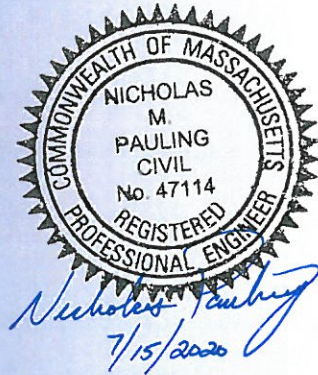


# Stormwater Management Report

*Five Paths  
Tax Map 39, Parcel 15A  
Wayland, MA*

*July 2019  
Rev 1 – July 14, 2020*



Submitted to:  
**Wayland Planning Board  
41 Cochituate Road  
Wayland, MA 01778**

Submitted by:  
**Ross C. Wilkinson, Personal Representative,  
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Project No:  
**171053**



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## Attachments

"Residential Subdivision - Definitive Plan - Five Paths Tax Map #39, Parcel 15A"  
prepared for Ross C. Wilkinson Personal Representative, Estate of Paula D. Wilkinson.  
Dated July 2019. Last revised July 14, 2020.

Long-Term Pollution Prevention Plan & Stormwater System Operation and Maintenance Plan,  
Dated July 2019. Last revised July 14, 2020.





## Introduction and Methodology

This drainage narrative is intended to accompany plans for the proposed residential subdivision named Five Paths, located between Shaw Drive and Woodridge Road in Wayland, MA. Drainage has been evaluated to comply with the Massachusetts Stormwater Management Handbook and the Town of Wayland Bylaws. Site specific information has been evaluated under two scenarios, “pre-development” and “post-development” to match the Definitive Subdivision Plan as designed on the accompanying drawings.

Evaluations of these conditions have been done so that potential impacts due to the project can be identified, quantified, and mitigated to the extents practicable. Summary data and calculations are provided herein and on drawing entitled “Drainage Plan” reflecting the hydrologic and hydraulic modeling of the stormwater management system that has been completed for the project.

The final design intent seeks to meet the following interrelated goals:

1. Limit stormwater runoff rates for the 0.5”, 1.0”, 2-, 10-, 25- and 100-year storm events to existing (pre-development) levels;
2. Limit post-development peak stormwater runoff volumes for the 2-year, 10-year storm, 25-year, and 100-year storm events to existing (pre-development) levels.
3. Evaluate potential on- and off-site flooding during the 100-year storm event due to proposed development;
4. Maintain or increase the volume of stormwater recharged per storm event to those of existing (pre-development) levels;
5. Prevent appreciable sediment and other suspended solids and contaminants transport by trapping them on site via Best Management Practices;
6. Provide adequate drainage for new surfaces;
7. Maintain existing drainage patterns while providing a cost-effective engineering solution that addresses regulatory as well as real-world constraints.
8. Protect final graded surfaces and outfalls with adequate energy dissipation and erosion control.

## Site Description

This proposed residential subdivision is located off Shaw Drive in southern Wayland. The project site area is a 6.5± acre portion of a 13.7± acre parcel currently identified on Wayland Assessor’s Map 39, Parcel 015A. The 7.2± acres of Parcel 39-015A not being developed for subdivision are designated as “Remaining Lands of Wilkinson.” None of Parcel 39-15A is currently developed, and

the parcel consists primarily of mixed evergreen and deciduous forest with some large rock outcrops.

The site is located on rolling terrain, rising in elevation 54± vertical feet from the lowest point in the northwest corner at Shaw Drive to the highest point at the southern limit of the subdivision. The land has a primary ridge running from southwest to northeast, splitting into two main watersheds draining generally west and south. A topographic saddle point at the southern end of the subject property, along with some bedrock ledge outcrops, creates several smaller sub-watersheds. The land typically slopes at approximately 10% to 16%, with internal undulations creating some leveling areas containing lesser slopes ranging between 3% to 5%.

Available NRCS soils mapping for the project and surrounding areas shows consistent soils, ranging from Hydrologic Soil Group (HSG) A & D. 45% of the soils consists of gravelly Narragansett loamy sand, which has a Hydraulic soil group of A. The remainder of the is a mixture of Hollis rock complex and ledge, both classified as a HSG D. Onsite soil evaluations done during subsurface sewage design were comprised of a gravelly sandy loam and loamy sand base with less than 15% cobble and boulders. These soil classifications, along with other listed characteristics in the logs reveal that the overall mapping is consistent with the field evaluation.

When determining the most appropriate HSG for overall hydrologic analysis, HSG C was selected on the basis that the results be conservative in nature yet provide as realistic a characterization of the hydraulic conductivity of the soils as possible. The NRCS soil map unit data was considered along with the Part 630, Chapter 7 “Hydrologic Soil Groups” of the National Engineering Handbook (NEH). According to this handbook, the range of saturated hydraulic conductivity of the least impermeable layer placed the soil map’s conductivity range between HSG B and HSG C. Since the lower end of the Narragansett’s conductivity range is less than the lower limit of the HSG B from the NEH, and the fact that there was a noticeable amount of cobbles and boulders, HSG C was selected for analysis.

Test holes dug in stormwater retention and infiltration basins revealed deeper sand and loamy sand deposits that are more consistent the HSG A characteristics of Narragansett. The localized pockets of HSG A soils are consistent with an overall HSG C for the whole site due to the other aspects observed. HSG A infiltration rate of 2.41 in/hr per the Rawl’s Chart for drainage have therefore been applied within stormwater infiltration areas.

To evaluate the site drainage conditions from pre-development to post-development, the project site has been divided into four subcatchment areas (SC1.0, SC2.0, SC3.0 and SC4.0) and their associated analysis point (AP1, AP2, AP3 and AP4) under the pre-development scenario, as shown on the plan entitled “WATERSHED MAP – EXISTING CONDITIONS”, see attached.

SC1.0 outlines a subcatchment area located on the north portion of the project site adjacent to Shaw Drive. SC1.0 generally flows north and west towards a low point located at the northwestern corner of the project site and shall be noted as AP1.

SC2.0 outlines a subcatchment area located at the southwestern portion of the project site and generally flows west onto the adjacent property and shall be noted as AP2.

SC3.0 outlines a subcatchment area located on the southeastern portion of the project site and generally flows south onto the adjacent property and shall be noted as AP3.

SC4.0 outlines a subcatchment area located on the southern portion of the project site between SC2.0 and SC3.0, and generally flows south onto the adjacent property and shall be noted as AP4.

### Project Description

This purpose of this project is to create a residential subdivision with 3 lots. Lot 1 shall be noted as the lot located on the northeastern portion of the project site adjacent to Shaw Drive. Lot 2 shall be noted as the lot located at the southwestern portion of the project site. Lot 3 shall be noted as the lot located at the south eastern portion of the project site. Each lot will be serviced by an onsite subsurface sewage disposal system and municipal service connection. The development includes the construction of the three (3) 5-bedroom single-family dwellings, supporting utilities, stormwater management system, and associated clearing, grading and grubbing. A proposed roadway “Five Paths Court” will provide access to each of the residential dwelling within the right of way.

The on-site stormwater runoff generated by the proposed impervious area (Pavement & roof) is to be collected and pre-treated prior to entering the two proposed Infiltration Chambers (IC) system. The Infiltration Chambers will provide sufficient stormwater infiltration and retention to mitigate the increase in overall impervious area from the proposed development per Massachusetts Stormwater Handbook.

Under the post-development scenario, the project has been divided into (14) subcatchment areas shown on the plan entitled “WATERSHED MAP – PROPOSED CONDITIONS”, see attached.

SC1.1 outlines an area draining into a double grate catch basin (DCB4), which will drain directly into the Infiltration Chambers (IC-1) located on Lot 1. SC1.1 will capture a portion of the existing pavement and wooded area from the adjacent property east of the project site, proposed roof runoff and a portion of the proposed paved driveway of the proposed single-family dwelling on Lot 1.

SC1.2 outlines an area consisting of a portion of the existing paved driveway and roof runoff from the adjacent property, a portion of the proposed driveway from Lot 1, grass and wooded area, and a portion of the proposed roadway. SC1.2 will be collected by a double grate catch basin (DCB3) and continue to flow into a drain manhole (DMH1) which will ultimately flow into IC-1.

SC1.3 and SC1.4 outline a portion of the proposed roadway to be collected by two catch basins located on the proposed roadway (CB2 and CB1 respectively). Both catch basins will flow into DMH1 similar to DCB3.

SC1.5 outlines an area that is mostly undisturbed except for tree clearing as required to construct the proposed roadway and Pipe End Structure (PES-1). The Pipe End Structure is an overflow outlet structure for IC-1, which will allow any overflow out of IC-1 to continue to flow towards AP1.

SC1.6 outlines an area of the proposed roadway coming off the edge of pavement of Shaw Drive. Stormwater runoff from SC1.6 is separated from the rest of the other subcatchments by a high point on Five Paths Court, in order to keep stormwater runoff the development separate from Shaw Drive. Stormwater runoff from SC1.6 is limited to approximately 622± sq. ft. of untreated pavement runoff.

SC2.1 outlines an area consisting of the proposed roof runoff from the proposed building on Lot 2 and a portion of the lawn that will get collected by a stone diaphragm (SD-1). SD-1 is a shallow structure that can retain stormwater runoff prior to overflowing and allowing runoff to continue downhill and into AP2.

SC2.2 outlines an area outside of SC2.1, consisting of existing wooded area and lawn area of the proposed residential building of Lot 2. SC2.2 will remain mostly undisturbed except for tree clearing for the lawn area and will continue to flow into AP2 similar to pre-development.

SC3.1 outlines an area consisting of the existing roof runoff, lawn area, and wooded area from the adjacent property east of the project site, as well as a portion of the roof runoff from the proposed building on Lot 3 and lawn area. Runoff from SC3.1 will be collected by a double grate catch basin (DCB5) and continue into a drain manhole (DMH2), which will ultimately discharge into an Infiltration Chamber system (IC-2) located south of the proposed building on Lot 3.

SC3.2 outlines an area consisting of wooded area, lawn area and a portion of the proposed building roof on Lot 3. Runoff from SC3.2 will get collected by a double grate catch basin (DCB7) and flowing directly into the Infiltration chambers (IC-2).

SC3.3 outlines an area that is mostly undisturbed with the exception for tree clearing as needed for the construction of the proposed onsite septic leaching area and Infiltration Chambers (IC-2) near the proposed building of Lot 3. SC3.3 will continue to flow into AP3 similar to pre-development.

SC3.4 outlines an area that that is mostly lawn area and a portion of the driveway runoff from Lot 2. Runoff from SC3.4 will get collected by a double grate catch basin (DCB6) and flow into a drain manhole (DMH2), similar to SC3.1.

SC4.1 outlines the lawn area for Lot 2 that will get collected by a stone diaphragm (SD-2) to retain the stormwater runoff generated by the tree clearing. SD-2 will overflow and allow runoff to continue downhill and into AP4.

SC4.2 outlines an area that is mostly undisturbed that will continue to flow into AP4 similar to pre-development.

The proposed BMP's have been designed in accordance with the Massachusetts Stormwater Standards, and the Town of Wayland Bylaws Chapter 193 to attenuate peak flows, retain runoff volumes, treat runoff from impervious surfaces and maintain groundwater recharge to predevelopment conditions.

## Hydrologic and Hydraulic Computation Methodology

Runoff rates and volume were computed using the Soil Conservation Service TR-20 Method entitled "Urban Hydrology for Small Watersheds". The following 24-hour rainfall events were analyzed:

Frequency: 0.5", 1.0", 2-yr, 10-yr, 25-yr and 100-yr

The rainfall depths for each storm were taken from the latest available updates from the Northeast Regional Climate Center (NRCC).

As outlined above, runoff from the site has been analyzed at four points under the pre-development and post-development conditions. As a standard for comparison, AP1, AP2, AP3 and AP4 are represented in both the pre and the post development cases.

### **Summary of Results**

Peak discharge rates and volumes of the calculated runoff for both conditions analyzed are displayed in the HYDROLOGY SUMMARY that follows. As shown within the summary, the peak discharge rates at all four analysis points for all analyzed storm events are less than or equal to those under pre-development conditions with the exception for the peak discharge volume of the 0.5" and 1" storm events for AP1, AP2 and AP4.

The deep sump hooded catch basins, stone diaphragms and infiltration chambers work together to provide an expected site wide Total Suspended Solids (TSS) removal of 84%.

The infiltration chambers retain and infiltrate 6,481 cubic feet of runoff prior to discharging, well in excess of the minimum required 544 cubic feet occurring under existing conditions and displaced by the proposed development.

The proposed development meets the MADEP Stormwater Management Standards through the use of Best Management Practices that address groundwater recharge, water quality (first flush) retention, and suspended solids removal within sustainable BMP's. See Appendix for computed solids quantities / removal process trains, and water quality runoff volumes.





# HYDROLOGY SUMMARY FOR 24-HOUR STORM

Five Paths  
Wayland, MA  
Project No. 171053

## PEAK DISCHARGE RATE

### Pre-Development (cfs)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	0.0	0.0	4.5	10.5	15.8	27.2
AP2	0.0	0.0	1.1	2.6	3.8	6.6
AP3	0.0	0.0	3.0	7.4	11.3	19.7
AP4	0.0	0.0	0.5	1.0	1.4	2.2

### Development (cfs)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	0.0	0.0	2.1	10.0	15.5	26.1
AP2	0.0	0.0	1.1	2.4	3.5	5.8
AP3	0.0	0.0	2.7	7.3	11.3	19.6
AP4	0.0	0.0	0.4	0.8	1.1	1.8

### Pre-Development vs. Developed (cfs)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	<b>0.0</b>	<b>0.0</b>	<b>-2.4</b>	<b>-0.5</b>	<b>-0.3</b>	<b>-1.1</b>
AP2	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.2</b>	<b>-0.3</b>	<b>-0.8</b>
AP3	<b>0.0</b>	<b>0.0</b>	<b>-0.3</b>	<b>-0.1</b>	<b>0.0</b>	<b>-0.1</b>
AP4	<b>0.0</b>	<b>0.0</b>	<b>-0.1</b>	<b>-0.2</b>	<b>-0.3</b>	<b>-0.4</b>

## PEAK DISCHARGE VOLUME

### Pre-Development (Cubic feet)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	0	213	16,177	36,167	53,979	93,791
AP2	0	53	3,992	8,924	13,319	23,144
AP3	0	124	13,814	31,474	47,335	82,984
AP4	0	122	1,798	3,482	4,894	7,922

### Development (Cubic feet)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	16	71	9,137	30,413	49,176	90,983
AP2	0	74	3,456	7,554	11,176	19,178
AP3	0	40	9,469	27,435	43,464	79,448
AP4	14	165	1,768	3,412	4,783	7,719

### Pre-Development vs. Developed (Cubic feet)

Analysis Point	.5"	1"	2-YR	10-YR	25-YR	100-YR
AP1	<b>16</b>	<b>-142</b>	<b>-7,040</b>	<b>-5,754</b>	<b>-4,803</b>	<b>-2,808</b>
AP2	<b>0</b>	<b>21</b>	<b>-536</b>	<b>-1,370</b>	<b>-2,143</b>	<b>-3,966</b>
AP3	<b>0</b>	<b>-84</b>	<b>-4,345</b>	<b>-4,039</b>	<b>-3,871</b>	<b>-3,536</b>
AP4	<b>14</b>	<b>43</b>	<b>-30</b>	<b>-70</b>	<b>-111</b>	<b>-203</b>

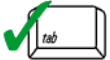




# Checklist for Stormwater Report

## A. Introduction

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



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

The Stormwater Report must include:

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

<sup>1</sup> 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.

<sup>2</sup> 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.



# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

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

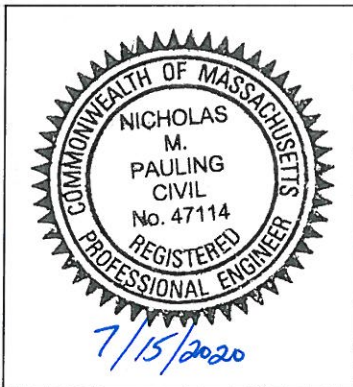
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that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

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

### Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



*Nicholas Pauling* 7/15/2020  
Signature and Date

## Checklist

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

- ☒ New development
- ☐ Redevelopment
- ☐ Mix of New Development and Redevelopment



# Checklist for Stormwater Report

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## Checklist (continued)

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

- ☒ No disturbance to any Wetland Resource Areas
- ☒ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): \_\_\_\_\_

## Standard 1: No New Untreated Discharges

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



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- ☒ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - ☒ Static
  - ☐ Simple Dynamic
  - ☐ Dynamic Field<sup>1</sup>
- ☐ 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.

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<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.





# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 3: Recharge (continued)

- ☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

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

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- ☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - ☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - ☐ is within the Zone II or Interim Wellhead Protection Area
    - ☐ is near or to other critical areas
    - ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - ☐ involves runoff from land uses with higher potential pollutant loads.
  - ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - ☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 4: Water Quality (continued)

- ☒ The BMP is sized (and calculations provided) based on:
  - ☒ The ½" or 1" Water Quality Volume or
  - ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- ☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- ☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

- ☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- ☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- ☒ The NPDES Multi-Sector General Permit does **not** cover the land use.
- ☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- ☒ All exposure has been eliminated.
- ☐ All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- ☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- ☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- ☒ Critical areas and BMPs are identified in the Stormwater Report.



# Checklist for Stormwater Report

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## Checklist (continued)

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

- ☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
  - ☐ Limited Project
  - ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - ☐ Bike Path and/or Foot Path
  - ☐ Redevelopment Project
  - ☐ Redevelopment portion of mix of new and redevelopment.
- ☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- ☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

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

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- ☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



# Checklist for Stormwater Report

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## Checklist (continued)

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

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- ☐ The project is **not** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

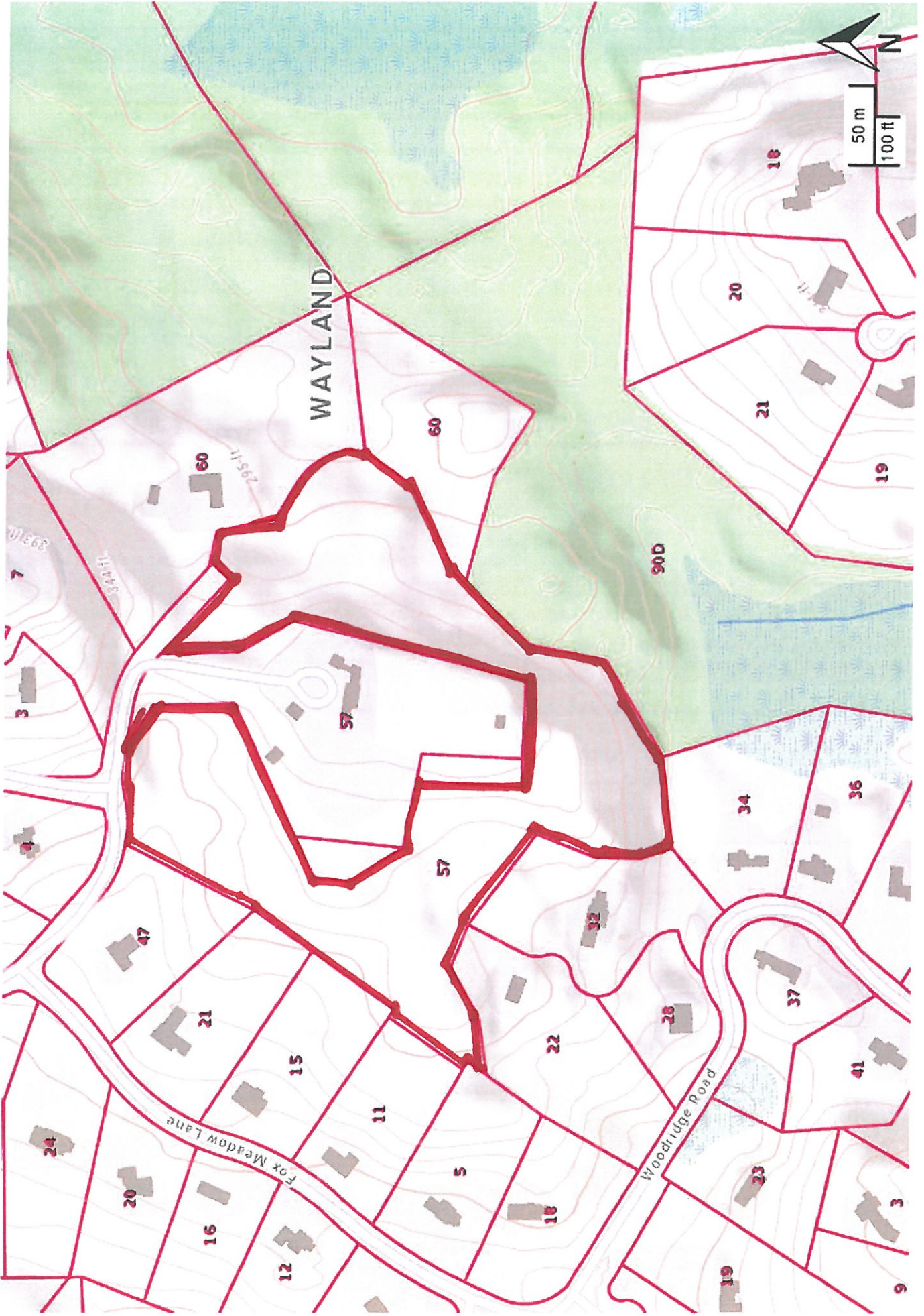
### Standard 9: Operation and Maintenance Plan

- ☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - ☒ Name of the stormwater management system owners;
  - ☒ Party responsible for operation and maintenance;
  - ☒ Schedule for implementation of routine and non-routine maintenance tasks;
  - ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
  - ☐ Description and delineation of public safety features;
  - ☒ Estimated operation and maintenance budget; and
  - ☒ Operation and Maintenance Log Form.
- ☐ The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- ☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☐ An Illicit Discharge Compliance Statement is attached;
- ☐ NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

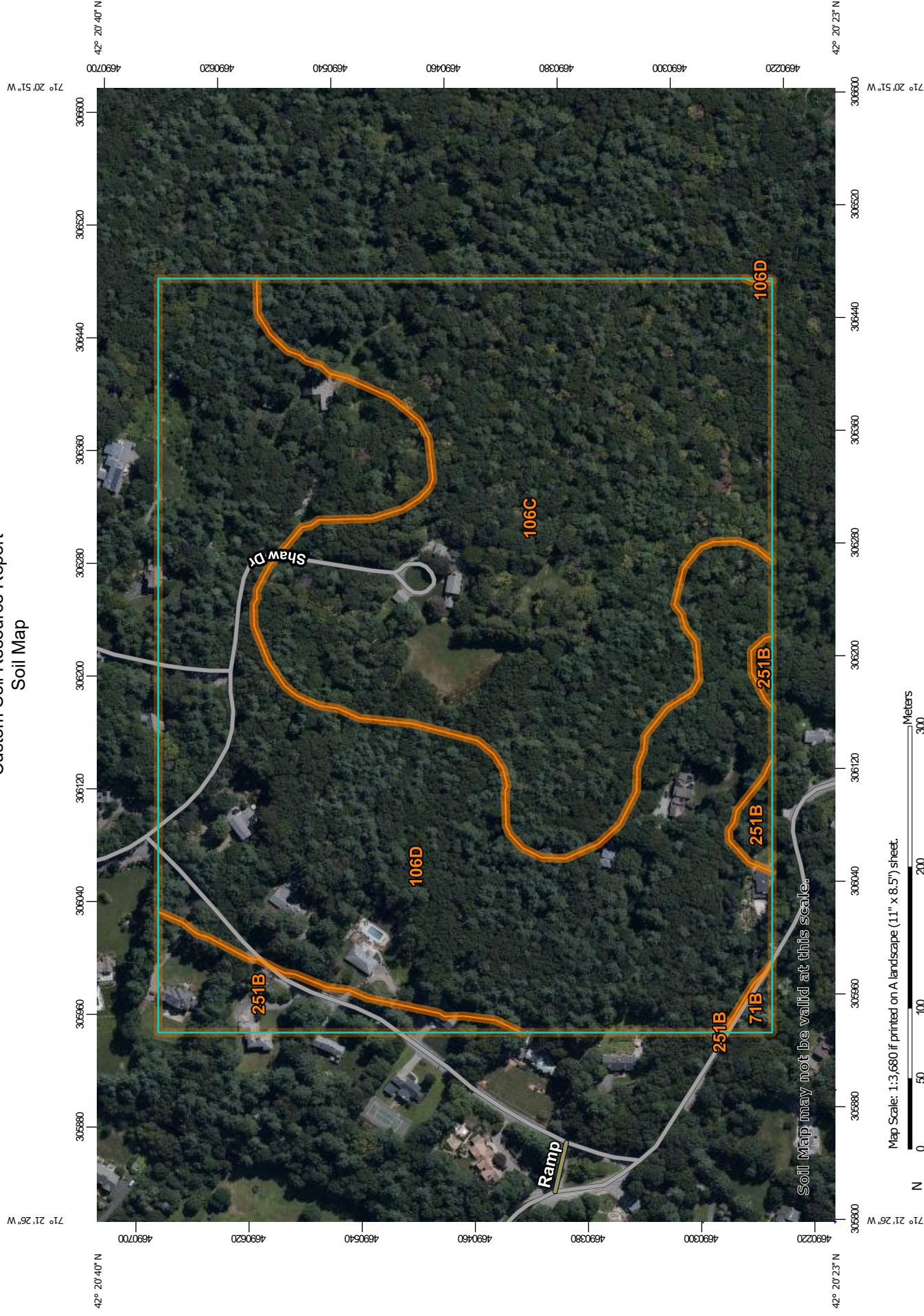
ASSESSORS MAP







# Custom Soil Resource Report Soil Map



Map Scale: 1:3,680 if printed on A landscape (11" x 8.5") sheet.

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

MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

**Special Point Features**

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

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

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

Date(s) aerial images were photographed: Jul 28, 2019—Aug 15, 2019

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	0.2	0.4%
106C	Narragansett-Hollis-Rock outcrop complex, 3 to 15 percent slopes	25.2	43.7%
106D	Narragansett-Hollis-Rock outcrop complex, 15 to 25 percent slopes	29.5	51.1%
251B	Haven silt loam, 3 to 8 percent slopes	2.7	4.8%
<b>Totals for Area of Interest</b>		<b>57.6</b>	<b>100.0%</b>



# FORM 11 - SOIL EVALUATOR FORM

No. 171053

Date: 8/31/18

Commonwealth of Massachusetts  
Wayland Massachusetts

## Soil Suitability Assessment for On-Site Sewage Disposal

Performed by: Jude Gauvin, GPR  
Witnessed by: Darren MacCaughney, RS, WBOH

Date: 4/26/18

Location Address: or Lot No. <u>57 Shaw Dr</u> <u>Wayland, MA</u>	Owner's Name: <u>Ross Wilkinson</u> Address: <u>29 Collins Rd</u> <u>Wilton, NH 03086</u>  Telephone No. _____
---	--

New Construction ☒ Upgrade ☐ Repair ☐

### Office Review

Published Soil Survey Available: No ☒ Yes ☐  
Year Published Internet Publication Scale na Soil Map Unit 106 C/D  
Soil Name Narragansett-Hollis-rock-outcrop Soil Limitations Depth to restrictive features, well drained  
Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_  
Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_  
Surficial Geologic Report Available: No ☒ Yes ☐  
Year Published MASS GIS Publication Scale \_\_\_\_\_  
Geologic Material(Map Unit) Glacial Till  
Landform Ground Moraine

Flood Insurance Rate Map: 25017C0528F  
Above 500 Year Flood Boundary No ☐ Yes ☒  
Within 500 Year Flood Boundary No ☒ Yes ☐  
Within 100 Year Flood Boundary No ☒ Yes ☐  
Within Velocity Zone No ☒ Yes ☐

### Wetland Area:

National Wetlands Inventory Map (map unit) N/A  
Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month May

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other Reference Reviewed USGS  
\_\_\_\_\_  
\_\_\_\_\_

Site Info.



# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-1 Date: 04/26/18 Time: 8:30 AM Weather: Sunny 60°  
 Location (identify on site plan) See Attached Sketch  
 Land Use Woodland Slope (%) 2%-6% Surfaces Stones none  
 (eg woodland, agricultural field, vacant lot etc...)  
 Vegetation mixed hardwoods and pines  
 Landform Ground Moraine  
 Position on landscape See attached Sketch  
 Distances from:  
 Open Water Body >100 feet Drainage Way >100 feet  
 Possible Wet Area >100 feet Property Line >50 feet  
 Drinking Water Well >100 feet Other:  
 feet

Deep Observation Hole Log					
Hole # 418-1		NB 30/18		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	None @90	loose, cr, roots
4-32	B	ls	10YR 5/6		roots, abk
32-88	C1	fsl	10YR 6/1		roots, loose
88-108	C2	ls	10YR5/4		abk, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >108"  
 Depth to Groundwater: Standing Water in the Hole 98" Weeping from Pit Face: 90"  
 Estimated Seasonal High Groundwater in the Hole 90"  
 Additional Notes



# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-2 Date: 04/26/18 Time: 9:00 AM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:  
feet

## Deep Observation Hole Log

Hole # 418-2		NB 30/18		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	None >112"	loose, cr, roots
4-24	B	ls	10YR 5/6		roots, abk
24-62	C1	fsl	10YR 6/1		roots, loose
62-112	C2	ls	10YR5/4		abk, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >112"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

>112"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-3 Date: 04/26/18 Time: 10:45 AM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

Hole # 418-3 NB 30/18 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	@116	loose, cr, roots
4-34	B	ls	10YR 5/6		mvfr, roots, abk
34-116	C	ls	10YR 5/4		mvfr, abk

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: 116"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

116"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-4 Date: 04/26/18 Time: 10:30 AM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 418-4 NB 30/20 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	@120	loose, cr, roots
4-28	B	ls	10YR 5/6		roots, abk
28-56	C1	fsl	10YR 6/1		roots, loose
56-120	C2	ls	10YR5/4		abk, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: 120"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

120"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-5 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

Deep Observation Hole Log					
Hole # 418-5		NB 30/20		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	@80"	loose, cr, roots
4-28	B	ls	10YR 5/6		roots, mvfr
28-96	C	ls	10YR 5/4		mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >96"

Depth to Groundwater: Standing Water in the Hole 92"

Weeping from Pit Face: 92"

Estimated Seasonal High Groundwater in the Hole 80"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-6 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 418-6 NB 30/20 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-6	A	sl	10YR 3/2	@80"	loose, cr, roots
6-22	B	ls	10YR 5/6		roots, mvfr
22-96	C	ls	10YR 5/4		mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >96"

Depth to Groundwater: Standing Water in the Hole 92"

Weeping from Pit Face: 92"

Estimated Seasonal High Groundwater in the Hole 80"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-7 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Deep Observation Hole Log					
Hole # 418-7		NB 30/20		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-6	A	sl	10YR 3/2	@50"	loose, cr, roots
6-24	B	ls	10YR 5/6		roots, mvfr
24-78	C	ls	10YR 5/4		mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >78"

Depth to Groundwater: Standing Water in the Hole 56"

Weeping from Pit Face: 56"

Estimated Seasonal High Groundwater in the Hole 80"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-8 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body	>100 feet	Drainage Way	>100 feet
Possible Wet Area	>100 feet	Property Line	>50 feet
Drinking Water Well	>100 feet	Other:	
			feet

## Deep Observation Hole Log

Deep Observation Hole Log					
Hole # 418-8		NB 30/20		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-48	B	ls	10YR 5/6		roots, mvfr
48-98	C	ls	10YR 5/4	@50"	mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >98"

Depth to Groundwater: Standing Water in the Hole 62" Weeping from Pit Face: 62"

Estimated Seasonal High Groundwater in the Hole 50"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-9 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

Deep Observation Hole Log					
Hole # 418-9		NB 30/20		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	@50"	loose, cr, roots
4-34	B	ls	10YR 5/6		roots, mvfr
34-84	C	ls	10YR 5/4		mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: 84"

Depth to Groundwater: Standing Water in the Hole 76"

Weeping from Pit Face: 76"

Estimated Seasonal High Groundwater in the Hole 50"

Additional Notes



# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 418-10 Date: 04/26/18 Time: 2:15 PM Weather: Sunny 60°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegatation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 418-10 NB 30/20 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2	@50"	loose, cr, roots
4-34	B	ls	10YR 5/6		roots, mvfr
34-64	C	ls	10YR 5/4		mfr, 10% gravel

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: 64"

Depth to Groundwater: Standing Water in the Hole None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole 50"

Additional Notes \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot#: 57 Shaw Dr  
Wayland, MA

## Determination for Seasonal High Water Table

### Method Used:

- ☐ Depth observed standing in observation hole ..... inches .....
- ☐ Depth weeping from side of observation hole ..... inches .....
- ☒ Depth to soil mottles \* inches See individual Reports .....
- ☐ Ground water adjustment ..... feet .....

Index Well Number ..... Reading Date ..... Index Well Level .....

Adjustment Factor ..... Adjusted Ground Water Level .....

### Depth of Naturally Occuring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas  
observed throughout the area proposed for the soil absorption system? Yes

If not, what is the depth of naturally occurring pervious material? \_\_\_\_\_ Feet

### Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated, on the attached soil evaluation form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature



Date

8/31/18

Notes:

\_\_\_\_\_  
\_\_\_\_\_

Signature

## FORM 12 - PERCOLATION TEST

Location Address: or Lot #      57 Shaw Dr Wayland, MA	Owner's Name: Ross Wilkinson Address:      29 Collins Rd Wilton, NH 03086  Telephone No.
--	--

	<u>04/26/18</u> Date	<u>1:51 PM</u> Time	<u>04/26/18</u> Date	<u>1:52 PM</u> Time
Observation Hole #		418-A		418-B
Depth of Perc		46"		46"
Start Pre-Soak		1:51 PM		1:52 PM
End Pre-Soak		2:06 PM		2:07 PM
Time @ 12"		2:06 PM		2:07 PM
Time @ 9"		2:16 PM		2:29 PM
Time @ 6"		2:23 PM		2:48 PM
Time (9"-6")		7		19
Rate (Min./Inch)		3		7
Test Passed:		<input checked="" type="checkbox"/>	Test Passed:	<input checked="" type="checkbox"/>
Test Failed:		<input type="checkbox"/>	Test Failed:	<input type="checkbox"/>

Test performed By: Jude Gauvin, GPR

Witnessed By: Darren MacCaughney, RS WBOH

Comments:  
\_\_\_\_\_  
\_\_\_\_\_

## FORM 12 - PERCOLATION TEST

Location Address: or Lot #      57 Shaw Dr Wayland, MA	Owner's Name: Ross Wilkinson Address:      29 Collins Rd Wilton, NH 03086  Telephone No.
--	--

	<u>04/26/18</u> Date	<u>2:41 PM</u> Time		<u>04/27/18</u> Date	<u>10:40 AM</u> Time
Observation Hole #		418-C			418-D
Depth of Perc		44"			58"
Start Pre-Soak		2:41 PM			10:40 AM
End Pre-Soak		2:56 PM			10:57 PM
Time @ 12"		2:56 PM			10:57 PM
Time @ 9"		3:15 PM			11:21 AM
Time @ 6"		3:40 PM			11:51 AM
Time (9"-6")		25			30
Rate (Min./Inch)		9			10
		Test Passed: <input checked="" type="checkbox"/>			Test Passed: <input checked="" type="checkbox"/>
		Test Failed: <input type="checkbox"/>			Test Failed: <input type="checkbox"/>

Test performed By: Jude Gauvin, GPR

Witnessed By: Darren MacCaughney, RS WBOH

Comments:

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# FORM 11 - SOIL EVALUATOR FORM

No. 171053

Date: 8/31/18

Commonwealth of Massachusetts  
Wayland Massachusetts

## Soil Suitability Assessment for On-Site Sewage Disposal

Performed by: Jude Gauvin, GPR  
Witnessed by: Darren MacCaughney, RS, WBOH

Date: 5/31/18

Location Address: or Lot No. <u>57 Shaw Dr</u> <u>Wayland, MA</u>	Owner's Name: <u>Ross Wilkinson</u> Address: <u>29 Collins Rd</u> <u>Wilton, NH 03086</u>  Telephone No. _____
---	--

New Construction ☒ Upgrade ☐ Repair ☐

### Office Review

Published Soil Survey Available: No ☒ Yes ☐

Year Published Internet Publication Scale na Soil Map Unit 106 C/D

Soil Name Narragansett-Hollis-rock-outcrop Soil Limitations Depth to restrictive features, well drained

Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_

Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_

Surficial Geologic Report Available: No ☒ Yes ☐

Year Published MASS GIS Publication Scale \_\_\_\_\_

Geologic Material(Map Unit) Glacial Till

Landform Ground Moraine

Flood Insurance Rate Map: 25017C0528F

Above 500 Year Flood Boundary No ☐ Yes ☒

Within 500 Year Flood Boundary No ☒ Yes ☐

Within 100 Year Flood Boundary No ☒ Yes ☐

Within Velocity Zone No ☒ Yes ☐

### Wetland Area:

National Wetlands Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month May

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other Reference Reviewed USGS

Site Info.

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 518-1 Date: 05/31/18 Time: 8:30 AM Weather: Sunny 76°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 518-1 NB 30/18 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-3	A	sl	10YR 3/2		loose, cr, roots
3-30	B	ls	10YR 5/6		mvfr, roots
30-92	C	ls	10YR 5/4		sabk, 20% gravel, vfirm

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >92"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

>92"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 518-2 Date: 05/31/18 Time: 9:00 AM Weather: Sunny 76°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body	>100 feet	Drainage Way	>100 feet
Possible Wet Area	>100 feet	Property Line	>50 feet
Drinking Water Well	>100 feet	Other:	
			feet

## Deep Observation Hole Log

Deep Observation Hole Log					
Hole # 518-2		NB 30/18		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-3	A	sl	10YR 3/2		loose, cr, roots
3-30	B	ls	10YR 5/6		mvfr, roots
30-99	C	ls	10YR 5/4		sabk, 20% gravel, vfirm

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >99"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

>99"

Additional Notes



# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 518-3 Date: 05/31/18 Time: 10:45 AM Weather: Sunny 76°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 518-3 NB 30/18 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-3	A	sl	10YR 3/2		loose, cr, roots
3-30	B	ls	10YR 5/6		mvfr, roots
30-102	C	ls	10YR 5/4		sabk, 20% gravel, vfirm

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >102"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

>102"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 518-4 Date: 05/31/18 Time: 12:00 PM Weather: Sunny 76°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet  
Possible Wet Area >100 feet Property Line >50 feet  
Drinking Water Well >100 feet Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 518-4 NB 30/20 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-3	A	sl	10YR 3/2		loose, cr, roots
3-36	B	ls	10YR 5/6		mvfr, roots
36-108	C	ls	10YR 5/4		sabk, 20% gravel, vfirm

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >108"

Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole >108"

Additional Notes \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 518-5 Date: 05/31/18 Time: 2:15 PM Weather: Sunny 76°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

Hole # 518-5 NB 30/20 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-3	A	sl	10YR 3/2	@66"	loose, cr, roots
3-20	B	ls	10YR 5/6		roots, mfr, abk
20-62	C1	fs	10YR 6/1		loose, roots
62-100	C2	ls	10YR 5/4		sabk, 20% gravel, vfirm

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >100"

Depth to Groundwater: Standing Water in the Hole None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole 66"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot#: 57 Shaw Dr  
Wayland, MA

## Determination for Seasonal High Water Table

### Method Used:

- ☐ Depth observed standing in observation hole ..... inches .....  
☐ Depth weeping from side of observation hole ..... inches .....  
☒ Depth to soil mottles \* inches See individual Reports .....  
☐ Ground water adjustment ..... feet .....

Index Well Number ..... Reading Date ..... Index Well Level .....

Adjustment Factor ..... Adjusted Ground Water Level .....

### Depth of Naturally Occuring Pervious Material

Does at least four feet of naturally occuring pervious material exist in all areas  
observed throughout the area proposed for the soil absorption system? Yes

If not, what is the depth of naturally occuring pervious material? \_\_\_\_\_ Feet

### Certification

I certify that I am currently approved by the Department of Environmental Protection  
pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis  
has been performed by me consistent with the training, expertise and experience described  
in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated,  
on the attached soil evaluation form, are accurate and in accordance with 310 CMR  
15.100 through 15.107.

Signature



Date

8/31/18

Notes:

\_\_\_\_\_  
\_\_\_\_\_

Signature

## FORM 12 - PERCOLATION TEST

Location Address: or Lot #            57 Shaw Dr Wayland, MA	Owner's Name: Ross Wilkinson Address:            29 Collins Rd Wilton, NH 03086  Telephone No.
--	--

	5/31/18	12:51 PM	5/31/18	12:58 PM
	Date	Time	Date	Time
Observation Hole #		518-A		518-B
Depth of Perc		53"		46"
Start Pre-Soak		12:51 PM		12:52 PM
End Pre-Soak		1:06 PM		1:07 PM
Time @ 12"		1:06 PM		1:07 PM
Time @ 9"		1:11 PM		1:12 PM
Time @ 6"		1:23 PM		1:19 PM
Time (9"-6")		12		7
Rate (Min./Inch)		4		3
Test Passed:		<input checked="" type="checkbox"/>	Test Passed:	<input checked="" type="checkbox"/>
Test Failed:		<input type="checkbox"/>	Test Failed:	<input type="checkbox"/>

Test performed By: Jude Gauvin, GPR

Witnessed By: Darren MacCaughney, RS WBOH

Comments:

# FORM 11 - SOIL EVALUATOR FORM

No. 171053

Date: 6/17/19

Commonwealth of Massachusetts  
Wayland Massachusetts

## Soil Suitability Assessment for On-Site Sewage Disposal

Performed by: Jude Gauvin, GPR

Date: 6/12/19.

Witnessed by: Darren MacCaughney, RS, WBOH

Location Address: or Lot No. <u>57 Shaw Dr</u> <u>Wayland, MA</u>	Owner's Name: <u>Ross Wilkinson</u> Address: <u>29 Collins Rd</u> <u>Wilton, NH 03086</u>  Telephone No. _____
---	--

New Construction ☒ Upgrade ☐ Repair ☐

### Office Review

Published Soil Survey Available: No ☒ Yes ☐

Year Published Internet Publication Scale na Soil Map Unit 106 C/D

Soil Name Narragansett-Hollis-rock-outcrop Soil Limitations Depth to restrictive features, well drained

Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_

Soil Name \_\_\_\_\_ Soil Limitations \_\_\_\_\_

Surficial Geologic Report Available: No ☒ Yes ☐

Year Published MASS GIS Publication Scale \_\_\_\_\_

Geologic Material(Map Unit) Glacial Till

Landform Ground Moraine

Flood Insurance Rate Map: 25017C0528F

Above 500 Year Flood Boundary No ☐ Yes ☒

Within 500 Year Flood Boundary No ☒ Yes ☐

Within 100 Year Flood Boundary No ☒ Yes ☐

Within Velocity Zone No ☒ Yes ☐

### Wetland Area:

National Wetlands Inventory Map (map unit) N/A

Wetlands Conservancy Program Map (map unit) N/A

Current Water Resource Conditions (USGS): Month June

Range: Above Normal ☐ Normal ☒ Below Normal ☐

Other Reference Reviewed USGS

Site Info.





# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-1 Date: 06/12/19 Time: 9:00 AM Weather: Sunny 70°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body	>100 feet	Drainage Way	>100 feet
Possible Wet Area	>100 feet	Property Line	>50 feet
Drinking Water Well	>100 feet	Other:	
			feet

## Deep Observation Hole Log

Hole # 619-1 NB 30/108 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-31	B	sl	10YR 5/6		mvfr, roots
31-83	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >83"

Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole >83"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-2 Date: 06/12/19 Time: 9:30 AM Weather: Sunny 70°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegatation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet  
Possible Wet Area >100 feet Property Line >50 feet  
Drinking Water Well >100 feet Other:  
feet

## Deep Observation Hole Log

Hole # 619-2 NB 30/108 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-30	B	sl	10YR 5/6		mvfr, roots
30-82	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >82"

Depth to Groundwater: Standing Water in the Hole None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole >82"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-3 Date: 06/12/19 Time: 10:00 AM Weather: Sunny 70°  
 Location (identify on site plan) See Attached Sketch  
 Land Use Woodland Slope (%) 2%-6% Surfaces Stones none  
 (eg woodland, agricultural field, vacant lot etc...)  
 Vegetation mixed hardwoods and pines  
 Landform Ground Moraine  
 Position on landscape See attached Sketch  
 Distances from:  
 Open Water Body >100 feet Drainage Way >100 feet  
 Possible Wet Area >100 feet Property Line >50 feet  
 Drinking Water Well >100 feet Other: \_\_\_\_\_ feet

Deep Observation Hole Log					
Hole # 619-3		NB 30/110		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-26	B	sl	10YR 5/6		mvfr, roots
26-120	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till Depth to Bedrock: >120"  
 Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None  
 Estimated Seasonal High Groundwater in the Hole >120"  
 Additional Notes \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-4 Date: 06/12/19 Time: 10:30 AM Weather: Sunny 70°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegatation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet Drainage Way >100 feet  
Possible Wet Area >100 feet Property Line >50 feet  
Drinking Water Well >100 feet Other: \_\_\_\_\_ feet

## Deep Observation Hole Log

Hole # 619-4 NB 30/110 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-25	B	sl	10YR 5/6		mvfr, roots
25-85	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >85"

Depth to Groundwater: Standing Water in the Hole None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole >85"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-5 Date: 06/12/19 Time: 11:00 AM Weather: Sunny 70°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegetation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:  
..... feet

## Deep Observation Hole Log

Hole # 619-5		NB 30/111		Surface El.	
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-26	B	sl	10YR 5/6		mvfr, roots
26-90	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >90"

Depth to Groundwater: Standing Water in the Hole None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole >90"

Additional Notes B horizon had pockets of fls 2.5Y 7/3  
.....  
.....  
.....

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot #: 57 Shaw Dr  
Wayland, MA

## On-Site Review

Deep Hole #: 619-6 Date: 06/12/19 Time: 11:30 AM Weather: Sunny 70°

Location (identify on site plan) See Attached Sketch

Land Use Woodland Slope (%) 2%-6% Surfaces Stones none

(eg woodland, agricultural field, vacant lot etc...)

Vegatation mixed hardwoods and pines

Landform Ground Moraine

Position on landscape See attached Sketch

Distances from:

Open Water Body >100 feet

Drainage Way >100 feet

Possible Wet Area >100 feet

Property Line >50 feet

Drinking Water Well >100 feet

Other:

feet

## Deep Observation Hole Log

Hole # 619-6 NB 30/111 Surface El.					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0-4	A	sl	10YR 3/2		loose, cr, roots
4-30	B	ls	10YR 5/6		mvfr, roots
30-90	C	ls	10YR 5/4		sabk, 10% gravel, mvfr

\*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Till

Depth to Bedrock: >90"

Depth to Groundwater: Standing Water in the Hole

None

Weeping from Pit Face: None

Estimated Seasonal High Groundwater in the Hole

>90"

Additional Notes

# FORM 11 - SOIL EVALUATOR FORM

Location Address or Lot#: 57 Shaw Dr  
Wayland, MA

## Determination for Seasonal High Water Table

### Method Used:

- ☐ Depth observed standing in observation hole \_\_\_\_\_ inches  
☐ Depth weeping from side of observation hole \_\_\_\_\_ inches  
☒ Depth to soil mottles \* \_\_\_\_\_ inches See individual Reports  
☐ Ground water adjustment \_\_\_\_\_ feet

Index Well Number \_\_\_\_\_ Reading Date \_\_\_\_\_ Index Well Level \_\_\_\_\_

Adjustment Factor \_\_\_\_\_ Adjusted Ground Water Level \_\_\_\_\_

### Depth of Naturally Occuring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas  
observed throughout the area proposed for the soil absorption system? Yes

If not, what is the depth of naturally occurring pervious material? \_\_\_\_\_ Feet

### Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated, on the attached soil evaluation form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature  Date 6/17/19

Notes: \_\_\_\_\_  
\_\_\_\_\_

Signature





## FORM 12 - PERCOLATION TEST

Location Address: or Lot #        57 Shaw Dr Wayland, MA	Owner's Name: Ross Wilkinson Address:        29 Collins Rd Wilton, NH 03086  Telephone No.
--	--

	<u>6/12/19</u>	<u>12:35 PM</u>	<u>6/12/19</u>	<u>12:36 PM</u>
	Date	Time	Date	Time
Observation Hole #		619-A		619-B
Depth of Perc		52"		52"
Start Pre-Soak		12:35 PM		12:36 PM
End Pre-Soak		12:50 PM		12:51 PM
Time @ 12"		12:50 PM		12:51 PM
Time @ 9"		12:53 PM		1:39 PM
Time @ 6"		12:58 PM		2:32 PM
Time (9"-6")		5		53
Rate (Min./Inch)		<2		18

Test Passed: ☒  
 Test Failed: ☐

Test Passed: ☒  
 Test Failed: ☐

Test performed By: Jude Gauvin, GPR

Witnessed By: Darren MacCaughney, RS WBOH

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_

\* over 24 gallons applied unable to soak



# National Flood Hazard Layer FIRMette



71°21'25"W 42°20'50"N

### Legend

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

Without Base Flood Elevation (BFE)  
*Zone A, V, A99*

With BFE or Depth *Zone AE, AO, AH, VE, AR*

Regulatory Floodway

SPECIAL FLOOD HAZARD AREAS

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*

Future Conditions 1% Annual Chance Flood Hazard *Zone X*

Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*

Area with Flood Risk due to Levee *Zone D*

OTHER AREAS OF FLOOD HAZARD

NO SCREEN

Area of Minimal Flood Hazard *Zone X*

Effective LOMRs

Area of Undetermined Flood Hazard *Zone D*

OTHER AREAS

GENERAL STRUCTURES

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

Coastal Transect

Base Flood Elevation Line (BFE)

Limit of Study

Jurisdiction Boundary

Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

OTHER FEATURES

Digital Data Available

No Digital Data Available

Unmapped

MAP PANELS

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/22/2020 at 3:53 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

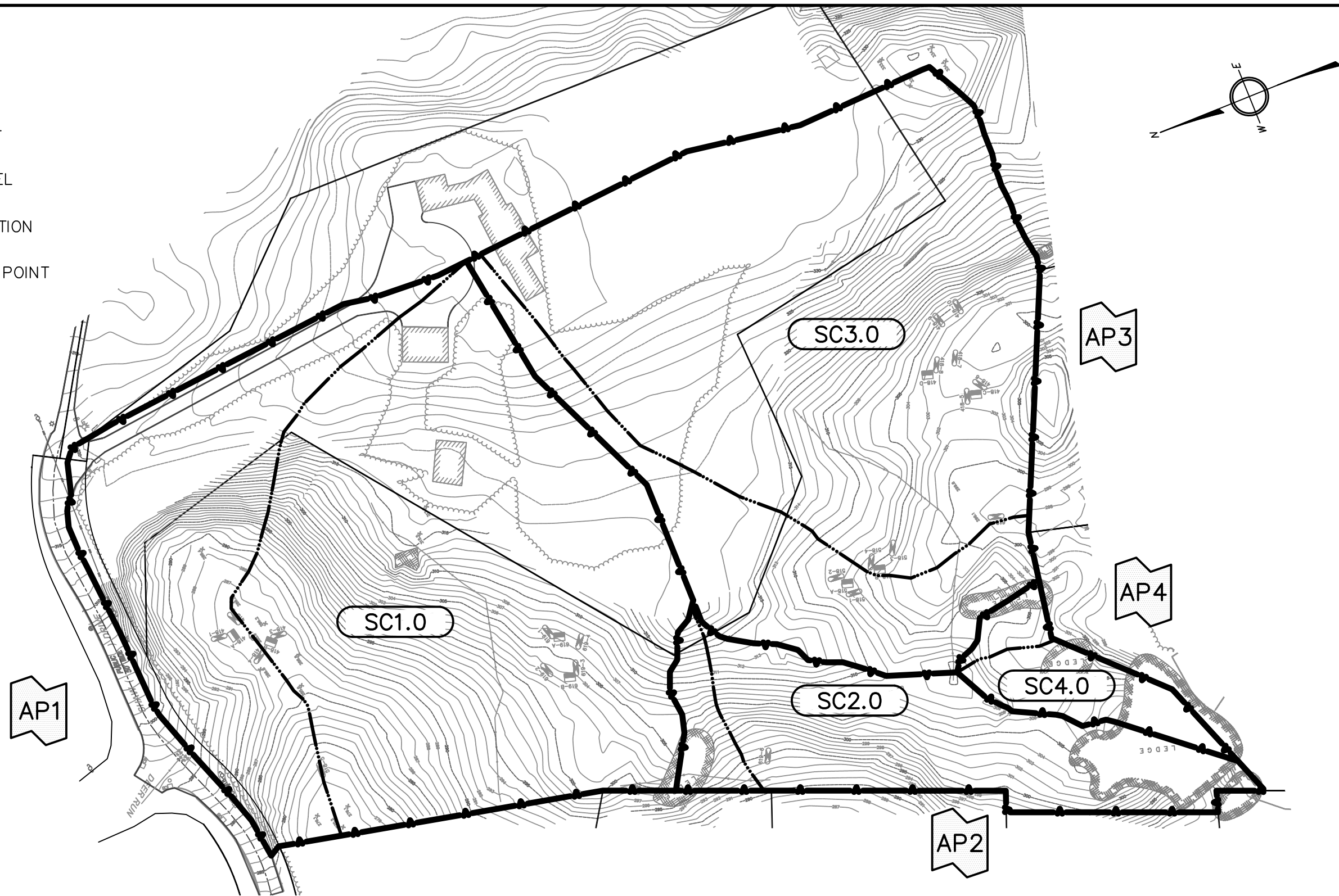
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

USGS The National Map Orthoimagery, Data refreshed April 2020  
71°20'47"W 42°20'23"N

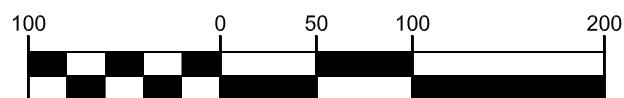


**LEGEND:**

- ◄..... DRAINAGE ARROW
- SUBCATCHMENT LIMIT
- SC-1 SUBCATCHMENT LABEL
- TIME OF CONCENTRATION
- AP1 DRAINAGE ANALYSIS POINT



**GRAPHIC SCALE**



( IN FEET )  
1 INCH = 100 FEET

**GPR**

Engineering Solutions  
for Land & Structures

**GOLDSMITH, PREST & RINGWALL, INC.**

39 MAIN ST., SUITE 301, AYER, MA 01432  
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING  
VOICE: 978.772.1590 FAX: 978.772.1591  
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**PREPARED FOR:**

ROSS C. WILKINSON, PERSONAL REP.,  
ESTATE OF PAULA D. WILKINSON  
PO BOX 98  
WILTON, NH 03086

DESIGNED BY: LT

CHECKED BY: KFB

DATE: REV 1 — JUNE 25, 2020

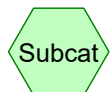
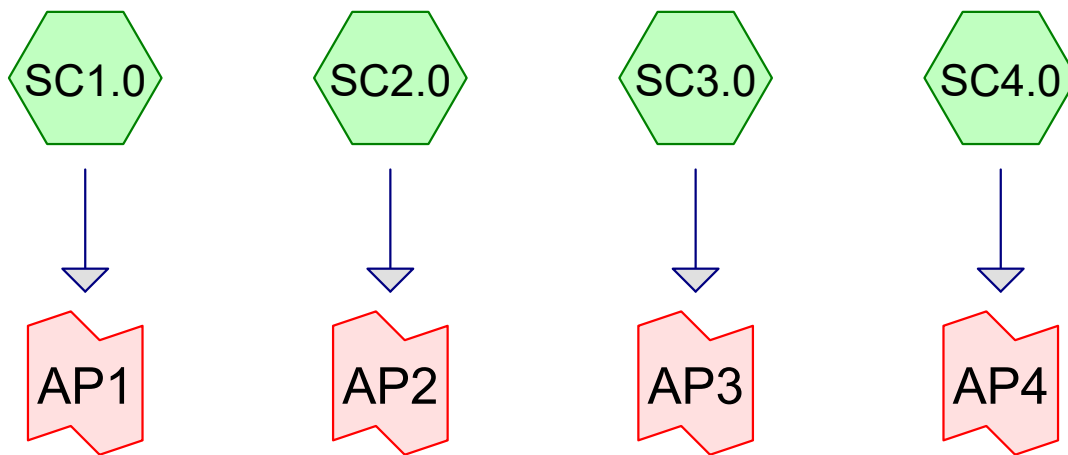
**WATERSHED MAP  
EXISTING CONDITIONS**

FIVE PATHS  
ASSESSORS MAP#39 PARCEL 15A  
WAYLAND, MA

PROJECT: 171053

1 of 1

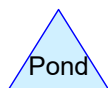




Subcat



Reach



Pond



Link

**Routing Diagram for Pre-Dev**

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
63,276	74	>75% Grass cover, Good, HSG C (SC1.0, SC3.0)
7,450	98	Paved parking, HSG C (SC1.0, SC3.0)
3,874	98	Roofs, HSG C (SC1.0, SC3.0)
16,501	98	Unconnected pavement, HSG C (SC1.0, SC2.0, SC3.0, SC4.0)
387,184	70	Woods, Good, HSG C (SC1.0, SC2.0, SC3.0, SC4.0)
<b>478,286</b>	<b>72</b>	<b>TOTAL AREA</b>

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.0:</b>	Runoff Area=215,046 sf 4.94% Impervious	Runoff Depth=0.00"
	Flow Length=646' Tc=6.7 min CN=72	Runoff=0.0 cfs 0 cf
<b>Subcatchment SC2.0:</b>	Runoff Area=53,073 sf 16.30% Impervious	Runoff Depth=0.00"
	Flow Length=190' Tc=7.2 min UI Adjusted CN=72	Runoff=0.0 cfs 0 cf
<b>Subcatchment SC3.0:</b>	Runoff Area=195,127 sf 1.28% Impervious	Runoff Depth=0.00"
	Flow Length=642' Tc=12.6 min CN=71	Runoff=0.0 cfs 0 cf
<b>Subcatchment SC4.0:</b>	Runoff Area=15,041 sf 40.25% Impervious	Runoff Depth>0.00"
	Flow Length=98' Tc=6.8 min CN=81	Runoff=0.0 cfs 0 cf
<b>Link AP1:</b>	Inflow=0.0 cfs 0 cf	Primary=0.0 cfs 0 cf
<b>Link AP2:</b>	Inflow=0.0 cfs 0 cf	Primary=0.0 cfs 0 cf
<b>Link AP3:</b>	Inflow=0.0 cfs 0 cf	Primary=0.0 cfs 0 cf
<b>Link AP4:</b>	Inflow=0.0 cfs 0 cf	Primary=0.0 cfs 0 cf

**Total Runoff Area = 478,286 sf    Runoff Volume = 0 cf    Average Runoff Depth = 0.00"**  
**94.18% Pervious = 450,461 sf    5.82% Impervious = 27,826 sf**

**Pre-Dev**

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**Summary for Subcatchment SC1.0:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

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**Summary for Subcatchment SC3.0:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0 cf, Depth&gt; 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			

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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0 cf  
 Primary = 0.0 cfs @ 24.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.0:** Runoff Area=215,046 sf 4.94% Impervious Runoff Depth>0.01"  
Flow Length=646' Tc=6.7 min CN=72 Runoff=0.0 cfs 213 cf

**Subcatchment SC2.0:** Runoff Area=53,073 sf 16.30% Impervious Runoff Depth>0.01"  
Flow Length=190' Tc=7.2 min UI Adjusted CN=72 Runoff=0.0 cfs 53 cf

**Subcatchment SC3.0:** Runoff Area=195,127 sf 1.28% Impervious Runoff Depth>0.01"  
Flow Length=642' Tc=12.6 min CN=71 Runoff=0.0 cfs 124 cf

**Subcatchment SC4.0:** Runoff Area=15,041 sf 40.25% Impervious Runoff Depth>0.10"  
Flow Length=98' Tc=6.8 min CN=81 Runoff=0.0 cfs 122 cf

**Link AP1:** Inflow=0.0 cfs 213 cf  
Primary=0.0 cfs 213 cf

**Link AP2:** Inflow=0.0 cfs 53 cf  
Primary=0.0 cfs 53 cf

**Link AP3:** Inflow=0.0 cfs 124 cf  
Primary=0.0 cfs 124 cf

**Link AP4:** Inflow=0.0 cfs 122 cf  
Primary=0.0 cfs 122 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 512 cf Average Runoff Depth = 0.01"**  
**94.18% Pervious = 450,461 sf 5.82% Impervious = 27,826 sf**

**Pre-Dev**

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**Summary for Subcatchment SC1.0:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 213 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 53 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

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**Summary for Subcatchment SC3.0:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 124 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 0.0 cfs @ 12.18 hrs, Volume= 122 cf, Depth&gt; 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			



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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth > 0.01" for 1 Inch event  
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 213 cf  
 Primary = 0.0 cfs @ 24.00 hrs, Volume= 213 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth > 0.01" for 1 Inch event  
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 53 cf  
 Primary = 0.0 cfs @ 24.00 hrs, Volume= 53 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth > 0.01" for 1 Inch event  
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 124 cf  
 Primary = 0.0 cfs @ 24.00 hrs, Volume= 124 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 0.10" for 1 Inch event  
 Inflow = 0.0 cfs @ 12.18 hrs, Volume= 122 cf  
 Primary = 0.0 cfs @ 12.18 hrs, Volume= 122 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.0:** Runoff Area=215,046 sf 4.94% Impervious Runoff Depth>0.90"  
Flow Length=646' Tc=6.7 min CN=72 Runoff=4.5 cfs 16,177 cf

**Subcatchment SC2.0:** Runoff Area=53,073 sf 16.30% Impervious Runoff Depth>0.90"  
Flow Length=190' Tc=7.2 min UI Adjusted CN=72 Runoff=1.1 cfs 3,992 cf

**Subcatchment SC3.0:** Runoff Area=195,127 sf 1.28% Impervious Runoff Depth>0.85"  
Flow Length=642' Tc=12.6 min CN=71 Runoff=3.0 cfs 13,814 cf

**Subcatchment SC4.0:** Runoff Area=15,041 sf 40.25% Impervious Runoff Depth>1.43"  
Flow Length=98' Tc=6.8 min CN=81 Runoff=0.5 cfs 1,798 cf

**Link AP1:** Inflow=4.5 cfs 16,177 cf  
Primary=4.5 cfs 16,177 cf

**Link AP2:** Inflow=1.1 cfs 3,992 cf  
Primary=1.1 cfs 3,992 cf

**Link AP3:** Inflow=3.0 cfs 13,814 cf  
Primary=3.0 cfs 13,814 cf

**Link AP4:** Inflow=0.5 cfs 1,798 cf  
Primary=0.5 cfs 1,798 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 35,781 cf Average Runoff Depth = 0.90"**  
**94.18% Pervious = 450,461 sf 5.82% Impervious = 27,826 sf**

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**Summary for Subcatchment SC1.0:**

Runoff = 4.5 cfs @ 12.14 hrs, Volume= 16,177 cf, Depth&gt; 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 1.1 cfs @ 12.15 hrs, Volume= 3,992 cf, Depth&gt; 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

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**Summary for Subcatchment SC3.0:**

Runoff = 3.0 cfs @ 12.22 hrs, Volume= 13,814 cf, Depth&gt; 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 0.5 cfs @ 12.14 hrs, Volume= 1,798 cf, Depth&gt; 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			

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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth > 0.90" for 2-Year event  
 Inflow = 4.5 cfs @ 12.14 hrs, Volume= 16,177 cf  
 Primary = 4.5 cfs @ 12.14 hrs, Volume= 16,177 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth > 0.90" for 2-Year event  
 Inflow = 1.1 cfs @ 12.15 hrs, Volume= 3,992 cf  
 Primary = 1.1 cfs @ 12.15 hrs, Volume= 3,992 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth > 0.85" for 2-Year event  
 Inflow = 3.0 cfs @ 12.22 hrs, Volume= 13,814 cf  
 Primary = 3.0 cfs @ 12.22 hrs, Volume= 13,814 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 1.43" for 2-Year event  
 Inflow = 0.5 cfs @ 12.14 hrs, Volume= 1,798 cf  
 Primary = 0.5 cfs @ 12.14 hrs, Volume= 1,798 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.0:**Runoff Area=215,046 sf 4.94% Impervious Runoff Depth>2.02"  
Flow Length=646' Tc=6.7 min CN=72 Runoff=10.5 cfs 36,167 cf**Subcatchment SC2.0:**Runoff Area=53,073 sf 16.30% Impervious Runoff Depth>2.02"  
Flow Length=190' Tc=7.2 min UI Adjusted CN=72 Runoff=2.6 cfs 8,924 cf**Subcatchment SC3.0:**Runoff Area=195,127 sf 1.28% Impervious Runoff Depth>1.94"  
Flow Length=642' Tc=12.6 min CN=71 Runoff=7.4 cfs 31,474 cf**Subcatchment SC4.0:**Runoff Area=15,041 sf 40.25% Impervious Runoff Depth>2.78"  
Flow Length=98' Tc=6.8 min CN=81 Runoff=1.0 cfs 3,482 cf**Link AP1:**Inflow=10.5 cfs 36,167 cf  
Primary=10.5 cfs 36,167 cf**Link AP2:**Inflow=2.6 cfs 8,924 cf  
Primary=2.6 cfs 8,924 cf**Link AP3:**Inflow=7.4 cfs 31,474 cf  
Primary=7.4 cfs 31,474 cf**Link AP4:**Inflow=1.0 cfs 3,482 cf  
Primary=1.0 cfs 3,482 cf

**Total Runoff Area = 478,286 sf   Runoff Volume = 80,046 cf   Average Runoff Depth = 2.01"**  
**94.18% Pervious = 450,461 sf   5.82% Impervious = 27,826 sf**

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**Summary for Subcatchment SC1.0:**

Runoff = 10.5 cfs @ 12.14 hrs, Volume= 36,167 cf, Depth&gt; 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 2.6 cfs @ 12.15 hrs, Volume= 8,924 cf, Depth&gt; 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

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**Summary for Subcatchment SC3.0:**

Runoff = 7.4 cfs @ 12.21 hrs, Volume= 31,474 cf, Depth&gt; 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 1.0 cfs @ 12.14 hrs, Volume= 3,482 cf, Depth&gt; 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			



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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth > 2.02" for 10-Year event  
Inflow = 10.5 cfs @ 12.14 hrs, Volume= 36,167 cf  
Primary = 10.5 cfs @ 12.14 hrs, Volume= 36,167 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth > 2.02" for 10-Year event  
Inflow = 2.6 cfs @ 12.15 hrs, Volume= 8,924 cf  
Primary = 2.6 cfs @ 12.15 hrs, Volume= 8,924 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth > 1.94" for 10-Year event  
Inflow = 7.4 cfs @ 12.21 hrs, Volume= 31,474 cf  
Primary = 7.4 cfs @ 12.21 hrs, Volume= 31,474 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 2.78" for 10-Year event  
Inflow = 1.0 cfs @ 12.14 hrs, Volume= 3,482 cf  
Primary = 1.0 cfs @ 12.14 hrs, Volume= 3,482 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.0:**Runoff Area=215,046 sf 4.94% Impervious Runoff Depth>3.01"  
Flow Length=646' Tc=6.7 min CN=72 Runoff=15.8 cfs 53,979 cf**Subcatchment SC2.0:**Runoff Area=53,073 sf 16.30% Impervious Runoff Depth>3.01"  
Flow Length=190' Tc=7.2 min UI Adjusted CN=72 Runoff=3.8 cfs 13,319 cf**Subcatchment SC3.0:**Runoff Area=195,127 sf 1.28% Impervious Runoff Depth>2.91"  
Flow Length=642' Tc=12.6 min CN=71 Runoff=11.3 cfs 47,335 cf**Subcatchment SC4.0:**Runoff Area=15,041 sf 40.25% Impervious Runoff Depth>3.90"  
Flow Length=98' Tc=6.8 min CN=81 Runoff=1.4 cfs 4,894 cf**Link AP1:**Inflow=15.8 cfs 53,979 cf  
Primary=15.8 cfs 53,979 cf**Link AP2:**Inflow=3.8 cfs 13,319 cf  
Primary=3.8 cfs 13,319 cf**Link AP3:**Inflow=11.3 cfs 47,335 cf  
Primary=11.3 cfs 47,335 cf**Link AP4:**Inflow=1.4 cfs 4,894 cf  
Primary=1.4 cfs 4,894 cf

**Total Runoff Area = 478,286 sf   Runoff Volume = 119,528 cf   Average Runoff Depth = 3.00"**  
**94.18% Pervious = 450,461 sf   5.82% Impervious = 27,826 sf**

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**Summary for Subcatchment SC1.0:**

Runoff = 15.8 cfs @ 12.14 hrs, Volume= 53,979 cf, Depth&gt; 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 3.8 cfs @ 12.14 hrs, Volume= 13,319 cf, Depth&gt; 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

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**Summary for Subcatchment SC3.0:**

Runoff = 11.3 cfs @ 12.21 hrs, Volume= 47,335 cf, Depth&gt; 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 1.4 cfs @ 12.14 hrs, Volume= 4,894 cf, Depth&gt; 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			

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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth > 3.01" for 25-Year event  
Inflow = 15.8 cfs @ 12.14 hrs, Volume= 53,979 cf  
Primary = 15.8 cfs @ 12.14 hrs, Volume= 53,979 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth > 3.01" for 25-Year event  
Inflow = 3.8 cfs @ 12.14 hrs, Volume= 13,319 cf  
Primary = 3.8 cfs @ 12.14 hrs, Volume= 13,319 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth > 2.91" for 25-Year event  
Inflow = 11.3 cfs @ 12.21 hrs, Volume= 47,335 cf  
Primary = 11.3 cfs @ 12.21 hrs, Volume= 47,335 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 3.90" for 25-Year event  
Inflow = 1.4 cfs @ 12.14 hrs, Volume= 4,894 cf  
Primary = 1.4 cfs @ 12.14 hrs, Volume= 4,894 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Five Paths, Wayland MA Project No. 171053

NRCC 24-hr D 100-Year Rainfall=8.62"

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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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment SC1.0:** Runoff Area=215,046 sf 4.94% Impervious Runoff Depth>5.23"  
Flow Length=646' Tc=6.7 min CN=72 Runoff=27.2 cfs 93,791 cf

**Subcatchment SC2.0:** Runoff Area=53,073 sf 16.30% Impervious Runoff Depth>5.23"  
Flow Length=190' Tc=7.2 min UI Adjusted CN=72 Runoff=6.6 cfs 23,144 cf

**Subcatchment SC3.0:** Runoff Area=195,127 sf 1.28% Impervious Runoff Depth>5.10"  
Flow Length=642' Tc=12.6 min CN=71 Runoff=19.7 cfs 82,984 cf

**Subcatchment SC4.0:** Runoff Area=15,041 sf 40.25% Impervious Runoff Depth>6.32"  
Flow Length=98' Tc=6.8 min CN=81 Runoff=2.2 cfs 7,922 cf

**Link AP1:** Inflow=27.2 cfs 93,791 cf  
Primary=27.2 cfs 93,791 cf

**Link AP2:** Inflow=6.6 cfs 23,144 cf  
Primary=6.6 cfs 23,144 cf

**Link AP3:** Inflow=19.7 cfs 82,984 cf  
Primary=19.7 cfs 82,984 cf

**Link AP4:** Inflow=2.2 cfs 7,922 cf  
Primary=2.2 cfs 7,922 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 207,841 cf Average Runoff Depth = 5.21"**  
**94.18% Pervious = 450,461 sf 5.82% Impervious = 27,826 sf**

**Pre-Dev**

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Five Paths, Wayland MA Project No. 171053

NRCC 24-hr D 100-Year Rainfall=8.62"

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**Summary for Subcatchment SC1.0:**

Runoff = 27.2 cfs @ 12.14 hrs, Volume= 93,791 cf, Depth&gt; 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
165,508	70	Woods, Good, HSG C
38,916	74	>75% Grass cover, Good, HSG C
778	98	Unconnected pavement, HSG C
7,395	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
215,046	72	Weighted Average
204,424		95.06% Pervious Area
10,622		4.94% Impervious Area
778		7.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.19		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	32	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.8	564	0.1046	1.62		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.7	646	Total			

**Summary for Subcatchment SC2.0:**

Runoff = 6.6 cfs @ 12.14 hrs, Volume= 23,144 cf, Depth&gt; 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Adj	Description
8,651	98		Unconnected pavement, HSG C
44,422	70		Woods, Good, HSG C
53,073	75	72	Weighted Average, UI Adjusted
44,422			83.70% Pervious Area
8,651			16.30% Impervious Area
8,651			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.1	140	0.1714	2.07		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.2	190	Total			

**Pre-Dev**

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**Summary for Subcatchment SC3.0:**

Runoff = 19.7 cfs @ 12.20 hrs, Volume= 82,984 cf, Depth&gt; 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
168,267	70	Woods, Good, HSG C
24,360	74	>75% Grass cover, Good, HSG C
55	98	Paved parking, HSG C
1,425	98	Roofs, HSG C
1,019	98	Unconnected pavement, HSG C
195,127	71	Weighted Average
192,627		98.72% Pervious Area
2,499		1.28% Impervious Area
1,019		40.77% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.9	225	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.0	367	0.0599	1.22		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.6	642	Total			

**Summary for Subcatchment SC4.0:**

Runoff = 2.2 cfs @ 12.14 hrs, Volume= 7,922 cf, Depth&gt; 6.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
6,053	98	Unconnected pavement, HSG C
8,988	70	Woods, Good, HSG C
15,041	81	Weighted Average
8,988		59.75% Pervious Area
6,053		40.25% Impervious Area
6,053		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1200	0.14		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.7	48	0.0520	1.14		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.8	98	Total			



**Pre-Dev**

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Five Paths, Wayland MA Project No. 171053

NRCC 24-hr D 100-Year Rainfall=8.62"

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**Summary for Link AP1:**

Inflow Area = 215,046 sf, 4.94% Impervious, Inflow Depth > 5.23" for 100-Year event  
Inflow = 27.2 cfs @ 12.14 hrs, Volume= 93,791 cf  
Primary = 27.2 cfs @ 12.14 hrs, Volume= 93,791 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP2:**

Inflow Area = 53,073 sf, 16.30% Impervious, Inflow Depth > 5.23" for 100-Year event  
Inflow = 6.6 cfs @ 12.14 hrs, Volume= 23,144 cf  
Primary = 6.6 cfs @ 12.14 hrs, Volume= 23,144 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Link AP3:**

Inflow Area = 195,127 sf, 1.28% Impervious, Inflow Depth > 5.10" for 100-Year event  
Inflow = 19.7 cfs @ 12.20 hrs, Volume= 82,984 cf  
Primary = 19.7 cfs @ 12.20 hrs, Volume= 82,984 cf, Atten= 0%, Lag= 0.0 min



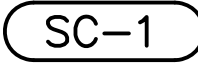


Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

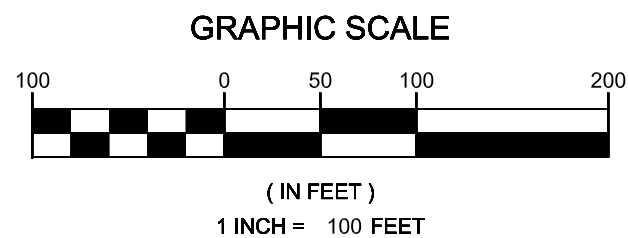
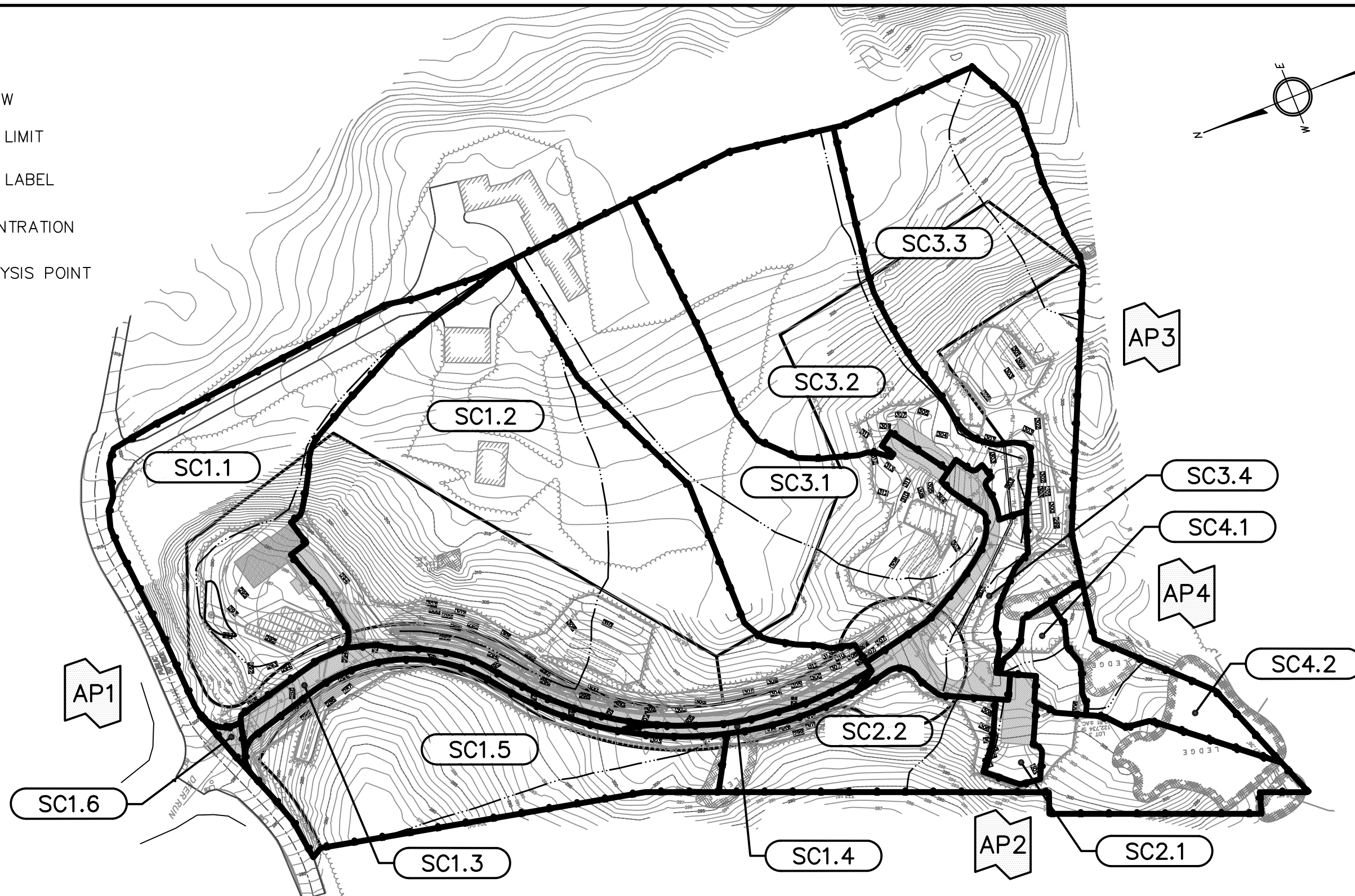
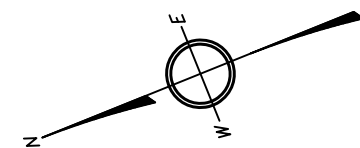
**Summary for Link AP4:**

Inflow Area = 15,041 sf, 40.25% Impervious, Inflow Depth > 6.32" for 100-Year event  
Inflow = 2.2 cfs @ 12.14 hrs, Volume= 7,922 cf  
Primary = 2.2 cfs @ 12.14 hrs, Volume= 7,922 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**LEGEND:**

-  DRAINAGE ARROW
-  SUBCATCHMENT LIMIT
-  SUBCATCHMENT LABEL
-  TIME OF CONCENTRATION
-  DRAINAGE ANALYSIS POINT



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DESIGNED BY: LT

CHECKED BY: KFB

DATE: REV 2 - JULY 13, 2020

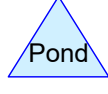
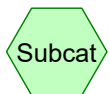
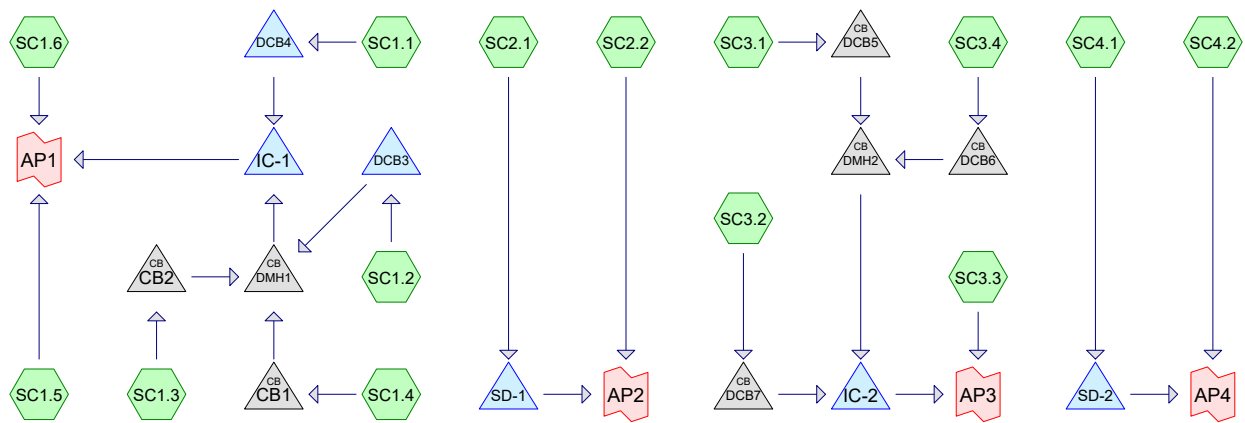
**WATERSHED MAP  
PROPOSED CONDITIONS**

FIVE PATHS  
ASSESSORS MAP#39 PARCEL 15A  
WAYLAND, MA

PROJECT: 171053

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
156,005	74	>75% Grass cover, Good, HSG C (SC1.1, SC1.2, SC1.3, SC1.5, SC2.1, SC2.2, SC3.1, SC3.2, SC3.3, SC3.4, SC4.1, SC4.2)
1,665	89	Gravel roads, HSG C (SC1.1, SC1.2, SC1.3, SC3.1, SC3.4)
27,894	98	Paved parking, HSG C (SC1.1, SC1.2, SC1.3, SC1.4, SC1.6, SC3.1, SC3.4)
9,202	98	Roofs, HSG C (SC1.1, SC1.2, SC2.1, SC3.1, SC3.2)
16,818	98	Unconnected pavement, HSG C (SC1.2, SC1.5, SC2.2, SC3.3, SC4.1, SC4.2)
266,702	70	Woods, Good, HSG C (SC1.1, SC1.2, SC1.5, SC2.2, SC3.1, SC3.2, SC3.3, SC3.4, SC4.1, SC4.2)
<b>478,286</b>	<b>75</b>	<b>TOTAL AREA</b>

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 0.5 Inch Rainfall=0.50"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Flow Length=549' Tc=7.5 min CN=76	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Flow Length=510' Tc=6.7 min CN=74	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Tc=5.0 min CN=97	Runoff Depth>0.26" Runoff=0.0 cfs 120 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth>0.32" Runoff=0.0 cfs 58 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Flow Length=337' Tc=6.4 min CN=71	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth>0.32" Runoff=0.0 cfs 16 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Flow Length=68' Tc=5.0 min CN=85	Runoff Depth>0.01" Runoff=0.0 cfs 3 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Flow Length=140' Tc=6.4 min UI Adjusted CN=74	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Flow Length=564' Tc=10.4 min CN=73	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Flow Length=378' Tc=10.1 min CN=71	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Flow Length=287' Tc=10.8 min CN=71	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Flow Length=246' Tc=5.0 min CN=86	Runoff Depth>0.02" Runoff=0.0 cfs 17 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Flow Length=64' Tc=5.0 min CN=74	Runoff Depth=0.00" Runoff=0.0 cfs 0 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Flow Length=75' Tc=12.7 min CN=86	Runoff Depth>0.02" Runoff=0.0 cfs 14 cf
<b>Pond CB1:</b>	12.0" Round Culvert n=0.013 L=220.0' S=0.0450 '/'	Peak Elev=298.07' Inflow=0.0 cfs 58 cf Outflow=0.0 cfs 58 cf
<b>Pond CB2:</b>	12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/'	Peak Elev=288.31' Inflow=0.0 cfs 120 cf Outflow=0.0 cfs 120 cf

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 0.5 Inch Rainfall=0.50"

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**Pond DCB3:** Peak Elev=287.00' Storage=0 cf Inflow=0.0 cfs 0 cf  
24.0" Round Culvert n=0.013 L=12.0' S=0.0200 '/' Outflow=0.0 cfs 0 cf

**Pond DCB4:** Peak Elev=287.00' Storage=0 cf Inflow=0.0 cfs 0 cf  
15.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.0 cfs 0 cf

**Pond DCB5:** Peak Elev=297.42' Inflow=0.0 cfs 0 cf  
21.0" Round Culvert n=0.013 L=47.0' S=0.0100 '/' Outflow=0.0 cfs 0 cf

**Pond DCB6:** Peak Elev=297.02' Inflow=0.0 cfs 17 cf  
21.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.0 cfs 17 cf

**Pond DCB7:** Peak Elev=297.01' Inflow=0.0 cfs 0 cf  
18.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.0 cfs 0 cf

**Pond DMH1:** Peak Elev=287.11' Inflow=0.1 cfs 179 cf  
24.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=0.1 cfs 179 cf

**Pond DMH2:** Peak Elev=296.86' Inflow=0.0 cfs 17 cf  
30.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=0.0 cfs 17 cf

**Pond IC-1:** Peak Elev=282.40' Storage=0 cf Inflow=0.1 cfs 179 cf  
Discarded=0.1 cfs 179 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 179 cf

**Pond IC-2:** Peak Elev=295.80' Storage=0 cf Inflow=0.0 cfs 17 cf  
Discarded=0.0 cfs 17 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 17 cf

**Pond SD-1:** Peak Elev=300.00' Storage=0 cf Inflow=0.0 cfs 3 cf  
Discarded=0.0 cfs 3 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 3 cf

**Pond SD-2:** Peak Elev=302.50' Storage=0 cf Inflow=0.0 cfs 0 cf  
Discarded=0.0 cfs 0 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 0 cf

**Link AP1:** Inflow=0.0 cfs 16 cf  
Primary=0.0 cfs 16 cf

**Link AP2:** Inflow=0.0 cfs 0 cf  
Primary=0.0 cfs 0 cf

**Link AP3:** Inflow=0.0 cfs 0 cf  
Primary=0.0 cfs 0 cf

**Link AP4:** Inflow=0.0 cfs 14 cf  
Primary=0.0 cfs 14 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 230 cf Average Runoff Depth = 0.01"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**

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**Summary for Subcatchment SC1.1:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected



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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 120 cf, Depth&gt; 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 58 cf, Depth&gt; 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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

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**Summary for Subcatchment SC1.5:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 16 cf, Depth&gt; 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.0 cfs @ 16.53 hrs, Volume= 3 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			

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**Summary for Subcatchment SC3.3:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 0.0 cfs @ 14.24 hrs, Volume= 17 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			

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**Summary for Subcatchment SC4.1:**

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 0.0 cfs @ 14.38 hrs, Volume= 14 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 0.5 Inch Rainfall=0.50"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 0.32" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 12.12 hrs, Volume= 58 cf  
 Outflow = 0.0 cfs @ 12.12 hrs, Volume= 58 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 12.12 hrs, Volume= 58 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.07' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=298.07' TW=287.11' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.0 cfs @ 0.72 fps)

**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 0.26" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 12.12 hrs, Volume= 120 cf  
 Outflow = 0.0 cfs @ 12.12 hrs, Volume= 120 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 12.12 hrs, Volume= 120 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.31' @ 12.12 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=288.31' TW=287.11' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.0 cfs @ 0.87 fps)

**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 287.00' @ 0.00 hrs Surf.Area= 1 sf Storage= 0 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=287.00' TW=287.00' (Dynamic Tailwater)

1=Culvert ( Controls 0.0 cfs)

**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.00' @ 0.00 hrs Surf.Area= 1 sf Storage= 0 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	



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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=287.00' TW=282.40' (Dynamic Tailwater)↑**1=Culvert** ( Controls 0.0 cfs)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.42' @ 0.00 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=297.42' TW=296.85' (Dynamic Tailwater)↑**1=Culvert** ( Controls 0.0 cfs)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 0.02" for 0.5 Inch event  
Inflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf  
Outflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf, Atten= 0%, Lag= 0.0 min  
Primary = 0.0 cfs @ 14.24 hrs, Volume= 17 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.02' @ 14.24 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 14.24 hrs HW=297.02' TW=296.86' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.36 fps)

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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.01' @ 0.00 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=297.01' TW=295.80' (Dynamic Tailwater)

↑1=Culvert ( Controls 0.0 cfs)

**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 0.02" for 0.5 Inch event  
 Inflow = 0.1 cfs @ 12.12 hrs, Volume= 179 cf  
 Outflow = 0.1 cfs @ 12.12 hrs, Volume= 179 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.12 hrs, Volume= 179 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.11' @ 12.12 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=0.1 cfs @ 12.12 hrs HW=287.11' TW=282.40' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.1 cfs @ 0.88 fps)

**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf  
 Outflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 14.24 hrs, Volume= 17 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 296.86' @ 14.24 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=0.0 cfs @ 14.24 hrs HW=296.86' TW=295.80' (Dynamic Tailwater)

1=Culvert (Barrel Controls 0.0 cfs @ 0.34 fps)

**Summary for Pond IC-1:**

Inflow Area = 177,892 sf, 14.37% Impervious, Inflow Depth > 0.01" for 0.5 Inch event  
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 179 cf  
Outflow = 0.1 cfs @ 12.12 hrs, Volume= 179 cf, Atten= 0%, Lag= 0.0 min  
Discarded = 0.1 cfs @ 12.12 hrs, Volume= 179 cf  
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 282.40' @ 12.12 hrs Surf.Area= 2,021 sf Storage= 0 cf

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

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 12.12 hrs HW=282.40' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=282.40' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)↑ **3=Culvert** ( Controls 0.0 cfs)↑ **4=Orifice/Grate** ( Controls 0.0 cfs)↑ **5=Sharp-Crested Vee/Trap Weir** ( Controls 0.0 cfs)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf  
 Outflow = 0.0 cfs @ 14.24 hrs, Volume= 17 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 14.24 hrs, Volume= 17 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 295.80' @ 0.00 hrs Surf.Area= 1,247 sf Storage= 0 cf

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

Center-of-Mass det. time= 0.0 min ( 1,085.0 - 1,085.0 )

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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

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**Discarded OutFlow** Max=0.0 cfs @ 14.24 hrs HW=295.80' (Free Discharge)↑ **1=Exfiltration** (Passes 0.0 cfs of 0.1 cfs potential flow)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=295.80' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)↑ **3=Culvert** ( Controls 0.0 cfs)↑ **4=Orifice/Grate** ( Controls 0.0 cfs)↑ **5=Sharp-Crested Vee/Trap Weir** ( Controls 0.0 cfs)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth > 0.01" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 16.53 hrs, Volume= 3 cf  
 Outflow = 0.0 cfs @ 16.53 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 16.53 hrs, Volume= 3 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.00' @ 0.00 hrs Surf.Area= 109 sf Storage= 0 cf

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

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 16.53 hrs HW=300.00' (Free Discharge)↑ **1=Exfiltration** (Passes 0.0 cfs of 0.0 cfs potential flow)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=300.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 302.50' @ 0.00 hrs Surf.Area= 40 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 0.00 hrs HW=302.50' (Free Discharge)↑**1=Exfiltration** (Passes 0.0 cfs of 0.0 cfs potential flow)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=302.50' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 0.00" for 0.5 Inch event  
 Inflow = 0.0 cfs @ 12.12 hrs, Volume= 16 cf  
 Primary = 0.0 cfs @ 12.12 hrs, Volume= 16 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth = 0.00" for 0.5 Inch event  
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf  
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 0.01" for 0.5 Inch event  
Inflow = 0.0 cfs @ 14.38 hrs, Volume= 14 cf  
Primary = 0.0 cfs @ 14.38 hrs, Volume= 14 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs



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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Runoff Depth>0.04" Flow Length=549' Tc=7.5 min CN=76 Runoff=0.0 cfs 174 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Runoff Depth>0.02" Flow Length=510' Tc=6.7 min CN=74 Runoff=0.0 cfs 221 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Runoff Depth>0.70" Tc=5.0 min CN=97 Runoff=0.1 cfs 331 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Runoff Depth>0.79" Tc=5.0 min CN=98 Runoff=0.0 cfs 145 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Runoff Depth>0.01" Flow Length=337' Tc=6.4 min CN=71 Runoff=0.0 cfs 30 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Runoff Depth>0.79" Tc=5.0 min CN=98 Runoff=0.0 cfs 41 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Runoff Depth>0.17" Flow Length=68' Tc=5.0 min CN=85 Runoff=0.0 cfs 54 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Runoff Depth>0.02" Flow Length=140' Tc=6.4 min UI Adjusted CN=74 Runoff=0.0 cfs 74 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Runoff Depth>0.02" Flow Length=564' Tc=10.4 min CN=73 Runoff=0.0 cfs 94 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Runoff Depth>0.01" Flow Length=378' Tc=10.1 min CN=71 Runoff=0.0 cfs 35 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Runoff Depth>0.01" Flow Length=287' Tc=10.8 min CN=71 Runoff=0.0 cfs 40 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Runoff Depth>0.20" Flow Length=246' Tc=5.0 min CN=86 Runoff=0.1 cfs 203 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Runoff Depth>0.02" Flow Length=64' Tc=5.0 min CN=74 Runoff=0.0 cfs 9 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Runoff Depth>0.20" Flow Length=75' Tc=12.7 min CN=86 Runoff=0.0 cfs 165 cf
<b>Pond CB1:</b>	Peak Elev=298.11' Inflow=0.0 cfs 145 cf 12.0" Round Culvert n=0.013 L=220.0' S=0.0450 ' ' Outflow=0.0 cfs 145 cf
<b>Pond CB2:</b>	Peak Elev=288.37' Inflow=0.1 cfs 331 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0200 ' ' Outflow=0.1 cfs 331 cf

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<b>Pond DCB3:</b>	Peak Elev=287.37' Storage=0 cf Inflow=0.0 cfs 221 cf 24.0" Round Culvert n=0.013 L=12.0' S=0.0200 '/' Outflow=0.0 cfs 221 cf
<b>Pond DCB4:</b>	Peak Elev=287.29' Storage=0 cf Inflow=0.0 cfs 174 cf 15.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=0.0 cfs 173 cf
<b>Pond DCB5:</b>	Peak Elev=297.45' Inflow=0.0 cfs 94 cf 21.0" Round Culvert n=0.013 L=47.0' S=0.0100 '/' Outflow=0.0 cfs 94 cf
<b>Pond DCB6:</b>	Peak Elev=297.12' Inflow=0.1 cfs 203 cf 21.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.1 cfs 203 cf
<b>Pond DCB7:</b>	Peak Elev=297.03' Inflow=0.0 cfs 35 cf 18.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.0 cfs 35 cf
<b>Pond DMH1:</b>	Peak Elev=287.17' Inflow=0.1 cfs 697 cf 24.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=0.1 cfs 697 cf
<b>Pond DMH2:</b>	Peak Elev=296.95' Inflow=0.1 cfs 297 cf 30.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=0.1 cfs 297 cf
<b>Pond IC-1:</b>	Peak Elev=282.41' Storage=8 cf Inflow=0.1 cfs 871 cf Discarded=0.1 cfs 870 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 870 cf
<b>Pond IC-2:</b>	Peak Elev=295.80' Storage=0 cf Inflow=0.1 cfs 332 cf Discarded=0.1 cfs 332 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 332 cf
<b>Pond SD-1:</b>	Peak Elev=300.07' Storage=3 cf Inflow=0.0 cfs 54 cf Discarded=0.0 cfs 54 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 54 cf
<b>Pond SD-2:</b>	Peak Elev=302.50' Storage=0 cf Inflow=0.0 cfs 9 cf Discarded=0.0 cfs 9 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 9 cf
<b>Link AP1:</b>	Inflow=0.0 cfs 71 cf Primary=0.0 cfs 71 cf
<b>Link AP2:</b>	Inflow=0.0 cfs 74 cf Primary=0.0 cfs 74 cf
<b>Link AP3:</b>	Inflow=0.0 cfs 40 cf Primary=0.0 cfs 40 cf
<b>Link AP4:</b>	Inflow=0.0 cfs 165 cf Primary=0.0 cfs 165 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 1,615 cf Average Runoff Depth = 0.04"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**

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**Summary for Subcatchment SC1.1:**

Runoff = 0.0 cfs @ 13.27 hrs, Volume= 174 cf, Depth&gt; 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 0.0 cfs @ 16.55 hrs, Volume= 221 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 331 cf, Depth&gt; 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 145 cf, Depth&gt; 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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

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**Summary for Subcatchment SC1.5:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 30 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 41 cf, Depth&gt; 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.0 cfs @ 12.13 hrs, Volume= 54 cf, Depth&gt; 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 0.0 cfs @ 16.54 hrs, Volume= 74 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 0.0 cfs @ 22.27 hrs, Volume= 94 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 35 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			

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**Summary for Subcatchment SC3.3:**

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 40 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 0.1 cfs @ 12.13 hrs, Volume= 203 cf, Depth&gt; 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			



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**Summary for Subcatchment SC4.1:**

Runoff = 0.0 cfs @ 16.53 hrs, Volume= 9 cf, Depth&gt; 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 0.0 cfs @ 12.22 hrs, Volume= 165 cf, Depth&gt; 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 1 Inch Rainfall=1.00"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 0.79" for 1 Inch event  
 Inflow = 0.0 cfs @ 12.12 hrs, Volume= 145 cf  
 Outflow = 0.0 cfs @ 12.12 hrs, Volume= 145 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 12.12 hrs, Volume= 145 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.11' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=298.11' TW=287.17' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.0 cfs @ 0.90 fps)**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 0.70" for 1 Inch event  
 Inflow = 0.1 cfs @ 12.12 hrs, Volume= 331 cf  
 Outflow = 0.1 cfs @ 12.12 hrs, Volume= 331 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.12 hrs, Volume= 331 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.37' @ 12.12 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.1 cfs @ 12.12 hrs HW=288.37' TW=287.17' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.1 cfs @ 1.12 fps)**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth > 0.02" for 1 Inch event  
 Inflow = 0.0 cfs @ 16.55 hrs, Volume= 221 cf  
 Outflow = 0.0 cfs @ 16.55 hrs, Volume= 221 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 0.0 cfs @ 16.55 hrs, Volume= 221 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 287.37' @ 16.55 hrs Surf.Area= 1 sf Storage= 0 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

Plug-Flow detention time= 1.1 min calculated for 221 cf (100% of inflow)

Center-of-Mass det. time= 0.6 min ( 1,123.6 - 1,123.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=0.0 cfs @ 16.55 hrs HW=287.37' TW=287.05' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.0 cfs @ 0.50 fps)**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth > 0.04" for 1 Inch event  
 Inflow = 0.0 cfs @ 13.27 hrs, Volume= 174 cf  
 Outflow = 0.0 cfs @ 13.27 hrs, Volume= 173 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 0.0 cfs @ 13.27 hrs, Volume= 173 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.29' @ 13.27 hrs Surf.Area= 1 sf Storage= 0 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

Plug-Flow detention time= 1.1 min calculated for 173 cf (100% of inflow)

Center-of-Mass det. time= 0.5 min ( 1,073.9 - 1,073.4 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	

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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.0 cfs @ 13.27 hrs HW=287.29' TW=282.40' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.77 fps)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth > 0.02" for 1 Inch event  
 Inflow = 0.0 cfs @ 22.27 hrs, Volume= 94 cf  
 Outflow = 0.0 cfs @ 22.27 hrs, Volume= 94 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 22.27 hrs, Volume= 94 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.45' @ 22.27 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 22.27 hrs HW=297.45' TW=296.88' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.62 fps)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 0.20" for 1 Inch event  
 Inflow = 0.1 cfs @ 12.13 hrs, Volume= 203 cf  
 Outflow = 0.1 cfs @ 12.13 hrs, Volume= 203 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.13 hrs, Volume= 203 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.12' @ 12.13 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.1 cfs @ 12.13 hrs HW=297.12' TW=296.95' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.1 cfs @ 1.31 fps)

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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth > 0.01" for 1 Inch event  
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 35 cf  
 Outflow = 0.0 cfs @ 24.00 hrs, Volume= 35 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.0 cfs @ 24.00 hrs, Volume= 35 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 297.03' @ 24.00 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=0.0 cfs @ 24.00 hrs HW=297.03' TW=295.80' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.51 fps)**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 0.07" for 1 Inch event  
 Inflow = 0.1 cfs @ 12.12 hrs, Volume= 697 cf  
 Outflow = 0.1 cfs @ 12.12 hrs, Volume= 697 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.12 hrs, Volume= 697 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.17' @ 12.12 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=0.1 cfs @ 12.12 hrs HW=287.17' TW=282.41' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.1 cfs @ 1.11 fps)**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 0.04" for 1 Inch event  
 Inflow = 0.1 cfs @ 12.13 hrs, Volume= 297 cf  
 Outflow = 0.1 cfs @ 12.13 hrs, Volume= 297 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.13 hrs, Volume= 297 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 296.95' @ 12.13 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=0.1 cfs @ 12.13 hrs HW=296.95' TW=295.80' (Dynamic Tailwater)

1=Culvert (Barrel Controls 0.1 cfs @ 1.23 fps)

**Summary for Pond IC-1:**

Inflow Area = 177,892 sf, 14.37% Impervious, Inflow Depth > 0.06" for 1 Inch event  
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 871 cf  
Outflow = 0.1 cfs @ 12.12 hrs, Volume= 870 cf, Atten= 23%, Lag= 0.0 min  
Discarded = 0.1 cfs @ 12.12 hrs, Volume= 870 cf  
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 282.41' @ 12.16 hrs Surf.Area= 2,021 sf Storage= 8 cf

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

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' S= 0.0157 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 12.12 hrs HW=282.41' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=282.40' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)↑ **3=Culvert** ( Controls 0.0 cfs)↑ **4=Orifice/Grate** ( Controls 0.0 cfs)↑ **5=Sharp-Crested Vee/Trap Weir** ( Controls 0.0 cfs)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 0.03" for 1 Inch event  
 Inflow = 0.1 cfs @ 12.13 hrs, Volume= 332 cf  
 Outflow = 0.1 cfs @ 12.13 hrs, Volume= 332 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.1 cfs @ 12.13 hrs, Volume= 332 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 295.80' @ 12.13 hrs Surf.Area= 1,247 sf Storage= 0 cf

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

Center-of-Mass det. time= 0.0 min ( 1,024.6 - 1,024.6 )

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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)



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**Discarded OutFlow** Max=0.1 cfs @ 12.13 hrs HW=295.80' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=295.80' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)↑ **3=Culvert** ( Controls 0.0 cfs)↑ **4=Orifice/Grate** ( Controls 0.0 cfs)↑ **5=Sharp-Crested Vee/Trap Weir** ( Controls 0.0 cfs)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth &gt; 0.17" for 1 Inch event

Inflow = 0.0 cfs @ 12.13 hrs, Volume= 54 cf

Outflow = 0.0 cfs @ 12.10 hrs, Volume= 54 cf, Atten= 57%, Lag= 0.0 min

Discarded = 0.0 cfs @ 12.10 hrs, Volume= 54 cf

Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.07' @ 12.26 hrs Surf.Area= 109 sf Storage= 3 cf

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

Center-of-Mass det. time= 1.1 min ( 940.5 - 939.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 12.10 hrs HW=300.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=300.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth > 0.02" for 1 Inch event  
 Inflow = 0.0 cfs @ 16.53 hrs, Volume= 9 cf  
 Outflow = 0.0 cfs @ 16.53 hrs, Volume= 9 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 16.53 hrs, Volume= 9 cf  
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 302.50' @ 0.00 hrs Surf.Area= 40 sf Storage= 0 cf

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

Center-of-Mass det. time= 0.0 min ( 1,122.2 - 1,122.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 16.53 hrs HW=302.50' (Free Discharge)↑**1=Exfiltration** (Passes 0.0 cfs of 0.0 cfs potential flow)**Primary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=302.50' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** ( Controls 0.0 cfs)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 0.00" for 1 Inch event  
 Inflow = 0.0 cfs @ 12.12 hrs, Volume= 71 cf  
 Primary = 0.0 cfs @ 12.12 hrs, Volume= 71 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 1 Inch Rainfall=1.00"

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth > 0.02" for 1 Inch event  
Inflow = 0.0 cfs @ 16.54 hrs, Volume= 74 cf  
Primary = 0.0 cfs @ 16.54 hrs, Volume= 74 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth > 0.00" for 1 Inch event  
Inflow = 0.0 cfs @ 24.00 hrs, Volume= 40 cf  
Primary = 0.0 cfs @ 24.00 hrs, Volume= 40 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 0.14" for 1 Inch event  
Inflow = 0.0 cfs @ 12.22 hrs, Volume= 165 cf  
Primary = 0.0 cfs @ 12.22 hrs, Volume= 165 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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NRCC 24-hr D 2-Year Rainfall=3.16"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Runoff Depth>1.12" Flow Length=549' Tc=7.5 min CN=76 Runoff=1.5 cfs 5,093 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Runoff Depth>1.01" Flow Length=510' Tc=6.7 min CN=74 Runoff=2.8 cfs 9,709 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Runoff Depth>2.81" Tc=5.0 min CN=97 Runoff=0.4 cfs 1,322 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Runoff Depth>2.92" Tc=5.0 min CN=98 Runoff=0.1 cfs 538 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Runoff Depth>0.85" Flow Length=337' Tc=6.4 min CN=71 Runoff=0.9 cfs 3,282 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Runoff Depth>2.92" Tc=5.0 min CN=98 Runoff=0.0 cfs 152 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Runoff Depth>1.72" Flow Length=68' Tc=5.0 min CN=85 Runoff=0.2 cfs 535 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Runoff Depth>1.01" Flow Length=140' Tc=6.4 min UI Adjusted CN=74 Runoff=0.9 cfs 3,231 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Runoff Depth>0.95" Flow Length=564' Tc=10.4 min CN=73 Runoff=1.3 cfs 5,311 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Runoff Depth>0.85" Flow Length=378' Tc=10.1 min CN=71 Runoff=0.9 cfs 3,901 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Runoff Depth>0.85" Flow Length=287' Tc=10.8 min CN=71 Runoff=1.0 cfs 4,424 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Runoff Depth>1.80" Flow Length=246' Tc=5.0 min CN=86 Runoff=0.6 cfs 1,850 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Runoff Depth>1.01" Flow Length=64' Tc=5.0 min CN=74 Runoff=0.1 cfs 379 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Runoff Depth>1.79" Flow Length=75' Tc=12.7 min CN=86 Runoff=0.4 cfs 1,511 cf
<b>Pond CB1:</b>	Peak Elev=298.21' Inflow=0.1 cfs 538 cf 12.0" Round Culvert n=0.013 L=220.0' S=0.0450 '/' Outflow=0.1 cfs 538 cf
<b>Pond CB2:</b>	Peak Elev=288.54' Inflow=0.4 cfs 1,322 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.4 cfs 1,322 cf

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**Pond DCB3:** Peak Elev=288.21' Storage=1 cf Inflow=2.8 cfs 9,709 cf  
24.0" Round Culvert n=0.013 L=12.0' S=0.0200 '/' Outflow=2.8 cfs 9,708 cf

**Pond DCB4:** Peak Elev=287.97' Storage=1 cf Inflow=1.5 cfs 5,093 cf  
15.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=1.5 cfs 5,093 cf

**Pond DCB5:** Peak Elev=298.25' Inflow=1.3 cfs 5,311 cf  
21.0" Round Culvert n=0.013 L=47.0' S=0.0100 '/' Outflow=1.3 cfs 5,311 cf

**Pond DCB6:** Peak Elev=298.17' Inflow=0.6 cfs 1,850 cf  
21.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.6 cfs 1,849 cf

**Pond DCB7:** Peak Elev=298.18' Inflow=0.9 cfs 3,901 cf  
18.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=0.9 cfs 3,901 cf

**Pond DMH1:** Peak Elev=287.87' Inflow=3.3 cfs 11,569 cf  
24.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=3.3 cfs 11,569 cf

**Pond DMH2:** Peak Elev=298.18' Inflow=1.7 cfs 7,160 cf  
30.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=1.7 cfs 7,160 cf

**Pond IC-1:** Peak Elev=285.56' Storage=4,603 cf Inflow=4.7 cfs 16,661 cf  
Discarded=0.1 cfs 6,442 cf Primary=1.7 cfs 5,704 cf Outflow=1.8 cfs 12,146 cf

**Pond IC-2:** Peak Elev=298.16' Storage=2,126 cf Inflow=2.6 cfs 11,061 cf  
Discarded=0.1 cfs 4,048 cf Primary=1.9 cfs 5,046 cf Outflow=1.9 cfs 9,094 cf

**Pond SD-1:** Peak Elev=300.91' Storage=40 cf Inflow=0.2 cfs 535 cf  
Discarded=0.0 cfs 310 cf Primary=0.2 cfs 225 cf Outflow=0.2 cfs 535 cf

**Pond SD-2:** Peak Elev=303.42' Storage=15 cf Inflow=0.1 cfs 379 cf  
Discarded=0.0 cfs 108 cf Primary=0.1 cfs 257 cf Outflow=0.1 cfs 364 cf

**Link AP1:** Inflow=2.1 cfs 9,137 cf  
Primary=2.1 cfs 9,137 cf

**Link AP2:** Inflow=1.1 cfs 3,456 cf  
Primary=1.1 cfs 3,456 cf

**Link AP3:** Inflow=2.7 cfs 9,469 cf  
Primary=2.7 cfs 9,469 cf

**Link AP4:** Inflow=0.4 cfs 1,768 cf  
Primary=0.4 cfs 1,768 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 41,236 cf Average Runoff Depth = 1.03"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**

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**Summary for Subcatchment SC1.1:**

Runoff = 1.5 cfs @ 12.15 hrs, Volume= 5,093 cf, Depth&gt; 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 2.8 cfs @ 12.14 hrs, Volume= 9,709 cf, Depth&gt; 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 0.4 cfs @ 12.12 hrs, Volume= 1,322 cf, Depth&gt; 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 538 cf, Depth&gt; 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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

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**Summary for Subcatchment SC1.5:**

Runoff = 0.9 cfs @ 12.14 hrs, Volume= 3,282 cf, Depth&gt; 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.0 cfs @ 12.12 hrs, Volume= 152 cf, Depth&gt; 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.2 cfs @ 12.12 hrs, Volume= 535 cf, Depth&gt; 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"



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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 0.9 cfs @ 12.14 hrs, Volume= 3,231 cf, Depth&gt; 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 1.3 cfs @ 12.19 hrs, Volume= 5,311 cf, Depth&gt; 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 0.9 cfs @ 12.18 hrs, Volume= 3,901 cf, Depth&gt; 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			

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**Summary for Subcatchment SC3.3:**

Runoff = 1.0 cfs @ 12.19 hrs, Volume= 4,424 cf, Depth&gt; 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 0.6 cfs @ 12.12 hrs, Volume= 1,850 cf, Depth&gt; 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			

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**Summary for Subcatchment SC4.1:**

Runoff = 0.1 cfs @ 12.13 hrs, Volume= 379 cf, Depth&gt; 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 0.4 cfs @ 12.20 hrs, Volume= 1,511 cf, Depth&gt; 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 2-Year Rainfall=3.16"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 2.92" for 2-Year event  
 Inflow = 0.1 cfs @ 12.12 hrs, Volume= 538 cf  
 Outflow = 0.1 cfs @ 12.12 hrs, Volume= 538 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.1 cfs @ 12.12 hrs, Volume= 538 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.21' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.1 cfs @ 12.12 hrs HW=298.21' TW=287.85' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.1 cfs @ 1.23 fps)**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 2.81" for 2-Year event  
 Inflow = 0.4 cfs @ 12.12 hrs, Volume= 1,322 cf  
 Outflow = 0.4 cfs @ 12.12 hrs, Volume= 1,322 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.4 cfs @ 12.12 hrs, Volume= 1,322 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.54' @ 12.12 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.4 cfs @ 12.12 hrs HW=288.54' TW=287.85' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.4 cfs @ 2.33 fps)**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth > 1.01" for 2-Year event  
 Inflow = 2.8 cfs @ 12.14 hrs, Volume= 9,709 cf  
 Outflow = 2.8 cfs @ 12.14 hrs, Volume= 9,708 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.8 cfs @ 12.14 hrs, Volume= 9,708 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 288.21' @ 12.14 hrs Surf.Area= 1 sf Storage= 1 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

Plug-Flow detention time= 0.0 min calculated for 9,708 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 895.0 - 895.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=2.8 cfs @ 12.14 hrs HW=288.20' TW=287.87' (Dynamic Tailwater)

1=Culvert (Outlet Controls 2.8 cfs @ 3.18 fps)

**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth > 1.12" for 2-Year event  
 Inflow = 1.5 cfs @ 12.15 hrs, Volume= 5,093 cf  
 Outflow = 1.5 cfs @ 12.15 hrs, Volume= 5,093 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.5 cfs @ 12.15 hrs, Volume= 5,093 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.97' @ 12.15 hrs Surf.Area= 1 sf Storage= 1 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

Plug-Flow detention time= 0.1 min calculated for 5,088 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 887.4 - 887.4 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	

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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.4 cfs @ 12.15 hrs HW=287.96' TW=284.63' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.4 cfs @ 2.87 fps)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth > 0.95" for 2-Year event  
Inflow = 1.3 cfs @ 12.19 hrs, Volume= 5,311 cf  
Outflow = 1.3 cfs @ 12.19 hrs, Volume= 5,311 cf, Atten= 0%, Lag= 0.0 min  
Primary = 1.3 cfs @ 12.19 hrs, Volume= 5,311 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.25' @ 12.26 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.9 cfs @ 12.19 hrs HW=298.07' TW=297.93' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.9 cfs @ 1.69 fps)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 1.80" for 2-Year event  
Inflow = 0.6 cfs @ 12.12 hrs, Volume= 1,850 cf  
Outflow = 0.6 cfs @ 12.12 hrs, Volume= 1,849 cf, Atten= 0%, Lag= 0.0 min  
Primary = 0.6 cfs @ 12.12 hrs, Volume= 1,849 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.17' @ 12.28 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.3 cfs @ 12.12 hrs HW=297.54' TW=297.53' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.3 cfs @ 0.66 fps)

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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth > 0.85" for 2-Year event  
 Inflow = 0.9 cfs @ 12.18 hrs, Volume= 3,901 cf  
 Outflow = 0.9 cfs @ 12.18 hrs, Volume= 3,901 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.9 cfs @ 12.18 hrs, Volume= 3,901 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.18' @ 12.26 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=1.0 cfs @ 12.18 hrs HW=297.91' TW=297.86' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.0 cfs @ 0.86 fps)**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 1.13" for 2-Year event  
 Inflow = 3.3 cfs @ 12.14 hrs, Volume= 11,569 cf  
 Outflow = 3.3 cfs @ 12.14 hrs, Volume= 11,569 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.3 cfs @ 12.14 hrs, Volume= 11,569 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.87' @ 12.14 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=3.3 cfs @ 12.14 hrs HW=287.87' TW=284.51' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.3 cfs @ 2.51 fps)**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 1.08" for 2-Year event  
 Inflow = 1.7 cfs @ 12.15 hrs, Volume= 7,160 cf  
 Outflow = 1.7 cfs @ 12.15 hrs, Volume= 7,160 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.7 cfs @ 12.15 hrs, Volume= 7,160 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2



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Peak Elev= 298.18' @ 12.26 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=1.7 cfs @ 12.15 hrs HW=297.71' TW=297.62' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.7 cfs @ 1.16 fps)**Summary for Pond IC-1:**

Inflow Area = 177,892 sf, 14.37% Impervious, Inflow Depth > 1.12" for 2-Year event  
Inflow = 4.7 cfs @ 12.14 hrs, Volume= 16,661 cf  
Outflow = 1.8 cfs @ 12.32 hrs, Volume= 12,146 cf, Atten= 61%, Lag= 11.0 min  
Discarded = 0.1 cfs @ 11.76 hrs, Volume= 6,442 cf  
Primary = 1.7 cfs @ 12.32 hrs, Volume= 5,704 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 285.56' @ 12.32 hrs Surf.Area= 2,271 sf Storage= 4,603 cf

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

Center-of-Mass det. time= 59.0 min ( 937.4 - 878.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 11.76 hrs HW=283.00' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=1.7 cfs @ 12.32 hrs HW=285.56' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.7 cfs @ 0.59 fps)↑ **3=Culvert** (Passes 1.7 cfs of 2.0 cfs potential flow)↑ **4=Orifice/Grate** (Passes 1.7 cfs of 1.9 cfs potential flow)↑ **5=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 0.99" for 2-Year event  
 Inflow = 2.6 cfs @ 12.17 hrs, Volume= 11,061 cf  
 Outflow = 1.9 cfs @ 12.26 hrs, Volume= 9,094 cf, Atten= 27%, Lag= 5.9 min  
 Discarded = 0.1 cfs @ 11.60 hrs, Volume= 4,048 cf  
 Primary = 1.9 cfs @ 12.26 hrs, Volume= 5,046 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.16' @ 12.26 hrs Surf.Area= 1,497 sf Storage= 2,126 cf

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

Center-of-Mass det. time= 38.2 min ( 933.0 - 894.8 )

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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

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**Discarded OutFlow** Max=0.1 cfs @ 11.60 hrs HW=296.00' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=1.8 cfs @ 12.26 hrs HW=298.16' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 1.8 cfs of 8.1 cfs potential flow)↑ **3=Culvert** (Passes 1.8 cfs of 2.7 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 1.8 cfs @ 1.92 fps)↑ **5=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth &gt; 1.72" for 2-Year event

Inflow = 0.2 cfs @ 12.12 hrs, Volume= 535 cf

Outflow = 0.2 cfs @ 12.12 hrs, Volume= 535 cf, Atten= 0%, Lag= 0.0 min

Discarded = 0.0 cfs @ 10.86 hrs, Volume= 310 cf

Primary = 0.2 cfs @ 12.12 hrs, Volume= 225 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.91' @ 12.12 hrs Surf.Area= 109 sf Storage= 40 cf

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

Center-of-Mass det. time= 38.6 min ( 886.6 - 848.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 10.86 hrs HW=300.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.2 cfs @ 12.12 hrs HW=300.91' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.2 cfs @ 0.26 fps)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth > 1.01" for 2-Year event  
 Inflow = 0.1 cfs @ 12.13 hrs, Volume= 379 cf  
 Outflow = 0.1 cfs @ 12.12 hrs, Volume= 364 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 11.12 hrs, Volume= 108 cf  
 Primary = 0.1 cfs @ 12.12 hrs, Volume= 257 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 303.42' @ 12.12 hrs Surf.Area= 40 sf Storage= 15 cf

Plug-Flow detention time= 27.9 min calculated for 364 cf (96% of inflow)

Center-of-Mass det. time= 7.8 min ( 901.7 - 893.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 11.12 hrs HW=302.51' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.1 cfs @ 12.12 hrs HW=303.42' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.1 cfs @ 0.32 fps)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 0.49" for 2-Year event  
 Inflow = 2.1 cfs @ 12.32 hrs, Volume= 9,137 cf  
 Primary = 2.1 cfs @ 12.32 hrs, Volume= 9,137 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 2-Year Rainfall=3.16"

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth > 0.98" for 2-Year event  
Inflow = 1.1 cfs @ 12.14 hrs, Volume= 3,456 cf  
Primary = 1.1 cfs @ 12.14 hrs, Volume= 3,456 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth > 0.58" for 2-Year event  
Inflow = 2.7 cfs @ 12.25 hrs, Volume= 9,469 cf  
Primary = 2.7 cfs @ 12.25 hrs, Volume= 9,469 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 1.45" for 2-Year event  
Inflow = 0.4 cfs @ 12.17 hrs, Volume= 1,768 cf  
Primary = 0.4 cfs @ 12.17 hrs, Volume= 1,768 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 10-Year Rainfall=4.77"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Runoff Depth>2.34" Flow Length=549' Tc=7.5 min CN=76 Runoff=3.1 cfs 10,638 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Runoff Depth>2.18" Flow Length=510' Tc=6.7 min CN=74 Runoff=6.3 cfs 20,959 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Runoff Depth>4.41" Tc=5.0 min CN=97 Runoff=0.6 cfs 2,074 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Runoff Depth>4.53" Tc=5.0 min CN=98 Runoff=0.2 cfs 833 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Runoff Depth>1.94" Flow Length=337' Tc=6.4 min CN=71 Runoff=2.2 cfs 7,474 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Runoff Depth>4.53" Tc=5.0 min CN=98 Runoff=0.1 cfs 235 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Runoff Depth>3.15" Flow Length=68' Tc=5.0 min CN=85 Runoff=0.3 cfs 979 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Runoff Depth>2.18" Flow Length=140' Tc=6.4 min UI Adjusted CN=74 Runoff=2.1 cfs 6,975 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Runoff Depth>2.09" Flow Length=564' Tc=10.4 min CN=73 Runoff=3.0 cfs 11,668 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Runoff Depth>1.94" Flow Length=378' Tc=10.1 min CN=71 Runoff=2.3 cfs 8,887 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Runoff Depth>1.94" Flow Length=287' Tc=10.8 min CN=71 Runoff=2.6 cfs 10,078 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Runoff Depth>3.25" Flow Length=246' Tc=5.0 min CN=86 Runoff=1.0 cfs 3,342 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Runoff Depth>2.18" Flow Length=64' Tc=5.0 min CN=74 Runoff=0.3 cfs 818 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Runoff Depth>3.24" Flow Length=75' Tc=12.7 min CN=86 Runoff=0.6 cfs 2,732 cf
<b>Pond CB1:</b>	Peak Elev=298.26' Inflow=0.2 cfs 833 cf 12.0" Round Culvert n=0.013 L=220.0' S=0.0450 '/' Outflow=0.2 cfs 833 cf
<b>Pond CB2:</b>	Peak Elev=288.64' Inflow=0.6 cfs 2,074 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.6 cfs 2,074 cf

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<b>Pond DCB3:</b>	Peak Elev=288.80' Storage=2 cf Inflow=6.3 cfs 20,959 cf 24.0" Round Culvert n=0.013 L=12.0' S=0.0200 ' Outflow=6.3 cfs 20,958 cf
<b>Pond DCB4:</b>	Peak Elev=288.39' Storage=1 cf Inflow=3.1 cfs 10,638 cf 15.0" Round Culvert n=0.013 L=10.0' S=0.0100 ' Outflow=3.1 cfs 10,637 cf
<b>Pond DCB5:</b>	Peak Elev=299.21' Inflow=3.0 cfs 11,668 cf 21.0" Round Culvert n=0.013 L=47.0' S=0.0100 ' Outflow=3.0 cfs 11,668 cf
<b>Pond DCB6:</b>	Peak Elev=299.14' Inflow=1.0 cfs 3,342 cf 21.0" Round Culvert n=0.013 L=6.0' S=0.0100 ' Outflow=1.0 cfs 3,342 cf
<b>Pond DCB7:</b>	Peak Elev=299.21' Inflow=2.3 cfs 8,887 cf 18.0" Round Culvert n=0.013 L=6.0' S=0.0100 ' Outflow=2.3 cfs 8,887 cf
<b>Pond DMH1:</b>	Peak Elev=288.35' Inflow=7.0 cfs 23,866 cf 24.0" Round Culvert n=0.013 L=60.0' S=0.0100 ' Outflow=7.0 cfs 23,866 cf
<b>Pond DMH2:</b>	Peak Elev=299.15' Inflow=3.8 cfs 15,011 cf 30.0" Round Culvert n=0.013 L=5.0' S=0.0100 ' Outflow=3.8 cfs 15,011 cf
<b>Pond IC-1:</b>	Peak Elev=286.50' Storage=5,991 cf Inflow=10.1 cfs 34,503 cf Discarded=0.1 cfs 7,270 cf Primary=8.0 cfs 22,704 cf Outflow=8.2 cfs 29,975 cf
<b>Pond IC-2:</b>	Peak Elev=299.12' Storage=3,055 cf Inflow=6.0 cfs 23,897 cf Discarded=0.1 cfs 4,567 cf Primary=4.9 cfs 17,357 cf Outflow=5.0 cfs 21,924 cf
<b>Pond SD-1:</b>	Peak Elev=300.92' Storage=40 cf Inflow=0.3 cfs 979 cf Discarded=0.0 cfs 364 cf Primary=0.3 cfs 579 cf Outflow=0.3 cfs 943 cf
<b>Pond SD-2:</b>	Peak Elev=303.43' Storage=15 cf Inflow=0.3 cfs 818 cf Discarded=0.0 cfs 123 cf Primary=0.3 cfs 681 cf Outflow=0.3 cfs 803 cf
<b>Link AP1:</b>	Inflow=10.0 cfs 30,413 cf Primary=10.0 cfs 30,413 cf
<b>Link AP2:</b>	Inflow=2.4 cfs 7,554 cf Primary=2.4 cfs 7,554 cf
<b>Link AP3:</b>	Inflow=7.3 cfs 27,435 cf Primary=7.3 cfs 27,435 cf
<b>Link AP4:</b>	Inflow=0.8 cfs 3,412 cf Primary=0.8 cfs 3,412 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 87,692 cf Average Runoff Depth = 2.20"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**



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**Summary for Subcatchment SC1.1:**

Runoff = 3.1 cfs @ 12.15 hrs, Volume= 10,638 cf, Depth&gt; 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 6.3 cfs @ 12.14 hrs, Volume= 20,959 cf, Depth&gt; 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 0.6 cfs @ 12.12 hrs, Volume= 2,074 cf, Depth&gt; 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.2 cfs @ 12.12 hrs, Volume= 833 cf, Depth&gt; 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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

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**Summary for Subcatchment SC1.5:**

Runoff = 2.2 cfs @ 12.14 hrs, Volume= 7,474 cf, Depth&gt; 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 235 cf, Depth&gt; 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.3 cfs @ 12.12 hrs, Volume= 979 cf, Depth&gt; 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 2.1 cfs @ 12.14 hrs, Volume= 6,975 cf, Depth&gt; 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 3.0 cfs @ 12.18 hrs, Volume= 11,668 cf, Depth&gt; 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 2.3 cfs @ 12.18 hrs, Volume= 8,887 cf, Depth&gt; 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			

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**Summary for Subcatchment SC3.3:**

Runoff = 2.6 cfs @ 12.19 hrs, Volume= 10,078 cf, Depth&gt; 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 1.0 cfs @ 12.12 hrs, Volume= 3,342 cf, Depth&gt; 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			

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**Summary for Subcatchment SC4.1:**

Runoff = 0.3 cfs @ 12.12 hrs, Volume= 818 cf, Depth&gt; 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 0.6 cfs @ 12.20 hrs, Volume= 2,732 cf, Depth&gt; 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 10-Year Rainfall=4.77"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 4.53" for 10-Year event  
 Inflow = 0.2 cfs @ 12.12 hrs, Volume= 833 cf  
 Outflow = 0.2 cfs @ 12.12 hrs, Volume= 833 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.2 cfs @ 12.12 hrs, Volume= 833 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.26' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.2 cfs @ 12.12 hrs HW=298.26' TW=288.31' (Dynamic Tailwater)

↑1=Culvert (Inlet Controls 0.2 cfs @ 1.38 fps)

**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 4.41" for 10-Year event  
 Inflow = 0.6 cfs @ 12.12 hrs, Volume= 2,074 cf  
 Outflow = 0.6 cfs @ 12.12 hrs, Volume= 2,074 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.6 cfs @ 12.12 hrs, Volume= 2,074 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.64' @ 12.12 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.6 cfs @ 12.12 hrs HW=288.64' TW=288.31' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 0.6 cfs @ 2.52 fps)

**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth > 2.18" for 10-Year event  
 Inflow = 6.3 cfs @ 12.14 hrs, Volume= 20,959 cf  
 Outflow = 6.3 cfs @ 12.14 hrs, Volume= 20,958 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.3 cfs @ 12.14 hrs, Volume= 20,958 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2



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Peak Elev= 288.80' @ 12.14 hrs Surf.Area= 1 sf Storage= 2 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

Plug-Flow detention time= 0.0 min calculated for 20,958 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 866.0 - 866.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=6.3 cfs @ 12.14 hrs HW=288.80' TW=288.35' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 6.3 cfs @ 2.55 fps)**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth > 2.34" for 10-Year event  
 Inflow = 3.1 cfs @ 12.15 hrs, Volume= 10,638 cf  
 Outflow = 3.1 cfs @ 12.15 hrs, Volume= 10,637 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.1 cfs @ 12.15 hrs, Volume= 10,637 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.39' @ 12.15 hrs Surf.Area= 1 sf Storage= 1 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

Plug-Flow detention time= 0.0 min calculated for 10,629 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 860.0 - 859.9 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	

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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=3.1 cfs @ 12.15 hrs HW=288.39' TW=286.37' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.1 cfs @ 3.44 fps)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth > 2.09" for 10-Year event  
Inflow = 3.0 cfs @ 12.18 hrs, Volume= 11,668 cf  
Outflow = 3.0 cfs @ 12.18 hrs, Volume= 11,668 cf, Atten= 0%, Lag= 0.0 min  
Primary = 3.0 cfs @ 12.18 hrs, Volume= 11,668 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 299.21' @ 12.24 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.9 cfs @ 12.18 hrs HW=299.04' TW=299.03' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.9 cfs @ 0.38 fps)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 3.25" for 10-Year event  
Inflow = 1.0 cfs @ 12.12 hrs, Volume= 3,342 cf  
Outflow = 1.0 cfs @ 12.12 hrs, Volume= 3,342 cf, Atten= 0%, Lag= 0.0 min  
Primary = 1.0 cfs @ 12.12 hrs, Volume= 3,342 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 299.14' @ 12.25 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=298.58' TW=298.67' (Dynamic Tailwater)↑**1=Culvert** ( Controls 0.0 cfs)

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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth > 1.94" for 10-Year event  
 Inflow = 2.3 cfs @ 12.18 hrs, Volume= 8,887 cf  
 Outflow = 2.3 cfs @ 12.18 hrs, Volume= 8,887 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.3 cfs @ 12.18 hrs, Volume= 8,887 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 299.21' @ 12.23 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=2.3 cfs @ 12.18 hrs HW=299.09' TW=298.97' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.3 cfs @ 1.30 fps)**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 2.32" for 10-Year event  
 Inflow = 7.0 cfs @ 12.14 hrs, Volume= 23,866 cf  
 Outflow = 7.0 cfs @ 12.14 hrs, Volume= 23,866 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 7.0 cfs @ 12.14 hrs, Volume= 23,866 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.35' @ 12.14 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=7.0 cfs @ 12.14 hrs HW=288.34' TW=286.31' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 7.0 cfs @ 3.12 fps)**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 2.27" for 10-Year event  
 Inflow = 3.8 cfs @ 12.16 hrs, Volume= 15,011 cf  
 Outflow = 3.8 cfs @ 12.16 hrs, Volume= 15,011 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.8 cfs @ 12.16 hrs, Volume= 15,011 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 299.15' @ 12.23 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=3.8 cfs @ 12.16 hrs HW=298.89' TW=298.84' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.8 cfs @ 0.87 fps)**Summary for Pond IC-1:**

Inflow Area = 177,892 sf, 14.37% Impervious, Inflow Depth > 2.33" for 10-Year event  
Inflow = 10.1 cfs @ 12.14 hrs, Volume= 34,503 cf  
Outflow = 8.2 cfs @ 12.19 hrs, Volume= 29,975 cf, Atten= 19%, Lag= 2.9 min  
Discarded = 0.1 cfs @ 10.72 hrs, Volume= 7,270 cf  
Primary = 8.0 cfs @ 12.19 hrs, Volume= 22,704 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 286.50' @ 12.19 hrs Surf.Area= 2,271 sf Storage= 5,991 cf

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

Center-of-Mass det. time= 26.2 min ( 881.1 - 854.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' S= 0.0157 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 10.72 hrs HW=283.00' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=8.0 cfs @ 12.19 hrs HW=286.49' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 8.0 cfs of 130.8 cfs potential flow)↑ **3=Culvert** (Passes 8.0 cfs of 11.9 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 8.0 cfs @ 4.80 fps)↑ **5=Sharp-Crested Vee/Trap Weir** ( Controls 0.0 cfs)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 2.14" for 10-Year event  
 Inflow = 6.0 cfs @ 12.17 hrs, Volume= 23,897 cf  
 Outflow = 5.0 cfs @ 12.24 hrs, Volume= 21,924 cf, Atten= 18%, Lag= 4.2 min  
 Discarded = 0.1 cfs @ 10.36 hrs, Volume= 4,567 cf  
 Primary = 4.9 cfs @ 12.24 hrs, Volume= 17,357 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 299.12' @ 12.24 hrs Surf.Area= 1,497 sf Storage= 3,055 cf

Plug-Flow detention time= 60.9 min calculated for 21,924 cf (92% of inflow)

Center-of-Mass det. time= 17.8 min ( 885.1 - 867.3 )

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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

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**Discarded OutFlow** Max=0.1 cfs @ 10.36 hrs HW=296.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=4.9 cfs @ 12.24 hrs HW=299.12' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 4.9 cfs of 158.3 cfs potential flow)↑ **3=Culvert** (Passes 4.9 cfs of 7.1 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 4.9 cfs @ 5.09 fps)↑ **5=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth > 3.15" for 10-Year event  
 Inflow = 0.3 cfs @ 12.12 hrs, Volume= 979 cf  
 Outflow = 0.3 cfs @ 12.12 hrs, Volume= 943 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 9.46 hrs, Volume= 364 cf  
 Primary = 0.3 cfs @ 12.12 hrs, Volume= 579 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.92' @ 12.12 hrs Surf.Area= 109 sf Storage= 40 cf

Plug-Flow detention time= 31.2 min calculated for 943 cf (96% of inflow)

Center-of-Mass det. time= 9.5 min ( 835.2 - 825.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 9.46 hrs HW=300.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.3 cfs @ 12.12 hrs HW=300.92' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.31 fps)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth > 2.18" for 10-Year event  
 Inflow = 0.3 cfs @ 12.12 hrs, Volume= 818 cf  
 Outflow = 0.3 cfs @ 12.12 hrs, Volume= 803 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 9.58 hrs, Volume= 123 cf  
 Primary = 0.3 cfs @ 12.12 hrs, Volume= 681 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 303.43' @ 12.12 hrs Surf.Area= 40 sf Storage= 15 cf

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

Center-of-Mass det. time= 4.3 min ( 869.1 - 864.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 9.58 hrs HW=302.51' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.3 cfs @ 12.12 hrs HW=303.43' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.42 fps)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 1.62" for 10-Year event  
 Inflow = 10.0 cfs @ 12.17 hrs, Volume= 30,413 cf  
 Primary = 10.0 cfs @ 12.17 hrs, Volume= 30,413 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs



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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 10-Year Rainfall=4.77"

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth > 2.15" for 10-Year event  
Inflow = 2.4 cfs @ 12.13 hrs, Volume= 7,554 cf  
Primary = 2.4 cfs @ 12.13 hrs, Volume= 7,554 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth > 1.67" for 10-Year event  
Inflow = 7.3 cfs @ 12.21 hrs, Volume= 27,435 cf  
Primary = 7.3 cfs @ 12.21 hrs, Volume= 27,435 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 2.80" for 10-Year event  
Inflow = 0.8 cfs @ 12.16 hrs, Volume= 3,412 cf  
Primary = 0.8 cfs @ 12.16 hrs, Volume= 3,412 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 25-Year Rainfall=6.03"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Runoff Depth>3.40" Flow Length=549' Tc=7.5 min CN=76 Runoff=4.5 cfs 15,439 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Runoff Depth>3.20" Flow Length=510' Tc=6.7 min CN=74 Runoff=9.2 cfs 30,837 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Runoff Depth>5.67" Tc=5.0 min CN=97 Runoff=0.7 cfs 2,663 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Runoff Depth>5.79" Tc=5.0 min CN=98 Runoff=0.3 cfs 1,065 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Runoff Depth>2.92" Flow Length=337' Tc=6.4 min CN=71 Runoff=3.4 cfs 11,238 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Runoff Depth>5.79" Tc=5.0 min CN=98 Runoff=0.1 cfs 300 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Runoff Depth>4.33" Flow Length=68' Tc=5.0 min CN=85 Runoff=0.4 cfs 1,344 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Runoff Depth>3.20" Flow Length=140' Tc=6.4 min UI Adjusted CN=74 Runoff=3.1 cfs 10,262 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Runoff Depth>3.10" Flow Length=564' Tc=10.4 min CN=73 Runoff=4.5 cfs 17,292 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Runoff Depth>2.91" Flow Length=378' Tc=10.1 min CN=71 Runoff=3.5 cfs 13,364 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Runoff Depth>2.91" Flow Length=287' Tc=10.8 min CN=71 Runoff=3.9 cfs 15,156 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Runoff Depth>4.43" Flow Length=246' Tc=5.0 min CN=86 Runoff=1.4 cfs 4,560 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Runoff Depth>3.21" Flow Length=64' Tc=5.0 min CN=74 Runoff=0.4 cfs 1,203 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Runoff Depth>4.42" Flow Length=75' Tc=12.7 min CN=86 Runoff=0.9 cfs 3,727 cf
<b>Pond CB1:</b>	Peak Elev=298.30' Inflow=0.3 cfs 1,065 cf 12.0" Round Culvert n=0.013 L=220.0' S=0.0450 '/' Outflow=0.3 cfs 1,065 cf
<b>Pond CB2:</b>	Peak Elev=288.85' Inflow=0.7 cfs 2,663 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=0.7 cfs 2,663 cf

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<b>Pond DCB3:</b>	Peak Elev=289.32' Storage=2 cf Inflow=9.2 cfs 30,837 cf 24.0" Round Culvert n=0.013 L=12.0' S=0.0200 ' Outflow=9.2 cfs 30,837 cf
<b>Pond DCB4:</b>	Peak Elev=288.79' Storage=2 cf Inflow=4.5 cfs 15,439 cf 15.0" Round Culvert n=0.013 L=10.0' S=0.0100 ' Outflow=4.5 cfs 15,439 cf
<b>Pond DCB5:</b>	Peak Elev=300.30' Inflow=4.5 cfs 17,292 cf 21.0" Round Culvert n=0.013 L=47.0' S=0.0100 ' Outflow=4.5 cfs 17,292 cf
<b>Pond DCB6:</b>	Peak Elev=300.14' Inflow=1.4 cfs 4,560 cf 21.0" Round Culvert n=0.013 L=6.0' S=0.0100 ' Outflow=1.4 cfs 4,560 cf
<b>Pond DCB7:</b>	Peak Elev=300.30' Inflow=3.5 cfs 13,364 cf 18.0" Round Culvert n=0.013 L=6.0' S=0.0100 ' Outflow=3.5 cfs 13,364 cf
<b>Pond DMH1:</b>	Peak Elev=288.73' Inflow=10.2 cfs 34,565 cf 24.0" Round Culvert n=0.013 L=60.0' S=0.0100 ' Outflow=10.2 cfs 34,565 cf
<b>Pond DMH2:</b>	Peak Elev=300.14' Inflow=5.5 cfs 21,852 cf 30.0" Round Culvert n=0.013 L=5.0' S=0.0100 ' Outflow=5.5 cfs 21,852 cf
<b>Pond IC-1:</b>	Peak Elev=287.27' Storage=7,020 cf Inflow=14.6 cfs 50,003 cf Discarded=0.1 cfs 7,831 cf Primary=12.6 cfs 37,638 cf Outflow=12.7 cfs 45,469 cf
<b>Pond IC-2:</b>	Peak Elev=300.08' Storage=3,920 cf Inflow=8.9 cfs 35,217 cf Discarded=0.1 cfs 4,932 cf Primary=7.7 cfs 28,308 cf Outflow=7.8 cfs 33,240 cf
<b>Pond SD-1:</b>	Peak Elev=300.92' Storage=40 cf Inflow=0.4 cfs 1,344 cf Discarded=0.0 cfs 391 cf Primary=0.4 cfs 913 cf Outflow=0.4 cfs 1,305 cf
<b>Pond SD-2:</b>	Peak Elev=303.44' Storage=15 cf Inflow=0.4 cfs 1,203 cf Discarded=0.0 cfs 133 cf Primary=0.4 cfs 1,056 cf Outflow=0.4 cfs 1,189 cf
<b>Link AP1:</b>	Inflow=15.5 cfs 49,176 cf Primary=15.5 cfs 49,176 cf
<b>Link AP2:</b>	Inflow=3.5 cfs 11,176 cf Primary=3.5 cfs 11,176 cf
<b>Link AP3:</b>	Inflow=11.3 cfs 43,464 cf Primary=11.3 cfs 43,464 cf
<b>Link AP4:</b>	Inflow=1.1 cfs 4,783 cf Primary=1.1 cfs 4,783 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 128,452 cf Average Runoff Depth = 3.22"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**

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**Summary for Subcatchment SC1.1:**

Runoff = 4.5 cfs @ 12.15 hrs, Volume= 15,439 cf, Depth&gt; 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 9.2 cfs @ 12.14 hrs, Volume= 30,837 cf, Depth&gt; 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 0.7 cfs @ 12.12 hrs, Volume= 2,663 cf, Depth&gt; 5.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.3 cfs @ 12.12 hrs, Volume= 1,065 cf, Depth&gt; 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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

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**Summary for Subcatchment SC1.5:**

Runoff = 3.4 cfs @ 12.14 hrs, Volume= 11,238 cf, Depth&gt; 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 300 cf, Depth&gt; 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.4 cfs @ 12.12 hrs, Volume= 1,344 cf, Depth&gt; 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 3.1 cfs @ 12.14 hrs, Volume= 10,262 cf, Depth&gt; 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 4.5 cfs @ 12.18 hrs, Volume= 17,292 cf, Depth&gt; 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 3.5 cfs @ 12.18 hrs, Volume= 13,364 cf, Depth&gt; 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			



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**Summary for Subcatchment SC3.3:**

Runoff = 3.9 cfs @ 12.18 hrs, Volume= 15,156 cf, Depth&gt; 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 1.4 cfs @ 12.12 hrs, Volume= 4,560 cf, Depth&gt; 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			

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**Summary for Subcatchment SC4.1:**

Runoff = 0.4 cfs @ 12.12 hrs, Volume= 1,203 cf, Depth&gt; 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 0.9 cfs @ 12.20 hrs, Volume= 3,727 cf, Depth&gt; 4.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 25-Year Rainfall=6.03"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 5.79" for 25-Year event  
 Inflow = 0.3 cfs @ 12.12 hrs, Volume= 1,065 cf  
 Outflow = 0.3 cfs @ 12.12 hrs, Volume= 1,065 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.3 cfs @ 12.12 hrs, Volume= 1,065 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.30' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.3 cfs @ 12.12 hrs HW=298.30' TW=288.68' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.3 cfs @ 1.46 fps)**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 5.67" for 25-Year event  
 Inflow = 0.7 cfs @ 12.12 hrs, Volume= 2,663 cf  
 Outflow = 0.7 cfs @ 12.12 hrs, Volume= 2,663 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.7 cfs @ 12.12 hrs, Volume= 2,663 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.85' @ 12.13 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.7 cfs @ 12.12 hrs HW=288.82' TW=288.68' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.7 cfs @ 1.42 fps)**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth > 3.20" for 25-Year event  
 Inflow = 9.2 cfs @ 12.14 hrs, Volume= 30,837 cf  
 Outflow = 9.2 cfs @ 12.14 hrs, Volume= 30,837 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 9.2 cfs @ 12.14 hrs, Volume= 30,837 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 289.32' @ 12.14 hrs Surf.Area= 1 sf Storage= 2 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

Plug-Flow detention time= 0.0 min calculated for 30,811 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 851.7 - 851.7 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=9.2 cfs @ 12.14 hrs HW=289.32' TW=288.72' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 9.2 cfs @ 2.93 fps)**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth > 3.40" for 25-Year event  
 Inflow = 4.5 cfs @ 12.15 hrs, Volume= 15,439 cf  
 Outflow = 4.5 cfs @ 12.15 hrs, Volume= 15,439 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.5 cfs @ 12.15 hrs, Volume= 15,439 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.79' @ 12.15 hrs Surf.Area= 1 sf Storage= 2 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

Plug-Flow detention time= 0.0 min calculated for 15,439 cf (100% of inflow)

Center-of-Mass det. time= 0.0 min ( 846.2 - 846.2 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	

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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.4 cfs @ 12.15 hrs HW=288.78' TW=287.11' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 4.4 cfs @ 3.62 fps)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth > 3.10" for 25-Year event  
 Inflow = 4.5 cfs @ 12.18 hrs, Volume= 17,292 cf  
 Outflow = 4.5 cfs @ 12.18 hrs, Volume= 17,292 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.5 cfs @ 12.18 hrs, Volume= 17,292 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.30' @ 12.23 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=1.3 cfs @ 12.18 hrs HW=299.96' TW=299.94' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.3 cfs @ 0.54 fps)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 4.43" for 25-Year event  
 Inflow = 1.4 cfs @ 12.12 hrs, Volume= 4,560 cf  
 Outflow = 1.4 cfs @ 12.12 hrs, Volume= 4,560 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.4 cfs @ 12.12 hrs, Volume= 4,560 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.14' @ 12.24 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=299.07' TW=299.25' (Dynamic Tailwater)↑**1=Culvert** ( Controls 0.0 cfs)

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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth > 2.91" for 25-Year event  
 Inflow = 3.5 cfs @ 12.18 hrs, Volume= 13,364 cf  
 Outflow = 3.5 cfs @ 12.18 hrs, Volume= 13,364 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.5 cfs @ 12.18 hrs, Volume= 13,364 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.30' @ 12.22 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=3.5 cfs @ 12.18 hrs HW=300.10' TW=299.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.5 cfs @ 1.97 fps)**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 3.36" for 25-Year event  
 Inflow = 10.2 cfs @ 12.14 hrs, Volume= 34,565 cf  
 Outflow = 10.2 cfs @ 12.14 hrs, Volume= 34,565 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 10.2 cfs @ 12.14 hrs, Volume= 34,565 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.73' @ 12.14 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=10.1 cfs @ 12.14 hrs HW=288.72' TW=287.01' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 10.1 cfs @ 3.52 fps)**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 3.31" for 25-Year event  
 Inflow = 5.5 cfs @ 12.16 hrs, Volume= 21,852 cf  
 Outflow = 5.5 cfs @ 12.16 hrs, Volume= 21,852 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.5 cfs @ 12.16 hrs, Volume= 21,852 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 300.14' @ 12.22 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=5.5 cfs @ 12.16 hrs HW=299.69' TW=299.60' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.5 cfs @ 1.11 fps)**Summary for Pond IC-1:**

Inflow Area = 177,892 sf, 14.37% Impervious, Inflow Depth > 3.37" for 25-Year event  
Inflow = 14.6 cfs @ 12.14 hrs, Volume= 50,003 cf  
Outflow = 12.7 cfs @ 12.18 hrs, Volume= 45,469 cf, Atten= 13%, Lag= 2.4 min  
Discarded = 0.1 cfs @ 9.74 hrs, Volume= 7,831 cf  
Primary = 12.6 cfs @ 12.18 hrs, Volume= 37,638 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 287.27' @ 12.18 hrs Surf.Area= 2,271 sf Storage= 7,020 cf

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

Center-of-Mass det. time= 20.6 min ( 863.1 - 842.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' S= 0.0157 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 9.74 hrs HW=283.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=12.6 cfs @ 12.18 hrs HW=287.27' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 12.6 cfs of 323.8 cfs potential flow)↑ **3=Culvert** (Passes 12.6 cfs of 15.9 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 10.7 cfs @ 6.41 fps)↑ **5=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.9 cfs @ 1.71 fps)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 3.15" for 25-Year event  
 Inflow = 8.9 cfs @ 12.17 hrs, Volume= 35,217 cf  
 Outflow = 7.8 cfs @ 12.23 hrs, Volume= 33,240 cf, Atten= 13%, Lag= 3.6 min  
 Discarded = 0.1 cfs @ 9.32 hrs, Volume= 4,932 cf  
 Primary = 7.7 cfs @ 12.23 hrs, Volume= 28,308 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.08' @ 12.23 hrs Surf.Area= 1,497 sf Storage= 3,920 cf

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

Center-of-Mass det. time= 14.3 min ( 867.8 - 853.5 )



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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

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**Discarded OutFlow** Max=0.1 cfs @ 9.32 hrs HW=296.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=7.6 cfs @ 12.23 hrs HW=300.07' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 7.6 cfs of 430.5 cfs potential flow)↑ **3=Culvert** (Passes 7.6 cfs of 9.7 cfs potential flow)↑ **4=Orifice/Grate** (Orifice Controls 6.6 cfs @ 6.93 fps)↑ **5=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.0 cfs @ 1.37 fps)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth > 4.33" for 25-Year event  
 Inflow = 0.4 cfs @ 12.12 hrs, Volume= 1,344 cf  
 Outflow = 0.4 cfs @ 12.12 hrs, Volume= 1,305 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 8.24 hrs, Volume= 391 cf  
 Primary = 0.4 cfs @ 12.12 hrs, Volume= 913 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.92' @ 12.12 hrs Surf.Area= 109 sf Storage= 40 cf

Plug-Flow detention time= 24.4 min calculated for 1,304 cf (97% of inflow)

Center-of-Mass det. time= 7.0 min ( 821.1 - 814.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 8.24 hrs HW=300.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.4 cfs @ 12.12 hrs HW=300.92' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.4 cfs @ 0.35 fps)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth > 3.21" for 25-Year event  
 Inflow = 0.4 cfs @ 12.12 hrs, Volume= 1,203 cf  
 Outflow = 0.4 cfs @ 12.12 hrs, Volume= 1,189 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 8.40 hrs, Volume= 133 cf  
 Primary = 0.4 cfs @ 12.12 hrs, Volume= 1,056 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 303.44' @ 12.12 hrs Surf.Area= 40 sf Storage= 15 cf

Plug-Flow detention time= 10.5 min calculated for 1,189 cf (99% of inflow)

Center-of-Mass det. time= 3.5 min ( 854.0 - 850.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 8.40 hrs HW=302.51' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.4 cfs @ 12.12 hrs HW=303.44' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.4 cfs @ 0.48 fps)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 2.63" for 25-Year event  
 Inflow = 15.5 cfs @ 12.17 hrs, Volume= 49,176 cf  
 Primary = 15.5 cfs @ 12.17 hrs, Volume= 49,176 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth > 3.18" for 25-Year event  
Inflow = 3.5 cfs @ 12.13 hrs, Volume= 11,176 cf  
Primary = 3.5 cfs @ 12.13 hrs, Volume= 11,176 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth > 2.65" for 25-Year event  
Inflow = 11.3 cfs @ 12.22 hrs, Volume= 43,464 cf  
Primary = 11.3 cfs @ 12.22 hrs, Volume= 43,464 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 3.93" for 25-Year event  
Inflow = 1.1 cfs @ 12.15 hrs, Volume= 4,783 cf  
Primary = 1.1 cfs @ 12.15 hrs, Volume= 4,783 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 100-Year Rainfall=8.62"

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Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment SC1.1:</b>	Runoff Area=54,522 sf 14.68% Impervious Runoff Depth>5.71" Flow Length=549' Tc=7.5 min CN=76 Runoff=7.4 cfs 25,957 cf
<b>Subcatchment SC1.2:</b>	Runoff Area=115,523 sf 8.76% Impervious Runoff Depth>5.47" Flow Length=510' Tc=6.7 min CN=74 Runoff=15.5 cfs 52,689 cf
<b>Subcatchment SC1.3:</b>	Runoff Area=5,639 sf 92.81% Impervious Runoff Depth>8.25" Tc=5.0 min CN=97 Runoff=1.0 cfs 3,877 cf
<b>Subcatchment SC1.4:</b>	Runoff Area=2,208 sf 100.00% Impervious Runoff Depth>8.37" Tc=5.0 min CN=98 Runoff=0.4 cfs 1,540 cf
<b>Subcatchment SC1.5:</b>	Runoff Area=46,238 sf 0.95% Impervious Runoff Depth>5.11" Flow Length=337' Tc=6.4 min CN=71 Runoff=5.9 cfs 19,698 cf
<b>Subcatchment SC1.6:</b>	Runoff Area=622 sf 100.00% Impervious Runoff Depth>8.37" Tc=5.0 min CN=98 Runoff=0.1 cfs 434 cf
<b>Subcatchment SC2.1:</b>	Runoff Area=3,729 sf 47.63% Impervious Runoff Depth>6.80" Flow Length=68' Tc=5.0 min CN=85 Runoff=0.6 cfs 2,115 cf
<b>Subcatchment SC2.2:</b>	Runoff Area=38,441 sf 23.39% Impervious Runoff Depth>5.47" Flow Length=140' Tc=6.4 min UI Adjusted CN=74 Runoff=5.2 cfs 17,534 cf
<b>Subcatchment SC3.1:</b>	Runoff Area=66,880 sf 3.55% Impervious Runoff Depth>5.35" Flow Length=564' Tc=10.4 min CN=73 Runoff=7.6 cfs 29,796 cf
<b>Subcatchment SC3.2:</b>	Runoff Area=55,060 sf 1.60% Impervious Runoff Depth>5.11" Flow Length=378' Tc=10.1 min CN=71 Runoff=6.1 cfs 23,428 cf
<b>Subcatchment SC3.3:</b>	Runoff Area=62,459 sf 1.63% Impervious Runoff Depth>5.10" Flow Length=287' Tc=10.8 min CN=71 Runoff=6.8 cfs 26,570 cf
<b>Subcatchment SC3.4:</b>	Runoff Area=12,347 sf 50.11% Impervious Runoff Depth>6.93" Flow Length=246' Tc=5.0 min CN=86 Runoff=2.1 cfs 7,125 cf
<b>Subcatchment SC4.1:</b>	Runoff Area=4,504 sf 4.43% Impervious Runoff Depth>5.48" Flow Length=64' Tc=5.0 min CN=74 Runoff=0.6 cfs 2,055 cf
<b>Subcatchment SC4.2:</b>	Runoff Area=10,114 sf 57.88% Impervious Runoff Depth>6.91" Flow Length=75' Tc=12.7 min CN=86 Runoff=1.3 cfs 5,825 cf
<b>Pond CB1:</b>	Peak Elev=298.36' Inflow=0.4 cfs 1,540 cf 12.0" Round Culvert n=0.013 L=220.0' S=0.0450 '/' Outflow=0.4 cfs 1,540 cf
<b>Pond CB2:</b>	Peak Elev=290.16' Inflow=1.0 cfs 3,877 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0200 '/' Outflow=1.0 cfs 3,877 cf

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**Pond DCB3:** Peak Elev=291.63' Storage=159 cf Inflow=15.5 cfs 52,689 cf  
24.0" Round Culvert n=0.013 L=12.0' S=0.0200 '/' Outflow=15.1 cfs 52,689 cf

**Pond DCB4:** Peak Elev=290.64' Storage=71 cf Inflow=7.4 cfs 25,957 cf  
15.0" Round Culvert n=0.013 L=10.0' S=0.0100 '/' Outflow=7.0 cfs 25,957 cf

**Pond DCB5:** Peak Elev=302.48' Inflow=7.6 cfs 29,796 cf  
21.0" Round Culvert n=0.013 L=47.0' S=0.0100 '/' Outflow=7.6 cfs 29,796 cf

**Pond DCB6:** Peak Elev=301.98' Inflow=2.1 cfs 7,125 cf  
21.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=2.1 cfs 7,125 cf

**Pond DCB7:** Peak Elev=302.51' Inflow=6.1 cfs 23,428 cf  
18.0" Round Culvert n=0.013 L=6.0' S=0.0100 '/' Outflow=6.1 cfs 23,428 cf

**Pond DMH1:** Peak Elev=290.31' Inflow=16.3 cfs 58,106 cf  
24.0" Round Culvert n=0.013 L=60.0' S=0.0100 '/' Outflow=16.3 cfs 58,106 cf

**Pond DMH2:** Peak Elev=302.00' Inflow=9.2 cfs 36,922 cf  
30.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=9.2 cfs 36,922 cf

**Pond IC-1:** Peak Elev=288.60' Storage=8,338 cf Inflow=23.2 cfs 84,063 cf  
Discarded=0.1 cfs 8,667 cf Primary=21.0 cfs 70,851 cf Outflow=21.2 cfs 79,518 cf

**Pond IC-2:** Peak Elev=301.82' Storage=5,132 cf Inflow=15.2 cfs 60,350 cf  
Discarded=0.1 cfs 5,490 cf Primary=13.1 cfs 52,878 cf Outflow=13.2 cfs 58,368 cf

**Pond SD-1:** Peak Elev=300.93' Storage=40 cf Inflow=0.6 cfs 2,115 cf  
Discarded=0.0 cfs 431 cf Primary=0.6 cfs 1,644 cf Outflow=0.6 cfs 2,075 cf

**Pond SD-2:** Peak Elev=303.46' Storage=15 cf Inflow=0.6 cfs 2,055 cf  
Discarded=0.0 cfs 147 cf Primary=0.6 cfs 1,894 cf Outflow=0.6 cfs 2,041 cf

**Link AP1:** Inflow=26.1 cfs 90,983 cf  
Primary=26.1 cfs 90,983 cf

**Link AP2:** Inflow=5.8 cfs 19,178 cf  
Primary=5.8 cfs 19,178 cf

**Link AP3:** Inflow=19.6 cfs 79,448 cf  
Primary=19.6 cfs 79,448 cf

**Link AP4:** Inflow=1.8 cfs 7,719 cf  
Primary=1.8 cfs 7,719 cf

**Total Runoff Area = 478,286 sf Runoff Volume = 218,645 cf Average Runoff Depth = 5.49"**  
**88.73% Pervious = 424,371 sf 11.27% Impervious = 53,915 sf**

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**Summary for Subcatchment SC1.1:**

Runoff = 7.4 cfs @ 12.15 hrs, Volume= 25,957 cf, Depth&gt; 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
24,785	74	>75% Grass cover, Good, HSG C
21,721	70	Woods, Good, HSG C
14	89	Gravel roads, HSG C
6,226	98	Paved parking, HSG C
1,776	98	Roofs, HSG C
54,522	76	Weighted Average
46,520		85.32% Pervious Area
8,002		14.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
0.2	35	0.0200	2.87		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
0.6	50	0.0345	1.30		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	180	0.1550	1.97		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
4.3	234	0.0170	0.91		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
7.5	549	Total			

**Summary for Subcatchment SC1.2:**

Runoff = 15.5 cfs @ 12.14 hrs, Volume= 52,689 cf, Depth&gt; 5.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
46,703	74	>75% Grass cover, Good, HSG C
57,729	70	Woods, Good, HSG C
967	89	Gravel roads, HSG C
313	98	Unconnected pavement, HSG C
7,362	98	Paved parking, HSG C
2,449	98	Roofs, HSG C
115,523	74	Weighted Average
105,398		91.24% Pervious Area
10,124		8.76% Impervious Area
313		3.09% Unconnected

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
1.3	167	0.0988	2.20		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	117	0.1200	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.0	176	0.0400	3.00		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
6.7	510	Total			

**Summary for Subcatchment SC1.3:**

Runoff = 1.0 cfs @ 12.12 hrs, Volume= 3,877 cf, Depth&gt; 8.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
162	74	>75% Grass cover, Good, HSG C
243	89	Gravel roads, HSG C
5,233	98	Paved parking, HSG C
5,639	97	Weighted Average
405		7.19% Pervious Area
5,233		92.81% Impervious Area

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

**Summary for Subcatchment SC1.4:**

Runoff = 0.4 cfs @ 12.12 hrs, Volume= 1,540 cf, Depth&gt; 8.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
2,208	98	Paved parking, HSG C
2,208		100.00% Impervious Area

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



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**Summary for Subcatchment SC1.5:**

Runoff = 5.9 cfs @ 12.14 hrs, Volume= 19,698 cf, Depth&gt; 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
37,139	70	Woods, Good, HSG C
441	98	Unconnected pavement, HSG C
8,658	74	>75% Grass cover, Good, HSG C
46,238	71	Weighted Average
45,797		99.05% Pervious Area
441		0.95% Impervious Area
441		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.26		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
3.1	287	0.0941	1.53		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	337	Total			

**Summary for Subcatchment SC1.6:**

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 434 cf, Depth&gt; 8.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
622	98	Paved parking, HSG C
622		100.00% Impervious Area

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

**Summary for Subcatchment SC2.1:**

Runoff = 0.6 cfs @ 12.12 hrs, Volume= 2,115 cf, Depth&gt; 6.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

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Area (sf)	CN	Description
1,953	74	>75% Grass cover, Good, HSG C
1,776	98	Roofs, HSG C
3,729	85	Weighted Average
1,953		52.37% Pervious Area
1,776		47.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	18	0.0300	1.21		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	68	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC2.2:**

Runoff = 5.2 cfs @ 12.13 hrs, Volume= 17,534 cf, Depth&gt; 5.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Adj	Description
7,180	74		>75% Grass cover, Good, HSG C
22,269	70		Woods, Good, HSG C
8,992	98		Unconnected pavement, HSG C
38,441	77	74	Weighted Average, UI Adjusted
29,449			76.61% Pervious Area
8,992			23.39% Impervious Area
8,992			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	29	0.1700	2.89		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.5	61	0.1800	2.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
6.4	140	Total			

**Summary for Subcatchment SC3.1:**

Runoff = 7.6 cfs @ 12.18 hrs, Volume= 29,796 cf, Depth&gt; 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

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Area (sf)	CN	Description
32,168	74	>75% Grass cover, Good, HSG C
31,971	70	Woods, Good, HSG C
364	89	Gravel roads, HSG C
55	98	Paved parking, HSG C
2,321	98	Roofs, HSG C
66,880	73	Weighted Average
64,504		96.45% Pervious Area
2,376		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
2.1	247	0.0800	1.98		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.5	133	0.0830	1.44		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.1	134	0.0820	2.00		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.4	564	Total			

**Summary for Subcatchment SC3.2:**

Runoff = 6.1 cfs @ 12.17 hrs, Volume= 23,428 cf, Depth&gt; 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
12,832	74	>75% Grass cover, Good, HSG C
880	98	Roofs, HSG C
41,349	70	Woods, Good, HSG C
55,060	71	Weighted Average
54,180		98.40% Pervious Area
880		1.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	204	0.1600	2.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
1.3	124	0.0530	1.61		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
10.1	378	Total			

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**Summary for Subcatchment SC3.3:**

Runoff = 6.8 cfs @ 12.18 hrs, Volume= 26,570 cf, Depth&gt; 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
12,393	74	>75% Grass cover, Good, HSG C
49,047	70	Woods, Good, HSG C
1,019	98	Unconnected pavement, HSG C
62,459	71	Weighted Average
61,440		98.37% Pervious Area
1,019		1.63% Impervious Area
1,019		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.0500	0.10		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
2.2	237	0.1350	1.84		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
10.8	287	Total			

**Summary for Subcatchment SC3.4:**

Runoff = 2.1 cfs @ 12.12 hrs, Volume= 7,125 cf, Depth&gt; 6.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
5,554	74	>75% Grass cover, Good, HSG C
529	70	Woods, Good, HSG C
76	89	Gravel roads, HSG C
6,187	98	Paved parking, HSG C
12,347	86	Weighted Average
6,159		49.89% Pervious Area
6,187		50.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	113	0.0200	1.40		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.16"
2.4	38	0.1000	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.9	95	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.6	246	Total, Increased to minimum Tc = 5.0 min			

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**Summary for Subcatchment SC4.1:**

Runoff = 0.6 cfs @ 12.12 hrs, Volume= 2,055 cf, Depth&gt; 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
1,020	70	Woods, Good, HSG C
200	98	Unconnected pavement, HSG C
3,285	74	>75% Grass cover, Good, HSG C
4,504	74	Weighted Average
4,305		95.57% Pervious Area
200		4.43% Impervious Area
200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.16"
0.2	14	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	64	Total, Increased to minimum Tc = 5.0 min			

**Summary for Subcatchment SC4.2:**

Runoff = 1.3 cfs @ 12.20 hrs, Volume= 5,825 cf, Depth&gt; 6.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs  
NRCC 24-hr D 100-Year Rainfall=8.62"

Area (sf)	CN	Description
3,927	70	Woods, Good, HSG C
5,854	98	Unconnected pavement, HSG C
333	74	>75% Grass cover, Good, HSG C
10,114	86	Weighted Average
4,260		42.12% Pervious Area
5,854		57.88% Impervious Area
5,854		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.16"
0.3	25	0.0800	1.41		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.7	75	Total			

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**Summary for Pond CB1:**

Inflow Area = 2,208 sf, 100.00% Impervious, Inflow Depth > 8.37" for 100-Year event  
 Inflow = 0.4 cfs @ 12.12 hrs, Volume= 1,540 cf  
 Outflow = 0.4 cfs @ 12.12 hrs, Volume= 1,540 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.4 cfs @ 12.12 hrs, Volume= 1,540 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 298.36' @ 12.12 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	<b>12.0" Round Culvert</b> L= 220.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 298.00' / 288.10' S= 0.0450 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.4 cfs @ 12.12 hrs HW=298.36' TW=289.68' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.4 cfs @ 1.61 fps)**Summary for Pond CB2:**

Inflow Area = 5,639 sf, 92.81% Impervious, Inflow Depth > 8.25" for 100-Year event  
 Inflow = 1.0 cfs @ 12.12 hrs, Volume= 3,877 cf  
 Outflow = 1.0 cfs @ 12.12 hrs, Volume= 3,877 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.0 cfs @ 12.12 hrs, Volume= 3,877 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 290.16' @ 12.14 hrs

Flood Elev= 292.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	288.20'	<b>12.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 288.20' / 288.10' S= 0.0200 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.6 cfs @ 12.12 hrs HW=289.98' TW=289.68' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.6 cfs @ 2.06 fps)**Summary for Pond DCB3:**

Inflow Area = 115,523 sf, 8.76% Impervious, Inflow Depth > 5.47" for 100-Year event  
 Inflow = 15.5 cfs @ 12.14 hrs, Volume= 52,689 cf  
 Outflow = 15.1 cfs @ 12.16 hrs, Volume= 52,689 cf, Atten= 3%, Lag= 1.3 min  
 Primary = 15.1 cfs @ 12.16 hrs, Volume= 52,689 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 291.63' @ 12.15 hrs Surf.Area= 321 sf Storage= 159 cf

Flood Elev= 292.00' Surf.Area= 519 sf Storage= 310 cf

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

Center-of-Mass det. time= 0.0 min ( 832.0 - 832.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	310 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	89	87.5	33	36	615	
292.00	519	180.8	274	310	2,611	

Device	Routing	Invert	Outlet Devices
#1	Primary	287.34'	<b>24.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.34' / 287.10' S= 0.0200 ' ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=13.8 cfs @ 12.16 hrs HW=291.61' TW=290.28' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 13.8 cfs @ 4.39 fps)**Summary for Pond DCB4:**

Inflow Area = 54,522 sf, 14.68% Impervious, Inflow Depth > 5.71" for 100-Year event  
 Inflow = 7.4 cfs @ 12.15 hrs, Volume= 25,957 cf  
 Outflow = 7.0 cfs @ 12.13 hrs, Volume= 25,957 cf, Atten= 5%, Lag= 0.0 min  
 Primary = 7.0 cfs @ 12.13 hrs, Volume= 25,957 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 290.64' @ 12.18 hrs Surf.Area= 302 sf Storage= 71 cf

Flood Elev= 290.50' Surf.Area= 192 sf Storage= 37 cf

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

Center-of-Mass det. time= 0.0 min ( 827.1 - 827.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	287.00'	250 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
287.00	1	1.0	0	0	1	
288.00	1	1.0	1	1	2	
289.00	1	1.0	1	2	3	
290.00	1	1.0	1	3	4	
291.00	714	132.0	247	250	1,392	

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Device	Routing	Invert	Outlet Devices
#1	Primary	287.25'	<b>15.0" Round Culvert</b> L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.25' / 287.15' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=7.0 cfs @ 12.13 hrs HW=290.26' TW=288.01' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 7.0 cfs @ 5.69 fps)**Summary for Pond DCB5:**

Inflow Area = 66,880 sf, 3.55% Impervious, Inflow Depth > 5.35" for 100-Year event  
Inflow = 7.6 cfs @ 12.18 hrs, Volume= 29,796 cf  
Outflow = 7.6 cfs @ 12.18 hrs, Volume= 29,796 cf, Atten= 0%, Lag= 0.0 min  
Primary = 7.6 cfs @ 12.18 hrs, Volume= 29,796 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 302.48' @ 12.23 hrs

Flood Elev= 302.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.42'	<b>21.0" Round Culvert</b> L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.42' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=5.5 cfs @ 12.18 hrs HW=302.02' TW=301.66' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 5.5 cfs @ 2.28 fps)**Summary for Pond DCB6:**

Inflow Area = 12,347 sf, 50.11% Impervious, Inflow Depth > 6.93" for 100-Year event  
Inflow = 2.1 cfs @ 12.12 hrs, Volume= 7,125 cf  
Outflow = 2.1 cfs @ 12.12 hrs, Volume= 7,125 cf, Atten= 0%, Lag= 0.0 min  
Primary = 2.1 cfs @ 12.12 hrs, Volume= 7,125 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 301.98' @ 12.24 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>21.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 2.41 sf

**Primary OutFlow** Max=0.0 cfs @ 12.12 hrs HW=300.49' TW=300.69' (Dynamic Tailwater)↑**1=Culvert** ( Controls 0.0 cfs)



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**Summary for Pond DCB7:**

Inflow Area = 55,060 sf, 1.60% Impervious, Inflow Depth > 5.11" for 100-Year event  
 Inflow = 6.1 cfs @ 12.17 hrs, Volume= 23,428 cf  
 Outflow = 6.1 cfs @ 12.17 hrs, Volume= 23,428 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.1 cfs @ 12.17 hrs, Volume= 23,428 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 302.51' @ 12.21 hrs

Flood Elev= 302.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	297.01'	<b>18.0" Round Culvert</b> L= 6.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.01' / 296.95' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.1 cfs @ 12.17 hrs HW=302.20' TW=301.38' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 6.1 cfs @ 3.44 fps)**Summary for Pond DMH1:**

Inflow Area = 123,370 sf, 14.24% Impervious, Inflow Depth > 5.65" for 100-Year event  
 Inflow = 16.3 cfs @ 12.15 hrs, Volume= 58,106 cf  
 Outflow = 16.3 cfs @ 12.15 hrs, Volume= 58,106 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 16.3 cfs @ 12.15 hrs, Volume= 58,106 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 290.31' @ 12.17 hrs

Flood Elev= 292.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	287.00'	<b>24.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 287.00' / 286.40' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=16.3 cfs @ 12.15 hrs HW=290.21' TW=288.35' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 16.3 cfs @ 5.19 fps)**Summary for Pond DMH2:**

Inflow Area = 79,226 sf, 10.81% Impervious, Inflow Depth > 5.59" for 100-Year event  
 Inflow = 9.2 cfs @ 12.16 hrs, Volume= 36,922 cf  
 Outflow = 9.2 cfs @ 12.16 hrs, Volume= 36,922 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 9.2 cfs @ 12.16 hrs, Volume= 36,922 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

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Peak Elev= 302.00' @ 12.22 hrs

Flood Elev= 302.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	296.85'	<b>30.0" Round Culvert</b> L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.85' / 296.80' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=9.2 cfs @ 12.16 hrs HW=301.31' TW=301.07' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 9.2 cfs @ 1.87 fps)**Summary for Pond IC-1:**

Inflow Area =	177,892 sf, 14.37% Impervious, Inflow Depth > 5.67" for 100-Year event
Inflow =	23.2 cfs @ 12.15 hrs, Volume= 84,063 cf
Outflow =	21.2 cfs @ 12.19 hrs, Volume= 79,518 cf, Atten= 9%, Lag= 2.0 min
Discarded =	0.1 cfs @ 7.80 hrs, Volume= 8,667 cf
Primary =	21.0 cfs @ 12.19 hrs, Volume= 70,851 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 288.60' @ 12.19 hrs Surf.Area= 2,271 sf Storage= 8,338 cf

Plug-Flow detention time= 47.5 min calculated for 79,518 cf (95% of inflow)

Center-of-Mass det. time= 16.8 min ( 841.6 - 824.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	282.40'	3,658 cf	<b>IC-1 Stone bed (Irregular)</b> Listed below (Recalc) 14,147 cf Overall - 5,002 cf Embedded = 9,145 cf x 40.0% Voids
#2	283.40'	5,002 cf	<b>ADS_StormTech MC-4500 b +Cap</b> x 44 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 44 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
#3	283.00'	200 cf	<b>PES-1 Stone bed (Pyramidal)</b> Listed below (Recalc) 625 cf Overall - 126 cf Embedded = 499 cf x 40.0% Voids
#4	283.00'	126 cf	<b>24.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		8,985 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
282.40	2,021	188.0	0	0	2,021
283.00	2,021	188.0	1,213	1,213	2,134
284.00	2,021	188.0	2,021	3,234	2,322
285.00	2,021	188.0	2,021	5,255	2,510
286.00	2,021	188.0	2,021	7,276	2,698
287.00	2,021	188.0	2,021	9,297	2,886
288.00	2,021	188.0	2,021	11,318	3,074
289.00	2,021	188.0	2,021	13,339	3,262
289.40	2,021	188.0	808	14,147	3,337

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
283.00	250	0	0	250
284.00	250	250	250	313
285.00	250	250	500	376
285.50	250	125	625	408

Device	Routing	Invert	Outlet Devices
#1	Discarded	282.40'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	285.50'	<b>50.0' long x 2.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#3	Device 2	284.10'	<b>24.0" Round Culvert</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 284.10' / 283.00' S= 0.0157 ' S= 0.0157 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	284.10'	<b>20.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	287.00'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

**Discarded OutFlow** Max=0.1 cfs @ 7.80 hrs HW=283.00' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=21.0 cfs @ 12.19 hrs HW=288.58' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 21.0 cfs of 829.7 cfs potential flow)↑ **3=Culvert** (Inlet Controls 21.0 cfs @ 6.67 fps)↑ **4=Orifice/Grate** (Passes < 14.1 cfs potential flow)↑ **5=Sharp-Crested Vee/Trap Weir** (Passes < 26.0 cfs potential flow)**Summary for Pond IC-2:**

Inflow Area = 134,287 sf, 7.03% Impervious, Inflow Depth > 5.39" for 100-Year event  
 Inflow = 15.2 cfs @ 12.16 hrs, Volume= 60,350 cf  
 Outflow = 13.2 cfs @ 12.22 hrs, Volume= 58,368 cf, Atten= 13%, Lag= 3.4 min  
 Discarded = 0.1 cfs @ 7.36 hrs, Volume= 5,490 cf  
 Primary = 13.1 cfs @ 12.22 hrs, Volume= 52,878 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 301.82' @ 12.22 hrs Surf.Area= 1,497 sf Storage= 5,132 cf

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

Center-of-Mass det. time= 11.8 min ( 846.1 - 834.3 )

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Volume	Invert	Avail.Storage	Storage Description
#1	295.80'	2,234 cf	<b>IC-2 Stone bed (Irregular)</b> Listed below (Recalc) 8,729 cf Overall - 3,143 cf Embedded = 5,586 cf x 40.0% Voids
#2	296.80'	3,143 cf	<b>ADS_StormTech MC-4500 b +Cap @ 4.03' L</b> x 28 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 28 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
#3	296.00'	172 cf	<b>PES-2 Stone bed (Pyramidal)</b> Listed below (Recalc) 500 cf Overall - 71 cf Embedded = 429 cf x 40.0% Voids
#4	296.00'	71 cf	<b>18.0" Round Pipe Storage</b> Inside #3 L= 40.0'
		5,620 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.80	1,247	165.0	0	0	1,247
296.00	1,247	165.0	249	249	1,280
297.00	1,247	165.0	1,247	1,496	1,445
298.00	1,247	165.0	1,247	2,743	1,610
299.00	1,247	165.0	1,247	3,990	1,775
300.00	1,247	165.0	1,247	5,237	1,940
301.00	1,247	165.0	1,247	6,484	2,105
302.00	1,247	165.0	1,247	7,731	2,270
302.80	1,247	165.0	998	8,729	2,402

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
296.00	250	0	0	250
297.00	250	250	250	313
298.00	250	250	500	376

Device	Routing	Invert	Outlet Devices
#1	Discarded	295.80'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	298.00'	<b>50.0' long x 2.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Device 2	296.50'	<b>18.0" Round Culvert</b> L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.50' / 296.00' S= 0.0250 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#4	Device 3	296.50'	<b>23.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 3	299.90'	<b>4.0' long Sharp-Crested Vee/Trap Weir</b> Cv= 2.62 (C= 3.28)

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**Discarded OutFlow** Max=0.1 cfs @ 7.36 hrs HW=296.00' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=13.1 cfs @ 12.22 hrs HW=301.81' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Passes 13.1 cfs of 1,236.5 cfs potential flow)↑ **3=Culvert** (Inlet Controls 13.1 cfs @ 7.42 fps)↑ **4=Orifice/Grate** (Passes < 9.0 cfs potential flow)↑ **5=Sharp-Crested Vee/Trap Weir** (Passes < 34.7 cfs potential flow)**Summary for Pond SD-1:**

Inflow Area = 3,729 sf, 47.63% Impervious, Inflow Depth &gt; 6.80" for 100-Year event

Inflow = 0.6 cfs @ 12.12 hrs, Volume= 2,115 cf

Outflow = 0.6 cfs @ 12.12 hrs, Volume= 2,075 cf, Atten= 0%, Lag= 0.0 min

Discarded = 0.0 cfs @ 6.30 hrs, Volume= 431 cf

Primary = 0.6 cfs @ 12.12 hrs, Volume= 1,644 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 300.93' @ 12.12 hrs Surf.Area= 109 sf Storage= 40 cf

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

Center-of-Mass det. time= 6.3 min ( 804.4 - 798.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	300.00'	44 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 109 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
300.00	109	113.3	0	0	109
301.00	109	113.3	109	109	222

Device	Routing	Invert	Outlet Devices
#1	Discarded	300.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.90'	<b>55.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 6.30 hrs HW=300.01' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.6 cfs @ 12.12 hrs HW=300.93' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.40 fps)

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**Summary for Pond SD-2:**

Inflow Area = 4,504 sf, 4.43% Impervious, Inflow Depth > 5.48" for 100-Year event  
 Inflow = 0.6 cfs @ 12.12 hrs, Volume= 2,055 cf  
 Outflow = 0.6 cfs @ 12.12 hrs, Volume= 2,041 cf, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.0 cfs @ 6.50 hrs, Volume= 147 cf  
 Primary = 0.6 cfs @ 12.12 hrs, Volume= 1,894 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 303.46' @ 12.12 hrs Surf.Area= 40 sf Storage= 15 cf

Plug-Flow detention time= 7.0 min calculated for 2,041 cf (99% of inflow)

Center-of-Mass det. time= 2.7 min ( 833.4 - 830.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	302.50'	16 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 40 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
302.50	40	44.0	0	0	40
303.50	40	44.0	40	40	84

Device	Routing	Invert	Outlet Devices
#1	Discarded	302.50'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	303.40'	<b>20.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

**Discarded OutFlow** Max=0.0 cfs @ 6.50 hrs HW=302.51' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.0 cfs)**Primary OutFlow** Max=0.6 cfs @ 12.12 hrs HW=303.46' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.57 fps)**Summary for Link AP1:**

Inflow Area = 224,752 sf, 11.85% Impervious, Inflow Depth > 4.86" for 100-Year event  
 Inflow = 26.1 cfs @ 12.16 hrs, Volume= 90,983 cf  
 Primary = 26.1 cfs @ 12.16 hrs, Volume= 90,983 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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Five Paths, Tax Map 39, Parcel 15A, Wayland, MA

NRCC 24-hr D 100-Year Rainfall=8.62"

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**Summary for Link AP2:**

Inflow Area = 42,170 sf, 25.53% Impervious, Inflow Depth > 5.46" for 100-Year event  
Inflow = 5.8 cfs @ 12.13 hrs, Volume= 19,178 cf  
Primary = 5.8 cfs @ 12.13 hrs, Volume= 19,178 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP3:**

Inflow Area = 196,746 sf, 5.32% Impervious, Inflow Depth > 4.85" for 100-Year event  
Inflow = 19.6 cfs @ 12.20 hrs, Volume= 79,448 cf  
Primary = 19.6 cfs @ 12.20 hrs, Volume= 79,448 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

**Summary for Link AP4:**

Inflow Area = 14,618 sf, 41.41% Impervious, Inflow Depth > 6.34" for 100-Year event  
Inflow = 1.8 cfs @ 12.15 hrs, Volume= 7,719 cf  
Primary = 1.8 cfs @ 12.15 hrs, Volume= 7,719 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

# Stormwater Management Standard 3

## GROUNDWATER RECHARGE

Pre-Development Conditions

Five Paths  
Wayland, MA  
Project No. 171053

		<u>Area (sf)</u>	<u>Area (Ac)</u>
<b>Total Subcatchment Areas</b>		478,286	11.0
<b>Total Subcatchment Areas On-Site</b>		478,286	11.0
<b>Total Area of Hydrolic Soil Groups On-Site</b>		478,286	11.0
	C	478,286	11.0
<b>Surface Type Areas</b>			
>75% Grass cover, Good	C	63,276	1.5
Pavement	C	7,450	0.2
Roofs	C	3,874	0.1
Unconnected pavement	C	16,501	0.4
Woods, Good	C	387,185	8.9
TOTAL AREA		478,286	11.0
<b>Total Impervious Area</b>		27,825	0.6

### Infiltration Volume

Inches of Recharge per Storm Event	A	0.60
	B	0.35
	C	0.25
	D	0.10

Infiltration Volume =  $\sum \{[(\text{Total Subcatchment Area within HSG}) - (\text{Total Impervious Area within HSG})]$   
x (inches of Recharge Per Storm)}

Infiltration Volume

<b>9,385</b>	<b>CF</b>
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# Stormwater Management Standard 3

## GROUNDWATER RECHARGE

Post Development Conditions

Five Paths  
Wayland, MA  
Project No. 171053

		Area (sf)	Area (Ac)
<b>Total Subcatchment Areas</b>		478,286	11.0
<b>Total Subcatchment Areas On-Site</b>		478,286	11.0
<b>Total Area of Hydrolic Soil Groups On-Site</b>		478,286	11.0
	C	478,286	11.0
<b>Surface Type Areas</b>			
>75% Grass cover, Good	C	156,005	3.6
Gravel	C	1,665	0.0
Pavement	C	27,894	0.6
Roofs	C	9,202	0.2
Unconnected pavement	C	16,818	0.4
Woods, Good	C	266,702	6.1
<b>TOTAL AREA</b>		478,286	11.0
<b>Total Impervious Area</b>		53,914	1.2

### Infiltration Volume

Inches of Recharge per Storm Event	A	0.60
	B	0.35
	C	0.25
	D	0.10

Infiltration Volume =  $\sum \{[(\text{Total Subcatchment Area within HSG}) - (\text{Total Impervious Area within HSG})] \times (\text{inches of Recharge Per Storm})\}$

Natural Infiltration Volume 8,841 CF

Pre-Development Infiltration Volume 9,385 CF

### Required Infiltration Volume

<b>544</b>	<b>CF</b>
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### Provided Infiltration Volume

Infiltration Chambers (IC-1)	4,515	CF	Storage below outlet Elev. 285.50
Infiltration Chambers (IC-2)	1,966	CF	Storage below outlet Elev. 298.00

### Total Provided Infiltration Volume

<b>6,481</b>	<b>CF</b>
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# Stormwater Management Standard 3

## GROUNDWATER RECHARGE

### Infiltration Area Requirements

Five Paths  
Wayland, MA  
Project No. 171053

### Drawdown Time

(Per Massachusetts Stormwater regulations, infiltration areas must completely drain within 72 hours)

		IC-1	IC-2
Infiltration Area Storage Volume	cf	4,515	1,966
Design infiltration Rate	in/hr	2.41	2.41
Infiltration Bottom Area	sf	2021	1247

Drawdown Time = Infiltration Area Storage Volume / [Design Infiltration Rate x Infiltration Area Bottom Area]

<b>Drawdown Time (Hrs)</b>	<b>11.1</b>	<b>7.9</b>
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### Mounding Analysis

Per the Massachusetts Stormwater Handbook, mounding analysis is required when "... The vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm." The mounding analysis "... must show that the REQUIRED RECHARGE VOLUME is fully dewatered within 72 hours..."

		IC-1	IC-2
Hydraulic Conductivity	ft/day	16	16
		Lower Range Standard Value for "Medium Sand" material	
Specific Yield		0.28	0.28
		Standard Value for "Medium Sand" material	
Initial Saturated Thickness	ft	10	10
		Depth to bedrock	
Design Recharge Rate	ft/day	4.82	4.82
		infiltration rate	
Time	days	3	3
		Minimum 72 hr evaluation period	
Bottom Infiltrating Area	sf	2,021	1,247
Length of Infiltration Area	ft	55.8	79.9
Width of Infiltration Area	ft	36.2	15.6
Time when Infiltration Stops	days	0.46	0.33

Calculated Drawdown Time (see Above)

Maximum Water table rise at 72 hours<sup>1</sup>

<b>ft</b>	<b>0.77</b>	<b>0.40</b>
<b>in</b>	<b>9 1/4</b>	<b>4 3/4</b>

**- Resulting mound will not interfere with the full draining of the infiltration area in accordance with Mass Stormwater Standards -**

<sup>1</sup> - mounding analysis calculated using the MOUNDSOLV Wizaard, Groundwater Mounding Analysis For A Sloping Water-Table Aquifer, Zlotnik Et Al. (2017) Solution.

## Stormwater Management Standard 4

### WATER QUALITY RETENTION VOLUME

Five Paths  
Wayland, MA  
Project No. 171053

Parameter	Unit	Quantity	Remarks
Watershed area	sf	478,286	
Predevelopment impervious area	sf	27,825	
Total impervious area added	sf	26,089	
Total impervious area	sf	53,914	
Total impervious area required for retention	sf	26,089	

Runoff depth over impervious area	IN	0.5
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#### Required Water Quality Volume

CF	1,087
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#### Provided Water Quality Volume

Infiltration Chambers (IC-1)	4,515	CF	Storage below outlet Elev. 285.50
Infiltration Chambers (IC-2)	1,966	CF	Storage below outlet Elev. 298.00

<b>DESIGN VOLUME PROVIDED</b>	<b>CF</b>	<b>6,481</b>
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## Stormwater Management Standard 4

### TSS REMOVAL

Five Paths  
Wayland, MA  
Project No. 171053

Process Train No.	Impervious Area (SF)	BMP Type	TSS Removal Rate	TSS Remaining at Discharge	TSS Removed at Discharge
SC1.1, SC1.2, SC1.3 & SC1.4	25,567	CB	25%	75%	25%
		IC	80%	15%	<b>85%</b>
SC1.6	622	Untreated	0%	100%	<b>0%</b>
SC2.1	1,776	Clean roof	100%	0%	<b>100%</b>
SC3.1, SC3.2 & SC3.4	9,444	CB	25%	75%	25%
		IC	80%	15%	<b>85%</b>

Total Development Weighted Average

**84%**

#### **ABBREVIATIONS:**

TSS=total suspended solids; SF=square feet; SC=subcatchment; GC=grassed channel; BMP=best management practices; CB=deep sump hooded catch basin; FB = Sediment Forebay; INF=infiltration basin; WB=wet basin; SP=Silt Prison Catch Basin; DW=drywell