Freeport Street
Boston, Massachusetts

Prepared for:
IBEW Local 103
256 Freeport Street
Dorchester, MA 02122

Prepared by
Howard Stein Hudson
11 Beacon Street, Suite 1010
Boston, MA 02108
617-482-7080

April 25, 2022
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Project Narrative

1.0 Introduction

This Stormwater Management System Operation & Maintenance Plan has been prepared by Howard Stein Hudson (HSH) on behalf of the International Brotherhood of Electrical Workers (IBEW) LOCAL 103 (the "Applicant") for the inspection and maintenance of structural Best Management Practices (BMPs) and for measures to prevent pollution associated with the proposed parking lot at 253 Freeport Street, Boston MA. The stormwater BMPs include porous pavements and level spreaders.

This document has been prepared in accordance with the requirements of the Stormwater Regulations included in the Massachusetts Wetlands Protection Act Regulations (310 CMR 10).

2.0 Purpose

This Operation & Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of BMPs to be installed on-site. Included in this O&M Plan is a description of each BMP type, the location of individual BMPs, an inspection schedule for each stormwater system and forms to be utilized to document the inspection and maintenance of each BMP. Snow storage areas have been identified and are shown on the plan entitled “Snow Storage Plan”. Once the designated snow storage areas have reached capacity, excess snow will be mechanically removed. This O&M Plan is intended for use by IBEW Local 103 maintenance personnel.

The Facilities Manager will be responsible for the operation and maintenance of the stormwater management facilities and associated stormwater management features.

Bob Bonanno:
Facilities Manager
IBEW LOCAL 103
256 Freeport Street,
Dorchester MA 02122
Phone: (617) 477-1696
Cell: (617) 840-3367
3.0 Descriptions and Locations of Stormwater BMPs

The following post-construction stormwater best management practices (BMPs) have been designed for the IBEW new porous pavement parking lots to assure its continued performance. A map showing the location of systems and facilities associated with the stormwater management system is provided in Attachment A.

3.1 POROUS PAVEMENT
There are two porous pavement areas design for the new parking lot. Porous pavement is a paved surface with a higher than normal percentage of air voids to allow water to pass through it and infiltrate into the subsoil. This porous surface replaces traditional pavement, allowing parking lot, driveway, and roadway runoff to infiltrate directly into the soil and receive water quality treatment. All permeable paving systems consist of a durable, load-bearing, pervious surface overlying a stone bed that stores rainwater before it infiltrates into the underlying soil.

Porous pavement performs well in cold climates. Porous pavement can reduce meltwater runoff and avoid excessive water on the road during the snowmelt period.

3.2 LEVEL SPREADER
There are three level spreaders are designed on-site. These structures are designed to receive concentrated flow from channels, outlet structures, or other conveyance structures, and converts it to sheet flow where it can disperse uniformly across a stable slope as a permanent structure to reduce runoff velocities, reduce erosion and gulleys in the channel and allow sediments to settle out.

4.0 Inspection Frequency, Inspection Safety and Maintenance Safety

4.1 INSPECTION FREQUENCY
A complete and thorough inspection of the system shall be performed once a month during the first six (6) months and then on a semi-annual basin (spring and fall) using the Inspection and Maintenance Forms provided in Attachment B. A qualified member of the Facilities Manager team shall complete an Inspection and Maintenance Form for each BMP at each visit. See Section 5 for a description of maintenance procedures.

4.2 INSPECTION SAFETY
The inspector performing the inspections of the drainage structures shall have the proper safety equipment (heavy duty gloves, steel-toed boots, hard hat, first aid kits, etc.) and appropriate training before conducting inspections. If the inspection of the drainage structure reveals any safety problems
the site activities may need to be modified to reduce or eliminate the safety risk. The inspector shall be aware of the following safety precautions when conducting drainage structure inspections:

- Never enter a confined space unless you have proper Occupational Health and Safety Administration (OSHA) training. Do not enter any confined space until the atmosphere has been checked and proper safety equipment is worn or erected.
- Avoid entering pipes or conduits without another individual present. If the structural strength of a pipe or conduit is questionable, do not enter the pipe or conduit.
- Check the ventilation in the drainage structures before using any ignitable materials. Some drainage structures may be sealed or have poor ventilation, posing a safety risk to the inspector if the vapor comes in contact with an open flame. Also, be sure to allow the drainage structures to vent for a period of time if a peculiar odor is present.
- Check the water depth of the system before taking a step in the water. The water may be deeper than it seems or there may be steep slopes below the water line.
- Be aware that nails, broken glass, or other sharp debris may be in the storm water system and can cause injury. Wearing the proper safety clothing will reduce the safety risk associated with these objects.

4.2 MAINTENANCE SAFETY
All maintenance work shall be done in compliance with OSHA regulations. Maintenance personal will have the proper safety equipment (heavy duty gloves, steel-toed boots, hard hat, first aid kits, etc.) and training before performing any maintenance on the drainage structures. Maintenance personnel shall be aware of the following safety precautions when performing maintenance on the drainage structures:

- Operate equipment safely and in accordance with the manufacturer’s specifications. Equipment operators must remain aware of site personnel at all times to avoid causing injury to others.
- Contact Dig Safe System Inc. at 1-888-DIG-SAFE seventy-two (72) hours before excavating a site. Underground utility wires and pipes may be present. Cover or clearly mark excavated
areas that cannot be filled in at the end of the day to alert site employees of the potential risk. Also, be aware of overhead electrical wires that could come in contact with maintenance equipment.

- Contact Dig Safe System Inc. at 1-888-DIG-SAFE seventy-two (72) hours before excavating a site. Underground utility wires and pipes may be present. Cover or clearly mark excavated areas that cannot be filled in at the end of the day to alert site employees of the potential risk. Also, be aware of overhead electrical wires that could come in contact with maintenance equipment.

- Wear gloves if any mechanical parts or structural components are going to be handled. Wearing gloves not only reduces the risk of getting cuts and abrasions, but also reduces the exposure of pollutants to the skin.

### 5.0 Inspection and Maintenance Procedures

The Facilities Manager is responsible for the inspection and maintenance of the stormwater system components. The following list of inspections and maintenance shall be performed on the required schedule. All sediment, debris, and hydrocarbons that are removed during the maintenance of the stormwater system components should be properly handled and disposed.

#### 5.1 POROUS PAVEMENT

a. Inspect annually for deterioration or spalling of the pavement. (January, April, July, October)

b. No winter sanding shall be conducted on the porous surface as it would lead to clogging of the surface.

c. The pavement should be vacuum swept monthly.

#### 5.2 LEVEL SPREADER

a. Inspect and remove trash monthly

b. Clean 2 times per year, removing and replacing dead vegetation, weeds etc.

### 6.0 Record Keeping

An “Inspection and Maintenance Form” shall be filled out each time inspectional or maintenance work is performed. A binder shall be kept by the Facility Manager that contains all of the completed inspection forms and/or photographs and related material. A review of all Operation and Maintenance actions should take place annually to ensure that these Stormwater BMPs are being
taken care of in the manner illustrated in this Operation & Maintenance Plan. Additionally, all operation and maintenance records shall be retained for at least ten (10) years and be provided to the Conservation Commission upon request.
Attachment A:
System Location Map
Attachment B: Inspection and Maintenance Forms
# INSPECTION AND MAINTENANCE FORM

**STORMWATER BEST MANAGEMENT PRACTICES (BMPs)**

Drainage System: **Porous Pavement**          Date: ___________ Time: ________

Weather/Temp.: ____________________ Inspector(s): ____________________

Date of Last Precipitation: ___________ Precipitation Amount: ________ *Inches*

Precipitation Type: ____________________ Location Onsite: ____________________

<table>
<thead>
<tr>
<th>Scoring Breakdown:</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A = Not Applicable</td>
</tr>
<tr>
<td>N/I = Not Investigated</td>
</tr>
<tr>
<td>0 = Not a problem</td>
</tr>
</tbody>
</table>

## 1. Pavement Surface

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<thead>
<tr>
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<th>N/I</th>
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<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spalling</td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Clogged Surface</td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Frost Heave</td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

## Overall Condition

**Inspector’s Summary:**

---

---
# INSPECTION AND MAINTENANCE FORM

## STORMWATER BEST MANAGEMENT PRACTICES (BMPs)

<table>
<thead>
<tr>
<th>Drainage System:</th>
<th>Level Spreader</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather/Temp.:</td>
<td></td>
<td>Inspector(s):</td>
<td></td>
</tr>
<tr>
<td>Date of Last Precipitation:</td>
<td></td>
<td>Precipitation Amount:</td>
<td>Inches</td>
</tr>
<tr>
<td>Precipitation Type:</td>
<td></td>
<td>Location On-Site:</td>
<td></td>
</tr>
</tbody>
</table>

### Scoring Breakdown:

- **N/A** = Not Applicable
- **N/I** = Not Investigated
- **0** = Not a problem
- **1** = Monitor (potential for future problems exist)
- **2** = Routine Maintenance Required
- **3** = Immediate Repair Necessary

### 1. Grass on Surface

<table>
<thead>
<tr>
<th>Overall Condition</th>
<th>N/A</th>
<th>N/I</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

### 5. Outlet

<table>
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<th>Broken</th>
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<th>N/I</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clogged</td>
<td>N/A</td>
<td>N/I</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Submerged Outlet Pipe</th>
<th>N/A</th>
<th>N/I</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

### Overall Condition

**Inspector’s Summary:**

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Introduction

This Stormwater Management Report describes the existing drainage conditions and proposed stormwater best management practices (BMPs) designed to treat and control runoff for the proposed new parking at 256 Freeport Street in Boston, MA.

The Project proposes the construction of two parking lots that provide parking for 67 vehicles. Construction will include porous pavement, one retaining wall, trees, fencing and lighting.

The approach to stormwater management for this project is to balance the needs of the project while preserving the integrity of the groundwater aquifer and the existing isolated vegetated wetlands. The proposed stormwater management system incorporates Best Management Practices (BMPs), as described in the Department of Environmental Protection Stormwater Management Policy Handbook. Stormwater BMPs include porous pavement and level spreaders to help reduce pollutant concentrations in the stormwater runoff. The Project will result in an decrease in impervious area of approximately 5,968 ft².

Pre and post-construction hydrology was analyzed with HydroCAD v 10.0, model using TR-20 methodology. The rainfall data was obtained from the Cornell University Atlas of Precipitation Extremes for Northeastern United States & Southeastern Canada. The pre- and post-development peak discharge rates have been analyze and are included in Table 1. The project will result in a slight increase in peak discharge rates, but overall provides an improvement over existing conditions. Soils at the site are mapped as Natural Resource Conservation Service (NRCS) Hydrologic Soil Group C. The NRCS soil maps are included in Appendix A.

Hydrology

Pre-Construction Hydrology

The hydrology calculations analyze three design points. Most existing stormwater runoff overland flows northerly toward on-site isolated vegetated wetlands, DP1 and DP2. A portion of the existing site overland flows southwest toward an existing catch basin, DP3. These subcatchment areas are shown on the plan entitled “Existing Hydrology” provided in Appendix B.
**Post-Construction Hydrology**

The proposed stormwater management system was designed to maintain peak flows and volumes contributing to the individual existing Isolated Vegetated Wetlands. Pre and Post construction peak flows and volumes are in Table 1. The proposed subcatchment areas are shown on the plan entitled “Proposed Hydrology” provided in Appendix C.

**DESIGN POINT 1 – NORTH ISOLATED VEGETATED WETLAND**

Runoff from subcatchment PR 5 is captured by porous pavement and will either infiltrate to groundwater or discharge to DP1 via a porous pavement underdrain and level spreader. Runoff within subcatchment PR8 will continue to flow overland to the existing isolated vegetated wetlands. DP1 will have a slight decrease in peak flows for the 2, 10, and 100-year storms. DP1 stormwater volumes slightly decrease for the 2-year storm and there’s a de minimis increase for the 10 and 100-year storms.

**DESIGN POINT 2 – SOUTH ISOLATED VEGETATED WETLAND**

Runoff within subcatchment PR1 will continue to flow overland to the existing isolated vegetated wetlands DP2. Runoff from subcatchments PR3, PR4 and PR7 is captured by porous pavement and will either infiltrate to groundwater or discharge to DP2 via an underdrain. DP2 will have a slight decrease in peak flows for the 2, 10, and 100-year storms. DP2 stormwater volumes slightly decrease for the 2 and 10-year storms and there’s a slight increase for the 100-year storm.

**DESIGN POINT 3 – EXISTING CATCH BASIN**

PR6 overland flows southwest toward an existing catch basin, DP3. PR 2 is captured by porous pavement and will either infiltrate or discharge to DP3 via sheet flow. DP2 will have a decrease in peak flows and volumes for the 2, 10, and 100-year storms.

**Stormwater Management Standards**

**STANDARD 1: NO NEW UNTREATED DISCHARGES**

The Massachusetts Stormwater Handbook requires that the project demonstrates that there are no new untreated discharges and that new discharges will not cause erosion or scour to downstream wetlands.

A majority of runoff from the paved areas will be filtered through porous pavement. Other areas disturbed by construction will be stabilized with vegetation and is not expected to cause erosion or scouring downstream.
STANDARD 2: POST-DEVELOPMENT PEAK DISCHARGE RATES NOT TO EXCEED PRE-DEVELOPMENT PEAK DISCHARGE RATES

The project meets Standard 2 for the 2, 10 and 100 year storms. Peak discharge rates and volumes are provided in Table 1. Hydrology calculations are provided in Appendices B and C.

<table>
<thead>
<tr>
<th>Design Point</th>
<th>Pre-Development Rate (cfs)</th>
<th>Pre-Development Volume(cf)</th>
<th>Post-Development Rate (cfs)</th>
<th>Post-Development Volume(cf)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-Year Storm Event</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP #1: Isolated Vegetated Wetland</td>
<td>0.73</td>
<td>2,901</td>
<td>0.61</td>
<td>2,874</td>
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<tr>
<td>DP #2: Isolated Vegetated Wetland</td>
<td>1.42</td>
<td>5,837</td>
<td>1.42</td>
<td>4,792</td>
</tr>
<tr>
<td>DP #3: Existing Catch Basin</td>
<td>0.98</td>
<td>3,485</td>
<td>0.57</td>
<td>1,742</td>
</tr>
<tr>
<td><strong>2-Year Storm Event Total</strong></td>
<td>3.13</td>
<td>12,221</td>
<td>2.60</td>
<td>9,408</td>
</tr>
<tr>
<td><strong>10-Year Storm Event</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP #1: Isolated Vegetated Wetland</td>
<td>1.70</td>
<td>6,273</td>
<td>1.36</td>
<td>6,360</td>
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<tr>
<td>DP #2: Isolated Vegetated Wetland</td>
<td>3.33</td>
<td>12,589</td>
<td>3.15</td>
<td>11,935</td>
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<tr>
<td>DP #3: Existing Catch Basin</td>
<td>1.72</td>
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<td>0.92</td>
<td>2,918</td>
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<tr>
<td><strong>10-Year Storm Event Total</strong></td>
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<td>5.43</td>
<td>21,213</td>
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<tr>
<td><strong>100-Year Storm Event</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP #1: Isolated Vegetated Wetland</td>
<td>4.30</td>
<td>15,725</td>
<td>3.37</td>
<td>15,812</td>
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<td>DP #2: Isolated Vegetated Wetland</td>
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<td>31,668</td>
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<td>32,321</td>
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<tr>
<td>DP #3: Existing Catch Basin</td>
<td>3.51</td>
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<td>7,361</td>
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<tr>
<td><strong>100-Year Storm Event Total</strong></td>
<td>16.25</td>
<td>60,592</td>
<td>12.91</td>
<td>55,494</td>
</tr>
</tbody>
</table>

STANDARD 3: MINIMIZE OR ELIMINATE LOSS OF ANNUAL RECHARGE TO GROUNDWATER

It is anticipated that the stormwater management system will increase the annual recharge to the groundwater over existing conditions. Recharge is provided by porous pavement. The recharge volumes calculations are provided in Appendix D.

STANDARD 4: STORMWATER MANAGEMENT SYSTEM TO REMOVE 80% OF AVERAGE ANNUAL LOAD OF TOTAL SUSPENDED SOLIDS (TSS)

The stormwater management system removes 80% of the average annual total suspended solids (TSS) for the overall project by utilizing infiltration basins and porous pavement. TSS Removal Calculations were computed using the MassDEP TSS Removal Calculation Worksheet. Calculations and the project’s Water Quality Data Form are provided in Appendix D.
STANDARD 5: LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS
Standard 5 does not apply to the project. There are no land uses with higher potential pollutant loads within the project area.

STANDARD 6: STORMWATER DISCHARGES TO CRITICAL AREAS
This standard is not applicable. The stormwater discharges are not located within or near a critical area.

STANDARD 7: REDEVELOPMENT PROJECTS
The project lies within a previously developed area and will improve existing conditions.

STANDARD 8: PLAN TO CONTROL CONSTRUCTION-RELATED IMPACTS
The project will install erosion and sediment controls prior to any major earthwork activity.

STANDARD 9: LONG-TERM OPERATION AND MAINTENANCE PLAN
A long-term Operations and Maintenance Plan has been provided in Appendix E.

STANDARD 10: NO ILLICIT DISCHARGES
No illicit discharges shall be made. See Appendix G for the illicit discharge compliance statement.
Appendix A: Soil 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: [Web Soil Survey](https://websoilsurvey.nrcs.usda.gov/)
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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 17, Sep 3, 2021

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

Date(s) aerial images were photographed: Aug 13, 2020—Oct 18, 2020

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

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>603</td>
<td>Urban land, wet substratum, 0 to 3 percent slopes</td>
<td>14.9</td>
<td>100.0%</td>
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<tr>
<td></td>
<td>Totals for Area of Interest</td>
<td>14.9</td>
<td>100.0%</td>
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Appendix B: Pre-Construction Hydrology
### Extreme Precipitation Tables

**Northeast Regional Climate Center**

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

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<thead>
<tr>
<th>Smoothing</th>
<th>Yes</th>
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<tr>
<td>State</td>
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</tr>
<tr>
<td>Location</td>
<td>71.054 degrees West</td>
</tr>
<tr>
<td>Longitude</td>
<td>42.305 degrees North</td>
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<tr>
<td>Elevation</td>
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</tr>
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<td>Date/Time</td>
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#### Extreme Precipitation Estimates

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<td>0.54</td>
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<td>2.72</td>
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<td>2.41</td>
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<td>2.89</td>
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#### Lower Confidence Limits

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<th>3hr</th>
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precip.eas.cornell.edu/data.php?161884273352
Routing Diagram for Existing Hydrology
Prepared by (enter your company name here), Printed 4/26/2022
HydroCAD® 10.10-3a s/n 02930 © 2020 HydroCAD Software Solutions LLC

Subcat  Reach  Pond  Link
## Rainfall Events Listing

<table>
<thead>
<tr>
<th>Event#</th>
<th>Event Name</th>
<th>Storm Type</th>
<th>Curve</th>
<th>Mode</th>
<th>Duration (hours)</th>
<th>B/B</th>
<th>Depth (inches)</th>
<th>AMC</th>
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<td>10 yr</td>
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# Area Listing (all nodes)

<table>
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<tr>
<th>Area (acres)</th>
<th>CN</th>
<th>Description</th>
<th>Subcatchment-numbers</th>
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<tbody>
<tr>
<td>0.128</td>
<td>96</td>
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<td>0.157</td>
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<td>Woods, Fair, HSG C (EX1, EX2, EX3)</td>
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<tr>
<td><strong>2.874</strong></td>
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### Soil Listing (all nodes)

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</tr>
<tr>
<td>0.000</td>
<td>HSG B</td>
<td></td>
</tr>
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<td>HSG C</td>
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</tr>
<tr>
<td>0.000</td>
<td>HSG D</td>
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</tr>
<tr>
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### Ground Covers (all nodes)

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<th>HSG-B (acres)</th>
<th>HSG-C (acres)</th>
<th>HSG-D (acres)</th>
<th>Other (acres)</th>
<th>Total (acres)</th>
<th>Ground Cover</th>
<th>Subcatchment Numbers</th>
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<tr>
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<td>0.000</td>
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<td>2.874</td>
<td>TOTAL AREA</td>
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</table>
Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1
- Runoff Area=34,184 sf  0.00% Impervious  Runoff Depth>1.02"
  - Flow Length=135’  Tc=10.7 min  CN=73  Runoff=0.75 cfs  0.067 af

Subcatchment EX2: EX2
- Runoff Area=68,776 sf  0.00% Impervious  Runoff Depth>1.02"
  - Flow Length=173’  Tc=11.6 min  CN=73  Runoff=1.46 cfs  0.134 af

Subcatchment EX3: To off Site Drainage
- Runoff Area=22,250 sf  30.83% Impervious  Runoff Depth>1.88"
  - Flow Length=85’  Tc=10.0 min  CN=86  Runoff=0.98 cfs  0.080 af

Pond 2P: Wetlands
- Peak Elev=13.96’  Storage=5,835 cf  Inflow=1.46 cfs  0.134 af
  - Outflow=0.00 cfs  0.000 af

Pond DP1: Wetlands
- Peak Elev=13.86’  Storage=2,901 cf  Inflow=0.75 cfs  0.067 af
  - Outflow=0.00 cfs  0.000 af

Pond DP2: IBEW DR S-M
- Inflow=0.98 cfs  0.080 af
  - Primary=0.98 cfs  0.080 af

Total Runoff Area = 2.874 ac  Runoff Volume = 0.281 af  Average Runoff Depth = 1.17"
  - 94.52% Pervious = 2.717 ac  5.48% Impervious = 0.157 ac
Summary for Subcatchment EX1: EX1

Runoff = 0.75 cfs @ 12.16 hrs, Volume= 0.067 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr  2 yr Rainfall=3.26"

<table>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
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<td>100.00%</td>
<td>Pervious Area</td>
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<table>
<thead>
<tr>
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<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tr>
<td>8.5</td>
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<td>Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
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<td></td>
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<tr>
<td>10.7</td>
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<td>Total</td>
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Subcatchment EX1: EX1

Type III 24-hr  2 yr Rainfall=3.26"
Runoff Area=34,184 sf
Runoff Volume=0.067 af
Runoff Depth>1.02"
Flow Length=135'
Tc=10.7 min
CN=73
Summary for Subcatchment EX2: EX2

Runoff = 1.46 cfs @ 12.17 hrs, Volume= 0.134 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr  2 yr Rainfall=3.26"

<table>
<thead>
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<td>Pervious Area</td>
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<table>
<thead>
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<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.0</td>
<td>10</td>
<td>0.4000</td>
<td>0.16</td>
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<td>Sheet Flow, Sheet Flow</td>
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<td>Short Grass Pasture Kv= 7.0 fps</td>
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11.6 173 Total

Subcatchment EX2: EX2

Type III 24-hr  2 yr Rainfall=3.26"
Runoff Area=68,776 sf
Runoff Volume=0.134 af
Runoff Depth>1.02"
Flow Length=173'
Tc=11.6 min
CN=73
Summary for Subcatchment EX3: To off Site Drainage PRE

Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.080 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
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<td>9,835</td>
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<td>Woods, Fair, HSG C</td>
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<td>22,250</td>
<td>86</td>
<td>Weighted Average</td>
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<td>15,390</td>
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<tr>
<td>6,860</td>
<td>30.83% Impervious Area</td>
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<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tr>
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<td>Shallow Concentrated Flow, Paved Kv= 20.3 fps</td>
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10.0 85 Total

Subcatchment EX3: To off Site Drainage PRE

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=22,250 sf
Runoff Volume=0.080 af
Runoff Depth>1.88"
Flow Length=85'
Tc=10.0 min
CN=86
Summary for Pond 2P: Wetlands

Inflow Area = 1.579 ac, 0.00% Impervious, Inflow Depth > 1.02" for 2 yr event
Inflow = 1.46 cfs @ 12.17 hrs, Volume= 0.134 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 13.96' @ 24.00 hrs Surf.Area= 31,611 sf Storage= 5,835 cf

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

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<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tr>
<td>#1</td>
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<td>50,175 cf</td>
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<table>
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<tr>
<td>14.00</td>
<td>33,076</td>
<td>7,071</td>
<td>7,071</td>
</tr>
<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

Pond 2P: Wetlands

Inflow Area=1.579 ac
Peak Elev=13.96'
Storage=5,835 cf
Summary for Pond DP1: Wetlands

Inflow Area = 0.785 ac, 0.00% Impervious, Inflow Depth > 1.02" for 2 yr event
Inflow = 0.75 cfs @ 12.16 hrs, Volume = 0.067 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af, Attenu = 100%, Lag = 0.0 min

Routing by Stor-Ind method, Time Span = 0.00-24.00 hrs, dt = 0.05 hrs
Peak Elev = 13.86' @ 24.00 hrs  Surf.Area = 27,827 sf  Storage = 2,901 cf

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

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
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<tbody>
<tr>
<td>#1</td>
<td>13.75'</td>
<td>50,175 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc)</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<tr>
<td>13.75</td>
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<td>14.00</td>
<td>33,076</td>
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<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

Pond DP1: Wetlands

Inflow Area = 0.785 ac
Peak Elev = 13.86'
Storage = 2,901 cf
Summary for Pond DP2: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.511 ac, 30.83% Impervious, Inflow Depth > 1.88" for 2 yr event
Inflow = 0.98 cfs @ 12.14 hrs, Volume = 0.080 af
Primary = 0.98 cfs @ 12.14 hrs, Volume = 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.90”

Existing Hydrology

Prepared by {enter your company name here}

Printed 4/26/2022

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Page 13

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1
Runoff Area=34,184 sf  0.00% Impervious  Runoff Depth>2.20”
Flow Length=135’  Tc=10.7 min  CN=73  Runoff=1.70 cfs  0.144 af

Subcatchment EX2: EX2
Runoff Area=68,776 sf  0.00% Impervious  Runoff Depth>2.20”
Flow Length=173’  Tc=11.6 min  CN=73  Runoff=3.33 cfs  0.289 af

Subcatchment EX3: To off Site Drainage
Runoff Area=22,250 sf  30.83% Impervious  Runoff Depth>3.37”
Flow Length=85’  Tc=10.0 min  CN=86  Runoff=1.72 cfs  0.143 af

Pond 2P: Wetlands
Peak Elev=14.16'  Storage=12,588 cf  Inflow=3.33 cfs  0.289 af
Outflow=0.00 cfs  0.000 af

Pond DP1: Wetlands
Peak Elev=13.98'  Storage=6,258 cf  Inflow=1.70 cfs  0.144 af
Outflow=0.00 cfs  0.000 af

Pond DP2: IBEW DR S-M
Inflow=1.72 cfs  0.143 af
Primary=1.72 cfs  0.143 af

Total Runoff Area = 2.874 ac  Runoff Volume = 0.576 af  Average Runoff Depth = 2.41”
94.52% Pervious = 2.717 ac  5.48% Impervious = 0.157 ac
Summary for Subcatchment EX1: EX1

Runoff = 1.70 cfs @ 12.16 hrs, Volume= 0.144 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
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<tbody>
<tr>
<td>34,184</td>
<td>73</td>
<td>Woods, Fair, HSG C</td>
</tr>
<tr>
<td>34,184</td>
<td>100%</td>
<td>Pervious Area</td>
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<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
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<td>P2= 3.26&quot;</td>
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<tr>
<td>8.5</td>
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<td>0.08</td>
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<td>1.2</td>
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<td></td>
<td></td>
<td>Short Grass Pasture Kv= 7.0 fps</td>
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10.7 135 Total

Subcatchment EX1: EX1

Hydrograph

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=34,184 sf
Runoff Volume=0.144 af
Runoff Depth>2.20"
Flow Length=135'
Tc=10.7 min
CN=73
Summary for Subcatchment EX2: EX2

Runoff = 3.33 cfs @ 12.17 hrs, Volume = 0.289 af, Depth > 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.90"

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<td>68,776</td>
<td>100.00% Pervious Area</td>
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<table>
<thead>
<tr>
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<td>Grass: Bermuda n = 0.410 P2= 3.26&quot;</td>
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<td>40</td>
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<td>0.08</td>
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<td>Sheet Flow,</td>
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<td>Grass: Bermuda n = 0.410 P2= 3.26&quot;</td>
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<tr>
<td>1.7</td>
<td>123</td>
<td>0.0300</td>
<td>1.21</td>
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<tr>
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Subcatchment EX2: EX2

Type III 24-hr
10 yr Rainfall=4.90"
Runoff Area=68,776 sf
Runoff Volume=0.289 af
Runoff Depth>2.20"
Flow Length=173'
Tc=11.6 min
CN=73
Summary for Subcatchment EX3: To off Site Drainage PRE

Runoff = 1.72 cfs @ 12.14 hrs, Volume= 0.143 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.90"

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</tr>
<tr>
<td>5,555</td>
<td>96</td>
<td>Gravel surface, HSG C</td>
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<td>Pervious Area</td>
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<td>6,860</td>
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<td>Impervious Area</td>
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<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
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<td>n= 0.410</td>
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<td>P2= 3.26&quot;</td>
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<td>P2= 3.26&quot;</td>
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<td>Paved Kv= 20.3 fps</td>
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<tr>
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<td>Total</td>
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</table>

Subcatchment EX3: To off Site Drainage PRE

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=22,250 sf
Runoff Volume=0.143 af
Runoff Depth>3.37"
Flow Length=85'
Tc=10.0 min
CN=86
Summary for Pond 2P: Wetlands

Inflow Area = 1.579 ac, 0.00% Impervious, Inflow Depth > 2.20" for 10 yr event
Inflow = 3.33 cfs @ 12.17 hrs, Volume= 0.289 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.16' @ 24.00 hrs  Surf.Area= 36,267 sf  Storage= 12,588 cf

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

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>13.75'</td>
<td>50,175 cf</td>
<td>Custom Stage Data (Prismatic)</td>
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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>13.75</td>
<td>23,495</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14.00</td>
<td>33,076</td>
<td>7,071</td>
<td>7,071</td>
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<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

Pond 2P: Wetlands

Inflow Area=1.579 ac
Peak Elev=14.16'
Storage=12,588 cf
Summary for Pond DP1: Wetlands

Inflow Area = 0.785 ac, 0.00% Impervious, Inflow Depth > 2.20" for 10 yr event
Inflow = 1.70 cfs @ 12.16 hrs, Volume = 0.144 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af, Attenuation = 100%, Lag = 0.0 min

Routing by Stor-Ind method, Time Span = 0.00-24.00 hrs, dt = 0.05 hrs
Peak Elev = 13.98' @ 24.00 hrs  Surf.Area = 32,120 sf  Storage = 6,258 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

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<th>#1</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td></td>
<td>13.75'</td>
<td>50,175 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc)</td>
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<tbody>
<tr>
<td>13.75</td>
<td>23,495</td>
<td>0</td>
<td>0</td>
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<tr>
<td>14.00</td>
<td>33,076</td>
<td>7,071</td>
<td>7,071</td>
</tr>
<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

Pond DP1: Wetlands

Inflow Area = 0.785 ac
Peak Elev = 13.98'
Storage = 6,258 cf
Summary for Pond DP2: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.511 ac, 30.83% Impervious, Inflow Depth > 3.37” for 10 yr event

Inflow = 1.72 cfs @ 12.14 hrs, Volume= 0.143 af
Primary = 1.72 cfs @ 12.14 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Pond DP2: IBEW DR S-M

Hydrograph
Type III 24-hr 100 yr Rainfall=8.81”

Existing Hydrology

Prepared by {enter your company name here}

Printed 4/26/2022

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX1: EX1
- Runoff Area=34,184 sf  0.00% Impervious  Runoff Depth>5.52”
- Flow Length=135’  Tc=10.7 min  CN=73  Runoff=4.30 cfs  0.361 af

Subcatchment EX2: EX2
- Runoff Area=68,776 sf  0.00% Impervious  Runoff Depth>5.52”
- Flow Length=173’  Tc=11.6 min  CN=73  Runoff=8.44 cfs  0.727 af

Subcatchment EX3: To off Site Drainage
- Runoff Area=22,250 sf  30.83% Impervious  Runoff Depth>7.11”
- Flow Length=85’  Tc=10.0 min  CN=86  Runoff=3.51 cfs  0.303 af

Pond 2P: Wetlands
- Peak Elev=14.62’  Storage=31,647 cf  Inflow=8.44 cfs  0.727 af
- Outflow=0.00 cfs  0.000 af

Pond DP1: Wetlands
- Peak Elev=14.24’  Storage=15,732 cf  Inflow=4.30 cfs  0.361 af
- Outflow=0.00 cfs  0.000 af

Pond DP2: IBEW DR S-M
- Inflow=3.51 cfs  0.303 af
- Primary=3.51 cfs  0.303 af

Total Runoff Area = 2.874 ac  Runoff Volume = 1.391 af  Average Runoff Depth = 5.81”
94.52% Pervious = 2.717 ac  5.48% Impervious = 0.157 ac
Summary for Subcatchment EX1: EX1

Runoff = 4.30 cfs @ 12.15 hrs, Volume= 0.361 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>34,184</td>
<td>73</td>
<td>Woods, Fair, HSG C</td>
</tr>
<tr>
<td>34,184</td>
<td>100</td>
<td>100.00% Pervious Area</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.0</td>
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<td>Sheet Flow, Sheet Flow</td>
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<td>Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
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<td>Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
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<tr>
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<td>Shallow Concentrated Flow,</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>Short Grass Pasture Kv= 7.0 fps</td>
</tr>
</tbody>
</table>

10.7 135 Total

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=34,184 sf
Runoff Volume=0.361 af
Runoff Depth>5.52"
Flow Length=135'
Tc=10.7 min
CN=73

Hydrograph
Summary for Subcatchment EX2: EX2

Runoff = 8.44 cfs @ 12.16 hrs, Volume= 0.727 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>68,776</td>
<td>73</td>
<td>Woods, Fair, HSG C</td>
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<tr>
<td>68,776</td>
<td>100</td>
<td>100.00% Pervious Area</td>
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<th>Velocity (ft/sec)</th>
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<td>Sheet Flow, Sheet Flow</td>
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<td>Grass: Bermuda n= 0.410</td>
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<td>8.9</td>
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<td></td>
<td>P2= 3.26&quot;</td>
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<tr>
<td>1.7</td>
<td>123</td>
<td>0.0300</td>
<td>1.21</td>
<td></td>
<td>Shallow Concentrated Flow,</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Short Grass Pasture Kv= 7.0 fps</td>
</tr>
</tbody>
</table>

11.6 173 Total

Subcatchment EX2: EX2

Hydrograph

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=68,776 sf
Runoff Volume=0.727 af
Runoff Depth>5.52"
Flow Length=173'
Tc=11.6 min
CN=73
Summary for Subcatchment EX3: To off Site Drainage PRE

Runoff = 3.51 cfs @ 12.14 hrs, Volume = 0.303 af, Depth > 7.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-24.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 yr Rainfall=8.81"

Area (sf)   CN   Description
6,860       98   Paved parking, HSG C
5,555       96   Gravel surface, HSG C
9,835       73   Woods, Fair, HSG C
22,250       86   Weighted Average
15,390   69.17% Pervious Area
6,860   30.83% Impervious Area

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>5</td>
<td>0.3300</td>
<td>0.13</td>
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<td>Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
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<tr>
<td>9.2</td>
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<td>0.0350</td>
<td>0.08</td>
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<td>Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
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<tr>
<td>0.2</td>
<td>35</td>
<td>0.0150</td>
<td>2.49</td>
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<td>Shallow Concentrated Flow, Paved Kv= 20.3 fps</td>
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</tbody>
</table>

10.0  85  Total

Subcatchment EX3: To off Site Drainage PRE

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=22,250 sf
Runoff Volume=0.303 af
Runoff Depth>7.11"
Flow Length=85'
Tc=10.0 min
CN=86
**Summary for Pond 2P: Wetlands**

- **Inflow Area**: 1.579 ac, 0.00% Impervious, Inflow Depth > 5.52" for 100 yr event
- **Inflow**: 8.44 cfs @ 12.16 hrs, Volume= 0.727 af
- **Outflow**: 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.62’ @ 24.00 hrs  Surf.Area= 45,604 sf  Storage= 31,647 cf

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

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>#1</td>
<td>13.75’</td>
<td>50,175 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc)</td>
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</table>

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>13.75</td>
<td>23,495</td>
<td>0</td>
<td>0</td>
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<tr>
<td>14.00</td>
<td>33,076</td>
<td>7,071</td>
<td>7,071</td>
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<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

**Pond 2P: Wetlands**

- Inflow Area=1.579 ac
- Peak Elev=14.62’
- Storage=31,647 cf
Summary for Pond DP1: Wetlands

Inflow Area = 0.785 ac, 0.00% Impervious, Inflow Depth > 5.52" for 100 yr event
Inflow = 4.30 cfs @ 12.15 hrs, Volume= 0.361 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.24' @ 24.00 hrs Surf.Area= 37,966 sf Storage= 15,732 cf

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

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>13.75'</td>
<td>50,175 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc)</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>13.75</td>
<td>23,495</td>
<td>0</td>
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<tr>
<td>14.00</td>
<td>33,076</td>
<td>7,071</td>
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<tr>
<td>15.00</td>
<td>53,131</td>
<td>43,104</td>
<td>50,175</td>
</tr>
</tbody>
</table>

Pond DP1: Wetlands

Inflow Area=0.785 ac
Peak Elev=14.24'
Storage=15,732 cf
Summary for Pond DP2: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.511 ac, 30.83% Impervious, Inflow Depth > 7.11" for 100 yr event
Inflow = 3.51 cfs @ 12.14 hrs, Volume = 0.303 af
Primary = 3.51 cfs @ 12.14 hrs, Volume = 0.303 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Appendix C: Post-Construction Hydrology
# Rainfall Events Listing

<table>
<thead>
<tr>
<th>Event#</th>
<th>Event Name</th>
<th>Storm Type</th>
<th>Curve</th>
<th>Mode</th>
<th>Duration (hours)</th>
<th>B/B</th>
<th>Depth (inches)</th>
<th>AMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 yr</td>
<td>Type III 24-hr</td>
<td>Default</td>
<td>24.00</td>
<td>1</td>
<td>3.26</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>10 yr</td>
<td>Type III 24-hr</td>
<td>Default</td>
<td>24.00</td>
<td>1</td>
<td>4.90</td>
<td>2</td>
<td>2</td>
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<tr>
<td>3</td>
<td>100 yr</td>
<td>Type III 24-hr</td>
<td>Default</td>
<td>24.00</td>
<td>1</td>
<td>8.81</td>
<td>2</td>
<td>2</td>
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<tr>
<td>4</td>
<td>Custom</td>
<td>Type III 24-hr</td>
<td>Default</td>
<td>24.00</td>
<td>1</td>
<td>6.70</td>
<td>2</td>
<td>2</td>
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</tbody>
</table>
## Area Listing (all nodes)

<table>
<thead>
<tr>
<th>Area (acres)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.169</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8)</td>
</tr>
<tr>
<td>0.705</td>
<td>98</td>
<td>Paved parking, HSG C (PR2, PR3, PR4, PR5, PR6, PR7)</td>
</tr>
<tr>
<td><strong>2.874</strong></td>
<td><strong>80</strong></td>
<td>TOTAL AREA</td>
</tr>
</tbody>
</table>


### Soil Listing (all nodes)

<table>
<thead>
<tr>
<th>Area (acres)</th>
<th>Soil Group</th>
<th>Subcatchment Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000</td>
<td>HSG A</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>HSG B</td>
<td></td>
</tr>
<tr>
<td>2.874</td>
<td>HSG C</td>
<td>PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8</td>
</tr>
<tr>
<td>0.000</td>
<td>HSG D</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>2.874</td>
<td>TOTAL AREA</td>
<td></td>
</tr>
</tbody>
</table>
## Ground Covers (all nodes)

<table>
<thead>
<tr>
<th>Subcatchment Numbers</th>
<th>Ground Cover</th>
<th>HSG-A (acres)</th>
<th>HSG-B (acres)</th>
<th>HSG-C (acres)</th>
<th>HSG-D (acres)</th>
<th>Other (acres)</th>
<th>Total (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;75% Grass cover, Good PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8</td>
<td>0.000</td>
<td>0.000</td>
<td>2.169</td>
<td>0.000</td>
<td>0.000</td>
<td>2.169</td>
<td></td>
</tr>
<tr>
<td>Paved parking PR2, PR3, PR4, PR5, PR6, PR7</td>
<td>0.000</td>
<td>0.000</td>
<td>0.705</td>
<td>0.000</td>
<td>0.000</td>
<td>0.705</td>
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</tr>
<tr>
<td>TOTAL AREA</td>
<td>0.000</td>
<td>0.000</td>
<td>2.874</td>
<td>0.000</td>
<td>0.000</td>
<td>2.874</td>
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</tbody>
</table>
## Pipe Listing (all nodes)

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<thead>
<tr>
<th>Line#</th>
<th>Node</th>
<th>In-Invert (feet)</th>
<th>Out-Invert (feet)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>n</th>
<th>Diam/Width (inches)</th>
<th>Height (inches)</th>
<th>Inside-Fill (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1P</td>
<td>16.00</td>
<td>15.25</td>
<td>80.0</td>
<td>0.0094</td>
<td>0.010</td>
<td>6.0</td>
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<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>3P</td>
<td>15.45</td>
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<td>137.0</td>
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<td>0.013</td>
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<tr>
<td>5</td>
<td>15P</td>
<td>15.45</td>
<td>14.75</td>
<td>137.0</td>
<td>0.0051</td>
<td>0.010</td>
<td>6.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
### Proposed Hydrology

**Type III 24-hr 2 yr Rainfall=3.26"**

**Prepared by {enter your company name here}**

Printed 4/26/2022

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**Page 7**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>Description</th>
<th>Runoff Area</th>
<th>% Impervious</th>
<th>Runoff Depth</th>
<th>Tc (min)</th>
<th>CN</th>
<th>Runoff Rate</th>
<th>Storage</th>
<th>Inflow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR1: Pr Site</td>
<td>Runoff Area=49,602 sf</td>
<td>0.00%</td>
<td>1.08&quot;</td>
<td>5.0</td>
<td>74</td>
<td></td>
<td>1.42 cfs</td>
<td>0.102 af</td>
<td></td>
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</tr>
<tr>
<td>PR2: POROUS PAVEMENT</td>
<td>Runoff Area=10,879 sf</td>
<td>39.68%</td>
<td>&gt;1.64&quot;</td>
<td>480.0</td>
<td>84</td>
<td></td>
<td>0.05 cfs</td>
<td>0.034 af</td>
<td></td>
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</tr>
<tr>
<td>PR3: North Driveway</td>
<td>Runoff Area=6,564 sf</td>
<td>50.94%</td>
<td>&gt;1.79&quot;</td>
<td>480.0</td>
<td>86</td>
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<td>0.03 cfs</td>
<td>0.023 af</td>
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</tr>
<tr>
<td>PR4: Parking 1 North</td>
<td>Runoff Area=8,250 sf</td>
<td>65.64%</td>
<td>&gt;2.12&quot;</td>
<td>480.0</td>
<td>90</td>
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<td>0.05 cfs</td>
<td>0.033 af</td>
<td></td>
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</tr>
<tr>
<td>PR5: Parking 2 North</td>
<td>Runoff Area=7,185 sf</td>
<td>63.26%</td>
<td>&gt;2.04&quot;</td>
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<td>0.04 cfs</td>
<td>0.028 af</td>
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<td></td>
</tr>
<tr>
<td>PR6: To off Site Drainage</td>
<td>Runoff Area=8,722 sf</td>
<td>74.16%</td>
<td>&gt;2.41&quot;</td>
<td>5.0</td>
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<td>0.57 cfs</td>
<td>0.040 af</td>
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<tr>
<td>PR7: POROUS PAVEMENT</td>
<td>Runoff Area=8,043 sf</td>
<td>82.33%</td>
<td>&gt;2.49&quot;</td>
<td>480.0</td>
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<td>0.05 cfs</td>
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<td>PR8: Pr Site</td>
<td>Runoff Area=25,943 sf</td>
<td>0.00%</td>
<td>1.08&quot;</td>
<td>50'</td>
<td>0.030'</td>
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<td>0.61 cfs</td>
<td>0.053 af</td>
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</tr>
<tr>
<td>Pond 1P: POROUS PAVEMENT</td>
<td>Peak Elev=16.11' Sorage=590 cf</td>
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<td>0.04 cfs</td>
<td>0.028 af</td>
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<tr>
<td></td>
<td>Discarded=0.00 cfs</td>
<td>0.000 af</td>
<td>Primary=0.03 cfs</td>
<td>0.016 af</td>
<td>Outflow=0.03 cfs</td>
<td>0.016 af</td>
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</tr>
<tr>
<td>Pond 2P: LEVEL SPREADER</td>
<td>Peak Elev=14.76' Sorage=209 cf</td>
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<td>0.03 cfs</td>
<td>0.016 af</td>
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<tr>
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<td>Discarded=0.00 cfs</td>
<td>0.003 af</td>
<td>Primary=0.02 cfs</td>
<td>0.008 af</td>
<td>Outflow=0.03 cfs</td>
<td>0.011 af</td>
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<tr>
<td>Pond 3P: POROUS PAVEMENT</td>
<td>Peak Elev=15.31' Sorage=419 cf</td>
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<td>0.05 cfs</td>
<td>0.038 af</td>
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<tr>
<td></td>
<td>Discarded=0.03 cfs</td>
<td>0.036 af</td>
<td>Primary=0.00 cfs</td>
<td>0.000 af</td>
<td>Outflow=0.03 cfs</td>
<td>0.036 af</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pond 4P: POROUS PAVEMENT</td>
<td>Peak Elev=16.48' Sorage=1,100 cf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.05 cfs</td>
<td>0.033 af</td>
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</tr>
<tr>
<td></td>
<td>Discarded=0.00 cfs</td>
<td>0.000 af</td>
<td>Primary=0.02 cfs</td>
<td>0.009 af</td>
<td>Outflow=0.02 cfs</td>
<td>0.009 af</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pond 6P: LEVEL SPREADER</td>
<td>Peak Elev=15.25' Sorage=266 cf</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>0.02 cfs</td>
<td>0.009 af</td>
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</tr>
<tr>
<td></td>
<td>Discarded=0.01 cfs</td>
<td>0.003 af</td>
<td>Primary=0.00 cfs</td>
<td>0.000 af</td>
<td>Outflow=0.01 cfs</td>
<td>0.003 af</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pond 8P: LEVEL SPREADER</td>
<td>Peak Elev=15.26' Sorage=152 cf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.03 cfs</td>
<td>0.016 af</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pond 9P: POROUS PAVEMENT</td>
<td>Peak Elev=16.10' Sorage=354 cf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.03 cfs</td>
<td>0.023 af</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discarded=0.00 cfs</td>
<td>0.000 af</td>
<td>Primary=0.03 cfs</td>
<td>0.016 af</td>
<td>Outflow=0.03 cfs</td>
<td>0.016 af</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pond 15P: POROUS PAVEMENT</td>
<td>Peak Elev=14.96' Sorage=29 cf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.05 cfs</td>
<td>0.034 af</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discarded=0.04 cfs</td>
<td>0.034 af</td>
<td>Primary=0.00 cfs</td>
<td>0.000 af</td>
<td>Outflow=0.04 cfs</td>
<td>0.034 af</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pond DP1: Wetlands
Inflow=0.61 cfs 0.066 af
Primary=0.61 cfs 0.066 af

Pond DP2: Wetlands
Inflow=1.42 cfs 0.110 af
Primary=1.42 cfs 0.110 af

Pond DP3: IBEW DR S-M
Inflow=0.57 cfs 0.040 af
Primary=0.57 cfs 0.040 af

Total Runoff Area = 2.874 ac  Runoff Volume = 0.352 af  Average Runoff Depth = 1.47"
75.47% Pervious = 2.169 ac  24.53% Impervious = 0.705 ac
Summary for Subcatchment PR1: Pr Site

Runoff = 1.42 cfs @ 12.08 hrs, Volume= 0.102 af, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>49,602</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>49,602</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment PR1: Pr Site

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=49,602 sf
Runoff Volume=0.102 af
Runoff Depth=1.08"
Tc=5.0 min
CN=74
Summary for Subcatchment PR2: POROUS PAVEMENT

Runoff = 0.05 cfs @ 18.67 hrs, Volume= 0.034 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,317</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>6,562</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>10,879</td>
<td>84</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>6,562</td>
<td>60.32% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>4,317</td>
<td>39.68% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>480.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment PR2: POROUS PAVEMENT

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=10,879 sf
Runoff Volume=0.034 af
Runoff Depth>1.64"
Tc=480.0 min
CN=84
Summary for Subcatchment PR3: North Driveway

Runoff = 0.03 cfs @ 18.67 hrs, Volume= 0.023 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,344</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>3,220</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>6,564</td>
<td>86</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>3,220</td>
<td></td>
<td>49.06% Pervious Area</td>
</tr>
<tr>
<td>3,344</td>
<td></td>
<td>50.94% Impervious Area</td>
</tr>
</tbody>
</table>

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

Subcatchment PR3: North Driveway

Hydrograph

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=6,564 sf
Runoff Volume=0.023 af
Runoff Depth>1.79"
Tc=480.0 min
CN=86
Summary for Subcatchment PR4: Parking 1 North

Runoff = 0.05 cfs @ 18.66 hrs, Volume = 0.033 af, Depth > 2.12"  

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr  2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,415</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,835</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,250</td>
<td>90</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,835</td>
<td>34.36%</td>
<td>Pervious Area</td>
</tr>
<tr>
<td>5,415</td>
<td>65.64%</td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

Tc = 480.0 min

Subcatchment PR4: Parking 1 North

Type III 24-hr  2 yr Rainfall=3.26"  
Runoff Area=8,250 sf  
Runoff Volume=0.033 af  
Runoff Depth>2.12"  
Tc=480.0 min  
CN=90
Summary for Subcatchment PR5: Parking 2 North

Runoff = 0.04 cfs @ 18.66 hrs, Volume = 0.028 af, Depth > 2.04″

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt = 0.01 hrs
Type III 24-hr 2 yr Rainfall = 3.26″

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,545</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,640</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>7,185</td>
<td>89</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,640</td>
<td></td>
<td>36.74% Pervious Area</td>
</tr>
<tr>
<td>4,545</td>
<td></td>
<td>63.26% Impervious Area</td>
</tr>
</tbody>
</table>

Subcatchment PR5: Parking 2 North

Type III 24-hr 2 yr Rainfall = 3.26″
Runoff Area = 7,185 sf
Runoff Volume = 0.028 af
Runoff Depth > 2.04″
Tc = 480.0 min
CN = 89
Summary for Subcatchment PR6: To off Site Drainage POST

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.040 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,468</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,254</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,722</td>
<td>92</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,254</td>
<td></td>
<td>25.84% Pervious Area</td>
</tr>
<tr>
<td>6,468</td>
<td>74</td>
<td>74.16% Impervious Area</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment PR6: To off Site Drainage POST

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=8,722 sf
Runoff Volume=0.040 af
Runoff Depth=2.41"
Tc=5.0 min
CN=92
Summary for Subcatchment PR7: POROUS PAVEMENT

Runoff = 0.05 cfs @ 18.66 hrs, Volume = 0.038 af, Depth > 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt = 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,622</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>1,421</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,043</td>
<td>94</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>1,421</td>
<td></td>
<td>17.67% Pervious Area</td>
</tr>
<tr>
<td>6,622</td>
<td></td>
<td>82.33% Impervious Area</td>
</tr>
</tbody>
</table>

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

Subcatchment PR7: POROUS PAVEMENT

Type III 24-hr 2 yr Rainfall=3.26"
Runoff Area=8,043 sf
Runoff Volume=0.038 af
Runoff Depth>2.49"
Tc=480.0 min
CN=94
Summary for Subcatchment PR8: Pr Site

Runoff = 0.61 cfs @ 12.16 hrs, Volume = 0.053 af, Depth = 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt = 0.01 hrs
Type III 24-hr 2 yr Rainfall = 3.26"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,943</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>25,943</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.6</td>
<td>50</td>
<td>0.0300</td>
<td>0.08</td>
<td></td>
<td>Sheet Flow, Grass: Bermuda n = 0.410 P2 = 3.26&quot;</td>
</tr>
</tbody>
</table>

Subcatchment PR8: Pr Site

Hydrograph

Type III 24-hr 2 yr Rainfall = 3.26"
Runoff Area = 25,943 sf
Runoff Volume = 0.053 af
Runoff Depth = 1.08"
Flow Length = 50'
Slope = 0.0300 '/'
Tc = 10.6 min
CN = 74
Summary for Pond 1P: POROUS PAVEMENT

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 2.04" for 2 yr event
Inflow = 0.04 cfs @ 18.66 hrs, Volume= 0.028 af
Outflow = 0.03 cfs @ 20.90 hrs, Volume= 0.016 af, Atten= 21%, Lag= 134.4 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.03 cfs @ 20.90 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.11' @ 20.90 hrs Surf.Area= 4,500 sf Storage= 590 cf

Plug-Flow detention time= 347.0 min calculated for 0.016 af (58% of inflow)
Center-of-Mass det. time= 187.5 min (1,405.0 - 1,217.5)

Volume Invert Avail.Storage Storage Description
#1 15.67' 1,350 cf Custom Stage Data (Prismatic) Listed below (Recalc)
4,500 cf Overall x 30.0% Voids

Elevation Surf.Area Inc.Store Cum.Store
(feet) (sq-ft) (cubic-feet) (cubic-feet)
15.67 4,500 0 0
16.67 4,500 4,500 4,500

Device Routing Invert Outlet Devices
#1 Primary 16.00' 6.0" Round Culvert
L= 80.0’ CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 16.00' / 15.25’ S= 0.0094 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)
↑②=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.03 cfs @ 20.90 hrs HW=16.11’ (Free Discharge)
↑①=Culvert (Inlet Controls 0.03 cfs @ 0.98 fps)
Proposed Hydrology

Pond 1P: POROUS PAVEMENT

Hydrograph

Inflow Area=0.165 ac
Peak Elev=16.11'
Storage=590 cf

Flow (cfs)

0.04 cfs

0.03 cfs

0.02 cfs

0.01 cfs

0.00 cfs

Time (hours)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Inflow
Outflow
Discarded
Primary
Summary for Pond 2P: LEVEL SPREADER

[79] Warning: Submerged Pond 9P Primary device # 1 OUTLET by 0.01'

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 1.25" for 2 yr event
Inflow = 0.03 cfs @ 20.02 hrs, Volume= 0.016 af
Outflow = 0.03 cfs @ 21.01 hrs, Volume= 0.011 af, Atten= 7%, Lag= 59.5 min
Discarded = 0.00 cfs @ 21.01 hrs, Volume= 0.003 af
Primary = 0.02 cfs @ 21.01 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 14.76' @ 21.01 hrs Surf.Area= 325 sf Storage= 209 cf

Plug-Flow detention time= 182.0 min calculated for 0.011 af (70% of inflow)
Center-of-Mass det. time= 81.1 min (1,445.2 - 1,364.1)

Volume Invert Avail.Storage Storage Description

<table>
<thead>
<tr>
<th>#1</th>
<th>14.00'</th>
<th>294 cf</th>
<th>Custom Stage Data (Conic) Listed below (Recalc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.00</td>
<td>230</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14.75</td>
<td>323</td>
<td>206</td>
<td>206</td>
</tr>
<tr>
<td>15.00</td>
<td>375</td>
<td>87</td>
<td>294</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>#1</th>
<th>Primary</th>
<th>14.75'</th>
<th>10.0' long x 0.5' breadth Broad-Crested Rectangular Weir</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Head (feet) 0.20 0.40 0.60 0.80 1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coef. (English) 2.80 2.92 3.08 3.30 3.32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#2</th>
<th>Discarded</th>
<th>14.00'</th>
<th>0.270 in/hr Exfiltration over Wetted area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conductivity to Groundwater Elevation = 13.00'</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.00 cfs @ 21.01 hrs HW=14.76' (Free Discharge)

Primary OutFlow Max=0.02 cfs @ 21.01 hrs HW=14.76' (Free Discharge)
Pond 2P: LEVEL SPREADER

Inflow Area=0.151 ac
Peak Elev=14.76'
Storage=209 cf
Summary for Pond 3P: POROUS PAVEMENT

Inflow Area = 0.185 ac, 82.33% Impervious, Inflow Depth > 2.49" for 2 yr event
Inflow = 0.05 cfs @ 18.66 hrs, Volume= 0.038 af
Outflow = 0.03 cfs @ 22.46 hrs, Volume= 0.036 af, Atten= 44%, Lag= 227.9 min
Discarded = 0.03 cfs @ 22.46 hrs, Volume= 0.036 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.31' @ 22.46 hrs Surf.Area= 3,872 sf Storage= 419 cf

Plug-Flow detention time= 144.6 min calculated for 0.036 af (95% of inflow)
Center-of-Mass det. time= 115.7 min ( 1,311.9 - 1,196.2 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.95'</td>
<td>1,220 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 4,066 cf Overall x 30.0% Voids</td>
</tr>
<tr>
<td>Elevation</td>
<td>Surf.Area</td>
<td>Inc.Store</td>
<td>Cum.Store</td>
</tr>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
</tr>
<tr>
<td>14.95</td>
<td>3,872</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.00</td>
<td>3,872</td>
<td>4,066</td>
<td>4,066</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices
#1 Primary 15.45' 6.0" Round Culvert
L= 137.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 15.45'/14.75' S= 0.0051 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.20 sf

#2 Discarded 14.95' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.03 cfs @ 22.46 hrs HW=15.31' (Free Discharge)
2=Exfiltration (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.95' (Free Discharge)
1=Culvert (Controls 0.00 cfs)
Pond 3P: POROUS PAVEMENT

Inflow Area = 0.185 ac
Peak Elev = 15.31'
Storage = 419 cf
Summary for Pond 4P: POROUS PAVEMENT

Inflow Area = 0.189 ac, 65.64% Impervious, Inflow Depth > 2.12" for 2 yr event
Inflow = 0.05 cfs @ 18.66 hrs, Volume= 0.033 af
Outflow = 0.02 cfs @ 24.11 hrs, Volume= 0.009 af, Atten= 57%, Lag= 326.6 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.02 cfs @ 24.11 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.48' @ 24.11 hrs Surf.Area= 4,500 sf Storage= 1,100 cf

Plug-Flow detention time= 586.9 min calculated for 0.009 af (27% of inflow)
Center-of-Mass det. time= 329.2 min (1,543.1 - 1,213.9)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.67'</td>
<td>1,350 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 4,500 cf Overall x 30.0% Voids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elevation</th>
<th>Surf.Area</th>
<th>Inc.Store</th>
<th>Cum.Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
</tr>
<tr>
<td>15.67</td>
<td>4,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.67</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>#1</th>
<th>Primary</th>
<th>16.40' 6.0&quot; Round Culvert</th>
</tr>
</thead>
<tbody>
<tr>
<td>L= 80.0' CPP, mitered to conform to fill, Ke= 0.700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet / Outlet Invert= 16.40' / 15.50' S= 0.0112 '/' Cc= 0.900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| #2     | Discarded | 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45' |

Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)

Primary OutFlow Max=0.02 cfs @ 24.11 hrs HW=16.48' (Free Discharge)
Pond 4P: POROUS PAVEMENT

- Inflow Area: 0.189 ac
- Peak Elev: 16.48'
- Storage: 1,100 cf

Hydrograph:

- Inflow Area: 0.189 ac
- Peak Elev: 16.48'
- Storage: 1,100 cf

Flow (cfs): 0.05, 0.045, 0.04, 0.035, 0.03, 0.025, 0.02, 0.015, 0.01, 0.005, 0.00

Time (hours): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Legend:
- Inflow
- Outflow
- Discarded
- Primary
**Summary for Pond 6P: LEVEL SPREADER**

- **Inflow Area =** 0.189 ac, 65.64% Impervious, Inflow Depth > 0.58" for 2 yr event
- **Inflow =** 0.02 cfs @ 24.11 hrs, Volume= 0.009 af
- **Outflow =** 0.01 cfs @ 29.14 hrs, Volume= 0.003 af, Atten= 51%, Lag= 302.2 min
- **Discarded =** 0.01 cfs @ 29.14 hrs, Volume= 0.003 af
- **Primary =** 0.00 cfs @ 29.14 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
- **Peak Elev=** 15.25' @ 29.14 hrs
- **Surf.Area=** 686 sf
- **Storage=** 266 cf

Plug-Flow detention time= 203.5 min calculated for 0.003 af (34% of inflow)
- Center-of-Mass det. time= 68.7 min (1,611.8 - 1,543.1)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
<td>14.75'</td>
<td>879 cf Custom Stage Data (Conic)</td>
</tr>
<tr>
<td>14.75</td>
<td>250</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.00</td>
<td>604</td>
<td>104</td>
<td>104</td>
</tr>
<tr>
<td>16.00</td>
<td>960</td>
<td>775</td>
<td>879</td>
</tr>
</tbody>
</table>

**Device Routing Invert Outlet Devices**
- **#1 Discarded 14.75’** 0.270 in/hr Exfiltration over Wetted area
  - Conductivity to Groundwater Elevation = 13.00’
- **#2 Primary 15.25’** 10.0' 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 @ 29.14 hrs HW=15.25’ (Free Discharge)
- 1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 29.14 hrs HW=15.25’ (Free Discharge)
- 2=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.10 fps)
Pond 6P: LEVEL SPREADER

Hydrograph

Inflow Area=0.189 ac
Peak Elev=15.25'
Storage=266 cf
Summary for Pond 8P: LEVEL SPREADER

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.01'

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 1.18" for 2 yr event
Inflow = 0.03 cfs @ 20.90 hrs, Volume= 0.016 af
Outflow = 0.03 cfs @ 21.09 hrs, Volume= 0.013 af, Attenuation= 0%, Lag= 11.4 min
Primary = 0.03 cfs @ 21.09 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.26' @ 21.09 hrs  Surf.Area= 624 sf  Storage= 152 cf

Plug-Flow detention time= 124.0 min calculated for 0.013 af (79% of inflow)
Center-of-Mass det. time= 55.2 min (1,460.2 - 1,405.0)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.00'</td>
<td>709 cf</td>
<td>Custom Stage Data (Conic) Listed below (Recalc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>15.00</td>
<td>542</td>
<td>0</td>
<td>0</td>
<td>542</td>
</tr>
<tr>
<td>16.00</td>
<td>890</td>
<td>709</td>
<td>709</td>
<td>903</td>
</tr>
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</table>

Device Routing Invert Outlet Devices
#1 Primary 15.25' **10.0' long x 0.5' breadth Broad-Crested Rectangular Weir**
Head (feet) 0.20 0.40 0.60 0.80 1.00
Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.03 cfs @ 21.09 hrs  HW=15.26' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.29 fps)
Pond 8P: LEVEL SPREADER

Hydrograph

Inflow Area=0.165 ac
Peak Elev=15.26'
Storage=152 cf
Summary for Pond 9P: POROUS PAVEMENT

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 1.79" for 2 yr event
Inflow = 0.03 cfs @ 18.67 hrs, Volume= 0.023 af
Outflow = 0.03 cfs @ 20.02 hrs, Volume= 0.016 af, Atten= 8%, Lag= 81.3 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.03 cfs @ 20.02 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.10' @ 20.02 hrs Surf.Area= 3,344 sf Storage= 354 cf

Plug-Flow detention time= 258.9 min calculated for 0.016 af (70% of inflow)
Center-of-Mass det. time= 136.8 min (1,364.1 - 1,227.3)

<table>
<thead>
<tr>
<th>Volume</th>
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<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.75'</td>
<td>1,003 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 3,344 cf Overall x 30.0% Voids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elevation</th>
<th>Surf.Area</th>
<th>Inc.Store</th>
<th>Cum.Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
</tr>
<tr>
<td>15.75</td>
<td>3,344</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.75</td>
<td>3,344</td>
<td>3,344</td>
<td>3,344</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>Device</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Primary</td>
<td>16.00'</td>
<td>6.0&quot; Round Culvert</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L= 108.0' CPP, mitered to conform to fill, Ke= 0.700</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inlet / Outlet Invert= 16.00' / 14.75' S= 0.0116 '/' Cc= 0.900</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf</td>
</tr>
<tr>
<td>#2</td>
<td>Discarded</td>
<td>15.75'</td>
<td>0.270 in/hr Exfiltration over Surface area below 15.45'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conductivity to Groundwater Elevation = 13.00'</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.75' (Free Discharge)

Primary OutFlow Max=0.03 cfs @ 20.02 hrs HW=16.10' (Free Discharge)
Pond 9P: POROUS PAVEMENT

Hydrograph

Inflow Area = 0.151 ac
Peak Elev = 16.10'
Storage = 354 cf
Summary for Pond 15P: POROUS PAVEMENT

Inflow Area = 0.250 ac, 39.68% Impervious, Inflow Depth > 1.64" for 2 yr event
Inflow = 0.05 cfs @ 18.67 hrs, Volume= 0.034 af
Outflow = 0.04 cfs @ 19.64 hrs, Volume= 0.034 af, Atten= 4%, Lag= 58.1 min
Discarded = 0.04 cfs @ 19.64 hrs, Volume= 0.034 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 14.96' @ 19.64 hrs Surf.Area= 7,067 sf Storage= 29 cf

Plug-Flow detention time= 8.5 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 7.2 min ( 1,240.4 - 1,233.2 )

Volume Invert Avail.Storage Storage Description
#1 14.95' 2,120 cf Custom Stage Data (Prismatic) Listed below (Recalc)
    7,067 cf Overall x 30.0% Voids

Elevation Surf.Area Inc.Store Cum.Store
(feet) (sq-ft) (cubic-feet) (cubic-feet)
14.95 7,067 0 0
15.95 7,067 7,067 7,067

Device Routing Invert Outlet Devices
#1 Primary 15.45’ 6.0” Round Culvert
    L= 137.0’ CPP, mitered to conform to fill, Ke= 0.700
    Inlet / Outlet Invert= 15.45’ / 14.75’ S= 0.0051 '/' Cc= 0.900
    n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 14.95’ 0.270 in/hr Exfiltration over Surface area below 15.45’
    Conductivity to Groundwater Elevation = 13.00’

Discarded OutFlow Max=0.04 cfs @ 19.64 hrs HW=14.96’ (Free Discharge)
↑↑2=Exfiltration ( Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.95’ (Free Discharge)
↑↑1=Culvert ( Controls 0.00 cfs)
Pond 15P: POROUS PAVEMENT

Inflow Area=0.250 ac
Peak Elev=14.96'
Storage=29 cf

Hydrograph

Inflow
Outflow
Discarded
Primary

Flow (cfs)

0.05 cfs
0.04 cfs
0.04 cfs
0.00 cfs

0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time (hours)
Summary for Pond DP1: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.761 ac, 13.72% Impervious, Inflow Depth > 1.05" for 2 yr event
Inflow = 0.61 cfs @ 12.16 hrs, Volume= 0.066 af
Primary = 0.61 cfs @ 12.16 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP1: Wetlands

Inflow Area=0.761 ac
Summary for Pond DP2: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.663 ac, 21.23% Impervious, Inflow Depth > 0.80" for 2 yr event
Inflow = 1.42 cfs @ 12.08 hrs, Volume= 0.110 af
Primary = 1.42 cfs @ 12.08 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Summary for Pond DP3: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.450 ac, 55.02% Impervious, Inflow Depth = 1.07” for 2 yr event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.040 af
Primary = 0.57 cfs @ 12.07 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Subcatchment PR1: Pr Site  
- Runoff Area: 49,602 sf
- 0.00% Impervious
- Runoff Depth: 2.28"
- Tc: 5.0 min
- CN: 74
- Runoff: 3.15 cfs
- 0.217 af

Subcatchment PR2: POROUS PAVEMENT  
- Runoff Area: 10,879 sf
- 39.68% Impervious
- Runoff Depth: 3.03"
- Tc: 480.0 min
- CN: 84
- Runoff: 0.09 cfs
- 0.063 af

Subcatchment PR3: North Driveway  
- Runoff Area: 6,564 sf
- 50.94% Impervious
- Runoff Depth: 3.22"
- Tc: 480.0 min
- CN: 86
- Runoff: 0.05 cfs
- 0.040 af

Subcatchment PR4: Parking 1 North  
- Runoff Area: 8,250 sf
- 65.64% Impervious
- Runoff Depth: 3.62"
- Tc: 480.0 min
- CN: 90
- Runoff: 0.08 cfs
- 0.057 af

Subcatchment PR5: Parking 2 North  
- Runoff Area: 8,722 sf
- 63.26% Impervious
- Runoff Depth: 3.99"
- Tc: 5.0 min
- CN: 92
- Runoff: 0.07 cfs
- 0.048 af

Subcatchment PR6: To off Site Drainage  
- Runoff Area: 8,043 sf
- 82.33% Impervious
- Runoff Depth: 4.04"
- Tc: 5.0 min
- CN: 94
- Runoff: 0.08 cfs
- 0.062 af

Subcatchment PR7: POROUS PAVEMENT  
- Runoff Area: 6,564 sf
- 0.00% Impervious
- Runoff Depth: 2.28"
- Tc: 10.6 min
- CN: 74
- Runoff: 1.36 cfs
- 0.113 af

Pond 1P: POROUS PAVEMENT  
- Peak Elev: 16.16'
- Storage: 656 cf
- Inflow: 0.07 cfs
- Discarded: 0.00 cfs
- Primary: 0.06 cfs
- Outflow: 0.06 cfs

Pond 2P: LEVEL SPREADER  
- Peak Elev: 14.76'
- Storage: 211 cf
- Inflow: 0.05 cfs
- Discarded: 0.00 cfs
- Primary: 0.05 cfs
- Outflow: 0.05 cfs

Pond 3P: POROUS PAVEMENT  
- Peak Elev: 15.58'
- Storage: 737 cf
- Inflow: 0.08 cfs
- Discarded: 0.03 cfs
- Primary: 0.04 cfs
- Outflow: 0.07 cfs

Pond 4P: POROUS PAVEMENT  
- Peak Elev: 16.56'
- Storage: 1,200 cf
- Inflow: 0.08 cfs
- Discarded: 0.00 cfs
- Primary: 0.06 cfs
- Outflow: 0.06 cfs

Pond 6P: LEVEL SPREADER  
- Peak Elev: 15.27'
- Storage: 276 cf
- Inflow: 0.06 cfs
- Discarded: 0.01 cfs
- Primary: 0.06 cfs
- Outflow: 0.06 cfs

Pond 8P: LEVEL SPREADER  
- Peak Elev: 15.27'
- Storage: 156 cf
- Inflow: 0.06 cfs
- Discarded: 0.05 cfs
- Primary: 0.00 cfs
- Outflow: 0.05 cfs

Pond 9P: POROUS PAVEMENT  
- Peak Elev: 16.14'
- Storage: 396 cf
- Inflow: 0.05 cfs
- Discarded: 0.00 cfs
- Primary: 0.05 cfs
- Outflow: 0.05 cfs

Pond 15P: POROUS PAVEMENT  
- Peak Elev: 15.24'
- Storage: 610 cf
- Inflow: 0.09 cfs
- Discarded: 0.05 cfs
- Primary: 0.00 cfs
- Outflow: 0.05 cfs
Pond DP1: Wetlands
Inflow=1.36 cfs  0.146 af
Primary=1.36 cfs  0.146 af

Pond DP2: Wetlands
Inflow=3.15 cfs  0.274 af
Primary=3.15 cfs  0.274 af

Pond DP3: IBEW DR S-M
Inflow=0.92 cfs  0.067 af
Primary=0.92 cfs  0.067 af

Total Runoff Area = 2.874 ac  Runoff Volume = 0.668 af  Average Runoff Depth = 2.79"
75.47% Pervious = 2.169 ac  24.53% Impervious = 0.705 ac
Summary for Subcatchment PR1: Pr Site

Runoff = 3.15 cfs @ 12.08 hrs, Volume= 0.217 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>49,602</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>49,602</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment PR1: Pr Site

Hydrograph

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=49,602 sf
Runoff Volume=0.217 af
Runoff Depth=2.28"
Tc=5.0 min
CN=74
Summary for Subcatchment PR2: POROUS PAVEMENT

Runoff = 0.09 cfs @ 18.66 hrs, Volume= 0.063 af, Depth> 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>4,317</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>6,562</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>10,879</td>
<td>84</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>6,562</td>
<td>60.32%</td>
<td>Pervious Area</td>
</tr>
<tr>
<td>4,317</td>
<td>39.68%</td>
<td>Impervious Area</td>
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</table>

<table>
<thead>
<tr>
<th>Tc  (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>480.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment PR2: POROUS PAVEMENT

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=10,879 sf
Runoff Volume=0.063 af
Runoff Depth>3.03" af
Tc=480.0 min
CN=84
Summary for Subcatchment PR3: North Driveway

Runoff = 0.05 cfs @ 18.66 hrs, Volume= 0.040 af, Depth> 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,344</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>3,220</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>6,564</td>
<td>86</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>3,220</td>
<td>49.06% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>3,344</td>
<td>50.94% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc=480.0 min

Subcatchment PR3: North Driveway

Type III 24-hr
10 yr Rainfall=4.90"
Runoff Area=6,564 sf
Runoff Volume=0.040 af
Runoff Depth>3.22"
Tc=480.0 min
CN=86
Summary for Subcatchment PR4: Parking 1 North

Runoff = 0.08 cfs @ 18.66 hrs, Volume= 0.057 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
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<td>Paved parking, HSG C</td>
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<tr>
<td>2,835</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>8,250</td>
<td>90</td>
<td>Weighted Average</td>
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<tr>
<td>2,835</td>
<td>34.36%</td>
<td>Pervious Area</td>
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<tr>
<td>5,415</td>
<td>65.64%</td>
<td>Impervious Area</td>
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</table>

Tc = 480.0 min

Subcatchment PR4: Parking 1 North

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=8,250 sf
Runoff Volume=0.057 af
Runoff Depth>3.62"
Tc=480.0 min
CN=90
Summary for Subcatchment PR5: Parking 2 North

Runoff = 0.07 cfs @ 18.66 hrs, Volume = 0.048 af, Depth > 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt = 0.01 hrs

Type III 24-hr 10 yr Rainfall = 4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>4,545</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,640</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>7,185</td>
<td>89</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,640</td>
<td>36.74% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>4,545</td>
<td>63.26% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc = 480.0 min

Subcatchment PR5: Parking 2 North

Runoff Area = 7,185 sf
Runoff Volume = 0.048 af
Runoff Depth > 3.52"

Type III 24-hr 10 yr Rainfall = 4.90"

CN = 89
Summary for Subcatchment PR6: To off Site Drainage POST

Runoff = 0.92 cfs @ 12.07 hrs, Volume= 0.067 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
<tr>
<td>6,468</td>
<td>98</td>
<td>Paved parking, HSG C</td>
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<tr>
<td>2,254</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>8,722</td>
<td>92</td>
<td>Weighted Average</td>
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<tr>
<td>2,254</td>
<td>25.84% Pervious Area</td>
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<tr>
<td>6,468</td>
<td>74.16% Impervious Area</td>
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</table>

Tc, Length, Slope, Velocity, Capacity, Description

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Flow (cfs)</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=8,722 sf
Runoff Volume=0.067 af
Runoff Depth=3.99"
Tc=5.0 min
CN=92
Summary for Subcatchment PR7: POROUS PAVEMENT

Runoff = 0.08 cfs @ 18.14 hrs, Volume= 0.062 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,622</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>1,421</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,043</td>
<td>94</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>1,421</td>
<td>17.67% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>6,622</td>
<td>82.33% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc = 480.0 min

Subcatchment PR7: POROUS PAVEMENT

Hydrograph

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=8,043 sf
Runoff Volume=0.062 af
Runoff Depth>4.04"
Tc=480.0 min
CN=94
Summary for Subcatchment PR8: Pr Site

Runoff = 1.36 cfs @ 12.15 hrs, Volume= 0.113 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.90"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,943</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>25,943</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.6</td>
<td>50</td>
<td>0.0300</td>
<td>0.08</td>
<td></td>
<td>Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
</tr>
</tbody>
</table>

Subcatchment PR8: Pr Site

Type III 24-hr 10 yr Rainfall=4.90"
Runoff Area=25,943 sf
Runoff Volume=0.113 af
Runoff Depth=2.28"
Flow Length=50'
Slope=0.0300 '/'
Tc=10.6 min
CN=74
Summary for Pond 1P: POROUS PAVEMENT

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 3.52" for 10 yr event
Inflow = 0.07 cfs @ 18.66 hrs, Volume= 0.048 af
Outflow = 0.06 cfs @ 19.36 hrs, Volume= 0.036 af, Atten= 4%, Lag= 42.4 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.06 cfs @ 19.36 hrs, Volume= 0.036 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.16' @ 19.36 hrs Surf.Area= 4,500 sf Storage= 656 cf

Plug-Flow detention time= 230.0 min calculated for 0.036 af (75% of inflow)
Center-of-Mass det. time= 122.6 min (1,326.6 - 1,204.0 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.67'</td>
<td>1,350 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 4,500 cf Overall x 30.0% Voids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>15.67</td>
<td>4,500</td>
<td>0</td>
<td>4,500</td>
</tr>
<tr>
<td>16.67</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

#1 Primary 16.00' 6.0" Round Culvert
L= 80.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 16.00' / 15.25' S= 0.0094 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)
↑2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 19.36 hrs HW=16.16' (Free Discharge)
↑1=Culvert (Inlet Controls 0.06 cfs @ 1.19 fps)
Pond 1P: POROUS PAVEMENT

Inflow Area = 0.165 ac
Peak Elev = 16.16'
Storage = 656 cf
Summary for Pond 2P: LEVEL SPREADER

[79] Warning: Submerged Pond 9P Primary device # 1 OUTLET by 0.01'

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 2.66" for 10 yr event
Inflow = 0.05 cfs @ 18.95 hrs, Volume= 0.033 af
Outflow = 0.05 cfs @ 18.97 hrs, Volume= 0.029 af, Atten= 0%, Lag= 1.1 min
Discarded = 0.00 cfs @ 18.97 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 18.97 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 14.76' @ 18.97 hrs Surf.Area= 326 sf Storage= 211 cf

Plug-Flow detention time= 100.8 min calculated for 0.029 af (86% of inflow)
Center-of-Mass det. time= 41.7 min (1,344.0 - 1,302.3)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.00'</td>
<td>294 cf</td>
<td>Custom Stage Data (Conic) Listed below (Recalc)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14.00</td>
<td>230</td>
<td>0</td>
<td>0</td>
<td>230</td>
</tr>
<tr>
<td>14.75</td>
<td>323</td>
<td>206</td>
<td>206</td>
<td>333</td>
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<tr>
<td>15.00</td>
<td>375</td>
<td>87</td>
<td>294</td>
<td>387</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

#1 Primary 14.75' 10.0' 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

#2 Discarded 14.00' 0.270 in/hr Exfiltration over Wetted area
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 18.97 hrs HW=14.76' (Free Discharge)
Discarded 2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.05 cfs @ 18.97 hrs HW=14.76' (Free Discharge)
Primary 1=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.34 fps)
Proposed Hydrology

Inflow Area = 0.151 ac
Peak Elev = 14.76 ft
Storage = 211 cf
Proposed Hydrology

Summary for Pond 3P: POROUS PAVEMENT

Inflow Area = 0.185 ac, 82.33% Impervious, Inflow Depth > 4.04" for 10 yr event
Inflow = 0.08 cfs @ 18.14 hrs, Volume= 0.062 af
Outflow = 0.07 cfs @ 20.47 hrs, Volume= 0.053 af, Atten= 18%, Lag= 139.6 min
Discarded = 0.03 cfs @ 20.47 hrs, Volume= 0.042 af
Primary = 0.04 cfs @ 20.47 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.58' @ 20.47 hrs Surf.Area= 3,872 sf Storage= 737 cf

Plug-Flow detention time= 175.1 min calculated for 0.053 af (85% of inflow)
Center-of-Mass det. time= 103.0 min (1,287.7 - 1,184.7)

Volume Invert Avail.Storage Storage Description
#1 14.95' 1,220 cf Custom Stage Data (Prismatic) Listed below (Recalc)
4,066 cf Overall x 30.0% Voids

Elevation Surf.Area Inc.Store Cum.Store
(foot) (sq-ft) (cubic-feet) (cubic-feet)
14.95 3,872 0 0
16.00 3,872 4,066 4,066

Device Routing Invert Outflow Devices
#1 Primary 15.45' 6.0” Round Culvert
L= 137.0’ CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 15.45’ / 14.75’ S= 0.0051 '/' Cc= 0.900
n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.20 sf

#2 Discarded 14.95' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.03 cfs @ 20.47 hrs HW=15.58’ (Free Discharge)
↑—2=Exfiltration (Controls 0.03 cfs)

Primary OutFlow Max=0.04 cfs @ 20.47 hrs HW=15.58’ (Free Discharge)
↑—1=Culvert (Barrel Controls 0.04 cfs @ 1.25 fps)
Pond 3P: POROUS PAVEMENT

**Hydrograph**

- **Inflow Area**: 0.185 ac
- **Peak Elev**: 15.58'
- **Storage**: 737 cf

**Inflow**:
- 0.09 cfs
- 0.085 cfs
- 0.08 cfs
- 0.075 cfs
- 0.07 cfs
- 0.065 cfs
- 0.06 cfs
- 0.055 cfs
- 0.05 cfs
- 0.045 cfs
- 0.04 cfs
- 0.035 cfs
- 0.03 cfs
- 0.025 cfs
- 0.02 cfs
- 0.015 cfs
- 0.01 cfs
- 0.005 cfs
- 0 cfs

**Outflow**: 0.005 cfs

**Discarded**: 0.005 cfs

**Primary**: 0.005 cfs
Summary for Pond 4P: POROUS PAVEMENT

Inflow Area = 0.189 ac, 65.64% Impervious, Inflow Depth > 3.62" for 10 yr event
Inflow = 0.08 cfs @ 18.66 hrs, Volume= 0.057 af
Outflow = 0.06 cfs @ 20.45 hrs, Volume= 0.032 af, Atten= 16%, Lag= 107.5 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.06 cfs @ 20.45 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.56' @ 20.45 hrs  Surf.Area= 4,500 sf  Storage= 1,200 cf

Plug-Flow detention time= 352.6 min calculated for 0.032 af (57% of inflow)
Center-of-Mass det. time= 187.4 min (1,388.0 - 1,200.7)

Volume Invert Avail.Storage Storage Description
#1 15.67' 1,350 cf Custom Stage Data (Prismatic) Listed below (Recalc)
4,500 cf Overall x 30.0% Voids

Elevation Surf.Area Inc.Store Cum.Store
(feet) (sq-ft) (cubic-feet) (cubic-feet)
15.67 4,500 0 0
16.67 4,500 4,500 4,500

Device Routing Invert Outlet Devices
#1 Primary 16.40' 6.0" Round Culvert
L= 80.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 16.40' / 15.50' S= 0.0112 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)
↑ 2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.06 cfs @ 20.45 hrs HW=16.56' (Free Discharge)
↑ 1=Culvert (Inlet Controls 0.06 cfs @ 1.20 fps)
Pond 4P: POROUS PAVEMENT

Hydrograph

Inflow Area=0.189 ac
Peak Elev=16.56'
Storage=1,200 cf

Flow (cfs)

0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time (hours)
Summary for Pond 6P: LEVEL SPREADER

Inflow Area = 0.189 ac, 65.64% Impervious, Inflow Depth > 2.05" for 10 yr event
Inflow = 0.06 cfs @ 20.45 hrs, Volume= 0.032 af
Outflow = 0.06 cfs @ 20.73 hrs, Volume= 0.026 af, Atten= 1%, Lag= 16.8 min
Discarded = 0.01 cfs @ 20.73 hrs, Volume= 0.005 af
Primary = 0.06 cfs @ 20.73 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.27' @ 20.73 hrs  Surf.Area= 691 sf  Storage= 276 cf

Plug-Flow detention time= 112.7 min calculated for 0.026 af (81% of inflow)
Center-of-Mass det. time= 48.3 min (1,436.3 - 1,388.0)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.75'</td>
<td>879 cf</td>
<td>Custom Stage Data (Conic)</td>
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<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>250</td>
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<td>0</td>
<td>250</td>
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<tr>
<td>15.00</td>
<td>604</td>
<td>104</td>
<td>104</td>
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</tr>
<tr>
<td>16.00</td>
<td>960</td>
<td>775</td>
<td>879</td>
<td>974</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

#1 Discarded 14.75' 0.270 in/hr Exfiltration over Wetted area
Conductivity to Groundwater Elevation = 13.00'

#2 Primary 15.25' 10.0' 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 @ 20.73 hrs HW=15.27' (Free Discharge)

Primary OutFlow Max=0.06 cfs @ 20.73 hrs HW=15.27' (Free Discharge)
Pond 6P: LEVEL SPREADER

Inflow Area=0.189 ac
Peak Elev=15.27'
Storage=276 cf
Summary for Pond 8P: LEVEL SPREADER

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.02'

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 2.63" for 10 yr event
Inflow = 0.06 cfs @ 19.36 hrs, Volume= 0.036 af
Outflow = 0.06 cfs @ 19.40 hrs, Volume= 0.033 af, Atten= 0%, Lag= 2.1 min
Primary = 0.06 cfs @ 19.40 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.27' @ 19.40 hrs Surf.Area= 626 sf Storage= 156 cf

Plug-Flow detention time= 67.1 min calculated for 0.033 af (91% of inflow)
Center-of-Mass det. time= 27.9 min (1,354.5 - 1,326.6)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.00'</td>
<td>709 cf</td>
<td>Custom Stage Data (Conic) Listed below (Recalc)</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
<td>(sq-ft)</td>
</tr>
<tr>
<td>15.00</td>
<td>542</td>
<td>0</td>
<td>0</td>
<td>542</td>
</tr>
<tr>
<td>16.00</td>
<td>890</td>
<td>709</td>
<td>709</td>
<td>903</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices
#1 Primary 15.25' 10.0' long x 0.5' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00
Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.06 cfs @ 19.40 hrs HW=15.27' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.36 fps)
Pond 8P: LEVEL SPREADER

Inflow Area=0.165 ac
Peak Elev=15.27'
Storage=156 cf
**Summary for Pond 9P: POROUS PAVEMENT**

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 3.22" for 10 yr event

<table>
<thead>
<tr>
<th>Inflow</th>
<th>0.05 cfs @ 18.66 hrs, Volume= 0.040 af</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outflow</td>
<td>0.05 cfs @ 18.95 hrs, Volume= 0.033 af, Atten= 1%, Lag= 17.5 min</td>
</tr>
<tr>
<td>Discarded</td>
<td>0.00 cfs @ 0.00 hrs, Volume= 0.000 af</td>
</tr>
<tr>
<td>Primary</td>
<td>0.05 cfs @ 18.95 hrs, Volume= 0.033 af</td>
</tr>
</tbody>
</table>

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Peak Elev= 16.14' @ 18.95 hrs   Surf.Area= 3,344 sf   Storage= 396 cf

Plug-Flow detention time= 168.7 min calculated for 0.033 af (83% of inflow)
Center-of-Mass det. time= 89.3 min (1,302.3 - 1,213.0)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
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<tbody>
<tr>
<td>#1</td>
<td>15.75'</td>
<td>1,003 cf</td>
<td><strong>Custom Stage Data (Prismatic)</strong> Listed below (Recalc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,344 cf Overall x 30.0% Voids</td>
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<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>15.75</td>
<td>3,344</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.75</td>
<td>3,344</td>
<td>3,344</td>
<td>3,344</td>
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</table>

<table>
<thead>
<tr>
<th>Device</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Primary</td>
<td>16.00'</td>
<td><strong>6.0&quot; Round Culvert</strong></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>L= 108.0' CPP, mitered to conform to fill, Ke= 0.700</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inlet / Outlet Invert= 16.00' / 14.75' S= 0.0116 '/' Cc= 0.900</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf</td>
</tr>
</tbody>
</table>

| #2     | Discarded | 15.75' | **0.270 in/hr Exfiltration over Surface area below 15.45'** |
|        |           |        | Conductivity to Groundwater Elevation = 13.00' |

**Discarded OutFlow** Max=0.00 cfs @ 0.00 hrs HW=15.75' (Free Discharge)

**Primary OutFlow** Max=0.05 cfs @ 18.95 hrs HW=16.14' (Free Discharge)
Pond 9P: POROUS PAVEMENT

Inflow Area=0.151 ac
Peak Elev=16.14'
Storage=396 cf
Summary for Pond 15P: POROUS PAVEMENT

Inflow Area = 0.250 ac, 39.68% Impervious, Inflow Depth > 3.03” for 10 yr event
Inflow = 0.09 cfs @ 18.66 hrs, Volume= 0.063 af
Outflow = 0.05 cfs @ 22.40 hrs, Volume= 0.062 af, Atten= 41%, Lag= 224.3 min
Discarded = 0.05 cfs @ 22.40 hrs, Volume= 0.062 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.24’ @ 22.40 hrs Surf.Area= 7,067 sf Storage= 610 cf

Plug-Flow detention time= 118.6 min calculated for 0.062 af (99% of inflow)
Center-of-Mass det. time= 111.2 min (1,329.5 - 1,218.4)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.95'</td>
<td>2,120 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 7,067 cf Overall x 30.0% Voids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14.95</td>
<td>7,067</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.95</td>
<td>7,067</td>
<td>7,067</td>
<td>7,067</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices
#1 Primary 15.45’ 6.0” Round Culvert
L= 137.0’ CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 15.45’ / 14.75’ S= 0.0051 ‘/’ Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 14.95’ 0.270 in/hr Exfiltration over Surface area below 15.45’
Conductivity to Groundwater Elevation = 13.00’

Discarded OutFlow Max=0.05 cfs @ 22.40 hrs HW=15.24’ (Free Discharge)
Exfiltration (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.95’ (Free Discharge)
Culvert (Controls 0.00 cfs)
Pond 15P: POROUS PAVEMENT

Inflow Area = 0.250 ac
Peak Elev = 15.24'
Storage = 610 cf
Summary for Pond DP1: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.761 ac, 13.72% Impervious, Inflow Depth > 2.31" for 10 yr event
Inflow = 1.36 cfs @ 12.15 hrs, Volume = 0.146 af
Primary = 1.36 cfs @ 12.15 hrs, Volume = 0.146 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Summary for Pond DP2: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.663 ac, 21.23% Impervious, Inflow Depth > 1.98" for 10 yr event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 0.274 af
Primary = 3.15 cfs @ 12.08 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Inflow Area=1.663 ac
Summary for Pond DP3: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.450 ac, 55.02% Impervious, Inflow Depth = 1.78" for 10 yr event
Inflow = 0.92 cfs @ 12.07 hrs, Volume= 0.067 af
Primary = 0.92 cfs @ 12.07 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Inflow Area=0.450 ac
Proposed Hydrology

Prepared by {enter your company name here}

Type III 24-hr 100 yr Rainfall=8.81"
Proposed Hydrology

Type III 24-hr 100 yr Rainfall=8.81"

Pond DP1: Wetlands
- Inflow=3.37 cfs 0.363 af
- Primary=3.37 cfs 0.363 af

Pond DP2: Wetlands
- Inflow=7.79 cfs 0.742 af
- Primary=7.79 cfs 0.742 af

Pond DP3: IBEW DR S-M
- Inflow=1.75 cfs 0.169 af
- Primary=1.75 cfs 0.169 af

Total Runoff Area = 2.874 ac  Runoff Volume = 1.504 af  Average Runoff Depth = 6.28"
75.47% Pervious = 2.169 ac  24.53% Impervious = 0.705 ac
Summary for Subcatchment PR1: Pr Site

Runoff = 7.79 cfs @ 12.07 hrs, Volume= 0.537 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>49,602</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>49,602</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Direct Entry,

Subcatchment PR1: Pr Site

Runoff Area=49,602 sf
Runoff Volume=0.537 af
Runoff Depth=5.66"
Tc=5.0 min
CN=74
Summary for Subcatchment PR2: POROUS PAVEMENT

Runoff = 0.18 cfs @ 18.66 hrs, Volume= 0.137 af, Depth> 6.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,317</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>6,562</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>10,879</td>
<td>84</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>6,562</td>
<td></td>
<td>60.32% Pervious Area</td>
</tr>
<tr>
<td>4,317</td>
<td></td>
<td>39.68% Impervious Area</td>
</tr>
</tbody>
</table>

Tc = 480.0 min

Direct Entry,

Subcatchment PR2: POROUS PAVEMENT

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=10,879 sf
Runoff Volume=0.137 af
Runoff Depth>6.58"
Tc=480.0 min
CN=84
Summary for Subcatchment PR3: North Driveway

Runoff = 0.11 cfs @ 18.66 hrs, Volume= 0.086 af, Depth> 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr  100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,344</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>3,220</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>6,564</td>
<td>86</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>3,220</td>
<td></td>
<td>49.06% Pervious Area</td>
</tr>
<tr>
<td>3,344</td>
<td></td>
<td>50.94% Impervious Area</td>
</tr>
</tbody>
</table>

Tc Length Slope Velocity Capacity Description
480.0  Direct Entry,

Subcatchment PR3: North Driveway

Type III 24-hr
100 yr Rainfall=8.81"
Runoff Area=6,564 sf
Runoff Volume=0.086 af
Runoff Depth>6.82"
Tc=480.0 min
CN=86
Summary for Subcatchment PR4: Parking 1 North

Runoff = 0.15 cfs @ 18.14 hrs, Volume = 0.115 af, Depth > 7.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt = 0.01 hrs
Type III 24-hr 100 yr Rainfall = 8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,415</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,835</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,250</td>
<td>90</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,835</td>
<td>34.36% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>5,415</td>
<td>65.64% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

Tc = 480.0 min

Subcatchment PR4: Parking 1 North

Type III 24-hr
100 yr Rainfall = 8.81"
Runoff Area = 8,250 sf
Runoff Volume = 0.115 af
Runoff Depth > 7.30"
Tc = 480.0 min
CN = 90
Summary for Subcatchment PR5: Parking 2 North

Runoff = 0.13 cfs @ 18.14 hrs, Volume= 0.099 af, Depth> 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr  100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,545</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,640</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>7,185</td>
<td>89</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,640</td>
<td>36.74%</td>
<td>Pervious Area</td>
</tr>
<tr>
<td>4,545</td>
<td>63.26%</td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

**Tc** = 480.0 min

Subcatchment PR5: Parking 2 North

Type III 24-hr  
100 yr Rainfall=8.81"
Runoff Area=7,185 sf
Runoff Volume=0.099 af
Runoff Depth>7.18"
Tc=480.0 min
CN=89
Summary for Subcatchment PR6: To off Site Drainage POST

Runoff = 1.75 cfs @ 12.07 hrs, Volume= 0.131 af, Depth= 7.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,468</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>2,254</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,722</td>
<td>92</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,254</td>
<td></td>
<td>25.84% Pervious Area</td>
</tr>
<tr>
<td>6,468</td>
<td></td>
<td>74.16% Impervious Area</td>
</tr>
</tbody>
</table>

Tc Length Slope Velocity Capacity Description
(min) (feet) (ft/ft) (ft/sec) (cfs)
5.0

Direct Entry,

Subcatchment PR6: To off Site Drainage POST

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=8,722 sf
Runoff Volume=0.131 af
Runoff Depth=7.85"
Tc=5.0 min
CN=92
Summary for Subcatchment PR7: POROUS PAVEMENT

Runoff = 0.16 cfs @ 18.14 hrs, Volume = 0.120 af, Depth > 7.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span = 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,622</td>
<td>98</td>
<td>Paved parking, HSG C</td>
</tr>
<tr>
<td>1,421</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>8,043</td>
<td>94</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>1,421</td>
<td></td>
<td>17.67% Pervious Area</td>
</tr>
<tr>
<td>6,622</td>
<td>82.33% Impervious Area</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>480.0</td>
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<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
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</table>

Subcatchment PR7: POROUS PAVEMENT

Type III 24-hr
100 yr Rainfall=8.81"
Runoff Area=8,043 sf
Runoff Volume=0.120 af
Runoff Depth>7.78"
Tc=480.0 min
CN=94
Summary for Subcatchment PR8: Pr Site

Runoff = 3.37 cfs @ 12.14 hrs, Volume= 0.281 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.81"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,943</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>25,943</td>
<td>100.00% Pervious Area</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.6</td>
<td>50</td>
<td>0.0300</td>
<td>0.08</td>
<td></td>
<td>Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.26&quot;</td>
</tr>
</tbody>
</table>

Subcatchment PR8: Pr Site

Hydrograph

Type III 24-hr 100 yr Rainfall=8.81"
Runoff Area=25,943 sf
Runoff Volume=0.281 af
Runoff Depth=5.66"
Flow Length=50'
Slope=0.0300 '/'
Tc=10.6 min
CN=74
Summary for Pond 1P: POROUS PAVEMENT

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 7.18" for 100 yr event
Inflow = 0.13 cfs @ 18.14 hrs, Volume= 0.099 af
Outflow = 0.13 cfs @ 18.73 hrs, Volume= 0.086 af, Atten= 1%, Lag= 35.1 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.13 cfs @ 18.73 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.23' @ 18.73 hrs  Surf.Area= 4,500 sf  Storage= 760 cf

Plug-Flow detention time= 141.4 min calculated for 0.086 af (87% of inflow)
Center-of-Mass det. time= 77.7 min (1,264.4 - 1,186.7)

Volume Invert Avail.Storage Storage Description
#1 15.67' 1,350 cf Custom Stage Data (Prismatic) Listed below (Recalc)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15.67</td>
<td>4,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.67</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device Routing Invert</th>
<th>Device Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Primary 16.00' 6.0&quot; Round Culvert</td>
<td></td>
</tr>
<tr>
<td>L= 80.0' CPP, mitered to conform to fill, Ke= 0.700</td>
<td></td>
</tr>
<tr>
<td>Inlet / Outlet Invert= 16.00' / 15.25' S= 0.0094 '/' Cc= 0.900</td>
<td></td>
</tr>
<tr>
<td>n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf</td>
<td></td>
</tr>
<tr>
<td>#2 Discarded 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45'</td>
<td></td>
</tr>
<tr>
<td>Conductivity to Groundwater Elevation = 13.00'</td>
<td></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)

Primary OutFlow Max=0.13 cfs @ 18.73 hrs HW=16.23' (Free Discharge)

Discarded 2=Exfiltration (Controls 0.00 cfs)
Primary 1=Culvert (Inlet Controls 0.13 cfs @ 1.45 fps)
Pond 1P: POROUS PAVEMENT

Inflow Area=0.165 ac
Peak Elev=16.23'
Storage=760 cf
Summary for Pond 2P: LEVEL SPREADER

[79] Warning: Submerged Pond 9P Primary device # 1 OUTLET by 0.02'

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 6.22" for 100 yr event
Inflow = 0.11 cfs @ 18.71 hrs, Volume= 0.078 af
Outflow = 0.11 cfs @ 18.72 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.8 min
Discarded = 0.00 cfs @ 18.72 hrs, Volume= 0.004 af
Primary = 0.11 cfs @ 18.72 hrs, Volume= 0.069 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 14.77' @ 18.72 hrs  Surf.Area= 328 sf  Storage= 214 cf

Plug-Flow detention time= 50.8 min calculated for 0.073 af (94% of inflow)
Center-of-Mass det. time= 20.6 min (1,271.5 - 1,250.9)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.00'</td>
<td>294 cf</td>
<td>Custom Stage Data (Conic) Listed below (Recalc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14.00</td>
<td>230</td>
<td>0</td>
<td>0</td>
<td>230</td>
</tr>
<tr>
<td>14.75</td>
<td>323</td>
<td>206</td>
<td>206</td>
<td>333</td>
</tr>
<tr>
<td>15.00</td>
<td>375</td>
<td>87</td>
<td>294</td>
<td>387</td>
</tr>
</tbody>
</table>

Device | Routing | Invert | Outlet Devices
---|---------|--------|------------------------
#1 Primary 14.75' **10.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32

#2 Discarded 14.00' **0.270 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 13.00'

**Discarded OutFlow** Max=0.00 cfs @ 18.72 hrs  HW=14.77' (Free Discharge)<br>↑2=Exfiltration (Controls 0.00 cfs)

**Primary OutFlow** Max=0.11 cfs @ 18.72 hrs  HW=14.77' (Free Discharge)<br>↑1=Broad-Crested Rectangular Weir (Weir Controls 0.11 cfs @ 0.44 fps)
Pond 2P: LEVEL SPREADER

Inflow Area=0.151 ac
Peak Elev=14.77'
Storage=214 cf
Summary for Pond 3P: POROUS PAVEMENT

Inflow Area = 0.185 ac, 82.33% Impervious, Inflow Depth > 7.78" for 100 yr event
Inflow = 0.16 cfs @ 18.14 hrs, Volume= 0.120 af
Outflow = 0.15 cfs @ 18.73 hrs, Volume= 0.106 af, Atten= 1%, Lag= 35.8 min
Discarded = 0.03 cfs @ 18.73 hrs, Volume= 0.049 af
Primary = 0.12 cfs @ 18.73 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.70' @ 18.73 hrs  Surf.Area= 3,872 sf  Storage= 874 cf

Plug-Flow detention time= 119.5 min calculated for 0.106 af (89% of inflow)
Center-of-Mass det. time= 62.9 min (1,233.5 - 1,170.6)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.95'</td>
<td>1,220 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 4,066 cf Overall x 30.0% Voids</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>14.95</td>
<td>3,872</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.00</td>
<td>3,872</td>
<td>4,066</td>
<td>4,066</td>
</tr>
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</table>

Device Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>#1</th>
<th>Primary</th>
<th>15.45'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6.0&quot; Round Culvert</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L= 137.0' CPP, mitered to conform to fill, Ke= 0.700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inlet / Outlet Invert= 15.45' / 14.75' S= 0.0051 '/' Cc= 0.900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n= 0.013 Concrete pipe, bends &amp; connections, Flow Area= 0.20 sf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#2</th>
<th>Discarded</th>
<th>14.95'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.270 in/hr Exfiltration over Surface area below 15.45'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conductivity to Groundwater Elevation = 13.00'</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.03 cfs @ 18.73 hrs  HW=15.70' (Free Discharge)

Primary OutFlow Max=0.12 cfs @ 18.73 hrs  HW=15.70' (Free Discharge)
Pond 3P: POROUS PAVEMENT

Hydrograph

Inflow Area=0.185 ac
Peak Elev=15.70'
Storage=874 cf
Summary for Pond 4P: POROUS PAVEMENT

Inflow Area = 0.189 ac, 65.64% Impervious, Inflow Depth > 7.30" for 100 yr event
Inflow  = 0.15 cfs @ 18.14 hrs, Volume= 0.115 af
Outflow = 0.15 cfs @ 18.76 hrs, Volume= 0.090 af, Atten= 1%, Lag= 37.3 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.15 cfs @ 18.76 hrs, Volume= 0.090 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.65' @ 18.76 hrs  Surf.Area= 4,500 sf  Storage= 1,327 cf

Plug-Flow detention time= 207.0 min calculated for 0.090 af (78% of inflow)
Center-of-Mass det. time= 108.3 min ( 1,292.2 - 1,183.8 )

Volume Invert Avail.Storage Storage Description
#1 15.67' 1,350 cf Custom Stage Data (Prismatic) Listed below (Recalc) 4,500 cf Overall x 30.0% Voids

Elevation Surf.Area Inc.Store Cum.Store
(44) (sq-ft) (cubic-feet) (cubic-feet)
15.67 4,500 0 0
16.67 4,500 4,500 4,500

Device Routing Invert Description
#1 Primary 16.40' 6.0" Round Culvert
L= 80.0’ CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 16.40' / 15.50’ S= 0.0112 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 15.67' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.67' (Free Discharge)
↑ 2=Exfiltration ( Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 18.76 hrs HW=16.65' (Free Discharge)
↑ 1=Culvert (Inlet Controls 0.15 cfs @ 1.51 fps)
Pond 4P: POROUS PAVEMENT

Hydrograph

Inflow Area = 0.189 ac
Peak Elev = 16.65'
Storage = 1,327 cf

Type III 24-hr 100 yr Rainfall = 8.81"
Summary for Pond 6P: LEVEL SPREADER

Inflow Area = 0.189 ac, 65.64% Impervious, Inflow Depth > 5.69" for 100 yr event
Inflow = 0.15 cfs @ 18.76 hrs, Volume= 0.090 af
Outflow = 0.15 cfs @ 18.79 hrs, Volume= 0.084 af, Attn= 0%, Lag= 1.6 min
Discarded = 0.01 cfs @ 18.79 hrs, Volume= 0.006 af
Primary = 0.15 cfs @ 18.79 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.28' @ 18.79 hrs Surf.Area= 695 sf Storage= 285 cf

Plug-Flow detention time= 52.2 min calculated for 0.084 af (93% of inflow)
Center-of-Mass det. time= 21.0 min (1,313.1 - 1,292.2)

Volume Invert Avail.Storage Storage Description
#1 14.75' 879 cf Custom Stage Data (Conic) Listed below (Recalc)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-ft)</td>
<td>(cubic-ft)</td>
<td>(sq-ft)</td>
</tr>
<tr>
<td>14.75</td>
<td>250</td>
<td>0</td>
<td>0</td>
<td>250</td>
</tr>
<tr>
<td>15.00</td>
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<td>104</td>
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</tr>
<tr>
<td>16.00</td>
<td>960</td>
<td>775</td>
<td>879</td>
<td>974</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices
#1 Discarded 14.75' 0.270 in/hr Exfiltration over Wetted area
Conductivity to Groundwater Elevation = 13.00'

#2 Primary 15.25' 10.0' 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 @ 18.79 hrs HW=15.28' (Free Discharge)
1=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.14 cfs @ 18.79 hrs HW=15.28' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.14 cfs @ 0.48 fps)
Pond 6P: LEVEL SPREADER

Hydrograph

Inflow Area=0.189 ac
Peak Elev=15.28'
Storage=285 cf
Summary for Pond 8P: LEVEL SPREADER

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.03'

Inflow Area = 0.165 ac, 63.26% Impervious, Inflow Depth > 6.24" for 100 yr event
Inflow  = 0.13 cfs @ 18.73 hrs, Volume= 0.086 af
Outflow = 0.13 cfs @ 18.76 hrs, Volume= 0.082 af, Atten= 0%, Lag= 1.6 min
Primary = 0.13 cfs @ 18.76 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.28' @ 18.76 hrs Surf.Area= 630 sf Storage= 163 cf

Plug-Flow detention time= 34.0 min calculated for 0.082 af (96% of inflow)
Center-of-Mass det. time= 14.1 min (1,278.5 - 1,264.4 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>15.00'</td>
<td>709 cf</td>
<td>Custom Stage Data (Conic) Listed below (Recalc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
<td>(sq-ft)</td>
</tr>
<tr>
<td>15.00</td>
<td>542</td>
<td>0</td>
<td>0</td>
<td>542</td>
</tr>
<tr>
<td>16.00</td>
<td>890</td>
<td>709</td>
<td>709</td>
<td>903</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

#1 Primary 15.25' 10.0' long x 0.5' breadth Broad-Crested Rectangular Weir
Head (feet) 0.20 0.40 0.60 0.80 1.00
Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.13 cfs @ 18.76 hrs HW=15.28' (Free Discharge)

---1=Broad-Crested Rectangular Weir (Weir Controls 0.13 cfs @ 0.47 fps)
Pond 8P: LEVEL SPREADER

Inflow Area=0.165 ac
Peak Elev=15.28'
Storage=163 cf
Summary for Pond 9P: POROUS PAVEMENT

Inflow Area = 0.151 ac, 50.94% Impervious, Inflow Depth > 6.82" for 100 yr event
Inflow = 0.11 cfs @ 18.66 hrs, Volume= 0.086 af
Outflow = 0.11 cfs @ 18.71 hrs, Volume= 0.078 af, Atten= 0%, Lag= 3.3 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.11 cfs @ 18.71 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 16.22' @ 18.71 hrs  Surf.Area= 3,344 sf  Storage= 468 cf

Plug-Flow detention time= 101.6 min calculated for 0.078 af (91% of inflow)
Center-of-Mass det. time= 56.4 min (1,250.9 - 1,194.5)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>#1</td>
<td>15.75'</td>
<td>1,003 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc)</td>
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<td></td>
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<td></td>
<td>3,344 cf Overall x 30.0% Voids</td>
</tr>
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<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15.75</td>
<td>3,344</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.75</td>
<td>3,344</td>
<td>3,344</td>
<td>3,344</td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

#1 Primary 16.00' 6.0" Round Culvert
L= 108.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 16.00' / 14.75' S= 0.0116 '/' Cc= 0.900
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

#2 Discarded 15.75' 0.270 in/hr Exfiltration over Surface area below 15.45'
Conductivity to Groundwater Elevation = 13.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.75' (Free Discharge)
2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.11 cfs @ 18.71 hrs HW=16.22' (Free Discharge)
1=Culvert (Inlet Controls 0.11 cfs @ 1.40 fps)
## Pond 9P: POROUS PAVEMENT

### Hydrograph

- **Inflow Area**: 0.151 ac
- **Peak Elev**: 16.22'
- **Storage**: 468 cf

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Flow (cfs)</th>
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<tbody>
<tr>
<td>0-1</td>
<td>0.11</td>
</tr>
<tr>
<td>2-3</td>
<td>0.11</td>
</tr>
<tr>
<td>4-5</td>
<td>0.00</td>
</tr>
<tr>
<td>6-7</td>
<td>0.11</td>
</tr>
<tr>
<td>8-9</td>
<td>0.00</td>
</tr>
<tr>
<td>10-11</td>
<td>0.11</td>
</tr>
</tbody>
</table>

---

### Diagram

- Green: Inflow
- Gray: Outflow
- Brown: Discarded
- Blue: Primary
Summary for Pond 15P: POROUS PAVEMENT

Inflow Area = 0.250 ac, 39.68% Impervious, Inflow Depth > 6.58" for 100 yr event
Inflow = 0.18 cfs @ 18.66 hrs, Volume= 0.137 af
Outflow = 0.16 cfs @ 20.03 hrs, Volume= 0.116 af, Atten= 11%, Lag= 82.6 min
Discarded = 0.06 cfs @ 20.03 hrs, Volume= 0.078 af
Primary = 0.10 cfs @ 20.03 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.66' @ 20.03 hrs  Surf.Area= 7,067 sf  Storage= 1,496 cf

Plug-Flow detention time= 163.6 min calculated for 0.116 af (85% of inflow)
Center-of-Mass det. time= 92.4 min ( 1,291.6 - 1,199.2 )

<table>
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<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>14.95'</td>
<td>2,120 cf</td>
<td>Custom Stage Data (Prismatic) Listed below (Recalc) 7,067 cf Overall x 30.0% Voids</td>
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<thead>
<tr>
<th>Elevation</th>
<th>Surf.Area</th>
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<th>Cum.Store</th>
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<td>(feet)</td>
<td>(sq-ft)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
</tr>
<tr>
<td>14.95</td>
<td>7,067</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.95</td>
<td>7,067</td>
<td>7,067</td>
<td>7,067</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
</table>
| #1     | Primary | 15.45' | 6.0" Round Culvert  
L= 137.0' CPP, mitered to conform to fill, Ke= 0.700  
Inlet / Outlet Invert= 15.45' / 14.75' S= 0.0051 '/' Cc= 0.900  
n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf |
| #2     | Discarded | 14.95' | 0.270 in/hr Exfiltration over Surface area below 15.45'  
Conductivity to Groundwater Elevation = 13.00'  
Discarded OutFlow Max=0.06 cfs @ 20.03 hrs  HW=15.66' (Free Discharge)  
↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑üp=Exfiltration ( Controls 0.06 cfs)  
PV= C= 0.1000  |
| Primary OutFlow Max=0.10 cfs @ 20.03 hrs  HW=15.66' (Free Discharge)  
↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑∪=Porous Pavement |
Pond 15P: POROUS PAVEMENT

Inflow Area = 0.250 ac
Peak Elev = 15.66'
Storage = 1,496 cf
Summary for Pond DP1: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.761 ac, 13.72% Impervious, Inflow Depth > 5.73" for 100 yr event
Inflow = 3.37 cfs @ 12.14 hrs, Volume = 0.363 af
Primary = 3.37 cfs @ 12.14 hrs, Volume = 0.363 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP1: Wetlands

Hydrograph

Inflow Area=0.761 ac
Summary for Pond DP2: Wetlands

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.663 ac, 21.23% Impervious, Inflow Depth > 5.35" for 100 yr event

Inflow = 7.79 cfs @ 12.07 hrs, Volume = 0.742 af

Primary = 7.79 cfs @ 12.07 hrs, Volume = 0.742 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Summary for Pond DP3: IBEW DR S-M

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.450 ac, 55.02% Impervious, Inflow Depth = 4.51" for 100 yr event
Inflow = 1.75 cfs @ 12.07 hrs, Volume= 0.169 af
Primary = 1.75 cfs @ 12.07 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP3: IBEW DR S-M
Table 1 Required Recharge Volume
Turnpike Road
As shown in Vol 3. Chapter 1 Page 15 of the Massachusetts Stormwater Handbook
Required Recharge Volume determined by the following equation:
\[ R_v = F \times A_{\text{imp}} \]
where:
- \( R_v \) Required Recharge Volume
- \( F \) Target Depth Factor
- \( A_{\text{imp}} \) Impervious Area

Given:
- NRCS Hydrologic Soil Type - C
- Target Depth Factor = 0.25 inch

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>( A_{\text{imp}} ) ft.²</th>
<th>( A_{\text{imp}} ) acre</th>
<th>( F ) inch</th>
<th>( R_v ) acre-ft</th>
<th>( R_v ) ft.³</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR2</td>
<td>7,067</td>
<td>0.16</td>
<td>0.25</td>
<td>0.0034</td>
<td>147</td>
</tr>
<tr>
<td>PR3</td>
<td>3,344</td>
<td>0.08</td>
<td>0.25</td>
<td>0.0016</td>
<td>70</td>
</tr>
<tr>
<td>PR4 and PR5</td>
<td>9,960</td>
<td>0.23</td>
<td>0.25</td>
<td>0.0048</td>
<td>208</td>
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<tr>
<td>PR7</td>
<td>3,872</td>
<td>0.09</td>
<td>0.25</td>
<td>0.0019</td>
<td>81</td>
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<tr>
<td>TOTAL</td>
<td>24,243</td>
<td></td>
<td></td>
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</table>
Table 2 Simple Dynamic Method for Recharge

As shown in Vol 3, Chapter 1 Page 19 of the Massachusetts Stormwater Handbook

Using the following equations

\[ A = \frac{R_v}{(D+K)T} \]

\[ V = A \times D \]

where

- \( R_v \) Required Recharge Volume
- \( A \) Minimum Req'd surface area of the bottom of the infiltration structure
- \( V \) Storage Volume
- \( D \) depth of the infiltration facility
- \( K \) Rawls rate for saturated hydraulic conductivity
- \( T \) allowable drawdown

Use

\[ k = 0.27 \text{ in/hr} \]

\[ T = 2 \text{ hours} \]

P5

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>( R_v ) ft.³</th>
<th>( D ) ft.</th>
<th>( A ) ft.²</th>
<th>( V_{\text{required}} ) ft.³</th>
<th>BMP</th>
<th>( V_{\text{provided}} ) ft.³</th>
<th>( V_{\text{provided}} &gt; V_{\text{req}} )</th>
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<tr>
<td>PR2</td>
<td>147</td>
<td>1.00</td>
<td>140.89</td>
<td>140.89</td>
<td>Porous Pavement</td>
<td>1,060</td>
<td>Yes</td>
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<tr>
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<td>66.67</td>
<td>Porous Pavement</td>
<td>502</td>
<td>Yes</td>
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<tr>
<td>PR4 and PR5</td>
<td>208</td>
<td>1.00</td>
<td>198.56</td>
<td>198.56</td>
<td>Porous Pavement</td>
<td>1,350</td>
<td>Yes</td>
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<tr>
<td>PR7</td>
<td>81</td>
<td>1.00</td>
<td>77.19</td>
<td>77.19</td>
<td>Porous Pavement</td>
<td>581</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Using the following equations
\[ \text{Time}_{\text{drawdown}} = \frac{R_v}{(K \times \text{Bottom Area})} \]
As shown in Vol 3. Chapter 1 Page 25 of the Massachusetts Stormwater Handbook

- \( R_v \): Required Recharge Volume
- \( K \): Rawls rate for saturated hydraulic conductivity
- \( k = 0.27 \) in/hr for C-Soils

### Table 3 Drawdown

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>( R_v )</th>
<th>Bottom Area</th>
<th>( \text{Time}_{\text{drawdown}} )</th>
<th>( \text{Time}_{\text{drawdown}} &lt; 72 ) hours</th>
</tr>
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<tbody>
<tr>
<td>PR2</td>
<td>147</td>
<td>7067</td>
<td>0.93</td>
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<tr>
<td>PR3</td>
<td>70</td>
<td>3344</td>
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<td>81</td>
<td>3872</td>
<td>0.93</td>
<td>Yes</td>
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</table>
Table 4 Water Quality Volume

As shown in Vol 3. Chapter 1 Page 32 of the Massachusetts Stormwater Handbook

\[ V_{WQ} = \left( \frac{D_{WQ}}{12 \text{ in/ft}} \right) \times (A_{imp} \times 43,560 \text{ ft.}^2/\text{acre}) \]

where

- \( V_{WQ} \): Water Quality Volume
- \( D_{WQ} \): Water Quality Depth
- \( A_{imp} \): Impervious Area

\( D_{WQ} = 0.5 \text{ in} \)

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>( A_{imp} )</th>
<th>( A_{imp} )</th>
<th>( V_{WQ} )</th>
<th>( V_{provided} )</th>
<th>( V_{provided} &gt; V_{req} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \text{ft.}^2 )</td>
<td>( \text{acre} )</td>
<td>( \text{ft.}^3 )</td>
<td>( \text{ft.}^3 )</td>
<td>( \text{Yes/No} )</td>
</tr>
<tr>
<td>PR2</td>
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<td>0.16</td>
<td>294.46</td>
<td>1,060</td>
<td>Yes</td>
</tr>
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<td>PR3</td>
<td>3,344</td>
<td>0.08</td>
<td>139.33</td>
<td>502</td>
<td>Yes</td>
</tr>
<tr>
<td>PR4 and PR5</td>
<td>9,960</td>
<td>0.23</td>
<td>415.00</td>
<td>1,350</td>
<td>Yes</td>
</tr>
<tr>
<td>PR7</td>
<td>3,872</td>
<td>0.09</td>
<td>161.33</td>
<td>581</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Volume taken from HydroCAD model
TSS Removal Worksheet

As shown in Vol 3, Chapter 1 Page 34 of the Massachusetts Stormwater Handbook

<table>
<thead>
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<th>Treatment Train 1</th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>BMP</strong></td>
<td><strong>B</strong></td>
<td><strong>C</strong></td>
<td><strong>D</strong></td>
<td><strong>E</strong></td>
</tr>
<tr>
<td>Porous Pavement</td>
<td>TSS Removal Rate</td>
<td>Starting TSS Load(^*)</td>
<td>Amount Removed (BxC)</td>
<td>Remaining Load (C-D)</td>
</tr>
<tr>
<td></td>
<td>80%</td>
<td>1.00</td>
<td>0.80</td>
<td>0.20</td>
</tr>
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</table>

Total TSS Removal = 0.80
Appendix E: Operation and Maintenance Plan (Under Separate Cover)
256 Freeport Street
Stormwater Management System

Operation and Maintenance Plan (O&M)

March 2022

This Stormwater Management System Operation and Maintenance Plan provides for the inspection and maintenance of structural Best Management Practices (BMPs) and for measures to prevent pollution of rainwater associated with the 256 Freeport Street project in Dorchester, MA.

This document has been prepared in accordance with the requirements of the Stormwater Regulations included in the Massachusetts Wetlands Protection Act Regulations (310 CMR 10).

Responsible Party

IBEW Local 103
256 Freeport Street
Dorchester, MA 02122

The stormwater management system will be maintained properly to assure its continued performance, as follows.

1. Level Spreader
   - Inspect every 6 months and after every major storm event
   - Remove any debris that may clog system.
   - Remove sediment if depth reaches 3 inches.
   - Removal of dead vegetation and leaves

3. Drain Outlets
   - Inspect every 6 months and after every major storm event
   - Remove any debris that may clog system.
   - Remove sediment if depth reaches 3 inches.
   - Removal of dead vegetation and leaves

4. Porous Pavement
   - Inspect every 6 months and after every major storm event
   - Remove any debris that may clog system.

Maintenance of these components will be conducted in accordance with the Mass DEP Stormwater Policy Manual as noted in the attached Operation and Maintenance table.
summarizing the pertinent inspection and maintenance activities. The Mass DEP Stormwater Policy Manual is available at the following web-site:


Practices for Long Term Pollution Prevention

Litter Pick-up
The Owner will conduct litter pick-up from the stormwater management facilities in conjunction with routine maintenance activities.

Routine Inspection and Maintenance of Stormwater BMPs
The Owner will conduct inspection and maintenance of the stormwater management practices in accordance with the guidelines discussed above.

Maintenance of Landscaped Areas
The Owner shall minimize use of fertilizers, herbicides, and pesticides for the maintenance of facilities covered by this plan.

Prohibition of Illicit Discharges
The DEP Stormwater Management Standards prohibit illicit discharges to the storm water management system. Illicit discharges are discharges that do not entirely consist of stormwater, except for certain specified non-stormwater discharges.

Discharges from the following activities are not considered illicit discharges:
- firefighting
- water line flushing
- landscape irrigation
- uncontaminated groundwater
- potable water sources
- water used to clean residential buildings without detergents
- footing drains
- individual resident car washing
- flows from riparian habitats and wetlands
- dechlorinated water from swimming pools
- water used for street washing
- air conditioning condensation

There are no known or proposed illicit connections associated with this project.
Appendix F:
Checklist for Stormwater Report
Checklist for Stormwater Report

A. Introduction

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 8²
- 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.
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

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 (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
- [X] Other (describe): Infiltration Basin, Porous Pavement

**Standard 1: No New Untreated Discharges**

- [X] No new untreated discharges
- [ ] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [X] Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.
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

☒ 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 (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 LUHPPPL;
• 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 (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 (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.
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 Plan 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 G: Illicit Discharge Compliance Statement
Illicit Discharge Compliance Statement

To the best of my knowledge, belief and information the stormwater management system servicing the 256 Freeport Street project in Boston, MA will not receive illicit discharges, including wastewater discharges or stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, or hazardous substances.

There are no known or proposed illicit connections associated with this project. If a potential illicit discharge to the facilities covered by this plan is detected (e.g. dry weather flows at any pipe outlet, evidence of contamination of surface water discharge by non-stormwater sources), the Boston Department of Public Works shall be notified for assistance in determining the nature and source of the discharge.

The stormwater management and conveyance systems are shown on the plans entitled “Grading and Drainage Plan” prepared by Howard Stein Hudson and include with the Notice of Intent submittal.

Signature: [Signature]
Appendix H: Proposed Plans (under Separate Cover)
April 25th, 2022

Boston Conservation Commission  
City Hall Plaza, Room 709  
Boston, MA 02201

Re: IBEW LOCAL 103 Wetland and Buffer Restoration Plan Updates

Dear Commissioners:

Howard Stein Hudson (HSH) is providing this letter update to address comments provided by Conservation Commission Staff in relation to the wetland restoration at the IBEW 103 SITE LOCATED AT 256 Freeport Street, Boston, MA. Also attached is an updated wetland impacts plan and the wetland restoration plan.

Comment No.1: Table 1-1 details the calculated impacts to the wetland resources but only quantifies the amount of fill placed within the ILSF. Having been to the site, a substantial amount of fill has also been placed within the IVW and Buff Zone. Why has that not been quantified?

Response: HSH has quantified the fill within the IVW & the 100-Foot Buffer Zone. An updated table is provided below. An updated wetland impact plan is also attached.

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<th>AREA</th>
<th>SQUARE FEET</th>
<th>CUT (CY)</th>
<th>FILL (CY)</th>
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<td>1,924</td>
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<tr>
<td>100FT WETLAND BUFFER</td>
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</table>

Table 1-1 Resource Area Impacts (Revised 4.25.2022)

Comment No.2: The plan itself seems to question the overall survivability of the restoration plantings, especially with the strong presence of invasive species. Why does the plan not include treatment of the invasive species and or restoration of these areas as well?

Response: Implementing an invasive plant removal plan across the entire site is a massive undertaking and out of the scope of the enforcement order. In the plan we state that the restoration areas will be monitored for invasives and a treatment will be prepared at that time.
Comment No.3: *Staff feels that this plan is a good first draft but has noted several components that are missing but overall critical to the success of a restoration effort. A clear understanding of what the overall goals and what the intended end point of the restoration plan is critical in assessing the success of the plan and whether the Resource Area Values have been restored.*

*Response:* The goal of the plan is to restore the pre-existing topography and flood storage capacity of the resource area, and to provide an enhanced and more diverse vegetative community than what existed prior to the unpermitted alteration.

Comment No.4: *Since we are already in April, a detailed timeline of the fill removal and planting process is necessary to ensure that activities are occurring in the correct sequence and during the correct time of year.*

*Response:* The removal of fill will begin in June, 2022. Once the fill is removed the area will be prepared for the seed mixes to be placed. The PWS will inspect for invasive species as outlined in the Wetland and Buffer Restoration Plan prepared by Lucas Environmental, LLC dated March 15, 2022. The erosion control measures, and the disturbed areas will be inspected in accordance with the Stormwater Pollution Prevention Plan. It is anticipated that the trees and shrubs will be planted at the appropriate time in late summer/early fall, depending on weather conditions. Plantings will commence under the supervision of the PWS.

Comment No.5: *Additional detail on how the fill will be removed and with what equipment, how the predisturbance substrate will be identified, and what process is in place should the predisturbance substrate not be differentiated from the fill.*

*Response:* Once the erosion controls are in place and the supervising Professional Wetland Scientist (PWS) is on site the contractor shall use a mid-sized excavator to remove the fill material. The excavator will be positioned outside of the wetland resource areas at all times and will be able to reach all of the filled areas. The fill material will be paced within a 10-wheeler dump truck and removed to the predetermined storage area within the existing parking lot, outside of the wetland resource buffer areas.

The fill material placed with the resource areas consist of roughly graded crushed rock and stone which is fairly easy to identify. The underlining material on the site is the original soil material. Once the PWS visually identifies the underlying native material the use of hand tools will begin to remove the last of the fill material.

Comment No.6: *Additional detail on what will happen to the fill, how it will be managed once removed, where it will be stockpiled and/or disposed of, etc.*
Response: The fill material removed from the resource areas will be stockpiled with the existing parking lot with the appropriate erosion controls (Haybales) in place outside of the wetland buffer areas. Suitable fill will be reused in the construction of the new parking areas. The remainder of the fill material will be trucked off site and dispose of according to State Regulations.

Comment No.6: Additional information on how the plantings will be maintained after planting (including irrigation, weeding, etc.).

Response: The PWS will inspect the planting area at the end of the 2022 growing season for invasive species to determine the presence/extent of invasive/opportunistic species within the planting area. If invasive/opportunistic species are found, a control plan including measures for removal will be developed and submitted to the Conservation Commission for review and approval prior to implementation. The control plan will provide for long-term maintenance activities within the restoration areas and Buffer.

The contractor will be required to maintain adequate moisture for the first growing season following planting to support the plantings (>75% survival is required). Irrigation practices will be likely be necessary for the mitigation areas following planting and seeding.

Once the fill is removed from the impacted areas the seed mixes can be placed. These areas would be irrigated twice a week by the contractor or as needed depending on weather conditions. The shrubs and tree planting will be installed in cooler conditions in early fall and will be watered weekly. The watering schedule is subject to change based on weather conditions.

If you have any questions, please do not hesitate to contact me at 617-797-9190 or jdowning@hshassoc.com.

Sincerely,

James Downing
Manager of Civil Engineering