CARMINAWOOD DESIGN

Engineer's Report

for

Proposed Warehouse

North America Drive West Seneca, Erie County, New York

Prepared for

Sonwil

2732 Transit Road West Seneca, NY 14224

Prepared by

Carmina Wood Design

487 Main Street, Suite 500 Buffalo, NY 14203

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September 2022



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Section 1 - Location & Description

This project is a development of approximately 31 Acres of a 60 acre site located at the east end of North America Drive. Construction will consist of the 333,852 sf warehouse building and associated vehicle and trailer parking. A rail spur is also proposed as part of this project. The proposed site development area to be disturbed for this project is approximately 32 acres.

Section 2 - Water Service

Water service for the project will be tapped off the existing 12" ECWA main which runs through the site. A portion of this main will be relocated to avoid the proposed building. The proposed service will be a 10" service split to a 4" domestic service and 10" fire service. These services will continue into a proposed exterior insulated hot box enclosure. Inside the enclosure the 4" domestic service and 8" fire service will have a meter and RPZ. Heat will be provided in the enclosure to prevent freezing. Drainage due to testing or failure of the RPZ will be via gravity to the exterior grade surrounding. The owner will be responsible for keeping the drainage ports clear of snow and debris. Water inside the building will be used for typical domestic uses.

The building will be sprinklered, and private hydrants located around the site to ensure fire hose coverage not exceeding 600'. Public hydrants also exist along the public 12" ECWA main which runs through the site.

Domestic Summary:

Peak Operating Demand: 2.25 gpm

Water Main: 12" on North America Drive

Static Pressure:62 psiFriction Loss:0.0 psiLoss through meter/RPZ:13.0 psiElevation Loss:1.95 psiPressure after RPZ:47.05 psi

Repairs to all devices will be made during off hours. The site is not located within a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

The site is not served by a public sanitary sewer main. To accommodate the proposed development the ECSD No. 1 existing public sewer main located in the northwest corner of the site will be extended to the development area. This extension will be in an easement to ECSD No. 1. From this extension, a private 8" sanitary main will be run south, along the west face of the building to pick up the 6" laterals which exit the building. The new public and private 8" mains will be SDR-35 PVC at a minimum slope of 0.4%. The 6" building laterals will be SDR-35 PVC at a minimum slope of 2%. The flow requirement determination has been outlined in the attached appendices:

Design Parameters

Total: 1,800 gpd

The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Section 4 - Storm Sewer Service

The existing site currently sheet drains to the existing creek on the east portion of the site and off site to the property to the north. The proposed site will continue to drain to both points following development.

The proposed onsite storm sewer system for this project consists of smooth interior and HDPE pipes connected by a series of catch basins to include bioretention areas and a dry detention basin located on the east portion of the site. Storm water runoff will be conveyed through the pipe network and bioretention areas and ultimately discharge to the existing creek on the east side of the site. A portion of the north and far west parts of the site will continue to sheet drain to the property to the north. This discharge will be less than existing.

The bioretention areas on site is designed to provide the minimum required runoff reduction volume (RRv) for the 32 acre project area. The soils in the vicinity of the bioretention area are mainly USDA hydrologic group 'C' and 'D' therefore the system will be installed with underdrains per NYSDEC requirements. The bioretention areas will consist of 6" perforated HDPE underdrains in drainage gravel, followed by filter fabric and then finally 18" minimum of bioretention soil. Overflow catch basins will be installed to allow 6" maximum ponding for RRv treatment. Stormwater detention is required per NYSDEC standards and specifications. The proposed storm water management area outlet structure is designed to accommodate the 1-year through 100-year storm events controlling the offsite runoff rate to less than the existing runoff rates.

Runoff reduction volume (RRv), water quality volume (WQv) and stormwater volume attenuation for the site is designed in accordance with Chapter 4 of the NYSDEC Stormwater design manual. The bioretention areas will be provided as a "green infrastructure" practice to provide runoff reduction to meet the Chapter 4 requirements for the currently undeveloped areas. Runoff from the site was looked at as a whole for the calculation of volume attenuation requirements. The amount of impervious cover post-development is 18.0 acres. The proposed dry detention basin is designed to accommodate the 1-year through 100-year storm events controlling the offsite runoff rate to less than the existing runoff rates.

The NYSDEC Stormwater Management Design Manual requires a five-step process for Stormwater Management Planning as outlined in Chapter 3. The five steps include:

- 1. Site planning to preserve natural features and reduce impervious cover.
- The entire portion of the site east of the creek will remain undisturbed.
- 2. Calculation of Water Quality Volume (WQv=RRv) for site.
- See Stormwater Drainage Calculations.
- 3. Incorporation of Green Infrastructure techniques and standard SMPs with Runoff Reduction Volume (RRv) capacity.
- A bioretention area was incorporated into the site design to provide required RRv for the development. See Stormwater Drainage Calculations.
- 4. Use of standard SMPs where applicable, to treat the portion of water quality volume not addressed by green infrastructure techniques and standard SMPs with RRv capacity.
- Since the provided RRv is less than the WQv required, use of standard SMPs to treat the remaining WQv is applicable.
- 5. Design of volume and peak rate control practices where required.
- See Stormwater Drainage Calculations.

The NYSDEC Stormwater Management Design Manual requires (5) five different criteria be considered when designing a stormwater management system. Those criteria are Water Quality, Runoff Reduction Volume, Channel Protection, Overbank Flooding and Extreme Storm Protection. Below is a summary of each item and how it is incorporated into this project.

Proposed Sonwil Warehouse 7/29/2022 3 of 4

Water Quality & Runoff Reduction Volume:

The NYSDEC requires reduction of the total water quality volume by green infrastructure techniques and SMP's to replicate pre-development hydrology. A bioretention area was incorporated into the site layout to provide the minimum required RRv for contributing WQv runoff area for the development. The bioretention area will provide 17,280 cf RRv. The minimum RRv required is 16,691 cf. The bioretention will also treat 47,334 cf of WQv. The required WQv = 64,614 cf. The sum of the WQv treated and the RRv is equal to the required WQv, therefore the practice is acceptable.

Channel Protection:

The NYSDEC requires that 24-Hour extended detention be provided for the proposed 1-year storm event. A volume of 26,743 cf is accommodated in the detention basin at elevation 674.69.

Overbank Flooding:

The NYSDEC requires that the 10-year proposed storm event be attenuated with detention and that the outlet be restricted to the 10-year existing storm event. A volume of 96,797 cf is accommodated in the detention basin at elevation 676.24.

Extreme Storm Protection:

The NYSDEC requires that the 100-year proposed storm event be attenuated with detention and that the outlet be restricted to the 100-year existing storm event. A volume of 226,706 cf is accommodated in the detention basin at elevation 678.63.

Detention Basin Summary:

Top of basin elevation = 680.00 Bottom of basin elevation = Varies from 671.20 to 670.80 at the outlet Max. pond storage volume = 311,588 cf @ 680.00

Water Quality Summary:

WQv req'd = 64,614 cf (1.648 ac-ft) RRv min. req'd = 16,691 cf (0.38 ac-ft) RRv provided - bioretention area = 17,280 cf (0.40 ac-ft) WQv provided - bioretention area = 47,334 cf (1.09 ac-ft) Total RRv + WQv provided = 17,280 cf + 47,334 cf = 64,614 cf (1.648 ac-ft) Proposed Sonwil Warehouse 7/29/2022 4 of 4

Bioretention: 1

100% of minimum post-development Runoff Reduction volume (RRv)

Area: 32,400 sf total Bottom Elevation: 674.00

Design Criteria:

Storm pipes:

10-year storm

Detention:

Comparison of the existing 1-year vs. the proposed 1-year runoff Comparison of the existing 10-year vs. the proposed 10-year runoff Comparison of the existing 100-year vs. the proposed 100-year runoff

Runoff Summary

Event	Ex. Runoff (cfs)*	Pro. Runoff (basin+runoff to north) (cfs)**	Result (cfs)
1-year	7.25	2.73 + 4.60 = 7.33	+0.08
10-year	31.65	3.25 + 11.77 = 15.02	-16.63
100-year	84.12	3.93 + 24.65 = 28.58	-55.54

^{*} Total runoff from the site

^{**} See attached storm drainage calculations for additional information.

Attachment A Sanitary Sewer and Water Demand Calculations

CARMINA WOOD DESIGN

487 MAIN STREET, SUITE 500 BUFFALO, NEW YORK, 14203 (716) 842-3165 FAX (716) 842-0263 Project No.:

22.117

Date:

9/12/2022

Project Name: Project Address: Subject: Sonwil Warehouse North America Drive

Sanitary Sewer & Water Demand Calcs

Sheet:

of 2

Water Demand Calculations (domestic):

Delivery Building

*use 1.8 peaking factor and assume a 24 hour day (facility runs (3) 8 hour shifts)

1,800 gpm x
$$1 \frac{day}{24} hr$$
 x $1 \frac{hr}{60} min = 1.25 gpm$

Headlosses:

 $Q_{peak} = 2.25 \text{ gpm}$

Pipe = 4 inch PVC C = 140

Length = 300 LF (approx. distance from RPZ to building connection)

$$H_L = \frac{10.44 L Q^{1.85}}{C^{1.85} D^{4.866}} = \frac{10.44(1280)(11.25)^{1.85}}{(140)^{1.85} (4)^{4.866}} = 0.00 \text{ ft} = 0.00 \text{ psi}$$

 Δ elev = 4.5 ft = 1.95 psi

Loss through meter = 1 psi

Loss through RPZ = 12 psi Total Losses = 14.95 psi

Static Pressure = 62 psi (per ECWA - residual pressure 41 psi)

Residual Pressure Following RPZ = 62 - 14.95 = 47.05 psi (available after rpz & meter)

CARMINA WOOD DESIGN

487 MAIN STREET, SUITE 500 BUFFALO, NEW YORK, 14203 (716) 842-3165

Peaking Factor =

Project No.:

22.117

Date:

9/12/2022

Project Name: Project Address: Sonwil Warehouse North America Drive

(716) 842-3165 FAX (716) 842-0263	B		Subje Shee	ect: S	anitary Sewer & 1 of	Water Demand Calcs 2	
Sanitary Sewage Demand Calculation	ns:				-		
Delivery Building							
15 gal/d/emp x	120 en	np =	1,800 gpd	***	use 15 gallons	per day per employe	e
Total Site Sanitary Demand:			1,800 gpd				
Find Peak Sanitary Demand:							
Peaking Factor based on Populat	tion:					4-4-4-4	
The state of the s	1,800 gpd	/ 100) apcd =	18 per capit	a		

Total demand: 1,800 gpd / 100 gpcd = 18 per capita

Population (P) = 18 people

Peaking Factor: $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

where is in thousand:

Peak Sanitary Demand = 1,800 x 4.39 = 7,896 gpd = 0.008 MGD = 0.012 cfs

4.39

Hydrant FLow Test

Print Date: 8/25/2022

Residual Hydrant: K13C23 Test Date/Time: 8/24/2022 17:18

Location.... : EASEMENT

7TH HYD W/O LEIN RD

TOWN OF WEST SENECA

Size of Main/Branch: 12"/6" Fire District: 68023 FIRE DIST 4 Water District: 601 WEST SENECA #1

Performed By: DWP/CDB

Comments: HYDRANT FLOW TEST REQUESTED BY CHRIS WOOD, CARMINA WOOD

DESIGN

EMAIL: CWOOD@CARMINAWOODDESIGN.COM

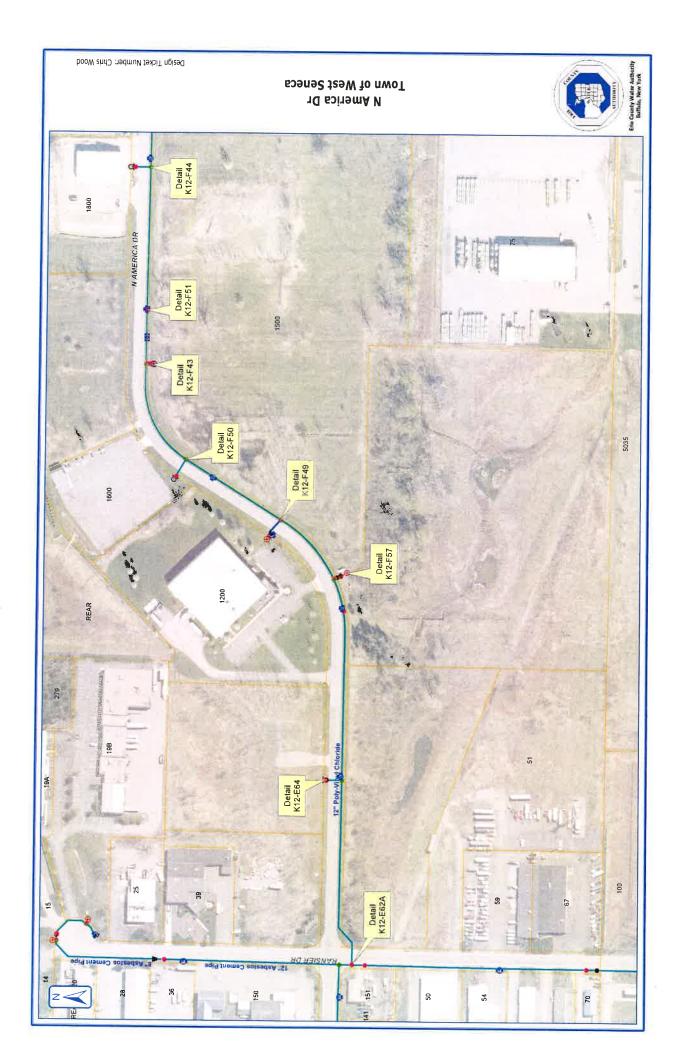
CW #72013

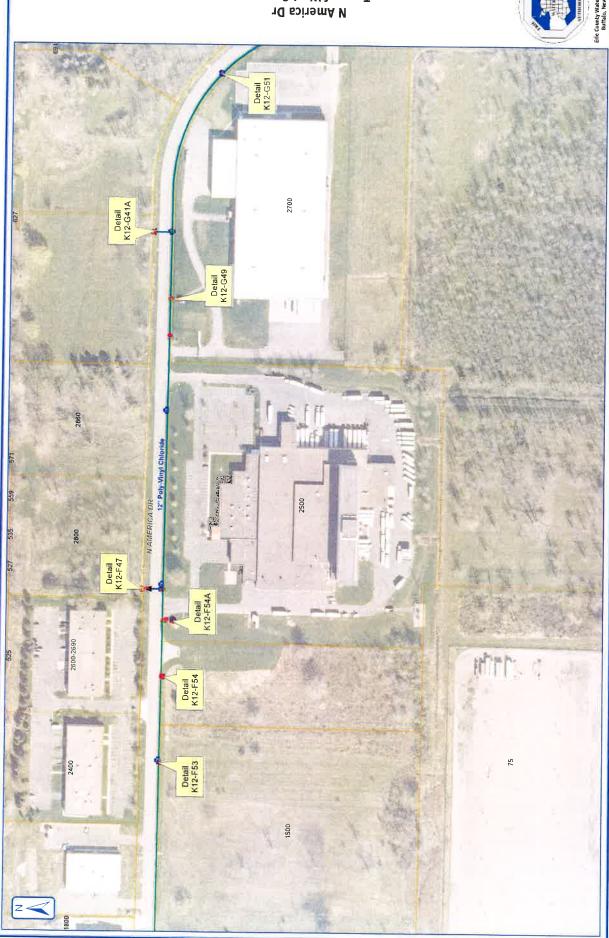
Dischrge Coef: 090 Elvtn Usgs(ft): Static(psi): 62 Residual(psi): 41 Required Residual Pressure(psi): 20
Gallons Used..: 4,020 Total Flow(gpm): 1,342 Flow at Reqd Resid Pressure: 1,9

Total Flow(gpm): 1,342 Flow at Reqd Resid Pressure: 1,951

Flow Hydrants:

Flow Hyd Location K13 D17 EASEMENT





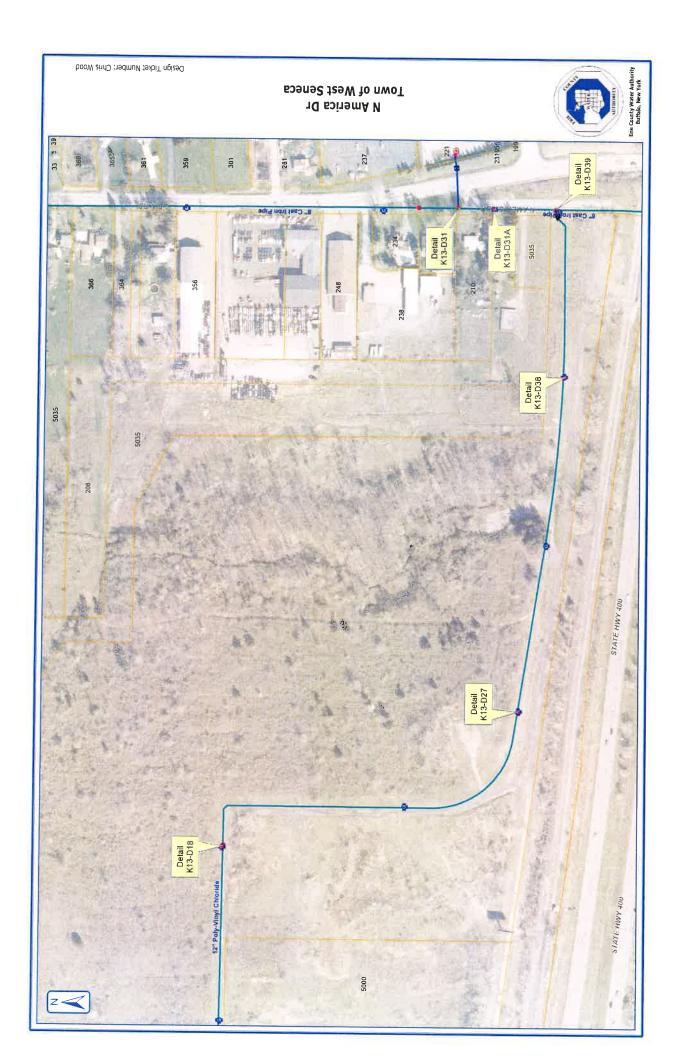




N America Dr Town of West Seneca







Attachment B Storm System Drainage Calculations

Existing Storm Calculations



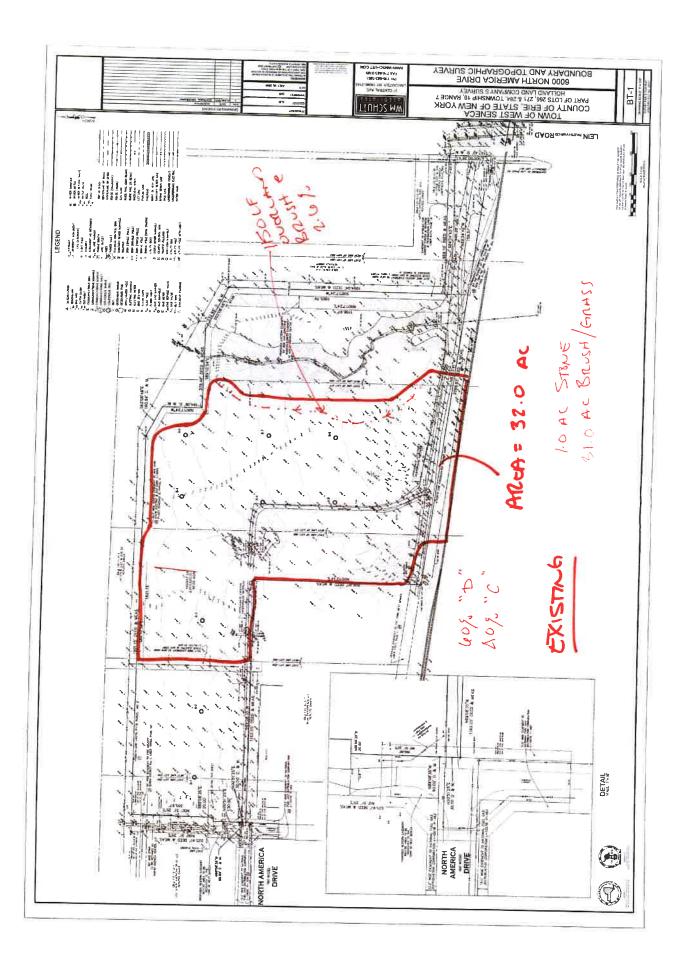
Existing











Events for Subcatchment 1S: Existing

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-Year	1.86	7.25	0.839	0.31
2-Year	2.20	12.69	1.288	0.48
5-Year	2.70	22.12	2.054	0.77
10-Year	3.15	31.65	2.827	1.06
25-Year	3.87	48.31	4.186	1.57
50-Year	4.52	64.42	5.510	2.07
100-Year	5.28	84.12	7.142	2.68

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	1.86	2
2	2-Year	Type II 24-hr		Default	24.00	1	2.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	2.70	2
4	10-Year	Type II 24-hr		Default	24.00	1	3.15	2
5	25-Year	Type II 24-hr		Default	24.00	1	3.87	2
6	50-Year	Type II 24-hr		Default	24.00	1	4.52	2
7	100-Year	Type II 24-hr		Default	24.00	1	5.28	2

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Area Listing (selected nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
12.400	70	Brush, Fair, HSG C (1S)
18.600	77	Brush, Fair, HSG D (1S)
0.400	96	Gravel surface, HSG C (1S)
0.600	96	Gravel surface, HSG D (1S)

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
12.800	HSG C	1S
19.200	HSG D	1S
0.000	Other	

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Ground Covers (selected nodes)

HSG-A	HSG-B	HSG-C	HSG-D	Other (acres)	Total	Ground	Subcatchment
(acres)	(acres)	(acres)	(acres)		(acres)	Cover	Numbers
0.000	0.000	12.400	18.600	0.000	31.000	Brush, Fair	1S
0.000	0.000	0.400	0.600	0.000	1.000	Gravel surface	1S

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Summary for Subcatchment 1S: Existing

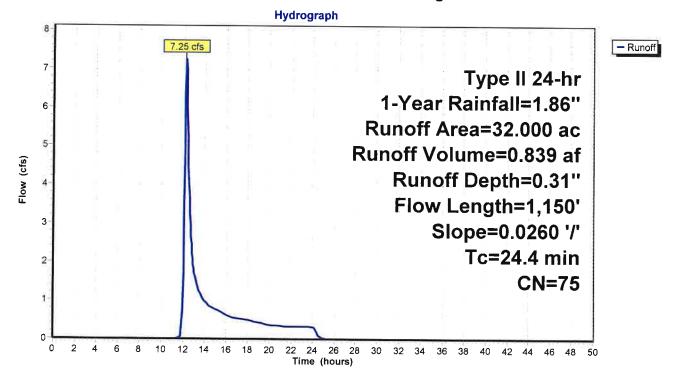
Runoff = 7.25 cfs @ 12.23 hrs, Volume= Routed to nonexistent node 17P

0.839 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 1-Year Rainfall=1.86"

Area	(ac)	CN Des	scription		
	400		sh, Fair, H	SG C	
	600		sh, Fair, H		
	600		ivel surface		
	400		ivel surface	,	
	000		ighted Ave		
	000		0.00% Perv		
				1040 / 1104	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)		(cfs)	
8.9	100	0.0260	0.19		Sheet Flow, BRUSH
					Range n= 0.130 P2= 2.50"
15.5	1,050	0.0260	1.13		Shallow Concentrated Flow, BRUSH
					Short Grass Pasture Kv= 7.0 fps
24 4	1 150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00	26.00	1.86	0.31	0.00
0.50	0.01	0.00	0.00	26.50	1.86	0.31	0.00
1.00	0.02	0.00	0.00	27.00	1.86	0.31	0.00
1.50 2.00	0.03 0.04	0.00 0.00	0.00 0.00	27.50 28.00	1.86 1.86	0.31 0.31	0.00 0.00
2.50	0.04	0.00	0.00	28.50	1.86	0.31	0.00
3.00	0.06	0.00	0.00	29.00	1.86	0.31	0.00
3.50	0.08	0.00	0.00	29.50	1.86	0.31	0.00
4.00	0.09	0.00	0.00	30.00	1.86	0.31	0.00
4.50	0.10	0.00	0.00	30.50	1.86	0.31	0.00
5.00 5.50	0.12	0.00	0.00	31.00	1.86	0.31	0.00
6.00	0.13 0.15	0.00 0.00	0.00 0.00	31.50 32.00	1.86 1.86	0.31 0.31	0.00 0.00
6.50	0.17	0.00	0.00	32.50	1.86	0.31	0.00
7.00	0.18	0.00	0.00	33.00	1.86	0.31	0.00
7.50	0.20	0.00	0.00	33.50	1.86	0.31	0.00
8.00	0.22	0.00	0.00	34.00	1.86	0.31	0.00
8.50	0.25	0.00	0.00	34.50	1.86	0.31	0.00
9.00 9.50	0.27 0.30	0.00 0.00	0.00 0.00	35.00 35.50	1.86 1.86	0.31 0.31	0.00 0.00
10.00	0.34	0.00	0.00	36.00	1.86	0.31	0.00
10.50	0.38	0.00	0.00	36.50	1.86	0.31	0.00
11.00	0.44	0.00	0.00	37.00	1.86	0.31	0.00
11.50	0.53	0.00	0.00	37.50	1.86	0.31	0.00
12.00 12.50	1.23 1.37	0.08	1.78	38.00	1.86	0.31	0.00
13.00	1.37	0.12 0.14	3.97 1.71	38.50 39.00	1.86 1.86	0.31 0.31	0.00 0.00
13.50	1.49	0.14	1.20	39.50	1.86	0.31	0.00
14.00	1.53	0.18	0.96	40.00	1.86	0.31	0.00
14.50	1.56	0.19	0.81	40.50	1.86	0.31	0.00
15.00	1.59	0.20	0.74	41.00	1.86	0.31	0.00
15.50 16.00	1.61 1.64	0.21 0.22	0.68	41.50	1.86	0.31	0.00
16.50	1.64	0.22	0.61 0.55	42.00 42.50	1.86 1.86	0.31 0.31	0.00 0.00
17.00	1.68	0.24	0.52	43.00	1.86	0.31	0.00
17.50	1.70	0.24	0.50	43.50	1.86	0.31	0.00
18.00	1.71	0.25	0.47	44.00	1.86	0.31	0.00
18.50	1.73	0.26	0.45	44.50	1.86	0.31	0.00
19.00 19.50	1.74	0.26	0.42	45.00	1.86	0.31	0.00
20.00	1.76 1.77	0.27 0.27	0.39 0.36	45.50 46.00	1.86 1.86	0.31 0.31	0.00 0.00
20.50	1.78	0.27	0.34	46.50	1.86	0.31	0.00
21.00	1.79	0.29	0.33	47.00	1.86	0.31	0.00
21.50	1.81	0.29	0.33	47.50	1.86	0.31	0.00
22.00	1.82	0.30	0.33	48.00	1.86	0.31	0.00
22.50	1.83	0.30	0.32	48.50	1.86	0.31	0.00
23.00 23.50	1.84 1.85	0.31 0.31	0.32 0.31	49.00 49.50	1.86 1.86	0.31 0.31	0.00 0.00
24.00	1.86	0.31	0.31	50.00	1.86	0.31	0.00
24.50	1.86	0.31	0.06	22.00		5.51	5.55
25.00	1.86	0.31	0.00				
25.50	1.86	0.31	0.00				
			į,				

Summary for Subcatchment 1S: Existing

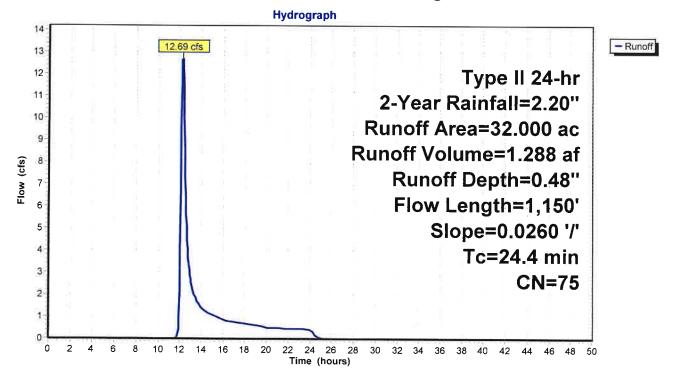
Runoff 12.69 cfs @ 12.21 hrs, Volume= 1.288 af, Depth= 0.48"

Routed to nonexistent node 17P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 2-Year Rainfall=2.20"

	Area	(ac) (N Des	cription		
	12.	400	70 Brus	sh, Fair, H	SG C	
	18.	.600	77 Brus	sh, Fair, HS	SG D	
	0.	600	96 Grav	vel surface	, HSG D	
-	0.	400	96 Grav	vel surface	, HSG C	
			75 Wei	ghted Aver	rage	
	32.	000	100.	00% Pervi	ous Area	
<u></u>	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	8.9	100	0.0260	0.19		Sheet Flow, BRUSH
=	15.5	1,050	0.0260	1.13		Range n= 0.130 P2= 2.50" Shallow Concentrated Flow, BRUSH Short Grass Pasture Kv= 7.0 fps
	24 4	1.150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

							_
Time (hours)	Precip. (inches)	Excess	Runoff	Time	Precip.	Excess	Runoff
0.00	0.00	(inches) 0.00	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.50	0.00	0.00	0.00	26.00	2.20	0.48	0.00
1.00	0.02	0.00	0.00 0.00	26.50	2.20	0.48	0.00
1.50	0.04	0.00	0.00	27.00 27.50	2.20 2.20	0.48	0.00
2.00	0.05	0.00	0.00	28.00	2.20	0.48	0.00
2.50	0.06	0.00	0.00	28.50	2.20	0.48 0.48	0.00
3.00	0.08	0.00	0.00	29.00	2.20	0.48	0.00 0.00
3.50	0.09	0.00	0.00	29.50	2.20	0.48	0.00
4.00	0.11	0.00	0.00	30.00	2.20	0.48	0.00
4.50	0.12	0.00	0.00	30.50	2.20	0.48	0.00
5.00	0.14	0.00	0.00	31.00	2.20	0.48	0.00
5.50	0.16	0.00	0.00	31.50	2.20	0.48	0.00
6.00	0.18	0.00	0.00	32.00	2.20	0.48	0.00
6.50	0.20	0.00	0.00	32.50	2.20	0.48	0.00
7.00	0.22	0.00	0.00	33.00	2.20	0.48	0.00
7.50 8.00	0.24 0.26	0.00	0.00	33.50	2.20	0.48	0.00
8.50	0.26	0.00 0.00	0.00	34.00	2.20	0.48	0.00
9.00	0.29	0.00	0.00 0.00	34.50 35.00	2.20	0.48	0.00
9.50	0.36	0.00	0.00	35.50	2.20 2.20	0.48 0.48	0.00
10.00	0.40	0.00	0.00	36.00	2.20	0.48	0.00 0.00
10.50	0.45	0.00	0.00	36.50	2.20	0.48	0.00
11.00	0.52	0.00	0.00	37.00	2.20	0.48	0.00
11.50	0.62	0.00	0.00	37.50	2.20	0.48	0.00
12.00	1.46	0.15	4.27	38.00	2.20	0.48	0.00
12.50	1.62	0.21	6.33	38.50	2.20	0.48	0.00
13.00	1.70	0.24	2.53	39.00	2.20	0.48	0.00
13.50	1.76	0.27	1.74	39.50	2.20	0.48	0.00
14.00 14.50	1.80 1.84	0.29 0.31	1.38	40.00	2.20	0.48	0.00
15.00	1.88	0.31	1.16 1.06	40.50	2.20	0.48	0.00
15.50	1.91	0.32	0.96	41.00 41.50	2.20	0.48	0.00
16.00	1.94	0.35	0.86	42.00	2.20 2.20	0.48 0.48	0.00
16.50	1.96	0.36	0.77	42.50	2.20	0.48	0.00 0.00
17.00	1.98	0.37	0.73	43.00	2.20	0.48	0.00
17.50	2.01	0.38	0.70	43.50	2.20	0.48	0.00
18.00	2.03	0.39	0.66	44.00	2.20	0.48	0.00
18.50	2.05	0.40	0.62	44.50	2.20	0.48	0.00
19.00	2.06	0.41	0.58	45.00	2.20	0.48	0.00
19.50	2.08	0.42	0.54	45.50	2.20	0.48	0.00
20.00	2.09	0.43	0.50	46.00	2.20	0.48	0.00
20.50 21.00	2.11 2.12	0.44	0.47	46.50	2.20	0.48	0.00
21.50	2.12	0.44 0.45	0.46	47.00	2.20	0.48	0.00
22.00	2.14	0.46	0.46 0.45	47.50	2.20	0.48	0.00
22.50	2.16	0.46	0.45	48.00 48.50	2.20 2.20	0.48	0.00
23.00	2.18	0.47	0.44	49.00	2.20	0.48 0.48	0.00 0.00
23.50	2.19	0.48	0.43	49.50	2.20	0.48	0.00
24.00	2.20	0.48	0.42	50.00	2.20	0.48	0.00
24.50	2.20	0.48	0.08	- 3.00	20	5. ∓0	5.00
25.00	2.20	0.48	0.00				
25.50	2.20	0.48	0.00				

Summary for Subcatchment 1S: Existing

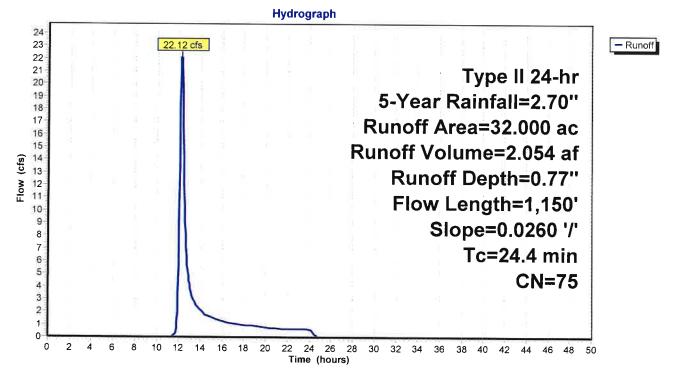
Runoff = 22.12 cfs @ 12.20 hrs, Volume= Routed to nonexistent node 17P

2.054 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 5-Year Rainfall=2.70"

	Area	(ac) (N Des	cription		
12.400 70 Brush, Fair, HSG C						
	18.	600	77 Brus	sh, Fair, H	SG D	
	0.	600	96 Grav	vel surface	e, HSG D	
-	0	400	96 Grav	vel surface	, HSG C	
	32.	000	75 Wei	ghted Ave	rage	
	32.	000	100.	.00% Pervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	8.9	100	0.0260	0.19		Sheet Flow, BRUSH
						Range n= 0.130 P2= 2.50"
	15.5	1,050	0.0260	1.13		Shallow Concentrated Flow, BRUSH
						Short Grass Pasture Kv= 7.0 fps
	24.4	1,150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

Time Precip. Excess Runoff (hours) (inches) (inches) (inches) (cfs) (26s)
0.00 0.00 0.00 0.00 26.00 2.70 0.77 0.00 0.50 0.01 0.00 0.00 26.50 2.70 0.77 0.00 1.50 0.04 0.00 0.00 27.50 2.70 0.77 0.00 2.00 0.06 0.00 0.00 27.50 2.70 0.77 0.00 2.50 0.08 0.00 0.00 28.50 2.70 0.77 0.00 3.00 0.09 0.00 0.00 28.50 2.70 0.77 0.00 3.50 0.11 0.00 0.00 29.50 2.70 0.77 0.00 4.50 0.13 0.00 0.00 30.00 2.70 0.77 0.00 4.50 0.15 0.00 0.00 31.50 2.70 0.77 0.00 5.50 0.19 0.00 0.00 31.50 2.70 0.77 0.00 6.50 0.24 0.00 <
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12.00 1.79 0.28 9.38 38.00 2.70 0.77 0.00 12.50 1.98 0.37 10.24 38.50 2.70 0.77 0.00 13.00 2.08 0.42 3.85 39.00 2.70 0.77 0.00 13.50 2.16 0.46 2.60 39.50 2.70 0.77 0.00 14.00 2.21 0.49 2.05 40.00 2.70 0.77 0.00 14.50 2.26 0.52 1.71 40.50 2.70 0.77 0.00 15.00 2.30 0.54 1.55 41.00 2.70 0.77 0.00 15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 18.00 2.49 0.64
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13.50 2.16 0.46 2.60 39.50 2.70 0.77 0.00 14.00 2.21 0.49 2.05 40.00 2.70 0.77 0.00 14.50 2.26 0.52 1.71 40.50 2.70 0.77 0.00 15.00 2.30 0.54 1.55 41.00 2.70 0.77 0.00 15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67
14.00 2.21 0.49 2.05 40.00 2.70 0.77 0.00 14.50 2.26 0.52 1.71 40.50 2.70 0.77 0.00 15.00 2.30 0.54 1.55 41.00 2.70 0.77 0.00 15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
14.50 2.26 0.52 1.71 40.50 2.70 0.77 0.00 15.00 2.30 0.54 1.55 41.00 2.70 0.77 0.00 15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
15.00 2.30 0.54 1.55 41.00 2.70 0.77 0.00 15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
15.50 2.34 0.56 1.40 41.50 2.70 0.77 0.00 16.00 2.38 0.58 1.25 42.00 2.70 0.77 0.00 16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
16.50 2.41 0.60 1.12 42.50 2.70 0.77 0.00 17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
17.00 2.43 0.61 1.06 43.00 2.70 0.77 0.00 17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
17.50 2.46 0.63 1.01 43.50 2.70 0.77 0.00 18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
18.00 2.49 0.64 0.95 44.00 2.70 0.77 0.00 18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
18.50 2.51 0.66 0.90 44.50 2.70 0.77 0.00 19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
19.00 2.53 0.67 0.84 45.00 2.70 0.77 0.00
19.50 2.55 0.68 0.78 45.50 2.70 0.77 0.00
20.00 2.57 0.69 0.72 46.00 2.70 0.77 0.00 20.50 2.59 0.70 0.67 46.50 2.70 0.77 0.00
24.00
21.00
22.00 2.64 0.73 0.64 48.00 2.70 0.77 0.00
22.50 2.65 0.74 0.63 48.50 2.70 0.77 0.00
23.00 2.67 0.75 0.62 49.00 2.70 0.77 0.00
23.50 2.68 0.76 0.61 49.50 2.70 0.77 0.00 24.00 2.70 0.77 0.60 50.00 2.70 0.77 0.00
24.00 2.70 0.77 0.60 50.00 2.70 0.77 0.00 24.50 2.70 0.77 0.12
25.00 2.70 0.77 0.01
25.50 2.70 0.77 0.00

Summary for Subcatchment 1S: Existing

Runoff = 31.65 cfs @ 12.19 hrs, Volume=

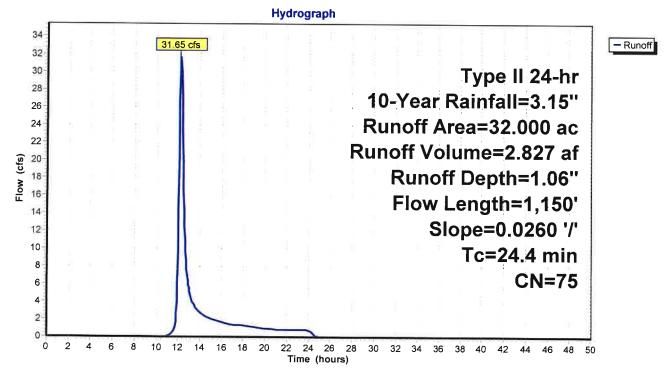
2.827 af, Depth= 1.06"

Routed to nonexistent node 17P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 10-Year Rainfall=3.15"

۸roo	(00)	N Dee			
Area	(ac) (CN Des	cription		
12.	400	70 Brus	sh, Fair, H	SG C	
			sh, Fair, H	SG D	
0.	600		vel surface		
			vel surface	•	
			ghted Avei		
32.000 100.00% Pervious Area					
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	2 00 0 11 pti 0 11
8.9	100	0.0260	0.19	(0.0)	Shoot Flow RDUCH
0.0	100	0.0200	0.19		Sheet Flow, BRUSH
					Range n= 0.130 P2= 2.50"
15.5	1,050	0.0260	1.13		Shallow Concentrated Flow, BRUSH
					Short Grass Pasture Kv= 7.0 fps
24.4	1,150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

Time	Precip.	Evene	Dunaff	7	ъ.	_	
(hours)	(inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff
0.00	0.00	0.00	0.00	26.00	3.15	1.06	(cfs) 0.00
0.50	0.02	0.00	0.00	26.50	3.15	1.06	0.00
1.00	0.03	0.00	0.00	27.00	3.15	1.06	0.00
1.50	0.05	0.00	0.00	27.50	3.15	1.06	0.00
2.00 2.50	0.07 0.09	0.00 0.00	0.00 0.00	28.00	3.15	1.06	0.00
3.00	0.03	0.00	0.00	28.50 29.00	3.15 3.15	1.06 1.06	0.00
3.50	0.13	0.00	0.00	29.50	3.15	1.06	0.00 0.00
4.00	0.15	0.00	0.00	30.00	3.15	1.06	0.00
4.50	0.17	0.00	0.00	30.50	3.15	1.06	0.00
5.00 5.50	0.20 0.22	0.00	0.00	31.00	3.15	1.06	0.00
6.00	0.22	0.00 0.00	0.00 0.00	31.50 32.00	3.15	1.06	0.00
6.50	0.28	0.00	0.00	32.50	3.15 3.15	1.06 1.06	0.00 0.00
7.00	0.31	0.00	0.00	33.00	3.15	1.06	0.00
7.50	0.34	0.00	0.00	33.50	3.15	1.06	0.00
8.00	0.38	0.00	0.00	34.00	3.15	1.06	0.00
8.50 9.00	0.42 0.46	0.00 0.00	0.00 0.00	34.50	3.15	1.06	0.00
9.50	0.51	0.00	0.00	35.00 35.50	3.15 3.15	1.06 1.06	0.00 0.00
10.00	0.57	0.00	0.00	36.00	3.15	1.06	0.00
10.50	0.64	0.00	0.00	36.50	3.15	1.06	0.00
11.00 11.50	0.74	0.00	0.04	37.00	3.15	1.06	0.00
12.00	0.89 2.09	0.01 0.43	0.57 14.79	37.50 38.00	3.15 3.15	1.06	0.00
12.50	2.32	0.55	14.09	38.50	3.15	1.06 1.06	0.00 0.00
13.00	2.43	0.61	5.12	39.00	3.15	1.06	0.00
13.50	2.52	0.66	3.42	39.50	3.15	1.06	0.00
14.00 14.50	2.58 2.64	0.70 0.73	2.68	40.00	3.15	1.06	0.00
15.00	2.69	0.76	2.22 2.01	40.50 41.00	3.15 3.15	1.06 1.06	0.00 0.00
15.50	2.73	0.79	1.82	41.50	3.15	1.06	0.00
16.00	2.77	0.81	1.62	42.00	3.15	1.06	0.00
16.50	2.81	0.84	1.45	42.50	3.15	1.06	0.00
17.00 17.50	2.84 2.87	0.86 0.88	1.37	43.00	3.15	1.06	0.00
18.00	2.90	0.88	1.30 1.23	43.50 44.00	3.15 3.15	1.06 1.06	0.00
18.50	2.93	0.91	1.16	44.50	3.15	1.06	0.00 0.00
19.00	2.95	0.93	1.08	45.00	3.15	1.06	0.00
19.50	2.98	0.95	1.00	45.50	3.15	1.06	0.00
20.00 20.50	3.00 3.02	0.96 0.97	0.92 0.86	46.00	3.15	1.06	0.00
21.00	3.04	0.99	0.85	46.50 47.00	3.15 3.15	1.06 1.06	0.00 0.00
21.50	3.06	1.00	0.83	47.50	3.15	1.06	0.00
22.00	3.08	1.01	0.82	48.00	3.15	1.06	0.00
22.50	3.10	1.02	0.81	48.50	3.15	1.06	0.00
23.00 23.50	3.11 3.13	1.04 1.05	0.79 0.78	49.00 49.50	3.15	1.06	0.00
24.00	3.15	1.05	0.76	49.50 50.00	3.15 3.15	1.06 1.06	0.00 0.00
24.50	3.15	1.06	0.15	30.00	5.15	1.00	0.00
25.00	3.15	1.06	0.01				
25.50	3.15	1.06	0.00				

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Summary for Subcatchment 1S: Existing

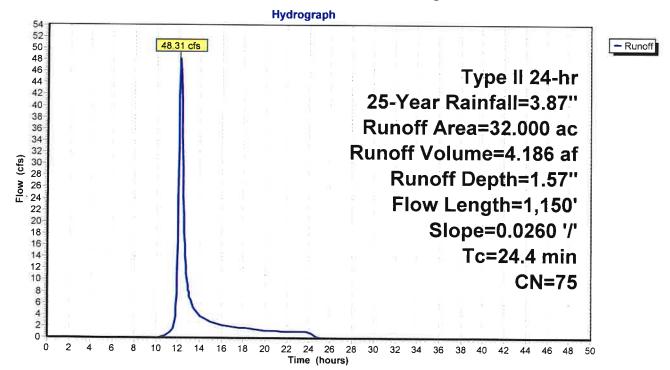
Runoff 48.31 cfs @ 12.19 hrs, Volume= Routed to nonexistent node 17P

4.186 af, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 25-Year Rainfall=3.87"

_	Area	(ac) C	N Des	cription		
12.400 70 Brush, Fair, HSG C					SG C	
	18.600 77		77 Brus	sh, Fair, H	SG D	
	0.	600	96 Grav	el surface	, HSG D	
	0.	400	96 Grav	el surface	, HSG C	
	32.	000	75 Wei	ghted Aver	age	
32.000 100.00% Pervious Area						
	Тс	Length	Slope	Velocity	Capacity	Description
-	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	8.9	100	0.0260	0.19		Sheet Flow, BRUSH
						Range n= 0.130 P2= 2.50"
	15.5	1,050	0.0260	1.13		Shallow Concentrated Flow, BRUSH
-						Short Grass Pasture Kv= 7.0 fps
	24.4	1 150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

Time (hours) (inches) (inches) Runoff (cfs) Time (hours) (inches) Time (hours) (inches) Precip. Excess (hours) Runoff (hours) (inches) Excess (hours) Runoff (hours) (inches) Construction (cfs) 0.00 0.00 0.00 0.00 26.00 3.87 1.57 0.00 0.50 0.04 0.00 0.00 26.50 3.87 1.57 0.00 1.50 0.04 0.00 0.00 27.00 3.87 1.57 0.00	<u>s)</u> 00
0.00 0.00 0.00 0.00 26.00 3.87 1.57 0.00 0.50 0.02 0.00 0.00 26.50 3.87 1.57 0.00 1.00 0.04 0.00 0.00 27.00 3.87 1.57 0.00 1.50 0.04 0.00 0.00 27.00 3.87 1.57 0.00	00
0.50	
1.00 0.04 0.00 0.00 27.00 3.87 1.57 0.00	
4.50	
1.50 0.06 0.00 0.00 27.50 3.87 1.57 0.00	
2.00 0.09 0.00 0.00 28.00 3.87 1.57 0.00	
2.50 0.11 0.00 0.00 28.50 3.87 1.57 0.00	
3.00 0.13 0.00 0.00 29.00 3.87 1.57 0.00	
3.50 0.16 0.00 0.00 29.50 3.87 1.57 0.00	
4.00 0.19 0.00 0.00 30.00 3.87 1.57 0.00	
4.50 0.21 0.00 0.00 30.50 3.87 1.57 0.00 5.00 0.24 0.00 0.00 31.00 3.87 1.57 0.00	
5.50	
0.00	
6.00 0.31 0.00 0.00 32.00 3.87 1.57 0.00 6.50 0.35 0.00 0.00 32.50 3.87 1.57 0.00	
7.00 0.38 0.00 0.00 33.00 3.87 1.57 0.00	
7.50 0.42 0.00 0.00 33.50 3.87 1.57 0.00	
8.00 0.46 0.00 0.00 34.00 3.87 1.57 0.00	
8.50 0.51 0.00 0.00 34.50 3.87 1.57 0.00	
9.00 0.57 0.00 0.00 35.00 3.87 1.57 0.00 9.50 0.63 0.00 0.00 35.50 3.87 1.57 0.00	
10.00	
10.50	
10.50 0.79 0.00 0.18 36.50 3.87 1.57 0.00 11.00 0.91 0.02 0.62 37.00 3.87 1.57 0.00	
11.50 1.10 0.05 1.65 37.50 3.87 1.57 0.00	
12.00 2.57 0.69 24.52 38.00 3.87 1.57 0.00	
12.50 2.84 0.86 20.66 38.50 3.87 1.57 0.00	
13.00 2.99 0.95 7.24 39.00 3.87 1.57 0.00	
13.50 3.09 1.02 4.78 39.50 3.87 1.57 0.00	
14.00 3.17 1.08 3.73 40.00 3.87 1.57 0.00 14.50 3.24 1.12 3.09 40.50 3.87 1.57 0.00	
15.00	
15.50 3.36 1.20 2.51 41.50 3.87 1.57 0.00 15.50 3.36 1.20 2.51 41.50 3.87 1.57 0.00	
16.00 3.41 1.24 2.22 42.00 3.87 1.57 0.00	
16.50 3.45 1.27 2.00 42.50 3.87 1.57 0.00	
17.00 3.49 1.29 1.89 43.00 3.87 1.57 0.00	
17.50 3.53 1.32 1.78 43.50 3.87 1.57 0.00	
18.00 3.56 1.35 1.68 44.00 3.87 1.57 0.00	
18.50 3.60 1.37 1.58 44.50 3.87 1.57 0.00 19.00 3.63 1.39 1.47 45.00 3.87 1.57 0.00	
10.50	
20.00	
20.00 3.68 1.43 1.26 46.00 3.87 1.57 0.00 20.50 3.71 1.45 1.18 46.50 3.87 1.57 0.00	
21.00 3.73 1.47 1.15 47.00 3.87 1.57 0.00	
21.50 3.76 1.49 1.13 47.50 3.87 1.57 0.00	
22.00 3.78 1.50 1.11 48.00 3.87 1.57 0.00	
22.50 3.80 1.52 1.09 48.50 3.87 1.57 0.00	0
23.00 3.83 1.54 1.07 49.00 3.87 1.57 0.00 23.50 3.85 1.55 1.05 49.50 3.87 1.57 0.00	
24.00	
24.00 3.87 1.57 1.03 50.00 3.87 1.57 0.00 24.50 3.87 1.57 0.20	J
25.00 3.87 1.57 0.01	
25.50 3.87 1.57 0.00	

Summary for Subcatchment 1S: Existing

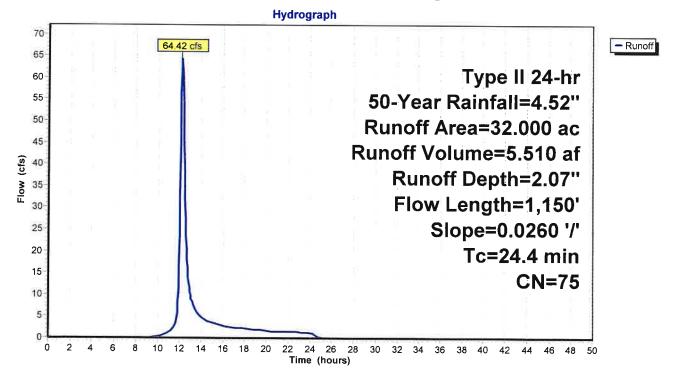
Runoff = 64.42 cfs @ 12.18 hrs, Volume= Routed to nonexistent node 17P

5.510 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 50-Year Rainfall=4.52"

	Area	(ac) (N Des	cription		
12.400 70 Brush, Fair, HSG C						
			77 Brus	sh, Fair, H	SG D	
	0.	600	96 Grav	vel surface	, HSG D	
,	0.	400	96 Grav	vel surface	, HSG C	
	32.	000	75 Wei	ghted Avei	rage	
	32.000 100.00% Pervious Area					
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	8.9	100	0.0260	0.19		Sheet Flow, BRUSH
						Range n= 0.130 P2= 2.50"
	15.5	1,050	0.0260	1.13		Shallow Concentrated Flow, BRUSH
-						Short Grass Pasture Kv= 7.0 fps
	24.4	1,150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

		_		2			
Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)		(cfs)
0.00	0.00	0.00	0.00	26.00	4.52	2.07	0.00
0.50	0.02	0.00	0.00	26.50	4.52	2.07	0.00
1.00	0.05	0.00	0.00	27.00	4.52	2.07	0.00
1.50 2.00	0.07	0.00	0.00	27.50	4.52	2.07	0.00
2.50	0.10	0.00	0.00	28.00	4.52	2.07	0.00
3.00	0.13 0.16	0.00	0.00	28.50	4.52	2.07	0.00
3.50	0.10	0.00 0.00	0.00 0.00	29.00	4.52	2.07	0.00
4.00	0.19	0.00	0.00	29.50 30.00	4.52	2.07	0.00
4.50	0.25	0.00	0.00	30.50	4.52 4.52	2.07 2.07	0.00
5.00	0.28	0.00	0.00	31.00	4.52	2.07	0.00 0.00
5.50	0.32	0.00	0.00	31.50	4.52	2.07	0.00
6.00	0.36	0.00	0.00	32.00	4.52	2.07	0.00
6.50	0.40	0.00	0.00	32.50	4.52	2.07	0.00
7.00	0.45	0.00	0.00	33.00	4.52	2.07	0.00
7.50	0.49	0.00	0.00	33.50	4.52	2.07	0.00
8.00	0.54	0.00	0.00	34.00	4.52	2.07	0.00
8.50	0.60	0.00	0.00	34.50	4.52	2.07	0.00
9.00	0.66	0.00	0.00	35.00	4.52	2.07	0.00
9.50	0.74	0.00	0.06	35.50	4.52	2.07	0.00
10.00 10.50	0.82	0.01	0.26	36.00	4.52	2.07	0.00
11.00	0.92 1.06	0.02	0.62	36.50	4.52	2.07	0.00
11.50	1.08	0.04 0.10	1.30 2.81	37.00	4.52	2.07	0.00
12.00	3.00	0.10	34.16	37.50 38.00	4.52 4.52	2.07 2.07	0.00
12.50	3.32	1.18	26.91	38.50	4.52	2.07	0.00 0.00
13.00	3.49	1.29	9.23	39.00	4.52	2.07	0.00
13.50	3.61	1.38	6.05	39.50	4.52	2.07	0.00
14.00	3.71	1.45	4.71	40.00	4.52	2.07	0.00
14.50	3.79	1.51	3.88	40.50	4.52	2.07	0.00
15.00	3.86	1.56	3.50	41.00	4.52	2.07	0.00
15.50	3.92	1.61	3.15	41.50	4.52	2.07	0.00
16.00	3.98	1.65	2.79	42.00	4.52	2.07	0.00
16.50 17.00	4.03	1.69	2.50	42.50	4.52	2.07	0.00
17.50	4.08 4.12	1.72	2.36	43.00	4.52	2.07	0.00
18.00	4.12 4.16	1.76 1.79	2.23 2.10	43.50 44.00	4.52	2.07	0.00
18.50	4.20	1.82	1.97	44.50	4.52 4.52	2.07 2.07	0.00 0.00
19.00	4.24	1.85	1.83	45.00	4.52	2.07	0.00
19.50	4.27	1.87	1.70	45.50	4.52	2.07	0.00
20.00	4.30	1.90	1.57	46.00	4.52	2.07	0.00
20.50	4.33	1.92	1.46	46.50	4.52	2.07	0.00
21.00	4.36	1.94	1.43	47.00	4.52	2.07	0.00
21.50	4.39	1.96	1.41	47.50	4.52	2.07	0.00
22.00	4.42	1.98	1.38	48.00	4.52	2.07	0.00
22.50	4.44	2.01	1.36	48.50	4.52	2.07	0.00
23.00	4.47	2.03	1.33	49.00	4.52	2.07	0.00
23.50 24.00	4.49	2.05	1.30	49.50	4.52	2.07	0.00
24.00 24.50	4.52 4.52	2.07 2.07	1.28	50.00	4.52	2.07	0.00
25.00	4.52 4.52	2.07	0.25 0.01				
25.50	4.52	2.07	0.00				
			0.00				
			:DK1				

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Summary for Subcatchment 1S: Existing

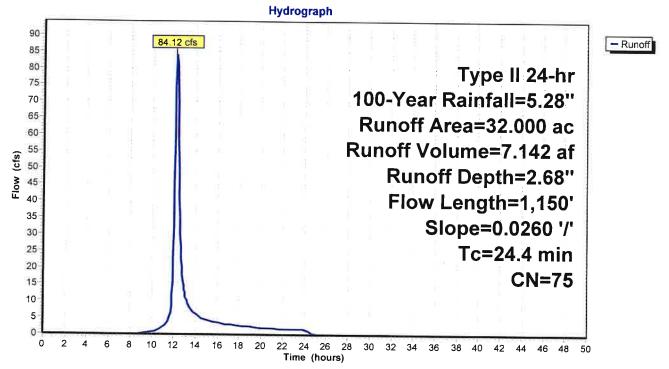
Runoff = 84.12 cfs @ 12.18 hrs, Volume= Routed to nonexistent node 17P

7.142 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.05 hrs Type II 24-hr 100-Year Rainfall=5.28"

-	Area	(ac) C	N Des	cription		
			70 Brus	sh, Fair, H	SG C	
	18	.600	77 Brus	sh, Fair, H	SG D	
	0.	600	96 Grav	vel surface	, HSG D	
	0.	400	96 Grav	vel surface	HSG C	
	32.	000	75 Wei	ghted Avei	rage	
	32.	000		00% Pervi		
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	8.9	100	0.0260	0.19		Sheet Flow, BRUSH
	15.5	1,050	0.0260	1.13		Range n= 0.130 P2= 2.50" Shallow Concentrated Flow, BRUSH Short Grass Pasture Kv= 7.0 fps
	24.4	1 150	Total			

Subcatchment 1S: Existing



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Hydrograph for Subcatchment 1S: Existing

Time	Precip.	Excess	Runoff	Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)	(cfs)
0.00 0.50	0.00 0.03	0.00	0.00	26.00	5.28	2.68	0.00
1.00	0.03	0.00 0.00	0.00 0.00	26.50 27.00	5.28 5.28	2.68	0.00
1.50	0.09	0.00	0.00	27.50	5.28	2.68 2.68	0.00 0.00
2.00	0.12	0.00	0.00	28.00	5.28	2.68	0.00
2.50	0.15	0.00	0.00	28.50	5.28	2.68	0.00
3.00	0.18	0.00	0.00	29.00	5.28	2.68	0.00
3.50	0.22	0.00	0.00	29.50	5.28	2.68	0.00
4.00 4.50	0.25 0.29	0.00 0.00	0.00 0.00	30.00 30.50	5.28 5.28	2.68	0.00
5.00	0.33	0.00	0.00	31.00	5.28	2.68 2.68	0.00 0.00
5.50	0.38	0.00	0.00	31.50	5.28	2.68	0.00
6.00	0.42	0.00	0.00	32.00	5.28	2.68	0.00
6.50	0.47	0.00	0.00	32.50	5.28	2.68	0.00
7.00 7.50	0.52 0.58	0.00 0.00	0.00 0.00	33.00	5.28	2.68	0.00
8.00	0.63	0.00	0.00	33.50 34.00	5.28 5.28	2.68 2.68	0.00 0.00
8.50	0.70	0.00	0.00	34.50	5.28	2.68	0.00
9.00	0.78	0.00	0.15	35.00	5.28	2.68	0.00
9.50	0.86	0.01	0.40	35.50	5.28	2.68	0.00
10.00 10.50	0.96 1.08	0.02 0.05	0.70 1.24	36.00 36.50	5.28 5.28	2.68	0.00
11.00	1.24	0.08	2.20	37.00	5.28	2.68 2.68	0.00 0.00
11.50	1.49	0.16	4.33	37.50	5.28	2.68	0.00
12.00	3.50	1.30	46.16	38.00	5.28	2.68	0.00
12.50 13.00	3.88 4.08	1.58 1.72	34.44	38.50	5.28	2.68	0.00
13.50	4.00	1.72	11.59 7.55	39.00 39.50	5.28 5.28	2.68 2.68	0.00 0.00
14.00	4.33	1.92	5.86	40.00	5.28	2.68	0.00
14.50	4.42	1.99	4.82	40.50	5.28	2.68	0.00
15.00	4.51	2.06	4.34	41.00	5.28	2.68	0.00
15.50 16.00	4.58 4.65	2.11 2.17	3.90 3.45	41.50	5.28	2.68	0.00
16.50	4.71	2.17	3.45	42.00 42.50	5.28 5.28	2.68 2.68	0.00 0.00
17.00	4.76	2.26	2.91	43.00	5.28	2.68	0.00
17.50	4.81	2.30	2.75	43.50	5.28	2.68	0.00
18.00	4.86	2.34	2.59	44.00	5.28	2.68	0.00
18.50 19.00	4.91 4.95	2.38 2.41	2.43 2.26	44.50 45.00	5.28 5.28	2.68	0.00
19.50	4.99	2.44	2.09	45.50	5.28	2.68 2.68	0.00 0.00
20.00	5.03	2.47	1.93	46.00	5.28	2.68	0.00
20.50	5.06	2.50	1.80	46.50	5.28	2.68	0.00
21.00 21.50	5.09 5.13	2.53	1.76	47.00	5.28	2.68	0.00
22.00	5.13 5.16	2.55 2.58	1.73 1.70	47.50 48.00	5.28 5.28	2.68 2.68	0.00 0.00
22.50	5.19	2.60	1.67	48.50	5.28	2.68	0.00
23.00	5.22	2.63	1.63	49.00	5.28	2.68	0.00
23.50	5.25	2.65	1.60	49.50	5.28	2.68	0.00
24.00 24.50	5.28 5.28	2.68 2.68	1.57	50.00	5.28	2.68	0.00
25.00	5.28	2.68 2.68	0.31 0.01				
25.50	5.28	2.68	0.00				

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Project Reports

- 1 Routing Diagram
- 2 Rainfall Events Listing
- 3 Area Listing (selected nodes)
- 4 Soil Listing (selected nodes)
- 5 Ground Covers (selected nodes)

1-Year Event

6 Subcat 1S: Existing

2-Year Event

8 Subcat 1S: Existing

5-Year Event

10 Subcat 1S: Existing

10-Year Event

12 Subcat 1S: Existing

25-Year Event

14 Subcat 1S: Existing

50-Year Event

16 Subcat 1S: Existing

100-Year Event

18 Subcat 1S: Existing

Green Infrastructure Calculations

Version 1.7

Total Water Quality Volume Calculation WQv(acre-feet) = [(P)(Rv)(A)]/12

Last Updated: 2/22/21

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?....

Design Point: 1
P= 1.00 inch

Breakdown of Subcatchments								
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Description		
1	32.00	18.00	56%	0.56	64,614			
2					<u> </u>	United to the same		
3								
4								
5								
6								
7								
8								
9	LOUIS NOTE OF							
10						3 1514		
Subtotal (1-30)	32.00	18.00	56%	0.56	64,614	Subtotal 1		
Total	32.00	18.00	56%	0.56	64,614	Initial WQv		

Identify Runoff Reduction Techniques By Area								
Technique	Total Contributing Area	Contributing Impervious Area	Notes					
	(Acre)	(Acre)						
Conservation of Natural Areas	0.00	0.00	minimum 10,000 sf					
Riparian Buffers	0.00	0.00	maximum contributing length 75 feet to 150 feet					
Filter Strips	0.00	0.00						
Tree Planting	0.00	0.00	Up to 100 sf directly connected impervious area may be subtracted per tree					
Total	0.00	0.00						

Recalculate WQv after application of Area Reduction Techniques								
	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Runoff Coefficient Rv	WQv (ft³)			
"< <initial td="" wqv"<=""><td>32.00</td><td>18.00</td><td>56%</td><td>0.56</td><td>64,614</td></initial>	32.00	18.00	56%	0.56	64,614			
Subtract Area	0.00	0.00			· ·			
WQv adjusted after Area Reductions	32.00	18.00	56%	0.56	64,614			
Disconnection of Rooftops		0.00		SCHOOL STATE				
Adjusted WQv after Area Reduction and Rooftop Disconnect	32.00	18.00	56%	0.56	64,614			
WQv reduced by Area Reduction techniques					0			

	Runoff Reduction	Volume	and Treated	olumes	date of the same	Chronista
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
	Conservation of Natural Areas	RR-1	0.00	0.00	SAL THE SAL	
Area/Volume Reduction	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
onp	Tree Planting/Tree Pit	RR-3	0.00	0.00		
- Re	Disconnection of Rooftop Runoff	RR-4		0.00		
l me	Vegetated Swale	RR-5	0.00	0.00	0	
no	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
Are	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
	Infiltration Trench	I-1	0.00	0.00	0	0
dPs city	Infiltration Basin	I-2	0.00	0.00	0	0
SN	Dry Well	I-3	0.00	0.00	0	0
C C	Underground Infiltration System	1-4	0.00			
Standard SMPs w/RRv Capacity	Bioretention & Infiltration Bioretention		32.00	18.00	17280	47334
	Dry swale	0-1	0.00	0.00	0	0
	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3			No.	I IN THE
	Multiple Pond system (P-4)	P-4				
S	Pocket Pond (p-5)	P-5				
SMPs	Surface Sand filter (F-1)	F-1				
1 P	Underground Sand filter (F-2)	F-2	Committee of the			
Standard	Perimeter Sand Filter (F-3)	F-3				
Star	Organic Filter (F-4	F-4				
٠,	Shallow Wetland (W-1)	W-1				
ļ	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	0-2				
	Totals by Area Reduction	\rightarrow	0.00	0.00	0	West of the last
	Totals by Volume Reduction	\rightarrow	0.00	0.00	0	
	Totals by Standard SMP w/RRV	\rightarrow	32.00	18.00	17280	47334
	Totals by Standard SMP	\rightarrow	0.00	0.00		0
To	otals (Area + Volume + all SMPs)	\rightarrow	32.00	18.00	17,280	47,334
	Impervious Cover V	okay			,,	
	Total Area ∨	okay				

Minimum RRv

Enter the Soils Da	ta for the site			
Soil Group	Acres	S		
Α	5.20	55%		
В		40%	7	
С	23.20	30%	7	
D	31.69	20%	1	
Total Area	60.09			
Calculate the Min	imum RRv			
S =	0.27			
Impervious =	18.00	acre	7	
Precipitation	1	in		
Rv	0.95		1	
Minimum RRv	16,691	ft3	1	
	0.38	af	1	

NOI QUESTIONS

#	NOI Question Reported				
		cf	af		
28	Total Water Quality Volume (WQv) Required	64614	1.483		
30	Total RRV Provided	17280	0.397		
31	Is RRv Provided ≥WQv Required?	No			
32	Minimum RRv	16691	0.383		
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes			
=					
33a	Total WQv Treated	47334	1.087		
34	Sum of Volume Reduced & Treated	64614	1.483		
34	Sum of Volume Reduced and Treated	64614	1.483		
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes			

Apply Peak Flow Attenuation								
36	Channel Protection	Сри						
37	Overbank	Qp						
37	Extreme Flood Control	Qf						
	Are Quantity Control requirements met?							

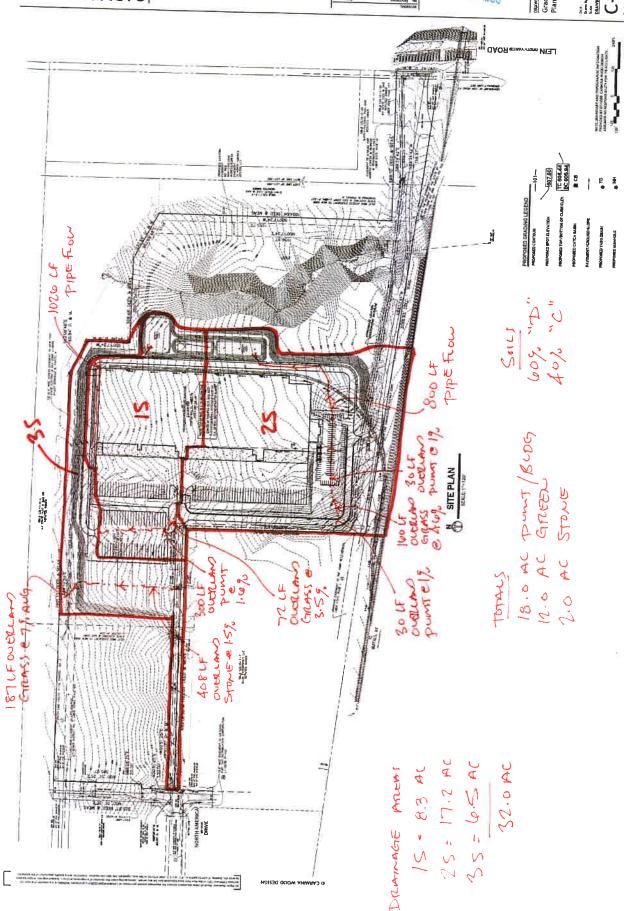
Bioretention Worksheet

(For use on HSG C or D Soils with underdrains) Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)		The hydraulic conductivity [ft/day], can be varied
WQv	Water Quality Volume (ft3)		depending on the properties of the soil media. Some
df	Depth of the Soil Medium (feet)	k	reported conductivity values are: Sand - 3.5 ft/day
hf	Average height of water above the planter bed		(City of Austin 1988); Peat - 2.0 ft/day (Galli 1990); Leaf Compost - 8.7 ft/day (Claytor and Schueler,
tf	Volume Through the Filter Media (days)		1996); Bioretention Soil (0.5 ft/day (Claytor &

			(- / - /		1990), Diore		, , , , , , , , , , , , , , , , , , , ,
Design Point:	1						
	Enter	Site Data For	Drainage Are	a to be	Treated by	Practice	
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
1	32.00	18.00	0.56	0.56	64614.00	1.00	
Enter Impervious by Disconnection		0.00	56%	0.56	64,614	< <wqv ac<="" after="" td=""><td>-</td></wqv>	-
Enter the portion routed to this pr		at is not redu	ced for all pra	ctices		ft ³	
	The same of the same		Soil Inform	ation			
Soil Group		D					
Soil Infiltration R	ate	0.00	in/hour	Okay			
Using Underdrain	ns?	Yes	Okay				
		Calcula	te the Minim	um Filte	er Area	THE PARTY OF	NAME OF THE OWNER.
				E- V	/alue	Units	Notes
	WQv			64,614		ft ³	
Enter [Depth of Soil Me	edia	df	1.5		ft	2.5-4 ft
Enter Hy	draulic Conduc	tivity	k	0.5		ft/day	
Enter Aver	rage Height of P	onding	hf	0.5		ft	6 inches max.
En	ter Filter Time		tf	2		days	
Req	uired Filter Are		Af			ft²	
		Determi	ne Actual Bio	Retenti	on Area		to an interest and the
Filter Width		180	ft				
Filter Length		180	ft				
Filter Area		32400	ft ²				
Actual Volume Pr	rovided	43200	ft ³				
			ermine Runof	f Reduct	ion	Thirty State	
Is the Bioretention contributing flow to another practice?				Select Practice			
RRv		17,280					
RRv applied		17,280	ft ³	This is 40% of the storage provided or WQv whichever is less.			
Volume Treated		47,334	ft ³	This is the portion of the WQv that is not reduced in the practice.			
Volume Directed		0	ft ³			cted another p	ractice
Sizing √		Error				a provided ≥ Af	

Proposed Storm Calculations



CARMINAWOOD
DESIGN

Proposed Warehouse Morth America Drive Worst Scheca, New York



Proposed Runoff Summary

Event	Ex. Runoff (cfs)*	Pro. Runoff (basin+runoff to north) (cfs)**	Result (cfs)
1-year	7.25	2.73 + 4.60 = 7.33	+0.08
10-year	31.65	3.25 + 11.77 = 15.02	-16.63
100-year	84.12	3.93 + 24.65 = 28.58	-55.54

^{*} Total runoff from the site

^{**} See attached storm drainage calculations for additional information.

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Events for Pond 7P: Basin

					-	
Event	Inflow	Outflow	Primary	Secondary	Elevation	Storage
	(cfs)	(cfs)	(cfs)	(cfs)	(feet)	(cubic-feet)
1-Year	29.50	2.73	2.73	0.00	674.69	26,743
2-Year	41.28	2.88	2.88	0.00	675.11	43,755
5-Year	55.02	3.08	3.08	0.00	675.70	71,125
10-Year	67.69	3.25	3.25	0.00	676.24	96,797
25-Year	89.54	3.50	3.50	0.00	677.07	139,095
50-Year	110.28	3.71	3.71	0.00	677.80	178,688
100-Year	135.20	3.93	3.93	0.00	678.63	226,706

Type II 24-hr 100-Year Rainfall=5.28"

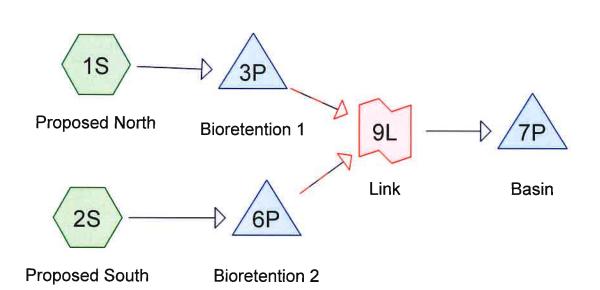
22.117 Proposed BasinPrepared by Carmina Wood Morris, PC

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Events for Subcatchment 3S: Proposed North not through basin

Event	Rainfall	Runoff	Volume	Depth
	(inches)	(cfs)	(acre-feet)	(inches)
1-Year	1.86	4.60	0.376	0.69
2-Year	2.20	6.38	0.512	0.94
5-Year	2.70	9.16	0.726	1.34
10-Year	3.15	11.77	0.929	1.72
25-Year	3.87	16.06	1.269	2.34
50-Year	4.52	20.00	1.586	2.93
100-Year	5.28	24.65	1.965	3.63











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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	1.86	2
2	2-Year	Type II 24-hr		Default	24.00	1	2.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	2.70	2
4	10-Year	Type II 24-hr		Default	24.00	1	3.15	2
5	25-Year	Type II 24-hr		Default	24.00	1	3.87	2
6	50-Year	Type II 24-hr		Default	24.00	1	4.52	2
7	100-Year	Type II 24-hr		Default	24.00	1	5.28	2

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Area Listing (selected nodes)

Area	CN	Description	
(acres)		(subcatchment-numbers)	
4.000	74	>75% Grass cover, Good, HSG C (1S, 2S)	
5.900	80	>75% Grass cover, Good, HSG D (1S, 2S)	
0.080	96	Gravel surface, HSG C (2S)	
0.120	96	Gravel surface, HSG D (2S)	
5.000	98	Paved parking, HSG C (1S, 2S)	
10.400	98	Paved parking, HSG D (1S, 2S)	

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Soil Listing (selected nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
0.000	HSG A	
0.000	HSG B	
9.080	HSG C	1S, 2S
16.420	HSG D	1S, 2S
0.000	Other	

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Ground Covers (selected nodes)

 HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	4.000	5.900	0.000	9.900	>75% Grass cover, Good	1S, 2S
0.000	0.000	0.080	0.120	0.000	0.200	Gravel surface	28
0.000	0.000	5.000	10.400	0.000	15.400	Paved parking	1S, 2S

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Summary for Subcatchment 1S: Proposed North

Runoff = 14.79 cfs @ 12.02 hrs, Volume=

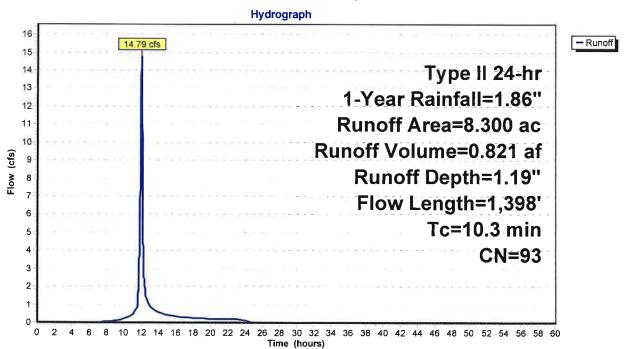
0.821 af, Depth= 1.19"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Year Rainfall=1.86"

Area	(ac)	CN Des	cription		
5	.000	98 Pav	ed parking	, HSG D	
1	.400	98 Pave	ed parking	, HSG C	
1	.100	80 >75	% Grass c	over, Good	, HSG D
0	.800	74 >75	% Grass co	over, Good	, HSG C
8	.300	93 Wei	ghted Aver	age	
1	.900	22.8	9% Pervio	us Area	
6	.400	77.1	1% Impen	ious Area	
Тс	Length	•	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
2.7	72	0.3500	0.44		Sheet Flow, grass
					Grass: Short n= 0.150 P2= 2.50"
1.9	300	0.0160	2.57		Shallow Concentrated Flow, pavement
					Paved Kv= 20.3 fps
5.7	1,026		3.00		Direct Entry, Pipe flow
10.3	1,398	Total			

Subcatchment 1S: Proposed North



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Hydrograph for Subcatchment 1S: Proposed North

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
0.00 1.00	0.00 0.02	0.00 0.00	0.00
2.00	0.04	0.00	0.00
3.00	0.06	0.00	0.00
4.00 5.00	0.09 0.12	0.00 0.00	0.00 0.00
6.00	0.15	0.00	0.00
7.00 8.00	0.18 0.22	0.00 0.01	0.02 0.05
9.00	0.27	0.02	0.12
10.00 11.00	0.34 0.44	0.04 0.08	0.20 0.46
12.00	1.23	0.64	14.53
13.00 14.00	1.44 1.53	0.81 0.89	0.93 0.55
15.00	1.59	0.89	0.55
16.00	1.64	0.99	0.33
17.00 18.00	1.68 1.71	1.02 1.05	0.29 0.26
19.00	1.74	1.08	0.22
20.00 21.00	1.77 1.79	1.11 1.13	0.19 0.18
22.00	1.82	1.15	0.17
23.00 24.00	1.84 1.86	1.17 1.19	0.16 0.16
25.00	1.86	1.19	0.00
26.00 27.00	1.86 1.86	1.19 1.19	0.00 0.00
28.00	1.86	1.19	0.00
29.00 30.00	1.86 1.86	1.19 1.19	0.00 0.00
31.00	1.86	1.19	0.00
32.00 33.00	1.86 1.86	1.19 1.19	0.00 0.00
34.00	1.86	1.19	0.00
35.00 36.00	1.86 1.86	1.19 1.19	0.00 0.00
37.00	1.86	1.19	0.00
38.00 39.00	1.86 1.86	1.19 1.19	0.00
40.00	1.86	1.19	0.00
41.00	1.86	1.19	0.00
42.00 43.00	1.86 1.86	1.19 1.19	0.00 0.00
44.00	1.86	1.19	0.00
45.00 46.00	1.86 1.86	1.19 1.19	0.00 0.00
47.00	1.86	1.19	0.00
48.00 49.00	1.86 1.86	1.19 1.19	0.00 0.00
50.00	1.86	1.19	0.00
51.00 52.00	1.86 1.86	1.19 1.19	0.00 0.00
52.00			3.00

Time (hours) 53.00 54.00 55.00 56.00 57.00 58.00	1.86 1.86 1.86 1.86 1.86 1.86	Excess (inches) 1.19 1.19 1.19 1.19 1.19	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00 0.00
58.00	1.86	1.19	0.00
59.00	1.86	1.19	0.00
60.00	1.86	1.19	0.00

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Summary for Subcatchment 2S: Proposed South

noff = 26.21 cfs @ 11.98 hrs, Volume= Routed to Pond 6P : Bioretention 2 Runoff

1.224 af, Depth= 0.85"

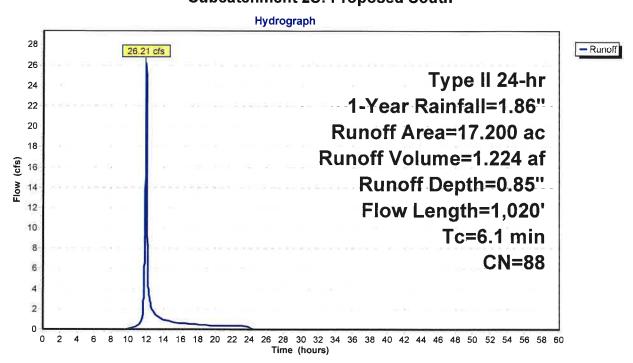
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Year Rainfall=1.86"

Area	(ac) (N Des	cription		
5	.400		ed parking		
3	.600		ed parking		
				over, Good	•
				over, Good	, HSG C
_			el surface	•	
0			el surface	, HSG C	
		,	ghted Aver	•	
_	.200		7% Pervio		
9	.000	52.3	3% Imper	vious Area	
Тс	Length	Slope	Volocity	Canacity	Description
(min)	(feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	30	0.0100	0.72	(013)	Shoot Flow numt
0.7	30	0.0100	0.72		Sheet Flow, pvmt Smooth surfaces n= 0.011 P2= 2.50"
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass
0.0	100	0.0100	0.40		Unpaved Kv= 16.1 fps
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement
	•	3.0.00			Paved Kv= 20.3 fps
4.4	800		3.00		Direct Entry, Pipe flow
6.1	1,020	Total			

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Subcatchment 2S: Proposed South



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Hydrograph for Subcatchment 2S: Proposed South

Time	Precip.	Excess	Runoff	
Time (hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 27.00 28.00 29.00 31.00 32.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00	(inches) 0.00 0.02 0.04 0.06 0.09 0.12 0.15 0.18 0.22 0.27 0.34 1.43 1.53 1.59 1.64 1.68 1.71 1.74 1.77 1.79 1.82 1.84 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86	Excess (inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	
34.00 35.00 36.00 37.00 38.00	1.86 1.86 1.86 1.86	0.85 0.85 0.85 0.85 0.85	0.00 0.00 0.00 0.00 0.00	55

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
53.00	1.86	0.85	0.00
54.00	1.86	0.85	0.00
55.00	1.86	0.85	0.00
56.00	1.86	0.85	0.00
57.00	1.86	0.85	0.00
58.00	1.86	0.85	0.00
59.00	1.86	0.85	0.00
60.00	1.86	0.85	0.00

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 1.19" for 1-Year event

Inflow 14.79 cfs @ 12.02 hrs, Volume= 0.821 af

11.07 cfs @ 12.09 hrs, Volume= 8.49 cfs @ 12.09 hrs, Volume= Outflow 0.821 af, Atten= 25%, Lag= 4.4 min

Primary = 0.709 af

Routed to Link 9L: Link

Secondary = 2.58 cfs @ 12.09 hrs, Volume= 0.112 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 674.69' @ 12.09 hrs Surf.Area= 17,880 sf Storage= 12,008 cf

Plug-Flow detention time= 362.7 min calculated for 0.821 af (100% of inflow)

Center-of-Mass det. time= 362.9 min (1,176.8 - 813.9)

volume	Invert /	Avail.Storage	Storage Description	
#1	674.00'	46,418 cf	Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevation (feet)	Surf.Are (sq-		c.Store Cum.Store c-feet) (cubic-feet)	

(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	17,150	0	0
675.00	18,215	17,683	17,683
676.00	19,279	18,747	36,430
676.50	20,675	9,989	46,418

<u>Device</u>	Routing	Invert	Outlet Devices
#1	Primary	671.45'	18.0" Round Culvert
			L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.45' / 671.20' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 4.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=8.47 cfs @ 12.09 hrs HW=674.69' (Free Discharge)

1=Culvert (Passes 8.47 cfs of 12.86 cfs potential flow)

-2=Exfiltration (Controls 0.11 cfs)

-3=Grate (Weir Controls 8.36 cfs @ 1.41 fps)

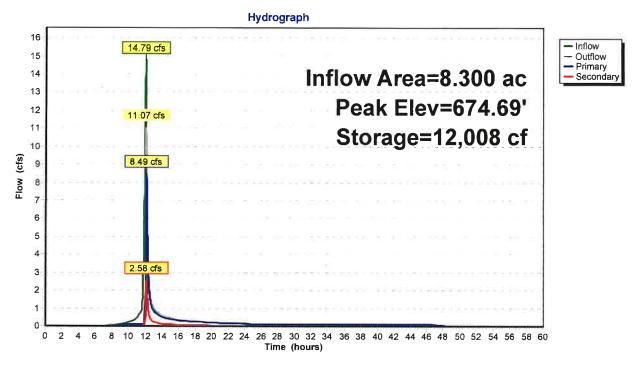
Secondary OutFlow Max=2.58 cfs @ 12.09 hrs HW=674.69' (Free Discharge)

-4=Spillway (Weir Controls 2.58 cfs @ 1.32 fps)

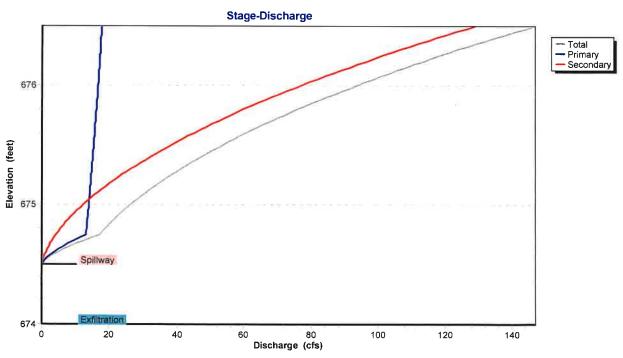
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Pond 3P: Bioretention 1



Pond 3P: Bioretention 1

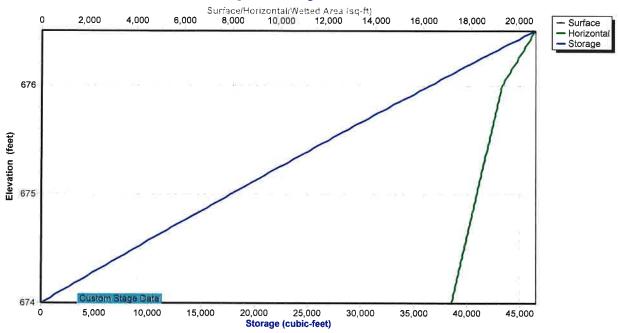


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.00	0	674.00	0.00	0.00	0.00
8.00	0.05	105	674.01	0.02	0.02	0.00
10.00	0.20	495	674.03	0.10	0.10	0.00
12.00	14.53	10,354	674.59	3.98	3.08	0.90
14.00	0.55	9,114	674.52	0.60	0.49	0.11
16.00	0.33	8,913	674.51	0.35	0.30	0.06
18.00	0.26	8,838	674.51	0.26	0.23	0.04
20.00	0.19	8,782	674.50	0.20	0.17	0.02
22.00	0.17	8,762	674.50	0.17	0.16	0.01
24.00	0.16	8,751	674.50	0.16	0.15	0.01
26.00	0.00	8,046	674.46	0.11	0.11	0.00
28.00	0.00	7,289	674.42	0.10	0.10	0.00
30.00	0.00	6,537	674.38	0.10	0.10	0.00
32.00	0.00	5,788	674.33	0.10	0.10	0.00
34.00	0.00	5,043	674.29	0.10	0.10	0.00
36.00	0.00	4,303	674.25	0.10	0.10	0.00
38.00	0.00	3,566	674.21	0.10	0.10	0.00
40.00	0.00	2,834	674.16	0.10	0.10	0.00
42.00	0.00	2,106	674.12	0.10	0.10	0.00
44.00	0.00	1,382	674.08	0,10	0.10	0.00
46.00	0.00	661	674.04	0,10	0.10	0.00
48.00	0.00	139	674.01	0.03	0.03	0.00
50.00	0.00	26	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05	0.10	0.10	0.00
674.10	0.10	0.10	0.00
674.15	0.10	0.10	0.00
674.20	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30	0.10	0.10	0.00
674.35	0.10	0.10	0.00
674.40	0.10	0.10	0.00
674.45	0.11	0.11	0.00
674.50	0.11	0.11	0.00
674.55 674.60	1.63	1.28 3.42	0.35
674.65	4.42 8.04	6.19	1.00 1.86
674.70	12.36	9.47	2.89
674.75	17.16	13.07	4.09
674.80	18.66	13.23	5.44
674.85	20.31	13.38	6.93
674.90	22.09	13.54	8.56
674.95	24.01	13.69	10.32
675.00	26.06	13.84	12.22
675.05	28.24	13.99	14.25
675.10	30.55	14.14	16.41
675.15	32.98	14.29	18.69
675.20	35.54	14.43	21.11
675.25	38.22	14.57	23.65
675.30	41.03	14.72	26.32
675.35	43.97	14.86	29.11
675.40	47.03	15.00	32.03
675.45 675.50	50.22	15.13	35.08
675.50 675.55	53.53 56.97	15.27 15.41	38.26 41.56
675.60	60.53	15.54	44.99
675.65	64.22	15.68	48.55
675.70	68.04	15.81	52.23
675.75	71.98	15.94	56.05
675.80	76.06	16.07	59.99
675.85	80.26	16.20	64.06
675.90	84.59	16.33	68.26
675.95	89.05	16.45	72.60
676.00	93.64	16.58	77.06
676.05	98.36	16.70	81.66
676.10	103.19	16.80	86.39
676.15	108.17	16.91	91.25
676.20	113.27	17.02	96.25
676.25	118.51	17.12	101.38
676.30	123.88	17.23	106.65
676.35	129.39	17.33	112.05
676.40	135.03	17.44 17.54	117.59
676.45 676.50	140.81 146.73	17.54 17.64	123.27
070.00	140./3	17.64	129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	17,150	17,150	0
674.05	17,203	17,203	859
674.10	17,257	17,257	1,720
674.15	17,310	17,310	2,584
674.20	17,363	17,363	3,451
674.25	17,416	17,416	4,321
674.30	17,469	17,469	5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45	17,629	17,629	7,825
674.50	17,683	17,683	8,708
674.55 674.60	17,736	17,736	9,594
674.65	17,789 17,842	17,789 17,842	10,482 11,372
674.70	17,896	17,896	12,266
674.75	17,949	17,949	13,162
674.80	18,002	18,002	14,061
674.85	18,055	18,055	14,962
674.90	18,108	18,108	15,866
674.95	18,162	18,162	16,773
675.00	18,215	18,215	17,683
675.05	18,268	18,268	18,595
675.10	18,321	18,321	19,509
675.15	18,375	18,375	20,427
675.20 675.25	18,428	18,428	21,347
675.30	18,481 18,534	18,481	22,270
675.35	18,587	18,534 18,587	23,195 24,123
675.40	18,641	18,641	25,054
675.45	18,694	18,694	25,987
675.50	18,747	18,747	26,923
675.55	18,800	18,800	27,862
675.60	18,853	18,853	28,803
675.65	18,907	18,907	29,747
675.70	18,960	18,960	30,694
675.75	19,013	19,013	31,643
675.80	19,066	19,066	32,595
675.85	19,119	19,119	33,550
675.90 675.95	19,173 19,226	19,173	34,507 35,467
676.00	40.070	19,226 19,279	35,467 36,430
676.05	19,279 19,419	19,279 19,419	36,430 37,397
676.10	19,558	19,558	38,371
676.15	19,698	19,698	39,353
676.20	19,837	19,837	40,341
676.25	19,977	19,977	41,337
676.30	20,117	20,117	42,339
676.35	20,256	20,256	43,348
676.40	20,396	20,396	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 0.85" for 1-Year event

26.21 cfs @ 11.98 hrs, Volume= 1.224 af

Outflow = Primary = 19.76 cfs @ 12.03 hrs, Volume= 1.224 af, Atten= 25%, Lag= 3.3 min

12.76 cfs @ 12.03 hrs, Volume= 0.948 af

Routed to Link 9L: Link

Secondary = 7.00 cfs @ 12.03 hrs, Volume= 0.276 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 674.85' @ 12.03 hrs Surf.Area= 16,842 sf Storage= 13,677 cf

Plug-Flow detention time= 223.0 min calculated for 1.224 af (100% of inflow)

Center-of-Mass det. time= 223.2 min (1,059.6 - 836.4)

Volume	Invert	Avail.Storage	Storage Description
#1	674.00'	44,156 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	15,250	0	0
675.00	17,118	16,184	16,184
676.00	19,153	18,136	34,320
676.50	20,191	9,836	44,156

Device	Routing	Invert	Outlet Devices
#1	Primary	671.55'	18.0" Round Culvert
			L= 60.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.55' / 671.25' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 3.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=12.76 cfs @ 12.03 hrs HW=674.85' (Free Discharge)

-1=Culvert (Barrel Controls 12.76 cfs @ 7.22 fps)

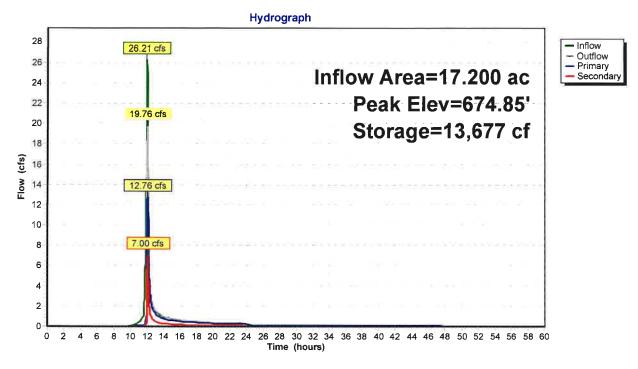
-2=Exfiltration (Passes < 0.10 cfs potential flow)

-3=Grate (Passes < 16.39 cfs potential flow)

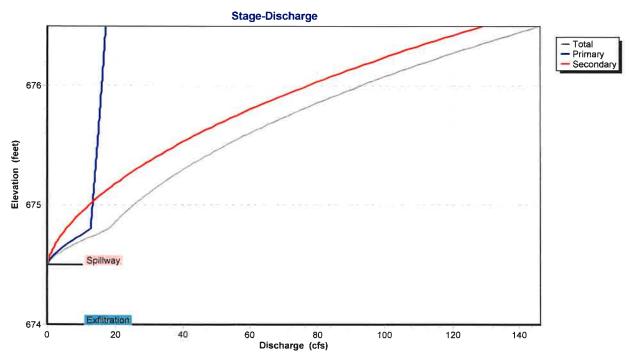
Secondary OutFlow Max=6.99 cfs @ 12.03 hrs HW=674.85' (Free Discharge)
4=Spillway (Weir Controls 6.99 cfs @ 1.80 fps)

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Pond 6P: Bioretention 2



Pond 6P: Bioretention 2

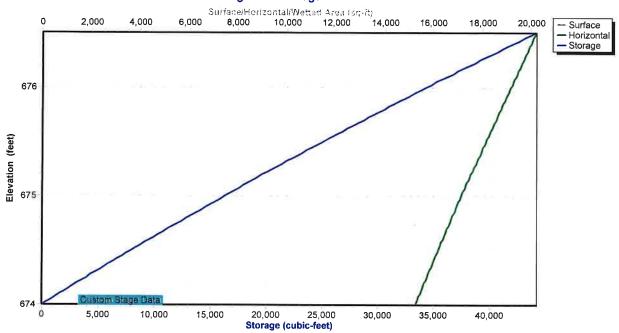


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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	Ó	674.00	0.00	0.00	0.00
2.00	0.00	Ō	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.00	0	674.00	0.00	0.00	0.00
8.00	0.00	0	674.00	0.00	0.00	0.00
10.00	0.10	114	674.01	0.03	0.03	0.00
12.00	24.90	13,332	674.83	19.07	12.70	6.37
14.00	0.91	8,492	674.54	0.98	0.73	0.25
16.00	0.57	8,297	674.53	0.59	0.45	0.14
18.00	0.45	8,201	674.52	0.46	0.36	0.10
20.00	0.33	8,091	674.51	0.35	0.28	0.07
22.00	0.30	8,054	674.51	0.31	0.25	0.06
24.00	0.28	8,033	674.51	0.28	0.23	0.05
26.00	0.00	7,294	674.47	0.10	0.10	0.00
28.00	0.00	6,603	674.42	0.10	0.10	0.00
30.00	0.00	5,918	674.38	0.09	0.09	0.00
32.00	0.00	5,238	674.34	0.09	0.09	0.00
34.00	0.00	4,564	674.29	0.09	0.09	0.00
36.00	0.00	3,894	674.25	0.09	0.09	0.00
38.00	0.00	3,231	674.21	0.09	0.09	0.00
40.00	0.00	2,572	674.17	0.09	0.09	0.00
42.00	0.00	1,918	674.12	0.09	0.09	0.00
44.00	0.00	1,270	674.08	0.09	0.09	0.00
46.00	0.00	627	674.04	0.09	0.09	0.00
48.00	0.00	136	674.01	0.03	0.03	0.00
50.00	0.00	26	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05	0.09	0.09	0.00
674.10 674.15	0.09 0.09	0.09 0.09	0.00 0.00
674.20	0.09	0.09	0.00
674.25	0.09	0.09	0.00
674.30	0.09	0.09	0.00
674.35	0.09	0.09	0.00
674.40 674.45	0.10 0.10	0.10 0.10	0.00 0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60	3.58	2.58	1.00
674.65	6.52	4.66	1.86
674.70 674.75	10.01 14.00	7.12 9.91	2.89 4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90	21.46	12.90	8.56
674.95	23.37	13.05	10.32
675.00 675.05	25.42 27.59	13.20 13.35	12.22 14.25
675.10	29.90	13.49	16.41
675.15	32.33	13.63	18.69
675.20	34.88	13.77	21.11
675.25 675.30	37.56 40.37	13.91 14.05	23.65 26.32
675.35	43.30	14.19	29.11
675.40	46.36	14.32	32.03
675.45	49.54	14.46	35.08
675.50	52.85	14.59	38.26
675.55 675.60	56.28 59.84	14.72 14.86	41.56 44.99
675.65	63.53	14.98	48.55
675.70	67.34	15.11	52.23
675.75	71.29	15.24	56.05
675.80 675.85	75.36 79.55	15.37	59.99
675.90	83.88	15.49 15.62	64.06 68.26
675.95	88.34	15.74	72.60
676.00	92.93	15.86	77.06
676.05	97.65	15.99	81.66
676.10 676.15	102.50 107.48	16.11 16.23	86.39 91.25
676.20	112.60	16.23	96.25
676.25	117.85	16.46	101.38
676.30	123.23	16.58	106.65
676.35	128.75	16.70	112.05
676.40 676.45	134.41 140.20	16.81 16.93	117.59 123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

674.00 15,250 15,250 0 674.05 15,343 15,343 765 674.10 15,437 15,437 1,534 674.15 15,530 15,530 2,309 674.20 15,624 15,624 3,087 674.25 15,717 15,717 3,871 674.30 15,810 4,659 674.35 15,904 15,904 5,452 674.40 15,997 15,997 6,249 674.45 16,091 16,091 7,052 674.50 16,184 16,184 7,859 674.55 16,277 16,277 8,670 674.60 16,371 16,371 9,486 674.70 16,558 16,558 11,133 674.75 16,651 16,651 11,963 674.85 16,838 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.55 18,337 18,339 26,821 675.60 18,339 18,339 26,821 675.70 18,543 18,034 24,093 675.50 18,136 18,136 24,997 675.75 18,644 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,441 27,728 675.85 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.55 18,237 18,237 25,907 675.60 18,339 18,339 26,821 675.75 18,644 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,441 27,741 675.95 19,051 19,051 33,364 675.90 18,949 18,949 32,414 675.95 19,051 19,051 33,364 675.90 19,361 19,361 36,245 676.00 19,153 19,153 34,200 676.00 19,153 19,153 34,200 676.00 19,153 19,153 34,200 676.05 19,257 19,257 35,280 676.00 19,361 19,361 36,245 676.05 19,267 19,672 39,173 676.30 19,776 19,776 40,159 676.45 20,087 20,087 43,149 676.50 20,191 20,191 44,156	Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
674.05				
674.15		15,343	15,343	
674.20				
674.25				
674.30				
674.35				
674.45 16,091 16,091 7,052 674.50 16,184 16,184 7,859 674.55 16,277 16,277 8,670 674.60 16,371 16,371 9,486 674.65 16,464 16,464 10,307 674.70 16,558 16,558 11,133 674.75 16,651 18,651 11,963 674.80 16,744 16,744 12,798 674.85 16,838 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,025 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,627 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.55 18,034 18,034 24,093 675.50 18,136 18,136 24,997 675.50 18,339 18,339 26,821 675.65 18,441 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,644 29,595 675.80 18,746 18,746 30,530 675.85 19,061 19,051 33,364 675.90 18,949 18,949 32,414 675.95 19,061 19,051 33,364 676.00 19,153 19,153 34,320 676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.45 20,087 20,087 43,149				
674.50				
674.55 16,277 16,277 8,670 674.60 16,371 16,371 9,486 674.65 16,464 16,464 10,307 674.70 16,558 18,558 11,133 674.75 16,651 16,651 11,963 674.80 16,744 16,744 12,798 674.85 16,838 19,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,042 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 <t< td=""><td></td><td></td><td></td><td></td></t<>				
674.60 16,371 16,371 9,486 674.65 16,464 16,464 10,307 674.70 16,558 16,558 11,133 674.75 16,651 16,651 11,963 674.80 16,744 16,744 12,798 674.85 16,838 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.55 18,339 18,339 26,821				
674.65 16,464 16,464 10,307 674.70 16,558 16,558 11,133 674.75 16,651 16,651 11,963 674.80 16,744 16,744 12,798 674.85 16,838 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.55 18,136 18,136 24,997 675.50 18,136 18,1339 26,821 675.75 18,644 18,441				
674.75 16,651 16,651 11,963 674.80 16,744 16,744 12,798 674.85 16,838 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.50 18,136 18,136 24,997 675.55 18,237 18,237 25,907 675.65 18,441 18,441 27,741 675.75 18,644 18,644 29,595 <td></td> <td></td> <td></td> <td></td>				
674.80 16,744 16,744 12,798 674.85 16,838 16,838 13,637 674.90 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.45 18,034 18,034 24,093 675.50 18,136 18,136 24,997 675.65 18,237 18,237 25,907 675.60 18,339 18,339 26,821 675.75 18,644 18,746 30,530 6			16,558	11,133
674.85 16,838 13,637 674.90 16,931 16,931 14,482 674.95 17,025 17,025 15,330 675.00 17,118 17,118 16,184 675.05 17,220 17,220 17,042 675.10 17,322 17,322 17,906 675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.45 18,034 18,034 24,093 675.50 18,136 18,136 24,997 675.55 18,237 18,237 25,907 675.60 18,339 18,339 26,821 675.75 18,644 18,644 29,595 675.80 18,746 18,746 30,530 6				
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675.15 17,423 17,423 18,775 675.20 17,525 17,525 19,648 675.25 17,627 17,627 20,527 675.30 17,728 17,728 21,411 675.35 17,830 17,830 22,300 675.40 17,932 17,932 23,194 675.45 18,034 18,034 24,093 675.50 18,136 18,136 24,997 675.55 18,237 18,237 25,907 675.60 18,339 18,339 26,821 675.65 18,441 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,644 29,595 675.80 18,746 18,746 30,530 675.85 18,848 18,848 31,469 675.90 18,949 18,949 32,414 675.95 19,051 19,051 33,364 676.00 19,153 19,153 34,320 676.05 19,257 19,257 35,280			17,220	17,042
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675.45 18,034 18,034 24,093 675.50 18,136 18,136 24,997 675.55 18,237 18,237 25,907 675.60 18,339 18,339 26,821 675.65 18,441 18,441 27,741 675.70 18,543 18,543 28,665 675.75 18,644 18,644 29,595 675.80 18,746 18,746 30,530 675.85 18,848 18,848 31,469 675.90 18,949 18,949 32,414 675.95 19,051 19,051 33,364 676.00 19,153 19,153 34,320 676.05 19,257 19,257 35,280 676.10 19,361 19,361 36,245 676.15 19,464 19,464 37,216 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.40 19,983 19,880 41,150 676.45 20,087 20,087 43,149				
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675.75 18,644 18,644 29,595 675.80 18,746 18,746 30,530 675.85 18,848 18,848 31,469 675.90 18,949 18,949 32,414 675.95 19,051 19,051 33,364 676.00 19,153 19,153 34,320 676.05 19,257 19,257 35,280 676.10 19,361 19,361 36,245 676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
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676.00 19,153 19,153 34,320 676.05 19,257 19,257 35,280 676.10 19,361 19,361 36,245 676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149	675.90	18,949		
676.05 19,257 19,257 35,280 676.10 19,361 19,361 36,245 676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.10 19,361 19,361 36,245 676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.15 19,464 19,464 37,216 676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.20 19,568 19,568 38,192 676.25 19,672 19,672 39,173 676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.30 19,776 19,776 40,159 676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149	676.20		19,568	
676.35 19,880 19,880 41,150 676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.40 19,983 19,983 42,147 676.45 20,087 20,087 43,149				
676.45 20,087 20,087 43,149				

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 0.96" for 1-Year event

Inflow = 29.50 cfs @ 12.07 hrs, Volume= 2.045 af

Outflow = 2.73 cfs @ 12.97 hrs, Volume= 2.045 af, Atten= 91%, Lag= 54.2 min

Primary = 2.73 cfs @ 12.97 hrs, Volume= 2.045 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 674.69' @ 12.97 hrs Surf.Area= 33,429 sf Storage= 26,743 cf

Plug-Flow detention time= 71.8 min calculated for 2.044 af (100% of inflow)

Center-of-Mass det. time= 71.7 min (1,178.4 - 1,106.6)

Volume	Inve	rt Avail.St	orage	Storage D	escription		
#1	672.0	0' 311,5	88 cf	dry basin	(Prismatic)Li	isted below (Recalc)	
Elevation (feet)		Surf.Area (sq-ft)		:.Store c-feet)	Cum.Store (cubic-feet)		
672.00		1,285		0	0		
673.00		6,433		3,859	3,859		
674.00		9,723		8,078	11,937		
675.00		44,268	2	26,996	38,933		
676.00		48,305	4	16,287	85,219		
677.00		52,399		50,352	135,571		
678.00		56,550		54,475	190,046		
679.00		60,757		8,654	248,699		
680.00		65,021		32,889	311,588		
		·		•	,		
Device F	Routing	Invert	Outl	et Devices			
#1 F	Primary	670.75'					

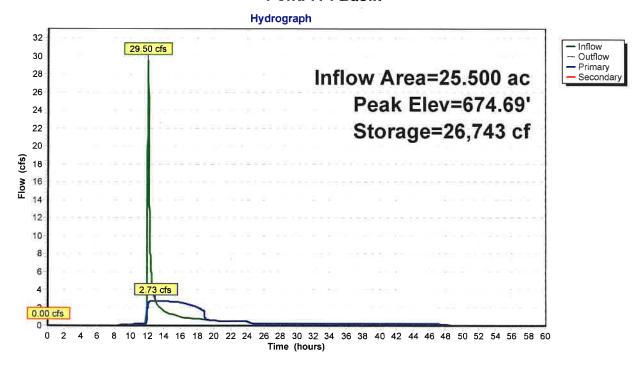
#1	Primary	670.75'	10.0" Round Culvert (structure to outlet)
			L= 200.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	670.80'	8.0" Round Culvert (basin to structure)
			L= 25.0' CPP, mitered to conform to fill, Ke= 0.700
			Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	678.00'	24.0" W x 24.0" H Vert. Grate C= 0.600
			Limited to weir flow at low heads
#4	Device 1	670.75'	8.0" Vert. Orifice X 3.00 C= 0.600
			Limited to weir flow at low heads
#5	Device 1	675.50'	5.0' long Weir 2 End Contraction(s)
#6	Secondary	679.00'	143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)
	•		J

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Primary OutFlow Max=2.73 cfs @ 12.97 hrs HW=674.69' (Free Discharge)
1=Culvert (structure to outlet) (Barrel Controls 2.73 cfs @ 5.01 fps)
2=Culvert (basin to structure) (Passes < 2.80 cfs potential flow)
3=Grate (Controls 0.00 cfs)
4=Orifice (Passes < 9.57 cfs potential flow)
5=Weir (Controls 0.00 cfs)

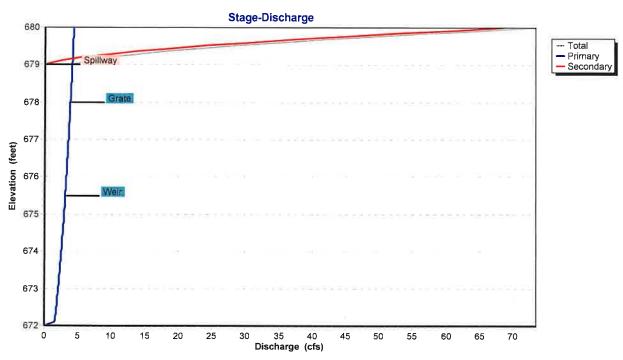
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge)
6=Spillway (Controls 0.00 cfs)

Pond 7P: Basin



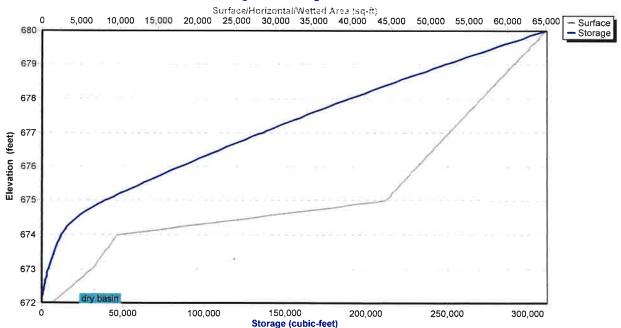
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.00	0	672.00	0.00	0.00	0.00
6.00	0.00	0	672.00	0.00	0.00	0.00
8.00	0.02	2	672.00	0.02	0.02	0.00
10.00	0.13	10	672.01	0.12	0.12	0.00
12.00	23.05	4,195	673.05	2.04	2.04	0.00
14.00	1.58	24,226	674.61	2.70	2.70	0.00
16.00	0.95	14,021	674.17	2.53	2.53	0.00
18.00	0.73	3,447	672.93	1.98	1.98	0.00
20.00	0.54	44	672.03	0.54	0.54	0.00
22.00	0.48	38	672.03	0.48	0.48	0.00
24.00	0.44	35	672.02	0.44	0.44	0.00
26.00	0.20	16	672.01	0.20	0.20	0.00
28.00	0.20	16	672.01	0.20	0.20	0.00
30.00	0.20	16	672.01	0.20	0.20	0.00
32.00	0.20	16	672.01	0.20	0.20	0.00
34.00	0.20	16	672.01	0.20	0.20	0.00
36.00	0.20	16	672.01	0.20	0.20	0.00
38.00	0.19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.06	5	672.00	0.07	0.07	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00	0.00	0	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

Classation.	Disabassa	Delasta	0	f =	D'antana	D.:	0
Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
673.90	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00	2.47	2.47	0.00	679.30	14.60	4.09	10.51
674.10	2.51	2.51	0.00	679.40	20.49	4.12	16.37
674.20	2.55	2.55	0.00	679.50	27.28	4.14	23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.19	39.19
674.50 674.60	2.66 2.70	2.66 2.70	0.00	679.80 679.90	52.63	4.22 4.24	48.41 58.40
674.60 674.70	2.70 2.74	2.70	0.00 0.00	680.00	62.63 73.39	4.24 4.26	69.13
674.80	2.77	2.74	0.00	000.00	13.35	4.20	09.13
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675.60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00				
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00	Ĭ,			
676.60 676.70	3.36 3.39	3.36 3.39	0.00 0.00				
676.80	3.39 3.42	3.39	0.00				
676.90	3.42 3.45	3.42	0.00	[[
677.00	3.48	3.48	0.00	l d			
677.10	3.51	3.51	0.00				
677.20	3.54	3.54	0.00				
J. ,J	0.01	0.0 T	0.00				

Stage-Area-Storage for Pond 7P: Basin

			w.		
Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677.60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60	4,374	1,698	677.90	56,135	184,411
672.70	4,889	2,161	678.00	56,550	190,046
672.80	5,403	2,675	678.10	56,971	195,722
672.90	5,918	3,241	678.20	57,391	201,440
673.00	6,433	3,859	678.30	57,812	207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407 8,736	8,311	678.90	60,336	242,644
673.70 673.80	8,736 9,065	9,168	679.00	60,757	248,699
673.90	9,065 9,394	10,058	679.10	61,183	254,796
674.00	9,394 9,723	10,981	679.20	61,610	260,936
674.10	13,178	11,937 13,082	679.30	62,036	267,118
674.20	16,632	14,573	679.40 679.50	62,463	273,343
674.30	20,086	16,408	679.60	62,889 63,315	279,611 285,921
674.40	23,541	18,590	679.70	63,742	292,274
674.50	26,996	21,117	679.80	64,168	298,669
674.60	30,450	23,989	679.90	64,595	305,107
674.70	33,905	27,207	680.00	65,021	311,588
674.80	37,359	30,770	000.00	00,021	311,300
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287	61,571			
675.60	46,690	66,220			
675.70	47,094	70,909			
675.80	47,498	75,639			
675.90	47,901	80,409			
676.00	48,305	85,219			
676.10	48,714	90,070			
676.20	49,124	94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352 50,761	109,883			
676.60 676.70	50,761	114,939			
676.70 676.80	51,171 51,590	120,036			
676.90	51,580 51,000	125,173			
676.90	51,990 52,399	130,352 135,571			
677.10	52,399 52,814	135,571			
677.10	53,229	140,832 146,134			
011.20	00,229	140, 134			

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 0.96" for 1-Year event

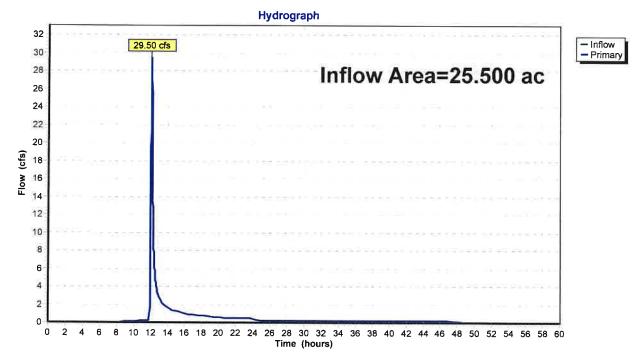
Inflow = 29.50 cfs @ 12.07 hrs, Volume= 2.045 af

Primary = 29.50 cfs @ 12.07 hrs, Volume= 2.045 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P: Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



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Hydrograph for Link 9L: Link

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	
0.00	0.00	0.00	0.00	1
1.00 2.00	0.00 0.00	0.00 0.00	0.00 0.00	
3.00	0.00	0.00	0.00	
4.00 5.00	0.00 0.00	0.00 0.00	0.00 0.00	
6.00	0.00	0.00	0.00	
7.00 8.00	0.01 0.02	0.00 0.00	0.01 0.02	
9.00	0.06	0.00	0.06	
10.00 11.00	0.13 0.19	0.00 0.00	0.13 0.19	
12.00	23.05	0.00	23.05	
13.00 14.00	2.67 1.58	0.00 0.00	2.67 1.58	
15.00	1.20	0.00	1.20	
16.00 17.00	0.95 0.82	0.00 0.00	0.95 0.82	
18.00	0.73	0.00	0.73	
19.00 20.00	0.64 0.54	0.00 0.00	0.64 0.54	
21.00	0.50	0.00	0.50	
22.00 23.00	0.48 0.46	0.00 0.00	0.48 0.46	
24.00	0.44	0.00	0.44	
25.00 26.00	0.20 0.20	0.00 0.00	0.20 0.20	
27.00	0.20 0.20	0.00	0.20	
28.00 29.00	0.20	0.00 0.00	0.20 0.20	
30.00 31.00	0.20 0.20	0.00	0.20	
32.00	0.20	0.00 0.00	0.20 0.20	
33.00 34.00	0.20 0.20	0.00 0.00	0.20	
35.00	0.20	0.00	0.20 0.20	
36.00 37.00	0.20 0.19	0.00 0.00	0.20 0.19	
38.00	0.19	0.00	0.19	
39.00 40.00	0.19 0.19	0.00 0.00	0.19 0.19	
41.00	0.19	0.00	0.19	
42.00 43.00	0.19 0.19	0.00 0.00	0.19 0.19	
44.00	0.19	0.00	0.19	
45.00 46.00	0.19 0.19	0.00 0.00	0.19 0.19	
47.00	0.15	0.00	0.15	
48.00 49.00	0.06 0.03	0.00 0.00	0.06 0.03	
50.00	0.01	0.00	0.01	
51.00 52.00	0.01 0.00	0.00 0.00	0.01 0.00	

Time	Inflow	Elevation	Primary
(hours)	(cfs)	(feet)	(cfs)
53.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00

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Summary for Subcatchment 1S: Proposed North

Runoff = 18.50 cfs @ 12.02 hrs, Volume=

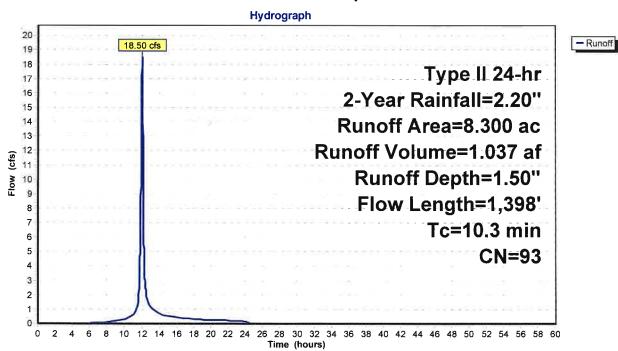
1.037 af, Depth= 1.50"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.20"

Area	(ac) (N Des	cription						
5	5.000	98 Pav	Paved parking, HSG D						
1	.400	98 Pav	Paved parking, HSG C						
1	.100	80 >75°	>75% Grass cover, Good, HSG D						
0	.800	74 >75	% Grass c	over, Good	, HSG C				
8	3.300	93 Wei	ghted Aver	age					
1	.900		9% Pervio						
6	.400	77.1	1% Imperv	vious Area					
Tc	Length	Slope	Velocity	Capacity	Description				
/									
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
<u>(min)</u> 2.7	(feet) 72	(ft/ft) 0.3500	(ft/sec) 0.44	(cfs)	Sheet Flow, grass				
				(cfs)	Sheet Flow, grass Grass: Short n= 0.150 P2= 2.50"				
	72			(cfs)					
2.7	72	0.3500	0.44	(cfs)	Grass: Short n= 0.150 P2= 2.50"				
2.7	72	0.3500 0.0160	0.44	(cfs)	Grass: Short n= 0.150 P2= 2.50" Shallow Concentrated Flow, pavement				

Subcatchment 1S: Proposed North



Runoff

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

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Hydrograph for Subcatchment 1S: Proposed North

Time	Precip.	Excess	Runoff	Time	Precip.	Excess
(hours)	(inches)	(inches)	(cfs)	(hours)	(inches)	(inches)
0.00	0.00	0.00	0.00	53.00	2.20	1.50
1.00	0.02	0.00	0.00	54.00	2.20	1.50
2.00 3.00	0.05 0.08	0.00 0.00	0.00 0.00	55.00 56.00	2.20 2.20	1.50 1.50
4.00	0.00	0.00	0.00	57.00	2.20	1.50
5.00	0.14	0.00	0.00	58.00	2.20	1.50
6.00	0.18	0.00	0.02	59.00	2.20	1.50
7.00	0.22	0.01	0.05	60.00	2.20	1.50
8.00 9.00	0.26 0.32	0.01 0.03	0.09 0.18			
10.00	0.40	0.03	0.18			
11.00	0.52	0.12	0.64			
12.00	1.46	0.83	18.22			
13.00	1.70	1.04	1.14			
14.00 15.00	1.80 1.88	1.14 1.20	0.67	,		
16.00	1.94	1.26	0.52 0.40			
17.00	1.98	1.30	0.35			
18.00	2.03	1.34	0.31			
19.00	2.06	1.37	0.27			
20.00 21.00	2.09 2.12	1.40 1.43	0.23 0.21			
22.00	2.12	1.45	0.21			
23.00	2.18	1.48	0.20			
24.00	2.20	1.50	0.19			
25.00	2.20	1.50	0.00	8		
26.00 27.00	2.20 2.20	1.50 1.50	0.00 0.00			
28.00	2.20	1.50	0.00			
29.00	2.20	1.50	0.00		55	
30.00	2.20	1.50	0.00			
31.00	2.20	1.50	0.00			
32.00 33.00	2.20 2.20	1.50 1.50	0.00 0.00			
34.00	2.20	1.50	0.00			
35.00	2.20	1.50	0.00			
36.00	2.20	1.50	0.00			
37.00	2.20	1.50	0.00			
38.00 39.00	2.20 2.20	1.50 1.50	0.00 0.00			
40.00	2.20	1.50	0.00			
41.00	2.20	1.50	0.00			
42.00	2.20	1.50	0.00			
43.00	2.20 2.20	1.50 1.50	0.00			
44.00 45.00	2.20	1.50	0.00 0.00			
46.00	2.20	1.50	0.00			
47.00	2.20	1.50	0.00			
48.00	2.20	1.50	0.00			
49.00 50.00	2.20 2.20	1.50 1.50	0.00 0.00			
51.00	2.20	1.50	0.00			
52.00	2.20	1.50	0.00			
			11	Į.		

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Summary for Subcatchment 2S: Proposed South

noff = 34.50 cfs @ 11.98 hrs, Volume= Routed to Pond 6P : Bioretention 2 Runoff

1.618 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.20"

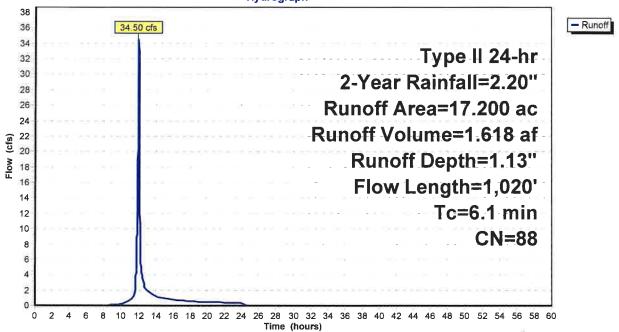
Area	(ac) C	N Des	cription				
5.400 98 Paved parking, HSG D							
3.	3.600 98 Paved parking, HSG C						
	4.800 80 >75% Grass cover, Good, HSG D						
				over, Good	, HSG C		
			el surface	•			
0.	080	96 Grav	<u>/el surface</u>	, HSG C			
		•	ghted Aver	•			
	200	-	7% Pervio				
9.	000	52.3	3% Imper	∕ious Area			
Тс	Length	Slope	Velocity	Capacity	Description		
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description		
0.7	30	0.0100	0.72	(010)	Sheet Flow, pvmt		
0.7	30	0.0100	0.12		Smooth surfaces n= 0.011 P2= 2.50"		
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass		
			• • • • • • • • • • • • • • • • • • • •		Unpaved Kv= 16.1 fps		
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement		
					Paved Kv= 20.3 fps		
4.4	800		3.00		Direct Entry, Pipe flow		
6.1	1,020	Total					

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Subcatchment 2S: Proposed South





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Hydrograph for Subcatchment 2S: Proposed South

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	
0.00	0.00	0.00	0.00	
1.00 2.00	0.02 0.05	0.00 0.00	0.00 0.00	
3.00	0.03	0.00	0.00	
4.00	0.11	0.00	0.00	
5.00 6.00	0.14 0.18	0.00 0.00	0.00 0.00	
7.00	0.22	0.00	0.00	
8.00 9.00	0.26 0.32	0.00 0.00	0.00 0.07	
10.00	0.40	0.01	0.22	
11.00 12.00	0.52 1.46	0.04 0.55	0.70 32.60	
13.00	1.70	0.73	1.91	
14.00 15.00	1.80 1.88	0.81 0.87	1.15 0.92	
16.00	1.94	0.91	0.72	
17.00 18.00	1.98 2.03	0.95 0.99	0.64 0.56	
19.00	2.06	1.02	0.49	
20.00 21.00	2.09 2.12	1.04 1.06	0.41 0.39	
22.00	2.15	1.09	0.38	
23.00 24.00	2.18 2.20	1.11 1.13	0.36 0.35	
25.00	2.20	1.13	0.00	
26.00 27.00	2.20 2.20	1.13 1.13	0.00 0.00	
28.00	2.20	1.13	0.00	
29.00 30.00	2.20 2.20	1.13 1.13	0.00 0.00	
31.00 32.00	2.20	1,13 1,13	0.00 0.00	
33.00	2.20 2.20	1.13	0.00	
34.00	2.20 2.20	1.13	0.00	
35.00 36.00	2.20	1,13 1,13	0.00 0.00	
37.00 38.00	2.20 2.20	1.13 1.13	0.00 0.00	
39.00	2.20	1.13	0.00	
40.00 41.00	2.20	1.13	0.00	
42.00	2.20 2.20	1.13 1.13	0.00 0.00	
43.00	2.20	1,13	0.00	
44.00 45.00	2.20 2.20	1.13 1.13	0.00 0.00	
46.00	2.20	1,13	0.00	
47.00 48.00	2.20 2.20	1,13 1,13	0.00 0.00	
49.00 50.00	2.20 2.20	1.13 1.13	0.00 0.00	
51.00	2.20	1,13	0.00	
52.00	2.20	1.13	0.00	

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
53.00	2.20	1.13	0.00
54.00	2.20	1.13	0.00
55.00	2.20	1.13	0.00
56.00	2.20	1.13	0.00
57.00	2.20	1.13	0.00
58.00	2.20	1.13	0.00
59.00	2.20	1.13	0.00
60.00	2.20	1.13	0.00

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 1.50" for 2-Year event

Inflow = 18.50 cfs @ 12.02 hrs, Volume= 1.037 af

Outflow = 16.07 cfs @ 12.07 hrs, Volume= 1.037 af, Atten= 13%, Lag= 3.0 min

Primary = 12.26 cfs @ 12.07 hrs, Volume= 0.875 af

Routed to Link 9L : Link

Secondary = 3.81 cfs @ 12.07 hrs, Volume= 0.161 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 674.74' @ 12.07 hrs Surf.Area= 17,937 sf Storage= 12,959 cf

Plug-Flow detention time= 292.4 min calculated for 1.037 af (100% of inflow)

Center-of-Mass det. time= 292.4 min (1,099.6 - 807.2)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	674.00'	46,418 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	17,150	0	0
675.00	18,215	17,683	17,683
676.00	19,279	18,747	36,430
676.50	20,675	9,989	46,418

Device	Routing	Invert	Outlet Devices
#1	Primary	671.45'	18.0" Round Culvert
			L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.45' / 671.20' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 4.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)
	•		0

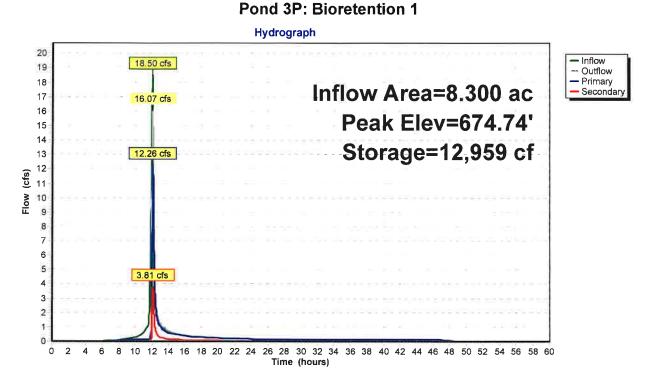
Primary OutFlow Max=12.30 cfs @ 12.07 hrs HW=674.74' (Free Discharge)

1=Culvert (Passes 12.30 cfs of 13.03 cfs potential flow)

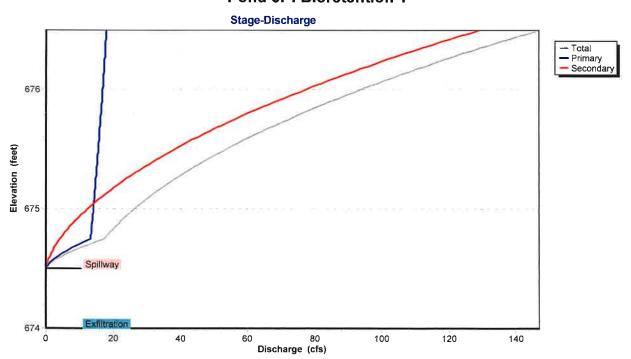
-2=Exfiltration (Controls 0.11 cfs)

-3=Grate (Weir Controls 12.19 cfs @ 1.60 fps)

Secondary OutFlow Max=3.80 cfs @ 12.07 hrs HW=674.74' (Free Discharge)
—4=Spillway (Weir Controls 3.80 cfs @ 1.49 fps)



Pond 3P: Bioretention 1

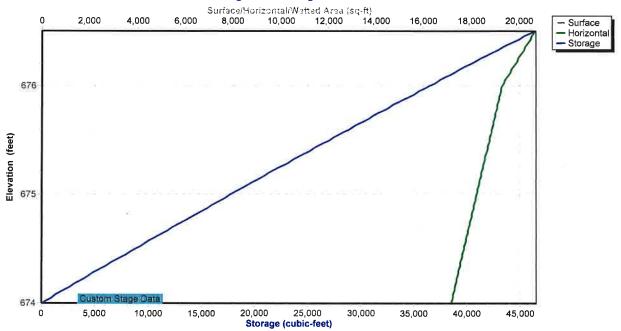


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.02	13	674.00	0.00	0.00	0.00
8.00	0.09	222	674.01	0.05	0.05	0.00
10.00	0.29	883	674.05	0.10	0.10	0.00
12.00	18.22	12,197	674.70	12.02	9.20	2.81
14.00	0.67	9,180	674.53	0.71	0.57	0.14
16.00	0.40	8,976	674.52	0.43	0.36	0.07
18.00	0.31	8,885	674.51	0.32	0.27	0.05
20.00	0.23	8,816	674.51	0.24	0.21	0.03
22.00	0.21	8,792	674.50	0.21	0.18	0.02
24.00	0.19	8,778	674.50	0.19	0.17	0.02
26.00	0.00	8,064	674.46	0.11	0.11	0.00
28.00	0.00	7,307	674.42	0.10	0.10	0.00
30.00	0.00	6,554	674.38	0.10	0.10	0.00
32.00	0.00	5,805	674.33	0.10	0.10	0.00
34.00	0.00	5,060	674.29	0.10	0.10	0.00
36.00	0.00	4,320	674.25	0.10	0.10	0.00
38.00	0.00	3,583	674.21	0.10	0.10	0.00
40.00	0.00	2,851	674.17	0.10	0.10	0.00
42.00	0.00	2,122	674.12	0.10	0.10	0.00
44.00	0.00	1,398	674.08	0.10	0.10	0.00
46.00	0.00	678	674.04	0.10	0.10	0.00
48.00	0.00	144	674.01	0.03	0.03	0.00
50.00	0.00	27	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05 674.10	0.10 0.10	0.10 0.10	0.00 0.00
674.15	0.10	0.10	0.00
674.13	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30	0.10	0.10	0.00
674.35	0.10	0.10	0.00
674.40	0.10	0.10	0.00
674.45	0.11	0.11	0.00
674.50	0.11	0.11	0.00
674.55	1.63	1.28	0.35
674.60	4.42	3.42	1.00
674.65	8.04	6.19	1.86
674.70	12.36	9.47	2.89
674.75 674.80	17.16 18.66	13.07 13.23	4.09 5.44
674.85	20.31	13.23	6.93
674.90	22.09	13.54	8.56
674.95	24.01	13.69	10.32
675.00	26.06	13.84	12.22
675.05	28.24	13.99	14.25
675.10	30.55	14.14	16.41
675.15	32.98	14.29	18.69
675.20	35.54	14.43	21.11
675.25	38.22	14.57	23.65
675.30	41.03	14.72	26.32
675.35 675.40	43.97 47.03	14.86 15.00	29.11 32.03
675.45	50.22	15.00	35.08
675.50	53.53	15.27	38.26
675.55	56.97	15.41	41.56
675.60	60.53	15.54	44.99
675.65	64.22	15.68	48.55
675.70	68.04	15.81	52.23
675.75	71.98	15.94	56.05
675.80	76.06	16.07	59.99
675.85	80.26	16.20	64.06 68.26
675.90 675.95	84.59 89.05	16.33 16.45	72.60
676.00	93.64	16.58	72.00 77.06
676.05	98.36	16.70	81.66
676.10	103.19	16.80	86.39
676.15	108.17	16.91	91.25
676.20	113.27	17.02	96.25
676.25	118.51	17.12	101.38
676.30	123.88	17.23	106.65
676.35	129.39	17.33	112.05
676.40	135.03	17.44	117.59
676.45	140.81	17.54	123.27
676.50	146.73	17.64	129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation (feet)	Surface	Horizontal	Storage (cubic-feet)
	(sq-ft)	(sq-ft)	
674.00 674.05	17,150 17,203	17,150 17,203	0 859
674.10	17,203	17,203 17,257	1,720
674.15	17,310	17,310	2,584
674.20	17,363	17,363	3,451
674.25	17,416	17,416	4,321
674.30	17,469	17,469	5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45	17,629	17,629	7,825
674.50	17,683	17,683	8,708
674.55	17,736	17,736	9,594
674.60	17,789	17,789	10,482
674.65	17,842	17,842	11,372
674.70 674.75	17,896	17,896	12,266
674.75 674.80	17,949 18,002	17,949 18,002	13,162
674.85	18,055	18,055	14,061 14,962
674.90	18,108	18,108	15,866
674.95	18,162	18,162	16,773
675.00	18,215	18,215	17,683
675.05	18,268	18,268	18,595
675.10	18,321	18,321	19,509
675.15	18,375	18,375	20,427
675.20	18,428	18,428	21,347
675.25	18, 4 81	18,481	22,270
675.30	18,534	18,534	23,195
675.35	18,587	18,587	24,123
675.40	18,641	18,641	25,054
675.45	18,694	18,694	25,987
675.50 675.55	18,747	18,747	26,923
675.60	18,800 18,853	18,800 18,853	27,862 28,803
675.65	18,907	18,907	29,747
675.70	18,960	18,960	30,694
675.75	19,013	19,013	31,643
675.80	19,066	19,066	32,595
675.85	19,119	19,119	33,550
675.90	19,173	19,173	34,507
675.95	19,226	19,226	35,467
676.00	19,279	19,279	36,430
676.05	19,419	19,419	37,397
676.10	19,558	19,558	38,371
676.15	19,698	19,698	39,353
676.20	19,837	19,837	40,341
676.25 676.30	19,977 20,117	19,977	41,337 42,339
676.35	20,117 20,256	20,117 20,256	42,339 43,348
676.40	20,396	20,230	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418
	•	•	•

22.117 Proposed Basin

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 1.13" for 2-Year event

Inflow = 34.50 cfs @ 11.98 hrs, Volume= 1.618 af

Outflow = 25.88 cfs @ 12.03 hrs, Volume= 1.618 af, Atten= 25%, Lag= 3.3 min

Primary = 13.23 cfs @ 12.03 hrs, Volume= 1.182 af

Routed to Link 9L : Link

Secondary = 12.65 cfs @ 12.03 hrs, Volume= 0.435 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.01' @ 12.03 hrs Surf.Area= 17,140 sf Storage= 16,366 cf

Plug-Flow detention time= 172.7 min calculated for 1.618 af (100% of inflow)

Center-of-Mass det. time= 172.7 min (1,001.0 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	674.00'	44,156 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	15,250	0	0
675.00	17,118	16,184	16,184
676.00	19,153	18,136	34,320
676.50	20,191	9,836	44,156

Device	Routing	Invert	Outlet Devices
#1	Primary	671.55'	18.0" Round Culvert
			L= 60.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.55' / 671.25' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 3.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=13.23 cfs @ 12.03 hrs HW=675.01' (Free Discharge)

1=Culvert (Barrel Controls 13.23 cfs @ 7.49 fps)

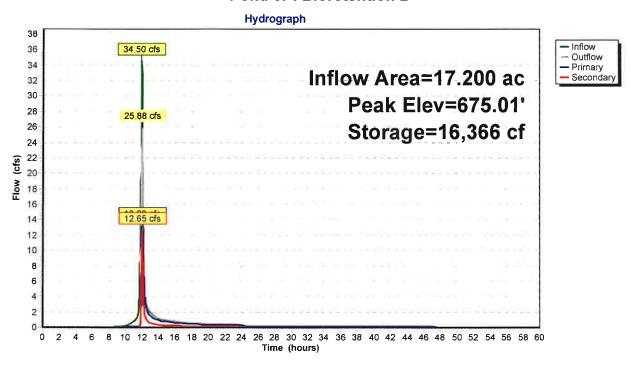
2=Exfiltration (Passes < 0.11 cfs potential flow)

-3=Grate (Passes < 28.62 cfs potential flow)

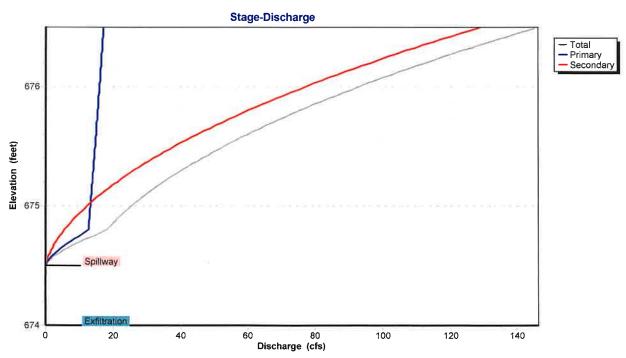
Secondary OutFlow Max=12.63 cfs @ 12.03 hrs HW=675.01' (Free Discharge) 4=Spillway (Weir Controls 12.63 cfs @ 2.15 fps)

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Pond 6P: Bioretention 2



Pond 6P: Bioretention 2

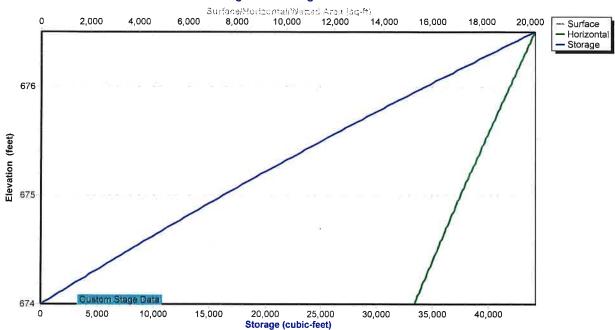


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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.00	0	674.00	0.00	0.00	0.00
8.00	0.00	0	674.00	0.00	0.00	0.00
10.00	0.22	391	674.03	0.09	0.09	0.00
12.00	32.60	15,917	674.98	24.77	13.15	11.62
14.00	1.15	8,621	674.55	1.23	0.91	0.32
16.00	0.72	8,375	674.53	0.75	0.56	0.18
18.00	0.56	8,285	674.53	0.57	0.44	0.13
20.00	0.41	8,172	674.52	0.43	0.34	0.09
22.00	0.38	8,125	674.52	0.38	0.30	0.08
24.00	0.35	8,098	674.51	0.35	0.28	0.07
26.00	0.00	7,314	674.47	0.10	0.10	0.00
28.00	0.00	6,623	674.42	0.10	0.10	0.00
30.00	0.00	5,937	674.38	0.09	0.09	0.00
32.00	0.00	5,257	674.34	0.09	0.09	0.00
34.00	0.00	4,583	674.30	0.09	0.09	0.00
36.00	0.00	3,913	674.25	0.09	0.09	0.00
38.00	0.00	3,249	674.21	0.09	0.09	0.00
40.00	0.00	2,591	674.17	0.09	0.09	0.00
42.00	0.00	1,937	674.13	0.09	0.09	0.00
44.00	0.00	1,289	674.08	0.09	0.09	0.00
46.00	0.00	645	674.04	0.09	0.09	0.00
48.00	0.00	143	674.01	0.03	0.03	0.00
50.00	0.00	27	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00 674.05	0.00 0.09	0.00 0.09	0.00 0.00
674.03	0.09	0.09	0.00
674.15	0.09	0.09	0.00
674.20	0.09	0.09	0.00
674.25	0.09	0.09	0.00
674.30	0.09	0.09	0.00
674.35 674.40	0.09 0.10	0.09 0.10	0.00 0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60	3.58	2.58	1.00
674.65 674.70	6.52 10.01	4.66 7.12	1.86 2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90 674.95	21.46 23.37	12.90 13.05	8.56
675.00	25.37 25.42	13.20	10.32 12.22
675.05	27.59	13.35	14.25
675.10	29.90	13.49	16.41
675.15 675.20	32.33	13.63	18.69
675.20 675.25	34.88 37.56	13.77 13.91	21.11 23.65
675.30	40.37	14.05	26.32
675.35	43.30	14.19	29.11
675.40	46.36	14.32	32.03
675.45 675.50	49.54 52.85	14.46 14.59	35.08 38.26
675.55	56.28	14.72	41.56
675.60	59.84	14.86	44.99
675.65	63.53	14.98	48.55
675.70 675.75	67.34 71.29	15.11	52.23
675.80	71.2 9 75.36	15.24 15.37	56.05 59.99
675.85	79.55	15.49	64.06
675.90	83.88	15.62	68.26
675.95	88.34	15.74	72.60
676.00 676.05	92.93 97.65	15.86 15.99	77.06 81.66
676.03	102.50	16.11	86.39
676.15	107.48	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30 676.35	123.23 128.75	16.58 16.70	106.65 112.05
676.40	134.41	16.70	117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10	15,437	15,437	1,534
674.15	15,530	15,530	2,309
674.20	15,624	15,624	3,087
674.25	15,717	15,717	3,871
674.30	15,810	15,810	4,659
674.35	15,904	15,904	5,452
674.40	15,997	15,997	6,249
674.45 674.50	16,091	16,091	7,052
	16,184	16,184	7,859
674.55 674.60	16,277	16,277	8,670
674.65	16,371 16,464	16,371	9,486
674.70	16,558	16,464 16,558	10,307 11,133
674.75	16,651	16,651	11,963
674.80	16,744	16,744	12,798
674.85	16,838	16,838	13,637
674.90	16,931	16,931	14,482
674.95	17,025	17,025	15,330
675.00	17,118	17,118	16,184
675.05	17,220	17,220	17,042
675.10	17,322	17,322	17,906
675.15	17,423	17,423	18,775
675.20	17,525	17,525	19,648
675.25	17,627	17,627	20,527
675.30	17,728	17,728	21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50	18,136	18,136	24,997
675.55	18,237	18,237	25,907
675.60	18,339	18,339	26,821
675.65	18,441	18,441	27,741
675.70	18,543	18,543	28,665
675.75	18,644	18,644	29,595
675.80	18,746	18,746	30,530
675.85	18,848	18,848	31,469
675.90	18,949	18,949	32,414
675.95 676.00	19,051 19,153	19,051	33,364
676.05	19,153	19,153	34,320
676.03	19,361	19,257	35,280 36,245
676.15	19,464	19,361 19,464	37,216
676.20	19,568	19,568	38,192
676.25	19,672	19,672	39,173
676.30	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40	19,983	19,983	42,147
676.45	20,087	20,087	43,149
676.50	20,191	20,191	44,156
	•	,	,

#3

#4

#5

#6

Device 1

Device 1

Device 1

Secondary

Type II 24-hr 2-Year Rainfall=2.20"

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 1.25" for 2-Year event

Inflow 41.28 cfs @ 12.05 hrs, Volume= 2.655 af

Outflow 2.88 cfs @ 13.20 hrs, Volume= 2.655 af, Atten= 93%, Lag= 69.4 min

Primary 2.88 cfs @ 13.20 hrs, Volume= 2.655 af Secondary = 0.00 cfs @ 0.00 hrs. Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 675.11' @ 13.20 hrs Surf.Area= 44,706 sf Storage= 43,755 cf

Plug-Flow detention time= 127.0 min calculated for 2.654 af (100% of inflow)

Center-of-Mass det. time= 127.0 min (1,166.5 - 1,039.5)

678.00'

670.75'

675.50'

679.00

<u>Volume</u>	Inv	ert Avail.	Storage	Storage	e Description	
#1	672.	00' 311	,588 cf	dry bas	sin (Prismatic)Li	sted below (Recalc)
				-	, ,	,
Elevation	on	Surf.Area	Inc	c.Store	Cum.Store	
(fee	et)	(sq-ft)	(cub	ic-feet)	(cubic-feet)	
672.	00	1,285		0	0	
673.0	00	6,433		3,859	3,859	
674.0	00	9,723		8,078	11,937	
675.0	00	44,268		26,996	38,933	
676.0	00	48,305		46,287	85,219	
677.0	00	52,399		50,352	135,571	
678.0	00	56,550		54,475	190,046	
679.0	00	60,757		58,654	248,699	
680.0	00	65,021		62,889	311,588	
Device	Routing	Inve	rt Out	let Device	es	
#1	Primary	670.7	5' 10.0	" Round	d Culvert (struct	ture to outlet)
	•					headwall, Ke= 0.500
			Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' C			,
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf			
#2	Device 1	l 670.8			Culvert (basin t	

L= 25.0' CPP, mitered to conform to fill, Ke= 0.700

24.0" W x 24.0" H Vert. Grate C= 0.600

Limited to weir flow at low heads

8.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads

5.0' long Weir 2 End Contraction(s)

Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

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Primary OutFlow Max=2.88 cfs @ 13.20 hrs HW=675.11' (Free Discharge)

1=Culvert (structure to outlet) (Barrel Controls 2.88 cfs @ 5.29 fps)

2=Culvert (basin to structure) (Passes < 2.96 cfs potential flow)

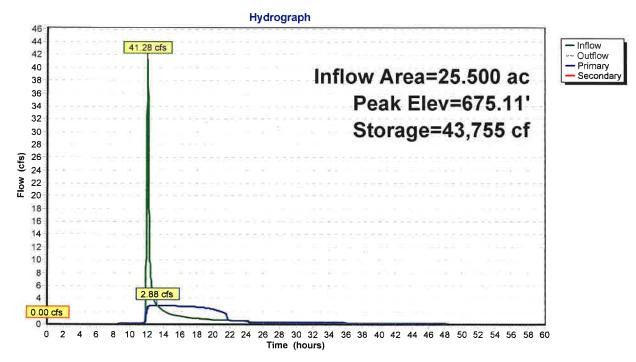
3=Grate (Controls 0.00 cfs)

4=Orifice (Passes < 10.12 cfs potential flow)

5=Weir (Controls 0.00 cfs)

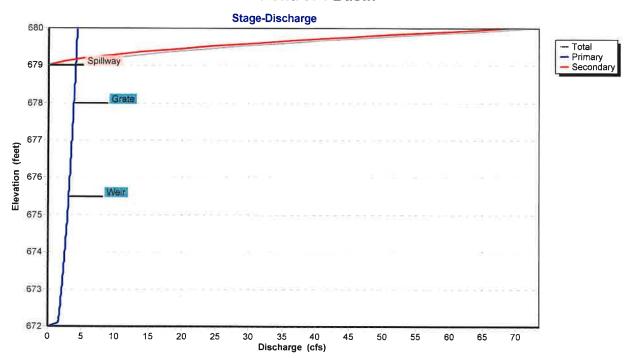
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

Pond 7P: Basin



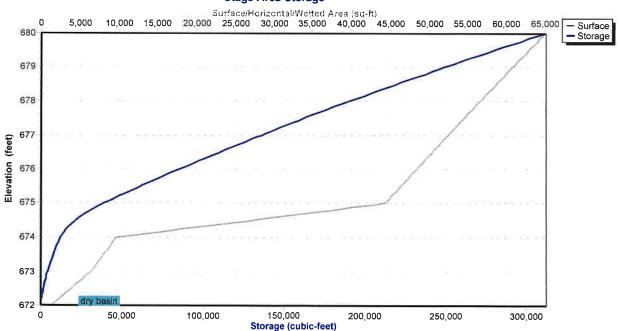
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.00	0	672.00	0.00	0.00	0.00
6.00	0.00	Ö	672.00	0.00	0.00	0.00
8.00	0.05	4	672.00	0.05	0.05	0.00
10.00	0.19	15	672.01	0.03	0.03	0.00
12.00	36.79	10,388	673.84	2.40	2.40	0.00
14.00	1.94	42,253	675.07	2.87	2.87	0.00
16.00	1.18	32,676	674.85	2.79	2.79	0.00
18.00	0.89	20,334	674.47	2.65	2.65	0.00
20.00	0.67	7,924	673.55	2.28	2.28	0.00
22.00	0.59	47	672.03	0.59	0.59	0.00
24.00	0.54	44	672.03	0.54	0.54	0.00
26.00	0.20	16	672.01	0.20	0.20	0.00
28.00	0.20	16	672.01	0.20	0.20	0.00
30.00	0.20	16	672.01	0.20	0.20	0.00
32.00	0.20	16	672.01	0.20	0.20	0.00
34.00	0.20	16	672.01	0.20	0.20	0.00
36.00	0.20	16	672.01	0.20	0.20	0.00
38.00	0.19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.07	5	672.00	0.07	0.07	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00	0.00	0	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

Elevation	Discharge	Primary	Secondary	Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)	(feet)	(cfs)	(cfs)	(cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
673.90	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00	2.47	2.47	0.00	679.30	14.60	4.09	10.51
674.10	2.51	2.51	0.00	679.40	20.49	4.12	16.37
674.20	2.55	2.55	0.00	679.50	27.28	4.14	23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.19	39.19
674.50	2.66 2.70	2.66	0.00	679.80	52.63	4.22	48.41
674.60 674.70	2.70 2.74	2.70 2.74	0.00	679.90	62.63	4.24	58.40
674.80	2.74 2.77	2.74 2.77	0.00 0.00	680.00	73.39	4.26	69.13
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675.60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00				
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00				
676.60	3.36	3.36	0.00				
676.70	3.39	3.39	0.00				
676.80	3.42	3.42	0.00				
676.90	3.45	3.45	0.00				
677.00 677.10	3.48	3.48	0.00				
677.10 677.20	3.51	3.51	0.00				
677.20	3.54	3.54	0.00				

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Stage-Area-Storage for Pond 7P: Basin

			v		
Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677.60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60	4,374	1,698	677.90	56,135	184,411
672.70	4,889	2,161	678.00	56,550	190,046
672.80	5,403	2,675	678.10	56,971	195,722
672.90	5,918	3,241	678.20	57,391	201,440
673.00	6,433	3,859	678.30	57,812	207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407	8,311	678.90	60,336	242,644
673.70	8,736	9,168	679.00	60,757	248,699
673.80	9,065	10,058	679.10	61,183	254,796
673.90	9,394	10,981	679.20	61,610	260,936
674.00	9,723	11,937	679.30	62,036	267,118
674.10	13,178	13,082	679.40	62,463	273,343
674.20	16,632	14,573	679.50	62,889	279,611
674.30	20,086	16,408	679.60	63,315	285,921
674.40	23,541	18,590	679.70	63,742	292,274
674.50	26,996	21,117	679.80	64,168	298,669
674.60	30,450	23,989	679.90	64,595	305,107
674.70	33,905	27,207	680.00	65,021	311,588
674.80	37,359	30,770		,	,
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287	61,571			
675.60	46,690	66,220			
675.70	47,094	70,909			
675.80	47,498	75,639			
675.90	47,901	80,409			
676.00	48,305	85,219			
676.10	48,714	90,070			
676.20	49,124	94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352	109,883			
676.60	50,761	114,939			
676.70	51,171	120,036			
676.80	51,580	125,173			
676.90	51,990	130,352			
677.00	52,399	135,571			
677.10	52,814	140,832			
677.20	53,229	146,134			
			II,		

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 1.25" for 2-Year event

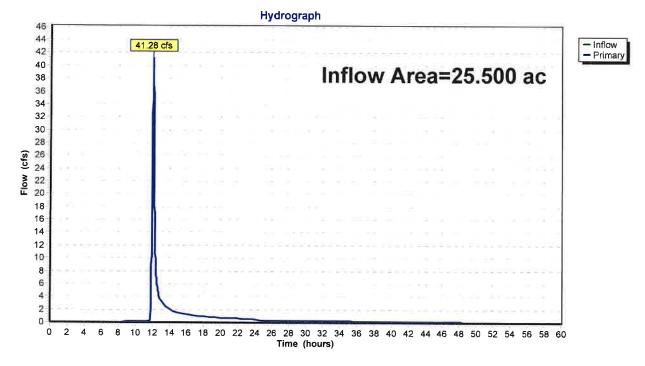
Inflow = 41.28 cfs @ 12.05 hrs, Volume= 2.655 af

Primary = 41.28 cfs @ 12.05 hrs, Volume= 2.655 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P : Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



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Hydrograph for Link 9L: Link

Time	Inflow	Elevation	Primary
(hours)	(cfs)	(feet)	(cfs)
0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00
2.00 3.00	0.00	0.00 0.00	0.00
4.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02
8.00	0.05	0.00	0.05
9.00	0.12	0.00	0.12
10.00	0.19	0.00	0.19
11.00	0.19	0.00	0.19
12.00	36.79	0.00	36.79
13.00	3.33	0.00	3.33
14.00	1.94	0.00	1.94
15.00	1.50	0.00	1.50
16.00	1.18	0.00	1.18
17.00	1.01	0.00	1.01
18.00	0.89	0.00	0.89
19.00	0.78	0.00	0.78
20.00 21.00 22.00	0.67 0.61	0.00 0.00	0.67 0.61
23.00 24.00	0.59 0.57 0.54	0.00 0.00 0.00	0.59 0.57 0.54
25.00	0.20	0.00	0.20
26.00	0.20	0.00	0.20
27.00	0.20	0.00	0.20
28.00	0.20	0.00	0.20
29.00	0.20	0.00	0.20
30.00	0.20	0.00	0.20
31.00	0.20	0.00	0.20
32.00	0.20	0.00	0.20
33.00	0.20	0.00	
34.00	0.20	0.00	0.20
35.00	0.20	0.00	0.20
36.00 37.00 38.00	0.20 0.19 0.19	0.00 0.00	0.20 0.19
39.00 40.00	0.19 0.19 0.19	0.00 0.00 0.00	0.19 0.19 0.19
41.00	0.19	0.00	0.19
42.00	0.19	0.00	0.19
43.00	0.19	0.00	0.19
44.00	0.19	0.00	0.19
45.00	0.19	0.00	0.19
46.00	0.19	0.00	0.19
47.00	0.15	0.00	0.15
48.00	0.07	0.00	0.07
49.00	0.03	0.00	0.03
50.00	0.01	0.00	0.01
51.00	0.01	0.00	0.01
52.00	0.00	0.00	0.00

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00

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Summary for Subcatchment 1S: Proposed North

Runoff = 23.97 cfs @ 12.02 hrs, Volume=

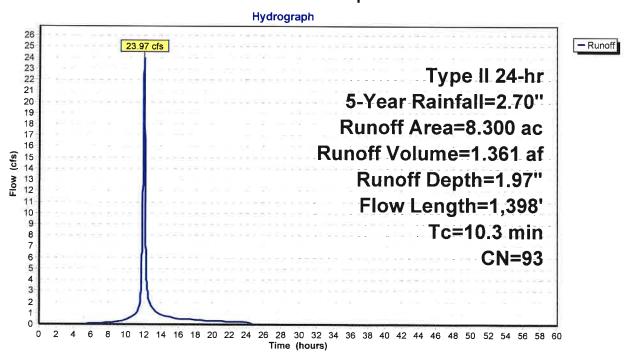
1.361 af, Depth= 1.97"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 5-Year Rainfall=2.70"

Area	(ac)	CN Des	cription						
5	.000	98 Pav	aved parking, HSG D						
1.	.400		ed parking						
1.	.100	80 >75	% Ġrass c	over, Good	, HSG D				
0	.800			over, Good					
8.	300	93 Weig	hted Aver	age					
1.	.900	22.8	9% Pervio	us Area					
6.	400	77.1	1% Impen	/ious Area					
Тс	Length	•	Velocity	Capacity	Description				
(min)_	(feet)	(ft/ft)	(ft/sec)	(cfs)					
2.7	72	0.3500	0.44		Sheet Flow, grass				
					Grass: Short n= 0.150 P2= 2.50"				
1.9	300	0.0160	2.57		Shallow Concentrated Flow, pavement				
					Paved Kv= 20.3 fps				
5.7	1,026		3.00		Direct Entry, Pipe flow				
10.3	1,398	Total							

Subcatchment 1S: Proposed North



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Hydrograph for Subcatchment 1S: Proposed North

			-	
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00	(inches) 0.00 0.03 0.06 0.09 0.13 0.17 0.22 0.27 0.32 0.40 0.49 0.63 1.79 2.08 2.21 2.30 2.38 2.43 2.49 2.53 2.57 2.60 2.64 2.67	(inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.03 0.06 0.10 0.19 1.12 1.39 1.51 1.60 1.66 1.72 1.77 1.81 1.85 1.88 1.91 1.94	(cfs) 0.00 0.00 0.00 0.00 0.01 0.05 0.10 0.16 0.29 0.43 0.91 23.65 1.44 0.84 0.66 0.51 0.44 0.39 0.34 0.29 0.27 0.26 0.25	
19.00 20.00 21.00 22.00	2.53 2.57 2.60 2.64 2.67 2.70 2.70 2.70 2.70 2.70 2.70 2.70 2.7	1.81 1.85 1.88 1.91 1.94 1.97 1.97 1.97 1.97 1.97 1.97 1.97 1.97	0.34 0.29 0.27 0.26 0.25 0.24 0.00	
42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00	2.70 2.70 2.70 2.70 2.70 2.70 2.70 2.70	1.97 1.97 1.97 1.97 1.97 1.97 1.97 1.97	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	

Time (hours) 53.00 54.00 55.00 56.00 57.00 58.00	Precip. (inches) 2.70 2.70 2.70 2.70 2.70 2.70	1.97 1.97 1.97 1.97 1.97 1.97	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00
58.00	2.70	1.97	0.00
59.00	2.70	1.97	0.00
60.00	2.70	1.97	0.00

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Summary for Subcatchment 2S: Proposed South

Runoff 47.06 cfs @ 11.97 hrs, Volume= 2.228 af, Depth= 1.55"

Routed to Pond 6P: Bioretention 2

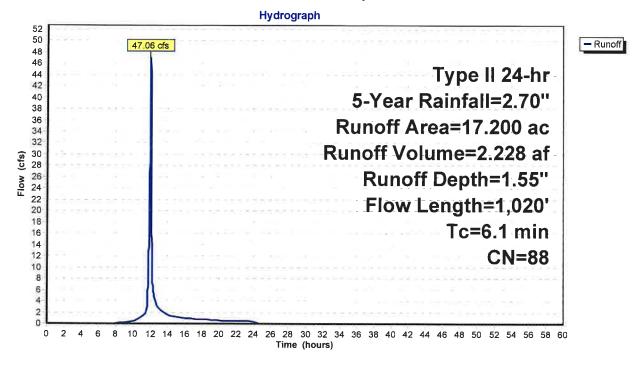
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 5-Year Rainfall=2.70"

Area	(ac)	CN De	scription					
5.	.400	98 Pa	Paved parking, HSG D					
3.	.600	98 Pa	ved parking	, HSG C				
4.	.800	80 >7	5% Grass c	over, Good	, HSG D			
	.200	74 >7	5% Grass c	over, Good	, HSG C			
-	.120		avel surface	,				
0.	.080	<u>96 Gr</u>	avel surface	e, HSG C				
	.200		ighted Ave					
	.200		67% Pervio					
9.	.000	52.	33% Imper	vious Area				
Тс	Longth	Slope	Valaaitu	Canacity	Description			
(min)	Length (feet)	•		Capacity (cfs)	Description			
0.7	30			(015)	Sheet Flans mount			
0.7	30	0.0100	0.72		Sheet Flow, pvmt Smooth surfaces n= 0.011 P2= 2.50"			
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass			
0.0	100	0.0400	0.40		Unpaved Kv= 16.1 fps			
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement			
- · · -		2.2.00	50		Paved Kv= 20.3 fps			
4.4	800		3.00		Direct Entry, Pipe flow			
6.1	1,020	Total	_					

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Subcatchment 2S: Proposed South



Runoff

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00 0.00

0.00

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Hydrograph for Subcatchment 2S: Proposed South

Time Precip. Excess

2.70

2.70

2.70

2.70

2.70

2.70

2.70

2.70

1.55

1.55

1.55

1.55

1.55

1.55

1.55

1.55

(hours) (inches) (inches)

53.00

54.00

55.00

56.00

57.00

58.00

59.00

60.00

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
0.00	0.00	0.00	0.00
1.00 2.00	0.03 0.06	0.00 0.00	0.00 0.00
3.00	0.09	0.00	0.00
4.00	0.13	0.00	0.00
5.00 6.00	0.17 0.22	0.00 0.00	0.00 0.00
7.00	0.27	0.00	0.00
8.00	0.32	0.00	0.07
9.00 10.00	0.40 0.49	0.01 0.03	0.22 0.44
11.00	0.63	0.08	1.16
12.00	1.79	0.80	44.23
13.00 14.00	2.08 2.21	1.03 1.14	2.51 1.51
15.00	2.30	1.22	1.20
16.00	2.38	1.28	0.94
17.00 18.00	2.43 2.49	1.33 1.37	0.83 0.73
19.00	2.53	1.41	0.63
20.00 21.00	2.57 2.60	1.44	0.53
22.00	2.64	1.47 1.50	0.51 0.49
23.00	2.67	1.53	0.47
24.00 25.00	2.70 2.70	1.55 1.55	0.45 0.00
26.00	2.70	1.55	0.00
27.00	2.70	1.55	0.00
28.00 29.00	2.70 2.70	1.55 1.55	0.00 0.00
30.00	2.70	1.55	0.00
31.00 32.00	2.70	1.55	0.00
33.00	2.70 2.70	1.55 1.55	0.00 0.00
34.00	2.70	1.55	0.00
35.00 36.00	2.70 2.70	1.55	0.00
37.00	2.70	1.55 1.55	0.00 0.00
38.00	2.70	1.55	0.00
39.00 40.00	2.70 2.70	1.55 1.55	0.00
41.00	2.70	1.55	0.00
42.00	2.70	1.55	0.00
43.00 44.00	2.70 2.70	1.55 1.55	0.00
45.00	2.70	1.55	0.00
46.00	2.70	1.55	0.00
47.00 48.00	2.70 2.70	1.55 1.55	0.00
49.00	2.70	1.55	0.00
50.00	2.70	1.55	0.00
51.00 52.00	2.70 2.70	1.55 1.55	0.00 0.00
	y		5.00

Type II 24-hr 5-Year Rainfall=2.70"

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 1.97" for 5-Year event

Inflow = 23.97 cfs @ 12.02 hrs, Volume= 1.361 af

Outflow = 19.61 cfs @ 12.08 hrs, Volume= 1.361 af, Atten= 18%, Lag= 3.6 min

Primary = 13.32 cfs @ 12.08 hrs, Volume= 1.110 af

Routed to Link 9L : Link

Secondary = 6.30 cfs @ 12.08 hrs, Volume= 0.251 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 674.83' @ 12.08 hrs Surf.Area= 18,033 sf Storage= 14,589 cf

Plug-Flow detention time= 228.7 min calculated for 1.361 af (100% of inflow)

Center-of-Mass det. time= 229.0 min (1,028.5 - 799.5)

<u>Volume</u>	Inve	rt Avail.Sto	rage Storage l	Description	
#1	674.00	0' 46,4°	18 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)
- ·	,	2			
Elevation	on s	Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
674.0	00	17,150	0	0	
675.0	00	18,215	17,683	17,683	
676.0	00	19,279	18,747	36,430	
676.5	50	20,675	9,989	46,418	
Device	Routing	Invert	Outlet Devices	3	
#1	Primary	671.45'	18.0" Round	Culvert	
	•		L= 50.0' CPP	, square edge l	headwall, Ke= 0.500
#2	Device 1	674.00'		•	•
#3	Device 1	674.50'			
				flow at low hea	
			Inlet / Outlet In n= 0.013 Corr 0.250 in/hr Ex Conductivity to 24.0" x 24.0" I	vert= 671.45' / rugated PE, sm filtration over o Groundwater Horiz. Grate X	671.20' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 1.77 sf Horizontal area Elevation = 660.00' 4.00 C= 0.600

674.50' 143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=13.32 cfs @ 12.08 hrs HW=674.83' (Free Discharge)

-1=Culvert (Barrel Controls 13.32 cfs @ 7.54 fps)

#4

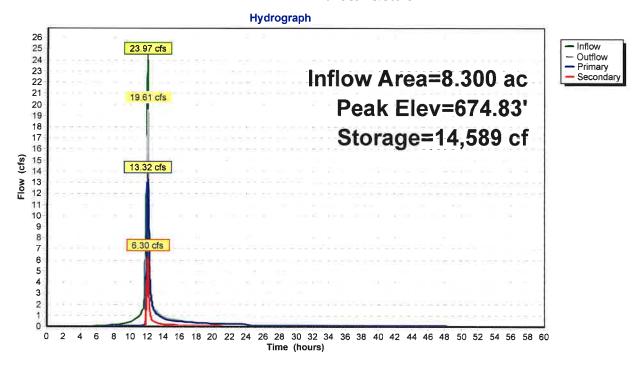
Secondary

2=Exfiltration (Passes < 0.11 cfs potential flow)

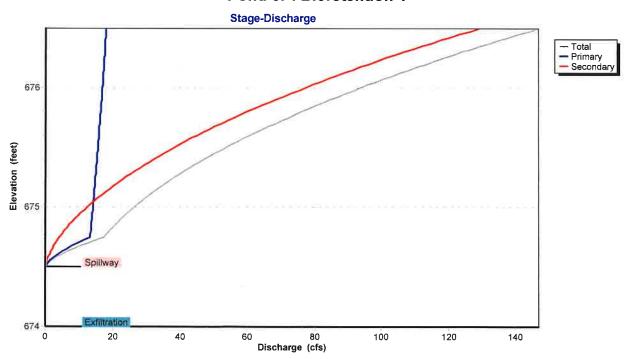
-3=Grate (Passes < 19.75 cfs potential flow)

Secondary OutFlow Max=6.28 cfs @ 12.08 hrs HW=674.83' (Free Discharge) 4=Spillway (Weir Controls 6.28 cfs @ 1.74 fps)

Pond 3P: Bioretention 1



Pond 3P: Bioretention 1



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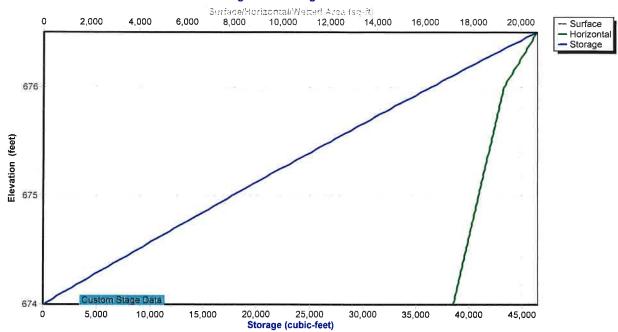
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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.05	90	674.01	0.02	0.02	0.00
8.00	0.16	436	674.03	0.10	0.10	0.00
10.00	0.43	1,733	674.10	0.10	0.10	0.00
12.00	23.65	13,543	674.77	17.78	13.13	4.65
14.00	0.84	9,265	674.53	0.90	0.71	0.18
16.00	0.51	9,068	674.52	0.54	0.44	0.10
18.00	0.39	8,953	674.51	0.40	0.33	0.07
20.00	0.29	8,866	674.51	0.30	0.25	0.04
22.00	0.26	8,836	674.51	0.26	0.23	0.04
24.00	0.24	8,818	674.51	0.24	0.21	0.03
26.00	0.00	8,084	674.46	0.11	0.11	0.00
28.00	0.00	7,326	674.42	0.10	0.10	0.00
30.00	0.00	6,573	674.38	0.10	0.10	0.00
32.00	0.00	5,825	674.34	0.10	0.10	0.00
34.00	0.00	5,080	674.29	0.10	0.10	0.00
36.00	0.00	4,339	674.25	0.10	0.10	0.00
38.00	0.00	3,603	674.21	0.10	0.10	0.00
40.00	0.00	2,870	674.17	0.10	0.10	0.00
42.00	0.00	2,142	674.12	0.10	0.10	0.00
44.00	0.00	1,417	674.08	0.10	0.10	0.00
46.00	0.00	697	674.04	0.10	0.10	0.00
48.00	0.00	150	674.01	0.03	0.03	0.00
50.00	0.00	28	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05 674.10	0.10 0.10	0.10 0.10	0.00
674.15	0.10	0.10	0.00 0.00
674.20	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30	0.10	0.10	0.00
674.35	0.10	0.10	0.00
674.40 674.45	0.10 0.11	0.10 0.11	0.00
674.50	0.11	0.11	0.00 0.00
674.55	1.63	1.28	0.35
674.60	4.42	3.42	1.00
674.65	8.04	6.19	1.86
674.70 674.75	12.36 17.16	9.47	2.89
674.75 674.80	18.66	13.07 13.23	4.09 5.44
674.85	20.31	13.38	6.93
674.90	22.09	13.54	8.56
674.95	24.01	13.69	10.32
675.00	26.06	13.84	12.22
675.05 675.10	28.24 30.55	13.99 14.14	14.25 16.41
675.15	32.98	14.29	18.69
675.20	35.54	14.43	21.11
675.25	38.22	14.57	23.65
675.30	41.03	14.72	26.32
675.35 675.40	43.97 47.03	14.86 15.00	29.11 32.03
675.45	50.22	15.13	35.08
675.50	53.53	15.27	38.26
675.55	56.97	15.41	41.56
675.60	60.53	15.54	44.99
675.65 675.70	64.22 68.04	15.68 15.81	48.55 52.23
675.75	71.98	15.01	56.05
675.80	76.06	16.07	59.99
675.85	80.26	16.20	64.06
675.90	84.59	16.33	68.26
675.95 676.00	89.05 93.64	16.45 16.58	72.60 77.06
676.05	98.36	16.70	81.66
676.10	103.19	16.80	86.39
676.15	108.17	16.91	91.25
676.20 676.25	113.27	17.02	96.25
676.25 676.30	118.51 123.88	17.12 17.23	101.38 106.65
676.35	129.39	17.23	112.05
676.40	135.03	17.44	117.59
676.45	140.81	17.54	123.27
676.50	146.73	17.64	129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
674.00	17,150	17,150	0
674.05	17,203	17,203	859
674.10	17,257	17,257	1,720
674.15 674.20	17,310	17,310	2,584
674.20 674.25	17,363 17,416	17,363 17,416	3,451 4,321
674.30	17,469	17,469	5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45 674.50	17,629 17,683	17,629 17,683	7,825 8 708
674.55	17,736	17,736	8,708 9,594
674.60	17,789	17,789	10,482
674.65	17,842	17,842	11,372
674.70	17,896	17,896	12,266
674.75 674.80	17,949 18,002	17,949 18,002	13,162 14,061
674.85	18,055	18,055	14,962
674.90	18,108	18,108	15,866
674.95	18,162	18,162	16,773
675.00	18,215	18,215	17,683
675.05 675.10	18,268 18,321	18,268	18,595
675.15	18,375	18,321 18,375	19,509 20,427
675.20	18,428	18,428	21,347
675.25	18,481	18,481	22,270
675.30	18,534	18,534	23,195
675.35	18,587	18,587	24,123
675.40 675.45	18,641 18,694	18,641 18,694	25,054 25,987
675.50	18,747	18,747	26,923
675.55	18,800	18,800	27,862
675.60	18,853	18,853	28,803
675.65	18,907	18,907	29,747
675.70 675.75	18,960 19,013	18,960 19,013	30,694 31,643
675.80	19,066	19,066	32,595
675.85	19,119	19,119	33,550
675.90	19,173	19,173	34,507
675.95	19,226	19,226	35,467
676.00 676.05	19,279 19,419	19,279 19,419	36,430 37,397
676.10	19,558	19,558	38,371
676.15	19,698	19,698	39,353
676.20	19,837	19,837	40,341
676.25	19,977	19,977	41,337
676.30 676.35	20,117 20,256	20,117 20,256	42,339 43,348
676.40	20,230	20,396	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 1.55" for 5-Year event

Inflow = 47.06 cfs @ 11.97 hrs, Volume= 2.228 af

Outflow = 36.17 cfs @ 12.03 hrs, Volume= 2.228 af, Atten= 23%, Lag= 3.2 min

Primary = 13.84 cfs @ 12.03 hrs, Volume= 1.507 af

Routed to Link 9L: Link

Secondary = 22.32 cfs @ 12.03 hrs, Volume= 0.720 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.22' @ 12.03 hrs Surf.Area= 17,574 sf Storage= 20,073 cf

Plug-Flow detention time= 130.1 min calculated for 2.228 af (100% of inflow)

Center-of-Mass det. time= 130.0 min (949.3 - 819.2)

Volume	Inve	ert Avail.Sto	rage S	Storage D	escription			
#1	674.0	0' 44,15	56 cf C	ustom S	Stage Data (Pi	rismatic)Listed below (Recalc)		
Elevation	on	Surf.Area	Inc.S	tore	Cum.Store			
(fee	∍t)	(sq-ft)	(cubic-f	eet)	(cubic-feet)			
674.0	00	15,250		0	0			
675.0	00	17,118	16,	184	16,184			
676.0		19,153	,	136	34,320			
676.5	50	20,191	9,	836	44,156			
Device	Routing	Invert	Outlet	Devices				
#1	Primary	671.55'	L= 60.0 Inlet / 0	Outlet Inv	square edge l /ert= 671.55' /	neadwall, Ke= 0.500 671.25' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 1.77 sf		
#2	Device 1	674.00'	0.250 i	0.250 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 660.00'				
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 3.00 C= 0.600 Limited to weir flow at low heads					

674.50' 143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=13.84 cfs @ 12.03 hrs HW=675.22' (Free Discharge)

-1=Culvert (Barrel Controls 13.84 cfs @ 7.83 fps)

#4

Secondary

-2=Exfiltration (Passes < 0.11 cfs potential flow)

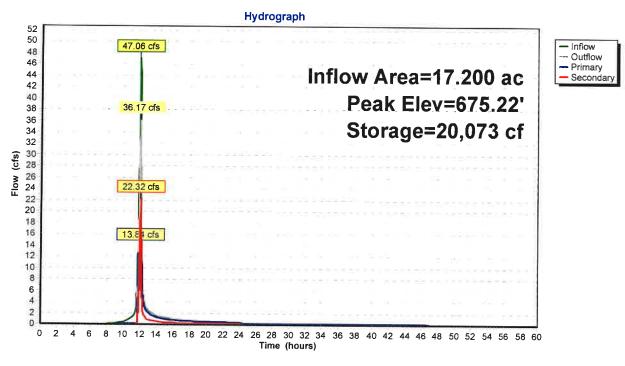
-3=Grate (Passes < 48.30 cfs potential flow)

Secondary OutFlow Max=22.29 cfs @ 12.03 hrs HW=675.22' (Free Discharge)

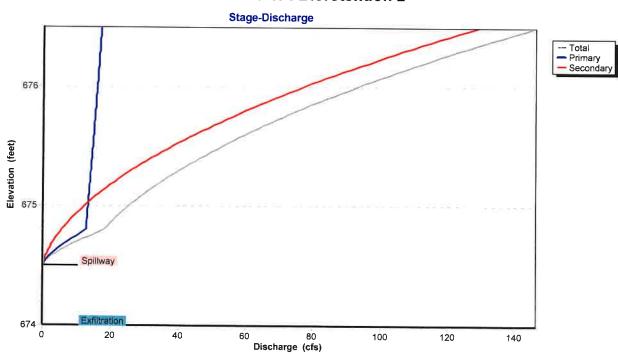
1 4=Spillway (Weir Controls 22.29 cfs @ 2.53 fps)

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Pond 6P: Bioretention 2



Pond 6P: Bioretention 2



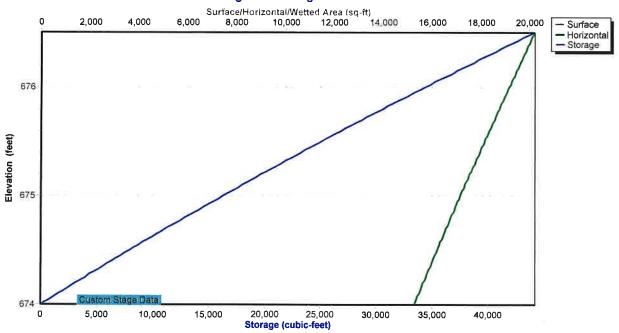
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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.00	0	674.00	0.00	0.00	0.00
8.00	0.07	75	674.00	0.02	0.02	0.00
10.00	0.44	1,181	674.08	0.09	0.09	0.00
12.00	44.23	19,594	675.20	34.72	13.76	20.96
14.00	1.51	8,776	674.56	1.59	1.17	0.43
16.00	0.94	8,491	674.54	0.97	0.72	0.25
18.00	0.73	8,373	674.53	0.74	0.56	0.18
20.00	0.53	8,273	674.53	0.55	0.42	0.13
22.00	0.49	8,229	674.52	0.49	0.38	0.11
24.00	0.45	8,194	674.52	0.46	0.35	0.10
26.00	0.00	7,337	674.47	0.10	0.10	0.00
28.00	0.00	6,646	674.42	0.10	0.10	0.00
30.00	0.00	5,960	674.38	0.09	0.09	0.00
32.00	0.00	5,280	674.34	0.09	0.09	0.00
34.00	0.00	4,605	674.30	0.09	0.09	0.00
36.00	0.00	3,936	674.25	0.09	0.09	0.00
38.00	0.00	3,271	674.21	0.09	0.09	0.00
40.00	0.00	2,612	674.17	0.09	0.09	0.00
42.00	0.00	1,959	674.13	0.09	0.09	0.00
44.00	0.00	1,310	674.09	0.09	0.09	0.00
46.00	0.00	667	674.04	0.09	0.09	0.00
48.00	0.00	151	674.01	0.04	0.04	0.00
50.00	0.00	28	674.00	0.01	0.01	0.00
52.00 54.00	0.00	5	674.00	0.00	0.00	0.00
	0.00	1	674.00	0.00	0.00	0.00
56.00 58.00	0.00 0.00	0	674.00 674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00
50.00	0.00	U	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05 674.10	0.09 0.09	0.09 0.09	0.00 0.00
674.15	0.09	0.09	0.00
674.20	0.09	0.09	0.00
674.25	0.09	0.09	0.00
674.30	0.09	0.09	0.00
674.35 674.40	0.09 0.10	0.09 0.10	0.00 0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60 674.65	3.58 6.52	2.58 4.66	1.00 1.86
674.70	10.01	7.12	2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85 674.90	19.68 21.46	12.75 12.90	6.93 8.56
674.95	23.37	13.05	10.32
675.00	25.42	13.20	12.22
675.05 675.40	27.59	13.35	14.25
675.10 675.15	29.90 32.33	13.49 13.63	16.41 18.69
675.20	34.88	13.77	21.11
675.25	37.56	13.91	23.65
675.30	40.37	14.05	26.32
675.35 675.40	43.30 46.36	14.19 14.32	29.11 32.03
675.45	49.54	14.46	35.08
675.50	52.85	14.59	38.26
675.55 675.60	56.28 59.84	14.72	41.56
675.65	63.53	14.86 14.98	44.99 48.55
675.70	67.34	15.11	52.23
675.75	71.29	15.24	56.05
675.80 675.85	75.36 79.55	15.37 15.49	59.99 64.06
675.90	83.88	15.49	68.26
675.95	88.34	15.74	72.60
676.00	92.93	15.86	77.06
676.05 676.10	97.65 102.50	15.99 16.11	81.66 86.39
676.15	102.30	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30 676.35	123.23 128.75	16.58 16.70	106.65 112.05
676.40	134.41	16.70	117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10 674.15	15,437 15,530	15,437	1,534
674.13	15,530 15,624	15,530 15,624	2,309
674.25	15,717	15,717	3,087 3,871
674.30	15,810	15,810	4,659
674.35	15,904	15,904	5,452
674.40	15,997	15,997	6,249
674.45	16,091	16,091	7,052
674.50	16,184	16,184	7,859
674.55	16,277	16,277	8,670
674.60 674.65	16,371	16,371	9,486
674.70	16,464 16,558	16,464 16,558	10,307 11,133
674.75	16,651	16,651	11,963
674.80	16,744	16,744	12,798
674.85	16,838	16,838	13,637
674.90	16,931	16,931	14,482
674.95	17,025	17,025	15,330
675.00	17,118	17,118	16,184
675.05 675.10	17,220	17,220	17,042
675.15	17,322 17,423	17,322 17,423	17,906
675.20	17,525	17,525	18,775 19,648
675.25	17,627	17,627	20,527
675.30	17,728	17,728	21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50	18,136	18,136	24,997
675.55 675.60	18,237 18,339	18,237 18,339	25,907 26,921
675.65	18,441	18,441	26,821 27,741
675.70	18,543	18,543	28,665
675.75	18,644	18,644	29,595
675.80	18,746	18,746	30,530
675.85	18,848	18,848	31,469
675.90	18,949	18,949	32,414
675.95	19,051	19,051	33,364
676.00 676.05	19,153 19,257	19,153	34,320
676.10	19,361	19,257 19,361	35,280 36,245
676.15	19,464	19,464	37,216
676.20	19,568	19,568	38,192
676.25	19,672	19,672	39,173
676.30	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40	19,983	19,983	42,147
676.45 676.50	20,087	20,087	43,149
676.50	20,191	20,191	44,156

#4

#5

#6

Device 1

Device 1

Secondary

675.50'

679.00'

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 1.69" for 5-Year event
Inflow = 55.02 cfs @ 12.04 hrs, Volume= 3.589 af
Outflow = 3.08 cfs @ 13.56 hrs, Volume= 3.589 af, Atten= 94%, Lag= 91.3 min

Primary = 3.08 cfs @ 13.56 hrs, Volume= 3.589 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.70' @ 13.56 hrs Surf.Area= 47,112 sf Storage= 71,125 cf

Plug-Flow detention time= 217.5 min calculated for 3.588 af (100% of inflow)

Center-of-Mass det. time= 217.4 min (1,196.8 - 979.3)

Volume	Inve	ert Avail.Sto	rage	Storage [Description	
#1	672.0	00' 311,5	88 cf	dry basir	n (Prismatic)Liste	d below (Recalc)
Elevation	าท	Surf.Area	Inc	.Store	Cum.Store	
(fee		(sq-ft)		c-feet)	(cubic-feet)	
672.0		1,285	A	0	0	
673.0		6,433		3,859	3,859	
674.0	00	9,723		8,078	11,937	
675.0		44,268		6,996	38,933	
676.0		48,305		6,287	85,219	
677.0		52,399		0,352	135,571	
678.0		56,550	5	4,475	190,046	
679.0		60,757	5	8,654	248,699	
680.0	00	65,021	6	2,889	311,588	
<u>Device</u>	Routing	Invert	Outle	et Devices		
#1	Primary	670.75	10.0	" Round (Culvert (structure	to outlet)
	_					adwall, Ke= 0.500
						.15' S= 0.0030 '/' Cc= 0.900
			n= 0.	.013 Corru	ugated PE, smooth	interior, Flow Area= 0.55 sf
#2	Device 1	670.80'			ulvert (basin to s	
						m to fill, Ke= 0.700
						0.75' S= 0.0020 '/' Cc= 0.900
						interior, Flow Area= 0.35 sf
#3	Device 1	678.00'			" H Vert. Grate	
** =		2. 2.00			flow at low heads	
					at loss modes	

670.75' **8.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads

5.0' long Weir 2 End Contraction(s)

143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

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Primary OutFlow Max=3.08 cfs @ 13.56 hrs HW=675.70' (Free Discharge)

1=Culvert (structure to outlet) (Barrel Controls 3.08 cfs @ 5.66 fps)

2=Culvert (basin to structure) (Passes < 3.17 cfs potential flow)

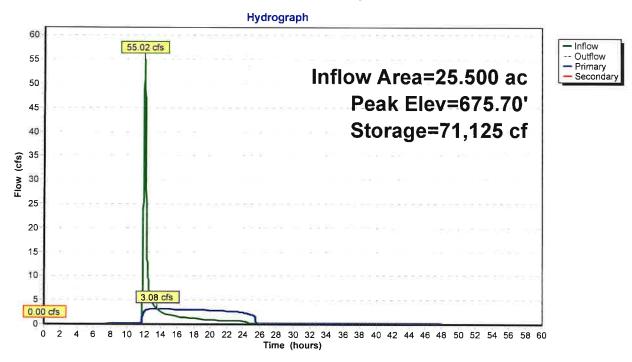
3=Grate (Controls 0.00 cfs)

4=Orifice (Passes < 10.84 cfs potential flow)

5=Weir (Passes < 1.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

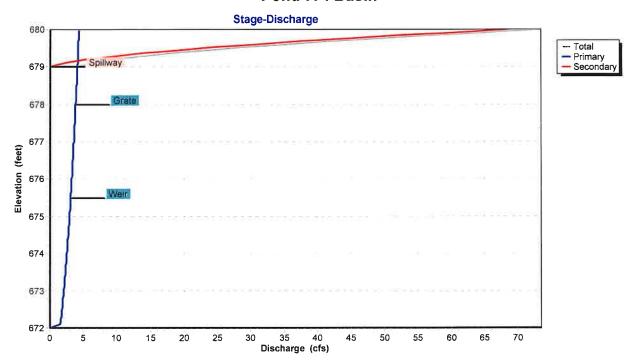
Pond 7P: Basin



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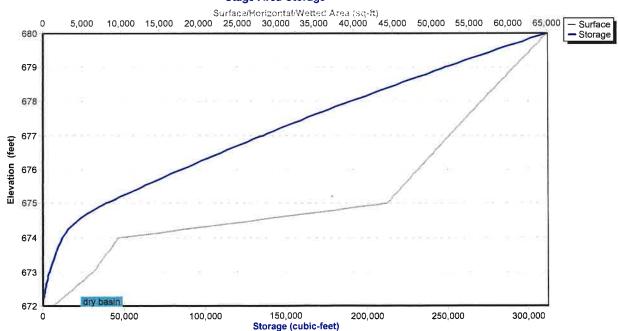
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	ő	672.00	0.00	0.00	0.00
4.00	0.00	Ö	672.00	0.00	0.00	0.00
6.00	0.02	2	672.00	0.02	0.02	0.00
8.00	0.12	9	672.01	0.12	0.12	0.00
10.00	0.19	15	672.01	0.19	0.19	0.00
12.00	52.50	22,379	674.54	2.68	2.68	0.00
14.00	2.49	70,626	675.69	3.08	3.08	0.00
16.00	1.52	62,500	675.52	3.02	3.02	0.00
18.00	1.15	50,413	675.26	2.93	2.93	0.00
20.00	0.85	36,831	674.95	2.83	2.83	0.00
22.00	0.75	22,626	674.55	2.68	2.68	0.00
24.00	0.69	9,448	673.73	2.35	2.35	0.00
26.00	0.20	16	672.01	0.20	0.20	0.00
28.00	0.20	16	672.01	0.20	0.20	0.00
30.00	0.20	16	672.01	0.20	0.20	0.00
32.00	0.20	16	672.01	0.20	0.20	0.00
34.00	0.20	16	672.01	0.20	0.20	0.00
36.00	0.20	16	672.01	0.20	0.20	0.00
38.00	0:19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.07	6	672.00	0.07	0.07	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00 54.00	0.00 0.00	0	672.00 672.00	0.00	0.00	0.00
56.00	0.00	_		0.00	0.00	0.00
58.00	0.00	0	672.00 672.00	0.00 0.00	0.00 0.00	0.00 0.00
60.00	0.00	0	672.00	0.00	0.00	0.00
30.00	0.00	U	012.00	0.00	0.00	0.00

677.20

3.54

3.54

0.00

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Stage-Discharge for Pond 7P: Basin

							12
Elevation (feet)	Discharge (cfs)	Primary	Secondary	Elevation	Discharge	Primary	Secondary
		(cfs)	(cfs)	(feet)	(cfs)	(cfs)	(cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60 673.70	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
674.00	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00 674.10	2.47 2.51	2.47 2.51	0.00	679.30	14.60	4.09	10.51
674.10	2.55	2.55	0.00	679.40	20.49	4.12	16.37
674.20	2.59	2.55	0.00 0.00	679.50	27.28	4.14	23.14
674.40	2.62	2.62	0.00	679.60 679.70	34.92	4.17	30.76
674.50	2.66	2.66	0.00	679.80	43.38	4.19 4.22	39.19
674.60	2.70	2.70	0.00	679.90	52.63 62.63	4.22	48.41
674.70	2.74	2.74	0.00	680.00	73.39	4.24	58.40
674.80	2.77	2.77	0.00	000.00	13.33	4.20	69.13
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675.60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00				
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00				
676.60	3.36	3.36	0.00				
676.70	3.39	3.39	0.00				
676.80	3.42	3.42	0.00				
676.90	3.45	3.45	0.00				
677.00	3.48	3.48	0.00				
677.10	3.51	3.51	0.00				
677 20	2.54	2.54	0.00				

53,229

677.20

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Stage-Area-Storage for Pond 7P: Basin

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677,60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60	4,374	1,698	677.90	56,135	184,411
672.70	4,889	2,161	678.00	56,550	190,046
672.80	5,403	2,675	678.10	56,971	195,722
672.90	5,918	3,241	678.20	57,391	201,440
673.00	6,433	3,859	678.30	57,812	207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407	8,311	678.90	60,336	242,644
673.70	8,736	9,168	679.00	60,757	248,699
673.80	9,065	10,058	679.10	61,183	254,796
673.90	9,394	10,981	679.20	61,610	260,936
674.00	9,723	11,937	679.30	62,036	267,118
674.10	13,178	13,082	679.40	62,463	273,343
674.20	16,632	14,573	679.50	62,889	279,611
674.30	20,086	16,408	679.60	63,315	285,921
674.40	23,541	18,590	679.70	63,742	292,274
674.50	26,996	21,117	679.80	64,168	298,669
674.60	30,450	23,989	679.90	64,595	305,107
674.70	33,905	27,207	680.00	65,021	311,588
674.80	37,359	30,770	000.00	00,02	011,000
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287	61,571			
675.60	46,690	66,220			
675.70	47,094	70,909			
675.80	47,498	75,639			
675.90	47,901	80,409			
676.00	48,305	85,219			
676.10	48,714	90,070			
676.20	49,124	94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352	109,883			
676.60	50,761	114,939			
676.70	51,171	120,036			
676.80	51,580	125,173			
676.90	51,990	130,352			
677.00	52,399	135,571			
677.10	52,814	140,832			
677.20	E2 220	146 124	I .		

146,134

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 1.69" for 5-Year event

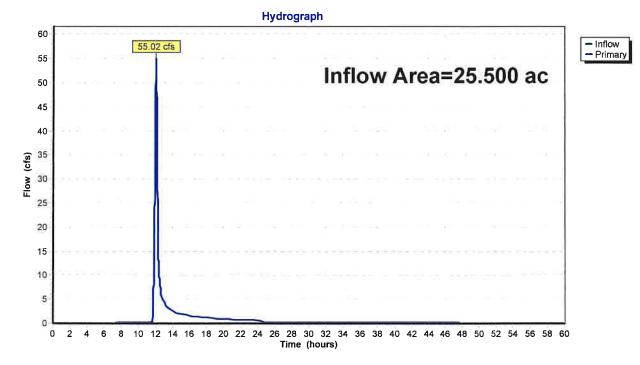
Inflow 3.589 af

55.02 cfs @ 12.04 hrs, Volume= 55.02 cfs @ 12.04 hrs, Volume= 3.589 af, Atten= 0%, Lag= 0.0 min Primary

Routed to Pond 7P: Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



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Hydrograph for Link 9L: Link

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	200
0.00	0.00	0.00	0.00	
1.00	0.00	0.00	0.00	
2.00	0.00	0.00	0.00	
3.00	0.00	0.00	0.00	
4.00	0.00	0.00	0.00	
5.00	0.00	0.00	0.00	
6.00	0.02	0.00	0.02	
7.00	0.06	0.00	0.06	
8.00	0.12	0.00	0.12	
9.00	0.19	0.00	0.19	
10.00	0.19	0.00	0.19	
11.00	0.19	0.00	0.19	
12.00	52.50	0.00	52.50	
13.00	4.27	0.00	4.27	
14.00	2.49	0.00	2.49	
15.00	1.91	0.00	1.91	
16.00	1.52	0.00	1.52	
17.00	1.29	0.00	1.29	
18.00	1.15	0.00	1.15	
19.00	1.00	0.00	1.00	
20.00	0.85	0.00	0.85	
21.00	0.78	0.00	0.78	
22.00	0.75	0.00	0.75	
23.00	0.72	0.00	0.72	
24.00	0.69	0.00	0.69	
25.00	0.20	0.00	0.20	
26.00	0.20	0.00	0.20	
27.00	0.20	0.00	0.20	
28.00	0.20	0.00	0.20	
29.00	0.20	0.00	0.20	
30.00	0.20	0.00	0.20	
31.00	0.20	0.00	0.20	
32.00	0.20	0.00	0.20	
33.00	0.20	0.00	0.20	
34.00	0.20	0.00	0.20	
35.00	0.20	0.00	0.20	
36.00	0.20	0.00	0.20	
37.00	0.19	0.00	0.19	
38.00	0.19	0.00	0.19	
39.00	0.19	0.00	0.19	
40.00	0.19	0.00	0.19	
41.00	0.19	0.00	0.19	
42.00	0.19	0.00	0.19	
43.00	0.19	0.00	0.19	
44.00	0.19	0.00	0.19	
45.00	0.19	0.00	0.19	
46.00	0.19	0.00	0.19	
47.00	0.16	0.00	0.16	
48.00	0.07	0.00	0.07	
49.00	0.03	0.00	0.03	
50.00	0.01	0.00	0.01	
51.00	0.01	0.00	0.01	
52.00	0.00	0.00	0.00	

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00

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Summary for Subcatchment 1S: Proposed North

Runoff = 28.88 cfs @ 12.01 hrs, Volume=

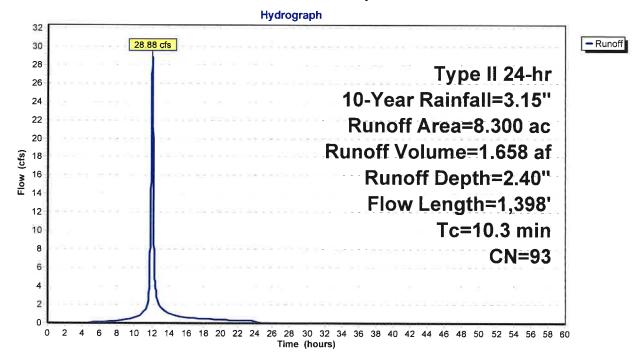
1.658 af, Depth= 2.40"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=3.15"

	Area	(ac) (ON Des	cription		
	5.	.000		ed parking		
	1.	400	98 Pav	ed parking	, HSG C	
	1.	100	80 >75	% Grass c	over, Good	, HSG D
_	0.	800	74 >75	% Grass c	over, Good	, HSG C
	8.	300	93 Wei	ghted Avei	age	
	1,	900	22.8	89% Pervio	us Area	
	6,	400	77.1	1% Imper	vious Area	
	Тс	Length	•	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	2.7	72	0.3500	0.44		Sheet Flow, grass
						Grass: Short n= 0.150 P2= 2.50"
	1.9	300	0.0160	2.57		Shallow Concentrated Flow, pavement
						Paved Kv= 20.3 fps
_	5.7	1,026		3.00		Direct Entry, Pipe flow
	10.3	1 398	Total			

Subcatchment 1S: Proposed North



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Hydrograph for Subcatchment 1S: Proposed North

Time	Danain	-	D
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00 3.00	0.07 0.11	0.00 0.00	0.00 0.00
4.00	0.11	0.00	0.00
5.00	0.20	0.00	0.04
6.00 7.00	0.25 0.31	0.01 0.03	0.10 0.16
8.00	0.31	0.05	0.23
9.00	0.46	0.09	0.39
10.00 11.00	0.57 0.74	0.15 0.26	0.57 1.16
12.00	2.09	1.40	28.53
13.00	2.43	1.72	1.71
14.00 15.00	2.58 2.69	1.86 1.96	1.00 0.78
16.00	2.77	2.04	0.60
17.00	2.84	2.10	0.52
18.00 19.00	2.90 2.95	2.16 2.21	0.46 0.40
20.00	3.00	2.25	0.34
21.00	3.04	2.29	0.32
22.00 23.00	3.08 3.11	2.33 2.36	0.31 0.29
24.00	3.15	2.40	0.28
25.00 26.00	3.15 3.15	2.40	0.00
27.00	3.15	2.40 2.40	0.00 0.00
28.00	3.15	2.40	0.00
29.00 30.00	3.15 3.15	2.40 2.40	0.00 0.00
31.00	3.15	2.40	0.00
32.00	3.15	2.40	0.00
33.00 34.00	3.15 3.15	2.40 2.40	0.00 0.00
35.00	3.15	2.40	0.00
36.00	3.15	2.40	0.00
37.00 38.00	3.15 3.15	2.40 2.40	0.00 0.00
39.00	3.15	2.40	0.00
40.00 41.00	3.15 3.15	2.40 2.40	0.00 0.00
42.00	3.15	2.40	0.00
43.00	3.15	2.40	0.00
44.00 45.00	3.15 3.15	2.40 2.40	0.00 0.00
46.00	3.15	2.40	0.00
47.00	3.15	2.40	0.00
48.00 49.00	3.15 3.15	2.40 2.40	0.00 0.00
50.00	3.15	2.40	0.00
51.00 52.00	3.15 3.15	2.40	0.00
52.00	3.15	2.40	0.00

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
53.00	3.15	2.40	0.00
54.00	3.15	2.40	0.00
55.00	3.15	2.40	0.00
56.00	3.15	2.40	0.00
57.00	3.15	2.40	0.00
58.00	3.15	2.40	0.00
59.00	3.15	2.40	0.00
60.00	3.15	2.40	0.00

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Summary for Subcatchment 2S: Proposed South

Runoff = 58.57 cfs @ 11.97 hrs, Volume=

2.798 af, Depth= 1.95"

Routed to Pond 6P: Bioretention 2

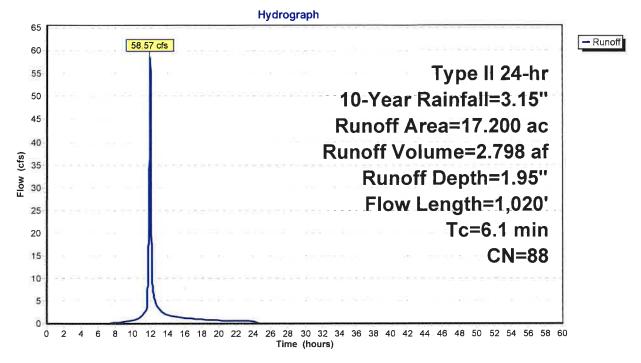
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=3.15"

Area	(ac) C	N Desc	cription		
5.	.400	98 Pave	ed parking	, HSG D	
3.	.600 9		ed parking		
				over, Good	
				over, Good	, HSG C
-			el surface	•	
0	.080	96 Grav	<u>el surface</u>	, HSG C	
		•	ghted Aver	•	
	200	-	7% Pervio		
9.	.000	52.3	3% Imper∖	∕ious Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
0.7	30	0.0100	0.72	\0.0/	Sheet Flow, pvmt
0.,	00	0.0100	0.72		Smooth surfaces n= 0.011 P2= 2.50"
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass
					Unpaved Kv= 16.1 fps
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement
					Paved Kv= 20.3 fps
4.4	800		3.00		Direct Entry, Pipe flow
6.1	1,020	Total			

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Subcatchment 2S: Proposed South



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Hydrograph for Subcatchment 2S: Proposed South

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
53.00	3.15	1.95	0.00
54.00	3.15	1.95	0.00
55.00	3.15	1.95	0.00
56.00	3.15	1.95	0.00
57.00	3.15	1.95	0.00
58.00	3.15	1.95	0.00
59.00	3.15	1.95	0.00
60.00	3,15	1.95	0.00

Type II 24-hr 10-Year Rainfall=3.15"

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 2.40" for 10-Year event

Inflow 28.88 cfs @ 12.01 hrs, Volume= 1.658 af

22.93 cfs @ 12.08 hrs, Volume= Outflow 1.658 af, Atten= 21%, Lag= 3.9 min

13.60 cfs @ 12.08 hrs, Volume= Primary 1.305 af

Routed to Link 9L: Link

Secondary = 9.32 cfs @ 12.08 hrs, Volume= 0.353 af

Routed to Link 9L: Link

#4

Secondary

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 674.92' @ 12.08 hrs Surf.Area= 18,132 sf Storage= 16,268 cf

Plug-Flow detention time= 193.0 min calculated for 1.658 af (100% of inflow)

Center-of-Mass det. time= 193.2 min (987.2 - 794.0)

Volume	Inve	ert Avail.Sto	rage	Storage D	escription		
#1	674.0	00' 46,4	18 cf	Custom S	Stage Data (P	rismatic)Listed below (Recalc)	
Elevation (fee	et)	Surf.Area (sq-ft)	Inc. (cubic		Cum.Store (cubic-feet)		
674.0 675.0		17,150 18,215	1	0 7,683	0 17,683		
676.0		19,279		8,747	36,430		
676.	50	20,675		9,989	46,418		
Device	Routing	Invert	Outle	et Devices			
#1	Primary	671.45'	18.0'	' Round C	ulvert		
						neadwall, Ke= 0.500	
						671.20' S= 0.0050 '/' Cc= 0.900	
40	D	074.001			•	ooth interior, Flow Area= 1.77 sf	
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 660.00'				
#3	Device 1	674.50'				4.00 C= 0.600	

Limited to weir flow at low heads

143.0 deg x **10.0'** long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=13.60 cfs @ 12.08 hrs HW=674.92' (Free Discharge)

-1=Culvert (Barrel Controls 13.60 cfs @ 7.70 fps)

-2=Exfiltration (Passes < 0.11 cfs potential flow)

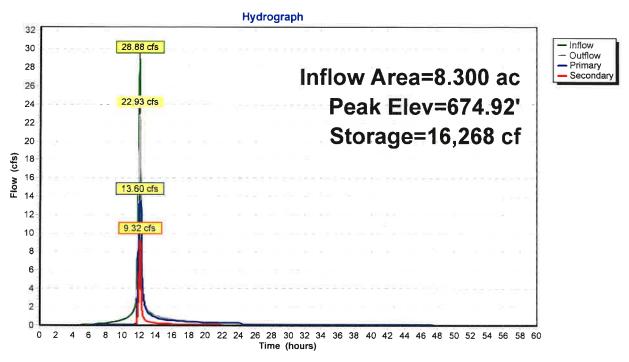
674.50'

☐3=Grate (Passes < 28.70 cfs potential flow)

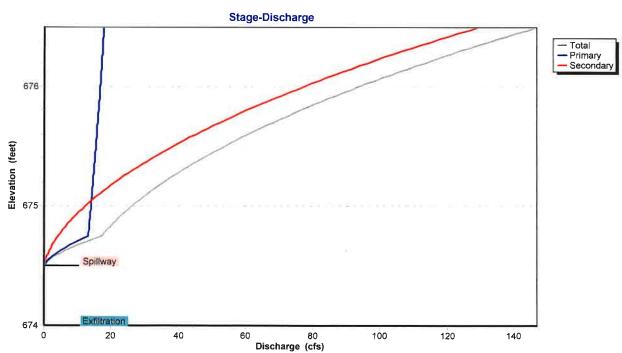
Secondary OutFlow Max=9.32 cfs @ 12.08 hrs HW=674.92' (Free Discharge)
4=Spillway (Weir Controls 9.32 cfs @ 1.96 fps)

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Pond 3P: Bioretention 1



Pond 3P: Bioretention 1

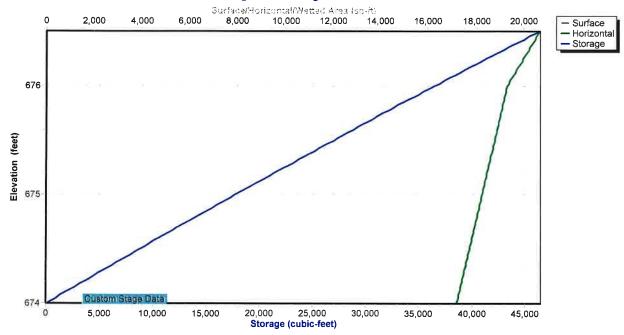


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary
0.00	0.00					(cfs)
2.00		0	674.00	0.00	0.00	0.00
	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.10	196	674.01	0.05	0.05	0.00
8.00	0.23	742	674.04	0.10	0.10	0.00
10.00	0.57	2,750	674.16	0.10	0.10	0.00
12.00	28.53	14,719	674.84	19.86	13.34	6.52
14.00	1.00	9,340	674.54	1.06	0.84	0.22
16.00	0.60	9,142	674.52	0.63	0.51	0.12
18.00	0.46	9,014	674.52	0.48	0.39	0.08
20.00	0.34	8,911	674.51	0.35	0.30	0.06
22.00	0.31	8,875	674.51	0.31	0.26	0.05
24.00	0.28	8,854	674.51	0.28	0.24	0.04
26.00	0.00	8,098	674.47	0.11	0.11	0.00
28.00	0.00	7,341	674.42	0.10	0.10	0.00
30.00	0.00	6,588	674.38	0.10	0.10	0.00
32.00	0.00	5,839	674.34	0.10	0.10	0.00
34.00	0.00	5,094	674.29	0.10	0.10	0.00
36.00	0.00	4,353	674.25	0.10	0.10	0.00
38.00	0.00	3,617	674.21	0.10	0.10	0.00
40.00	0.00	2,884	674.17	0.10	0.10	0.00
42.00	0.00	2,156	674.13	0.10	0.10	0.00
44.00	0.00	1,431	674.08	0.10	0.10	0.00
46.00	0.00	710	674.04	0.10	0.10	0.00
48.00	0.00	155	674.01	0.04	0.04	0.00
50.00	0.00	29	674.00	0.01	0.01	0.00
52.00	0.00	5	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet) 674.00	(cfs) 0.00	(cfs) 0.00	(cfs) 0.00
674.05	0.10	0.10	0.00
674,10 674,15	0.10 0.10	0.10 0.10	0.00 0.00
674.20	0.10	0.10	0.00
674.25 674.30	0.10 0.10	0.10 0.10	0.00 0.00
674.35	0.10	0.10	0.00
674.40 674.45	0.10 0.11	0.10 0.11	0.00 0.00
674.45	0.11	0.11	0.00
674.55	1.63	1.28	0.35
674.60 674.65	4.42 8.04	3.42 6.19	1.00 1.86
674.70	12.36	9.47	2.89
674.75 674.80	17.16 18.66	13.07 13.23	4.09 5.44
674.85	20.31	13.38	6.93
674.90 674.95	22.09 24.01	13.54 13.69	8.56 10.32
675.00	26.06	13.84	12.22
675.05 675.10	28.24 30.55	13.99 14.14	14.25 16.41
675.15	32.98	14.29	18.69
675.20 675.25	35.54 38.22	14.43 14.57	21.11 23.65
675.30	41.03	14.72	26.32
675.35 675.40	43.97 47.03	14.86 15.00	29.11 32.03
675.45	50.22	15.13	35.08
675.50 675.55	53.53 56.97	15.27 15.41	38.26 41.56
675.60	60.53	15.54	44.99
675.65	64.22	15.68	48.55 52.23
675.70 675.75	68.04 71.98	15.81 15.94	52.23 56.05
675.80	76.06	16.07	59.99
675.85 675.90	80.26 84.59	16.20 16.33	64.06 68.26
675.95	89.05	16.45	72.60
676.00 676.05	93.64 98.36	16.58 16.70	77.06 81.66
676.10	103.19	16.80	86.39
676.15 676.20	108.17 113.27	16.91 17.02	91.25 96.25
676.25	118.51	17.12	101.38
676.30 676.35	123.88 129.39	17.23 17.33	106.65 112.05
676.40	135.03	17.44	117.59
676.45 676.50	140.81 146.73	17.54 17.64	123.27 129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

(feet) (sq-ft) (cubic-feet) 674 00 17,150 17,150 0 674 05 17,203 17,203 859 674 10 17,257 17,257 1,720 674 15 17,310 17,363 3,451 674 20 17,363 17,363 3,451 674 25 17,416 17,416 4,321 674.30 17,469 17,469 5,193 674.35 17,523 17,576 6,945 674.40 17,576 17,576 6,945 674.45 17,629 17,629 7,825 674.50 17,683 17,683 8,708 674.55 17,736 17,789 17,789 10,482 674.60 17,789 17,789 10,482 12,266 674.70 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896 17,896	Elevation	Surface	Horizontal	Storage
674.00 17,150 17,150 0 674.05 17,203 17,203 859 674.10 17,257 17,257 1,720 674.15 17,310 17,310 2,584 674.20 17,363 17,363 3,451 674.25 17,416 17,416 4,321 674.30 17,469 17,469 5,193 674.40 17,576 17,576 6,945 674.40 17,576 17,576 6,945 674.50 17,683 17,683 17,683 8,708 674.50 17,683 17,683 17,683 8,708 674.50 17,736 17,736 9,594 674.60 17,789 17,789 10,482 674.60 17,789 17,789 10,482 674.70 17,896 17,896 17,896 674.80 18,002 18,002 14,061 674.85 18,055 18,055 14,962 674.90 18,108 18,108 15,866 674.95 18,162 18,162 16,773 675.05 18,268 18,268 18,268 675.10 18,321 18,321 19,509 675.15 18,375 18,375 20,427 675.30 18,534 18,694 23,195 675.55 18,694 18,694 22,70 675.50 18,684 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,694 18,694 25,987 675.50 18,747 18,747 26,923 675.55 18,000 18,960 30,694 675.75 19,013 19,013 31,643 675.70 18,960 18,960 30,694 675.75 19,013 19,013 31,643 675.95 19,226 35,467 676.00 19,279 19,279 36,430 676.05 19,419 19,419 37,397 676.30 20,117 20,117 42,339 676.45 20,535 20,535 45,388				
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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 1.95" for 10-Year event

Inflow = 58.57 cfs @ 11.97 hrs, Volume= 2.798 af

Outflow = 46.22 cfs @ 12.02 hrs, Volume= 2,798 af, Atten= 21%, Lag= 3.1 min

Primary = 14.32 cfs @ 12.02 hrs, Volume= 1.790 af

Routed to Link 9L : Link

Secondary = 31.90 cfs @ 12.02 hrs, Volume= 1.008 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.40' @ 12.02 hrs Surf.Area= 17,927 sf Storage= 23,153 cf

Plug-Flow detention time= 106.9 min calculated for 2.798 af (100% of inflow)

Center-of-Mass det. time= 107.1 min (919.8 - 812.7)

Volume	Invert	Avail.Sto	rage Stora	age Description	
#1	674.00'	44,15	66 cf Cust	om Stage Data (P	rismatic)Listed below (Recalc)
Elevation		rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
674.0	00	15,250	0	0	
675.0	00	17,118	16,184	16,184	
676.0	00	19,153	18,136	•	
676.5		20,191	9,836	•	
		,	.,	,	
Device	Routing	Invert	Outlet Dev	rices	
#1	Primary	671.55'	18.0" Round Culvert		
	•		L= 60.0' CPP, square edge headwall, Ke= 0.500		
			Inlet / Outlet Invert= 671.55' / 671.25' S= 0.0050 '/' Cc= 0.900		
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf		
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area		
-	201.00	07 1.00	Conductivity to Groundwater Elevation = 660.00'		
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 3.00 C= 0.600		
πο	Limited to weir flow at low heads				
#4	Socondon	674 50!	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)		
#4	Secondary	674.50'	143.0 deg	x 10.0 long Spilly	$vay \ Cv = 2.47 \ (C = 3.09)$

Primary OutFlow Max=14.32 cfs @ 12.02 hrs HW=675.40' (Free Discharge)

-1=Culvert (Barrel Controls 14.32 cfs @ 8.10 fps)
-2=Exfiltration (Passes < 0.11 cfs potential flow)

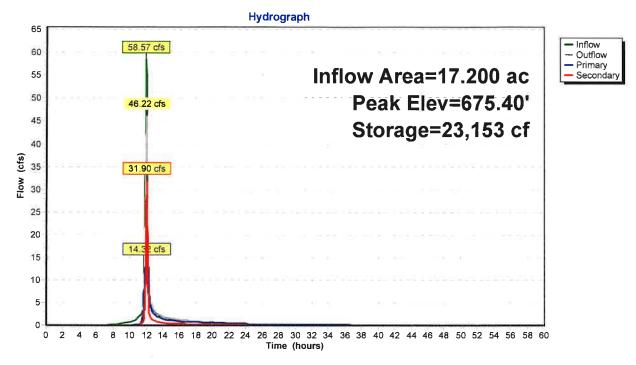
-3=Grate (Passes < 54.71 cfs potential flow)

Secondary OutFlow Max=31.84 cfs @ 12.02 hrs HW=675.40' (Free Discharge)

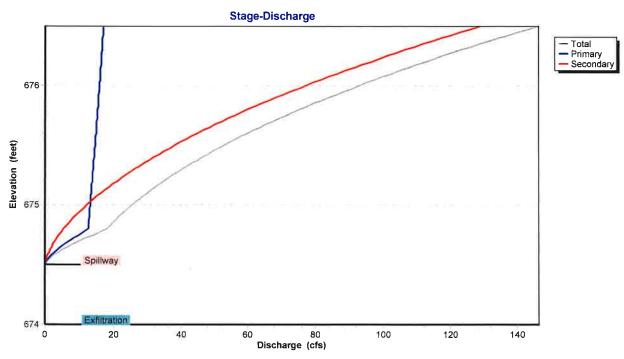
4=Spillway (Weir Controls 31.84 cfs @ 2.80 fps)

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Pond 6P: Bioretention 2



Pond 6P: Bioretention 2



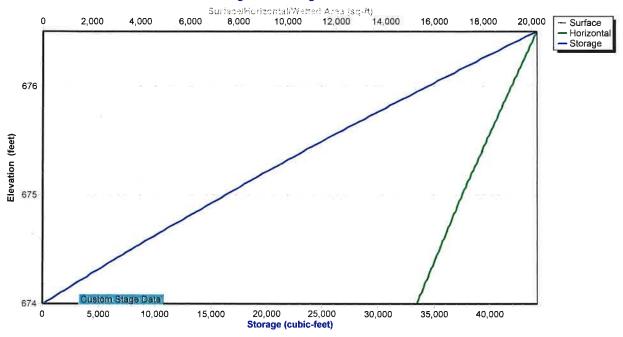
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22.117 Proposed BasinPrepared by Carmina Wood Morris, PC
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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	Ó	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.00	0	674.00	0.00	0.00	0.00
8.00	0.16	285	674.02	0.07	0.07	0.00
10.00	0.67	2,329	674.15	0.09	0.09	0.00
12.00	54.84	22,708	675.37	44.68	14.25	30.43
14.00	1.83	8,910	674.56	1.93	1.41	0.52
16.00	1.13	8,595	674.55	1.18	0.87	0.31
18.00	0.88	8,451	674.54	0.90	0.67	0.23
20.00	0.64	8,330	674.53	0.66	0.50	0.16
22.00	0.59	8,295	674.53	0.59	0.45	0.14
24.00	0.54	8,271	674.53	0.54	0.42	0.13
26.00	0,00	7,352	674.47	0.10	0.10	0.00
28.00	0.00	6,661	674.43	0.10	0.10	0.00
30.00	0.00	5,975	674.38	0.09	0.09	0.00
32.00	0.00	5,295	674.34	0.09	0.09	0.00
34.00	0.00	4,620	674.30	0.09	0.09	0.00
36.00	0.00	3,950	674.26	0.09	0.09	0.00
38.00	0.00	3,286	674.21	0.09	0.09	0.00
40.00	0.00	2,627	674.17	0.09	0.09	0.00
42.00	0.00	1,973	674.13	0.09	0.09	0.00
44.00	0.00	1,324	674.09	0.09	0.09	0.00
46.00	0.00	681	674.04	0.09	0.09	0.00
48.00	0.00	157	674.01	0.04	0.04	0.00
50.00	0.00	29	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05	0.09	0.09	0.00
674.10	0.09	0.09	0.00
674.15	0.09	0.09	0.00
674.20 674.25	0.09	0.09	0.00
674.25	0.09 0.09	0.09 0.09	0.00 0.00
674.35	0.09	0.09	0.00
674.40	0.09	0.09	0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60	3.58	2.58	1.00
674.65	6.52	4.66	1.86
674.70	10.01	7.12	2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90	21.46	12.90	8.56
674.95	23.37	13.05	10.32
675.00	25.42	13.20	12.22
675.05 675.40	27.59	13.35	14.25
675.10 675.15	29.90 32.33	13.49	16.41
675.13	32.33 34.88	13.63 13.77	18.69 21.11
675.25	37.56	13.77	23.65
675.30	40.37	14.05	26.32
675.35	43.30	14.19	29.11
675.40	46.36	14.32	32.03
675.45	49.54	14.46	35.08
675.50	52.85	14.59	38.26
675.55	56.28	14.72	41.56
675.60	59.84	14.86	44.99
675.65	63.53	14.98	48.55
675.70	67.34	15.11	52.23
675.75	71.29	15.24	56.05
675.80	75.36	15.37	59.99
675.85 675.00	79.55	15.49	64.06
675.90 675.95	83.88 88.34	15.62 15.74	68.26 72.60
676.00	92.93	15.74	72.00 77.06
676.05	97.65	15.00	81.66
676.10	102.50	16.11	86.39
676.15	107.48	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30	123.23	16.58	106.65
676.35	128.75	16.70	112.05
676.40	134.41	16.81	117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10	15,437	15,437	1,534
674.15	15,530	15,530	2,309
674.20	15,624	15,624	3,087
674.25	15,717	15,717	3,871
674.30	15,810	15,810	4,659
674.35 674.40	15,904 15,997	15,904 15,007	5,452 6,240
674.45	16,091	15,997 16,091	6,249 7,052
674.50	16,184	16,184	7,032 7,859
674.55	16,277	16,277	8,670
674.60	16,371	16,371	9,486
674.65	16,464	16,464	10,307
674.70	16,558	16,558	11,133
674.75	16,651	16,651	11,963
674.80	16,744	16,744	12,798
674.85	16,838	16,838	13,637
674.90	16,931	16,931	14,482
674.95	17,025	17,025	15,330
675.00	17,118	17,118	16,184
675.05	17,220	17,220	17,042
675.10	17,322	17,322	17,906
675.15	17,423	17,423	18,775
675.20 675.25	17,525	17,525	19,648
675.30	17,627 17,728	17,627 17,728	20,527 21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50	18,136	18,136	24,997
675.55	18,237	18,237	25,907
675.60	18,339	18,339	26,821
675.65	18,441	18,441	27,741
675.70	18,543	18,543	28,665
675.75	18,644	18,644	29,595
675.80	18,746	18,746	30,530
675.85	18,848	18,848	31,469
675.90	18,949	18,949	32,414
675.95	19,051	19,051	33,364
676.00 676.05	19,153	19,153	34,320 35,280
676.03	19,257 19,361	19,257 19,361	36,245
676.15	19,464	19,464	37,216
676.20	19,568	19,568	38,192
676.25	19,672	19,672	39,173
676.30	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40	19,983	19,983	42,147
676.45	20,087	20,087	43,149
676.50	20,191	20,191	44,156

Type II 24-hr 10-Year Rainfall=3.15"

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 2.10" for 10-Year event Inflow

67.69 cfs @ 12.03 hrs, Volume= 4.456 af

Outflow 3.25 cfs @ 13.82 hrs, Volume= 4.456 af, Atten= 95%, Lag= 107.3 min

Primary 3.25 cfs @ 13.82 hrs, Volume= 4.456 af 0.00 cfs @ 0.00 hrs, Volume= Secondary = 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 676.24' @ 13.82 hrs Surf.Area= 49,276 sf Storage= 96,797 cf

Plug-Flow detention time= 295.8 min calculated for 4.456 af (100% of inflow) Center-of-Mass det. time= 295.7 min (1,240.6 - 944.9)

Volume Invert Avail.Storage Storage Description #1 672.00' 311,588 cf dry basin (Prismatic)Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	1,285	0	0
673.00	6,433	3,859	3,859
674.00	9,723	8,078	11,937
675.00	44,268	26,996	38,933
676.00	48,305	46,287	85,219
677.00	52,399	50,352	135,571
678.00	56,550	54,475	190,046
679.00	60,757	58,654	248,699
680.00	65,021	62,889	311,588

<u>Device</u>	Routing	Invert	Outlet Devices
#1	Primary	670.75'	10.0" Round Culvert (structure to outlet)
			L= 200.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	670.80'	
			L= 25.0' CPP, mitered to conform to fill, Ke= 0.700
			Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	678.00'	24.0" W x 24.0" H Vert. Grate C= 0.600
			Limited to weir flow at low heads
#4	Device 1	670.75'	8.0" Vert. Orifice X 3.00 C= 0.600
			Limited to weir flow at low heads
#5	Device 1	675.50'	5.0' long Weir 2 End Contraction(s)
#6	Secondary	679.00'	143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

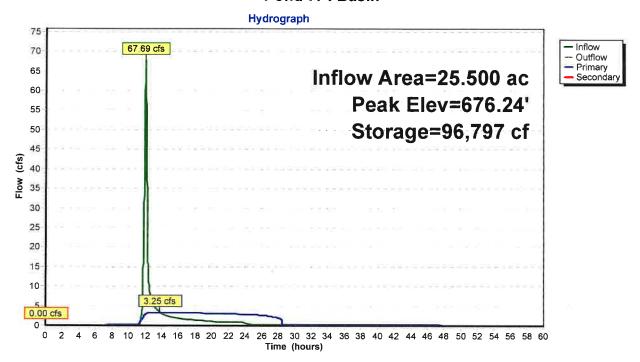
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Primary OutFlow Max=3.25 cfs @ 13.82 hrs HW=676.24' (Free Discharge)
1=Culvert (structure to outlet) (Barrel Controls 3.25 cfs @ 5.97 fps)
2=Culvert (basin to structure) (Passes < 3.35 cfs potential flow)
3=Grate (Controls 0.00 cfs)
4=Orifice (Passes < 11.45 cfs potential flow)
5=Weir (Passes < 10.05 cfs potential flow)

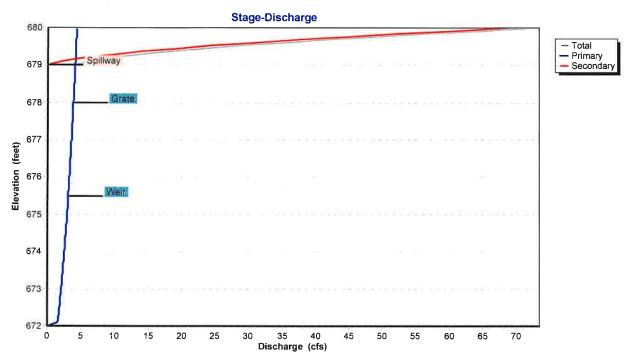
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

Pond 7P: Basin



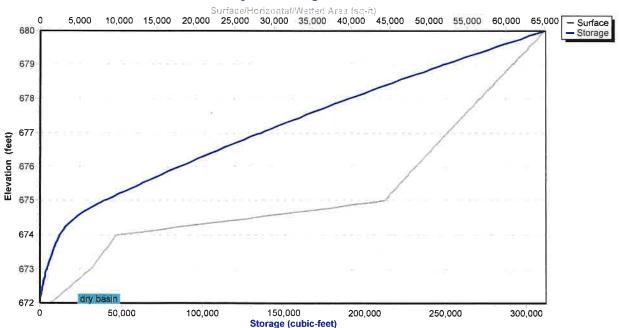
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.00	0	672.00	0.00	0.00	0.00
6.00	0.05	4	672.00	0.04	0.04	0.00
8.00	0.17	13	672.01	0.16	0.16	0.00
10.00	0.19	15	672.01	0.19	0.19	0.00
12.00	64.54	33,805	674.88	2.80	2.80	0.00
14.00	2.99	96,713	676.24	3.25	3.25	0.00
16.00	1.81	90,022	676.10	3.21	3.21	0.00
18.00	1.37	78,397	675.86	3.13	3.13	0.00
20.00	1.01	64,749	675.57	3.04	3.04	0.00
22.00	0.90	50,008	675.25	2.93	2.93	0.00
24.00	0.83	35,525	674.92	2.82	2.82	0.00
26.00	0.20	17,910	674.37	2.61	2.61	0.00
28.00	0.20	2,587	672.78	1.90	1.90	0.00
30.00	0.20	16	672.01	0.20	0.20	0.00
32.00	0.20	16	672.01	0.20	0.20	0.00
34.00	0.20	16	672.01	0.20	0.20	0.00
36.00	0.20	16	672.01	0.20	0.20	0.00
38.00	0.19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.07	6	672.00	0.07	0.07	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00	0.00	0	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

Elevation	Discharge	Primary	Secondary	Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)	(feet)	(cfs)	(cfs)	(cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50 673.60	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60 673.70	2.30 2.34	2.30 2.34	0.00	678.90	3.99	3.99	0.00
673.80	2.34	2.34	0.00 0.00	679.00	4.02	4.02	0.00
673.90	2.30	2.30	0.00	679.10 679.20	6.02	4.04 4.07	1.98
674.00	2.42	2.42	0.00	679.20	9.72 14.60	4.07	5.66 10.51
674.00	2.47	2.47	0.00	679.40	20.49	4.12	16.37
674.20	2.55	2.55	0.00	679.50	27.28	4.12	23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.17	39.19
674.50	2.66	2.66	0.00	679.80	52.63	4.22	48.41
674.60	2.70	2.70	0.00	679.90	62.63	4.24	58.40
674.70	2.74	2.74	0.00	680.00	73.39	4.26	69.13
674.80	2.77	2.77	0.00	000.00	7 3.33	7.20	03.13
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675.60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00				
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00				
676.60	3.36	3.36	0.00				
676.70	3.39	3.39	0.00				
676.80	3.42	3.42	0.00				
676.90	3.45	3.45	0.00				
677.00	3.48	3.48	0.00				
677.10	3.51	3.51	0.00				
677.20	3.54	3.54	0.00				

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Stage-Area-Storage for Pond 7P: Basin

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677.60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60	4,374	1,698	677.90	56,135	184,411
672.70	4,889	2,161	678.00	56,550 56,574	190,046
672.80 672.90	5,403 5,018	2,675	678.10	56,971	195,722
673.00	5,918 6,433	3,241 3,859	678.20 678.30	57,391 57,812	201,440 207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407	8,311	678.90	60,336	242,644
673.70	8,736	9,168	679.00	60,757	248,699
673.80	9,065	10,058	679.10	61,183	254,796
673.90	9,394	10,981	679.20	61,610	260,936
674.00	9,723	11,937	679.30	62,036	267,118
674.10	13,178	13,082	679.40	62,463	273,343
674.20	16,632	14,573	679.50	62,889	279,611
674.30 674.40	20,086	16,408	679.60	63,315	285,921
674.40 674.50	23,541	18,590	679.70	63,742	292,274
674.50 674.60	26,996 30,450	21,117 23,989	679.80 679.90	64,168 64,595	298,669 305,107
674.70	33,905	23,909 27,207	680.00	65,021	311,588
674.80	37,359	30,770	000.00	05,021	311,300
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287	61,571			
675.60	46,690	66,220			
675.70	47,094 47,408	70,909			
675.80 675.90	47,498 47,001	75,639			
676.00	47,901 48,305	80,409 85,219			
676.10	48,714	90,070			
676.20	49,124	94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352	109,883			
676.60	50,761	114,939			
676.70	51,171	120,036			
676.80	51,580	125,173			
676.90	51,990	130,352			
677.00	52,399	135,571			
677.10	52,814 53,330	140,832			
677.20	53,229	146,134			

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Summary for Link 9L: Link

Inflow Area =

25.500 ac, 60.39% Impervious, Inflow Depth = 2.10" for 10-Year event

Inflow =

67.69 cfs @ 12.03 hrs, Volume=

4.456 af

Primary =

67.69 cfs @ 12.03 hrs, Volume=

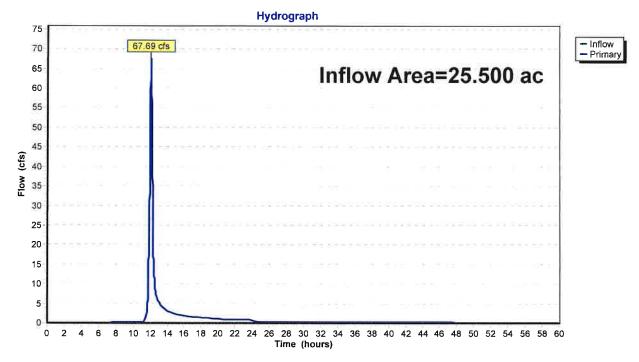
4.450 ai

/olume= 4.456 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P : Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



Primary

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

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Hydrograph for Link 9L: Link

Inflow Elevation

(feet)

0.00

0.00 0.00

0.00

0.00

0.00

0.00

0.00

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)
0.00	0.00	0.00	0.00	53.00
1.00	0.00	0.00	0.00	54.00
2.00	0.00	0.00	0.00	55.00
3.00 4.00	0.00 0.00	0.00	0.00	56.00
5.00	0.00	0.00 0.00	0.00 0.01	57.00 58.00
6.00	0.05	0.00	0.05	59.00
7.00	0.10	0.00	0.10	60.00
8.00 9.00	0.17 0.19	0.00 0.00	0.17 0.19	
10.00	0.19	0.00	0.19	
11.00	0.20	0.00	0.20	
12.00	64.54	0.00	64.54	
13.00 14.00	5.12 2.99	0.00 0.00	5.12 2.99	
15.00	2.29	0.00	2.39	
16.00	1.81	0.00	1,81	
17.00	1.55	0.00	1.55	
18.00 19.00	1.37 1.19	0.00 0.00	1.37 1.19	
20.00	1.01	0.00	1.19	
21.00	0.93	0.00	0.93	
22.00	0.90	0.00	0.90	
23.00 24.00	0.86 0.83	0.00 0.00	0.86 0.83	
25.00	0.20	0.00	0.20	
26.00	0.20	0.00	0.20	
27.00 28.00	0.20 0.20	0.00 0.00	0.20 0.20	
29.00	0.20	0.00	0.20	
30.00	0.20	0.00	0.20	
31.00	0.20	0.00	0.20	
32.00 33.00	0.20 0.20	0.00 0.00	0.20 0.20	
34.00	0.20	0.00	0.20	
35.00	0.20	0.00	0.20	
36.00	0.20	0.00	0.20	ø
37.00 38.00	0.19 0.19	0.00 0.00	0.19 0.19	
39.00	0.19	0.00	0.19	
40.00	0.19	0.00	0.19	
41.00	0.19	0.00	0.19	
42.00 43.00	0.19 0.19	0.00 0.00	0.19 0.19	
44.00	0.19	0.00	0.19	
45.00	0.19	0.00	0.19	
46.00 47.00	0.19	0.00	0.19	
48.00	0.17 0.07	0.00 0.00	0.17 0.07	
49.00	0.03	0.00	0.03	
50.00	0.01	0.00	0.01	
51.00 52.00	0.01	0.00	0.01	
52.00	0.00	0.00	0.00	

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Summary for Subcatchment 1S: Proposed North

Runoff = 36.71 cfs @ 12.01 hrs, Volume=

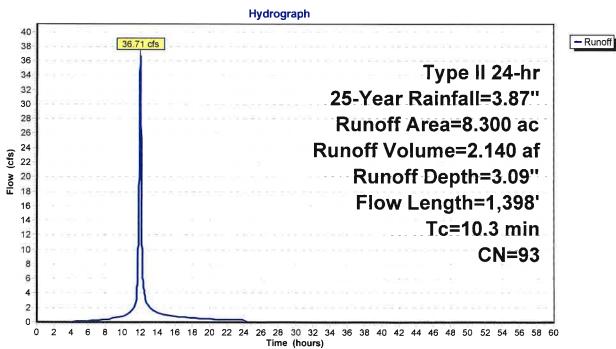
2.140 af, Depth= 3.09"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 25-Year Rainfall=3.87"

Are	ea (a	ac) C	N Desc	cription		
	5.0	000	8 Pave	ed parking	, HSG D	
	1.4	100	8 Pave	ed parking	, HSG C	
	1.1	00	30 >759	% Grass co	over, Good	, HSG D
	0.8	300 7	⁷ 4 >75 ⁹	% Grass co	over, Good	, HSG C
	8.3	300 9	3 Weig	hted Aver	age	
	1.9	000	22.8	9% Pervio	us Area	
	6.4	100	77.1	1% Imperv	ious Area	
T	С	Length	Slope	Velocity	Capacity	Description
(mir	n).	(feet)	(ft/ft)	(ft/sec)	(cfs)	
2.	.7	72	0.3500	0.44		Sheet Flow, grass
						Grass: Short n= 0.150 P2= 2.50"
1.	.9	300	0.0160	2.57		Shallow Concentrated Flow, pavement
						Paved Kv= 20.3 fps
5.	.7	1,026		3.00		Direct Entry, Pipe flow
10.	.3	1,398	Total			

Subcatchment 1S: Proposed North



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22.117 Proposed BasinPrepared by Carmina Wood Morris, PC

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Hydrograph for Subcatchment 1S: Proposed North

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
	Precip. (inches) 0.00 0.04 0.09 0.13 0.19 0.24 0.31 0.38 0.46 0.57 0.70 0.91 2.57 2.99 3.17 3.30 3.41 3.49 3.56 3.63 3.68 3.73 3.87 3.87 3.87 3.87 3.87 3.87 3.8	Excess (inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.03 0.05 0.09 0.15 0.23 0.38 1.84 2.24 2.54 2.64 2.72 2.80 2.86 2.91 2.96 3.01 3.05 3.09 3.09 3.09 3.09 3.09 3.09 3.09 3.09	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00 0.03 0.10 0.17 0.26 0.34 0.56 0.79 1.57 36.30 2.14 1.25 0.97 0.75 0.65 0.58 0.50 0.42 0.40 0.38 0.36 0.35 0.00 0.00 0.00 0.00 0.00 0.00 0.00
			59

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
53.00	3.87	3.09	0.00
54.00	3.87	3.09	0.00
55.00	3.87	3.09	0.00
56.00	3.87	3.09	0.00
57.00	3.87	3.09	0.00
58.00	3.87	3.09	0.00
59.00	3.87	3.09	0.00
60.00	3.87	3.09	0.00

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Summary for Subcatchment 2S: Proposed South

Runoff = 77.16 cfs @ 11.97 hrs, Volume=

3.739 af, Depth= 2.61"

Routed to Pond 6P: Bioretention 2

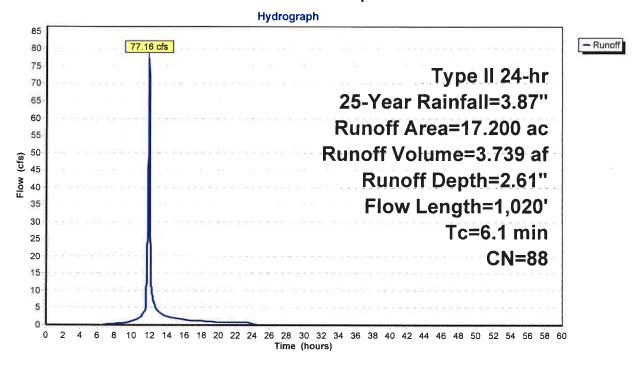
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 25-Year Rainfall=3.87"

Area	(ac) C	N Des	cription		_
5.	400	98 Pave	ed parking	, HSG D	
3.	.600		ed parking		
				over, Good	,
				over, Good	, HSG C
			el surface	•	
0.			<u>rel surface</u>	, HSG C	
		•	ghted Aver	•	
	200		7% Pervio		
9.	000	52.3	3% Imper	<i>r</i> ious Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
0.7	30	0.0100	0.72	(0.0)	Sheet Flow, pvmt
0.7	00	0.0100	0.12		Smooth surfaces n= 0.011 P2= 2.50"
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass
					Unpaved Kv= 16.1 fps
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement
					Paved Kv= 20.3 fps
4.4	800		3.00		Direct Entry, Pipe flow
6.1	1,020	Total			

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Subcatchment 2S: Proposed South



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Hydrograph for Subcatchment 2S: Proposed South

Time	Precip.	Excess	Runoff	ı
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 11.00 13.00 14.00 15.00 15.00 16.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 27.00 28.00 27.00 28.00 27.00 28.00 27.00 28.00 31.00	(inches) 0.00 0.04 0.09 0.13 0.24 0.31 0.38 0.46 0.57 0.91 2.99 3.17 3.49 3.56 3.63 3.78 3.87 3.87 3.87 3.87 3.87 3.87 3.8	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	(cfs) 0.00 0.00 0.00 0.00 0.00 0.00 0.05 0.18 0.33 0.66 1.06 2.40 71.93 3.92 2.34 1.86 1.44 1.27 1.12 0.97 0.82 0.77 0.74 0.72 0.69 0.00 0.00 0.00 0.00 0.00 0.00 0.00	STATE OF THE STATE

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
53.00	3.87	2.61	0.00
54.00	3.87	2.61	0.00
55.00	3.87	2.61	0.00
56.00	3.87	2.61	0.00
57.00	3.87	2.61	0.00
58.00	3.87	2.61	0.00
59.00	3.87	2.61	0.00
60.00	3.87	2.61	0.00

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 3.09" for 25-Year event

Inflow = 36.71 cfs @ 12.01 hrs, Volume= 2.140 af

Outflow = 28.94 cfs @ 12.08 hrs, Volume= 2.140 af, Atten= 21%, Lag= 4.0 min

Primary = 14.04 cfs @ 12.08 hrs, Volume= 1.598 af

Routed to Link 9L: Link

Secondary = 14.90 cfs @ 12.08 hrs, Volume= 0.542 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.07' @ 12.08 hrs Surf.Area= 18,285 sf Storage= 18,876 cf

Plug-Flow detention time= 156.6 min calculated for 2.140 af (100% of inflow)

Center-of-Mass det. time= 156.5 min (943.5 - 787.0)

Volume	Invert	Avail.Storage	Storage Description
#1	674.00'	46,418 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
Elevation	C A.	[Ctore Ctore

Elevation	Surt.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	17,150	0	0
675.00	18,215	17,683	17,683
676.00	19,279	18,747	36,430
676.50	20,675	9,989	46,418

Routing	Invert	Outlet Devices
Primary	671.45'	18.0" Round Culvert
		L= 50.0' CPP, square edge headwall, Ke= 0.500
		Inlet / Outlet Invert= 671.45' / 671.20' S= 0.0050 '/' Cc= 0.900
		n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
		Conductivity to Groundwater Elevation = 660.00'
Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 4.00 C= 0.600
		Limited to weir flow at low heads
Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)
	Primary Device 1 Device 1	Primary 671.45' Device 1 674.00' Device 1 674.50'

Primary OutFlow Max=14.04 cfs @ 12.08 hrs HW=675.07' (Free Discharge)

-1=Culvert (Barrel Controls 14.04 cfs @ 7.94 fps)

2=Exfiltration (Passes < 0.11 cfs potential flow)

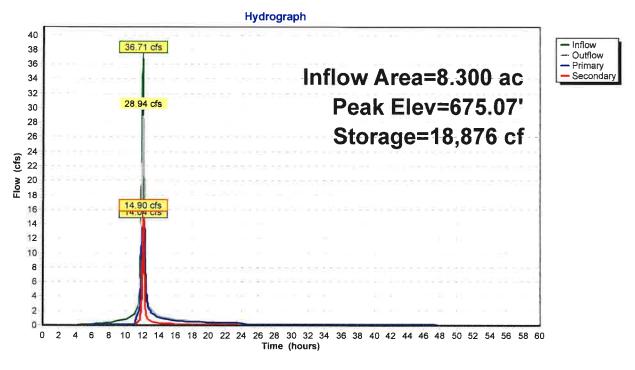
-3=Grate (Passes < 44.47 cfs potential flow)

Secondary OutFlow Max=14.89 cfs @ 12.08 hrs HW=675.07' (Free Discharge) 4=Spillway (Weir Controls 14.89 cfs @ 2.25 fps)

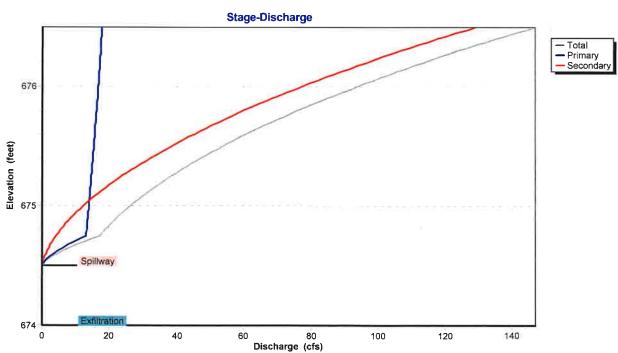
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Pond 3P: Bioretention 1



Pond 3P: Bioretention 1

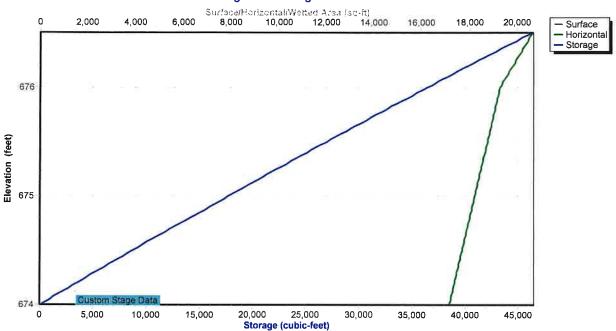


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.03	24	674.00	0.01	0.01	0.00
6.00	0.17	415	674.02	0.10	0.10	0.00
8.00	0.34	1,544	674.09	0.10	0.10	0.00
10.00	0.79	4,756	674.27	0.10	0.10	0.00
12.00	36.30	16,757	674.95	23.98	13.69	10.29
14.00	1.25	9,459	674.54	1.33	1.05	0.28
16.00	0.75	9,213	674.53	0.78	0.63	0.15
18.00	0.58	9,110	674.52	0.59	0.48	0.11
20.00	0.42	8,982	674.52	0.44	0.36	0.08
22.00	0.38	8,937	674.51	0.38	0.32	0.06
24.00	0.35	8,911	674.51	0.35	0.30	0.06
26.00	0.00	8,117	674.47	0.11	0.11	0.00
28.00	0.00	7,360	674.42	0.10	0.10	0.00
30.00	0.00	6,607	674.38	0.10	0.10	0.00
32.00	0.00	5,858	674.34	0.10	0.10	0.00
34.00	0.00	5,113	674.30	0.10	0.10	0.00
36.00	0.00	4,372	674.25	0.10	0.10	0.00
38.00	0.00	3,635	674.21	0.10	0.10	0.00
40.00	0.00	2,902	674.17	0.10	0.10	0.00
42.00	0.00	2,174	674.13	0.10	0.10	0.00
44.00	0.00	1,449	674.08	0.10	0.10	0.00
46.00	0.00	729	674.04	0.10	0.10	0.00
48.00	0.00	162	674.01	0.04	0.04	0.00
50.00	0.00	30	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00 674.05	0.00	0.00	0.00
674.05	0.10 0.10	0.10 0.10	0.00 0.00
674.15	0.10	0.10	0.00
674.20	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30	0.10	0.10	0.00
674.35 674.40	0.10 0.10	0.10 0.10	0.00
674.45	0.10	0.10	0.00 0.00
674.50	0.11	0.11	0.00
674.55	1.63	1.28	0.35
674.60	4.42	3.42	1.00
674.65 674.70	8.04	6.19	1.86
674.70 674.75	12.36 17.16	9.47 13.07	2.89 4.09
674.80	18.66	13.23	5.44
674.85	20.31	13.38	6.93
674.90	22.09	13.54	8.56
674.95	24.01	13.69	10.32
675.00 675.05	26.06 28.24	13.84 13.99	12.22 14.25
675.10	30.55	14.14	16.41
675.15	32.98	14.29	18.69
675.20	35.54	14.43	21.11
675.25	38.22	14.57	23.65
675.30 675.35	41.03 43.97	14.72 14.86	26.32 29.11
675.40	47.03	15.00	32.03
675.45	50.22	15.13	35.08
675.50	53.53	15.27	38.26
675.55	56.97	15.41	41.56
675.60 675.65	60.53 64.22	15.54 15.68	44.99 48.55
675.70	68.04	15.81	52.23
675.75	71.98	15.94	56.05
675.80	76.06	16.07	59.99
675.85	80.26	16.20	64.06
675.90 675.95	84.59 89.05	16.33 16.45	68.26 72.60
676.00	93.64	16.58	77.06
676.05	98.36	16.70	81.66
676.10	103.19	16.80	86.39
676.15	108.17	16.91	91.25
676.20 676.25	113.27 118.51	17.02 17.12	96.25 101.38
676.30	123.88	17.12	101.36
676.35	129.39	17.33	112.05
676.40	135.03	17.44	117.59
676.45	140.81	17.54	123.27
676.50	146.73	17.64	129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	17,150	17,150	0
674.05	17,203	17,203	859
674.10	17,257	17,257	1,720
674.15	17,310	17,310	2,584
674.20	17,363	17,363	3,451
674.25	17,416	17,416	4,321
674.30	17,469	17,469	5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45	17,629	17,629	7,825
674.50 674.55	17,683	17,683	8,708
674.60	17,736 17,789	17,736 17,780	9,594
674.65	17,769	17,789 17,842	10,482 11,372
674.70	17,842	17,896	12,266
674.75	17,949	17,949	13,162
674.80	18,002	18,002	14,061
674.85	18,055	18,055	14,962
674.90	18,108	18,108	15,866
674.95	18,162	18,162	16,773
675.00	18,215	18,215	17,683
675.05	18,268	18,268	18,595
675.10	18,321	18,321	19,509
675.15	18,375	18,375	20,427
675.20	18,428	18,428	21,347
675.25	18,481	18,481	22,270
675.30	18,534	18,534	23,195
675.35	18,587	18,587	24,123
675.40	18,641	18,641	25,054
675.45	18,694	18,694	25,987
675.50	18,747	18,747	26,923
675.55	18,800	18,800	27,862
675.60	18,853	18,853	28,803
675.65	18,907	18,907	29,747
675.70	18,960	18,960	30,694
675.75	19,013	19,013	31,643
675.80	19,066	19,066	32,595
675.85	19,119	19,119	33,550
675.90	19,173	19,173	34,507
675.95 676.00	19,226	19,226	35,467
676.05	19,279 19,419	19,279	36,430
676.10	19,558	19,419 19,558	37,397 38,371
676.15	19,698	19,698	
676.20	19,837	19,837	39,353 40,341
676.25	19,977	19,977	41,337
676.30	20,117	20,117	42,339
676.35	20,256	20,256	43,348
676.40	20,396	20,396	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 2.61" for 25-Year event

Inflow = 77.16 cfs @ 11.97 hrs, Volume= 3.739 af

Outflow = 63.29 cfs @ 12.02 hrs, Volume= 3.739 af, Atten= 18%, Lag= 2.8 min

Primary = 14.98 cfs @ 12.02 hrs, Volume= 2.227 af

Routed to Link 9L : Link

Secondary = 48.32 cfs @ 12.02 hrs, Volume= 1.512 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.65' @ 12.02 hrs Surf.Area= 18,434 sf Storage= 27,681 cf

Plug-Flow detention time= 84.4 min calculated for 3.739 af (100% of inflow)

Center-of-Mass det. time= 84.3 min (888.8 - 804.5)

Volume	Invert	Avail.Sto	rage Stora	ge Description		
#1	674.00'	44,15	56 cf Cust	om Stage Data (P	rismatic)Listed below (Recalc)	
Elevation	on Su	ırf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
674.0	00	15,250	0	0		
675.0	00	17,118	16,184	16,184		
676.0	00	19,153	18,136	34,320		
676.	50	20,191	9,836	44,156		
Device	Routing	Invert	Outlet Dev	ices		
#1	Primary	671.55'	18.0" Rou	ind Culvert		
			L = 60.0'	CPP, square edge l	headwall, Ke= 0.500	
			Inlet / Outle	et Invert= 671.55' /	671.25' S= 0.0050 '/' Cc= 0.900	
			n= 0.013 (Corrugated PE, sm	ooth interior, Flow Area= 1.77 sf	
#2	Device 1	674.00'	0.250 in/hı	r Exfiltration over	Horizontal area	
			Conductivi	ty to Groundwater	Elevation = 660.00'	
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 3.00 C= 0.600			
			Limited to	weir flow at low hea	ads	
#4	Secondary	674.50'	143.0 deg	x 10.0' long Spilly	vay Cv= 2.47 (C= 3.09)	

Primary OutFlow Max=14.98 cfs @ 12.02 hrs HW=675.65' (Free Discharge)

-1=Culvert (Barrel Controls 14.98 cfs @ 8.47 fps)

2=Exfiltration (Passes < 0.12 cfs potential flow)

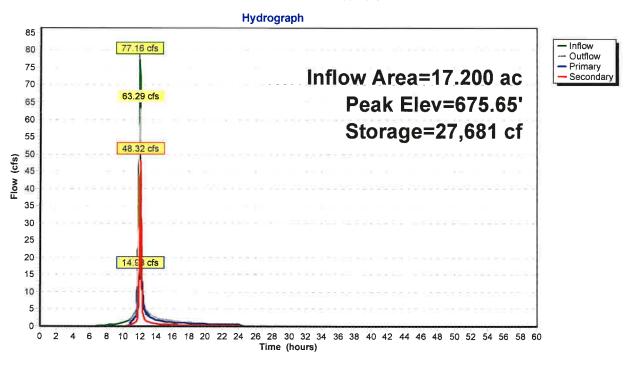
-3=Grate (Passes < 61.86 cfs potential flow)

Secondary OutFlow Max=48.28 cfs @ 12.02 hrs HW=675.65' (Free Discharge) 4=Spillway (Weir Controls 48.28 cfs @ 3.14 fps)

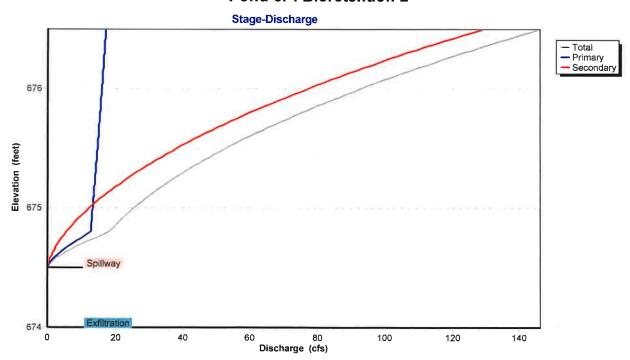
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Pond 6P: Bioretention 2



Pond 6P: Bioretention 2

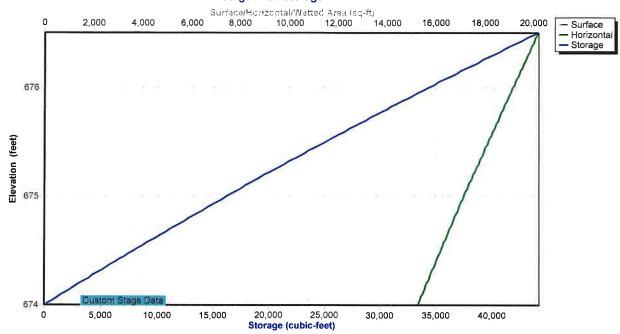


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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.05	37	674.00	0.01	0.01	0.00
8.00	0.33	910	674.06	0.09	0.09	0.00
10.00	1.06	4,900	674.32	0.09	0.09	0.00
12.00	71.93	27,338	675.63	61.91	14.93	46.98
14.00	2.34	9,110	674.58	2.45	1.78	0.67
16.00	1.44	8,734	674.55	1.49	1.09	0.40
18.00	1.12	8,576	674.54	1.14	0.84	0.30
20.00	0.82	8,421	674.53	0.84	0.63	0.21
22.00	0.74	8,376	674.53	0.75	0.56	0.19
24.00	0.69	8,345	674.53	0.69	0.52	0.17
26.00	0.00	7,364	674.47	0.10	0.10	0.00
28.00	0.00	6,673	674.43	0.10	0.10	0.00
30.00	0.00	5,987	674.38	0.09	0.09	0.00
32.00	0.00	5,307	674.34	0.09	0.09	0.00
34.00	0.00	4,632	674.30	0.09	0.09	0.00
36.00	0.00	3,962	674.26	0.09	0.09	0.00
38.00	0.00	3,298	674.21	0.09	0.09	0.00
40.00	0.00	2,639	674.17	0.09	0.09	0.00
42.00	0.00	1,985	674.13	0.09	0.09	0.00
44.00	0.00	1,336	674.09	0.09	0.09	0.00
46.00	0.00	692	674.05	0.09	0.09	0.00
48.00	0.00	161	674.01	0.04	0.04	0.00
50.00	0.00	30	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	Ô	674.00	0.00	0.00	0.00
58.00	0.00	Ō	674.00	0.00	0.00	0.00
60.00	0.00	Ō	674.00	0.00	0.00	0.00
		_	- · · · · · ·	2.30	2.50	5.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05 674.10	0.09 0.09	0.09 0.09	0.00 0.00
674.10	0.09	0.09	0.00
674.20	0.09	0.09	0.00
674.25	0.09	0.09	0.00
674.30	0.09	0.09	0.00
674.35	0.09	0.09	0.00
674.40	0.10	0.10	0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55 674.60	1.32 3.58	0.98 2.58	0.35
674.65	6.52	4.66	1.00 1.86
674.70	10.01	7.12	2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90	21.46	12.90	8.56
674.95 675.00	23.37	13.05	10.32
675.00 675.05	25.42 27.59	13.20 13.35	12.22 14.25
675.10	29.90	13.49	16.41
675.15	32.33	13.63	18.69
675.20	34.88	13.77	21.11
675.25	37.56	13.91	23.65
675.30	40.37	14.05	26.32
675.35	43.30	14.19	29.11
675.40 675.45	46.36 49.54	14.32 14.46	32.03 35.08
675.50	52.85	14.40	38.26
675.55	56.28	14.72	41.56
675.60	59.84	14.86	44.99
675.65	63.53	14.98	48.55
675.70	67.34	15.11	52.23
675.75	71.29	15.24	56.05
675.80 675.85	75.36 79.55	15.37	59.99
675.90	79.55 83.88	15.49 15.62	64.06 68.26
675.95	88.34	15.74	72.60
676.00	92.93	15.86	77.06
676.05	97.65	15.99	81.66
676.10	102.50	16.11	86.39
676.15	107.48	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30 676.35	123.23 128.75	16.58 16.70	106.65 112.05
676.40	134.41	16.70	117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10	15,437	15,437	1,534
674.15 674.20	15,530 15,624	15,530 15,624	2,309 3,087
674.25	15,717	15,717	3,871
674.30	15,810	15,810	4,659
674.35	15,904	15,904	5,452
674.40	15,997	15,997	6,249
674.45	16,091	16,091	7,052
674.50 674.55	16,184 16,277	16,184 16,277	7,859 8,670
674.60	16,371	16,371	9,486
674.65	16,464	16,464	10,307
674.70	16,558	16,558	11,133
674.75	16,651	16,651	11,963
674.80 674.85	16,744	16,744	12,798
674.85 674.90	16,838 16,931	16,838 16,931	13,637 14,482
674.95	17,025	17,025	15,330
675.00	17,118	17,118	16,184
675.05	17,220	17,220	17,042
675.10	17,322	17,322	17,906
675.15 675.20	17,423	17,423	18,775
675.20 675.25	17,525 17,627	17,525 17,627	19,648 20,527
675.30	17,728	17,728	21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50 675.55	18,136 18,237	18,136 18,237	24,997 25,007
675.60	18,339	18,339	25,907 26,821
675.65	18,441	18,441	27,741
675.70	18,543	18,543	28,665
675.75	18,644	18,644	29,595
675.80	18,746	18,746	30,530
675.85 675.90	18,848 18,949	18,848 18,949	31,469 32,414
675.95	19,051	19,051	33,364
676.00	19,153	19,153	34,320
676.05	19,257	19,257	35,280
676.10	19,361	19,361	36,245
676.15	19,464	19,464	37,216
676.20 676.25	19,568 19,672	19,568 19,672	38,192 39,173
676.30	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40	19,983	19,983	42,147
676.45	20,087	20,087	43,149
676.50	20,191	20,191	44,156

22.117 Proposed Basin

#3

#4

#5

#6

Device 1

Device 1

Device 1

Secondary

670.75'

675.50'

679.00'

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 2.77" for 25-Year event

Inflow = 89.54 cfs @ 12.03 hrs, Volume= 5.878 af

Outflow = 3.50 cfs @ 14.17 hrs, Volume= 5.878 af, Atten= 96%, Lag= 128.7 min

Primary = 3.50 cfs @ 14.17 hrs, Volume= 5.878 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 677.07' @ 14.17 hrs Surf.Area= 52,677 sf Storage= 139,095 cf

Plug-Flow detention time= 410.1 min calculated for 5.877 af (100% of inflow)

Center-of-Mass det. time= 410.0 min (1,318.7 - 908.7)

Volume	lnv	ert Avail.Sto	rage Storag	ge Description	
#1	672.0	00' 311,58	88 cf dry ba	asin (Prismatic)Li	isted below (Recalc)
Classatis		Court Area	In a Chara	Cum Store	
Elevation		Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
672.0	00	1,285	0	0	
673.0	00	6,433	3,859	3,859	
674.0	00	9,723	8,078	11,937	
675.0	00	44,268	26,996	38,933	
676.0	00	48,305	46,287	85,219	
677.0	00	52,399	50,352	135,571	
678.0	00	56,550	54,475	190,046	
679.0	00	60,757	58,654	248,699	
680.0	00	65,021	62,889	311,588	
Device	Routing	Invert	Outlet Device	ces	
#1	Primary	670.75'	10.0" Rour	nd Culvert (struct	ture to outlet)
	,				headwall, Ke= 0.500
					670.15' S= 0.0030 '/' Cc= 0.900
".0		0=0.00			ooth interior, Flow Area= 0.55 sf
#2	Device 1	670.80'		d Culvert (basin t	
			L= 25.0' C	PP, mitered to cor	nform to fill, Ke= 0.700

678.00' **24.0" W x 24.0" H Vert. Grate** C= 0.600

Limited to weir flow at low heads **8.0" Vert. Orifice X 3.00** C= 0.600

Limited to weir flow at low heads

5.0' long Weir 2 End Contraction(s)

Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

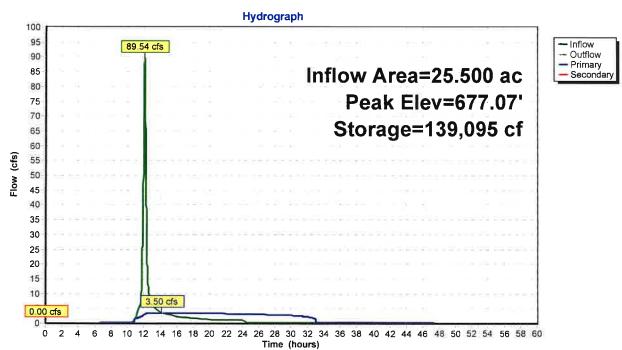
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Primary OutFlow Max=3.50 cfs @ 14.17 hrs HW=677.07' (Free Discharge)
1=Culvert (structure to outlet) (Barrel Controls 3.50 cfs @ 6.42 fps)
2=Culvert (basin to structure) (Passes < 3.61 cfs potential flow)
3=Grate (Controls 0.00 cfs)
4=Orifice (Passes < 12.33 cfs potential flow)
5=Weir (Passes < 30.06 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

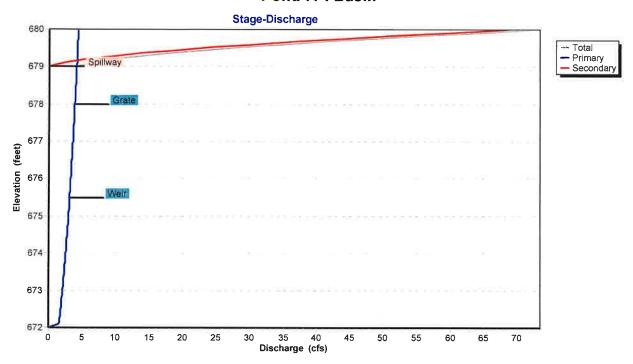
Pond 7P: Basin



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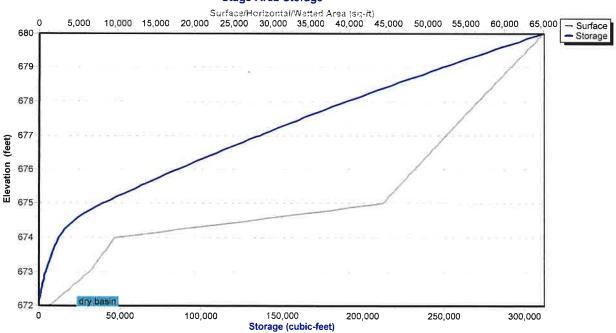
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.01	0	672.00	0.01	0.01	0.00
6.00	0.10	8	672.01	0.10	0.10	0.00
8.00	0.19	15	672.01	0.19	0.19	0.00
10.00	0.20	16	672.01	0.20	0.20	0.00
12.00	85.88	52,694	675.31	2.95	2.95	0.00
14.00	3.78	139,016	677.07	3.50	3.50	0.00
16.00	2.27	134,874	676.99	3.48	3.48	0.00
18.00	1.73	124,147	676.78	3.42	3.42	0.00
20.00	1.28	110,651	676.52	3.34	3.34	0.00
22.00	1.13	95,464	676.21	3.25	3.25	0.00
24.00	1.04	80,277	675.90	3.15	3.15	0.00
26.00	0.20	60,309	675.47	3.01	3.01	0.00
28.00	0.20	40,636	675.04	2.86	2.86	0.00
30.00	0.20	22,103	674.53	2.68	2.68	0.00
32.00	0.20	5,712	673.27	2.15	2.15	0.00
34.00	0.20	16	672.01	0.20	0.20	0.00
36.00	0.20	16	672.01	0.20	0.20	0.00
38.00	0.19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.08	6	672.00	0.08	0.08	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00	0.00	Ō	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

Elevation	Discharge	Primary	Secondary	Elevation	Discharge	Drimon	Cocondon
(feet)	(cfs)	(cfs)	(cfs)	(feet)	(cfs)	Primary (cfs)	Secondary (cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
673.90	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00	2.47	2.47	0.00	679.30	14.60	4.09	10.51
674.10	2.51	2.51	0.00	679.40	20.49	4.12	16.37
674.20	2.55	2.55	0.00	679.50	27.28	4.14	23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.19	39.19
674.50	2.66	2.66	0.00	679.80	52.63	4.22	48.41
674.60	2.70	2.70	0.00	679.90	62.63	4.24	58.40
674.70	2.74	2.74	0.00	680.00	73.39	4.26	69.13
674.80	2.77	2.77	0.00				
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40 675.50	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675.60 675.70	3.05 3.08	3.05	0.00				
675.70	3.06 3.12	3.08 3.12	0.00				
675.80	3.12	3.12	0.00 0.00				
676.00	3.18	3.18					
676.00	3.10	3.10	0.00 0.00				
676.10	3.24	3.24	0.00				
676.30	3.27	3.24	0.00				
676.40	3.30	3.27	0.00				
676.50	3.33	3.33	0.00				
676.60	3.36	3.36	0.00	1			
676.70	3.39	3.39	0.00				
676.80	3.42	3.42	0.00				
676.90	3.45	3.45	0.00				
677.00	3.48	3.48	0.00				
677.10	3.51	3.51	0.00				
677.20	3.54	3.54	0.00				
- · · · - ·	J.J.	0.01	0.00				

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Stage-Area-Storage for Pond 7P: Basin

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677.60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60 672.70	4,374	1,698	677.90	56,135	184,411
672.80	4,889 5,403	2,161 2,675	678.00 678.10	56,550 56,971	190,046 195,722
672.90	5,403 5,918	3,241	678.20	57,391	201,440
673.00	6,433	3,859	678.30	57,812	207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407	8,311	678.90	60,336	242,644
673.70	8,736	9,168	679.00	60,757	248,699
673.80	9,065	10,058	679.10	61,183	254,796
673.90	9,394	10,981	679.20	61,610	260,936
674.00	9,723	11,937	679.30	62,036	267,118
674.10 674.20	13,178	13,082	679.40	62,463	273,343
674.20	16,632 20,086	14,573 16,408	679.50 679.60	62,889 63.315	279,611 285,921
674.40	23,541	18,590	679.60 679.70	63,315 63,742	292,274
674.50	26,996	21,117	679.80	64,168	298,669
674.60	30,450	23,989	679.90	64,595	305,107
674.70	33,905	27,207	680.00	65,021	311,588
674.80	37,359	30,770		,	,
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287 46,600	61,571			
675.60 675.70	46,690 47,094	66,220			
675.80	47,498	70,909 75,639			
675.90	47,901	80,409			
676.00	48,305	85,219			
676.10	48,714	90,070			
676.20	49,124	94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352	109,883			
676.60	50,761	114,939			
676.70	51,171	120,036			
676.80	51,580 54,000	125,173			
676.90	51,990 52,300	130,352			
677.00 677.10	52,399 52,814	135,571 140,832			
677.20	53,229	146,134			
011.20	55,225	170,137			

22.117 Proposed Basin

Type II 24-hr 25-Year Rainfall=3.87"

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 2.77" for 25-Year event

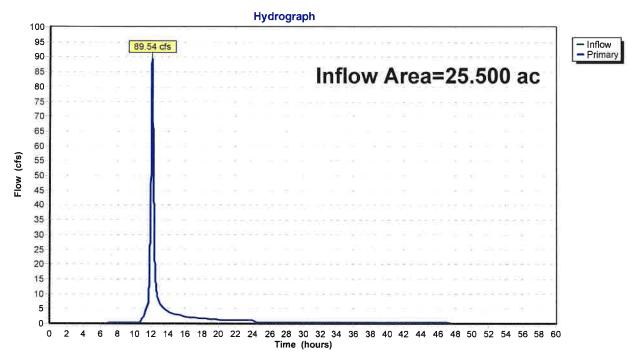
Inflow = 89.54 cfs @ 12.03 hrs, Volume= 5.878 af

Primary = 89.54 cfs @ 12.03 hrs, Volume= 5.878 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P : Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



Primary (cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

22.117 Proposed BasinPrepared by Carmina Wood Morris, PC

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Hydrograph for Link 9L: Link

Inflow Elevation

(feet)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Time

53.00

54.00

55.00

56.00

57.00

58.00

59.00

60.00

(hours)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01
5.00	0.04	0.00	0.04
6.00	0.10	0.00	0.10
7.00	0.17	0.00	0.17
8.00	0.19	0.00	0.19
9.00	0.19	0.00	0.19
10.00 11.00	0.20 2.17	0.00	0.20
12.00	85.88	0.00 0.00	2.17 85.88
13.00	6.49	0.00	6.49
14.00	3.78	0.00	3.78
15.00	2.90	0.00	2.90
16.00	2.27	0.00	2.27
17.00	1.95	0.00	1.95
18.00	1.73	0.00	1.73
19.00	1.51	0.00	1.51
20.00 21.00	1.28	0.00	1.28
22.00	1.18 1.13	0.00 0.00	1.18 1.13
23.00	1.09	0.00	1.09
24.00	1.04	0.00	1.04
25.00	0.20	0.00	0.20
26.00	0.20	0.00	0.20
27.00	0.20	0.00	0.20
28.00	0.20	0.00	0.20
29.00	0.20	0.00	0.20
30.00 31.00	0.20 0.20	0.00 0.00	0.20 0.20
32.00	0.20	0.00	0.20
33.00	0.20	0.00	0.20
34.00	0.20	0.00	0.20
35.00	0.20	0.00	0.20
36.00	0.20	0.00	0.20
37.00	0.19	0.00	0.19
38.00	0.19	0.00	0.19
39.00	0.19	0.00	0.19
40.00 41.00	0.19 0.19	0.00 0.00	0.19 0.19
42.00	0.19	0.00	0.19
43.00	0.19	0.00	0.19
44.00	0.19	0.00	0.19
45.00	0.19	0.00	0.19
46.00	0.19	0.00	0.19
47.00	0.17	0.00	0.17
48.00	0.08	0.00	0.08
49.00 50.00	0.03 0.01	0.00 0.00	0.03
51.00	0.01	0.00	0.01 0.01
52.00	0.00	0.00	0.00
	99.		

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Summary for Subcatchment 1S: Proposed North

Runoff = 43.72 cfs @ 12.01 hrs, Volume=

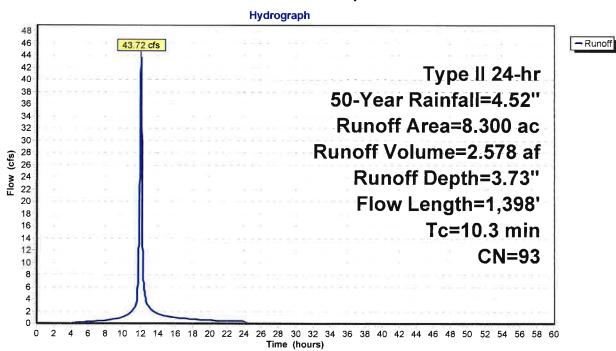
2.578 af, Depth= 3.73"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 50-Year Rainfall=4.52"

Агеа	(ac)	CN Des	cription		
5	.000	98 Pav	ed parking	, HSG D	
1	.400	98 Pav	ed parking	, HSG C	
1	.100	80 >75	% Grass c	over, Good	, HSG D
0	.800	74 >75	% Grass c	over, Good	, HSG C
8	.300	93 Wei	ghted Aver	age	
1.	.900	22.8	9% Pervio	us Area	
6	.400	77.1	1% Imper	vious Area	
Tc	Length	•	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
2.7	72	0.3500	0.44		Sheet Flow, grass
					Grass: Short n= 0.150 P2= 2.50"
1.9	300	0.0160	2.57		Shallow Concentrated Flow, pavement
					Paved Kv= 20.3 fps
5.7	1,026		3.00		Direct Entry, Pipe flow
10.3	1,398	Total			

Subcatchment 1S: Proposed North



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Hydrograph for Subcatchment 1S: Proposed North

Time	Ргесір.	Excess	Runoff
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 29.00 31.00	(inches) 0.00 0.05 0.10 0.16 0.22 0.36 0.45 0.66 0.82 1.06 0.82 1.06 3.49 3.71 3.86 4.16 4.30 4.36 4.47 4.52 4.		(cfs) 0.00 0.00 0.00 0.00 0.00 0.07 0.15 0.25 0.35 0.46 0.73 1.00 1.94 43.27 2.53 1.47 1.14 0.89 0.77 0.68 0.59 0.49 0.47 0.45 0.43 0.41 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Time (hours) 53.00 54.00 55.00 56.00 57.00 58.00	Precip. (inches) 4.52 4.52 4.52 4.52 4.52 4.52 4.52	Excess (inches) 3.73 3.73 3.73 3.73 3.73 3.73 3.73	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00

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Summary for Subcatchment 2S: Proposed South

Runoff =

93.99 cfs @ 11.97 hrs, Volume=

4.608 af, Depth= 3.22"

Routed to Pond 6P: Bioretention 2

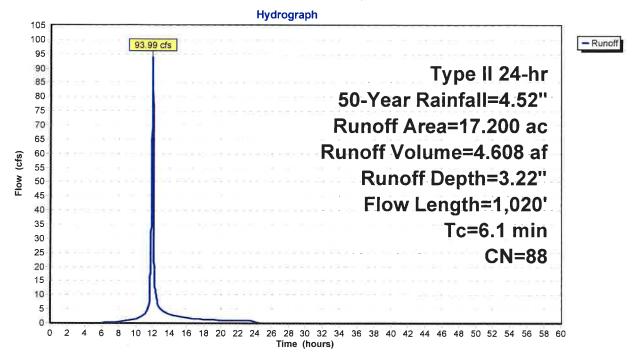
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 50-Year Rainfall=4.52"

Area	(ac) C	N Desc	cription		
5.	400 9	8 Pave	ed parking	, HSG D	
3.	.600		ed parking		
4.	.008	30 >759	% Grass c	over, Good,	, HSG D
3.	200 7			over, Good,	, HSG C
0.	.120	96 Grav	el surface	, HSG D	
0.	.080	6 Grav	el surface	, HSG C	
17.	200 8	88 Weig	hted Aver	age	
	200		7% Pervio		
9.	000	52.3	3% Imper	vious Area	
_					
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.7	30	0.0100	0.72		Sheet Flow, pvmt
					Smooth surfaces n= 0.011 P2= 2.50"
8.0	160	0.0460	3.45		Shallow Concentrated Flow, grass
0.0		0.0400	0.00		Unpaved Kv= 16.1 fps
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement
4.4	000		2.00		Paved Kv= 20.3 fps
4.4	800		3.00		Direct Entry, Pipe flow
6.1	1,020	Total			

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Subcatchment 2S: Proposed South



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Hydrograph for Subcatchment 2S: Proposed South

Time	Precip.	Excess	Runoff	
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 22.00 23.00 24.00 25.00 26.00 27.00 28.00 27.00 28.00 27.00 28.00 27.00 28.00 31.00 32.00 31.00 32.00 31.00 32.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 37.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00	(inches) 0.00 0.05 0.10 0.05 0.10 0.16 0.22 0.28 0.36 0.45 0.682 1.06 0.3.49 3.71 3.868 4.164 4.30 4.430 4.452 4.52 4.52 4.52 4.52 4.52 4.52 4.5	(inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.04 0.09 0.16 0.29 1.82 2.26 2.46 2.60 2.71 2.80 2.88 2.95 3.01 3.07 3.12 3.22 3.22 3.22 3.22 3.22 3.22 3.22	(cfs) 0.00 0.00 0.00 0.00 0.01 0.15 0.32 0.50 0.94 1.45 3.14 87.36 4.70 2.80 2.22 1.72 1.51 1.33 1.15 0.97 0.92 0.89 0.85 0.81 0.00 0.00 0.00 0.00 0.00 0.00 0.00	
51.00 52.00	4.52 4.52	3.22 3.22	0.00 0.00	

	Precip. (inches)		Runoff (cfs)
53.00 54.00	4.52	3.22	0.00
55.00	4.52 4.52	3.22 3.22	0.00 0.00
56.00	4.52	3.22	0.00
57.00	4.52	3.22	0.00
58.00	4.52	3.22	0.00
59.00 60.00	4.52 4.52	3.22 3.22	0.00 0.00

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Summary for Pond 3P: Bioretention 1

Inflow Area = 8.300 ac, 77.11% Impervious, Inflow Depth = 3.73" for 50-Year event

Inflow = 43.72 cfs @ 12.01 hrs, Volume= 2.578 af

Outflow = 34.86 cfs @ 12.08 hrs, Volume= 2.578 af, Atten= 20%, Lag= 3.9 min

Primary = 14.39 cfs @ 12.08 hrs, Volume= 1.847 af

Routed to Link 9L: Link

Secondary = 20.47 cfs @ 12.08 hrs, Volume= 0.731 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.19' @ 12.08 hrs Surf.Area= 18,414 sf Storage= 21,105 cf

Plug-Flow detention time= 134.5 min calculated for 2.578 af (100% of inflow)

Center-of-Mass det. time= 134.8 min (916.7 - 782.0)

Volume	Invert	Avail.Storage	Storage Description
#1	674.00'	46,418 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
674.00	17,150	0	0
675.00	18,215	17,683	17,683
676.00	19,279	18,747	36,430
676.50	20,675	9,989	46,418

Device	Routing	Invert	Outlet Devices
#1	Primary	671.45'	18.0" Round Culvert
			L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.45' / 671.20' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 4.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=14.39 cfs @ 12.08 hrs HW=675.19' (Free Discharge)

-1=Culvert (Barrel Controls 14.39 cfs @ 8.14 fps)

2=Exfiltration (Passes < 0.12 cfs potential flow)

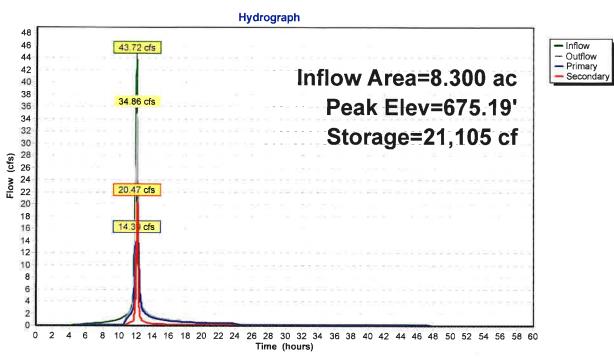
-3=Grate (Passes < 59.54 cfs potential flow)

Secondary OutFlow Max=20.45 cfs @ 12.08 hrs HW=675.19' (Free Discharge)
—4=Spillway (Weir Controls 20.45 cfs @ 2.47 fps)

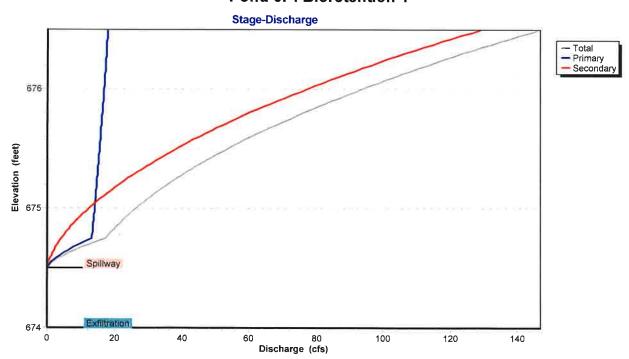
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Pond 3P: Bioretention 1



Pond 3P: Bioretention 1

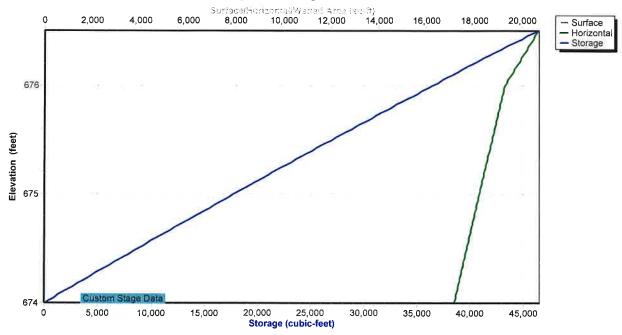


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.07	93	674.01	0.02	0.02	0.00
6.00	0.25	709	674.04	0.10	0.10	0.00
8.00	0.46	2,517	674.15	0.10	0.10	0.00
10.00	1.00	6,861	674.40	0.10	0.10	0.00
12.00	43.27	18,670	675.05	28.43	14.00	14.42
14.00	1.47	9,563	674.55	1.56	1.22	0.33
16.00	0.89	9,275	674.53	0.92	0.73	0.19
18.00	0.68	9,172	674.53	0.69	0.56	0.13
20.00	0.49	9,046	674.52	0.52	0.42	0.09
22.00	0.45	8,992	674.52	0.45	0.37	0.08
24.00	0.41	8,962	674.51	0.41	0.34	0.07
26.00	0.00	8,131	674.47	0.11	0.11	0.00
28.00	0.00	7,374	674.42	0.10	0.10	0.00
30.00	0.00	6,621	674.38	0.10	0.10	0.00
32.00	0.00	5,872	674.34	0.10	0.10	0.00
34.00	0.00	5,127	674.30	0.10	0.10	0.00
36.00	0.00	4,386	674.25	0.10	0.10	0.00
38.00	0.00	3,649	674.21	0.10	0.10	0.00
40.00	0.00	2,916	674.17	0.10	0.10	0.00
42.00	0.00	2,187	674.13	0.10	0.10	0.00
44.00	0.00	1,463	674.09	0.10	0.10	0.00
46.00	0.00	742	674.04	0.10	0.10	0.00
48.00	0.00	167	674.01	0.04	0.04	0.00
50.00	0.00	31	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00 674.05	0.00	0.00	0.00
674.03	0.10 0.10	0.10 0.10	0.00 0.00
674.15	0.10	0.10	0.00
674.20	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30	0.10	0.10	0.00
674.35	0.10	0.10	0.00
674.40	0.10	0.10	0.00
674.45 674.50	0.11 0.11	0.11 0.11	0.00 0.00
674.55	1.63	1.28	0.35
674.60	4.42	3.42	1.00
674.65	8.04	6.19	1.86
674.70	12.36	9.47	2.89
674.75	17.16	13.07	4.09
674.80 674.85	18.66	13.23	5.44
674.85	20.31 22.09	13.38 13.54	6.93 8.56
674.95	24.01	13.69	10.32
675.00	26.06	13.84	12.22
675.05	28.24	13.99	14.25
675.10	30.55	14.14	16.41
675.15 675.20	32.98	14.29 14.43	18.69
675.25	35.54 38.22	14.43	21.11 23.65
675.30	41.03	14.72	26.32
675.35	43.97	14.86	29.11
675.40	47.03	15.00	32.03
675.45	50.22	15.13	35.08
675.50 675.55	53.53 56.97	15.27 15.41	38.26 41.56
675.60	60.53	15.54	44.99
675.65	64.22	15.68	48.55
675.70	68.04	15.81	52.23
675.75	71.98	15.94	56.05
675.80	76.06	16.07	59.99
675.85 675.90	80.26 84.59	16.20 16.33	64.06
675.95	89.05	16.33	68.26 72.60
676.00	93.64	16.58	77.06
676.05	98.36	16.70	81.66
676.10	103.19	16.80	86.39
676.15	108.17	16.91	91.25
676.20	113.27	17.02	96.25
676.25 676.30	118.51 123.88	17.12 17.23	101.38 106.65
676.35	129.39	17.23	112.05
676.40	135.03	17.44	117.59
676.45	140.81	17.54	123.27
676.50	146.73	17.64	129.09

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	17,150	17,150	0
674.05	17,203	17,203	859
674.10	17,257	17,257	1,720
674.15	17,310	17,310	2,584
674.20	17,363	17,363	3,451
674.25 674.30	17,416 17,469	17,416 17,469	4,321 5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45	17,629	17,629	7,825
674.50	17,683	17,683	8,708
674.55	17,736	17,736	9,594
674.60	17,789	17,789	10,482
674.65	17,842	17,842	11,372
674.70	17,896	17,896	12,266
674.75	17,949	17,949	13,162
674.80	18,002	18,002	14,061
674.85 674.90	18,055 18,108	18,055	14,962
674.95	18,162	18,108 18,162	15,866 16,773
675.00	18,215	18,215	17,683
675.05	18,268	18,268	18,595
675.10	18,321	18,321	19,509
675.15	18,375	18,375	20,427
675.20	18,428	18,428	21,347
675.25	18,481	18,481	22,270
675.30	18,534	18,534	23,195
675.35	18,587	18,587	24,123
675.40	18,641	18,641	25,054 25,087
675.45 675.50	18,694 18,747	18,694 18,747	25,987 26,923
675.55	18,800	18,800	27,862
675.60	18,853	18,853	28,803
675.65	18,907	18,907	29,747
675.70	18,960	18,960	30,694
675.75	19,013	19,013	31,643
675.80	19,066	19,066	32,595
675.85	19,119	19,119	33,550
675.90	19,173	19,173	34,507
675.95	19,226	19,226	35,467
676.00 676.05	19,279	19,279	36,430
676.03	19,419 19,558	19,419 19,558	37,397 38,371
676.15	19,698	19,698	39,353
676.20	19,837	19,837	40,341
676.25	19,977	19,977	41,337
676.30	20,117	20,117	42,339
676.35	20,256	20,256	43,348
676.40	20,396	20,396	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac. 52.33% Impervious. Inflow Depth = 3.22" for 50-Year event

Inflow 93.99 cfs @ 11.97 hrs, Volume= 4.608 af

79.22 cfs @ 12.02 hrs, Volume= Outflow 4.608 af, Atten= 16%, Lag= 2.6 min

15.48 cfs @ 12.02 hrs, Volume= Primary 2.610 af

Routed to Link 9L: Link

Secondary = 63.74 cfs @ 12.02 hrs, Volume= 1.998 af

Routed to Link 9L: Link

#4

Secondary

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.85' @ 12.02 hrs Surf.Area= 18,840 sf Storage= 31,395 cf

Plug-Flow detention time= 71.1 min calculated for 4.607 af (100% of inflow)

Center-of-Mass det. time= 71.4 min (869.9 - 798.6)

Volume	lnv	ert Avail.Sto	rage Storage D	Description			
#1	674.0	00' 44,1	56 cf Custom S	Stage Data (P	rismatic)Listed below (Recalc)		
Elevation (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
674.0	00	15,250	0	0			
675.0	00	17,118	16,184	16,184			
676.0	00	19,153	18,136	34,320			
676.5	50	20,191	9,836	44,156			
Device	Routing	Invert	Outlet Devices				
#1	Primary	671.55'	18.0" Round (Culvert	197		
	•		L= 60.0' CPP, square edge headwall, Ke= 0.500				
		Inlet / Outlet Invert= 671.55' / 671.25' S= 0.0050 '/' Cc= 0.900					
			n= 0.013 Corru	igated PE, sm	ooth interior, Flow Area= 1.77 sf		
#2	Device 1	674.00'	0.250 in/hr Exf	iltration over	Horizontal area		
			Conductivity to	Groundwater	Elevation = 660.00'		
#3	Device 1	674.50'	24.0" x 24.0" H	loriz. Grate X	3.00 C= 0.600		

Limited to weir flow at low heads

674.50' **143.0 deg x 10.0' long Spillway** Cv= 2.47 (C= 3.09)

Primary OutFlow Max=15.48 cfs @ 12.02 hrs HW=675.84' (Free Discharge)

-1=Culvert (Barrel Controls 15.48 cfs @ 8.76 fps)

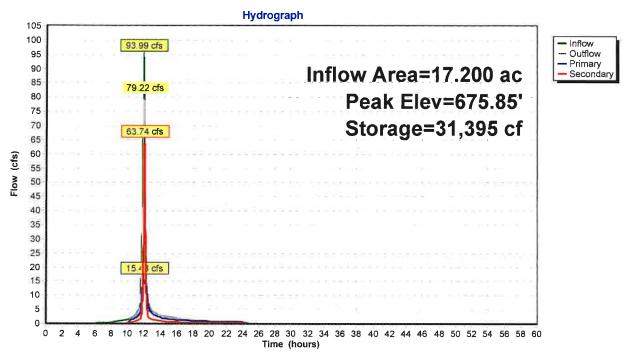
-2=Exfiltration (Passes < 0.12 cfs potential flow)

-3=Grate (Passes < 67.00 cfs potential flow)

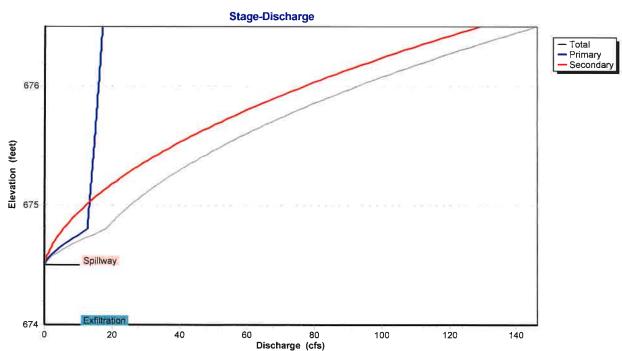
Secondary OutFlow Max=63.61 cfs @ 12.02 hrs HW=675.84' (Free Discharge)

-4=Spillway (Weir Controls 63.61 cfs @ 3.37 fps)

Pond 6P: Bioretention 2



Pond 6P: Bioretention 2

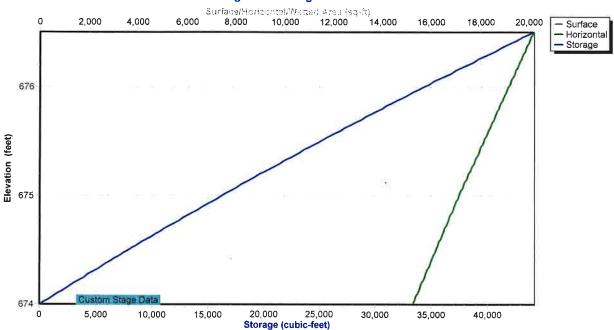


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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00					
		0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.15	217	674.01	0.05	0.05	0.00
8.00	0.50	1,924	674.13	0.09	0.09	0.00
10.00	1.45	7,872	674.50	0.11	0.11	0.00
12.00	87.36	31,143	675.83	78.09	15.45	62.64
14.00	2.80	9,270	674.59	2.93	2.12	0.81
16.00	1.72	8,848	674.56	1.78	1.30	0.48
18.00	1.33	8,681	674.55	1.35	1.00	0.36
20.00	0.97	8,502	674.54	1.00	0.74	0.26
22.00	0.89	8,448	674.54	0.89	0.67	0.23
24.00	0.81	8,412	674.53	0.82	0.61	0.21
26.00	0.00	7,373	674.47	0.10	0.10	0.00
28.00	0.00	6,682	674.43	0.10	0.10	0.00
30.00	0.00	5,996	674.38	0.09	0.09	0.00
32.00	0.00	5,316	674.34	0.09	0.09	0.00
34.00	0.00	4,640	674.30	0.09	0.09	0.00
36.00	0.00	3,971	674.26	0.09	0.09	0.00
38.00	0.00	3,306	674.21	0.09	0.09	0.00
40.00	0.00	2,647	674.17	0.09	0.09	0.00
42.00	0.00	1,993	674.13	0.09	0.09	0.00
44.00	0.00	1,344	674.09	0.09	0.09	0.00
46.00	0.00	700	674.05	0.09	0.09	0.00
48.00	0.00	165	674.01	0.04	0.04	0.00
50.00	0.00	31	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	Ó	674.00	0.00	0.00	0.00
58.00	0.00	Ō	674.00	0.00	0.00	0.00
60.00	0.00	Ö	674.00	0.00	0.00	0.00
		•	- · · · · · · · · ·	2.30	2.30	2.50

22.117 Proposed BasinType II 24-hr50-Year Rainfall=4.52"Prepared by Carmina Wood Morris, PCPrinted9/12/2022HydroCAD® 10.20-2d s/n 05019 © 2021 HydroCAD Software Solutions LLCPage 146

Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05	0.09	0.09	0.00
674.10	0.09	0.09	0.00
674.15	0.09	0.09	0.00
674.20 674.25	0.09	0.09	0.00
674.25	0.09 0.09	0.09 0.09	0.00 0.00
674.35	0.09	0.09	0.00
674.40	0.03	0.09	0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60	3.58	2.58	1.00
674.65	6.52	4.66	1.86
674.70	10.01	7.12	2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90	21.46	12.90	8.56
674.95	23.37	13.05	10.32
675.00	25.42	13.20	12.22
675.05 675.10	27.59	13.35 13.49	14.25
675.10	29.90 32.33	13.49	16.41 18.69
675.20	34.88	13.77	21.11
675.25	37.56	13.91	23.65
675.30	40.37	14.05	26.32
675.35	43.30	14.19	29.11
675.40	46.36	14.32	32.03
675.45	49.54	14.46	35.08
675.50	52.85	14.59	38.26
675.55	56.28	14.72	41.56
675.60	59.84	14.86	44.99
675.65	63.53	14.98	48.55
675.70	67.34	15.11	52.23
675.75	71.29	15.24	56.05
675.80 675.85	75.36 79.55	15.37 15.49	59.99
675.90	83.88	15.49	64.06 68.26
675.95	88.34	15.74	72.60
676.00	92.93	15.86	77.06
676.05	97.65	15.99	81.66
676.10	102.50	16.11	86.39
676.15	107.48	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30	123.23	16.58	106.65
676.35	128.75	16.70	112.05
676.40	134.41	16.81	117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10	15,437	15,437	1,534
674.15	15,530	15,530	2,309
674.20	15,624	15,624	3,087
674.25	15,717	15,717	3,871
674.30	15,810	15,810	4,659
674.35	15,904	15,904	5,452
674.40	15,997	15,997	6,249
674.45	16,091	16,091	7,052
674.50	16,184	16,184	7,859
674.55	16,277	16,277	8,670
674.60	16,371	16,371	9,486
674.65	16,464	16,464	10,307
674.70	16,558	16,558	11,133
674.75	16,651	16,651	11,963
674.80	16,744	16,744	12,798
674.85	16,838	16,838	13,637
674.90	16,931	16,931	14,482
674.95	17,025	17,025	15,330
675.00	17,118	17,118	16,184
675.05	17,220	17,220	17,042
675.10	17,322	17,322	17,906
675.15	17,423	17,423	18,775
675.20	17,525	17,525	19,648
675.25	17,627	17,627	20,527
675.30	17,728	17,728	21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50	18,136	18,136	24,997
675.55 675.60	18,237	18,237	25,907
675.60	18,339	18,339	26,821
675.65 675.70	18,441	18,441	27,741
675.70 675.75	18,543	18,543	28,665
675.75 675.80	18,644	18,644	29,595
675.85	18,746	18,746	30,530
675.90	18,848	18,848	31,469
675.95	18,949	18,949	32,414
	19,051	19,051	33,364
676.00	19,153	19,153	34,320
676.05	19,257	19,257	35,280 36,245
676.10	19,361	19,361	36,245 37,246
676.15	19,464	19,464	37,216
676.20 676.25	19,568 19,673	19,568	38,192
676.25	19,672	19,672	39,173
676.30 676.35	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40	19,983	19,983	42,147
676.45	20,087	20,087	43,149
676.50	20,191	20,191	44,156

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 3.38" for 50-Year event

Inflow = 110.28 cfs @ 12.03 hrs, Volume= 7.186 af

Outflow = 3.71 cfs @ 14.65 hrs, Volume= 7.186 af, Atten= 97%, Lag= 157.4 min

Primary = 3.71 cfs @ 14.65 hrs, Volume= 7.186 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 677.80' @ 14.65 hrs Surf.Area= 55,710 sf Storage= 178,688 cf

Plug-Flow detention time= 505.2 min calculated for 7.185 af (100% of inflow)

Center-of-Mass det. time= 505.1 min (1,391.8 - 886.7)

Volume	Inve	ert Avail.Sto	orage	Storage D	escription				
#1	672.0		88 cf			sted below (Recalc)			
Elevation	-	Surf.Area		:.Store	Cum.Store				
(feet)		(sq-ft)	(cubi	c-feet)	(cubic-feet)				
672.00)	1,285		0	0				
673.00)	6,433		3,859	3,859				
674.00)	9,723		8,078	11,937				
675.00)	44,268	2	26,996	38,933				
676.00)	48,305	4	16,287	85,219				
677.00)	52,399	5	50,352	135,571				
678.00)	56,550	5	54,475	190,046				
679.00)	60,757	5	58,654	248,699				
680.00	1	65,021	6	32,889	311,588				
Device I	Routing	Invert	Outl	et Devices					
#1	Primary	670.75'	L= 2	10.0" Round Culvert (structure to outlet) L= 200.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' Cc= 0.900					
				n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf					

		0.00	L= 200.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	670.80'	
			L= 25.0' CPP, mitered to conform to fill, Ke= 0.700
			Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	678.00'	24.0" W x 24.0" H Vert. Grate C= 0.600
			Limited to weir flow at low heads
#4	Device 1	670.75'	8.0" Vert. Orifice X 3.00 C= 0.600
			Limited to weir flow at low heads
#5	Device 1	675.50'	5.0' long Weir 2 End Contraction(s)
#6	Secondary	679.00'	143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

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Primary OutFlow Max=3.71 cfs @ 14.65 hrs HW=677.80' (Free Discharge)

1=Culvert (structure to outlet) (Barrel Controls 3.71 cfs @ 6.79 fps)

2=Culvert (basin to structure) (Passes < 3.83 cfs potential flow)

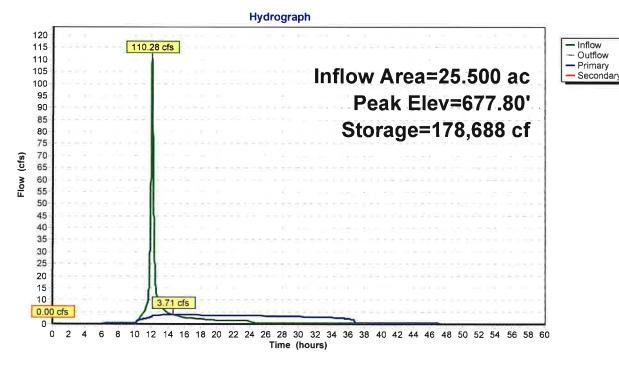
3=Grate (Controls 0.00 cfs)

4=Orifice (Passes < 13.07 cfs potential flow)

5=Weir (Passes < 51.71 cfs potential flow)

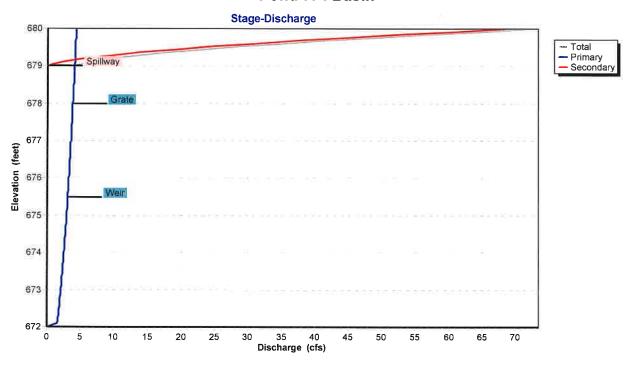
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

Pond 7P: Basin



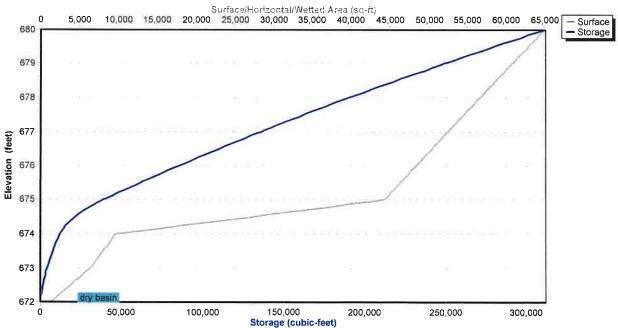
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Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



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Hydrograph for Pond 7P: Basin

-		- .				
Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.02	2	672.00	0.02	0.02	0.00
6.00	0.15	12	672.01	0.15	0.15	0.00
8.00	0.19	15	672.01	0.19	0.19	0.00
10.00	0.22	16	672.01	0.20	0.20	0.00
12.00	106.51	70,726	675.70	3.08	3.08	0.00
14.00	4.49	177,967	677.78	3.70	3.70	0.00
16.00	2.69	176,267	677.75	3.69	3.69	0.00
18.00	2.04	166,547	677.58	3.65	3.65	0.00
20.00	1.51	153,359	677.33	3.58	3.58	0.00
22.00	1.34	137,993	677.05	3.50	3.50	0.00
24.00	1.23	122,414	676.75	3.41	3.41	0.00
26.00	0.20	100,706	676.32	3.28	3.28	0.00
28.00	0.20	79,052	675.87	3.14	3.14	0.00
30.00	0.20	58,411	675.43	2.99	2.99	0.00
32.00	0.20	38,821	675.00	2.84	2.84	0.00
34.00	0.20	20,398	674.47	2.65	2.65	0.00
36.00	0.20	4,380	673.08	2.05	2.05	0.00
38.00	0.19	16	672.01	0.19	0.19	0.00
40.00	0.19	15	672.01	0.19	0.19	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.08	6	672.00	0.08	0.08	0.00
50.00	0.01	1	672.00	0.01	0.01	0.00
52.00	0.00	0	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

Elevation	Discharge	Primary	Secondary	Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)	(feet)	(cfs)	(cfs)	(cfs)
672.00	0.00	0.00	0.00	677.30	3.57	3.57	0.00
672.10	1.50	1.50	0.00	677.40	3.60	3.60	0.00
672.20	1.57	1.57	0.00	677.50	3.62	3.62	0.00
672.30	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60 672.70	1.80 1.86	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.00	1.86 1.91	0.00 0.00	678.00 678.10	3.76 3.79	3.76 3.79	0.00 0.00
672.90	1.97	1.97	0.00	678.20	3.79 3.81	3.79	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
673.90	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00 674.10	2.47	2.47	0.00	679.30	14.60	4.09	10.51
674.10 674.20	2.51 2.55	2.51 2.55	0.00 0.00	679.40 679.50	20.49 27.28	4.12 4.14	16.37 23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.17	39.19
674.50	2.66	2.66	0.00	679.80	52.63	4.22	48.41
674.60	2.70	2.70	0.00	679.90	62.63	4.24	58.40
674.70	2.74	2.74	0.00	680.00	73.39	4.26	69.13
674.80	2.77	2.77	0.00				
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30 675.40	2.95 2.98	2.95	0.00				
675.50	2.96 3.02	2.98 3.02	0.00 0.00				
675.60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00				
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00				
676.60 676.70	3.36 3.39	3.36 3.39	0.00 0.00				
676.70	3.42	3.42	0.00				
676.90	3.45	3.42	0.00				
677.00	3.48	3.48	0.00				
677.10	3.51	3.51	0.00				
677.20	3.54	3.54	0.00				
				l			

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Stage-Area-Storage for Pond 7P: Basin

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
672.00	1,285	0	677.30	53,644	151,477
672.10	1,800	154	677.40	54,059	156,863
672.20	2,315	360	677.50	54,475	162,289
672.30	2,829	617	677.60	54,890	167,758
672.40	3,344	926	677.70	55,305	173,267
672.50	3,859	1,286	677.80	55,720	178,819
672.60	4,374	1,698	677.90	56,135	184,411
672.70	4,889	2,161	678.00	56,550	190,046
672.80	5,403	2,675	678.10	56,971 57,301	195,722
672.90 673.00	5,918 6,433	3,241 3,859	678.20 678.30	57,391 57,812	201,440 207,200
673.10	6,762	4,519	678.40	58,233	213,002
673.20	7,091	5,211	678.50	58,654	218,846
673.30	7,420	5,937	678.60	59,074	224,733
673.40	7,749	6,695	678.70	59,495	230,661
673.50	8,078	7,487	678.80	59,916	236,632
673.60	8,407	8,311	678.90	60,336	242,644
673.70	8,736	9,168	679.00	60,757	248,699
673.80	9,065	10,058	679.10	61,183	254,796
673.90	9,394	10,981	679.20	61,610	260,936
674.00	9,723	11,937	679.30	62,036	267,118
674.10	13,178	13,082	679.40	62,463	273,343
674.20	16,632	14,573	679.50	62,889	279,611
674.30	20,086	16,408	679.60	63,315	285,921
674.40 674.50	23,541	18,590	679.70	63,742	292,274
674.50 674.60	26,996 30,450	21,117 23,989	679.80 679.90	64,168 64,595	298,669 305,107
674.70	33,905	27,207	680.00	65,021	311,588
674.80	37,359	30,770	000.00	05,021	311,300
674.90	40,813	34,678			
675.00	44,268	38,933			
675.10	44,672	43,379			
675.20	45,075	47,867			
675.30	45,479	52,395			
675.40	45,883	56,963			
675.50	46,287	61,571			
675.60	46,690	66,220			
675.70	47,094	70,909			
675.80	47,498 47,004	75,639			
675.90	47,901 48,305	80,409			
676.00 676.10	48,305 48,714	85,219			
676.20	49,124	90,070 94,962			
676.30	49,533	99,895			
676.40	49,943	104,869			
676.50	50,352	109,883			
676.60	50,761	114,939			
676.70	51,171	120,036			
676.80	51,580	125,173			
676.90	51,990	130,352			
677.00	52,399	135,571			
677.10	52,814	140,832			
677.20	53,229	146,134			

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 3.38" for 50-Year event

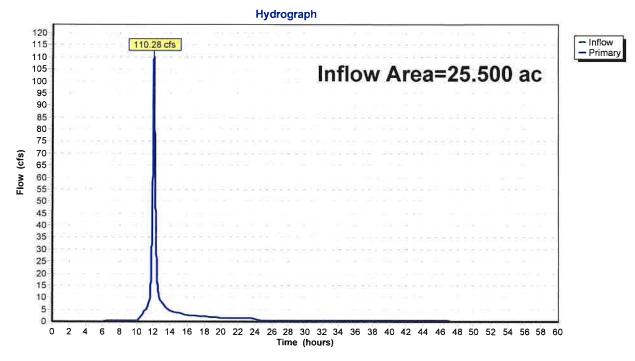
Inflow = 110.28 cfs @ 12.03 hrs, Volume= 7.186 af

Primary = 110.28 cfs @ 12.03 hrs, Volume= 7.186 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P : Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



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Hydrograph for Link 9L: Link

Time	Inflow	Elevation	Primary (cfs)
(hours)	(cfs)	(feet)	
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 19.00 20.00 21.00 22.00	(cfs) 0.00 0.00 0.00 0.00 0.02 0.08 0.15 0.19 0.20 0.22 4.69 106.51 7.70 4.49 3.45 2.69 2.31 2.04 1.78 1.51 1.40 1.34	(feet) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	(cfs) 0.00 0.00 0.00 0.00 0.02 0.08 0.15 0.19 0.20 0.22 4.69 106.51 7.70 4.49 3.45 2.69 2.31 2.04 1.78 1.51 1.40 1.34
23.00 24.00 25.00 26.00 27.00 28.00 29.00 30.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00 40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00	1.34 1.29 1.23 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	1.29 1.23 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0
49.00	0.03	0.00	0.03
50.00	0.01	0.00	0.01
51.00	0.01	0.00	0.01
52.00	0.00	0.00	0.00

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
53.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
55.00	0.00	0.00	0.00
56.00	0.00	0.00	0.00
57.00	0.00	0.00	0.00
58.00	0.00	0.00	0.00
59.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00

22.117 Proposed Basin

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Summary for Subcatchment 1S: Proposed North

Runoff = 51.88 cfs @ 12.01 hrs, Volume=

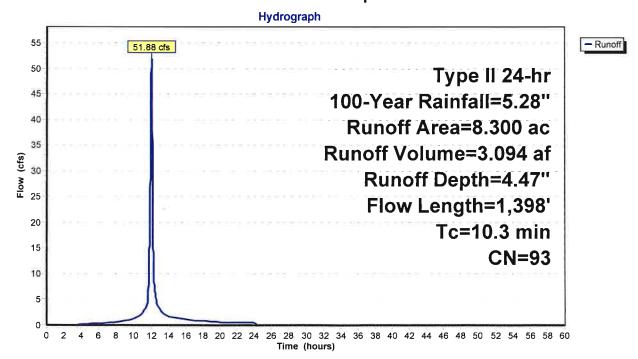
3.094 af, Depth= 4.47"

Routed to Pond 3P: Bioretention 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=5.28"

_	Area	(ac)	CN	Desc	ription							
	5.	000	98	Pave	aved parking, HSG D							
	1.	400	98	Pave	ed parking	, HSG C						
	1.	100	80	>75%	% Grass co	over, Good	, HSG D					
	0.	800	74	>75%	6 Grass co	over, Good	, HSG C					
	8.	300	93	Weig	hted Aver	age						
	1.	900		22.89	9% Pervio	us Area						
	6.	400		77.1	1% Imperv	≀ious Area						
	_											
	Тс	Length		Slope	Velocity	Capacity	Description					
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	2.7	72	2 0.3	3500	0.44		Sheet Flow, grass					
							Grass: Short n= 0.150 P2= 2.50"					
	1.9	300	0.0	0160	2.57		Shallow Concentrated Flow, pavement					
							Paved Kv= 20.3 fps					
_	5.7	1,026	<u> </u>		3.00		Direct Entry, Pipe flow					
	10.3	1,398	3 To	tal								

Subcatchment 1S: Proposed North



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Hydrograph for Subcatchment 1S: Proposed North

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	1
0.00	0.00	0.00	0.00	4
1.00	0.06	0.00	0.00	
2.00	0.12	0.00	0.00	
3.00 4.00	0.18 0.25	0.00 0.01	0.03 0.13	
5.00	0.33	0.04	0.23	
6.00	0.42	0.07	0.35	
7.00 8.00	0.52 0.63	0.12 0.19	0.47 0.59	
9.00	0.03	0.19	0.93	
10.00	0.96	0.42	1.25	
11.00 12.00	1.24 3.50	0.64 2.74	2.39 51.38	
13.00	4.08	3.29	2.98	
14.00	4.33	3.54	1.73	
15.00	4.51	3.71	1.35 1.04	
16.00 17.00	4.65 4.76	3.85 3.96	0.91	
18.00	4.86	4.06	0.80	
19.00	4.95	4.15	0.69	
20.00 21.00	5.03 5.09	4.22 4.29	0.58 0.55	
22.00	5.16	4.35	0.52	
23.00	5.22	4.41	0.50	
24.00 25.00	5.28 5.28	4.47 4.47	0.48 0.00	
26.00	5.28	4.47	0.00	
27.00	5.28	4.47	0.00	
28.00 29.00	5.28 5.28	4.47 4.47	0.00 0.00	
30.00	5.28	4.47	0.00	
31.00	5.28	4.47	0.00	
32.00 33.00	5.28 5.28	4.47 4.47	0.00 0.00	
34.00	5.28	4.47	0.00	
35.00	5.28	4.47	0.00	
36.00 37.00	5.28 5.28	4.47 4.47	0.00 0.00	
38.00	5.28	4.47	0.00	
39.00	5.28	4.47	0.00	
40.00 41.00	5.28 5.28	4.47 4.47	0.00 0.00	
42.00	5.28	4.47 4.47	0.00	
43.00	5.28	4.47	0.00	
44.00	5.28	4.47	0.00	
45.00 46.00	5.28 5.28	4.47 4.47	0.00 0.00	
47.00	5.28	4.47	0.00	
48.00	5.28	4.47	0.00	
49.00 50.00	5.28 5.28	4.47 4.47	0.00 0.00	
51.00	5.28	4.47	0.00	
52.00	5.28	4.47	0.00	

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
53.00	5.28	4.47	0.00
54.00	5.28	4.47	0.00
55.00	5.28	4.47	0.00
56.00	5.28	4.47	0.00
57.00	5.28	4.47	0.00
58.00	5.28	4.47	0.00
59.00	5.28	4.47	0.00
60.00	5.28	4.47	0.00

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Summary for Subcatchment 2S: Proposed South

Runoff = 113.64 cfs @ 11.97 hrs, Volume=

5.641 af, Depth= 3.94"

Routed to Pond 6P: Bioretention 2

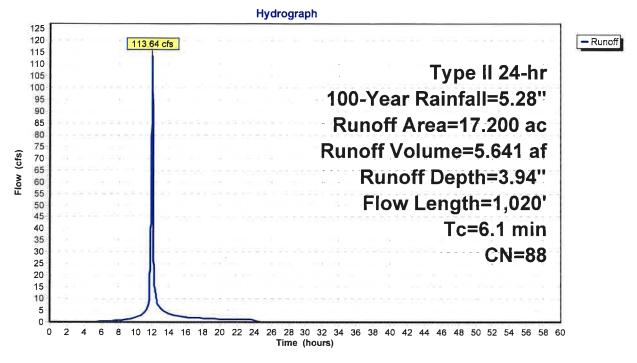
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=5.28"

Area	(ac) C	N Des	cription		
5.	400 9	98 Pave	ed parking	, HSG D	
3.	.600	98 Pave	ed parking	, HSG C	
4.	.800	30 >75°	% Grass c	over, Good	, HSG D
		74 >75°	% Grass co	over, Good	, HSG C
			el surface	•	
0.	080	96 Grav	<u>rel surface</u>	, HSG C	
		•	ghted Aver	•	
	200		7% Pervio		
9.	000	52.3	3% Imper	vious Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
0.7	30	0.0100	0.72	\/	Sheet Flow, pvmt
					Smooth surfaces n= 0.011 P2= 2.50"
0.8	160	0.0460	3.45		Shallow Concentrated Flow, grass
					Unpaved Kv= 16.1 fps
0.2	30	0.0100	2.03		Shallow Concentrated Flow, pavement
					Paved Kv= 20.3 fps
4.4	800		3.00		Direct Entry, Pipe flow
6.1	1,020	Total			

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Subcatchment 2S: Proposed South



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Hydrograph for Subcatchment 2S: Proposed South

Time	Precip.	Excess	Runoff	
(hours)	(inches)		(cfs)	3
0.00	0.00	0.00	0.00	
1.00 2.00	0.06 0.12	0.00 0.00	0.00 0.00	
3.00	0.18	0.00	0.00	
4.00 5.00	0.25 0.33	0.00 0.00	0.00	
6.00	0.33	0.00	0.10 0.29	
7.00	0.52	0.04	0.50	
8.00 9.00	0.63 0.78	0.08 0.14	0.73 1.30	
10.00	0.96	0.23	1.93	
11.00 12.00	1.24 3.50	0.40 2.27	4.05 105.37	
13.00	4.08	2.80	5.61	
14.00	4.33	3.04	3.33	
15.00 16.00	4.51 4.65	3.20 3.33	2.64 2.04	
17.00	4.76	3.44	1.80	
18.00 19.00	4.86 4.95	3.54 3.62	1.58 1.37	
20.00	5.03	3.69	1.15	
21.00 22.00	5.09 5.16	3.76 3.82	1.09 1.05	
23.00	5.22	3.88	1.01	
24.00 25.00	5.28 5.28	3.94 3.94	0.97 0.00	
26.00	5.28	3.94	0.00	
27.00 28.00	5.28 5.28	3.94 3.94	0.00 0.00	
29.00	5.28	3.94	0.00	
30.00 31.00	5.28	3.94	0.00	
32.00	5.28 5.28	3.94 3.94	0.00 0.00	
33.00	5.28	3.94	0.00	
34.00 35.00	5.28 5.28	3.94 3.94	0.00 0.00	
36.00	5.28	3.94	0.00	
37.00 38.00	5.28 5.28	3.94 3.94	0.00 0.00	
39.00	5.28	3.94	0.00	
40.00 41.00	5.28 5.28	3.94 3.94	0.00 0.00	
42.00	5.28	3.94 3.94	0.00	
43.00	5.28	3.94	0.00	
44.00 45.00	5.28 5.28	3.94 3.94	0.00 0.00	
46.00	5.28	3.94	0.00	
47.00 48.00	5.28 5.28	3.94 3.94	0.00 0.00	
49.00	5.28	3.94	0.00	
50.00 51.00	5.28 5.28	3.94 3.94	0.00 0.00	
52.00	5.28	3.94	0.00	

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
53.00	5.28	3.94	0.00
54.00	5.28	3.94	0.00
55.00	5.28	3.94	0.00
56.00	5.28	3.94	0.00
57.00	5.28	3.94	0.00
58.00	5.28	3.94	0.00
59.00	5.28	3.94	0.00
60.00	5.28	3,94	0.00

Type II 24-hr 100-Year Rainfall=5.28"

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Summary for Pond 3P: Bioretention 1

8.300 ac, 77.11% Impervious, Inflow Depth = 4.47" for 100-Year event Inflow Area =

Inflow = 3.094 af

51.88 cfs @ 12.01 hrs, Volume= 42.13 cfs @ 12.08 hrs, Volume= Outflow 3.094 af, Atten= 19%, Lag= 3.7 min

14.77 cfs @ 12.08 hrs, Volume= Primary = 2.126 af

Routed to Link 9L: Link

Secondary = 27.36 cfs @ 12.08 hrs, Volume= 0.967 af

Routed to Link 9L: Link

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 675.32' @ 12.08 hrs Surf.Area= 18,554 sf Storage= 23,545 cf

Plug-Flow detention time= 116.7 min calculated for 3.094 af (100% of inflow)

Center-of-Mass det. time= 116.6 min (893.8 - 777.2)

Volume	Invert	Avail.Sto	rage S	torage L	Description		
#1	674.00'	46,4	18 cf C	ustom	Stage Data (Pri	ismatic)Listed below (Recalc)	
Elevation (feet)	Surf (s	Area sq-ft)	Inc.St (cubic-fe		Cum.Store (cubic-feet)		
674.00	17	,150		0	0		
675.00	18	,215	17,6	383	17,683		
676.00	19	,279	18,	747	36,430		
676.50	20	,675	9,9	989	46,418	8	
Device Ro	outina	Invert	Outlet [Devices			

DEVICE	Nouting	mvent	Outlet Devices
#1	Primary	671.45'	18.0" Round Culvert
	-		L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 671.45' / 671.20' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 660.00'
#3	Device 1	674.50'	24.0" x 24.0" Horiz. Grate X 4.00 C= 0.600
			Limited to weir flow at low heads
#4	Secondary	674.50'	143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)
	-		, , , ,

Primary OutFlow Max=14.77 cfs @ 12.08 hrs HW=675.32' (Free Discharge)

-1=Culvert (Barrel Controls 14.77 cfs @ 8.36 fps)

-2=Exfiltration (Passes < 0.12 cfs potential flow)

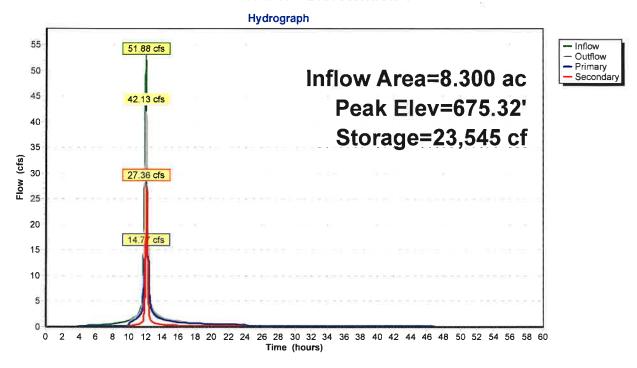
-3=Grate (Passes < 69.69 cfs potential flow)

Secondary OutFlow Max=27.32 cfs @ 12.08 hrs HW=675.32' (Free Discharge) 4=Spillway (Weir Controls 27.32 cfs @ 2.68 fps)

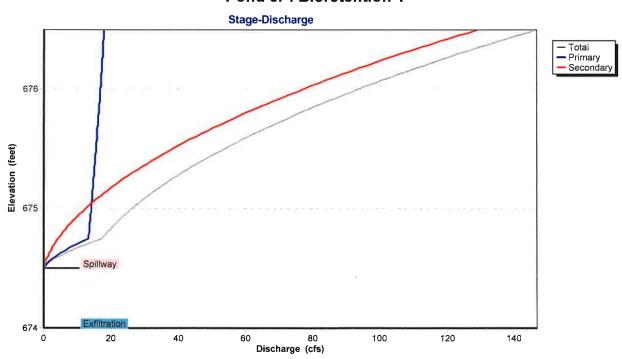
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Pond 3P: Bioretention 1



Pond 3P: Bioretention 1

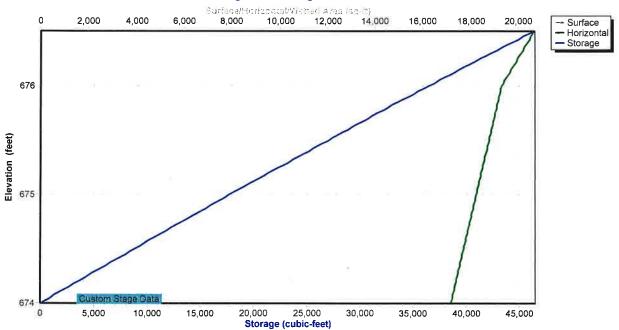


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Pond 3P: Bioretention 1

Stage-Area-Storage



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Hydrograph for Pond 3P: Bioretention 1

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.13	213	674.01	0.05	0.05	0.00
6.00	0.35	1,232	674.07	0.10	0.10	0.00
8.00	0.59	3,880	674.22	0.10	0.10	0.00
10.00	1.25	9,257	674.53	0.88	0.70	0.18
12.00	51.38	20,890	675.18	34.25	14.36	19.90
14.00	1.73	9,661	674.55	1.82	1.42	0.39
16.00	1.04	9,348	674.54	1.08	0.86	0.22
18.00	0.80	9,226	674.53	0.81	0.65	0.16
20.00	0.58	9,119	674.52	0.60	0.49	0.11
22.00	0.52	9,057	674.52	0.53	0.43	0.10
24.00	0.48	9,022	674.52	0.49	0.40	0.09
26.00	0.00	8,145	674.47	0.11	0.11	0.00
28.00	0.00	7,388	674.43	0.10	0.10	0.00
30.00	0.00	6,635	674.38	0.10	0.10	0.00
32.00	0.00	5,885	674.34	0.10	0.10	0.00
34.00	0.00	5,140	674.30	0.10	0.10	0.00
36.00	0.00	4,399	674.25	0.10	0.10	0.00
38.00	0.00	3,662	674.21	0.10	0.10	0.00
40.00	0.00	2,930	674.17	0.10	0.10	0.00
42.00	0.00	2,201	674.13	0.10	0.10	0.00
44.00	0.00	1,476	674.09	0.10	0.10	0.00
46.00	0.00	755	674.04	0.10	0.10	0.00
48.00	0.00	172	674.01	0.04	0.04	0.00
50.00	0.00	32	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00
4						

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Stage-Discharge for Pond 3P: Bioretention 1

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00 674.05	0.00 0.10	0.00 0.10	0.00 0.00
674.10	0.10	0.10	0.00
674.15	0.10	0.10	0.00
674.20	0.10	0.10	0.00
674.25	0.10	0.10	0.00
674.30 674.35	0.10 0.10	0.10 0.10	0.00
674.40	0.10	0.10	0.00 0.00
674.45	0.11	0.11	0.00
674.50	0.11	0.11	0.00
674.55	1.63	1.28	0.35
674.60 674.65	4.42 8.04	3.42 6.19	1.00 1.86
674.70	12.36	9.47	2.89
674.75	17.16	13.07	4.09
674.80	18.66	13.23	5.44
674.85	20.31	13.38	6.93
674.90 674.95	22.09 24.01	13.54 13.69	8.56 10.32
675.00	26.06	13.84	12.22
675.05	28.24	13.99	14.25
675.10	30.55	14.14	16.41
675.15 675.20	32.98 35.54	14.29 14.43	18.69 21.11
675.25	38.22	14.57	23.65
675.30	41.03	14.72	26.32
675.35	43.97	14.86	29.11
675.40 675.45	47.03 50.22	15.00 15.13	32.03 35.08
675.50	53.53	15.13	38.26
675.55	56.97	15.41	41.56
675.60	60.53	15.54	44.99
675.65 675.70	64.22 68.04	15.68 15.81	48.55 52.23
675.75	71.98	15.94	56.05
675.80	76.06	16.07	59.99
675.85	80.26	16.20	64.06
675.90	84.59	16.33	68.26
676.05			
676.10	103.19	16.80	86.39
676.30		17.12	
676.35	129.39	17.33	112.05
	135.03	17.44	117.59
675.95 676.00 676.05 676.10 676.15 676.20 676.25 676.30	89.05 93.64 98.36 103.19 108.17 113.27 118.51 123.88 129.39	16.45 16.58 16.70 16.80 16.91 17.02 17.12 17.23 17.33	72.60 77.06 81.66 86.39 91.25 96.25 101.38 106.65 112.05

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Stage-Area-Storage for Pond 3P: Bioretention 1

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	17,150	17,150	0
674.05	17,203	17,203	859
674.10	17,257	17,257	1,720
674.15	17,310	17,310	2,584
674.20	17,363	17,363	3,451
674.25	17,416	17,416	4,321
674.30	17,469	17,469	5,193
674.35	17,523	17,523	6,068
674.40	17,576	17,576	6,945
674.45	17,629	17,629	7,825
674.50	17,683	17,683	8,708
674.55	17,736	17,736	9,594
674.60	17,789	17,789	10,482
674.65	17,842	17,842	11,372
674.70	17,896	17,896	12,266
674.75 674.80	17,949 18,002	17,949	13,162 14,061
674.85	18,055	18,002 18,055	14,962
674.90	18,108	18,108	15,866
674.95	18,162	18,162	16,773
675.00	18,215	18,215	17,683
675.05	18,268	18,268	18,595
675.10	18,321	18,321	19,509
675.15	18,375	18,375	20,427
675.20	18,428	18,428	21,347
675.25	18,481	18,481	22,270
675.30	18,534	18,534	23,195
675.35	18,587	18,587	24,123
675.40	18,641	18,641	25,054
675.45	18,694	18,694	25,987
675.50	18,747	18,747	26,923
675.55	18,800	18,800	27,862
675.60	18,853	18,853	28,803
675.65	18,907	18,907	29,747
675.70	18,960	18,960	30,694
675.75 675.80	19,013 19,066	19,013 19,066	31,643
675.85	19,119	19,000	32,595 33,550
675.90	19,173	19,173	34,507
675.95	19,226	19,226	35,467
676.00	19,279	19,279	36,430
676.05	19,419	19,419	37,397
676.10	19,558	19,558	38,371
676.15	19,698	19,698	39,353
676.20	19,837	19,837	40,341
676.25	19,977	19,977	41,337
676.30	20,117	20,117	42,339
676.35	20,256	20,256	43,348
676.40	20,396	20,396	44,364
676.45	20,535	20,535	45,388
676.50	20,675	20,675	46,418

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Summary for Pond 6P: Bioretention 2

Inflow Area = 17.200 ac, 52.33% Impervious, Inflow Depth = 3.94" for 100-Year event

Inflow = 113.64 cfs @ 11.97 hrs, Volume= 5.641 af

Outflow = 98.07 cfs @ 12.01 hrs, Volume= 5.641 af, Atten= 14%, Lag= 2.5 min

Primary = 16.00 cfs @ 12.01 hrs, Volume= 3.051 af

Routed to Link 9L : Link

Secondary = 82.08 cfs @ 12.01 hrs, Volume= 2.590 af

Routed to Link 9L: Link

#4

Secondary

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Peak Elev= 676.05' @ 12.01 hrs Surf.Area= 19,266 sf Storage= 35,365 cf

Plug-Flow detention time= 60.6 min calculated for 5.640 af (100% of inflow)

Center-of-Mass det. time= 60.9 min (853.7 - 792.9)

<u>Volume</u>	Inve	<u>rt Avail.Sto</u>	rage S	Storage	Description	
#1	674.0	0' 44,1	56 cf (Custom	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevatio	n (Surf.Area	Inc.S	Store	Cum.Store	
(fee		(sq-ft)	(cubic-		(cubic-feet)	
674.0		15,250	(odbio	0	0	
675.0	_	17,118	16	,184	16,184	
676.0		19,153		,136	34,320	
676.5	50	20,191	9	,836	44,156	
ъ.	D "		~	. .		
Device	Routing	Invert	Outlet	<u>Devices</u>	<u>s</u>	
#1	Primary	671.55'	18.0"	Round	Culvert	
			L= 60.	0' CPF	^o , square edge l	neadwall, Ke= 0.500
			Inlet /	Outlet In	nvert= 671.55' /	671.25' S= 0.0050 '/' Cc= 0.900
			n = 0.0	13 Cor	rugated PE, sm	ooth interior, Flow Area= 1.77 sf
#2	Device 1	674.00'	0.250	in/hr Ex	xfiltration over	Horizontal area
						Elevation = 660.00'
#3	Device 1	674.50'	24.0"	x 24.0"	Horiz. Grate X	3.00 C= 0.600
			Limite	d to wei	r flow at low hea	ads

674.50' 143.0 deg x 10.0' long Spillway Cv= 2.47 (C= 3.09)

Primary OutFlow Max=15.99 cfs @ 12.01 hrs HW=676.05' (Free Discharge)

-1=Culvert (Barrel Controls 15.99 cfs @ 9.05 fps)

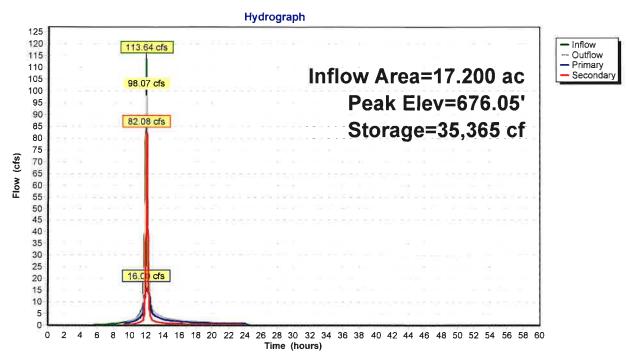
=2=Exfiltration (Passes < 0.13 cfs potential flow)

-3=Grate (Passes < 72.02 cfs potential flow)

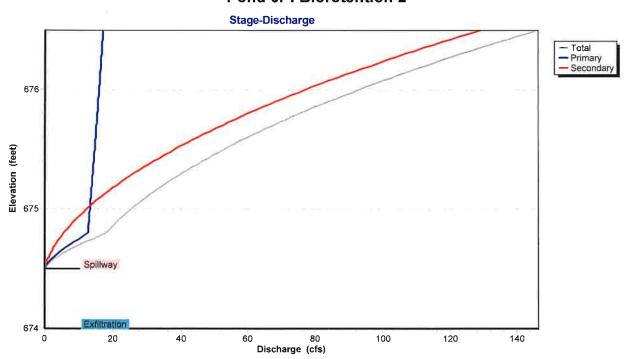
Secondary OutFlow Max=81.99 cfs @ 12.01 hrs HW=676.05' (Free Discharge)

4=Spillway (Weir Controls 81.99 cfs @ 3.60 fps)

Pond 6P: Bioretention 2



Pond 6P: Bioretention 2

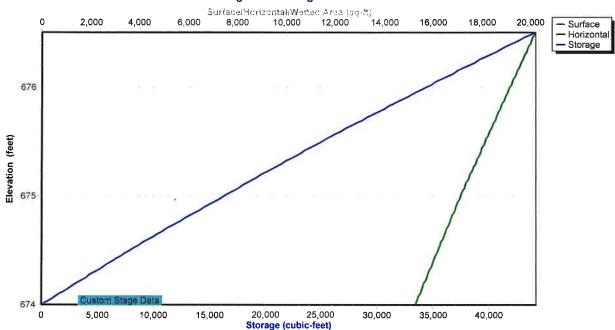


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Pond 6P: Bioretention 2

Stage-Area-Storage



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Hydrograph for Pond 6P: Bioretention 2

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	0	674.00	0.00	0.00	0.00
2.00	0.00	0	674.00	0.00	0.00	0.00
4.00	0.00	0	674.00	0.00	0.00	0.00
6.00	0.29	573	674.04	0.09	0.09	0.00
8.00	0.73	3,563	674.23	0.09	0.09	0.00
10.00	1.93	8,861	674.56	1.81	1.32	0.49
12.00	105.37	35,197	676.05	97.24	15.97	81.26
14.00	3.33	9,454	674.60	3.48	2.51	0.97
16.00	2.04	8,980	674.57	2.11	1.53	0.57
18.00	1.58	8,781	674.56	1.61	1.18	0.43
20.00	1.15	8,597	674.55	1.18	0.87	0.31
22.00	1.05	8,533	674.54	1.06	0.78	0.27
24.00	0.97	8,489	674.54	0.97	0.72	0.25
26.00	0.00	7,382	674.47	0.10	0.10	0.00
28.00	0.00	6,690	674.43	0.10	0.10	0.00
30.00	0.00	6,004	674.38	0.09	0.09	0.00
32.00	0.00	5,324	674.34	0.09	0.09	0.00
34.00	0.00	4,649	674.30	0.09	0.09	0.00
36.00	0.00	3,979	674.26	0.09	0.09	0.00
38.00	0.00	3,314	674.21	0.09	0.09	0.00
40.00	0.00	2,655	674.17	0.09	0.09	0.00
42.00	0.00	2,001	674.13	0.09	0.09	0.00
44.00	0.00	1,352	674.09	0.09	0.09	0.00
46.00	0.00	708	674.05	0.09	0.09	0.00
48.00	0.00	168	674.01	0.04	0.04	0.00
50.00	0.00	32	674.00	0.01	0.01	0.00
52.00	0.00	6	674.00	0.00	0.00	0.00
54.00	0.00	1	674.00	0.00	0.00	0.00
56.00	0.00	0	674.00	0.00	0.00	0.00
58.00	0.00	0	674.00	0.00	0.00	0.00
60.00	0.00	0	674.00	0.00	0.00	0.00

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Stage-Discharge for Pond 6P: Bioretention 2

Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)
674.00	0.00	0.00	0.00
674.05	0.09	0.09	0.00
674.10	0.09	0.09	0.00
674.15	0.09	0.09	0.00
674.20	0.09	0.09	0.00
674.25 674.30	0.09 0.09	0.09 0.09	0.00 0.00
674.35	0.09	0.09	0.00
674.40	0.10	0.10	0.00
674.45	0.10	0.10	0.00
674.50	0.10	0.10	0.00
674.55	1.32	0.98	0.35
674.60	3.58	2.58	1.00
674.65	6.52	4.66	1.86
674.70	10.01	7.12	2.89
674.75	14.00	9.91	4.09
674.80	18.04	12.60	5.44
674.85	19.68	12.75	6.93
674.90	21.46	12.90	8.56
674.95 675.00	23.37	13.05	10.32
675.05	25.42 27.59	13.20 13.35	12.22 14.25
675.10	29.90	13.49	16.41
675.15	32.33	13.63	18.69
675.20	34.88	13.77	21.11
675.25	37.56	13.91	23.65
675.30	40.37	14.05	26.32
675.35	43.30	14.19	29.11
675.40	46.36	14.32	32.03
675.45	49.54	14.46	35.08
675.50	52.85	14.59	38.26
675.55	56.28	14.72	41.56
675.60	59.84	14.86	44.99 48.55
675.65 675.70	63.53 67.34	14.98 15.11	48.55 52.23
675.75	71.29	15.11	56.05
675.80	75.36	15.37	59.99
675.85	79.55	15.49	64.06
675.90	83.88	15.62	68.26
675.95	88.34	15.74	72.60
676.00	92.93	15.86	77.06
676.05	97.65	15.99	81.66
676.10	102.50	16.11	86.39
676.15	107.48	16.23	91.25
676.20	112.60	16.34	96.25
676.25	117.85	16.46	101.38
676.30	123.23	16.58	106.65
676.35 676.40	128.75 134.41	16.70 16.81	112.05 117.59
676.45	140.20	16.93	123.27
676.50	146.13	17.04	129.09
5, 5.55	1-0.10	17.04	. 20.00

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Stage-Area-Storage for Pond 6P: Bioretention 2

Elevation	Surface	Horizontal	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
674.00	15,250	15,250	0
674.05	15,343	15,343	765
674.10	15,437	15,437	1,534
674.15	15,530	15,530	2,309
674.20 674.25	15,624	15,624	3,087
674.25 674.30	15,717 15,810	15,717 15,810	3,871 4,659
674.35	15,904	15,904	5,452
674.40	15,997	15,997	6,249
674.45	16,091	16,091	7,052
674.50	16,184	16,184	7,859
674.55	16,277	16,277	8,670
674.60	16,371	16,371	9,486
674.65	16,464	16,464	10,307
674.70	16,558	16,558	11,133
674.75	16,651	16,651	11,963
674.80	16,744	16,744	12,798
674.85	16,838	16,838	13,637
674.90 674.05	16,931	16,931	14,482
674.95	17,025	17,025	15,330
675.00 675.05	17,118 17,220	17,118 17,220	16,184 17,042
675.10	17,322	17,322	17,906
675.15	17,423	17,423	18,775
675.20	17,525	17,525	19,648
675.25	17,627	17,627	20,527
675.30	17,728	17,728	21,411
675.35	17,830	17,830	22,300
675.40	17,932	17,932	23,194
675.45	18,034	18,034	24,093
675.50	18,136	18,136	24,997
675.55	18,237	18,237	25,907
675.60	18,339	18,339	26,821
675.65	18,441	18,441	27,741
675.70 675.75	18,543 18,644	18,543 18,644	28,665 29,595
675.80	18,746	18,746	30,530
675.85	18,848	18,848	31,469
675.90	18,949	18,949	32,414
675.95	19,051	19,051	33,364
676.00	19,153	19,153	34,320
676.05	19,257	19,257	35,280
676.10	19,361	19,361	36,245
676.15	19,464	19,464	37,216
676.20	19,568	19,568	38,192
676.25	19,672	19,672	39,173
676.30	19,776	19,776	40,159
676.35	19,880	19,880	41,150
676.40 676.45	19,983 20,087	19,983 20,087	42,147 43.149
676.50	20,087 20,191	20,087 20,191	43,149 44,156
0.0.00	20,101	20,101	, 130

22.117 Proposed Basin

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Summary for Pond 7P: Basin

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 4.11" for 100-Year event

Inflow = 135.20 cfs @ 12.02 hrs, Volume= 8.735 af

Outflow = 3.93 cfs @ 15.17 hrs, Volume= 8.735 af, Atten= 97%, Lag= 188.8 min

Primary = 3.93 cfs @ 15.17 hrs, Volume= 8.735 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 678.63' @ 15.17 hrs Surf.Area= 59,215 sf Storage= 226,706 cf

Plug-Flow detention time= 609.4 min calculated for 8.735 af (100% of inflow)

Center-of-Mass det. time= 609.4 min (1,477.3 - 867.9)

Volume	Inv	ert Avail.S	torage	Storage [Description	
#1	672.0	00' 311	,588 cf	dry basii	n (Prismatic) Li	sted below (Recalc)
				_		
Elevation	1	Surf.Area	Ind	c.Store	Cum.Store	
(feet))	(sq-ft)	(cubi	ic-feet)	(cubic-feet)	
672.00)	1,285		0	0	
673.00)	6,433		3,859	3,859	
674.00)	9,723		8,078	11,937	
675.00)	44,268		26,996	38,933	
676.00)	48,305	•	46,287	85,219	
677.00)	52,399	;	50,352	135,571	
678.00)	56,550	į	54,475	190,046	
679.00)	60,757	;	58,654	248,699	
680.00)	65,021	(62,889	311,588	
Device	Routing	Inve	t Out	et Devices		
#1	Primary	670.7	5' 10. 0	" Round	Culvert (struct	ture to outlet)
						headwall, Ke= 0.500
			Inle	t / Outlet In	vert= 670.75' /	670.15' S= 0.0030 '/' Cc= 0.900
			n= 0	0.013 Corre	ugated PE, smo	ooth interior. Flow Area= 0.55 sf

#1	Primary	670.75'	10.0" Round Culvert (structure to outlet)
			L= 200.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 670.75' / 670.15' S= 0.0030 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	670.80'	8.0" Round Culvert (basin to structure)
			L= 25.0' CPP, mitered to conform to fill, Ke= 0.700
			Inlet / Outlet Invert= 670.80' / 670.75' S= 0.0020 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	678.00'	24.0" W x 24.0" H Vert. Grate C= 0.600
			Limited to weir flow at low heads
#4	Device 1	670.75'	8.0" Vert. Orifice X 3.00 C= 0.600
			Limited to weir flow at low heads
#5	Device 1	675.50'	5.0' long Weir 2 End Contraction(s)
#6	Secondary	679.00'	143.0 deg x 20.0' long x 1.00' rise Spillway Cv= 2.47 (C= 3.09)

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Primary OutFlow Max=3.93 cfs @ 15.17 hrs HW=678.63' (Free Discharge)

1=Culvert (structure to outlet) (Barrel Controls 3.93 cfs @ 7.20 fps)

2=Culvert (basin to structure) (Passes < 4.06 cfs potential flow)

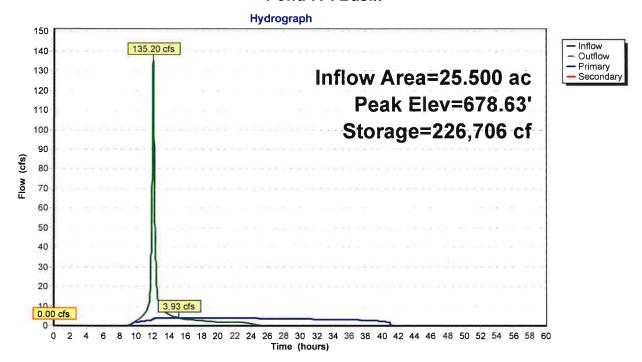
3=Grate (Passes < 3.24 cfs potential flow)

4=Orifice (Passes < 13.85 cfs potential flow)

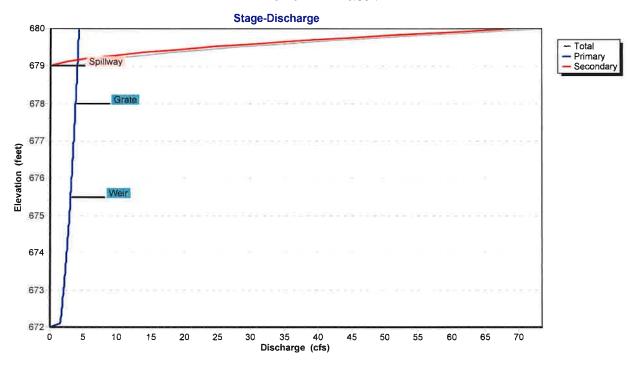
5=Weir (Passes < 79.32 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=672.00' (Free Discharge) 6=Spillway (Controls 0.00 cfs)

Pond 7P: Basin

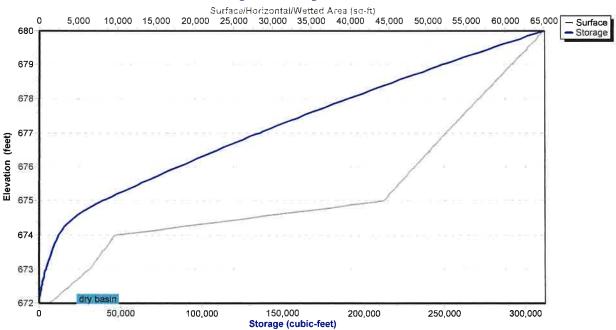


Pond 7P: Basin



Pond 7P: Basin

Stage-Area-Storage



Hydrograph for Pond 7P: Basin

Time	Inflow	Storage	Elevation	Outflow	Primary	Secondary
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)
0.00	0.00	Ó	672.00	0.00	0.00	0.00
2.00	0.00	0	672.00	0.00	0.00	0.00
4.00	0.05	4	672.00	0.05	0.05	0.00
6.00	0.19	15	672.01	0.19	0.19	0.00
8.00	0.19	16	672.01	0.19	0.19	0.00
10.00	2.69	674	672.32	1.64	1.64	0.00
12.00	131.49	92,992	676.16	3.23	3.23	0.00
14.00	5.30	224,341	678.59	3.92	3.92	0.00
16.00	3.19	225,610	678.61	3.92	3.92	0.00
18.00	2.42	217,275	678.47	3.88	3.88	0.00
20.00	1.79	204,596	678.25	3.83	3.83	0.00
22.00	1.59	189,226	677.99	3.76	3.76	0.00
24.00	1.46	173,412	677.70	3.68	3.68	0.00
26.00	0.20	149,918	677.27	3.56	3.56	0.00
28.00	0.20	126,204	676.82	3.43	3.43	0.00
30.00	0.20	103,433	676.37	3.29	3.29	0.00
32.00	0.20	81,637	675.93	3.16	3.16	0.00
34.00	0.20	60,852	675.48	3.01	3.01	0.00
36.00	0.20	41,113	675.05	2.86	2.86	0.00
38.00	0.19	22,511	674.55	2.68	2.68	0.00
40.00	0.19	6,002	673.31	2.16	2.16	0.00
42.00	0.19	15	672.01	0.19	0.19	0.00
44.00	0.19	15	672.01	0.19	0.19	0.00
46.00	0.19	15	672.01	0.19	0.19	0.00
48.00	0.08	6	672.00	0.08	0.08	0.00
50.00	0.01	1	672.00	0.02	0.02	0.00
52.00	0.00	0	672.00	0.00	0.00	0.00
54.00	0.00	0	672.00	0.00	0.00	0.00
56.00	0.00	0	672.00	0.00	0.00	0.00
58.00	0.00	0	672.00	0.00	0.00	0.00
60.00	0.00	0	672.00	0.00	0.00	0.00

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Stage-Discharge for Pond 7P: Basin

			_	0			
Elevation	Discharge	Primary	Secondary	Elevation	Discharge	Primary	Secondary
(feet)	(cfs)	(cfs)	(cfs)	(feet)	(cfs) 3.57	(cfs) 3.57	(cfs)
672.00	0.00 1.50	0.00 1.50	0.00 0.00	677.30	3.57 3.60	3.60	0.00 0.00
672.10 672.20	1.57	1.50	0.00	677.40 677.50	3.62	3.62	0.00
672.20	1.63	1.63	0.00	677.60	3.65	3.65	0.00
672.40	1.69	1.69	0.00	677.70	3.68	3.68	0.00
672.50	1.75	1.75	0.00	677.80	3.71	3.71	0.00
672.60	1.80	1.80	0.00	677.90	3.73	3.73	0.00
672.70	1.86	1.86	0.00	678.00	3.76	3.76	0.00
672.80	1.91	1.91	0.00	678.10	3.79	3.79	0.00
672.90	1.97	1.97	0.00	678.20	3.81	3.81	0.00
673.00	2.02	2.02	0.00	678.30	3.84	3.84	0.00
673.10	2.07	2.07	0.00	678.40	3.87	3.87	0.00
673.20	2.11	2.11	0.00	678.50	3.89	3.89	0.00
673.30	2.16	2.16	0.00	678.60	3.92	3.92	0.00
673.40	2.21	2.21	0.00	678.70	3.94	3.94	0.00
673.50	2.25	2.25	0.00	678.80	3.97	3.97	0.00
673.60	2.30	2.30	0.00	678.90	3.99	3.99	0.00
673.70	2.34	2.34	0.00	679.00	4.02	4.02	0.00
673.80	2.38	2.38	0.00	679.10	6.02	4.04	1.98
673.90	2.42	2.42	0.00	679.20	9.72	4.07	5.66
674.00	2.47	2.47	0.00	679.30	14.60	4.09	10.51
674.10	2.51	2.51	0.00	679.40	20.49	4.12	16.37
674.20	2.55	2.55	0.00	679.50	27.28	4.14	23.14
674.30	2.59	2.59	0.00	679.60	34.92	4.17	30.76
674.40	2.62	2.62	0.00	679.70	43.38	4.19	39.19
674.50	2.66	2.66	0.00	679.80	52.63	4.22	48.41
674.60	2.70	2.70	0.00	679.90	62.63	4.24	58.40
674.70	2.74	2.74	0.00	680.00	73.39	4.26	69.13
674.80	2.77	2.77	0.00				
674.90	2.81	2.81	0.00				
675.00	2.84	2.84	0.00				
675.10	2.88	2.88	0.00				
675.20	2.91	2.91	0.00				
675.30	2.95	2.95	0.00				
675.40	2.98	2.98	0.00				
675.50	3.02	3.02	0.00				
675,60	3.05	3.05	0.00				
675.70	3.08	3.08	0.00				
675.80	3.12	3.12	0.00				
675.90	3.15	3.15	0.00				
676.00	3.18	3.18	0.00				
676.10	3.21	3.21	0.00				
676.20	3.24	3.24	0.00				
676.30	3.27	3.27	0.00	ľ			
676.40	3.30	3.30	0.00				
676.50	3.33	3.33	0.00				
676.60	3.36	3.36	0.00				
676.70	3.39	3.39	0.00				
676.80	3.42	3.42	0.00				
676.90	3.45	3.45	0.00				
677.00	3.48	3.48	0.00				
677.10	3.51	3.51	0.00				

3.54

3.54

677.20

0.00

Stage-Area-Storage for Pond 7P: Basin

Elevation Surface Storage (feet) (sq.ft) (cubic-feet) (feet) (sq.ft) (cubic-feet) (feet) (sq.ft) (cubic-feet) (feet) (sq.ft) (cubic-feet) (feet) (sq.ft)						
672.00 1,285 0 677.30 53,644 151,477 672.10 1,800 154 677.40 54,059 156,863 672.20 2,315 360 677.50 54,475 162,289 672.30 2,829 617 677.60 54,890 167,758 672.40 3,344 926 677.70 55,306 173,267 672.50 3,859 1,286 677.80 55,720 178,819 672.60 4,374 1,698 677.90 56,135 184,411 672.70 4,889 2,161 678.00 56,550 190,046 672.80 5,403 2,675 678.10 56,971 195,722 672.90 5,918 3,241 678.20 57,391 201,440 673.00 6,433 3,859 678.30 57,812 207,200 673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,094 10,981 679.20 61,610 20,936 674.00 9,723 11,937 679.50 62,389 279,611 674.20 13,178 13,082 674.20 13,178 13,082 679.40 62,264 623 273,343 674.40 23,541 18,590 679.00 60,757 248,699 674.40 23,541 18,590 679.00 60,757 248,699 674.40 23,541 18,590 679.00 60,757 248,699 674.40 23,541 18,590 679.00 60,757 248,699 674.40 23,541 18,590 679.00 60,757 248,699 674.40 23,541 18,590 679.00 60,757 63,742 292,274 674.50 20,996 21,117 679.80 64,168 298,699 675.80 47,498 75,639 679.00 65,021 311,588 675.00 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,268 38,933 675.50 44,269 48,287 61,571 679.80 64,168 298,669 675.80 47,498 75,639 679.00 65,021 311,588 676.00 50,576 11,171 120,036 676.00 48,305 85,219 676.00 65,021 311,588 676.60 50,761 114,939 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51,171 120,036 676.70 51						
672.10 1,800 154 677.40 54,059 156,863 672.20 2,315 360 677.50 54,475 162,289 672.30 2,829 617 677.60 54,890 167,758 672.40 3,344 926 677.60 55,305 173,267 672.50 3,859 1,286 677.80 55,720 178,819 672.60 4,374 1,698 677.90 56,135 184,411 672.70 4,889 2,161 678.00 56,550 190,046 672.80 5,403 2,675 678.10 56,971 195,722 672.90 5,918 3,241 678.20 57,391 201,440 673.00 6,433 3,859 678.30 57,812 207,200 673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.50 8,078 7,487 678.80 59,916 236,632 673.50 8,078 7,487 678.80 59,916 236,632 673.80 9,065 10,058 679.10 61,183 254,796 673.30 9,394 10,981 679.20 61,610 260,936 674.00 9,723 11,937 679.30 62,038 267,118 13,082 674.00 9,723 11,937 679.30 62,038 267,118 674.20 16,632 14,573 679.50 62,889 279,611 674.50 20,866 12,457 9 674.50 20,866 12,457 9 674.50 20,866 12,457 9 675.50 44,268 38,933			(cubic-feet)			
672.20			_	677.30		151,477
672.30		1,800	154	677.40	54,059	156,863
672.40 3,344 926 677.70 55,305 173,267 672.50 3,859 1,286 677.80 55,720 178,819 672.60 4,374 1,698 677.90 56,135 184,411 672.70 4,889 2,161 678.00 56,550 199,046 672.80 5,403 2,675 678.10 56,971 195,722 672.90 5,918 3,241 678.20 57,391 201,440 673.00 6,433 3,859 678.30 57,812 207,200 673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,094 10,981 679.20 61,610 280,936 674.00 9,723 11,937 679.30 62,036 267,118 674.10 13,178 13,082 679.40 62,463 273,343 674.20 16,632 14,573 679.50 62,889 279,611 674.50 20,936 16,408 679.00 63,315 225,217 674.50 26,996 21,117 679.80 64,168 298,669 674.50 20,946 44,668 20,966 21,117 679.80 64,168 298,669 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 38,933 675.60 50,761 114,939 676.70 49,943 104,869 676.60 50,761 114,939 676.70 51,771 120,036 676.80 51,990 130,352 677.00 52,891 135,571 677.10 52,814 140,832 440,832	672.20	2,315	360	677.50	54,475	162,289
672.40 3,344 926 677.70 55,305 173,267 672.50 3,859 1,286 677.80 55,720 178,819 672.60 4,374 1,698 677.90 56,135 184,411 672.70 4,889 2,161 678.00 56,550 199,046 672.80 5,403 2,675 678.10 56,971 195,722 672.90 5,918 3,241 678.20 57,391 201,440 673.00 6,433 3,859 678.30 57,812 207,200 673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,094 10,981 679.20 61,610 280,936 674.00 9,723 11,937 679.30 62,036 267,118 674.10 13,178 13,082 679.40 62,463 273,343 674.20 16,632 14,573 679.50 62,889 279,611 674.50 20,936 16,408 679.00 63,315 225,217 674.50 26,996 21,117 679.80 64,168 298,669 674.50 20,946 44,668 20,966 21,117 679.80 64,168 298,669 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 33,933 675.50 44,268 38,933 675.60 50,761 114,939 676.70 49,943 104,869 676.60 50,761 114,939 676.70 51,771 120,036 676.80 51,990 130,352 677.00 52,891 135,571 677.10 52,814 140,832 440,832	672.30	2,829	617	677.60		167,758
672.50			926			
672.60						
672.70						
672.80 5,403 2,675 678.10 56,971 195,722 672.90 5,918 3,241 678.20 57,391 201,440 673.00 6,433 3,859 678.30 57,812 207,200 673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,065 10,058 679.10 61,183 254,796 673.90 9,394 10,981 679.20 61,610 260,936 674.00 9,723 11,937 679.30 62,036 267,118 674.10 13,178 13,082 679.40 62,453 273,343 674.20 16,632 14,573 679.50 62,889 279,611 674.40 23,541 18,590 679.50 62,889 279,611 674.40 23,541 18,590 679.70 63,742 292,274 674.50 26,996 21,117 679.80 64,168 298,669 674.70 40,813 34,678 675.00 44,268 38,933 675.50 46,287 61,571 675.60 48,805 45,479 52,395 675.40 45,883 56,963 675.50 46,287 61,571 675.60 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.00 48,305 85,219 676.60 50,761 114,939 676.60 50,761 114,939 676.60 50,761 114,939 676.60 51,990 130,352 677.00 52,399 135,571 677.00 52,399 135,571 677.10 52,814 140,832						
672.90						
673.00						
673.10 6,762 4,519 678.40 58,233 213,002 673.20 7,091 5,211 678.50 58,654 218,846 673.30 7,420 5,937 678.60 59,074 224,733 673.40 7,749 6,695 678.70 59,495 230,661 673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,065 10,068 679.10 61,183 254,796 673.90 9,394 10,981 679.20 61,610 260,936 674.00 9,723 11,937 679.30 62,036 267,118 674.20 16,632 14,573 679.50 62,889 279,611 674.30 20,086 16,408 679.60 63,315 285,921 674.40 23,541 18,590 679.70 63,742 292,274 674.50 26,996 21,117 679.80 64,168 298,669 674.40 33,4670 33,453 674.90 40,813 34,678 675.50 44,268 38,933 675.10 44,672 43,379 675.50 44,268 38,933 675.10 44,672 43,379 675.50 44,268 38,933 675.60 46,690 66,220 675.70 47,994 70,999 675.80 47,9						•
673.20						
673.30						
673.40						
673.50 8,078 7,487 678.80 59,916 236,632 673.60 8,407 8,311 678.90 60,336 242,644 673.70 8,736 9,168 679.00 60,757 248,699 673.80 9,065 10,058 679.10 61,183 254,796 673.90 9,394 10,981 679.20 61,610 260,936 674.00 9,723 11,937 679.30 62,036 267,118 674.10 13,178 13,082 679.40 62,463 273,343 674.20 16,632 14,573 679.50 62,889 279,611 674.30 20,086 16,408 679.60 63,315 285,921 674.40 23,541 18,590 679.70 63,742 292,274 674.50 26,996 21,117 679.80 64,168 298,669 674.60 30,450 23,989 679.70 63,742 292,274 674.80 37,359 30,770 674.90 40,813 34,678 675.00 44,268 38,933 675.10 44,672 43,379 675.20 45,075 47,867 675.50 46,287 61,571 675.60 46,690 66,220 675.70 47,094 70,909 675.80 47,498 75,639 675.90 47,901 80,409 676.10 48,714 90,070 676.20 49,124 94,962 676.50 49,533 99,895 676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.60 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.00 52,814 140,832						
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674.10	674.00		11,937			
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674.30	674.20					
674.40 23,541 18,590 679.70 63,742 292,274 674.50 26,996 21,117 679.80 64,168 298,669 674.60 30,450 23,989 679.90 64,595 305,107 674.70 33,905 27,207 680.00 65,021 311,588 674.80 37,359 30,770 674.90 40,813 34,678 675.00 44,268 38,933 675.10 44,672 43,379 675.20 45,075 47,867 675.30 45,479 52,395 675.40 45,883 56,963 675.50 46,287 61,571 675.60 46,690 66,220 675.70 47,498 75,639 675.90 47,901 80,409 676.00 48,305 85,219 676.10 48,714 90,070 676.20 49,124 94,962 676.30 49,533 99,895 676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832					•	
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674.70 33,905 27,207 680.00 65,021 311,588 674.80 37,359 30,770 674.90 40,813 34,678 675.00 44,268 38,933 675.10 44,672 43,379 675.20 45,075 47,867 675.30 45,479 52,395 675.40 45,883 56,963 675.50 46,287 61,571 675.60 46,690 66,220 675.70 47,094 70,909 675.80 47,498 75,639 675.90 47,901 80,409 676.00 48,305 85,219 676.10 48,714 90,070 676.20 49,124 94,962 676.30 49,533 99,895 676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	674.60					
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674.90	674.80				·	•
675.00	674.90					
675.20	675.00	44,268	38,933			
675.20	675.10	44,672				
675.30	675.20	45,075	47,867			
675.50	675.30	45,479				
675.60	675.40	45,883	56,963			
675.70	675.50	46,287	61,571			
675.70	675.60	46,690	66,220			
675.90	675.70	47,094	70,909			
676.00	675.80	47,498	75,639			
676.10 48,714 90,070 676.20 49,124 94,962 676.30 49,533 99,895 676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	675.90	47,901	80,409			
676.20 49,124 94,962 676.30 49,533 99,895 676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	676.00	48,305	85,219			
676.30	676.10	48,714	90,070			
676.40 49,943 104,869 676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	676.20	49,124	94,962			
676.50 50,352 109,883 676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	676.30	49,533	99,895			
676.60 50,761 114,939 676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832	676.40	49,943	104,869			
676.70 51,171 120,036 676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832			109,883			
676.80 51,580 125,173 676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832						
676.90 51,990 130,352 677.00 52,399 135,571 677.10 52,814 140,832						
677.00 52,399 135,571 677.10 52,814 140,832						
677.10 52,814 140,832						
677.20 53,229 146,134						
	677.20	53,229	146,134			

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Summary for Link 9L: Link

Inflow Area = 25.500 ac, 60.39% Impervious, Inflow Depth = 4.11" for 100-Year event

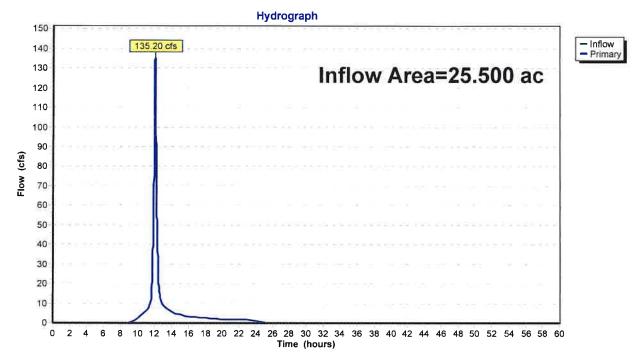
Inflow = 135.20 cfs @ 12.02 hrs, Volume= 8.735 af

Primary = 135.20 cfs @ 12.02 hrs, Volume= 8.735 af, Atten= 0%, Lag= 0.0 min

Routed to Pond 7P: Basin

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link 9L: Link



Primary (cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

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Hydrograph for Link 9L: Link

Inflow Elevation

(feet)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

(cfs)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Time

(hours)

53.00

54.00

55.00

56.00

57.00

58.00

59.00

60.00

Time	Inflow	Elevation	Primary	
(hours)	(cfs)	(feet)	(cfs)	
0.00	0.00	0.00	0.00	ľ
1.00	0.00	0.00	0.00	
2.00 3.00	0.00	0.00 0.00	0.00 0.00	
4.00	0.05	0.00	0.05	
5.00	0.12	0.00	0.12	
6.00	0.19	0.00	0.19	
7.00	0.19	0.00	0.19	
8.00	0.19	0.00	0.19	
9.00 10.00	0.20 2.69	0.00 0.00 0.00	0.19 0.20 2.69	
11.00	6.02	0.00	6.02	
12.00	131.49	0.00	131.49	
13.00	9.11	0.00	9.11	
14.00	5.30	0.00	5.30	
15.00	4.08	0.00	4.08	
16.00	3.19	0.00	3.19	
17.00	2.74	0.00	2.74	
18.00	2.42	0.00	2.42	
19.00	2.09	0.00	2.09	
20.00	1.79	0.00	1.79	
21.00	1.65	0.00	1.65	
22.00 23.00	1.59 1.52	0.00 0.00 0.00	1.59 1.52	
24.00	1.46	0.00	1.46	
25.00	0.20	0.00	0.20	
26.00	0.20	0.00	0.20	
27.00	0.20	0.00	0.20	
28.00	0.20	0.00	0.20	
29.00	0.20	0.00	0.20	
30.00	0.20	0.00	0.20	
31.00	0.20	0.00	0.20	
32.00	0.20	0.00	0.20	
33.00 34.00	0.20 0.20 0.20	0.00 0.00	0.20 0.20 0.20	
35.00	0.20	0.00	0.20	
36.00	0.20	0.00	0.20	
37.00	0.19	0.00	0.19	
38.00	0.19	0.00	0.19	
39.00	0.19	0.00	0.19	
40.00	0.19	0.00	0.19	
41.00 42.00	0.19 0.19 0.19	0.00 0.00	0.19 0.19 0.19	
43.00	0.19	0.00	0.19	
44.00	0.19	0.00	0.19	
45.00	0.19	0.00	0.19	
46.00 47.00	0.19 0.18	0.00	0.19 0.18	
48.00	0.08	0.00	0.08	
49.00	0.03	0.00	0.03	
50.00	0.01	0.00	0.01	
51.00	0.01	0.00	0.01	
52.00	0.00	0.00	0.00	

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22.117 Proposed Basin

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167 Pond 6P: Bioretention 2

173 Pond 7P: Basin

179 Link 9L: Link

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22.117 Proposed BasinPrepared by Carmina Wood Morris, PC

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Events for Subcatchment 3S: Proposed North not through basin

Event	Rainfall	Runoff	Volume	Depth
	(inches)	(cfs)	(acre-feet)	(inches)
1-Year	1.86	4.60	0.376	0.69
2-Year	2.20	6.38	0.512	0.94
5-Year	2.70	9.16	0.726	1.34
10-Year	3.15	11.77	0.929	1.72
25-Year	3.87	16.06	1.269	2.34
50-Year	4.52	20.00	1.586	2.93
100-Year	5.28	24.65	1.965	3.63



Proposed North not through basin









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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	1.86	2
2	2-Year	Type II 24-hr		Default	24.00	1	2.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	2.70	2
4	10-Year	Type II 24-hr		Default	24.00	1	3.15	2
5	25-Year	Type II 24-hr		Default	24.00	1	3.87	2
6	50-Year	Type II 24-hr		Default	24.00	1	4.52	2
7	100-Year	Type II 24-hr		Default	24.00	1	5.28	2

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Area Listing (selected nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
1.640	74	>75% Grass cover, Good, HSG C (3S)
2.460	80	>75% Grass cover, Good, HSG D (3S)
0.700	96	Gravel surface, HSG C (3S)
1.100	96	Gravel surface, HSG D (3S)
0.240	98	Paved parking, HSG C (3S)
0.360	98	Paved parking, HSG D (3S)

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Soil Listing (selected nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
0.000	HSG A	
0.000	HSG B	
2.580	HSG C	3S
3.920	HSG D	3S
0.000	Other	

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Ground Covers (selected nodes)

 HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.640	2.460	0.000	4.100	>75% Grass cover, Good	3S
0.000	0.000	0.700	1.100	0.000	1.800	Gravel surface	3S
0.000	0.000	0.240	0.360	0.000	0.600	Paved parking	3S

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Summary for Subcatchment 3S: Proposed North not through basin

Runoff = 4.60 cfs @ 12.15 hrs, Volume=

0.376 af, Depth= 0.69"

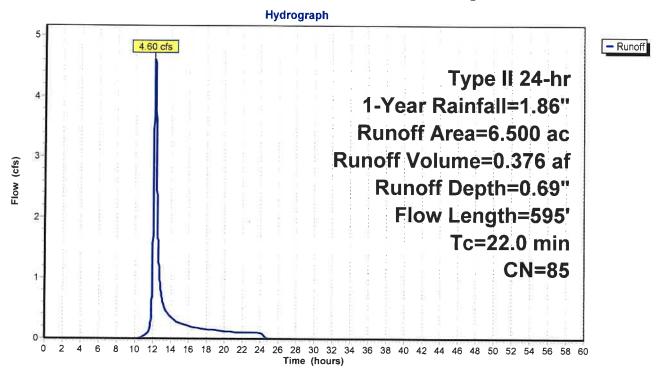
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 1-Year Rainfall=1.86"

Area	(ac) (N Des	cription		
0	.360	98 Pave	ed parking	, HSG D	
0	.240	98 Pave	ed parking	, HSG C	
		80 >75°	% Grass c	over, Good	, HSG D
			% Grass c	over, Good	, HSG C
			el surface	•	
-		96 Grav	el surface	, HSG C	
			ghted Aver		
	.900		7% Pervio		
0.	.600	9.23	% Impervi	ous Area	
Тс	Longth	Clana	Valaaitu.	0	Description
(min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity	Description
18.7	-			(cfs)	
10.7	100	0.0150	0.09		Sheet Flow, stone n= 0.250 P2= 2.50"
2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone
					Unpaved Kv= 16.1 fps
0.7	187	0.0700	4.26		Shallow Concentrated Flow, grass
					Unpaved Kv= 16.1 fps
22.0	595	Total			•

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Subcatchment 3S: Proposed North not through basin



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Hydrograph for Subcatchment 3S: Proposed North not through basin

Time	Precip.	Excess	Runoff
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 11.00 12.00 13.00 14.00 15.00 15.00 21.00 22.00 23.00 24.00 25.00 25.00 26.00 27.00 28.00 29.00 31.00	(inches) 0.00 0.02 0.04 0.06 0.09 0.12 0.15 0.18 0.22 0.27 0.34 1.53 1.59 1.64 1.77 1.79 1.82 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86	0.00 0.05 0.65 0.68 0.69	(cfs) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
52.00	1.86	0.69	0.00
53.00	1.86	0.69	0.00
54.00	1.86	0.69	0.00
55.00	1.86	0.69	0.00
56.00	1.86	0.69	0.00
57.00	1.86	0.69	0.00
58.00	1.86	0.69	0.00
59.00	1.86	0.69	0.00
60.00	1.86	0.69	0.00

22.117 Proposed Basin

Type II 24-hr 2-Year Rainfall=2.20"

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Summary for Subcatchment 3S: Proposed North not through basin

Runoff

=

6.38 cfs @ 12.15 hrs, Volume=

0.512 af, Depth= 0.94"

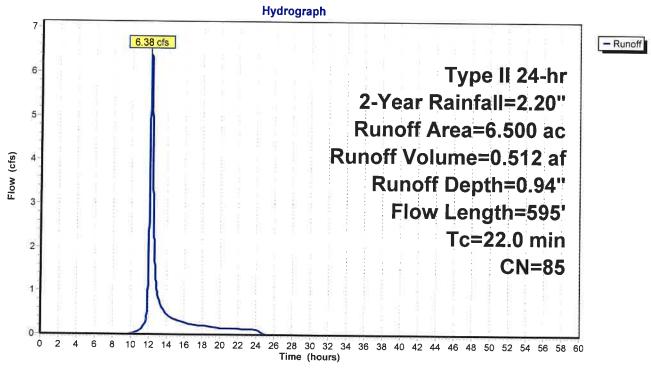
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.20"

Area	a (ac)	CN Des	cription		
	0.360	98 Pav	ed parking	, HSG D	
+	0.240	98 Pav	ed parking	, HSG C	
	2.460	80 >75	% Grass c	over, Good	, HSG D
	1.640	74 >75	% Grass c	over, Good	, HSG C
	1.100		vel surface	•	
	0.700	96 Gra	vel surface	, HSG C	
	3.500		ghted Avei		
	5.900		7% Pervio		
(0.600	9.23	3% Impervi	ous Area	
То	Longt	. Clana	Malaaitu.	0	December 1
Tc (min)	72.00		Velocity	Capacity	Description
			(ft/sec)	(cfs)	
18.7	100	0.0150	0.09		Sheet Flow, stone
2.6	308	3 0.0150	1.97		n= 0.250 P2= 2.50"
2.0	300	0.0130	1.97		Shallow Concentrated Flow, stone
0.7	187	0.0700	4.26		Unpaved Kv= 16.1 fps Shallow Concentrated Flow, grass
•		0.0700	7.20		Unpaved Kv= 16.1 fps
22.0	595	Total			0.1 paroa 174 10.1 po

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Subcatchment 3S: Proposed North not through basin



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22.117 Proposed BasinPrepared by Carmina Wood Morris, PC

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Hydrograph for Subcatchment 3S: Proposed North not through basin

Time	Precip.	Excess	Runoff
Time (hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 11.00 12.00 13.00 14.00 15.00 15.00 22.00 23.00 24.00 25.00 25.00 26.00 27.00 28.00 27.00 28.00 27.00 28.00 27.00 28.00 31.00 32.00 33.00 35.00 36.00 37.00 38.00 37.00 38.00 41.00 42.00 43.00 45.00	Precip. (inches) 0.00 0.02 0.05 0.08 0.11 0.14 0.18 0.22 0.26 0.32 0.40 0.52 1.46 1.70 1.80 1.88 1.94 1.98 2.03 2.06 2.09 2.12 2.15 2.18 2.20 2.20 2.20 2.20 2.20 2.20 2.20 2.2	Excess (inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.

Time	Precip.	Excess	Runoff
	(inches)	(inches)	(cfs)
52.00	2.20	0.94	0.00
53.00	2.20	0.94	0.00
54.00	2.20	0.94	0.00
55.00	2.20	0.94	0.00
56.00	2.20	0.94	0.00
57.00	2.20	0.94	0.00
58.00	2.20	0.94	0.00
59.00	2.20	0.94	0.00
60.00	2.20	0.94	0.00

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Summary for Subcatchment 3S: Proposed North not through basin

Runoff

=

9.16 cfs @ 12.15 hrs, Volume=

0.726 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 5-Year Rainfall=2.70"

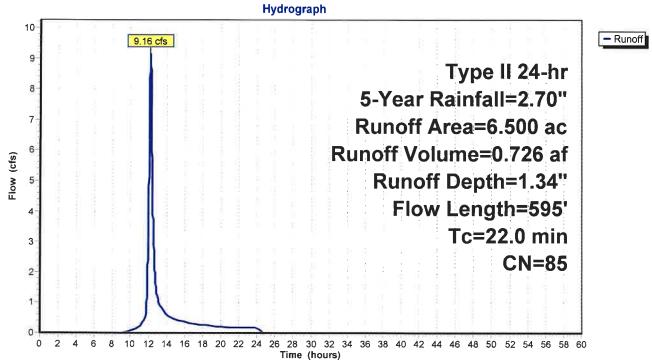
Area	(ac) (N Des	cription		
0	.360	98 Pav	ed parking	, HSG D	
0	.240	98 Pav	ed parking	, HSG C	
		30 >75	% Grass c	over, Good	, HSG D
				over, Good	, HSG C
			vel surface	•	
			vel surface		
			ghted Aver		
	.900		7% Pervio	-	
0	.600	9.23	% Impervi	ous Area	
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
18.7	100	0.0150	0.09		Sheet Flow, stone
					n= 0.250 P2= 2.50"
					11- 0.230
2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone
	-				Shallow Concentrated Flow, stone Unpaved Kv= 16.1 fps
2.6 0.7	308 187	0.0150 0.0700	1.97 4.26		Shallow Concentrated Flow, stone Unpaved Kv= 16.1 fps Shallow Concentrated Flow, grass
	-				Shallow Concentrated Flow, stone Unpaved Kv= 16.1 fps

Prepared by Carmina Wood Morris, PC

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Subcatchment 3S: Proposed North not through basin



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Hydrograph for Subcatchment 3S: Proposed North not through basin

Time (hours) (inches) (inches) (inches) (inches) Runoff (cfs) 0.00 0.00 0.00 0.00 1.00 0.03 0.00 0.00 2.00 0.06 0.00 0.00 3.00 0.09 0.00 0.00 4.00 0.13 0.00 0.00 5.00 0.17 0.00 0.00 6.00 0.22 0.00 0.00 7.00 0.27 0.00 0.00 8.00 0.32 0.00 0.00 9.00 0.40 0.00 0.01 10.00 0.49 0.01 0.07 11.00 0.63 0.04 0.22 12.00 1.79 0.65 5.50 13.00 2.08 0.86 1.10 14.00 2.21 0.96 0.59 15.00 2.30 1.02 0.44 16.00 2.38 1.08 0.35 17.00 2.43 1.13 0.30 <			, · · · · · · · · · · · · · · · · · · ·	
0.00 0.00 0.00 0.00 1.00 0.03 0.00 0.00 2.00 0.06 0.00 0.00 3.00 0.09 0.00 0.00 4.00 0.13 0.00 0.00 5.00 0.17 0.00 0.00 6.00 0.22 0.00 0.00 7.00 0.27 0.00 0.00 8.00 0.32 0.00 0.00 9.00 0.40 0.00 0.01 10.00 0.49 0.01 0.07 11.00 0.63 0.04 0.22 12.00 1.79 0.65 5.50 13.00 2.08 0.86 1.10 14.00 2.21 0.96 0.59 15.00 2.30 1.02 0.44 16.00 2.38 1.08 0.35 17.00 2.43 1.13 0.30 18.00 2.49 1.17 0.26				
2.00 0.06 0.00 0.00 3.00 0.09 0.00 0.00 4.00 0.13 0.00 0.00 5.00 0.17 0.00 0.00 6.00 0.22 0.00 0.00 7.00 0.27 0.00 0.00 8.00 0.32 0.00 0.00 9.00 0.40 0.00 0.01 10.00 0.49 0.01 0.07 11.00 0.63 0.04 0.22 12.00 1.79 0.65 5.50 13.00 2.08 0.86 1.10 14.00 2.21 0.96 0.59 15.00 2.30 1.02 0.44 16.00 2.38 1.08 0.35 17.00 2.43 1.13 0.30 18.00 2.49 1.17 0.26 19.00 2.53 1.20 0.23 20.00 2.57 1.23 0.20	0.00	0.00	0.00	0.00
3.00 0.09 0.00 0.00 4.00 0.13 0.00 0.00 5.00 0.17 0.00 0.00 6.00 0.22 0.00 0.00 7.00 0.27 0.00 0.00 8.00 0.32 0.00 0.00 9.00 0.40 0.00 0.01 10.00 0.49 0.01 0.07 11.00 0.63 0.04 0.22 12.00 1.79 0.65 5.50 13.00 2.08 0.86 1.10 14.00 2.21 0.96 0.59 15.00 2.30 1.02 0.44 16.00 2.38 1.08 0.35 17.00 2.43 1.13 0.30 18.00 2.49 1.17 0.26 19.00 2.53 1.20 0.23 20.00 2.57 1.23 0.20 21.00 2.60 1.26 0.18				
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7.00 0.27 0.00 0.00 8.00 0.32 0.00 0.00 9.00 0.40 0.00 0.01 10.00 0.49 0.01 0.07 11.00 0.63 0.04 0.22 12.00 1.79 0.65 5.50 13.00 2.08 0.86 1.10 14.00 2.21 0.96 0.59 15.00 2.30 1.02 0.44 16.00 2.38 1.08 0.35 17.00 2.43 1.13 0.30 18.00 2.49 1.17 0.26 19.00 2.53 1.20 0.23 20.00 2.57 1.23 0.20 21.00 2.60 1.26 0.18 22.00 2.64 1.29 0.17 23.00 2.67 1.34 0.16 25.00 2.70 1.34 0.00 26.00 2.70 1.34 0.00 <	5.00	0.17	0.00	0.00
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19.00 2.53 1.20 0.23 20.00 2.57 1.23 0.20 21.00 2.60 1.26 0.18 22.00 2.64 1.29 0.17 23.00 2.67 1.31 0.17 24.00 2.70 1.34 0.16 25.00 2.70 1.34 0.00 26.00 2.70 1.34 0.00 27.00 2.70 1.34 0.00 28.00 2.70 1.34 0.00 29.00 2.70 1.34 0.00 30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00	17.00	2.43	1.13	0.30
20.00 2.57 1.23 0.20 21.00 2.60 1.26 0.18 22.00 2.64 1.29 0.17 23.00 2.67 1.31 0.17 24.00 2.70 1.34 0.00 25.00 2.70 1.34 0.00 26.00 2.70 1.34 0.00 27.00 2.70 1.34 0.00 28.00 2.70 1.34 0.00 30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 36.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00				
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24.00 2.70 1.34 0.16 25.00 2.70 1.34 0.00 26.00 2.70 1.34 0.00 27.00 2.70 1.34 0.00 28.00 2.70 1.34 0.00 29.00 2.70 1.34 0.00 30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00	22.00	2.64	1.29	0.17
25.00 2.70 1.34 0.00 26.00 2.70 1.34 0.00 27.00 2.70 1.34 0.00 28.00 2.70 1.34 0.00 29.00 2.70 1.34 0.00 30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00				
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29.00 2.70 1.34 0.00 30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 36.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00	27.00	2.70	1.34	0.00
30.00 2.70 1.34 0.00 31.00 2.70 1.34 0.00 32.00 2.70 1.34 0.00 33.00 2.70 1.34 0.00 34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 36.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00		2.70		
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34.00 2.70 1.34 0.00 35.00 2.70 1.34 0.00 36.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00	32.00	2.70	1.34	0.00
35.00 2.70 1.34 0.00 36.00 2.70 1.34 0.00 37.00 2.70 1.34 0.00 38.00 2.70 1.34 0.00 39.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00				
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39.00 2.70 1.34 0.00 40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00	37.00	2.70	1.34	0.00
40.00 2.70 1.34 0.00 41.00 2.70 1.34 0.00 42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00				
42.00 2.70 1.34 0.00 43.00 2.70 1.34 0.00 44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00			1.34	0.00
44.00 2.70 1.34 0.00 45.00 2.70 1.34 0.00 46.00 2.70 1.34 0.00	42.00	2.70	1.34	0.00
46.00 2.70 1.34 0.00		2.70 2.70		
		2.70		
	47.00	2.70	1.34	0.00
48.00 2.70 1.34 0.00 49.00 2.70 1.34 0.00	49.00	2.70	1.34	
50.00 2.70 1.34 0.00 51.00 2.70 1.34 0.00				

Time	Precip.	Excess	Runoff
(hours)		(inches)	(cfs)
52.00	2.70	1.34	0.00
53.00	2.70	1.34	0.00
54.00	2.70	1.34	0.00
55.00	2.70	1.34	0.00
56.00	2.70	1.34	0.00
57.00	2.70	1.34	0.00
58.00	2.70	1.34	0.00
59.00	2.70	1.34	0.00
60.00	2.70	1.34	0.00

22.117 Proposed Basin

Type II 24-hr 10-Year Rainfall=3.15"

Prepared by Carmina Wood Morris, PC
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Summary for Subcatchment 3S: Proposed North not through basin

Runoff

11.77 cfs @ 12.15 hrs, Volume=

0.929 af, Depth= 1.72"

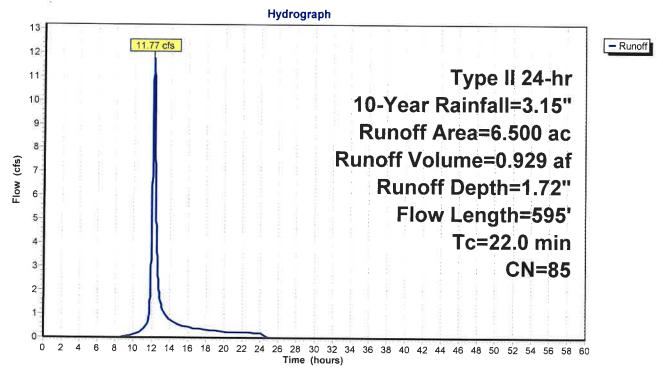
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=3.15"

Area	(ac) C	N Des	cription						
0	.360	98 Pave	Paved parking, HSG D						
0	.240		ed parking						
			% Grass c	over, Good	, HSG D				
				over, Good	, HSG C				
			el surface	•					
		96 Grav	el surface	, HSG C					
			ghted Aver						
	.900		7% Pervio						
0	.600	9.23	% Impervi	ous Area					
Тс	Longth	Clana	Volonity	Conneitu	Description				
(min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity	Description				
-				(cfs)	01 451 4				
18.7	100	0.0150	0.09		Sheet Flow, stone n= 0.250 P2= 2.50"				
2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone				
					Unpaved Kv= 16.1 fps				
0.7	187	0.0700	4.26		Shallow Concentrated Flow, grass				
·					Unpaved Kv= 16.1 fps				
22.0	595	Total							

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Subcatchment 3S: Proposed North not through basin



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Hydrograph for Subcatchment 3S: Proposed North not through basin

Time (hours)	Precip.	Excess (inches)	Runoff (cfs)
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 22.00 23.00 24.00 25.00 25.00 26.00 27.00 28.00 29.00 31.00 31.00 32.00 31.00 35.00	(inches) 0.00 0.03 0.07 0.15 0.20 0.25 0.31 0.25 0.31 0.25 0.31 0.38 0.45 0.57 0.74 0.25 0.31 0.38 0.45 0.57 0.74 0.38 0.45 0.57 0.74 0.38 0.45 0.57 0.74 0.38 0.57 0.75 0.75 0.75 0.75 0.75 0.75 0.75	(inches) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	(cfs) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
52.00	3.15	1.72	0.00
53.00	3.15	1.72	0.00
54.00	3.15	1.72	0.00
55.00	3.15	1.72	0.00
56.00	3.15	1.72	0.00
57.00	3.15	1.72	0.00
58.00	3.15	1.72	0.00
59.00	3.15	1.72	0.00
60.00	3.15	1.72	0.00

Type II 24-hr 25-Year Rainfall=3.87"

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Summary for Subcatchment 3S: Proposed North not through basin

Runoff = 16.06 cfs @ 12.15 hrs, Volume=

1.269 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 25-Year Rainfall=3.87"

Area	(ac) C	N Des	cription		
0	.360	98 Pave	ed parking	, HSG D	
0.	.240	98 Pave	ed parking	, HSG C	
2	.460	30 >75°	% Grass co	over, Good	, HSG D
1.	.640	74 >75°	% Grass co	over, Good	, HSG C
1.	.100	96 Grav	el surface	, HSG D	
0	.700	96 Grav	<u>rel surface</u>	, HSG C	
			ghted Aver		
5.	.900	90.7	7% Pervio	us Area	
0.	.600	9.23	% Impervi	ous Area	
-		01		0 "	B
Tc	Length	Slope	Velocity	Capacity	Description
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	
18.7	100	0.0150	0.09		Sheet Flow, stone n= 0.250 P2= 2.50"
2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone
					Unpaved Kv= 16.1 fps
0.7	187	0.0700	4.26		Shallow Concentrated Flow, grass
					Unpaved Kv= 16.1 fps
22.0	595	Total			

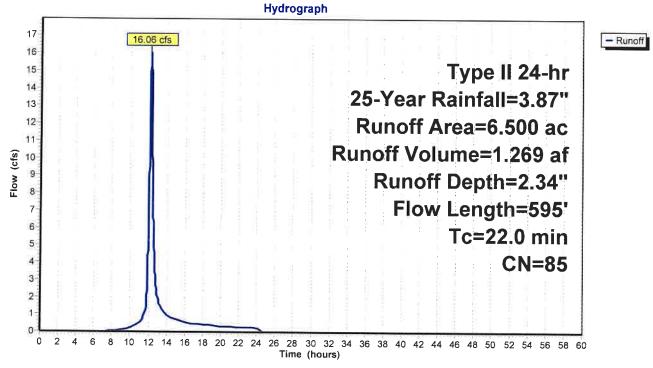
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Subcatchment 3S: Proposed North not through basin



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Hydrograph for Subcatchment 3S: Proposed North not through basin

Time (hours) 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00	3.87 3.87 3.87 3.87 3.87 3.87 3.87	Excess (inches) 2.34 2.34 2.34 2.34 2.34 2.34 2.34 2.34	Runoff (cfs) 0.00 0.00 0.00 0.00 0.00 0.00
59.00	3.87	2.34	0.00
60.00	3.87	2.34	0.00

Type II 24-hr 50-Year Rainfall=4.52" Printed 9/12/2022

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Summary for Subcatchment 3S: Proposed North not through basin

Runoff = 20.00 cfs @ 12.15 hrs, Volume=

1.586 af, Depth= 2.93"

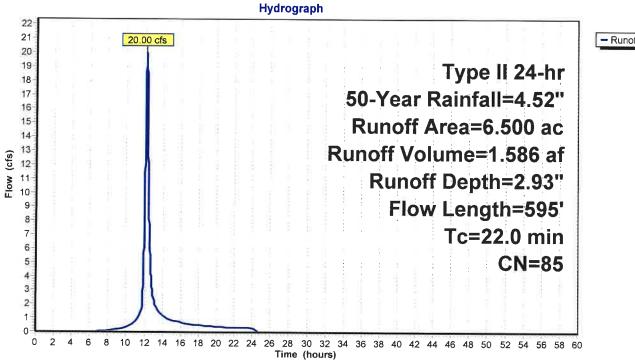
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 50-Year Rainfall=4.52"

Area	(ac) C	N Desc	cription					
0.	.360	98 Pave	Paved parking, HSG D					
0.	.240	98 Pave	ed parking	, HSG C				
		30 >759	% Grass co	over, Good	, HSG D			
				over, Good	, HSG C			
			el surface	•				
-			rel surface	, HSG C				
		•	ghted Aver	•				
	.900		7% Pervio					
0.	.600	9.23	% Impervi	ous Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
18.7	100	0.0150	0.09	(010)	Sheet Flow, stone			
10.7	100	0.0130	0.03		n= 0.250 P2= 2.50"			
2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone			
					Unpaved Kv= 16.1 fps			
0.7	187	0.0700	4.26		Shallow Concentrated Flow, grass			
_					Unpaved Kv= 16.1 fps			
22.0	595	Total						

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Subcatchment 3S: Proposed North not through basin





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	Н	ydrograp	h for Subc	atchment	3S: Pro	posed No	orth not throu	gh basin
Time (hours)	Precip.	Excess (inches)	Runoff (cfs)	Time (hours)		Excess (inches)	Runoff (cfs)	
(hours) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00 19.00 21.00 22.00 23.00 24.00 25.00 24.00 25.00 25.00 26.00 27.00 28.00 27.00 28.00 30.00 31.00 32.00 31.00 32.00 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 37.00 38.00 39.00 41.00 42.00 43.00 44.00 45.00 45.00 46.00 47.00 48.00 49.00	(inches) 0.00 0.05 0.10 0.16 0.22 0.28 0.36 0.45 0.66 0.82 1.06 3.49 3.71 3.86 4.36 4.42 4.52 4.52 4.52 4.52 4.52 4.52 4.52							
48.00	4.52	2.93	0.00					

Time	Precip.	Excess	Runoff
(hours)	(inches)	(inches)	(cfs)
52.00	4.52	2.93	0.00
53.00	4.52	2.93	0.00
54.00	4.52	2.93	0.00
55.00	4.52	2.93	0.00
56.00	4.52	2.93	0.00
57.00	4.52	2.93	0.00
58.00	4.52	2.93	0.00
59.00	4.52	2.93	0.00
60.00	4.52	2.93	0.00

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Runoff = 24.65 cfs @ 12.15 hrs, Volume=

1.965 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=5.28"

Summary for Subcatchment 3S: Proposed North not through basin

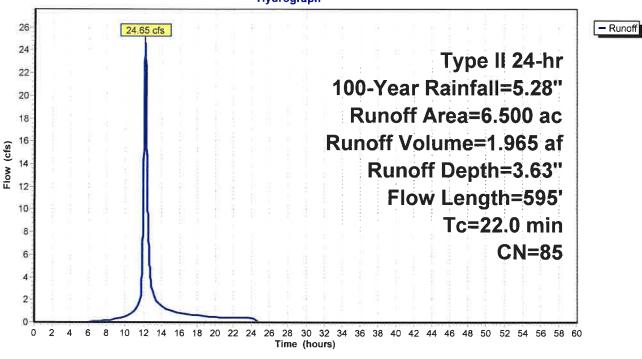
	Area	(ac) (N Des	cription		
	0	.360	98 Pave	ed parking		
	0.	.240	98 Pave	ed parking	, HSG C	
					over, Good	
			74 >75°	% Grass c	over, Good	, HSG C
				el surface	, HSG D	
-	0.	700	96 Grav	el surface	, HSG C	
				ghted Aver		
		900		7% Pervio		
0.600 9.23% Impervious Area						
	- -		01			
	Tc	Length	Slope	Velocity	Capacity	Description
-	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	18.7	100	0.0150	0.09		Sheet Flow, stone
	0.0	000				n= 0.250 P2= 2.50"
	2.6	308	0.0150	1.97		Shallow Concentrated Flow, stone
	0.7	407	0.0700	4.00		Unpaved Kv= 16.1 fps
	0.7	187	0.0700	4.26		Shallow Concentrated Flow, grass
-	00.0	505				Unpaved Kv= 16.1 fps
	22.0	595	Total			

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Subcatchment 3S: Proposed North not through basin





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Hydrograph for Subcatchment 3S: Proposed North not through basin

Precip.	Excess (inches)	Runoff (cfs)
5.28		0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
5.28	3.63	0.00
	5.28 5.28 5.28 5.28 5.28 5.28 5.28 5.28	(inches) (inches) 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63 5.28 3.63

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