STORMWATER MANAGEMENT REPORT

BROOKVIEW HEIGHTS
MAP 908 BLOCK 78E LOTS 67E, 66D, 66B & 55C
OFF WASHINGTON STREET
METHUEN, MASSACHUSETTS

GPI

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Salem, NH 03079
(603) 893-0720

Prepared For:

DHB Homes, LLC
25 Buttrick Road, Unit A1
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March 6, 2024
Revised: September 26, 2024

(GPI Project No.: NEX-2200136)

Brookview Heights
DHB Homes, LLC
Stormwater Management Report

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SECTION 1 EXECUTIVE SUMMARY

This report contains a stormwater management analysis for the proposed 28-lot residential subdivision in Methuen, Massachusetts. The analysis includes both pre- and post-development calculations of stormwater runoff rates at specific locations on the project site. This analysis has been prepared in accordance with both City of Methuen requirements and Stormwater Management Standards of the Massachusetts Department of Environmental Protection (MassDEP) Massachusetts Stormwater Policy.

The project site consists of four parcels located in the Single Family Residence District (RA) identified as Map 908 Block 78E Lots 67E, 66D, 66B & 53C which total approximately 38 acres. The site is currently undisturbed woodland. The site is bordered by the Washington Street ROW to the west, Hawkes Brook to the north, and Old Ferry Road to the south.

The project proponent is proposing to subdivide the property in accordance with the Methuen Subdivision Rules and Regulations. Individual lots in general range from approximately 37,800 to just over 166,000 square feet in size. A proposed conservation easement totaling 14.86 acres, or 39% of the parcel, will be created to protect the NHESP Priority Habitat. All proposed disturbance will be located outside the 200-foot Riverfront Area associated with Hawkes Brook. No direct wetland impacts are proposed and minimal encroachment into the 100-foot wetland buffer zone will occur.

Access to the new homes will be provided by extending Washington Street approximately 1300 feet to the north, ending in a hammerhead dead end. A second road, Edgewater Drive will be built off Washington Street. The roadways are designed in accordance with City of Methuen Subdivision Regulations although a number of waivers are being requested in order to create a more environmentally sensitive project.

Stormwater management is provided by a closed drainage system consisting of deep sump, hooded catch basins, First Defense stormwater treatment units, and aboveground infiltration basins.

Based on site topography and discharge points, two analysis points are identified for the purposes of this analysis. Design Point #1 is Hawkes Brook. Design Point #2 is the wetlands on the western side of Washington Street.

It should be noted that while the Definitive Subdivision Plans are for the construction of the roadways and utilities only, the stormwater drainage analysis assumes full build-out of each house lot for pipe sizing and pre- vs. post-development peak flow comparisons. Certain assumptions were made regarding house, driveway and yard size and location, which can be seen on the Site Development Overview Plan and the Post-Development Drainage Plan. As noted on the Definitive

Subdivision Plan drawings, the runoff from the roof of each house shall be infiltrated using either dry-wells, leaching trenches or stone-drip strips along the foundation. For the analysis however we did not account for any storage/infiltration of any portion of the roof runoff which yields a more conservative analysis.

The tables below summarizes the comparative pre- and post-development peak rates and volumes of stormwater runoff at the design points.

TABLE 1: PEAK RATE ANALYSIS SUMMARY

Design Storm	Pre-Development (cfs)	Post-Development (cfs)	Change (cfs)
DESIGN POINT #1 – Hawkes Brook			
2-year	8.0	8.0	0.0
10-year	27.2	25.8	-2.4
25-year	49.1	45.3	-3.8
100-year	104.5	104.4	-0.1
DESIGN POINT #2 – Wetlands west side of Washington St.			
2-year	0.9	0.4	-0.5
10-year	4.4	2.2	-2.2
25-year	8.4	4.4	-4.0
100-year	18.1	10.2	-7.9

(All values shown are peak rates in CFS)

TABLE 2: VOLUME ANALYSIS SUMMARY

Design Storm	Pre-Development (acre-ft)	Post-Development (acre-ft)	Change (acre-ft)
DESIGN POINT #1 – Hawkes Brook			
2-year	1.70	1.56	-0.14
10-year	4.45	4.12	-0.33
25-year	7.40	7.02	-0.38
100-year	14.95	14.77	-0.18
DESIGN POINT #2 – Wetlands west side of Washington St.			
2-year	0.17	0.07	-0.10
10-year	0.48	0.26	-0.22
25-year	0.82	0.47	-0.35
100-year	1.70	1.02	-0.68

(All values shown are volumes in acre-ft)

In conclusion, by incorporating a new on-site stormwater management system that includes provisions for stormwater treatment and recharge, there will be a decrease in the peak rates and volumes of stormwater runoff leaving the property at the design point during all storms analyzed.

Implementing the maintenance procedures outlined in the attached Inspection and Maintenance Manual (I&M) will ensure the long-term performance of the system.

SECTION 2 EXISTING CONDITIONS

The project site consists of four parcels located in the Single Family Residence District (RA) identified as Map 908 Block 78E Lots 67E, 66D, 66B & 53C which total approximately 38 acres. The site is currently undisturbed woodland. The site is bordered by the Washington Street ROW to the west, Hawkes Brook to the north, and Old Ferry Road to the south.

The site generally slopes from south to north. Site topography is steep, with slopes approaching 25% in spots. Elevations range from 232 along Old Ferry Drive to 116 at the edge of wetlands adjacent to Hawkes Brook.

The NRCS Web Soil Survey identifies on-site soils as Freetown muck (Hydrologic Soil Group B/D), Sutton fine sandy loam (Hydrologic Soil Group B/D), and Canton fine sandy loam (Hydrologic Soil Group A & B). Refer to Appendix C for additional information.

Test pits were performed by Greenman-Pedersen, Inc (GPI) on September 13, 2023. The nine (9) drainage test pits encountered loamy sand throughout with three test pits encountering sand overlain by loamy sand. Estimated seasonal high groundwater table (ESHWT) was encountered at 30-36" below grade for Test Pits 1-3, 16-30" for Test Pits 4-6 and 12-36" for Test Pits 7-9. Test pit logs are included in Appendix D.

Hawkes Brook is a perennial stream and therefore subject to the Rivers Protection Act. Hawkes Brook also has a defined 100-year flood zone.

A portion of the project is located within zone AE, which is a special flood hazard area with a 1% annual flood chance, and in a floodway according to the Federal Emergency Management Agency (FEMA) FIRM panel 25009C0069F effective on July 3, 2012.

SECTION 3 PROPOSED CONDITIONS

The project proponent is proposing to subdivide the property in accordance with the Methuen Subdivision Rules and Regulations. Individual lots in general range from approximately 37,800 to just over 166,000 square feet in size. A proposed conservation easement totaling 14.86 acres, or 39% of the parcel, will be created to protect the NHESP Priority Habitat. All proposed disturbance will be located outside the 200-foot Riverfront Area associated with Hawkes Brook. No direct wetland impacts are proposed and minimal encroachment into the 100-foot wetland buffer zone will occur.

Access to the new homes will be provided by extending Washington Street approximately 1300 feet to the north, ending in a hammerhead dead end. A second road, Edgewater Drive, at a length of 1,570 feet, will be built off Washington Street. The roadways are designed in accordance with City of Methuen Subdivision Regulations although a number of waivers are being requested in order to create a more environmentally sensitive project.

Stormwater management is provided by a closed drainage system consisting of deep sump, hooded catch basins, First Defense stormwater treatment units, and aboveground infiltration basins.

In order to safeguard against oil, gas, debris and suspended solids from passing through the storm drainage systems and into sensitive areas or abutting properties the storm water runoff from the roadway and driveway areas will be collected into deep sump catch basins fitted with oil/gas hoods (see plans for details). Such pretreatment of stormwater reduces both suspended solids and petroleum products in the drainage system and is recommended in the MA Stormwater Handbook. A First Defense unit will provide further treatment of the stormwater through the removal of oil, debris and suspended solids before entering the infiltration basins.

An Operation and Maintenance (O&M) Plan will be implemented to safeguard against future intrusion of contaminants and TSS and ensure proper long-term functioning of drainage components.

To prevent erosion and discharge of sediment during construction, Best Management Practices including erosion control mulch berms, catch basin inlet protection, a stabilized construction exit, mulch and seeding have been incorporated into the construction sequence.

The total area of disturbance related to the proposed site improvements and stormwater management system construction is well over 200,000 square feet, and therefore the project will require an EPA Construction General Permit under the NPDES program.

Stormwater Quality Controls:

1. **Street Sweeping** - to remove sediment prior to entering the drainage system. This would be done on a scheduled basis. TSS Removal Rate = 5%
2. **Catch Basins with Deep Sumps and Hooded Outlets** – to capture, pretreat, and direct stormwater to the proposed treatment devices. TSS Removal Rate = 25%
3. **First Defense hydrodynamic particle separators with and without inlet grates** - to capture, treat, and direct stormwater to the proposed detention systems. TSS Removal Rate = 70%
4. **Above ground Infiltration Basin** – to provide treatment through groundwater recharge. TSS Removal Rate = 80%

Groundwater Recharge:

On-site groundwater recharge of the Required Recharge Volume and the Water Quality Volume is achieved by the proposed above ground infiltration basins. Refer to the calculations in Standard #3.

Stormwater Quantity Controls:

The stormwater management system has been designed to control stormwater runoff from the site during all design storms. Peak flow rates of stormwater runoff are reduced by the above ground infiltration basins.

Stormwater Management Standards:

Standard #1: Untreated Stormwater

Full compliance:

- No new untreated stormwater discharges directly to wetlands or waters of the Commonwealth are proposed.

Standard #2: Post Development Peak Discharge Rates

Full compliance:

- Implementing the stormwater management system will result in no change or a decrease in post-development peak flow rates compared with pre-development rates for all storms analyzed. Refer to Table 1 in Section 1.

Standard #3: Groundwater Recharge

Full Compliance

On-site groundwater recharge is provided through the use of above ground infiltration basins.

In accordance with Massachusetts Stormwater Policy, the required groundwater recharge volume (Rv) is based on a target depth factor (F) over impervious areas. The target depth factors for HSG-A soils is 0.60 inches and HSG-B soils is 0.35 inches. The proposed on-site impervious area = 32,273 sf for A soils and 168,575 sf for B soils.

Required Groundwater Recharge Volume:

$$R_v = F * A_{impervious}$$

$$R_v = 0.60\ inches\left(\frac{1\ in}{12\ ft}\right) * 32{,}273\ sf = \mathbf{1{,}614\ c.f.}$$

$$R_v = 0.35\ inches\left(\frac{1\ in}{12\ ft}\right) * 168{,}575\ sf = \mathbf{4{,}917\ c.f.}$$

Total Recharge Volume = 6,531 cf

The recharge volume provided is the volume within the infiltration basin below the lowest outlet elevation (measured statically). See summary table below.

Groundwater Recharge Volume Provided		
BMP	**Elevation**	**Volume Provided (c.f.)**
Infiltration Basin #1	145.00-146.00	**7,651**
Infiltration Basin #2	144.00-146.00	**12,214**
Infiltration Basin #3	142.00-143.50	**3,780**

Total Annual Recharge Volume Provided = 23,645 c.f.
(See Appendix G for HydroCAD summaries)

Standard #4: TSS Removal

Full Compliance

Water Quality Volume Calculations:

The proposed infiltration practices are designed to store and infiltrate the water quality volume (V_{WQ}) from their contributing paved impervious surfaces. The water quality volume (V_{WQ}) is the volume of impervious surfaces times the water quality depth (D_{WQ}). A water quality depth of 1 inch is used due to the soils having an infiltration rate greater than 2.4 inches per hour.

Above Ground Infiltration Basin #1:

The contributing paved impervious area to the Infiltration Basin is 62,210 sf.

$$V_{WQ} = D_{WQ} * A_{impervious}$$

$$V_{WQ} = 1\ in \left(\frac{1\ in}{12\ ft}\right) * 62{,}210\ sf = \mathbf{5{,}184\ c.f.}$$

The infiltration basin provides storage capacity for a treatment volume of 7,651 cf of runoff and exceeds the required volume of 5,184 cf.

Above Ground Infiltration Basin #2:

The contributing paved impervious area to the Infiltration Basin is 29,098 sf.

$$V_{WQ} = D_{WQ} * A_{impervious}$$

$$V_{WQ} = 1\ in \left(\frac{1\ in}{12\ ft}\right) * 29{,}098\ sf = \mathbf{2{,}425\ c.f.}$$

The infiltration basin provides storage capacity for a treatment volume of 12,214 cf of runoff and exceeds the required volume of 2,425 cf.

Above Ground Infiltration Basin #3:

The contributing paved impervious area to the Infiltration Basin is 19,216 sf.

$$V_{WQ} = D_{WQ} * A_{impervious}$$

$$V_{WQ} = 1\ in \left(\frac{1\ in}{12\ ft}\right) * 19{,}216\ sf = \mathbf{1{,}601\ c.f.}$$

The infiltration basin provides storage capacity for a treatment volume of 3,780 cf of runoff and exceeds the required volume of 1,601 cf.

<u>First Defense Units:</u>

The proposed First Defense units are sized by the manufacturer to provide treatment of the water quality flow rate for each contributing area. The water quality flow rates at DMH-1(FD) DMH-

6(FD), DMH-8(FD) and DMH-10(FD) during a 1-inch water quality storm are 0.1 cfs, 0.0 cfs, 0.1 cfs and 0.2 cfs respectively. The proposed First Defense FD-4HC unit is NJDEP certified to treat runoff up to 1.50 cfs. Refer to the product brochure included in Appendix G.

TSS Removal Rates Summary:

BMP	TSS Removal Rate
Street Sweeping	5%
Deep Sump Catch Basin	25%
First Defense Unit	70%
Above ground Infiltration Basin	80%

Treatment Train 'A'
Beginning Load: 1.00 x Street Sweeping removal rate (0.05) = 0.05
Load Remaining = 1.00 – 0.05 = **0.95**
Remaining Load: 0.95 x Catch Basin w/ deep sump removal rate (0.25) = 0.24
Load Remaining = 0.95 – 0.24 = **0.71**
Remaining Load: 0.71 x First Defense removal rate (0.70) = 0.50
Load Remaining = 0.71 – 0.50 = **0.21**
Remaining Load: 0.21 x Above Ground Infiltration Basin removal rate (0.80) = 0.17
Load Remaining = 0.21 – 0.17 = **0.04**
TSS Removal Rate = (1.00 – 0.04) **= 96%**

Standard #5: Land Uses with Higher Potential Pollutant Loads (LUHPPL)

The site does not contain a land use with high potential pollutant loads (LUHPPL).

Standard #6: Protection of Critical Areas

The site is not within a Zone II, wellhead protection area, or any other critical area.

Standard #7: Redevelopment Projects

The site is not considered a redevelopment project.

As shown in the standards above, the project fully complies with the Stormwater Management Standards.

Standard #8: Erosion and Sediment Control

Full compliance:

- Erosion and sediment controls are incorporated into the project design to prevent erosion. An Erosion & Sediment Control Plan is included in the site plan set.

Standard #9: Operation and Maintenance Plan

Full compliance:

- A long-term Operation and Maintenance Plan meeting the requirements of this standard has been prepared and is included as a separate document.

Standard #10: Illicit Discharges

Full compliance:

- To the best of our knowledge, the site does not contain any illicit discharges. An illicit discharge statement is included in Appendix A.

SECTION 4 STORMWATER MODELING METHODOLOGY

The drainage system for this project was modeled using HydroCAD, a stormwater modeling computer program that analyzes the hydrology, and hydraulics of stormwater runoff. HydroCAD is based largely on the hydrology techniques developed by the Soil Conservation Service (SCS/NRCS), combined with other hydrology and hydraulics calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout a watershed. This provides verification that a given drainage system is adequate for the area under consideration, or to predict where flooding or erosion is likely to occur.

In HydroCAD, each watershed is modeled as a Subcatchment, streams and culverts as a Reach (or Pond, depending on available storage capacity), and large wetlands and other natural or artificial storage areas as a Pond. SCS hydrograph generation and routing procedures were used to model both Pre-development and Post-development runoff conditions.

The Pre-development and Post-development watershed limits and the subcatchment characteristics were determined using both USGS and on-the-ground topographic survey information and through visual, on-site inspection. Conservative estimates were used at all times in estimating the hydrologic characteristics of each watershed or subcatchment.

APPENDIX A

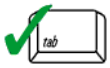
MassDEP Checklist for Stormwater Report

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

Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

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

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

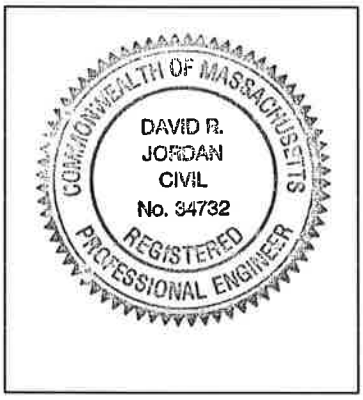
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



3/6/24
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

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): Above ground infiltration basin

Standard 1: No New Untreated Discharges

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

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

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

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

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

March 6, 2024

City of Methuen Community Development Board
41 Pleasant Street
Methuen, MA 01844

Re: Washington Street
Assessors Map 908 Block 78E Lots 67E, 66D, 66B & 53C
Sub: Illicit Discharge Statement
Standard #10

Dear Board Members:

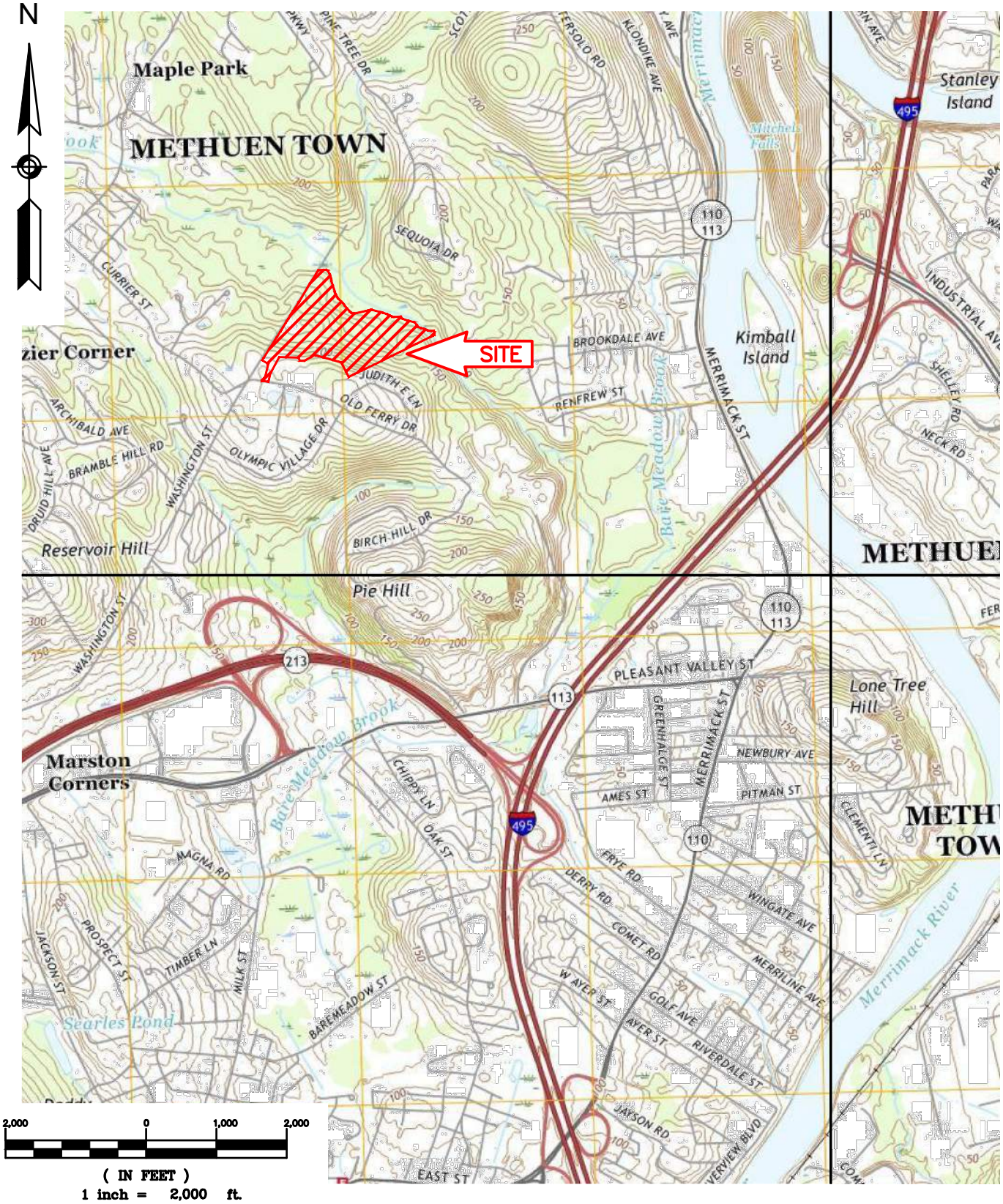
On behalf of our client, DHB Homes, LLC, we hereby state that to the best of our knowledge, no illicit discharges exist on the above referenced site and none are proposed with the subdivision plans. Implementing the pollution prevention plan measures outlined in the subdivision plans will prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease. Refer to the Grading & Drainage Plan from the subdivision plan set for additional information.

Sincerely,
Greenman-Pedersen, Inc.

David R. Jordan, P.E., P.L.S., LEED AP
Director of Project Delivery – Land Development

APPENDIX B

Maps



USGS MAP

DHB HOMES, LLC
WASHINGTON STREET
METHUEN, MA

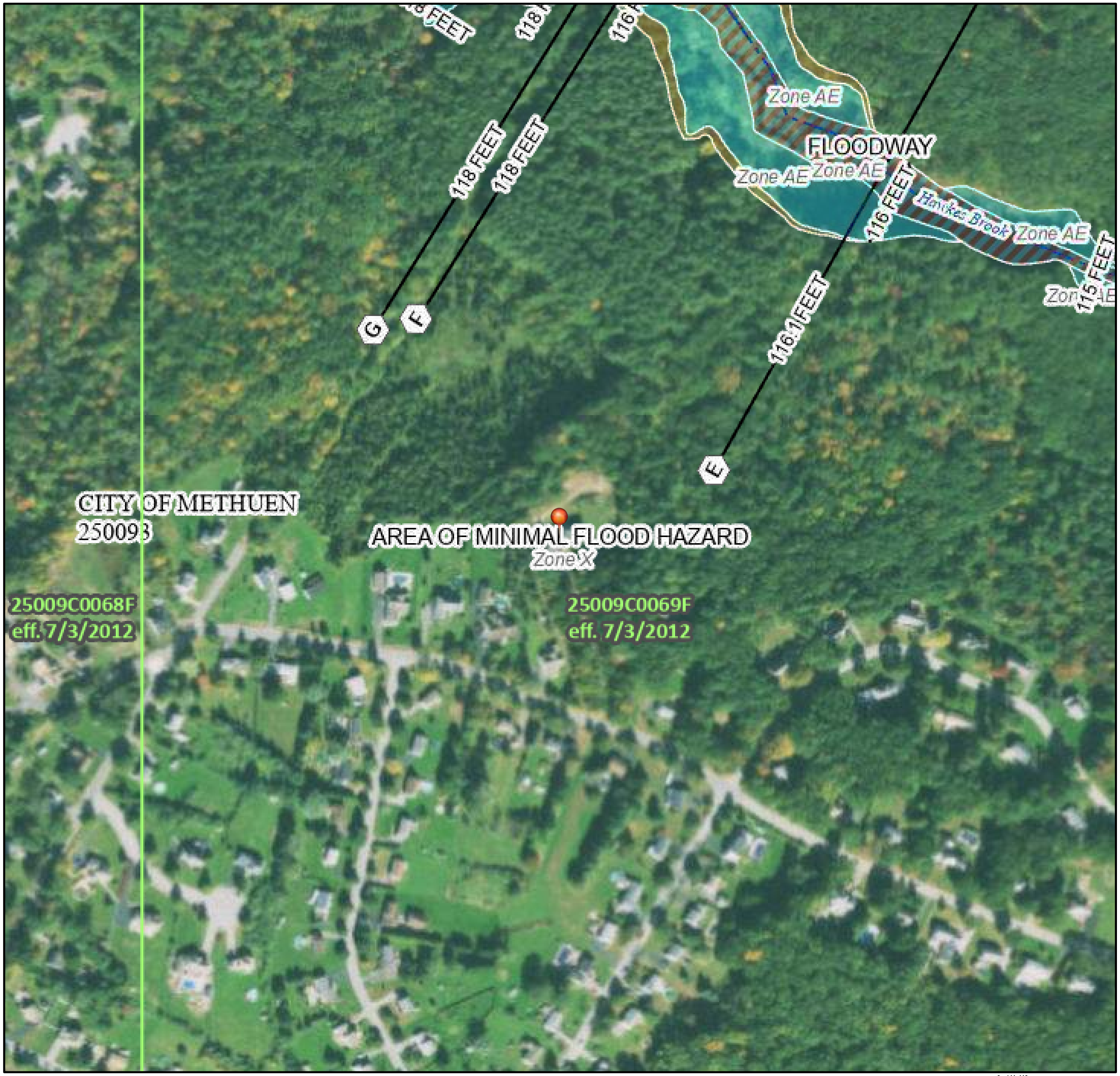
GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

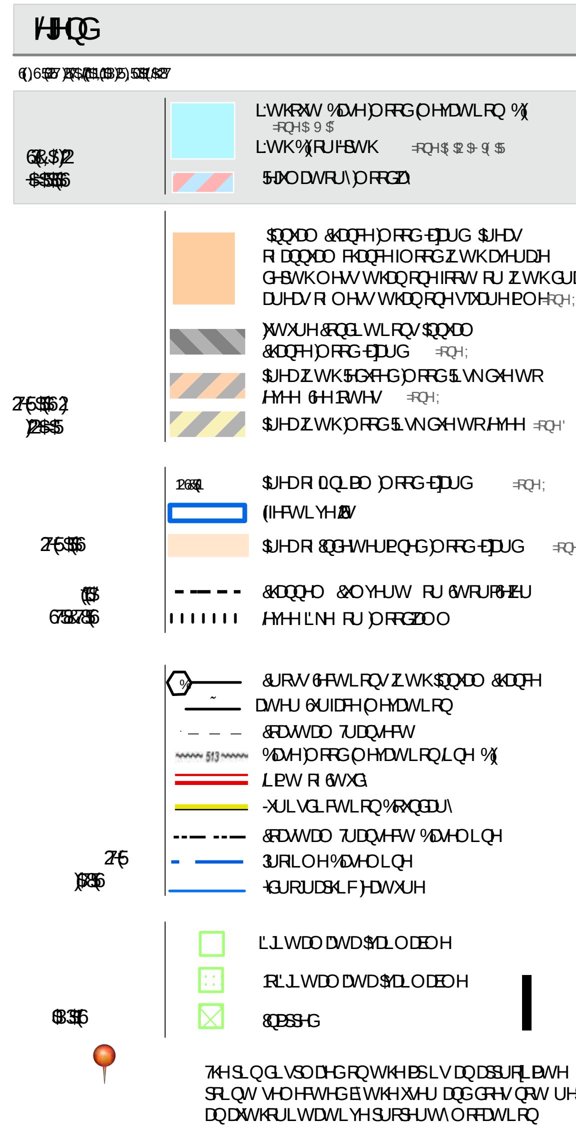
DRAWN BY: CNM
PROJECT #: NEX-2200136
DATE: 3/6/2024
FIGURE 1

F:\Projects\NEX-2200136 - Methuen, MA - DHB Homes\Drainage\Stormwater Report\Appendix B - USGS Map\2200136 - USGS Map.dwg USGS 3/05/24 4:20pm sbonfanti

1DWLRQDO)ORRG+D]DUG/D\HU)5,5HWWH

FEMA





7KLV PDS FRPSOLHV ZLWK)(0$V VWDQGDUGV IRU WKH XVH RI GLJLWDO IORRG PDSV LI LW LV QRW YRLG DV GHVFULEHG EHORZ 7KH EDVHPDS VKRZQ FRPSOLHV ZLWK)(0$V EDVHPDS DFFXUDF\ VWDQGDUGV

%DVHPDS 86*6 1DWLRQDO 0DS 2UWKRLPDJHU\ 'DWD UHIUHVKHG 2FWREHU

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Massachusetts State Plane Mainland Zone (FIPS zone 2001). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by the Massachusetts Geographic Information System. This information was created from photography dated 2005.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

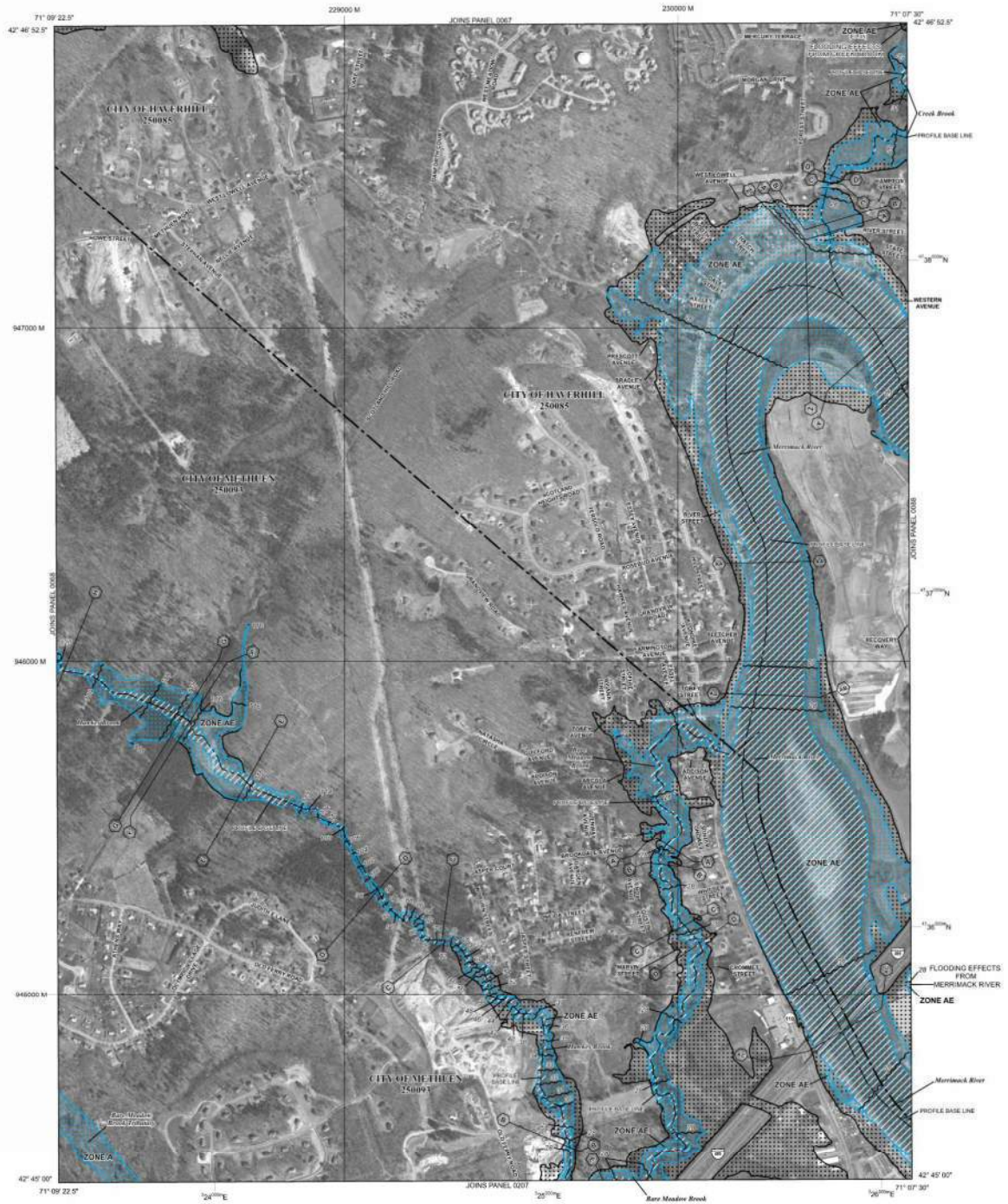
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A A Cross section line

23 23 Transect line

Culvert

Bridge

45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

4989000 M 1000-meter ticks: Massachusetts State Plane Mainland Zone (FIPS Zone 2001), Lambert Conformal Conic projection

5000 mE 1000-meter Universal Transverse Mercator grid values, zone 19N

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
July 3, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0069F

FIRM

FLOOD INSURANCE RATE MAP

ESSEX COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 69 OF 600

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAVERHILL, CITY OF	250085	0069	F
METHUEN, CITY OF	250093	0069	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25009C0069F
EFFECTIVE DATE
JULY 3, 2012

Federal Emergency Management Agency

APPENDIX C

NRCS Soils Information

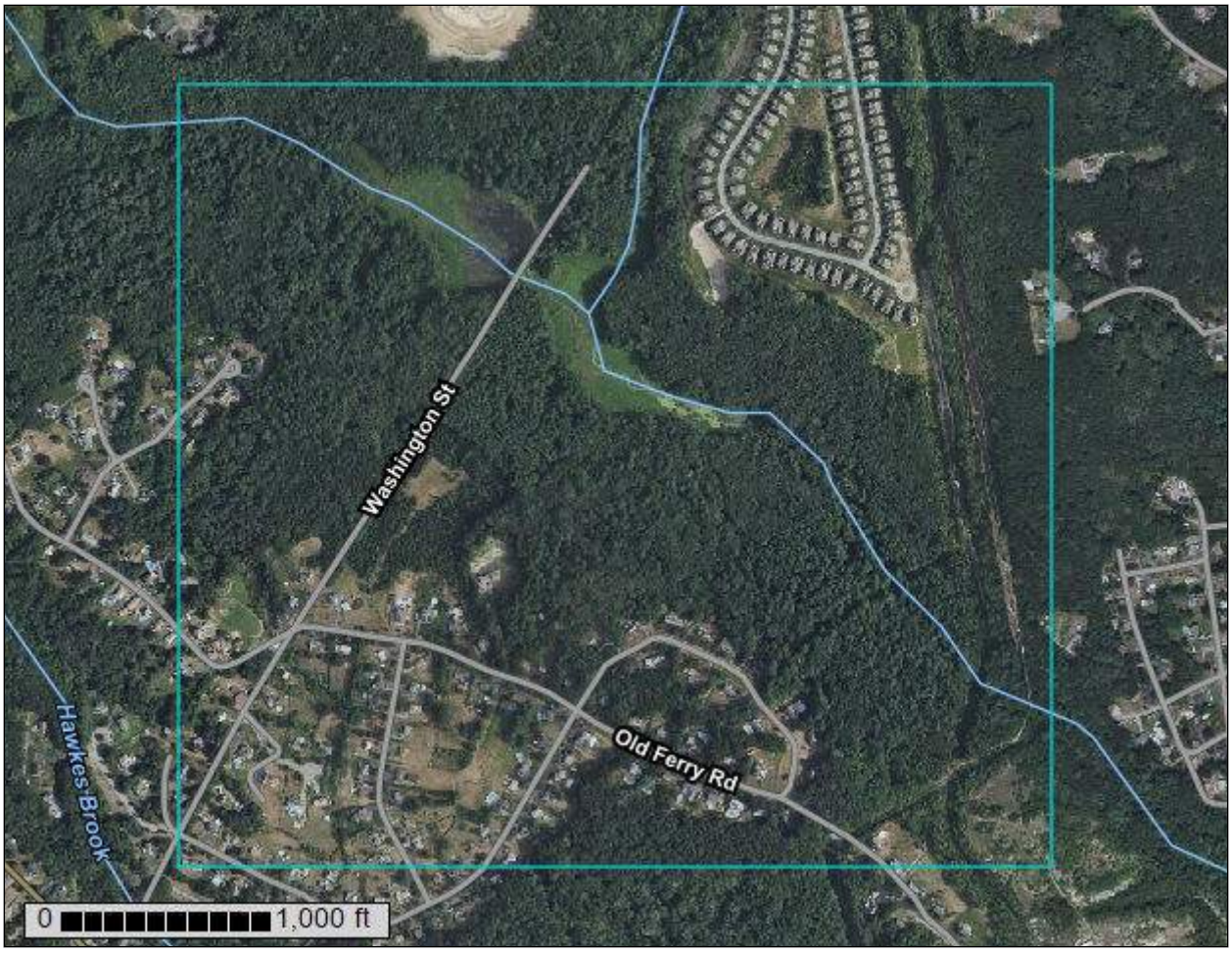
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Essex County, Massachusetts, Northern Part



July 11, 2022

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

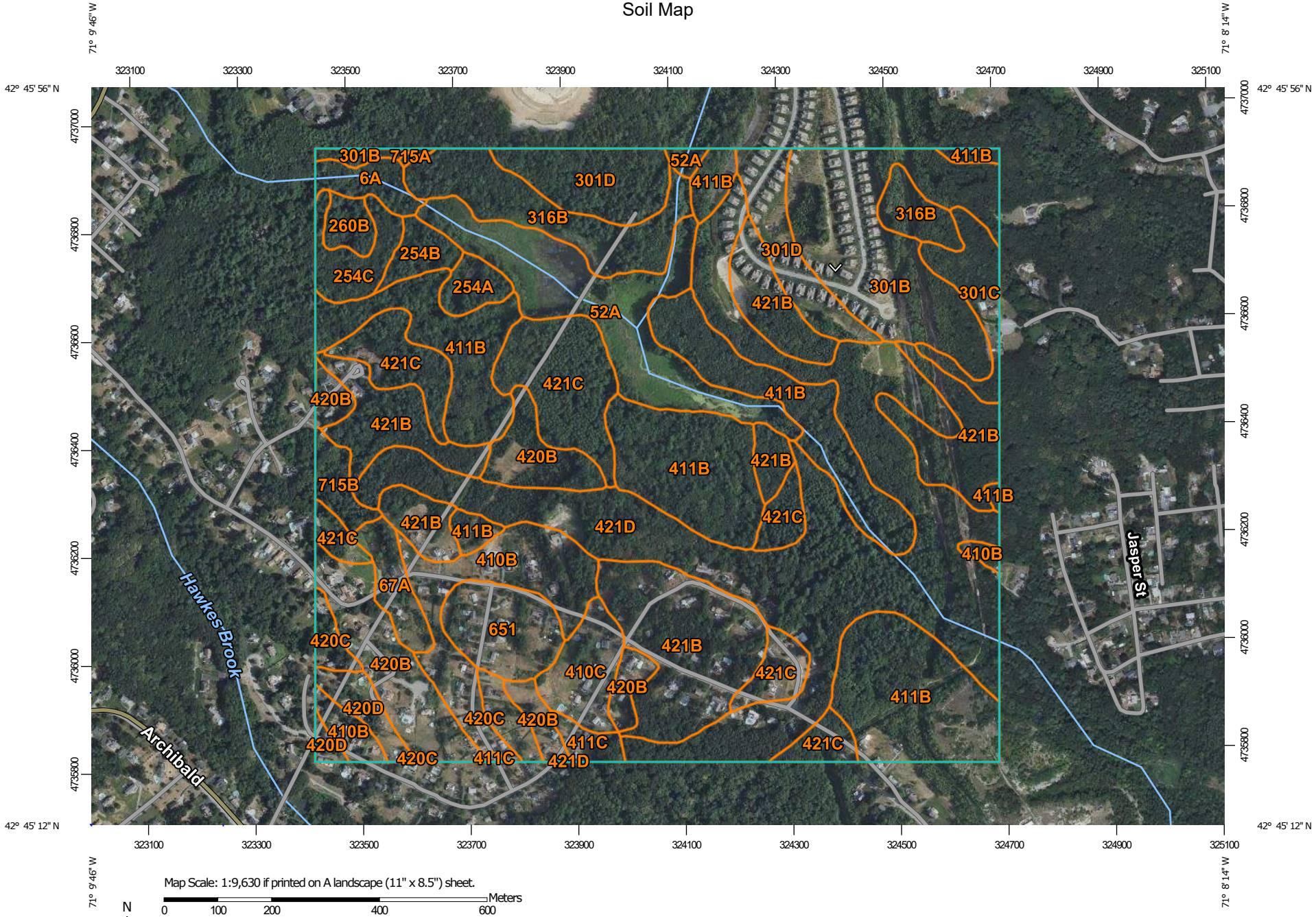
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



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 1:15,800.

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: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 17, Sep 2, 2021

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

Date(s) aerial images were photographed: Aug 13, 2020—Sep 15, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	3.2	0.9%
52A	Freetown muck, 0 to 1 percent slopes	20.9	5.8%
67A	Leicester fine sandy loam, 0 to 3 percent slopes	3.9	1.1%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	2.5	0.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	2.7	0.8%
254C	Merrimac fine sandy loam, 8 to 15 percent slopes	4.5	1.3%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	2.1	0.6%
301B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	25.0	7.0%
301C	Montauk fine sandy loam, 8 to 15 percent slopes, very stony	5.9	1.6%
301D	Montauk fine sandy loam, 15 to 35 percent slopes, very stony	15.6	4.4%
316B	Scituate fine sandy loam, 3 to 8 percent slopes, very stony	15.3	4.3%
410B	Sutton fine sandy loam, 3 to 8 percent slopes	16.2	4.5%
410C	Sutton fine sandy loam, 8 to 15 percent slopes	6.0	1.7%
411B	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	59.1	16.5%
411C	Sutton fine sandy loam, 8 to 15 percent slopes, very stony	2.0	0.5%
420B	Canton fine sandy loam, 3 to 8 percent slopes	21.2	5.9%
420C	Canton fine sandy loam, 8 to 15 percent slopes	4.1	1.1%
420D	Canton fine sandy loam, 15 to 25 percent slopes	3.7	1.0%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	42.9	12.0%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	25.4	7.1%
421D	Canton fine sandy loam, 15 to 25 percent slopes, very stony	65.7	18.3%
651	Udorthents, smoothed	7.9	2.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
715A	Ridgebury and Leicester fine sandy loams, 0 to 3 percent slopes, extremely stony	0.2	0.1%
715B	Ridgebury and Leicester fine sandy loams, 3 to 8 percent slopes, extremely stony	2.7	0.8%
Totals for Area of Interest		**358.8**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Essex County, Massachusetts, Northern Part

6A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svky
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Drainageways, outwash deltas, outwash terraces, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile

Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Deltas, depressions, outwash terraces, depressions, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

52A—Freetown muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2q9
Elevation: 0 to 1,110 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

67A—Leicester fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: vjh4
Elevation: 30 to 280 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Leicester and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester

Setting

Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Friable coarse-loamy eolian deposits over friable coarse-loamy basal till derived from granite and gneiss

Typical profile

O - 0 to 3 inches: muck
H2 - 3 to 8 inches: fine sandy loam
H3 - 8 to 31 inches: fine sandy loam
H4 - 31 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 8 percent
Landform: Depressions
Hydric soil rating: Yes

Woodbridge

Percent of map unit: 7 percent
Hydric soil rating: No

254A—Merrimac fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqr
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, crest, side slope, nose slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Stream terraces, outwash terraces, outwash plains, moraines, eskers, kames
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 2 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

254B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley
Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury
Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Windsor
Percent of map unit: 3 percent
Landform: Outwash terraces, dunes, deltas, outwash plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Agawam
Percent of map unit: 2 percent
Landform: Outwash plains, outwash terraces, moraines, stream terraces, eskers, kames
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

254C—Merrimac fine sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2tyqt
Elevation: 0 to 1,030 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Eskers, outwash plains, moraines, kames, outwash terraces
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash plains, dunes, deltas, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

260B—Sudbury fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: vjsn
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Friable loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

O - 0 to 1 inches: muck
H2 - 1 to 5 inches: fine sandy loam
H3 - 5 to 21 inches: sandy loam

H4 - 21 to 27 inches: loamy sand
H5 - 27 to 60 inches: Error

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 15 percent
Hydric soil rating: No

Walpole

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

301B—Montauk fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w80v
Elevation: 0 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Montauk, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Very Stony

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins

Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, footslope, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 4 percent

Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

301C—Montauk fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w80w
Elevation: 0 to 1,120 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Montauk, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Very Stony

Setting

Landform: Hills, recessionial moraines, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 4 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

301D—Montauk fine sandy loam, 15 to 35 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w80x
Elevation: 0 to 1,150 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Montauk, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Very Stony

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

316B—Scituate fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: vjs9
Elevation: 50 to 340 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Scituate and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate

Setting

Landform: Drumlins
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 27 inches: fine sandy loam
H3 - 27 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 18 to 30 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 20 percent
Landform: Depressions
Hydric soil rating: Yes

Whitman

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

410B—Sutton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w69j
Elevation: 0 to 1,410 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sutton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton

Setting

Landform: Ridges, ground moraines, hills

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 5 inches: fine sandy loam
Bw1 - 5 to 17 inches: fine sandy loam
Bw2 - 17 to 25 inches: sandy loam
C1 - 25 to 39 inches: gravelly sandy loam
C2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 9 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 5 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drainageways, depressions

Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 1 percent
Landform: Drumlins, ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

410C—Sutton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2xffk
Elevation: 10 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sutton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton

Setting

Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 5 inches: fine sandy loam
Bw1 - 5 to 17 inches: fine sandy loam
Bw2 - 17 to 25 inches: sandy loam
C1 - 25 to 39 inches: gravelly sandy loam
C2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton

Percent of map unit: 5 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 3 percent
Landform: Hills, moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Drainageways, depressions, ground moraines, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

411B—Sutton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xfff
Elevation: 0 to 1,410 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sutton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton, Very Stony

Setting

Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: fine sandy loam
Bw1 - 7 to 19 inches: fine sandy loam
Bw2 - 19 to 27 inches: sandy loam
C1 - 27 to 41 inches: gravelly sandy loam
C2 - 41 to 62 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Charlton, very stony
Percent of map unit: 7 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony
Percent of map unit: 4 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 3 percent
Landform: Depressions, ground moraines, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman, very stony
Percent of map unit: 1 percent
Landform: Drumlins, ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

411C—Sutton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2xffl
Elevation: 10 to 350 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Sutton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sutton, Very Stony

Setting

Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: fine sandy loam
Bw1 - 7 to 19 inches: fine sandy loam
Bw2 - 19 to 27 inches: sandy loam
C1 - 27 to 41 inches: gravelly sandy loam
C2 - 41 to 62 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Charlton, very stony

Percent of map unit: 5 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Canton, very stony

Percent of map unit: 3 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 2 percent
Landform: Depressions, ground moraines, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

420B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Landform: Moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

420C—Canton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w817
Elevation: 0 to 1,330 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk

Percent of map unit: 6 percent
Landform: Moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Scituate

Percent of map unit: 6 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Newfields

Percent of map unit: 4 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

420D—Canton fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: vj4s

Elevation: 0 to 1,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable coarse-loamy eolian deposits over friable sandy and gravelly basal till derived from granite and gneiss

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 33 inches: fine sandy loam
H3 - 33 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 18 to 36 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 12 percent
Hydric soil rating: No

Swansea

Percent of map unit: 3 percent
Landform: Bogs
Hydric soil rating: Yes

421B—Canton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w81l
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony
Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony
Percent of map unit: 5 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Gloucester, very stony
Percent of map unit: 4 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea
Percent of map unit: 2 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

421C—Canton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2w814
Elevation: 0 to 1,160 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 6 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Scituate, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

421D—Canton fine sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: vj5c
Elevation: 0 to 1,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable coarse-loamy eolian deposits over friable sandy and gravelly basal till derived from granite and gneiss

Typical profile

H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 33 inches: fine sandy loam
H3 - 33 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 18 to 36 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent
Hydric soil rating: No

Charlton

Percent of map unit: 5 percent
Hydric soil rating: No

651—Udorthents, smoothed

Map Unit Setting

National map unit symbol: vjwk
Elevation: 0 to 3,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Excavated and filled land loamy and/or excavated and filled land sandy and gravelly

Typical profile

H1 - 0 to 6 inches: variable
H2 - 6 to 60 inches: variable

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: Unranked

Minor Components

Urban land

Percent of map unit: 10 percent
Hydric soil rating: Unranked

Beaches

Percent of map unit: 8 percent
Hydric soil rating: Unranked

Dumps

Percent of map unit: 2 percent
Hydric soil rating: Unranked

715A—Ridgebury and Leicester fine sandy loams, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2xfft
Elevation: 10 to 310 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 50 percent
Leicester, extremely stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Ground moraines, hills, drainageways, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Leicester, Extremely Stony

Setting

Landform: Depressions, hills, ground moraines, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg - 7 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 39 inches: gravelly fine sandy loam
C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear

Hydric soil rating: No

715B—Ridgebury and Leicester fine sandy loams, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2xffv
Elevation: 0 to 370 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 50 percent
Leicester, extremely stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Ground moraines, hills, drainageways, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Leicester, Extremely Stony

Setting

Landform: Depressions, hills, ground moraines, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg - 7 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 39 inches: gravelly fine sandy loam
C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave

Across-slope shape: Linear
Hydric soil rating: No

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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

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

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

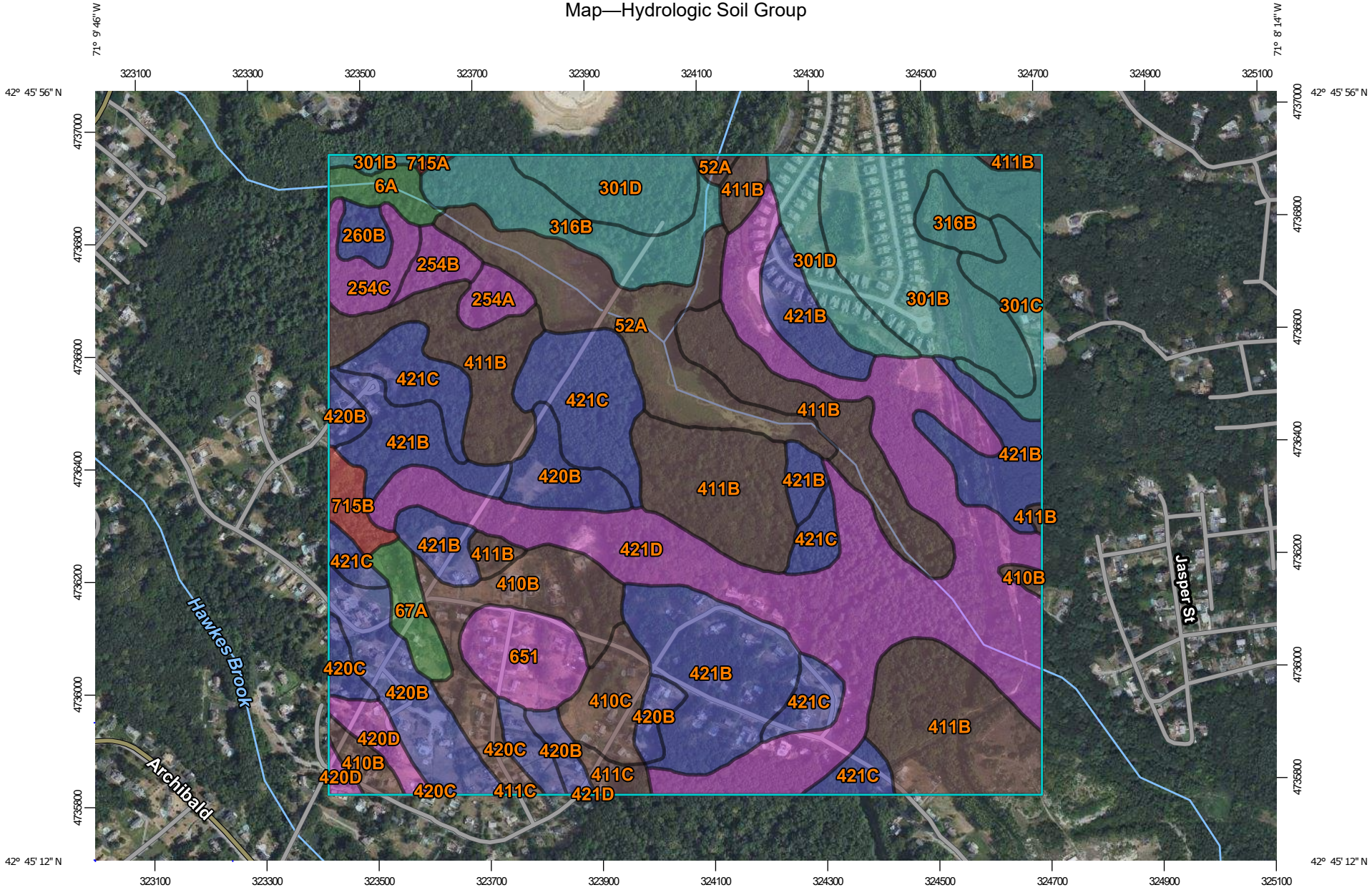
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

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

Custom Soil Resource Report
Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 17, Sep 2, 2021

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

Date(s) aerial images were photographed: Aug 13, 2020—Sep 15, 2020

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	3.2	0.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	20.9	5.8%
67A	Leicester fine sandy loam, 0 to 3 percent slopes	A/D	3.9	1.1%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	2.5	0.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	2.7	0.8%
254C	Merrimac fine sandy loam, 8 to 15 percent slopes	A	4.5	1.3%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B	2.1	0.6%
301B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	C	25.0	7.0%
301C	Montauk fine sandy loam, 8 to 15 percent slopes, very stony	C	5.9	1.6%
301D	Montauk fine sandy loam, 15 to 35 percent slopes, very stony	C	15.6	4.4%
316B	Scituate fine sandy loam, 3 to 8 percent slopes, very stony	C	15.3	4.3%
410B	Sutton fine sandy loam, 3 to 8 percent slopes	B/D	16.2	4.5%
410C	Sutton fine sandy loam, 8 to 15 percent slopes	B/D	6.0	1.7%
411B	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	B/D	59.1	16.5%
411C	Sutton fine sandy loam, 8 to 15 percent slopes, very stony	B/D	2.0	0.5%
420B	Canton fine sandy loam, 3 to 8 percent slopes	B	21.2	5.9%
420C	Canton fine sandy loam, 8 to 15 percent slopes	B	4.1	1.1%
420D	Canton fine sandy loam, 15 to 25 percent slopes	A	3.7	1.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	42.9	12.0%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	B	25.4	7.1%
421D	Canton fine sandy loam, 15 to 25 percent slopes, very stony	A	65.7	18.3%
651	Udorthents, smoothed	A	7.9	2.2%
715A	Ridgebury and Leicester fine sandy loams, 0 to 3 percent slopes, extremely stony	D	0.2	0.1%
715B	Ridgebury and Leicester fine sandy loams, 3 to 8 percent slopes, extremely stony	D	2.7	0.8%
Totals for Area of Interest			**358.8**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX D

Test Pit Logs

TEST PIT DATA

Client: DHB Homes
Project Address: Washington Street
Town, State: Methuen, MA
Job Number: NEX-2200136
Date: September 13, 2023
Performed by: Diane Pantermoller (SE#1835)

Test Pit No. **1 (500)** SCS Soil: Canton Fine Sandy Loam
ESHWT: 30” Standing Water: None
Refusal: >100” Roots: 36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-14”	A	Loamy Sand	10yr 3/2	FR	
14-24”	B	Loamy Sand	10yr 5/6	FR	
24-100”	C	Loamy Sand	2.5y 6/3	FR	Stones, Cobbles and Boulders

Test Pit No. **2 (501)** SCS Soil: Canton Fine Sandy Loam
ESHWT: 36” Standing Water: None
Refusal: >110” Roots: 40”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-13”	A	Loamy Sand	10yr 3/2	FR	
13-29”	B	Loamy Sand	10yr 5/6	FR	
29-110”	C	Loamy Sand	2.5y 6/3	FR	Stones, Cobbles and Boulders

Test Pit No. **3 (502)** SCS Soil: Canton Fine Sandy Loam
ESHWT: 36” Standing Water: 112”
Refusal: >114” Roots: 30”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-14”	A	Loamy Sand	10yr 3/2	FR	
14-30”	B	Loamy Sand	10yr 5/6	FR	
30-114”	C	Sand	2.5y 6/3	FR	

Test Pit No. **4 (503)** SCS Soil: Sutton Fine Sandy Loam
ESHWT: 30” Standing Water: None
Refusal: >105” Roots: 36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-7”	A	Loamy Sand	10yr 3/2	FR	
7-26”	B	Loamy Sand	10yr 5/6	FR	
26-105”	C	Sand	2.5y 6/4	FR	

Test Pit No.	**5 (504)**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	24”	Standing Water:	48”
Refusal:	>112”	Roots:	36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-8”	A	Loamy Sand	10yr 3/2	FR	
8-36”	B	Loamy Sand	10yr 5/6	FR	
36-112”	C	Sand	2.5y 6/4	FR	

Test Pit No.	**6 (505)**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	16”	Standing Water:	18”
Refusal:	>114”	Roots:	20”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-11”	A	Sandy Loam	10yr 2/1	FR	
11-26”	B	Sandy Loam	10yr 3/4	FR	
26-114”	C	Loamy Sand	2.5y 8/4	FR	

Test Pit No.	**7 (506)**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	36”	Standing Water:	48”
Refusal:	>110”	Roots:	36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-7”	A	Loamy Sand	10yr 3/2	FR	
7-29”	B	Loamy Sand	10yr 5/6	FR	
29-110”	C	Loamy Sand	2.5y 6/4	FR	

Test Pit No.	**8 (507)**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	20”	Standing Water:	36”
Refusal:	>111”	Roots:	24”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-16”	A	Loamy Sand	10yr 3/2	FR	
16-36”	B	Loamy Sand	10yr 5/6	FR	
36-111”	C	Loamy Sand	2.5y 6/6	FR	

Test Pit No.	**9 (508)**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	12”	Standing Water:	16”
Refusal:	>116”	Roots:	24”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-16”	A	Loamy Sand	10yr 3/2	FR	
16-28”	B	Loamy Sand	10yr 5/6	FR	
28-116”	C	Loamy Sand	2.5y 6/3	FR	

The test pits below were done on June 19, 2024

Test Pit No.	**524**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	36”	Standing Water:	50”
Refusal:	>111”	Roots:	36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-14”	A	Loamy Sand	10yr 3/2	Friable	
14-26”	B	Loamy Sand	10yr 5/8	Friable	
26-111”	C	Fine Sand	2.5y 6/8	Friable	

Test Pit No.	**525**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	40”	Standing Water:	None
Refusal:	>109”	Roots:	42”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-14”	A	Loamy Sand	10yr 3/2	Friable	
14-26”	B	Loamy Sand	10yr 5/6	Friable	
26-109”	C	Loamy Sand	2.5y 7/4	Friable	

Test Pit No.	**526**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	60”	Standing Water:	84”
Refusal:	>110”	Roots:	None

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-12”	A	Loamy Sand	10yr 3/2	Friable	
12-24”	B	Loamy Sand	10yr 6/4	Friable	
24-29”	C1	Medium Sand	2.5y 6/6	Granular	
29-110”	C2	Sand & Gravel	2.5y 6/4	Granular	

Test Pit No.	**527**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	36”	Standing Water:	None
Refusal:	>110”	Roots:	36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-20”	A	Loamy Sand	10yr 3/2	Friable	
20-30”	B	Loamy Sand	10yr 5/4	Friable	
30-110”	C	Sand	2.5y 7/4	Granular	

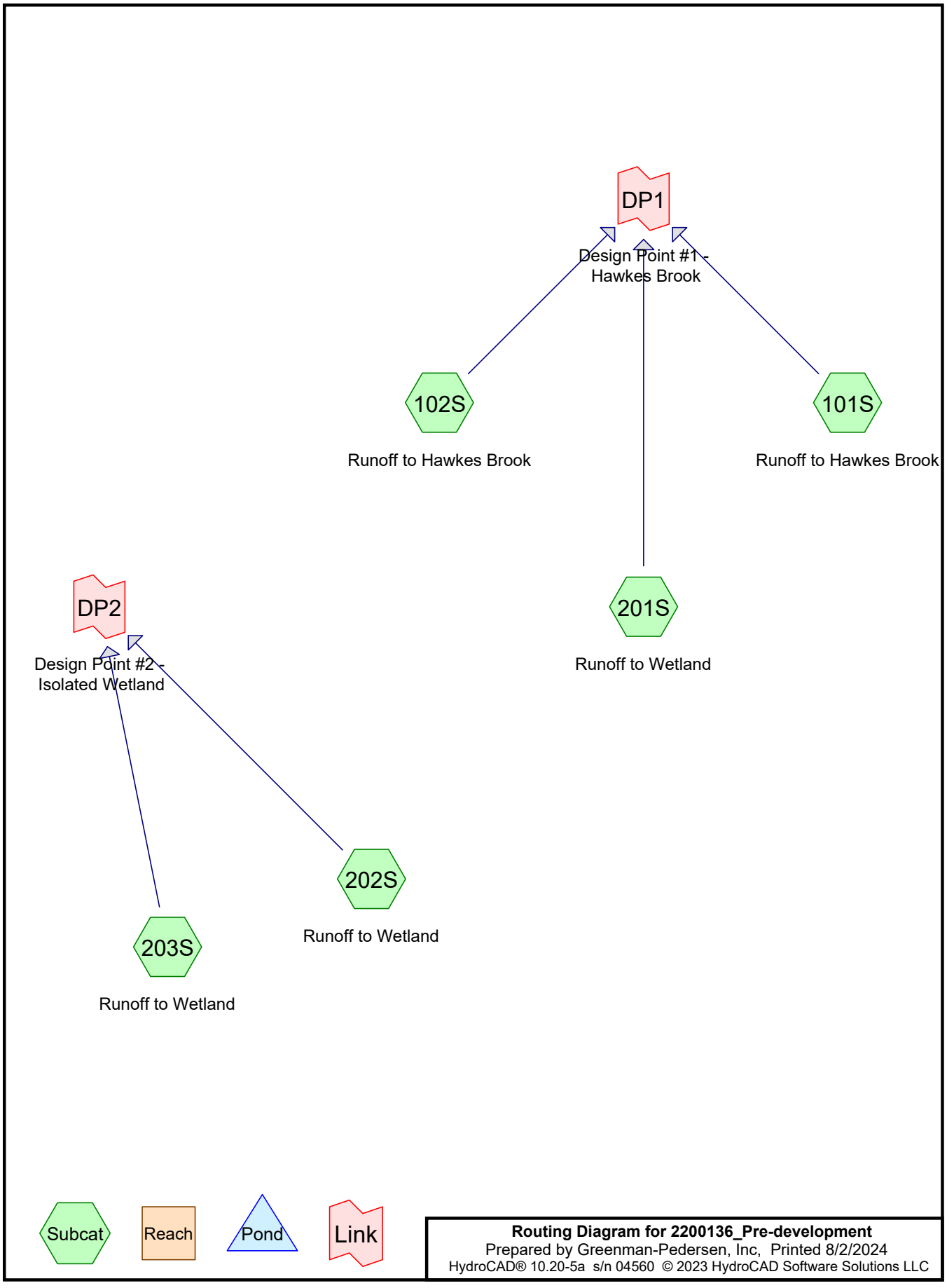
Test Pit No.	**528**	SCS Soil:	Sutton Fine Sandy Loam
ESHWT:	30”	Standing Water:	50”
Refusal:	>108”	Roots:	36”

Depth	Horizon	Soil Texture	Color	Consistence	Layer Description
0-12”	A	Loamy Sand	10yr 3/2	Friable	
12-24”	B	Loamy Sand	10yr 5/6	Friable	
24-108”	C	Fine Sand	2.5y 7/4	Friable	

NOTES

APPENDIX E

Pre-Development HydroCAD Computations



Routing Diagram for 2200136_Pre-development
Prepared by Greenman-Pedersen, Inc, Printed 8/2/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.116	39	>75% Grass cover, Good, HSG A (101S, 201S)
6.745	61	>75% Grass cover, Good, HSG B (101S, 201S, 202S, 203S)
0.190	80	>75% Grass cover, Good, HSG D (201S)
0.124	96	Gravel surface, HSG A (101S, 201S, 202S)
0.489	96	Gravel surface, HSG B (101S, 102S, 201S, 202S)
0.487	98	Paved parking, HSG A (101S, 201S)
1.633	98	Paved parking, HSG B (101S, 201S, 202S)
0.153	98	Roofs, HSG A (101S, 201S)
0.856	98	Roofs, HSG B (101S, 201S, 202S, 203S)
13.034	30	Woods, Good, HSG A (101S, 201S, 202S, 203S)
39.144	55	Woods, Good, HSG B (101S, 102S, 201S, 202S, 203S)
64.972	**53**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
15.915	HSG A	101S, 201S, 202S, 203S
48.868	HSG B	101S, 102S, 201S, 202S, 203S
0.000	HSG C	
0.190	HSG D	201S
0.000	Other	
64.972		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.116	6.745	0.000	0.190	0.000	9.051	>75% Grass cover, Good	101S, 201S, 202S, 203S
0.124	0.489	0.000	0.000	0.000	0.613	Gravel surface	101S, 102S, 201S, 202S
0.487	1.633	0.000	0.000	0.000	2.120	Paved parking	101S, 201S, 202S
0.153	0.856	0.000	0.000	0.000	1.009	Roofs	101S, 201S, 202S, 203S
13.034	39.144	0.000	0.000	0.000	52.179	Woods, Good	101S, 102S, 201S, 202S, 203S
15.915	**48.868**	**0.000**	**0.190**	**0.000**	**64.972**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment101S: Runoff to Hawkes Runoff Area=1,820,238 sf 3.51% Impervious Runoff Depth=0.28"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=4.08 cfs 0.979 af

Subcatchment102S: Runoff to Hawkes Runoff Area=59,920 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=0.17 cfs 0.037 af

Subcatchment201S: Runoff to Wetland Runoff Area=649,542 sf 10.83% Impervious Runoff Depth=0.55"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=4.22 cfs 0.685 af

Subcatchment202S: Runoff to Wetland Runoff Area=168,904 sf 0.86% Impervious Runoff Depth=0.40"
Flow Length=901' Tc=8.5 min CN=WQ Runoff=0.87 cfs 0.129 af

Subcatchment203S: Runoff to Wetland Runoff Area=131,585 sf 0.42% Impervious Runoff Depth=0.16"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=0.19 cfs 0.040 af

Link DP1: Design Point #1 - Hawkes Brook Inflow=8.01 cfs 1.701 af
Primary=8.01 cfs 1.701 af

Link DP2: Design Point #2 - Isolated Wetland Inflow=0.94 cfs 0.169 af
Primary=0.94 cfs 0.169 af

Total Runoff Area = 64.972 ac Runoff Volume = 1.870 af Average Runoff Depth = 0.35"
95.18% Pervious = 61.843 ac 4.82% Impervious = 3.129 ac

Summary for Subcatchment 101S: Runoff to Hawkes Brook

Runoff = 4.08 cfs @ 12.58 hrs, Volume= 0.979 af, Depth= 0.28"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
64,297	39	>75% Grass cover, Good, HSG A
78,421	61	>75% Grass cover, Good, HSG B
261	96	Gravel surface, HSG A
7,245	96	Gravel surface, HSG B
10,924	98	Paved parking, HSG A
33,782	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
13,058	98	Roofs, HSG B
380,438	30	Woods, Good, HSG A
1,225,644	55	Woods, Good, HSG B
1,820,238		Weighted Average
1,756,306		96.49% Pervious Area
63,931		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Runoff to Hawkes Brook

Runoff = 0.17 cfs @ 12.33 hrs, Volume= 0.037 af, Depth= 0.32"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
2,382	96	Gravel surface, HSG B
57,538	55	Woods, Good, HSG B
59,920		Weighted Average
59,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 201S: Runoff to Wetland

Runoff = 4.22 cfs @ 12.39 hrs, Volume= 0.685 af, Depth= 0.55"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
27,883	39	>75% Grass cover, Good, HSG A
185,646	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,377	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
118,022	30	Woods, Good, HSG A
233,099	55	Woods, Good, HSG B
649,542		Weighted Average
579,192		89.17% Pervious Area
70,350		10.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Runoff to Wetland

Runoff = 0.87 cfs @ 12.14 hrs, Volume= 0.129 af, Depth= 0.40"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
14,957	61	>75% Grass cover, Good, HSG B
2,026	96	Gravel surface, HSG A
8,521	96	Gravel surface, HSG B
953	98	Paved parking, HSG B
499	98	Roofs, HSG B
13,130	30	Woods, Good, HSG A
128,818	55	Woods, Good, HSG B
168,904		Weighted Average
167,452		99.14% Pervious Area
1,452		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0870	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	108	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	140	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	482	0.0910	4.86		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	121	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	901	Total			

Summary for Subcatchment 203S: Runoff to Wetland

Runoff = 0.19 cfs @ 12.44 hrs, Volume= 0.040 af, Depth= 0.16"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
14,809	61	>75% Grass cover, Good, HSG B
557	98	Roofs, HSG B
56,185	30	Woods, Good, HSG A
60,034	55	Woods, Good, HSG B
131,585		Weighted Average
131,028		99.58% Pervious Area
557		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 58.074 ac, 5.31% Impervious, Inflow Depth = 0.35" for 2-Year event
Inflow = 8.01 cfs @ 12.47 hrs, Volume= 1.701 af
Primary = 8.01 cfs @ 12.47 hrs, Volume= 1.701 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 6.898 ac, 0.67% Impervious, Inflow Depth = 0.29" for 2-Year event
Inflow = 0.94 cfs @ 12.15 hrs, Volume= 0.169 af
Primary = 0.94 cfs @ 12.15 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment101S: Runoff to Hawkes Runoff Area=1,820,238 sf 3.51% Impervious Runoff Depth=0.81"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=16.83 cfs 2.815 af

Subcatchment102S: Runoff to Hawkes Runoff Area=59,920 sf 0.00% Impervious Runoff Depth=0.99"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=1.04 cfs 0.113 af

Subcatchment201S: Runoff to Wetland Runoff Area=649,542 sf 10.83% Impervious Runoff Depth=1.22"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=10.88 cfs 1.520 af

Subcatchment202S: Runoff to Wetland Runoff Area=168,904 sf 0.86% Impervious Runoff Depth=1.06"
Flow Length=901' Tc=8.5 min CN=WQ Runoff=3.57 cfs 0.344 af

Subcatchment203S: Runoff to Wetland Runoff Area=131,585 sf 0.42% Impervious Runoff Depth=0.55"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=1.15 cfs 0.137 af

Link DP1: Design Point #1 - Hawkes Brook Inflow=27.23 cfs 4.448 af
Primary=27.23 cfs 4.448 af

Link DP2: Design Point #2 - Isolated Wetland Inflow=4.44 cfs 0.481 af
Primary=4.44 cfs 0.481 af

Total Runoff Area = 64.972 ac Runoff Volume = 4.929 af Average Runoff Depth = 0.91"
95.18% Pervious = 61.843 ac 4.82% Impervious = 3.129 ac

Summary for Subcatchment 101S: Runoff to Hawkes Brook

Runoff = 16.83 cfs @ 12.54 hrs, Volume= 2.815 af, Depth= 0.81"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
64,297	39	>75% Grass cover, Good, HSG A
78,421	61	>75% Grass cover, Good, HSG B
261	96	Gravel surface, HSG A
7,245	96	Gravel surface, HSG B
10,924	98	Paved parking, HSG A
33,782	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
13,058	98	Roofs, HSG B
380,438	30	Woods, Good, HSG A
1,225,644	55	Woods, Good, HSG B
1,820,238		Weighted Average
1,756,306		96.49% Pervious Area
63,931		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Runoff to Hawkes Brook

Runoff = 1.04 cfs @ 12.18 hrs, Volume= 0.113 af, Depth= 0.99"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
2,382	96	Gravel surface, HSG B
57,538	55	Woods, Good, HSG B
59,920		Weighted Average
59,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 201S: Runoff to Wetland

Runoff = 10.88 cfs @ 12.38 hrs, Volume= 1.520 af, Depth= 1.22"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
27,883	39	>75% Grass cover, Good, HSG A
185,646	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,377	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
118,022	30	Woods, Good, HSG A
233,099	55	Woods, Good, HSG B
649,542		Weighted Average
579,192		89.17% Pervious Area
70,350		10.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Runoff to Wetland

Runoff = 3.57 cfs @ 12.14 hrs, Volume= 0.344 af, Depth= 1.06"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
14,957	61	>75% Grass cover, Good, HSG B
2,026	96	Gravel surface, HSG A
8,521	96	Gravel surface, HSG B
953	98	Paved parking, HSG B
499	98	Roofs, HSG B
13,130	30	Woods, Good, HSG A
128,818	55	Woods, Good, HSG B
168,904		Weighted Average
167,452		99.14% Pervious Area
1,452		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0870	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	108	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	140	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	482	0.0910	4.86		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	121	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	901	Total			

Summary for Subcatchment 203S: Runoff to Wetland

Runoff = 1.15 cfs @ 12.25 hrs, Volume= 0.137 af, Depth= 0.55"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
14,809	61	>75% Grass cover, Good, HSG B
557	98	Roofs, HSG B
56,185	30	Woods, Good, HSG A
60,034	55	Woods, Good, HSG B
131,585		Weighted Average
131,028		99.58% Pervious Area
557		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 58.074 ac, 5.31% Impervious, Inflow Depth = 0.92" for 10-Year event
Inflow = 27.23 cfs @ 12.48 hrs, Volume= 4.448 af
Primary = 27.23 cfs @ 12.48 hrs, Volume= 4.448 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 6.898 ac, 0.67% Impervious, Inflow Depth = 0.84" for 10-Year event
Inflow = 4.44 cfs @ 12.15 hrs, Volume= 0.481 af
Primary = 4.44 cfs @ 12.15 hrs, Volume= 0.481 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment101S: Runoff to Hawkes Runoff Area=1,820,238 sf 3.51% Impervious Runoff Depth=1.39"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=31.77 cfs 4.836 af

Subcatchment102S: Runoff to Hawkes Runoff Area=59,920 sf 0.00% Impervious Runoff Depth=1.71"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=2.06 cfs 0.196 af

Subcatchment201S: Runoff to Wetland Runoff Area=649,542 sf 10.83% Impervious Runoff Depth=1.90"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=17.81 cfs 2.366 af

Subcatchment202S: Runoff to Wetland Runoff Area=168,904 sf 0.86% Impervious Runoff Depth=1.76"
Flow Length=901' Tc=8.5 min CN=WQ Runoff=6.54 cfs 0.570 af

Subcatchment203S: Runoff to Wetland Runoff Area=131,585 sf 0.42% Impervious Runoff Depth=0.99"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=2.32 cfs 0.250 af

Link DP1: Design Point #1 - Hawkes Brook Inflow=49.12 cfs 7.397 af
Primary=49.12 cfs 7.397 af

Link DP2: Design Point #2 - Isolated Wetland Inflow=8.40 cfs 0.820 af
Primary=8.40 cfs 0.820 af

Total Runoff Area = 64.972 ac Runoff Volume = 8.217 af Average Runoff Depth = 1.52"
95.18% Pervious = 61.843 ac 4.82% Impervious = 3.129 ac

Summary for Subcatchment 101S: Runoff to Hawkes Brook

Runoff = 31.77 cfs @ 12.51 hrs, Volume= 4.836 af, Depth= 1.39"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
64,297	39	>75% Grass cover, Good, HSG A
78,421	61	>75% Grass cover, Good, HSG B
261	96	Gravel surface, HSG A
7,245	96	Gravel surface, HSG B
10,924	98	Paved parking, HSG A
33,782	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
13,058	98	Roofs, HSG B
380,438	30	Woods, Good, HSG A
1,225,644	55	Woods, Good, HSG B
1,820,238		Weighted Average
1,756,306		96.49% Pervious Area
63,931		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Runoff to Hawkes Brook

Runoff = 2.06 cfs @ 12.17 hrs, Volume= 0.196 af, Depth= 1.71"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
2,382	96	Gravel surface, HSG B
57,538	55	Woods, Good, HSG B
59,920		Weighted Average
59,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 201S: Runoff to Wetland

Runoff = 17.81 cfs @ 12.38 hrs, Volume= 2.366 af, Depth= 1.90"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
27,883	39	>75% Grass cover, Good, HSG A
185,646	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,377	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
118,022	30	Woods, Good, HSG A
233,099	55	Woods, Good, HSG B
649,542		Weighted Average
579,192		89.17% Pervious Area
70,350		10.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Runoff to Wetland

Runoff = 6.54 cfs @ 12.13 hrs, Volume= 0.570 af, Depth= 1.76"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
14,957	61	>75% Grass cover, Good, HSG B
2,026	96	Gravel surface, HSG A
8,521	96	Gravel surface, HSG B
953	98	Paved parking, HSG B
499	98	Roofs, HSG B
13,130	30	Woods, Good, HSG A
128,818	55	Woods, Good, HSG B
168,904		Weighted Average
167,452		99.14% Pervious Area
1,452		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0870	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	108	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	140	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	482	0.0910	4.86		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	121	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	901	Total			

Summary for Subcatchment 203S: Runoff to Wetland

Runoff = 2.32 cfs @ 12.22 hrs, Volume= 0.250 af, Depth= 0.99"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
14,809	61	>75% Grass cover, Good, HSG B
557	98	Roofs, HSG B
56,185	30	Woods, Good, HSG A
60,034	55	Woods, Good, HSG B
131,585		Weighted Average
131,028		99.58% Pervious Area
557		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 58.074 ac, 5.31% Impervious, Inflow Depth = 1.53" for 25-Year event
Inflow = 49.12 cfs @ 12.46 hrs, Volume= 7.397 af
Primary = 49.12 cfs @ 12.46 hrs, Volume= 7.397 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 6.898 ac, 0.67% Impervious, Inflow Depth = 1.43" for 25-Year event
Inflow = 8.40 cfs @ 12.14 hrs, Volume= 0.820 af
Primary = 8.40 cfs @ 12.14 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment101S: Runoff to Hawkes Runoff Area=1,820,238 sf 3.51% Impervious Runoff Depth=2.90"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=70.12 cfs 10.103 af

Subcatchment102S: Runoff to Hawkes Runoff Area=59,920 sf 0.00% Impervious Runoff Depth=3.49"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=4.58 cfs 0.400 af

Subcatchment201S: Runoff to Wetland Runoff Area=649,542 sf 10.83% Impervious Runoff Depth=3.58"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=34.59 cfs 4.450 af

Subcatchment202S: Runoff to Wetland Runoff Area=168,904 sf 0.86% Impervious Runoff Depth=3.50"
Flow Length=901' Tc=8.5 min CN=WQ Runoff=13.80 cfs 1.132 af

Subcatchment203S: Runoff to Wetland Runoff Area=131,585 sf 0.42% Impervious Runoff Depth=2.25"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=5.27 cfs 0.566 af

Link DP1: Design Point #1 - Hawkes Brook Inflow=104.48 cfs 14.953 af
Primary=104.48 cfs 14.953 af

Link DP2: Design Point #2 - Isolated Wetland Inflow=18.12 cfs 1.697 af
Primary=18.12 cfs 1.697 af

Total Runoff Area = 64.972 ac Runoff Volume = 16.650 af Average Runoff Depth = 3.08"
95.18% Pervious = 61.843 ac 4.82% Impervious = 3.129 ac

Summary for Subcatchment 101S: Runoff to Hawkes Brook

Runoff = 70.12 cfs @ 12.50 hrs, Volume= 10.103 af, Depth= 2.90"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
64,297	39	>75% Grass cover, Good, HSG A
78,421	61	>75% Grass cover, Good, HSG B
261	96	Gravel surface, HSG A
7,245	96	Gravel surface, HSG B
10,924	98	Paved parking, HSG A
33,782	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
13,058	98	Roofs, HSG B
380,438	30	Woods, Good, HSG A
1,225,644	55	Woods, Good, HSG B
1,820,238		Weighted Average
1,756,306		96.49% Pervious Area
63,931		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Runoff to Hawkes Brook

Runoff = 4.58 cfs @ 12.16 hrs, Volume= 0.400 af, Depth= 3.49"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
2,382	96	Gravel surface, HSG B
57,538	55	Woods, Good, HSG B
59,920		Weighted Average
59,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 201S: Runoff to Wetland

Runoff = 34.59 cfs @ 12.38 hrs, Volume= 4.450 af, Depth= 3.58"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
27,883	39	>75% Grass cover, Good, HSG A
185,646	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,377	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
118,022	30	Woods, Good, HSG A
233,099	55	Woods, Good, HSG B
649,542		Weighted Average
579,192		89.17% Pervious Area
70,350		10.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Runoff to Wetland

Runoff = 13.80 cfs @ 12.12 hrs, Volume= 1.132 af, Depth= 3.50"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
14,957	61	>75% Grass cover, Good, HSG B
2,026	96	Gravel surface, HSG A
8,521	96	Gravel surface, HSG B
953	98	Paved parking, HSG B
499	98	Roofs, HSG B
13,130	30	Woods, Good, HSG A
128,818	55	Woods, Good, HSG B
168,904		Weighted Average
167,452		99.14% Pervious Area
1,452		0.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.0870	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	108	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	140	0.1110	1.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	482	0.0910	4.86		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	121	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	901	Total			

Summary for Subcatchment 203S: Runoff to Wetland

Runoff = 5.27 cfs @ 12.22 hrs, Volume= 0.566 af, Depth= 2.25"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
14,809	61	>75% Grass cover, Good, HSG B
557	98	Roofs, HSG B
56,185	30	Woods, Good, HSG A
60,034	55	Woods, Good, HSG B
131,585		Weighted Average
131,028		99.58% Pervious Area
557		0.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 58.074 ac, 5.31% Impervious, Inflow Depth = 3.09" for 100-Year event
Inflow = 104.48 cfs @ 12.44 hrs, Volume= 14.953 af
Primary = 104.48 cfs @ 12.44 hrs, Volume= 14.953 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

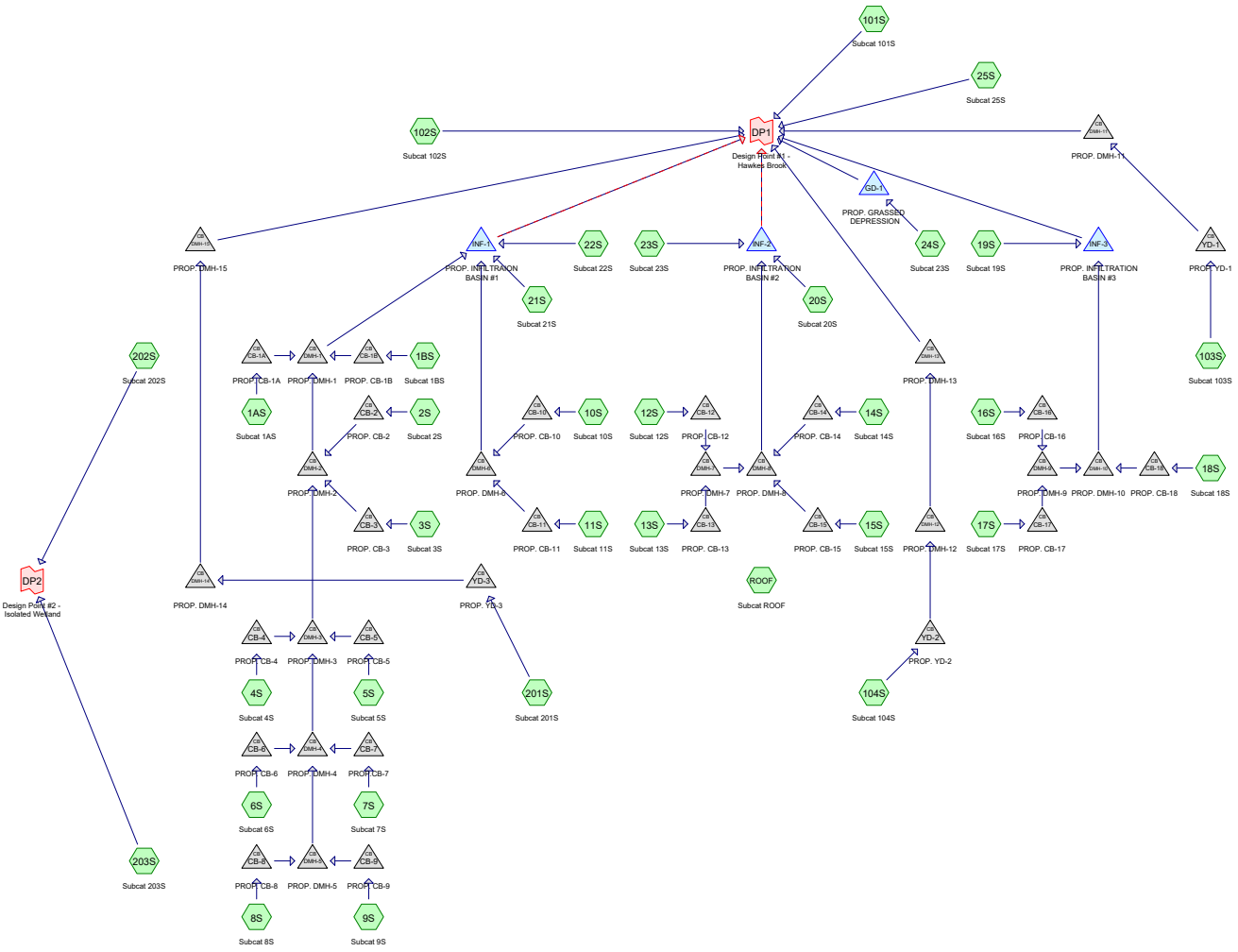
Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 6.898 ac, 0.67% Impervious, Inflow Depth = 2.95" for 100-Year event
Inflow = 18.12 cfs @ 12.14 hrs, Volume= 1.697 af
Primary = 18.12 cfs @ 12.14 hrs, Volume= 1.697 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

APPENDIX F

Post-Development HydroCAD Computations



Subcat Reach Pond Link

Routing Diagram for 2200136_Post-development REV 2
Prepared by Greenman-Pedersen, Inc, Printed 10/8/2024
HydroCAD® 10.20-5a s/n 04560 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
184,297	39	>75% Grass cover, Good, HSG A (5S, 6S, 7S, 15S, 17S, 101S, 103S, 104S, 201S, 203S)
686,755	61	>75% Grass cover, Good, HSG B (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 101S, 103S, 104S, 201S, 202S, 203S, ROOF)
8,260	80	>75% Grass cover, Good, HSG D (201S)
3,338	96	Gravel surface, HSG A (101S, 104S, 201S)
8,503	96	Gravel surface, HSG B (101S, 104S, 201S)
32,273	98	Paved parking, HSG A (4S, 5S, 6S, 7S, 15S, 17S, 101S, 103S, 104S, 201S)
168,575	98	Paved parking, HSG B (1AS, 1BS, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 24S, 25S, 101S, 102S, 103S, 104S, 201S, 202S)
19,095	98	Roofs, HSG A (101S, 201S, ROOF)
107,445	98	Roofs, HSG B (4S, 6S, 7S, 8S, 9S, 101S, 103S, 104S, 201S, 202S, 203S, ROOF)
454,238	30	Woods, Good, HSG A (6S, 101S, 103S, 104S, 201S, 203S)
1,157,397	55	Woods, Good, HSG B (3S, 4S, 6S, 7S, 8S, 9S, 21S, 101S, 102S, 103S, 104S, 201S, 202S, 203S)
2,830,174	**57**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
693,240	HSG A	4S, 5S, 6S, 7S, 15S, 17S, 101S, 103S, 104S, 201S, 203S, ROOF
2,128,674	HSG B	1AS, 1BS, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 101S, 102S, 103S, 104S, 201S, 202S, 203S, ROOF
0	HSG C	
8,260	HSG D	201S
0	Other	
2,830,174		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
184,297	686,755	0	8,260	0	879,311	>75% Grass cover, Good	
3,338	8,503	0	0	0	11,841	Gravel surface	
32,273	168,575	0	0	0	200,847	Paved parking	
19,095	107,445	0	0	0	126,540	Roofs	
454,238	1,157,397	0	0	0	1,611,635	Woods, Good	
693,240	**2,128,674**	**0**	**8,260**	**0**	**2,830,174**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	CB-10	154.50	154.30	11.0	0.0182	0.012	0.0	12.0	0.0	
2	CB-11	154.50	154.30	24.0	0.0083	0.012	0.0	12.0	0.0	
3	CB-12	155.00	154.50	10.0	0.0500	0.012	0.0	12.0	0.0	
4	CB-13	155.00	154.50	24.0	0.0208	0.012	0.0	12.0	0.0	
5	CB-14	151.50	151.20	31.0	0.0097	0.012	0.0	12.0	0.0	
6	CB-15	151.50	151.20	37.0	0.0081	0.012	0.0	12.0	0.0	
7	CB-16	154.00	153.80	8.0	0.0250	0.012	0.0	12.0	0.0	
8	CB-17	154.00	153.80	21.0	0.0095	0.012	0.0	12.0	0.0	
9	CB-18	155.00	154.80	15.0	0.0133	0.012	0.0	12.0	0.0	
10	CB-1A	147.30	147.10	13.0	0.0154	0.012	0.0	12.0	0.0	
11	CB-1B	147.30	147.10	13.0	0.0154	0.012	0.0	12.0	0.0	
12	CB-2	149.50	149.20	19.0	0.0158	0.012	0.0	12.0	0.0	
13	CB-3	149.10	148.80	42.0	0.0071	0.012	0.0	12.0	0.0	
14	CB-4	156.30	156.10	14.0	0.0143	0.012	0.0	12.0	0.0	
15	CB-5	156.30	156.10	13.0	0.0154	0.012	0.0	12.0	0.0	
16	CB-6	178.30	178.10	14.0	0.0143	0.012	0.0	12.0	0.0	
17	CB-7	178.30	178.10	14.0	0.0143	0.012	0.0	12.0	0.0	
18	CB-8	206.70	206.10	13.0	0.0462	0.012	0.0	12.0	0.0	
19	CB-9	206.70	206.10	13.0	0.0462	0.012	0.0	12.0	0.0	
20	DMH-1	147.00	145.80	147.0	0.0082	0.012	0.0	18.0	0.0	
21	DMH-10	153.10	146.00	79.0	0.0899	0.012	0.0	12.0	0.0	
22	DMH-11	154.40	145.50	105.0	0.0848	0.012	0.0	18.0	0.0	
23	DMH-12	151.50	146.00	165.0	0.0333	0.012	0.0	18.0	0.0	
24	DMH-13	145.90	144.00	90.0	0.0211	0.012	0.0	18.0	0.0	
25	DMH-14	147.90	146.25	67.0	0.0246	0.012	0.0	24.0	0.0	
26	DMH-15	146.15	144.00	300.0	0.0072	0.012	0.0	24.0	0.0	
27	DMH-2	147.50	147.10	62.0	0.0065	0.012	0.0	18.0	0.0	
28	DMH-3	154.80	147.60	255.0	0.0282	0.012	0.0	18.0	0.0	
29	DMH-4	178.00	154.90	250.0	0.0924	0.012	0.0	12.0	0.0	
30	DMH-5	206.00	178.10	251.0	0.1112	0.012	0.0	12.0	0.0	
31	DMH-6	154.00	149.00	117.0	0.0427	0.012	0.0	12.0	0.0	
32	DMH-7	154.40	151.20	123.0	0.0260	0.012	0.0	12.0	0.0	
33	DMH-8	151.10	145.00	136.0	0.0449	0.012	0.0	18.0	0.0	
34	DMH-9	153.70	153.20	79.0	0.0063	0.012	0.0	12.0	0.0	
35	INF-1	144.25	144.00	36.0	0.0069	0.012	0.0	12.0	0.0	
36	INF-2	143.25	140.00	40.0	0.0813	0.012	0.0	12.0	0.0	
37	YD-1	155.00	154.50	40.0	0.0125	0.012	0.0	18.0	0.0	
38	YD-2	156.50	151.60	96.0	0.0510	0.012	0.0	18.0	0.0	
39	YD-3	148.50	148.00	43.0	0.0116	0.012	0.0	24.0	0.0	

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1AS: Subcat 1AS Runoff Area=4,096 sf 100.00% Impervious Runoff Depth=2.88"
Flow Length=310' Tc=1.7 min CN=98 Runoff=0.33 cfs 982 cf

Subcatchment1BS: Subcat 1BS Runoff Area=895 sf 100.00% Impervious Runoff Depth=2.88"
Flow Length=70' Slope=0.0200 '/' Tc=0.6 min CN=98 Runoff=0.07 cfs 215 cf

Subcatchment2S: Subcat 2S Runoff Area=3,445 sf 79.85% Impervious Runoff Depth=2.38"
Flow Length=170' Tc=3.3 min CN=WQ Runoff=0.21 cfs 683 cf

Subcatchment3S: Subcat 3S Runoff Area=40,581 sf 22.05% Impervious Runoff Depth=0.93"
Flow Length=250' Tc=2.7 min CN=WQ Runoff=0.87 cfs 3,156 cf

Subcatchment4S: Subcat 4S Runoff Area=6,683 sf 52.95% Impervious Runoff Depth=1.71"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=0.31 cfs 953 cf

Subcatchment5S: Subcat 5S Runoff Area=15,922 sf 34.35% Impervious Runoff Depth=1.23"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=0.51 cfs 1,630 cf

Subcatchment6S: Subcat 6S Runoff Area=22,666 sf 25.71% Impervious Runoff Depth=0.80"
Flow Length=250' Tc=0.9 min CN=WQ Runoff=0.49 cfs 1,516 cf

Subcatchment7S: Subcat 7S Runoff Area=39,670 sf 26.91% Impervious Runoff Depth=0.92"
Flow Length=480' Tc=4.5 min CN=WQ Runoff=0.86 cfs 3,037 cf

Subcatchment8S: Subcat 8S Runoff Area=12,260 sf 26.99% Impervious Runoff Depth=1.00"
Flow Length=250' Tc=2.4 min CN=WQ Runoff=0.29 cfs 1,020 cf

Subcatchment9S: Subcat 9S Runoff Area=12,855 sf 41.05% Impervious Runoff Depth=1.39"
Flow Length=300' Slope=0.0700 '/' Tc=3.4 min CN=WQ Runoff=0.43 cfs 1,486 cf

Subcatchment10S: Subcat 10S Runoff Area=3,923 sf 69.98% Impervious Runoff Depth=2.14"
Flow Length=190' Tc=3.4 min CN=WQ Runoff=0.22 cfs 698 cf

Subcatchment11S: Subcat 11S Runoff Area=14,342 sf 36.27% Impervious Runoff Depth=1.30"
Flow Length=235' Tc=2.6 min CN=WQ Runoff=0.47 cfs 1,558 cf

Subcatchment12S: Subcat 12S Runoff Area=4,589 sf 72.91% Impervious Runoff Depth=2.21"
Flow Length=180' Tc=3.5 min CN=WQ Runoff=0.26 cfs 845 cf

Subcatchment13S: Subcat 13S Runoff Area=16,855 sf 35.02% Impervious Runoff Depth=1.27"
Flow Length=200' Tc=2.4 min CN=WQ Runoff=0.54 cfs 1,788 cf

Subcatchment14S: Subcat 14S Runoff Area=7,169 sf 66.61% Impervious Runoff Depth=2.05"
Flow Length=185' Tc=3.5 min CN=WQ Runoff=0.38 cfs 1,226 cf

Subcatchment15S: Subcat 15S Runoff Area=38,051 sf 28.52% Impervious Runoff Depth=1.05"
Flow Length=280' Tc=3.4 min CN=WQ Runoff=0.96 cfs 3,323 cf

Subcatchment16S: Subcat 16S Runoff Area=5,609 sf 80.43% Impervious Runoff Depth=2.39"
Flow Length=235' Tc=0.8 min CN=WQ Runoff=0.38 cfs 1,119 cf

Subcatchment17S: Subcat 17S Runoff Area=36,538 sf 27.17% Impervious Runoff Depth=0.95"
Flow Length=280' Tc=3.5 min CN=WQ Runoff=0.85 cfs 2,906 cf

Subcatchment18S: Subcat 18S Runoff Area=4,802 sf 58.01% Impervious Runoff Depth=1.84"
Flow Length=50' Slope=0.0200 '/' Tc=3.2 min CN=WQ Runoff=0.23 cfs 737 cf

Subcatchment19S: Subcat 19S Runoff Area=23,856 sf 8.35% Impervious Runoff Depth=0.61"
Flow Length=140' Slope=0.1400 '/' Tc=2.4 min CN=WQ Runoff=0.31 cfs 1,220 cf

Subcatchment20S: Subcat 20S Runoff Area=45,391 sf 9.32% Impervious Runoff Depth=0.64"
Flow Length=140' Slope=0.0800 '/' Tc=3.1 min CN=WQ Runoff=0.60 cfs 2,413 cf

Subcatchment21S: Subcat 21S Runoff Area=65,663 sf 5.31% Impervious Runoff Depth=0.52"
Flow Length=230' Slope=0.0500 '/' Tc=4.7 min CN=WQ Runoff=0.61 cfs 2,826 cf

Subcatchment22S: Subcat 22S Runoff Area=10,299 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=142' Tc=3.2 min CN=61 Runoff=0.07 cfs 350 cf

Subcatchment23S: Subcat 23S Runoff Area=11,706 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=110' Tc=3.2 min CN=61 Runoff=0.09 cfs 398 cf

Subcatchment24S: Subcat 23S Runoff Area=14,047 sf 9.72% Impervious Runoff Depth=0.65"
Flow Length=140' Tc=3.4 min CN=WQ Runoff=0.19 cfs 758 cf

Subcatchment25S: Subcat 25S Runoff Area=11,916 sf 10.09% Impervious Runoff Depth=0.66"
Flow Length=70' Tc=2.0 min CN=WQ Runoff=0.17 cfs 652 cf

Subcatchment101S: Subcat 101S Runoff Area=1,032,309 sf 5.35% Impervious Runoff Depth=0.36"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=3.27 cfs 31,389 cf

Subcatchment102S: Subcat 102S Runoff Area=54,684 sf 0.01% Impervious Runoff Depth=0.23"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=0.10 cfs 1,026 cf

Subcatchment103S: Subcat 103S Runoff Area=156,437 sf 4.63% Impervious Runoff Depth=0.25"
Flow Length=880' Tc=17.9 min CN=WQ Runoff=0.46 cfs 3,250 cf

Subcatchment104S: Subcat 104S Runoff Area=269,613 sf 0.59% Impervious Runoff Depth=0.12"
Flow Length=1,090' Tc=19.8 min CN=WQ Runoff=0.33 cfs 2,741 cf

Subcatchment201S: Subcat 201S Runoff Area=572,884 sf 12.31% Impervious Runoff Depth=0.61"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=4.20 cfs 28,911 cf

Subcatchment202S: Subcat 202S Runoff Area=71,588 sf 0.18% Impervious Runoff Depth=0.24"
Flow Length=220' Tc=6.5 min CN=WQ Runoff=0.15 cfs 1,404 cf

Subcatchment203S: Subcat 203S Runoff Area=116,233 sf 1.23% Impervious Runoff Depth=0.20"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=0.23 cfs 1,972 cf

Subcatchment ROOF: Subcat ROOF Runoff Area=82,597 sf 94.63% Impervious Runoff Depth=2.75"
Tc=0.0 min CN=WQ Runoff=6.64 cfs 18,896 cf

Pond CB-10: PROP. CB-10 Peak Elev=154.73' Inflow=0.22 cfs 698 cf
12.0" Round Culvert n=0.012 L=11.0' S=0.0182 '/' Outflow=0.22 cfs 698 cf

Pond CB-11: PROP. CB-11 Peak Elev=154.87' Inflow=0.47 cfs 1,558 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.47 cfs 1,558 cf

Pond CB-12: PROP. CB-12 Peak Elev=155.25' Inflow=0.26 cfs 845 cf
12.0" Round Culvert n=0.012 L=10.0' S=0.0500 '/' Outflow=0.26 cfs 845 cf

Pond CB-13: PROP. CB-13 Peak Elev=155.37' Inflow=0.54 cfs 1,788 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0208 '/' Outflow=0.54 cfs 1,788 cf

Pond CB-14: PROP. CB-14 Peak Elev=151.91' Inflow=0.38 cfs 1,226 cf
12.0" Round Culvert n=0.012 L=31.0' S=0.0097 '/' Outflow=0.38 cfs 1,226 cf

Pond CB-15: PROP. CB-15 Peak Elev=152.09' Inflow=0.96 cfs 3,323 cf
12.0" Round Culvert n=0.012 L=37.0' S=0.0081 '/' Outflow=0.96 cfs 3,323 cf

Pond CB-16: PROP. CB-16 Peak Elev=154.40' Inflow=0.38 cfs 1,119 cf
12.0" Round Culvert n=0.012 L=8.0' S=0.0250 '/' Outflow=0.38 cfs 1,119 cf

Pond CB-17: PROP. CB-17 Peak Elev=154.56' Inflow=0.85 cfs 2,906 cf
12.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=0.85 cfs 2,906 cf

Pond CB-18: PROP. CB-18 Peak Elev=155.23' Inflow=0.23 cfs 737 cf
12.0" Round Culvert n=0.012 L=15.0' S=0.0133 '/' Outflow=0.23 cfs 737 cf

Pond CB-1A: PROP. CB-1A Peak Elev=148.00' Inflow=0.33 cfs 982 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.33 cfs 982 cf

Pond CB-1B: PROP. CB-1B Peak Elev=147.99' Inflow=0.07 cfs 215 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.07 cfs 215 cf

Pond CB-2: PROP. CB-2 Peak Elev=149.73' Inflow=0.21 cfs 683 cf
12.0" Round Culvert n=0.012 L=19.0' S=0.0158 '/' Outflow=0.21 cfs 683 cf

Pond CB-3: PROP. CB-3 Peak Elev=149.62' Inflow=0.87 cfs 3,156 cf
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=0.87 cfs 3,156 cf

Pond CB-4: PROP. CB-4 Peak Elev=156.58' Inflow=0.31 cfs 953 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.31 cfs 953 cf

Pond CB-5: PROP. CB-5 Peak Elev=156.66' Inflow=0.51 cfs 1,630 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.51 cfs 1,630 cf

Pond CB-6: PROP. CB-6 Peak Elev=178.83' Inflow=0.49 cfs 1,516 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.49 cfs 1,516 cf

Pond CB-7: PROP.CB-7 Peak Elev=178.93' Inflow=0.86 cfs 3,037 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.86 cfs 3,037 cf

Pond CB-8: PROP. CB-8 Peak Elev=206.96' Inflow=0.29 cfs 1,020 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=0.29 cfs 1,020 cf

Pond CB-9: PROP. CB-9 Peak Elev=207.03' Inflow=0.43 cfs 1,486 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=0.43 cfs 1,486 cf

Pond DMH-1: PROP. DMH-1 Peak Elev=147.98' Inflow=4.16 cfs 14,679 cf
18.0" Round Culvert n=0.012 L=147.0' S=0.0082 '/' Outflow=4.16 cfs 14,679 cf

Pond DMH-10: PROP. DMH-10 Peak Elev=153.72' Inflow=1.38 cfs 4,762 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0899 '/' Outflow=1.38 cfs 4,762 cf

Pond DMH-11: PROP. DMH-11 Peak Elev=154.70' Inflow=0.46 cfs 3,250 cf
18.0" Round Culvert n=0.012 L=105.0' S=0.0848 '/' Outflow=0.46 cfs 3,250 cf

Pond DMH-12: PROP. DMH-12 Peak Elev=151.75' Inflow=0.33 cfs 2,741 cf
18.0" Round Culvert n=0.012 L=165.0' S=0.0333 '/' Outflow=0.33 cfs 2,741 cf

Pond DMH-13: PROP. DMH-13 Peak Elev=146.15' Inflow=0.33 cfs 2,741 cf
18.0" Round Culvert n=0.012 L=90.0' S=0.0211 '/' Outflow=0.33 cfs 2,741 cf

Pond DMH-14: PROP. DMH-14 Peak Elev=148.77' Inflow=4.20 cfs 28,911 cf
24.0" Round Culvert n=0.012 L=67.0' S=0.0246 '/' Outflow=4.20 cfs 28,911 cf

Pond DMH-15: PROP. DMH-15 Peak Elev=147.02' Inflow=4.20 cfs 28,911 cf
24.0" Round Culvert n=0.012 L=300.0' S=0.0072 '/' Outflow=4.20 cfs 28,911 cf

Pond DMH-2: PROP. DMH-2 Peak Elev=148.57' Inflow=3.78 cfs 13,482 cf
18.0" Round Culvert n=0.012 L=62.0' S=0.0065 '/' Outflow=3.78 cfs 13,482 cf

Pond DMH-3: PROP. DMH-3 Peak Elev=155.56' Inflow=2.70 cfs 9,642 cf
18.0" Round Culvert n=0.012 L=255.0' S=0.0282 '/' Outflow=2.70 cfs 9,642 cf

Pond DMH-4: PROP. DMH-4 Peak Elev=178.77' Inflow=1.95 cfs 7,059 cf
12.0" Round Culvert n=0.012 L=250.0' S=0.0924 '/' Outflow=1.95 cfs 7,059 cf

Pond DMH-5: PROP. DMH-5 Peak Elev=206.43' Inflow=0.71 cfs 2,506 cf
12.0" Round Culvert n=0.012 L=251.0' S=0.1112 '/' Outflow=0.71 cfs 2,506 cf

Pond DMH-6: PROP. DMH-6 Peak Elev=154.42' Inflow=0.68 cfs 2,256 cf
12.0" Round Culvert n=0.012 L=117.0' S=0.0427 '/' Outflow=0.68 cfs 2,256 cf

Pond DMH-7: PROP. DMH-7 Peak Elev=154.85' Inflow=0.79 cfs 2,632 cf
12.0" Round Culvert n=0.012 L=123.0' S=0.0260 '/' Outflow=0.79 cfs 2,632 cf

Pond DMH-8: PROP. DMH-8 Peak Elev=151.77' Inflow=2.12 cfs 7,182 cf
18.0" Round Culvert n=0.012 L=136.0' S=0.0449 '/' Outflow=2.12 cfs 7,182 cf

Pond DMH-9: PROP. DMH-9 Peak Elev=154.32' Inflow=1.16 cfs 4,026 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=1.16 cfs 4,026 cf

Pond GD-1: PROP. GRASSED DEPRESSION Peak Elev=145.09' Storage=96 cf Inflow=0.19 cfs 758 cf
Discarded=0.06 cfs 758 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 758 cf

Pond INF-1: PROP. INFILTRAION BASIN #1 Peak Elev=145.90' Storage=6,815 cf Inflow=5.36 cfs 20,110 cf
Discarded=0.46 cfs 20,110 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.46 cfs 20,110 cf

Pond INF-2: PROP. INFILTRATION BASIN #2 Peak Elev=144.57' Storage=2,919 cf Inflow=2.79 cfs 9,993 cf
Discarded=0.31 cfs 9,993 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.31 cfs 9,993 cf

Pond INF-3: PROP. INFILTRATION BASIN #3 Peak Elev=142.89' Storage=2,009 cf Inflow=1.69 cfs 5,983 cf
Discarded=0.16 cfs 5,983 cf Primary=0.00 cfs 0 cf Outflow=0.16 cfs 5,983 cf

Pond YD-1: PROP. YD-1 Peak Elev=155.30' Inflow=0.46 cfs 3,250 cf
18.0" Round Culvert n=0.012 L=40.0' S=0.0125 '/' Outflow=0.46 cfs 3,250 cf

Pond YD-2: PROP. YD-2 Peak Elev=156.75' Inflow=0.33 cfs 2,741 cf
18.0" Round Culvert n=0.012 L=96.0' S=0.0510 '/' Outflow=0.33 cfs 2,741 cf

Pond YD-3: PROP. YD-3 Peak Elev=149.42' Inflow=4.20 cfs 28,911 cf
24.0" Round Culvert n=0.012 L=43.0' S=0.0116 '/' Outflow=4.20 cfs 28,911 cf

Link DP1: Design Point #1 - Hawkes Brook Inflow=8.04 cfs 67,969 cf
Primary=8.04 cfs 67,969 cf

Link DP2: Design Point #2 - Isolated Wetland Inflow=0.38 cfs 3,376 cf
Primary=0.38 cfs 3,376 cf

Total Runoff Area = 2,830,174 sf Runoff Volume = 127,084 cf Average Runoff Depth = 0.54"
88.43% Pervious = 2,502,787 sf 11.57% Impervious = 327,387 sf

Summary for Subcatchment 1AS: Subcat 1AS

Runoff = 0.33 cfs @ 12.02 hrs, Volume= 982 cf, Depth= 2.88"
Routed to Pond CB-1A : PROP. CB-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
4,096	98	Paved parking, HSG B
4,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
1.4	290	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	310	Total			

Summary for Subcatchment 1BS: Subcat 1BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.07 cfs @ 12.01 hrs, Volume= 215 cf, Depth= 2.88"
Routed to Pond CB-1B : PROP. CB-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
895	98	Paved parking, HSG B
895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	70	Total			

Summary for Subcatchment 2S: Subcat 2S

Runoff = 0.21 cfs @ 12.05 hrs, Volume= 683 cf, Depth= 2.38"
Routed to Pond CB-2 : PROP. CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
694	61	>75% Grass cover, Good, HSG B
2,751	98	Paved parking, HSG B
3,445		Weighted Average
694		20.15% Pervious Area
2,751		79.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	170	Total			

Summary for Subcatchment 3S: Subcat 3S

Runoff = 0.87 cfs @ 12.05 hrs, Volume= 3,156 cf, Depth= 0.93"
Routed to Pond CB-3 : PROP. CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
27,382	61	>75% Grass cover, Good, HSG B
8,949	98	Paved parking, HSG B
4,250	55	Woods, Good, HSG B
40,581		Weighted Average
31,632		77.95% Pervious Area
8,949		22.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	70	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	250	Total			

Summary for Subcatchment 4S: Subcat 4S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.31 cfs @ 12.02 hrs, Volume= 953 cf, Depth= 1.71"
Routed to Pond CB-4 : PROP. CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
3,010	61	>75% Grass cover, Good, HSG B
82	98	Paved parking, HSG A
3,455	98	Paved parking, HSG B
2	98	Roofs, HSG B
134	55	Woods, Good, HSG B
6,683		Weighted Average
3,144		47.05% Pervious Area
3,538		52.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 5S: Subcat 5S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.51 cfs @ 12.02 hrs, Volume= 1,630 cf, Depth= 1.23"
Routed to Pond CB-5 : PROP. CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
1,087	39	>75% Grass cover, Good, HSG A
9,367	61	>75% Grass cover, Good, HSG B
134	98	Paved parking, HSG A
5,335	98	Paved parking, HSG B
15,922		Weighted Average
10,454		65.65% Pervious Area
5,469		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 6S: Subcat 6S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.49 cfs @ 12.01 hrs, Volume= 1,516 cf, Depth= 0.80"
Routed to Pond CB-6 : PROP. CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
9,260	39	>75% Grass cover, Good, HSG A
1,509	61	>75% Grass cover, Good, HSG B
3,852	98	Paved parking, HSG A
1,695	98	Paved parking, HSG B
281	98	Roofs, HSG B
2,497	30	Woods, Good, HSG A
3,572	55	Woods, Good, HSG B
22,666		Weighted Average
16,838		74.29% Pervious Area
5,828		25.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	250	Total			

Summary for Subcatchment 7S: Subcat 7S

Runoff = 0.86 cfs @ 12.07 hrs, Volume= 3,037 cf, Depth= 0.92"
Routed to Pond CB-7 : PROP.CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
14,582	39	>75% Grass cover, Good, HSG A
13,602	61	>75% Grass cover, Good, HSG B
5,822	98	Paved parking, HSG A
1,575	98	Paved parking, HSG B
3,276	98	Roofs, HSG B
813	55	Woods, Good, HSG B
39,670		Weighted Average
28,996		73.09% Pervious Area
10,673		26.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0880	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.8	220	0.0880	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	480	Total			

Summary for Subcatchment 8S: Subcat 8S

Runoff = 0.29 cfs @ 12.04 hrs, Volume= 1,020 cf, Depth= 1.00"
Routed to Pond CB-8 : PROP. CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
3,825	61	>75% Grass cover, Good, HSG B
3,201	98	Paved parking, HSG B
108	98	Roofs, HSG B
5,126	55	Woods, Good, HSG B
12,260		Weighted Average
8,951		73.01% Pervious Area
3,309		26.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
2.1	230	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	250	Total			

Summary for Subcatchment 9S: Subcat 9S

Runoff = 0.43 cfs @ 12.05 hrs, Volume= 1,486 cf, Depth= 1.39"
Routed to Pond CB-9 : PROP. CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
5,176	61	>75% Grass cover, Good, HSG B
4,886	98	Paved parking, HSG B
391	98	Roofs, HSG B
2,402	55	Woods, Good, HSG B
12,855		Weighted Average
7,578		58.95% Pervious Area
5,277		41.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0700	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	40	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	230	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	300	Total			

Summary for Subcatchment 10S: Subcat 10S

Runoff = 0.22 cfs @ 12.05 hrs, Volume= 698 cf, Depth= 2.14"
Routed to Pond CB-10 : PROP. CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
1,177	61	>75% Grass cover, Good, HSG B
2,745	98	Paved parking, HSG B
3,923		Weighted Average
1,177		30.02% Pervious Area
2,745		69.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	190	Total			

Summary for Subcatchment 11S: Subcat 11S

Runoff = 0.47 cfs @ 12.04 hrs, Volume= 1,558 cf, Depth= 1.30"
Routed to Pond CB-11 : PROP. CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
9,140	61	>75% Grass cover, Good, HSG B
5,201	98	Paved parking, HSG B
14,342		Weighted Average
9,140		63.73% Pervious Area
5,201		36.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1500	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.2	35	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	235	Total			

Summary for Subcatchment 12S: Subcat 12S

Runoff = 0.26 cfs @ 12.05 hrs, Volume= 845 cf, Depth= 2.21"
Routed to Pond CB-12 : PROP. CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
1,243	61	>75% Grass cover, Good, HSG B
3,346	98	Paved parking, HSG B
4,589		Weighted Average
1,243		27.09% Pervious Area
3,346		72.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	180	Total			

Summary for Subcatchment 13S: Subcat 13S

Runoff = 0.54 cfs @ 12.04 hrs, Volume= 1,788 cf, Depth= 1.27"
Routed to Pond CB-13 : PROP. CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
10,952	61	>75% Grass cover, Good, HSG B
5,903	98	Paved parking, HSG B
16,855		Weighted Average
10,952		64.98% Pervious Area
5,903		35.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	40	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	200	Total			

Summary for Subcatchment 14S: Subcat 14S

Runoff = 0.38 cfs @ 12.05 hrs, Volume= 1,226 cf, Depth= 2.05"
Routed to Pond CB-14 : PROP. CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
2,394	61	>75% Grass cover, Good, HSG B
4,775	98	Paved parking, HSG B
7,169		Weighted Average
2,394		33.39% Pervious Area
4,775		66.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	165	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	185	Total			

Summary for Subcatchment 15S: Subcat 15S

Runoff = 0.96 cfs @ 12.05 hrs, Volume= 3,323 cf, Depth= 1.05"
Routed to Pond CB-15 : PROP. CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
5,979	39	>75% Grass cover, Good, HSG A
21,222	61	>75% Grass cover, Good, HSG B
839	98	Paved parking, HSG A
10,012	98	Paved parking, HSG B
38,051		Weighted Average
27,201		71.48% Pervious Area
10,850		28.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.3	55	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	175	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	280	Total			

Summary for Subcatchment 16S: Subcat 16S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.38 cfs @ 12.01 hrs, Volume= 1,119 cf, Depth= 2.39"
Routed to Pond CB-16 : PROP. CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
1,098	61	>75% Grass cover, Good, HSG B
4,512	98	Paved parking, HSG B
5,609		Weighted Average
1,098		19.57% Pervious Area
4,512		80.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.5	215	0.1300	7.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	235	Total			

Summary for Subcatchment 17S: Subcat 17S

Runoff = 0.85 cfs @ 12.05 hrs, Volume= 2,906 cf, Depth= 0.95"
Routed to Pond CB-17 : PROP. CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
11,133	39	>75% Grass cover, Good, HSG A
15,479	61	>75% Grass cover, Good, HSG B
310	98	Paved parking, HSG A
9,616	98	Paved parking, HSG B
36,538		Weighted Average
26,612		72.83% Pervious Area
9,926		27.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	90	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	140	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	280	Total			

Summary for Subcatchment 18S: Subcat 18S

Runoff = 0.23 cfs @ 12.05 hrs, Volume= 737 cf, Depth= 1.84"
Routed to Pond CB-18 : PROP. CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
2,016	61	>75% Grass cover, Good, HSG B
2,786	98	Paved parking, HSG B
4,802		Weighted Average
2,016		41.99% Pervious Area
2,786		58.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	30	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	50	Total			

Summary for Subcatchment 19S: Subcat 19S

Runoff = 0.31 cfs @ 12.05 hrs, Volume= 1,220 cf, Depth= 0.61"
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
21,865	61	>75% Grass cover, Good, HSG B
1,991	98	Paved parking, HSG B
23,856		Weighted Average
21,865		91.65% Pervious Area
1,991		8.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1400	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	110	0.1400	2.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	140	Total			

Summary for Subcatchment 20S: Subcat 20S

Runoff = 0.60 cfs @ 12.06 hrs, Volume= 2,413 cf, Depth= 0.64"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
41,162	61	>75% Grass cover, Good, HSG B
4,228	98	Paved parking, HSG B
45,391		Weighted Average
41,162		90.68% Pervious Area
4,228		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.9	110	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	140	Total			

Summary for Subcatchment 21S: Subcat 21S

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 2,826 cf, Depth= 0.52"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
54,083	61	>75% Grass cover, Good, HSG B
3,487	98	Paved parking, HSG B
8,093	55	Woods, Good, HSG B
65,663		Weighted Average
62,176		94.69% Pervious Area
3,487		5.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
2.1	200	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	230	Total			

Summary for Subcatchment 22S: Subcat 22S

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 350 cf, Depth= 0.41"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
10,299	61	>75% Grass cover, Good, HSG B
10,299		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	72	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	142	Total			

Summary for Subcatchment 23S: Subcat 23S

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 398 cf, Depth= 0.41"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
11,706	61	>75% Grass cover, Good, HSG B
11,706		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.2	80	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	110	Total			

Summary for Subcatchment 24S: Subcat 23S

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 758 cf, Depth= 0.65"
Routed to Pond GD-1 : PROP. GRASSED DEPRESSION

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
12,682	61	>75% Grass cover, Good, HSG B
1,365	98	Paved parking, HSG B
14,047		Weighted Average
12,682		90.28% Pervious Area
1,365		9.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	110	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	140	Total			

Summary for Subcatchment 25S: Subcat 25S

Runoff = 0.17 cfs @ 12.04 hrs, Volume= 652 cf, Depth= 0.66"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
10,714	61	>75% Grass cover, Good, HSG B
1,202	98	Paved parking, HSG B
11,916		Weighted Average
10,714		89.91% Pervious Area
1,202		10.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	20	0.0800	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	50	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	70	Total			

Summary for Subcatchment 101S: Subcat 101S

Runoff = 3.27 cfs @ 12.58 hrs, Volume= 31,389 cf, Depth= 0.36"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
34,820	39	>75% Grass cover, Good, HSG A
119,511	61	>75% Grass cover, Good, HSG B
16	96	Gravel surface, HSG A
4,888	96	Gravel surface, HSG B
10,860	98	Paved parking, HSG A
29,842	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
8,339	98	Roofs, HSG B
124,228	30	Woods, Good, HSG A
693,637	55	Woods, Good, HSG B
1,032,309		Weighted Average
977,100		94.65% Pervious Area
55,209		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Subcat 102S

Runoff = 0.10 cfs @ 12.43 hrs, Volume= 1,026 cf, Depth= 0.23"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
3	98	Paved parking, HSG B
54,680	55	Woods, Good, HSG B
54,684		Weighted Average
54,680		99.99% Pervious Area
3		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 103S: Subcat 103S

Runoff = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf, Depth= 0.25"
Routed to Pond YD-1 : PROP. YD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
9,487	39	>75% Grass cover, Good, HSG A
17,354	61	>75% Grass cover, Good, HSG B
59	98	Paved parking, HSG A
3,339	98	Paved parking, HSG B
3,844	98	Roofs, HSG B
73,084	30	Woods, Good, HSG A
49,270	55	Woods, Good, HSG B
156,437		Weighted Average
149,195		95.37% Pervious Area
7,243		4.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.3	80	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	390	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	360	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.9	880	Total			

Summary for Subcatchment 104S: Subcat 104S

Runoff = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf, Depth= 0.12"
Routed to Pond YD-2 : PROP. YD-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
46,882	39	>75% Grass cover, Good, HSG A
40,738	61	>75% Grass cover, Good, HSG B
205	96	Gravel surface, HSG A
449	96	Gravel surface, HSG B
6	98	Paved parking, HSG A
712	98	Paved parking, HSG B
874	98	Roofs, HSG B
135,456	30	Woods, Good, HSG A
44,293	55	Woods, Good, HSG B
269,613		Weighted Average
268,022		99.41% Pervious Area
1,591		0.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1220	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
6.3	660	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	380	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	1,090	Total			

Summary for Subcatchment 201S: Subcat 201S

Runoff = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf, Depth= 0.61"
Routed to Pond YD-3 : PROP. YD-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
38,392	39	>75% Grass cover, Good, HSG A
188,905	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,540	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
85,988	30	Woods, Good, HSG A
174,544	55	Woods, Good, HSG B
572,884		Weighted Average
502,371		87.69% Pervious Area
70,513		12.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Subcat 202S

Runoff = 0.15 cfs @ 12.35 hrs, Volume= 1,404 cf, Depth= 0.24"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
2,155	61	>75% Grass cover, Good, HSG B
131	98	Paved parking, HSG B
0	98	Roofs, HSG B
69,302	55	Woods, Good, HSG B
71,588		Weighted Average
71,457		99.82% Pervious Area
131		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0870	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.9	190	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	220	Total			

Summary for Subcatchment 203S: Subcat 203S

Runoff = 0.23 cfs @ 12.38 hrs, Volume= 1,972 cf, Depth= 0.20"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
12,674	39	>75% Grass cover, Good, HSG A
21,861	61	>75% Grass cover, Good, HSG B
1,431	98	Roofs, HSG B
32,985	30	Woods, Good, HSG A
47,282	55	Woods, Good, HSG B
116,233		Weighted Average
114,802		98.77% Pervious Area
1,431		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Subcatchment ROOF: Subcat ROOF

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 6.64 cfs @ 12.00 hrs, Volume= 18,896 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.11"

Area (sf)	CN	Description
4,434	61	>75% Grass cover, Good, HSG B
12,443	98	Roofs, HSG A
65,719	98	Roofs, HSG B
82,597		Weighted Average
4,434		5.37% Pervious Area
78,162		94.63% Impervious Area

Summary for Pond CB-10: PROP. CB-10

Inflow Area = 3,923 sf, 69.98% Impervious, Inflow Depth = 2.14" for 2-Year event
Inflow = 0.22 cfs @ 12.05 hrs, Volume= 698 cf
Outflow = 0.22 cfs @ 12.05 hrs, Volume= 698 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.05 hrs, Volume= 698 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.73' @ 12.05 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0182 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.05 hrs HW=154.73' TW=154.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.22 cfs @ 1.62 fps)

Summary for Pond CB-11: PROP. CB-11

Inflow Area = 14,342 sf, 36.27% Impervious, Inflow Depth = 1.30" for 2-Year event
Inflow = 0.47 cfs @ 12.04 hrs, Volume= 1,558 cf
Outflow = 0.47 cfs @ 12.04 hrs, Volume= 1,558 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.04 hrs, Volume= 1,558 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.87' @ 12.04 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0083 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.04 hrs HW=154.87' TW=154.42' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.46 cfs @ 2.65 fps)

Summary for Pond CB-12: PROP. CB-12

Inflow Area = 4,589 sf, 72.91% Impervious, Inflow Depth = 2.21" for 2-Year event
Inflow = 0.26 cfs @ 12.05 hrs, Volume= 845 cf
Outflow = 0.26 cfs @ 12.05 hrs, Volume= 845 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.26 cfs @ 12.05 hrs, Volume= 845 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.25' @ 12.05 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0500 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.26 cfs @ 12.05 hrs HW=155.25' TW=154.85' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.26 cfs @ 1.70 fps)

Summary for Pond CB-13: PROP. CB-13

Inflow Area = 16,855 sf, 35.02% Impervious, Inflow Depth = 1.27" for 2-Year event
Inflow = 0.54 cfs @ 12.04 hrs, Volume= 1,788 cf
Outflow = 0.54 cfs @ 12.04 hrs, Volume= 1,788 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.04 hrs, Volume= 1,788 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.37' @ 12.04 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0208 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.04 hrs HW=155.37' TW=154.85' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.54 cfs @ 2.06 fps)

Summary for Pond CB-14: PROP. CB-14

Inflow Area = 7,169 sf, 66.61% Impervious, Inflow Depth = 2.05" for 2-Year event
Inflow = 0.38 cfs @ 12.05 hrs, Volume= 1,226 cf
Outflow = 0.38 cfs @ 12.05 hrs, Volume= 1,226 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.05 hrs, Volume= 1,226 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.91' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0097 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.05 hrs HW=151.91' TW=151.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.37 cfs @ 1.81 fps)

Summary for Pond CB-15: PROP. CB-15

Inflow Area = 38,051 sf, 28.52% Impervious, Inflow Depth = 1.05" for 2-Year event
Inflow = 0.96 cfs @ 12.05 hrs, Volume= 3,323 cf
Outflow = 0.96 cfs @ 12.05 hrs, Volume= 3,323 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.96 cfs @ 12.05 hrs, Volume= 3,323 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.09' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.95 cfs @ 12.05 hrs HW=152.09' TW=151.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.95 cfs @ 2.84 fps)

Summary for Pond CB-16: PROP. CB-16

Inflow Area = 5,609 sf, 80.43% Impervious, Inflow Depth = 2.39" for 2-Year event
Inflow = 0.38 cfs @ 12.01 hrs, Volume= 1,119 cf
Outflow = 0.38 cfs @ 12.01 hrs, Volume= 1,119 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.01 hrs, Volume= 1,119 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.40' @ 12.04 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.01 hrs HW=154.38' TW=154.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.34 cfs @ 1.82 fps)

Summary for Pond CB-17: PROP. CB-17

Inflow Area = 36,538 sf, 27.17% Impervious, Inflow Depth = 0.95" for 2-Year event
Inflow = 0.85 cfs @ 12.05 hrs, Volume= 2,906 cf
Outflow = 0.85 cfs @ 12.05 hrs, Volume= 2,906 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.05 hrs, Volume= 2,906 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.56' @ 12.05 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 21.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.05 hrs HW=154.56' TW=154.32' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.85 cfs @ 2.70 fps)

Summary for Pond CB-18: PROP. CB-18

Inflow Area = 4,802 sf, 58.01% Impervious, Inflow Depth = 1.84" for 2-Year event
Inflow = 0.23 cfs @ 12.05 hrs, Volume= 737 cf
Outflow = 0.23 cfs @ 12.05 hrs, Volume= 737 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.05 hrs, Volume= 737 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.23' @ 12.05 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.80' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.05 hrs HW=155.23' TW=153.72' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.23 cfs @ 2.46 fps)

Summary for Pond CB-1A: PROP. CB-1A

Inflow Area = 4,096 sf,100.00% Impervious, Inflow Depth = 2.88" for 2-Year event
Inflow = 0.33 cfs @ 12.02 hrs, Volume= 982 cf
Outflow = 0.33 cfs @ 12.02 hrs, Volume= 982 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.02 hrs, Volume= 982 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.00' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=147.97' TW=147.97' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-1B: PROP. CB-1B

Inflow Area = 895 sf,100.00% Impervious, Inflow Depth = 2.88" for 2-Year event
Inflow = 0.07 cfs @ 12.01 hrs, Volume= 215 cf
Outflow = 0.07 cfs @ 12.01 hrs, Volume= 215 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.01 hrs, Volume= 215 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.99' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=147.89' TW=147.93' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-2: PROP. CB-2

Inflow Area = 3,445 sf, 79.85% Impervious, Inflow Depth = 2.38" for 2-Year event
Inflow = 0.21 cfs @ 12.05 hrs, Volume= 683 cf
Outflow = 0.21 cfs @ 12.05 hrs, Volume= 683 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.05 hrs, Volume= 683 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.73' @ 12.05 hrs
Flood Elev= 153.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.50'	**12.0" Round Culvert** L= 19.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.50' / 149.20' S= 0.0158 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.05 hrs HW=149.72' TW=148.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.21 cfs @ 1.61 fps)

Summary for Pond CB-3: PROP. CB-3

Inflow Area = 40,581 sf, 22.05% Impervious, Inflow Depth = 0.93" for 2-Year event
Inflow = 0.87 cfs @ 12.05 hrs, Volume= 3,156 cf
Outflow = 0.87 cfs @ 12.05 hrs, Volume= 3,156 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.05 hrs, Volume= 3,156 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.62' @ 12.05 hrs
Flood Elev= 153.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.10'	**12.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.10' / 148.80' S= 0.0071 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.87 cfs @ 12.05 hrs HW=149.62' TW=148.56' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.87 cfs @ 3.08 fps)

Summary for Pond CB-4: PROP. CB-4

Inflow Area = 6,683 sf, 52.95% Impervious, Inflow Depth = 1.71" for 2-Year event
Inflow = 0.31 cfs @ 12.02 hrs, Volume= 953 cf
Outflow = 0.31 cfs @ 12.02 hrs, Volume= 953 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.02 hrs, Volume= 953 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.58' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.02 hrs HW=156.58' TW=155.55' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.31 cfs @ 2.66 fps)

Summary for Pond CB-5: PROP. CB-5

Inflow Area = 15,922 sf, 34.35% Impervious, Inflow Depth = 1.23" for 2-Year event
Inflow = 0.51 cfs @ 12.02 hrs, Volume= 1,630 cf
Outflow = 0.51 cfs @ 12.02 hrs, Volume= 1,630 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.02 hrs, Volume= 1,630 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.66' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.02 hrs HW=156.66' TW=155.55' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.51 cfs @ 2.96 fps)

Summary for Pond CB-6: PROP. CB-6

Inflow Area = 22,666 sf, 25.71% Impervious, Inflow Depth = 0.80" for 2-Year event
Inflow = 0.49 cfs @ 12.01 hrs, Volume= 1,516 cf
Outflow = 0.49 cfs @ 12.01 hrs, Volume= 1,516 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.01 hrs, Volume= 1,516 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 178.83' @ 12.05 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.01 hrs HW=178.80' TW=178.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.41 cfs @ 1.54 fps)

Summary for Pond CB-7: PROP.CB-7

Inflow Area = 39,670 sf, 26.91% Impervious, Inflow Depth = 0.92" for 2-Year event
Inflow = 0.86 cfs @ 12.07 hrs, Volume= 3,037 cf
Outflow = 0.86 cfs @ 12.07 hrs, Volume= 3,037 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.07 hrs, Volume= 3,037 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 178.93' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.07 hrs HW=178.93' TW=178.76' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.89 cfs @ 2.43 fps)

Summary for Pond CB-8: PROP. CB-8

Inflow Area = 12,260 sf, 26.99% Impervious, Inflow Depth = 1.00" for 2-Year event
Inflow = 0.29 cfs @ 12.04 hrs, Volume= 1,020 cf
Outflow = 0.29 cfs @ 12.04 hrs, Volume= 1,020 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.04 hrs, Volume= 1,020 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 206.96' @ 12.04 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.04 hrs HW=206.96' TW=206.43' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.28 cfs @ 1.74 fps)

Summary for Pond CB-9: PROP. CB-9

Inflow Area = 12,855 sf, 41.05% Impervious, Inflow Depth = 1.39" for 2-Year event
Inflow = 0.43 cfs @ 12.05 hrs, Volume= 1,486 cf
Outflow = 0.43 cfs @ 12.05 hrs, Volume= 1,486 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 12.05 hrs, Volume= 1,486 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.03' @ 12.05 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.05 hrs HW=207.03' TW=206.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.43 cfs @ 1.94 fps)

Summary for Pond DMH-1: PROP. DMH-1

[80] Warning: Exceeded Pond CB-1A by 0.02' @ 12.00 hrs (0.29 cfs 55 cf)
[80] Warning: Exceeded Pond CB-1B by 0.04' @ 12.00 hrs (0.41 cfs 134 cf)

Inflow Area = 159,073 sf, 31.93% Impervious, Inflow Depth = 1.11" for 2-Year event
Inflow = 4.16 cfs @ 12.04 hrs, Volume= 14,679 cf
Outflow = 4.16 cfs @ 12.04 hrs, Volume= 14,679 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.16 cfs @ 12.04 hrs, Volume= 14,679 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.98' @ 12.04 hrs
Flood Elev= 152.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	**18.0" Round Culvert**
			L= 147.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 147.00' / 145.80' S= 0.0082 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=4.15 cfs @ 12.04 hrs HW=147.98' TW=145.35' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.15 cfs @ 3.38 fps)

Summary for Pond DMH-10: PROP. DMH-10

Inflow Area = 46,949 sf, 36.69% Impervious, Inflow Depth = 1.22" for 2-Year event
Inflow = 1.38 cfs @ 12.04 hrs, Volume= 4,762 cf
Outflow = 1.38 cfs @ 12.04 hrs, Volume= 4,762 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.04 hrs, Volume= 4,762 cf
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 153.72' @ 12.04 hrs
Flood Elev= 159.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.10'	**12.0" Round Culvert**
			L= 79.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 153.10' / 146.00' S= 0.0899 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.38 cfs @ 12.04 hrs HW=153.72' TW=142.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.38 cfs @ 2.69 fps)

Summary for Pond DMH-11: PROP. DMH-11

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf
Outflow = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.70' @ 12.27 hrs
Flood Elev= 159.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**18.0" Round Culvert** L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 145.50' S= 0.0848 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=0.46 cfs @ 12.27 hrs HW=154.70' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.46 cfs @ 1.85 fps)

Summary for Pond DMH-12: PROP. DMH-12

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.12" for 2-Year event
Inflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Outflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Routed to Pond DMH-13 : PROP. DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.75' @ 12.41 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**18.0" Round Culvert** L= 165.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 146.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=0.33 cfs @ 12.41 hrs HW=151.75' TW=146.15' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.33 cfs @ 1.71 fps)

Summary for Pond DMH-13: PROP. DMH-13

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.12" for 2-Year event
Inflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Outflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 146.15' @ 12.41 hrs
Flood Elev= 151.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**18.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 144.00' S= 0.0211 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=0.33 cfs @ 12.41 hrs HW=146.15' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.33 cfs @ 1.71 fps)

Summary for Pond DMH-14: PROP. DMH-14

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 0.61" for 2-Year event
Inflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Outflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Routed to Pond DMH-15 : PROP. DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.77' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.90'	**24.0" Round Culvert** L= 67.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.90' / 146.25' S= 0.0246 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.20 cfs @ 12.38 hrs HW=148.77' TW=147.02' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.20 cfs @ 3.18 fps)

Summary for Pond DMH-15: PROP. DMH-15

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 0.61" for 2-Year event
Inflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Outflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.02' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.15'	**24.0" Round Culvert** L= 300.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 146.15' / 144.00' S= 0.0072 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.20 cfs @ 12.38 hrs HW=147.02' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.20 cfs @ 3.18 fps)

Summary for Pond DMH-2: PROP. DMH-2

Inflow Area = 154,082 sf, 29.72% Impervious, Inflow Depth = 1.05" for 2-Year event
Inflow = 3.78 cfs @ 12.04 hrs, Volume= 13,482 cf
Outflow = 3.78 cfs @ 12.04 hrs, Volume= 13,482 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.78 cfs @ 12.04 hrs, Volume= 13,482 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.57' @ 12.04 hrs
Flood Elev= 153.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.50'	**18.0" Round Culvert** L= 62.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.50' / 147.10' S= 0.0065 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=3.77 cfs @ 12.04 hrs HW=148.57' TW=147.98' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.77 cfs @ 3.94 fps)

Summary for Pond DMH-3: PROP. DMH-3

Inflow Area = 110,056 sf, 30.98% Impervious, Inflow Depth = 1.05" for 2-Year event
Inflow = 2.70 cfs @ 12.04 hrs, Volume= 9,642 cf
Outflow = 2.70 cfs @ 12.04 hrs, Volume= 9,642 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.70 cfs @ 12.04 hrs, Volume= 9,642 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.56' @ 12.04 hrs
Flood Elev= 161.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.80'	**18.0" Round Culvert** L= 255.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.80' / 147.60' S= 0.0282 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.69 cfs @ 12.04 hrs HW=155.56' TW=148.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.69 cfs @ 2.98 fps)

Summary for Pond DMH-4: PROP. DMH-4

Inflow Area = 87,451 sf, 28.69% Impervious, Inflow Depth = 0.97" for 2-Year event
Inflow = 1.95 cfs @ 12.05 hrs, Volume= 7,059 cf
Outflow = 1.95 cfs @ 12.05 hrs, Volume= 7,059 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.95 cfs @ 12.05 hrs, Volume= 7,059 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 178.77' @ 12.05 hrs
Flood Elev= 182.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.00'	**12.0" Round Culvert** L= 250.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.00' / 154.90' S= 0.0924 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.95 cfs @ 12.05 hrs HW=178.77' TW=155.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.95 cfs @ 2.99 fps)

Summary for Pond DMH-5: PROP. DMH-5

Inflow Area = 25,115 sf, 34.18% Impervious, Inflow Depth = 1.20" for 2-Year event
Inflow = 0.71 cfs @ 12.05 hrs, Volume= 2,506 cf
Outflow = 0.71 cfs @ 12.05 hrs, Volume= 2,506 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.71 cfs @ 12.05 hrs, Volume= 2,506 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 206.43' @ 12.05 hrs
Flood Elev= 210.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**12.0" Round Culvert** L= 251.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 178.10' S= 0.1112 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.71 cfs @ 12.05 hrs HW=206.43' TW=178.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.71 cfs @ 2.22 fps)

Summary for Pond DMH-6: PROP. DMH-6

Inflow Area = 18,264 sf, 43.51% Impervious, Inflow Depth = 1.48" for 2-Year event
Inflow = 0.68 cfs @ 12.04 hrs, Volume= 2,256 cf
Outflow = 0.68 cfs @ 12.04 hrs, Volume= 2,256 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 12.04 hrs, Volume= 2,256 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.42' @ 12.04 hrs
Flood Elev= 158.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 117.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 149.00' S= 0.0427 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.68 cfs @ 12.04 hrs HW=154.42' TW=145.37' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.68 cfs @ 2.20 fps)

Summary for Pond DMH-7: PROP. DMH-7

Inflow Area = 21,444 sf, 43.13% Impervious, Inflow Depth = 1.47" for 2-Year event
Inflow = 0.79 cfs @ 12.04 hrs, Volume= 2,632 cf
Outflow = 0.79 cfs @ 12.04 hrs, Volume= 2,632 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.04 hrs, Volume= 2,632 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.85' @ 12.04 hrs
Flood Elev= 158.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**12.0" Round Culvert** L= 123.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 151.20' S= 0.0260 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.79 cfs @ 12.04 hrs HW=154.85' TW=151.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.79 cfs @ 2.29 fps)

Summary for Pond DMH-8: PROP. DMH-8

Inflow Area = 66,664 sf, 37.31% Impervious, Inflow Depth = 1.29" for 2-Year event
Inflow = 2.12 cfs @ 12.05 hrs, Volume= 7,182 cf
Outflow = 2.12 cfs @ 12.05 hrs, Volume= 7,182 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.05 hrs, Volume= 7,182 cf
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.77' @ 12.05 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.10'	**18.0" Round Culvert** L= 136.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.10' / 145.00' S= 0.0449 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.12 cfs @ 12.05 hrs HW=151.77' TW=144.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.12 cfs @ 2.78 fps)

Summary for Pond DMH-9: PROP. DMH-9

Inflow Area = 42,147 sf, 34.25% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 1.16 cfs @ 12.04 hrs, Volume= 4,026 cf
Outflow = 1.16 cfs @ 12.04 hrs, Volume= 4,026 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.04 hrs, Volume= 4,026 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.32' @ 12.05 hrs
Flood Elev= 158.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.70'	**12.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 153.70' / 153.20' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.15 cfs @ 12.04 hrs HW=154.32' TW=153.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.15 cfs @ 3.21 fps)

Summary for Pond GD-1: PROP. GRASSED DEPRESSION

Inflow Area = 14,047 sf, 9.72% Impervious, Inflow Depth = 0.65" for 2-Year event
Inflow = 0.19 cfs @ 12.07 hrs, Volume= 758 cf
Outflow = 0.06 cfs @ 12.45 hrs, Volume= 758 cf, Atten= 66%, Lag= 22.8 min
Discarded = 0.06 cfs @ 12.45 hrs, Volume= 758 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 145.09' @ 12.45 hrs Surf.Area= 1,130 sf Storage= 96 cf
Flood Elev= 146.00' Surf.Area= 1,547 sf Storage= 1,314 cf

Plug-Flow detention time= 8.1 min calculated for 758 cf (100% of inflow)
Center-of-Mass det. time= 8.1 min (854.5 - 846.4)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	1,314 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	1,094	141.0	0	0	1,094
146.00	1,547	160.0	1,314	1,314	1,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.06 cfs @ 12.45 hrs HW=145.09' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond INF-1: PROP. INFILTRAION BASIN #1

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 253,299 sf, 24.56% Impervious, Inflow Depth = 0.95" for 2-Year event
Inflow = 5.36 cfs @ 12.05 hrs, Volume= 20,110 cf
Outflow = 0.46 cfs @ 13.54 hrs, Volume= 20,110 cf, Atten= 91%, Lag= 89.8 min
Discarded = 0.46 cfs @ 13.54 hrs, Volume= 20,110 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 145.90' @ 13.54 hrs Surf.Area= 7,956 sf Storage= 6,815 cf
Flood Elev= 150.00' Surf.Area= 12,505 sf Storage= 47,980 cf

Plug-Flow detention time= 123.4 min calculated for 20,105 cf (100% of inflow)
Center-of-Mass det. time= 123.3 min (920.1 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	47,980 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	7,269	340.0	0	0	7,269
147.00	8,847	380.0	16,090	16,090	9,671
149.00	11,229	416.0	20,029	36,119	12,087
150.00	12,505	435.0	11,861	47,980	13,442

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	144.25'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 144.25' / 144.00' S= 0.0069 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	148.75'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.46 cfs @ 13.54 hrs HW=145.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.57 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond INF-2: PROP. INFILTRATION BASIN #2

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 123,761 sf, 23.52% Impervious, Inflow Depth = 0.97" for 2-Year event
Inflow = 2.79 cfs @ 12.05 hrs, Volume= 9,993 cf
Outflow = 0.31 cfs @ 12.94 hrs, Volume= 9,993 cf, Atten= 89%, Lag= 52.9 min
Discarded = 0.31 cfs @ 12.94 hrs, Volume= 9,993 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 144.57' @ 12.94 hrs Surf.Area= 5,504 sf Storage= 2,919 cf
Flood Elev= 148.00' Surf.Area= 10,493 sf Storage= 30,153 cf

Plug-Flow detention time= 71.6 min calculated for 9,990 cf (100% of inflow)
Center-of-Mass det. time= 71.6 min (874.7 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	30,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	4,789	438.0	0	0	4,789
146.00	7,528	475.0	12,214	12,214	7,628
148.00	10,493	513.0	17,939	30,153	10,775

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.25'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.25' / 140.00' S= 0.0813 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	146.75'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.31 cfs @ 12.94 hrs HW=144.57' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.86 cfs potential flow)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF-3: PROP. INFILTRATION BASIN #3

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 70,805 sf, 27.14% Impervious, Inflow Depth = 1.01" for 2-Year event
Inflow = 1.69 cfs @ 12.05 hrs, Volume= 5,983 cf
Outflow = 0.16 cfs @ 13.02 hrs, Volume= 5,983 cf, Atten= 90%, Lag= 58.3 min
Discarded = 0.16 cfs @ 13.02 hrs, Volume= 5,983 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 142.89' @ 13.02 hrs Surf.Area= 2,628 sf Storage= 2,009 cf
Flood Elev= 145.00' Surf.Area= 4,623 sf Storage= 9,652 cf

Plug-Flow detention time= 106.9 min calculated for 5,983 cf (100% of inflow)

Center-of-Mass det. time= 106.9 min (898.0 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	9,652 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
142.00	1,902	248.0	0	0	1,902
144.00	3,697	300.0	5,500	5,500	4,235
145.00	4,623	318.0	4,151	9,652	5,173

Device	Routing	Invert	Outlet Devices
#1	Discarded	142.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.16 cfs @ 13.02 hrs HW=142.89' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=142.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond YD-1: PROP. YD-1

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf
Outflow = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.27 hrs, Volume= 3,250 cf
Routed to Pond DMH-11 : PROP. DMH-11

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.30' @ 12.27 hrs
Flood Elev= 159.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**18.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=0.46 cfs @ 12.27 hrs HW=155.30' TW=154.70' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.46 cfs @ 1.85 fps)

Summary for Pond YD-2: PROP. YD-2

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.12" for 2-Year event
Inflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Outflow = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.41 hrs, Volume= 2,741 cf
Routed to Pond DMH-12 : PROP. DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.75' @ 12.41 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.50'	**18.0" Round Culvert** L= 96.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.50' / 151.60' S= 0.0510 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=0.33 cfs @ 12.41 hrs HW=156.75' TW=151.75' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.33 cfs @ 1.71 fps)

Summary for Pond YD-3: PROP. YD-3

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 0.61" for 2-Year event
Inflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Outflow = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.20 cfs @ 12.38 hrs, Volume= 28,911 cf
Routed to Pond DMH-14 : PROP. DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.42' @ 12.39 hrs
Flood Elev= 154.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.50'	**24.0" Round Culvert** L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.50' / 148.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.19 cfs @ 12.38 hrs HW=149.42' TW=148.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.19 cfs @ 4.38 fps)

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 2,559,756 sf, 9.68% Impervious, Inflow Depth = 0.32" for 2-Year event
Inflow = 8.04 cfs @ 12.44 hrs, Volume= 67,969 cf
Primary = 8.04 cfs @ 12.44 hrs, Volume= 67,969 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 187,821 sf, 0.83% Impervious, Inflow Depth = 0.22" for 2-Year event
Inflow = 0.38 cfs @ 12.36 hrs, Volume= 3,376 cf
Primary = 0.38 cfs @ 12.36 hrs, Volume= 3,376 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1AS: Subcat 1AS Runoff Area=4,096 sf 100.00% Impervious Runoff Depth=4.50"
Flow Length=310' Tc=1.7 min CN=98 Runoff=0.51 cfs 1,537 cf

Subcatchment1BS: Subcat 1BS Runoff Area=895 sf 100.00% Impervious Runoff Depth=4.50"
Flow Length=70' Slope=0.0200 '/' Tc=0.6 min CN=98 Runoff=0.11 cfs 336 cf

Subcatchment2S: Subcat 2S Runoff Area=3,445 sf 79.85% Impervious Runoff Depth=3.84"
Flow Length=170' Tc=3.3 min CN=WQ Runoff=0.34 cfs 1,103 cf

Subcatchment3S: Subcat 3S Runoff Area=40,581 sf 22.05% Impervious Runoff Depth=1.90"
Flow Length=250' Tc=2.7 min CN=WQ Runoff=2.05 cfs 6,435 cf

Subcatchment4S: Subcat 4S Runoff Area=6,683 sf 52.95% Impervious Runoff Depth=2.95"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=0.55 cfs 1,642 cf

Subcatchment5S: Subcat 5S Runoff Area=15,922 sf 34.35% Impervious Runoff Depth=2.27"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=1.02 cfs 3,015 cf

Subcatchment6S: Subcat 6S Runoff Area=22,666 sf 25.71% Impervious Runoff Depth=1.43"
Flow Length=250' Tc=0.9 min CN=WQ Runoff=0.87 cfs 2,710 cf

Subcatchment7S: Subcat 7S Runoff Area=39,670 sf 26.91% Impervious Runoff Depth=1.70"
Flow Length=480' Tc=4.5 min CN=WQ Runoff=1.62 cfs 5,624 cf

Subcatchment8S: Subcat 8S Runoff Area=12,260 sf 26.99% Impervious Runoff Depth=1.95"
Flow Length=250' Tc=2.4 min CN=WQ Runoff=0.62 cfs 1,994 cf

Subcatchment9S: Subcat 9S Runoff Area=12,855 sf 41.05% Impervious Runoff Depth=2.50"
Flow Length=300' Slope=0.0700 '/' Tc=3.4 min CN=WQ Runoff=0.82 cfs 2,676 cf

Subcatchment10S: Subcat 10S Runoff Area=3,923 sf 69.98% Impervious Runoff Depth=3.52"
Flow Length=190' Tc=3.4 min CN=WQ Runoff=0.36 cfs 1,150 cf

Subcatchment11S: Subcat 11S Runoff Area=14,342 sf 36.27% Impervious Runoff Depth=2.41"
Flow Length=235' Tc=2.6 min CN=WQ Runoff=0.92 cfs 2,878 cf

Subcatchment12S: Subcat 12S Runoff Area=4,589 sf 72.91% Impervious Runoff Depth=3.61"
Flow Length=180' Tc=3.5 min CN=WQ Runoff=0.43 cfs 1,382 cf

Subcatchment13S: Subcat 13S Runoff Area=16,855 sf 35.02% Impervious Runoff Depth=2.37"
Flow Length=200' Tc=2.4 min CN=WQ Runoff=1.07 cfs 3,325 cf

Subcatchment14S: Subcat 14S Runoff Area=7,169 sf 66.61% Impervious Runoff Depth=3.41"
Flow Length=185' Tc=3.5 min CN=WQ Runoff=0.63 cfs 2,035 cf

Subcatchment15S: Subcat 15S Runoff Area=38,051 sf 28.52% Impervious Runoff Depth=1.99"
Flow Length=280' Tc=3.4 min CN=WQ Runoff=1.94 cfs 6,297 cf

Subcatchment16S: Subcat 16S Runoff Area=5,609 sf 80.43% Impervious Runoff Depth=3.86"
Flow Length=235' Tc=0.8 min CN=WQ Runoff=0.61 cfs 1,804 cf

Subcatchment17S: Subcat 17S Runoff Area=36,538 sf 27.17% Impervious Runoff Depth=1.78"
Flow Length=280' Tc=3.5 min CN=WQ Runoff=1.64 cfs 5,433 cf

Subcatchment18S: Subcat 18S Runoff Area=4,802 sf 58.01% Impervious Runoff Depth=3.12"
Flow Length=50' Slope=0.0200 '/' Tc=3.2 min CN=WQ Runoff=0.39 cfs 1,250 cf

Subcatchment19S: Subcat 19S Runoff Area=23,856 sf 8.35% Impervious Runoff Depth=1.49"
Flow Length=140' Slope=0.1400 '/' Tc=2.4 min CN=WQ Runoff=0.97 cfs 2,962 cf

Subcatchment20S: Subcat 20S Runoff Area=45,391 sf 9.32% Impervious Runoff Depth=1.52"
Flow Length=140' Slope=0.0800 '/' Tc=3.1 min CN=WQ Runoff=1.83 cfs 5,757 cf

Subcatchment21S: Subcat 21S Runoff Area=65,663 sf 5.31% Impervious Runoff Depth=1.35"
Flow Length=230' Slope=0.0500 '/' Tc=4.7 min CN=WQ Runoff=2.19 cfs 7,363 cf

Subcatchment22S: Subcat 22S Runoff Area=10,299 sf 0.00% Impervious Runoff Depth=1.22"
Flow Length=142' Tc=3.2 min CN=61 Runoff=0.33 cfs 1,043 cf

Subcatchment23S: Subcat 23S Runoff Area=11,706 sf 0.00% Impervious Runoff Depth=1.22"
Flow Length=110' Tc=3.2 min CN=61 Runoff=0.38 cfs 1,186 cf

Subcatchment24S: Subcat 23S Runoff Area=14,047 sf 9.72% Impervious Runoff Depth=1.54"
Flow Length=140' Tc=3.4 min CN=WQ Runoff=0.56 cfs 1,797 cf

Subcatchment25S: Subcat 25S Runoff Area=11,916 sf 10.09% Impervious Runoff Depth=1.55"
Flow Length=70' Tc=2.0 min CN=WQ Runoff=0.51 cfs 1,537 cf

Subcatchment101S: Subcat 101S Runoff Area=1,032,309 sf 5.35% Impervious Runoff Depth=0.98"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=11.78 cfs 84,351 cf

Subcatchment102S: Subcat 102S Runoff Area=54,684 sf 0.01% Impervious Runoff Depth=0.85"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=0.80 cfs 3,891 cf

Subcatchment103S: Subcat 103S Runoff Area=156,437 sf 4.63% Impervious Runoff Depth=0.62"
Flow Length=880' Tc=17.9 min CN=WQ Runoff=1.49 cfs 8,101 cf

Subcatchment104S: Subcat 104S Runoff Area=269,613 sf 0.59% Impervious Runoff Depth=0.39"
Flow Length=1,090' Tc=19.8 min CN=WQ Runoff=1.47 cfs 8,699 cf

Subcatchment201S: Subcat 201S Runoff Area=572,884 sf 12.31% Impervious Runoff Depth=1.31"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=10.34 cfs 62,573 cf

Subcatchment202S: Subcat 202S Runoff Area=71,588 sf 0.18% Impervious Runoff Depth=0.87"
Flow Length=220' Tc=6.5 min CN=WQ Runoff=1.26 cfs 5,197 cf

Subcatchment203S: Subcat 203S Runoff Area=116,233 sf 1.23% Impervious Runoff Depth=0.65"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=1.21 cfs 6,275 cf

Subcatchment ROOF: Subcat ROOF Runoff Area=82,597 sf 94.63% Impervious Runoff Depth=4.33"
Tc=0.0 min CN=WQ Runoff=10.30 cfs 29,784 cf

Pond CB-10: PROP. CB-10 Peak Elev=154.81' Inflow=0.36 cfs 1,150 cf
12.0" Round Culvert n=0.012 L=11.0' S=0.0182 '/' Outflow=0.36 cfs 1,150 cf

Pond CB-11: PROP. CB-11 Peak Elev=155.04' Inflow=0.92 cfs 2,878 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=0.92 cfs 2,878 cf

Pond CB-12: PROP. CB-12 Peak Elev=155.32' Inflow=0.43 cfs 1,382 cf
12.0" Round Culvert n=0.012 L=10.0' S=0.0500 '/' Outflow=0.43 cfs 1,382 cf

Pond CB-13: PROP. CB-13 Peak Elev=155.54' Inflow=1.07 cfs 3,325 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0208 '/' Outflow=1.07 cfs 3,325 cf

Pond CB-14: PROP. CB-14 Peak Elev=152.16' Inflow=0.63 cfs 2,035 cf
12.0" Round Culvert n=0.012 L=31.0' S=0.0097 '/' Outflow=0.63 cfs 2,035 cf

Pond CB-15: PROP. CB-15 Peak Elev=152.44' Inflow=1.94 cfs 6,297 cf
12.0" Round Culvert n=0.012 L=37.0' S=0.0081 '/' Outflow=1.94 cfs 6,297 cf

Pond CB-16: PROP. CB-16 Peak Elev=154.69' Inflow=0.61 cfs 1,804 cf
12.0" Round Culvert n=0.012 L=8.0' S=0.0250 '/' Outflow=0.61 cfs 1,804 cf

Pond CB-17: PROP. CB-17 Peak Elev=154.91' Inflow=1.64 cfs 5,433 cf
12.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=1.64 cfs 5,433 cf

Pond CB-18: PROP. CB-18 Peak Elev=155.32' Inflow=0.39 cfs 1,250 cf
12.0" Round Culvert n=0.012 L=15.0' S=0.0133 '/' Outflow=0.39 cfs 1,250 cf

Pond CB-1A: PROP. CB-1A Peak Elev=148.67' Inflow=0.51 cfs 1,537 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.51 cfs 1,537 cf

Pond CB-1B: PROP. CB-1B Peak Elev=148.66' Inflow=0.11 cfs 336 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.11 cfs 336 cf

Pond CB-2: PROP. CB-2 Peak Elev=149.79' Inflow=0.34 cfs 1,103 cf
12.0" Round Culvert n=0.012 L=19.0' S=0.0158 '/' Outflow=0.34 cfs 1,103 cf

Pond CB-3: PROP. CB-3 Peak Elev=149.98' Inflow=2.05 cfs 6,435 cf
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=2.05 cfs 6,435 cf

Pond CB-4: PROP. CB-4 Peak Elev=156.68' Inflow=0.55 cfs 1,642 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.55 cfs 1,642 cf

Pond CB-5: PROP. CB-5 Peak Elev=156.85' Inflow=1.02 cfs 3,015 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=1.02 cfs 3,015 cf

Pond CB-6: PROP. CB-6 Peak Elev=179.51' Inflow=0.87 cfs 2,710 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.87 cfs 2,710 cf

Pond CB-7: PROP.CB-7 Peak Elev=179.66' Inflow=1.62 cfs 5,624 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=1.62 cfs 5,624 cf

Pond CB-8: PROP. CB-8 Peak Elev=207.10' Inflow=0.62 cfs 1,994 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=0.62 cfs 1,994 cf

Pond CB-9: PROP. CB-9 Peak Elev=207.16' Inflow=0.82 cfs 2,676 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=0.82 cfs 2,676 cf

Pond DMH-1: PROP. DMH-1 Peak Elev=148.66' Inflow=8.10 cfs 27,073 cf
18.0" Round Culvert n=0.012 L=147.0' S=0.0082 '/' Outflow=8.10 cfs 27,073 cf

Pond DMH-10: PROP. DMH-10 Peak Elev=154.04' Inflow=2.53 cfs 8,487 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0899 '/' Outflow=2.53 cfs 8,487 cf

Pond DMH-11: PROP. DMH-11 Peak Elev=154.95' Inflow=1.49 cfs 8,101 cf
18.0" Round Culvert n=0.012 L=105.0' S=0.0848 '/' Outflow=1.49 cfs 8,101 cf

Pond DMH-12: PROP. DMH-12 Peak Elev=152.05' Inflow=1.47 cfs 8,699 cf
18.0" Round Culvert n=0.012 L=165.0' S=0.0333 '/' Outflow=1.47 cfs 8,699 cf

Pond DMH-13: PROP. DMH-13 Peak Elev=146.45' Inflow=1.47 cfs 8,699 cf
18.0" Round Culvert n=0.012 L=90.0' S=0.0211 '/' Outflow=1.47 cfs 8,699 cf

Pond DMH-14: PROP. DMH-14 Peak Elev=149.38' Inflow=10.34 cfs 62,573 cf
24.0" Round Culvert n=0.012 L=67.0' S=0.0246 '/' Outflow=10.34 cfs 62,573 cf

Pond DMH-15: PROP. DMH-15 Peak Elev=147.63' Inflow=10.34 cfs 62,573 cf
24.0" Round Culvert n=0.012 L=300.0' S=0.0072 '/' Outflow=10.34 cfs 62,573 cf

Pond DMH-2: PROP. DMH-2 Peak Elev=149.43' Inflow=7.51 cfs 25,200 cf
18.0" Round Culvert n=0.012 L=62.0' S=0.0065 '/' Outflow=7.51 cfs 25,200 cf

Pond DMH-3: PROP. DMH-3 Peak Elev=155.93' Inflow=5.13 cfs 17,662 cf
18.0" Round Culvert n=0.012 L=255.0' S=0.0282 '/' Outflow=5.13 cfs 17,662 cf

Pond DMH-4: PROP. DMH-4 Peak Elev=179.47' Inflow=3.73 cfs 13,004 cf
12.0" Round Culvert n=0.012 L=250.0' S=0.0924 '/' Outflow=3.73 cfs 13,004 cf

Pond DMH-5: PROP. DMH-5 Peak Elev=206.64' Inflow=1.44 cfs 4,669 cf
12.0" Round Culvert n=0.012 L=251.0' S=0.1112 '/' Outflow=1.44 cfs 4,669 cf

Pond DMH-6: PROP. DMH-6 Peak Elev=154.59' Inflow=1.28 cfs 4,028 cf
12.0" Round Culvert n=0.012 L=117.0' S=0.0427 '/' Outflow=1.28 cfs 4,028 cf

Pond DMH-7: PROP. DMH-7 Peak Elev=155.05' Inflow=1.50 cfs 4,707 cf
12.0" Round Culvert n=0.012 L=123.0' S=0.0260 '/' Outflow=1.50 cfs 4,707 cf

Pond DMH-8: PROP. DMH-8 Peak Elev=152.07' Inflow=4.05 cfs 13,038 cf
18.0" Round Culvert n=0.012 L=136.0' S=0.0449 '/' Outflow=4.05 cfs 13,038 cf

Pond DMH-9: PROP. DMH-9 Peak Elev=154.66' Inflow=2.14 cfs 7,237 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=2.14 cfs 7,237 cf

Pond GD-1: PROP. GRASSED DEPRESSION Peak Elev=145.44' Storage=528 cf Inflow=0.56 cfs 1,797 cf
Discarded=0.07 cfs 1,797 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 1,797 cf

Pond INF-1: PROP. INFILTRAION BASIN Peak Elev=146.83' Storage=14,585 cf Inflow=11.61 cfs 39,507 cf
Discarded=0.53 cfs 30,233 cf Primary=0.72 cfs 9,274 cf Secondary=0.00 cfs 0 cf Outflow=1.25 cfs 39,507 cf

Pond INF-2: PROP. INFILTRATION BASIN #2 Peak Elev=145.44' Storage=8,251 cf Inflow=6.25 cfs 19,981 cf
Discarded=0.38 cfs 19,981 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.38 cfs 19,981 cf

Pond INF-3: PROP. INFILTRATION BASIN #3 Peak Elev=143.56' Storage=3,971 cf Inflow=3.50 cfs 11,450 cf
Discarded=0.21 cfs 10,292 cf Primary=0.68 cfs 1,158 cf Outflow=0.89 cfs 11,450 cf

Pond YD-1: PROP. YD-1 Peak Elev=155.55' Inflow=1.49 cfs 8,101 cf
18.0" Round Culvert n=0.012 L=40.0' S=0.0125 '/' Outflow=1.49 cfs 8,101 cf

Pond YD-2: PROP. YD-2 Peak Elev=157.05' Inflow=1.47 cfs 8,699 cf
18.0" Round Culvert n=0.012 L=96.0' S=0.0510 '/' Outflow=1.47 cfs 8,699 cf

Pond YD-3: PROP. YD-3 Peak Elev=150.14' Inflow=10.34 cfs 62,573 cf
24.0" Round Culvert n=0.012 L=43.0' S=0.0116 '/' Outflow=10.34 cfs 62,573 cf

Link DP1: Design Point #1 - Hawkes Brook Inflow=25.77 cfs 179,584 cf
Primary=25.77 cfs 179,584 cf

Link DP2: Design Point #2 - Isolated Wetland Inflow=2.17 cfs 11,472 cf
Primary=2.17 cfs 11,472 cf

Total Runoff Area = 2,830,174 sf Runoff Volume = 283,142 cf Average Runoff Depth = 1.20"
88.43% Pervious = 2,502,787 sf 11.57% Impervious = 327,387 sf

Summary for Subcatchment 1AS: Subcat 1AS

Runoff = 0.51 cfs @ 12.02 hrs, Volume= 1,537 cf, Depth= 4.50"
Routed to Pond CB-1A : PROP. CB-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
4,096	98	Paved parking, HSG B
4,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
1.4	290	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	310	Total			

Summary for Subcatchment 1BS: Subcat 1BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 336 cf, Depth= 4.50"
Routed to Pond CB-1B : PROP. CB-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
895	98	Paved parking, HSG B
895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	70	Total			

Summary for Subcatchment 2S: Subcat 2S

Runoff = 0.34 cfs @ 12.05 hrs, Volume= 1,103 cf, Depth= 3.84"
Routed to Pond CB-2 : PROP. CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
694	61	>75% Grass cover, Good, HSG B
2,751	98	Paved parking, HSG B
3,445		Weighted Average
694		20.15% Pervious Area
2,751		79.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	170	Total			

Summary for Subcatchment 3S: Subcat 3S

Runoff = 2.05 cfs @ 12.04 hrs, Volume= 6,435 cf, Depth= 1.90"
Routed to Pond CB-3 : PROP. CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
27,382	61	>75% Grass cover, Good, HSG B
8,949	98	Paved parking, HSG B
4,250	55	Woods, Good, HSG B
40,581		Weighted Average
31,632		77.95% Pervious Area
8,949		22.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	70	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	250	Total			

Summary for Subcatchment 4S: Subcat 4S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.55 cfs @ 12.02 hrs, Volume= 1,642 cf, Depth= 2.95"
Routed to Pond CB-4 : PROP. CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
3,010	61	>75% Grass cover, Good, HSG B
82	98	Paved parking, HSG A
3,455	98	Paved parking, HSG B
2	98	Roofs, HSG B
134	55	Woods, Good, HSG B
6,683		Weighted Average
3,144		47.05% Pervious Area
3,538		52.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 5S: Subcat 5S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.02 cfs @ 12.02 hrs, Volume= 3,015 cf, Depth= 2.27"
Routed to Pond CB-5 : PROP. CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
1,087	39	>75% Grass cover, Good, HSG A
9,367	61	>75% Grass cover, Good, HSG B
134	98	Paved parking, HSG A
5,335	98	Paved parking, HSG B
15,922		Weighted Average
10,454		65.65% Pervious Area
5,469		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 6S: Subcat 6S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.87 cfs @ 12.01 hrs, Volume= 2,710 cf, Depth= 1.43"
Routed to Pond CB-6 : PROP. CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
9,260	39	>75% Grass cover, Good, HSG A
1,509	61	>75% Grass cover, Good, HSG B
3,852	98	Paved parking, HSG A
1,695	98	Paved parking, HSG B
281	98	Roofs, HSG B
2,497	30	Woods, Good, HSG A
3,572	55	Woods, Good, HSG B
22,666		Weighted Average
16,838		74.29% Pervious Area
5,828		25.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	250	Total			

Summary for Subcatchment 7S: Subcat 7S

Runoff = 1.62 cfs @ 12.07 hrs, Volume= 5,624 cf, Depth= 1.70"
Routed to Pond CB-7 : PROP.CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
14,582	39	>75% Grass cover, Good, HSG A
13,602	61	>75% Grass cover, Good, HSG B
5,822	98	Paved parking, HSG A
1,575	98	Paved parking, HSG B
3,276	98	Roofs, HSG B
813	55	Woods, Good, HSG B
39,670		Weighted Average
28,996		73.09% Pervious Area
10,673		26.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0880	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.8	220	0.0880	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	480	Total			

Summary for Subcatchment 8S: Subcat 8S

Runoff = 0.62 cfs @ 12.04 hrs, Volume= 1,994 cf, Depth= 1.95"
Routed to Pond CB-8 : PROP. CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
3,825	61	>75% Grass cover, Good, HSG B
3,201	98	Paved parking, HSG B
108	98	Roofs, HSG B
5,126	55	Woods, Good, HSG B
12,260		Weighted Average
8,951		73.01% Pervious Area
3,309		26.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
2.1	230	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	250	Total			

Summary for Subcatchment 9S: Subcat 9S

Runoff = 0.82 cfs @ 12.05 hrs, Volume= 2,676 cf, Depth= 2.50"
Routed to Pond CB-9 : PROP. CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
5,176	61	>75% Grass cover, Good, HSG B
4,886	98	Paved parking, HSG B
391	98	Roofs, HSG B
2,402	55	Woods, Good, HSG B
12,855		Weighted Average
7,578		58.95% Pervious Area
5,277		41.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0700	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	40	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	230	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	300	Total			

Summary for Subcatchment 10S: Subcat 10S

Runoff = 0.36 cfs @ 12.05 hrs, Volume= 1,150 cf, Depth= 3.52"
Routed to Pond CB-10 : PROP. CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
1,177	61	>75% Grass cover, Good, HSG B
2,745	98	Paved parking, HSG B
3,923		Weighted Average
1,177		30.02% Pervious Area
2,745		69.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	190	Total			

Summary for Subcatchment 11S: Subcat 11S

Runoff = 0.92 cfs @ 12.04 hrs, Volume= 2,878 cf, Depth= 2.41"
Routed to Pond CB-11 : PROP. CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
9,140	61	>75% Grass cover, Good, HSG B
5,201	98	Paved parking, HSG B
14,342		Weighted Average
9,140		63.73% Pervious Area
5,201		36.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1500	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.2	35	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	235	Total			

Summary for Subcatchment 12S: Subcat 12S

Runoff = 0.43 cfs @ 12.05 hrs, Volume= 1,382 cf, Depth= 3.61"
Routed to Pond CB-12 : PROP. CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
1,243	61	>75% Grass cover, Good, HSG B
3,346	98	Paved parking, HSG B
4,589		Weighted Average
1,243		27.09% Pervious Area
3,346		72.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	180	Total			

Summary for Subcatchment 13S: Subcat 13S

Runoff = 1.07 cfs @ 12.04 hrs, Volume= 3,325 cf, Depth= 2.37"
Routed to Pond CB-13 : PROP. CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
10,952	61	>75% Grass cover, Good, HSG B
5,903	98	Paved parking, HSG B
16,855		Weighted Average
10,952		64.98% Pervious Area
5,903		35.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	40	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	200	Total			

Summary for Subcatchment 14S: Subcat 14S

Runoff = 0.63 cfs @ 12.05 hrs, Volume= 2,035 cf, Depth= 3.41"
Routed to Pond CB-14 : PROP. CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
2,394	61	>75% Grass cover, Good, HSG B
4,775	98	Paved parking, HSG B
7,169		Weighted Average
2,394		33.39% Pervious Area
4,775		66.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	165	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	185	Total			

Summary for Subcatchment 15S: Subcat 15S

Runoff = 1.94 cfs @ 12.05 hrs, Volume= 6,297 cf, Depth= 1.99"
Routed to Pond CB-15 : PROP. CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
5,979	39	>75% Grass cover, Good, HSG A
21,222	61	>75% Grass cover, Good, HSG B
839	98	Paved parking, HSG A
10,012	98	Paved parking, HSG B
38,051		Weighted Average
27,201		71.48% Pervious Area
10,850		28.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.3	55	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	175	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	280	Total			

Summary for Subcatchment 16S: Subcat 16S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.61 cfs @ 12.01 hrs, Volume= 1,804 cf, Depth= 3.86"
Routed to Pond CB-16 : PROP. CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
1,098	61	>75% Grass cover, Good, HSG B
4,512	98	Paved parking, HSG B
5,609		Weighted Average
1,098		19.57% Pervious Area
4,512		80.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.5	215	0.1300	7.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	235	Total			

Summary for Subcatchment 17S: Subcat 17S

Runoff = 1.64 cfs @ 12.05 hrs, Volume= 5,433 cf, Depth= 1.78"
Routed to Pond CB-17 : PROP. CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
11,133	39	>75% Grass cover, Good, HSG A
15,479	61	>75% Grass cover, Good, HSG B
310	98	Paved parking, HSG A
9,616	98	Paved parking, HSG B
36,538		Weighted Average
26,612		72.83% Pervious Area
9,926		27.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	90	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	140	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	280	Total			

Summary for Subcatchment 18S: Subcat 18S

Runoff = 0.39 cfs @ 12.05 hrs, Volume= 1,250 cf, Depth= 3.12"
Routed to Pond CB-18 : PROP. CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
2,016	61	>75% Grass cover, Good, HSG B
2,786	98	Paved parking, HSG B
4,802		Weighted Average
2,016		41.99% Pervious Area
2,786		58.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	30	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	50	Total			

Summary for Subcatchment 19S: Subcat 19S

Runoff = 0.97 cfs @ 12.04 hrs, Volume= 2,962 cf, Depth= 1.49"
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
21,865	61	>75% Grass cover, Good, HSG B
1,991	98	Paved parking, HSG B
23,856		Weighted Average
21,865		91.65% Pervious Area
1,991		8.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1400	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	110	0.1400	2.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	140	Total			

Summary for Subcatchment 20S: Subcat 20S

Runoff = 1.83 cfs @ 12.05 hrs, Volume= 5,757 cf, Depth= 1.52"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
41,162	61	>75% Grass cover, Good, HSG B
4,228	98	Paved parking, HSG B
45,391		Weighted Average
41,162		90.68% Pervious Area
4,228		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.9	110	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	140	Total			

Summary for Subcatchment 21S: Subcat 21S

Runoff = 2.19 cfs @ 12.08 hrs, Volume= 7,363 cf, Depth= 1.35"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
54,083	61	>75% Grass cover, Good, HSG B
3,487	98	Paved parking, HSG B
8,093	55	Woods, Good, HSG B
65,663		Weighted Average
62,176		94.69% Pervious Area
3,487		5.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
2.1	200	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	230	Total			

Summary for Subcatchment 22S: Subcat 22S

Runoff = 0.33 cfs @ 12.06 hrs, Volume= 1,043 cf, Depth= 1.22"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
10,299	61	>75% Grass cover, Good, HSG B
10,299		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	72	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	142	Total			

Summary for Subcatchment 23S: Subcat 23S

Runoff = 0.38 cfs @ 12.06 hrs, Volume= 1,186 cf, Depth= 1.22"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
11,706	61	>75% Grass cover, Good, HSG B
11,706		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.2	80	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	110	Total			

Summary for Subcatchment 24S: Subcat 23S

Runoff = 0.56 cfs @ 12.06 hrs, Volume= 1,797 cf, Depth= 1.54"
Routed to Pond GD-1 : PROP. GRASSED DEPRESSION

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
12,682	61	>75% Grass cover, Good, HSG B
1,365	98	Paved parking, HSG B
14,047		Weighted Average
12,682		90.28% Pervious Area
1,365		9.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	110	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	140	Total			

Summary for Subcatchment 25S: Subcat 25S

Runoff = 0.51 cfs @ 12.04 hrs, Volume= 1,537 cf, Depth= 1.55"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
10,714	61	>75% Grass cover, Good, HSG B
1,202	98	Paved parking, HSG B
11,916		Weighted Average
10,714		89.91% Pervious Area
1,202		10.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	20	0.0800	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	50	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	70	Total			

Summary for Subcatchment 101S: Subcat 101S

Runoff = 11.78 cfs @ 12.54 hrs, Volume= 84,351 cf, Depth= 0.98"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
34,820	39	>75% Grass cover, Good, HSG A
119,511	61	>75% Grass cover, Good, HSG B
16	96	Gravel surface, HSG A
4,888	96	Gravel surface, HSG B
10,860	98	Paved parking, HSG A
29,842	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
8,339	98	Roofs, HSG B
124,228	30	Woods, Good, HSG A
693,637	55	Woods, Good, HSG B
1,032,309		Weighted Average
977,100		94.65% Pervious Area
55,209		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Subcat 102S

Runoff = 0.80 cfs @ 12.19 hrs, Volume= 3,891 cf, Depth= 0.85"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
3	98	Paved parking, HSG B
54,680	55	Woods, Good, HSG B
54,684		Weighted Average
54,680		99.99% Pervious Area
3		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 103S: Subcat 103S

Runoff = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf, Depth= 0.62"
Routed to Pond YD-1 : PROP. YD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
9,487	39	>75% Grass cover, Good, HSG A
17,354	61	>75% Grass cover, Good, HSG B
59	98	Paved parking, HSG A
3,339	98	Paved parking, HSG B
3,844	98	Roofs, HSG B
73,084	30	Woods, Good, HSG A
49,270	55	Woods, Good, HSG B
156,437		Weighted Average
149,195		95.37% Pervious Area
7,243		4.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.3	80	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	390	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	360	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.9	880	Total			

Summary for Subcatchment 104S: Subcat 104S

Runoff = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf, Depth= 0.39"
Routed to Pond YD-2 : PROP. YD-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
46,882	39	>75% Grass cover, Good, HSG A
40,738	61	>75% Grass cover, Good, HSG B
205	96	Gravel surface, HSG A
449	96	Gravel surface, HSG B
6	98	Paved parking, HSG A
712	98	Paved parking, HSG B
874	98	Roofs, HSG B
135,456	30	Woods, Good, HSG A
44,293	55	Woods, Good, HSG B
269,613		Weighted Average
268,022		99.41% Pervious Area
1,591		0.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1220	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
6.3	660	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	380	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	1,090	Total			

Summary for Subcatchment 201S: Subcat 201S

Runoff = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf, Depth= 1.31"
Routed to Pond YD-3 : PROP. YD-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
38,392	39	>75% Grass cover, Good, HSG A
188,905	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,540	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
85,988	30	Woods, Good, HSG A
174,544	55	Woods, Good, HSG B
572,884		Weighted Average
502,371		87.69% Pervious Area
70,513		12.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Subcat 202S

Runoff = 1.26 cfs @ 12.12 hrs, Volume= 5,197 cf, Depth= 0.87"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
2,155	61	>75% Grass cover, Good, HSG B
131	98	Paved parking, HSG B
0	98	Roofs, HSG B
69,302	55	Woods, Good, HSG B
71,588		Weighted Average
71,457		99.82% Pervious Area
131		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0870	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.9	190	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	220	Total			

Summary for Subcatchment 203S: Subcat 203S

Runoff = 1.21 cfs @ 12.24 hrs, Volume= 6,275 cf, Depth= 0.65"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
12,674	39	>75% Grass cover, Good, HSG A
21,861	61	>75% Grass cover, Good, HSG B
1,431	98	Roofs, HSG B
32,985	30	Woods, Good, HSG A
47,282	55	Woods, Good, HSG B
116,233		Weighted Average
114,802		98.77% Pervious Area
1,431		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Subcatchment ROOF: Subcat ROOF

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 10.30 cfs @ 12.00 hrs, Volume= 29,784 cf, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.74"

Area (sf)	CN	Description
4,434	61	>75% Grass cover, Good, HSG B
12,443	98	Roofs, HSG A
65,719	98	Roofs, HSG B
82,597		Weighted Average
4,434		5.37% Pervious Area
78,162		94.63% Impervious Area

Summary for Pond CB-10: PROP. CB-10

Inflow Area = 3,923 sf, 69.98% Impervious, Inflow Depth = 3.52" for 10-Year event
Inflow = 0.36 cfs @ 12.05 hrs, Volume= 1,150 cf
Outflow = 0.36 cfs @ 12.05 hrs, Volume= 1,150 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.36 cfs @ 12.05 hrs, Volume= 1,150 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.81' @ 12.05 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0182 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.36 cfs @ 12.05 hrs HW=154.81' TW=154.59' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.36 cfs @ 2.57 fps)

Summary for Pond CB-11: PROP. CB-11

Inflow Area = 14,342 sf, 36.27% Impervious, Inflow Depth = 2.41" for 10-Year event
Inflow = 0.92 cfs @ 12.04 hrs, Volume= 2,878 cf
Outflow = 0.92 cfs @ 12.04 hrs, Volume= 2,878 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.04 hrs, Volume= 2,878 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.04' @ 12.04 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0083 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.92 cfs @ 12.04 hrs HW=155.04' TW=154.59' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.92 cfs @ 3.08 fps)

Summary for Pond CB-12: PROP. CB-12

Inflow Area = 4,589 sf, 72.91% Impervious, Inflow Depth = 3.61" for 10-Year event
Inflow = 0.43 cfs @ 12.05 hrs, Volume= 1,382 cf
Outflow = 0.43 cfs @ 12.05 hrs, Volume= 1,382 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 12.05 hrs, Volume= 1,382 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.32' @ 12.05 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0500 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.05 hrs HW=155.32' TW=155.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.43 cfs @ 1.94 fps)

Summary for Pond CB-13: PROP. CB-13

Inflow Area = 16,855 sf, 35.02% Impervious, Inflow Depth = 2.37" for 10-Year event
Inflow = 1.07 cfs @ 12.04 hrs, Volume= 3,325 cf
Outflow = 1.07 cfs @ 12.04 hrs, Volume= 3,325 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.04 hrs, Volume= 3,325 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.54' @ 12.04 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0208 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.07 cfs @ 12.04 hrs HW=155.54' TW=155.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.07 cfs @ 2.49 fps)

Summary for Pond CB-14: PROP. CB-14

Inflow Area = 7,169 sf, 66.61% Impervious, Inflow Depth = 3.41" for 10-Year event
Inflow = 0.63 cfs @ 12.05 hrs, Volume= 2,035 cf
Outflow = 0.63 cfs @ 12.05 hrs, Volume= 2,035 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.05 hrs, Volume= 2,035 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.16' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0097 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.62 cfs @ 12.05 hrs HW=152.16' TW=152.07' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.62 cfs @ 1.60 fps)

Summary for Pond CB-15: PROP. CB-15

Inflow Area = 38,051 sf, 28.52% Impervious, Inflow Depth = 1.99" for 10-Year event
Inflow = 1.94 cfs @ 12.05 hrs, Volume= 6,297 cf
Outflow = 1.94 cfs @ 12.05 hrs, Volume= 6,297 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.05 hrs, Volume= 6,297 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.44' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.93 cfs @ 12.05 hrs HW=152.44' TW=152.07' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.93 cfs @ 3.26 fps)

Summary for Pond CB-16: PROP. CB-16

Inflow Area = 5,609 sf, 80.43% Impervious, Inflow Depth = 3.86" for 10-Year event
Inflow = 0.61 cfs @ 12.01 hrs, Volume= 1,804 cf
Outflow = 0.61 cfs @ 12.01 hrs, Volume= 1,804 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.01 hrs, Volume= 1,804 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.69' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.01 hrs HW=154.61' TW=154.57' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.41 cfs @ 1.17 fps)

Summary for Pond CB-17: PROP. CB-17

Inflow Area = 36,538 sf, 27.17% Impervious, Inflow Depth = 1.78" for 10-Year event
Inflow = 1.64 cfs @ 12.05 hrs, Volume= 5,433 cf
Outflow = 1.64 cfs @ 12.05 hrs, Volume= 5,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.64 cfs @ 12.05 hrs, Volume= 5,433 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.91' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 21.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.05 hrs HW=154.90' TW=154.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.64 cfs @ 2.89 fps)

Summary for Pond CB-18: PROP. CB-18

Inflow Area = 4,802 sf, 58.01% Impervious, Inflow Depth = 3.12" for 10-Year event
Inflow = 0.39 cfs @ 12.05 hrs, Volume= 1,250 cf
Outflow = 0.39 cfs @ 12.05 hrs, Volume= 1,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.05 hrs, Volume= 1,250 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.32' @ 12.05 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.80' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.05 hrs HW=155.32' TW=154.04' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.39 cfs @ 2.75 fps)

Summary for Pond CB-1A: PROP. CB-1A

Inflow Area = 4,096 sf,100.00% Impervious, Inflow Depth = 4.50" for 10-Year event
Inflow = 0.51 cfs @ 12.02 hrs, Volume= 1,537 cf
Outflow = 0.51 cfs @ 12.02 hrs, Volume= 1,537 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.02 hrs, Volume= 1,537 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.67' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=148.56' TW=148.62' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-1B: PROP. CB-1B

Inflow Area = 895 sf,100.00% Impervious, Inflow Depth = 4.50" for 10-Year event
Inflow = 0.11 cfs @ 12.01 hrs, Volume= 336 cf
Outflow = 0.11 cfs @ 12.01 hrs, Volume= 336 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.01 hrs, Volume= 336 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.66' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=148.38' TW=148.50' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-2: PROP. CB-2

Inflow Area = 3,445 sf, 79.85% Impervious, Inflow Depth = 3.84" for 10-Year event
Inflow = 0.34 cfs @ 12.05 hrs, Volume= 1,103 cf
Outflow = 0.34 cfs @ 12.05 hrs, Volume= 1,103 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.05 hrs, Volume= 1,103 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.79' @ 12.05 hrs
Flood Elev= 153.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.50'	**12.0" Round Culvert** L= 19.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.50' / 149.20' S= 0.0158 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.05 hrs HW=149.79' TW=149.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.34 cfs @ 1.83 fps)

Summary for Pond CB-3: PROP. CB-3

Inflow Area = 40,581 sf, 22.05% Impervious, Inflow Depth = 1.90" for 10-Year event
Inflow = 2.05 cfs @ 12.04 hrs, Volume= 6,435 cf
Outflow = 2.05 cfs @ 12.04 hrs, Volume= 6,435 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.05 cfs @ 12.04 hrs, Volume= 6,435 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.98' @ 12.04 hrs
Flood Elev= 153.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.10'	**12.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.10' / 148.80' S= 0.0071 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.04 cfs @ 12.04 hrs HW=149.98' TW=149.42' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.04 cfs @ 3.72 fps)

Summary for Pond CB-4: PROP. CB-4

Inflow Area = 6,683 sf, 52.95% Impervious, Inflow Depth = 2.95" for 10-Year event
Inflow = 0.55 cfs @ 12.02 hrs, Volume= 1,642 cf
Outflow = 0.55 cfs @ 12.02 hrs, Volume= 1,642 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.02 hrs, Volume= 1,642 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.68' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.02 hrs HW=156.68' TW=155.90' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.55 cfs @ 2.97 fps)

Summary for Pond CB-5: PROP. CB-5

Inflow Area = 15,922 sf, 34.35% Impervious, Inflow Depth = 2.27" for 10-Year event
Inflow = 1.02 cfs @ 12.02 hrs, Volume= 3,015 cf
Outflow = 1.02 cfs @ 12.02 hrs, Volume= 3,015 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.02 hrs, Volume= 3,015 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.85' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.01 cfs @ 12.02 hrs HW=156.84' TW=155.90' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.01 cfs @ 3.36 fps)

Summary for Pond CB-6: PROP. CB-6

Inflow Area = 22,666 sf, 25.71% Impervious, Inflow Depth = 1.43" for 10-Year event
Inflow = 0.87 cfs @ 12.01 hrs, Volume= 2,710 cf
Outflow = 0.87 cfs @ 12.01 hrs, Volume= 2,710 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.01 hrs, Volume= 2,710 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 179.51' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=179.23' TW=179.28' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-7: PROP.CB-7

Inflow Area = 39,670 sf, 26.91% Impervious, Inflow Depth = 1.70" for 10-Year event
Inflow = 1.62 cfs @ 12.07 hrs, Volume= 5,624 cf
Outflow = 1.62 cfs @ 12.07 hrs, Volume= 5,624 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.62 cfs @ 12.07 hrs, Volume= 5,624 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 179.66' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.07 hrs HW=179.64' TW=179.42' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.80 cfs @ 2.29 fps)

Summary for Pond CB-8: PROP. CB-8

Inflow Area = 12,260 sf, 26.99% Impervious, Inflow Depth = 1.95" for 10-Year event
Inflow = 0.62 cfs @ 12.04 hrs, Volume= 1,994 cf
Outflow = 0.62 cfs @ 12.04 hrs, Volume= 1,994 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.04 hrs, Volume= 1,994 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.10' @ 12.04 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.62 cfs @ 12.04 hrs HW=207.10' TW=206.64' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.62 cfs @ 2.15 fps)

Summary for Pond CB-9: PROP. CB-9

Inflow Area = 12,855 sf, 41.05% Impervious, Inflow Depth = 2.50" for 10-Year event
Inflow = 0.82 cfs @ 12.05 hrs, Volume= 2,676 cf
Outflow = 0.82 cfs @ 12.05 hrs, Volume= 2,676 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.05 hrs, Volume= 2,676 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.16' @ 12.05 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.05 hrs HW=207.16' TW=206.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.82 cfs @ 2.32 fps)

Summary for Pond DMH-1: PROP. DMH-1

[80] Warning: Exceeded Pond CB-1A by 0.11' @ 12.01 hrs (1.24 cfs 306 cf)
[80] Warning: Exceeded Pond CB-1B by 0.12' @ 12.01 hrs (1.32 cfs 463 cf)

Inflow Area = 159,073 sf, 31.93% Impervious, Inflow Depth = 2.04" for 10-Year event
Inflow = 8.10 cfs @ 12.04 hrs, Volume= 27,073 cf
Outflow = 8.10 cfs @ 12.04 hrs, Volume= 27,073 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.10 cfs @ 12.04 hrs, Volume= 27,073 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.66' @ 12.04 hrs
Flood Elev= 152.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	**18.0" Round Culvert**
			L= 147.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 147.00' / 145.80' S= 0.0082 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=8.08 cfs @ 12.04 hrs HW=148.65' TW=145.85' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.08 cfs @ 4.57 fps)

Summary for Pond DMH-10: PROP. DMH-10

Inflow Area = 46,949 sf, 36.69% Impervious, Inflow Depth = 2.17" for 10-Year event
Inflow = 2.53 cfs @ 12.04 hrs, Volume= 8,487 cf
Outflow = 2.53 cfs @ 12.04 hrs, Volume= 8,487 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.53 cfs @ 12.04 hrs, Volume= 8,487 cf
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.04' @ 12.04 hrs
Flood Elev= 159.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.10'	**12.0" Round Culvert**
			L= 79.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 153.10' / 146.00' S= 0.0899 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.53 cfs @ 12.04 hrs HW=154.04' TW=142.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.53 cfs @ 3.30 fps)

Summary for Pond DMH-11: PROP. DMH-11

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 0.62" for 10-Year event
Inflow = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf
Outflow = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.95' @ 12.27 hrs
Flood Elev= 159.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**18.0" Round Culvert** L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 145.50' S= 0.0848 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=1.48 cfs @ 12.27 hrs HW=154.95' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.48 cfs @ 2.53 fps)

Summary for Pond DMH-12: PROP. DMH-12

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.39" for 10-Year event
Inflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Outflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Routed to Pond DMH-13 : PROP. DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.05' @ 12.32 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**18.0" Round Culvert** L= 165.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 146.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=1.47 cfs @ 12.32 hrs HW=152.05' TW=146.45' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.47 cfs @ 2.52 fps)

Summary for Pond DMH-13: PROP. DMH-13

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.39" for 10-Year event
Inflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Outflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 146.45' @ 12.32 hrs
Flood Elev= 151.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**18.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 144.00' S= 0.0211 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=1.47 cfs @ 12.32 hrs HW=146.45' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.47 cfs @ 2.52 fps)

Summary for Pond DMH-14: PROP. DMH-14

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 1.31" for 10-Year event
Inflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Outflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Routed to Pond DMH-15 : PROP. DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.38' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.90'	**24.0" Round Culvert** L= 67.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.90' / 146.25' S= 0.0246 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=10.34 cfs @ 12.38 hrs HW=149.38' TW=147.63' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.34 cfs @ 4.14 fps)

Summary for Pond DMH-15: PROP. DMH-15

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 1.31" for 10-Year event
Inflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Outflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.63' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.15'	**24.0" Round Culvert** L= 300.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 146.15' / 144.00' S= 0.0072 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=10.34 cfs @ 12.38 hrs HW=147.63' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.34 cfs @ 4.14 fps)

Summary for Pond DMH-2: PROP. DMH-2

Inflow Area = 154,082 sf, 29.72% Impervious, Inflow Depth = 1.96" for 10-Year event
Inflow = 7.51 cfs @ 12.04 hrs, Volume= 25,200 cf
Outflow = 7.51 cfs @ 12.04 hrs, Volume= 25,200 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.51 cfs @ 12.04 hrs, Volume= 25,200 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.43' @ 12.04 hrs
Flood Elev= 153.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.50'	**18.0" Round Culvert** L= 62.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.50' / 147.10' S= 0.0065 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=7.46 cfs @ 12.04 hrs HW=149.42' TW=148.65' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.46 cfs @ 4.22 fps)

Summary for Pond DMH-3: PROP. DMH-3

Inflow Area = 110,056 sf, 30.98% Impervious, Inflow Depth = 1.93" for 10-Year event
Inflow = 5.13 cfs @ 12.04 hrs, Volume= 17,662 cf
Outflow = 5.13 cfs @ 12.04 hrs, Volume= 17,662 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.13 cfs @ 12.04 hrs, Volume= 17,662 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.93' @ 12.04 hrs
Flood Elev= 161.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.80'	**18.0" Round Culvert** L= 255.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.80' / 147.60' S= 0.0282 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.13 cfs @ 12.04 hrs HW=155.92' TW=149.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.13 cfs @ 3.61 fps)

Summary for Pond DMH-4: PROP. DMH-4

[80] Warning: Exceeded Pond CB-6 by 0.05' @ 12.01 hrs (0.78 cfs 117 cf)

Inflow Area = 87,451 sf, 28.69% Impervious, Inflow Depth = 1.78" for 10-Year event
Inflow = 3.73 cfs @ 12.05 hrs, Volume= 13,004 cf
Outflow = 3.73 cfs @ 12.05 hrs, Volume= 13,004 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.73 cfs @ 12.05 hrs, Volume= 13,004 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 179.47' @ 12.05 hrs
Flood Elev= 182.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.00'	**12.0" Round Culvert** L= 250.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.00' / 154.90' S= 0.0924 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.73 cfs @ 12.05 hrs HW=179.47' TW=155.92' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.73 cfs @ 4.75 fps)

Summary for Pond DMH-5: PROP. DMH-5

Inflow Area = 25,115 sf, 34.18% Impervious, Inflow Depth = 2.23" for 10-Year event
Inflow = 1.44 cfs @ 12.05 hrs, Volume= 4,669 cf
Outflow = 1.44 cfs @ 12.05 hrs, Volume= 4,669 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.44 cfs @ 12.05 hrs, Volume= 4,669 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 206.64' @ 12.05 hrs
Flood Elev= 210.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**12.0" Round Culvert** L= 251.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 178.10' S= 0.1112 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.44 cfs @ 12.05 hrs HW=206.64' TW=179.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.44 cfs @ 2.72 fps)

Summary for Pond DMH-6: PROP. DMH-6

Inflow Area = 18,264 sf, 43.51% Impervious, Inflow Depth = 2.65" for 10-Year event
Inflow = 1.28 cfs @ 12.04 hrs, Volume= 4,028 cf
Outflow = 1.28 cfs @ 12.04 hrs, Volume= 4,028 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.28 cfs @ 12.04 hrs, Volume= 4,028 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.59' @ 12.04 hrs
Flood Elev= 158.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 117.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 149.00' S= 0.0427 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.27 cfs @ 12.04 hrs HW=154.59' TW=145.87' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.27 cfs @ 2.62 fps)

Summary for Pond DMH-7: PROP. DMH-7

Inflow Area = 21,444 sf, 43.13% Impervious, Inflow Depth = 2.63" for 10-Year event
Inflow = 1.50 cfs @ 12.04 hrs, Volume= 4,707 cf
Outflow = 1.50 cfs @ 12.04 hrs, Volume= 4,707 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.50 cfs @ 12.04 hrs, Volume= 4,707 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.05' @ 12.04 hrs
Flood Elev= 158.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**12.0" Round Culvert** L= 123.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 151.20' S= 0.0260 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.49 cfs @ 12.04 hrs HW=155.05' TW=152.07' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.75 fps)

Summary for Pond DMH-8: PROP. DMH-8

Inflow Area = 66,664 sf, 37.31% Impervious, Inflow Depth = 2.35" for 10-Year event
Inflow = 4.05 cfs @ 12.05 hrs, Volume= 13,038 cf
Outflow = 4.05 cfs @ 12.05 hrs, Volume= 13,038 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.05 cfs @ 12.05 hrs, Volume= 13,038 cf
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.07' @ 12.05 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.10'	**18.0" Round Culvert** L= 136.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.10' / 145.00' S= 0.0449 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=4.04 cfs @ 12.05 hrs HW=152.07' TW=144.60' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.04 cfs @ 3.35 fps)

Summary for Pond DMH-9: PROP. DMH-9

Inflow Area = 42,147 sf, 34.25% Impervious, Inflow Depth = 2.06" for 10-Year event
Inflow = 2.14 cfs @ 12.04 hrs, Volume= 7,237 cf
Outflow = 2.14 cfs @ 12.04 hrs, Volume= 7,237 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.04 hrs, Volume= 7,237 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.66' @ 12.05 hrs
Flood Elev= 158.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.70'	**12.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 153.70' / 153.20' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.04 hrs HW=154.65' TW=154.04' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.12 cfs @ 3.53 fps)

Summary for Pond GD-1: PROP. GRASSED DEPRESSION

Inflow Area = 14,047 sf, 9.72% Impervious, Inflow Depth = 1.54" for 10-Year event
Inflow = 0.56 cfs @ 12.06 hrs, Volume= 1,797 cf
Outflow = 0.07 cfs @ 12.82 hrs, Volume= 1,797 cf, Atten= 87%, Lag= 45.7 min
Discarded = 0.07 cfs @ 12.82 hrs, Volume= 1,797 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 145.44' @ 12.82 hrs Surf.Area= 1,286 sf Storage= 528 cf
Flood Elev= 146.00' Surf.Area= 1,547 sf Storage= 1,314 cf

Plug-Flow detention time= 58.3 min calculated for 1,797 cf (100% of inflow)
Center-of-Mass det. time= 58.3 min (895.9 - 837.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	1,314 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	1,094	141.0	0	0	1,094
146.00	1,547	160.0	1,314	1,314	1,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.07 cfs @ 12.82 hrs HW=145.44' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF-1: PROP. INFILTRAION BASIN #1

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 253,299 sf, 24.56% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 11.61 cfs @ 12.05 hrs, Volume= 39,507 cf
Outflow = 1.25 cfs @ 12.92 hrs, Volume= 39,507 cf, Atten= 89%, Lag= 52.4 min
Discarded = 0.53 cfs @ 12.92 hrs, Volume= 30,233 cf
Primary = 0.72 cfs @ 12.92 hrs, Volume= 9,274 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 146.83' @ 12.92 hrs Surf.Area= 8,706 sf Storage= 14,585 cf
Flood Elev= 150.00' Surf.Area= 12,505 sf Storage= 47,980 cf

Plug-Flow detention time= 168.2 min calculated for 39,507 cf (100% of inflow)
Center-of-Mass det. time= 168.2 min (968.6 - 800.4)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	47,980 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	7,269	340.0	0	0	7,269
147.00	8,847	380.0	16,090	16,090	9,671
149.00	11,229	416.0	20,029	36,119	12,087
150.00	12,505	435.0	11,861	47,980	13,442

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	144.25'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 144.25' / 144.00' S= 0.0069 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	148.75'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.53 cfs @ 12.92 hrs HW=146.83' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Primary OutFlow Max=0.72 cfs @ 12.92 hrs HW=146.83' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.72 cfs of 5.43 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.72 cfs @ 3.66 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond INF-2: PROP. INFILTRATION BASIN #2

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 123,761 sf, 23.52% Impervious, Inflow Depth = 1.94" for 10-Year event
Inflow = 6.25 cfs @ 12.05 hrs, Volume= 19,981 cf
Outflow = 0.38 cfs @ 14.21 hrs, Volume= 19,981 cf, Atten= 94%, Lag= 129.4 min
Discarded = 0.38 cfs @ 14.21 hrs, Volume= 19,981 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 145.44' @ 14.21 hrs Surf.Area= 6,703 sf Storage= 8,251 cf
Flood Elev= 148.00' Surf.Area= 10,493 sf Storage= 30,153 cf

Plug-Flow detention time= 214.0 min calculated for 19,976 cf (100% of inflow)
Center-of-Mass det. time= 214.0 min (1,018.6 - 804.6)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	30,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	4,789	438.0	0	0	4,789
146.00	7,528	475.0	12,214	12,214	7,628
148.00	10,493	513.0	17,939	30,153	10,775

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.25'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.25' / 140.00' S= 0.0813 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	146.75'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.38 cfs @ 14.21 hrs HW=145.44' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.86 cfs potential flow)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF-3: PROP. INFILTRATION BASIN #3

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 70,805 sf, 27.14% Impervious, Inflow Depth = 1.94" for 10-Year event
Inflow = 3.50 cfs @ 12.04 hrs, Volume= 11,450 cf
Outflow = 0.89 cfs @ 12.42 hrs, Volume= 11,450 cf, Atten= 75%, Lag= 22.7 min
Discarded = 0.21 cfs @ 12.42 hrs, Volume= 10,292 cf
Primary = 0.68 cfs @ 12.42 hrs, Volume= 1,158 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 143.56' @ 12.42 hrs Surf.Area= 3,251 sf Storage= 3,971 cf
Flood Elev= 145.00' Surf.Area= 4,623 sf Storage= 9,652 cf

Plug-Flow detention time= 175.5 min calculated for 11,447 cf (100% of inflow)
Center-of-Mass det. time= 175.5 min (970.4 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	9,652 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
142.00	1,902	248.0	0	0	1,902
144.00	3,697	300.0	5,500	5,500	4,235
145.00	4,623	318.0	4,151	9,652	5,173

Device	Routing	Invert	Outlet Devices
#1	Discarded	142.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.21 cfs @ 12.42 hrs HW=143.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.68 cfs @ 12.42 hrs HW=143.56' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.68 cfs @ 0.58 fps)

Summary for Pond YD-1: PROP. YD-1

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 0.62" for 10-Year event
Inflow = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf
Outflow = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.27 hrs, Volume= 8,101 cf
Routed to Pond DMH-11 : PROP. DMH-11

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.55' @ 12.27 hrs
Flood Elev= 159.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**18.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=1.48 cfs @ 12.27 hrs HW=155.55' TW=154.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.48 cfs @ 2.53 fps)

Summary for Pond YD-2: PROP. YD-2

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.39" for 10-Year event
Inflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Outflow = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.32 hrs, Volume= 8,699 cf
Routed to Pond DMH-12 : PROP. DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 157.05' @ 12.32 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.50'	**18.0" Round Culvert** L= 96.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.50' / 151.60' S= 0.0510 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=1.47 cfs @ 12.32 hrs HW=157.05' TW=152.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.47 cfs @ 2.52 fps)

Summary for Pond YD-3: PROP. YD-3

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 1.31" for 10-Year event
Inflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Outflow = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.34 cfs @ 12.38 hrs, Volume= 62,573 cf
Routed to Pond DMH-14 : PROP. DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 150.14' @ 12.39 hrs
Flood Elev= 154.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.50'	**24.0" Round Culvert** L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.50' / 148.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=10.33 cfs @ 12.38 hrs HW=150.14' TW=149.38' (Dynamic Tailwater)
1=Culvert (Outlet Controls 10.33 cfs @ 5.09 fps)

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 2,559,756 sf, 9.68% Impervious, Inflow Depth = 0.84" for 10-Year event
Inflow = 25.77 cfs @ 12.44 hrs, Volume= 179,584 cf
Primary = 25.77 cfs @ 12.44 hrs, Volume= 179,584 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 187,821 sf, 0.83% Impervious, Inflow Depth = 0.73" for 10-Year event
Inflow = 2.17 cfs @ 12.17 hrs, Volume= 11,472 cf
Primary = 2.17 cfs @ 12.17 hrs, Volume= 11,472 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1AS: Subcat 1AS Runoff Area=4,096 sf 100.00% Impervious Runoff Depth=5.81"
Flow Length=310' Tc=1.7 min CN=98 Runoff=0.65 cfs 1,984 cf

Subcatchment1BS: Subcat 1BS Runoff Area=895 sf 100.00% Impervious Runoff Depth=5.81"
Flow Length=70' Slope=0.0200 '/' Tc=0.6 min CN=98 Runoff=0.15 cfs 433 cf

Subcatchment2S: Subcat 2S Runoff Area=3,445 sf 79.85% Impervious Runoff Depth=5.05"
Flow Length=170' Tc=3.3 min CN=WQ Runoff=0.45 cfs 1,450 cf

Subcatchment3S: Subcat 3S Runoff Area=40,581 sf 22.05% Impervious Runoff Depth=2.82"
Flow Length=250' Tc=2.7 min CN=WQ Runoff=3.16 cfs 9,535 cf

Subcatchment4S: Subcat 4S Runoff Area=6,683 sf 52.95% Impervious Runoff Depth=4.03"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=0.77 cfs 2,242 cf

Subcatchment5S: Subcat 5S Runoff Area=15,922 sf 34.35% Impervious Runoff Depth=3.23"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=1.47 cfs 4,282 cf

Subcatchment6S: Subcat 6S Runoff Area=22,666 sf 25.71% Impervious Runoff Depth=2.07"
Flow Length=250' Tc=0.9 min CN=WQ Runoff=1.20 cfs 3,910 cf

Subcatchment7S: Subcat 7S Runoff Area=39,670 sf 26.91% Impervious Runoff Depth=2.46"
Flow Length=480' Tc=4.5 min CN=WQ Runoff=2.32 cfs 8,144 cf

Subcatchment8S: Subcat 8S Runoff Area=12,260 sf 26.99% Impervious Runoff Depth=2.85"
Flow Length=250' Tc=2.4 min CN=WQ Runoff=0.95 cfs 2,913 cf

Subcatchment9S: Subcat 9S Runoff Area=12,855 sf 41.05% Impervious Runoff Depth=3.50"
Flow Length=300' Slope=0.0700 '/' Tc=3.4 min CN=WQ Runoff=1.18 cfs 3,745 cf

Subcatchment10S: Subcat 10S Runoff Area=3,923 sf 69.98% Impervious Runoff Depth=4.68"
Flow Length=190' Tc=3.4 min CN=WQ Runoff=0.48 cfs 1,530 cf

Subcatchment11S: Subcat 11S Runoff Area=14,342 sf 36.27% Impervious Runoff Depth=3.41"
Flow Length=235' Tc=2.6 min CN=WQ Runoff=1.34 cfs 4,072 cf

Subcatchment12S: Subcat 12S Runoff Area=4,589 sf 72.91% Impervious Runoff Depth=4.79"
Flow Length=180' Tc=3.5 min CN=WQ Runoff=0.57 cfs 1,832 cf

Subcatchment13S: Subcat 13S Runoff Area=16,855 sf 35.02% Impervious Runoff Depth=3.36"
Flow Length=200' Tc=2.4 min CN=WQ Runoff=1.56 cfs 4,720 cf

Subcatchment14S: Subcat 14S Runoff Area=7,169 sf 66.61% Impervious Runoff Depth=4.55"
Flow Length=185' Tc=3.5 min CN=WQ Runoff=0.85 cfs 2,719 cf

Subcatchment15S: Subcat 15S Runoff Area=38,051 sf 28.52% Impervious Runoff Depth=2.87"
Flow Length=280' Tc=3.4 min CN=WQ Runoff=2.84 cfs 9,090 cf

Subcatchment16S: Subcat 16S Runoff Area=5,609 sf 80.43% Impervious Runoff Depth=5.07"
Flow Length=235' Tc=0.8 min CN=WQ Runoff=0.81 cfs 2,372 cf

Subcatchment17S: Subcat 17S Runoff Area=36,538 sf 27.17% Impervious Runoff Depth=2.58"
Flow Length=280' Tc=3.5 min CN=WQ Runoff=2.36 cfs 7,864 cf

Subcatchment18S: Subcat 18S Runoff Area=4,802 sf 58.01% Impervious Runoff Depth=4.23"
Flow Length=50' Slope=0.0200 '/' Tc=3.2 min CN=WQ Runoff=0.54 cfs 1,692 cf

Subcatchment19S: Subcat 19S Runoff Area=23,856 sf 8.35% Impervious Runoff Depth=2.35"
Flow Length=140' Slope=0.1400 '/' Tc=2.4 min CN=WQ Runoff=1.61 cfs 4,680 cf

Subcatchment20S: Subcat 20S Runoff Area=45,391 sf 9.32% Impervious Runoff Depth=2.39"
Flow Length=140' Slope=0.0800 '/' Tc=3.1 min CN=WQ Runoff=3.03 cfs 9,042 cf

Subcatchment21S: Subcat 21S Runoff Area=65,663 sf 5.31% Impervious Runoff Depth=2.18"
Flow Length=230' Slope=0.0500 '/' Tc=4.7 min CN=WQ Runoff=3.78 cfs 11,922 cf

Subcatchment22S: Subcat 22S Runoff Area=10,299 sf 0.00% Impervious Runoff Depth=2.04"
Flow Length=142' Tc=3.2 min CN=61 Runoff=0.60 cfs 1,750 cf

Subcatchment23S: Subcat 23S Runoff Area=11,706 sf 0.00% Impervious Runoff Depth=2.04"
Flow Length=110' Tc=3.2 min CN=61 Runoff=0.68 cfs 1,989 cf

Subcatchment24S: Subcat 23S Runoff Area=14,047 sf 9.72% Impervious Runoff Depth=2.41"
Flow Length=140' Tc=3.4 min CN=WQ Runoff=0.93 cfs 2,816 cf

Subcatchment25S: Subcat 25S Runoff Area=11,916 sf 10.09% Impervious Runoff Depth=2.42"
Flow Length=70' Tc=2.0 min CN=WQ Runoff=0.84 cfs 2,403 cf

Subcatchment101S: Subcat 101S Runoff Area=1,032,309 sf 5.35% Impervious Runoff Depth=1.64"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=21.50 cfs 140,860 cf

Subcatchment102S: Subcat 102S Runoff Area=54,684 sf 0.01% Impervious Runoff Depth=1.55"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=1.70 cfs 7,049 cf

Subcatchment103S: Subcat 103S Runoff Area=156,437 sf 4.63% Impervious Runoff Depth=1.05"
Flow Length=880' Tc=17.9 min CN=WQ Runoff=2.62 cfs 13,642 cf

Subcatchment104S: Subcat 104S Runoff Area=269,613 sf 0.59% Impervious Runoff Depth=0.73"
Flow Length=1,090' Tc=19.8 min CN=WQ Runoff=2.82 cfs 16,376 cf

Subcatchment201S: Subcat 201S Runoff Area=572,884 sf 12.31% Impervious Runoff Depth=2.02"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=16.65 cfs 96,325 cf

Subcatchment202S: Subcat 202S Runoff Area=71,588 sf 0.18% Impervious Runoff Depth=1.57"
Flow Length=220' Tc=6.5 min CN=WQ Runoff=2.65 cfs 9,362 cf

Subcatchment203S: Subcat 203S Runoff Area=116,233 sf 1.23% Impervious Runoff Depth=1.16"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=2.35 cfs 11,200 cf

SubcatchmentROOF: Subcat ROOF Runoff Area=82,597 sf 94.63% Impervious Runoff Depth=5.61"
Tc=0.0 min CN=WQ Runoff=13.26 cfs 38,609 cf

Pond CB-10: PROP. CB-10 Peak Elev=154.91' Inflow=0.48 cfs 1,530 cf
12.0" Round Culvert n=0.012 L=11.0' S=0.0182 '/' Outflow=0.48 cfs 1,530 cf

Pond CB-11: PROP. CB-11 Peak Elev=155.18' Inflow=1.34 cfs 4,072 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=1.34 cfs 4,072 cf

Pond CB-12: PROP. CB-12 Peak Elev=155.43' Inflow=0.57 cfs 1,832 cf
12.0" Round Culvert n=0.012 L=10.0' S=0.0500 '/' Outflow=0.57 cfs 1,832 cf

Pond CB-13: PROP. CB-13 Peak Elev=155.69' Inflow=1.56 cfs 4,720 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0208 '/' Outflow=1.56 cfs 4,720 cf

Pond CB-14: PROP. CB-14 Peak Elev=152.40' Inflow=0.85 cfs 2,719 cf
12.0" Round Culvert n=0.012 L=31.0' S=0.0097 '/' Outflow=0.85 cfs 2,719 cf

Pond CB-15: PROP. CB-15 Peak Elev=152.88' Inflow=2.84 cfs 9,090 cf
12.0" Round Culvert n=0.012 L=37.0' S=0.0081 '/' Outflow=2.84 cfs 9,090 cf

Pond CB-16: PROP. CB-16 Peak Elev=155.32' Inflow=0.81 cfs 2,372 cf
12.0" Round Culvert n=0.012 L=8.0' S=0.0250 '/' Outflow=0.81 cfs 2,372 cf

Pond CB-17: PROP. CB-17 Peak Elev=155.69' Inflow=2.36 cfs 7,864 cf
12.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=2.36 cfs 7,864 cf

Pond CB-18: PROP. CB-18 Peak Elev=155.38' Inflow=0.54 cfs 1,692 cf
12.0" Round Culvert n=0.012 L=15.0' S=0.0133 '/' Outflow=0.54 cfs 1,692 cf

Pond CB-1A: PROP. CB-1A Peak Elev=149.91' Inflow=0.65 cfs 1,984 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.65 cfs 1,984 cf

Pond CB-1B: PROP. CB-1B Peak Elev=149.88' Inflow=0.15 cfs 433 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.15 cfs 433 cf

Pond CB-2: PROP. CB-2 Peak Elev=151.54' Inflow=0.45 cfs 1,450 cf
12.0" Round Culvert n=0.012 L=19.0' S=0.0158 '/' Outflow=0.45 cfs 1,450 cf

Pond CB-3: PROP. CB-3 Peak Elev=152.21' Inflow=3.16 cfs 9,535 cf
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=3.16 cfs 9,535 cf

Pond CB-4: PROP. CB-4 Peak Elev=156.76' Inflow=0.77 cfs 2,242 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=0.77 cfs 2,242 cf

Pond CB-5: PROP. CB-5 Peak Elev=156.99' Inflow=1.47 cfs 4,282 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=1.47 cfs 4,282 cf

Pond CB-6: PROP. CB-6 Peak Elev=180.59' Inflow=1.20 cfs 3,910 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=1.20 cfs 3,910 cf

Pond CB-7: PROP.CB-7 Peak Elev=180.89' Inflow=2.32 cfs 8,144 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=2.32 cfs 8,144 cf

Pond CB-8: PROP. CB-8 Peak Elev=207.20' Inflow=0.95 cfs 2,913 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=0.95 cfs 2,913 cf

Pond CB-9: PROP. CB-9 Peak Elev=207.27' Inflow=1.18 cfs 3,745 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=1.18 cfs 3,745 cf

Pond DMH-1: PROP. DMH-1 Peak Elev=149.88' Inflow=11.71 cfs 38,639 cf
18.0" Round Culvert n=0.012 L=147.0' S=0.0082 '/' Outflow=11.71 cfs 38,639 cf

Pond DMH-10: PROP. DMH-10 Peak Elev=154.48' Inflow=3.55 cfs 11,928 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0899 '/' Outflow=3.55 cfs 11,928 cf

Pond DMH-11: PROP. DMH-11 Peak Elev=155.15' Inflow=2.62 cfs 13,642 cf
18.0" Round Culvert n=0.012 L=105.0' S=0.0848 '/' Outflow=2.62 cfs 13,642 cf

Pond DMH-12: PROP. DMH-12 Peak Elev=152.28' Inflow=2.82 cfs 16,376 cf
18.0" Round Culvert n=0.012 L=165.0' S=0.0333 '/' Outflow=2.82 cfs 16,376 cf

Pond DMH-13: PROP. DMH-13 Peak Elev=146.68' Inflow=2.82 cfs 16,376 cf
18.0" Round Culvert n=0.012 L=90.0' S=0.0211 '/' Outflow=2.82 cfs 16,376 cf

Pond DMH-14: PROP. DMH-14 Peak Elev=150.11' Inflow=16.65 cfs 96,325 cf
24.0" Round Culvert n=0.012 L=67.0' S=0.0246 '/' Outflow=16.65 cfs 96,325 cf

Pond DMH-15: PROP. DMH-15 Peak Elev=148.36' Inflow=16.65 cfs 96,325 cf
24.0" Round Culvert n=0.012 L=300.0' S=0.0072 '/' Outflow=16.65 cfs 96,325 cf

Pond DMH-2: PROP. DMH-2 Peak Elev=151.53' Inflow=10.96 cfs 36,222 cf
18.0" Round Culvert n=0.012 L=62.0' S=0.0065 '/' Outflow=10.96 cfs 36,222 cf

Pond DMH-3: PROP. DMH-3 Peak Elev=156.30' Inflow=7.36 cfs 25,236 cf
18.0" Round Culvert n=0.012 L=255.0' S=0.0282 '/' Outflow=7.36 cfs 25,236 cf

Pond DMH-4: PROP. DMH-4 Peak Elev=180.52' Inflow=5.38 cfs 18,712 cf
12.0" Round Culvert n=0.012 L=250.0' S=0.0924 '/' Outflow=5.38 cfs 18,712 cf

Pond DMH-5: PROP. DMH-5 Peak Elev=206.82' Inflow=2.12 cfs 6,658 cf
12.0" Round Culvert n=0.012 L=251.0' S=0.1112 '/' Outflow=2.12 cfs 6,658 cf

Pond DMH-6: PROP. DMH-6 Peak Elev=154.74' Inflow=1.81 cfs 5,602 cf
12.0" Round Culvert n=0.012 L=117.0' S=0.0427 '/' Outflow=1.81 cfs 5,602 cf

Pond DMH-7: PROP. DMH-7 Peak Elev=155.22' Inflow=2.12 cfs 6,552 cf
12.0" Round Culvert n=0.012 L=123.0' S=0.0260 '/' Outflow=2.12 cfs 6,552 cf

Pond DMH-8: PROP. DMH-8 Peak Elev=152.32' Inflow=5.78 cfs 18,361 cf
18.0" Round Culvert n=0.012 L=136.0' S=0.0449 '/' Outflow=5.78 cfs 18,361 cf

Pond DMH-9: PROP. DMH-9 Peak Elev=155.30' Inflow=3.01 cfs 10,236 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=3.01 cfs 10,236 cf

Pond GD-1: PROP. GRASSED DEPRESSION Peak Elev=145.56' Storage=676 cf Inflow=0.93 cfs 2,816 cf
Discarded=0.08 cfs 2,349 cf Primary=0.32 cfs 467 cf Outflow=0.40 cfs 2,816 cf

Pond INF-1: PROP. INFILTRAION BASIN Peak Elev=147.76' Storage=23,170 cf Inflow=17.50 cfs 57,912 cf
Discarded=0.59 cfs 35,961 cf Primary=1.16 cfs 21,951 cf Secondary=0.00 cfs 0 cf Outflow=1.75 cfs 57,912 cf

Pond INF-2: PROP. INFILTRATION BASIN Peak Elev=146.09' Storage=12,923 cf Inflow=9.49 cfs 29,393 cf
Discarded=0.43 cfs 27,539 cf Primary=0.29 cfs 1,853 cf Secondary=0.00 cfs 0 cf Outflow=0.73 cfs 29,393 cf

Pond INF-3: PROP. INFILTRATION BASIN #3 Peak Elev=143.65' Storage=4,281 cf Inflow=5.16 cfs 16,607 cf
Discarded=0.21 cfs 11,796 cf Primary=2.85 cfs 4,811 cf Outflow=3.06 cfs 16,607 cf

Pond YD-1: PROP. YD-1 Peak Elev=155.77' Inflow=2.62 cfs 13,642 cf
18.0" Round Culvert n=0.012 L=40.0' S=0.0125 '/' Outflow=2.62 cfs 13,642 cf

Pond YD-2: PROP. YD-2 Peak Elev=157.28' Inflow=2.82 cfs 16,376 cf
18.0" Round Culvert n=0.012 L=96.0' S=0.0510 '/' Outflow=2.82 cfs 16,376 cf

Pond YD-3: PROP. YD-3 Peak Elev=151.32' Inflow=16.65 cfs 96,325 cf
24.0" Round Culvert n=0.012 L=43.0' S=0.0116 '/' Outflow=16.65 cfs 96,325 cf

Link DP1: Design Point #1 - Hawkes Brook Inflow=45.32 cfs 305,736 cf
Primary=45.32 cfs 305,736 cf

Link DP2: Design Point #2 - Isolated Wetland Inflow=4.40 cfs 20,562 cf
Primary=4.40 cfs 20,562 cf

Total Runoff Area = 2,830,174 sf Runoff Volume = 442,553 cf Average Runoff Depth = 1.88"
88.43% Pervious = 2,502,787 sf 11.57% Impervious = 327,387 sf

Summary for Subcatchment 1AS: Subcat 1AS

Runoff = 0.65 cfs @ 12.02 hrs, Volume= 1,984 cf, Depth= 5.81"
Routed to Pond CB-1A : PROP. CB-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
4,096	98	Paved parking, HSG B
4,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
1.4	290	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	310	Total			

Summary for Subcatchment 1BS: Subcat 1BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.15 cfs @ 12.01 hrs, Volume= 433 cf, Depth= 5.81"
Routed to Pond CB-1B : PROP. CB-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
895	98	Paved parking, HSG B
895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	70	Total			

Summary for Subcatchment 2S: Subcat 2S

Runoff = 0.45 cfs @ 12.05 hrs, Volume= 1,450 cf, Depth= 5.05"
Routed to Pond CB-2 : PROP. CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
694	61	>75% Grass cover, Good, HSG B
2,751	98	Paved parking, HSG B
3,445		Weighted Average
694		20.15% Pervious Area
2,751		79.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	170	Total			

Summary for Subcatchment 3S: Subcat 3S

Runoff = 3.16 cfs @ 12.04 hrs, Volume= 9,535 cf, Depth= 2.82"
Routed to Pond CB-3 : PROP. CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
27,382	61	>75% Grass cover, Good, HSG B
8,949	98	Paved parking, HSG B
4,250	55	Woods, Good, HSG B
40,581		Weighted Average
31,632		77.95% Pervious Area
8,949		22.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	70	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	250	Total			

Summary for Subcatchment 4S: Subcat 4S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.77 cfs @ 12.02 hrs, Volume= 2,242 cf, Depth= 4.03"
Routed to Pond CB-4 : PROP. CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
3,010	61	>75% Grass cover, Good, HSG B
82	98	Paved parking, HSG A
3,455	98	Paved parking, HSG B
2	98	Roofs, HSG B
134	55	Woods, Good, HSG B
6,683		Weighted Average
3,144		47.05% Pervious Area
3,538		52.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 5S: Subcat 5S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.47 cfs @ 12.02 hrs, Volume= 4,282 cf, Depth= 3.23"
Routed to Pond CB-5 : PROP. CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
1,087	39	>75% Grass cover, Good, HSG A
9,367	61	>75% Grass cover, Good, HSG B
134	98	Paved parking, HSG A
5,335	98	Paved parking, HSG B
15,922		Weighted Average
10,454		65.65% Pervious Area
5,469		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 6S: Subcat 6S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.20 cfs @ 12.01 hrs, Volume= 3,910 cf, Depth= 2.07"
Routed to Pond CB-6 : PROP. CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
9,260	39	>75% Grass cover, Good, HSG A
1,509	61	>75% Grass cover, Good, HSG B
3,852	98	Paved parking, HSG A
1,695	98	Paved parking, HSG B
281	98	Roofs, HSG B
2,497	30	Woods, Good, HSG A
3,572	55	Woods, Good, HSG B
22,666		Weighted Average
16,838		74.29% Pervious Area
5,828		25.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	250	Total			

Summary for Subcatchment 7S: Subcat 7S

Runoff = 2.32 cfs @ 12.07 hrs, Volume= 8,144 cf, Depth= 2.46"
Routed to Pond CB-7 : PROP.CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
14,582	39	>75% Grass cover, Good, HSG A
13,602	61	>75% Grass cover, Good, HSG B
5,822	98	Paved parking, HSG A
1,575	98	Paved parking, HSG B
3,276	98	Roofs, HSG B
813	55	Woods, Good, HSG B
39,670		Weighted Average
28,996		73.09% Pervious Area
10,673		26.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0880	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.8	220	0.0880	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	480	Total			

Summary for Subcatchment 8S: Subcat 8S

Runoff = 0.95 cfs @ 12.04 hrs, Volume= 2,913 cf, Depth= 2.85"
Routed to Pond CB-8 : PROP. CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
3,825	61	>75% Grass cover, Good, HSG B
3,201	98	Paved parking, HSG B
108	98	Roofs, HSG B
5,126	55	Woods, Good, HSG B
12,260		Weighted Average
8,951		73.01% Pervious Area
3,309		26.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
2.1	230	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	250	Total			

Summary for Subcatchment 9S: Subcat 9S

Runoff = 1.18 cfs @ 12.05 hrs, Volume= 3,745 cf, Depth= 3.50"
Routed to Pond CB-9 : PROP. CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
5,176	61	>75% Grass cover, Good, HSG B
4,886	98	Paved parking, HSG B
391	98	Roofs, HSG B
2,402	55	Woods, Good, HSG B
12,855		Weighted Average
7,578		58.95% Pervious Area
5,277		41.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0700	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	40	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	230	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	300	Total			

Summary for Subcatchment 10S: Subcat 10S

Runoff = 0.48 cfs @ 12.05 hrs, Volume= 1,530 cf, Depth= 4.68"
Routed to Pond CB-10 : PROP. CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
1,177	61	>75% Grass cover, Good, HSG B
2,745	98	Paved parking, HSG B
3,923		Weighted Average
1,177		30.02% Pervious Area
2,745		69.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	190	Total			

Summary for Subcatchment 11S: Subcat 11S

Runoff = 1.34 cfs @ 12.04 hrs, Volume= 4,072 cf, Depth= 3.41"
Routed to Pond CB-11 : PROP. CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
9,140	61	>75% Grass cover, Good, HSG B
5,201	98	Paved parking, HSG B
14,342		Weighted Average
9,140		63.73% Pervious Area
5,201		36.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1500	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.2	35	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	235	Total			

Summary for Subcatchment 12S: Subcat 12S

Runoff = 0.57 cfs @ 12.05 hrs, Volume= 1,832 cf, Depth= 4.79"
Routed to Pond CB-12 : PROP. CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
1,243	61	>75% Grass cover, Good, HSG B
3,346	98	Paved parking, HSG B
4,589		Weighted Average
1,243		27.09% Pervious Area
3,346		72.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	180	Total			

Summary for Subcatchment 13S: Subcat 13S

Runoff = 1.56 cfs @ 12.04 hrs, Volume= 4,720 cf, Depth= 3.36"
Routed to Pond CB-13 : PROP. CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
10,952	61	>75% Grass cover, Good, HSG B
5,903	98	Paved parking, HSG B
16,855		Weighted Average
10,952		64.98% Pervious Area
5,903		35.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	40	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	200	Total			

Summary for Subcatchment 14S: Subcat 14S

Runoff = 0.85 cfs @ 12.05 hrs, Volume= 2,719 cf, Depth= 4.55"
Routed to Pond CB-14 : PROP. CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
2,394	61	>75% Grass cover, Good, HSG B
4,775	98	Paved parking, HSG B
7,169		Weighted Average
2,394		33.39% Pervious Area
4,775		66.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	165	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	185	Total			

Summary for Subcatchment 15S: Subcat 15S

Runoff = 2.84 cfs @ 12.05 hrs, Volume= 9,090 cf, Depth= 2.87"
Routed to Pond CB-15 : PROP. CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
5,979	39	>75% Grass cover, Good, HSG A
21,222	61	>75% Grass cover, Good, HSG B
839	98	Paved parking, HSG A
10,012	98	Paved parking, HSG B
38,051		Weighted Average
27,201		71.48% Pervious Area
10,850		28.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.3	55	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	175	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	280	Total			

Summary for Subcatchment 16S: Subcat 16S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.81 cfs @ 12.01 hrs, Volume= 2,372 cf, Depth= 5.07"
Routed to Pond CB-16 : PROP. CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
1,098	61	>75% Grass cover, Good, HSG B
4,512	98	Paved parking, HSG B
5,609		Weighted Average
1,098		19.57% Pervious Area
4,512		80.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.5	215	0.1300	7.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	235	Total			

Summary for Subcatchment 17S: Subcat 17S

Runoff = 2.36 cfs @ 12.05 hrs, Volume= 7,864 cf, Depth= 2.58"
Routed to Pond CB-17 : PROP. CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
11,133	39	>75% Grass cover, Good, HSG A
15,479	61	>75% Grass cover, Good, HSG B
310	98	Paved parking, HSG A
9,616	98	Paved parking, HSG B
36,538		Weighted Average
26,612		72.83% Pervious Area
9,926		27.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	90	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	140	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	280	Total			

Summary for Subcatchment 18S: Subcat 18S

Runoff = 0.54 cfs @ 12.05 hrs, Volume= 1,692 cf, Depth= 4.23"
Routed to Pond CB-18 : PROP. CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
2,016	61	>75% Grass cover, Good, HSG B
2,786	98	Paved parking, HSG B
4,802		Weighted Average
2,016		41.99% Pervious Area
2,786		58.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	30	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	50	Total			

Summary for Subcatchment 19S: Subcat 19S

Runoff = 1.61 cfs @ 12.04 hrs, Volume= 4,680 cf, Depth= 2.35"
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
21,865	61	>75% Grass cover, Good, HSG B
1,991	98	Paved parking, HSG B
23,856		Weighted Average
21,865		91.65% Pervious Area
1,991		8.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1400	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	110	0.1400	2.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	140	Total			

Summary for Subcatchment 20S: Subcat 20S

Runoff = 3.03 cfs @ 12.05 hrs, Volume= 9,042 cf, Depth= 2.39"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
41,162	61	>75% Grass cover, Good, HSG B
4,228	98	Paved parking, HSG B
45,391		Weighted Average
41,162		90.68% Pervious Area
4,228		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.9	110	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	140	Total			

Summary for Subcatchment 21S: Subcat 21S

Runoff = 3.78 cfs @ 12.08 hrs, Volume= 11,922 cf, Depth= 2.18"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
54,083	61	>75% Grass cover, Good, HSG B
3,487	98	Paved parking, HSG B
8,093	55	Woods, Good, HSG B
65,663		Weighted Average
62,176		94.69% Pervious Area
3,487		5.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
2.1	200	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	230	Total			

Summary for Subcatchment 22S: Subcat 22S

Runoff = 0.60 cfs @ 12.05 hrs, Volume= 1,750 cf, Depth= 2.04"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
10,299	61	>75% Grass cover, Good, HSG B
10,299		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	72	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	142	Total			

Summary for Subcatchment 23S: Subcat 23S

Runoff = 0.68 cfs @ 12.05 hrs, Volume= 1,989 cf, Depth= 2.04"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
11,706	61	>75% Grass cover, Good, HSG B
11,706		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.2	80	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	110	Total			

Summary for Subcatchment 24S: Subcat 23S

Runoff = 0.93 cfs @ 12.06 hrs, Volume= 2,816 cf, Depth= 2.41"
Routed to Pond GD-1 : PROP. GRASSED DEPRESSION

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
12,682	61	>75% Grass cover, Good, HSG B
1,365	98	Paved parking, HSG B
14,047		Weighted Average
12,682		90.28% Pervious Area
1,365		9.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	110	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	140	Total			

Summary for Subcatchment 25S: Subcat 25S

Runoff = 0.84 cfs @ 12.03 hrs, Volume= 2,403 cf, Depth= 2.42"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
10,714	61	>75% Grass cover, Good, HSG B
1,202	98	Paved parking, HSG B
11,916		Weighted Average
10,714		89.91% Pervious Area
1,202		10.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	20	0.0800	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	50	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	70	Total			

Summary for Subcatchment 101S: Subcat 101S

Runoff = 21.50 cfs @ 12.51 hrs, Volume= 140,860 cf, Depth= 1.64"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
34,820	39	>75% Grass cover, Good, HSG A
119,511	61	>75% Grass cover, Good, HSG B
16	96	Gravel surface, HSG A
4,888	96	Gravel surface, HSG B
10,860	98	Paved parking, HSG A
29,842	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
8,339	98	Roofs, HSG B
124,228	30	Woods, Good, HSG A
693,637	55	Woods, Good, HSG B
1,032,309		Weighted Average
977,100		94.65% Pervious Area
55,209		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Subcat 102S

Runoff = 1.70 cfs @ 12.17 hrs, Volume= 7,049 cf, Depth= 1.55"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
3	98	Paved parking, HSG B
54,680	55	Woods, Good, HSG B
54,684		Weighted Average
54,680		99.99% Pervious Area
3		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 103S: Subcat 103S

Runoff = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf, Depth= 1.05"
Routed to Pond YD-1 : PROP. YD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
9,487	39	>75% Grass cover, Good, HSG A
17,354	61	>75% Grass cover, Good, HSG B
59	98	Paved parking, HSG A
3,339	98	Paved parking, HSG B
3,844	98	Roofs, HSG B
73,084	30	Woods, Good, HSG A
49,270	55	Woods, Good, HSG B
156,437		Weighted Average
149,195		95.37% Pervious Area
7,243		4.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.3	80	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	390	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	360	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.9	880	Total			

Summary for Subcatchment 104S: Subcat 104S

Runoff = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf, Depth= 0.73"
Routed to Pond YD-2 : PROP. YD-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
46,882	39	>75% Grass cover, Good, HSG A
40,738	61	>75% Grass cover, Good, HSG B
205	96	Gravel surface, HSG A
449	96	Gravel surface, HSG B
6	98	Paved parking, HSG A
712	98	Paved parking, HSG B
874	98	Roofs, HSG B
135,456	30	Woods, Good, HSG A
44,293	55	Woods, Good, HSG B
269,613		Weighted Average
268,022		99.41% Pervious Area
1,591		0.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1220	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
6.3	660	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	380	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	1,090	Total			

Summary for Subcatchment 201S: Subcat 201S

Runoff = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf, Depth= 2.02"
Routed to Pond YD-3 : PROP. YD-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
38,392	39	>75% Grass cover, Good, HSG A
188,905	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,540	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
85,988	30	Woods, Good, HSG A
174,544	55	Woods, Good, HSG B
572,884		Weighted Average
502,371		87.69% Pervious Area
70,513		12.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Subcat 202S

Runoff = 2.65 cfs @ 12.11 hrs, Volume= 9,362 cf, Depth= 1.57"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
2,155	61	>75% Grass cover, Good, HSG B
131	98	Paved parking, HSG B
0	98	Roofs, HSG B
69,302	55	Woods, Good, HSG B
71,588		Weighted Average
71,457		99.82% Pervious Area
131		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0870	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.9	190	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	220	Total			

Summary for Subcatchment 203S: Subcat 203S

Runoff = 2.35 cfs @ 12.22 hrs, Volume= 11,200 cf, Depth= 1.16"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
12,674	39	>75% Grass cover, Good, HSG A
21,861	61	>75% Grass cover, Good, HSG B
1,431	98	Roofs, HSG B
32,985	30	Woods, Good, HSG A
47,282	55	Woods, Good, HSG B
116,233		Weighted Average
114,802		98.77% Pervious Area
1,431		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Subcatchment ROOF: Subcat ROOF

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 13.26 cfs @ 12.00 hrs, Volume= 38,609 cf, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.05"

Area (sf)	CN	Description
4,434	61	>75% Grass cover, Good, HSG B
12,443	98	Roofs, HSG A
65,719	98	Roofs, HSG B
82,597		Weighted Average
4,434		5.37% Pervious Area
78,162		94.63% Impervious Area

Summary for Pond CB-10: PROP. CB-10

Inflow Area = 3,923 sf, 69.98% Impervious, Inflow Depth = 4.68" for 25-Year event
Inflow = 0.48 cfs @ 12.05 hrs, Volume= 1,530 cf
Outflow = 0.48 cfs @ 12.05 hrs, Volume= 1,530 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.05 hrs, Volume= 1,530 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.91' @ 12.05 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0182 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.05 hrs HW=154.91' TW=154.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.48 cfs @ 2.38 fps)

Summary for Pond CB-11: PROP. CB-11

Inflow Area = 14,342 sf, 36.27% Impervious, Inflow Depth = 3.41" for 25-Year event
Inflow = 1.34 cfs @ 12.04 hrs, Volume= 4,072 cf
Outflow = 1.34 cfs @ 12.04 hrs, Volume= 4,072 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.34 cfs @ 12.04 hrs, Volume= 4,072 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.18' @ 12.04 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0083 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.04 hrs HW=155.18' TW=154.74' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.34 cfs @ 3.34 fps)

Summary for Pond CB-12: PROP. CB-12

Inflow Area = 4,589 sf, 72.91% Impervious, Inflow Depth = 4.79" for 25-Year event
Inflow = 0.57 cfs @ 12.05 hrs, Volume= 1,832 cf
Outflow = 0.57 cfs @ 12.05 hrs, Volume= 1,832 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.05 hrs, Volume= 1,832 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.43' @ 12.05 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0500 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.58 cfs @ 12.05 hrs HW=155.43' TW=155.21' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.58 cfs @ 2.68 fps)

Summary for Pond CB-13: PROP. CB-13

Inflow Area = 16,855 sf, 35.02% Impervious, Inflow Depth = 3.36" for 25-Year event
Inflow = 1.56 cfs @ 12.04 hrs, Volume= 4,720 cf
Outflow = 1.56 cfs @ 12.04 hrs, Volume= 4,720 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.04 hrs, Volume= 4,720 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.69' @ 12.04 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0208 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.54 cfs @ 12.04 hrs HW=155.69' TW=155.22' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.54 cfs @ 3.77 fps)

Summary for Pond CB-14: PROP. CB-14

Inflow Area = 7,169 sf, 66.61% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 0.85 cfs @ 12.05 hrs, Volume= 2,719 cf
Outflow = 0.85 cfs @ 12.05 hrs, Volume= 2,719 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.05 hrs, Volume= 2,719 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.40' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0097 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.05 hrs HW=152.39' TW=152.32' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.83 cfs @ 1.48 fps)

Summary for Pond CB-15: PROP. CB-15

Inflow Area = 38,051 sf, 28.52% Impervious, Inflow Depth = 2.87" for 25-Year event
Inflow = 2.84 cfs @ 12.05 hrs, Volume= 9,090 cf
Outflow = 2.84 cfs @ 12.05 hrs, Volume= 9,090 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.84 cfs @ 12.05 hrs, Volume= 9,090 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.88' @ 12.05 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.83 cfs @ 12.05 hrs HW=152.88' TW=152.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.83 cfs @ 3.60 fps)

Summary for Pond CB-16: PROP. CB-16

Inflow Area = 5,609 sf, 80.43% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 0.81 cfs @ 12.01 hrs, Volume= 2,372 cf
Outflow = 0.81 cfs @ 12.01 hrs, Volume= 2,372 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.01 hrs, Volume= 2,372 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.32' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=154.84' TW=154.89' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-17: PROP. CB-17

Inflow Area = 36,538 sf, 27.17% Impervious, Inflow Depth = 2.58" for 25-Year event
Inflow = 2.36 cfs @ 12.05 hrs, Volume= 7,864 cf
Outflow = 2.36 cfs @ 12.05 hrs, Volume= 7,864 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.05 hrs, Volume= 7,864 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.69' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 21.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.32 cfs @ 12.05 hrs HW=155.66' TW=155.29' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.32 cfs @ 2.96 fps)

Summary for Pond CB-18: PROP. CB-18

Inflow Area = 4,802 sf, 58.01% Impervious, Inflow Depth = 4.23" for 25-Year event
Inflow = 0.54 cfs @ 12.05 hrs, Volume= 1,692 cf
Outflow = 0.54 cfs @ 12.05 hrs, Volume= 1,692 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.05 hrs, Volume= 1,692 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.38' @ 12.05 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.80' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.05 hrs HW=155.38' TW=154.48' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.53 cfs @ 2.93 fps)

Summary for Pond CB-1A: PROP. CB-1A

Inflow Area = 4,096 sf,100.00% Impervious, Inflow Depth = 5.81" for 25-Year event
Inflow = 0.65 cfs @ 12.02 hrs, Volume= 1,984 cf
Outflow = 0.65 cfs @ 12.02 hrs, Volume= 1,984 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.02 hrs, Volume= 1,984 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.91' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=149.60' TW=149.77' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-1B: PROP. CB-1B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=552)

Inflow Area = 895 sf,100.00% Impervious, Inflow Depth = 5.81" for 25-Year event
Inflow = 0.15 cfs @ 12.01 hrs, Volume= 433 cf
Outflow = 0.15 cfs @ 12.01 hrs, Volume= 433 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.01 hrs, Volume= 433 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.88' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=149.13' TW=149.45' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond CB-2: PROP. CB-2

Inflow Area = 3,445 sf, 79.85% Impervious, Inflow Depth = 5.05" for 25-Year event
Inflow = 0.45 cfs @ 12.05 hrs, Volume= 1,450 cf
Outflow = 0.45 cfs @ 12.05 hrs, Volume= 1,450 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.05 hrs, Volume= 1,450 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.54' @ 12.06 hrs
Flood Elev= 153.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.50'	**12.0" Round Culvert**

L= 19.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 149.50' / 149.20' S= 0.0158 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=151.48' TW=151.51' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-3: PROP. CB-3

Inflow Area = 40,581 sf, 22.05% Impervious, Inflow Depth = 2.82" for 25-Year event
Inflow = 3.16 cfs @ 12.04 hrs, Volume= 9,535 cf
Outflow = 3.16 cfs @ 12.04 hrs, Volume= 9,535 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.16 cfs @ 12.04 hrs, Volume= 9,535 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.21' @ 12.05 hrs
Flood Elev= 153.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.10'	**12.0" Round Culvert**
			L= 42.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 149.10' / 148.80' S= 0.0071 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.87 cfs @ 12.04 hrs HW=152.09' TW=151.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.87 cfs @ 3.66 fps)

Summary for Pond CB-4: PROP. CB-4

Inflow Area = 6,683 sf, 52.95% Impervious, Inflow Depth = 4.03" for 25-Year event
Inflow = 0.77 cfs @ 12.02 hrs, Volume= 2,242 cf
Outflow = 0.77 cfs @ 12.02 hrs, Volume= 2,242 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.77 cfs @ 12.02 hrs, Volume= 2,242 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.76' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert**
			L= 14.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0143 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.76 cfs @ 12.02 hrs HW=156.76' TW=156.23' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.76 cfs @ 3.16 fps)

Summary for Pond CB-5: PROP. CB-5

Inflow Area = 15,922 sf, 34.35% Impervious, Inflow Depth = 3.23" for 25-Year event
Inflow = 1.47 cfs @ 12.02 hrs, Volume= 4,282 cf
Outflow = 1.47 cfs @ 12.02 hrs, Volume= 4,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.02 hrs, Volume= 4,282 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.99' @ 12.02 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.46 cfs @ 12.02 hrs HW=156.98' TW=156.24' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.46 cfs @ 3.60 fps)

Summary for Pond CB-6: PROP. CB-6

Inflow Area = 22,666 sf, 25.71% Impervious, Inflow Depth = 2.07" for 25-Year event
Inflow = 1.20 cfs @ 12.01 hrs, Volume= 3,910 cf
Outflow = 1.20 cfs @ 12.01 hrs, Volume= 3,910 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.01 hrs, Volume= 3,910 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 180.59' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=179.99' TW=180.12' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-7: PROP.CB-7

Inflow Area = 39,670 sf, 26.91% Impervious, Inflow Depth = 2.46" for 25-Year event
Inflow = 2.32 cfs @ 12.07 hrs, Volume= 8,144 cf
Outflow = 2.32 cfs @ 12.07 hrs, Volume= 8,144 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.07 hrs, Volume= 8,144 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 180.89' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.57 cfs @ 12.07 hrs HW=180.86' TW=180.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.57 cfs @ 3.28 fps)

Summary for Pond CB-8: PROP. CB-8

Inflow Area = 12,260 sf, 26.99% Impervious, Inflow Depth = 2.85" for 25-Year event
Inflow = 0.95 cfs @ 12.04 hrs, Volume= 2,913 cf
Outflow = 0.95 cfs @ 12.04 hrs, Volume= 2,913 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.04 hrs, Volume= 2,913 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.20' @ 12.04 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.95 cfs @ 12.04 hrs HW=207.20' TW=206.82' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.95 cfs @ 2.41 fps)

Summary for Pond CB-9: PROP. CB-9

Inflow Area = 12,855 sf, 41.05% Impervious, Inflow Depth = 3.50" for 25-Year event
Inflow = 1.18 cfs @ 12.05 hrs, Volume= 3,745 cf
Outflow = 1.18 cfs @ 12.05 hrs, Volume= 3,745 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.18 cfs @ 12.05 hrs, Volume= 3,745 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.27' @ 12.05 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.18 cfs @ 12.05 hrs HW=207.27' TW=206.82' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.18 cfs @ 2.56 fps)

Summary for Pond DMH-1: PROP. DMH-1

[80] Warning: Exceeded Pond CB-1A by 0.29' @ 12.01 hrs (2.05 cfs 700 cf)
[80] Warning: Exceeded Pond CB-1B by 0.56' @ 13.23 hrs (1.05 cfs 3,367 cf)

Inflow Area = 159,073 sf, 31.93% Impervious, Inflow Depth = 2.91" for 25-Year event
Inflow = 11.71 cfs @ 12.04 hrs, Volume= 38,639 cf
Outflow = 11.71 cfs @ 12.04 hrs, Volume= 38,639 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.71 cfs @ 12.04 hrs, Volume= 38,639 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.88' @ 12.04 hrs
Flood Elev= 152.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	**18.0" Round Culvert**
			L= 147.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 147.00' / 145.80' S= 0.0082 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.69 cfs @ 12.04 hrs HW=149.88' TW=146.41' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.69 cfs @ 6.62 fps)

Summary for Pond DMH-10: PROP. DMH-10

Inflow Area = 46,949 sf, 36.69% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 3.55 cfs @ 12.05 hrs, Volume= 11,928 cf
Outflow = 3.55 cfs @ 12.05 hrs, Volume= 11,928 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.55 cfs @ 12.05 hrs, Volume= 11,928 cf
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.48' @ 12.05 hrs
Flood Elev= 159.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.10'	**12.0" Round Culvert**
			L= 79.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 153.10' / 146.00' S= 0.0899 '/' Cc= 0.900
			n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.54 cfs @ 12.05 hrs HW=154.48' TW=143.41' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.54 cfs @ 4.51 fps)

Summary for Pond DMH-11: PROP. DMH-11

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 1.05" for 25-Year event
Inflow = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf
Outflow = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.15' @ 12.27 hrs
Flood Elev= 159.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**18.0" Round Culvert** L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 145.50' S= 0.0848 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.62 cfs @ 12.27 hrs HW=155.15' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.62 cfs @ 2.95 fps)

Summary for Pond DMH-12: PROP. DMH-12

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.73" for 25-Year event
Inflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Outflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Routed to Pond DMH-13 : PROP. DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.28' @ 12.30 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**18.0" Round Culvert** L= 165.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 146.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.82 cfs @ 12.30 hrs HW=152.28' TW=146.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.82 cfs @ 3.02 fps)

Summary for Pond DMH-13: PROP. DMH-13

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.73" for 25-Year event
Inflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Outflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 146.68' @ 12.30 hrs
Flood Elev= 151.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**18.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 144.00' S= 0.0211 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.82 cfs @ 12.30 hrs HW=146.68' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.82 cfs @ 3.02 fps)

Summary for Pond DMH-14: PROP. DMH-14

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 2.02" for 25-Year event
Inflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Outflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Routed to Pond DMH-15 : PROP. DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 150.11' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.90'	**24.0" Round Culvert** L= 67.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.90' / 146.25' S= 0.0246 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=16.65 cfs @ 12.38 hrs HW=150.11' TW=148.36' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 16.65 cfs @ 5.30 fps)

Summary for Pond DMH-15: PROP. DMH-15

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 2.02" for 25-Year event
Inflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Outflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 148.36' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.15'	**24.0" Round Culvert** L= 300.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 146.15' / 144.00' S= 0.0072 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=16.65 cfs @ 12.38 hrs HW=148.36' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.65 cfs @ 5.30 fps)

Summary for Pond DMH-2: PROP. DMH-2

[80] Warning: Exceeded Pond CB-2 by 0.47' @ 12.02 hrs (2.59 cfs 340 cf)

Inflow Area = 154,082 sf, 29.72% Impervious, Inflow Depth = 2.82" for 25-Year event
Inflow = 10.96 cfs @ 12.04 hrs, Volume= 36,222 cf
Outflow = 10.96 cfs @ 12.04 hrs, Volume= 36,222 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.96 cfs @ 12.04 hrs, Volume= 36,222 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.53' @ 12.05 hrs
Flood Elev= 153.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.50'	**18.0" Round Culvert** L= 62.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.50' / 147.10' S= 0.0065 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.86 cfs @ 12.04 hrs HW=151.51' TW=149.88' (Dynamic Tailwater)
1=Culvert (Inlet Controls 10.86 cfs @ 6.14 fps)

Summary for Pond DMH-3: PROP. DMH-3

Inflow Area = 110,056 sf, 30.98% Impervious, Inflow Depth = 2.75" for 25-Year event
Inflow = 7.36 cfs @ 12.04 hrs, Volume= 25,236 cf
Outflow = 7.36 cfs @ 12.04 hrs, Volume= 25,236 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.36 cfs @ 12.04 hrs, Volume= 25,236 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.30' @ 12.04 hrs
Flood Elev= 161.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.80'	**18.0" Round Culvert** L= 255.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.80' / 147.60' S= 0.0282 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=7.35 cfs @ 12.04 hrs HW=156.29' TW=151.45' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.35 cfs @ 4.16 fps)

Summary for Pond DMH-4: PROP. DMH-4

[80] Warning: Exceeded Pond CB-6 by 0.14' @ 12.01 hrs (1.39 cfs 331 cf)
[80] Warning: Exceeded Pond CB-7 by 0.05' @ 12.00 hrs (0.84 cfs 130 cf)

Inflow Area = 87,451 sf, 28.69% Impervious, Inflow Depth = 2.57" for 25-Year event
Inflow = 5.38 cfs @ 12.05 hrs, Volume= 18,712 cf
Outflow = 5.38 cfs @ 12.05 hrs, Volume= 18,712 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.38 cfs @ 12.05 hrs, Volume= 18,712 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 180.52' @ 12.05 hrs
Flood Elev= 182.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.00'	**12.0" Round Culvert** L= 250.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.00' / 154.90' S= 0.0924 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.37 cfs @ 12.05 hrs HW=180.52' TW=156.27' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.37 cfs @ 6.84 fps)

Summary for Pond DMH-5: PROP. DMH-5

Inflow Area = 25,115 sf, 34.18% Impervious, Inflow Depth = 3.18" for 25-Year event
Inflow = 2.12 cfs @ 12.05 hrs, Volume= 6,658 cf
Outflow = 2.12 cfs @ 12.05 hrs, Volume= 6,658 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.05 hrs, Volume= 6,658 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 206.82' @ 12.05 hrs
Flood Elev= 210.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**12.0" Round Culvert** L= 251.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 178.10' S= 0.1112 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.05 hrs HW=206.82' TW=180.51' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.12 cfs @ 3.08 fps)

Summary for Pond DMH-6: PROP. DMH-6

Inflow Area = 18,264 sf, 43.51% Impervious, Inflow Depth = 3.68" for 25-Year event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 5,602 cf
Outflow = 1.81 cfs @ 12.04 hrs, Volume= 5,602 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.04 hrs, Volume= 5,602 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.74' @ 12.04 hrs
Flood Elev= 158.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 117.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 149.00' S= 0.0427 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.81 cfs @ 12.04 hrs HW=154.74' TW=146.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.81 cfs @ 2.92 fps)

Summary for Pond DMH-7: PROP. DMH-7

Inflow Area = 21,444 sf, 43.13% Impervious, Inflow Depth = 3.67" for 25-Year event
Inflow = 2.12 cfs @ 12.04 hrs, Volume= 6,552 cf
Outflow = 2.12 cfs @ 12.04 hrs, Volume= 6,552 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.04 hrs, Volume= 6,552 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.22' @ 12.04 hrs
Flood Elev= 158.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**12.0" Round Culvert** L= 123.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 151.20' S= 0.0260 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.04 hrs HW=155.22' TW=152.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.12 cfs @ 3.08 fps)

Summary for Pond DMH-8: PROP. DMH-8

Inflow Area = 66,664 sf, 37.31% Impervious, Inflow Depth = 3.31" for 25-Year event
Inflow = 5.78 cfs @ 12.05 hrs, Volume= 18,361 cf
Outflow = 5.78 cfs @ 12.05 hrs, Volume= 18,361 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.78 cfs @ 12.05 hrs, Volume= 18,361 cf
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.32' @ 12.05 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.10'	**18.0" Round Culvert** L= 136.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.10' / 145.00' S= 0.0449 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.77 cfs @ 12.05 hrs HW=152.32' TW=145.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.77 cfs @ 3.76 fps)

Summary for Pond DMH-9: PROP. DMH-9

[80] Warning: Exceeded Pond CB-16 by 0.15' @ 12.03 hrs (1.45 cfs 166 cf)

Inflow Area = 42,147 sf, 34.25% Impervious, Inflow Depth = 2.91" for 25-Year event
Inflow = 3.01 cfs @ 12.04 hrs, Volume= 10,236 cf
Outflow = 3.01 cfs @ 12.04 hrs, Volume= 10,236 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.01 cfs @ 12.04 hrs, Volume= 10,236 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.30' @ 12.05 hrs
Flood Elev= 158.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.70'	**12.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 153.70' / 153.20' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.97 cfs @ 12.04 hrs HW=155.28' TW=154.48' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.97 cfs @ 3.78 fps)

Summary for Pond GD-1: PROP. GRASSED DEPRESSION

Inflow Area = 14,047 sf, 9.72% Impervious, Inflow Depth = 2.41" for 25-Year event
Inflow = 0.93 cfs @ 12.06 hrs, Volume= 2,816 cf
Outflow = 0.40 cfs @ 12.26 hrs, Volume= 2,816 cf, Atten= 57%, Lag= 12.0 min
Discarded = 0.08 cfs @ 12.26 hrs, Volume= 2,349 cf
Primary = 0.32 cfs @ 12.26 hrs, Volume= 467 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 145.56' @ 12.26 hrs Surf.Area= 1,337 sf Storage= 676 cf
Flood Elev= 146.00' Surf.Area= 1,547 sf Storage= 1,314 cf

Plug-Flow detention time= 63.0 min calculated for 2,815 cf (100% of inflow)

Center-of-Mass det. time= 63.0 min (893.3 - 830.4)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	1,314 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	1,094	141.0	0	0	1,094
146.00	1,547	160.0	1,314	1,314	1,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.08 cfs @ 12.26 hrs HW=145.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.32 cfs @ 12.26 hrs HW=145.56' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.32 cfs @ 0.57 fps)

Summary for Pond INF-1: PROP. INFILTRAION BASIN #1

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 253,299 sf, 24.56% Impervious, Inflow Depth = 2.74" for 25-Year event
Inflow = 17.50 cfs @ 12.05 hrs, Volume= 57,912 cf
Outflow = 1.75 cfs @ 12.96 hrs, Volume= 57,912 cf, Atten= 90%, Lag= 54.9 min
Discarded = 0.59 cfs @ 12.96 hrs, Volume= 35,961 cf
Primary = 1.16 cfs @ 12.96 hrs, Volume= 21,951 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.76' @ 12.96 hrs Surf.Area= 9,722 sf Storage= 23,170 cf
Flood Elev= 150.00' Surf.Area= 12,505 sf Storage= 47,980 cf

Plug-Flow detention time= 181.7 min calculated for 57,912 cf (100% of inflow)
Center-of-Mass det. time= 181.7 min (981.6 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	47,980 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	7,269	340.0	0	0	7,269
147.00	8,847	380.0	16,090	16,090	9,671
149.00	11,229	416.0	20,029	36,119	12,087
150.00	12,505	435.0	11,861	47,980	13,442

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	144.25'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 144.25' / 144.00' S= 0.0069 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	148.75'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.59 cfs @ 12.96 hrs HW=147.76' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.59 cfs)

Primary OutFlow Max=1.16 cfs @ 12.96 hrs HW=147.76' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.16 cfs of 6.56 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.92 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond INF-2: PROP. INFILTRATION BASIN #2

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 123,761 sf, 23.52% Impervious, Inflow Depth = 2.85" for 25-Year event
Inflow = 9.49 cfs @ 12.05 hrs, Volume= 29,393 cf
Outflow = 0.73 cfs @ 13.42 hrs, Volume= 29,393 cf, Atten= 92%, Lag= 82.4 min
Discarded = 0.43 cfs @ 13.42 hrs, Volume= 27,539 cf
Primary = 0.29 cfs @ 13.42 hrs, Volume= 1,853 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
  Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 146.09' @ 13.42 hrs Surf.Area= 7,656 sf Storage= 12,923 cf
Flood Elev= 148.00' Surf.Area= 10,493 sf Storage= 30,153 cf

Plug-Flow detention time= 286.7 min calculated for 29,385 cf (100% of inflow)
Center-of-Mass det. time= 286.8 min (1,089.6 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	30,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	4,789	438.0	0	0	4,789
146.00	7,528	475.0	12,214	12,214	7,628
148.00	10,493	513.0	17,939	30,153	10,775

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.25'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.25' / 140.00' S= 0.0813 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	146.75'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.43 cfs @ 13.42 hrs HW=146.09' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=0.29 cfs @ 13.42 hrs HW=146.09' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.29 cfs of 5.79 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.29 cfs @ 1.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=144.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF-3: PROP. INFILTRATION BASIN #3

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 70,805 sf, 27.14% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 5.16 cfs @ 12.04 hrs, Volume= 16,607 cf
Outflow = 3.06 cfs @ 12.13 hrs, Volume= 16,607 cf, Atten= 41%, Lag= 5.3 min
Discarded = 0.21 cfs @ 12.13 hrs, Volume= 11,796 cf
Primary = 2.85 cfs @ 12.13 hrs, Volume= 4,811 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 143.65' @ 12.13 hrs Surf.Area= 3,344 sf Storage= 4,281 cf
Flood Elev= 145.00' Surf.Area= 4,623 sf Storage= 9,652 cf

Plug-Flow detention time= 146.1 min calculated for 16,603 cf (100% of inflow)
Center-of-Mass det. time= 146.2 min (941.1 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	9,652 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
142.00	1,902	248.0	0	0	1,902
144.00	3,697	300.0	5,500	5,500	4,235
145.00	4,623	318.0	4,151	9,652	5,173

Device	Routing	Invert	Outlet Devices
#1	Discarded	142.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.21 cfs @ 12.13 hrs HW=143.65' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=2.84 cfs @ 12.13 hrs HW=143.65' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.84 cfs @ 0.93 fps)

Summary for Pond YD-1: PROP. YD-1

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 1.05" for 25-Year event
Inflow = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf
Outflow = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 12.27 hrs, Volume= 13,642 cf
Routed to Pond DMH-11 : PROP. DMH-11

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.77' @ 12.27 hrs
Flood Elev= 159.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**18.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.61 cfs @ 12.27 hrs HW=155.77' TW=155.15' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.61 cfs @ 4.17 fps)

Summary for Pond YD-2: PROP. YD-2

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 0.73" for 25-Year event
Inflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Outflow = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 12.30 hrs, Volume= 16,376 cf
Routed to Pond DMH-12 : PROP. DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 157.28' @ 12.30 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.50'	**18.0" Round Culvert** L= 96.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.50' / 151.60' S= 0.0510 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=2.82 cfs @ 12.30 hrs HW=157.28' TW=152.28' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.82 cfs @ 3.02 fps)

Summary for Pond YD-3: PROP. YD-3

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 2.02" for 25-Year event
Inflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Outflow = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.65 cfs @ 12.38 hrs, Volume= 96,325 cf
Routed to Pond DMH-14 : PROP. DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 151.32' @ 12.39 hrs
Flood Elev= 154.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.50'	**24.0" Round Culvert** L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.50' / 148.00' S= 0.0116 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=16.61 cfs @ 12.38 hrs HW=151.32' TW=150.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 16.61 cfs @ 5.29 fps)

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 2,559,756 sf, 9.68% Impervious, Inflow Depth = 1.43" for 25-Year event
Inflow = 45.32 cfs @ 12.43 hrs, Volume= 305,736 cf
Primary = 45.32 cfs @ 12.43 hrs, Volume= 305,736 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 187,821 sf, 0.83% Impervious, Inflow Depth = 1.31" for 25-Year event
Inflow = 4.40 cfs @ 12.14 hrs, Volume= 20,562 cf
Primary = 4.40 cfs @ 12.14 hrs, Volume= 20,562 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1AS: Subcat 1AS Runoff Area=4,096 sf 100.00% Impervious Runoff Depth=8.49"
Flow Length=310' Tc=1.7 min CN=98 Runoff=0.94 cfs 2,898 cf

Subcatchment1BS: Subcat 1BS Runoff Area=895 sf 100.00% Impervious Runoff Depth=8.49"
Flow Length=70' Slope=0.0200 '/' Tc=0.6 min CN=98 Runoff=0.21 cfs 633 cf

Subcatchment2S: Subcat 2S Runoff Area=3,445 sf 79.85% Impervious Runoff Depth=7.59"
Flow Length=170' Tc=3.3 min CN=WQ Runoff=0.68 cfs 2,178 cf

Subcatchment3S: Subcat 3S Runoff Area=40,581 sf 22.05% Impervious Runoff Depth=4.92"
Flow Length=250' Tc=2.7 min CN=WQ Runoff=5.70 cfs 16,649 cf

Subcatchment4S: Subcat 4S Runoff Area=6,683 sf 52.95% Impervious Runoff Depth=6.37"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=1.23 cfs 3,546 cf

Subcatchment5S: Subcat 5S Runoff Area=15,922 sf 34.35% Impervious Runoff Depth=5.38"
Flow Length=260' Tc=1.0 min CN=WQ Runoff=2.51 cfs 7,133 cf

Subcatchment6S: Subcat 6S Runoff Area=22,666 sf 25.71% Impervious Runoff Depth=3.64"
Flow Length=250' Tc=0.9 min CN=WQ Runoff=2.24 cfs 6,873 cf

Subcatchment7S: Subcat 7S Runoff Area=39,670 sf 26.91% Impervious Runoff Depth=4.27"
Flow Length=480' Tc=4.5 min CN=WQ Runoff=4.25 cfs 14,115 cf

Subcatchment8S: Subcat 8S Runoff Area=12,260 sf 26.99% Impervious Runoff Depth=4.92"
Flow Length=250' Tc=2.4 min CN=WQ Runoff=1.71 cfs 5,026 cf

Subcatchment9S: Subcat 9S Runoff Area=12,855 sf 41.05% Impervious Runoff Depth=5.72"
Flow Length=300' Slope=0.0700 '/' Tc=3.4 min CN=WQ Runoff=1.98 cfs 6,122 cf

Subcatchment10S: Subcat 10S Runoff Area=3,923 sf 69.98% Impervious Runoff Depth=7.15"
Flow Length=190' Tc=3.4 min CN=WQ Runoff=0.73 cfs 2,336 cf

Subcatchment11S: Subcat 11S Runoff Area=14,342 sf 36.27% Impervious Runoff Depth=5.63"
Flow Length=235' Tc=2.6 min CN=WQ Runoff=2.26 cfs 6,735 cf

Subcatchment12S: Subcat 12S Runoff Area=4,589 sf 72.91% Impervious Runoff Depth=7.28"
Flow Length=180' Tc=3.5 min CN=WQ Runoff=0.87 cfs 2,783 cf

Subcatchment13S: Subcat 13S Runoff Area=16,855 sf 35.02% Impervious Runoff Depth=5.58"
Flow Length=200' Tc=2.4 min CN=WQ Runoff=2.66 cfs 7,836 cf

Subcatchment14S: Subcat 14S Runoff Area=7,169 sf 66.61% Impervious Runoff Depth=6.99"
Flow Length=185' Tc=3.5 min CN=WQ Runoff=1.31 cfs 4,178 cf

Subcatchment15S: Subcat 15S Runoff Area=38,051 sf 28.52% Impervious Runoff Depth=4.89"
Flow Length=280' Tc=3.4 min CN=WQ Runoff=5.02 cfs 15,505 cf

Subcatchment16S: Subcat 16S Runoff Area=5,609 sf 80.43% Impervious Runoff Depth=7.61"
Flow Length=235' Tc=0.8 min CN=WQ Runoff=1.21 cfs 3,559 cf

Subcatchment17S: Subcat 17S Runoff Area=36,538 sf 27.17% Impervious Runoff Depth=4.46"
Flow Length=280' Tc=3.5 min CN=WQ Runoff=4.29 cfs 13,566 cf

Subcatchment18S: Subcat 18S Runoff Area=4,802 sf 58.01% Impervious Runoff Depth=6.61"
Flow Length=50' Slope=0.0200 '/' Tc=3.2 min CN=WQ Runoff=0.84 cfs 2,645 cf

Subcatchment19S: Subcat 19S Runoff Area=23,856 sf 8.35% Impervious Runoff Depth=4.38"
Flow Length=140' Slope=0.1400 '/' Tc=2.4 min CN=WQ Runoff=3.12 cfs 8,716 cf

Subcatchment20S: Subcat 20S Runoff Area=45,391 sf 9.32% Impervious Runoff Depth=4.43"
Flow Length=140' Slope=0.0800 '/' Tc=3.1 min CN=WQ Runoff=5.83 cfs 16,748 cf

Subcatchment21S: Subcat 21S Runoff Area=65,663 sf 5.31% Impervious Runoff Depth=4.16"
Flow Length=230' Slope=0.0500 '/' Tc=4.7 min CN=WQ Runoff=7.53 cfs 22,763 cf

Subcatchment22S: Subcat 22S Runoff Area=10,299 sf 0.00% Impervious Runoff Depth=4.01"
Flow Length=142' Tc=3.2 min CN=61 Runoff=1.22 cfs 3,442 cf

Subcatchment23S: Subcat 23S Runoff Area=11,706 sf 0.00% Impervious Runoff Depth=4.01"
Flow Length=110' Tc=3.2 min CN=61 Runoff=1.39 cfs 3,912 cf

Subcatchment24S: Subcat 23S Runoff Area=14,047 sf 9.72% Impervious Runoff Depth=4.45"
Flow Length=140' Tc=3.4 min CN=WQ Runoff=1.79 cfs 5,204 cf

Subcatchment25S: Subcat 25S Runoff Area=11,916 sf 10.09% Impervious Runoff Depth=4.46"
Flow Length=70' Tc=2.0 min CN=WQ Runoff=1.60 cfs 4,431 cf

Subcatchment101S: Subcat 101S Runoff Area=1,032,309 sf 5.35% Impervious Runoff Depth=3.29"
Flow Length=1,314' Tc=33.8 min CN=WQ Runoff=45.83 cfs 283,308 cf

Subcatchment102S: Subcat 102S Runoff Area=54,684 sf 0.01% Impervious Runoff Depth=3.29"
Flow Length=424' Tc=11.0 min CN=WQ Runoff=3.98 cfs 15,013 cf

Subcatchment103S: Subcat 103S Runoff Area=156,437 sf 4.63% Impervious Runoff Depth=2.25"
Flow Length=880' Tc=17.9 min CN=WQ Runoff=5.58 cfs 29,287 cf

Subcatchment104S: Subcat 104S Runoff Area=269,613 sf 0.59% Impervious Runoff Depth=1.78"
Flow Length=1,090' Tc=19.8 min CN=WQ Runoff=6.92 cfs 39,923 cf

Subcatchment201S: Subcat 201S Runoff Area=572,884 sf 12.31% Impervious Runoff Depth=3.74"
Flow Length=1,510' Tc=26.1 min CN=WQ Runoff=31.91 cfs 178,640 cf

Subcatchment202S: Subcat 202S Runoff Area=71,588 sf 0.18% Impervious Runoff Depth=3.33"
Flow Length=220' Tc=6.5 min CN=WQ Runoff=6.12 cfs 19,837 cf

Subcatchment203S: Subcat 203S Runoff Area=116,233 sf 1.23% Impervious Runoff Depth=2.53"
Flow Length=766' Tc=14.8 min CN=WQ Runoff=5.38 cfs 24,515 cf

Subcatchment ROOF: Subcat ROOF Runoff Area=82,597 sf 94.63% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=WQ Runoff=19.35 cfs 56,780 cf

Pond CB-10: PROP. CB-10 Peak Elev=155.21' Inflow=0.73 cfs 2,336 cf
12.0" Round Culvert n=0.012 L=11.0' S=0.0182 '/' Outflow=0.73 cfs 2,336 cf

Pond CB-11: PROP. CB-11 Peak Elev=155.51' Inflow=2.26 cfs 6,735 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0083 '/' Outflow=2.26 cfs 6,735 cf

Pond CB-12: PROP. CB-12 Peak Elev=155.83' Inflow=0.87 cfs 2,783 cf
12.0" Round Culvert n=0.012 L=10.0' S=0.0500 '/' Outflow=0.87 cfs 2,783 cf

Pond CB-13: PROP. CB-13 Peak Elev=156.24' Inflow=2.66 cfs 7,836 cf
12.0" Round Culvert n=0.012 L=24.0' S=0.0208 '/' Outflow=2.66 cfs 7,836 cf

Pond CB-14: PROP. CB-14 Peak Elev=153.29' Inflow=1.31 cfs 4,178 cf
12.0" Round Culvert n=0.012 L=31.0' S=0.0097 '/' Outflow=1.31 cfs 4,178 cf

Pond CB-15: PROP. CB-15 Peak Elev=154.94' Inflow=5.02 cfs 15,505 cf
12.0" Round Culvert n=0.012 L=37.0' S=0.0081 '/' Outflow=5.02 cfs 15,505 cf

Pond CB-16: PROP. CB-16 Peak Elev=158.74' Inflow=1.21 cfs 3,559 cf
12.0" Round Culvert n=0.012 L=8.0' S=0.0250 '/' Outflow=1.21 cfs 3,559 cf

Pond CB-17: PROP. CB-17 Peak Elev=159.96' Inflow=4.29 cfs 13,566 cf
12.0" Round Culvert n=0.012 L=21.0' S=0.0095 '/' Outflow=4.29 cfs 13,566 cf

Pond CB-18: PROP. CB-18 Peak Elev=156.25' Inflow=0.84 cfs 2,645 cf
12.0" Round Culvert n=0.012 L=15.0' S=0.0133 '/' Outflow=0.84 cfs 2,645 cf

Pond CB-1A: PROP. CB-1A Peak Elev=155.55' Inflow=0.94 cfs 2,898 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.94 cfs 2,898 cf

Pond CB-1B: PROP. CB-1B Peak Elev=155.51' Inflow=0.21 cfs 633 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=0.21 cfs 631 cf

Pond CB-2: PROP. CB-2 Peak Elev=160.61' Inflow=0.68 cfs 2,178 cf
12.0" Round Culvert n=0.012 L=19.0' S=0.0158 '/' Outflow=0.68 cfs 2,178 cf

Pond CB-3: PROP. CB-3 Peak Elev=162.75' Inflow=5.70 cfs 16,649 cf
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=5.70 cfs 16,649 cf

Pond CB-4: PROP. CB-4 Peak Elev=165.01' Inflow=1.23 cfs 3,546 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=1.23 cfs 3,546 cf

Pond CB-5: PROP. CB-5 Peak Elev=165.21' Inflow=2.51 cfs 7,133 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0154 '/' Outflow=2.51 cfs 7,133 cf

Pond CB-6: PROP. CB-6 Peak Elev=185.25' Inflow=2.24 cfs 6,873 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=2.24 cfs 6,873 cf

Pond CB-7: PROP.CB-7 Peak Elev=186.27' Inflow=4.25 cfs 14,115 cf
12.0" Round Culvert n=0.012 L=14.0' S=0.0143 '/' Outflow=4.25 cfs 14,115 cf

Pond CB-8: PROP. CB-8 Peak Elev=207.65' Inflow=1.71 cfs 5,026 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=1.71 cfs 5,026 cf

Pond CB-9: PROP. CB-9 Peak Elev=207.71' Inflow=1.98 cfs 6,122 cf
12.0" Round Culvert n=0.012 L=13.0' S=0.0462 '/' Outflow=1.98 cfs 6,122 cf

Pond DMH-1: PROP. DMH-1 Peak Elev=155.51' Inflow=20.41 cfs 65,172 cf
18.0" Round Culvert n=0.012 L=147.0' S=0.0082 '/' Outflow=20.41 cfs 65,172 cf

Pond DMH-10: PROP. DMH-10 Peak Elev=156.20' Inflow=6.10 cfs 19,769 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0899 '/' Outflow=6.10 cfs 19,769 cf

Pond DMH-11: PROP. DMH-11 Peak Elev=155.59' Inflow=5.58 cfs 29,287 cf
18.0" Round Culvert n=0.012 L=105.0' S=0.0848 '/' Outflow=5.58 cfs 29,287 cf

Pond DMH-12: PROP. DMH-12 Peak Elev=152.90' Inflow=6.92 cfs 39,923 cf
18.0" Round Culvert n=0.012 L=165.0' S=0.0333 '/' Outflow=6.92 cfs 39,923 cf

Pond DMH-13: PROP. DMH-13 Peak Elev=147.30' Inflow=6.92 cfs 39,923 cf
18.0" Round Culvert n=0.012 L=90.0' S=0.0211 '/' Outflow=6.92 cfs 39,923 cf

Pond DMH-14: PROP. DMH-14 Peak Elev=157.94' Inflow=31.91 cfs 178,640 cf
24.0" Round Culvert n=0.012 L=67.0' S=0.0246 '/' Outflow=31.91 cfs 178,640 cf

Pond DMH-15: PROP. DMH-15 Peak Elev=153.51' Inflow=31.91 cfs 178,640 cf
24.0" Round Culvert n=0.012 L=300.0' S=0.0072 '/' Outflow=31.91 cfs 178,640 cf

Pond DMH-2: PROP. DMH-2 Peak Elev=160.58' Inflow=19.33 cfs 61,643 cf
18.0" Round Culvert n=0.012 L=62.0' S=0.0065 '/' Outflow=19.33 cfs 61,643 cf

Pond DMH-3: PROP. DMH-3 Peak Elev=164.95' Inflow=12.97 cfs 42,816 cf
18.0" Round Culvert n=0.012 L=255.0' S=0.0282 '/' Outflow=12.97 cfs 42,816 cf

Pond DMH-4: PROP. DMH-4 Peak Elev=185.02' Inflow=9.66 cfs 32,137 cf
12.0" Round Culvert n=0.012 L=250.0' S=0.0924 '/' Outflow=9.66 cfs 32,137 cf

Pond DMH-5: PROP. DMH-5 Peak Elev=207.44' Inflow=3.66 cfs 11,149 cf
12.0" Round Culvert n=0.012 L=251.0' S=0.1112 '/' Outflow=3.66 cfs 11,149 cf

Pond DMH-6: PROP. DMH-6 Peak Elev=155.12' Inflow=2.99 cfs 9,070 cf
12.0" Round Culvert n=0.012 L=117.0' S=0.0427 '/' Outflow=2.99 cfs 9,070 cf

Pond DMH-7: PROP. DMH-7 Peak Elev=155.76' Inflow=3.51 cfs 10,619 cf
12.0" Round Culvert n=0.012 L=123.0' S=0.0260 '/' Outflow=3.51 cfs 10,619 cf

Pond DMH-8: PROP. DMH-8 Peak Elev=153.17' Inflow=9.79 cfs 30,302 cf
18.0" Round Culvert n=0.012 L=136.0' S=0.0449 '/' Outflow=9.79 cfs 30,302 cf

Pond DMH-9: PROP. DMH-9 Peak Elev=158.69' Inflow=5.25 cfs 17,125 cf
12.0" Round Culvert n=0.012 L=79.0' S=0.0063 '/' Outflow=5.25 cfs 17,125 cf

Pond GD-1: PROP. GRASSED DEPRESSION Peak Elev=145.66' Storage=819 cf Inflow=1.79 cfs 5,204 cf
Discarded=0.08 cfs 3,143 cf Primary=1.55 cfs 2,060 cf Outflow=1.63 cfs 5,204 cf

Pond INF-1: PROP. INFILTRAION BASIN Peak Elev=149.02' Storage=36,360 cf Inflow=31.51 cfs 100,447 cf
Discarded=0.68 cfs 42,512 cf Primary=5.40 cfs 54,164 cf Secondary=3.49 cfs 3,771 cf Outflow=9.56 cfs 100,447 cf

Pond INF-2: PROP. INFILTRATION BASIN Peak Elev=146.79' Storage=18,575 cf Inflow=17.01 cfs 50,962 cf
Discarded=0.49 cfs 32,570 cf Primary=3.36 cfs 18,228 cf Secondary=0.36 cfs 164 cf Outflow=4.20 cfs 50,962 cf

Pond INF-3: PROP. INFILTRATION BASIN #3 Peak Elev=143.81' Storage=4,823 cf Inflow=9.20 cfs 28,485 cf
Discarded=0.22 cfs 14,160 cf Primary=8.52 cfs 14,325 cf Outflow=8.74 cfs 28,485 cf

Pond YD-1: PROP. YD-1 Peak Elev=156.28' Inflow=5.58 cfs 29,287 cf
18.0" Round Culvert n=0.012 L=40.0' S=0.0125 '/' Outflow=5.58 cfs 29,287 cf

Pond YD-2: PROP. YD-2 Peak Elev=157.90' Inflow=6.92 cfs 39,923 cf
18.0" Round Culvert n=0.012 L=96.0' S=0.0510 '/' Outflow=6.92 cfs 39,923 cf

Pond YD-3: PROP. YD-3 Peak Elev=162.37' Inflow=31.91 cfs 178,640 cf
24.0" Round Culvert n=0.012 L=43.0' S=0.0116 '/' Outflow=31.91 cfs 178,640 cf

Link DP1: Design Point #1 - Hawkes Brook Inflow=104.38 cfs 643,314 cf
Primary=104.38 cfs 643,314 cf

Link DP2: Design Point #2 - Isolated Wetland Inflow=10.15 cfs 44,352 cf
Primary=10.15 cfs 44,352 cf

Total Runoff Area = 2,830,174 sf Runoff Volume = 836,834 cf Average Runoff Depth = 3.55"
88.43% Pervious = 2,502,787 sf 11.57% Impervious = 327,387 sf

Summary for Subcatchment 1AS: Subcat 1AS

Runoff = 0.94 cfs @ 12.02 hrs, Volume= 2,898 cf, Depth= 8.49"
Routed to Pond CB-1A : PROP. CB-1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
4,096	98	Paved parking, HSG B
4,096		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
1.4	290	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	310	Total			

Summary for Subcatchment 1BS: Subcat 1BS

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 12.01 hrs, Volume= 633 cf, Depth= 8.49"
Routed to Pond CB-1B : PROP. CB-1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
895	98	Paved parking, HSG B
895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	70	Total			

Summary for Subcatchment 2S: Subcat 2S

Runoff = 0.68 cfs @ 12.05 hrs, Volume= 2,178 cf, Depth= 7.59"
Routed to Pond CB-2 : PROP. CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
694	61	>75% Grass cover, Good, HSG B
2,751	98	Paved parking, HSG B
3,445		Weighted Average
694		20.15% Pervious Area
2,751		79.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	170	Total			

Summary for Subcatchment 3S: Subcat 3S

Runoff = 5.70 cfs @ 12.04 hrs, Volume= 16,649 cf, Depth= 4.92"
Routed to Pond CB-3 : PROP. CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
27,382	61	>75% Grass cover, Good, HSG B
8,949	98	Paved parking, HSG B
4,250	55	Woods, Good, HSG B
40,581		Weighted Average
31,632		77.95% Pervious Area
8,949		22.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1600	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	70	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.7	250	Total			

Summary for Subcatchment 4S: Subcat 4S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.23 cfs @ 12.02 hrs, Volume= 3,546 cf, Depth= 6.37"
Routed to Pond CB-4 : PROP. CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
3,010	61	>75% Grass cover, Good, HSG B
82	98	Paved parking, HSG A
3,455	98	Paved parking, HSG B
2	98	Roofs, HSG B
134	55	Woods, Good, HSG B
6,683		Weighted Average
3,144		47.05% Pervious Area
3,538		52.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 5S: Subcat 5S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.51 cfs @ 12.02 hrs, Volume= 7,133 cf, Depth= 5.38"
Routed to Pond CB-5 : PROP. CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
1,087	39	>75% Grass cover, Good, HSG A
9,367	61	>75% Grass cover, Good, HSG B
134	98	Paved parking, HSG A
5,335	98	Paved parking, HSG B
15,922		Weighted Average
10,454		65.65% Pervious Area
5,469		34.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.7	240	0.0900	6.09		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	260	Total			

Summary for Subcatchment 6S: Subcat 6S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.24 cfs @ 12.02 hrs, Volume= 6,873 cf, Depth= 3.64"
Routed to Pond CB-6 : PROP. CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
9,260	39	>75% Grass cover, Good, HSG A
1,509	61	>75% Grass cover, Good, HSG B
3,852	98	Paved parking, HSG A
1,695	98	Paved parking, HSG B
281	98	Roofs, HSG B
2,497	30	Woods, Good, HSG A
3,572	55	Woods, Good, HSG B
22,666		Weighted Average
16,838		74.29% Pervious Area
5,828		25.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	250	Total			

Summary for Subcatchment 7S: Subcat 7S

Runoff = 4.25 cfs @ 12.07 hrs, Volume= 14,115 cf, Depth= 4.27"
Routed to Pond CB-7 : PROP.CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
14,582	39	>75% Grass cover, Good, HSG A
13,602	61	>75% Grass cover, Good, HSG B
5,822	98	Paved parking, HSG A
1,575	98	Paved parking, HSG B
3,276	98	Roofs, HSG B
813	55	Woods, Good, HSG B
39,670		Weighted Average
28,996		73.09% Pervious Area
10,673		26.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0880	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.8	220	0.0880	2.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	230	0.1100	6.73		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5	480	Total			

Summary for Subcatchment 8S: Subcat 8S

Runoff = 1.71 cfs @ 12.04 hrs, Volume= 5,026 cf, Depth= 4.92"
Routed to Pond CB-8 : PROP. CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
3,825	61	>75% Grass cover, Good, HSG B
3,201	98	Paved parking, HSG B
108	98	Roofs, HSG B
5,126	55	Woods, Good, HSG B
12,260		Weighted Average
8,951		73.01% Pervious Area
3,309		26.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
2.1	230	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	250	Total			

Summary for Subcatchment 9S: Subcat 9S

Runoff = 1.98 cfs @ 12.05 hrs, Volume= 6,122 cf, Depth= 5.72"
Routed to Pond CB-9 : PROP. CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
5,176	61	>75% Grass cover, Good, HSG B
4,886	98	Paved parking, HSG B
391	98	Roofs, HSG B
2,402	55	Woods, Good, HSG B
12,855		Weighted Average
7,578		58.95% Pervious Area
5,277		41.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0700	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	40	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	230	0.0700	5.37		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	300	Total			

Summary for Subcatchment 10S: Subcat 10S

Runoff = 0.73 cfs @ 12.05 hrs, Volume= 2,336 cf, Depth= 7.15"
Routed to Pond CB-10 : PROP. CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
1,177	61	>75% Grass cover, Good, HSG B
2,745	98	Paved parking, HSG B
3,923		Weighted Average
1,177		30.02% Pervious Area
2,745		69.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	190	Total			

Summary for Subcatchment 11S: Subcat 11S

Runoff = 2.26 cfs @ 12.04 hrs, Volume= 6,735 cf, Depth= 5.63"
Routed to Pond CB-11 : PROP. CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
9,140	61	>75% Grass cover, Good, HSG B
5,201	98	Paved parking, HSG B
14,342		Weighted Average
9,140		63.73% Pervious Area
5,201		36.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1500	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.2	35	0.1500	2.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	170	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	235	Total			

Summary for Subcatchment 12S: Subcat 12S

Runoff = 0.87 cfs @ 12.05 hrs, Volume= 2,783 cf, Depth= 7.28"
Routed to Pond CB-12 : PROP. CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
1,243	61	>75% Grass cover, Good, HSG B
3,346	98	Paved parking, HSG B
4,589		Weighted Average
1,243		27.09% Pervious Area
3,346		72.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	180	Total			

Summary for Subcatchment 13S: Subcat 13S

Runoff = 2.66 cfs @ 12.04 hrs, Volume= 7,836 cf, Depth= 5.58"
Routed to Pond CB-13 : PROP. CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
10,952	61	>75% Grass cover, Good, HSG B
5,903	98	Paved parking, HSG B
16,855		Weighted Average
10,952		64.98% Pervious Area
5,903		35.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	40	0.3000	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	160	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	200	Total			

Summary for Subcatchment 14S: Subcat 14S

Runoff = 1.31 cfs @ 12.05 hrs, Volume= 4,178 cf, Depth= 6.99"
Routed to Pond CB-14 : PROP. CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
2,394	61	>75% Grass cover, Good, HSG B
4,775	98	Paved parking, HSG B
7,169		Weighted Average
2,394		33.39% Pervious Area
4,775		66.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	165	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	185	Total			

Summary for Subcatchment 15S: Subcat 15S

Runoff = 5.02 cfs @ 12.05 hrs, Volume= 15,505 cf, Depth= 4.89"
Routed to Pond CB-15 : PROP. CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
5,979	39	>75% Grass cover, Good, HSG A
21,222	61	>75% Grass cover, Good, HSG B
839	98	Paved parking, HSG A
10,012	98	Paved parking, HSG B
38,051		Weighted Average
27,201		71.48% Pervious Area
10,850		28.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.3	55	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	175	0.0280	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4	280	Total			

Summary for Subcatchment 16S: Subcat 16S

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.21 cfs @ 12.01 hrs, Volume= 3,559 cf, Depth= 7.61"
Routed to Pond CB-16 : PROP. CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
1,098	61	>75% Grass cover, Good, HSG B
4,512	98	Paved parking, HSG B
5,609		Weighted Average
1,098		19.57% Pervious Area
4,512		80.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.98		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.11"
0.5	215	0.1300	7.32		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	235	Total			

Summary for Subcatchment 17S: Subcat 17S

Runoff = 4.29 cfs @ 12.05 hrs, Volume= 13,566 cf, Depth= 4.46"
Routed to Pond CB-17 : PROP. CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
11,133	39	>75% Grass cover, Good, HSG A
15,479	61	>75% Grass cover, Good, HSG B
310	98	Paved parking, HSG A
9,616	98	Paved parking, HSG B
36,538		Weighted Average
26,612		72.83% Pervious Area
9,926		27.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.2200	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	90	0.2200	3.28		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	140	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.5	280	Total			

Summary for Subcatchment 18S: Subcat 18S

Runoff = 0.84 cfs @ 12.05 hrs, Volume= 2,645 cf, Depth= 6.61"
Routed to Pond CB-18 : PROP. CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
2,016	61	>75% Grass cover, Good, HSG B
2,786	98	Paved parking, HSG B
4,802		Weighted Average
2,016		41.99% Pervious Area
2,786		58.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.0200	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.5	30	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	50	Total			

Summary for Subcatchment 19S: Subcat 19S

Runoff = 3.12 cfs @ 12.04 hrs, Volume= 8,716 cf, Depth= 4.38"
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
21,865	61	>75% Grass cover, Good, HSG B
1,991	98	Paved parking, HSG B
23,856		Weighted Average
21,865		91.65% Pervious Area
1,991		8.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	30	0.1400	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.7	110	0.1400	2.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.4	140	Total			

Summary for Subcatchment 20S: Subcat 20S

Runoff = 5.83 cfs @ 12.05 hrs, Volume= 16,748 cf, Depth= 4.43"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
41,162	61	>75% Grass cover, Good, HSG B
4,228	98	Paved parking, HSG B
45,391		Weighted Average
41,162		90.68% Pervious Area
4,228		9.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.9	110	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.1	140	Total			

Summary for Subcatchment 21S: Subcat 21S

Runoff = 7.53 cfs @ 12.07 hrs, Volume= 22,763 cf, Depth= 4.16"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
54,083	61	>75% Grass cover, Good, HSG B
3,487	98	Paved parking, HSG B
8,093	55	Woods, Good, HSG B
65,663		Weighted Average
62,176		94.69% Pervious Area
3,487		5.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
2.1	200	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	230	Total			

Summary for Subcatchment 22S: Subcat 22S

Runoff = 1.22 cfs @ 12.05 hrs, Volume= 3,442 cf, Depth= 4.01"
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
10,299	61	>75% Grass cover, Good, HSG B
10,299		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.0	72	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	142	Total			

Summary for Subcatchment 23S: Subcat 23S

Runoff = 1.39 cfs @ 12.05 hrs, Volume= 3,912 cf, Depth= 4.01"
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
11,706	61	>75% Grass cover, Good, HSG B
11,706		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	30	0.1000	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
1.2	80	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.2	110	Total			

Summary for Subcatchment 24S: Subcat 23S

Runoff = 1.79 cfs @ 12.05 hrs, Volume= 5,204 cf, Depth= 4.45"
Routed to Pond GD-1 : PROP. GRASSED DEPRESSION

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
12,682	61	>75% Grass cover, Good, HSG B
1,365	98	Paved parking, HSG B
14,047		Weighted Average
12,682		90.28% Pervious Area
1,365		9.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	30	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.8	110	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	140	Total			

Summary for Subcatchment 25S: Subcat 25S

Runoff = 1.60 cfs @ 12.03 hrs, Volume= 4,431 cf, Depth= 4.46"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
10,714	61	>75% Grass cover, Good, HSG B
1,202	98	Paved parking, HSG B
11,916		Weighted Average
10,714		89.91% Pervious Area
1,202		10.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	20	0.0800	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
0.4	50	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.0	70	Total			

Summary for Subcatchment 101S: Subcat 101S

Runoff = 45.83 cfs @ 12.50 hrs, Volume= 283,308 cf, Depth= 3.29"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
34,820	39	>75% Grass cover, Good, HSG A
119,511	61	>75% Grass cover, Good, HSG B
16	96	Gravel surface, HSG A
4,888	96	Gravel surface, HSG B
10,860	98	Paved parking, HSG A
29,842	98	Paved parking, HSG B
6,167	98	Roofs, HSG A
8,339	98	Roofs, HSG B
124,228	30	Woods, Good, HSG A
693,637	55	Woods, Good, HSG B
1,032,309		Weighted Average
977,100		94.65% Pervious Area
55,209		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	100	0.0250	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	193	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	30	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	991	0.1190	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
33.8	1,314	Total			

Summary for Subcatchment 102S: Subcat 102S

Runoff = 3.98 cfs @ 12.16 hrs, Volume= 15,013 cf, Depth= 3.29"
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
3	98	Paved parking, HSG B
54,680	55	Woods, Good, HSG B
54,684		Weighted Average
54,680		99.99% Pervious Area
3		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0870	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
4.1	374	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.0	424	Total			

Summary for Subcatchment 103S: Subcat 103S

Runoff = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf, Depth= 2.25"
Routed to Pond YD-1 : PROP. YD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
9,487	39	>75% Grass cover, Good, HSG A
17,354	61	>75% Grass cover, Good, HSG B
59	98	Paved parking, HSG A
3,339	98	Paved parking, HSG B
3,844	98	Roofs, HSG B
73,084	30	Woods, Good, HSG A
49,270	55	Woods, Good, HSG B
156,437		Weighted Average
149,195		95.37% Pervious Area
7,243		4.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.3	80	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	390	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.2	360	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.9	880	Total			

Summary for Subcatchment 104S: Subcat 104S

Runoff = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf, Depth= 1.78"
Routed to Pond YD-2 : PROP. YD-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
46,882	39	>75% Grass cover, Good, HSG A
40,738	61	>75% Grass cover, Good, HSG B
205	96	Gravel surface, HSG A
449	96	Gravel surface, HSG B
6	98	Paved parking, HSG A
712	98	Paved parking, HSG B
874	98	Roofs, HSG B
135,456	30	Woods, Good, HSG A
44,293	55	Woods, Good, HSG B
269,613		Weighted Average
268,022		99.41% Pervious Area
1,591		0.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1220	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
6.3	660	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	380	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	1,090	Total			

Summary for Subcatchment 201S: Subcat 201S

Runoff = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf, Depth= 3.74"
Routed to Pond YD-3 : PROP. YD-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
38,392	39	>75% Grass cover, Good, HSG A
188,905	61	>75% Grass cover, Good, HSG B
8,260	80	>75% Grass cover, Good, HSG D
3,116	96	Gravel surface, HSG A
3,166	96	Gravel surface, HSG B
10,310	98	Paved parking, HSG A
36,540	98	Paved parking, HSG B
484	98	Roofs, HSG A
23,179	98	Roofs, HSG B
85,988	30	Woods, Good, HSG A
174,544	55	Woods, Good, HSG B
572,884		Weighted Average
502,371		87.69% Pervious Area
70,513		12.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.1	72	0.0490	1.11		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	77	0.0360	1.33		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	244	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	208	0.0340	3.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	498	0.1220	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	282	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.0	79	0.0630	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.1	1,510	Total			

Summary for Subcatchment 202S: Subcat 202S

Runoff = 6.12 cfs @ 12.10 hrs, Volume= 19,837 cf, Depth= 3.33"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
2,155	61	>75% Grass cover, Good, HSG B
131	98	Paved parking, HSG B
0	98	Roofs, HSG B
69,302	55	Woods, Good, HSG B
71,588		Weighted Average
71,457		99.82% Pervious Area
131		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0870	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
1.9	190	0.1070	1.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.5	220	Total			

Summary for Subcatchment 203S: Subcat 203S

Runoff = 5.38 cfs @ 12.22 hrs, Volume= 24,515 cf, Depth= 2.53"
Routed to Link DP2 : Design Point #2 - Isolated Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
12,674	39	>75% Grass cover, Good, HSG A
21,861	61	>75% Grass cover, Good, HSG B
1,431	98	Roofs, HSG B
32,985	30	Woods, Good, HSG A
47,282	55	Woods, Good, HSG B
116,233		Weighted Average
114,802		98.77% Pervious Area
1,431		1.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	28	0.0430	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.11"
4.8	22	0.0430	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.11"
0.4	25	0.0430	1.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	99	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	592	0.1170	1.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.8	766	Total			

Summary for Subcatchment ROOF: Subcat ROOF

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 19.35 cfs @ 12.00 hrs, Volume= 56,780 cf, Depth= 8.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.73"

Area (sf)	CN	Description
4,434	61	>75% Grass cover, Good, HSG B
12,443	98	Roofs, HSG A
65,719	98	Roofs, HSG B
82,597		Weighted Average
4,434		5.37% Pervious Area
78,162		94.63% Impervious Area

Summary for Pond CB-10: PROP. CB-10

Inflow Area = 3,923 sf, 69.98% Impervious, Inflow Depth = 7.15" for 100-Year event
Inflow = 0.73 cfs @ 12.05 hrs, Volume= 2,336 cf
Outflow = 0.73 cfs @ 12.05 hrs, Volume= 2,336 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.05 hrs, Volume= 2,336 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.21' @ 12.05 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0182 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.77 cfs @ 12.05 hrs HW=155.21' TW=155.11' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.77 cfs @ 1.83 fps)

Summary for Pond CB-11: PROP. CB-11

Inflow Area = 14,342 sf, 36.27% Impervious, Inflow Depth = 5.63" for 100-Year event
Inflow = 2.26 cfs @ 12.04 hrs, Volume= 6,735 cf
Outflow = 2.26 cfs @ 12.04 hrs, Volume= 6,735 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.26 cfs @ 12.04 hrs, Volume= 6,735 cf
Routed to Pond DMH-6 : PROP. DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.51' @ 12.05 hrs
Flood Elev= 158.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.50'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.50' / 154.30' S= 0.0083 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.19 cfs @ 12.04 hrs HW=155.50' TW=155.12' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.19 cfs @ 3.47 fps)

Summary for Pond CB-12: PROP. CB-12

Inflow Area = 4,589 sf, 72.91% Impervious, Inflow Depth = 7.28" for 100-Year event
Inflow = 0.87 cfs @ 12.05 hrs, Volume= 2,783 cf
Outflow = 0.87 cfs @ 12.05 hrs, Volume= 2,783 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.05 hrs, Volume= 2,783 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.83' @ 12.05 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0500 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.01 cfs @ 12.05 hrs HW=155.83' TW=155.73' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.01 cfs @ 1.95 fps)

Summary for Pond CB-13: PROP. CB-13

Inflow Area = 16,855 sf, 35.02% Impervious, Inflow Depth = 5.58" for 100-Year event
Inflow = 2.66 cfs @ 12.04 hrs, Volume= 7,836 cf
Outflow = 2.66 cfs @ 12.04 hrs, Volume= 7,836 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.66 cfs @ 12.04 hrs, Volume= 7,836 cf
Routed to Pond DMH-7 : PROP. DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.24' @ 12.04 hrs
Flood Elev= 159.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 24.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0208 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.54 cfs @ 12.04 hrs HW=156.20' TW=155.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.54 cfs @ 3.23 fps)

Summary for Pond CB-14: PROP. CB-14

Inflow Area = 7,169 sf, 66.61% Impervious, Inflow Depth = 6.99" for 100-Year event
Inflow = 1.31 cfs @ 12.05 hrs, Volume= 4,178 cf
Outflow = 1.31 cfs @ 12.05 hrs, Volume= 4,178 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.31 cfs @ 12.05 hrs, Volume= 4,178 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 153.29' @ 12.06 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0097 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.25 cfs @ 12.05 hrs HW=153.28' TW=153.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.25 cfs @ 1.59 fps)

Summary for Pond CB-15: PROP. CB-15

Inflow Area = 38,051 sf, 28.52% Impervious, Inflow Depth = 4.89" for 100-Year event
Inflow = 5.02 cfs @ 12.05 hrs, Volume= 15,505 cf
Outflow = 5.02 cfs @ 12.05 hrs, Volume= 15,505 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.02 cfs @ 12.05 hrs, Volume= 15,505 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 154.94' @ 12.05 hrs
Flood Elev= 155.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**12.0" Round Culvert** L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 151.20' S= 0.0081 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.01 cfs @ 12.05 hrs HW=154.92' TW=153.16' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.01 cfs @ 6.38 fps)

Summary for Pond CB-16: PROP. CB-16

[58] Hint: Peaked 0.53' above defined flood level

Inflow Area = 5,609 sf, 80.43% Impervious, Inflow Depth = 7.61" for 100-Year event
Inflow = 1.21 cfs @ 12.01 hrs, Volume= 3,559 cf
Outflow = 1.21 cfs @ 12.01 hrs, Volume= 3,559 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.01 hrs, Volume= 3,559 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 158.74' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0250 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=156.85' TW=157.32' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-17: PROP. CB-17

[58] Hint: Peaked 1.75' above defined flood level

Inflow Area = 36,538 sf, 27.17% Impervious, Inflow Depth = 4.46" for 100-Year event
Inflow = 4.29 cfs @ 12.05 hrs, Volume= 13,566 cf
Outflow = 4.29 cfs @ 12.05 hrs, Volume= 13,566 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.29 cfs @ 12.05 hrs, Volume= 13,566 cf
Routed to Pond DMH-9 : PROP. DMH-9

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 159.96' @ 12.06 hrs
Flood Elev= 158.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 21.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 153.80' S= 0.0095 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.17 cfs @ 12.05 hrs HW=159.87' TW=158.66' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.17 cfs @ 5.31 fps)

Summary for Pond CB-18: PROP. CB-18

Inflow Area = 4,802 sf, 58.01% Impervious, Inflow Depth = 6.61" for 100-Year event
Inflow = 0.84 cfs @ 12.05 hrs, Volume= 2,645 cf
Outflow = 0.84 cfs @ 12.05 hrs, Volume= 2,645 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.05 hrs, Volume= 2,645 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.25' @ 12.06 hrs
Flood Elev= 159.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**12.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.80' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=156.19' TW=156.19' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-1A: PROP. CB-1A

[58] Hint: Peaked 3.23' above defined flood level

Inflow Area = 4,096 sf,100.00% Impervious, Inflow Depth = 8.49" for 100-Year event
Inflow = 0.94 cfs @ 12.02 hrs, Volume= 2,898 cf
Outflow = 0.94 cfs @ 12.02 hrs, Volume= 2,898 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 12.02 hrs, Volume= 2,898 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.55' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=154.35' TW=155.00' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-1B: PROP. CB-1B

[58] Hint: Peaked 3.19' above defined flood level
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=568)

Inflow Area = 895 sf,100.00% Impervious, Inflow Depth = 8.49" for 100-Year event
Inflow = 0.21 cfs @ 12.01 hrs, Volume= 633 cf
Outflow = 0.21 cfs @ 12.01 hrs, Volume= 631 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.01 hrs, Volume= 631 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.51' @ 12.05 hrs
Flood Elev= 152.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.30' / 147.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=152.85' TW=153.86' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-2: PROP. CB-2

[58] Hint: Peaked 7.23' above defined flood level

Inflow Area = 3,445 sf, 79.85% Impervious, Inflow Depth = 7.59" for 100-Year event
Inflow = 0.68 cfs @ 12.05 hrs, Volume= 2,178 cf
Outflow = 0.68 cfs @ 12.05 hrs, Volume= 2,178 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.68 cfs @ 12.05 hrs, Volume= 2,178 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 160.61' @ 12.06 hrs
Flood Elev= 153.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.50'	**12.0" Round Culvert** L= 19.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.50' / 149.20' S= 0.0158 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=160.34' TW=160.53' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-3: PROP. CB-3

[58] Hint: Peaked 9.65' above defined flood level

Inflow Area = 40,581 sf, 22.05% Impervious, Inflow Depth = 4.92" for 100-Year event
Inflow = 5.70 cfs @ 12.04 hrs, Volume= 16,649 cf
Outflow = 5.70 cfs @ 12.04 hrs, Volume= 16,649 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.70 cfs @ 12.04 hrs, Volume= 16,649 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 162.75' @ 12.05 hrs
Flood Elev= 153.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	149.10'	**12.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.10' / 148.80' S= 0.0071 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.00 cfs @ 12.04 hrs HW=162.23' TW=160.48' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.00 cfs @ 6.37 fps)

Summary for Pond CB-4: PROP. CB-4

[58] Hint: Peaked 3.62' above defined flood level

Inflow Area = 6,683 sf, 52.95% Impervious, Inflow Depth = 6.37" for 100-Year event
Inflow = 1.23 cfs @ 12.02 hrs, Volume= 3,546 cf
Outflow = 1.23 cfs @ 12.02 hrs, Volume= 3,546 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.02 hrs, Volume= 3,546 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 165.01' @ 12.06 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=158.82' TW=160.68' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-5: PROP. CB-5

[58] Hint: Peaked 3.82' above defined flood level

Inflow Area = 15,922 sf, 34.35% Impervious, Inflow Depth = 5.38" for 100-Year event
Inflow = 2.51 cfs @ 12.02 hrs, Volume= 7,133 cf
Outflow = 2.51 cfs @ 12.02 hrs, Volume= 7,133 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.02 hrs, Volume= 7,133 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 165.21' @ 12.06 hrs
Flood Elev= 161.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.30'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.30' / 156.10' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=159.31' TW=160.83' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-6: PROP. CB-6

[58] Hint: Peaked 2.12' above defined flood level

Inflow Area = 22,666 sf, 25.71% Impervious, Inflow Depth = 3.64" for 100-Year event
Inflow = 2.24 cfs @ 12.02 hrs, Volume= 6,873 cf
Outflow = 2.24 cfs @ 12.02 hrs, Volume= 6,873 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.24 cfs @ 12.02 hrs, Volume= 6,873 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 185.25' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=183.43' TW=183.80' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond CB-7: PROP.CB-7

[58] Hint: Peaked 3.14' above defined flood level

Inflow Area = 39,670 sf, 26.91% Impervious, Inflow Depth = 4.27" for 100-Year event
Inflow = 4.25 cfs @ 12.07 hrs, Volume= 14,115 cf
Outflow = 4.25 cfs @ 12.07 hrs, Volume= 14,115 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.07 hrs, Volume= 14,115 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 186.27' @ 12.06 hrs
Flood Elev= 183.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.30'	**12.0" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.30' / 178.10' S= 0.0143 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.73 cfs @ 12.07 hrs HW=186.17' TW=184.60' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.73 cfs @ 6.02 fps)

Summary for Pond CB-8: PROP. CB-8

Inflow Area = 12,260 sf, 26.99% Impervious, Inflow Depth = 4.92" for 100-Year event
Inflow = 1.71 cfs @ 12.04 hrs, Volume= 5,026 cf
Outflow = 1.71 cfs @ 12.04 hrs, Volume= 5,026 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.71 cfs @ 12.04 hrs, Volume= 5,026 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.65' @ 12.05 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.49 cfs @ 12.04 hrs HW=207.61' TW=207.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.49 cfs @ 2.61 fps)

Summary for Pond CB-9: PROP. CB-9

Inflow Area = 12,855 sf, 41.05% Impervious, Inflow Depth = 5.72" for 100-Year event
Inflow = 1.98 cfs @ 12.05 hrs, Volume= 6,122 cf
Outflow = 1.98 cfs @ 12.05 hrs, Volume= 6,122 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.98 cfs @ 12.05 hrs, Volume= 6,122 cf
Routed to Pond DMH-5 : PROP. DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.71' @ 12.05 hrs
Flood Elev= 210.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.70'	**12.0" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.70' / 206.10' S= 0.0462 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.00 cfs @ 12.05 hrs HW=207.71' TW=207.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.00 cfs @ 2.55 fps)

Summary for Pond DMH-1: PROP. DMH-1

[58] Hint: Peaked 2.73' above defined flood level
[80] Warning: Exceeded Pond CB-1A by 0.97' @ 12.01 hrs (3.72 cfs 1,637 cf)
[80] Warning: Exceeded Pond CB-1B by 1.11' @ 13.39 hrs (2.91 cfs 5,359 cf)

Inflow Area = 159,073 sf, 31.93% Impervious, Inflow Depth = 4.92" for 100-Year event
Inflow = 20.41 cfs @ 12.04 hrs, Volume= 65,172 cf
Outflow = 20.41 cfs @ 12.04 hrs, Volume= 65,172 cf, Atten= 0%, Lag= 0.0 min
Primary = 20.41 cfs @ 12.04 hrs, Volume= 65,172 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.51' @ 12.04 hrs
Flood Elev= 152.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	**18.0" Round Culvert** L= 147.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.00' / 145.80' S= 0.0082 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=20.24 cfs @ 12.04 hrs HW=155.46' TW=147.74' (Dynamic Tailwater)
1=Culvert (Outlet Controls 20.24 cfs @ 11.46 fps)

Summary for Pond DMH-10: PROP. DMH-10

[80] Warning: Exceeded Pond CB-18 by 0.15' @ 12.02 hrs (1.21 cfs 154 cf)

Inflow Area = 46,949 sf, 36.69% Impervious, Inflow Depth = 5.05" for 100-Year event
Inflow = 6.10 cfs @ 12.05 hrs, Volume= 19,769 cf
Outflow = 6.10 cfs @ 12.05 hrs, Volume= 19,769 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.10 cfs @ 12.05 hrs, Volume= 19,769 cf
Routed to Pond INF-3 : PROP. INFILTRATION BASIN #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.20' @ 12.05 hrs
Flood Elev= 159.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.10'	**12.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 153.10' / 146.00' S= 0.0899 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=6.08 cfs @ 12.05 hrs HW=156.19' TW=143.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.08 cfs @ 7.75 fps)

Summary for Pond DMH-11: PROP. DMH-11

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 2.25" for 100-Year event
Inflow = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf
Outflow = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.59' @ 12.27 hrs
Flood Elev= 159.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**18.0" Round Culvert** L= 105.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 145.50' S= 0.0848 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.57 cfs @ 12.27 hrs HW=155.59' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.57 cfs @ 3.71 fps)

Summary for Pond DMH-12: PROP. DMH-12

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 1.78" for 100-Year event
Inflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Outflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Routed to Pond DMH-13 : PROP. DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 152.90' @ 12.30 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.50'	**18.0" Round Culvert** L= 165.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.50' / 146.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=6.92 cfs @ 12.30 hrs HW=152.90' TW=147.30' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.92 cfs @ 4.03 fps)

Summary for Pond DMH-13: PROP. DMH-13

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 1.78" for 100-Year event
Inflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Outflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 147.30' @ 12.30 hrs
Flood Elev= 151.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**18.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 144.00' S= 0.0211 '/' Cc= 0.900

n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=6.92 cfs @ 12.30 hrs HW=147.30' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.92 cfs @ 4.03 fps)

Summary for Pond DMH-14: PROP. DMH-14

[58] Hint: Peaked 3.94' above defined flood level

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 3.74" for 100-Year event
Inflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Outflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf, Atten= 0%, Lag= 0.0 min
Primary = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Routed to Pond DMH-15 : PROP. DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 157.94' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.90'	**24.0" Round Culvert** L= 67.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.90' / 146.25' S= 0.0246 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=31.85 cfs @ 12.38 hrs HW=157.93' TW=153.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 31.85 cfs @ 10.14 fps)

Summary for Pond DMH-15: PROP. DMH-15

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 3.74" for 100-Year event
Inflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Outflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf, Atten= 0%, Lag= 0.0 min
Primary = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 153.51' @ 12.38 hrs
Flood Elev= 154.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	146.15'	**24.0" Round Culvert** L= 300.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 146.15' / 144.00' S= 0.0072 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=31.90 cfs @ 12.38 hrs HW=153.50' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 31.90 cfs @ 10.15 fps)

Summary for Pond DMH-2: PROP. DMH-2

[58] Hint: Peaked 7.31' above defined flood level
[80] Warning: Exceeded Pond CB-2 by 1.54' @ 12.01 hrs (4.69 cfs 1,399 cf)
[80] Warning: Exceeded Pond CB-3 by 0.08' @ 11.97 hrs (1.10 cfs 143 cf)

Inflow Area = 154,082 sf, 29.72% Impervious, Inflow Depth = 4.80" for 100-Year event
Inflow = 19.33 cfs @ 12.04 hrs, Volume= 61,643 cf
Outflow = 19.33 cfs @ 12.04 hrs, Volume= 61,643 cf, Atten= 0%, Lag= 0.0 min
Primary = 19.33 cfs @ 12.04 hrs, Volume= 61,643 cf
Routed to Pond DMH-1 : PROP. DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 160.58' @ 12.05 hrs
Flood Elev= 153.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	147.50'	**18.0" Round Culvert** L= 62.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 147.50' / 147.10' S= 0.0065 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=18.92 cfs @ 12.04 hrs HW=160.44' TW=155.49' (Dynamic Tailwater)
1=Culvert (Inlet Controls 18.92 cfs @ 10.71 fps)

Summary for Pond DMH-3: PROP. DMH-3

[58] Hint: Peaked 3.89' above defined flood level
[80] Warning: Exceeded Pond CB-4 by 1.88' @ 12.01 hrs (5.19 cfs 886 cf)
[80] Warning: Exceeded Pond CB-5 by 1.55' @ 12.01 hrs (4.71 cfs 740 cf)

Inflow Area = 110,056 sf, 30.98% Impervious, Inflow Depth = 4.67" for 100-Year event
Inflow = 12.97 cfs @ 12.04 hrs, Volume= 42,816 cf
Outflow = 12.97 cfs @ 12.04 hrs, Volume= 42,816 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.97 cfs @ 12.04 hrs, Volume= 42,816 cf
Routed to Pond DMH-2 : PROP. DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 164.95' @ 12.05 hrs
Flood Elev= 161.06'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.80'	**18.0" Round Culvert** L= 255.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.80' / 147.60' S= 0.0282 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.79 cfs @ 12.04 hrs HW=164.05' TW=160.27' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.79 cfs @ 6.67 fps)

Summary for Pond DMH-4: PROP. DMH-4

[58] Hint: Peaked 2.49' above defined flood level
[80] Warning: Exceeded Pond CB-6 by 0.43' @ 12.01 hrs (2.49 cfs 811 cf)
[80] Warning: Exceeded Pond CB-7 by 0.17' @ 12.00 hrs (1.57 cfs 332 cf)

Inflow Area = 87,451 sf, 28.69% Impervious, Inflow Depth = 4.41" for 100-Year event
Inflow = 9.66 cfs @ 12.05 hrs, Volume= 32,137 cf
Outflow = 9.66 cfs @ 12.05 hrs, Volume= 32,137 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.66 cfs @ 12.05 hrs, Volume= 32,137 cf
Routed to Pond DMH-3 : PROP. DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 185.02' @ 12.05 hrs
Flood Elev= 182.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.00'	**12.0" Round Culvert** L= 250.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.00' / 154.90' S= 0.0924 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=9.65 cfs @ 12.05 hrs HW=185.01' TW=164.88' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.65 cfs @ 12.29 fps)

Summary for Pond DMH-5: PROP. DMH-5

Inflow Area = 25,115 sf, 34.18% Impervious, Inflow Depth = 5.33" for 100-Year event
Inflow = 3.66 cfs @ 12.04 hrs, Volume= 11,149 cf
Outflow = 3.66 cfs @ 12.04 hrs, Volume= 11,149 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.04 hrs, Volume= 11,149 cf
Routed to Pond DMH-4 : PROP. DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 207.44' @ 12.04 hrs
Flood Elev= 210.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**12.0" Round Culvert** L= 251.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 178.10' S= 0.1112 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.65 cfs @ 12.04 hrs HW=207.43' TW=184.97' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.65 cfs @ 4.65 fps)

Summary for Pond DMH-6: PROP. DMH-6

Inflow Area = 18,264 sf, 43.51% Impervious, Inflow Depth = 5.96" for 100-Year event
Inflow = 2.99 cfs @ 12.04 hrs, Volume= 9,070 cf
Outflow = 2.99 cfs @ 12.04 hrs, Volume= 9,070 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.99 cfs @ 12.04 hrs, Volume= 9,070 cf
Routed to Pond INF-1 : PROP. INFILTRAION BASIN #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.12' @ 12.04 hrs
Flood Elev= 158.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	**12.0" Round Culvert** L= 117.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.00' / 149.00' S= 0.0427 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.98 cfs @ 12.04 hrs HW=155.12' TW=147.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.98 cfs @ 3.80 fps)

Summary for Pond DMH-7: PROP. DMH-7

Inflow Area = 21,444 sf, 43.13% Impervious, Inflow Depth = 5.94" for 100-Year event
Inflow = 3.51 cfs @ 12.04 hrs, Volume= 10,619 cf
Outflow = 3.51 cfs @ 12.04 hrs, Volume= 10,619 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.51 cfs @ 12.04 hrs, Volume= 10,619 cf
Routed to Pond DMH-8 : PROP. DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 155.76' @ 12.04 hrs
Flood Elev= 158.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	154.40'	**12.0" Round Culvert** L= 123.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 154.40' / 151.20' S= 0.0260 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.51 cfs @ 12.04 hrs HW=155.76' TW=153.16' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.51 cfs @ 4.46 fps)

Summary for Pond DMH-8: PROP. DMH-8

[80] Warning: Exceeded Pond CB-14 by 0.07' @ 12.00 hrs (1.00 cfs 164 cf)

Inflow Area = 66,664 sf, 37.31% Impervious, Inflow Depth = 5.45" for 100-Year event
Inflow = 9.79 cfs @ 12.05 hrs, Volume= 30,302 cf
Outflow = 9.79 cfs @ 12.05 hrs, Volume= 30,302 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.79 cfs @ 12.05 hrs, Volume= 30,302 cf
Routed to Pond INF-2 : PROP. INFILTRATION BASIN #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 153.17' @ 12.05 hrs
Flood Elev= 156.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	151.10'	**18.0" Round Culvert** L= 136.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.10' / 145.00' S= 0.0449 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.77 cfs @ 12.05 hrs HW=153.17' TW=145.96' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 9.77 cfs @ 5.53 fps)

Summary for Pond DMH-9: PROP. DMH-9

[58] Hint: Peaked 0.49' above defined flood level
[80] Warning: Exceeded Pond CB-16 by 0.47' @ 12.01 hrs (2.60 cfs 748 cf)

Inflow Area = 42,147 sf, 34.25% Impervious, Inflow Depth = 4.88" for 100-Year event
Inflow = 5.25 cfs @ 12.05 hrs, Volume= 17,125 cf
Outflow = 5.25 cfs @ 12.05 hrs, Volume= 17,125 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.25 cfs @ 12.05 hrs, Volume= 17,125 cf
Routed to Pond DMH-10 : PROP. DMH-10

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 158.69' @ 12.05 hrs
Flood Elev= 158.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	153.70'	**12.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 153.70' / 153.20' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.18 cfs @ 12.05 hrs HW=158.63' TW=156.19' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 5.18 cfs @ 6.60 fps)

Summary for Pond GD-1: PROP. GRASSED DEPRESSION

Inflow Area = 14,047 sf, 9.72% Impervious, Inflow Depth = 4.45" for 100-Year event
Inflow = 1.79 cfs @ 12.05 hrs, Volume= 5,204 cf
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 5,204 cf, Atten= 9%, Lag= 1.9 min
Discarded = 0.08 cfs @ 12.09 hrs, Volume= 3,143 cf
Primary = 1.55 cfs @ 12.09 hrs, Volume= 2,060 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 145.66' @ 12.09 hrs Surf.Area= 1,385 sf Storage= 819 cf
Flood Elev= 146.00' Surf.Area= 1,547 sf Storage= 1,314 cf

Plug-Flow detention time= 50.4 min calculated for 5,204 cf (100% of inflow)
Center-of-Mass det. time= 50.4 min (869.1 - 818.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	1,314 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	1,094	141.0	0	0	1,094
146.00	1,547	160.0	1,314	1,314	1,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	145.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.08 cfs @ 12.09 hrs HW=145.66' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.54 cfs @ 12.09 hrs HW=145.66' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 1.54 cfs @ 0.95 fps)

Summary for Pond INF-1: PROP. INFILTRAION BASIN #1

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 253,299 sf, 24.56% Impervious, Inflow Depth = 4.76" for 100-Year event
Inflow = 31.51 cfs @ 12.05 hrs, Volume= 100,447 cf
Outflow = 9.56 cfs @ 12.38 hrs, Volume= 100,447 cf, Atten= 70%, Lag= 19.7 min
Discarded = 0.68 cfs @ 12.38 hrs, Volume= 42,512 cf
Primary = 5.40 cfs @ 12.38 hrs, Volume= 54,164 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 3.49 cfs @ 12.38 hrs, Volume= 3,771 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 149.02' @ 12.38 hrs Surf.Area= 11,256 sf Storage= 36,360 cf
Flood Elev= 150.00' Surf.Area= 12,505 sf Storage= 47,980 cf

Plug-Flow detention time= 153.4 min calculated for 100,422 cf (100% of inflow)
Center-of-Mass det. time= 153.4 min (949.6 - 796.2)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	47,980 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
145.00	7,269	340.0	0	0	7,269
147.00	8,847	380.0	16,090	16,090	9,671
149.00	11,229	416.0	20,029	36,119	12,087
150.00	12,505	435.0	11,861	47,980	13,442

Device	Routing	Invert	Outlet Devices
#1	Discarded	145.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	144.25'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 144.25' / 144.00' S= 0.0069 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	148.75'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.68 cfs @ 12.38 hrs HW=149.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.68 cfs)

Primary OutFlow Max=5.40 cfs @ 12.38 hrs HW=149.02' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 5.40 cfs of 7.82 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.57 cfs @ 8.02 fps)
  └**4=Orifice/Grate** (Orifice Controls 3.82 cfs @ 4.87 fps)

Secondary OutFlow Max=3.49 cfs @ 12.38 hrs HW=149.02' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 3.49 cfs @ 1.29 fps)

Summary for Pond INF-2: PROP. INFILTRATION BASIN #2

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 123,761 sf, 23.52% Impervious, Inflow Depth = 4.94" for 100-Year event
Inflow = 17.01 cfs @ 12.05 hrs, Volume= 50,962 cf
Outflow = 4.20 cfs @ 12.42 hrs, Volume= 50,962 cf, Atten= 75%, Lag= 22.3 min
Discarded = 0.49 cfs @ 12.42 hrs, Volume= 32,570 cf
Primary = 3.36 cfs @ 12.42 hrs, Volume= 18,228 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook
Secondary = 0.36 cfs @ 12.42 hrs, Volume= 164 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 146.79' @ 12.42 hrs Surf.Area= 8,637 sf Storage= 18,575 cf
Flood Elev= 148.00' Surf.Area= 10,493 sf Storage= 30,153 cf

Plug-Flow detention time= 211.9 min calculated for 50,949 cf (100% of inflow)
Center-of-Mass det. time= 212.0 min (1,009.6 - 797.6)

Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	30,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	4,789	438.0	0	0	4,789
146.00	7,528	475.0	12,214	12,214	7,628
148.00	10,493	513.0	17,939	30,153	10,775

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.25'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.25' / 140.00' S= 0.0813 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	146.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	146.75'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.49 cfs @ 12.42 hrs HW=146.79' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.49 cfs)

Primary OutFlow Max=3.36 cfs @ 12.42 hrs HW=146.79' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 3.36 cfs of 6.59 cfs potential flow)
↑—**3=Orifice/Grate** (Orifice Controls 3.36 cfs @ 4.27 fps)

Secondary OutFlow Max=0.35 cfs @ 12.42 hrs HW=146.79' TW=0.00' (Dynamic Tailwater)
↑—**4=Broad-Crested Rectangular Weir** (Weir Controls 0.35 cfs @ 0.47 fps)

Summary for Pond INF-3: PROP. INFILTRATION BASIN #3

Test pits indicated loamy sand. Therefore, an infiltration rate of 2.41 in/hf (based on Rawl's Rates) is utilized for this system.

Inflow Area = 70,805 sf, 27.14% Impervious, Inflow Depth = 4.83" for 100-Year event
Inflow = 9.20 cfs @ 12.04 hrs, Volume= 28,485 cf
Outflow = 8.74 cfs @ 12.07 hrs, Volume= 28,485 cf, Atten= 5%, Lag= 1.4 min
Discarded = 0.22 cfs @ 12.07 hrs, Volume= 14,160 cf
Primary = 8.52 cfs @ 12.07 hrs, Volume= 14,325 cf
Routed to Link DP1 : Design Point #1 - Hawkes Brook

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 143.81' @ 12.07 hrs Surf.Area= 3,503 sf Storage= 4,823 cf
Flood Elev= 145.00' Surf.Area= 4,623 sf Storage= 9,652 cf

Plug-Flow detention time= 110.1 min calculated for 28,478 cf (100% of inflow)
Center-of-Mass det. time= 110.1 min (902.3 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	9,652 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
142.00	1,902	248.0	0	0	1,902
144.00	3,697	300.0	5,500	5,500	4,235
145.00	4,623	318.0	4,151	9,652	5,173

Device	Routing	Invert	Outlet Devices
#1	Discarded	142.00'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	143.50'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.22 cfs @ 12.07 hrs HW=143.81' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=8.50 cfs @ 12.07 hrs HW=143.81' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 8.50 cfs @ 1.37 fps)

Summary for Pond YD-1: PROP. YD-1

Inflow Area = 156,437 sf, 4.63% Impervious, Inflow Depth = 2.25" for 100-Year event
Inflow = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf
Outflow = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.58 cfs @ 12.27 hrs, Volume= 29,287 cf
Routed to Pond DMH-11 : PROP. DMH-11

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 156.28' @ 12.27 hrs
Flood Elev= 159.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	**18.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.57 cfs @ 12.27 hrs HW=156.28' TW=155.59' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.57 cfs @ 4.68 fps)

Summary for Pond YD-2: PROP. YD-2

Inflow Area = 269,613 sf, 0.59% Impervious, Inflow Depth = 1.78" for 100-Year event
Inflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Outflow = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.92 cfs @ 12.30 hrs, Volume= 39,923 cf
Routed to Pond DMH-12 : PROP. DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 157.90' @ 12.30 hrs
Flood Elev= 161.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	156.50'	**18.0" Round Culvert** L= 96.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.50' / 151.60' S= 0.0510 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=6.92 cfs @ 12.30 hrs HW=157.90' TW=152.90' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.92 cfs @ 4.03 fps)

Summary for Pond YD-3: PROP. YD-3

[58] Hint: Peaked 7.57' above defined flood level

Inflow Area = 572,884 sf, 12.31% Impervious, Inflow Depth = 3.74" for 100-Year event
Inflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Outflow = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf, Atten= 0%, Lag= 0.0 min
Primary = 31.91 cfs @ 12.38 hrs, Volume= 178,640 cf
Routed to Pond DMH-14 : PROP. DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Peak Elev= 162.37' @ 12.38 hrs
Flood Elev= 154.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	148.50'	**24.0" Round Culvert**

L= 43.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 148.50' / 148.00' S= 0.0116 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=31.79 cfs @ 12.38 hrs HW=162.35' TW=157.93' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 31.79 cfs @ 10.12 fps)

Summary for Link DP1: Design Point #1 - Hawkes Brook

Inflow Area = 2,559,756 sf, 9.68% Impervious, Inflow Depth = 3.02" for 100-Year event
Inflow = 104.38 cfs @ 12.40 hrs, Volume= 643,314 cf
Primary = 104.38 cfs @ 12.40 hrs, Volume= 643,314 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Summary for Link DP2: Design Point #2 - Isolated Wetland

Inflow Area = 187,821 sf, 0.83% Impervious, Inflow Depth = 2.83" for 100-Year event
Inflow = 10.15 cfs @ 12.13 hrs, Volume= 44,352 cf
Primary = 10.15 cfs @ 12.13 hrs, Volume= 44,352 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

APPENDIX G

Supplemental Calculations and Backup Data

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	Massachusetts
Location	
Longitude	71.155 degrees West
Latitude	42.758 degrees North
Elevation	0 feet
Date/Time	Mon, 22 Aug 2022 13:44:43 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.41	0.51	0.68	0.84	1.07	**1yr**	0.73	1.01	1.24	1.58	2.01	2.59	2.80	**1yr**	2.29	2.69	3.13	3.81	4.44	**1yr**
2yr	0.33	0.51	0.64	0.84	1.05	1.33	**2yr**	0.91	1.22	1.54	1.95	2.46	3.11	3.44	**2yr**	2.75	3.31	3.83	4.54	5.17	**2yr**
5yr	0.39	0.61	0.76	1.02	1.31	1.67	**5yr**	1.13	1.52	1.95	2.47	3.12	3.95	4.40	**5yr**	3.50	4.23	4.86	5.77	6.52	**5yr**
10yr	0.44	0.69	0.87	1.19	1.55	2.00	**10yr**	1.33	1.81	2.34	2.97	3.76	4.74	5.31	**10yr**	4.20	5.11	5.83	6.92	7.78	**10yr**
25yr	0.52	0.83	1.05	1.45	1.93	2.51	**25yr**	1.66	2.26	2.95	3.77	4.79	6.05	6.81	**25yr**	5.35	6.55	7.42	8.80	9.82	**25yr**
50yr	0.58	0.94	1.20	1.69	2.28	3.00	**50yr**	1.97	2.69	3.55	4.55	5.77	7.27	8.22	**50yr**	6.43	7.91	8.91	10.57	11.73	**50yr**
100yr	0.67	1.08	1.40	1.98	2.70	3.58	**100yr**	2.33	3.19	4.24	5.45	6.92	8.73	9.94	**100yr**	7.73	9.55	10.70	12.70	14.00	**100yr**
200yr	0.76	1.24	1.61	2.31	3.19	4.27	**200yr**	2.76	3.79	5.08	6.55	8.33	10.50	12.01	**200yr**	9.30	11.55	12.86	15.27	16.73	**200yr**
500yr	0.91	1.50	1.96	2.85	4.00	5.40	**500yr**	3.45	4.77	6.44	8.33	10.63	13.42	15.43	**500yr**	11.87	14.84	16.39	19.49	21.18	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.88	**1yr**	0.64	0.86	1.09	1.35	1.64	2.39	2.57	**1yr**	2.11	2.47	2.88	3.45	4.06	**1yr**
2yr	0.32	0.49	0.61	0.82	1.01	1.21	**2yr**	0.87	1.18	1.38	1.82	2.32	3.01	3.34	**2yr**	2.66	3.21	3.72	4.41	5.04	**2yr**
5yr	0.37	0.57	0.70	0.97	1.23	1.45	**5yr**	1.06	1.41	1.64	2.12	2.71	3.69	4.08	**5yr**	3.26	3.92	4.54	5.36	6.09	**5yr**
10yr	0.41	0.63	0.78	1.09	1.41	1.65	**10yr**	1.21	1.62	1.86	2.39	3.03	4.28	4.72	**10yr**	3.78	4.54	5.27	6.23	7.01	**10yr**
25yr	0.47	0.72	0.89	1.28	1.68	1.96	**25yr**	1.45	1.92	2.19	2.78	3.53	5.19	5.73	**25yr**	4.59	5.51	6.44	7.58	8.40	**25yr**
50yr	0.52	0.80	0.99	1.43	1.92	2.24	**50yr**	1.66	2.19	2.47	3.13	3.97	6.00	6.64	**50yr**	5.31	6.38	7.50	8.82	9.61	**50yr**
100yr	0.59	0.89	1.11	1.61	2.21	2.55	**100yr**	1.91	2.50	2.80	3.52	4.45	6.71	7.68	**100yr**	5.93	7.39	8.74	10.26	11.01	**100yr**
200yr	0.66	0.99	1.26	1.82	2.54	2.91	**200yr**	2.19	2.84	3.16	3.95	5.01	7.70	8.91	**200yr**	6.82	8.57	10.18	11.95	12.58	**200yr**
500yr	0.77	1.15	1.48	2.15	3.05	3.46	**500yr**	2.63	3.38	3.72	4.61	5.86	9.21	10.87	**500yr**	8.15	10.45	12.50	14.62	15.01	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.09	**1yr**	0.80	1.07	1.26	1.67	2.12	2.79	3.02	**1yr**	2.47	2.90	3.37	4.06	4.78	**1yr**
2yr	0.34	0.53	0.65	0.88	1.09	1.29	**2yr**	0.94	1.27	1.49	1.95	2.49	3.22	3.57	**2yr**	2.85	3.43	3.95	4.69	5.37	**2yr**
5yr	0.42	0.65	0.81	1.11	1.42	1.67	**5yr**	1.22	1.64	1.93	2.49	3.16	4.22	4.74	**5yr**	3.73	4.56	5.21	6.18	6.96	**5yr**
10yr	0.51	0.79	0.98	1.36	1.76	2.05	**10yr**	1.52	2.00	2.35	3.01	3.80	5.21	5.89	**10yr**	4.61	5.66	6.43	7.63	8.54	**10yr**
25yr	0.66	1.00	1.24	1.78	2.34	2.68	**25yr**	2.02	2.62	3.07	3.87	4.83	6.90	7.86	**25yr**	6.11	7.56	8.49	10.09	11.22	**25yr**
50yr	0.79	1.20	1.49	2.15	2.89	3.28	**50yr**	2.49	3.21	3.75	4.69	5.82	8.54	9.80	**50yr**	7.56	9.42	10.47	12.48	13.78	**50yr**
100yr	0.96	1.44	1.81	2.61	3.59	4.02	**100yr**	3.09	3.93	4.61	5.69	7.00	10.99	12.21	**100yr**	9.73	11.74	12.92	15.43	16.97	**100yr**
200yr	1.15	1.73	2.20	3.18	4.44	4.94	**200yr**	3.83	4.83	5.66	6.89	8.41	13.69	15.21	**200yr**	12.12	14.62	15.92	19.08	20.90	**200yr**
500yr	1.49	2.21	2.85	4.14	5.88	6.47	**500yr**	5.07	6.33	7.43	8.90	10.76	18.33	20.36	**500yr**	16.22	19.57	21.01	25.26	27.58	**500yr**

GPI Project No.	2200136	**Sheet**	1 of 2
Project Description	Off Washington Street - Methuen, MA		
Task	Drawdown Calculations		
Calculated By	SJB	**Date**	03/06/24
Checked By	GMP	**Date**	

Greenman-Pedersen, Inc.

Drawdown within 72 hours Analysis for Static Method

Above ground Infiltration Basin #1

Infiltration Rate: 2.41 inches/hour (From table 2.3.3: Rawls, Brakensiek, Saxton, 1982)

Design Infiltration Rate: 2.41 inches/hour

Total Volume: 7,269 cf

Basin bottom area: 6,270 sf

Time $_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

Time $_{drawdown}$ = (7,269 cf) (1 / 2.41 in/hr) (1ft/12 in.) (1 / 6,270 sf)

= 5.77 hours

Above ground Infiltration Basin #2

Infiltration Rate: 2.41 inches/hour (From table 2.3.3: Rawls, Brakensiek, Saxton, 1982)

Design Infiltration Rate: 2.41 inches/hour

Total Volume: 12,214 cf

Basin bottom area: 4,789 sf

Time $_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

Time $_{drawdown}$ = (12,214 cf) (1 / 2.41 in/hr) (1ft/12 in.) (1 / 4,789 sf)

= 12.70 hours

Drawdown within 72 hours Analysis for Static Method

Above ground Infiltration Basin #3

Infiltration Rate:	2.41	inches/hour (From table 2.3.3: Rawls, Brakensiek, Saxton, 1982)
Design Infiltration Rate:	2.41	inches/hour
Total Volume:	3,780	cf
Basin bottom area:	1,902	sf

$Time_{drawdown}$ = (Required Recharge Volume in cubic feet as determined by the Static Method)(1/Design Infiltration Rate in inches per hour)(conversion for inches to feet)(1/bottom area in feet)

$Time_{drawdown}$ = (3,780 cf) (1 / 2.41 in/hr) (1ft/12 in.) (1 / 1,902 sf)

= 9.90 hours

Infiltration Basin #3

August 2, 2024

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values		
0.6600	***R***	**Recharge (infiltration) rate (feet/day)**
0.260	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
6.60	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
57.000	**x**	**1/2 length of basin (x direction, in feet)**
7.500	**y**	**1/2 width of basin (y direction, in feet)**
1.000	**t**	**duration of infiltration period (days)**
6.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00

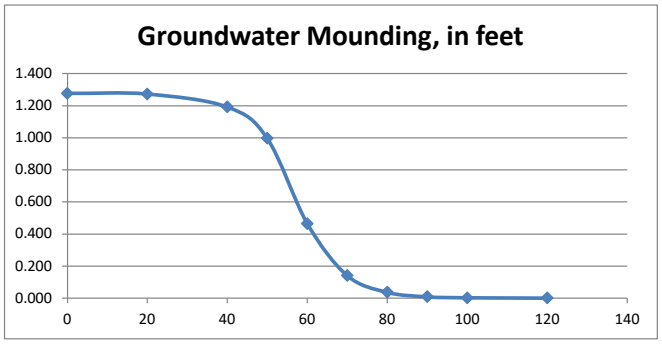
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

7.277	**h(max)**	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
1.277	**Δh(max)**	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
1.277	0
1.272	20
1.192	40
0.996	50
0.465	60
0.140	70
0.037	80
0.008	90
0.002	100
0.001	120

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Added 9/26/24

Mounding Analysis Variables

Infiltration Basin #3

$$R = \frac{volume}{Area} \times \frac{1}{3} = \frac{3780}{1902} \times \frac{1}{3} = 0.66$$

$S_y = 0.26$ (Specific Yield by A.I. Johnson)

$$K = 10 \times R = 6.60$$

$$x = \frac{1}{2} length = \frac{1}{2}(112) = 56$$

$$y = \frac{1}{2} width = \frac{1}{2}(15) = 7.5$$

$$t = 1$$

$h_i(0) = 6.2$ (See test pit logs)

Technical Abstract

First Defense® - High Capacity

NJCAT Verified 80% TSS Removal & Sizing - “Down to 50 microns”

Abstract

Hydro International has a state-of-the-art hydraulics and test facility that is used both to develop products and to evaluate performance. Through controlled testing using industry standard test protocols, Hydro’s treatment products are evaluated under varying hydraulic and sediment load conditions. With a known drainage area or water quality flow rate, these test results are used to benchmark treatment objectives and to select the correct model size.

A common performance expectation for hydrodynamic stormwater separators is to remove 80% of Total Suspended Solids (TSS). To support this approach, Hydro International has completed efficiency tests for a range of flow rates and particle size ranges. All tests are conducted with an independent observer present and use industry accepted protocols. All analytics are completed by externally certified laboratories. The test procedures and results have been reviewed and verified by New Jersey Corporation for Advanced Technology (NJCAT).

First Defense

The FDHC (Figure 1) has patented flow-modifying internal components that create a gentle swirling flow path within the Vortex Chamber. The rotating flow creates low energy vortex forces that supplement gravitational settling forces to enhance separation of pollutants

The internal components are designed to fit into standard precast manholes and are installed to collect runoff as part of typical drainage network system. During a rain event, flow enters either from a surface inlet grate or inlet pipe. As flow enters the manhole, components divert flow and pollutants into a Vortex Chamber beneath a separation module, that includes both Inlet\Outlet Chutes and Bypass Weirs. The internal Bypass Weirs divert peak flows over the separation module and away from the Vortex Chamber where pollutants are collecting. This prevents high velocities from re-suspending captured pollutants during infrequent but large storm events.

Capable of providing high pollutant removals for a wide range of flow rates and pipe sizes, the FDHC can be installed ether online or offline depending on pipes and peak flows. Its efficiency and simplicity make it economical to install and maintain.

Fine Sediment Removal Test Material

The feed sediment used for the removal efficiency testing was high purity silica (SiO2 99.8%) supplied by two different commercial silica suppliers, blended in the proportions to produce a wide range of particle sizes distributed from less than 10 µm to over 1000 µm, with a D_{50} = 63 µm. This provides a loading bias towards finer particle sizes and produces more conservative results. In the presence of an independent observer, composited samples were sealed, signed, and packaged for independent transport to the outside laboratory for analysis.

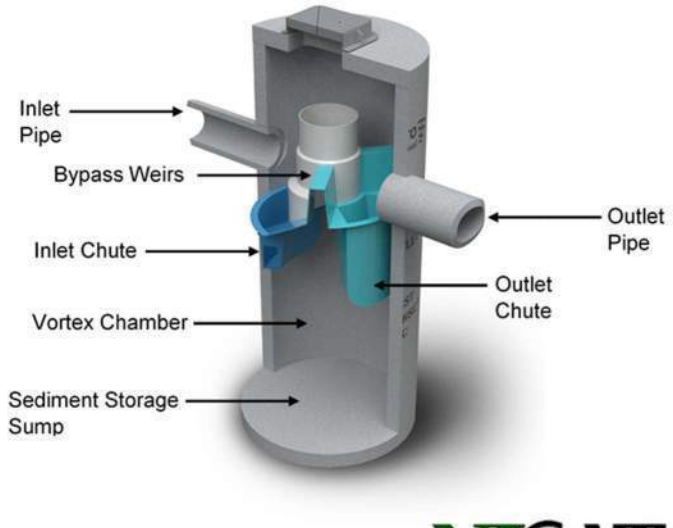


Figure 1 – First Defense High Capacity

The independent laboratory, GeoTesting Express, analyzed the three test sand samples for particle size distribution (PSD) using ASTM D 422-63. The particle size results were averaged to produce an overall measure of the test sediment. Because the goal was to verify the removal rate of the First Defense for various PSD ranges, the test sand was also graded into subset PSD ranges shown in Figure 2. Each subset is expressed as a separate PSD “Down To” the smallest particle size in that subset, as a fraction of subset’s total mass.

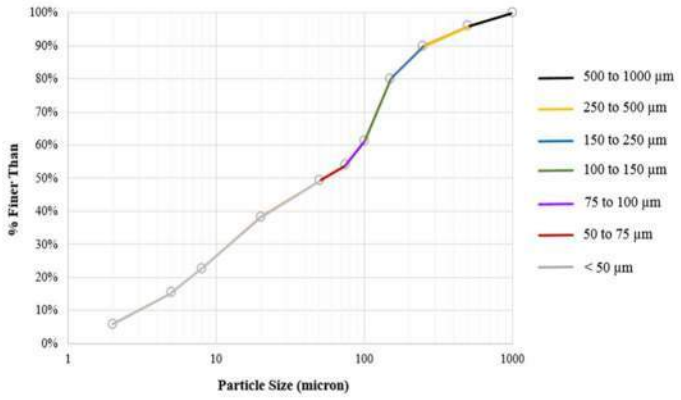


Figure 2 - Particle Size Distribution of Test Sediment

First Defense®

Laboratory Testing Arrangement

The laboratory setup consisted of a recirculating closed loop system with an 8-inch (200 mm) submersible Flygt pump that conveyed water from a 23,000 gal (87,064 L) reservoir through a PVC pipe network to the 4-ft (1.2m) First Defense (Fig.3). The flow rate of the pump was controlled by a GE Fuji Electric AF-300 P11 Adjustable Frequency Drive and measured by an EMCO Flow Systems 4411e Electromagnetic Flow Transmitter.

The sediment storage sump of the First Defense measures 18 inches (457 mm) in height. But it was fitted with a false bottom positioned 9 inches (229 mm) above the floor of the sump to simulate a 50% full condition during testing to ensure a conservative test result.

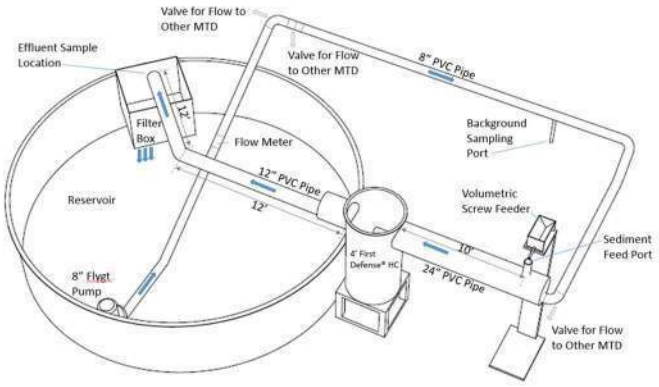


Figure 3 - Set-up of the Portland, Maine hydraulic testing facility

Performance Test Procedures

Removal efficiency testing was conducted in accordance with Section 5 of the NJDEP Laboratory Protocol for HDS MTDs. Particle sizes were determined for both the inlet feed and captured sediment removed from the sump between each test run.

A total of 15 evenly spaced effluent samples were taken at five flow rates: 0.38 cfs (10.8 L/s), 0.54 cfs (15.3 L/s), 0.82 cfs (23.2 L/s), 1.07 cfs (30.3 L/s), and 1.38 cfs (39.1 L/s).

Duplicate effluent samples were also takes at the first, middle and last sample at each flow. These were composited and analyzed for particle size distribution using laser diffraction. Background concentrations were also taken to ensure the recirculation and filter system kept background concentration below 20 mg/L.

To determine the effluent concentration within a specific particle size range, the percentage of particles in the particle size band was multiplied by the overall adjusted average effluent concentration. Removal efficiencies were calculated using the average influent concentration and average effluent concentration adjusted for background concentrations.

These results are summarized below and the full report can be viewed at: FDHC_PSD_Removal_Verification_Report_9-16.pdf

Performance Results

The First Defense performed well under the full range of tested flow rates showing high removal rates across a broad range of particle sizes. For all particles from 50 µm to 1,000 µm, the FDHC removed greater than 90% TSS for all tested flow rates up to 1.88 cfs, or 1.5 cfs with a safety factor of 1.25.

The results for all tests were plotted on a flow vs. removal efficiency graph and a best fit curve produced (Figure 4).

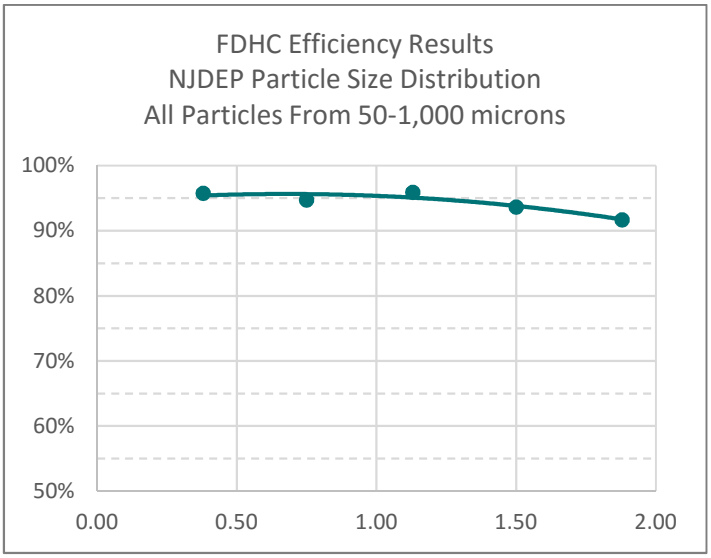


Figure 4 - Removal Efficiency Results of the 4-ft First Defense

First Defense Sizing for > 80% TSS Removal

Table 1 includes the treatment flow rates for different First Defense models based on surface loading rate scaling of the test unit, for greater than 80% TSS removal down to 50 microns. The treatment flow rates include a safety factor of 1.25 and actual removals from test results were greater than 90%.

For design purposes, the selected model's Treatment Flow Rate must be equal or greater to the site's required Water Quality Flow Rate.

The peak flow rate and maximum pipe size must be considered to determine whether an online or offline configuration is appropriate.

Refer to the First Defense product information brochure for visit www.hydro-int.com/us for more information.

Table 1. First Defense verified flow rates for greater than 80% TSS* removal with safety factor of 1.25.

Model:	FD-3HC	FD-4HC	FD-6HC	FD-8HC
Size:	3 ft (900 mm)	4 ft (1.2 m)	6 ft (1.8 m)	8 ft (2.4m)
cfs:	0.85	1.5	3.38	6.00
L/s:	24.0	42.5	95.7	170.0

**Actual removals for all particles down to 50µm were > 90%.*

Hydro International. 94 Hutchins Drive. Portland. ME 04102
Tel: 207.756.6200 Fax: 207.756.6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

Stormwater Solutions

Hydro International

First Defense® High Capacity

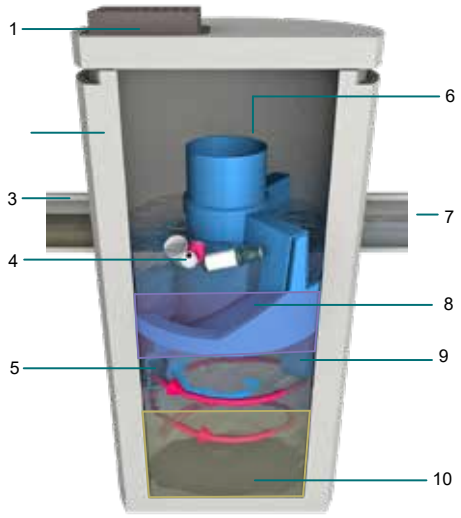
Advanced Hydrodynamic Separator

Product Summary

A Simple Solution for your Trickiest Sites

First Defense® High Capacity is a versatile stormwater separator with some of the highest approved flow rates in the United States, enabling engineers and contractors to save site space and projects costs by using the smallest possible footprint. It also works with single and multiple inlet pipes and inlet grates has an internal bypass to convey infrequent peak flows directly to the outlet.

Fig.1 The First Defense® High Capacity has internal components designed to efficiently capture pollutants and prevent washout at



Product Profile

1. Inlet Grate (optional)
2. Precast chamber
3. Inlet Pipe (optional)
4. Floatables Draw Off Slot (not pictured)
5. Inlet Chute
6. Internal Bypass
7. Outlet pipe
8. Oil and Floatables Storage
9. Outlet chute
10. Sediment Storage Sump

Applications

- Areas requiring a minimum of 50% TSS removal
- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Highways, car parks, industrial areas and urban developments
- Pre-treatment to ponds, storage systems, green infrastructure

How it Works

Highest Flow through the Smallest Footprint

Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Benefits

Small & Simple

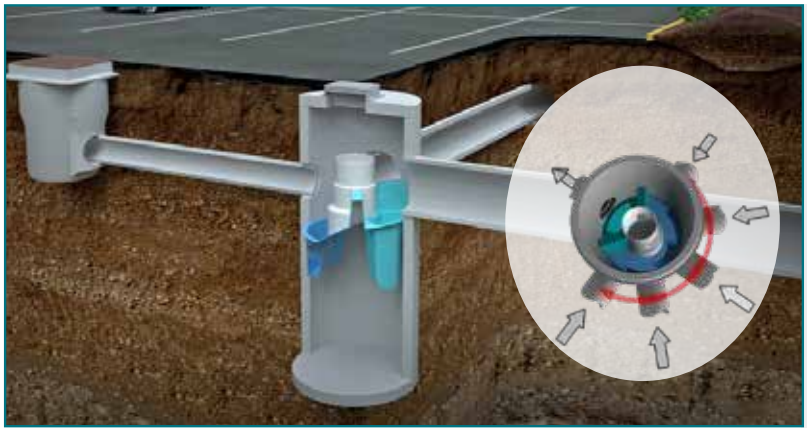
- Cut footprint size, cut costs: First Defense® provides space-saving, easy-to-install surface water treatment in standard sized chambers/ manholes.
- Adapt to site limitations: Variable configuratoins will help you effectively slip First Defense® into a tight spot. It also works well with large pipes, multiple inlet pipes and inlet grates.
- Save installation time: Every First Defense® unit is delivered to site pre-assembled and ready for installation – so installation is as easy as fitting any chamber/manhole.

Stormwater Solutions

→ hydro-int.com/firstdefense

Sizing & Design

This adaptable online treatment system works easily with large pipes, multiple inlet pipes, inlet grates and now, contains a high capacity bypass for the conveyance of large peak flows. Designed with site flexibility in mind, the First Defense® High Capacity allows engineers to maximize available site space without compromising treatment level.



Free Sizing Tool

This simple online tool will recommend the best separator, model size and online/offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.

First Defense® High Capacity Model Number	Diameter	Typical TSS Treatment Flow Rates		Peak Online Flow Rate	Maximum Pipe Diameter[1]	Oil Storage Capacity	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
		NJDEP Certified	110µm						
	(ft / m)	(cfs / L/s)	(cfs / L/s)	(cfs / L/s)	(in / mm)	(gal / L)	(yd^3 / m^3)	(ft / m)	(ft / m)
FD-3HC	3 / 0.9	0.84 / 23.7	1.06 / 30.0	15 / 424	18 / 450	125 / 473	0.4 / 0.3	2.0 - 3.5 / 0.6 - 1.0	3.71 / 1.13
FD-4HC	4 / 1.2	1.50 / 42.4	1.88 / 53.2	18 / 510	24 / 600	191 / 723	0.7 / 0.5	2.3 - 3.9 / 0.7 - 1.2	4.97 / 1.5
FD-5HC	5 / 1.5	2.35 / 66.2	2.94 / 83.2	20 / 566	24 / 600	300 / 1135	1.1 / .84	2.5 - 4.5 / 0.7 - 1.3	5.19 / 1.5
FD-6HC	6 / 1.8	3.38 / 95.7	4.23 / 119.8	32 / 906	30 / 750	496 / 1,878	1.6 / 1.2	3.0 - 5.1 / 0.9 - 1.6	5.97 / 1.8
FD-8HC	8 / 2.4	6.00 / 169.9	7.52 / 212.9	50 / 1415	48 / 1200	1120 / 4239	2.8 / 2.1	3.0 - 6.0 / 0.9 -1.8	7.40 / 2.2
FD-10HC	10 / 3.0	9.38 / 265.6	11.75 / 332.7	50 / 1415	48 / 1200	1742 / 6594	4.4 / 3.3	6.5 -8.0 / 2.0 - 2.4	10.25 / 3.12

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]Minimum distance for models depends on pipe diameter.

Maintenance

Easy vactor hose access through the center shaft of the system makes for quick, simple sump cleanout while trash and floatables can be fished out from the surface with a net.

Nobody maintains our systems better than we do. To ensure optimal, ongoing device performance, be sure to recommend Hydro International as a preferred service and maintenance provider to your clients.

Hydro International

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/firstdefense

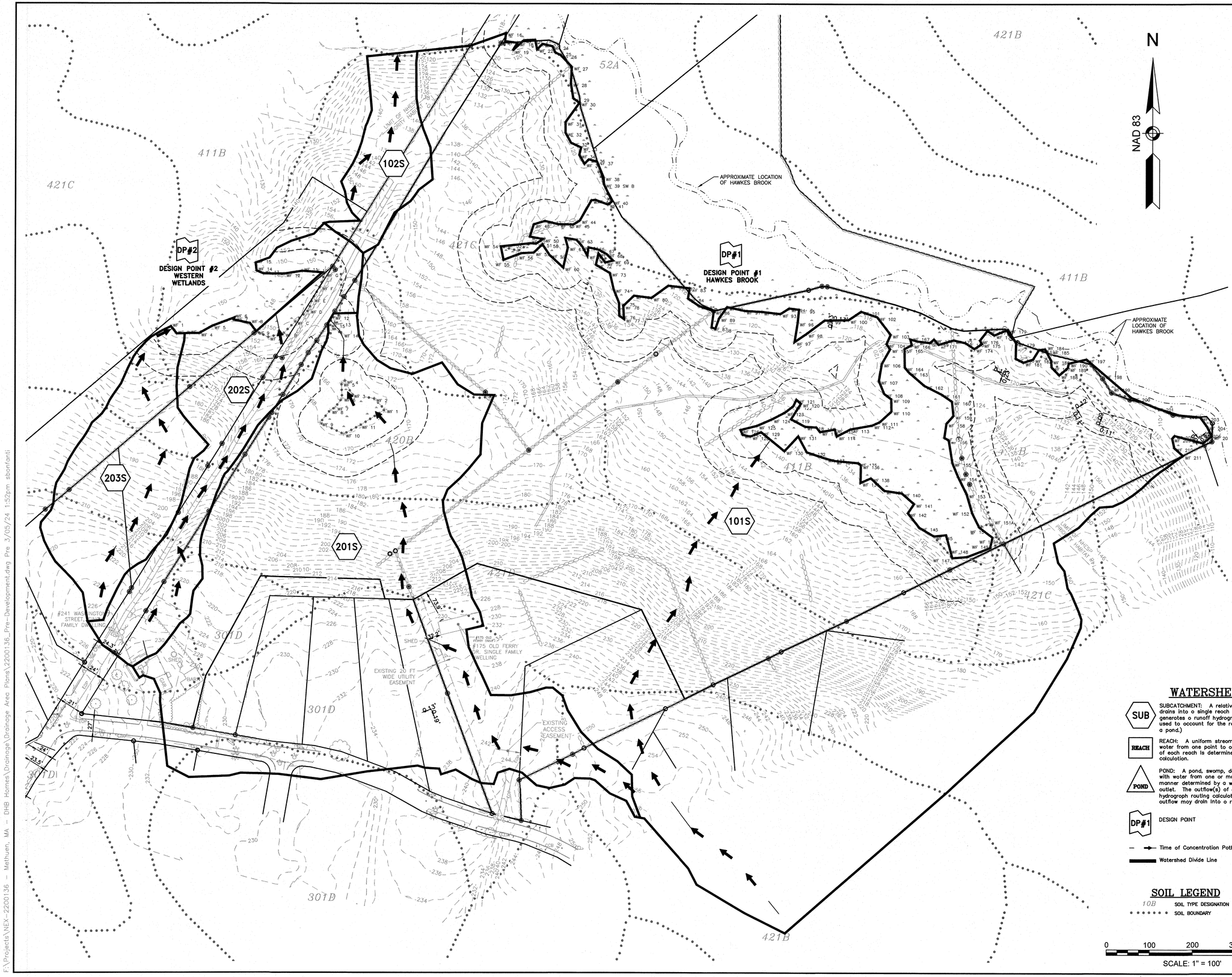
FD_SS_B_2105

Download Drawings!

→ hydro-int.com/fddrawings

Access the Operation & Maintenance Manual

→ hydro-int.com/fd-om



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LONDONDERRY, NH 03053

BROOKVIEW HEIGHTS
DEFINITIVE SUBDIVISION PLAN
DHB HOMES, LLC
LAND OFF WASHINGTON STREET
METHUEN, MASSACHUSETTS

REVISIONS		
NO.	REVISION	DATE

MARCH 6. 2024

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PRE - DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=100'

PROJECT NO. NEX-2200136

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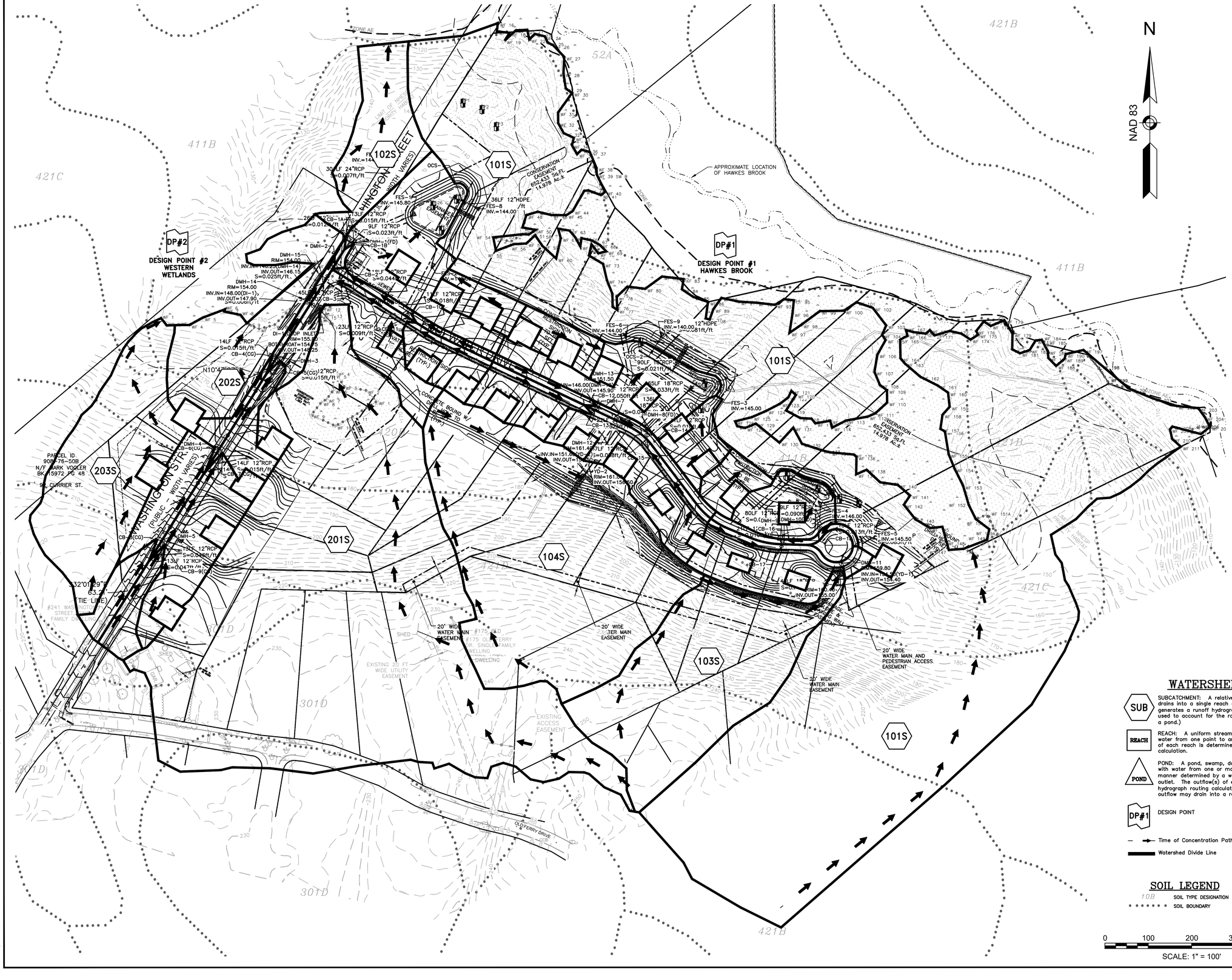

WATERSHED LEGEND

SUB — SUBCATCHMENT: A relatively homogeneous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph. (A subcatchment may also be used to account for the rain falling directly on the surface of a pond.)

REACH — REACH: A uniform stream, channel, or pipe that conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

POND — POND: A pond, swamp, dam, or other impoundment that fills with water from one or more sources and empties in a manner determined by a weir, culvert, or other device(s) at its outlet. The outflow(s) of each pond is determined by a hydrograph routing calculation. The primary and/or secondary outflow may drain into a reach or into another pond.

DP#1 — DESIGN POINT

Time of Concentration Path (Tc)

Watershed Divide Line

SOIL LEGEND

10B — SOIL TYPE DESIGNATION

SOIL BOUNDARY

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REVISIONS		
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POST - DEVELOPMENT OVERVIEW PLAN

SCALE: 1"=100'

PROJECT NO. NEX-2200136

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Watershed Divide Line

SOIL LEGEND

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POST - DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=40'

PROJECT NO. NEX-2200136

WATERSHED LEGEND

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- **DP#1** — DESIGN POINT
- Time of Concentration Path (Tc)
- Watershed Divide Line

SOIL LEGEND

- 10B — SOIL TYPE DESIGNATION
- SOIL BOUNDARY

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POST - DEVELOPMENT DRAINAGE AREA PLAN

SCALE: 1"=40'

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Time of Concentration Path (Tc)

Watershed Divide Line

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