

STORMWATER MANAGEMENT REPORT

109 CREEPER HILL ROAD GRAFTON , MA

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Table of Contents

STORMWATER MANAGEMENT CHECKLIST

- 1 DRAINAGE REPORT**
- 2 OPERATION AND MAINTENANCE PLAN**
- 3 EXHIBITS**
- 4 HYDRCAD[®] WORKSHEETS**
- 5 PROPOSED SITE PLANS**

1 Drainage Report

INTRODUCTION

The purpose of this drainage report is to provide a review of the stormwater runoff, both quality and quantity, as it pertains to the existing and proposed developed conditions. The report will show by means of narrative, calculations and exhibits that appropriate best management practices have been used to mitigate the impacts from the proposed redevelopment. The report will demonstrate that the proposed site development reduces the rate of runoff at the overall site runoff point during all storm events. Further, the report will show that the proposed stormwater management system complies with the ten stormwater standards as presented in the Massachusetts Department of Environmental Protection (MA DEP) Stormwater Management Regulations.

The proposed project consists of the construction of a 5810 square foot structure in place of an existing 1990 square foot abandoned structure (A net increase of 3,820 SF). This structure will be used as an addition to an existing food processing building adjacent to it. The existing foundation slab and abandoned building structure will be removed in order to provide area for the proposed building and proposed infiltration system. The existing truck path roadway within the site consist of gravel/stone cover, which as part of this project will be further stabilized by adding additional 3/4 in stone covering as means to provide erosion control during the project and as a permanent measure to keep the dust down and control erosion of the gravel roadway. The roof drain for the proposed building will be connected to an existing underground stone infiltration BMP. As part of this addition the existing BMP will be modified with installation of Cultec units (Recharge 330) to replace existing stone & pipe configuration to increase the storage capacity in an attempt to decrease peak runoff and to promote ground water recharge to maximum extent possible.

SITE LOCATION AND DESCRIPTION

The site is located at 109 Creeper Hill Road , in Grafton MA. The site is located within an industrial zone, which is currently used for food recycling operations. The proposed building will be used to implement the current operation and automation of the process.

Portion of the site also falls within the 200' buffer zone for the river front area located on the east side outside of the project construction limit. Generally, the property slopes from west to the east with a earth berm separating the main section of the site from the bordering wetland on the east side.

Based of the soil report that was obtained from the Natural Resources Conservation Service, formerly Soil Conservation Service, the majority of the site has been classified as Undorthents and cannot be accurately be classified, due to previous development in form of cut and fill of original materials, and requires field testing.

A copy of the NRCS Soil Map is provided in the Appendix of this report.

EXISTING DRAINAGE PATTERNS

To demonstrate compliance with the stormwater regulations, the existing drainage patterns were analyzed at “design points”. The design point was selected based visual observation of drainage patterns.

For the most part, surface runoff surface sheds towards the northeastern boundary of the site towards Creeple Hill Road. Since the site is for the majority of the area consists of gravel surfaces, runoff is limited and recharge levels are high .

The stormwater runoff model shows that the proposed development reduces the rate of runoff for each design point analyzed. This is accomplished by providing subsurface infiltration systems for the proposed building, in addition to the existing building adjacent to it .

The HydroCAD worksheets and hydrographs are included in the “HydroCAD Worksheets” Section of this report.

METHODOLOGY

The peak rate of runoff was determined using techniques and data found in the following:

1. Urban Hydrology for Small Watersheds – Technical Release 55 by the United States Department of Agriculture Soils Conservation Service, June 1986. Runoff curve numbers and 24-hour precipitation values were obtained from this reference.
2. HydroCAD[®] Stormwater Modeling System by HydroCAD Software Solutions LLC, version 8.50, 2007. The HydroCAD program was used to generate the runoff hydrographs for the watershed areas, to determine discharge/stage/storage characteristics for the infiltration systems, to perform drainage routing and to combine the results of the runoff hydrographs.
3. Soil Survey of Norfolk County Massachusetts, by United States Department of Agriculture, Natural Resources Conservation Service. Soil types and boundaries were obtained from this reference.

STORMWATER MANAGEMENT STANDARDS

The proposed project is designed to meet or exceed all of the Stormwater Management Standards as determined by MassDEP to the maximum extent practicable. A description of each standard and if it is met is below.

Standard #1 – No New Untreated Discharges or Erosion:

Discharge points will remain unchanged from pre-construction to post-construction. No new discharges are created. Existing discharges off the site currently drain through well-established areas with vegetation and no signs of erosion. Being redirected into the proposed infiltration reservoir will mitigate proposed discharge from the proposed building.

Standard #2 – Peak Rate Attenuation:

Calculations have been provided to show that the proposed redevelopment will not cause an increase in peak discharge rates, but it would help reducing it through limited storage provide in the proposed infiltration reservoir. Refer to the HydroCAD calculations provided within this report for detailed breakdowns of each study point.

Standard #3 – Recharge to Groundwater:

The project meets this standard with the “post-development site increasing the annual recharge from the pre-development conditions. The proposed building is situated over an existing concrete slab. Also existing infiltration BMP will be retrofitted with 77 units of Cultec Recharge 330. This reservoir is to be used for the recharge of ground water from the existing roofs in addition to the new building. Currently under existing conditions, recharge is only attained stone and pipe system. Under proposed conditions, recharge is provided for the impervious areas being introduced based on the table below:

Hydrologic Group Volume to Recharge (x Total Impervious Area)	
Hydrologic Group	Volume to Recharge x Total Impervious Area
A	0.60 inches of runoff
B	0.35 inches of runoff
C	0.25 inches of runoff
D	0.10 inches of runoff

Using hydrological group A (note that the majority of existing soil type has been classified as Udorthents) The required recharge volume is given by the following equation:

$$R_v = F \times IA \text{ (Equation 1 Stormwater Handbook Volume 3)}$$

Where R_v = Required Recharge Volume, ft^3
 F = Target Depth factor (Hydrologic Group A)
 IA = Impervious drainage area

For Watershed 5,810 square feet of proposed impervious surface (building) will be constructed.

$$\begin{aligned} R_v &= F \times IA \\ &= (0.60 \text{ inches})(12 \text{ inches/foot})(5810 \text{ square feet}) \\ &= 290.5 \text{ cubic feet} \end{aligned}$$

6,201 cubic feet of available storage is provided in the underground system.
 (See HydroCAD worksheet)

Infiltration system is based on the Static Method of calculation as outlined in the Stormwater Management Handbook).

The system drawdown time is defined as:

$$\text{Time}_{\text{drawdown}} = R_v / (K)(\text{bottom area})$$

where R_v = Required Recharge Volume, ft³
 K = Saturated Hydraulic Conductivity (Rawls table)
Bottom area = bottom area of recharge structure

with a bottom area of 47'x44'
and $K= 2.4$ in

$$\begin{aligned} &= 320 \text{ ft}^3 / (2.4* \text{ in/hour})(2068 \text{ s.f.})(1\text{ft}/12 \text{ in}) \\ &= 0.09\text{hours} (<72 \text{ hours drain time} = \text{ok}) \end{aligned}$$

*2.4 inches per hour is a default for HSG "A" with Loamy Sand texture which had been established based on a soil evaluation conducted at infiltration field location in 2014.

A capture area adjustment is not required as all stormwater is treated through stormwater controls.

Therefore, this standard has been met.

Standard 4 – Water Quality:

The project is a redevelopment project. Stormwater water quality units are not proposed. The runoff directed towards the infiltration system is from the roof area and does not require treatment and therefore Standard 4 does not apply to this project.

Standard 5 – Land Use with Higher Potential Pollutant Loads (LUHPPLs):

The proposed project is not a Land Use with Higher Potential Pollutant Loads and therefore Standard 5 does not apply to this project.

Standard 6 – Critical Areas

The proposed project is not located in an area defined as a Critical Area and therefore Standard 6 does not apply to this project.

Standard 7 – Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

Standards are met to the maximum extent practicable as described in this section thereby meeting this Standard.

Standard 8 – Construction Period Pollution Prevention & Erosion & Sediment Control

An Erosion Control plan has been incorporated with the design plans. Also, due to limited area of disturbance the project does not require a Stormwater Pollution Prevention Plan under the EPA NPDES program.

Standard 9 – Operations and Maintenance Plan

Refer to the Operations and Maintenance Plan included in this report.

Standard 10 – Prohibition of Illicit Discharges

No illicit discharges exist on site. The storm water management system proposed shall not be connected to the wastewater management system and shall not be contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease per Massachusetts DEP Storm Water Standard 10. The Illicit discharge statement is included in the appendix of this report.

2 Operation & Maintenance Plan

OPERATION AND MAINTENANCE PLAN

In accordance with the standards set forth by the Stormwater Management Regulations issued by the Department of Environmental Protection (DEP), this report has prepared the following Operation and Maintenance (O&M) plan for the proposed stormwater management system at the 109 Creeper Hill Road site. This O&M plan addressed post construction pollution prevention and maintenance of stormwater systems.

This plan is broken into two major sections. The first section describes pollution prevention techniques to encourage source controls that prevent pollution. The second section is devoted to a post-development operation and maintenance plan of the stormwater management system. An operation and maintenance schedule has been included at the end of the report.

Basic Information

Owner: Feedback Earth Inc
Address: 109 Creeper Hill
City: Grafton, MA

Section 1 Pollution Prevention

As a food recycling facility, the largest potential sources of pollution includes food packaging and normal maintenance truck fluids in this facility. It is anticipated that all of these materials will be stored and maintained inside specialized containers that are only access by trained personnel. However the following pollution prevention techniques are provided in the event that there is a spill outside the facility that may enter the stormwater management system.

Good House Keeping

The following measures will be employed to control potential sources of contamination and prevent pollution at The Project property:

Deicing

To prevent increased pollutant concentrations in stormwater discharges, the amount of road salt applied will be controlled. Calibration devices for spreaders in trucks will be encouraged to contractors employed to plow the parking area. The amount of deicing materials used will be monitored with the goal of using only enough to make the roadway and parking areas safe.

Snow Storage/Disposal

Snow storage/disposal will be allowed in unused areas of the property away from storm drainage systems and wetland resource areas.

Pavement Sweeping

N/A.

Fertilizer/Pesticide/Herbicide Application

Applications of treatment materials will be used throughout the site. Their application adjacent to the stormwater systems will be limited. Slow release fertilizer will be used and applied in the minimum amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a closed structure; and the contents of any partially used bags will be transferred to a sealable, plastic bin to avoid spills.

Materials Management/Housekeeping Practices

The following product-specific practices will be followed on-site. Recommendations are provided for petroleum products, fertilizers, solvents, paints, and other hazardous substances, and concrete.

Petroleum Products – Routine maintenance of course equipment is anticipated. No chemicals, fluids or fuels from vehicles will be drained into the stormwater system. All fluids will be collected in appropriate containers and disposed of according to State regulations. Storage of diesel and unleaded fuel will be regulated by the State Fire Marshall and will be in an approved container. No petroleum-based or asphalt substances will be stored within 100 feet of a waterway.

Solvents, Paints, and other Hazardous Substances - All containers will be tightly sealed and stored indoors when not required for use. Excess materials will not be discharged to the storm sewer system, but will be properly disposed according to manufacturer's instructions or state and local regulations. Outside storage on the property will be prohibited.

Spill Prevention and Control

The Property Manager/Groundskeeper will be responsible for training of people in the proper handling and cleanup of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with storm water discharges. If such contact occurs, the storm water discharge will be contained on site until appropriate measures in compliance with State and Federal regulations are taken to dispose of such contaminated storm water.

In order to minimize the potential for a spill of hazardous materials to come into contact with storm water, the following steps will be implemented:

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on the site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the maintenance area of the site.
4. Manufacturers recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

In the event of a spill, the following procedures should be followed:

1. All spills will be cleaned up immediately after discovery.

2. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
3. The Owner and Property Manager will be notified immediately.
4. Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill.
5. If the spilt material enters the drainage system, the catch basin or other structure acting as the inlet shall be cleaned via a vac truck as soon as possible and before the next rainfall event to the extent practicable.

The Property Manager will be the spill prevention and response coordinator. He will designate the individuals who will receive spill prevention and response training. These individuals will each become responsible for a particular phase of prevention and response. The names of these personnel will be posted in the material storage area and other applicable areas onsite.

Section 2 Stormwater Management System – Operation and Maintenance

1. Paved Areas – N/A
2. Salt for de-icing during the winter months shall be limited to the minimum amount practicable. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities.
3. The Infiltration System: Inspect and maintain twice a year and after every rain event. Removal of all debris from the area and avoid storage of any material on or around the infiltration system.
4. All sediments removed from the infiltration systems shall be disposed of properly, and in accordance with applicable local and state regulations.
5. All vegetated areas on the site shall be stabilized and maintained to control erosion. Any disturbed areas shall be re-seeded as soon as practicable. Trash and debris should be removed on a regular basis.
6. Work within any drainage structures shall be performed in accordance with the latest OSHA regulations, and only by individuals with appropriate OSHA certification.

Maintenance Responsibilities - All post-construction maintenance activities shall be documented and kept on file for up to 3 years. Copies of said document shall be submitted to the Zoning Board of Appeals and the Town Engineer.

Table B-1. Requirements for Determining Field Infiltration Rates

Infiltration Design Method	NRCS Hydrologic Soil Groups			
	A	B	C	D
Static Method	Soil Textural Analysis	Soil Textural Analysis	Saturated Hydraulic Conductivity Testing	Infiltration Not Allowed
Simple Dynamic Method	Soil Textural Analysis	Soil Textural Analysis	Saturated Hydraulic Conductivity Testing	Infiltration Not Allowed
Dynamic Field Method	Saturated Hydraulic Conductivity Testing	Saturated Hydraulic Conductivity Testing	Saturated Hydraulic Conductivity Testing	Infiltration Not Allowed

Table B-2. Default (Rawls) Infiltration Rates

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

Source: Rawls, Brakensiek and Saxton, 1982.

- The slowest of the Hydrologic Soil Groups determined to exist at the point where infiltration is proposed shall be used.
 - *Example:* Two samples are taken at a proposed infiltration bioretention system in the actual soil layer where recharge is proposed. One sample indicates sandy soils. The second sample indicates a sandy loam soil. The default infiltration rate used for the design analysis must use the sandy loam rate and not the sandy soil rate. Soils must not be composited for purposes of the soil textural analysis.
- When the “Dynamic Field” method is used to size the infiltration system (regardless of Hydrologic Soil Group) or infiltration is proposed within Hydrologic Soil Group C soils



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Map Unit Legend

Worcester County, Massachusetts, Southern Part (MA615)

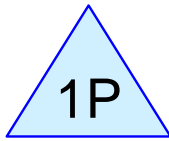
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
245B	Hinckley sandy loam, 3 to 8 percent slopes	1.7	16.9%
651	Udorthents, smoothed	8.2	83.1%
Totals for Area of Interest		9.9	100.0%

Scale (not to scale)

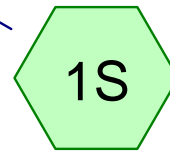


Warning: Soil Map may not be valid at this scale.
 You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at a design of map units and the level of detail shown in the resulting soil map are dependent on that map 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 been shown at a more detailed scale.

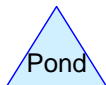
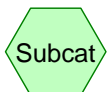
4 HydroCad worksheet



Cultec Recharge 330
-Exfiltration



Post development



Grafton-Toriano-post-develop2021-2

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.133	98	Roof Propose (1S)
0.184	98	roof -Existing (1S)
0.184	98	roof -Exsiting (1S)
0.501		TOTAL AREA

Grafton-Toriano-post-develop2021-2

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.501	Other	1S
0.501		TOTAL AREA

Grafton-Toriano-post-develop2021-2

Type III 24-hr 2-YEAR EVENT Rainfall=3.15"

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Page 4

Time span=0.00-33.00 hrs, dt=0.05 hrs, 661 points

Runoff by SCS TR-20 method, UH=SCS

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

Subcatchment 1S: Post development

Runoff Area=21,810 sf 100.00% Impervious Runoff Depth=2.92"

Flow Length=130' Tc=1.0 min CN=98 Runoff=1.71 cfs 0.122 af

Pond 1P: Cultec Recharge 330 -Exfiltration

Peak Elev=373.77' Storage=1,694 cf Inflow=1.71 cfs 0.122 af

Outflow=0.18 cfs 0.122 af

Total Runoff Area = 0.501 ac Runoff Volume = 0.122 af Average Runoff Depth = 2.92"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.501 ac

Summary for Subcatchment 1S: Post development

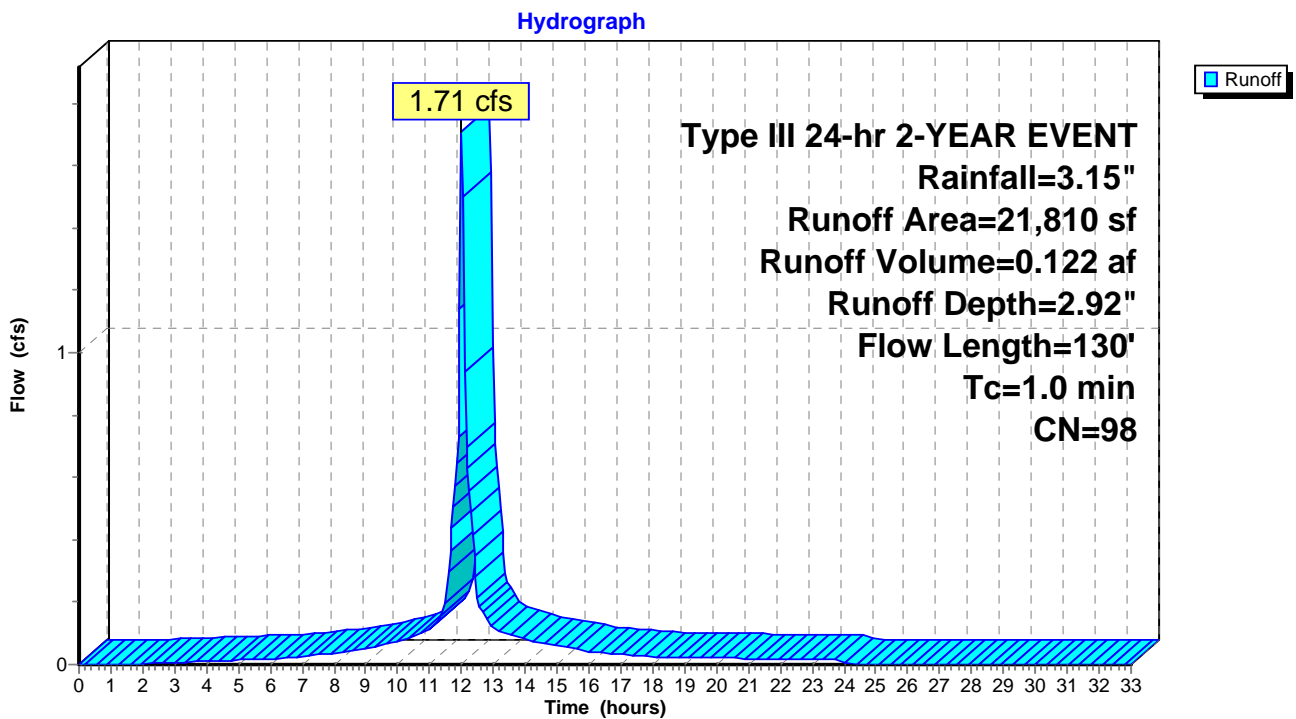
Runoff = 1.71 cfs @ 12.01 hrs, Volume= 0.122 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.15"

	Area (sf)	CN	Description
*	8,000	98	roof -Existing
*	8,000	98	roof -Exsiting
*	5,810	98	Roof Propose
	21,810	98	Weighted Average
	21,810		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	130		2.17		Direct Entry,

Subcatchment 1S: Post development



Hydrograph for Subcatchment 1S: Post development

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	3.15	2.92	0.00
0.50	0.02	0.00	0.00	27.00	3.15	2.92	0.00
1.00	0.03	0.00	0.00	27.50	3.15	2.92	0.00
1.50	0.05	0.00	0.00	28.00	3.15	2.92	0.00
2.00	0.06	0.00	0.00	28.50	3.15	2.92	0.00
2.50	0.08	0.01	0.00	29.00	3.15	2.92	0.00
3.00	0.10	0.01	0.01	29.50	3.15	2.92	0.00
3.50	0.12	0.02	0.01	30.00	3.15	2.92	0.00
4.00	0.14	0.03	0.01	30.50	3.15	2.92	0.00
4.50	0.16	0.04	0.01	31.00	3.15	2.92	0.00
5.00	0.18	0.06	0.01	31.50	3.15	2.92	0.00
5.50	0.20	0.07	0.02	32.00	3.15	2.92	0.00
6.00	0.23	0.09	0.02	32.50	3.15	2.92	0.00
6.50	0.25	0.11	0.02	33.00	3.15	2.92	0.00
7.00	0.29	0.13	0.03				
7.50	0.32	0.16	0.03				
8.00	0.36	0.19	0.03				
8.50	0.40	0.23	0.04				
9.00	0.46	0.28	0.05				
9.50	0.52	0.34	0.06				
10.00	0.60	0.41	0.07				
10.50	0.68	0.49	0.09				
11.00	0.79	0.59	0.11				
11.50	0.94	0.73	0.18				
12.00	1.57	1.35	1.68				
12.50	2.21	1.98	0.21				
13.00	2.36	2.13	0.12				
13.50	2.47	2.24	0.10				
14.00	2.55	2.33	0.08				
14.50	2.63	2.40	0.07				
15.00	2.69	2.46	0.06				
15.50	2.75	2.51	0.05				
16.00	2.79	2.56	0.04				
16.50	2.83	2.60	0.04				
17.00	2.86	2.63	0.03				
17.50	2.90	2.66	0.03				
18.00	2.92	2.69	0.03				
18.50	2.95	2.72	0.02				
19.00	2.97	2.74	0.02				
19.50	2.99	2.76	0.02				
20.00	3.01	2.78	0.02				
20.50	3.03	2.80	0.02				
21.00	3.05	2.82	0.02				
21.50	3.07	2.84	0.02				
22.00	3.09	2.86	0.02				
22.50	3.11	2.87	0.02				
23.00	3.12	2.89	0.02				
23.50	3.14	2.90	0.01				
24.00	3.15	2.92	0.01				
24.50	3.15	2.92	0.00				
25.00	3.15	2.92	0.00				
25.50	3.15	2.92	0.00				
26.00	3.15	2.92	0.00				

Summary for Pond 1P: Cultec Recharge 330 -Exfiltration

Inflow Area = 0.501 ac, 100.00% Impervious, Inflow Depth = 2.92" for 2-YEAR EVENT event
 Inflow = 1.71 cfs @ 12.01 hrs, Volume= 0.122 af
 Outflow = 0.18 cfs @ 12.56 hrs, Volume= 0.122 af, Atten= 89%, Lag= 33.1 min
 Primary = 0.18 cfs @ 12.56 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Peak Elev= 373.77' @ 12.56 hrs Surf.Area= 3,297 sf Storage= 1,694 cf

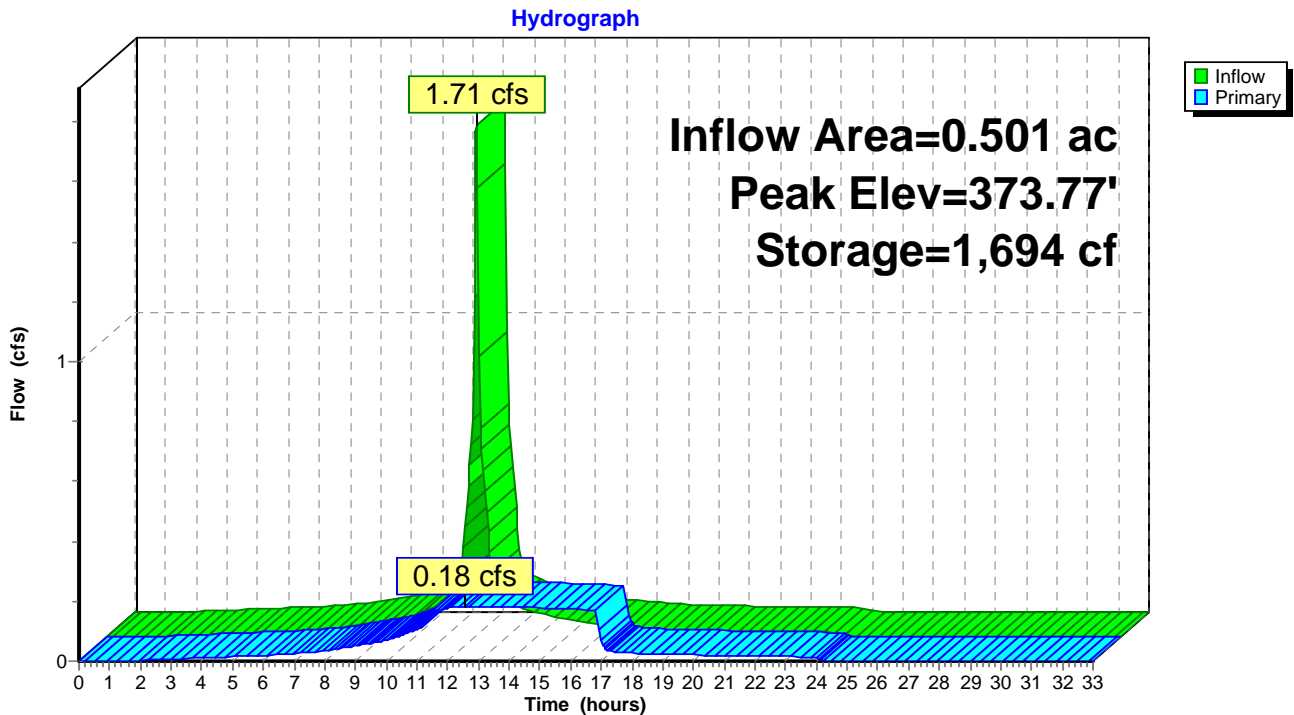
Plug-Flow detention time= 61.6 min calculated for 0.122 af (100% of inflow)
 Center-of-Mass det. time= 61.6 min (813.7 - 752.1)

Volume	Invert	Avail.Storage	Storage Description
#1	372.63'	4,822 cf	66.00'W x 46.00'L x 4.40'H Prismatic Z=1.0 15,640 cf Overall - 3,586 cf Embedded = 12,055 cf x 40.0% Voids
#2	373.55'	3,586 cf	47.8"W x 30.0"H x 6.25'L Cultec R-330 x 77 Inside #1
		8,408 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	372.63'	2.400 in/hr Exfiltration over Surface area

Primary OutFlow Max=0.18 cfs @ 12.56 hrs HW=373.77' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 1P: Cultec Recharge 330 -Exfiltration



Hydrograph for Pond 1P: Cultec Recharge 330 -Exfiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	372.63	0.00
1.00	0.00	0	372.63	0.00
2.00	0.00	1	372.63	0.00
3.00	0.01	2	372.63	0.01
4.00	0.01	3	372.63	0.01
5.00	0.01	5	372.63	0.01
6.00	0.02	6	372.63	0.02
7.00	0.03	8	372.64	0.03
8.00	0.03	11	372.64	0.03
9.00	0.05	16	372.64	0.05
10.00	0.07	22	372.65	0.07
11.00	0.11	34	372.66	0.11
12.00	1.68	797	373.27	0.18
13.00	0.12	1,641	373.75	0.18
14.00	0.08	1,334	373.62	0.18
15.00	0.06	934	373.38	0.18
16.00	0.04	483	373.02	0.17
17.00	0.03	23	372.65	0.07
18.00	0.03	8	372.64	0.03
19.00	0.02	7	372.64	0.02
20.00	0.02	7	372.64	0.02
21.00	0.02	6	372.63	0.02
22.00	0.02	5	372.63	0.02
23.00	0.02	5	372.63	0.02
24.00	0.01	4	372.63	0.01
25.00	0.00	0	372.63	0.00
26.00	0.00	0	372.63	0.00
27.00	0.00	0	372.63	0.00
28.00	0.00	0	372.63	0.00
29.00	0.00	0	372.63	0.00
30.00	0.00	0	372.63	0.00
31.00	0.00	0	372.63	0.00
32.00	0.00	0	372.63	0.00
33.00	0.00	0	372.63	0.00

Grafton-Toriano-post-develop2021-2

Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

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Page 9

Time span=0.00-33.00 hrs, dt=0.05 hrs, 661 points

Runoff by SCS TR-20 method, UH=SCS

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

Subcatchment 1S: Post development

Runoff Area=21,810 sf 100.00% Impervious Runoff Depth=4.46"

Flow Length=130' Tc=1.0 min CN=98 Runoff=2.56 cfs 0.186 af

Pond 1P: Cultec Recharge 330 -Exfiltration

Peak Elev=374.30' Storage=2,991 cf Inflow=2.56 cfs 0.186 af

Outflow=0.19 cfs 0.186 af

Total Runoff Area = 0.501 ac Runoff Volume = 0.186 af Average Runoff Depth = 4.46"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.501 ac

Summary for Subcatchment 1S: Post development

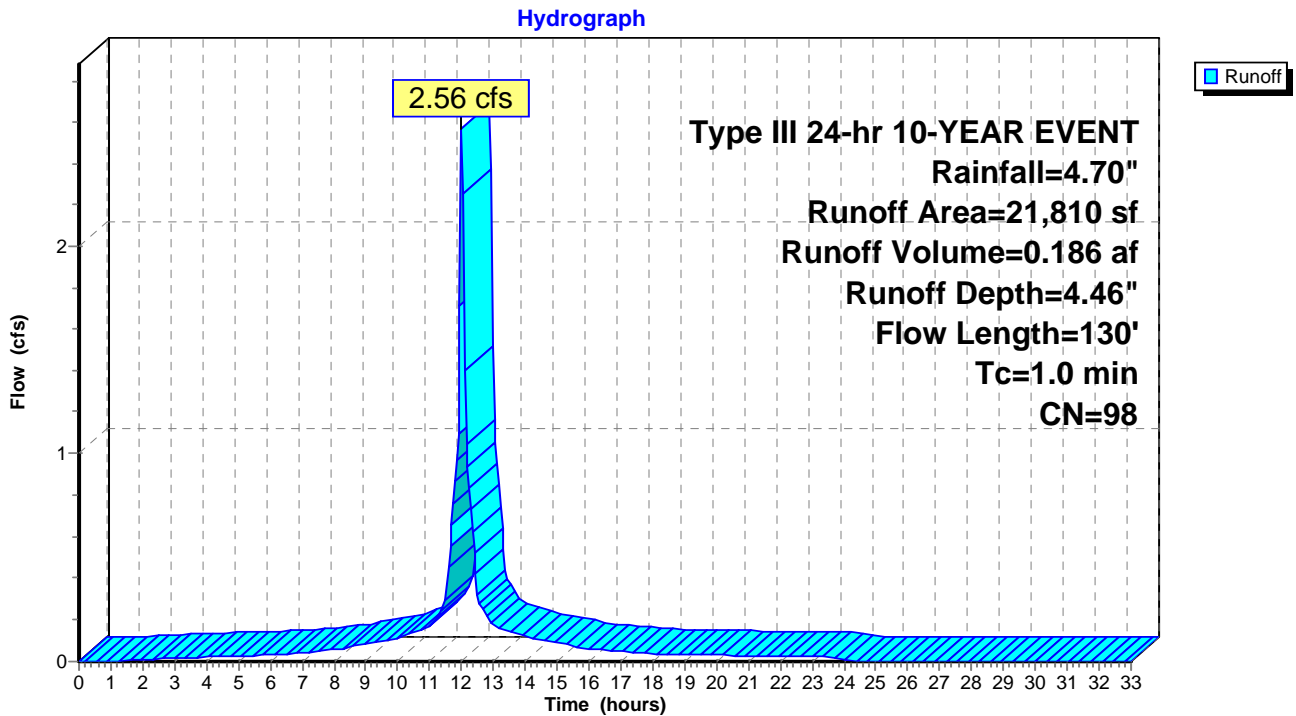
Runoff = 2.56 cfs @ 12.01 hrs, Volume= 0.186 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

	Area (sf)	CN	Description
*	8,000	98	roof -Existing
*	8,000	98	roof -Exsiting
*	5,810	98	Roof Propose
	21,810	98	Weighted Average
	21,810		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	130		2.17		Direct Entry,

Subcatchment 1S: Post development



Hydrograph for Subcatchment 1S: Post development

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	4.70	4.46	0.00
0.50	0.02	0.00	0.00	27.00	4.70	4.46	0.00
1.00	0.05	0.00	0.00	27.50	4.70	4.46	0.00
1.50	0.07	0.00	0.01	28.00	4.70	4.46	0.00
2.00	0.09	0.01	0.01	28.50	4.70	4.46	0.00
2.50	0.12	0.02	0.01	29.00	4.70	4.46	0.00
3.00	0.14	0.03	0.02	29.50	4.70	4.46	0.00
3.50	0.17	0.05	0.02	30.00	4.70	4.46	0.00
4.00	0.20	0.07	0.02	30.50	4.70	4.46	0.00
4.50	0.23	0.09	0.02	31.00	4.70	4.46	0.00
5.00	0.27	0.12	0.03	31.50	4.70	4.46	0.00
5.50	0.30	0.15	0.03	32.00	4.70	4.46	0.00
6.00	0.34	0.18	0.03	32.50	4.70	4.46	0.00
6.50	0.38	0.21	0.04	33.00	4.70	4.46	0.00
7.00	0.43	0.25	0.04				
7.50	0.48	0.30	0.05				
8.00	0.54	0.35	0.06				
8.50	0.60	0.41	0.07				
9.00	0.69	0.49	0.08				
9.50	0.78	0.58	0.10				
10.00	0.89	0.68	0.11				
10.50	1.02	0.81	0.14				
11.00	1.17	0.96	0.17				
11.50	1.40	1.18	0.28				
12.00	2.35	2.12	2.53				
12.50	3.30	3.07	0.32				
13.00	3.52	3.29	0.18				
13.50	3.68	3.45	0.15				
14.00	3.81	3.58	0.12				
14.50	3.92	3.69	0.10				
15.00	4.01	3.78	0.09				
15.50	4.10	3.86	0.08				
16.00	4.16	3.93	0.06				
16.50	4.22	3.99	0.06				
17.00	4.27	4.04	0.05				
17.50	4.32	4.09	0.04				
18.00	4.36	4.13	0.04				
18.50	4.40	4.16	0.04				
19.00	4.43	4.20	0.03				
19.50	4.47	4.23	0.03				
20.00	4.50	4.26	0.03				
20.50	4.53	4.29	0.03				
21.00	4.56	4.32	0.03				
21.50	4.58	4.35	0.03				
22.00	4.61	4.37	0.03				
22.50	4.63	4.40	0.02				
23.00	4.66	4.42	0.02				
23.50	4.68	4.44	0.02				
24.00	4.70	4.46	0.02				
24.50	4.70	4.46	0.00				
25.00	4.70	4.46	0.00				
25.50	4.70	4.46	0.00				
26.00	4.70	4.46	0.00				

Summary for Pond 1P: Cultec Recharge 330 -Exfiltration

Inflow Area = 0.501 ac, 100.00% Impervious, Inflow Depth = 4.46" for 10-YEAR EVENT event
 Inflow = 2.56 cfs @ 12.01 hrs, Volume= 0.186 af
 Outflow = 0.19 cfs @ 12.94 hrs, Volume= 0.186 af, Atten= 93%, Lag= 55.4 min
 Primary = 0.19 cfs @ 12.94 hrs, Volume= 0.186 af

Routing by Stor-Ind method, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Peak Elev= 374.30' @ 12.94 hrs Surf.Area= 3,421 sf Storage= 2,991 cf

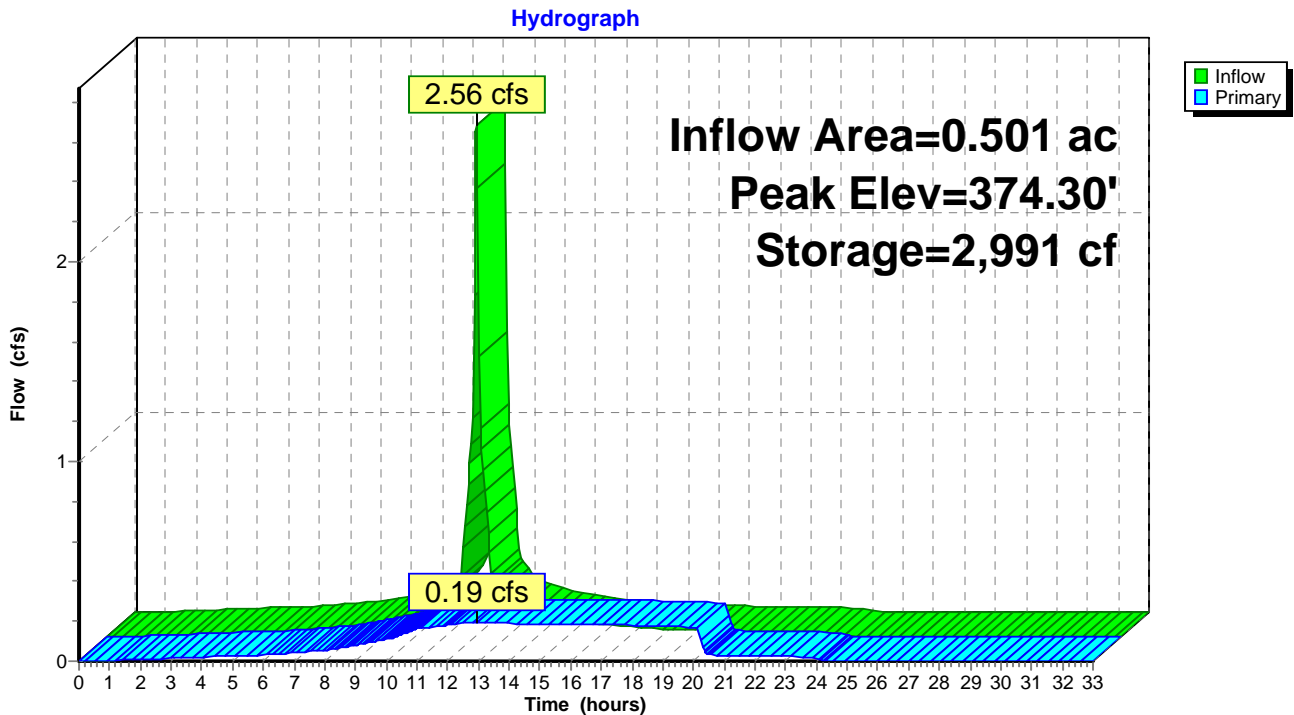
Plug-Flow detention time= 116.9 min calculated for 0.186 af (100% of inflow)
 Center-of-Mass det. time= 116.7 min (861.2 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1	372.63'	4,822 cf	66.00'W x 46.00'L x 4.40'H Prismaoid Z=1.0 15,640 cf Overall - 3,586 cf Embedded = 12,055 cf x 40.0% Voids
#2	373.55'	3,586 cf	47.8"W x 30.0"H x 6.25'L Cultec R-330 x 77 Inside #1
		8,408 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	372.63'	2.400 in/hr Exfiltration over Surface area

Primary OutFlow Max=0.19 cfs @ 12.94 hrs HW=374.30' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.19 cfs)

Pond 1P: Cultec Recharge 330 -Exfiltration



Hydrograph for Pond 1P: Cultec Recharge 330 -Exfiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	372.63	0.00
1.00	0.00	0	372.63	0.00
2.00	0.01	3	372.63	0.01
3.00	0.02	5	372.63	0.01
4.00	0.02	7	372.64	0.02
5.00	0.03	8	372.64	0.03
6.00	0.03	10	372.64	0.03
7.00	0.04	13	372.64	0.04
8.00	0.06	17	372.64	0.06
9.00	0.08	26	372.65	0.08
10.00	0.11	34	372.66	0.11
11.00	0.17	52	372.67	0.16
12.00	2.53	1,418	373.66	0.18
13.00	0.18	2,990	374.30	0.19
14.00	0.12	2,830	374.23	0.19
15.00	0.09	2,521	374.11	0.19
16.00	0.06	2,122	373.94	0.19
17.00	0.05	1,660	373.76	0.18
18.00	0.04	1,164	373.55	0.18
19.00	0.03	654	373.16	0.18
20.00	0.03	150	372.75	0.17
21.00	0.03	9	372.64	0.03
22.00	0.03	8	372.64	0.03
23.00	0.02	7	372.64	0.02
24.00	0.02	6	372.64	0.02
25.00	0.00	0	372.63	0.00
26.00	0.00	0	372.63	0.00
27.00	0.00	0	372.63	0.00
28.00	0.00	0	372.63	0.00
29.00	0.00	0	372.63	0.00
30.00	0.00	0	372.63	0.00
31.00	0.00	0	372.63	0.00
32.00	0.00	0	372.63	0.00
33.00	0.00	0	372.63	0.00

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Type III 24-hr 25-YEAR EVENT Rainfall=5.90"

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Page 14

Time span=0.00-33.00 hrs, dt=0.05 hrs, 661 points

Runoff by SCS TR-20 method, UH=SCS

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

Subcatchment 1S: Post development

Runoff Area=21,810 sf 100.00% Impervious Runoff Depth=5.66"

Flow Length=130' Tc=1.0 min CN=98 Runoff=3.23 cfs 0.236 af

Pond 1P: Cultec Recharge 330 -Exfiltration

Peak Elev=374.77' Storage=4,121 cf Inflow=3.23 cfs 0.236 af

Outflow=0.20 cfs 0.236 af

Total Runoff Area = 0.501 ac Runoff Volume = 0.236 af Average Runoff Depth = 5.66"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.501 ac

Summary for Subcatchment 1S: Post development

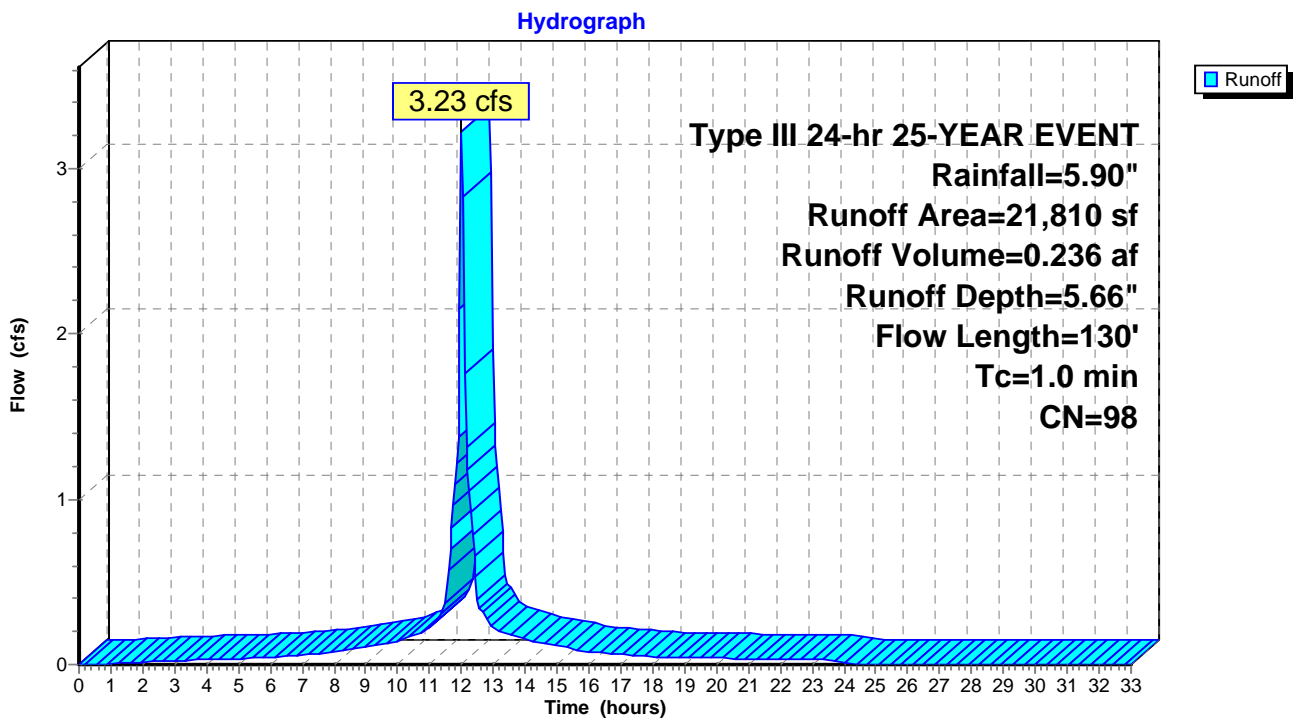
Runoff = 3.23 cfs @ 12.01 hrs, Volume= 0.236 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-YEAR EVENT Rainfall=5.90"

	Area (sf)	CN	Description
*	8,000	98	roof -Existing
*	8,000	98	roof -Exsiting
*	5,810	98	Roof Propose
	21,810	98	Weighted Average
	21,810		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	130		2.17		Direct Entry,

Subcatchment 1S: Post development



Hydrograph for Subcatchment 1S: Post development

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	5.90	5.66	0.00
0.50	0.03	0.00	0.00	27.00	5.90	5.66	0.00
1.00	0.06	0.00	0.00	27.50	5.90	5.66	0.00
1.50	0.09	0.01	0.01	28.00	5.90	5.66	0.00
2.00	0.12	0.02	0.01	28.50	5.90	5.66	0.00
2.50	0.15	0.04	0.02	29.00	5.90	5.66	0.00
3.00	0.18	0.06	0.02	29.50	5.90	5.66	0.00
3.50	0.22	0.08	0.03	30.00	5.90	5.66	0.00
4.00	0.25	0.11	0.03	30.50	5.90	5.66	0.00
4.50	0.29	0.14	0.03	31.00	5.90	5.66	0.00
5.00	0.33	0.17	0.04	31.50	5.90	5.66	0.00
5.50	0.38	0.21	0.04	32.00	5.90	5.66	0.00
6.00	0.42	0.25	0.04	32.50	5.90	5.66	0.00
6.50	0.48	0.30	0.05	33.00	5.90	5.66	0.00
7.00	0.53	0.35	0.06				
7.50	0.60	0.41	0.06				
8.00	0.67	0.48	0.07				
8.50	0.76	0.56	0.09				
9.00	0.86	0.66	0.11				
9.50	0.98	0.77	0.12				
10.00	1.12	0.90	0.14				
10.50	1.28	1.06	0.18				
11.00	1.48	1.26	0.21				
11.50	1.76	1.53	0.35				
12.00	2.95	2.72	3.19				
12.50	4.14	3.91	0.40				
13.00	4.42	4.19	0.22				
13.50	4.62	4.39	0.18				
14.00	4.78	4.55	0.15				
14.50	4.92	4.68	0.13				
15.00	5.04	4.80	0.11				
15.50	5.14	4.91	0.09				
16.00	5.23	4.99	0.08				
16.50	5.30	5.06	0.07				
17.00	5.37	5.13	0.06				
17.50	5.42	5.19	0.06				
18.00	5.48	5.24	0.05				
18.50	5.52	5.28	0.05				
19.00	5.57	5.33	0.04				
19.50	5.61	5.37	0.04				
20.00	5.65	5.41	0.04				
20.50	5.68	5.45	0.04				
21.00	5.72	5.48	0.04				
21.50	5.75	5.52	0.03				
22.00	5.79	5.55	0.03				
22.50	5.82	5.58	0.03				
23.00	5.85	5.61	0.03				
23.50	5.87	5.64	0.03				
24.00	5.90	5.66	0.02				
24.50	5.90	5.66	0.00				
25.00	5.90	5.66	0.00				
25.50	5.90	5.66	0.00				
26.00	5.90	5.66	0.00				

Summary for Pond 1P: Cultec Recharge 330 -Exfiltration

Inflow Area = 0.501 ac, 100.00% Impervious, Inflow Depth = 5.66" for 25-YEAR EVENT event
 Inflow = 3.23 cfs @ 12.01 hrs, Volume= 0.236 af
 Outflow = 0.20 cfs @ 13.31 hrs, Volume= 0.236 af, Atten= 94%, Lag= 77.7 min
 Primary = 0.20 cfs @ 13.31 hrs, Volume= 0.236 af

Routing by Stor-Ind method, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Peak Elev= 374.77' @ 13.31 hrs Surf.Area= 3,533 sf Storage= 4,121 cf

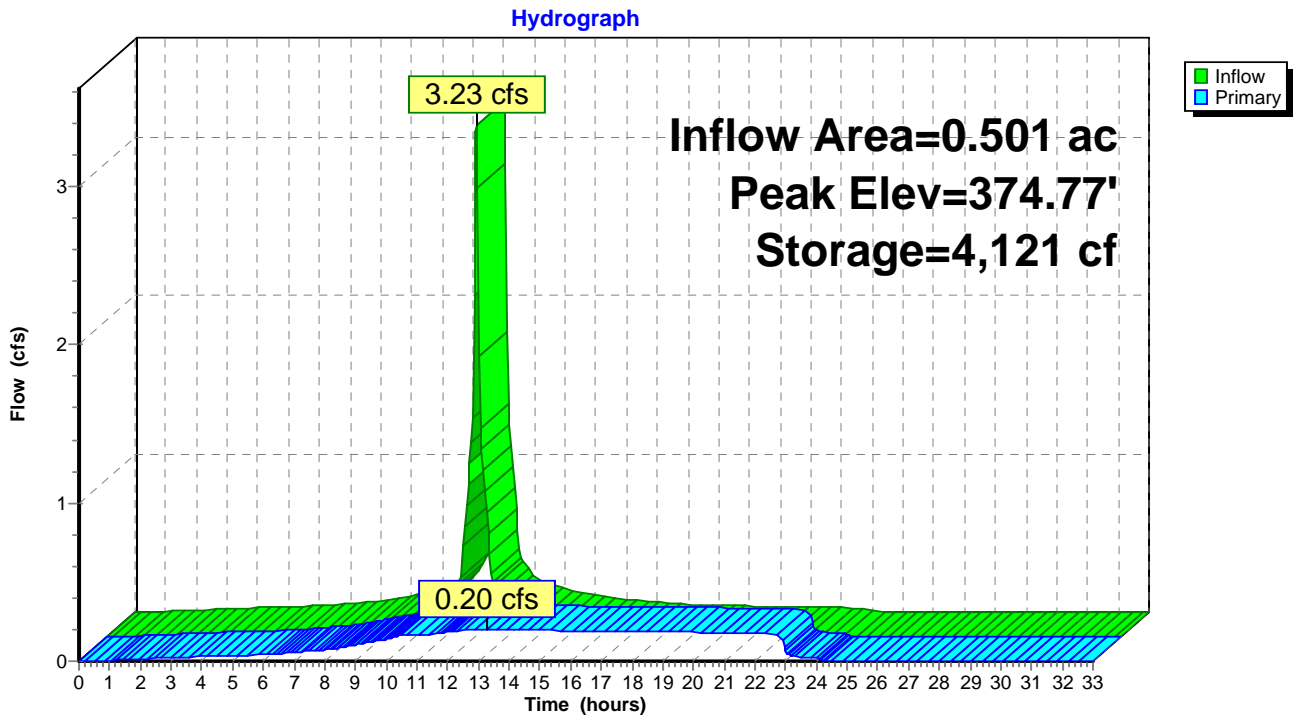
Plug-Flow detention time= 166.4 min calculated for 0.236 af (100% of inflow)
 Center-of-Mass det. time= 166.1 min (906.9 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1	372.63'	4,822 cf	66.00'W x 46.00'L x 4.40'H Prismatic Z=1.0 15,640 cf Overall - 3,586 cf Embedded = 12,055 cf x 40.0% Voids
#2	373.55'	3,586 cf	47.8"W x 30.0"H x 6.25'L Cultec R-330 x 77 Inside #1
		8,408 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	372.63'	2.400 in/hr Exfiltration over Surface area

Primary OutFlow Max=0.20 cfs @ 13.31 hrs HW=374.77' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.20 cfs)

Pond 1P: Cultec Recharge 330 -Exfiltration



Hydrograph for Pond 1P: Cultec Recharge 330 -Exfiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	372.63	0.00
1.00	0.00	1	372.63	0.00
2.00	0.01	4	372.63	0.01
3.00	0.02	7	372.64	0.02
4.00	0.03	9	372.64	0.03
5.00	0.04	11	372.64	0.04
6.00	0.04	13	372.64	0.04
7.00	0.06	18	372.64	0.06
8.00	0.07	23	372.65	0.07
9.00	0.11	33	372.66	0.10
10.00	0.14	44	372.67	0.14
11.00	0.21	100	372.71	0.17
12.00	3.19	1,977	373.89	0.18
13.00	0.22	4,109	374.76	0.20
14.00	0.15	4,060	374.74	0.20
15.00	0.11	3,821	374.64	0.19
16.00	0.08	3,466	374.50	0.19
17.00	0.06	3,029	374.32	0.19
18.00	0.05	2,548	374.12	0.19
19.00	0.04	2,041	373.91	0.18
20.00	0.04	1,527	373.70	0.18
21.00	0.04	1,010	373.44	0.18
22.00	0.03	496	373.03	0.17
23.00	0.03	20	372.65	0.06
24.00	0.02	8	372.64	0.02
25.00	0.00	0	372.63	0.00
26.00	0.00	0	372.63	0.00
27.00	0.00	0	372.63	0.00
28.00	0.00	0	372.63	0.00
29.00	0.00	0	372.63	0.00
30.00	0.00	0	372.63	0.00
31.00	0.00	0	372.63	0.00
32.00	0.00	0	372.63	0.00
33.00	0.00	0	372.63	0.00

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Type III 24-hr 100-YEAR EVENT Rainfall=8.35"

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Page 19

Time span=0.00-33.00 hrs, dt=0.05 hrs, 661 points

Runoff by SCS TR-20 method, UH=SCS

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

Subcatchment 1S: Post development

Runoff Area=21,810 sf 100.00% Impervious Runoff Depth=8.11"

Flow Length=130' Tc=1.0 min CN=98 Runoff=4.58 cfs 0.338 af

Pond 1P: Cultec Recharge 330 -Exfiltration

Peak Elev=375.98' Storage=6,736 cf Inflow=4.58 cfs 0.338 af

Outflow=0.21 cfs 0.338 af

Total Runoff Area = 0.501 ac Runoff Volume = 0.338 af Average Runoff Depth = 8.11"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.501 ac

Summary for Subcatchment 1S: Post development

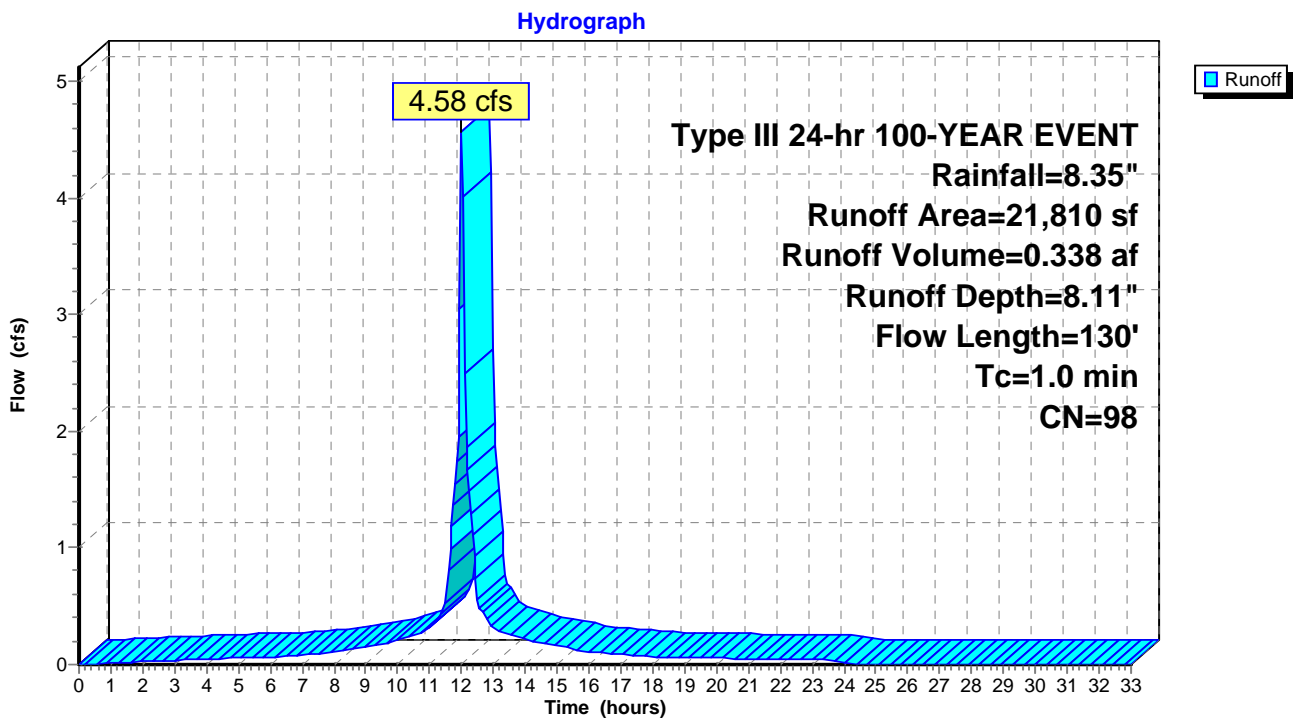
Runoff = 4.58 cfs @ 12.01 hrs, Volume= 0.338 af, Depth= 8.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-YEAR EVENT Rainfall=8.35"

	Area (sf)	CN	Description
*	8,000	98	roof -Existing
*	8,000	98	roof -Exsiting
*	5,810	98	Roof Propose
	21,810	98	Weighted Average
	21,810		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	130		2.17		Direct Entry,

Subcatchment 1S: Post development



Hydrograph for Subcatchment 1S: Post development

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	8.35	8.11	0.00
0.50	0.04	0.00	0.00	27.00	8.35	8.11	0.00
1.00	0.08	0.01	0.01	27.50	8.35	8.11	0.00
1.50	0.13	0.02	0.02	28.00	8.35	8.11	0.00
2.00	0.17	0.05	0.03	28.50	8.35	8.11	0.00
2.50	0.21	0.08	0.03	29.00	8.35	8.11	0.00
3.00	0.26	0.11	0.04	29.50	8.35	8.11	0.00
3.50	0.31	0.15	0.04	30.00	8.35	8.11	0.00
4.00	0.36	0.19	0.05	30.50	8.35	8.11	0.00
4.50	0.41	0.24	0.05	31.00	8.35	8.11	0.00
5.00	0.47	0.29	0.05	31.50	8.35	8.11	0.00
5.50	0.54	0.35	0.06	32.00	8.35	8.11	0.00
6.00	0.60	0.41	0.06	32.50	8.35	8.11	0.00
6.50	0.67	0.48	0.07	33.00	8.35	8.11	0.00
7.00	0.76	0.56	0.08				
7.50	0.85	0.64	0.09				
8.00	0.95	0.74	0.11				
8.50	1.07	0.86	0.13				
9.00	1.22	1.00	0.15				
9.50	1.39	1.17	0.18				
10.00	1.58	1.36	0.20				
10.50	1.81	1.58	0.25				
11.00	2.09	1.86	0.30				
11.50	2.49	2.26	0.50				
12.00	4.17	3.94	4.52				
12.50	5.86	5.62	0.56				
13.00	6.26	6.02	0.31				
13.50	6.54	6.30	0.26				
14.00	6.77	6.53	0.21				
14.50	6.96	6.73	0.18				
15.00	7.13	6.89	0.16				
15.50	7.28	7.04	0.13				
16.00	7.40	7.16	0.11				
16.50	7.50	7.26	0.10				
17.00	7.59	7.35	0.09				
17.50	7.68	7.44	0.08				
18.00	7.75	7.51	0.07				
18.50	7.81	7.57	0.06				
19.00	7.88	7.64	0.06				
19.50	7.94	7.70	0.06				
20.00	7.99	7.75	0.05				
20.50	8.04	7.80	0.05				
21.00	8.09	7.85	0.05				
21.50	8.14	7.90	0.05				
22.00	8.19	7.95	0.05				
22.50	8.23	7.99	0.04				
23.00	8.27	8.03	0.04				
23.50	8.31	8.07	0.04				
24.00	8.35	8.11	0.03				
24.50	8.35	8.11	0.00				
25.00	8.35	8.11	0.00				
25.50	8.35	8.11	0.00				
26.00	8.35	8.11	0.00				

Summary for Pond 1P: Cultec Recharge 330 -Exfiltration

Inflow Area = 0.501 ac, 100.00% Impervious, Inflow Depth = 8.11" for 100-YEAR EVENT event
 Inflow = 4.58 cfs @ 12.01 hrs, Volume= 0.338 af
 Outflow = 0.21 cfs @ 13.95 hrs, Volume= 0.338 af, Atten= 95%, Lag= 116.4 min
 Primary = 0.21 cfs @ 13.95 hrs, Volume= 0.338 af

Routing by Stor-Ind method, Time Span= 0.00-33.00 hrs, dt= 0.05 hrs
 Peak Elev= 375.98' @ 13.95 hrs Surf.Area= 3,831 sf Storage= 6,736 cf

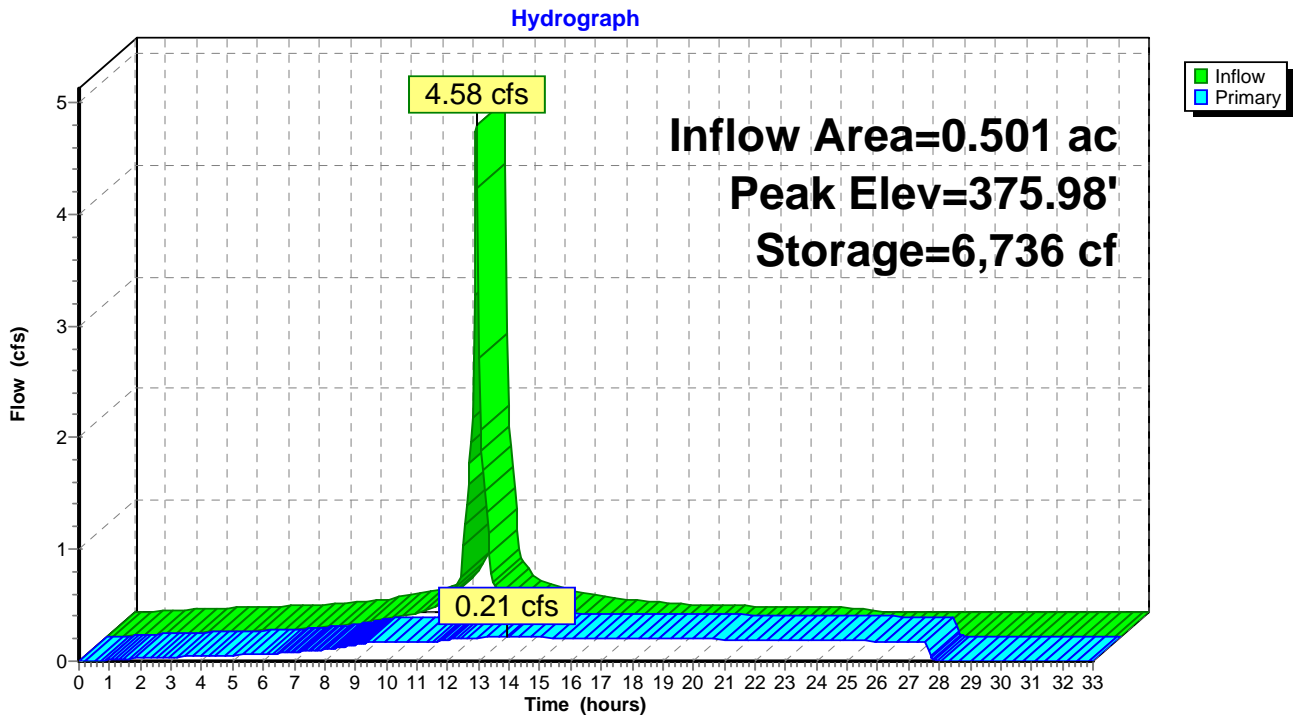
Plug-Flow detention time= 273.7 min calculated for 0.338 af (100% of inflow)
 Center-of-Mass det. time= 273.6 min (1,009.7 - 736.1)

Volume	Invert	Avail.Storage	Storage Description
#1	372.63'	4,822 cf	66.00'W x 46.00'L x 4.40'H Prismatic Z=1.0 15,640 cf Overall - 3,586 cf Embedded = 12,055 cf x 40.0% Voids
#2	373.55'	3,586 cf	47.8"W x 30.0"H x 6.25'L Cultec R-330 x 77 Inside #1
		8,408 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	372.63'	2.400 in/hr Exfiltration over Surface area

Primary OutFlow Max=0.21 cfs @ 13.95 hrs HW=375.98' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.21 cfs)

Pond 1P: Cultec Recharge 330 -Exfiltration



Hydrograph for Pond 1P: Cultec Recharge 330 -Exfiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	372.63	0.00
1.00	0.01	4	372.63	0.01
2.00	0.03	8	372.64	0.03
3.00	0.04	11	372.64	0.04
4.00	0.05	14	372.64	0.05
5.00	0.05	17	372.64	0.05
6.00	0.06	20	372.65	0.06
7.00	0.08	26	372.65	0.08
8.00	0.11	33	372.66	0.10
9.00	0.15	47	372.67	0.15
10.00	0.20	94	372.71	0.17
11.00	0.30	390	372.95	0.17
12.00	4.52	3,303	374.43	0.19
13.00	0.31	6,569	375.88	0.21
14.00	0.21	6,735	375.98	0.21
15.00	0.16	6,629	375.91	0.21
16.00	0.11	6,353	375.76	0.21
17.00	0.09	5,960	375.57	0.21
18.00	0.07	5,501	375.36	0.20
19.00	0.06	5,003	375.14	0.20
20.00	0.05	4,493	374.92	0.20
21.00	0.05	3,973	374.70	0.20
22.00	0.05	3,446	374.49	0.19
23.00	0.04	2,913	374.27	0.19
24.00	0.03	2,373	374.05	0.19
25.00	0.00	1,709	373.78	0.18
26.00	0.00	1,056	373.47	0.18
27.00	0.00	422	372.97	0.17
28.00	0.00	0	372.63	0.00
29.00	0.00	0	372.63	0.00
30.00	0.00	0	372.63	0.00
31.00	0.00	0	372.63	0.00
32.00	0.00	0	372.63	0.00
33.00	0.00	0	372.63	0.00