

# **WESTCOTT SITE SERVICES**

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**Hillside Center for  
Sustainable Living**

**Newburyport, Massachusetts**

## **STORMWATER REPORT**



December 28, 2015

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# **STORMWATER REPORT**

## **&**

# **HYDROLOGICAL ANALYSIS**

### **Hillside Center for Sustainable Living**

#### **A. Summary**

Hillside Center for Sustainable Living will be a planned residential community on 4.77 acres (owned land and right of way). The site will include:

- A Common House
- A Greenhouse for residents
- A Recycling/Mechanics Bard
- Solar Canopies over parking spaces
- A Silo
- Residential Housing of 49 Units in 9 buildings. Seven of the buildings are combined into groups of 2.

The numbering and layout of the buildings can be seen on Sheet C-2, Layout Plan.

(For a quick summary of the Runoff Rates, see the last page of this Narrative).

#### **B. Site – Existing Conditions (Pre-Development)**

The site is a former junk yard with a barn and a steel shed. All former foreign junk material have been removed. The barn and steel shed remain; but will be removed as part of the new work. An adjacent parcel is an existing 2 family house that will remain, and be renovated.

The site is bordered to the north by existing residential housing, served off Pond Street by Cottage Court and Hillside Avenue; to the east by existing housing, and Highland Cemetery; to the south by Highland Cemetery; and to the west by U.S. Route One.

##### **a. Soils**

The site has been mapped by the USDA NRCS as having:

- Hinckley & Windsor loamy sand, HSG A
- Suffield silt loam, HSG C
- Sciantic silt loam, HSG D
- Hinckley loamy sand, HSG A

In addition, 26 test pits were dug throughout the site. These tests confirm the USDA mapping. The USDA soil groups were used to determine “CN”

values for the Stormwater Water Quality Volumes, Annual Recharge Volumes, and Pre and Post Development runoff rates.

**b. *Pre-Development Watersheds***

The debris of the former junk yard has been removed, and the site is generally unpaved, with informal gravel drives. It is largely unvegetated, except at its peripheries, and the future YWCA parcel.

In the Pre-development condition, the site is comprised of six sub-watersheds. (See Pre-Development Watershed Plan in rear of Report). The majority of the site drains in all directions from the higher periphery to low areas in the middle. These low areas pond, and then overflow to one larger low area which is drained by a culvert pipe. This culvert also picks up drainage from the drain system on Cottage Court. The culvert continues under the property of 12-14 Cottage Court (part of the proposed development) where it picks up drainage from an on-site catchbasin. The culvert then continues eastward under Route One to an outlet that our surveyors are now attempting to better define. (MassHighway, the owners of Route One, have no information on the culvert).

This site is part of the Little River watershed, which flows south to the Parker River, and thence the Atlantic Ocean.

**C. *Site – Proposed Conditions (Post-Development)***

Access to the site will be as follows:

- a. At the east, and high side of the site, Hillside Ave. will be extended from its current terminus as a private drive as far as the new Barn.
- b. At the west, and low side of the site, Cottage Court will be extended from its current terminus through the Right-of-Way that exists all the way to Route One. It will be necked down part way to signify a one-way portion, so that major traffic cannot use Cottage Court as a cut-thorough. The new site's largest parking area will be serviced from a new curb cut on Route One. This parking area will also be the site of a series of solar arrays.
- c. A wood plank emergency access "Firemen's Drive" will connect the lower Cottage Court with the higher Hillside Ave. This drive will not be open to general traffic.
- d. A Common House with a Silo and Terrace will be at the center of the site, with access from both Cottage Court and Hillside Ave. There will be a Greenhouse adjacent to the Common House, with additional emergency access from the new small parking lot off Cottage Court.

These can be seen on the full size sheet C-2 Layout, or on the Post-Development Watershed Plan at the rear of this Report.

**a. Post-Development Watersheds**

In the Post-development condition, the site is comprised of 24 sub-watersheds. (See Post-Development Watershed Plan in rear of Report). These watersheds can be categorized as:

- 1) Site runoff watersheds. 18. These watersheds sheet flow to their on-site analysis points.
  - a) Each of these 24 watersheds are further broken down into their constituent parts of:
    - i) Impervious over A soils
    - ii) Impervious over C soils
    - iii) Impervious over D soils
    - iv) Woods to remain over A soils
    - v) Woods to remain over C soils (there are no woods over D soils)
    - vi) Grass over A soils
    - vii) Grass over C soils
    - viii) Grass over D soils
    - ix) Wood Planking over A soils
    - x) Wood Planking over C soils
    - xi) Wood Planking over D soils
    - xii) Porous Pavement over C soils
- 2) Building roof watersheds. Each of these 6 roofs (except the Barn) have rain cisterns built into their basement that will store 100% of the 100 year runoff volume. Although this is useful for stormwater attenuation, the real purpose is to create reservoirs for on-site water usage.

**b) Stormwater Runoff Controls**

The drainage system has been designed to fully mitigate impacts from the 2, 10, 25, 50, and 100 year 24 hour storm events.

The drainage system has been designed in accordance with the Massachusetts Department of Environmental Protection's Stormwater Management Policy (including Volume One, Stormwater Policy Handbook and Volume Two, Stormwater Technical Handbook). Runoff rate and mitigation are accomplished in two principal ways:

- i) The water storage cisterns within the new buildings. These cisterns will have a "permanent level", which is the level of rainwater intended to be held and available for site uses. Above this level will be a volume large enough to hold the 100 year roof runoff volume. A small diameter discharge pipe will allow this volume to drain over 3 days to the permanent level.
- ii) The change in surfaces. Although the site will have some impervious surfaces, it will have wood plank drive and a wood plank entrance area,

porous pavement for some of the parking bays, and considerably more grass area than the existing site.

**b) Water Quality Controls:**

Water quality can be degraded by development as stormwater runoff comes into contact with parking and drive areas, as well as other areas subject to intense use. The “first flush” effect is the name given to the highest pollutant concentrations observed at the beginning of a storm event. Residues which have collected on paved surfaces are “flushed” at the beginning of a rain event. After this first flush is washed from the paved surface, pollutant concentrations decline throughout the remainder of the storm event. Therefore, runoff from paved surfaces will be directed through the following “Best Management Practices” (BMP’s) as defined by the DEP.

- i) Rain Gardens, designed in accordance with the DEP Standards.
- ii) Where the nature of the site structures do not permit the placement of a landscape Rain Garden, Stormceptor Water Quality Inlets, sized in accordance with the DEP Standards.
- iii) In addition, there will be Grassed Swales, although since these do not meet the full specifications of the DEP Standards, they have not been counted in the Water Quality calculations. (The site easily meets the Water Quality standards without them).

**D. Hydrological Analysis:**

Analysis was done in accordance with the “City of Newburyport Stormwater Management Rules and Regulations”. These Regulations also reference the MA DEP Stormwater Guidelines. In accordance with these Regulations, the USDA Soil Conservation Services (SCS) hydrologic methods were used for these calculations. The analysis is based on procedures described in the SCS National Engineering Handbook, Section 4, (NEH-4) and was performed using the SCS TR-20 Computer Program for project Formulation Hydrology, as used by the analysis program “HydroCAD Version 10.0”. This program incorporates the methods described in NEH-4 to compute runoff, develop flood hydrographs, and route flows through stream channels and reservoirs. It can combine routed hydrographs with tributaries and compute the peak discharges, their times of occurrence, and the water surface elevations at any desired cross section or structure.

- i) A note about Rainfall Data used in the analysis:
  - (1) The Newburyport Stormwater R & R contain in Table 1, prescribed 24 hour rainfall amounts to be used in the analysis as follows:

Storm Event (in years)	Inches (per 24-hours)
2	3.1
10	4.7
25	5.8
50	7.1
100	8.3

However, the NOAA Atlas of Precipitation Frequencies was recently updated to higher numbers. This Atlas is referenced in the MA DEP Stormwater Guidelines. The new NOAA rainfall amounts for Newburyport are as follows:

Storm Event (in years)	Inches (per 24-hours)
2	3.15
10	4.83
25	5.80
50	7.10
100	8.30

One can see that the 2 and 10 year rainfall amounts are slightly higher in the NOAA Atlas. Therefore, to be conservative, these were used in the analysis.

Results of the analysis are presented in the calculations that follow, and are summarized below.

Pre and Post development runoff rates and volumes were calculated at the point of discharge from the new road culvert. Results are as follows:

Storm Event	Pre Rate, cfs	Post Rate, cfs		Pre Volume, cf	Post Volume, cf
2 year	3.57	1.22		28,531	13,250
10 year	5.65	2.86		57,814	34,317
25 year	6.24	4.17		77,490	49,987
50 year	6.46	5.33		106,235	74,224
100 year	6.68	6.32		135,077	99,387

End of Narrative



# Checklist for Stormwater Report

## A. Introduction

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



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

The Stormwater Report must include:

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

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

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

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the

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

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

## 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





# Checklist for Stormwater Report

conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

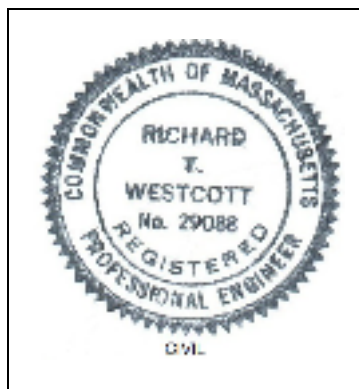
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that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



Richard T. Westcott P.E.  
2015.11.25 09:42:03 -05'00'

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 (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



# Checklist for Stormwater Report

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): Cisterns for roof runoff

## 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 (continued)

### Standard 2: Peak Rate Attenuation



# Checklist for Stormwater Report

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

## Standard 3: Recharge

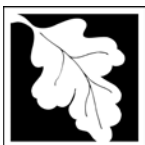
- ☒ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - ☒ Static
  - ☐ Simple Dynamic
  - ☐ Dynamic Field<sup>1</sup>
- ☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
  - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
  - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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

## Checklist (continued)

### Standard 3: Recharge (continued)



# Checklist for Stormwater Report

- ☐ 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 (continued)

### Standard 4: Water Quality (continued)



# Checklist for Stormwater Report

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

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

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

## Standard 6: Critical Areas

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

## Checklist (continued)

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



# Checklist for Stormwater Report

- 
- ☒ 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.

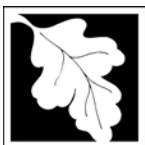
## Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

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 (continued)

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



# Checklist for Stormwater Report

- ☐ 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.





# WESTCOTT SITE SERVICES

60 Prospect Street, Waltham MA  
Engineers Planners

Date: 11/23/2015

Project: **HILLSIDE CENTER**

WSS #: 5301

Subject: **Impervious Area, ARV, & WQV** By HydroCad node

Node		Soil A	Soil C	Soil D	
20S	C-Low			12226	
22S	RG 2	2400	7701	1666	
23S	Strmtr2	5201			
24S	CenDep	1199	75	9481	
25S	Strmtr 1	10501	7266		
26S	CB2	1269			
27S	GH West			390	
28S	GH East			1129	
29S	CB1	3522			
30S	CB3	3592			
31S	Rte 1	493			
32S	GH			1709	(Greenhouse)
34S	Barn			2426	
40S	YW	2136			
41S	SR	7823			
42S	CE		2744	3179	
43S	CC		4684	4280	
44S	HA+CH	1803		8315	
46S	Prkg Bay 1				(all porous)
49S	Prkg Bay 2		1664		(not incl porous)
50S	Prkg Bay 3		1612		(not incl porous)
51S	Prkg Bay 4		2549		(not incl porous)
Totals		39939	28295	44801	

## Standard 3 - Annual Required Recharge Volume

Feet	0.05	0.021	0.008
Vcf =	1997	594	358

**Total Req. V= 2,950** cf

## Recharge Volume Provided:

### Rain Garden #1

Bott. Pond Surface Area sf	126	from plan		
Target Ponding Depth	0.5		V=	63
4:1 side slope				
Top Pond Surface Area sf	345	from plan	V=	55
Soil Strg Volume:				

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60 Prospect Street, Waltham MA  
Engineers Planners

Surface Area	126			
Depth	3.25	30% voids	V=	123
Total Volume Provided =				241

Rain Gardens 2 same.

Rain Gardens V =	482
------------------	-----

Pervious Pavement in parking lot:

Storage Bed 4" stone + 12" gravel + 3" pea stone + 4" stone = 1.91 ft.

Surface Area =

Bay 1	1192 sf
Bay 2	2304 sf
Bay 3	2545 sf
Bay 4	1530 sf

7571 sf	40% voids V=	5784 cf
---------	--------------	---------

Total ARV Provided =	6,266	cf	OK
----------------------	-------	----	----

## Standard 4 - Required Water Quality Volume

Impervious Area, not including residential roofs:

HydroCad Nodes:

20S	C-Low			12226
22S	RG 2	2400	7701	1666
23S	Strmtr2	5201		
24S	CenDep	1199	75	9481
25S	Strmtr 1	10501	7266	
26S	CB2	1269		
27S	GH West			390
28S	GH East			1129
29S	CB1	3522		
30S	CB3	3592		
31S	Rte 1	493		
32S	GH			1709
49S	Prkg Bay 2		1664	
50S	Prkg Bay 3		1612	
51S	Prkg Bay 4		2549	
34S	Barn			2426
Totals		28177	20867	29027

Total Impervious Area = 78,071

Required rainfall 1/2 inch = 0.042 ft.

Total Required Water Quality Volume =	3,279	cf
---------------------------------------	-------	----

Total WQV Provided =	6,266	cf	OK
----------------------	-------	----	----

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: RAIN GARDENS 1 &amp; 2

TSS Removal Calculation Worksheet	B	C	D	E	F
	BMP <sup>1</sup>	TSS Removal Rate <sup>1</sup>	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	Rain Garden	0.90	1.00	0.90	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10

Total TSS Removal =

90%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project: Hillside Center  
Prepared By: RTW  
Date: 11/23/2015

\*Equals remaining load from previous BMP (E)  
which enters the BMP

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Rain Garden 3

TSS Removal Calculation Worksheet	B	C	D	E	F
	BMP <sup>1</sup>	TSS Removal Rate <sup>1</sup>	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	Rain Garden	0.90	1.00	0.90	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10
		0.00	0.10	0.00	0.10

Total TSS Removal =

90%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project: Hillside Center  
Prepared By: RTW  
Date: 11/23/2015

\*Equals remaining load from previous BMP (E)  
which enters the BMP

## INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: 

TSS Removal Calculation Worksheet	B	C	D	E	F
	BMP <sup>1</sup>	TSS Removal Rate <sup>1</sup>	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
	Porous Pavement	0.80	1.00	0.80	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20
		0.00	0.20	0.00	0.20

Total TSS Removal =

80%

Separate Form Needs to  
be Completed for Each  
Outlet or BMP Train

Project:   
 Prepared By:   
 Date:

\*Equals remaining load from previous BMP (E)  
which enters the BMP

Standard 4 - Stormceptor TSS Removal calculations  
(Stormceptor 1 modeled, the unit with the greatest impervious area)

PCSWMM for Stormceptor

**Stormceptor®**

**Step 2 - Site Details**

Enter site drainage area and imperviousness.

Site drainage area  
Total area [ac] 1.76 Imperviousness [%] 45

Site parameters below are defaulted to represent common Stormceptor System applications. For specific parameters, contact a local representative for assistance.

Surface characteristics  
Width [ft] 554  
Slope [%] 2  
Impervious depression storage [in.] 0.02  
Pervious depression storage [in.] 0.2  
Impervious Manning's n 0.015  
Pervious Manning's n 0.25

Infiltration parameters  
Max. infiltration rate [in/hr] 2.44  
Min. infiltration rate [in/hr] 0.4  
Decay rate [1/s] 0.00055  
Regeneration rate [1/s] 0.01

Evaporation  
Daily evaporation rate [in./day] 0.1

Dry weather flow  
Dry weather flow [cfs] 0

Maintenance frequency  
Maintenance frequency (months) 12

Developed in partnership with: **CHI**

**HOW IT WORKS**  
Try our interactive simulation tools

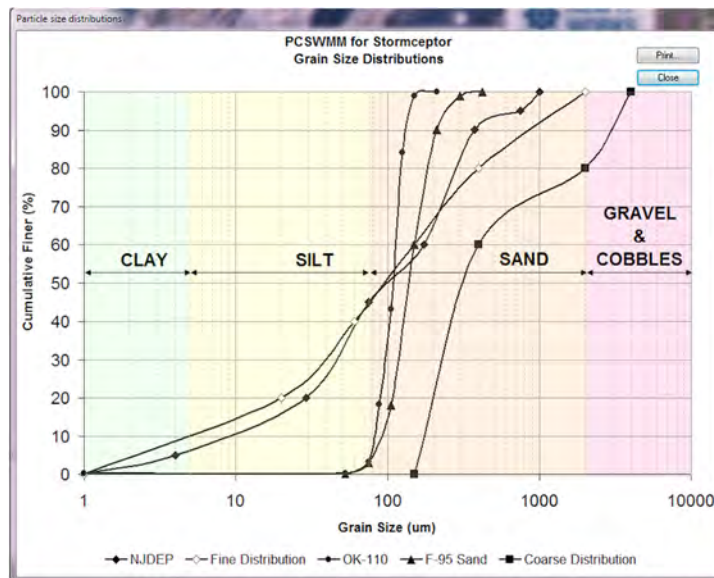
**Documentation**

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PCSWMM for Stormceptor

**Stormceptor®**

**Step 7 - Design Summary**

Highlighted in the table below, is the recommended Stormceptor System that meets the treatment criteria identified. In addition to the recommended unit, the annual TSS removal of other Stormceptor Models are included for your information.

Stormceptor treatment recommendation

Stormceptor Model	TSS Removal (%)
STC 450	78
<b>STC 900</b>	<b>86</b>
STC 1200	86
STC 1800	86
STC 2400	89
STC 3600	90
STC 4800	92
STC 6000	93
STC 7200	94
STC 11000	96
STC 13000	96
STC 16000	97

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Brief Report

Extras  
Detailed Report  
View Rainfall  
View Hydrograph  
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Save project

## **STANDARD 8 – CONSTRUCTION PERIOD CONTROLS**

### **STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

Spill management and emergencies:

- If a hazardous material spill occurs, or other environmental hazard, the Fire Department shall be called.
- The responsibility for the cleanup will be upon the entity that caused the hazard. That entity shall immediately engage a qualified Environmental Cleanup Company to remove the hazard.

Principles:

- The total area of exposed earth shall be kept to the practical minimum.
- No earth shall be left exposed when heavy rain is expected. All disturbed areas shall be stabilized with temporary jute mesh, or equal, if the permanent surface will not be applied within a week.

Schedule of Activities:

1. Stone Entrance Aprons shall be constructed where shown. These are intended to minimize the tracking of dirt off the site. The stone in the apron shall be renewed as necessary to maintain effectiveness. These shall be maintained throughout the major construction, and be removed only when the major site construction is complete.
2. Solar arrays shall be placed, and used as a protected Staging Area.
3. The siltfence shall be erected, as shown at a minimum, with additional fence placed as needed.
4. Construction drive shall be graded and located as shown on Sheet C-1. It shall be surfaced with base course gravel.
5. The Sediment Traps shall be constructed where shown.
6. The Construction Office and Staging Area will be set up.
7. The remainder of the construction activities can then commence.

The General Contractor shall conduct the following routine inspections:

- Any dewatering that is necessary shall be directed into perforated barrels lined with filter fabric, or other effective silt filters.
- After every major rain event, and at least weekly:
  - Integrity of the erosion control fence, making repairs and adjustments as necessary.
- Police the property line, and remove any trash and debris that has travelled off the site.
- Once a month: Measure sediment depth in the sediment traps. Sediment shall be removed when it has reached 12" deep.
- The General Contractor shall maintain the SWPPP Checklist, contained in the Project Manual (not yet awarded at the time of this Sheet's printing).
- At the substantial complete stage:
  - All manholes and drain pipes shall be inspected to ensure they are clear of debris.
  - Silt fence, and other temporary controls shall be removed from the site.

## Standard 9

### Stormwater Control Operation & Maintenance Schedule

---

#### REQUIRED INSPECTION AND MAINTENANCE SCHEDULE

---

**COMPONENT:** Paved Areas

**RESPONSIBLE PARTY:** Property Owner

**ACTION:** Street Sweeping

**FREQUENCY:** Annually

**DESCRIPTION:** The access drives and parking areas shall be vacuum swept to remove accumulated winter debris on an annual basis. The sweeping shall occur in the spring, after winter snow removal activities are complete. All materials removed during the vacuum sweeping shall be disposed of outside the property in an approved location in accordance with all applicable local, state and federal regulations for the disposal of road debris, including Massachusetts Department of Environmental Protection (MADEP) Storm Water Management Policy.

---

**COMPONENT:** Deep sump catch basins

**RESPONSIBLE PARTY:** Property Owner

**ACTION:** Sediment removal / sump cleaning

**FREQUENCY:** Bi - Annually

**DESCRIPTION:** Catch basins shall be cleaned to remove accumulated sand and other debris on a bi-annual basis. Cleaning shall be performed after paved areas are swept in the spring and after fall leaf clean-up activities. All sediment removed from catch basin sumps will be disposed of outside the property in a manner consistent with current DEP Policies relative to storm water related sediments.

---

**COMPONENT:** Stormceptor Water Quality Inlets

**RESPONSIBLE PARTY:** Property Owner

**ACTION:** Sediment removal / sump cleaning

**FREQUENCY:** Annually (subject to adjustment)

**DESCRIPTION:** Once each year the level of sediment in the Stormceptor sump shall be measured using a light intensity sludge detector, such as the "Markland Sludge Gun or the Canacopus Sludge Detector, or equal. When sediment has reached 6 inches deep the Stormceptor shall be cleaned by a vacuum truck. The schedule for inspection may be modified according to the rate at which sediment is actually found to be accumulating. All sediment removed from shall be disposed of outside the property in a manner consistent with current DEP Policies relative to storm water related sediments.

---

**COMPONENT:** Access driveways, sidewalk and walkway maintenance - Winter Maintenance

**RESPONSIBLE PARTY:** Property Owner

**ACTION:** Snow removal, sanding, de-icing application

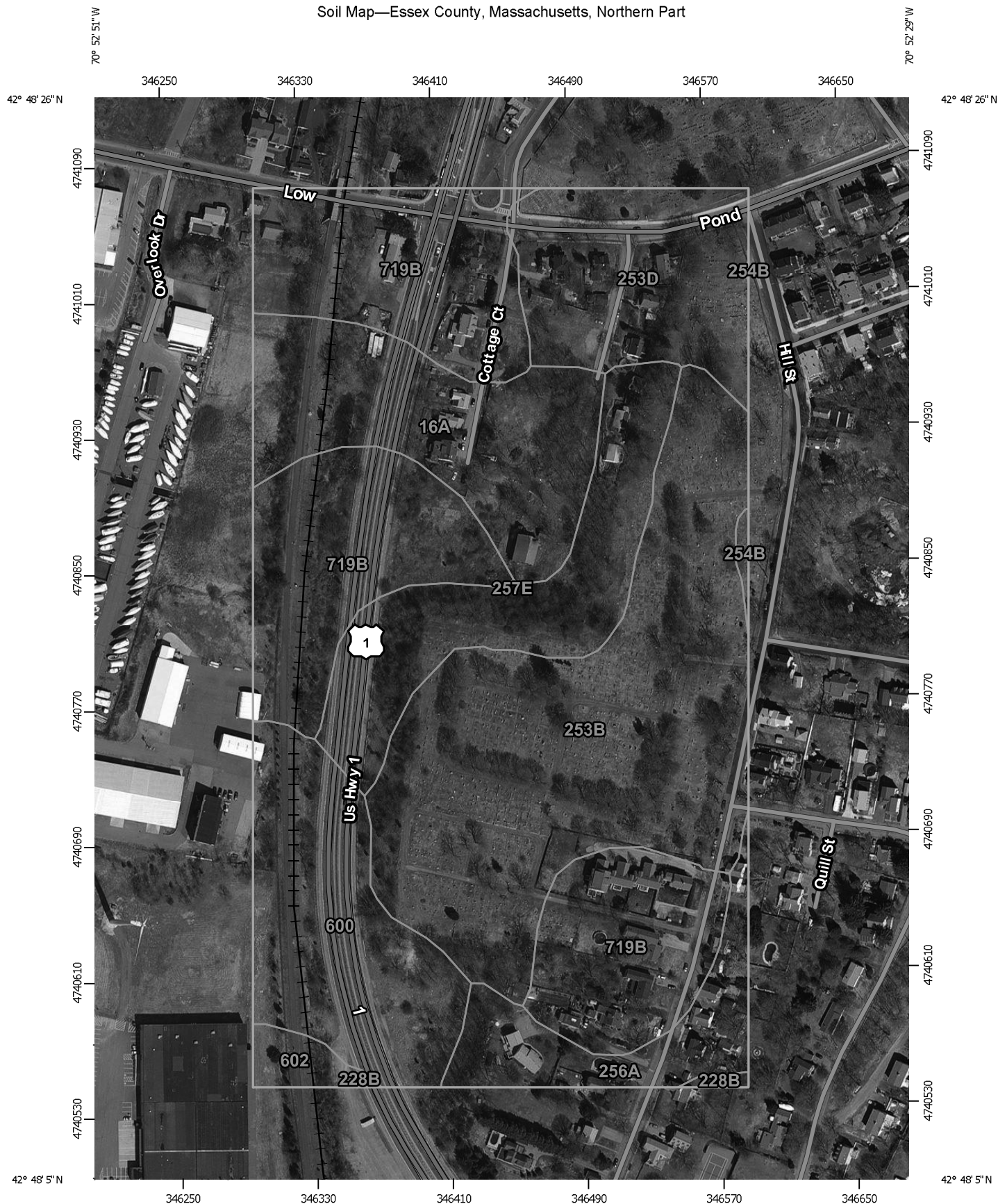
**FREQUENCY:** As weather conditions require

**DESCRIPTION:** The common area access drives, sidewalks, parking areas, and walkways shall be cleared of snow and / or ice as required during the winter. At the







































culmination of each storm event, the Manager and his or her employees and/or subcontractors will remove snow from the drives, walkways and individual unit driveways. Such snow removal activities will take place using snowplows and snow blowers. Snow will be plowed into those areas of the property where sufficient room for snow storage exists. In the event of excessive snow accumulation, the Manager will remove and properly dispose of snow in accordance all applicable local, state and federal regulations.

# Soil Map—Essex County, Massachusetts, Northern Part



## MAP LEGEND

<b>Area of Interest (AOI)</b>		Area of Interest (AOI)		Spoil Area
<b>Soils</b>		Soil Map Unit Polygons		Stony Spot
		Soil Map Unit Lines		Very Stony Spot
		Soil Map Unit Points		Wet Spot
<b>Special Point Features</b>		Blowout		Other
		Borrow Pit		Special Line Features
		Clay Spot	<b>Water Features</b>	
		Closed Depression		Streams and Canals
		Gravel Pit	<b>Transportation</b>	
		Gravelly Spot		Rails
		Landfill		Interstate Highways
		Lava Flow		US Routes
		Marsh or swamp		Major Roads
		Mine or Quarry		Local Roads
		Miscellaneous Water	<b>Background</b>	
		Perennial Water		Aerial Photography
		Rock Outcrop		
		Saline Spot		
		Sandy Spot		
		Severely Eroded Spot		
		Sinkhole		
		Slide or Slip		
		Sodic Spot		

## MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Essex County, Massachusetts, Northern Part  
Survey Area Data: Version 10, Sep 19, 2014

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

Date(s) aerial images were photographed: Mar 30, 2011—Apr 8, 2011

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

Essex County, Massachusetts, Northern Part (MA605)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
16A	Scantic silt loam, 0 to 3 percent slopes	4.4	11.4%
228B	Buxton silt loam, 3 to 8 percent slopes	0.1	0.3%
253B	Hinckley loamy sand, 3 to 8 percent slopes	10.1	26.3%
253D	Hinckley loamy sand, 15 to 25 percent slopes	3.6	9.4%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	0.1	0.2%
256A	Deerfield loamy fine sand, 0 to 3 percent slopes	2.0	5.2%
257E	Hinckley and Windsor loamy sands, steep	3.7	9.6%
600	Pits, gravel	4.2	10.9%
602	Urban land	0.4	1.0%
719B	Suffield silt loam, 3 to 8 percent slopes	9.9	25.7%
<b>Totals for Area of Interest</b>		<b>38.5</b>	<b>100.0%</b>

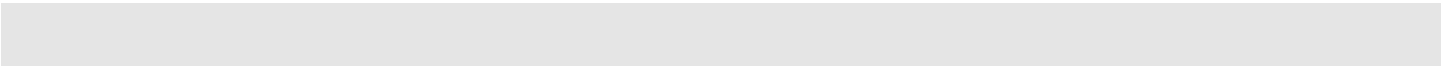
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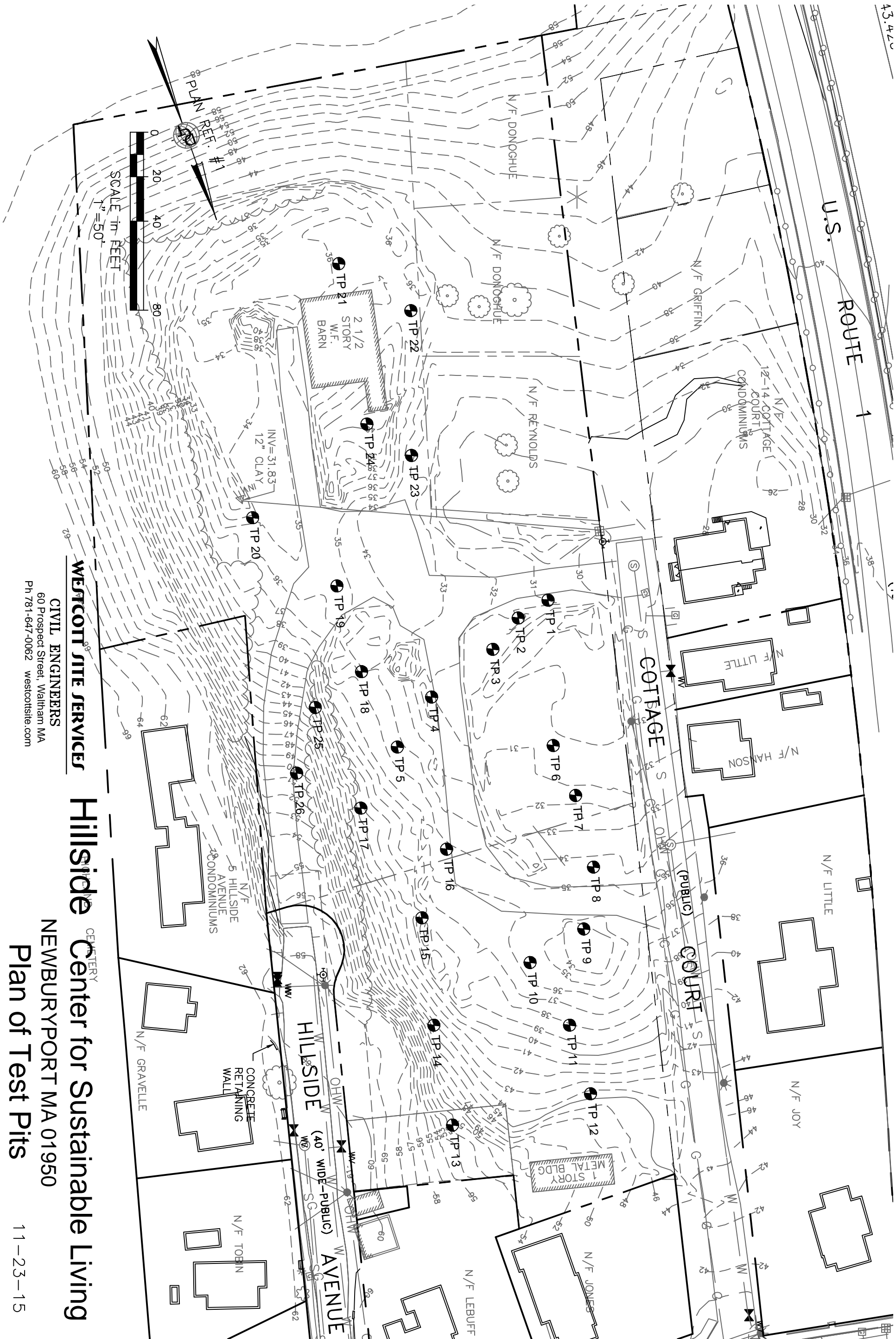
Hillside Center for Sustainable Living



*SOILS INFORMATION*

.....





**WESTCOTT SITE SERVICES** **Hillside Cemetery**  
**CIVIL ENGINEERS** **Center for Sustainable Living**  
60 Prospect Street, Waltham MA  
Ph 781-647-0062 westcottsite.com  
NEWBURYPORT MA 01950  
Plan of Test Pits  
11-23-15





[illegible]



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT						
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-02</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: _____ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-bottom: 1px solid black;">DEPTH</td> <td style="width: 70%; border-bottom: 1px solid black;">STABILIZATION TIME</td> </tr> <tr> <td style="text-align: center;">2'</td> <td style="text-align: center;">in-situ</td> </tr> </table>				DEPTH	STABILIZATION TIME	2'	in-situ	Mini-Excavator TYPE: <u>NA</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>		
DEPTH	STABILIZATION TIME									
2'	in-situ									
SAMPLE DATA										
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)				
0.0			<b>0-1': Fill: Silty Gravelly Sand;</b> fine to medium sand, 10-20% large sub-rounded gravel, 10% slightly plastic silt, brown. Glass, metal, plastic, and wood debris observed. Black, ashen coal slag observed with some white and red components. <b>1-2': Fill: Gravelly Clayey Sand;</b> fine sand, 10-20% large sub-rounded to sub-angular gravel, 10% moderately plastic clay, brown. Glass, metal, plastic, and wood debris observed. Black, ashen coal slag observed with some white and red components. <b>2'-3': Glacial Till: Gravelly Sand;</b> fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Soils at 3 feet below grade appear to be native.  Hole collapsed due to groundwater encountered at 2'.		NA					
5.0										
10.0										
15.0										
20.0										
<b>GENERAL REMARKS:</b> No soil samples collected NA indicates Not Applicable, test pit completed with mini-excavator. Denotes approximate groundwater elevation.										



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT			
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-03</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>			
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: _____ DEPTH: <u>2.5'</u> STABILIZATION TIME: <u>in-situ</u>				Mini-Excavator TYPE: <u>NA</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>			
SAMPLE DATA							
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./ft)	FIELD SCREENING (ppm)	
0.0			<b>0-6": Topsoil: Organic Silty Sand;</b> fine to medium sand, 10% slightly plastic silt, 20-30% organic material, dark brown. <b>6"-1.5': Fill: Silty Gravelly Sand;</b> fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Black, ashen coal slag observed with some white and red components. <b>1.5'-2.5': Fill: Gravelly Clayey Sand;</b> fine to medium sand, 10-20% large sub-rounded to sub-angular gravel, 10% moderately plastic clay, brown. Black, ashen coal slag observed with some white and red components. <b>2.5'-3.5': Glacial Till: Gravelly Sand;</b> fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Soils at 3 feet below grade appear to be native.		NA		
5.0			Hole collapsed due to groundwater encountered at 2.5'				
10.0							
15.0							
20.0							
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.							



CONECO ENGINEERS & SCIENTISTS						TEST PIT REPORT			
PROJECT: 6733 - Cottage Court and Hillside Avenue						BORING ID: TP-04			
LOCATION: Newburyport, Massachusetts						PAGE 1 OF 1			
DRILLING CO: NA						DATE STARTED: 4/13/2010			
EQUIPMENT: Mini-Excavator						DATE FINISHED: 4/13/2010			
DRILLED BY: NA						SURFACE ELEVATION: Not Determined			
INSPECTED BY: Michael Philbin									
<b>GROUNDWATER OBSERVATIONS</b>						Mini-Excavator			
NOT ENCOUNTERED:						TYPE: NA			
DEPTH		STABILIZATION TIME				SIZE: NA			
2.5'		in-situ				PENETRATION: NA			
SAMPLE DATA									
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)			
0.0		▽	0'-4": Topsoil: Organic Silty Sand; fine to medium sand, 10% slightly plastic silt, 20-30% organic material, dark brown.		NA				
			4"-2.5': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Black, ashen coal slag observed with some white and red components. Bottles, cans, bricks, wood debris observed.						
			2.5'-3.5': Glacial Till: Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Soils at 3 feet below grade appear to be native.						
			Hole collapsed due to groundwater encountered at 2.5'						
5.0									
10.0									
15.0									
20.0									
GENERAL REMARKS: No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator. ▽ Denotes approximate groundwater elevation.									



CONICO ENGINEERS & SCIENTISTS						TEST PIT REPORT			
PROJECT: 6733 - Cottage Court and Hillside Avenue						BORING ID: TP-05			
LOCATION: Newburyport, Massachusetts						PAGE 1 OF 1			
DRILLING CO: NA						DATE STARTED: 4/13/2010			
EQUIPMENT: Mini-Excavator						DATE FINISHED: 4/13/2010			
DRILLED BY: NA						SURFACE ELEVATION: Not Determined			
INSPECTED BY: Michael Philbin									
<b>GROUNDWATER OBSERVATIONS</b>									
NOT ENCOUNTERED:						Mini-Excavator			
DEPTH		STABILIZATION TIME				TYPE:		NA	
3'		in-situ				SIZE:		NA	
						PENETRATION:		NA	
SAMPLE DATA									
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)			
0.0			0'-1': Fill: Silty Gravelly Sand; fine to medium sand, 20% sub-rounded gravel, 10% slightly plastic silt, dark brown.		NA				
			1'-2': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Black, ashen coal slag observed with some white and red components. Glass jars, bricks, wood debris observed.						
			2'-3': Glacial Till: Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, dark brown. Black, ashen coal slag interspersed. Soils at 3 feet below grade appear to be native.						
			Hole collapsed due to groundwater encountered at 3'.						
5.0									
10.0									
15.0									
20.0									
GENERAL REMARKS: No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator. Denotes approximate groundwater elevation.									



CONECG ENGINEERS & SCIENTISTS				TEST PIT REPORT						
<b>PROJECT:</b> 6733 - Cottage Court and Hillside Avenue <b>LOCATION:</b> Newburyport, Massachusetts <b>DRILLING CO:</b> NA <b>EQUIPMENT:</b> Mini-Excavator <b>DRILLED BY:</b> NA <b>INSPECTED BY:</b> Michael Philbin				<b>BORING ID:</b> TP-06 <b>PAGE 1 OF</b> 1 <b>DATE STARTED:</b> 4/13/2010 <b>DATE FINISHED:</b> 4/13/2010 <b>SURFACE ELEVATION:</b> Not Determined						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: _____ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">DEPTH</td> <td style="width: 50%; border-bottom: 1px solid black;">STABILIZATION TIME</td> </tr> <tr> <td style="text-align: center;">3'</td> <td style="text-align: center;">in-situ</td> </tr> </table>				DEPTH	STABILIZATION TIME	3'	in-situ	Mini-Excavator  <b>TYPE:</b> NA <b>SIZE:</b> NA <b>PENETRATION:</b> NA		
DEPTH	STABILIZATION TIME									
3'	in-situ									
SAMPLE DATA										
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ REC'OV. (in./in.)	FIELD SCREENING (ppm)				
0.0			0-2': Fill: Sand; medium to coarse sand, brown.		NA					
			2'-3': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, gray. Gray/white ashen coal slag observed with some red components. Bottles, bricks, wood debris observed.							
		▽	3'-4': Native Materials: Glacial Till: Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, brown.							
5.0			Hole collapsed due to groundwater encountered at 3'							
10.0										
15.0										
20.0										
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator. ▽ Denotes approximate groundwater elevation.										









CONECO ENGINEERS & SCIENTISTS						TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue						BORING ID: TP-08		
LOCATION: Newburyport, Massachusetts						PAGE 1 OF 1		
DRILLING CO: NA						DATE STARTED: 4/13/2010		
EQUIPMENT: Mini-Excavator						DATE FINISHED: 4/13/2010		
DRILLED BY: NA						SURFACE ELEVATION: Not Determined		
INSPECTED BY: Michael Philbin								
<b>GROUNDWATER OBSERVATIONS</b>								
NOT ENCOUNTERED:						Mini-Excavator		
DEPTH		STABILIZATION TIME				TYPE		NA
2'		in-situ				SIZE		NA
						PENETRATION:		NA
SAMPLE DATA								
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in / in.)	FIELD SCREENING (ppm)		
0.0			0'-8": Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, gray. Gray/white ashen coal slag observed with some red components. Bottles, bricks, wood debris observed. 8"-1.5': Glacial Till: Silty Sand; fine to medium sand, 10% slightly plastic silt, gray. Black/gray ashen coal slag observed. 1.5'-2': Glacial Till: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, tan. Black/gray/white ashen coal slag observed.		NA			
5.0			Hole collapsed due to groundwater encountered at 2'					
10.0								
15.0								
20.0								
GENERAL REMARKS: No soil samples collected.								
NA indicates Not Applicable, test pit completed with mini-excavator.								
Denotes approximate groundwater elevation.								



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT						
<b>PROJECT:</b> 6733 - Cottage Court and Hillside Avenue <b>LOCATION:</b> Newburyport, Massachusetts <b>DRILLING CO:</b> NA <b>EQUIPMENT:</b> Mini-Excavator <b>DRILLED BY:</b> NA <b>INSPECTED BY:</b> Michael Philbin				<b>BORING ID:</b> TP-09 <b>PAGE 1 OF</b> 1 <b>DATE STARTED:</b> 4/13/2010 <b>DATE FINISHED:</b> 4/13/2010 <b>SURFACE ELEVATION:</b> Not Determined						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: _____ <table border="1"> <thead> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>4'</td> <td>in-situ</td> </tr> </tbody> </table>				DEPTH	STABILIZATION TIME	4'	in-situ	Mini-Excavator <b>TYPE:</b> NA <b>SIZE:</b> NA <b>PENETRATION:</b> NA		
DEPTH	STABILIZATION TIME									
4'	in-situ									
SAMPLE DATA										
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)				
0.0			0'-2": Organic Topsoil: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, 20% organic material, dark brown. 2"-1.5': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, tan. Brick debris. 1.5'-4': Native Materials: Sandy Clay; Moderately plastic clay, 20% fine to medium sand, tan/gray.		NA					
5.0			Bottom of test pit: 4'							
10.0										
15.0										
20.0										
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.										



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-10 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: _____ DEPTH: 3' STABILIZATION TIME: in-situ				Mini-Excavator TYPE: NA SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./ft.)	FIELD SCREENING (ppm)
0.0			0-1.5': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, tan. Black/gray ashen coal slag observed. Brick fragments present. 1.5'-3': Native Materials: Sandy Clay; Moderately plastic clay, 20% fine to medium sand, tan/gray.		NA	
5.0			Hole collapse due to groundwater encountered at 3'			
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.						





CON/CO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-12 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <input checked="" type="checkbox"/> X DEPTH:                      STABILIZATION TIME:				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0'-8": Fill: Silty Sandy; fine to medium sand, 20% slightly plastic silt, black. Clinker observed on the ground surface 8"-2': Fill: Silty Sand; fine to medium sand, 20% slightly plastic silt, tan. Ceramic and brick fragments present. 2'-2.5': Native Materials: Glacial Till: Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, brown.  Bottom of test pit: 2.5'		NA	
5.0						
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-13 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH:                      STABILIZATION TIME:				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0'-3': Fill: Gravelly Sand; fine to medium sand, 20-30% sub-angular gravel, cobbles present, brown. Brick fragments present.		NA	
			3'-3.5': Native Materials: Glacial Till; Silty Sand; dense fine to medium sand, 10-20% slightly plastic silttan.			
5.0			Bottom of test pit: 3.5'			
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-14 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <input checked="" type="checkbox"/> X DEPTH:                      STABILIZATION TIME:				Mini-Excavator TYPE: NA SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-8': Fill; Silty Gravelly Sand; fine to medium sand, 20-30% sub-rounded gravel, 10% slightly plastic silt, brown.		NA	
5.0						
10.0			8'-10': Fill; Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, gray. Gray/white ashen coal slag observed with some red components.  Bottom of test pit: 10'.			
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-15 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH:                      STABILIZATION TIME:				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in/in)	FIELD SCREENING (ppm)
0.0			0-2': Fill: Silty Clayey Sand; fine to medium sand, 15-20% moderately plastic fines, brown.		NA	
			2'-5': Fill: Silty Gravelly Sand; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, brown. Black/gray ashen coal slag observed. Brick fragments present.			
5.0			5'-5.5': Native Materials: Glacial Till: Silty Sand; fine to medium sand, 10% slightly plastic fines, tan.			
			Bottom of test pit: 5.5'			
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						

[illegible]




CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT				
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-17 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined				
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: DEPTH: 1.5' STABILIZATION TIME: in-situ				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA				
SAMPLE DATA								
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)		
0.0			0-1': Fill: Silty Gravelly Sand; fine to medium sand, 10-20% slightly plastic silt, trace gravel, dark brown. 1'-1.5': Native Materials: Glacial Till: Silty Sand; fine to medium sand, 10-20% slightly plastic silt, brown.  Hole collapse due to groundwater encountered at 1.5'.		NA			
5.0								
10.0								
15.0								
20.0								
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.								



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-18</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH: <u>                    </u> STABILIZATION TIME: <u>                    </u>				TYPE: <u>Mini-Excavator</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-3': <b>Fill: Silty Gravelly Sand</b> ; fine to medium sand, 15-20% sub-rounded gravel, 10% slightly plastic silt, brown. Black/gray ash coal slag observed. Brick, glass, wood, metal, and rope debris present.		NA	
			3'-4': <b>Native Materials: Glacial Till: Silty Sand</b> ; fine to medium sand, 10% slightly plastic fines, brown, dense.			
5.0			Bottom of test pit: 4'			
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT						
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-19 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <table border="1"> <tr> <th>DEPTH</th> <th>STABILIZATION TIME</th> </tr> <tr> <td>3'</td> <td>in-situ</td> </tr> </table>				DEPTH	STABILIZATION TIME	3'	in-situ	TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
DEPTH	STABILIZATION TIME									
3'	in-situ									
SAMPLE DATA										
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)				
0.0			0-2.5': Fill: Gravelly Silty Sand; fine to medium sand, 20% slightly plastic silt, 10% sub-rounded gravel, brown. Gray/white ashen coal slag observed. Brick fragments present.  2.5'-3': Native Materials: Glacial Till: Silty Sand; fine to medium sand, 10% slightly plastic fines, brown, dense.  Hole collapsed due to groundwater encountered at 3'.		NA					
5.0										
10.0										
15.0										
20.0										
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.										



## TEST PTI REPORT


BORING ID:	TP-20
PAGE 1 OF	1
DATE STARTED:	4/13/2010
DATE FINISHED:	4/13/2010
SURFACE ELEVATION	Not Determined



TYPE:	Mini-Excavator
SIZE:	NA
PENETRATION:	NA

NOT ENCOUNTERED:	
DEPTH	STABILIZATION TIME
1.5'	in-situ

[illegible]

NA indicates Not Applicable, test pit completed with mini-excavator

 Denotes approximate groundwater elevation.

CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue				BORING ID: TP-21		
LOCATION: Newburyport, Massachusetts				PAGE 1 OF 1		
DRILLING CO: NA				DATE STARTED: 4/13/2010		
EQUIPMENT: Mini-Excavator				DATE FINISHED: 4/13/2010		
DRILLED BY: NA				SURFACE ELEVATION: Not Determined		
INSPECTED BY: Michael Philbin						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: DEPTH: 3' STABILIZATION TIME: in-situ				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./ft)	FIELD SCREENING (ppm)
0.0			0-8": Fill: Silty Sand; fine to medium sand, 10% slightly plastic fines, light brown.		NA	
			8"-1.5': Fill: Silty Sand; fine to medium sand, 10% slightly plastic fines, dark brown.			
			1.5'-3': Fill: Gravelly Sand; medium to coarse sand, 20-30% sub-rounded gravel, trace fines, brown.			
			Hole collapsed due to groundwater encountered at 3'			
5.0						
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.  Denotes approximate groundwater elevation.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue				BORING ID: TP-22		
LOCATION: Newburyport, Massachusetts				PAGE 1 OF 1		
DRILLING CO: NA				DATE STARTED: 4/13/2010		
EQUIPMENT: Mini-Excavator				DATE FINISHED: 4/13/2010		
DRILLED BY: NA				SURFACE ELEVATION: Not Determined		
INSPECTED BY: Michael Philbin						
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <input checked="" type="checkbox"/> X DEPTH:                      STABILIZATION TIME:				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-6": Organic Topsoil: Silty Sand; fine to medium sand, 10% slightly plastic fines, 20-30% organic material, dark brown. 6"-1': Fill: Silty Sand; fine to medium sand, 10% slightly plastic fines, brown.  Bottom of test pit: 1'		NA	
5.0						
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						

CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-23</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH: <u>                    </u> STABILIZATION TIME: <u>                    </u>				TYPE: <u>Mini-Excavator</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-6": <b>Organic Topsoil: Silty Sand</b> ; fine to medium sand, 10% slightly plastic fines, 20-30% organic material, dark brown. 6"-1': <b>Fill: Silty Sand</b> ; fine to medium sand, 10% slightly plastic fines, brown.  Bottom of test pit: 1'		NA	
5.0						
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-24</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH: _____ STABILIZATION TIME: _____				TYPE: <u>Mini-Excavator</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/ RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0'-8": Fill: Silty Gravelly Sand; fine to medium sand, 20% sub-rounded gravel, 10% slightly plastic fines, brown. Brick and clinker fragments present. 8"-7': Fill: Silty Gravelly Sand; fine to medium sand, 20-30% sub-angular gravel, 10% slightly plastic fines, tan.		NA	
5.0						
10.0			Bottom of test pit: 7'			
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable; test pit completed with mini-excavator.						

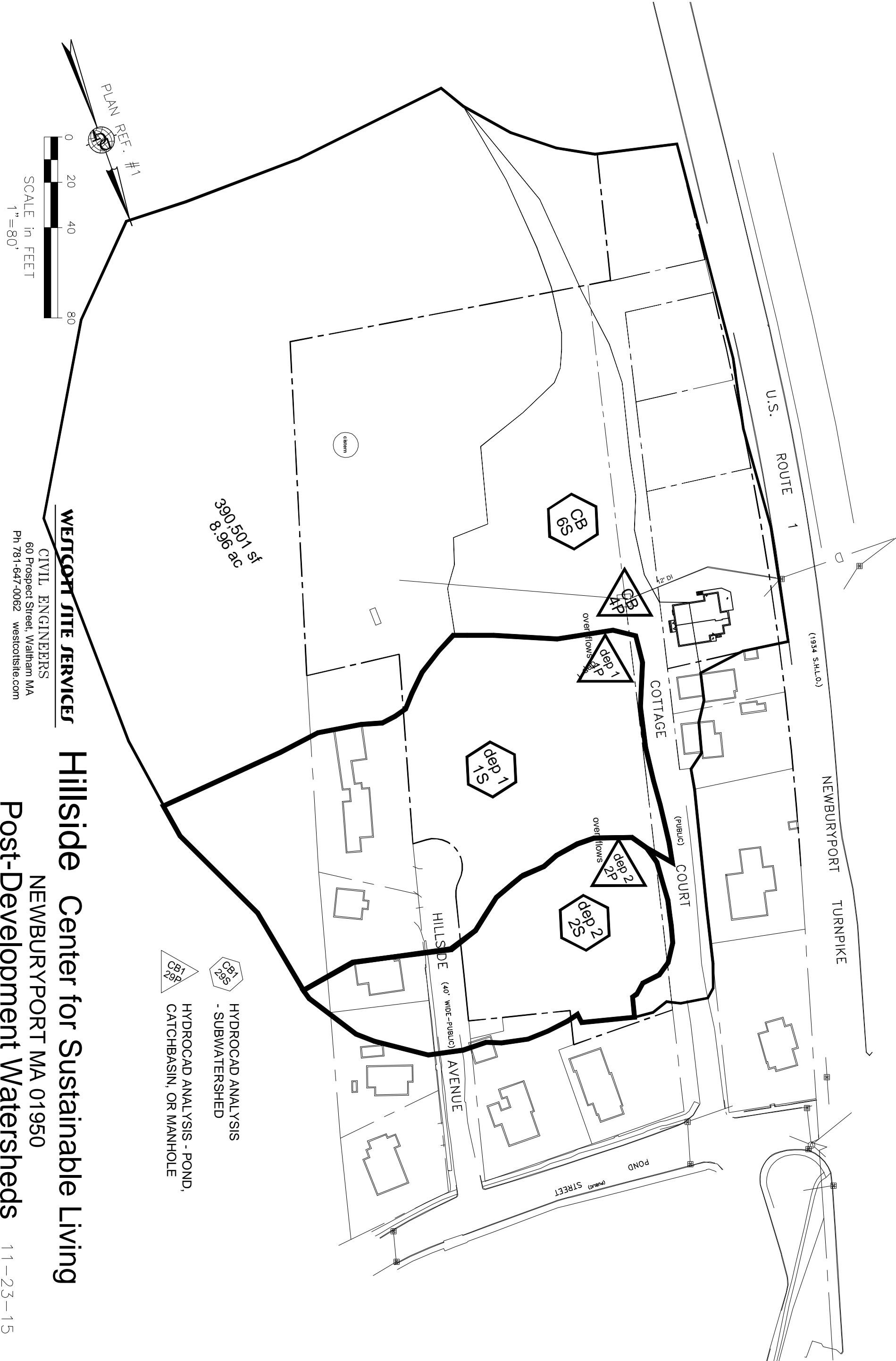


CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: <u>6733 - Cottage Court and Hillside Avenue</u> LOCATION: <u>Newburyport, Massachusetts</u> DRILLING CO: <u>NA</u> EQUIPMENT: <u>Mini-Excavator</u> DRILLED BY: <u>NA</u> INSPECTED BY: <u>Michael Philbin</u>				BORING ID: <u>TP-25</u> PAGE 1 OF <u>1</u> DATE STARTED: <u>4/13/2010</u> DATE FINISHED: <u>4/13/2010</u> SURFACE ELEVATION: <u>Not Determined</u>		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH: _____ STABILIZATION TIME: _____				TYPE: <u>Mini-Excavator</u> SIZE: <u>NA</u> PENETRATION: <u>NA</u>		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-3.5': Fill: Silty Gravelly Sand; fine to medium sand, 20-30% sub-angular gravel, 10% slightly plastic fines, brown. Brick fragments present. Coal fragments observed from 1.5' to 2.5' below grade.		NA	
3.0			3.5'-6.5': Native Materials: Glacial Till: Silty Sand; fine to medium sand, 10% slightly plastic fines, brown, dense			
			Bottom of test pit: 6.5'			
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						



CONECO ENGINEERS & SCIENTISTS				TEST PIT REPORT		
PROJECT: 6733 - Cottage Court and Hillside Avenue LOCATION: Newburyport, Massachusetts DRILLING CO: NA EQUIPMENT: Mini-Excavator DRILLED BY: NA INSPECTED BY: Michael Philbin				BORING ID: TP-26 PAGE 1 OF 1 DATE STARTED: 4/13/2010 DATE FINISHED: 4/13/2010 SURFACE ELEVATION: Not Determined		
<b>GROUNDWATER OBSERVATIONS</b>  NOT ENCOUNTERED: <u>X</u> DEPTH:                      STABILIZATION TIME:				TYPE: Mini-Excavator SIZE: NA PENETRATION: NA		
SAMPLE DATA						
DEPTH (ft)	SAMPLING DEPTH FROM - TO	WATER TABLE (ft)	LITHOLOGY (Description of materials)	SAMPLE ID	PEN/RECOV (in./in.)	FIELD SCREENING (ppm)
0.0			0-1': Fill: Silty Gravelly Sand; fine to medium sand, 20-30% sub-angular gravel, 10% slightly plastic fines, brown. Coal fragments observed from 8" to 1' below grade. 1'-2.5': Native Materials: Glacial Till: Silty Sand; fine to medium sand, 10% slightly plastic fines, brown, dense.  Bottom of test pit: 2.5'		NA	
5.0						
10.0						
15.0						
20.0						
<b>GENERAL REMARKS:</b> No soil samples collected. NA indicates Not Applicable, test pit completed with mini-excavator.						





390,501 sf  
8.96 ac

**WESTCOTT SITE SERVICES**

CIVIL ENGINEERS  
60 Prospect Street, Waltham MA  
Ph 781-647-0062 westcotsite.com

**Hillside** Center for Sustainable Living

NEWBURYPORT MA 01950

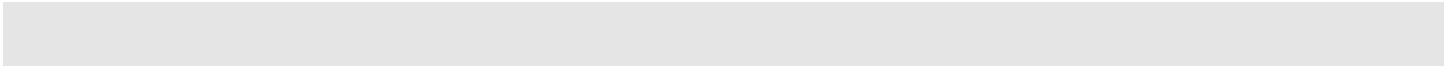
Post-Development Watersheds

11-23-15



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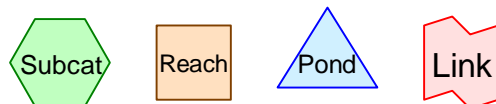
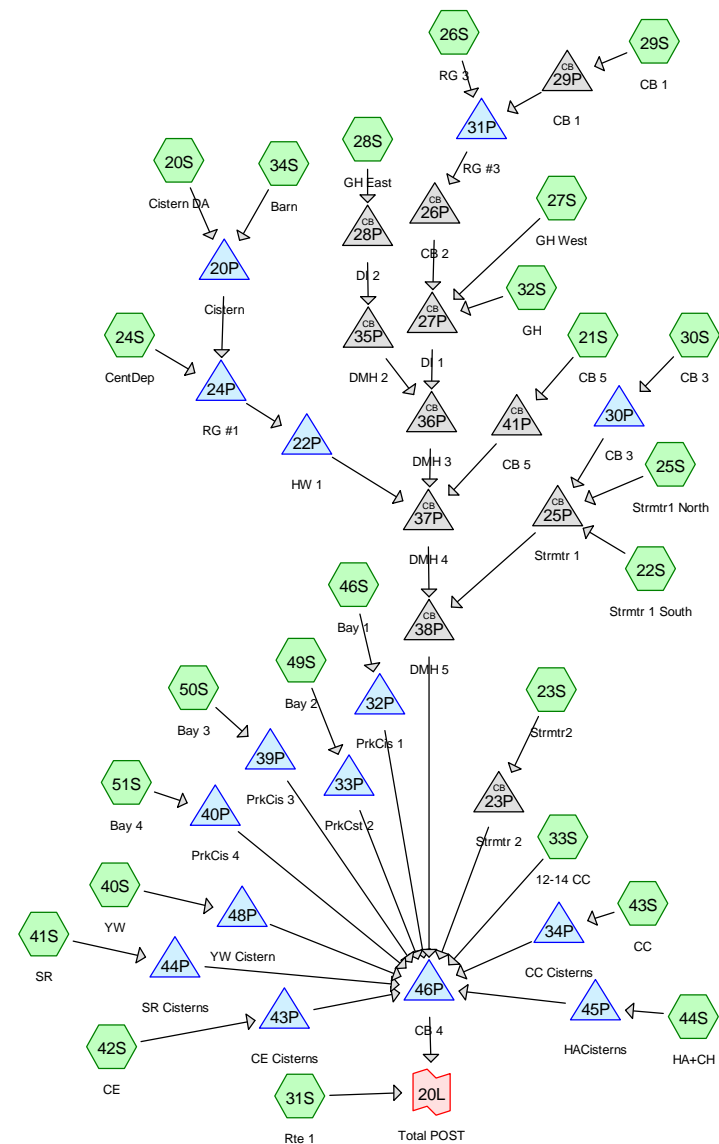
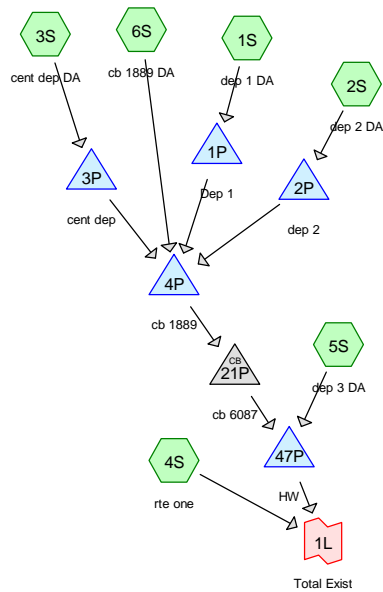
Hillside Center for Sustainable Living



*Standard 2*  
*Peak Rate Attenuation*

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**Routing Diagram for Hillside Center 12-28-15**  
 Prepared by WESTCOTT SITE SERVICES  
 HydroCAD® 10.00-15 s/n 06103 © 2015 HydroCAD Software Solutions LLC

**Summary for Subcatchment 1S: dep 1 DA**

Runoff = 2.11 cfs @ 12.53 hrs, Volume= 15,625 cf, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 8,110	98	roof & pvmnt
50,133	94	Fallow, bare soil, HSG D
16,361	84	50-75% Grass cover, Fair, HSG D
* 4,460	98	pre-exist warehouse, HSG D
79,064	93	Weighted Average
66,494		84.10% Pervious Area
12,570		15.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	96	0.2300	3.36		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	260	0.1400	6.02		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
39.3	406	Total			

**Summary for Subcatchment 2S: dep 2 DA**

Runoff = 0.89 cfs @ 12.24 hrs, Volume= 4,056 cf, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 4,525	98	roof & pvmnt
13,599	68	<50% Grass cover, Poor, HSG A
8,272	77	Fallow, bare soil, HSG A
2,342	91	Fallow, bare soil, HSG C
* 2,147	98	pre-exist house, HSG A
* 3,353	98	pre-exist warehouse, HSG C
34,238	81	Weighted Average
24,213		70.72% Pervious Area
10,025		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2200	3.28		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	216	0.1300	5.80		<b>Shallow Concentrated Flow, bare soil</b>
					Unpaved Kv= 16.1 fps
15.2	338	Total			

**Summary for Subcatchment 3S: cent dep DA**

Runoff = 0.02 cfs @ 23.96 hrs, Volume= 406 cf, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 2,218	98	barn
18,317	89	<50% Grass cover, Poor, HSG D
116,882	39	>75% Grass cover, Good, HSG A
48,880	36	Woods, Fair, HSG A
* 2,286	97	Dirt roads, HSG D
188,583	44	Weighted Average
186,365		98.82% Pervious Area
2,218		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
0.4	77	0.0400	3.22		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
25.7	252	Total			

**Summary for Subcatchment 4S: rte one**

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

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
4,389	39	>75% Grass cover, Good, HSG A
15,476	30	Woods, Good, HSG A
19,865	32	Weighted Average
19,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 5S: dep 3 DA**

Runoff = 0.74 cfs @ 12.14 hrs, Volume= 2,496 cf, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 1,388	98	roof & pvmnt
28,408	74	>75% Grass cover, Good, HSG C
1,781	36	Woods, Fair, HSG A
31,577	73	Weighted Average
30,189		95.60% Pervious Area
1,388		4.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.1600	2.00		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	43	0.1400	1.87		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
2.1	245	0.0800	1.98		<b>Shallow Concentrated Flow, grass</b> Short Grass Pasture Kv= 7.0 fps
3.3					<b>Direct Entry, 6 min minimum</b>
6.0	313	Total			

**Summary for Subcatchment 6S: cb 1889 DA**

Runoff = 2.37 cfs @ 12.13 hrs, Volume= 7,716 cf, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	8,445	98	roof & pvmnt
	14,077	86	<50% Grass cover, Poor, HSG C
	4,389	39	>75% Grass cover, Good, HSG A
	5,092	77	Woods, Poor, HSG C
*	3,284	97	Dirt roads, HSG D
	16,493	94	Fallow, bare soil, HSG D
	51,780	86	Weighted Average
	43,335		83.69% Pervious Area
	8,445		16.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	1.98		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.7	107	0.1200	2.42		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.6	107	0.3100	2.78		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.7	200	0.0950	4.96		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
3.8					<b>Direct Entry, add for 6 min. minimum</b>
6.0	439	Total			

**Summary for Subcatchment 20S: Cistern DA**

Runoff = 0.02 cfs @ 22.73 hrs, Volume= 526 cf, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	78,503	39	cemertery
	10,899	30	Woods, Good, HSG A
*	3,034	98	exist roofs
*	12,226	98	impervious HSG D
	25,167	39	>75% Grass cover, Good, HSG A
	2,182	80	>75% Grass cover, Good, HSG D
	132,011	46	Weighted Average
	116,751		88.44% Pervious Area
	15,260		11.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	100	0.2600	3.57		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
2.4	303	0.0900	2.10		<b>Shallow Concentrated Flow, lawn &amp; swale</b> Short Grass Pasture Kv= 7.0 fps
41.0	453	Total			

**Summary for Subcatchment 21S: CB 5**

Runoff = 0.00 cfs @ 13.04 hrs, Volume= 45 cf, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 70	98	impervious HSG A
60	74	>75% Grass cover, Good, HSG C
* 1,274	50	Planking D
* 2,486	50	Pervious D
3,890	51	Weighted Average
3,820		98.20% Pervious Area
70		1.80% Impervious Area

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

**Summary for Subcatchment 22S: Strmtr 1 South**

Runoff = 0.10 cfs @ 12.73 hrs, Volume= 1,320 cf, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 15,487	39	Cemetery
5,314	30	Woods, Good, HSG A
* 2,400	98	impervious HSG A
3,003	39	>75% Grass cover, Good, HSG A
3,519	74	>75% Grass cover, Good, HSG C
1,985	80	>75% Grass cover, Good, HSG D
* 8,451	98	impervious HSG C
* 1,736	98	impervious HSG D
41,895	60	Weighted Average
29,308		69.96% Pervious Area
12,587		30.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
1.2	138	0.0700	1.85		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.2	46	0.4800	3.46		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	76	0.2100	3.21		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
1.0	226	0.0360	3.85		<b>Shallow Concentrated Flow, pvd</b> Paved Kv= 20.3 fps
40.9	536	Total			



**Summary for Subcatchment 23S: Strmtr2**

Runoff = 0.04 cfs @ 12.70 hrs, Volume= 436 cf, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	2,231	39	Cemetery
	2,408	30	Woods, Good, HSG A
*	5,201	98	impervious HSG A
	2,847	39	>75% Grass cover, Good, HSG A
	12,687	61	Weighted Average
	7,486		59.01% Pervious Area
	5,201		40.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	78	0.1300	2.52		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.1	26	0.4600	3.39		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	59	0.4000	4.43		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0220	3.01		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
39.3	280	Total			

**Summary for Subcatchment 24S: CentDep**

Runoff = 0.11 cfs @ 12.61 hrs, Volume= 1,847 cf, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	40,139	39	Cemetery
	6,033	30	Woods, Good, HSG A
*	1,199	98	impervious HSG A
*	75	98	impervious HSG C
	5,671	39	>75% Grass cover, Good, HSG A
	21,301	80	>75% Grass cover, Good, HSG D
*	9,481	98	impervious HSG D
*	1,143	50	planking HSG D
*	691	50	planking HSG A
	85,733	56	Weighted Average
	74,978		87.46% Pervious Area
	10,755		12.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, woods</b> Short Grass Pasture Kv= 7.0 fps
0.4	62	0.1600	2.80		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.9	184	0.0270	3.34		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
26.6	421	Total			

**Summary for Subcatchment 25S: Strmtr1 North**

Runoff = 0.76 cfs @ 12.33 hrs, Volume= 4,328 cf, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 10,501	98	impervious HSG A
* 6,100	98	impervious HSG C
3,082	74	>75% Grass cover, Good, HSG C
3,022	80	>75% Grass cover, Good, HSG D
22,705	92	Weighted Average
6,104		26.88% Pervious Area
16,601		73.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6	26	0.0400	0.02		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
1.1	265	0.0400	4.06		<b>Shallow Concentrated Flow, paved</b>
					Paved Kv= 20.3 fps
23.7	291	Total			

**Summary for Subcatchment 26S: RG 3**

Runoff = 0.00 cfs @ 22.54 hrs, Volume= 55 cf, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 1,269	98	impervious HSG A
9,945	39	>75% Grass cover, Good, HSG A
* 1,830	50	planking HSG A
13,044	46	Weighted Average
11,775		90.27% Pervious Area
1,269		9.73% Impervious Area

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

**Summary for Subcatchment 27S: GH West**

Runoff = 0.14 cfs @ 12.13 hrs, Volume= 460 cf, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 390	98	impervious HSG D
3,304	80	>75% Grass cover, Good, HSG D
3,694	82	Weighted Average
3,304		89.44% Pervious Area
390		10.56% Impervious Area

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

**Summary for Subcatchment 28S: GH East**

Runoff = 0.04 cfs @ 12.14 hrs, Volume= 178 cf, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 1,129	98	impervious HSG D
* 2,880	50	planking HSG D
4,009	64	Weighted Average
2,880		71.84% Pervious Area
1,129		28.16% Impervious Area

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

**Summary for Subcatchment 29S: CB 1**

Runoff = 0.09 cfs @ 12.25 hrs, Volume= 507 cf, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 3,522	98	impervious HSG A
* 1,102	98	exist roof HSG A
* 261	39	cemetery HSG A
5,039	39	>75% Grass cover, Good, HSG A
9,924	66	Weighted Average
5,300		53.41% Pervious Area
4,624		46.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2000	3.13		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0500	4.54		<b>Shallow Concentrated Flow, pvd</b>
					Paved Kv= 20.3 fps
14.9	197	Total			

**Summary for Subcatchment 30S: CB 3**

Runoff = 0.18 cfs @ 12.13 hrs, Volume= 586 cf, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 3,592	98	impervious HSG A
1,574	39	>75% Grass cover, Good, HSG A
5,166	80	Weighted Average
1,574		30.47% Pervious Area
3,592		69.53% Impervious Area

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

**Summary for Subcatchment 31S: Rte 1**

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 4 cf, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 709	39	Cemetery HSG A
1,784	30	Woods, Good, HSG A
* 493	98	impervious HSG A
1,291	39	>75% Grass cover, Good, HSG A
4,277	42	Weighted Average
3,784		88.47% Pervious Area
493		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, wds</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 32S: GH**

Runoff = 0.29 cfs @ 12.13 hrs, Volume= 1,087 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 4,476	98	roof HSG D
4,476		100.00% Impervious Area

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

**Summary for Subcatchment 33S: 12-14 CC**

Runoff = 0.42 cfs @ 12.13 hrs, Volume= 1,352 cf, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 1,709	98	impervious HSG D
4,934	74	>75% Grass cover, Good, HSG C
5,279	80	>75% Grass cover, Good, HSG D
11,922	80	Weighted Average
10,213		85.67% Pervious Area
1,709		14.33% Impervious Area

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

**Summary for Subcatchment 34S: Barn**

Runoff = 0.16 cfs @ 12.13 hrs, Volume= 589 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 2,426	98	roof HSG D
2,426		100.00% Impervious Area

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

**Summary for Subcatchment 40S: YW**

Runoff = 0.14 cfs @ 12.13 hrs, Volume= 519 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 2,136	98	roof, HSG A
2,136		100.00% Impervious Area

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

**Summary for Subcatchment 41S: SR**

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 1,899 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 7,823	98	roof HSG A
7,823		100.00% Impervious Area

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

**Summary for Subcatchment 42S: CE**

Runoff = 0.39 cfs @ 12.13 hrs, Volume= 1,438 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 2,744	98	roof HSG C
* 3,179	98	roof HSG D
5,923	98	Weighted Average
5,923		100.00% Impervious Area

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

**Summary for Subcatchment 43S: CC**

Runoff = 0.58 cfs @ 12.13 hrs, Volume= 2,177 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	4,684	98	roof HSG C
*	4,280	98	roof HSG D
	8,964	98	Weighted Average
	8,964		100.00% Impervious Area

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

**Summary for Subcatchment 44S: HA+CH**

Runoff = 0.66 cfs @ 12.13 hrs, Volume= 2,457 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	1,803	98	roof HSG A
*	8,315	98	roof HSG D
	10,118	98	Weighted Average
	10,118		100.00% Impervious Area

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

**Summary for Subcatchment 46S: Bay 1**

Runoff = 0.08 cfs @ 12.13 hrs, Volume= 289 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
	1,192		100.00% Impervious Area

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

**Summary for Subcatchment 49S: Bay 2**

Runoff = 0.19 cfs @ 12.13 hrs, Volume= 693 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
*	1,664	98	pavement HSG C
	2,856	98	Weighted Average
	2,856		100.00% Impervious Area

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

**Summary for Subcatchment 50S: Bay 3**

Runoff = 0.27 cfs @ 12.13 hrs, Volume= 1,009 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 2,545	98	porous pavement HSG C
* 1,612	98	pavement HSG C
4,157	98	Weighted Average
4,157		100.00% Impervious Area

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

**Summary for Subcatchment 51S: Bay 4**

Runoff = 0.27 cfs @ 12.13 hrs, Volume= 990 cf, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 2-Year Rainfall=3.15"

Area (sf)	CN	Description
* 1,530	98	porous pavement HSG C
* 2,549	98	pavement HSG C
4,079	98	Weighted Average
4,079		100.00% Impervious Area

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

**Summary for Pond 1P: Dep 1**

Inflow Area = 79,064 sf, 15.90% Impervious, Inflow Depth > 2.37" for 2-Year event  
Inflow = 2.11 cfs @ 12.53 hrs, Volume= 15,625 cf  
Outflow = 1.59 cfs @ 12.78 hrs, Volume= 15,624 cf, Atten= 24%, Lag= 15.2 min  
Primary = 1.59 cfs @ 12.78 hrs, Volume= 15,624 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
Peak Elev= 30.04' @ 12.78 hrs Surf.Area= 4,094 sf Storage= 2,455 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
Center-of-Mass det. time= 17.9 min ( 848.4 - 830.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	18,511 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	163	0	0
29.00	253	208	208
30.00	3,899	2,076	2,284
31.00	8,477	6,188	8,472
32.00	11,600	10,039	18,511

Device	Routing	Invert	Outlet Devices
#1	Primary	30.00'	<b>39.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	26.50'	<b>2.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.50' / 25.40' S= 0.0268 ' S= 0.0268 ' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf
#3	Primary	27.70'	<b>4.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 27.70' / 25.40' S= 0.0561 ' S= 0.0561 ' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=1.59 cfs @ 12.78 hrs HW=30.04' TW=25.72' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 0.86 cfs @ 0.51 fps)

↑ **2=Culvert** (Outlet Controls 0.12 cfs @ 5.33 fps)

↑ **3=Culvert** (Inlet Controls 0.62 cfs @ 7.10 fps)

### Summary for Pond 2P: dep 2

Inflow Area = 34,238 sf, 29.28% Impervious, Inflow Depth > 1.42" for 2-Year event  
 Inflow = 0.89 cfs @ 12.24 hrs, Volume= 4,056 cf  
 Outflow = 0.27 cfs @ 12.66 hrs, Volume= 2,299 cf, Atten= 70%, Lag= 25.4 min  
 Primary = 0.27 cfs @ 12.66 hrs, Volume= 2,299 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.51' @ 12.66 hrs Surf.Area= 2,171 sf Storage= 1,775 cf

Plug-Flow detention time= 258.4 min calculated for 2,298 cf (57% of inflow)

Center-of-Mass det. time= 118.5 min ( 991.2 - 872.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	3,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	576	0	0
35.00	1,235	906	906
36.00	3,069	2,152	3,058

Device	Routing	Invert	Outlet Devices
#1	Primary	35.50'	<b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.27 cfs @ 12.66 hrs HW=35.51' TW=25.51' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 0.27 cfs @ 0.25 fps)

### Summary for Pond 3P: cent dep

Inflow Area = 188,583 sf, 1.18% Impervious, Inflow Depth > 0.03" for 2-Year event  
 Inflow = 0.02 cfs @ 23.96 hrs, Volume= 406 cf  
 Outflow = 0.02 cfs @ 23.97 hrs, Volume= 403 cf, Atten= 0%, Lag= 0.9 min  
 Primary = 0.02 cfs @ 23.97 hrs, Volume= 403 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 31.90' @ 23.97 hrs Surf.Area= 70 sf Storage= 4 cf

Plug-Flow detention time= 3.9 min calculated for 403 cf (99% of inflow)

Center-of-Mass det. time= 1.9 min ( 1,224.4 - 1,222.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.83'	28,303 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)



**Hillside Center 12-28-15**

NRCC 24-hr D 2-Year Rainfall=3.15"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.83	40	0	0
33.00	566	355	355
34.00	2,635	1,601	1,955
35.00	6,530	4,583	6,538
36.00	37,000	21,765	28,303

Device	Routing	Invert	Outlet Devices
#1	Primary	35.30'	<b>45.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.83'	<b>12.0" Round Culvert</b> L= 201.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 31.83' / 25.00' S= 0.0340 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.02 cfs @ 23.97 hrs HW=31.90' TW=25.10' (Dynamic Tailwater)↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)↑ **2=Culvert** (Inlet Controls 0.02 cfs @ 0.77 fps)**Summary for Pond 4P: cb 1889**

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 0.88" for 2-Year event  
 Inflow = 2.93 cfs @ 12.13 hrs, Volume= 26,042 cf  
 Outflow = 2.91 cfs @ 12.14 hrs, Volume= 26,039 cf, Atten= 1%, Lag= 0.4 min  
 Primary = 2.91 cfs @ 12.14 hrs, Volume= 26,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 25.99' @ 12.14 hrs Surf.Area= 72 sf Storage= 51 cf

Plug-Flow detention time= 0.3 min calculated for 26,039 cf (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 865.8 - 865.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	42,875 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	30	0	0
28.00	157	281	281
29.00	623	390	671
30.00	5,783	3,203	3,874
32.00	33,218	39,001	42,875

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 24.90' / 23.60' S= 0.0236 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.91 cfs @ 12.14 hrs HW=25.99' TW=25.03' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 2.91 cfs @ 3.70 fps)**Summary for Pond 20P: Cistern**

Inflow Area = 134,437 sf, 13.16% Impervious, Inflow Depth > 0.10" for 2-Year event  
 Inflow = 0.16 cfs @ 12.13 hrs, Volume= 1,115 cf  
 Outflow = 0.03 cfs @ 16.97 hrs, Volume= 495 cf, Atten= 84%, Lag= 290.6 min  
 Primary = 0.03 cfs @ 16.97 hrs, Volume= 495 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.90' @ 16.97 hrs Surf.Area= 79 sf Storage= 621 cf

Plug-Flow detention time= 553.0 min calculated for 494 cf (44% of inflow)  
 Center-of-Mass det. time= 275.7 min ( 1,230.2 - 954.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	628 cf	<b>10.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	39.90'	<b>1.0" x 6.5" Horiz. Orifice/Grate X 11.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#2	Primary	39.95'	<b>100.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.02 cfs @ 16.97 hrs HW=39.90' TW=35.08' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.18 fps)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 21P: cb 6087

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 0.88" for 2-Year event  
 Inflow = 2.91 cfs @ 12.14 hrs, Volume= 26,039 cf  
 Outflow = 2.91 cfs @ 12.14 hrs, Volume= 26,039 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.91 cfs @ 12.14 hrs, Volume= 26,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.05' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	23.60'	<b>12.0" Round Culvert</b> L= 52.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.60' / 23.00' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.91 cfs @ 12.14 hrs HW=25.03' TW=24.37' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 2.91 cfs @ 3.70 fps)

### Summary for Pond 22P: HW 1

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 0.13" for 2-Year event  
 Inflow = 0.11 cfs @ 12.62 hrs, Volume= 2,319 cf  
 Outflow = 0.07 cfs @ 13.72 hrs, Volume= 1,973 cf, Atten= 39%, Lag= 66.0 min  
 Primary = 0.07 cfs @ 13.72 hrs, Volume= 1,973 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 32.65' @ 13.72 hrs Surf.Area= 495 sf Storage= 359 cf

Flood Elev= 34.50' Surf.Area= 2,516 sf Storage= 2,477 cf

Plug-Flow detention time= 107.7 min calculated for 1,973 cf (85% of inflow)

Center-of-Mass det. time= 51.7 min ( 1,112.3 - 1,060.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	8,939 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	131	0	0
33.00	607	554	554
34.00	1,321	964	1,518
36.00	6,100	7,421	8,939

Device	Routing	Invert	Outlet Devices
#1	Primary	31.58'	<b>12.0" Round Culvert</b> L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 31.58' / 25.32' S= 0.1841 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	32.50'	<b>7.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.07 cfs @ 13.72 hrs HW=32.65' TW=25.05' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.07 cfs of 3.88 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.30 fps)

**Summary for Pond 23P: Strmtr 2**

Inflow Area = 12,687 sf, 40.99% Impervious, Inflow Depth > 0.41" for 2-Year event  
 Inflow = 0.04 cfs @ 12.70 hrs, Volume= 436 cf  
 Outflow = 0.04 cfs @ 12.70 hrs, Volume= 436 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.04 cfs @ 12.70 hrs, Volume= 436 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.24' @ 12.70 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.16'	<b>12.0" Round Culvert</b> L= 222.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 38.16' / 24.80' S= 0.0602 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.04 cfs @ 12.70 hrs HW=38.24' TW=21.93' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.04 cfs @ 1.22 fps)

**Summary for Pond 24P: RG #1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 0.13" for 2-Year event  
 Inflow = 0.11 cfs @ 12.61 hrs, Volume= 2,341 cf  
 Outflow = 0.11 cfs @ 12.62 hrs, Volume= 2,319 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 0.11 cfs @ 12.62 hrs, Volume= 2,319 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.09' @ 12.62 hrs Surf.Area= 396 sf Storage= 24 cf

Flood Elev= 36.50' Surf.Area= 10 sf Storage= 336 cf

Plug-Flow detention time= 6.9 min calculated for 2,318 cf (99% of inflow)

Center-of-Mass det. time= 3.2 min ( 1,060.6 - 1,057.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	131	0	0
35.08	394	21	21
35.50	500	188	209
36.00	10	128	336

Device	Routing	Invert	Outlet Devices
#1	Primary	35.08'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.11 cfs @ 12.62 hrs HW=35.09' TW=31.95' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.23 fps)

**Summary for Pond 25P: Strmtr 1**

Inflow Area = 69,766 sf, 46.99% Impervious, Inflow Depth > 0.97" for 2-Year event  
 Inflow = 0.80 cfs @ 12.35 hrs, Volume= 5,649 cf  
 Outflow = 0.80 cfs @ 12.35 hrs, Volume= 5,649 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.80 cfs @ 12.35 hrs, Volume= 5,649 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.18' @ 12.35 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.78'	<b>12.0" Round Culvert</b> L= 51.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.78' / 24.81' S= 0.0386 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.80 cfs @ 12.35 hrs HW=27.18' TW=24.46' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.80 cfs @ 2.70 fps)

### Summary for Pond 26P: CB 2

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 0.28" for 2-Year event  
 Inflow = 0.09 cfs @ 12.26 hrs, Volume= 541 cf  
 Outflow = 0.09 cfs @ 12.26 hrs, Volume= 541 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.09 cfs @ 12.26 hrs, Volume= 541 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 36.36' @ 12.26 hrs  
 Flood Elev= 40.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.22'	<b>10.0" Round Culvert</b> L= 150.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 36.22' / 27.72' S= 0.0567 ' / ' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.09 cfs @ 12.26 hrs HW=36.36' TW=27.96' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.09 cfs @ 1.57 fps)

### Summary for Pond 27P: DI 1

Inflow Area = 31,138 sf, 34.55% Impervious, Inflow Depth > 0.80" for 2-Year event  
 Inflow = 0.47 cfs @ 12.15 hrs, Volume= 2,088 cf  
 Outflow = 0.47 cfs @ 12.15 hrs, Volume= 2,088 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.47 cfs @ 12.15 hrs, Volume= 2,088 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 28.04' @ 12.15 hrs  
 Flood Elev= 33.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.72'	<b>10.0" Round Culvert</b> L= 70.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 27.72' / 26.36' S= 0.0194 ' / ' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.47 cfs @ 12.15 hrs HW=28.04' TW=26.68' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.47 cfs @ 2.41 fps)

### Summary for Pond 28P: DI 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 0.53" for 2-Year event  
 Inflow = 0.04 cfs @ 12.14 hrs, Volume= 178 cf  
 Outflow = 0.04 cfs @ 12.14 hrs, Volume= 178 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.04 cfs @ 12.14 hrs, Volume= 178 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.93' @ 12.14 hrs  
 Flood Elev= 35.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.84'	<b>10.0" Round Culvert</b> L= 66.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.84' / 33.00' S= 0.0127 ' / ' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.04 cfs @ 12.14 hrs HW=33.93' TW=33.09' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.04 cfs @ 1.30 fps)

### Summary for Pond 29P: CB 1

Inflow Area = 9,924 sf, 46.59% Impervious, Inflow Depth > 0.61" for 2-Year event  
 Inflow = 0.09 cfs @ 12.25 hrs, Volume= 507 cf  
 Outflow = 0.09 cfs @ 12.25 hrs, Volume= 507 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.09 cfs @ 12.25 hrs, Volume= 507 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.89' @ 12.25 hrs

Flood Elev= 57.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	<b>10.0" Round Culvert</b> L= 46.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 53.75' / 42.60' S= 0.2424 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.09 cfs @ 12.25 hrs HW=53.89' TW=39.81' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.09 cfs @ 1.57 fps)

### Summary for Pond 30P: CB 3

Inflow Area = 5,166 sf, 69.53% Impervious, Inflow Depth > 1.36" for 2-Year event  
 Inflow = 0.18 cfs @ 12.13 hrs, Volume= 586 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 37.14' @ 24.00 hrs Surf.Area= 802 sf Storage= 586 cf

Flood Elev= 43.50' Surf.Area= 802 sf Storage= 1,789 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	36.00'	701 cf	<b>20.83"W x 38.50"L x 3.54'H Field A</b> 2,841 cf Overall - 1,088 cf Embedded = 1,753 cf x 40.0% Voids
#2A	36.50'	1,088 cf	<b>Cultec R-330XLHD</b> x 20 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		1,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.04'	<b>8.0" Round Culvert</b> L= 268.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 39.04' / 26.50' S= 0.0468 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Device 1	43.04'	<b>2.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=26.78' (Dynamic Tailwater)

↑**1=Culvert** ( Controls 0.00 cfs)

↑**2=Orifice/Grate** ( Controls 0.00 cfs)

### Summary for Pond 31P: RG #3

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 0.29" for 2-Year event  
 Inflow = 0.09 cfs @ 12.25 hrs, Volume= 562 cf  
 Outflow = 0.09 cfs @ 12.26 hrs, Volume= 541 cf, Atten= 0%, Lag= 0.3 min  
 Primary = 0.09 cfs @ 12.26 hrs, Volume= 541 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.81' @ 12.26 hrs Surf.Area= 395 sf Storage= 24 cf

Flood Elev= 43.50' Surf.Area= 500 sf Storage= 244 cf

Plug-Flow detention time= 27.7 min calculated for 540 cf (96% of inflow)

Center-of-Mass det. time= 9.6 min ( 967.8 - 958.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	39.72'	244 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.72	131	0	0
39.80	394	21	21
40.30	500	224	244

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.09 cfs @ 12.26 hrs HW=39.81' TW=36.36' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.22 fps)

### Summary for Pond 32P: PrkCis 1

Inflow Area = 1,192 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.08 cfs @ 12.13 hrs, Volume= 289 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 38.86' @ 24.00 hrs Surf.Area= 863 sf Storage= 289 cf  
 Flood Elev= 42.00' Surf.Area= 863 sf Storage= 1,733 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	38.20'	689 cf	<b>19.17'W x 45.00'L x 3.21'H Field A</b> 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	38.70'	1,044 cf	<b>Cultec R-280HD</b> x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
1,733 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.20'	<b>4.0" Round Culvert</b> L= 100.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 39.20' / 30.00' S= 0.0920 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=38.20' TW=21.50' (Dynamic Tailwater)

↑**1=Culvert** ( Controls 0.00 cfs)

### Summary for Pond 33P: PrkCst 2

Inflow Area = 2,856 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.19 cfs @ 12.13 hrs, Volume= 693 cf  
 Outflow = 0.01 cfs @ 14.39 hrs, Volume= 213 cf, Atten= 95%, Lag= 135.9 min  
 Primary = 0.01 cfs @ 14.39 hrs, Volume= 213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 37.48' @ 14.39 hrs Surf.Area= 728 sf Storage= 501 cf  
 Flood Elev= 41.00' Surf.Area= 728 sf Storage= 1,459 cf

Plug-Flow detention time= 526.3 min calculated for 213 cf (31% of inflow)  
 Center-of-Mass det. time= 293.0 min ( 1,052.9 - 759.9 )



Volume	Invert	Avail.Storage	Storage Description
#1A	36.40'	585 cf	<b>19.17'W x 38.00'L x 3.21'H Field A</b> 2,337 cf Overall - 874 cf Embedded = 1,462 cf x 40.0% Voids
#2A	36.90'	874 cf	<b>Cultec R-280HD</b> x 20 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,459 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>2.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 34.66' S= 0.0548 '/' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf

**Primary OutFlow** Max=0.01 cfs @ 14.39 hrs HW=37.48' TW=21.77' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.01 cfs @ 0.85 fps)

### Summary for Pond 34P: CC Cisterns

Inflow Area = 8,964 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.58 cfs @ 12.13 hrs, Volume= 2,177 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 305 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 305 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 42.87' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 1,871 cf

Plug-Flow detention time= 660.4 min calculated for 305 cf (14% of inflow)  
 Center-of-Mass det. time= 283.2 min ( 1,043.1 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.50'	5,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	227	0	0
45.50	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	41.50'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=42.87' TW=21.69' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 5.17 fps)

### Summary for Pond 35P: DMH 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 0.53" for 2-Year event  
 Inflow = 0.04 cfs @ 12.14 hrs, Volume= 178 cf  
 Outflow = 0.04 cfs @ 12.14 hrs, Volume= 178 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.04 cfs @ 12.14 hrs, Volume= 178 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.09' @ 12.14 hrs  
 Flood Elev= 35.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>12.0" Round Culvert</b> L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.00' / 24.90' S= 0.3115 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.04 cfs @ 12.14 hrs HW=33.09' TW=26.67' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.04 cfs @ 1.27 fps)

**Summary for Pond 36P: DMH 3**

Inflow Area = 35,147 sf, 33.82% Impervious, Inflow Depth > 0.77" for 2-Year event  
 Inflow = 0.51 cfs @ 12.15 hrs, Volume= 2,266 cf  
 Outflow = 0.51 cfs @ 12.15 hrs, Volume= 2,266 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.51 cfs @ 12.15 hrs, Volume= 2,266 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 26.68' @ 12.15 hrs

Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.36'	<b>12.0" Round Culvert</b> L= 73.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.36' / 24.90' S= 0.0200 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.51 cfs @ 12.15 hrs HW=26.68' TW=25.22' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.51 cfs @ 2.39 fps)

**Summary for Pond 37P: DMH 4**

Inflow Area = 259,207 sf, 15.59% Impervious, Inflow Depth > 0.20" for 2-Year event  
 Inflow = 0.51 cfs @ 12.15 hrs, Volume= 4,284 cf  
 Outflow = 0.51 cfs @ 12.15 hrs, Volume= 4,284 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.51 cfs @ 12.15 hrs, Volume= 4,284 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.22' @ 12.15 hrs

Flood Elev= 34.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 37.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.90' / 24.00' S= 0.0243 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.51 cfs @ 12.15 hrs HW=25.22' TW=24.45' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.51 cfs @ 2.39 fps)

**Summary for Pond 38P: DMH 5**

Inflow Area = 328,973 sf, 22.24% Impervious, Inflow Depth > 0.36" for 2-Year event  
 Inflow = 1.02 cfs @ 12.30 hrs, Volume= 9,932 cf  
 Outflow = 1.02 cfs @ 12.30 hrs, Volume= 9,932 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.02 cfs @ 12.30 hrs, Volume= 9,932 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 24.46' @ 12.30 hrs

Flood Elev= 33.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.00'	<b>12.0" Round Culvert</b> L= 59.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.00' / 23.00' S= 0.0169 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.02 cfs @ 12.30 hrs HW=24.46' TW=22.08' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.02 cfs @ 2.89 fps)

**Summary for Pond 39P: PrkCis 3**

Inflow Area = 4,157 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.27 cfs @ 12.13 hrs, Volume= 1,009 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.74' @ 24.00 hrs Surf.Area= 1,226 sf Storage= 1,009 cf

Flood Elev= 39.00' Surf.Area= 1,226 sf Storage= 2,485 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	34.50'	967 cf	<b>23.58'W x 52.00'L x 3.21'H Field A</b> 3,934 cf Overall - 1,518 cf Embedded = 2,417 cf x 40.0% Voids
#2A	35.00'	1,518 cf	<b>Cultec R-280HD x 35 Inside #1</b> Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 5 rows
		2,485 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>6.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 32.46' S= 0.0988 ' / Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Primary	37.80'	<b>80.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=34.50' TW=21.50' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 40P: PrkCis 4

Inflow Area = 4,079 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.27 cfs @ 12.13 hrs, Volume= 990 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 32.03' @ 24.00 hrs Surf.Area= 1,094 sf Storage= 990 cf  
 Flood Elev= 40.00' Surf.Area= 1,094 sf Storage= 2,453 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	30.67'	947 cf	<b>20.83'W x 52.50'L x 3.54'H Field A</b> 3,874 cf Overall - 1,505 cf Embedded = 2,369 cf x 40.0% Voids
#2A	31.17'	1,505 cf	<b>Cultec R-330XLHD x 28 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		2,453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	<b>4.0" Round Culvert</b> L= 60.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 32.75' / 32.26' S= 0.0082 ' / Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=30.67' TW=21.50' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

### Summary for Pond 41P: CB 5

Inflow Area = 3,890 sf, 1.80% Impervious, Inflow Depth > 0.14" for 2-Year event  
 Inflow = 0.00 cfs @ 13.04 hrs, Volume= 45 cf  
 Outflow = 0.00 cfs @ 13.04 hrs, Volume= 45 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 13.04 hrs, Volume= 45 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.96' @ 13.04 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.94'	<b>10.0" Round Culvert</b> L= 38.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 28.94' / 25.90' S= 0.0800 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.00 cfs @ 13.04 hrs HW=28.96' TW=25.02' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.00 cfs @ 0.56 fps)**Summary for Pond 43P: CE Cisterns**

Inflow Area = 5,923 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.39 cfs @ 12.13 hrs, Volume= 1,438 cf  
 Outflow = 0.00 cfs @ 24.00 hrs, Volume= 216 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.00 cfs @ 24.00 hrs, Volume= 216 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 44.35' @ 24.00 hrs Surf.Area= 908 sf Storage= 1,222 cf

Plug-Flow detention time= 631.8 min calculated for 216 cf (15% of inflow)

Center-of-Mass det. time= 266.9 min ( 1,026.7 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	3,632 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 4

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	227	0	0
47.00	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>0.2" Vert. Orifice/Grate</b> X 4 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.00 cfs @ 24.00 hrs HW=44.35' TW=21.69' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.00 cfs @ 5.30 fps)**Summary for Pond 44P: SR Cisterns**

Inflow Area = 7,823 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.51 cfs @ 12.13 hrs, Volume= 1,899 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 271 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 271 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 47.43' @ 24.00 hrs Surf.Area= 1,135 sf Storage= 1,629 cf

Plug-Flow detention time= 649.0 min calculated for 271 cf (14% of inflow)

Center-of-Mass det. time= 274.6 min ( 1,034.5 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	5,675 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	227	0	0
51.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>0.2" Vert. Orifice/Grate</b> X 5 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=47.43' TW=21.69' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 5.40 fps)

**Summary for Pond 45P: HACisterns**

Inflow Area = 10,118 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.66 cfs @ 12.13 hrs, Volume= 2,457 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 331 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 331 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 45.56' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 2,125 cf

Plug-Flow detention time= 663.9 min calculated for 331 cf (13% of inflow)  
 Center-of-Mass det. time= 279.9 min ( 1,039.7 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	6,810 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	227	0	0
49.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=45.56' TW=21.69' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 5.57 fps)

**Summary for Pond 46P: CB 4**

Inflow Area = 400,830 sf, 31.77% Impervious, Inflow Depth > 0.40" for 2-Year event  
 Inflow = 1.41 cfs @ 12.15 hrs, Volume= 13,344 cf  
 Outflow = 1.22 cfs @ 12.27 hrs, Volume= 13,246 cf, Atten= 14%, Lag= 6.9 min  
 Primary = 1.22 cfs @ 12.27 hrs, Volume= 13,246 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 22.08' @ 12.27 hrs Surf.Area= 1,297 sf Storage= 348 cf

Plug-Flow detention time= 8.8 min calculated for 13,241 cf (99% of inflow)  
 Center-of-Mass det. time= 5.1 min ( 927.2 - 922.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	27.80'	23,576 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2A	21.50'	259 cf	<b>21.79'W x 59.50'L x 6.00'H Field A</b>
			7,780 cf Overall - 7,131 cf Embedded = 648 cf x 40.0% Voids
#3A	22.00'	5,694 cf	<b>StormTrap SingleTrap 5-0</b> x 3 Inside #2
			Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
			Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf
			8.48' x 46.19' Core + 6.66' Border = 21.79' x 59.50' System
		29,529 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.80	4	0	0
28.00	1,704	171	171
30.00	4,071	5,775	5,946
32.00	13,559	17,630	23,576

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 21.50' / 19.40' S= 0.0149 ' S= 0.0149 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.22 cfs @ 12.27 hrs HW=22.08' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 1.22 cfs @ 2.59 fps)

**Summary for Pond 47P: HW**

Inflow Area = 385,242 sf, 8.99% Impervious, Inflow Depth > 0.89" for 2-Year event  
 Inflow = 3.65 cfs @ 12.14 hrs, Volume= 28,535 cf  
 Outflow = 3.57 cfs @ 12.15 hrs, Volume= 28,531 cf, Atten= 2%, Lag= 0.9 min  
 Primary = 3.57 cfs @ 12.15 hrs, Volume= 28,531 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 24.39' @ 12.15 hrs Surf.Area= 140 sf Storage= 104 cf

Plug-Flow detention time= 0.3 min calculated for 28,531 cf (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 868.9 - 868.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	75,612 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	10	0	0
26.00	290	450	450
28.00	2,812	3,102	3,552
32.00	33,218	72,060	75,612

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 19.40' S= 0.0255 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.56 cfs @ 12.15 hrs HW=24.39' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 3.56 cfs @ 4.54 fps)

**Summary for Pond 48P: YW Cistern**

Inflow Area = 2,136 sf, 100.00% Impervious, Inflow Depth > 2.91" for 2-Year event  
 Inflow = 0.14 cfs @ 12.13 hrs, Volume= 519 cf  
 Outflow = 0.01 cfs @ 14.87 hrs, Volume= 287 cf, Atten= 96%, Lag= 164.5 min  
 Primary = 0.01 cfs @ 14.87 hrs, Volume= 287 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 53.77' @ 14.87 hrs Surf.Area= 392 sf Storage= 303 cf

Plug-Flow detention time= 361.1 min calculated for 287 cf (55% of inflow)  
 Center-of-Mass det. time= 214.4 min ( 974.3 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	1,176 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	392	0	0
56.00	392	1,176	1,176

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	<b>0.5" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 14.87 hrs HW=53.77' TW=21.75' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 4.18 fps)

**Summary for Link 1L: Total Exist**

Inflow Area = 405,107 sf, 8.55% Impervious, Inflow Depth > 0.85" for 2-Year event  
 Inflow = 3.57 cfs @ 12.15 hrs, Volume= 28,531 cf  
 Primary = 3.57 cfs @ 12.15 hrs, Volume= 28,531 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



**Summary for Link 20L: Total POST**

Inflow Area = 405,107 sf, 31.55% Impervious, Inflow Depth > 0.39" for 2-Year event  
Inflow = 1.22 cfs @ 12.27 hrs, Volume= 13,250 cf  
Primary = 1.22 cfs @ 12.27 hrs, Volume= 13,250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Subcatchment 1S: dep 1 DA**

Runoff = 3.45 cfs @ 12.53 hrs, Volume= 26,287 cf, Depth> 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 8,110	98	roof & pvmnt
50,133	94	Fallow, bare soil, HSG D
16,361	84	50-75% Grass cover, Fair, HSG D
* 4,460	98	pre-exist warehouse, HSG D
79,064	93	Weighted Average
66,494		84.10% Pervious Area
12,570		15.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	96	0.2300	3.36		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	260	0.1400	6.02		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
39.3	406	Total			

**Summary for Subcatchment 2S: dep 2 DA**

Runoff = 1.78 cfs @ 12.23 hrs, Volume= 8,051 cf, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 4,525	98	roof & pvmnt
13,599	68	<50% Grass cover, Poor, HSG A
8,272	77	Fallow, bare soil, HSG A
2,342	91	Fallow, bare soil, HSG C
* 2,147	98	pre-exist house, HSG A
* 3,353	98	pre-exist warehouse, HSG C
34,238	81	Weighted Average
24,213		70.72% Pervious Area
10,025		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2200	3.28		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	216	0.1300	5.80		<b>Shallow Concentrated Flow, bare soil</b>
					Unpaved Kv= 16.1 fps
15.2	338	Total			

**Summary for Subcatchment 3S: cent dep DA**

Runoff = 0.27 cfs @ 12.71 hrs, Volume= 5,344 cf, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

**Hillside Center 12-28-15**

NRCC 24-hr D 10-Year Rainfall=4.83"

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Area (sf)	CN	Description
* 2,218	98	barn
18,317	89	<50% Grass cover, Poor, HSG D
116,882	39	>75% Grass cover, Good, HSG A
48,880	36	Woods, Fair, HSG A
* 2,286	97	Dirt roads, HSG D
188,583	44	Weighted Average
186,365		98.82% Pervious Area
2,218		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.4	77	0.0400	3.22		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
25.7	252	Total			

**Summary for Subcatchment 4S: rte one**

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 24 cf, Depth&gt; 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
4,389	39	>75% Grass cover, Good, HSG A
15,476	30	Woods, Good, HSG A
19,865	32	Weighted Average
19,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 5S: dep 3 DA**

Runoff = 1.74 cfs @ 12.13 hrs, Volume= 5,640 cf, Depth&gt; 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 1,388	98	roof & pvmnt
28,408	74	>75% Grass cover, Good, HSG C
1,781	36	Woods, Fair, HSG A
31,577	73	Weighted Average
30,189		95.60% Pervious Area
1,388		4.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.1600	2.00		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	43	0.1400	1.87		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
2.1	245	0.0800	1.98		<b>Shallow Concentrated Flow, grass</b> Short Grass Pasture Kv= 7.0 fps
3.3					<b>Direct Entry, 6 min minimum</b>
6.0	313	Total			

**Summary for Subcatchment 6S: cb 1889 DA**

Runoff = 4.28 cfs @ 12.13 hrs, Volume= 14,252 cf, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 8,445	98	roof & pvmnt
14,077	86	<50% Grass cover, Poor, HSG C
4,389	39	>75% Grass cover, Good, HSG A
5,092	77	Woods, Poor, HSG C
* 3,284	97	Dirt roads, HSG D
16,493	94	Fallow, bare soil, HSG D
51,780	86	Weighted Average
43,335		83.69% Pervious Area
8,445		16.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	1.98		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.7	107	0.1200	2.42		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.6	107	0.3100	2.78		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.7	200	0.0950	4.96		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
3.8					<b>Direct Entry, add for 6 min. minimum</b>
6.0	439	Total			

**Summary for Subcatchment 20S: Cistern DA**

Runoff = 0.27 cfs @ 12.81 hrs, Volume= 4,613 cf, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 78,503	39	cemertery
10,899	30	Woods, Good, HSG A
* 3,034	98	exist roofs
* 12,226	98	impervious HSG D
25,167	39	>75% Grass cover, Good, HSG A
2,182	80	>75% Grass cover, Good, HSG D
132,011	46	Weighted Average
116,751		88.44% Pervious Area
15,260		11.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	100	0.2600	3.57		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
2.4	303	0.0900	2.10		<b>Shallow Concentrated Flow, lawn &amp; swale</b> Short Grass Pasture Kv= 7.0 fps
41.0	453	Total			

**Summary for Subcatchment 21S: CB 5**

Runoff = 0.05 cfs @ 12.15 hrs, Volume= 218 cf, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 70	98	impervious HSG A
60	74	>75% Grass cover, Good, HSG C
* 1,274	50	Planking D
* 2,486	50	Pervious D
3,890	51	Weighted Average
3,820		98.20% Pervious Area
70		1.80% Impervious Area

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

**Summary for Subcatchment 22S: Strmtr 1 South**

Runoff = 0.49 cfs @ 12.59 hrs, Volume= 4,113 cf, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 15,487	39	Cemetery
5,314	30	Woods, Good, HSG A
* 2,400	98	impervious HSG A
3,003	39	>75% Grass cover, Good, HSG A
3,519	74	>75% Grass cover, Good, HSG C
1,985	80	>75% Grass cover, Good, HSG D
* 8,451	98	impervious HSG C
* 1,736	98	impervious HSG D
41,895	60	Weighted Average
29,308		69.96% Pervious Area
12,587		30.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
1.2	138	0.0700	1.85		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.2	46	0.4800	3.46		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	76	0.2100	3.21		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
1.0	226	0.0360	3.85		<b>Shallow Concentrated Flow, pvd</b> Paved Kv= 20.3 fps
40.9	536	Total			



**Summary for Subcatchment 23S: Strmtr2**

Runoff = 0.16 cfs @ 12.58 hrs, Volume= 1,315 cf, Depth> 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	2,231	39	Cemetery
	2,408	30	Woods, Good, HSG A
*	5,201	98	impervious HSG A
	2,847	39	>75% Grass cover, Good, HSG A
	12,687	61	Weighted Average
	7,486		59.01% Pervious Area
	5,201		40.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	78	0.1300	2.52		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.1	26	0.4600	3.39		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	59	0.4000	4.43		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0220	3.01		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
39.3	280	Total			

**Summary for Subcatchment 24S: CentDep**

Runoff = 0.92 cfs @ 12.43 hrs, Volume= 6,724 cf, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	40,139	39	Cemetery
	6,033	30	Woods, Good, HSG A
*	1,199	98	impervious HSG A
*	75	98	impervious HSG C
	5,671	39	>75% Grass cover, Good, HSG A
	21,301	80	>75% Grass cover, Good, HSG D
*	9,481	98	impervious HSG D
*	1,143	50	planking HSG D
*	691	50	planking HSG A
	85,733	56	Weighted Average
	74,978		87.46% Pervious Area
	10,755		12.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, woods</b> Short Grass Pasture Kv= 7.0 fps
0.4	62	0.1600	2.80		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.9	184	0.0270	3.34		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
26.6	421	Total			

**Summary for Subcatchment 25S: Strmtr1 North**

Runoff = 1.27 cfs @ 12.33 hrs, Volume= 7,377 cf, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 10,501	98	impervious HSG A
* 6,100	98	impervious HSG C
3,082	74	>75% Grass cover, Good, HSG C
3,022	80	>75% Grass cover, Good, HSG D
22,705	92	Weighted Average
6,104		26.88% Pervious Area
16,601		73.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6	26	0.0400	0.02		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
1.1	265	0.0400	4.06		<b>Shallow Concentrated Flow, paved</b>
					Paved Kv= 20.3 fps
23.7	291	Total			

**Summary for Subcatchment 26S: RG 3**

Runoff = 0.05 cfs @ 12.16 hrs, Volume= 469 cf, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 1,269	98	impervious HSG A
9,945	39	>75% Grass cover, Good, HSG A
* 1,830	50	planking HSG A
13,044	46	Weighted Average
11,775		90.27% Pervious Area
1,269		9.73% Impervious Area

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

**Summary for Subcatchment 27S: GH West**

Runoff = 0.27 cfs @ 12.13 hrs, Volume= 899 cf, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 390	98	impervious HSG D
3,304	80	>75% Grass cover, Good, HSG D
3,694	82	Weighted Average
3,304		89.44% Pervious Area
390		10.56% Impervious Area

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

**Summary for Subcatchment 28S: GH East**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 490 cf, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 1,129	98	impervious HSG D
* 2,880	50	planking HSG D
4,009	64	Weighted Average
2,880		71.84% Pervious Area
1,129		28.16% Impervious Area

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

**Summary for Subcatchment 29S: CB 1**

Runoff = 0.28 cfs @ 12.24 hrs, Volume= 1,325 cf, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 3,522	98	impervious HSG A
* 1,102	98	exist roof HSG A
* 261	39	cemetery HSG A
5,039	39	>75% Grass cover, Good, HSG A
9,924	66	Weighted Average
5,300		53.41% Pervious Area
4,624		46.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2000	3.13		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0500	4.54		<b>Shallow Concentrated Flow, pvd</b>
					Paved Kv= 20.3 fps
14.9	197	Total			

**Summary for Subcatchment 30S: CB 3**

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,179 cf, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 3,592	98	impervious HSG A
1,574	39	>75% Grass cover, Good, HSG A
5,166	80	Weighted Average
1,574		30.47% Pervious Area
3,592		69.53% Impervious Area

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

**Summary for Subcatchment 31S: Rte 1**

Runoff = 0.00 cfs @ 12.65 hrs, Volume= 95 cf, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 709	39	Cemetery HSG A
1,784	30	Woods, Good, HSG A
* 493	98	impervious HSG A
1,291	39	>75% Grass cover, Good, HSG A
4,277	42	Weighted Average
3,784		88.47% Pervious Area
493		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, wds</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 32S: GH**

Runoff = 0.45 cfs @ 12.13 hrs, Volume= 1,711 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 4,476	98	roof HSG D
4,476		100.00% Impervious Area

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

**Summary for Subcatchment 33S: 12-14 CC**

Runoff = 0.84 cfs @ 12.13 hrs, Volume= 2,722 cf, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 1,709	98	impervious HSG D
4,934	74	>75% Grass cover, Good, HSG C
5,279	80	>75% Grass cover, Good, HSG D
11,922	80	Weighted Average
10,213		85.67% Pervious Area
1,709		14.33% Impervious Area

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

### Summary for Subcatchment 34S: Barn

Runoff = 0.24 cfs @ 12.13 hrs, Volume= 927 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 2,426	98	roof HSG D
2,426		100.00% Impervious Area

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

### Summary for Subcatchment 40S: YW

Runoff = 0.21 cfs @ 12.13 hrs, Volume= 817 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 2,136	98	roof, HSG A
2,136		100.00% Impervious Area

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

### Summary for Subcatchment 41S: SR

Runoff = 0.79 cfs @ 12.13 hrs, Volume= 2,991 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 7,823	98	roof HSG A
7,823		100.00% Impervious Area

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

### Summary for Subcatchment 42S: CE

Runoff = 0.59 cfs @ 12.13 hrs, Volume= 2,264 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 2,744	98	roof HSG C
* 3,179	98	roof HSG D
5,923	98	Weighted Average
5,923		100.00% Impervious Area

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



**Summary for Subcatchment 43S: CC**

Runoff = 0.90 cfs @ 12.13 hrs, Volume= 3,427 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	4,684	98	roof HSG C
*	4,280	98	roof HSG D
	8,964	98	Weighted Average
	8,964		100.00% Impervious Area

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

**Summary for Subcatchment 44S: HA+CH**

Runoff = 1.02 cfs @ 12.13 hrs, Volume= 3,868 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	1,803	98	roof HSG A
*	8,315	98	roof HSG D
	10,118	98	Weighted Average
	10,118		100.00% Impervious Area

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

**Summary for Subcatchment 46S: Bay 1**

Runoff = 0.12 cfs @ 12.13 hrs, Volume= 456 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
	1,192		100.00% Impervious Area

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

**Summary for Subcatchment 49S: Bay 2**

Runoff = 0.29 cfs @ 12.13 hrs, Volume= 1,092 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
*	1,664	98	pavement HSG C
	2,856	98	Weighted Average
	2,856		100.00% Impervious Area

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

**Summary for Subcatchment 50S: Bay 3**

Runoff = 0.42 cfs @ 12.13 hrs, Volume= 1,589 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 2,545	98	porous pavement HSG C
* 1,612	98	pavement HSG C
4,157	98	Weighted Average
4,157		100.00% Impervious Area

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

**Summary for Subcatchment 51S: Bay 4**

Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,559 cf, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
* 1,530	98	porous pavement HSG C
* 2,549	98	pavement HSG C
4,079	98	Weighted Average
4,079		100.00% Impervious Area

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

**Summary for Pond 1P: Dep 1**

Inflow Area = 79,064 sf, 15.90% Impervious, Inflow Depth > 3.99" for 10-Year event  
Inflow = 3.45 cfs @ 12.53 hrs, Volume= 26,287 cf  
Outflow = 3.41 cfs @ 12.55 hrs, Volume= 26,287 cf, Atten= 1%, Lag= 1.5 min  
Primary = 3.41 cfs @ 12.55 hrs, Volume= 26,287 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
Peak Elev= 30.10' @ 12.56 hrs Surf.Area= 4,346 sf Storage= 2,686 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
Center-of-Mass det. time= 16.2 min ( 829.2 - 813.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	18,511 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	163	0	0
29.00	253	208	208
30.00	3,899	2,076	2,284
31.00	8,477	6,188	8,472
32.00	11,600	10,039	18,511

Device	Routing	Invert	Outlet Devices
#1	Primary	30.00'	<b>39.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	26.50'	<b>2.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.50' / 25.40' S= 0.0268 ' S= 0.0268 ' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf
#3	Primary	27.70'	<b>4.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 27.70' / 25.40' S= 0.0561 ' S= 0.0561 ' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=3.41 cfs @ 12.55 hrs HW=30.10' TW=28.65' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 2.96 cfs @ 0.78 fps)

↓ **2=Culvert** (Outlet Controls 0.07 cfs @ 3.09 fps)

↓ **3=Culvert** (Outlet Controls 0.39 cfs @ 4.41 fps)

### Summary for Pond 2P: dep 2

Inflow Area = 34,238 sf, 29.28% Impervious, Inflow Depth > 2.82" for 10-Year event  
 Inflow = 1.78 cfs @ 12.23 hrs, Volume= 8,051 cf  
 Outflow = 1.78 cfs @ 12.24 hrs, Volume= 6,291 cf, Atten= 0%, Lag= 0.5 min  
 Primary = 1.78 cfs @ 12.24 hrs, Volume= 6,291 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.54' @ 12.24 hrs Surf.Area= 2,220 sf Storage= 1,833 cf

Plug-Flow detention time= 147.1 min calculated for 6,291 cf (78% of inflow)

Center-of-Mass det. time= 52.8 min ( 900.3 - 847.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	3,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	576	0	0
35.00	1,235	906	906
36.00	3,069	2,152	3,058

Device	Routing	Invert	Outlet Devices
#1	Primary	35.50'	<b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=1.78 cfs @ 12.24 hrs HW=35.54' TW=28.85' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 1.78 cfs @ 0.48 fps)

### Summary for Pond 3P: cent dep

Inflow Area = 188,583 sf, 1.18% Impervious, Inflow Depth > 0.34" for 10-Year event  
 Inflow = 0.27 cfs @ 12.71 hrs, Volume= 5,344 cf  
 Outflow = 0.27 cfs @ 12.74 hrs, Volume= 5,333 cf, Atten= 0%, Lag= 1.7 min  
 Primary = 0.27 cfs @ 12.74 hrs, Volume= 5,333 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 32.10' @ 12.74 hrs Surf.Area= 163 sf Storage= 28 cf

Plug-Flow detention time= 1.9 min calculated for 5,333 cf (100% of inflow)

Center-of-Mass det. time= 1.1 min ( 1,025.1 - 1,024.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.83'	28,303 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.83	40	0	0
33.00	566	355	355
34.00	2,635	1,601	1,955
35.00	6,530	4,583	6,538
36.00	37,000	21,765	28,303

Device	Routing	Invert	Outlet Devices
#1	Primary	35.30'	<b>45.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.83'	<b>12.0" Round Culvert</b> L= 201.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 31.83' / 25.00' S= 0.0340 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.27 cfs @ 12.74 hrs HW=32.10' TW=28.61' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

↑ **2=Culvert** (Inlet Controls 0.27 cfs @ 1.57 fps)

### Summary for Pond 4P: cb 1889

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 1.77" for 10-Year event  
 Inflow = 5.91 cfs @ 12.14 hrs, Volume= 52,163 cf  
 Outflow = 4.70 cfs @ 12.63 hrs, Volume= 52,157 cf, Atten= 20%, Lag= 29.8 min  
 Primary = 4.70 cfs @ 12.63 hrs, Volume= 52,157 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 28.89' @ 12.21 hrs Surf.Area= 572 sf Storage= 605 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.5 min ( 856.3 - 855.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	42,875 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	30	0	0
28.00	157	281	281
29.00	623	390	671
30.00	5,783	3,203	3,874
32.00	33,218	39,001	42,875

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 24.90' / 23.60' S= 0.0236 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.70 cfs @ 12.63 hrs HW=28.77' TW=26.98' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 4.70 cfs @ 5.99 fps)

### Summary for Pond 20P: Cistern

Inflow Area = 134,437 sf, 13.16% Impervious, Inflow Depth > 0.49" for 10-Year event  
 Inflow = 0.29 cfs @ 12.81 hrs, Volume= 5,541 cf  
 Outflow = 0.29 cfs @ 12.81 hrs, Volume= 4,920 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 0.29 cfs @ 12.81 hrs, Volume= 4,920 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.92' @ 12.81 hrs Surf.Area= 79 sf Storage= 622 cf

Plug-Flow detention time= 94.1 min calculated for 4,920 cf (89% of inflow)  
 Center-of-Mass det. time= 43.6 min ( 1,013.1 - 969.5 )

**Hillside Center 12-28-15**

NRCC 24-hr D 10-Year Rainfall=4.83"

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Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	628 cf	<b>10.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	39.90'	<b>1.0" x 6.5" Horiz. Orifice/Grate X 11.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#2	Primary	39.95'	<b>100.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.29 cfs @ 12.81 hrs HW=39.92' TW=35.11' (Dynamic Tailwater)↑ **1=Orifice/Grate** (Weir Controls 0.29 cfs @ 0.42 fps)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)**Summary for Pond 21P: cb 6087**

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 1.77" for 10-Year event  
 Inflow = 4.70 cfs @ 12.63 hrs, Volume= 52,157 cf  
 Outflow = 4.70 cfs @ 12.63 hrs, Volume= 52,157 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.70 cfs @ 12.63 hrs, Volume= 52,157 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.29' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	23.60'	<b>12.0" Round Culvert</b> L= 52.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.60' / 23.00' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.70 cfs @ 12.63 hrs HW=26.98' TW=25.23' (Dynamic Tailwater)↑ **1=Culvert** (Outlet Controls 4.70 cfs @ 5.99 fps)**Summary for Pond 22P: HW 1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 0.63" for 10-Year event  
 Inflow = 1.10 cfs @ 12.45 hrs, Volume= 11,619 cf  
 Outflow = 0.90 cfs @ 12.70 hrs, Volume= 11,226 cf, Atten= 18%, Lag= 14.8 min  
 Primary = 0.90 cfs @ 12.70 hrs, Volume= 11,226 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 33.28' @ 12.70 hrs Surf.Area= 806 sf Storage= 751 cf

Flood Elev= 34.50' Surf.Area= 2,516 sf Storage= 2,477 cf

Plug-Flow detention time= 27.1 min calculated for 11,221 cf (97% of inflow)

Center-of-Mass det. time= 11.6 min ( 985.1 - 973.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	8,939 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	131	0	0
33.00	607	554	554
34.00	1,321	964	1,518
36.00	6,100	7,421	8,939

Device	Routing	Invert	Outlet Devices
#1	Primary	31.58'	<b>12.0" Round Culvert</b> L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 31.58' / 25.32' S= 0.1841 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	32.50'	<b>7.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.90 cfs @ 12.70 hrs HW=33.28' TW=25.39' (Dynamic Tailwater)↑ **1=Culvert** (Passes 0.90 cfs of 5.65 cfs potential flow)↑ **2=Orifice/Grate** (Orifice Controls 0.90 cfs @ 3.36 fps)



**Summary for Pond 23P: Strmtr 2**

Inflow Area = 12,687 sf, 40.99% Impervious, Inflow Depth > 1.24" for 10-Year event  
 Inflow = 0.16 cfs @ 12.58 hrs, Volume= 1,315 cf  
 Outflow = 0.16 cfs @ 12.58 hrs, Volume= 1,315 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.16 cfs @ 12.58 hrs, Volume= 1,315 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.33' @ 12.58 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.16'	<b>12.0" Round Culvert</b> L= 222.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 38.16' / 24.80' S= 0.0602 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.16 cfs @ 12.58 hrs HW=38.33' TW=22.56' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.16 cfs @ 1.77 fps)

**Summary for Pond 24P: RG #1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 0.63" for 10-Year event  
 Inflow = 1.11 cfs @ 12.44 hrs, Volume= 11,644 cf  
 Outflow = 1.10 cfs @ 12.45 hrs, Volume= 11,619 cf, Atten= 1%, Lag= 0.5 min  
 Primary = 1.10 cfs @ 12.45 hrs, Volume= 11,619 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.11' @ 12.45 hrs Surf.Area= 403 sf Storage= 35 cf

Flood Elev= 36.50' Surf.Area= 10 sf Storage= 336 cf

Plug-Flow detention time= 1.6 min calculated for 11,619 cf (100% of inflow)

Center-of-Mass det. time= 0.6 min ( 973.5 - 972.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	131	0	0
35.08	394	21	21
35.50	500	188	209
36.00	10	128	336

Device	Routing	Invert	Outlet Devices
#1	Primary	35.08'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=1.09 cfs @ 12.45 hrs HW=35.11' TW=33.09' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1.09 cfs @ 0.50 fps)

**Summary for Pond 25P: Strmtr 1**

Inflow Area = 69,766 sf, 46.99% Impervious, Inflow Depth > 1.98" for 10-Year event  
 Inflow = 1.58 cfs @ 12.36 hrs, Volume= 11,490 cf  
 Outflow = 1.58 cfs @ 12.36 hrs, Volume= 11,490 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.58 cfs @ 12.36 hrs, Volume= 11,490 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.37' @ 12.36 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.78'	<b>12.0" Round Culvert</b> L= 51.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.78' / 24.81' S= 0.0386 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.58 cfs @ 12.36 hrs HW=27.37' TW=24.78' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.58 cfs @ 3.27 fps)

### Summary for Pond 26P: CB 2

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 0.93" for 10-Year event  
 Inflow = 0.33 cfs @ 12.24 hrs, Volume= 1,772 cf  
 Outflow = 0.33 cfs @ 12.24 hrs, Volume= 1,772 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.33 cfs @ 12.24 hrs, Volume= 1,772 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 36.49' @ 12.24 hrs

Flood Elev= 40.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.22'	<b>10.0" Round Culvert</b> L= 150.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 36.22' / 27.72' S= 0.0567 ' / S= 0.0567 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.33 cfs @ 12.24 hrs HW=36.48' TW=28.11' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.33 cfs @ 2.19 fps)

### Summary for Pond 27P: DI 1

Inflow Area = 31,138 sf, 34.55% Impervious, Inflow Depth > 1.69" for 10-Year event  
 Inflow = 0.96 cfs @ 12.14 hrs, Volume= 4,383 cf  
 Outflow = 0.96 cfs @ 12.14 hrs, Volume= 4,383 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.96 cfs @ 12.14 hrs, Volume= 4,383 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.20' @ 12.14 hrs

Flood Elev= 33.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.72'	<b>10.0" Round Culvert</b> L= 70.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 27.72' / 26.36' S= 0.0194 ' / S= 0.0194 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.96 cfs @ 12.14 hrs HW=28.20' TW=26.84' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.96 cfs @ 2.95 fps)

### Summary for Pond 28P: DI 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 1.47" for 10-Year event  
 Inflow = 0.15 cfs @ 12.14 hrs, Volume= 490 cf  
 Outflow = 0.15 cfs @ 12.14 hrs, Volume= 490 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.15 cfs @ 12.14 hrs, Volume= 490 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 34.01' @ 12.14 hrs

Flood Elev= 35.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.84'	<b>10.0" Round Culvert</b> L= 66.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.84' / 33.00' S= 0.0127 ' / S= 0.0127 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.15 cfs @ 12.14 hrs HW=34.01' TW=33.16' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.15 cfs @ 1.77 fps)

### Summary for Pond 29P: CB 1

Inflow Area = 9,924 sf, 46.59% Impervious, Inflow Depth > 1.60" for 10-Year event  
 Inflow = 0.28 cfs @ 12.24 hrs, Volume= 1,325 cf  
 Outflow = 0.28 cfs @ 12.24 hrs, Volume= 1,325 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.28 cfs @ 12.24 hrs, Volume= 1,325 cf

**Hillside Center 12-28-15**

NRCC 24-hr D 10-Year Rainfall=4.83"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.00' @ 12.24 hrs

Flood Elev= 57.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	<b>10.0" Round Culvert</b> L= 46.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 53.75' / 42.60' S= 0.2424 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.28 cfs @ 12.24 hrs HW=54.00' TW=39.82' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.28 cfs @ 2.11 fps)**Summary for Pond 30P: CB 3**

Inflow Area = 5,166 sf, 69.53% Impervious, Inflow Depth > 2.74" for 10-Year event  
 Inflow = 0.36 cfs @ 12.13 hrs, Volume= 1,179 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.09' @ 24.00 hrs Surf.Area= 802 sf Storage= 1,179 cf

Flood Elev= 43.50' Surf.Area= 802 sf Storage= 1,789 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	36.00'	701 cf	<b>20.83"W x 38.50"L x 3.54"H Field A</b> 2,841 cf Overall - 1,088 cf Embedded = 1,753 cf x 40.0% Voids
#2A	36.50'	1,088 cf	<b>Cultec R-330XLHD</b> x 20 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		1,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.04'	<b>8.0" Round Culvert</b> L= 268.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 39.04' / 26.50' S= 0.0468 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Device 1	43.04'	<b>2.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=26.78' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 31P: RG #3**

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 0.94" for 10-Year event  
 Inflow = 0.33 cfs @ 12.23 hrs, Volume= 1,794 cf  
 Outflow = 0.33 cfs @ 12.24 hrs, Volume= 1,772 cf, Atten= 0%, Lag= 0.2 min  
 Primary = 0.33 cfs @ 12.24 hrs, Volume= 1,772 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.82' @ 12.24 hrs Surf.Area= 397 sf Storage= 27 cf

Flood Elev= 43.50' Surf.Area= 500 sf Storage= 244 cf

Plug-Flow detention time= 9.7 min calculated for 1,772 cf (99% of inflow)

Center-of-Mass det. time= 3.5 min ( 925.9 - 922.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	39.72'	244 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.72	131	0	0
39.80	394	21	21
40.30	500	224	244

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.33 cfs @ 12.24 hrs HW=39.82' TW=36.48' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.33 fps)

### Summary for Pond 32P: PrkCis 1

Inflow Area = 1,192 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.12 cfs @ 12.13 hrs, Volume= 456 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.09' @ 24.00 hrs Surf.Area= 863 sf Storage= 456 cf

Flood Elev= 42.00' Surf.Area= 863 sf Storage= 1,733 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	38.20'	689 cf	<b>19.17'W x 45.00'L x 3.21'H Field A</b> 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	38.70'	1,044 cf	<b>Cultec R-280HD</b> x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
1,733 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.20'	<b>4.0" Round Culvert</b> L= 100.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 39.20' / 30.00' S= 0.0920 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=38.20' TW=21.50' (Dynamic Tailwater)

↑**1=Culvert** ( Controls 0.00 cfs)

### Summary for Pond 33P: PrkCst 2

Inflow Area = 2,856 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.29 cfs @ 12.13 hrs, Volume= 1,092 cf  
 Outflow = 0.04 cfs @ 12.58 hrs, Volume= 605 cf, Atten= 85%, Lag= 26.8 min  
 Primary = 0.04 cfs @ 12.58 hrs, Volume= 605 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 37.71' @ 12.58 hrs Surf.Area= 728 sf Storage= 637 cf

Flood Elev= 41.00' Surf.Area= 728 sf Storage= 1,459 cf

Plug-Flow detention time= 332.9 min calculated for 605 cf (55% of inflow)

Center-of-Mass det. time= 182.7 min ( 933.0 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.40'	585 cf	<b>19.17'W x 38.00'L x 3.21'H Field A</b> 2,337 cf Overall - 874 cf Embedded = 1,462 cf x 40.0% Voids
#2A	36.90'	874 cf	<b>Cultec R-280HD</b> x 20 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,459 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>2.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 34.66' S= 0.0548 ' / Cc= 0.900 n= 0.010, Flow Area= 0.02 sf

**Primary OutFlow** Max=0.04 cfs @ 12.58 hrs HW=37.71' TW=22.57' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.04 cfs @ 2.04 fps)

### Summary for Pond 34P: CC Cisterns

Inflow Area = 8,964 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.90 cfs @ 12.13 hrs, Volume= 3,427 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 419 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 419 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 43.71' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 3,008 cf

Plug-Flow detention time= 696.4 min calculated for 418 cf (12% of inflow)  
 Center-of-Mass det. time= 271.2 min ( 1,021.5 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.50'	5,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	227	0	0
45.50	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	41.50'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=43.71' TW=21.78' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.79 fps)

### Summary for Pond 35P: DMH 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 1.47" for 10-Year event  
 Inflow = 0.15 cfs @ 12.14 hrs, Volume= 490 cf  
 Outflow = 0.15 cfs @ 12.14 hrs, Volume= 490 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.15 cfs @ 12.14 hrs, Volume= 490 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.16' @ 12.14 hrs  
 Flood Elev= 35.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>12.0" Round Culvert</b> L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.00' / 24.90' S= 0.3115 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.15 cfs @ 12.14 hrs HW=33.16' TW=26.84' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.15 cfs @ 1.72 fps)



**Summary for Pond 36P: DMH 3**

Inflow Area = 35,147 sf, 33.82% Impervious, Inflow Depth > 1.66" for 10-Year event  
 Inflow = 1.11 cfs @ 12.14 hrs, Volume= 4,873 cf  
 Outflow = 1.11 cfs @ 12.14 hrs, Volume= 4,873 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.11 cfs @ 12.14 hrs, Volume= 4,873 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 26.84' @ 12.14 hrs

Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.36'	<b>12.0" Round Culvert</b> L= 73.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.36' / 24.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.11 cfs @ 12.14 hrs HW=26.84' TW=25.39' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.11 cfs @ 2.95 fps)

**Summary for Pond 37P: DMH 4**

Inflow Area = 259,207 sf, 15.59% Impervious, Inflow Depth > 0.76" for 10-Year event  
 Inflow = 1.16 cfs @ 12.56 hrs, Volume= 16,317 cf  
 Outflow = 1.16 cfs @ 12.56 hrs, Volume= 16,317 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.16 cfs @ 12.56 hrs, Volume= 16,317 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.40' @ 12.54 hrs

Flood Elev= 34.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 37.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.90' / 24.00' S= 0.0243 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.16 cfs @ 12.56 hrs HW=25.40' TW=24.77' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 1.16 cfs @ 4.37 fps)

**Summary for Pond 38P: DMH 5**

Inflow Area = 328,973 sf, 22.24% Impervious, Inflow Depth > 1.01" for 10-Year event  
 Inflow = 2.57 cfs @ 12.42 hrs, Volume= 27,807 cf  
 Outflow = 2.57 cfs @ 12.42 hrs, Volume= 27,807 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.57 cfs @ 12.42 hrs, Volume= 27,807 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 24.80' @ 12.42 hrs

Flood Elev= 33.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.00'	<b>12.0" Round Culvert</b> L= 59.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.00' / 23.00' S= 0.0169 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.57 cfs @ 12.42 hrs HW=24.80' TW=22.53' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.57 cfs @ 3.81 fps)

**Summary for Pond 39P: PrkCis 3**

Inflow Area = 4,157 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.42 cfs @ 12.13 hrs, Volume= 1,589 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 36.34' @ 24.00 hrs Surf.Area= 1,226 sf Storage= 1,589 cf

Flood Elev= 39.00' Surf.Area= 1,226 sf Storage= 2,485 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	34.50'	967 cf	<b>23.58'W x 52.00'L x 3.21'H Field A</b> 3,934 cf Overall - 1,518 cf Embedded = 2,417 cf x 40.0% Voids
#2A	35.00'	1,518 cf	<b>Cultec R-280HD x 35 Inside #1</b> Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 5 rows
		2,485 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>6.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 32.46' S= 0.0988 '/ Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Primary	37.80'	<b>80.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=34.50' TW=21.50' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 40P: PrkCis 4

Inflow Area = 4,079 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.41 cfs @ 12.13 hrs, Volume= 1,559 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 32.69' @ 24.00 hrs Surf.Area= 1,094 sf Storage= 1,559 cf  
 Flood Elev= 40.00' Surf.Area= 1,094 sf Storage= 2,453 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	30.67'	947 cf	<b>20.83'W x 52.50'L x 3.54'H Field A</b> 3,874 cf Overall - 1,505 cf Embedded = 2,369 cf x 40.0% Voids
#2A	31.17'	1,505 cf	<b>Cultec R-330XLHD x 28 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		2,453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	<b>4.0" Round Culvert</b> L= 60.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 32.75' / 32.26' S= 0.0082 '/ Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=30.67' TW=21.50' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

### Summary for Pond 41P: CB 5

Inflow Area = 3,890 sf, 1.80% Impervious, Inflow Depth > 0.67" for 10-Year event  
 Inflow = 0.05 cfs @ 12.15 hrs, Volume= 218 cf  
 Outflow = 0.05 cfs @ 12.15 hrs, Volume= 218 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.05 cfs @ 12.15 hrs, Volume= 218 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

**Hillside Center 12-28-15**

NRCC 24-hr D 10-Year Rainfall=4.83"

Prepared by WESTCOTT SITE SERVICES

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Peak Elev= 29.04' @ 12.15 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.94'	<b>10.0" Round Culvert</b> L= 38.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 28.94' / 25.90' S= 0.0800 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.05 cfs @ 12.15 hrs HW=29.04' TW=25.39' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.05 cfs @ 1.32 fps)**Summary for Pond 43P: CE Cisterns**

Inflow Area = 5,923 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.59 cfs @ 12.13 hrs, Volume= 2,264 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 292 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 292 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 45.17' @ 24.00 hrs Surf.Area= 908 sf Storage= 1,972 cf

Plug-Flow detention time= 670.2 min calculated for 292 cf (13% of inflow)

Center-of-Mass det. time= 254.3 min ( 1,004.6 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	3,632 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 4

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	227	0	0
47.00	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>0.2" Vert. Orifice/Grate</b> X 4 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=45.17' TW=21.78' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.87 fps)**Summary for Pond 44P: SR Cisterns**

Inflow Area = 7,823 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.79 cfs @ 12.13 hrs, Volume= 2,991 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 368 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 368 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 48.31' @ 24.00 hrs Surf.Area= 1,135 sf Storage= 2,622 cf

Plug-Flow detention time= 685.9 min calculated for 368 cf (12% of inflow)

Center-of-Mass det. time= 261.9 min ( 1,012.2 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	5,675 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	227	0	0
51.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>0.2" Vert. Orifice/Grate</b> X 5 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=48.31' TW=21.78' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.03 fps)

**Summary for Pond 45P: HACisterns**

Inflow Area = 10,118 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 1.02 cfs @ 12.13 hrs, Volume= 3,868 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 452 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 452 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 46.51' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 3,416 cf

Plug-Flow detention time= 699.9 min calculated for 452 cf (12% of inflow)  
 Center-of-Mass det. time= 267.2 min ( 1,017.5 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	6,810 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	227	0	0
49.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=46.51' TW=21.78' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.28 fps)

**Summary for Pond 46P: CB 4**

Inflow Area = 400,830 sf, 31.77% Impervious, Inflow Depth > 1.03" for 10-Year event  
 Inflow = 2.96 cfs @ 12.41 hrs, Volume= 34,367 cf  
 Outflow = 2.85 cfs @ 12.54 hrs, Volume= 34,222 cf, Atten= 4%, Lag= 7.7 min  
 Primary = 2.85 cfs @ 12.54 hrs, Volume= 34,222 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 22.57' @ 12.54 hrs Surf.Area= 1,297 sf Storage= 908 cf

Plug-Flow detention time= 6.2 min calculated for 34,208 cf (100% of inflow)  
 Center-of-Mass det. time= 4.0 min ( 911.9 - 907.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	27.80'	23,576 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2A	21.50'	259 cf	<b>21.79'W x 59.50'L x 6.00'H Field A</b>
			7,780 cf Overall - 7,131 cf Embedded = 648 cf x 40.0% Voids
#3A	22.00'	5,694 cf	<b>StormTrap SingleTrap 5-0</b> x 3 Inside #2
			Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
			Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf
			8.48' x 46.19' Core + 6.66' Border = 21.79' x 59.50' System
		29,529 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.80	4	0	0
28.00	1,704	171	171
30.00	4,071	5,775	5,946
32.00	13,559	17,630	23,576

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 21.50' / 19.40' S= 0.0149 ' S= 0.0149 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.85 cfs @ 12.54 hrs HW=22.57' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 2.85 cfs @ 3.63 fps)

**Summary for Pond 47P: HW**

Inflow Area = 385,242 sf, 8.99% Impervious, Inflow Depth > 1.80" for 10-Year event  
 Inflow = 6.01 cfs @ 12.15 hrs, Volume= 57,797 cf  
 Outflow = 5.65 cfs @ 12.19 hrs, Volume= 57,789 cf, Atten= 6%, Lag= 2.8 min  
 Primary = 5.65 cfs @ 12.19 hrs, Volume= 57,789 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 25.73' @ 12.19 hrs Surf.Area= 265 sf Storage= 376 cf

Plug-Flow detention time= 0.5 min calculated for 57,789 cf (100% of inflow)  
 Center-of-Mass det. time= 0.4 min ( 857.8 - 857.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	75,612 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	10	0	0
26.00	290	450	450
28.00	2,812	3,102	3,552
32.00	33,218	72,060	75,612

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 19.40' S= 0.0255 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.65 cfs @ 12.19 hrs HW=25.73' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 5.65 cfs @ 7.19 fps)

**Summary for Pond 48P: YW Cistern**

Inflow Area = 2,136 sf, 100.00% Impervious, Inflow Depth > 4.59" for 10-Year event  
 Inflow = 0.21 cfs @ 12.13 hrs, Volume= 817 cf  
 Outflow = 0.01 cfs @ 15.61 hrs, Volume= 388 cf, Atten= 97%, Lag= 208.8 min  
 Primary = 0.01 cfs @ 15.61 hrs, Volume= 388 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 54.28' @ 15.61 hrs Surf.Area= 392 sf Storage= 503 cf

Plug-Flow detention time= 383.3 min calculated for 387 cf (47% of inflow)  
 Center-of-Mass det. time= 211.6 min ( 961.9 - 750.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	1,176 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	392	0	0
56.00	392	1,176	1,176

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	<b>0.5" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 15.61 hrs HW=54.28' TW=21.89' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 5.41 fps)

**Summary for Link 1L: Total Exist**

Inflow Area = 405,107 sf, 8.55% Impervious, Inflow Depth > 1.71" for 10-Year event  
 Inflow = 5.65 cfs @ 12.19 hrs, Volume= 57,814 cf  
 Primary = 5.65 cfs @ 12.19 hrs, Volume= 57,814 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



**Summary for Link 20L: Total POST**

Inflow Area = 405,107 sf, 31.55% Impervious, Inflow Depth > 1.02" for 10-Year event  
Inflow = 2.86 cfs @ 12.54 hrs, Volume= 34,317 cf  
Primary = 2.86 cfs @ 12.54 hrs, Volume= 34,317 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Subcatchment 1S: dep 1 DA**

Runoff = 4.22 cfs @ 12.53 hrs, Volume= 32,518 cf, Depth> 4.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 8,110	98	roof & pvmnt
50,133	94	Fallow, bare soil, HSG D
16,361	84	50-75% Grass cover, Fair, HSG D
* 4,460	98	pre-exist warehouse, HSG D
79,064	93	Weighted Average
66,494		84.10% Pervious Area
12,570		15.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	96	0.2300	3.36		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	260	0.1400	6.02		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
39.3	406	Total			

**Summary for Subcatchment 2S: dep 2 DA**

Runoff = 2.31 cfs @ 12.23 hrs, Volume= 10,513 cf, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 4,525	98	roof & pvmnt
13,599	68	<50% Grass cover, Poor, HSG A
8,272	77	Fallow, bare soil, HSG A
2,342	91	Fallow, bare soil, HSG C
* 2,147	98	pre-exist house, HSG A
* 3,353	98	pre-exist warehouse, HSG C
34,238	81	Weighted Average
24,213		70.72% Pervious Area
10,025		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2200	3.28		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	216	0.1300	5.80		<b>Shallow Concentrated Flow, bare soil</b>
					Unpaved Kv= 16.1 fps
15.2	338	Total			

**Summary for Subcatchment 3S: cent dep DA**

Runoff = 0.92 cfs @ 12.48 hrs, Volume= 10,228 cf, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 2,218	98	barn
18,317	89	<50% Grass cover, Poor, HSG D
116,882	39	>75% Grass cover, Good, HSG A
48,880	36	Woods, Fair, HSG A
* 2,286	97	Dirt roads, HSG D
188,583	44	Weighted Average
186,365		98.82% Pervious Area
2,218		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
0.4	77	0.0400	3.22		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
25.7	252	Total			

**Summary for Subcatchment 4S: rte one**

Runoff = 0.01 cfs @ 21.65 hrs, Volume= 171 cf, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,389	39	>75% Grass cover, Good, HSG A
15,476	30	Woods, Good, HSG A
19,865	32	Weighted Average
19,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 5S: dep 3 DA**

Runoff = 2.37 cfs @ 12.13 hrs, Volume= 7,677 cf, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 1,388	98	roof & pvmnt
28,408	74	>75% Grass cover, Good, HSG C
1,781	36	Woods, Fair, HSG A
31,577	73	Weighted Average
30,189		95.60% Pervious Area
1,388		4.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.1600	2.00		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	43	0.1400	1.87		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
2.1	245	0.0800	1.98		<b>Shallow Concentrated Flow, grass</b> Short Grass Pasture Kv= 7.0 fps
3.3					<b>Direct Entry, 6 min minimum</b>
6.0	313	Total			

**Summary for Subcatchment 6S: cb 1889 DA**

Runoff = 5.39 cfs @ 12.13 hrs, Volume= 18,178 cf, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 8,445	98	roof & pvmnt
14,077	86	<50% Grass cover, Poor, HSG C
4,389	39	>75% Grass cover, Good, HSG A
5,092	77	Woods, Poor, HSG C
* 3,284	97	Dirt roads, HSG D
16,493	94	Fallow, bare soil, HSG D
51,780	86	Weighted Average
43,335		83.69% Pervious Area
8,445		16.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	1.98		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.7	107	0.1200	2.42		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.6	107	0.3100	2.78		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.7	200	0.0950	4.96		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
3.8					<b>Direct Entry, add for 6 min. minimum</b>
6.0	439	Total			

**Summary for Subcatchment 20S: Cistern DA**

Runoff = 0.71 cfs @ 12.71 hrs, Volume= 8,398 cf, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 78,503	39	cemertery
10,899	30	Woods, Good, HSG A
* 3,034	98	exist roofs
* 12,226	98	impervious HSG D
25,167	39	>75% Grass cover, Good, HSG A
2,182	80	>75% Grass cover, Good, HSG D
132,011	46	Weighted Average
116,751		88.44% Pervious Area
15,260		11.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	100	0.2600	3.57		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
2.4	303	0.0900	2.10		<b>Shallow Concentrated Flow, lawn &amp; swale</b> Short Grass Pasture Kv= 7.0 fps
41.0	453	Total			

**Summary for Subcatchment 21S: CB 5**

Runoff = 0.09 cfs @ 12.14 hrs, Volume= 360 cf, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 70	98	impervious HSG A
60	74	>75% Grass cover, Good, HSG C
* 1,274	50	Planking D
* 2,486	50	Pervious D
3,890	51	Weighted Average
3,820		98.20% Pervious Area
70		1.80% Impervious Area

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

**Summary for Subcatchment 22S: Strmtr 1 South**

Runoff = 0.78 cfs @ 12.59 hrs, Volume= 6,139 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 15,487	39	Cemetery
5,314	30	Woods, Good, HSG A
* 2,400	98	impervious HSG A
3,003	39	>75% Grass cover, Good, HSG A
3,519	74	>75% Grass cover, Good, HSG C
1,985	80	>75% Grass cover, Good, HSG D
* 8,451	98	impervious HSG C
* 1,736	98	impervious HSG D
41,895	60	Weighted Average
29,308		69.96% Pervious Area
12,587		30.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
1.2	138	0.0700	1.85		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.2	46	0.4800	3.46		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	76	0.2100	3.21		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
1.0	226	0.0360	3.85		<b>Shallow Concentrated Flow, pvd</b> Paved Kv= 20.3 fps
40.9	536	Total			



**Summary for Subcatchment 23S: Strmtr2**

Runoff = 0.25 cfs @ 12.57 hrs, Volume= 1,945 cf, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	2,231	39	Cemetery
	2,408	30	Woods, Good, HSG A
*	5,201	98	impervious HSG A
	2,847	39	>75% Grass cover, Good, HSG A
	12,687	61	Weighted Average
	7,486		59.01% Pervious Area
	5,201		40.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	78	0.1300	2.52		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.1	26	0.4600	3.39		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	59	0.4000	4.43		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0220	3.01		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
39.3	280	Total			

**Summary for Subcatchment 24S: CentDep**

Runoff = 1.58 cfs @ 12.41 hrs, Volume= 10,431 cf, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	40,139	39	Cemetery
	6,033	30	Woods, Good, HSG A
*	1,199	98	impervious HSG A
*	75	98	impervious HSG C
	5,671	39	>75% Grass cover, Good, HSG A
	21,301	80	>75% Grass cover, Good, HSG D
*	9,481	98	impervious HSG D
*	1,143	50	planking HSG D
*	691	50	planking HSG A
	85,733	56	Weighted Average
	74,978		87.46% Pervious Area
	10,755		12.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, woods</b> Short Grass Pasture Kv= 7.0 fps
0.4	62	0.1600	2.80		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.9	184	0.0270	3.34		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
26.6	421	Total			

**Summary for Subcatchment 25S: Strmtr1 North**

Runoff = 1.55 cfs @ 12.33 hrs, Volume= 9,164 cf, Depth> 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 10,501	98	impervious HSG A
* 6,100	98	impervious HSG C
3,082	74	>75% Grass cover, Good, HSG C
3,022	80	>75% Grass cover, Good, HSG D
22,705	92	Weighted Average
6,104		26.88% Pervious Area
16,601		73.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6	26	0.0400	0.02		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
1.1	265	0.0400	4.06		<b>Shallow Concentrated Flow, paved</b>
					Paved Kv= 20.3 fps
23.7	291	Total			

**Summary for Subcatchment 26S: RG 3**

Runoff = 0.18 cfs @ 12.15 hrs, Volume= 850 cf, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 1,269	98	impervious HSG A
9,945	39	>75% Grass cover, Good, HSG A
* 1,830	50	planking HSG A
13,044	46	Weighted Average
11,775		90.27% Pervious Area
1,269		9.73% Impervious Area

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

**Summary for Subcatchment 27S: GH West**

Runoff = 0.35 cfs @ 12.13 hrs, Volume= 1,169 cf, Depth> 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 390	98	impervious HSG D
3,304	80	>75% Grass cover, Good, HSG D
3,694	82	Weighted Average
3,304		89.44% Pervious Area
390		10.56% Impervious Area

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

**Summary for Subcatchment 28S: GH East**

Runoff = 0.22 cfs @ 12.13 hrs, Volume= 707 cf, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 1,129	98	impervious HSG D
* 2,880	50	planking HSG D
4,009	64	Weighted Average
2,880		71.84% Pervious Area
1,129		28.16% Impervious Area

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

**Summary for Subcatchment 29S: CB 1**

Runoff = 0.41 cfs @ 12.24 hrs, Volume= 1,885 cf, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 3,522	98	impervious HSG A
* 1,102	98	exist roof HSG A
* 261	39	cemetery HSG A
5,039	39	>75% Grass cover, Good, HSG A
9,924	66	Weighted Average
5,300		53.41% Pervious Area
4,624		46.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2000	3.13		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0500	4.54		<b>Shallow Concentrated Flow, pvd</b>
					Paved Kv= 20.3 fps
14.9	197	Total			

**Summary for Subcatchment 30S: CB 3**

Runoff = 0.47 cfs @ 12.13 hrs, Volume= 1,547 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 3,592	98	impervious HSG A
1,574	39	>75% Grass cover, Good, HSG A
5,166	80	Weighted Average
1,574		30.47% Pervious Area
3,592		69.53% Impervious Area

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

**Summary for Subcatchment 31S: Rte 1**

Runoff = 0.02 cfs @ 12.30 hrs, Volume= 193 cf, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 709	39	Cemetery HSG A
1,784	30	Woods, Good, HSG A
* 493	98	impervious HSG A
1,291	39	>75% Grass cover, Good, HSG A
4,277	42	Weighted Average
3,784		88.47% Pervious Area
493		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, wds</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 32S: GH**

Runoff = 0.54 cfs @ 12.13 hrs, Volume= 2,072 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 4,476	98	roof HSG D
4,476		100.00% Impervious Area

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

**Summary for Subcatchment 33S: 12-14 CC**

Runoff = 1.09 cfs @ 12.13 hrs, Volume= 3,571 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 1,709	98	impervious HSG D
4,934	74	>75% Grass cover, Good, HSG C
5,279	80	>75% Grass cover, Good, HSG D
11,922	80	Weighted Average
10,213		85.67% Pervious Area
1,709		14.33% Impervious Area

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

**Summary for Subcatchment 34S: Barn**

Runoff = 0.29 cfs @ 12.13 hrs, Volume= 1,123 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 2,426	98	roof HSG D
2,426		100.00% Impervious Area

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

**Summary for Subcatchment 40S: YW**

Runoff = 0.26 cfs @ 12.13 hrs, Volume= 989 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 2,136	98	roof, HSG A
2,136		100.00% Impervious Area

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

**Summary for Subcatchment 41S: SR**

Runoff = 0.95 cfs @ 12.13 hrs, Volume= 3,621 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 7,823	98	roof HSG A
7,823		100.00% Impervious Area

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

**Summary for Subcatchment 42S: CE**

Runoff = 0.72 cfs @ 12.13 hrs, Volume= 2,742 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 2,744	98	roof HSG C
* 3,179	98	roof HSG D
5,923	98	Weighted Average
5,923		100.00% Impervious Area

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



**Summary for Subcatchment 43S: CC**

Runoff = 1.08 cfs @ 12.13 hrs, Volume= 4,149 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,684	98	roof HSG C
*	4,280	98	roof HSG D
	8,964	98	Weighted Average
	8,964		100.00% Impervious Area

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

**Summary for Subcatchment 44S: HA+CH**

Runoff = 1.22 cfs @ 12.13 hrs, Volume= 4,684 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,803	98	roof HSG A
*	8,315	98	roof HSG D
	10,118	98	Weighted Average
	10,118		100.00% Impervious Area

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

**Summary for Subcatchment 46S: Bay 1**

Runoff = 0.14 cfs @ 12.13 hrs, Volume= 552 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
	1,192		100.00% Impervious Area

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

**Summary for Subcatchment 49S: Bay 2**

Runoff = 0.35 cfs @ 12.13 hrs, Volume= 1,322 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
*	1,664	98	pavement HSG C
	2,856	98	Weighted Average
	2,856		100.00% Impervious Area

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

**Summary for Subcatchment 50S: Bay 3**

Runoff = 0.50 cfs @ 12.13 hrs, Volume= 1,924 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 2,545	98	porous pavement HSG C
* 1,612	98	pavement HSG C
4,157	98	Weighted Average
4,157		100.00% Impervious Area

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

**Summary for Subcatchment 51S: Bay 4**

Runoff = 0.49 cfs @ 12.13 hrs, Volume= 1,888 cf, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 1,530	98	porous pavement HSG C
* 2,549	98	pavement HSG C
4,079	98	Weighted Average
4,079		100.00% Impervious Area

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

**Summary for Pond 1P: Dep 1**

Inflow Area = 79,064 sf, 15.90% Impervious, Inflow Depth > 4.94" for 25-Year event  
Inflow = 4.22 cfs @ 12.53 hrs, Volume= 32,518 cf  
Outflow = 4.19 cfs @ 12.54 hrs, Volume= 32,517 cf, Atten= 1%, Lag= 1.0 min  
Primary = 4.19 cfs @ 12.54 hrs, Volume= 32,517 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
Peak Elev= 30.12' @ 12.55 hrs Surf.Area= 4,447 sf Storage= 2,784 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
Center-of-Mass det. time= 15.8 min ( 822.1 - 806.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	18,511 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	163	0	0
29.00	253	208	208
30.00	3,899	2,076	2,284
31.00	8,477	6,188	8,472
32.00	11,600	10,039	18,511

Device	Routing	Invert	Outlet Devices
#1	Primary	30.00'	<b>39.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	26.50'	<b>2.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.50' / 25.40' S= 0.0268 ' S= 0.0268 ' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf
#3	Primary	27.70'	<b>4.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 27.70' / 25.40' S= 0.0561 ' S= 0.0561 ' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=4.19 cfs @ 12.54 hrs HW=30.12' TW=29.93' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 4.02 cfs @ 0.86 fps)

↑ **2=Culvert** (Outlet Controls 0.02 cfs @ 1.12 fps)

↑ **3=Culvert** (Outlet Controls 0.14 cfs @ 1.60 fps)

### Summary for Pond 2P: dep 2

Inflow Area = 34,238 sf, 29.28% Impervious, Inflow Depth > 3.68" for 25-Year event  
 Inflow = 2.31 cfs @ 12.23 hrs, Volume= 10,513 cf  
 Outflow = 2.31 cfs @ 12.24 hrs, Volume= 8,752 cf, Atten= 0%, Lag= 0.4 min  
 Primary = 2.31 cfs @ 12.24 hrs, Volume= 8,752 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.54' @ 12.24 hrs Surf.Area= 2,233 sf Storage= 1,849 cf

Plug-Flow detention time= 122.5 min calculated for 8,752 cf (83% of inflow)

Center-of-Mass det. time= 44.1 min ( 881.9 - 837.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	3,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	576	0	0
35.00	1,235	906	906
36.00	3,069	2,152	3,058

Device	Routing	Invert	Outlet Devices
#1	Primary	35.50'	<b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=2.31 cfs @ 12.24 hrs HW=35.54' TW=29.48' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 2.31 cfs @ 0.52 fps)

### Summary for Pond 3P: cent dep

Inflow Area = 188,583 sf, 1.18% Impervious, Inflow Depth > 0.65" for 25-Year event  
 Inflow = 0.92 cfs @ 12.48 hrs, Volume= 10,228 cf  
 Outflow = 0.91 cfs @ 12.51 hrs, Volume= 10,213 cf, Atten= 1%, Lag= 1.6 min  
 Primary = 0.91 cfs @ 12.51 hrs, Volume= 10,213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 32.36' @ 12.51 hrs Surf.Area= 276 sf Storage= 83 cf

Plug-Flow detention time= 1.7 min calculated for 10,213 cf (100% of inflow)

Center-of-Mass det. time= 1.0 min ( 985.8 - 984.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.83'	28,303 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.83	40	0	0
33.00	566	355	355
34.00	2,635	1,601	1,955
35.00	6,530	4,583	6,538
36.00	37,000	21,765	28,303

Device	Routing	Invert	Outlet Devices
#1	Primary	35.30'	<b>45.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.83'	<b>12.0" Round Culvert</b> L= 201.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 31.83' / 25.00' S= 0.0340 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.91 cfs @ 12.51 hrs HW=32.36' TW=29.88' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

↑ **2=Culvert** (Inlet Controls 0.91 cfs @ 2.18 fps)

### Summary for Pond 4P: cb 1889

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 2.36" for 25-Year event  
 Inflow = 7.35 cfs @ 12.14 hrs, Volume= 69,660 cf  
 Outflow = 5.23 cfs @ 12.80 hrs, Volume= 69,652 cf, Atten= 29%, Lag= 40.0 min  
 Primary = 5.23 cfs @ 12.80 hrs, Volume= 69,652 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 30.05' @ 12.77 hrs Surf.Area= 6,490 sf Storage= 4,190 cf

Plug-Flow detention time= 3.3 min calculated for 69,652 cf (100% of inflow)  
 Center-of-Mass det. time= 3.3 min ( 854.5 - 851.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	42,875 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	30	0	0
28.00	157	281	281
29.00	623	390	671
30.00	5,783	3,203	3,874
32.00	33,218	39,001	42,875

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 24.90' / 23.60' S= 0.0236 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.23 cfs @ 12.80 hrs HW=30.05' TW=27.82' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 5.23 cfs @ 6.66 fps)

### Summary for Pond 20P: Cistern

Inflow Area = 134,437 sf, 13.16% Impervious, Inflow Depth > 0.85" for 25-Year event  
 Inflow = 0.75 cfs @ 12.71 hrs, Volume= 9,521 cf  
 Outflow = 0.75 cfs @ 12.71 hrs, Volume= 8,900 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.75 cfs @ 12.71 hrs, Volume= 8,900 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.93' @ 12.71 hrs Surf.Area= 79 sf Storage= 623 cf

Plug-Flow detention time= 55.6 min calculated for 8,896 cf (93% of inflow)  
 Center-of-Mass det. time= 25.0 min ( 978.1 - 953.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	628 cf	<b>10.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	39.90'	<b>1.0" x 6.5" Horiz. Orifice/Grate X 11.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#2	Primary	39.95'	<b>100.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.75 cfs @ 12.71 hrs HW=39.93' TW=35.13' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Weir Controls 0.75 cfs @ 0.58 fps)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 21P: cb 6087

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 2.36" for 25-Year event  
 Inflow = 5.23 cfs @ 12.80 hrs, Volume= 69,652 cf  
 Outflow = 5.23 cfs @ 12.80 hrs, Volume= 69,652 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.23 cfs @ 12.80 hrs, Volume= 69,652 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.83' @ 12.75 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	23.60'	<b>12.0" Round Culvert</b> L= 52.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.60' / 23.00' S= 0.0115 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.23 cfs @ 12.80 hrs HW=27.82' TW=25.66' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 5.23 cfs @ 6.66 fps)

### Summary for Pond 22P: HW 1

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 1.05" for 25-Year event  
 Inflow = 2.09 cfs @ 12.47 hrs, Volume= 19,305 cf  
 Outflow = 1.50 cfs @ 12.83 hrs, Volume= 18,886 cf, Atten= 28%, Lag= 21.4 min  
 Primary = 1.50 cfs @ 12.83 hrs, Volume= 18,886 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 34.15' @ 12.83 hrs Surf.Area= 1,691 sf Storage= 1,751 cf

Flood Elev= 34.50' Surf.Area= 2,516 sf Storage= 2,477 cf

Plug-Flow detention time= 21.3 min calculated for 18,886 cf (98% of inflow)

Center-of-Mass det. time= 10.9 min ( 960.8 - 949.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	8,939 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	131	0	0
33.00	607	554	554
34.00	1,321	964	1,518
36.00	6,100	7,421	8,939

Device	Routing	Invert	Outlet Devices
#1	Primary	31.58'	<b>12.0" Round Culvert</b> L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 31.58' / 25.32' S= 0.1841 ' / ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	32.50'	<b>7.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.50 cfs @ 12.83 hrs HW=34.15' TW=25.55' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.50 cfs of 7.43 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 1.50 cfs @ 5.62 fps)

**Summary for Pond 23P: Strmtr 2**

Inflow Area = 12,687 sf, 40.99% Impervious, Inflow Depth > 1.84" for 25-Year event  
 Inflow = 0.25 cfs @ 12.57 hrs, Volume= 1,945 cf  
 Outflow = 0.25 cfs @ 12.57 hrs, Volume= 1,945 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.25 cfs @ 12.57 hrs, Volume= 1,945 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.38' @ 12.57 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.16'	<b>12.0" Round Culvert</b> L= 222.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 38.16' / 24.80' S= 0.0602 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.25 cfs @ 12.57 hrs HW=38.38' TW=23.20' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.25 cfs @ 1.99 fps)

**Summary for Pond 24P: RG #1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 1.05" for 25-Year event  
 Inflow = 2.09 cfs @ 12.47 hrs, Volume= 19,330 cf  
 Outflow = 2.09 cfs @ 12.47 hrs, Volume= 19,305 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.09 cfs @ 12.47 hrs, Volume= 19,305 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.13' @ 12.47 hrs Surf.Area= 407 sf Storage= 42 cf

Flood Elev= 36.50' Surf.Area= 10 sf Storage= 336 cf

Plug-Flow detention time= 1.1 min calculated for 19,305 cf (100% of inflow)

Center-of-Mass det. time= 0.4 min ( 949.9 - 949.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	131	0	0
35.08	394	21	21
35.50	500	188	209
36.00	10	128	336

Device	Routing	Invert	Outlet Devices
#1	Primary	35.08'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=2.09 cfs @ 12.47 hrs HW=35.13' TW=33.79' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.09 cfs @ 0.62 fps)

**Summary for Pond 25P: Strmtr 1**

Inflow Area = 69,766 sf, 46.99% Impervious, Inflow Depth > 2.63" for 25-Year event  
 Inflow = 2.09 cfs @ 12.37 hrs, Volume= 15,303 cf  
 Outflow = 2.09 cfs @ 12.37 hrs, Volume= 15,303 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.09 cfs @ 12.37 hrs, Volume= 15,303 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.48' @ 12.37 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.78'	<b>12.0" Round Culvert</b> L= 51.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.78' / 24.81' S= 0.0386 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf



**Primary OutFlow** Max=2.09 cfs @ 12.37 hrs HW=27.48' TW=25.16' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.09 cfs @ 3.56 fps)

### Summary for Pond 26P: CB 2

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 1.42" for 25-Year event  
 Inflow = 0.53 cfs @ 12.20 hrs, Volume= 2,712 cf  
 Outflow = 0.53 cfs @ 12.20 hrs, Volume= 2,712 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.53 cfs @ 12.20 hrs, Volume= 2,712 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 36.56' @ 12.20 hrs

Flood Elev= 40.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.22'	<b>10.0" Round Culvert</b> L= 150.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 36.22' / 27.72' S= 0.0567 ' / S= 0.0567 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.53 cfs @ 12.20 hrs HW=36.56' TW=28.23' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.53 cfs @ 2.49 fps)

### Summary for Pond 27P: DI 1

Inflow Area = 31,138 sf, 34.55% Impervious, Inflow Depth > 2.29" for 25-Year event  
 Inflow = 1.36 cfs @ 12.14 hrs, Volume= 5,953 cf  
 Outflow = 1.36 cfs @ 12.14 hrs, Volume= 5,953 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.36 cfs @ 12.14 hrs, Volume= 5,953 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.31' @ 12.14 hrs

Flood Elev= 33.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.72'	<b>10.0" Round Culvert</b> L= 70.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 27.72' / 26.36' S= 0.0194 ' / S= 0.0194 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=1.36 cfs @ 12.14 hrs HW=28.31' TW=26.95' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.36 cfs @ 3.27 fps)

### Summary for Pond 28P: DI 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 2.12" for 25-Year event  
 Inflow = 0.22 cfs @ 12.13 hrs, Volume= 707 cf  
 Outflow = 0.22 cfs @ 12.13 hrs, Volume= 707 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.22 cfs @ 12.13 hrs, Volume= 707 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 34.05' @ 12.13 hrs

Flood Elev= 35.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.84'	<b>10.0" Round Culvert</b> L= 66.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.84' / 33.00' S= 0.0127 ' / S= 0.0127 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.21 cfs @ 12.13 hrs HW=34.05' TW=33.20' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.21 cfs @ 1.96 fps)

### Summary for Pond 29P: CB 1

Inflow Area = 9,924 sf, 46.59% Impervious, Inflow Depth > 2.28" for 25-Year event  
 Inflow = 0.41 cfs @ 12.24 hrs, Volume= 1,885 cf  
 Outflow = 0.41 cfs @ 12.24 hrs, Volume= 1,885 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.41 cfs @ 12.24 hrs, Volume= 1,885 cf

**Hillside Center 12-28-15**

NRCC 24-hr D 25-Year Rainfall=5.80"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.05' @ 12.24 hrs

Flood Elev= 57.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	<b>10.0" Round Culvert</b> L= 46.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 53.75' / 42.60' S= 0.2424 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.41 cfs @ 12.24 hrs HW=54.05' TW=39.82' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.41 cfs @ 2.33 fps)**Summary for Pond 30P: CB 3**

Inflow Area = 5,166 sf, 69.53% Impervious, Inflow Depth > 3.59" for 25-Year event  
 Inflow = 0.47 cfs @ 12.13 hrs, Volume= 1,547 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.81' @ 24.00 hrs Surf.Area= 802 sf Storage= 1,547 cf

Flood Elev= 43.50' Surf.Area= 802 sf Storage= 1,789 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	36.00'	701 cf	<b>20.83'W x 38.50'L x 3.54'H Field A</b> 2,841 cf Overall - 1,088 cf Embedded = 1,753 cf x 40.0% Voids
#2A	36.50'	1,088 cf	<b>Cultec R-330XLHD</b> x 20 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		1,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.04'	<b>8.0" Round Culvert</b> L= 268.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 39.04' / 26.50' S= 0.0468 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Device 1	43.04'	<b>2.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=26.78' (Dynamic Tailwater)↑**1=Culvert** (Controls 0.00 cfs)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 31P: RG #3**

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 1.43" for 25-Year event  
 Inflow = 0.53 cfs @ 12.20 hrs, Volume= 2,735 cf  
 Outflow = 0.53 cfs @ 12.20 hrs, Volume= 2,712 cf, Atten= 0%, Lag= 0.2 min  
 Primary = 0.53 cfs @ 12.20 hrs, Volume= 2,712 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.82' @ 12.20 hrs Surf.Area= 398 sf Storage= 29 cf

Flood Elev= 43.50' Surf.Area= 500 sf Storage= 244 cf

Plug-Flow detention time= 6.9 min calculated for 2,712 cf (99% of inflow)

Center-of-Mass det. time= 2.6 min ( 910.1 - 907.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	39.72'	244 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.72	131	0	0
39.80	394	21	21
40.30	500	224	244

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.53 cfs @ 12.20 hrs HW=39.82' TW=36.56' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.53 cfs @ 0.39 fps)

### Summary for Pond 32P: PrkCis 1

Inflow Area = 1,192 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.14 cfs @ 12.13 hrs, Volume= 552 cf  
 Outflow = 0.00 cfs @ 24.00 hrs, Volume= 2 cf, Atten= 100%, Lag= 712.3 min  
 Primary = 0.00 cfs @ 24.00 hrs, Volume= 2 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.22' @ 24.00 hrs Surf.Area= 863 sf Storage= 550 cf

Flood Elev= 42.00' Surf.Area= 863 sf Storage= 1,733 cf

Plug-Flow detention time= 1,348.2 min calculated for 2 cf (0% of inflow)

Center-of-Mass det. time= 666.6 min ( 1,413.4 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	38.20'	689 cf	<b>19.17'W x 45.00'L x 3.21'H Field A</b> 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	38.70'	1,044 cf	<b>Cultec R-280HD</b> x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
1,733 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.20'	<b>4.0" Round Culvert</b> L= 100.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 39.20' / 30.00' S= 0.0920 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 24.00 hrs HW=39.22' TW=21.83' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.00 cfs @ 0.40 fps)

### Summary for Pond 33P: PrkCst 2

Inflow Area = 2,856 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.35 cfs @ 12.13 hrs, Volume= 1,322 cf  
 Outflow = 0.06 cfs @ 12.51 hrs, Volume= 832 cf, Atten= 83%, Lag= 23.2 min  
 Primary = 0.06 cfs @ 12.51 hrs, Volume= 832 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 37.90' @ 12.51 hrs Surf.Area= 728 sf Storage= 746 cf

Flood Elev= 41.00' Surf.Area= 728 sf Storage= 1,459 cf

Plug-Flow detention time= 306.1 min calculated for 831 cf (63% of inflow)

Center-of-Mass det. time= 171.7 min ( 918.6 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.40'	585 cf	<b>19.17'W x 38.00'L x 3.21'H Field A</b> 2,337 cf Overall - 874 cf Embedded = 1,462 cf x 40.0% Voids
#2A	36.90'	874 cf	<b>Cultec R-280HD</b> x 20 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,459 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>2.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 34.66' S= 0.0548 ' / Cc= 0.900 n= 0.010, Flow Area= 0.02 sf

**Primary OutFlow** Max=0.06 cfs @ 12.51 hrs HW=37.90' TW=23.20' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.06 cfs @ 2.75 fps)

### Summary for Pond 34P: CC Cisterns

Inflow Area = 8,964 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 1.08 cfs @ 12.13 hrs, Volume= 4,149 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 476 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 476 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 44.20' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 3,674 cf

Plug-Flow detention time= 710.0 min calculated for 476 cf (11% of inflow)  
 Center-of-Mass det. time= 265.0 min ( 1,011.9 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.50'	5,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	227	0	0
45.50	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	41.50'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=44.20' TW=21.83' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.58 fps)

### Summary for Pond 35P: DMH 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 2.12" for 25-Year event  
 Inflow = 0.22 cfs @ 12.13 hrs, Volume= 707 cf  
 Outflow = 0.22 cfs @ 12.13 hrs, Volume= 707 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.22 cfs @ 12.13 hrs, Volume= 707 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.20' @ 12.13 hrs  
 Flood Elev= 35.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>12.0" Round Culvert</b> L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.00' / 24.90' S= 0.3115 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.21 cfs @ 12.13 hrs HW=33.20' TW=26.95' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.21 cfs @ 1.91 fps)

**Summary for Pond 36P: DMH 3**

Inflow Area = 35,147 sf, 33.82% Impervious, Inflow Depth > 2.27" for 25-Year event  
 Inflow = 1.57 cfs @ 12.14 hrs, Volume= 6,660 cf  
 Outflow = 1.57 cfs @ 12.14 hrs, Volume= 6,660 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.57 cfs @ 12.14 hrs, Volume= 6,660 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 26.95' @ 12.14 hrs

Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.36'	<b>12.0" Round Culvert</b> L= 73.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.36' / 24.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.57 cfs @ 12.14 hrs HW=26.95' TW=25.54' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.57 cfs @ 3.27 fps)

**Summary for Pond 37P: DMH 4**

Inflow Area = 259,207 sf, 15.59% Impervious, Inflow Depth > 1.20" for 25-Year event  
 Inflow = 1.83 cfs @ 12.55 hrs, Volume= 25,907 cf  
 Outflow = 1.83 cfs @ 12.55 hrs, Volume= 25,907 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.83 cfs @ 12.55 hrs, Volume= 25,907 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.62' @ 12.36 hrs

Flood Elev= 34.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 37.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.90' / 24.00' S= 0.0243 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.83 cfs @ 12.55 hrs HW=25.61' TW=25.07' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 1.83 cfs @ 4.32 fps)

**Summary for Pond 38P: DMH 5**

Inflow Area = 328,973 sf, 22.24% Impervious, Inflow Depth > 1.50" for 25-Year event  
 Inflow = 3.84 cfs @ 12.36 hrs, Volume= 41,210 cf  
 Outflow = 3.84 cfs @ 12.36 hrs, Volume= 41,210 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.84 cfs @ 12.36 hrs, Volume= 41,210 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.16' @ 12.36 hrs

Flood Elev= 33.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.00'	<b>12.0" Round Culvert</b> L= 59.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.00' / 23.00' S= 0.0169 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.84 cfs @ 12.36 hrs HW=25.16' TW=23.08' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 3.84 cfs @ 4.89 fps)

**Summary for Pond 39P: PrkCis 3**

Inflow Area = 4,157 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.50 cfs @ 12.13 hrs, Volume= 1,924 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 36.72' @ 24.00 hrs Surf.Area= 1,226 sf Storage= 1,924 cf

Flood Elev= 39.00' Surf.Area= 1,226 sf Storage= 2,485 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1A	34.50'	967 cf	<b>23.58'W x 52.00'L x 3.21'H Field A</b> 3,934 cf Overall - 1,518 cf Embedded = 2,417 cf x 40.0% Voids
#2A	35.00'	1,518 cf	<b>Cultec R-280HD x 35 Inside #1</b> Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 5 rows
		2,485 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>6.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 32.46' S= 0.0988 ' / Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Primary	37.80'	<b>80.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=34.50' TW=21.50' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 40P: PrkCis 4

Inflow Area = 4,079 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.49 cfs @ 12.13 hrs, Volume= 1,888 cf  
 Outflow = 0.01 cfs @ 19.34 hrs, Volume= 233 cf, Atten= 98%, Lag= 432.8 min  
 Primary = 0.01 cfs @ 19.34 hrs, Volume= 233 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 32.82' @ 19.34 hrs Surf.Area= 1,094 sf Storage= 1,662 cf  
 Flood Elev= 40.00' Surf.Area= 1,094 sf Storage= 2,453 cf

Plug-Flow detention time= 916.9 min calculated for 233 cf (12% of inflow)  
 Center-of-Mass det. time= 484.4 min ( 1,231.3 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	30.67'	947 cf	<b>20.83'W x 52.50'L x 3.54'H Field A</b> 3,874 cf Overall - 1,505 cf Embedded = 2,369 cf x 40.0% Voids
#2A	31.17'	1,505 cf	<b>Cultec R-330XLHD x 28 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		2,453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	<b>4.0" Round Culvert</b> L= 60.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 32.75' / 32.26' S= 0.0082 ' / Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.01 cfs @ 19.34 hrs HW=32.82' TW=21.87' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.01 cfs @ 0.79 fps)

### Summary for Pond 41P: CB 5

Inflow Area = 3,890 sf, 1.80% Impervious, Inflow Depth > 1.11" for 25-Year event  
 Inflow = 0.09 cfs @ 12.14 hrs, Volume= 360 cf  
 Outflow = 0.09 cfs @ 12.14 hrs, Volume= 360 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.09 cfs @ 12.14 hrs, Volume= 360 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3



**Hillside Center 12-28-15**

NRCC 24-hr D 25-Year Rainfall=5.80"

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Peak Elev= 29.08' @ 12.14 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.94'	<b>10.0" Round Culvert</b> L= 38.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 28.94' / 25.90' S= 0.0800 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.09 cfs @ 12.14 hrs HW=29.08' TW=25.54' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.09 cfs @ 1.58 fps)**Summary for Pond 43P: CE Cisterns**

Inflow Area = 5,923 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.72 cfs @ 12.13 hrs, Volume= 2,742 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 330 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 330 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 45.66' @ 24.00 hrs Surf.Area= 908 sf Storage= 2,412 cf

Plug-Flow detention time= 685.4 min calculated for 330 cf (12% of inflow)

Center-of-Mass det. time= 248.7 min ( 995.5 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	3,632 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 4

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	227	0	0
47.00	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>0.2" Vert. Orifice/Grate</b> X 4 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=45.66' TW=21.83' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.65 fps)**Summary for Pond 44P: SR Cisterns**

Inflow Area = 7,823 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.95 cfs @ 12.13 hrs, Volume= 3,621 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 417 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 417 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 48.82' @ 24.00 hrs Surf.Area= 1,135 sf Storage= 3,204 cf

Plug-Flow detention time= 700.1 min calculated for 417 cf (12% of inflow)

Center-of-Mass det. time= 255.9 min ( 1,002.7 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	5,675 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	227	0	0
51.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>0.2" Vert. Orifice/Grate</b> X 5 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=48.82' TW=21.83' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.83 fps)

**Summary for Pond 45P: HACisterns**

Inflow Area = 10,118 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 1.22 cfs @ 12.13 hrs, Volume= 4,684 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 513 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 513 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 47.06' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 4,170 cf

Plug-Flow detention time= 713.5 min calculated for 513 cf (11% of inflow)  
 Center-of-Mass det. time= 261.0 min ( 1,007.8 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	6,810 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	227	0	0
49.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=47.06' TW=21.83' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 8.12 fps)

**Summary for Pond 46P: CB 4**

Inflow Area = 400,830 sf, 31.77% Impervious, Inflow Depth > 1.50" for 25-Year event  
 Inflow = 4.42 cfs @ 12.35 hrs, Volume= 49,965 cf  
 Outflow = 4.15 cfs @ 12.54 hrs, Volume= 49,794 cf, Atten= 6%, Lag= 11.2 min  
 Primary = 4.15 cfs @ 12.54 hrs, Volume= 49,794 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 23.21' @ 12.54 hrs Surf.Area= 1,297 sf Storage= 1,633 cf

Plug-Flow detention time= 6.0 min calculated for 49,773 cf (100% of inflow)  
 Center-of-Mass det. time= 4.1 min ( 905.7 - 901.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	27.80'	23,576 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2A	21.50'	259 cf	<b>21.79'W x 59.50'L x 6.00'H Field A</b>
			7,780 cf Overall - 7,131 cf Embedded = 648 cf x 40.0% Voids
#3A	22.00'	5,694 cf	<b>StormTrap SingleTrap 5-0</b> x 3 Inside #2
			Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
			Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf
			8.48' x 46.19' Core + 6.66' Border = 21.79' x 59.50' System
		29,529 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.80	4	0	0
28.00	1,704	171	171
30.00	4,071	5,775	5,946
32.00	13,559	17,630	23,576

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 21.50' / 19.40' S= 0.0149 ' S= 0.0149 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.15 cfs @ 12.54 hrs HW=23.21' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 4.15 cfs @ 5.29 fps)

**Summary for Pond 47P: HW**

Inflow Area = 385,242 sf, 8.99% Impervious, Inflow Depth > 2.41" for 25-Year event  
 Inflow = 6.77 cfs @ 12.14 hrs, Volume= 77,329 cf  
 Outflow = 6.24 cfs @ 12.18 hrs, Volume= 77,320 cf, Atten= 8%, Lag= 2.8 min  
 Primary = 6.24 cfs @ 12.18 hrs, Volume= 77,320 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 26.22' @ 12.18 hrs Surf.Area= 567 sf Storage= 544 cf

Plug-Flow detention time= 0.6 min calculated for 77,287 cf (100% of inflow)  
 Center-of-Mass det. time= 0.5 min ( 855.2 - 854.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	75,612 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	10	0	0
26.00	290	450	450
28.00	2,812	3,102	3,552
32.00	33,218	72,060	75,612

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 19.40' S= 0.0255 ' / Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=6.24 cfs @ 12.18 hrs HW=26.22' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 6.24 cfs @ 7.94 fps)

**Summary for Pond 48P: YW Cistern**

Inflow Area = 2,136 sf, 100.00% Impervious, Inflow Depth > 5.55" for 25-Year event  
 Inflow = 0.26 cfs @ 12.13 hrs, Volume= 989 cf  
 Outflow = 0.01 cfs @ 16.16 hrs, Volume= 438 cf, Atten= 97%, Lag= 241.8 min  
 Primary = 0.01 cfs @ 16.16 hrs, Volume= 438 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 54.59' @ 16.16 hrs Surf.Area= 392 sf Storage= 623 cf

Plug-Flow detention time= 395.4 min calculated for 438 cf (44% of inflow)  
 Center-of-Mass det. time= 210.5 min ( 957.3 - 746.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	1,176 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	392	0	0
56.00	392	1,176	1,176

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	<b>0.5" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 16.16 hrs HW=54.59' TW=21.95' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.03 fps)

**Summary for Link 1L: Total Exist**

Inflow Area = 405,107 sf, 8.55% Impervious, Inflow Depth > 2.30" for 25-Year event  
 Inflow = 6.24 cfs @ 12.18 hrs, Volume= 77,490 cf  
 Primary = 6.24 cfs @ 12.18 hrs, Volume= 77,490 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Link 20L: Total POST**

Inflow Area = 405,107 sf, 31.55% Impervious, Inflow Depth > 1.48" for 25-Year event  
Inflow = 4.17 cfs @ 12.54 hrs, Volume= 49,987 cf  
Primary = 4.17 cfs @ 12.54 hrs, Volume= 49,987 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Subcatchment 1S: dep 1 DA**

Runoff = 5.24 cfs @ 12.53 hrs, Volume= 40,909 cf, Depth> 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 8,110	98	roof & pvmnt
50,133	94	Fallow, bare soil, HSG D
16,361	84	50-75% Grass cover, Fair, HSG D
* 4,460	98	pre-exist warehouse, HSG D
79,064	93	Weighted Average
66,494		84.10% Pervious Area
12,570		15.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	96	0.2300	3.36		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	260	0.1400	6.02		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
39.3	406	Total			

**Summary for Subcatchment 2S: dep 2 DA**

Runoff = 3.03 cfs @ 12.23 hrs, Volume= 13,913 cf, Depth> 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 4,525	98	roof & pvmnt
13,599	68	<50% Grass cover, Poor, HSG A
8,272	77	Fallow, bare soil, HSG A
2,342	91	Fallow, bare soil, HSG C
* 2,147	98	pre-exist house, HSG A
* 3,353	98	pre-exist warehouse, HSG C
34,238	81	Weighted Average
24,213		70.72% Pervious Area
10,025		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2200	3.28		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	216	0.1300	5.80		<b>Shallow Concentrated Flow, bare soil</b>
					Unpaved Kv= 16.1 fps
15.2	338	Total			

**Summary for Subcatchment 3S: cent dep DA**

Runoff = 2.36 cfs @ 12.42 hrs, Volume= 18,576 cf, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

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NRCC 24-hr D 50-Year Rainfall=7.10"

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Area (sf)	CN	Description
* 2,218	98	barn
18,317	89	<50% Grass cover, Poor, HSG D
116,882	39	>75% Grass cover, Good, HSG A
48,880	36	Woods, Fair, HSG A
* 2,286	97	Dirt roads, HSG D
188,583	44	Weighted Average
186,365		98.82% Pervious Area
2,218		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
0.4	77	0.0400	3.22		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
25.7	252	Total			

**Summary for Subcatchment 4S: rte one**

Runoff = 0.02 cfs @ 13.07 hrs, Volume= 550 cf, Depth&gt; 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
4,389	39	>75% Grass cover, Good, HSG A
15,476	30	Woods, Good, HSG A
19,865	32	Weighted Average
19,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 5S: dep 3 DA**

Runoff = 3.24 cfs @ 12.13 hrs, Volume= 10,562 cf, Depth&gt; 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 1,388	98	roof & pvmnt
28,408	74	>75% Grass cover, Good, HSG C
1,781	36	Woods, Fair, HSG A
31,577	73	Weighted Average
30,189		95.60% Pervious Area
1,388		4.40% Impervious Area



Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.1600	2.00		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	43	0.1400	1.87		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
2.1	245	0.0800	1.98		<b>Shallow Concentrated Flow, grass</b> Short Grass Pasture Kv= 7.0 fps
3.3					<b>Direct Entry, 6 min minimum</b>
6.0	313	Total			

**Summary for Subcatchment 6S: cb 1889 DA**

Runoff = 6.87 cfs @ 12.13 hrs, Volume= 23,531 cf, Depth> 5.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 8,445	98	roof & pvmnt
14,077	86	<50% Grass cover, Poor, HSG C
4,389	39	>75% Grass cover, Good, HSG A
5,092	77	Woods, Poor, HSG C
* 3,284	97	Dirt roads, HSG D
16,493	94	Fallow, bare soil, HSG D
51,780	86	Weighted Average
43,335		83.69% Pervious Area
8,445		16.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	1.98		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.7	107	0.1200	2.42		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.6	107	0.3100	2.78		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.7	200	0.0950	4.96		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
3.8					<b>Direct Entry, add for 6 min. minimum</b>
6.0	439	Total			

**Summary for Subcatchment 20S: Cistern DA**

Runoff = 1.57 cfs @ 12.62 hrs, Volume= 14,716 cf, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 78,503	39	cemertery
10,899	30	Woods, Good, HSG A
* 3,034	98	exist roofs
* 12,226	98	impervious HSG D
25,167	39	>75% Grass cover, Good, HSG A
2,182	80	>75% Grass cover, Good, HSG D
132,011	46	Weighted Average
116,751		88.44% Pervious Area
15,260		11.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	100	0.2600	3.57		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
2.4	303	0.0900	2.10		<b>Shallow Concentrated Flow, lawn &amp; swale</b> Short Grass Pasture Kv= 7.0 fps
41.0	453	Total			

**Summary for Subcatchment 21S: CB 5**

Runoff = 0.17 cfs @ 12.14 hrs, Volume= 586 cf, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 70	98	impervious HSG A
60	74	>75% Grass cover, Good, HSG C
* 1,274	50	Planking D
* 2,486	50	Pervious D
3,890	51	Weighted Average
3,820		98.20% Pervious Area
70		1.80% Impervious Area

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

**Summary for Subcatchment 22S: Strmtr 1 South**

Runoff = 1.21 cfs @ 12.59 hrs, Volume= 9,178 cf, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 15,487	39	Cemetery
5,314	30	Woods, Good, HSG A
* 2,400	98	impervious HSG A
3,003	39	>75% Grass cover, Good, HSG A
3,519	74	>75% Grass cover, Good, HSG C
1,985	80	>75% Grass cover, Good, HSG D
* 8,451	98	impervious HSG C
* 1,736	98	impervious HSG D
41,895	60	Weighted Average
29,308		69.96% Pervious Area
12,587		30.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
1.2	138	0.0700	1.85		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.2	46	0.4800	3.46		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	76	0.2100	3.21		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
1.0	226	0.0360	3.85		<b>Shallow Concentrated Flow, pvd</b> Paved Kv= 20.3 fps
40.9	536	Total			

**Summary for Subcatchment 23S: Strmtr2**

Runoff = 0.39 cfs @ 12.54 hrs, Volume= 2,886 cf, Depth> 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	2,231	39	Cemetery
	2,408	30	Woods, Good, HSG A
*	5,201	98	impervious HSG A
	2,847	39	>75% Grass cover, Good, HSG A
	12,687	61	Weighted Average
	7,486		59.01% Pervious Area
	5,201		40.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	78	0.1300	2.52		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.1	26	0.4600	3.39		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	59	0.4000	4.43		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0220	3.01		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
39.3	280	Total			

**Summary for Subcatchment 24S: CentDep**

Runoff = 2.60 cfs @ 12.39 hrs, Volume= 16,120 cf, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	40,139	39	Cemetery
	6,033	30	Woods, Good, HSG A
*	1,199	98	impervious HSG A
*	75	98	impervious HSG C
	5,671	39	>75% Grass cover, Good, HSG A
	21,301	80	>75% Grass cover, Good, HSG D
*	9,481	98	impervious HSG D
*	1,143	50	planking HSG D
*	691	50	planking HSG A
	85,733	56	Weighted Average
	74,978		87.46% Pervious Area
	10,755		12.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, woods</b> Short Grass Pasture Kv= 7.0 fps
0.4	62	0.1600	2.80		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.9	184	0.0270	3.34		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
26.6	421	Total			

**Summary for Subcatchment 25S: Strmtr1 North**

Runoff = 1.94 cfs @ 12.33 hrs, Volume= 11,574 cf, Depth> 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 10,501	98	impervious HSG A
* 6,100	98	impervious HSG C
3,082	74	>75% Grass cover, Good, HSG C
3,022	80	>75% Grass cover, Good, HSG D
22,705	92	Weighted Average
6,104		26.88% Pervious Area
16,601		73.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6	26	0.0400	0.02		<b>Sheet Flow, grass</b>
					Grass: Short n= 0.150 P2= 0.04"
1.1	265	0.0400	4.06		<b>Shallow Concentrated Flow, paved</b>
					Paved Kv= 20.3 fps
23.7	291	Total			

**Summary for Subcatchment 26S: RG 3**

Runoff = 0.39 cfs @ 12.14 hrs, Volume= 1,484 cf, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 1,269	98	impervious HSG A
9,945	39	>75% Grass cover, Good, HSG A
* 1,830	50	planking HSG A
13,044	46	Weighted Average
11,775		90.27% Pervious Area
1,269		9.73% Impervious Area

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

**Summary for Subcatchment 27S: GH West**

Runoff = 0.46 cfs @ 12.13 hrs, Volume= 1,540 cf, Depth> 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 390	98	impervious HSG D
3,304	80	>75% Grass cover, Good, HSG D
3,694	82	Weighted Average
3,304		89.44% Pervious Area
390		10.56% Impervious Area

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

**Summary for Subcatchment 28S: GH East**

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 1,129	98	impervious HSG D
* 2,880	50	planking HSG D
4,009	64	Weighted Average
2,880		71.84% Pervious Area
1,129		28.16% Impervious Area

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

**Summary for Subcatchment 29S: CB 1**

Runoff = 0.60 cfs @ 12.23 hrs, Volume= 2,700 cf, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 3,522	98	impervious HSG A
* 1,102	98	exist roof HSG A
* 261	39	cemetery HSG A
5,039	39	>75% Grass cover, Good, HSG A
9,924	66	Weighted Average
5,300		53.41% Pervious Area
4,624		46.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2000	3.13		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0500	4.54		<b>Shallow Concentrated Flow, pvd</b>
					Paved Kv= 20.3 fps
14.9	197	Total			

**Summary for Subcatchment 30S: CB 3**

Runoff = 0.62 cfs @ 12.13 hrs, Volume= 2,057 cf, Depth> 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 3,592	98	impervious HSG A
1,574	39	>75% Grass cover, Good, HSG A
5,166	80	Weighted Average
1,574		30.47% Pervious Area
3,592		69.53% Impervious Area

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

**Summary for Subcatchment 31S: Rte 1**

Runoff = 0.06 cfs @ 12.25 hrs, Volume= 366 cf, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 709	39	Cemetery HSG A
1,784	30	Woods, Good, HSG A
* 493	98	impervious HSG A
1,291	39	>75% Grass cover, Good, HSG A
4,277	42	Weighted Average
3,784		88.47% Pervious Area
493		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, wds</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Summary for Subcatchment 32S: GH**

Runoff = 0.66 cfs @ 12.13 hrs, Volume= 2,556 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 4,476	98	roof HSG D
4,476		100.00% Impervious Area

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

**Summary for Subcatchment 33S: 12-14 CC**

Runoff = 1.43 cfs @ 12.13 hrs, Volume= 4,747 cf, Depth> 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 1,709	98	impervious HSG D
4,934	74	>75% Grass cover, Good, HSG C
5,279	80	>75% Grass cover, Good, HSG D
11,922	80	Weighted Average
10,213		85.67% Pervious Area
1,709		14.33% Impervious Area

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



**Summary for Subcatchment 34S: Barn**

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,385 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 2,426	98	roof HSG D
2,426		100.00% Impervious Area

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

**Summary for Subcatchment 40S: YW**

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 1,220 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 2,136	98	roof, HSG A
2,136		100.00% Impervious Area

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

**Summary for Subcatchment 41S: SR**

Runoff = 1.16 cfs @ 12.13 hrs, Volume= 4,467 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 7,823	98	roof HSG A
7,823		100.00% Impervious Area

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

**Summary for Subcatchment 42S: CE**

Runoff = 0.88 cfs @ 12.13 hrs, Volume= 3,382 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 2,744	98	roof HSG C
* 3,179	98	roof HSG D
5,923	98	Weighted Average
5,923		100.00% Impervious Area

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

**Summary for Subcatchment 43S: CC**

Runoff = 1.33 cfs @ 12.13 hrs, Volume= 5,118 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	4,684	98	roof HSG C
*	4,280	98	roof HSG D
	8,964	98	Weighted Average
	8,964		100.00% Impervious Area

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

**Summary for Subcatchment 44S: HA+CH**

Runoff = 1.50 cfs @ 12.13 hrs, Volume= 5,777 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	1,803	98	roof HSG A
*	8,315	98	roof HSG D
	10,118	98	Weighted Average
	10,118		100.00% Impervious Area

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

**Summary for Subcatchment 46S: Bay 1**

Runoff = 0.18 cfs @ 12.13 hrs, Volume= 681 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
	1,192		100.00% Impervious Area

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

**Summary for Subcatchment 49S: Bay 2**

Runoff = 0.42 cfs @ 12.13 hrs, Volume= 1,631 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
*	1,664	98	pavement HSG C
	2,856	98	Weighted Average
	2,856		100.00% Impervious Area

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

### Summary for Subcatchment 50S: Bay 3

Runoff = 0.62 cfs @ 12.13 hrs, Volume= 2,374 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 2,545	98	porous pavement HSG C
* 1,612	98	pavement HSG C
4,157	98	Weighted Average
4,157		100.00% Impervious Area

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

### Summary for Subcatchment 51S: Bay 4

Runoff = 0.60 cfs @ 12.13 hrs, Volume= 2,329 cf, Depth> 6.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 50-Year Rainfall=7.10"

Area (sf)	CN	Description
* 1,530	98	porous pavement HSG C
* 2,549	98	pavement HSG C
4,079	98	Weighted Average
4,079		100.00% Impervious Area

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

### Summary for Pond 1P: Dep 1

Inflow Area = 79,064 sf, 15.90% Impervious, Inflow Depth > 6.21" for 50-Year event

Inflow = 5.24 cfs @ 12.53 hrs, Volume= 40,909 cf

Outflow = 3.84 cfs @ 12.62 hrs, Volume= 40,909 cf, Atten= 27%, Lag= 5.3 min

Primary = 3.84 cfs @ 12.62 hrs, Volume= 40,909 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 30.60' @ 12.94 hrs Surf.Area= 6,646 sf Storage= 5,448 cf

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

Center-of-Mass det. time= 20.4 min ( 819.9 - 799.5 )

Volume	Invert	Avail.Storage	Storage	Description
#1	28.00'	18,511 cf		<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
28.00	163	0	0	
29.00	253	208	208	
30.00	3,899	2,076	2,284	
31.00	8,477	6,188	8,472	
32.00	11,600	10,039	18,511	

Device	Routing	Invert	Outlet Devices
#1	Primary	30.00'	<b>39.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	26.50'	<b>2.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.50' / 25.40' S= 0.0268 '/' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf
#3	Primary	27.70'	<b>4.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 27.70' / 25.40' S= 0.0561 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 12.62 hrs HW=30.51' TW=30.51' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

↑ **2=Culvert** ( Controls 0.00 cfs)

↑ **3=Culvert** ( Controls 0.00 cfs)

### Summary for Pond 2P: dep 2

Inflow Area = 34,238 sf, 29.28% Impervious, Inflow Depth > 4.88" for 50-Year event  
 Inflow = 3.03 cfs @ 12.23 hrs, Volume= 13,913 cf  
 Outflow = 3.03 cfs @ 12.24 hrs, Volume= 12,151 cf, Atten= 0%, Lag= 0.4 min  
 Primary = 3.03 cfs @ 12.24 hrs, Volume= 12,151 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.55' @ 12.24 hrs Surf.Area= 2,249 sf Storage= 1,869 cf

Plug-Flow detention time= 101.7 min calculated for 12,146 cf (87% of inflow)

Center-of-Mass det. time= 38.2 min ( 865.7 - 827.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	3,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	576	0	0
35.00	1,235	906	906
36.00	3,069	2,152	3,058

Device	Routing	Invert	Outlet Devices
#1	Primary	35.50'	<b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=3.03 cfs @ 12.24 hrs HW=35.55' TW=30.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 3.03 cfs @ 0.57 fps)

### Summary for Pond 3P: cent dep

Inflow Area = 188,583 sf, 1.18% Impervious, Inflow Depth > 1.18" for 50-Year event  
 Inflow = 2.36 cfs @ 12.42 hrs, Volume= 18,576 cf  
 Outflow = 2.30 cfs @ 12.47 hrs, Volume= 18,555 cf, Atten= 2%, Lag= 3.0 min  
 Primary = 2.30 cfs @ 12.47 hrs, Volume= 18,555 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 32.80' @ 12.47 hrs Surf.Area= 475 sf Storage= 249 cf

Plug-Flow detention time= 1.6 min calculated for 18,555 cf (100% of inflow)

Center-of-Mass det. time= 1.1 min ( 955.5 - 954.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.83'	28,303 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

**Hillside Center 12-28-15**

NRCC 24-hr D 50-Year Rainfall=7.10"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.83	40	0	0
33.00	566	355	355
34.00	2,635	1,601	1,955
35.00	6,530	4,583	6,538
36.00	37,000	21,765	28,303

Device	Routing	Invert	Outlet Devices
#1	Primary	35.30'	<b>45.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.83'	<b>12.0" Round Culvert</b> L= 201.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 31.83' / 25.00' S= 0.0340 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.30 cfs @ 12.47 hrs HW=32.80' TW=30.38' (Dynamic Tailwater)↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)↑ **2=Culvert** (Inlet Controls 2.30 cfs @ 2.95 fps)**Summary for Pond 4P: cb 1889**

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 3.23" for 50-Year event  
 Inflow = 10.42 cfs @ 12.17 hrs, Volume= 95,145 cf  
 Outflow = 5.44 cfs @ 13.12 hrs, Volume= 95,135 cf, Atten= 48%, Lag= 57.1 min  
 Primary = 5.44 cfs @ 13.12 hrs, Volume= 95,135 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 30.60' @ 12.94 hrs Surf.Area= 14,011 sf Storage= 9,810 cf

Plug-Flow detention time= 9.5 min calculated for 95,095 cf (100% of inflow)  
 Center-of-Mass det. time= 9.5 min ( 857.6 - 848.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	42,875 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	30	0	0
28.00	157	281	281
29.00	623	390	671
30.00	5,783	3,203	3,874
32.00	33,218	39,001	42,875

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 24.90' / 23.60' S= 0.0236 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.44 cfs @ 13.12 hrs HW=30.58' TW=28.17' (Dynamic Tailwater)↑ **1=Culvert** (Outlet Controls 5.44 cfs @ 6.93 fps)**Summary for Pond 20P: Cistern**

Inflow Area = 134,437 sf, 13.16% Impervious, Inflow Depth > 1.44" for 50-Year event  
 Inflow = 1.62 cfs @ 12.62 hrs, Volume= 16,101 cf  
 Outflow = 1.62 cfs @ 12.62 hrs, Volume= 15,480 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.62 cfs @ 12.62 hrs, Volume= 15,480 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.95' @ 12.62 hrs Surf.Area= 79 sf Storage= 625 cf

Plug-Flow detention time= 34.0 min calculated for 15,480 cf (96% of inflow)  
 Center-of-Mass det. time= 15.2 min ( 951.5 - 936.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	628 cf	<b>10.00'D x 8.00'H Vertical Cone/Cylinder</b>

Device	Routing	Invert	Outlet Devices
#1	Primary	39.90'	<b>1.0" x 6.5" Horiz. Orifice/Grate X 11.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#2	Primary	39.95'	<b>100.0' long x 15.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=1.62 cfs @ 12.62 hrs HW=39.95' TW=35.15' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Weir Controls 1.60 cfs @ 0.75 fps)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.12 fps)

### Summary for Pond 21P: cb 6087

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 3.23" for 50-Year event  
 Inflow = 5.44 cfs @ 13.12 hrs, Volume= 95,135 cf  
 Outflow = 5.44 cfs @ 13.12 hrs, Volume= 95,135 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.44 cfs @ 13.12 hrs, Volume= 95,135 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.31' @ 12.29 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	23.60'	<b>12.0" Round Culvert</b> L= 52.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.60' / 23.00' S= 0.0115 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.44 cfs @ 13.12 hrs HW=28.17' TW=25.84' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 5.44 cfs @ 6.93 fps)

### Summary for Pond 22P: HW 1

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 1.72" for 50-Year event  
 Inflow = 3.86 cfs @ 12.45 hrs, Volume= 31,573 cf  
 Outflow = 1.99 cfs @ 13.05 hrs, Volume= 31,121 cf, Atten= 48%, Lag= 35.8 min  
 Primary = 1.99 cfs @ 13.05 hrs, Volume= 31,121 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.18' @ 13.05 hrs Surf.Area= 4,142 sf Storage= 4,743 cf

Flood Elev= 34.50' Surf.Area= 2,516 sf Storage= 2,477 cf

Plug-Flow detention time= 25.1 min calculated for 31,121 cf (99% of inflow)

Center-of-Mass det. time= 17.9 min ( 947.6 - 929.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	8,939 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	131	0	0
33.00	607	554	554
34.00	1,321	964	1,518
36.00	6,100	7,421	8,939

Device	Routing	Invert	Outlet Devices
#1	Primary	31.58'	<b>12.0" Round Culvert</b> L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 31.58' / 25.32' S= 0.1841 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	32.50'	<b>7.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.99 cfs @ 13.05 hrs HW=35.18' TW=25.69' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.99 cfs of 9.08 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 1.99 cfs @ 7.44 fps)



### Summary for Pond 23P: Strmtr 2

Inflow Area = 12,687 sf, 40.99% Impervious, Inflow Depth > 2.73" for 50-Year event  
 Inflow = 0.39 cfs @ 12.54 hrs, Volume= 2,886 cf  
 Outflow = 0.39 cfs @ 12.54 hrs, Volume= 2,886 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.39 cfs @ 12.54 hrs, Volume= 2,886 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.43' @ 12.54 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.16'	<b>12.0" Round Culvert</b> L= 222.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 38.16' / 24.80' S= 0.0602 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.39 cfs @ 12.54 hrs HW=38.43' TW=24.56' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.39 cfs @ 2.23 fps)

### Summary for Pond 24P: RG #1

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 1.72" for 50-Year event  
 Inflow = 3.85 cfs @ 12.45 hrs, Volume= 31,599 cf  
 Outflow = 3.86 cfs @ 12.45 hrs, Volume= 31,573 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.86 cfs @ 12.45 hrs, Volume= 31,573 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.18' @ 13.04 hrs Surf.Area= 420 sf Storage= 64 cf

Flood Elev= 36.50' Surf.Area= 10 sf Storage= 336 cf

Plug-Flow detention time= 0.8 min calculated for 31,573 cf (100% of inflow)

Center-of-Mass det. time= 0.3 min ( 929.7 - 929.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	131	0	0
35.08	394	21	21
35.50	500	188	209
36.00	10	128	336

Device	Routing	Invert	Outlet Devices
#1	Primary	35.08'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=3.85 cfs @ 12.45 hrs HW=35.16' TW=34.52' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.85 cfs @ 0.75 fps)

### Summary for Pond 25P: Strmtr 1

Inflow Area = 69,766 sf, 46.99% Impervious, Inflow Depth > 3.62" for 50-Year event  
 Inflow = 2.81 cfs @ 12.39 hrs, Volume= 21,020 cf  
 Outflow = 2.81 cfs @ 12.39 hrs, Volume= 21,020 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.81 cfs @ 12.39 hrs, Volume= 21,020 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.64' @ 12.39 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.78'	<b>12.0" Round Culvert</b> L= 51.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.78' / 24.81' S= 0.0386 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.81 cfs @ 12.39 hrs HW=27.64' TW=25.85' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.81 cfs @ 3.94 fps)

### Summary for Pond 26P: CB 2

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 2.17" for 50-Year event  
 Inflow = 0.87 cfs @ 12.17 hrs, Volume= 4,162 cf  
 Outflow = 0.87 cfs @ 12.17 hrs, Volume= 4,162 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.87 cfs @ 12.17 hrs, Volume= 4,162 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 36.67' @ 12.17 hrs

Flood Elev= 40.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.22'	<b>10.0" Round Culvert</b> L= 150.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 36.22' / 27.72' S= 0.0567 ' / S= 0.0567 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.87 cfs @ 12.17 hrs HW=36.67' TW=28.44' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.87 cfs @ 2.87 fps)

### Summary for Pond 27P: DI 1

Inflow Area = 31,138 sf, 34.55% Impervious, Inflow Depth > 3.18" for 50-Year event  
 Inflow = 1.94 cfs @ 12.14 hrs, Volume= 8,257 cf  
 Outflow = 1.94 cfs @ 12.14 hrs, Volume= 8,257 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.94 cfs @ 12.14 hrs, Volume= 8,257 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.48' @ 12.14 hrs

Flood Elev= 33.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.72'	<b>10.0" Round Culvert</b> L= 70.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 27.72' / 26.36' S= 0.0194 ' / S= 0.0194 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=1.94 cfs @ 12.14 hrs HW=28.48' TW=27.09' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.94 cfs @ 3.71 fps)

### Summary for Pond 28P: DI 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 3.07" for 50-Year event  
 Inflow = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf  
 Outflow = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 34.10' @ 12.13 hrs

Flood Elev= 35.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.84'	<b>10.0" Round Culvert</b> L= 66.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.84' / 33.00' S= 0.0127 ' / S= 0.0127 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.31 cfs @ 12.13 hrs HW=34.10' TW=33.25' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.31 cfs @ 2.17 fps)

### Summary for Pond 29P: CB 1

Inflow Area = 9,924 sf, 46.59% Impervious, Inflow Depth > 3.27" for 50-Year event  
 Inflow = 0.60 cfs @ 12.23 hrs, Volume= 2,700 cf  
 Outflow = 0.60 cfs @ 12.23 hrs, Volume= 2,700 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.60 cfs @ 12.23 hrs, Volume= 2,700 cf

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.12' @ 12.23 hrs

Flood Elev= 57.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	<b>10.0" Round Culvert</b> L= 46.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 53.75' / 42.60' S= 0.2424 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.60 cfs @ 12.23 hrs HW=54.12' TW=39.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.60 cfs @ 2.58 fps)**Summary for Pond 30P: CB 3**

Inflow Area = 5,166 sf, 69.53% Impervious, Inflow Depth > 4.78" for 50-Year event  
 Inflow = 0.62 cfs @ 12.13 hrs, Volume= 2,057 cf  
 Outflow = 0.03 cfs @ 18.41 hrs, Volume= 268 cf, Atten= 95%, Lag= 376.8 min  
 Primary = 0.03 cfs @ 18.41 hrs, Volume= 268 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 43.20' @ 18.41 hrs Surf.Area= 802 sf Storage= 1,789 cf

Flood Elev= 43.50' Surf.Area= 802 sf Storage= 1,789 cf

Plug-Flow detention time= 690.2 min calculated for 268 cf (13% of inflow)

Center-of-Mass det. time= 438.8 min ( 1,262.7 - 823.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.00'	701 cf	<b>20.83"W x 38.50"L x 3.54"H Field A</b> 2,841 cf Overall - 1,088 cf Embedded = 1,753 cf x 40.0% Voids
#2A	36.50'	1,088 cf	<b>Cultec R-330XLHD</b> x 20 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		1,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.04'	<b>8.0" Round Culvert</b> L= 268.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 39.04' / 26.50' S= 0.0468 ' / Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Device 1	43.04'	<b>2.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.03 cfs @ 18.41 hrs HW=43.20' TW=26.98' (Dynamic Tailwater)↑**1=Culvert** (Passes 0.03 cfs of 3.59 cfs potential flow)↑**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.38 fps)**Summary for Pond 31P: RG #3**

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 2.19" for 50-Year event  
 Inflow = 0.87 cfs @ 12.17 hrs, Volume= 4,184 cf  
 Outflow = 0.87 cfs @ 12.17 hrs, Volume= 4,162 cf, Atten= 0%, Lag= 0.2 min  
 Primary = 0.87 cfs @ 12.17 hrs, Volume= 4,162 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.83' @ 12.17 hrs Surf.Area= 400 sf Storage= 33 cf

Flood Elev= 43.50' Surf.Area= 500 sf Storage= 244 cf

Plug-Flow detention time= 4.9 min calculated for 4,160 cf (99% of inflow)

Center-of-Mass det. time= 2.0 min ( 894.6 - 892.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	39.72'	244 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.72	131	0	0
39.80	394	21	21
40.30	500	224	244

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.87 cfs @ 12.17 hrs HW=39.83' TW=36.67' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.87 cfs @ 0.46 fps)

### Summary for Pond 32P: PrkCis 1

Inflow Area = 1,192 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.18 cfs @ 12.13 hrs, Volume= 681 cf  
 Outflow = 0.00 cfs @ 17.43 hrs, Volume= 117 cf, Atten= 97%, Lag= 318.0 min  
 Primary = 0.00 cfs @ 17.43 hrs, Volume= 117 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.25' @ 17.43 hrs Surf.Area= 863 sf Storage= 570 cf  
 Flood Elev= 42.00' Surf.Area= 863 sf Storage= 1,733 cf

Plug-Flow detention time= 803.9 min calculated for 117 cf (17% of inflow)  
 Center-of-Mass det. time= 425.7 min ( 1,169.3 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	38.20'	689 cf	<b>19.17"W x 45.00"L x 3.21"H Field A</b> 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	38.70'	1,044 cf	<b>Cultec R-280HD</b> x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
1,733 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.20'	<b>4.0" Round Culvert</b> L= 100.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 39.20' / 30.00' S= 0.0920 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 17.43 hrs HW=39.25' TW=22.00' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.00 cfs @ 0.64 fps)

### Summary for Pond 33P: PrkCst 2

Inflow Area = 2,856 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.42 cfs @ 12.13 hrs, Volume= 1,631 cf  
 Outflow = 0.08 cfs @ 12.49 hrs, Volume= 1,136 cf, Atten= 82%, Lag= 21.5 min  
 Primary = 0.08 cfs @ 12.49 hrs, Volume= 1,136 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 38.14' @ 12.49 hrs Surf.Area= 728 sf Storage= 880 cf  
 Flood Elev= 41.00' Surf.Area= 728 sf Storage= 1,459 cf

Plug-Flow detention time= 286.4 min calculated for 1,136 cf (70% of inflow)  
 Center-of-Mass det. time= 165.7 min ( 909.2 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.40'	585 cf	<b>19.17'W x 38.00'L x 3.21'H Field A</b> 2,337 cf Overall - 874 cf Embedded = 1,462 cf x 40.0% Voids
#2A	36.90'	874 cf	<b>Cultec R-280HD</b> x 20 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,459 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>2.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 34.66' S= 0.0548 '/' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf

**Primary OutFlow** Max=0.08 cfs @ 12.49 hrs HW=38.14' TW=24.48' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.08 cfs @ 3.44 fps)

### Summary for Pond 34P: CC Cisterns

Inflow Area = 8,964 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 1.33 cfs @ 12.13 hrs, Volume= 5,118 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 545 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 545 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 44.86' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 4,573 cf

Plug-Flow detention time= 723.9 min calculated for 545 cf (11% of inflow)  
 Center-of-Mass det. time= 257.9 min ( 1,001.4 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.50'	5,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	227	0	0
45.50	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	41.50'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=44.86' TW=21.90' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 8.53 fps)

### Summary for Pond 35P: DMH 2

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 3.07" for 50-Year event  
 Inflow = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf  
 Outflow = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.32 cfs @ 12.13 hrs, Volume= 1,026 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.25' @ 12.13 hrs  
 Flood Elev= 35.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>12.0" Round Culvert</b> L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.00' / 24.90' S= 0.3115 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.31 cfs @ 12.13 hrs HW=33.25' TW=27.09' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.31 cfs @ 2.11 fps)

**Summary for Pond 36P: DMH 3**

Inflow Area = 35,147 sf, 33.82% Impervious, Inflow Depth > 3.17" for 50-Year event  
 Inflow = 2.25 cfs @ 12.14 hrs, Volume= 9,283 cf  
 Outflow = 2.25 cfs @ 12.14 hrs, Volume= 9,283 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.25 cfs @ 12.14 hrs, Volume= 9,283 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 27.09' @ 12.14 hrs

Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.36'	<b>12.0" Round Culvert</b> L= 73.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.36' / 24.90' S= 0.0200 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.25 cfs @ 12.14 hrs HW=27.09' TW=26.08' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.25 cfs @ 3.65 fps)

**Summary for Pond 37P: DMH 4**

Inflow Area = 259,207 sf, 15.59% Impervious, Inflow Depth > 1.90" for 50-Year event  
 Inflow = 3.30 cfs @ 12.15 hrs, Volume= 40,990 cf  
 Outflow = 3.30 cfs @ 12.15 hrs, Volume= 40,990 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.30 cfs @ 12.15 hrs, Volume= 40,990 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 26.23' @ 12.50 hrs

Flood Elev= 34.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 37.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.90' / 24.00' S= 0.0243 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.29 cfs @ 12.15 hrs HW=26.09' TW=25.56' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 3.29 cfs @ 4.44 fps)

**Summary for Pond 38P: DMH 5**

Inflow Area = 328,973 sf, 22.24% Impervious, Inflow Depth > 2.26" for 50-Year event  
 Inflow = 5.32 cfs @ 12.35 hrs, Volume= 62,010 cf  
 Outflow = 5.32 cfs @ 12.35 hrs, Volume= 62,010 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.32 cfs @ 12.35 hrs, Volume= 62,010 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 25.95' @ 12.50 hrs

Flood Elev= 33.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.00'	<b>12.0" Round Culvert</b> L= 59.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.00' / 23.00' S= 0.0169 '/ Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.33 cfs @ 12.35 hrs HW=25.77' TW=24.10' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 5.33 cfs @ 6.78 fps)

**Summary for Pond 39P: PrkCis 3**

Inflow Area = 4,157 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.62 cfs @ 12.13 hrs, Volume= 2,374 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 15 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 15 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 37.45' @ 24.00 hrs Surf.Area= 1,226 sf Storage= 2,359 cf

Flood Elev= 39.00' Surf.Area= 1,226 sf Storage= 2,485 cf



Plug-Flow detention time= 1,348.7 min calculated for 14 cf (1% of inflow)

Center-of-Mass det. time= 676.7 min ( 1,420.2 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	34.50'	967 cf	<b>23.58'W x 52.00'L x 3.21'H Field A</b> 3,934 cf Overall - 1,518 cf Embedded = 2,417 cf x 40.0% Voids
#2A	35.00'	1,518 cf	<b>Cultec R-280HD x 35 Inside #1</b> Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 5 rows
		2,485 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>6.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 32.46' S= 0.0988 ' / Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Primary	37.80'	<b>80.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=37.45' TW=21.90' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.01 cfs @ 0.69 fps)

↓ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 40P: PrkCis 4

Inflow Area = 4,079 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.60 cfs @ 12.13 hrs, Volume= 2,329 cf  
 Outflow = 0.03 cfs @ 14.15 hrs, Volume= 668 cf, Atten= 95%, Lag= 121.0 min  
 Primary = 0.03 cfs @ 14.15 hrs, Volume= 668 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 32.87' @ 14.15 hrs Surf.Area= 1,094 sf Storage= 1,705 cf  
 Flood Elev= 40.00' Surf.Area= 1,094 sf Storage= 2,453 cf

Plug-Flow detention time= 577.2 min calculated for 668 cf (29% of inflow)  
 Center-of-Mass det. time= 306.7 min ( 1,050.2 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	30.67'	947 cf	<b>20.83'W x 52.50'L x 3.54'H Field A</b> 3,874 cf Overall - 1,505 cf Embedded = 2,369 cf x 40.0% Voids
#2A	31.17'	1,505 cf	<b>Cultec R-330XLHD x 28 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		2,453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	<b>4.0" Round Culvert</b> L= 60.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 32.75' / 32.26' S= 0.0082 ' / Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.03 cfs @ 14.15 hrs HW=32.87' TW=22.52' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.03 cfs @ 1.06 fps)

### Summary for Pond 41P: CB 5

Inflow Area = 3,890 sf, 1.80% Impervious, Inflow Depth > 1.81" for 50-Year event  
 Inflow = 0.17 cfs @ 12.14 hrs, Volume= 586 cf  
 Outflow = 0.17 cfs @ 12.14 hrs, Volume= 586 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.17 cfs @ 12.14 hrs, Volume= 586 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

**Hillside Center 12-28-15**

NRCC 24-hr D 50-Year Rainfall=7.10"

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Peak Elev= 29.13' @ 12.14 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.94'	<b>10.0" Round Culvert</b> L= 38.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 28.94' / 25.90' S= 0.0800 ' / Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.17 cfs @ 12.14 hrs HW=29.13' TW=26.07' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.17 cfs @ 1.84 fps)**Summary for Pond 43P: CE Cisterns**

Inflow Area = 5,923 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.88 cfs @ 12.13 hrs, Volume= 3,382 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 376 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 376 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 46.31' @ 24.00 hrs Surf.Area= 908 sf Storage= 3,006 cf

Plug-Flow detention time= 701.8 min calculated for 376 cf (11% of inflow)

Center-of-Mass det. time= 242.7 min ( 986.2 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	3,632 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 4

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	227	0	0
47.00	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>0.2" Vert. Orifice/Grate</b> X 4 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=46.31' TW=21.90' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 8.58 fps)**Summary for Pond 44P: SR Cisterns**

Inflow Area = 7,823 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 1.16 cfs @ 12.13 hrs, Volume= 4,467 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 476 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 476 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 49.52' @ 24.00 hrs Surf.Area= 1,135 sf Storage= 3,991 cf

Plug-Flow detention time= 715.2 min calculated for 476 cf (11% of inflow)

Center-of-Mass det. time= 249.3 min ( 992.8 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	5,675 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	227	0	0
51.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>0.2" Vert. Orifice/Grate</b> X 5 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=49.52' TW=21.90' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 8.80 fps)

**Summary for Pond 45P: HACisterns**

Inflow Area = 10,118 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 1.50 cfs @ 12.13 hrs, Volume= 5,777 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 587 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 587 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 47.81' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 5,190 cf

Plug-Flow detention time= 727.8 min calculated for 587 cf (10% of inflow)  
 Center-of-Mass det. time= 254.0 min ( 997.5 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	6,810 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	227	0	0
49.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=47.81' TW=21.90' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.13 fps)

**Summary for Pond 46P: CB 4**

Inflow Area = 400,830 sf, 31.77% Impervious, Inflow Depth > 2.22" for 50-Year event  
 Inflow = 6.50 cfs @ 12.15 hrs, Volume= 74,063 cf  
 Outflow = 5.31 cfs @ 12.62 hrs, Volume= 73,857 cf, Atten= 18%, Lag= 28.2 min  
 Primary = 5.31 cfs @ 12.62 hrs, Volume= 73,857 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 24.60' @ 12.62 hrs Surf.Area= 1,297 sf Storage= 3,222 cf

Plug-Flow detention time= 6.5 min calculated for 73,857 cf (100% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 902.6 - 897.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	27.80'	23,576 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2A	21.50'	259 cf	<b>21.79'W x 59.50'L x 6.00'H Field A</b>
			7,780 cf Overall - 7,131 cf Embedded = 648 cf x 40.0% Voids
#3A	22.00'	5,694 cf	<b>StormTrap SingleTrap 5-0</b> x 3 Inside #2
			Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
			Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf
			8.48' x 46.19' Core + 6.66' Border = 21.79' x 59.50' System
		29,529 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.80	4	0	0
28.00	1,704	171	171
30.00	4,071	5,775	5,946
32.00	13,559	17,630	23,576

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 21.50' / 19.40' S= 0.0149 ' S= 0.0149 ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.31 cfs @ 12.62 hrs HW=24.60' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 5.31 cfs @ 6.76 fps)

**Summary for Pond 47P: HW**

Inflow Area = 385,242 sf, 8.99% Impervious, Inflow Depth > 3.29" for 50-Year event  
 Inflow = 7.64 cfs @ 12.13 hrs, Volume= 105,697 cf  
 Outflow = 6.46 cfs @ 12.21 hrs, Volume= 105,685 cf, Atten= 15%, Lag= 4.4 min  
 Primary = 6.46 cfs @ 12.21 hrs, Volume= 105,685 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 26.62' @ 12.21 hrs Surf.Area= 1,073 sf Storage= 873 cf

Plug-Flow detention time= 0.8 min calculated for 105,685 cf (100% of inflow)  
 Center-of-Mass det. time= 0.7 min ( 857.0 - 856.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	75,612 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	10	0	0
26.00	290	450	450
28.00	2,812	3,102	3,552
32.00	33,218	72,060	75,612

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 19.40' S= 0.0255 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=6.46 cfs @ 12.21 hrs HW=26.62' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 6.46 cfs @ 8.22 fps)

**Summary for Pond 48P: YW Cistern**

Inflow Area = 2,136 sf, 100.00% Impervious, Inflow Depth > 6.85" for 50-Year event  
 Inflow = 0.32 cfs @ 12.13 hrs, Volume= 1,220 cf  
 Outflow = 0.01 cfs @ 16.68 hrs, Volume= 500 cf, Atten= 97%, Lag= 273.3 min  
 Primary = 0.01 cfs @ 16.68 hrs, Volume= 500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 55.01' @ 16.68 hrs Surf.Area= 392 sf Storage= 789 cf

Plug-Flow detention time= 410.4 min calculated for 500 cf (41% of inflow)  
 Center-of-Mass det. time= 209.4 min ( 952.9 - 743.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	1,176 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	392	0	0
56.00	392	1,176	1,176

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	<b>0.5" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 16.68 hrs HW=55.01' TW=22.03' (Dynamic Tailwater)

↑**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.80 fps)

**Summary for Link 1L: Total Exist**

Inflow Area = 405,107 sf, 8.55% Impervious, Inflow Depth > 3.15" for 50-Year event  
 Inflow = 6.46 cfs @ 12.21 hrs, Volume= 106,235 cf  
 Primary = 6.46 cfs @ 12.21 hrs, Volume= 106,235 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Link 20L: Total POST**

Inflow Area = 405,107 sf, 31.55% Impervious, Inflow Depth > 2.20" for 50-Year event  
Inflow = 5.33 cfs @ 12.61 hrs, Volume= 74,224 cf  
Primary = 5.33 cfs @ 12.61 hrs, Volume= 74,224 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Summary for Subcatchment 1S: dep 1 DA**

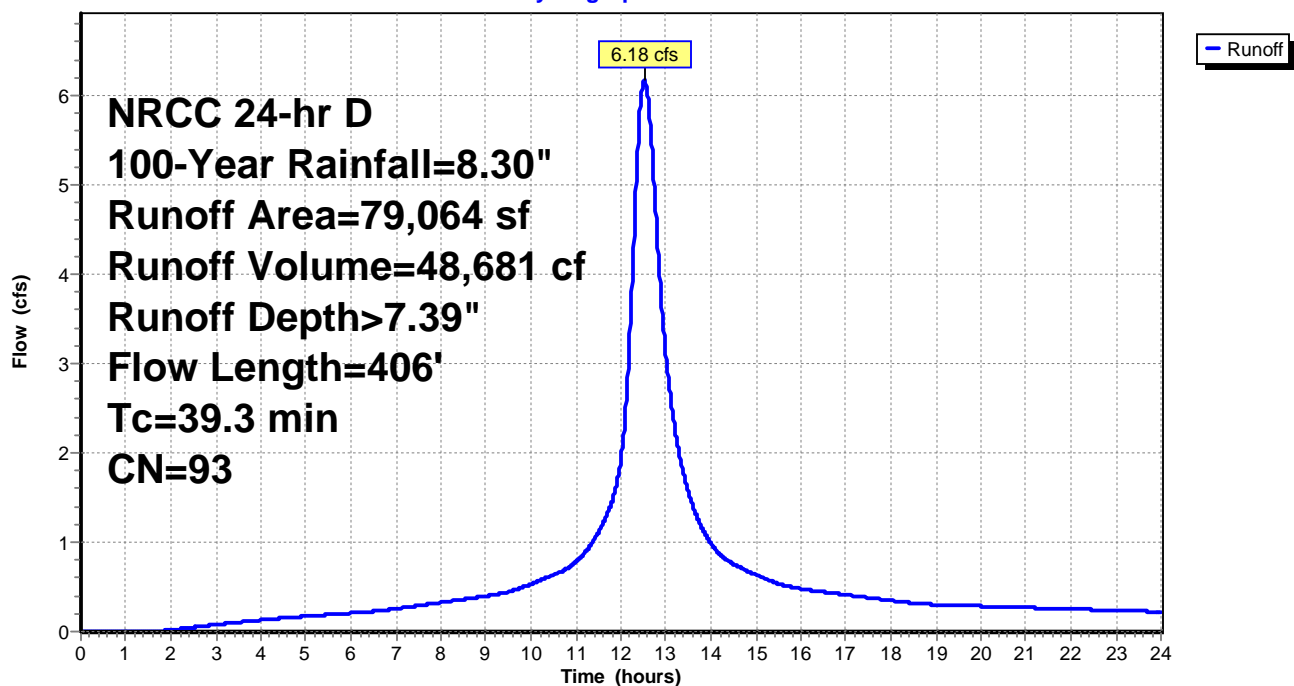
Runoff = 6.18 cfs @ 12.53 hrs, Volume= 48,681 cf, Depth> 7.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	8,110	98	roof & pvmnt
	50,133	94	Fallow, bare soil, HSG D
	16,361	84	50-75% Grass cover, Fair, HSG D
*	4,460	98	pre-exist warehouse, HSG D
	79,064	93	Weighted Average
	66,494		84.10% Pervious Area
	12,570		15.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	96	0.2300	3.36		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	260	0.1400	6.02		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
39.3	406	Total			

**Subcatchment 1S: dep 1 DA****Hydrograph**

**Summary for Subcatchment 2S: dep 2 DA**

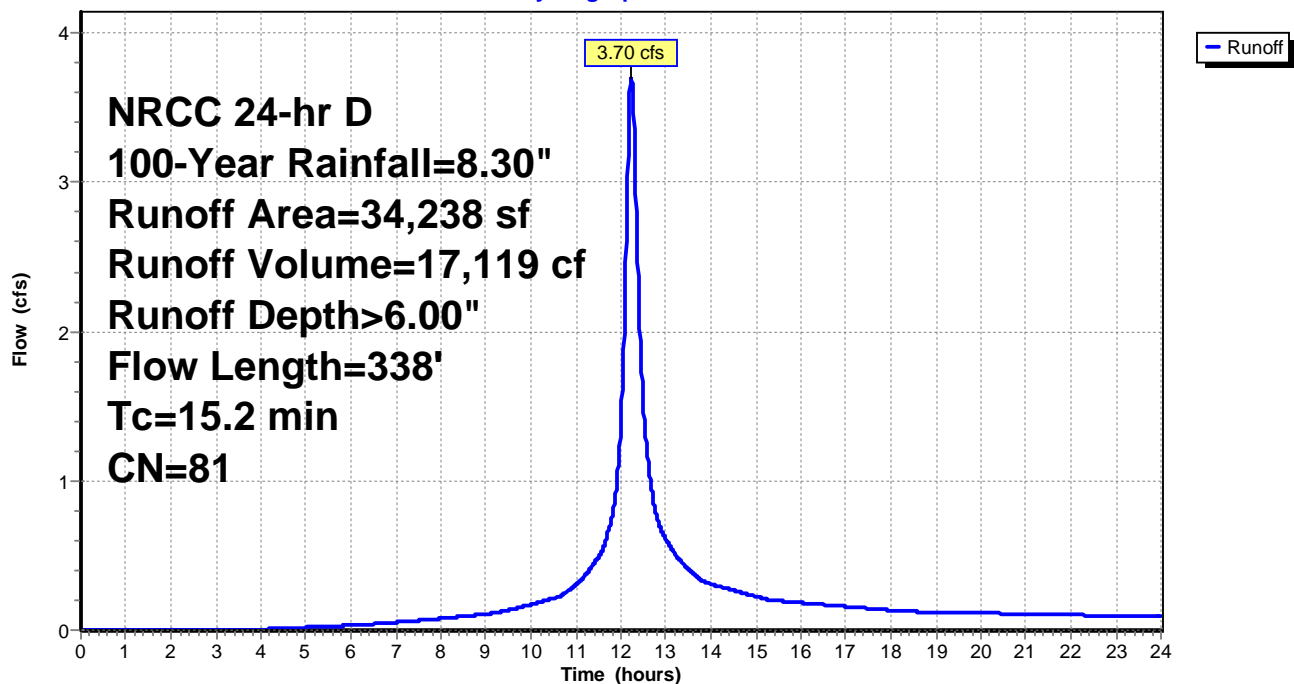
Runoff = 3.70 cfs @ 12.23 hrs, Volume= 17,119 cf, Depth> 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	4,525	98	roof & pvmnt
	13,599	68	<50% Grass cover, Poor, HSG A
	8,272	77	Fallow, bare soil, HSG A
	2,342	91	Fallow, bare soil, HSG C
*	2,147	98	pre-exist house, HSG A
*	3,353	98	pre-exist warehouse, HSG C
	34,238	81	Weighted Average
	24,213		70.72% Pervious Area
	10,025		29.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2200	3.28		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	216	0.1300	5.80		<b>Shallow Concentrated Flow, bare soil</b>
					Unpaved Kv= 16.1 fps
15.2	338	Total			

**Subcatchment 2S: dep 2 DA****Hydrograph**



**Summary for Subcatchment 3S: cent dep DA**

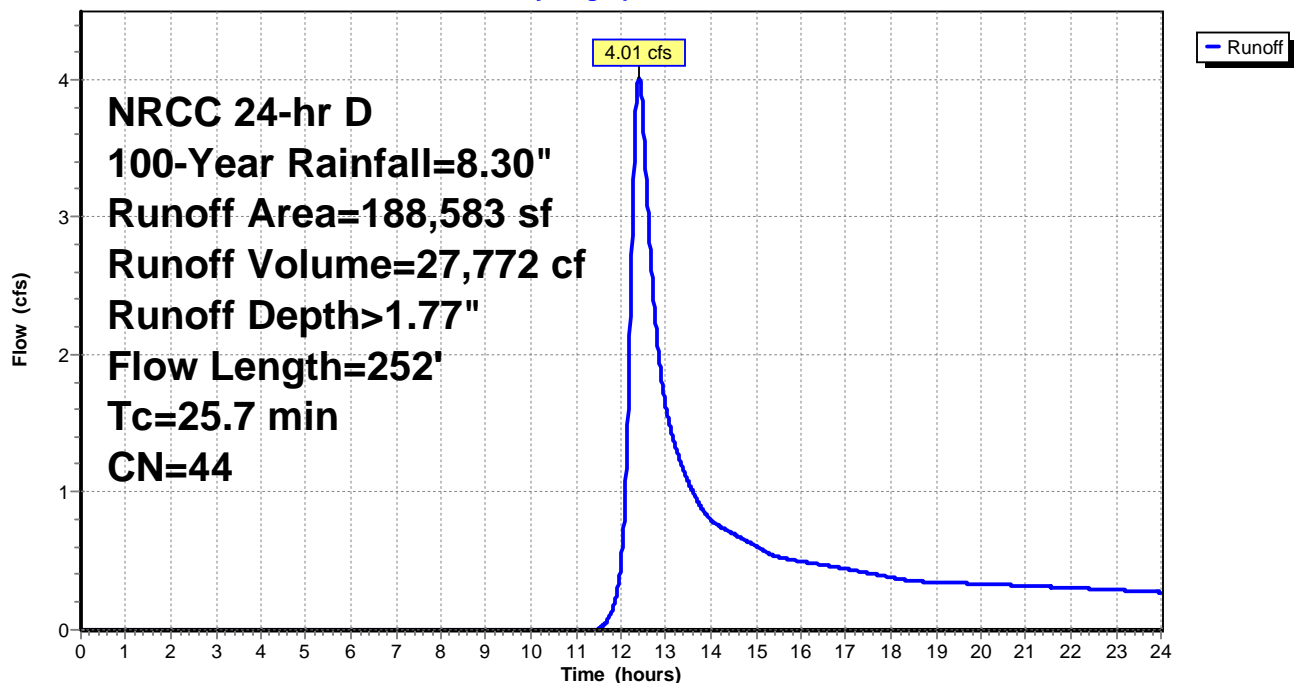
Runoff = 4.01 cfs @ 12.40 hrs, Volume= 27,772 cf, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 2,218	98	barn
18,317	89	<50% Grass cover, Poor, HSG D
116,882	39	>75% Grass cover, Good, HSG A
48,880	36	Woods, Fair, HSG A
* 2,286	97	Dirt roads, HSG D
188,583	44	Weighted Average
186,365		98.82% Pervious Area
2,218		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.4	77	0.0400	3.22		<b>Shallow Concentrated Flow, bare</b> Unpaved Kv= 16.1 fps
25.7	252	Total			

**Subcatchment 3S: cent dep DA****Hydrograph**

**Summary for Subcatchment 4S: rte one**

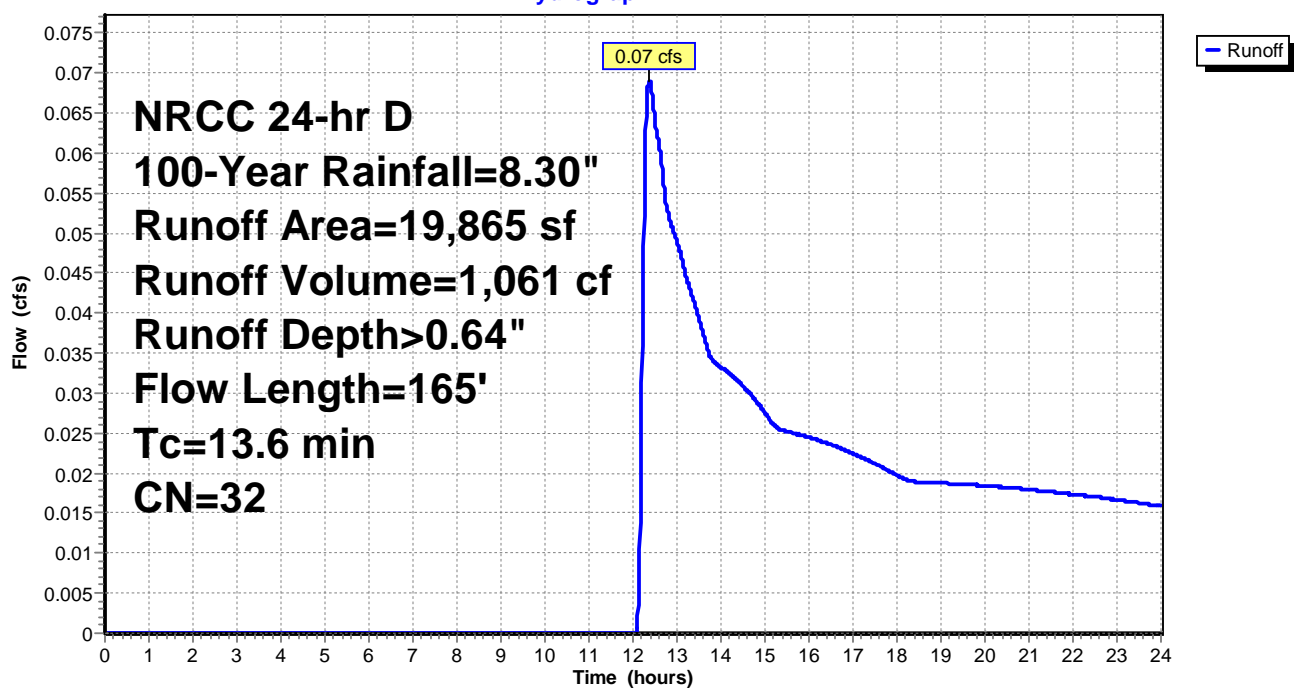
Runoff = 0.07 cfs @ 12.38 hrs, Volume= 1,061 cf, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
4,389	39	>75% Grass cover, Good, HSG A
15,476	30	Woods, Good, HSG A
19,865	32	Weighted Average
19,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
13.6	165	Total			

**Subcatchment 4S: rte one****Hydrograph**

**Summary for Subcatchment 5S: dep 3 DA**

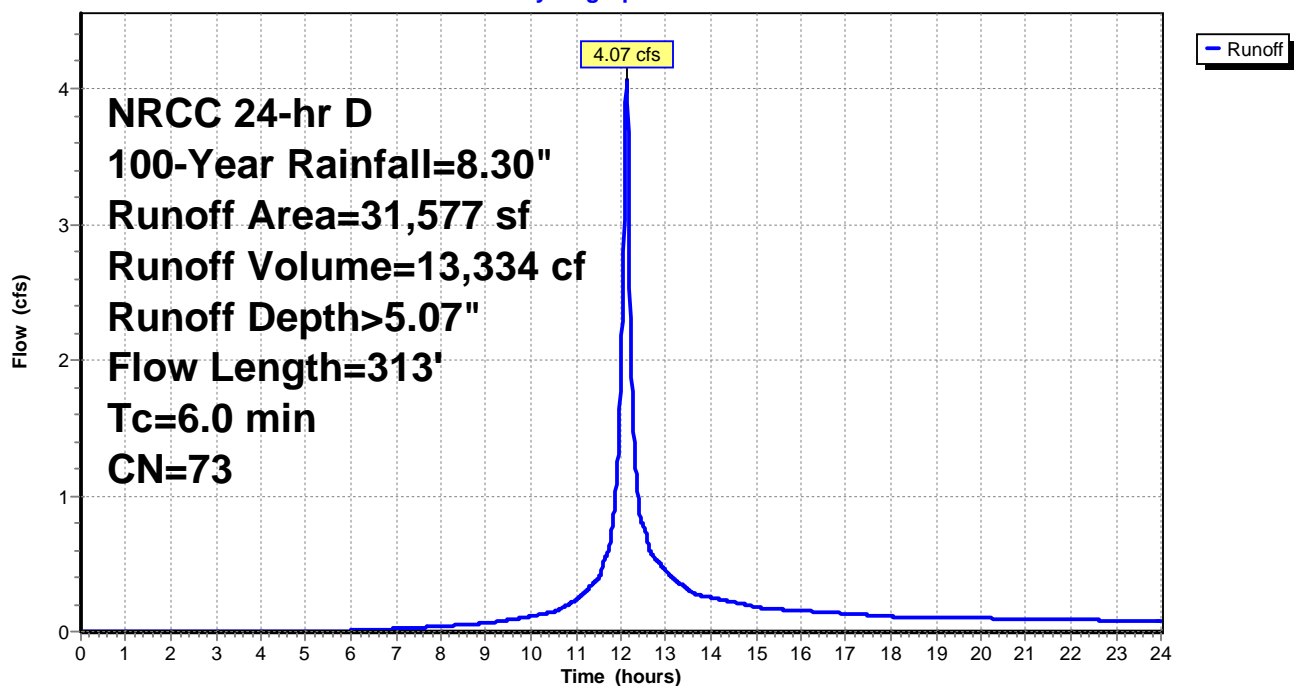
Runoff = 4.07 cfs @ 12.13 hrs, Volume= 13,334 cf, Depth> 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 1,388	98	roof & pvmnt
28,408	74	>75% Grass cover, Good, HSG C
1,781	36	Woods, Fair, HSG A
31,577	73	Weighted Average
30,189		95.60% Pervious Area
1,388		4.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.1600	2.00		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	43	0.1400	1.87		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
2.1	245	0.0800	1.98		<b>Shallow Concentrated Flow, grass</b> Short Grass Pasture Kv= 7.0 fps
3.3					<b>Direct Entry, 6 min minimum</b>
6.0	313	Total			

**Subcatchment 5S: dep 3 DA****Hydrograph**

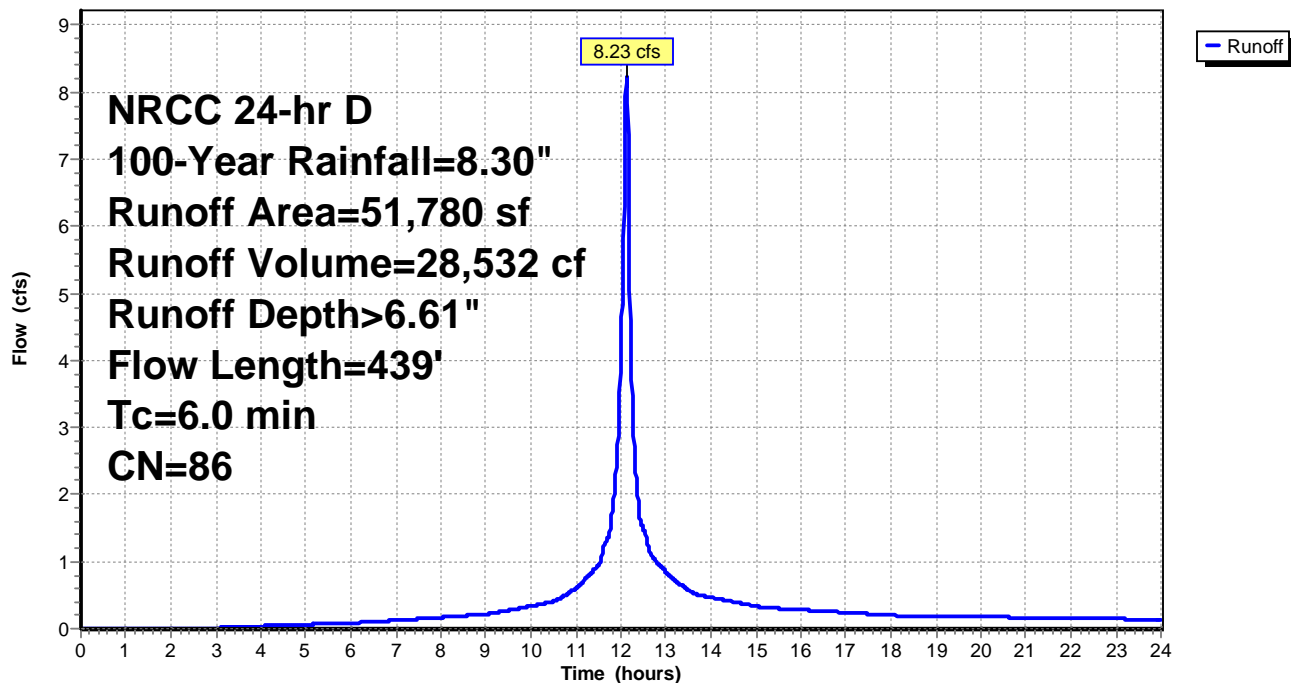
**Summary for Subcatchment 6S: cb 1889 DA**

Runoff = 8.23 cfs @ 12.13 hrs, Volume= 28,532 cf, Depth> 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	8,445	98	roof & pvmnt
	14,077	86	<50% Grass cover, Poor, HSG C
	4,389	39	>75% Grass cover, Good, HSG A
	5,092	77	Woods, Poor, HSG C
*	3,284	97	Dirt roads, HSG D
	16,493	94	Fallow, bare soil, HSG D
	51,780	86	Weighted Average
	43,335		83.69% Pervious Area
	8,445		16.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	25	0.0800	1.98		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
0.7	107	0.1200	2.42		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
0.6	107	0.3100	2.78		<b>Shallow Concentrated Flow, woods</b>
					Woodland Kv= 5.0 fps
0.7	200	0.0950	4.96		<b>Shallow Concentrated Flow, bare</b>
					Unpaved Kv= 16.1 fps
3.8					<b>Direct Entry, add for 6 min. minimum</b>
6.0	439	Total			

**Subcatchment 6S: cb 1889 DA****Hydrograph**

**Summary for Subcatchment 20S: Cistern DA**

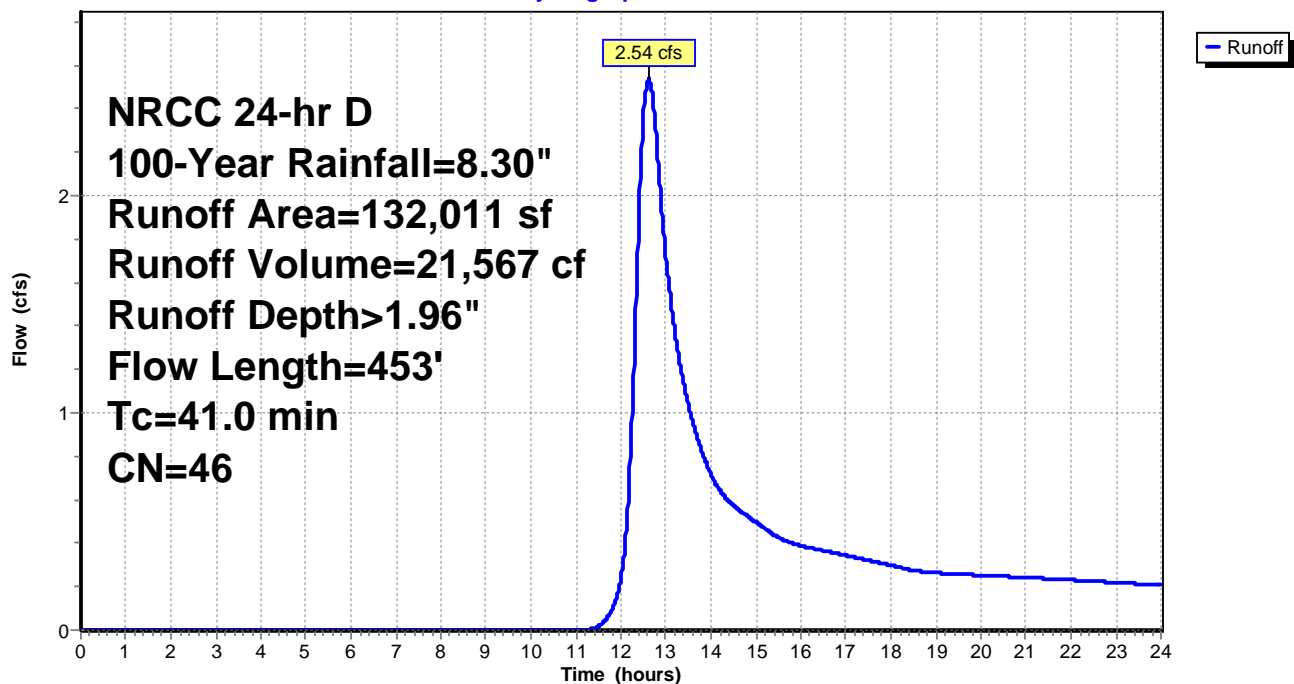
Runoff = 2.54 cfs @ 12.62 hrs, Volume= 21,567 cf, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	78,503	39	cemetery
	10,899	30	Woods, Good, HSG A
*	3,034	98	exist roofs
*	12,226	98	impervious HSG D
	25,167	39	>75% Grass cover, Good, HSG A
	2,182	80	>75% Grass cover, Good, HSG D
	132,011	46	Weighted Average
	116,751		88.44% Pervious Area
	15,260		11.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	100	0.2600	3.57		<b>Shallow Concentrated Flow, cemetery</b>
					Short Grass Pasture Kv= 7.0 fps
2.4	303	0.0900	2.10		<b>Shallow Concentrated Flow, lawn &amp; swale</b>
					Short Grass Pasture Kv= 7.0 fps
41.0	453	Total			

**Subcatchment 20S: Cistern DA****Hydrograph**

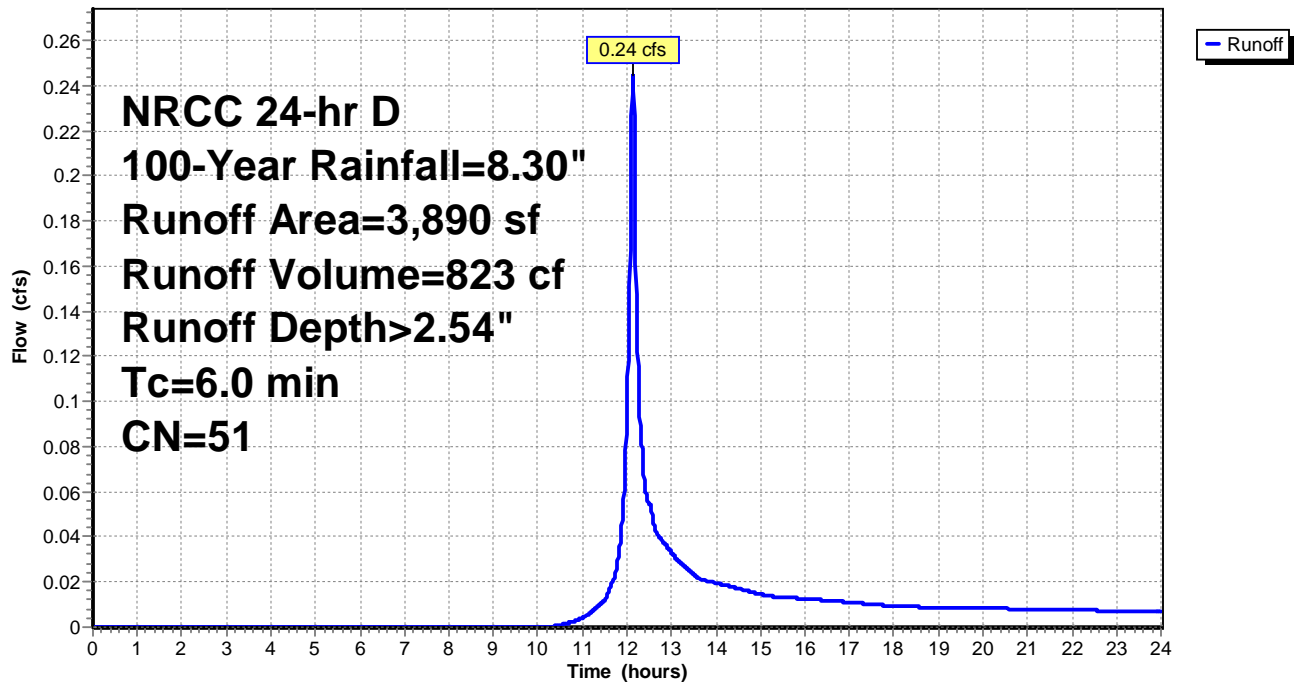
**Summary for Subcatchment 21S: CB 5**

Runoff = 0.24 cfs @ 12.14 hrs, Volume= 823 cf, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	70	98	impervious HSG A
	60	74	>75% Grass cover, Good, HSG C
*	1,274	50	Planking D
*	2,486	50	Pervious D
	3,890	51	Weighted Average
	3,820		98.20% Pervious Area
	70		1.80% Impervious Area

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

**Subcatchment 21S: CB 5****Hydrograph**

**Summary for Subcatchment 22S: Strmtr 1 South**

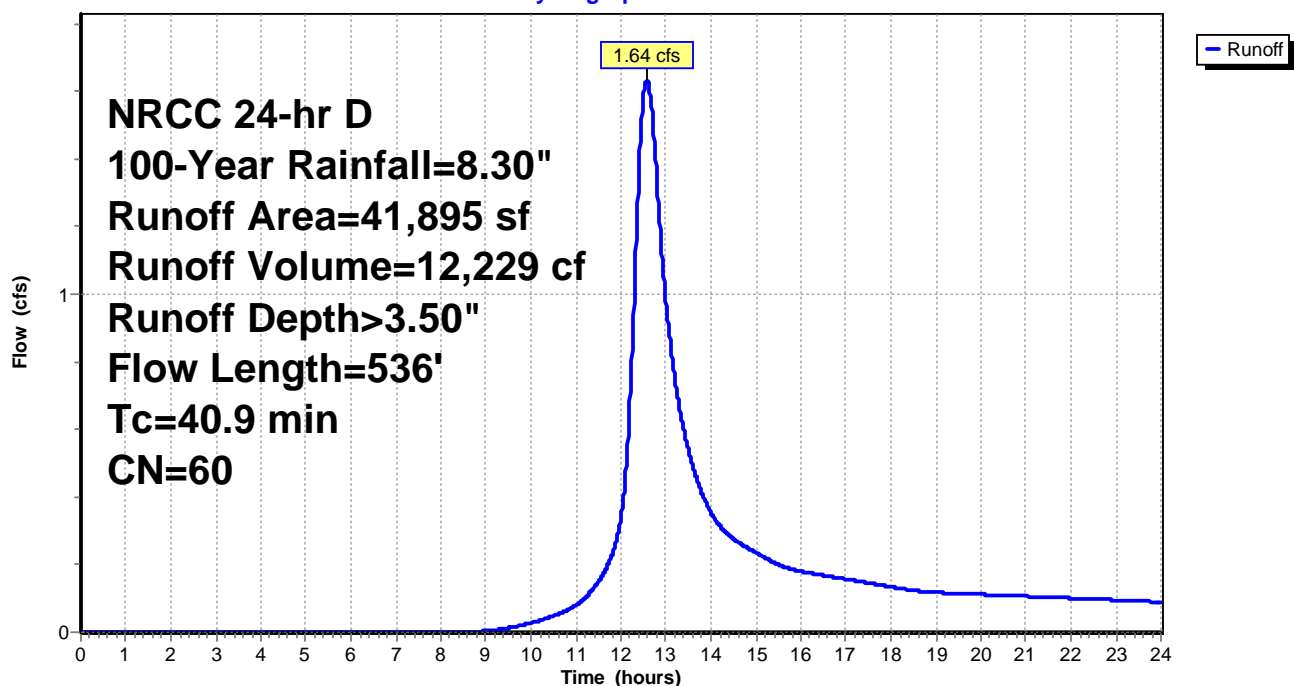
Runoff = 1.64 cfs @ 12.59 hrs, Volume= 12,229 cf, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	15,487	39	Cemetery
	5,314	30	Woods, Good, HSG A
*	2,400	98	impervious HSG A
	3,003	39	>75% Grass cover, Good, HSG A
	3,519	74	>75% Grass cover, Good, HSG C
	1,985	80	>75% Grass cover, Good, HSG D
*	8,451	98	impervious HSG C
*	1,736	98	impervious HSG D
	41,895	60	Weighted Average
	29,308		69.96% Pervious Area
	12,587		30.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
1.2	138	0.0700	1.85		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.2	46	0.4800	3.46		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.4	76	0.2100	3.21		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
1.0	226	0.0360	3.85		<b>Shallow Concentrated Flow, pvd</b> Paved Kv= 20.3 fps
40.9	536	Total			

**Subcatchment 22S: Strmtr 1 South****Hydrograph**



**Summary for Subcatchment 23S: Strmtr2**

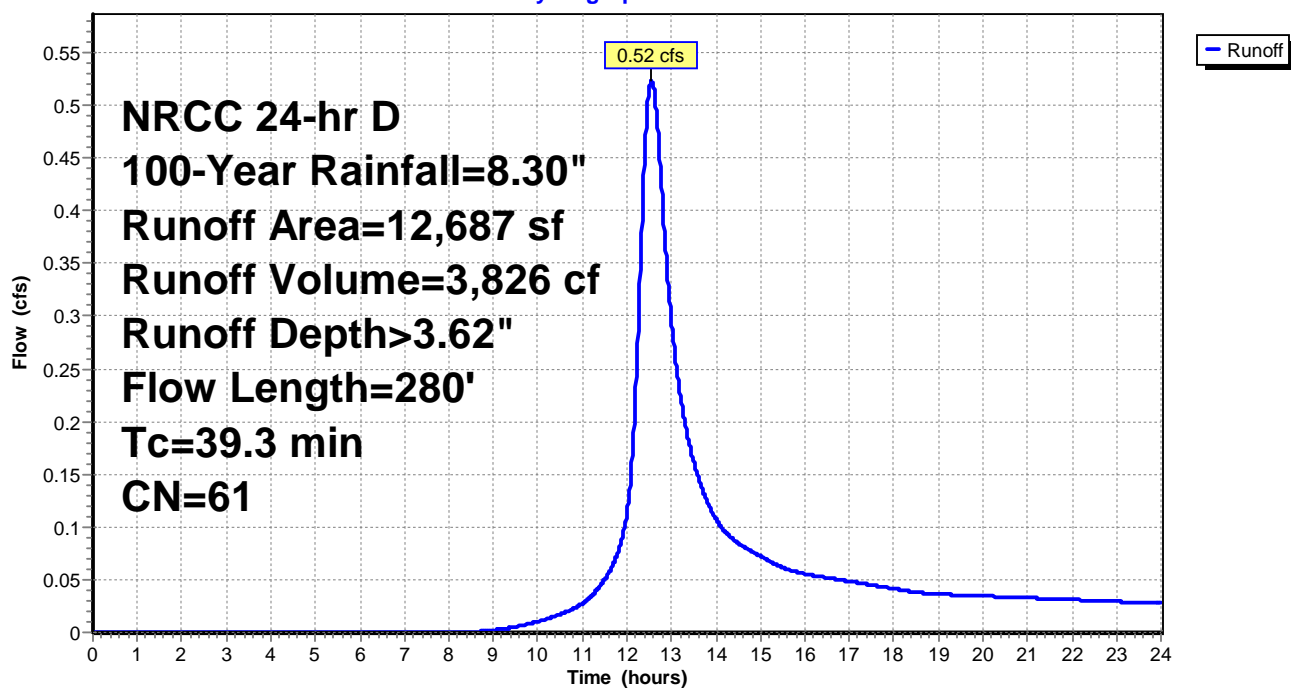
Runoff = 0.52 cfs @ 12.54 hrs, Volume= 3,826 cf, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	2,231	39	Cemetery
	2,408	30	Woods, Good, HSG A
*	5,201	98	impervious HSG A
	2,847	39	>75% Grass cover, Good, HSG A
	12,687	61	Weighted Average
	7,486		59.01% Pervious Area
	5,201		40.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.1	50	0.0400	0.02		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.5	78	0.1300	2.52		<b>Shallow Concentrated Flow, cemetery</b> Short Grass Pasture Kv= 7.0 fps
0.1	26	0.4600	3.39		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	59	0.4000	4.43		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.4	67	0.0220	3.01		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
39.3	280	Total			

**Subcatchment 23S: Strmtr2****Hydrograph**

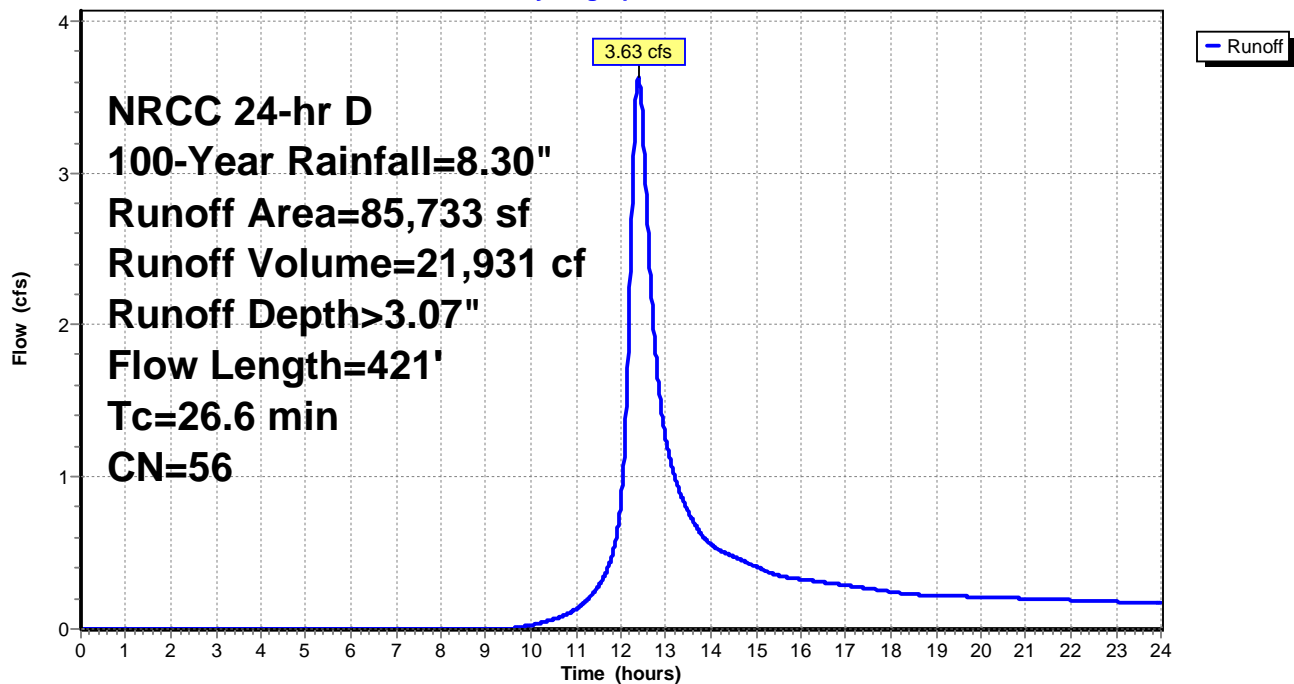
**Summary for Subcatchment 24S: CentDep**

Runoff = 3.63 cfs @ 12.38 hrs, Volume= 21,931 cf, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	40,139	39	Cemetery
	6,033	30	Woods, Good, HSG A
*	1,199	98	impervious HSG A
*	75	98	impervious HSG C
	5,671	39	>75% Grass cover, Good, HSG A
	21,301	80	>75% Grass cover, Good, HSG D
*	9,481	98	impervious HSG D
*	1,143	50	planking HSG D
*	691	50	planking HSG A
	85,733	56	Weighted Average
	74,978		87.46% Pervious Area
	10,755		12.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	50	0.1200	0.03		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
0.7	125	0.1600	2.80		<b>Shallow Concentrated Flow, woods</b> Short Grass Pasture Kv= 7.0 fps
0.4	62	0.1600	2.80		<b>Shallow Concentrated Flow, swale</b> Short Grass Pasture Kv= 7.0 fps
0.9	184	0.0270	3.34		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
26.6	421	Total			

**Subcatchment 24S: CentDep****Hydrograph**

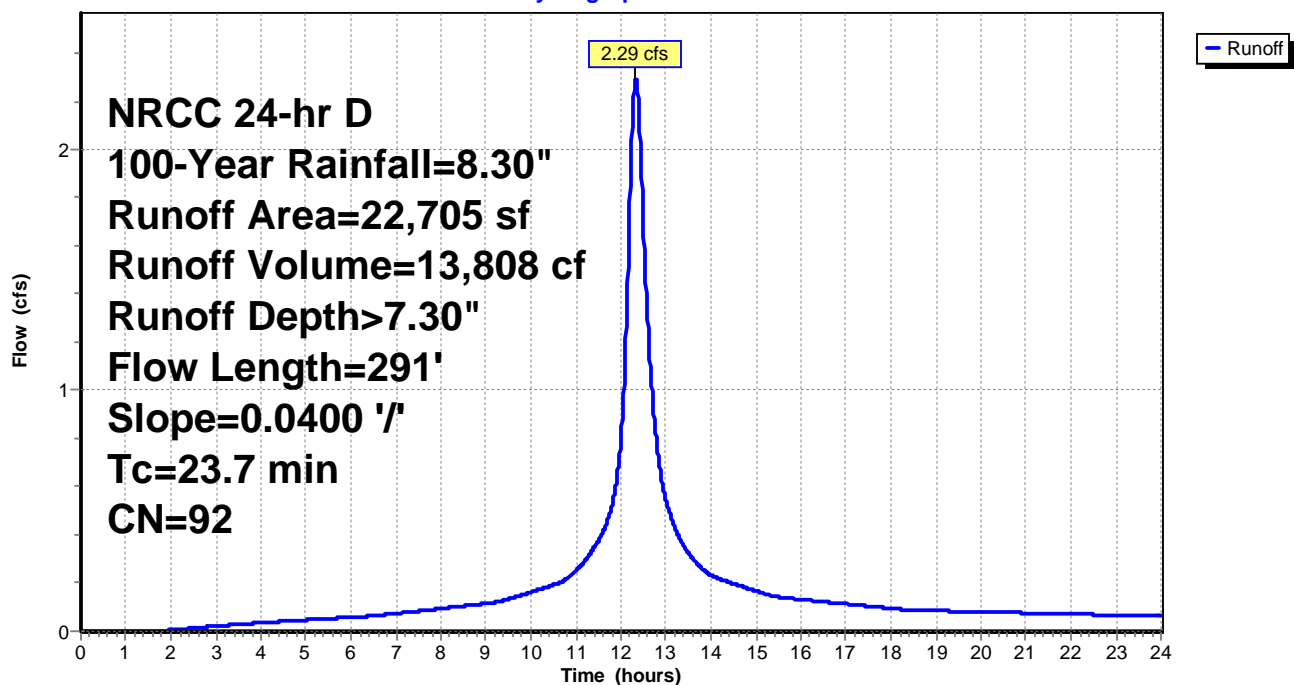
**Summary for Subcatchment 25S: Strmtr1 North**

Runoff = 2.29 cfs @ 12.33 hrs, Volume= 13,808 cf, Depth> 7.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	10,501	98	impervious HSG A
*	6,100	98	impervious HSG C
	3,082	74	>75% Grass cover, Good, HSG C
	3,022	80	>75% Grass cover, Good, HSG D
	22,705	92	Weighted Average
	6,104		26.88% Pervious Area
	16,601		73.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6	26	0.0400	0.02		<b>Sheet Flow, grass</b> Grass: Short n= 0.150 P2= 0.04"
1.1	265	0.0400	4.06		<b>Shallow Concentrated Flow, paved</b> Paved Kv= 20.3 fps
23.7	291	Total			

**Subcatchment 25S: Strmtr1 North****Hydrograph**

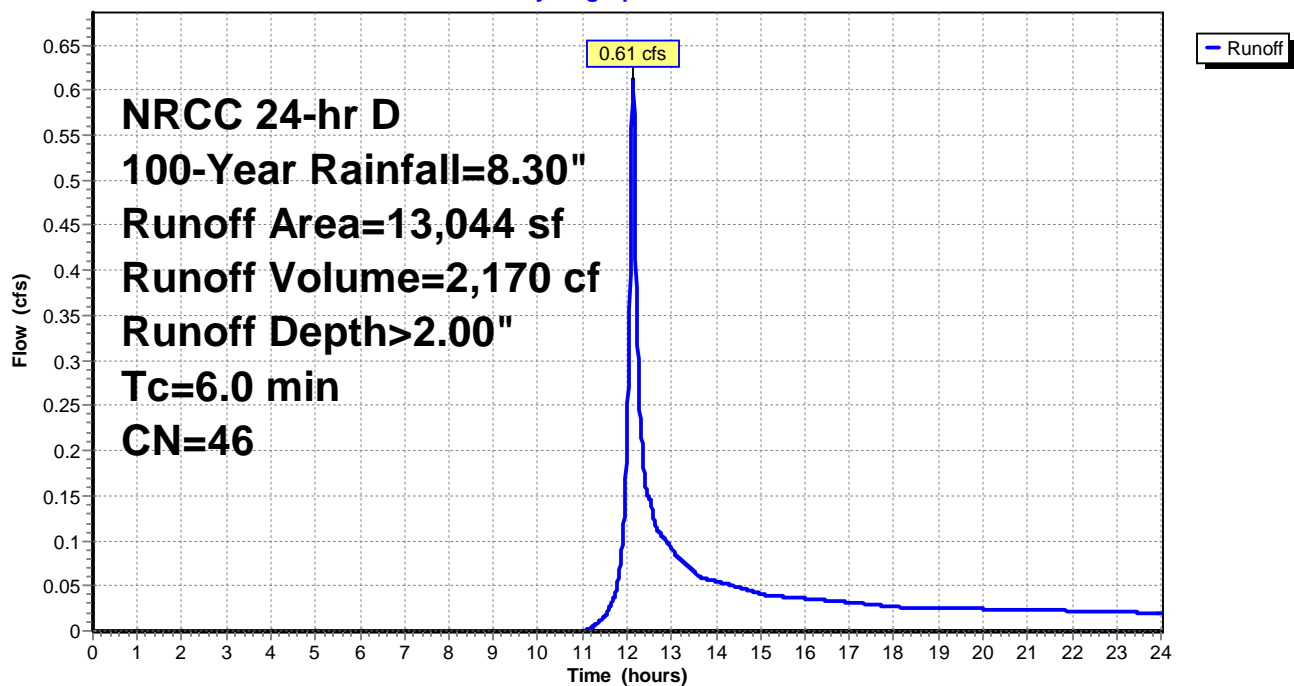
**Summary for Subcatchment 26S: RG 3**

Runoff = 0.61 cfs @ 12.14 hrs, Volume= 2,170 cf, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,269	98	impervious HSG A
	9,945	39	>75% Grass cover, Good, HSG A
*	1,830	50	planking HSG A
	13,044	46	Weighted Average
	11,775		90.27% Pervious Area
	1,269		9.73% Impervious Area

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

**Subcatchment 26S: RG 3****Hydrograph**

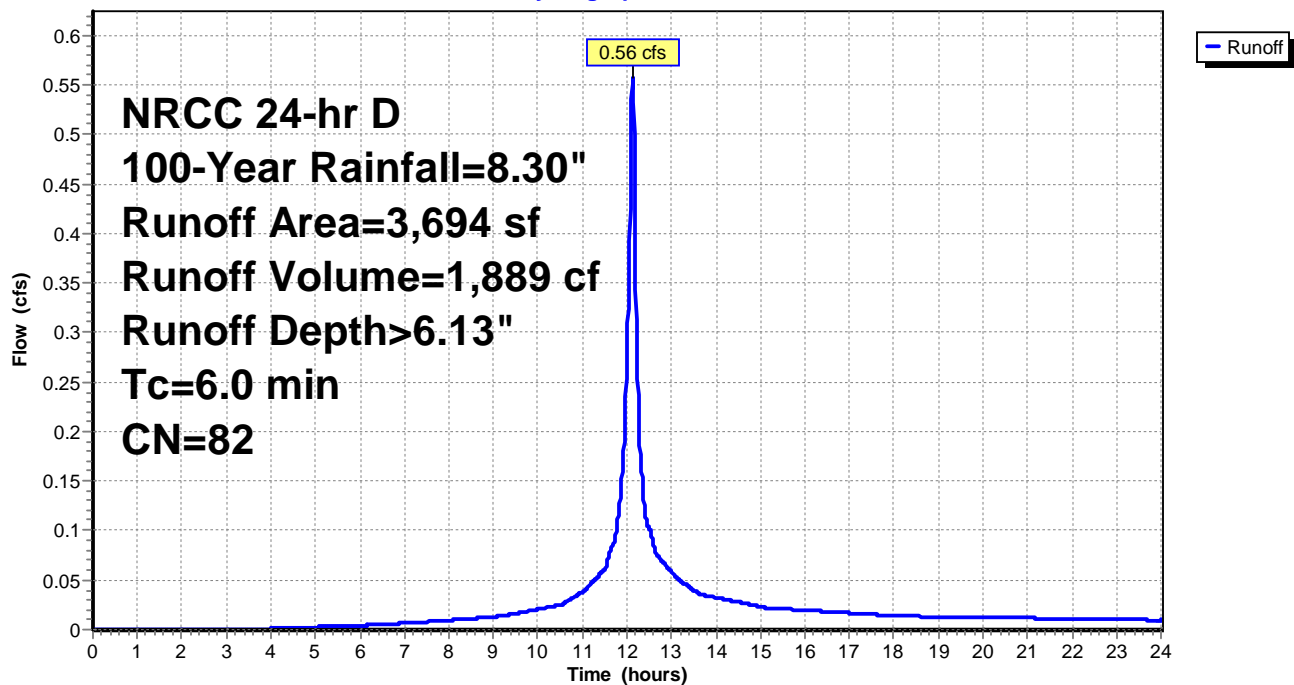
**Summary for Subcatchment 27S: GH West**

Runoff = 0.56 cfs @ 12.13 hrs, Volume= 1,889 cf, Depth> 6.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 390	98	impervious HSG D
3,304	80	>75% Grass cover, Good, HSG D
3,694	82	Weighted Average
3,304		89.44% Pervious Area
390		10.56% Impervious Area

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

**Subcatchment 27S: GH West****Hydrograph**

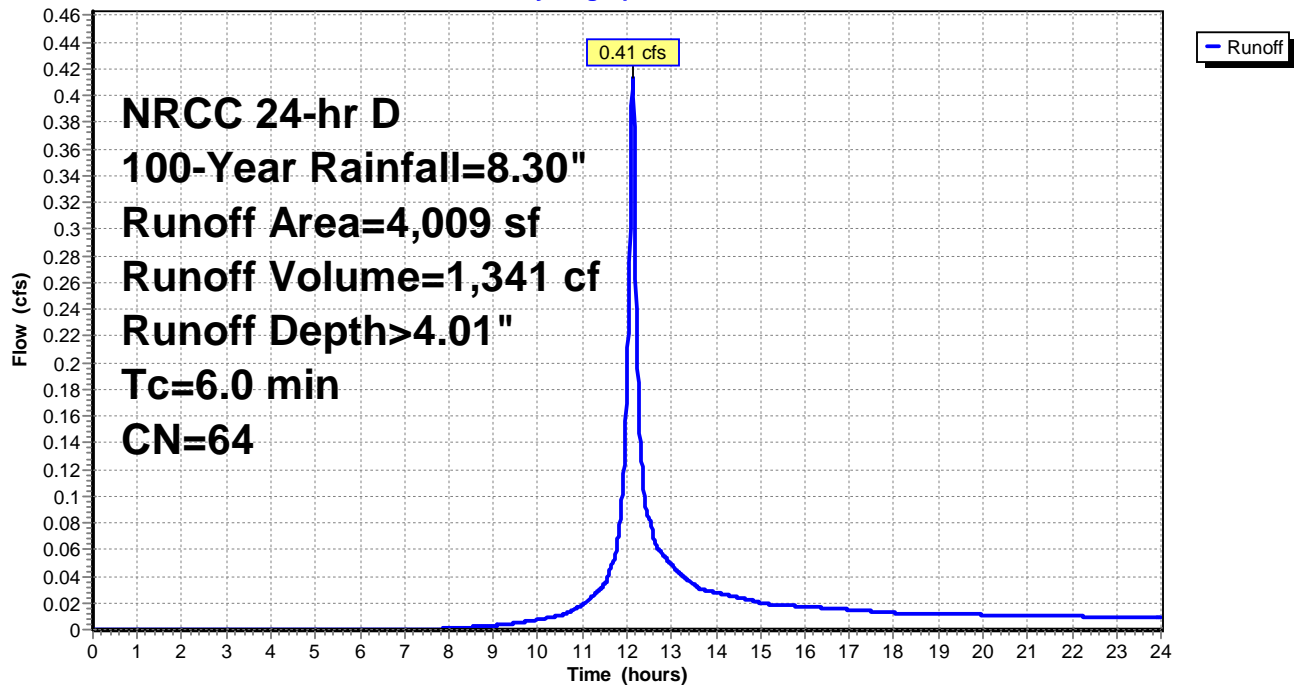
**Summary for Subcatchment 28S: GH East**

Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,129	98	impervious HSG D
*	2,880	50	planking HSG D
	4,009	64	Weighted Average
	2,880		71.84% Pervious Area
	1,129		28.16% Impervious Area

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

**Subcatchment 28S: GH East****Hydrograph**

**Summary for Subcatchment 29S: CB 1**

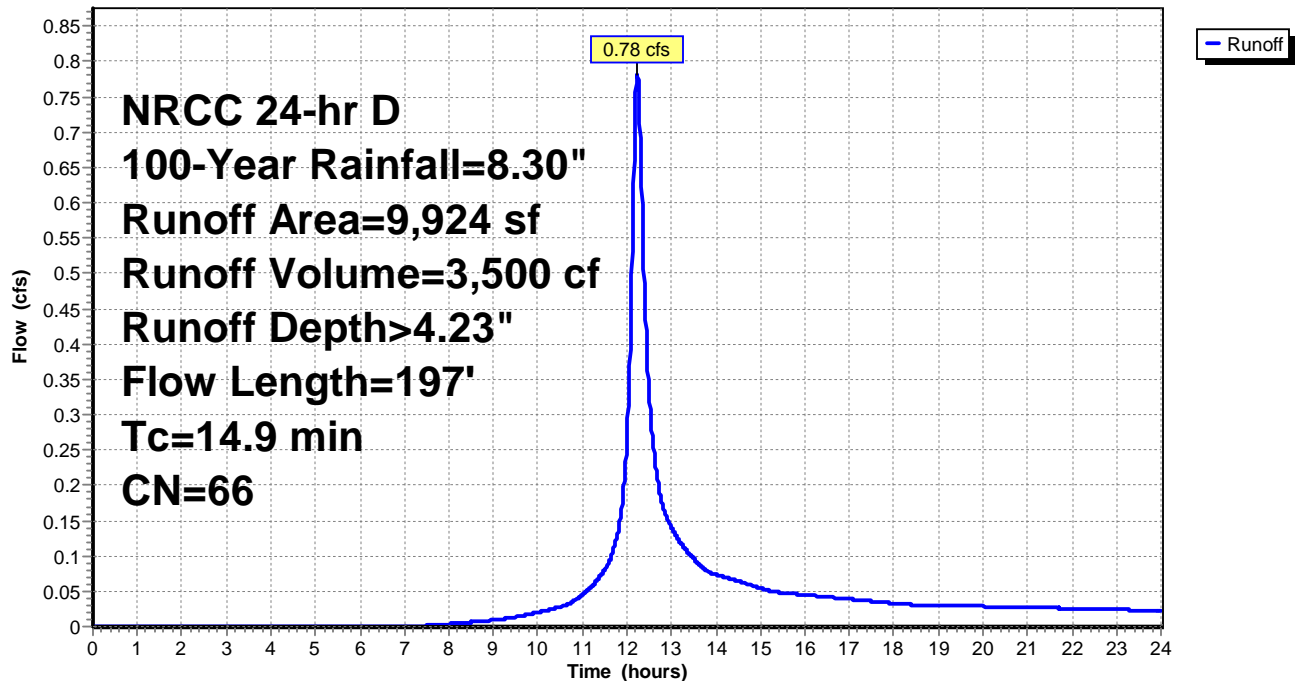
Runoff = 0.78 cfs @ 12.23 hrs, Volume= 3,500 cf, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	3,522	98	impervious HSG A
*	1,102	98	exist roof HSG A
*	261	39	cemetery HSG A
	5,039	39	>75% Grass cover, Good, HSG A
	9,924	66	Weighted Average
	5,300		53.41% Pervious Area
	4,624		46.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	25	0.1200	0.03		<b>Sheet Flow, cemetery</b>
					Grass: Short n= 0.150 P2= 0.04"
0.5	97	0.2000	3.13		<b>Shallow Concentrated Flow, grass</b>
					Short Grass Pasture Kv= 7.0 fps
0.3	75	0.0500	4.54		<b>Shallow Concentrated Flow, pvd</b>
					Paved Kv= 20.3 fps
14.9	197	Total			

**Subcatchment 29S: CB 1****Hydrograph**



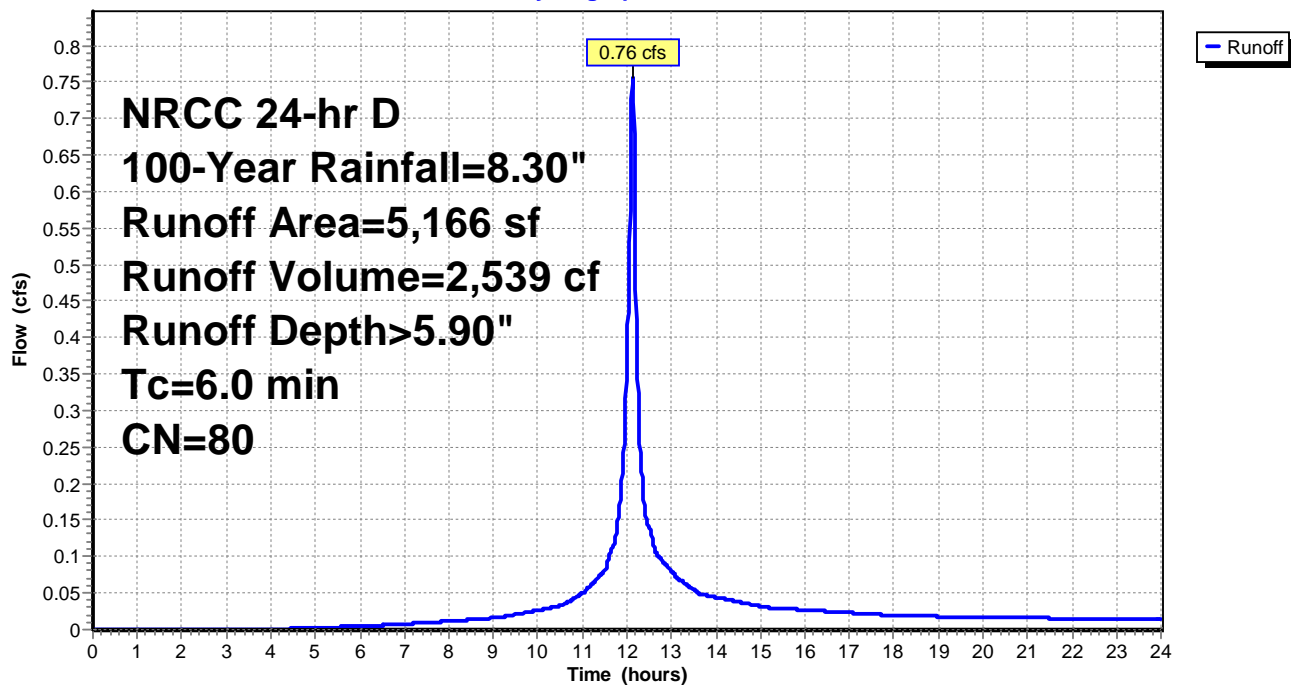
**Summary for Subcatchment 30S: CB 3**

Runoff = 0.76 cfs @ 12.13 hrs, Volume= 2,539 cf, Depth> 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 3,592	98	impervious HSG A
1,574	39	>75% Grass cover, Good, HSG A
5,166	80	Weighted Average
1,574		30.47% Pervious Area
3,592		69.53% Impervious Area

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

**Subcatchment 30S: CB 3****Hydrograph**

**Summary for Subcatchment 31S: Rte 1**

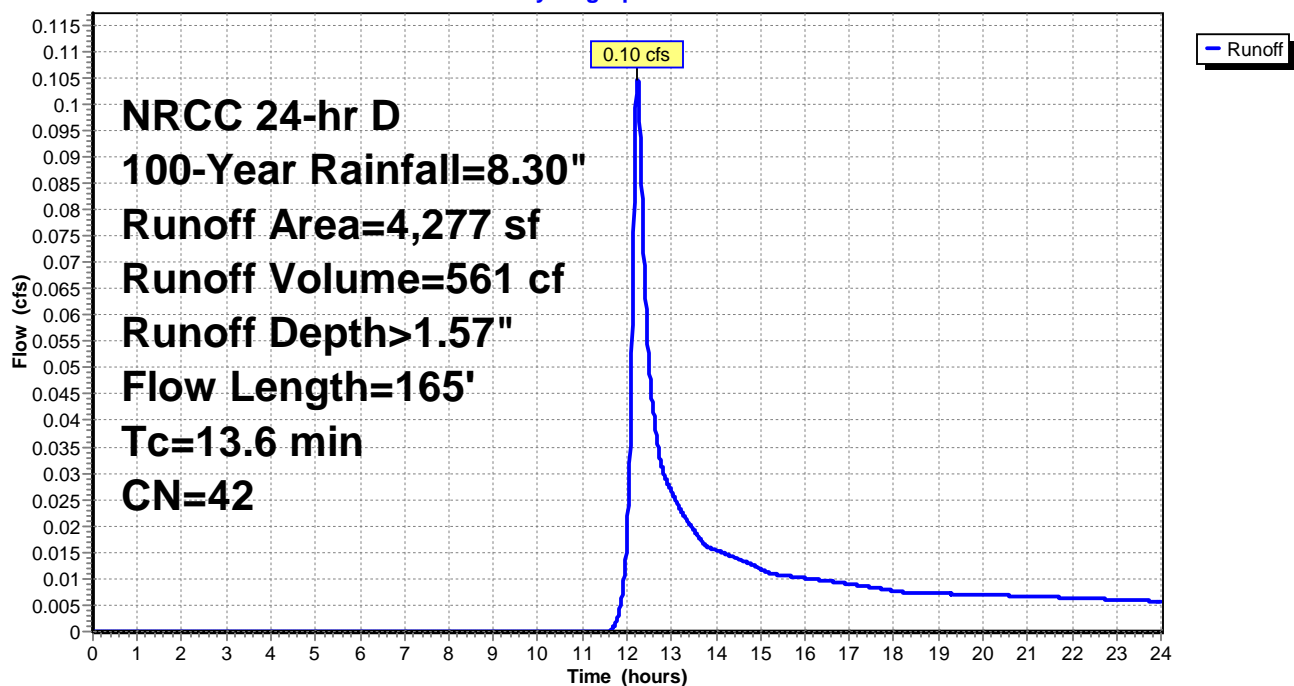
Runoff = 0.10 cfs @ 12.24 hrs, Volume= 561 cf, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 709	39	Cemetery HSG A
1,784	30	Woods, Good, HSG A
* 493	98	impervious HSG A
1,291	39	>75% Grass cover, Good, HSG A
4,277	42	Weighted Average
3,784		88.47% Pervious Area
493		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	20	0.1000	0.03		<b>Sheet Flow, cemetery</b> Grass: Short n= 0.150 P2= 0.04"
0.7	96	0.2300	2.40		<b>Shallow Concentrated Flow, woods</b> Woodland Kv= 5.0 fps
0.2	49	0.4500	3.35		<b>Shallow Concentrated Flow, wds</b> Woodland Kv= 5.0 fps
13.6	165	Total			

**Subcatchment 31S: Rte 1****Hydrograph**

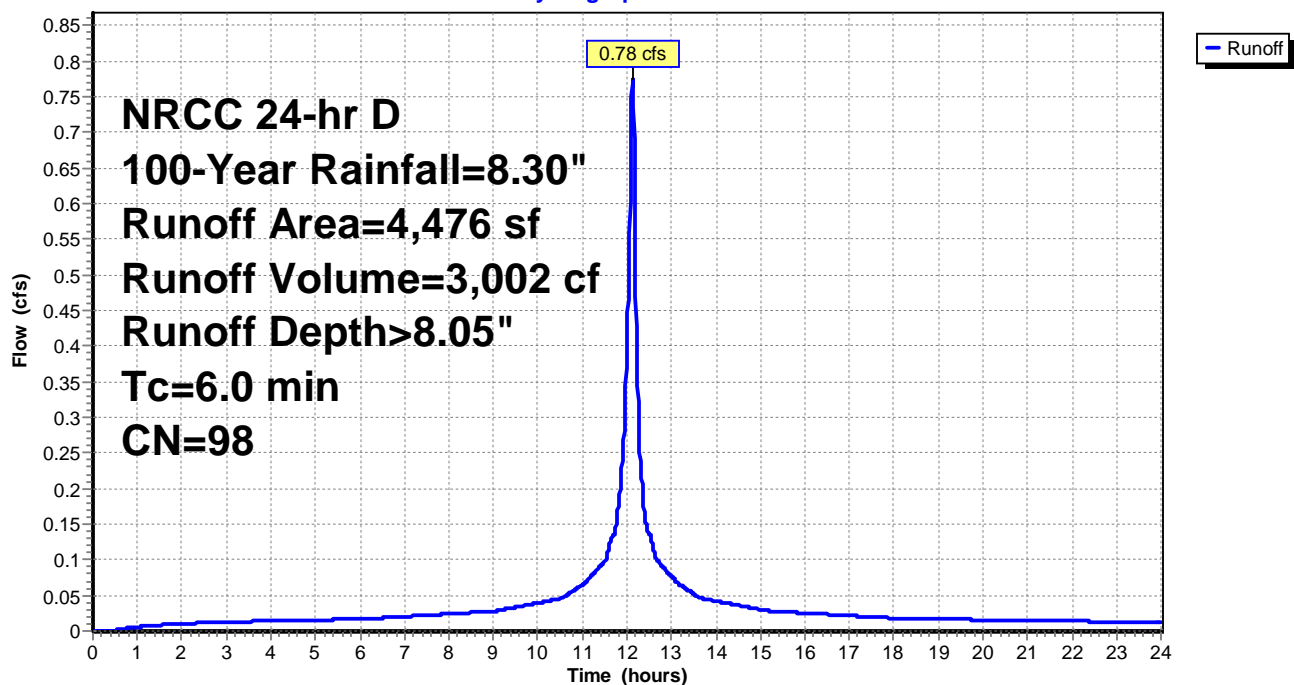
**Summary for Subcatchment 32S: GH**

Runoff = 0.78 cfs @ 12.13 hrs, Volume= 3,002 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	4,476	98	roof HSG D
	4,476		100.00% Impervious Area

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

**Subcatchment 32S: GH****Hydrograph**

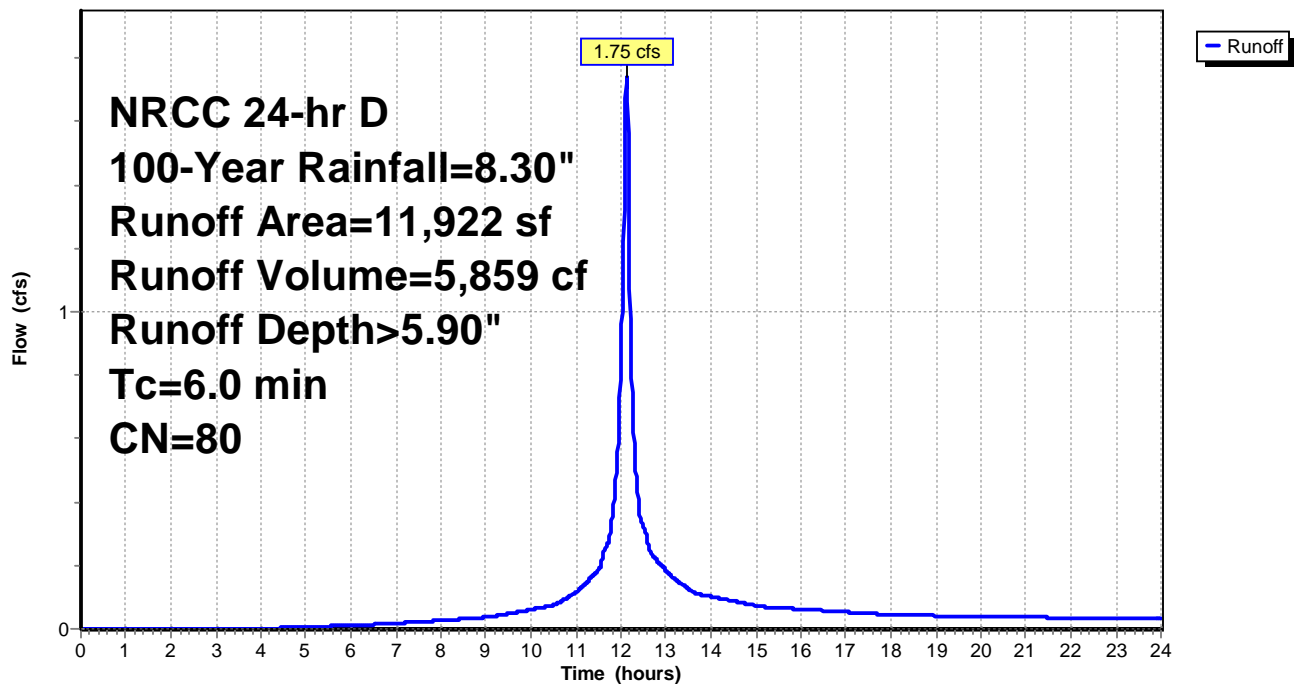
**Summary for Subcatchment 33S: 12-14 CC**

Runoff = 1.75 cfs @ 12.13 hrs, Volume= 5,859 cf, Depth> 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

Area (sf)	CN	Description
* 1,709	98	impervious HSG D
4,934	74	>75% Grass cover, Good, HSG C
5,279	80	>75% Grass cover, Good, HSG D
11,922	80	Weighted Average
10,213		85.67% Pervious Area
1,709		14.33% Impervious Area

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

**Subcatchment 33S: 12-14 CC****Hydrograph**

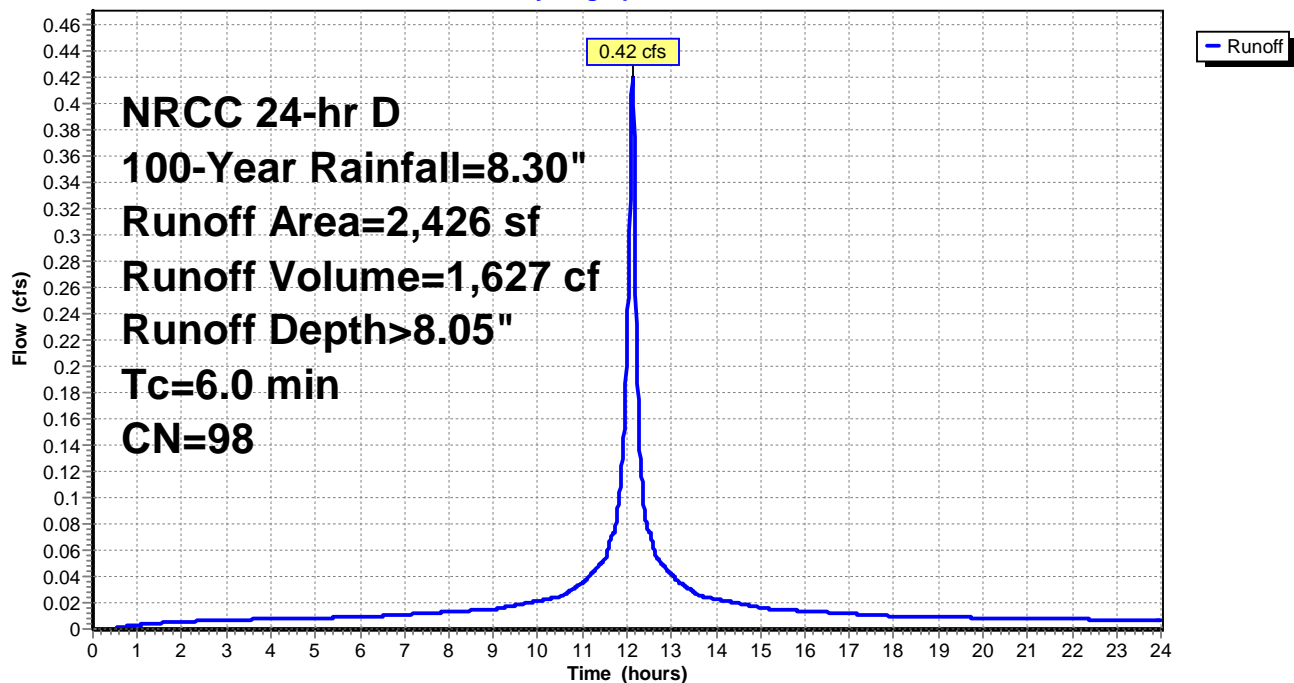
**Summary for Subcatchment 34S: Barn**

Runoff = 0.42 cfs @ 12.13 hrs, Volume= 1,627 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	2,426	98	roof HSG D
	2,426		100.00% Impervious Area

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

**Subcatchment 34S: Barn****Hydrograph**

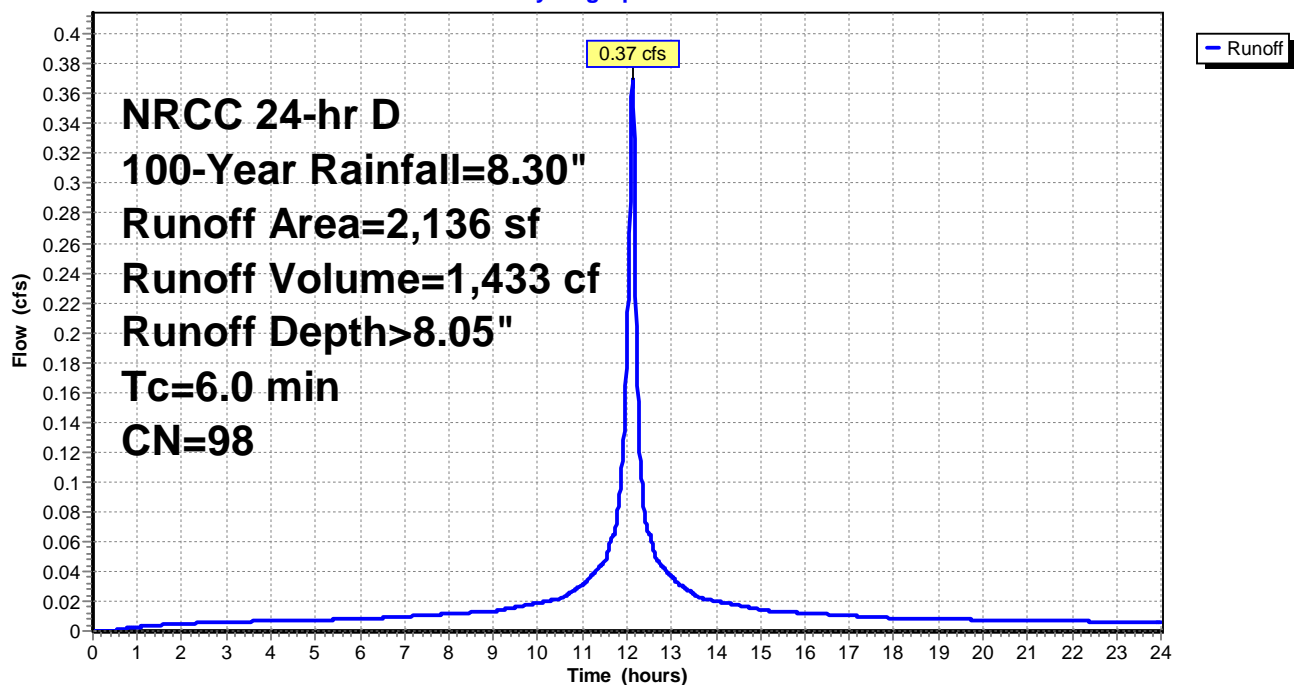
**Summary for Subcatchment 40S: YW**

Runoff = 0.37 cfs @ 12.13 hrs, Volume= 1,433 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	2,136	98	roof, HSG A
	2,136		100.00% Impervious Area

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

**Subcatchment 40S: YW****Hydrograph**

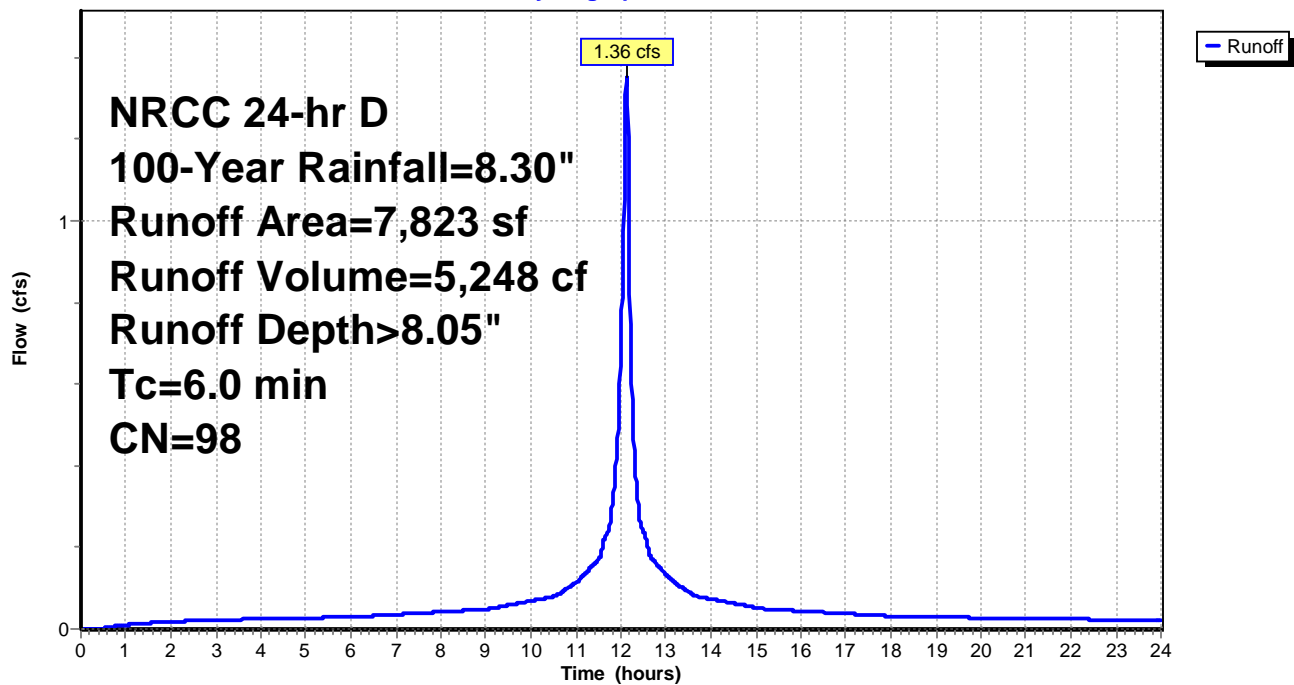
**Summary for Subcatchment 41S: SR**

Runoff = 1.36 cfs @ 12.13 hrs, Volume= 5,248 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	7,823	98	roof HSG A
	7,823		100.00% Impervious Area

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

**Subcatchment 41S: SR****Hydrograph**



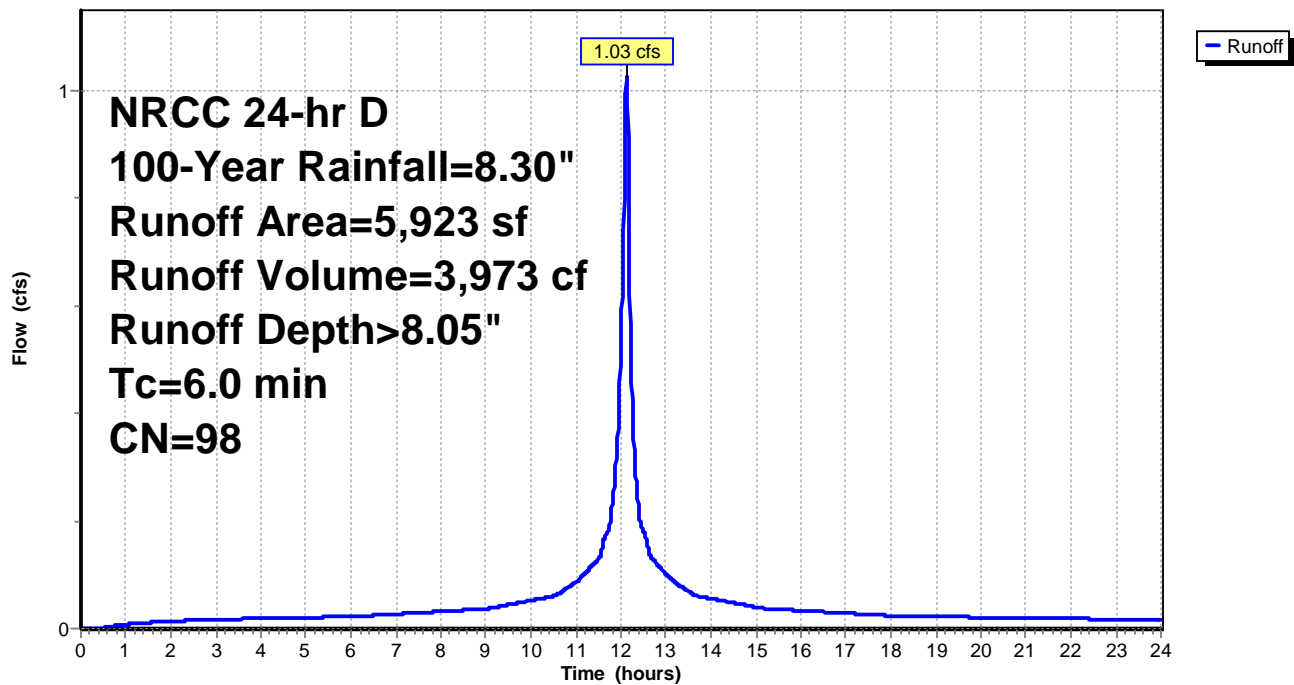
**Summary for Subcatchment 42S: CE**

Runoff = 1.03 cfs @ 12.13 hrs, Volume= 3,973 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	2,744	98	roof HSG C
*	3,179	98	roof HSG D
	5,923	98	Weighted Average
	5,923		100.00% Impervious Area

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

**Subcatchment 42S: CE****Hydrograph**

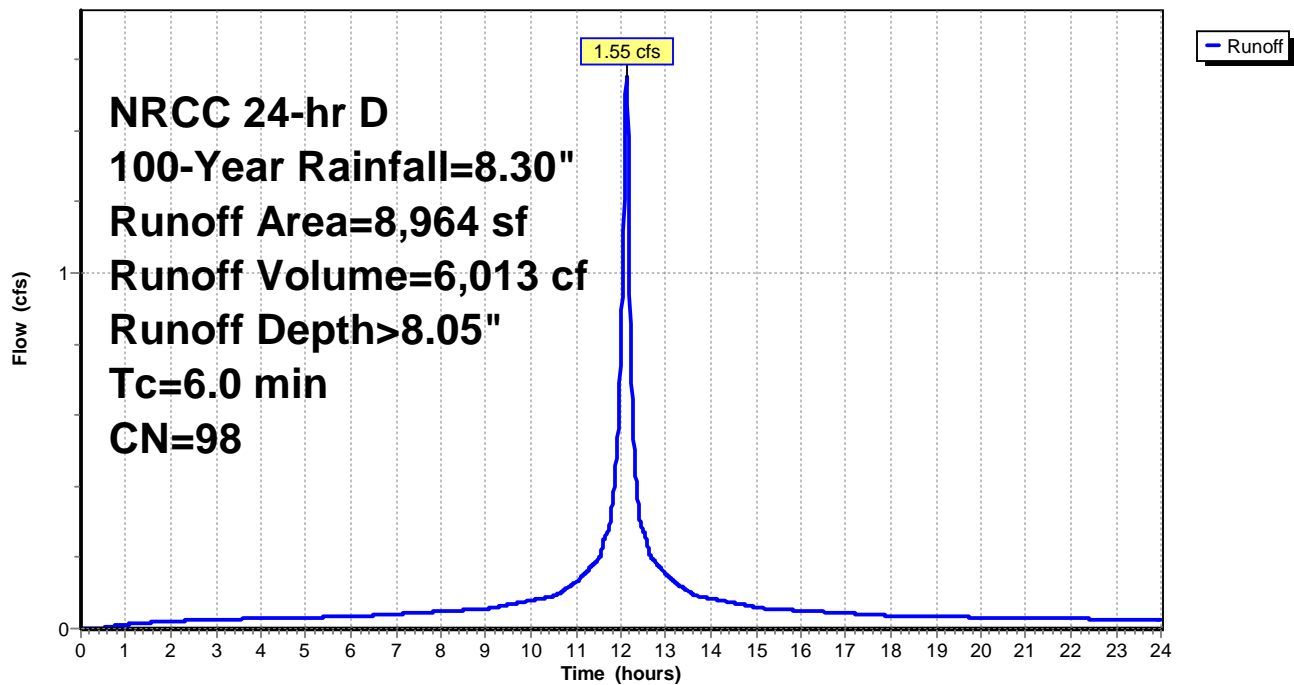
**Summary for Subcatchment 43S: CC**

Runoff = 1.55 cfs @ 12.13 hrs, Volume= 6,013 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	4,684	98	roof HSG C
*	4,280	98	roof HSG D
	8,964	98	Weighted Average
	8,964		100.00% Impervious Area

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

**Subcatchment 43S: CC****Hydrograph**

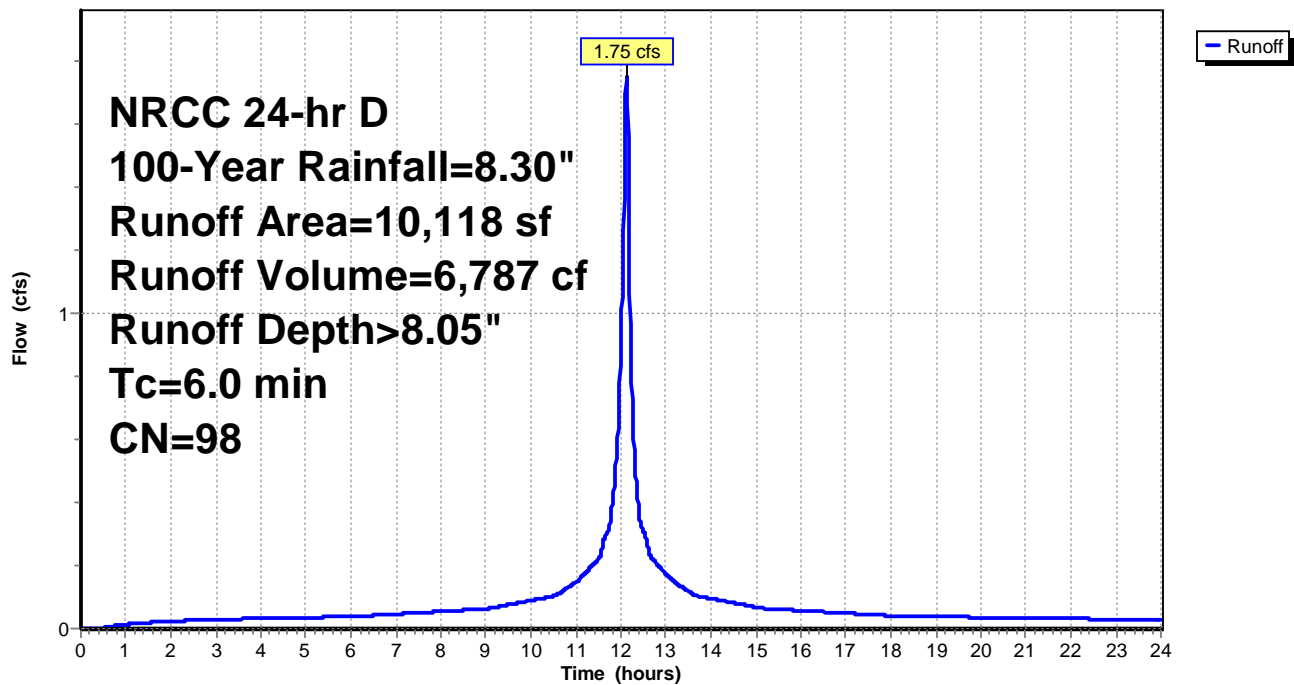
**Summary for Subcatchment 44S: HA+CH**

Runoff = 1.75 cfs @ 12.13 hrs, Volume= 6,787 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,803	98	roof HSG A
*	8,315	98	roof HSG D
	10,118	98	Weighted Average
	10,118		100.00% Impervious Area

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

**Subcatchment 44S: HA+CH****Hydrograph**

### Summary for Subcatchment 46S: Bay 1

Runoff = 0.21 cfs @ 12.13 hrs, Volume= 800 cf, Depth> 8.05"

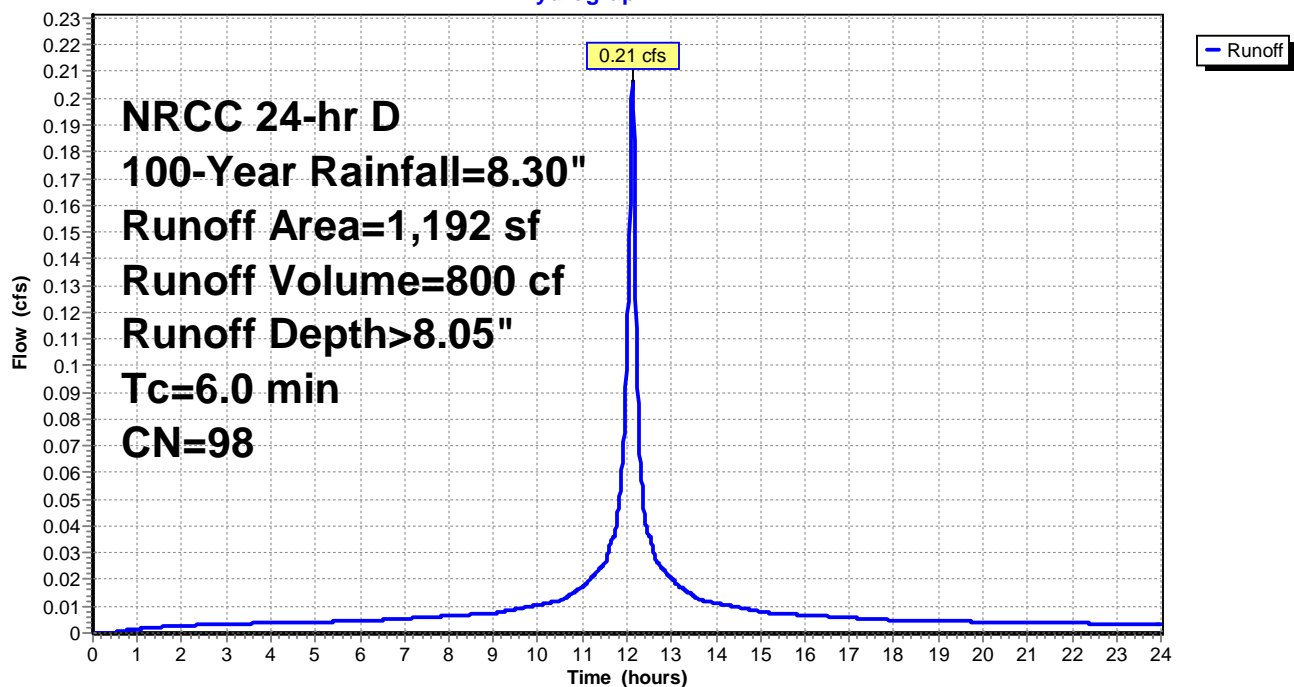
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
	1,192		100.00% Impervious Area

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

### Subcatchment 46S: Bay 1

## Hydrograph



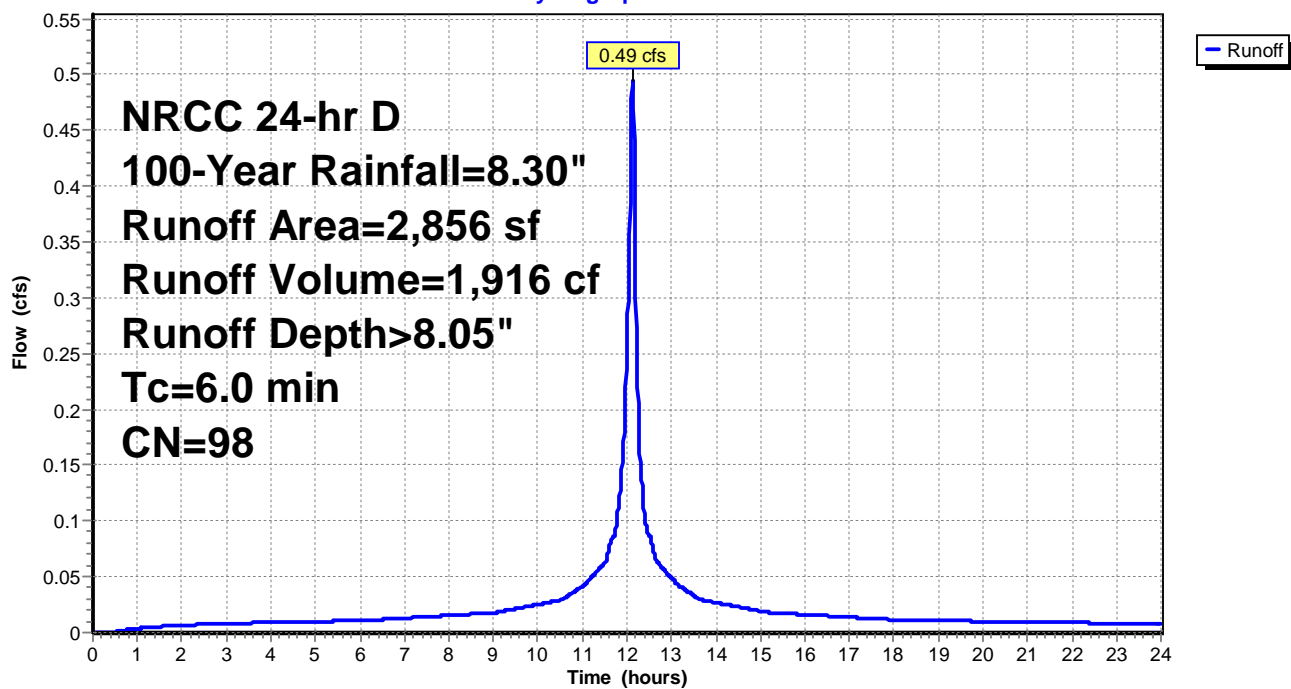
**Summary for Subcatchment 49S: Bay 2**

Runoff = 0.49 cfs @ 12.13 hrs, Volume= 1,916 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,192	98	porous pavement
*	1,664	98	pavement HSG C
	2,856	98	Weighted Average
	2,856		100.00% Impervious Area

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

**Subcatchment 49S: Bay 2****Hydrograph**

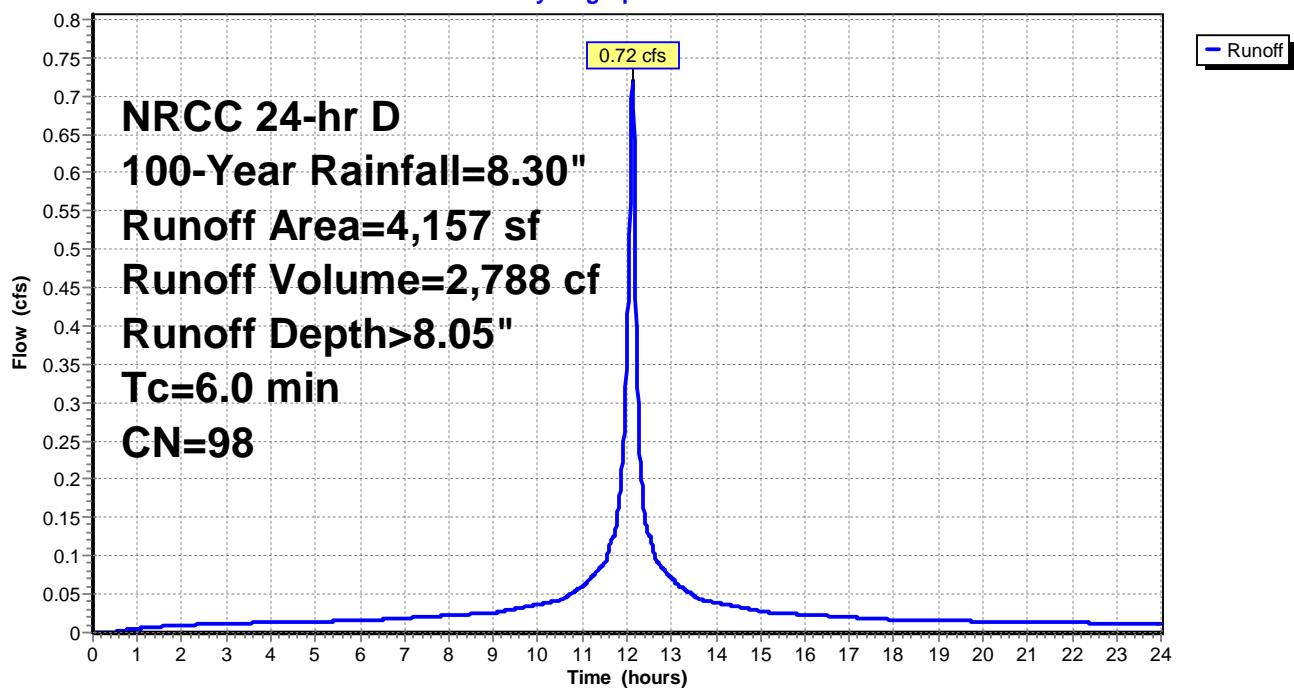
**Summary for Subcatchment 50S: Bay 3**

Runoff = 0.72 cfs @ 12.13 hrs, Volume= 2,788 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	2,545	98	porous pavement HSG C
*	1,612	98	pavement HSG C
	4,157	98	Weighted Average
	4,157		100.00% Impervious Area

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

**Subcatchment 50S: Bay 3****Hydrograph**

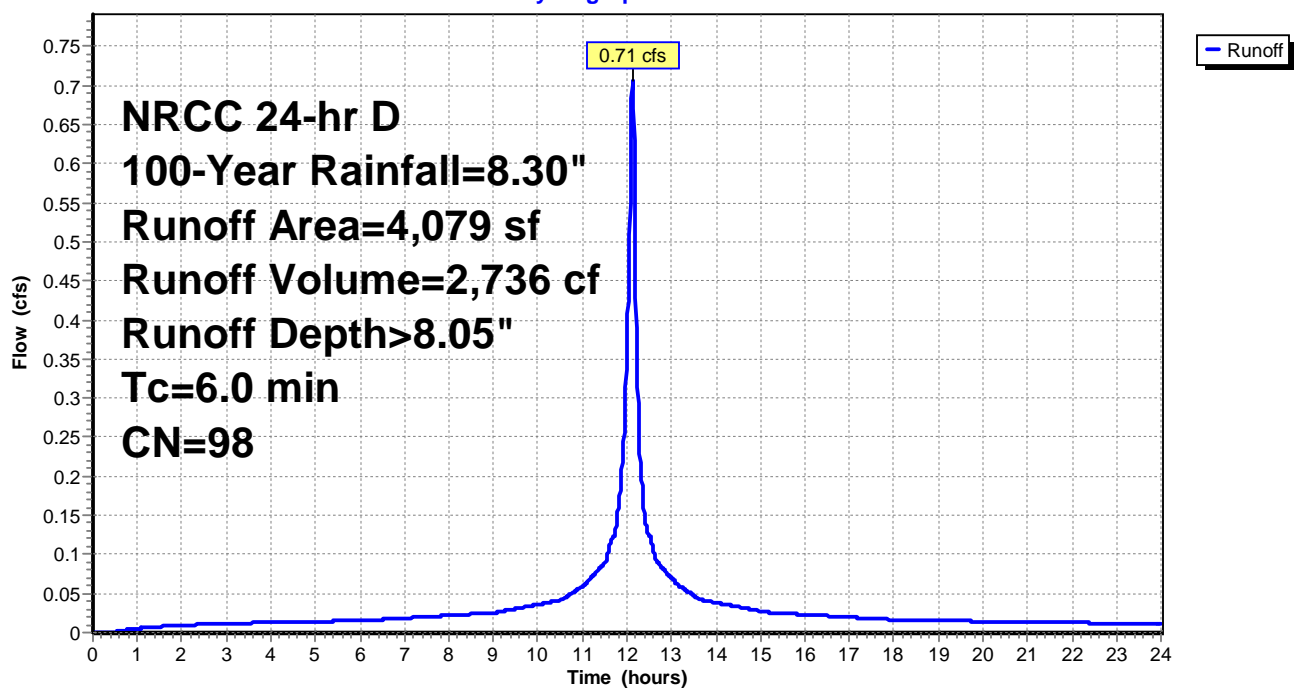
**Summary for Subcatchment 51S: Bay 4**

Runoff = 0.71 cfs @ 12.13 hrs, Volume= 2,736 cf, Depth> 8.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
NRCC 24-hr D 100-Year Rainfall=8.30"

	Area (sf)	CN	Description
*	1,530	98	porous pavement HSG C
*	2,549	98	pavement HSG C
	4,079	98	Weighted Average
	4,079		100.00% Impervious Area

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

**Subcatchment 51S: Bay 4****Hydrograph**



## Summary for Pond 1P: Dep 1

Inflow Area = 79,064 sf, 15.90% Impervious, Inflow Depth > 7.39" for 100-Year event  
 Inflow = 6.18 cfs @ 12.53 hrs, Volume= 48,681 cf  
 Outflow = 6.66 cfs @ 12.43 hrs, Volume= 48,680 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.99 cfs @ 12.43 hrs, Volume= 49,077 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 31.02' @ 13.09 hrs Surf.Area= 8,529 sf Storage= 8,615 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 30.1 min ( 824.8 - 794.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	18,511 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	163	0	0
29.00	253	208	208
30.00	3,899	2,076	2,284
31.00	8,477	6,188	8,472
32.00	11,600	10,039	18,511

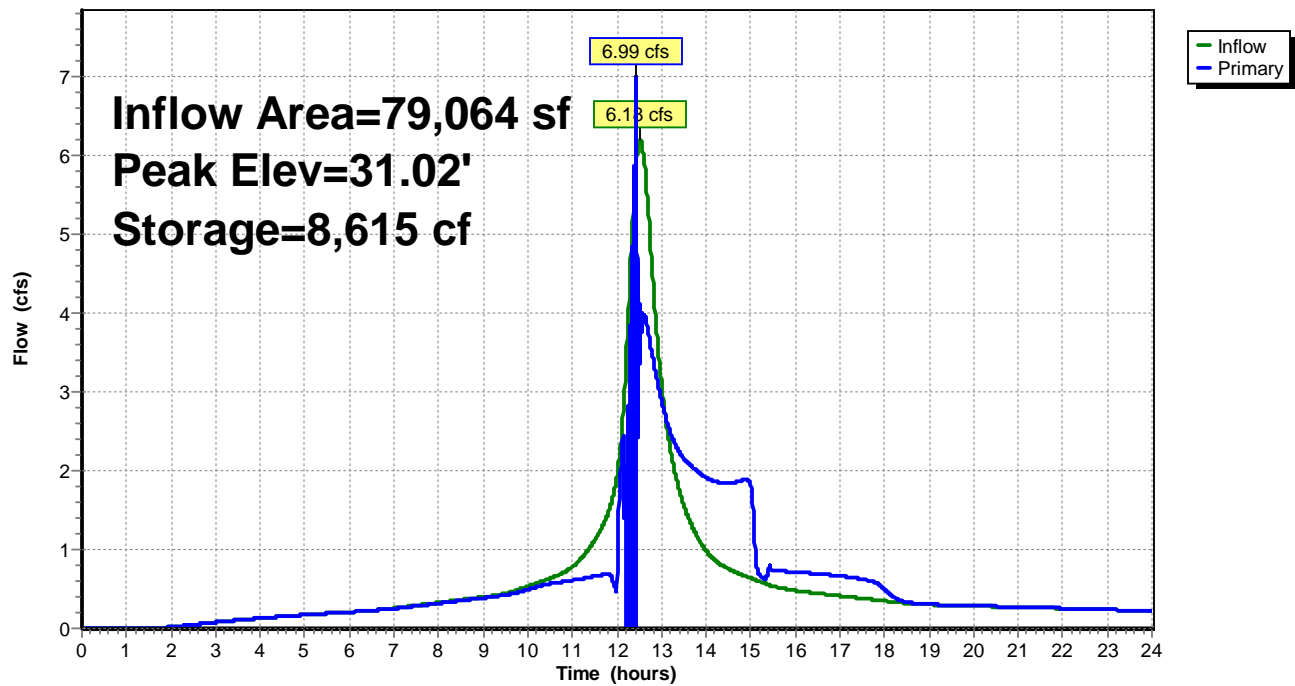
Device	Routing	Invert	Outlet Devices
#1	Primary	30.00'	<b>39.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	26.50'	<b>2.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.50' / 25.40' S= 0.0268 '/' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf
#3	Primary	27.70'	<b>4.0" Round Culvert</b> L= 41.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 27.70' / 25.40' S= 0.0561 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.00 cfs @ 12.43 hrs HW=30.63' TW=30.63' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)  
 — **2=Culvert** ( Controls 0.00 cfs)  
 — **3=Culvert** ( Controls 0.00 cfs)

## Pond 1P: Dep 1

## Hydrograph



**Summary for Pond 2P: dep 2**

Inflow Area = 34,238 sf, 29.28% Impervious, Inflow Depth > 6.00" for 100-Year event  
 Inflow = 3.70 cfs @ 12.23 hrs, Volume= 17,119 cf  
 Outflow = 3.69 cfs @ 12.24 hrs, Volume= 15,356 cf, Atten= 0%, Lag= 0.4 min  
 Primary = 3.69 cfs @ 12.24 hrs, Volume= 15,356 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 35.56' @ 12.24 hrs Surf.Area= 2,263 sf Storage= 1,886 cf

Plug-Flow detention time= 88.8 min calculated for 15,356 cf (90% of inflow)  
 Center-of-Mass det. time= 34.7 min ( 854.8 - 820.0 )

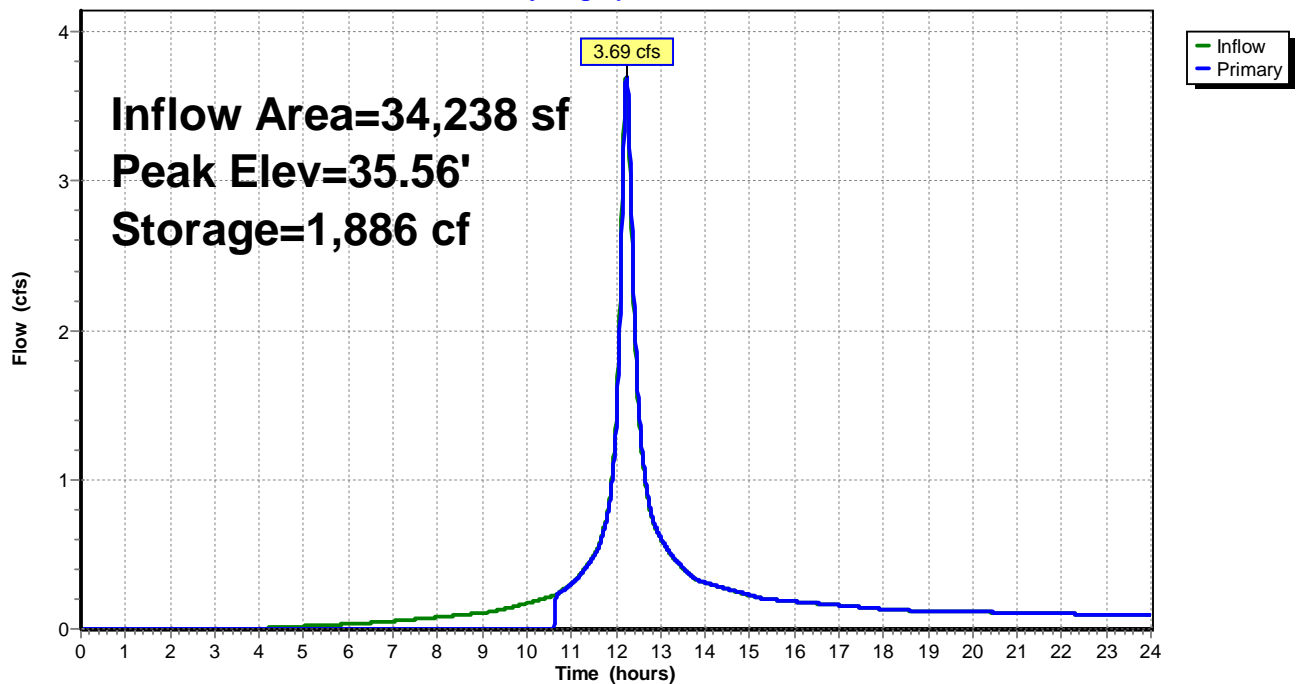
Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	3,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	576	0	0
35.00	1,235	906	906
36.00	3,069	2,152	3,058

Device	Routing	Invert	Outlet Devices
#1	Primary	35.50'	<b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=3.69 cfs @ 12.24 hrs HW=35.56' TW=30.30' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 3.69 cfs @ 0.61 fps)

**Pond 2P: dep 2****Hydrograph**

### Summary for Pond 3P: cent dep

Inflow Area = 188,583 sf, 1.18% Impervious, Inflow Depth > 1.77" for 100-Year event  
 Inflow = 4.01 cfs @ 12.40 hrs, Volume= 27,772 cf  
 Outflow = 3.53 cfs @ 12.52 hrs, Volume= 27,744 cf, Atten= 12%, Lag= 7.2 min  
 Primary = 3.53 cfs @ 12.52 hrs, Volume= 27,744 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 33.45' @ 12.52 hrs Surf.Area= 1,490 sf Storage= 813 cf

Plug-Flow detention time= 1.9 min calculated for 27,744 cf (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 937.9 - 936.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.83'	28,303 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.83	40	0	0
33.00	566	355	355
34.00	2,635	1,601	1,955
35.00	6,530	4,583	6,538
36.00	37,000	21,765	28,303

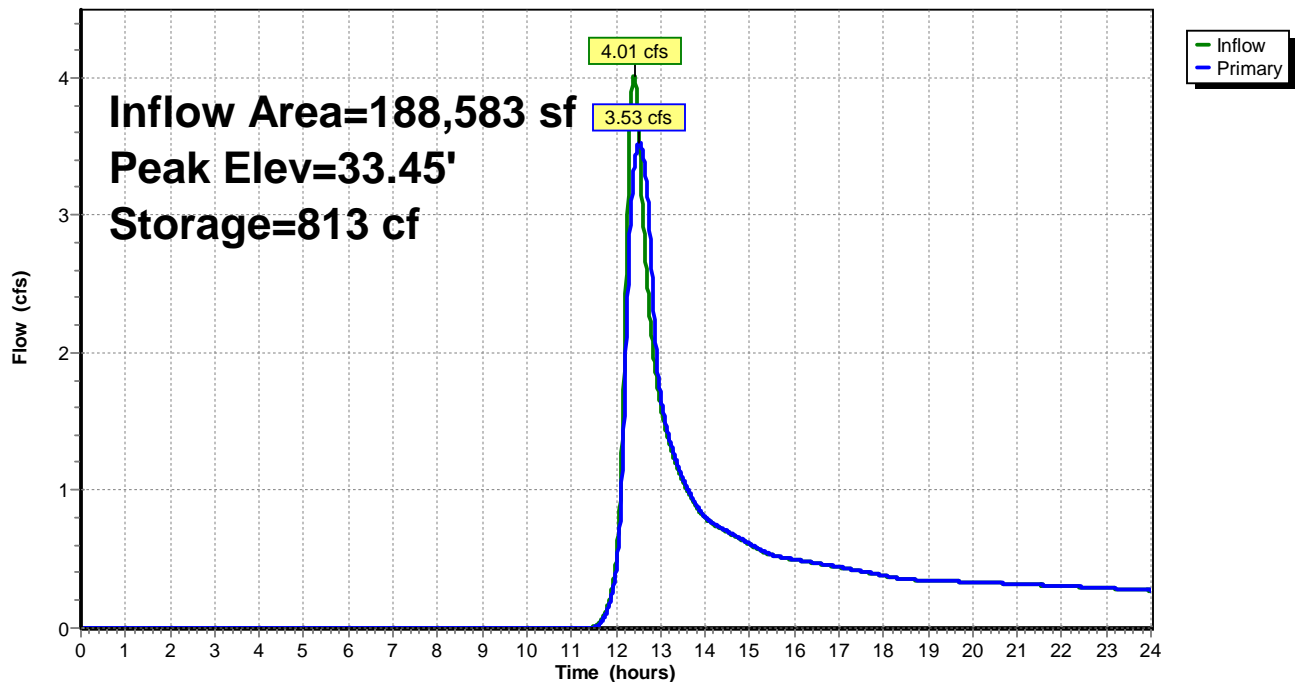
Device	Routing	Invert	Outlet Devices
#1	Primary	35.30'	<b>45.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.83'	<b>12.0" Round Culvert L= 201.0' RCP, mitered to conform to fill, Ke= 0.700</b> Inlet / Outlet Invert= 31.83' / 25.00' S= 0.0340 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.53 cfs @ 12.52 hrs HW=33.45' TW=30.75' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)  
 2=Culvert (Inlet Controls 3.53 cfs @ 4.49 fps)

### Pond 3P: cent dep

#### Hydrograph



**Summary for Pond 4P: cb 1889**

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 4.10" for 100-Year event  
 Inflow = 14.51 cfs @ 12.14 hrs, Volume= 120,708 cf  
 Outflow = 5.59 cfs @ 13.33 hrs, Volume= 120,696 cf, Atten= 61%, Lag= 71.1 min  
 Primary = 5.59 cfs @ 13.33 hrs, Volume= 120,696 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 31.02' @ 13.08 hrs Surf.Area= 19,730 sf Storage= 16,844 cf

Plug-Flow detention time= 17.8 min calculated for 120,696 cf (100% of inflow)  
 Center-of-Mass det. time= 17.7 min ( 865.5 - 847.7 )

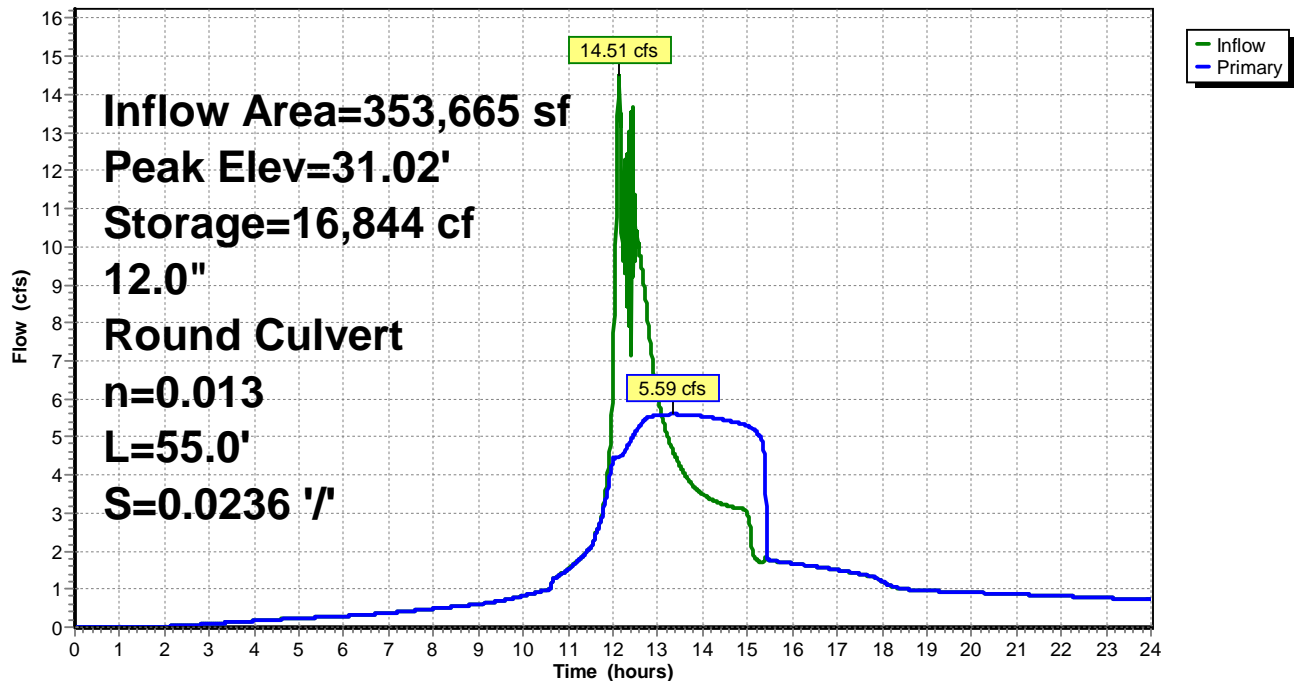
Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	42,875 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	30	0	0
28.00	157	281	281
29.00	623	390	671
30.00	5,783	3,203	3,874
32.00	33,218	39,001	42,875

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 55.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 24.90' / 23.60' S= 0.0236 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.60 cfs @ 13.33 hrs HW=30.99' TW=28.45' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 5.60 cfs @ 7.12 fps)

**Pond 4P: cb 1889****Hydrograph**

**Summary for Pond 20P: Cistern**

Inflow Area = 134,437 sf, 13.16% Impervious, Inflow Depth > 2.07" for 100-Year event  
 Inflow = 2.60 cfs @ 12.62 hrs, Volume= 23,194 cf  
 Outflow = 2.60 cfs @ 12.62 hrs, Volume= 22,573 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.60 cfs @ 12.62 hrs, Volume= 22,573 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 39.97' @ 12.62 hrs Surf.Area= 79 sf Storage= 626 cf

Plug-Flow detention time= 24.5 min calculated for 22,563 cf (97% of inflow)  
 Center-of-Mass det. time= 11.1 min ( 935.7 - 924.6 )

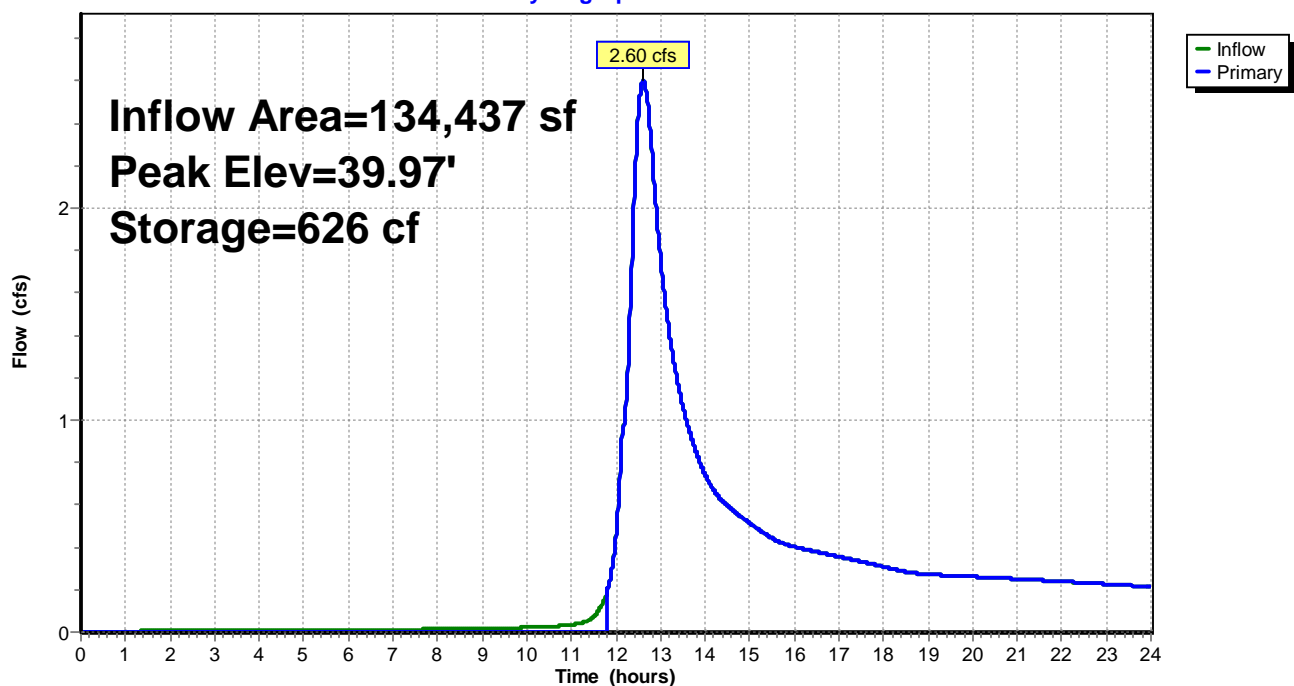
Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	628 cf	10.00'D x 8.00'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	39.90'	1.0" x 6.5" Horiz. Orifice/Grate X 11.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#2	Primary	39.95'	100.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=2.60 cfs @ 12.62 hrs HW=39.97' TW=35.50' (Dynamic Tailwater)

1=Orifice/Grate (Orifice Controls 1.89 cfs @ 1.27 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 0.71 cfs @ 0.37 fps)

**Pond 20P: Cistern****Hydrograph**

**Summary for Pond 21P: cb 6087**

Inflow Area = 353,665 sf, 9.40% Impervious, Inflow Depth > 4.10" for 100-Year event  
 Inflow = 5.59 cfs @ 13.33 hrs, Volume= 120,696 cf  
 Outflow = 5.59 cfs @ 13.33 hrs, Volume= 120,696 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.59 cfs @ 13.33 hrs, Volume= 120,696 cf

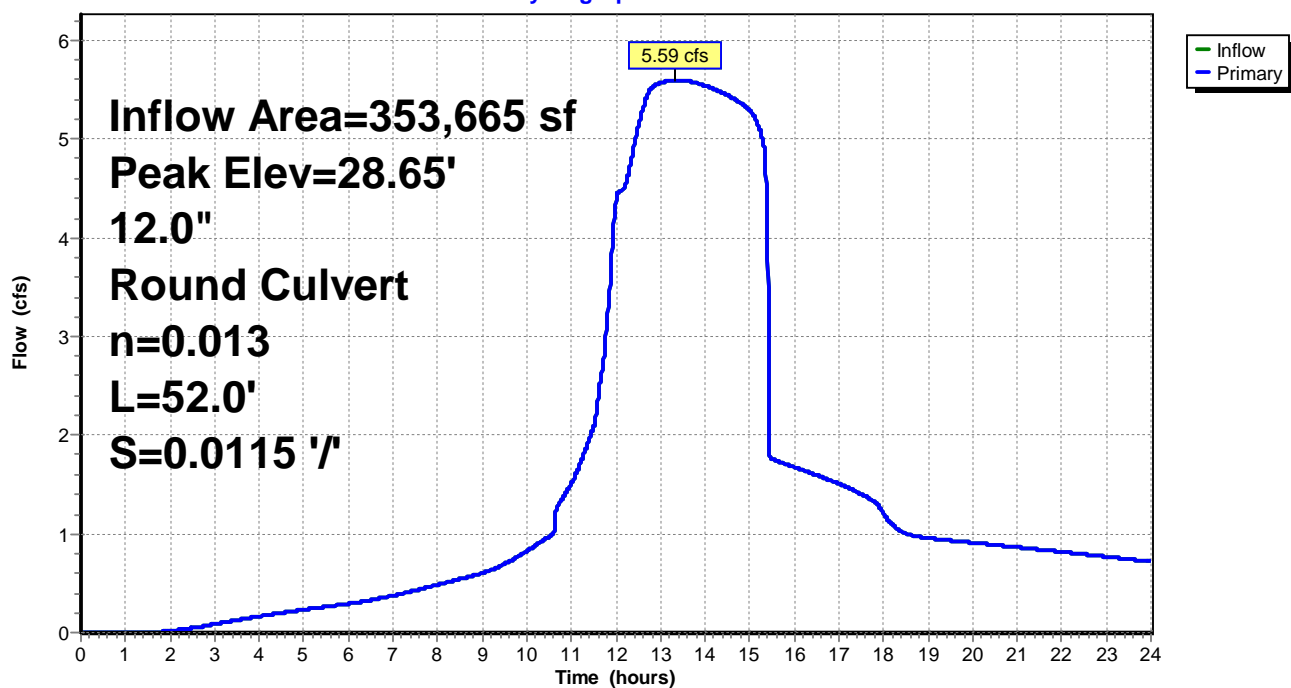
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 28.65' @ 12.33 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	23.60'	<b>12.0" Round Culvert</b> L= 52.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.60' / 23.00' S= 0.0115 ' / ' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.59 cfs @ 13.33 hrs HW=28.45' TW=25.98' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 5.59 cfs @ 7.12 fps)

**Pond 21P: cb 6087****Hydrograph**



**Summary for Pond 22P: HW 1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 2.42" for 100-Year event  
 Inflow = 5.75 cfs @ 12.45 hrs, Volume= 44,476 cf  
 Outflow = 2.30 cfs @ 13.25 hrs, Volume= 43,994 cf, Atten= 60%, Lag= 47.9 min  
 Primary = 2.30 cfs @ 13.25 hrs, Volume= 43,994 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.98' @ 13.25 hrs Surf.Area= 6,042 sf Storage= 8,792 cf

Flood Elev= 34.50' Surf.Area= 2,516 sf Storage= 2,477 cf

Plug-Flow detention time= 35.3 min calculated for 43,994 cf (99% of inflow)

Center-of-Mass det. time= 29.7 min ( 947.1 - 917.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	31.50'	8,939 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

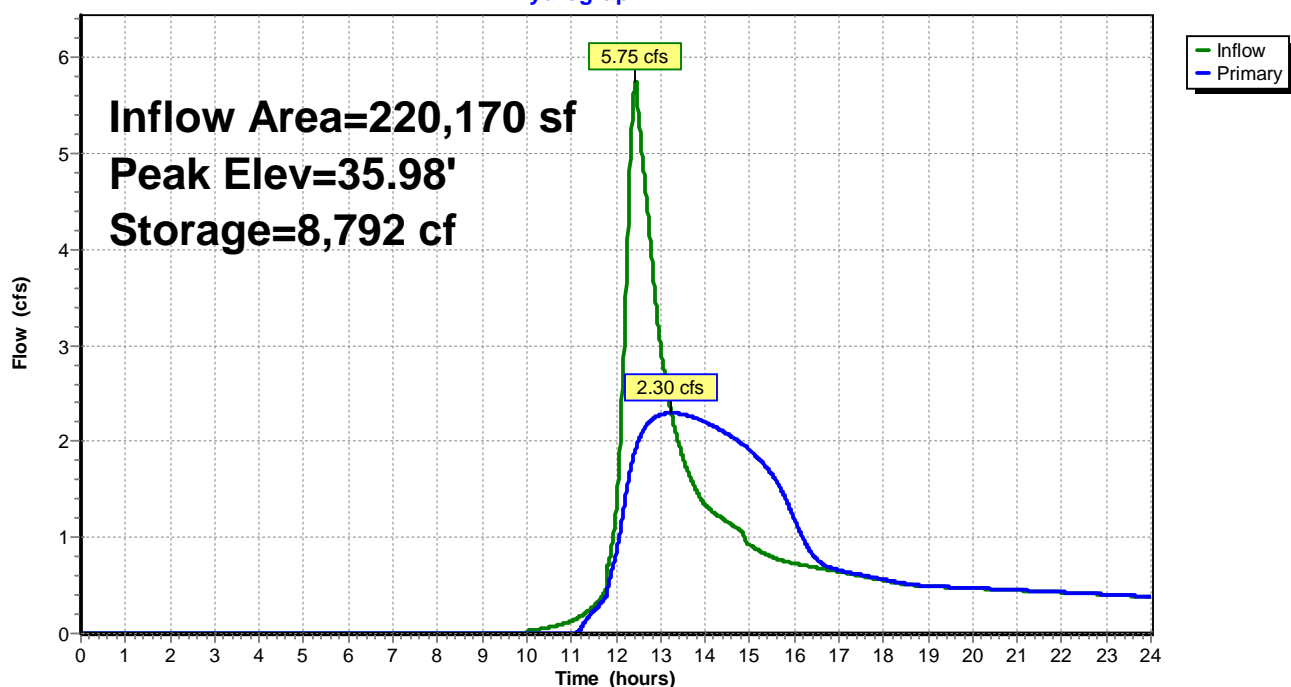
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.50	131	0	0
33.00	607	554	554
34.00	1,321	964	1,518
36.00	6,100	7,421	8,939

Device	Routing	Invert	Outlet Devices
#1	Primary	31.58'	<b>12.0" Round Culvert</b> L= 34.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 31.58' / 25.32' S= 0.1841 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	32.50'	<b>7.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=2.30 cfs @ 13.25 hrs HW=35.98' TW=26.04' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 2.30 cfs of 10.18 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 2.30 cfs @ 8.59 fps)

**Pond 22P: HW 1****Hydrograph**

**Summary for Pond 23P: Strmtr 2**

Inflow Area = 12,687 sf, 40.99% Impervious, Inflow Depth > 3.62" for 100-Year event  
 Inflow = 0.52 cfs @ 12.54 hrs, Volume= 3,826 cf  
 Outflow = 0.52 cfs @ 12.54 hrs, Volume= 3,826 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.52 cfs @ 12.54 hrs, Volume= 3,826 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

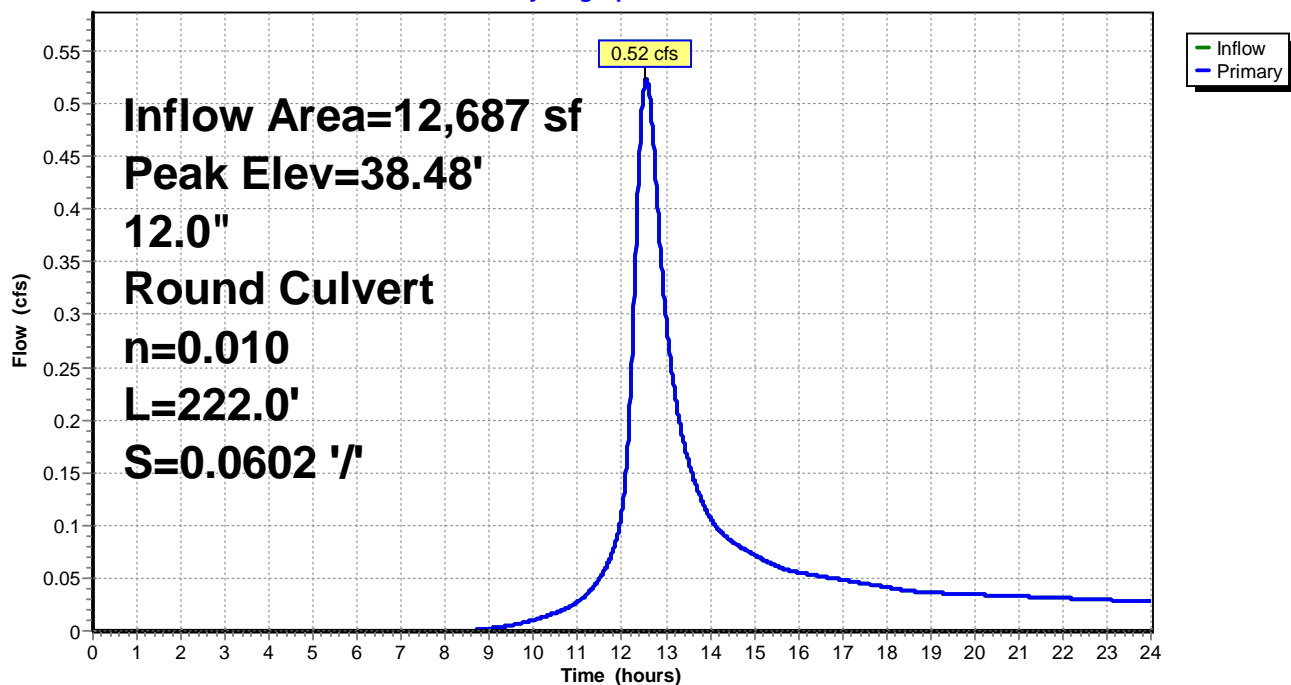
Peak Elev= 38.48' @ 12.54 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.16'	<b>12.0" Round Culvert</b> L= 222.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 38.16' / 24.80' S= 0.0602 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.52 cfs @ 12.54 hrs HW=38.48' TW=26.12' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.52 cfs @ 2.41 fps)

**Pond 23P: Strmtr 2****Hydrograph**

**Summary for Pond 24P: RG #1**

Inflow Area = 220,170 sf, 12.92% Impervious, Inflow Depth > 2.43" for 100-Year event  
 Inflow = 5.75 cfs @ 12.45 hrs, Volume= 44,504 cf  
 Outflow = 5.75 cfs @ 12.45 hrs, Volume= 44,476 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.75 cfs @ 12.45 hrs, Volume= 44,476 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 35.98' @ 12.45 hrs Surf.Area= 34 sf Storage= 336 cf

Flood Elev= 36.50' Surf.Area= 10 sf Storage= 336 cf

Plug-Flow detention time= 1.3 min calculated for 44,476 cf (100% of inflow)

Center-of-Mass det. time= 1.0 min ( 917.4 - 916.4 )

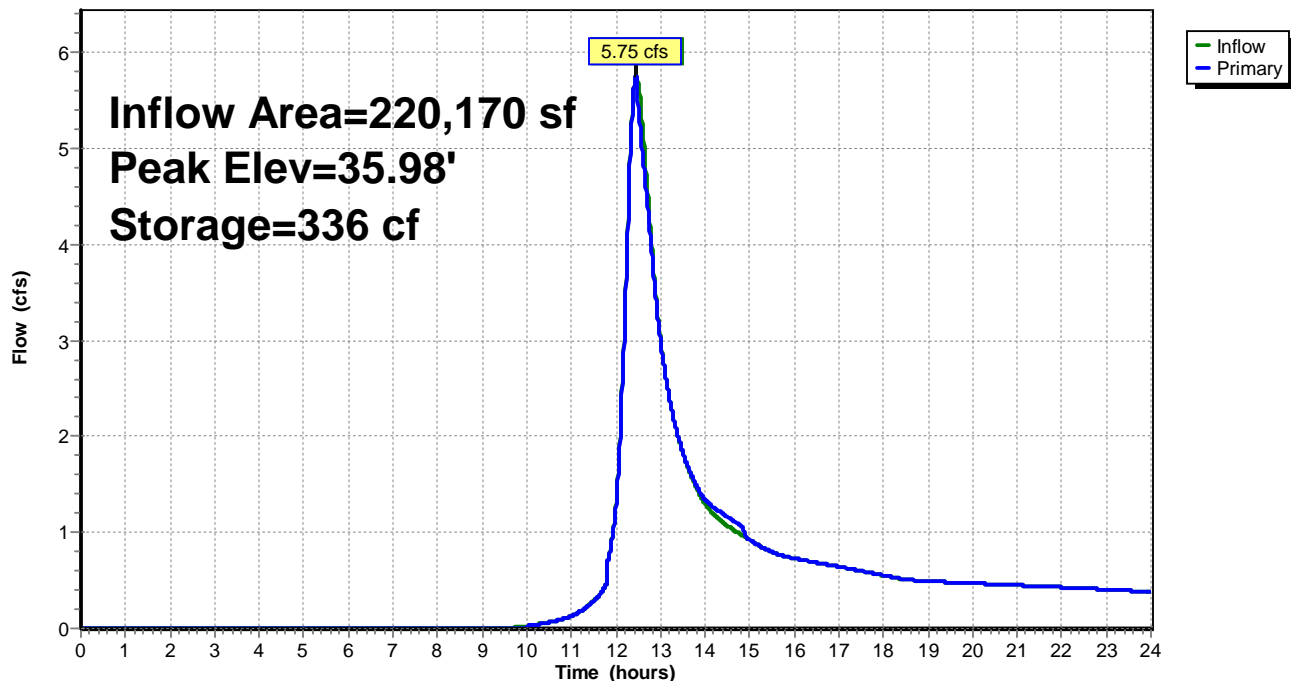
Volume	Invert	Avail.Storage	Storage Description
#1	35.00'	336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	131	0	0
35.08	394	21	21
35.50	500	188	209
36.00	10	128	336

Device	Routing	Invert	Outlet Devices
#1	Primary	35.08'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=5.75 cfs @ 12.45 hrs HW=35.18' TW=35.05' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 5.75 cfs @ 0.86 fps)

**Pond 24P: RG #1****Hydrograph**

**Summary for Pond 25P: Strmtr 1**

Inflow Area = 69,766 sf, 46.99% Impervious, Inflow Depth > 4.61" for 100-Year event  
 Inflow = 3.52 cfs @ 12.40 hrs, Volume= 26,787 cf  
 Outflow = 3.52 cfs @ 12.40 hrs, Volume= 26,787 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.52 cfs @ 12.40 hrs, Volume= 26,787 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

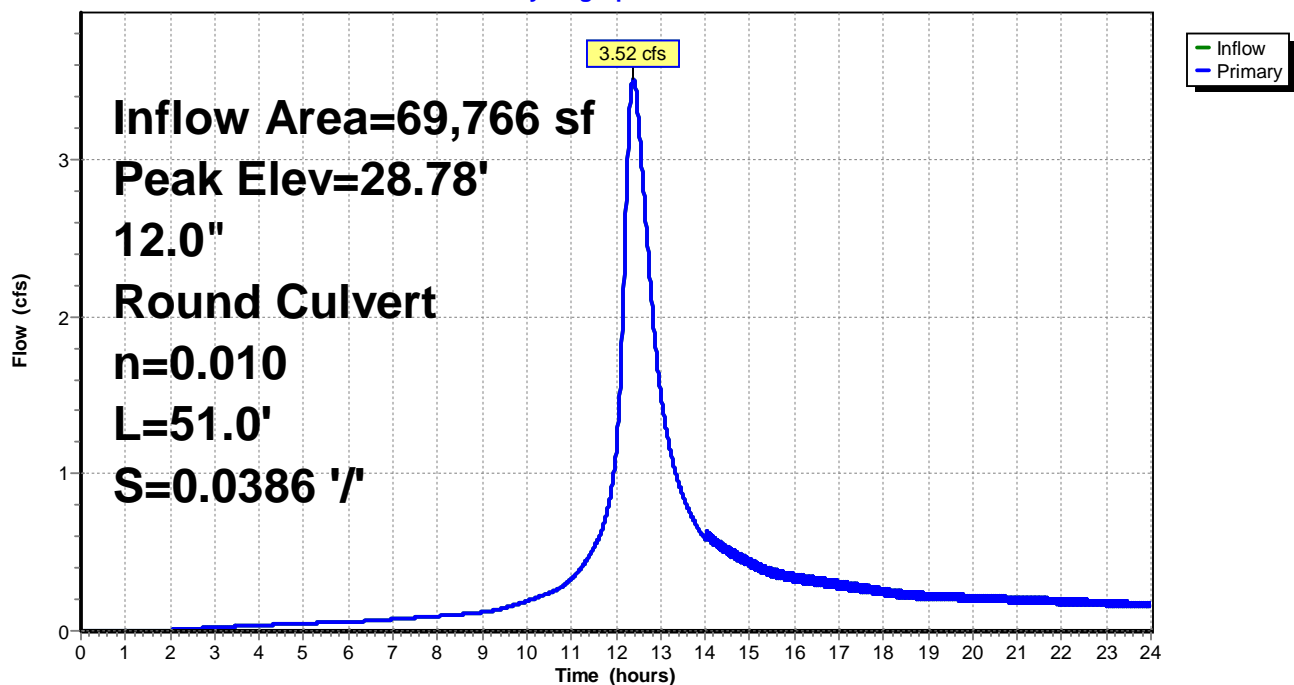
Peak Elev= 28.78' @ 12.46 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.78'	<b>12.0" Round Culvert</b> L= 51.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.78' / 24.81' S= 0.0386 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=3.52 cfs @ 12.40 hrs HW=28.68' TW=28.01' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 3.52 cfs @ 4.48 fps)

**Pond 25P: Strmtr 1****Hydrograph**

**Summary for Pond 26P: CB 2**

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 2.95" for 100-Year event  
 Inflow = 1.23 cfs @ 12.16 hrs, Volume= 5,648 cf  
 Outflow = 1.23 cfs @ 12.16 hrs, Volume= 5,648 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.23 cfs @ 12.16 hrs, Volume= 5,648 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

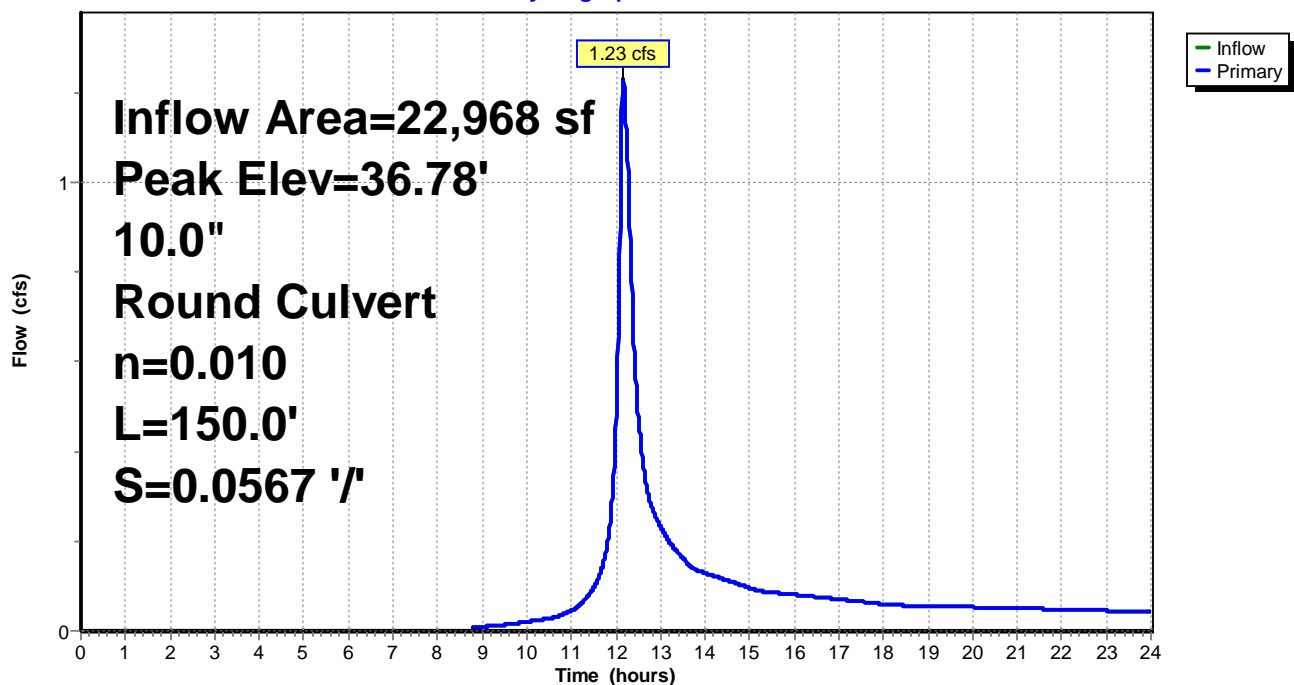
Peak Elev= 36.78' @ 12.16 hrs

Flood Elev= 40.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.22'	<b>10.0" Round Culvert</b> L= 150.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 36.22' / 27.72' S= 0.0567 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=1.23 cfs @ 12.16 hrs HW=36.78' TW=28.68' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 1.23 cfs @ 3.18 fps)

**Pond 26P: CB 2****Hydrograph**

**Summary for Pond 27P: DI 1**

Inflow Area = 31,138 sf, 34.55% Impervious, Inflow Depth > 4.06" for 100-Year event  
 Inflow = 2.52 cfs @ 12.14 hrs, Volume= 10,539 cf  
 Outflow = 2.52 cfs @ 12.14 hrs, Volume= 10,539 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.52 cfs @ 12.14 hrs, Volume= 10,539 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

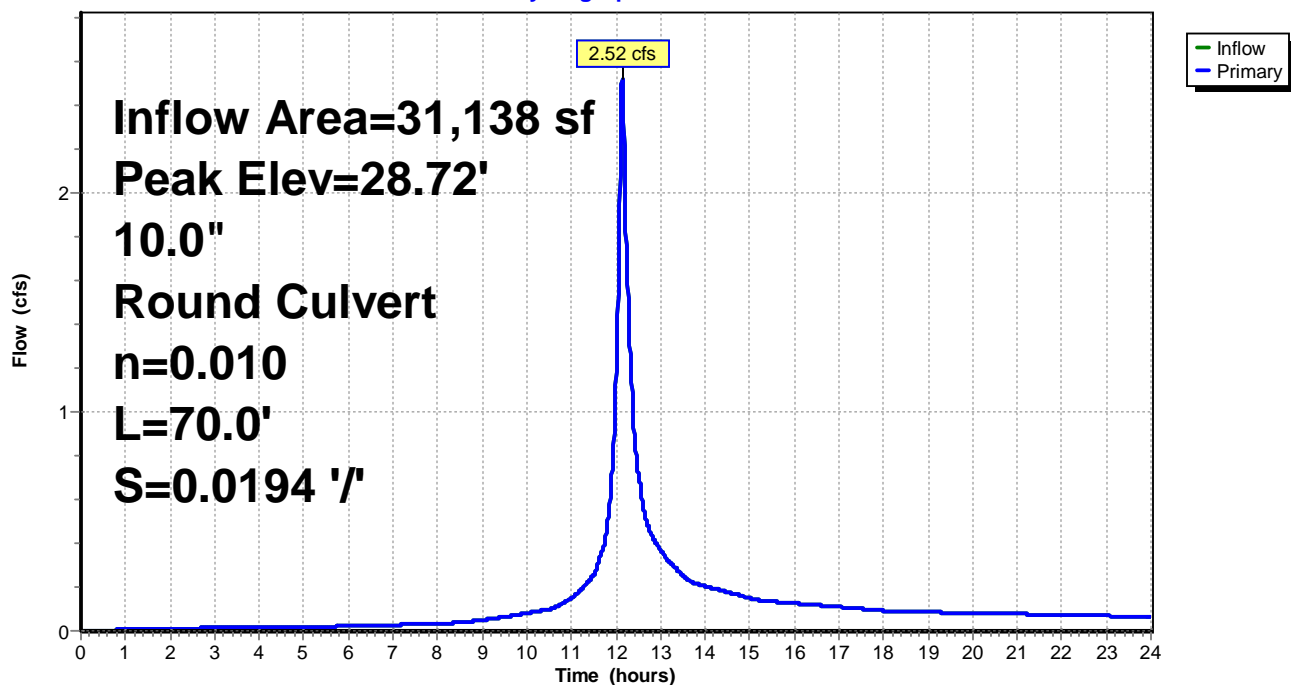
Peak Elev= 28.72' @ 12.14 hrs

Flood Elev= 33.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	27.72'	<b>10.0" Round Culvert</b> L= 70.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 27.72' / 26.36' S= 0.0194 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=2.52 cfs @ 12.14 hrs HW=28.72' TW=27.75' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 2.52 cfs @ 4.61 fps)

**Pond 27P: DI 1****Hydrograph**

**Summary for Pond 28P: DI 2**

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 4.01" for 100-Year event  
 Inflow = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf  
 Outflow = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

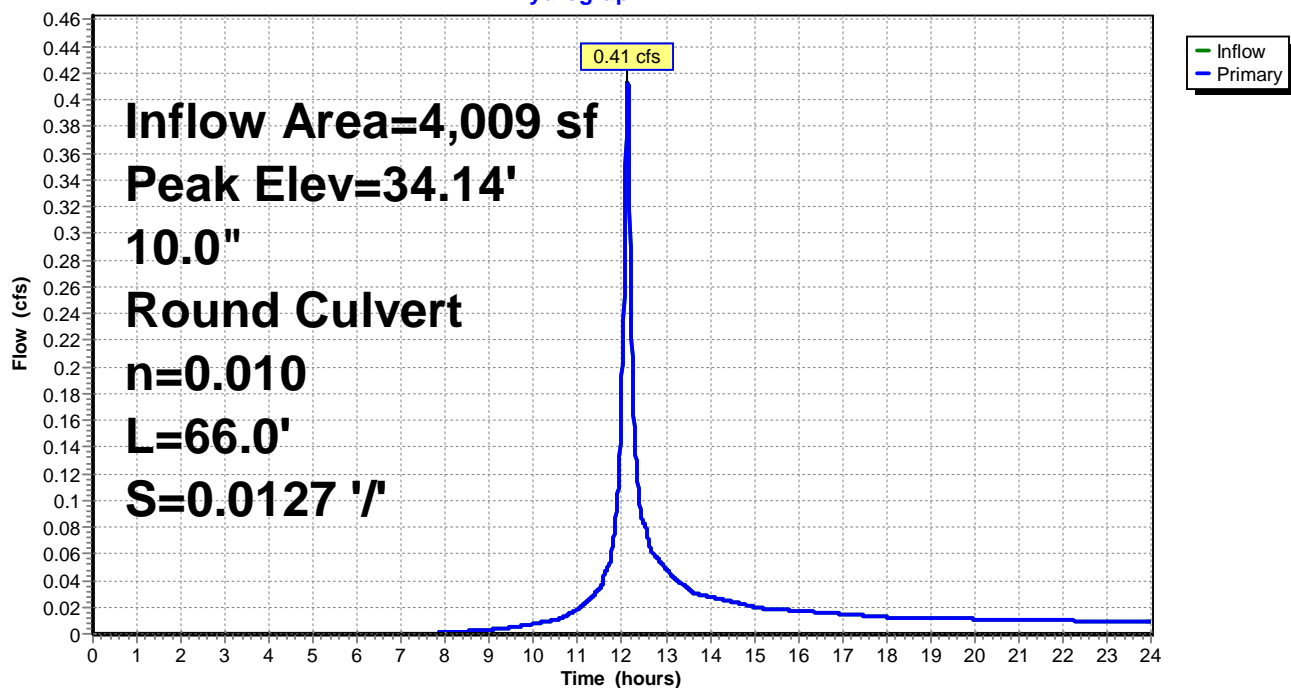
Peak Elev= 34.14' @ 12.13 hrs

Flood Elev= 35.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.84'	<b>10.0" Round Culvert</b> L= 66.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.84' / 33.00' S= 0.0127 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.41 cfs @ 12.13 hrs HW=34.14' TW=33.28' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.41 cfs @ 2.33 fps)

**Pond 28P: DI 2****Hydrograph**



**Summary for Pond 29P: CB 1**

Inflow Area = 9,924 sf, 46.59% Impervious, Inflow Depth > 4.23" for 100-Year event  
 Inflow = 0.78 cfs @ 12.23 hrs, Volume= 3,500 cf  
 Outflow = 0.78 cfs @ 12.23 hrs, Volume= 3,500 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.78 cfs @ 12.23 hrs, Volume= 3,500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

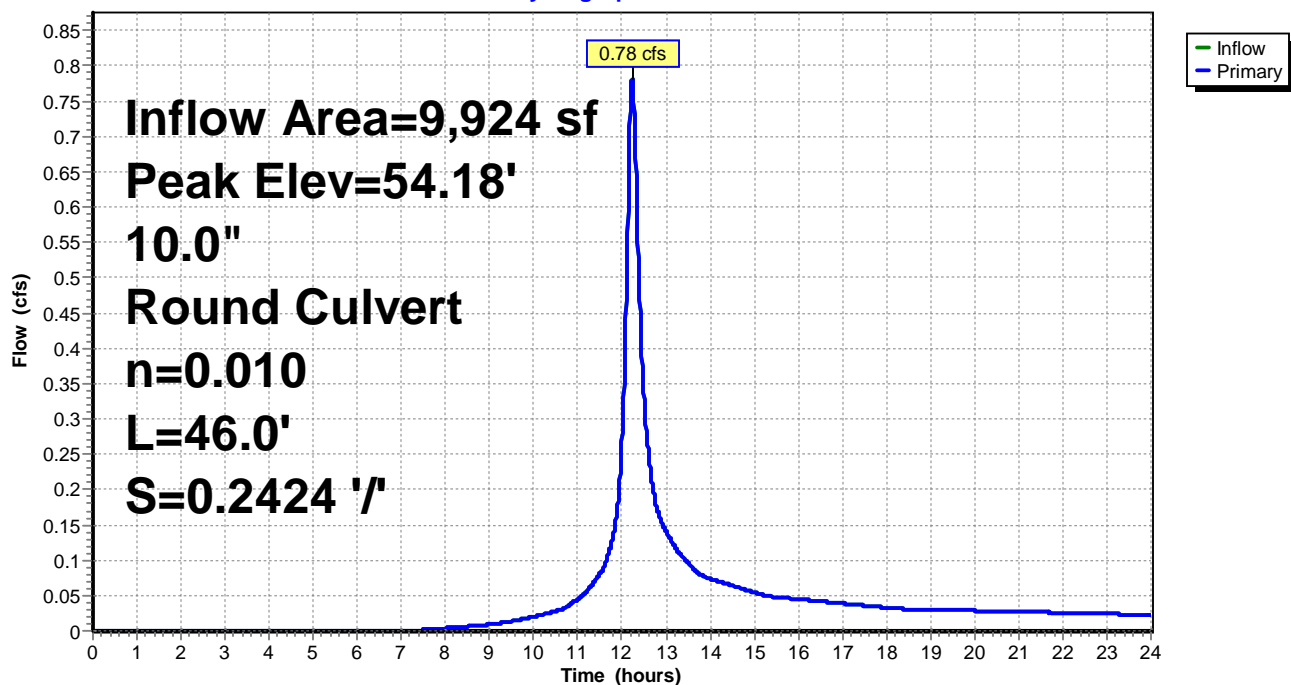
Peak Elev= 54.18' @ 12.23 hrs

Flood Elev= 57.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.75'	<b>10.0" Round Culvert</b> L= 46.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 53.75' / 42.60' S= 0.2424 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.78 cfs @ 12.23 hrs HW=54.18' TW=39.83' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.78 cfs @ 2.78 fps)

**Pond 29P: CB 1****Hydrograph**

**Summary for Pond 30P: CB 3**

Inflow Area = 5,166 sf, 69.53% Impervious, Inflow Depth > 5.90" for 100-Year event  
 Inflow = 0.76 cfs @ 12.13 hrs, Volume= 2,539 cf  
 Outflow = 0.07 cfs @ 14.04 hrs, Volume= 750 cf, Atten= 91%, Lag= 114.6 min  
 Primary = 0.07 cfs @ 14.04 hrs, Volume= 750 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 43.53' @ 14.04 hrs Surf.Area= 802 sf Storage= 1,789 cf

Flood Elev= 43.50' Surf.Area= 802 sf Storage= 1,789 cf

Plug-Flow detention time= 451.2 min calculated for 750 cf (30% of inflow)

Center-of-Mass det. time= 269.9 min ( 1,086.1 - 816.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.00'	701 cf	<b>20.83'W x 38.50'L x 3.54'H Field A</b> 2,841 cf Overall - 1,088 cf Embedded = 1,753 cf x 40.0% Voids
#2A	36.50'	1,088 cf	<b>Cultec R-330XLHD</b> x 20 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		1,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.04'	<b>8.0" Round Culvert</b> L= 268.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 39.04' / 26.50' S= 0.0468 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Device 1	43.04'	<b>2.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.07 cfs @ 14.04 hrs HW=43.53' TW=27.14' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.07 cfs of 3.63 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.06 fps)

**Pond 30P: CB 3 - Chamber Wizard Field A****Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H =&gt; 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +12.0" End Stone x 2 = 38.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

20 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 1,087.8 cf Chamber Storage

2,840.7 cf Field - 1,087.8 cf Chambers = 1,752.9 cf Stone x 40.0% Voids = 701.1 cf Stone Storage

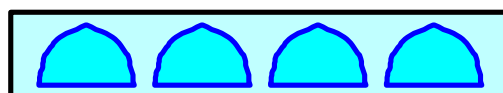
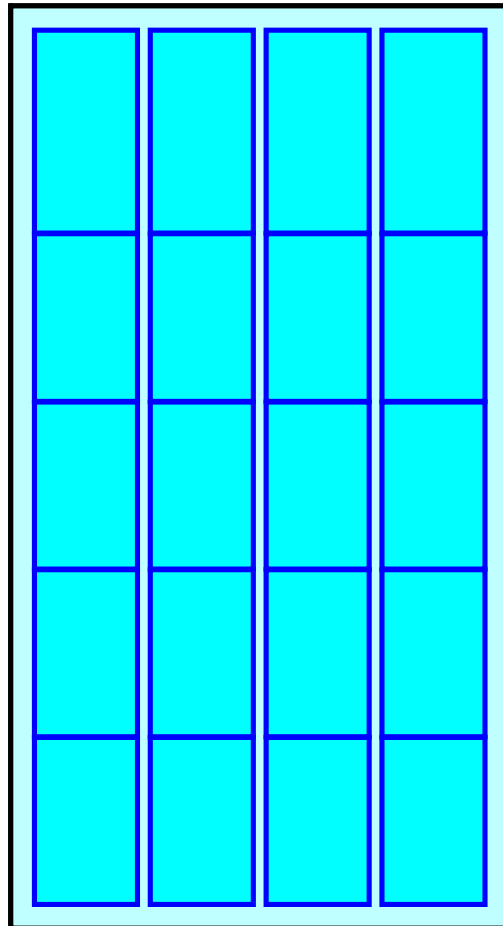
Chamber Storage + Stone Storage = 1,789.0 cf = 0.041 af

Overall Storage Efficiency = 63.0%

20 Chambers

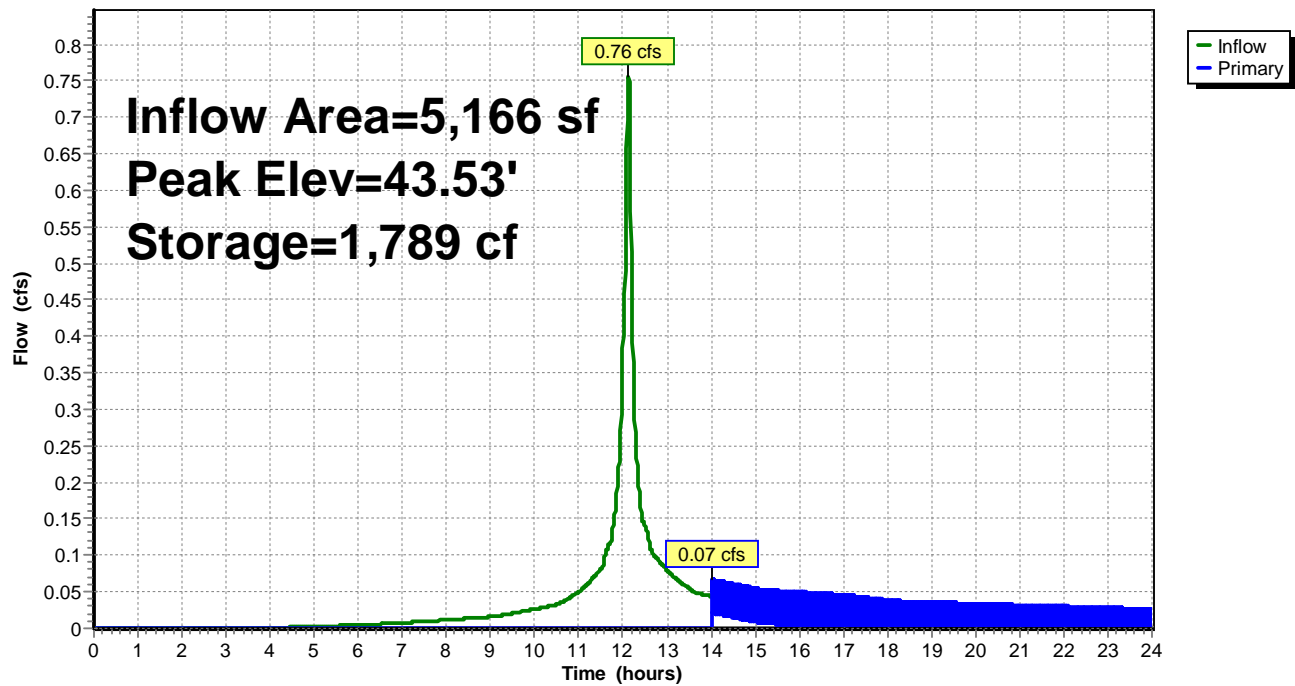
105.2 cy Field

64.9 cy Stone



## Pond 30P: CB 3

## Hydrograph



**Summary for Pond 31P: RG #3**

Inflow Area = 22,968 sf, 25.66% Impervious, Inflow Depth > 2.96" for 100-Year event  
 Inflow = 1.23 cfs @ 12.16 hrs, Volume= 5,671 cf  
 Outflow = 1.23 cfs @ 12.16 hrs, Volume= 5,648 cf, Atten= 0%, Lag= 0.1 min  
 Primary = 1.23 cfs @ 12.16 hrs, Volume= 5,648 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.84' @ 12.16 hrs Surf.Area= 402 sf Storage= 36 cf

Flood Elev= 43.50' Surf.Area= 500 sf Storage= 244 cf

Plug-Flow detention time= 3.9 min calculated for 5,648 cf (100% of inflow)

Center-of-Mass det. time= 1.7 min ( 883.7 - 882.0 )

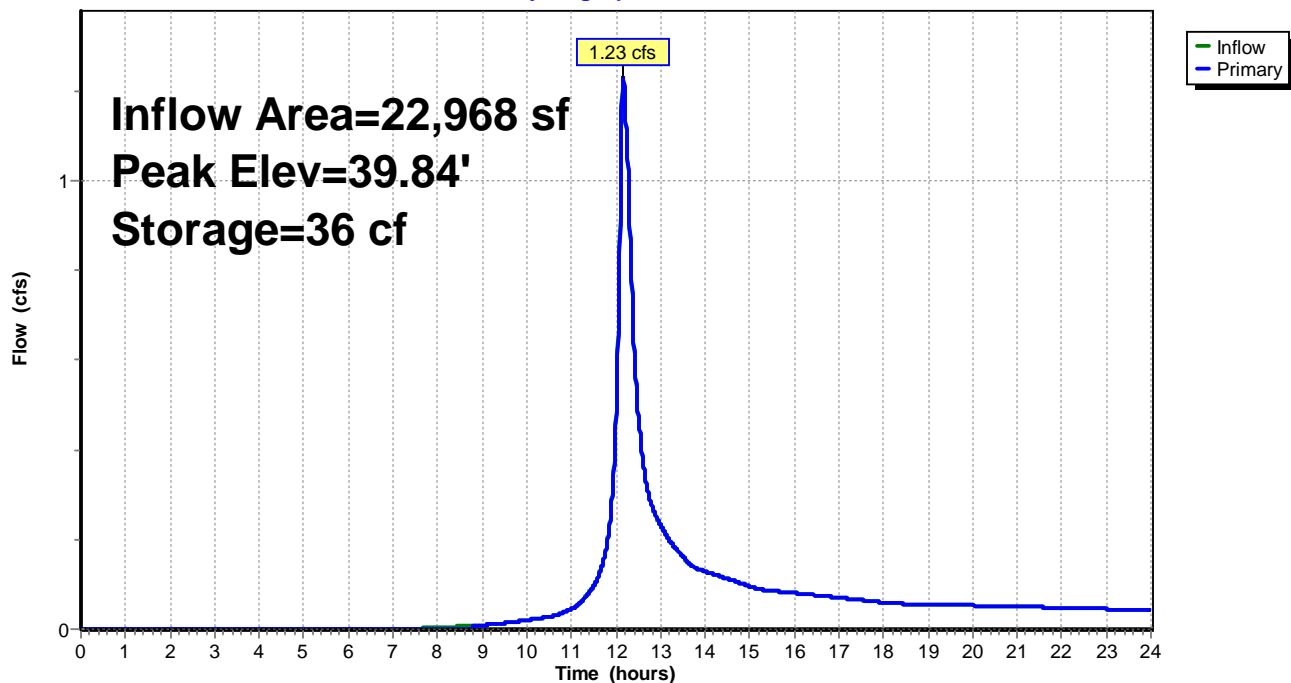
Volume	Invert	Avail.Storage	Storage Description
#1	39.72'	244 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.72	131	0	0
39.80	394	21	21
40.30	500	224	244

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	<b>65.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=1.23 cfs @ 12.16 hrs HW=39.84' TW=36.78' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 1.23 cfs @ 0.52 fps)

**Pond 31P: RG #3****Hydrograph**

**Summary for Pond 32P: PrkCis 1**

Inflow Area = 1,192 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 0.21 cfs @ 12.13 hrs, Volume= 800 cf  
 Outflow = 0.01 cfs @ 14.31 hrs, Volume= 234 cf, Atten= 95%, Lag= 131.1 min  
 Primary = 0.01 cfs @ 14.31 hrs, Volume= 234 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 39.27' @ 14.31 hrs Surf.Area= 863 sf Storage= 586 cf

Flood Elev= 42.00' Surf.Area= 863 sf Storage= 1,733 cf

Plug-Flow detention time= 580.4 min calculated for 234 cf (29% of inflow)

Center-of-Mass det. time= 310.3 min ( 1,051.5 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	38.20'	689 cf	<b>19.17'W x 45.00'L x 3.21'H Field A</b> 2,767 cf Overall - 1,044 cf Embedded = 1,723 cf x 40.0% Voids
#2A	38.70'	1,044 cf	<b>Cultec R-280HD</b> x 24 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,733 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	39.20'	<b>4.0" Round Culvert</b> L= 100.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 39.20' / 30.00' S= 0.0920 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.01 cfs @ 14.31 hrs HW=39.27' TW=22.79' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.01 cfs @ 0.79 fps)

**Pond 32P: PrkCis 1 - Chamber Wizard Field A****Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)**

Effective Size= 46.9"W x 26.0"H =&gt; 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length

4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width

6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

24 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,044.3 cf Chamber Storage

2,767.2 cf Field - 1,044.3 cf Chambers = 1,722.8 cf Stone x 40.0% Voids = 689.1 cf Stone Storage

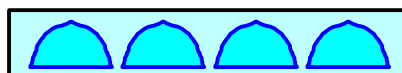
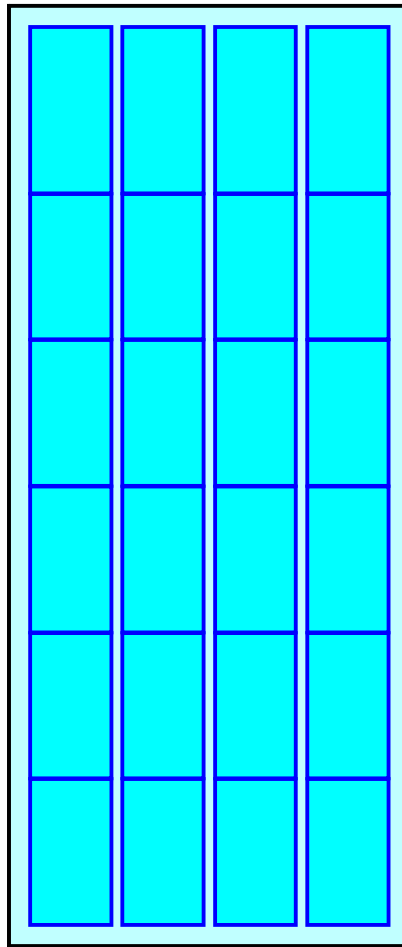
Chamber Storage + Stone Storage = 1,733.5 cf = 0.040 af

Overall Storage Efficiency = 62.6%

24 Chambers

102.5 cy Field

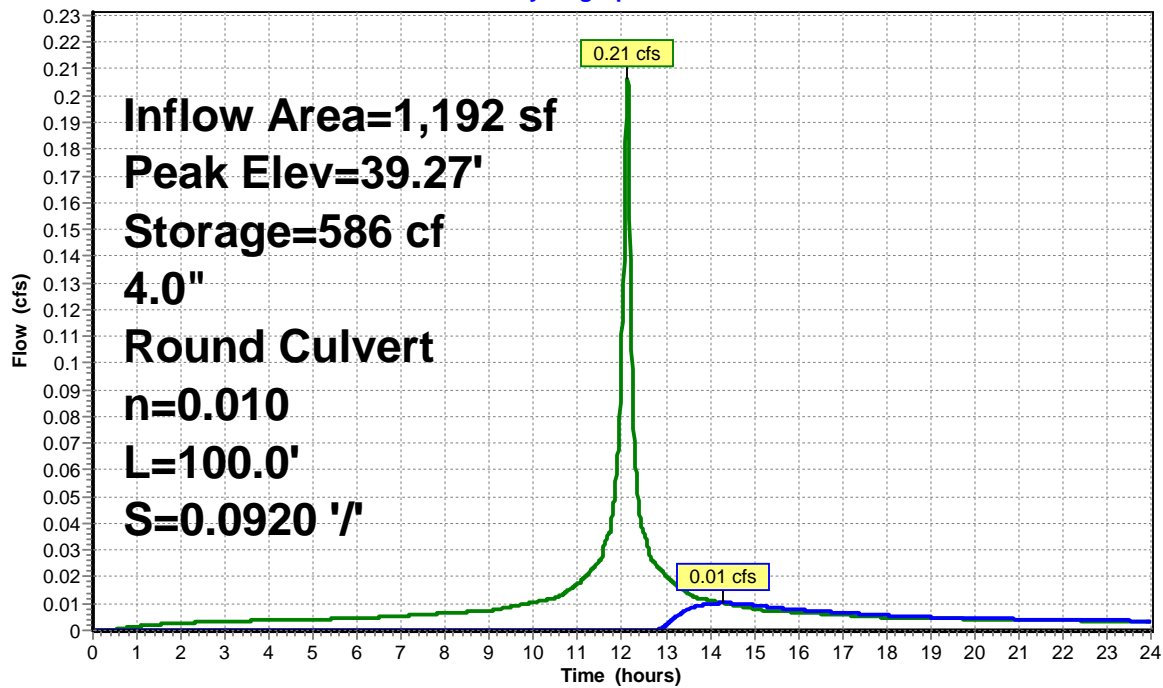
63.8 cy Stone





## Pond 32P: PrkCis 1

## Hydrograph



**Summary for Pond 33P: PrkCst 2**

Inflow Area = 2,856 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 0.49 cfs @ 12.13 hrs, Volume= 1,916 cf  
 Outflow = 0.09 cfs @ 12.51 hrs, Volume= 1,417 cf, Atten= 83%, Lag= 23.0 min  
 Primary = 0.09 cfs @ 12.51 hrs, Volume= 1,417 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 38.35' @ 12.51 hrs Surf.Area= 728 sf Storage= 990 cf

Flood Elev= 41.00' Surf.Area= 728 sf Storage= 1,459 cf

Plug-Flow detention time= 273.4 min calculated for 1,417 cf (74% of inflow)

Center-of-Mass det. time= 162.3 min ( 903.6 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	36.40'	585 cf	<b>19.17'W x 38.00'L x 3.21'H Field A</b> 2,337 cf Overall - 874 cf Embedded = 1,462 cf x 40.0% Voids
#2A	36.90'	874 cf	<b>Cultec R-280HD</b> x 20 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 4 rows
		1,459 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>2.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 34.66' S= 0.0548 '/' Cc= 0.900 n= 0.010, Flow Area= 0.02 sf

**Primary OutFlow** Max=0.09 cfs @ 12.51 hrs HW=38.35' TW=26.05' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.09 cfs @ 3.95 fps)

**Pond 33P: PrkCst 2 - Chamber Wizard Field A****Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)**

Effective Size= 46.9"W x 26.0"H =&gt; 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

5 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 36.00' Row Length +12.0" End Stone x 2 = 38.00' Base Length

4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width

6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

20 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 874.3 cf Chamber Storage

2,336.7 cf Field - 874.3 cf Chambers = 1,462.4 cf Stone x 40.0% Voids = 585.0 cf Stone Storage

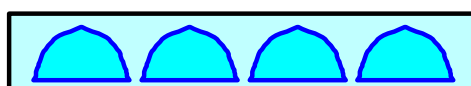
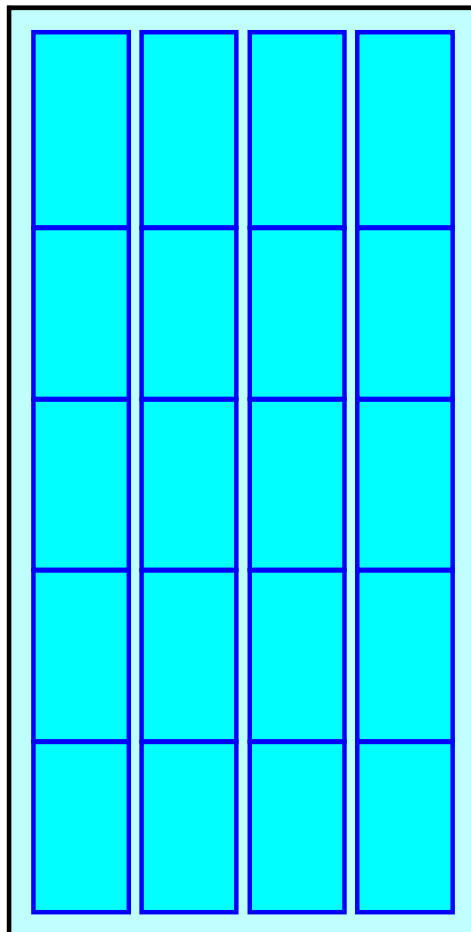
Chamber Storage + Stone Storage = 1,459.3 cf = 0.034 af

Overall Storage Efficiency = 62.5%

20 Chambers

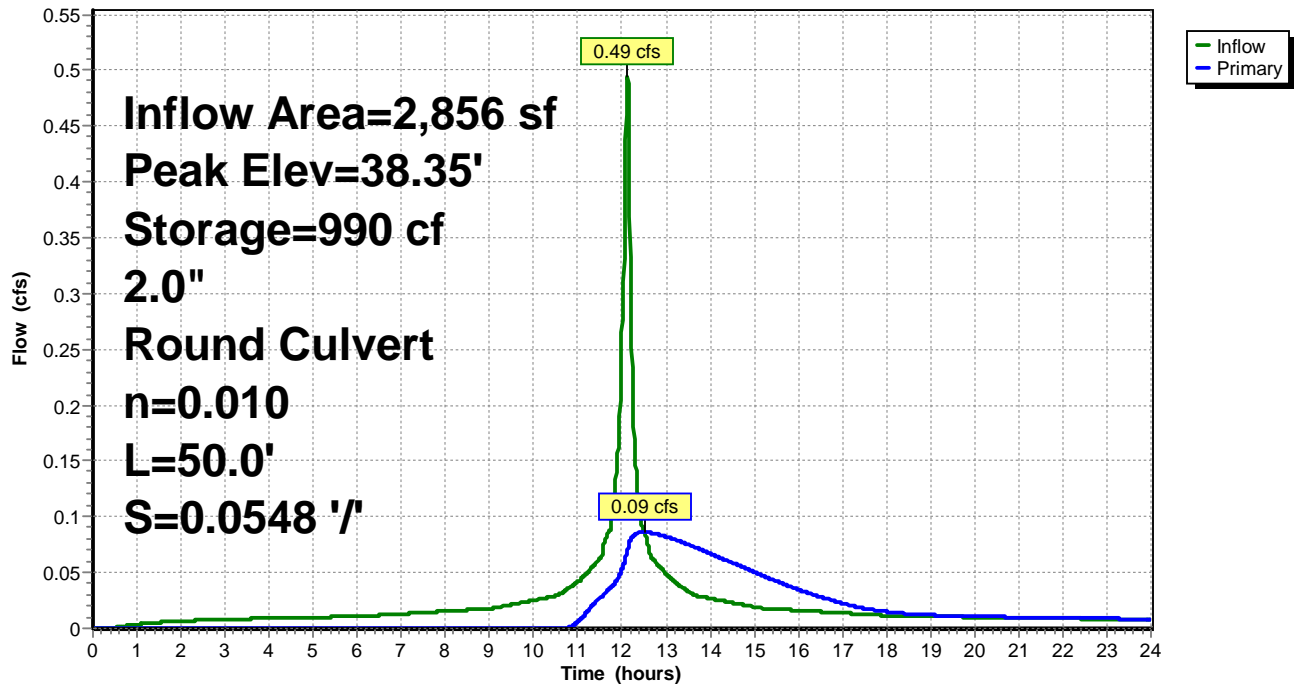
86.5 cy Field

54.2 cy Stone



## Pond 33P: PrkCst 2

## Hydrograph



**Summary for Pond 34P: CC Cisterns**

Inflow Area = 8,964 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 1.55 cfs @ 12.13 hrs, Volume= 6,013 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 604 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 604 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 45.47' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 5,409 cf

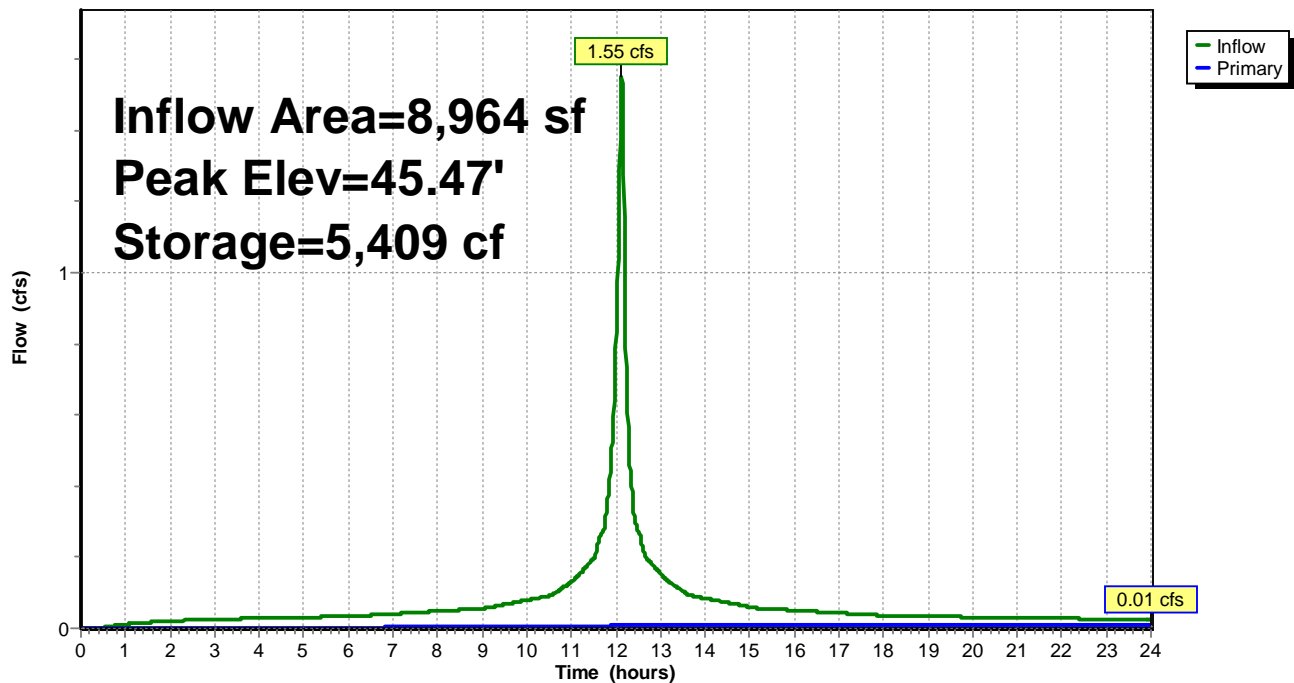
Plug-Flow detention time= 734.3 min calculated for 604 cf (10% of inflow)  
 Center-of-Mass det. time= 252.5 min ( 993.8 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	41.50'	5,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	227	0	0
45.50	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	41.50'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=45.47' TW=21.95' (Dynamic Tailwater)  
 ↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.33 fps)

**Pond 34P: CC Cisterns****Hydrograph**

**Summary for Pond 35P: DMH 2**

Inflow Area = 4,009 sf, 28.16% Impervious, Inflow Depth > 4.01" for 100-Year event  
 Inflow = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf  
 Outflow = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.41 cfs @ 12.13 hrs, Volume= 1,341 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

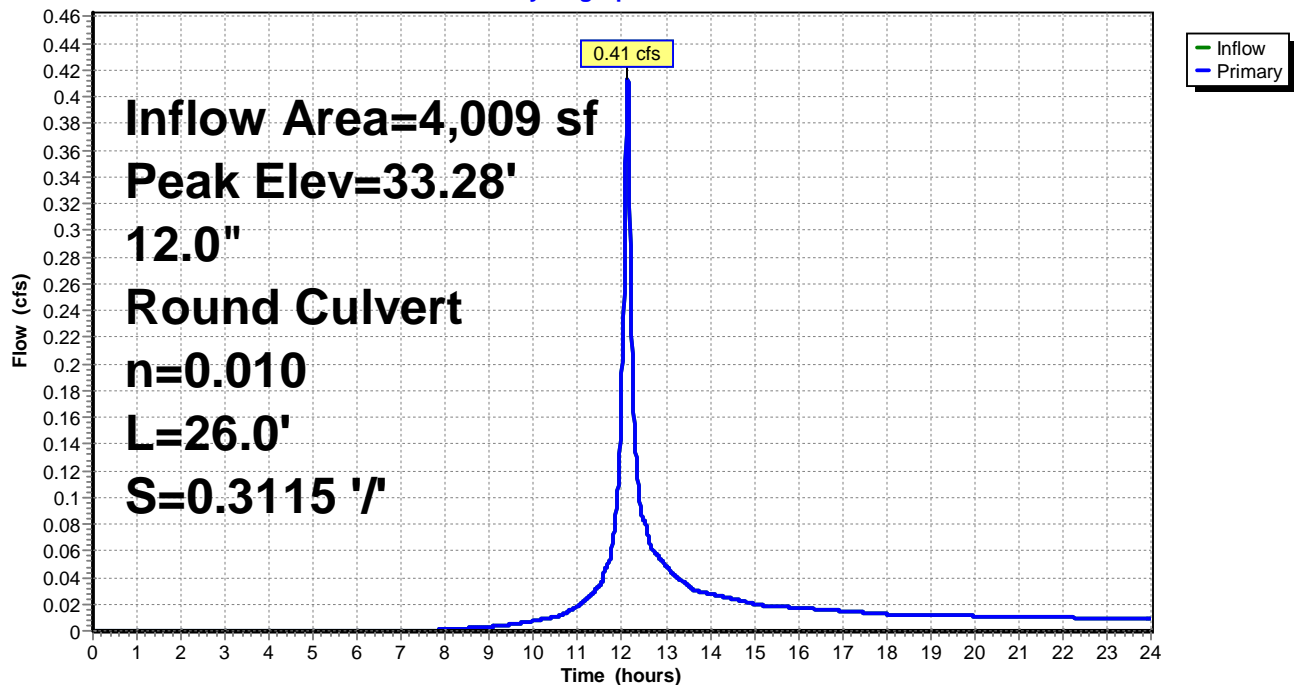
Peak Elev= 33.28' @ 12.13 hrs

Flood Elev= 35.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>12.0" Round Culvert</b> L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 33.00' / 24.90' S= 0.3115 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=0.41 cfs @ 12.13 hrs HW=33.28' TW=27.64' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.41 cfs @ 2.26 fps)

**Pond 35P: DMH 2****Hydrograph**

**Summary for Pond 36P: DMH 3**

Inflow Area = 35,147 sf, 33.82% Impervious, Inflow Depth > 4.06" for 100-Year event  
 Inflow = 2.93 cfs @ 12.14 hrs, Volume= 11,880 cf  
 Outflow = 2.93 cfs @ 12.14 hrs, Volume= 11,880 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.93 cfs @ 12.14 hrs, Volume= 11,880 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

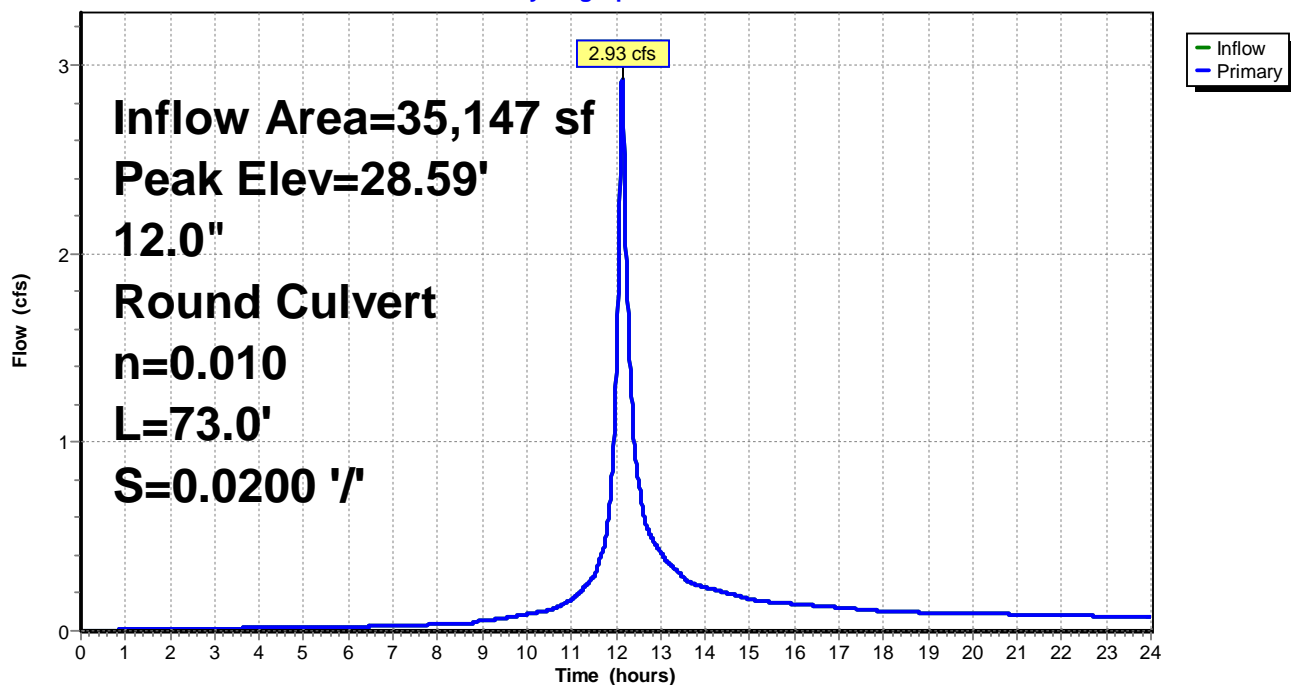
Peak Elev= 28.59' @ 12.51 hrs

Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	26.36'	<b>12.0" Round Culvert</b> L= 73.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 26.36' / 24.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.92 cfs @ 12.14 hrs HW=27.73' TW=27.19' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 2.92 cfs @ 3.72 fps)

**Pond 36P: DMH 3****Hydrograph**



**Summary for Pond 37P: DMH 4**

Inflow Area = 259,207 sf, 15.59% Impervious, Inflow Depth > 2.62" for 100-Year event  
 Inflow = 4.38 cfs @ 12.14 hrs, Volume= 56,697 cf  
 Outflow = 4.38 cfs @ 12.14 hrs, Volume= 56,697 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.38 cfs @ 12.14 hrs, Volume= 56,697 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

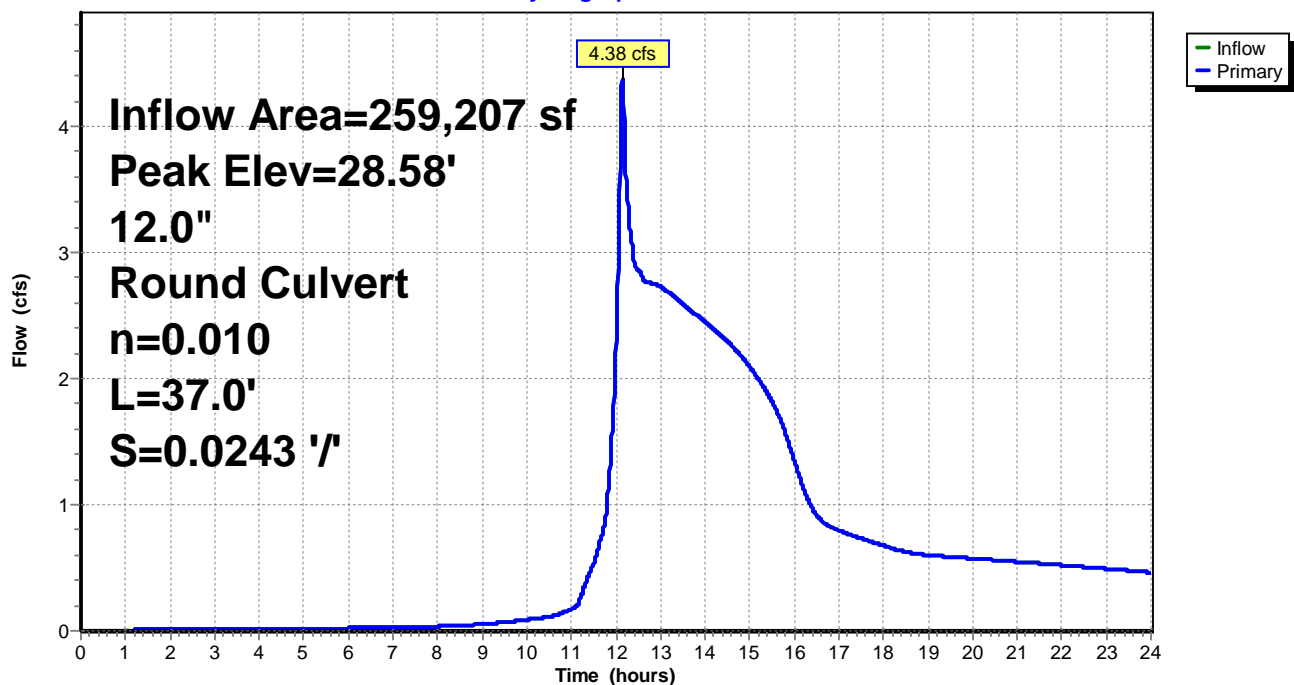
Peak Elev= 28.58' @ 12.51 hrs

Flood Elev= 34.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.90'	<b>12.0" Round Culvert</b> L= 37.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.90' / 24.00' S= 0.0243 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.37 cfs @ 12.14 hrs HW=27.22' TW=26.31' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 4.37 cfs @ 5.57 fps)

**Pond 37P: DMH 4****Hydrograph**

**Summary for Pond 38P: DMH 5**

Inflow Area = 328,973 sf, 22.24% Impervious, Inflow Depth > 3.05" for 100-Year event  
 Inflow = 6.57 cfs @ 12.35 hrs, Volume= 83,484 cf  
 Outflow = 6.57 cfs @ 12.35 hrs, Volume= 83,484 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.57 cfs @ 12.35 hrs, Volume= 83,484 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

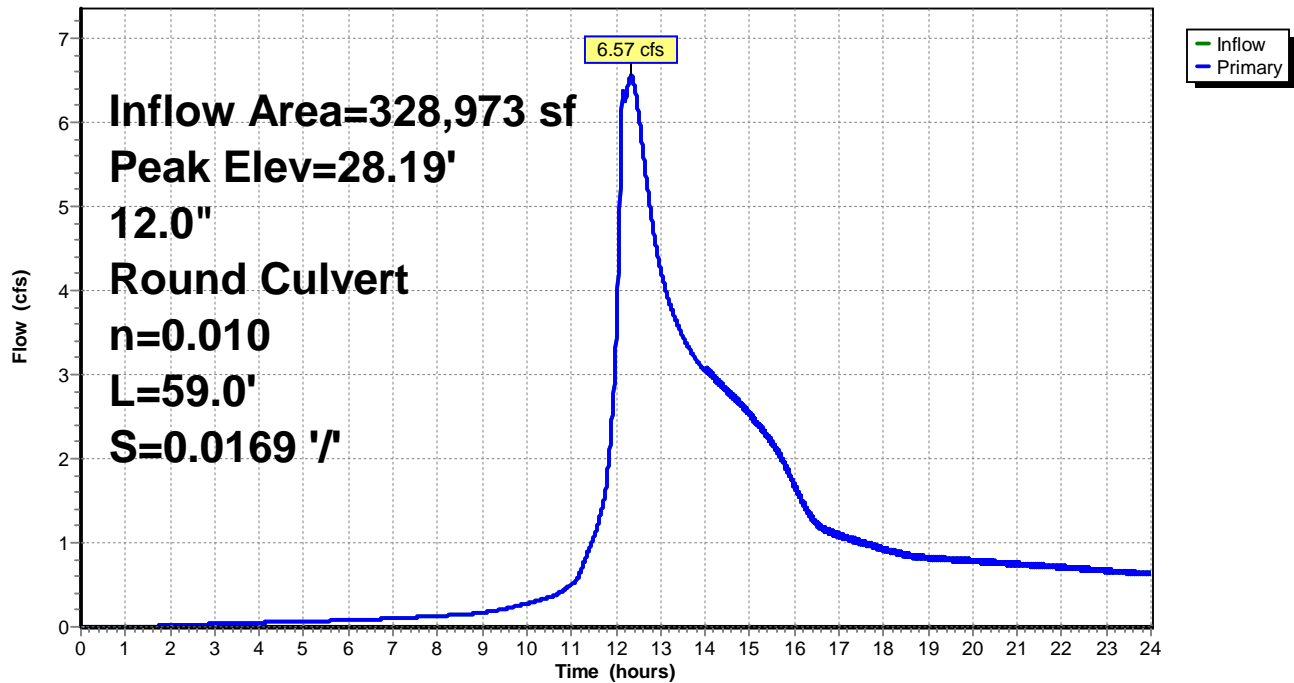
Peak Elev= 28.19' @ 12.51 hrs

Flood Elev= 33.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.00'	<b>12.0" Round Culvert</b> L= 59.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 24.00' / 23.00' S= 0.0169 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

**Primary OutFlow** Max=6.56 cfs @ 12.35 hrs HW=27.81' TW=25.32' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 6.56 cfs @ 8.36 fps)

**Pond 38P: DMH 5****Hydrograph**

### Summary for Pond 39P: PrkCis 3

Inflow Area = 4,157 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 0.72 cfs @ 12.13 hrs, Volume= 2,788 cf  
 Outflow = 0.02 cfs @ 17.10 hrs, Volume= 423 cf, Atten= 97%, Lag= 298.5 min  
 Primary = 0.02 cfs @ 17.10 hrs, Volume= 423 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 37.49' @ 17.10 hrs Surf.Area= 1,226 sf Storage= 2,375 cf  
 Flood Elev= 39.00' Surf.Area= 1,226 sf Storage= 2,485 cf

Plug-Flow detention time= 854.6 min calculated for 423 cf (15% of inflow)  
 Center-of-Mass det. time= 445.9 min ( 1,187.2 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	34.50'	967 cf	<b>23.58'W x 52.00'L x 3.21'H Field A</b> 3,934 cf Overall - 1,518 cf Embedded = 2,417 cf x 40.0% Voids
#2A	35.00'	1,518 cf	<b>Cultec R-280HD x 35 Inside #1</b> Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 5 rows
		2,485 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.40'	<b>6.0" Round Culvert</b> L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 37.40' / 32.46' S= 0.0988 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Primary	37.80'	<b>80.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.02 cfs @ 17.10 hrs HW=37.49' TW=22.10' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 0.02 cfs @ 0.88 fps)
- 2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 39P: PrkCis 3 - Chamber Wizard Field A

**Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)**

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 5 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

7 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 50.00' Row Length +12.0" End Stone x 2 = 52.00' Base Length

5 Rows x 47.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 23.58' Base Width

6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

35 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 5 Rows = 1,517.9 cf Chamber Storage

3,934.5 cf Field - 1,517.9 cf Chambers = 2,416.5 cf Stone x 40.0% Voids = 966.6 cf Stone Storage

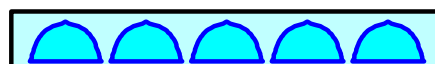
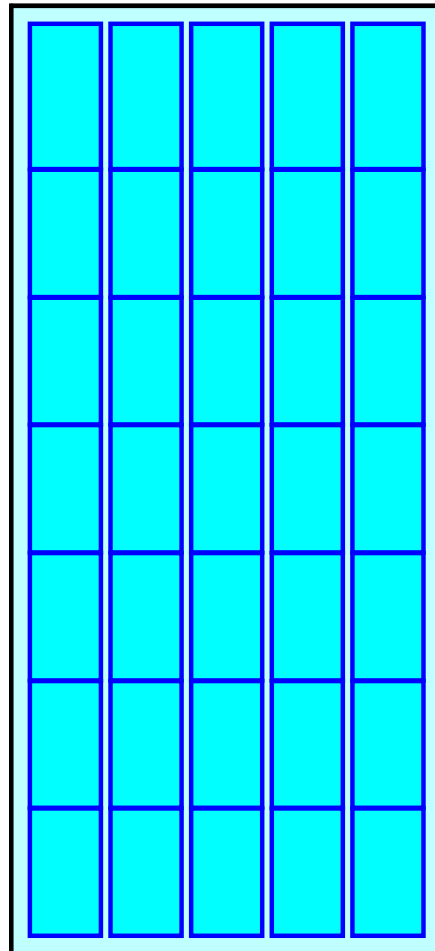
Chamber Storage + Stone Storage = 2,484.6 cf = 0.057 af

Overall Storage Efficiency = 63.1%

35 Chambers

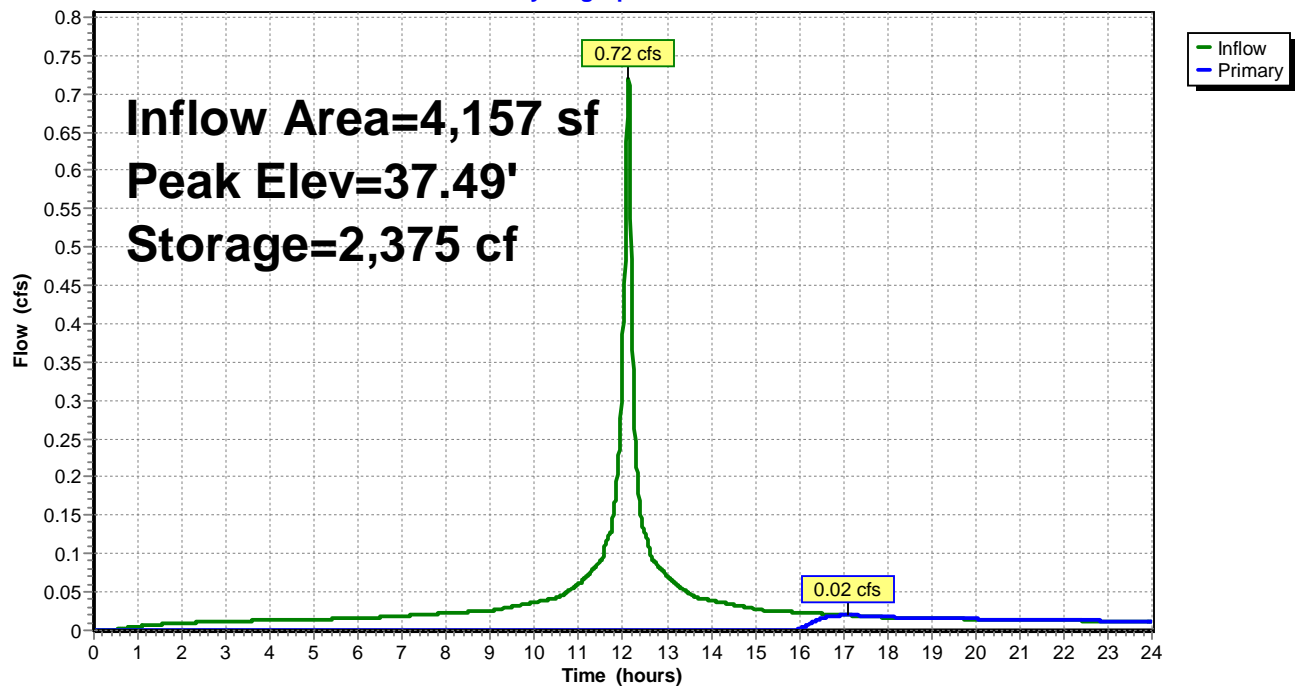
145.7 cy Field

89.5 cy Stone



## Pond 39P: PrkCis 3

## Hydrograph



### Summary for Pond 40P: PrkCis 4

Inflow Area = 4,079 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 0.71 cfs @ 12.13 hrs, Volume= 2,736 cf  
 Outflow = 0.08 cfs @ 12.88 hrs, Volume= 1,071 cf, Atten= 89%, Lag= 45.2 min  
 Primary = 0.08 cfs @ 12.88 hrs, Volume= 1,071 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 32.96' @ 12.88 hrs Surf.Area= 1,094 sf Storage= 1,768 cf  
 Flood Elev= 40.00' Surf.Area= 1,094 sf Storage= 2,453 cf

Plug-Flow detention time= 447.6 min calculated for 1,071 cf (39% of inflow)  
 Center-of-Mass det. time= 236.2 min ( 977.5 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	30.67'	947 cf	<b>20.83'W x 52.50'L x 3.54'H Field A</b> 3,874 cf Overall - 1,505 cf Embedded = 2,369 cf x 40.0% Voids
#2A	31.17'	1,505 cf	<b>Cultec R-330XLHD x 28 Inside #1</b> Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 4 rows
		2,453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	<b>4.0" Round Culvert</b> L= 60.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 32.75' / 32.26' S= 0.0082 '/' Cc= 0.900 n= 0.010, Flow Area= 0.09 sf

**Primary OutFlow** Max=0.08 cfs @ 12.88 hrs HW=32.96' TW=26.01' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 0.08 cfs @ 1.36 fps)

**Pond 40P: PrkCis 4 - Chamber Wizard Field A****Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)**

Effective Size= 47.8"W x 30.0"H =&gt; 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 4 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

7 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 50.50' Row Length +12.0" End Stone x 2 = 52.50' Base Length

4 Rows x 52.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.83' Base Width

6.0" Base + 30.5" Chamber Height + 6.0" Cover = 3.54' Field Height

28 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 4 Rows = 1,505.1 cf Chamber Storage

3,873.7 cf Field - 1,505.1 cf Chambers = 2,368.6 cf Stone x 40.0% Voids = 947.4 cf Stone Storage

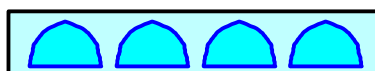
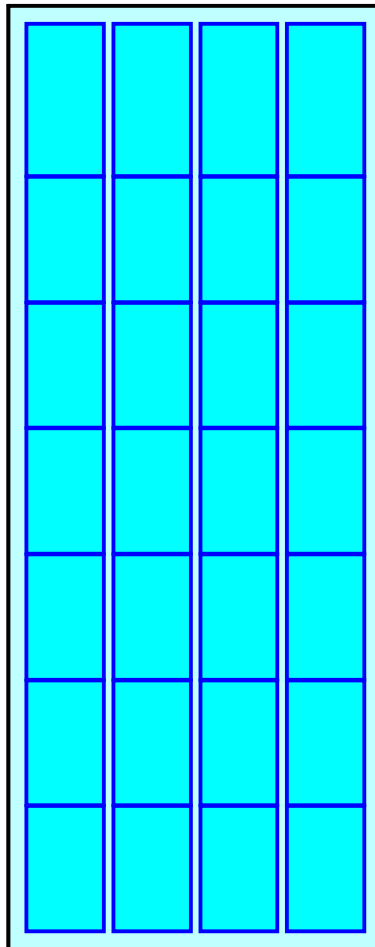
Chamber Storage + Stone Storage = 2,452.5 cf = 0.056 af

Overall Storage Efficiency = 63.3%

28 Chambers

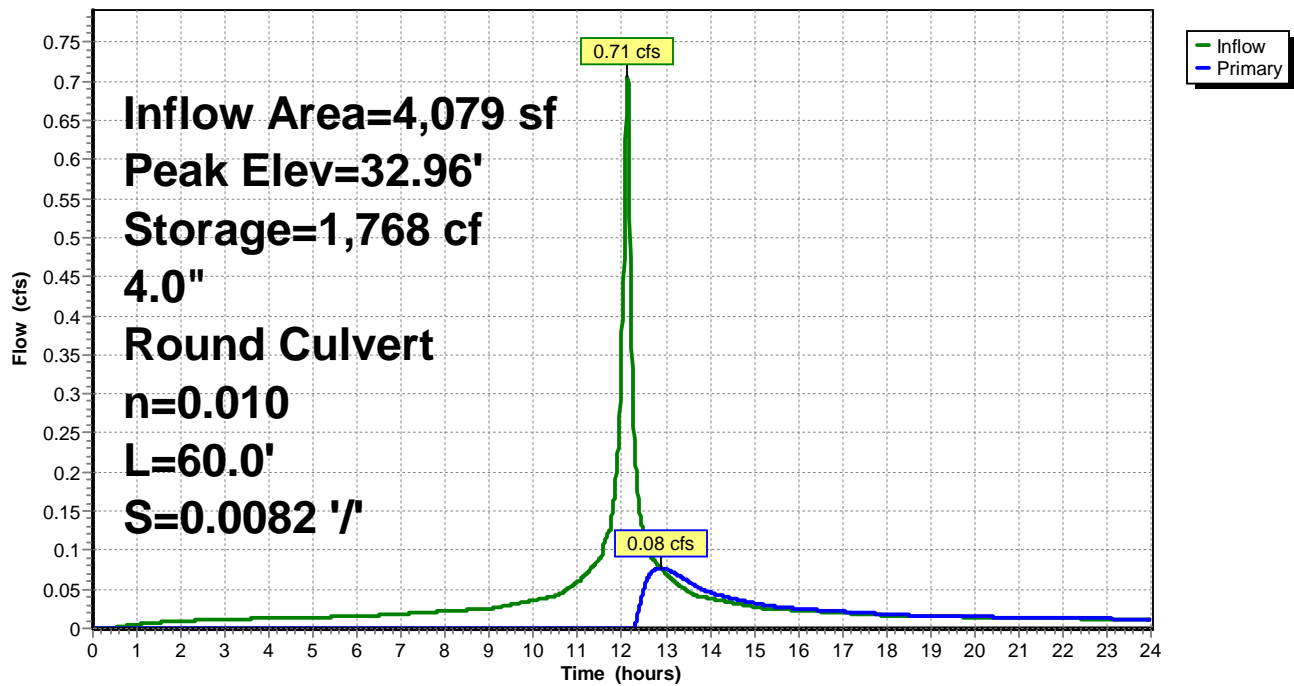
143.5 cy Field

87.7 cy Stone



## Pond 40P: PrkCis 4

## Hydrograph





**Summary for Pond 41P: CB 5**

Inflow Area = 3,890 sf, 1.80% Impervious, Inflow Depth > 2.54" for 100-Year event  
 Inflow = 0.24 cfs @ 12.14 hrs, Volume= 823 cf  
 Outflow = 0.24 cfs @ 12.14 hrs, Volume= 823 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.24 cfs @ 12.14 hrs, Volume= 823 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

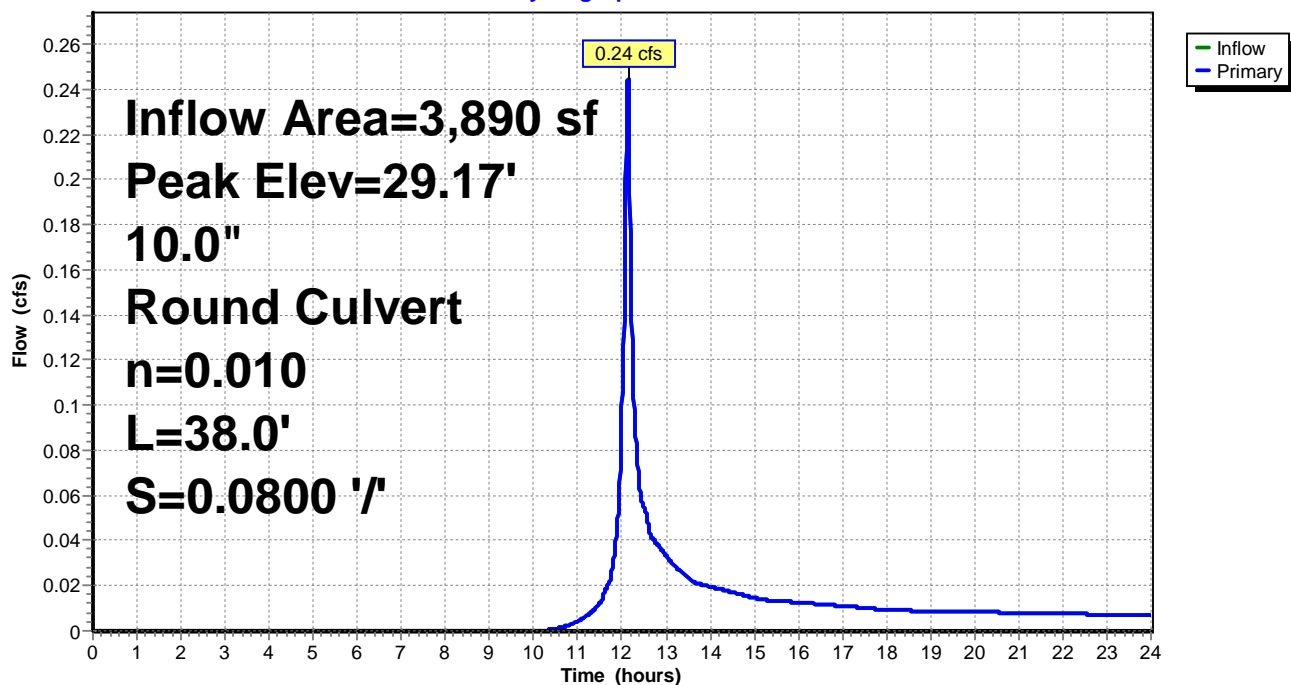
Peak Elev= 29.17' @ 12.14 hrs

Flood Elev= 31.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.94'	<b>10.0" Round Culvert</b> L= 38.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 28.94' / 25.90' S= 0.0800 '/ Cc= 0.900 n= 0.010, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.24 cfs @ 12.14 hrs HW=29.17' TW=27.15' (Dynamic Tailwater)

↑**1=Culvert** (Inlet Controls 0.24 cfs @ 2.03 fps)

**Pond 41P: CB 5****Hydrograph**

**Summary for Pond 43P: CE Cisterns**

Inflow Area = 5,923 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 1.03 cfs @ 12.13 hrs, Volume= 3,973 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 415 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 415 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 46.92' @ 24.00 hrs Surf.Area= 908 sf Storage= 3,558 cf

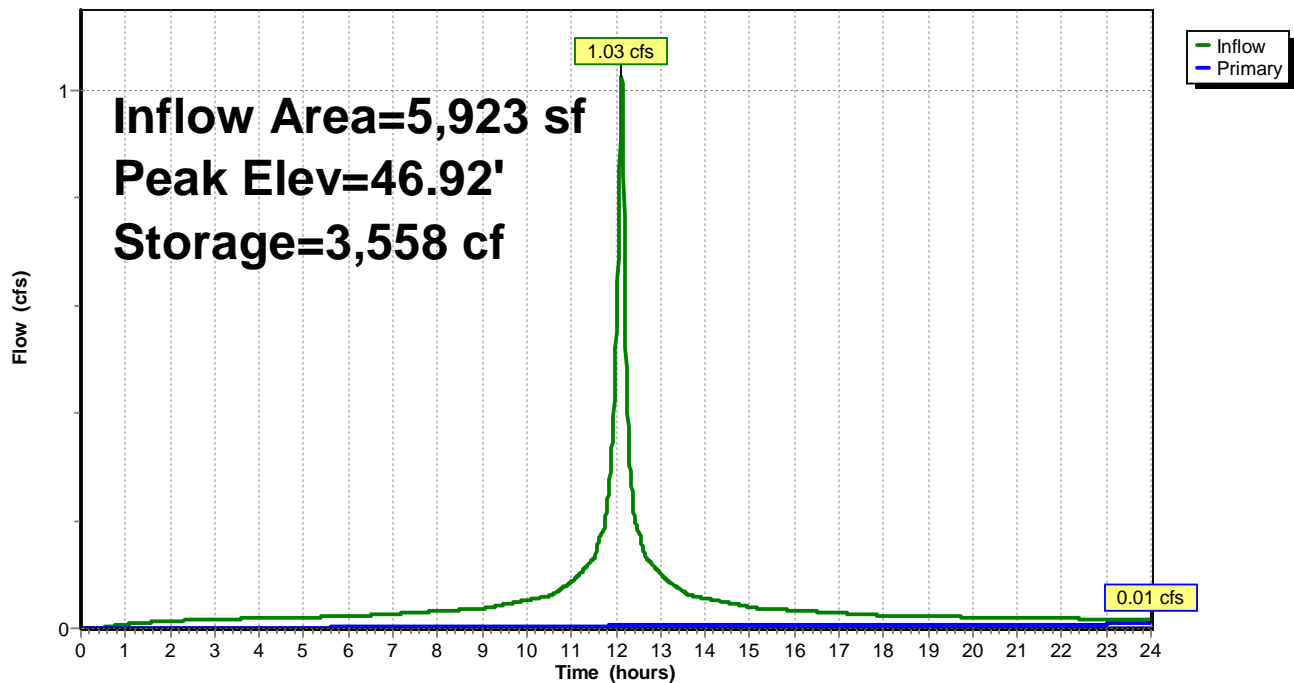
Plug-Flow detention time= 714.1 min calculated for 415 cf (10% of inflow)  
 Center-of-Mass det. time= 238.3 min ( 979.5 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	43.00'	3,632 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 4

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.00	227	0	0
47.00	227	908	908

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	<b>0.2" Vert. Orifice/Grate</b> X 4 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=46.92' TW=21.95' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 0.01 cfs @ 9.37 fps)

**Pond 43P: CE Cisterns****Hydrograph**

**Summary for Pond 44P: SR Cisterns**

Inflow Area = 7,823 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 1.36 cfs @ 12.13 hrs, Volume= 5,248 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 526 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 526 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 50.16' @ 24.00 hrs Surf.Area= 1,135 sf Storage= 4,722 cf

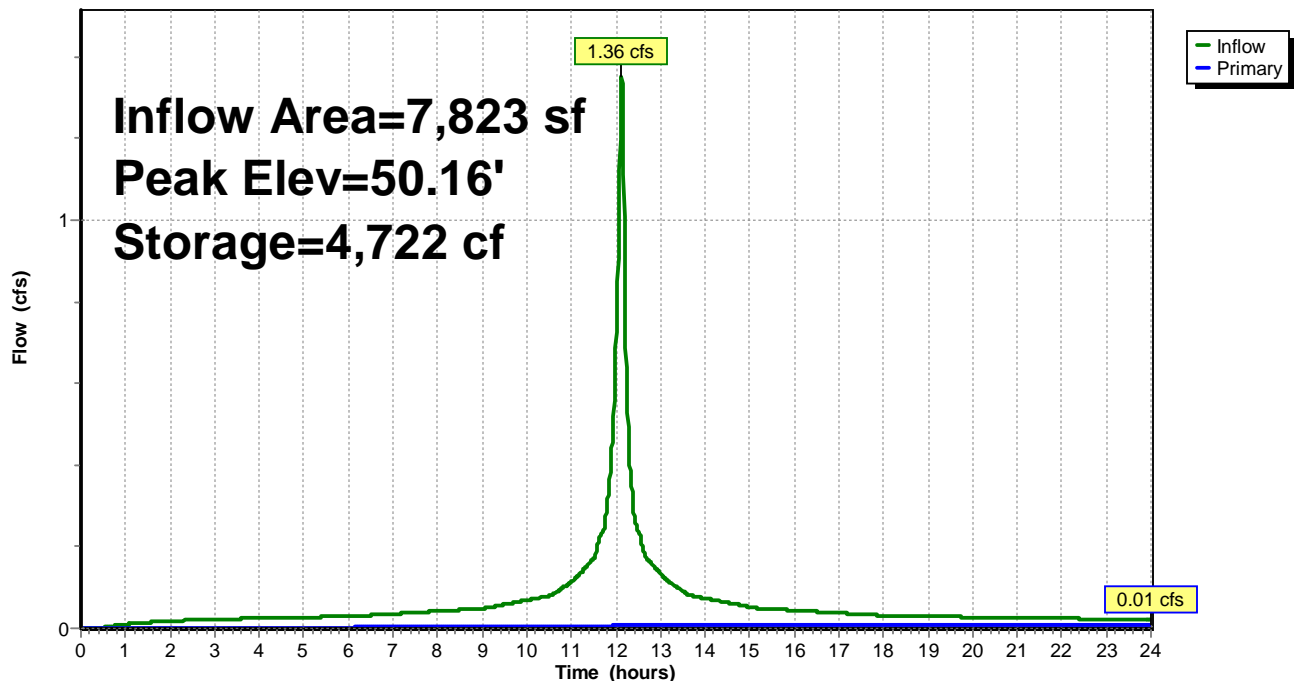
Plug-Flow detention time= 726.6 min calculated for 526 cf (10% of inflow)  
 Center-of-Mass det. time= 244.3 min ( 985.6 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	5,675 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 5

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	227	0	0
51.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	46.00'	<b>0.2" Vert. Orifice/Grate</b> X 5 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=50.16' TW=21.95' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 0.01 cfs @ 9.61 fps)

**Pond 44P: SR Cisterns****Hydrograph**

**Summary for Pond 45P: HACisterns**

Inflow Area = 10,118 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 1.75 cfs @ 12.13 hrs, Volume= 6,787 cf  
 Outflow = 0.01 cfs @ 24.00 hrs, Volume= 649 cf, Atten= 99%, Lag= 712.3 min  
 Primary = 0.01 cfs @ 24.00 hrs, Volume= 649 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 48.51' @ 24.00 hrs Surf.Area= 1,362 sf Storage= 6,138 cf

Plug-Flow detention time= 738.2 min calculated for 649 cf (10% of inflow)  
 Center-of-Mass det. time= 248.8 min ( 990.0 - 741.3 )

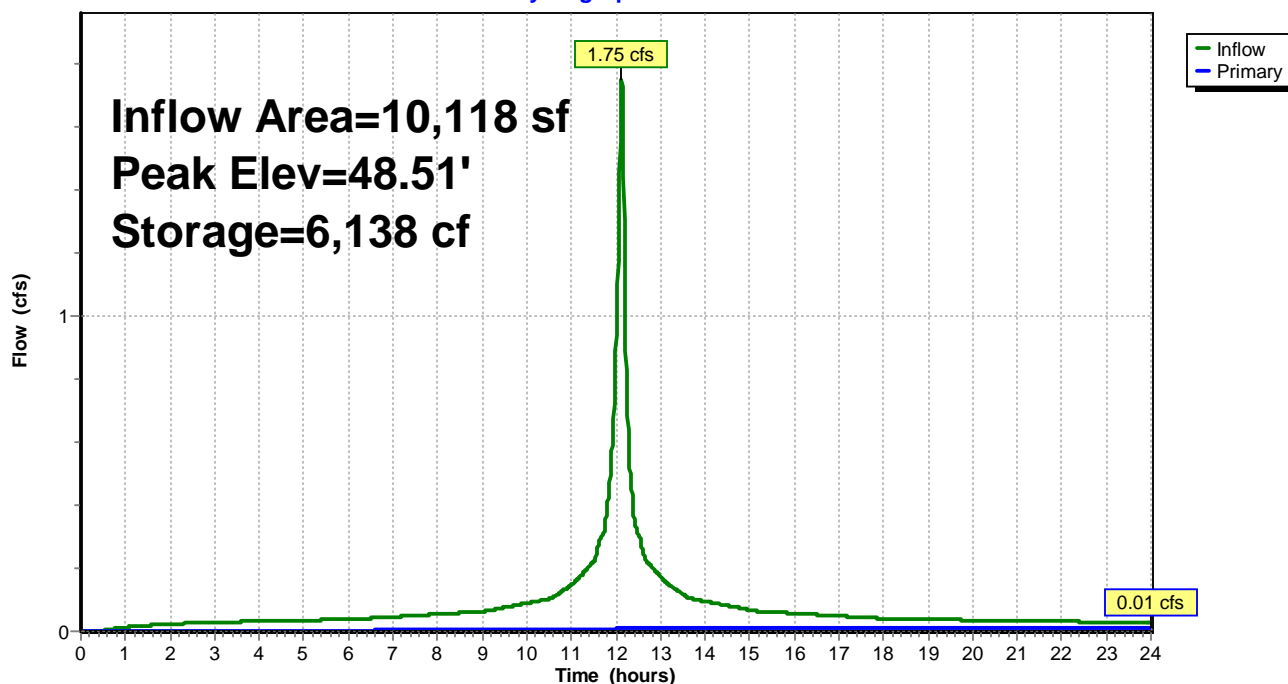
Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	6,810 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) x 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	227	0	0
49.00	227	1,135	1,135

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	<b>0.2" Vert. Orifice/Grate</b> X 6 rows with 1.0" cc spacing C= 0.600

**Primary OutFlow** Max=0.01 cfs @ 24.00 hrs HW=48.51' TW=21.95' (Dynamic Tailwater)

↑ **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.97 fps)

**Pond 45P: HACisterns****Hydrograph**

**Summary for Pond 46P: CB 4**

Inflow Area = 400,830 sf, 31.77% Impervious, Inflow Depth > 2.97" for 100-Year event  
 Inflow = 8.34 cfs @ 12.15 hrs, Volume= 99,059 cf  
 Outflow = 6.28 cfs @ 12.68 hrs, Volume= 98,827 cf, Atten= 25%, Lag= 31.7 min  
 Primary = 6.28 cfs @ 12.68 hrs, Volume= 98,827 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 26.29' @ 12.68 hrs Surf.Area= 1,297 sf Storage= 5,143 cf

Plug-Flow detention time= 7.4 min calculated for 98,786 cf (100% of inflow)  
 Center-of-Mass det. time= 6.1 min ( 903.6 - 897.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	27.80'	23,576 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
#2A	21.50'	259 cf	<b>21.79'W x 59.50'L x 6.00'H Field A</b> 7,780 cf Overall - 7,131 cf Embedded = 648 cf x 40.0% Voids
#3A	22.00'	5,694 cf	<b>StormTrap SingleTrap 5-0</b> x 3 Inside #2 Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf 8.48' x 46.19' Core + 6.66' Border = 21.79' x 59.50' System
		29,529 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.80	4	0	0
28.00	1,704	171	171
30.00	4,071	5,775	5,946
32.00	13,559	17,630	23,576

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 21.50' / 19.40' S= 0.0149 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=6.28 cfs @ 12.68 hrs HW=26.29' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Barrel Controls 6.28 cfs @ 8.00 fps)

### Pond 46P: CB 4 - Chamber Wizard Field A

**Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® 5'-0" tall Type II + IV)**

Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf

Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

3 Chambers/Row x 15.40' Long = 46.19' Row Length +79.9" Border x 2 = 59.50' Base Length

1 Rows x 101.7" Wide + 79.9" Side Border x 2 = 21.79' Base Width

6.0" Base + 66.0" Chamber Height = 6.00' Field Height

3 Chambers x 590.2 cf + 3,923.6 cf Border = 5,694.1 cf Chamber Storage

3 Chambers x 718.0 cf + 4,977.3 cf Border = 7,131.3 cf Displacement

7,779.6 cf Field - 7,131.3 cf Chambers = 648.3 cf Stone x 40.0% Voids = 259.3 cf Stone Storage

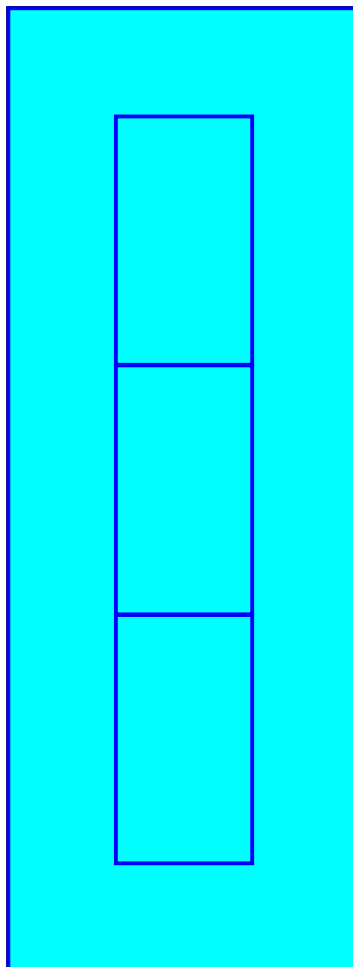
Chamber Storage + Stone Storage = 5,953.5 cf = 0.137 af

Overall Storage Efficiency = 76.5%

3 Chambers (plus border)

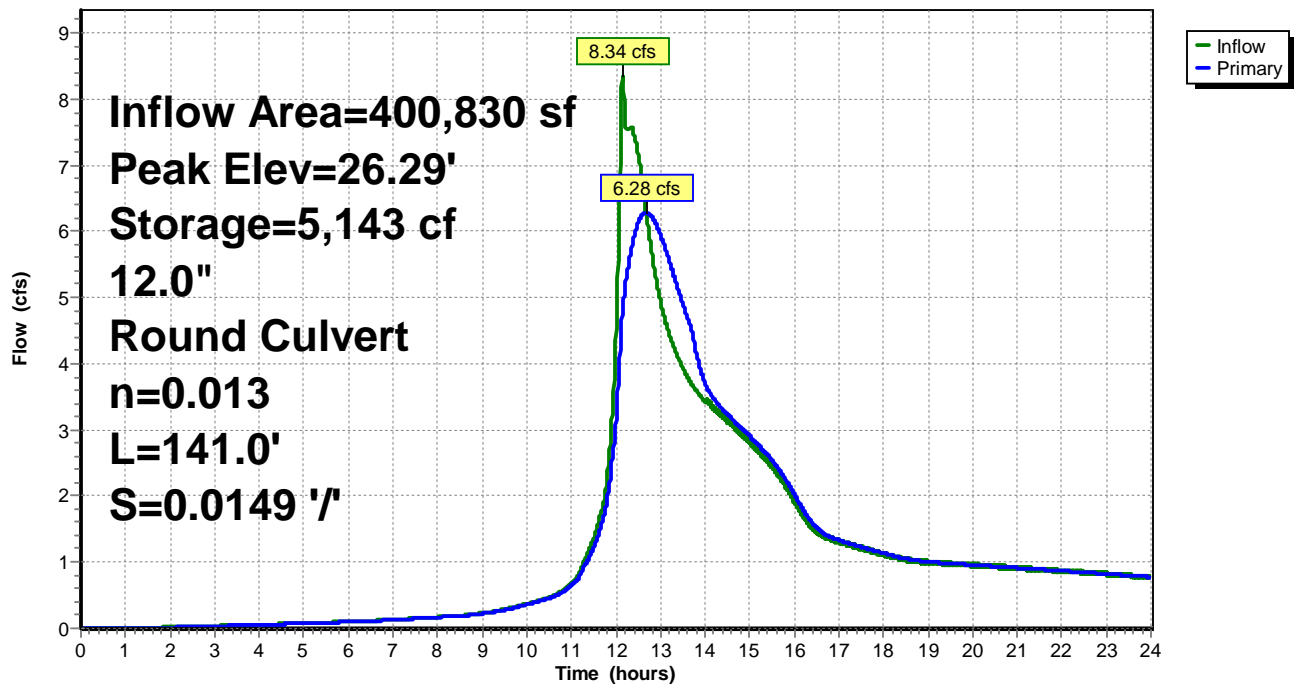
288.1 cy Field

24.0 cy Stone



## Pond 46P: CB 4

## Hydrograph



### Summary for Pond 47P: HW

Inflow Area = 385,242 sf, 8.99% Impervious, Inflow Depth > 4.17" for 100-Year event  
 Inflow = 8.54 cfs @ 12.13 hrs, Volume= 134,030 cf  
 Outflow = 6.64 cfs @ 12.22 hrs, Volume= 134,016 cf, Atten= 22%, Lag= 5.5 min  
 Primary = 6.64 cfs @ 12.22 hrs, Volume= 134,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 26.97' @ 12.22 hrs Surf.Area= 1,513 sf Storage= 1,324 cf

Plug-Flow detention time= 0.9 min calculated for 134,016 cf (100% of inflow)  
 Center-of-Mass det. time= 0.9 min ( 863.4 - 862.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	75,612 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	10	0	0
26.00	290	450	450
28.00	2,812	3,102	3,552
32.00	33,218	72,060	75,612

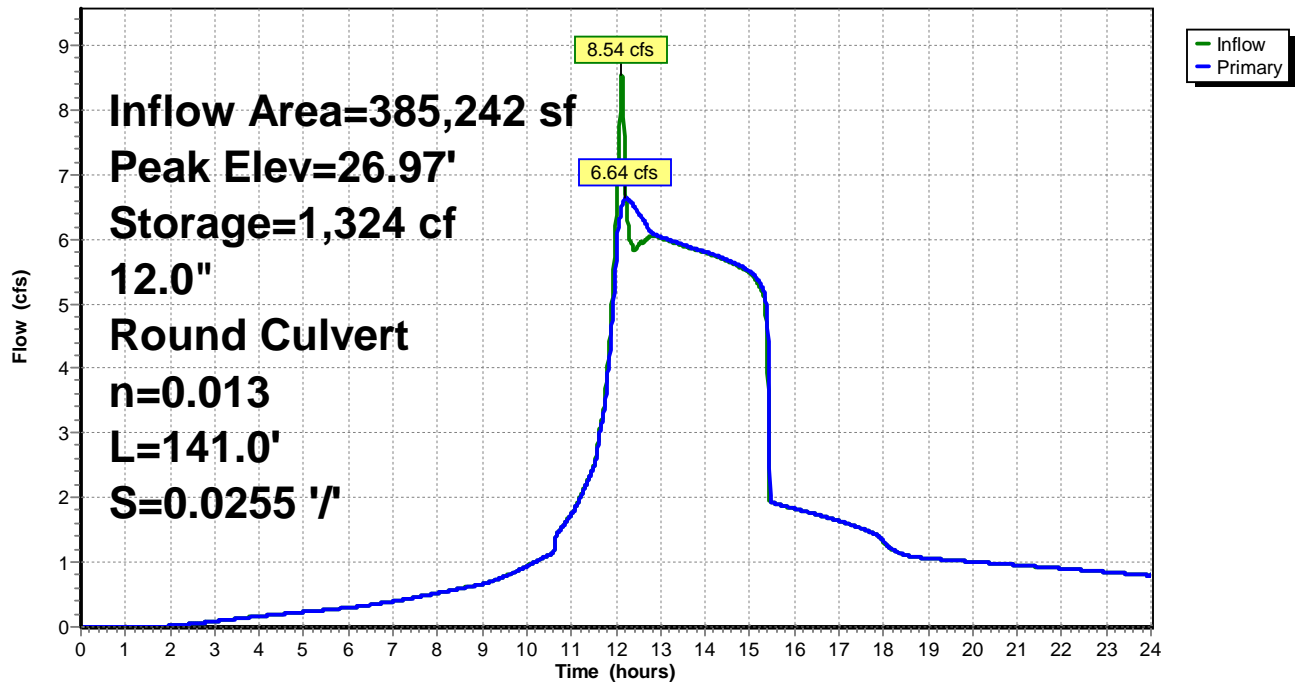
Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	<b>12.0" Round Culvert</b> L= 141.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 23.00' / 19.40' S= 0.0255 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=6.64 cfs @ 12.22 hrs HW=26.97' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 6.64 cfs @ 8.45 fps)

### Pond 47P: HW

#### Hydrograph





**Summary for Pond 48P: YW Cistern**

Inflow Area = 2,136 sf, 100.00% Impervious, Inflow Depth > 8.05" for 100-Year event  
 Inflow = 0.37 cfs @ 12.13 hrs, Volume= 1,433 cf  
 Outflow = 0.01 cfs @ 17.08 hrs, Volume= 552 cf, Atten= 97%, Lag= 296.8 min  
 Primary = 0.01 cfs @ 17.08 hrs, Volume= 552 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 55.41' @ 17.08 hrs Surf.Area= 392 sf Storage= 946 cf

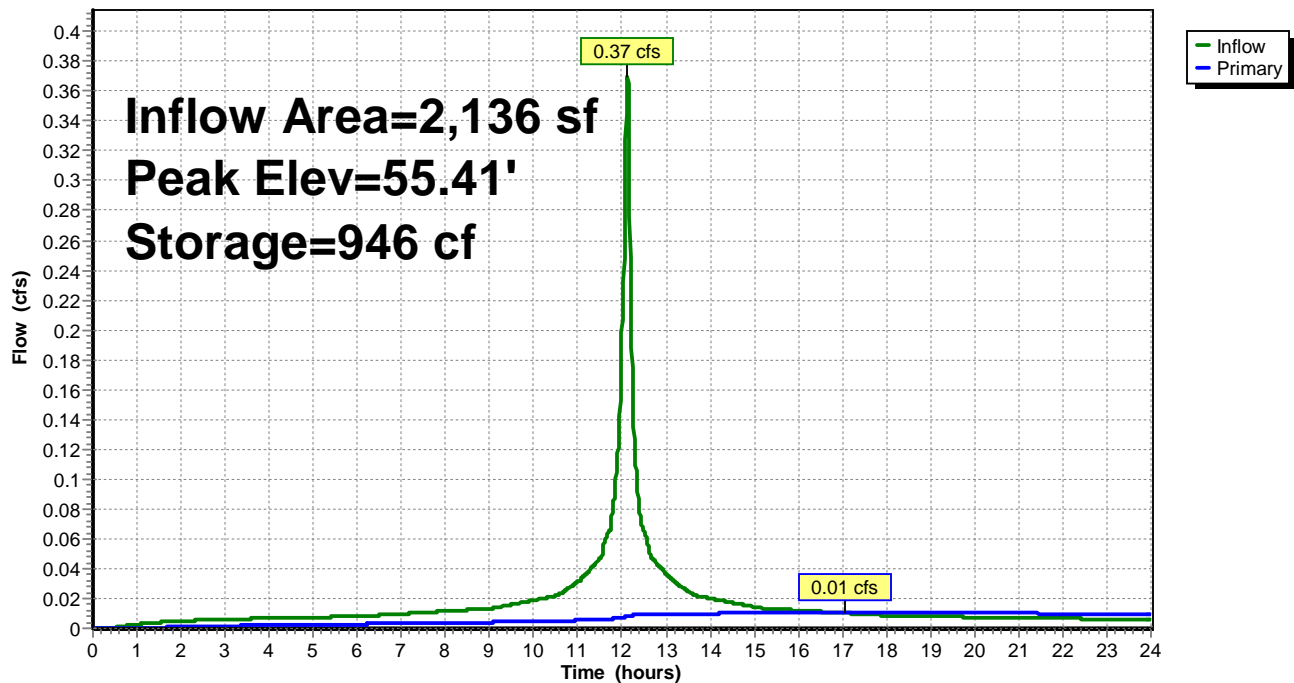
Plug-Flow detention time= 423.1 min calculated for 552 cf (39% of inflow)  
 Center-of-Mass det. time= 208.6 min ( 949.9 - 741.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	1,176 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	392	0	0
56.00	392	1,176	1,176

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	<b>0.5" Vert. Orifice/Grate</b> C= 0.600

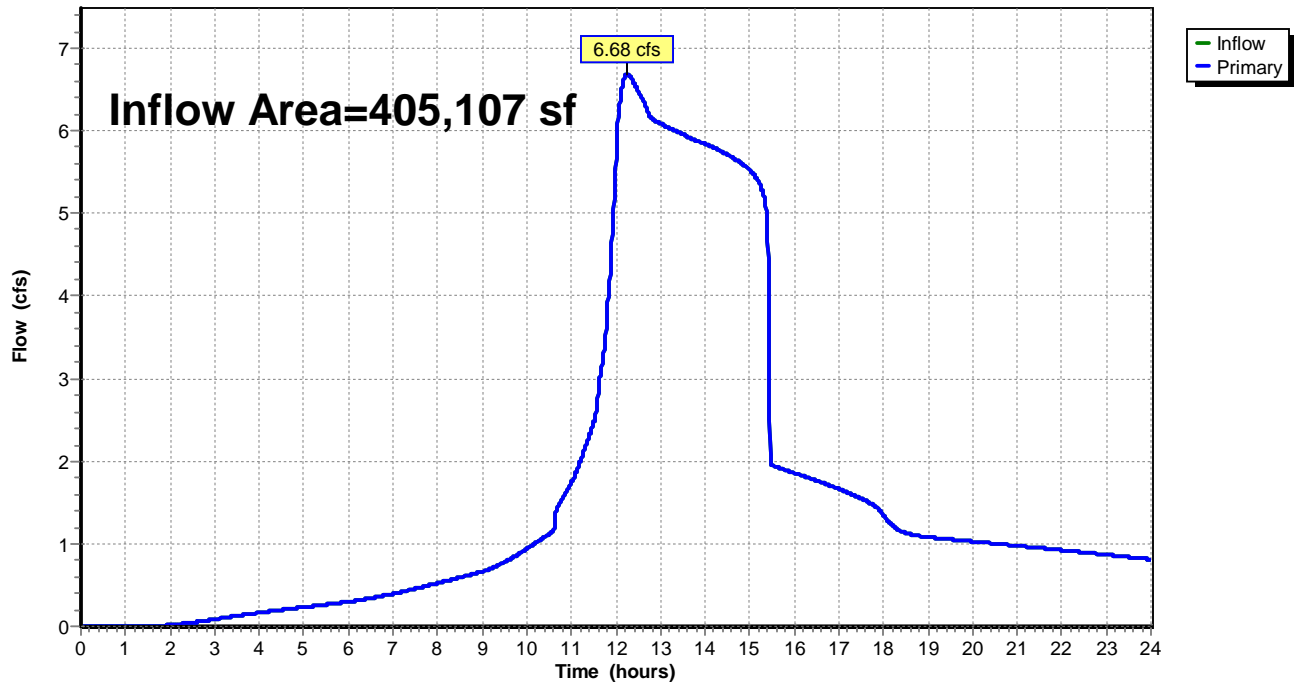
**Primary OutFlow** Max=0.01 cfs @ 17.08 hrs HW=55.41' TW=22.10' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 0.01 cfs @ 7.45 fps)

**Pond 48P: YW Cistern****Hydrograph**

**Summary for Link 1L: Total Exist**

Inflow Area = 405,107 sf, 8.55% Impervious, Inflow Depth > 4.00" for 100-Year event  
Inflow = 6.68 cfs @ 12.25 hrs, Volume= 135,077 cf  
Primary = 6.68 cfs @ 12.25 hrs, Volume= 135,077 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Link 1L: Total Exist****Hydrograph**

**Summary for Link 20L: Total POST**

Inflow Area = 405,107 sf, 31.55% Impervious, Inflow Depth > 2.94" for 100-Year event  
Inflow = 6.32 cfs @ 12.67 hrs, Volume= 99,387 cf  
Primary = 6.32 cfs @ 12.67 hrs, Volume= 99,387 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

**Link 20L: Total POST****Hydrograph**