STORMWATER MANAGEMENT REPORT Addendum

BASKIN REDEVELOPMENT 75 WEST MAIN STREET CHICOPEE, MASSACHUSETTS

Assessor's Map 0173-00001

Prepared for:

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PROJECT DESCRIPTION

Introduction

Brisa Development, LLC. is proposing the redevelopment of Baskin Mills located at 75 West Main Street in the City of Chicopee, Massachusetts (site). The Baskin Redevelopment project will consist of renovating one remaining building for brewery and construction new buildings for commercial retail, athletic, and residential uses. The project site is approximately five acres and the limit of disturbance (LOD) encompasses approximately four acres. The parcel (the site) totals five acres and are located on the City Assessor's Map 0173, Lot 00001.

The proposed project includes renovating the existing building to house a brewery and construction of new buildings to include a 48,695 sf athletic facility, 3,773 sf grocery store, and 101 residentials units in a 12,560 sf seven story residential building (project). New sidewalks and revisions to the existing parking areas, drainage system, and on-site utilities are proposed to support the redevelopment.

Stormwater Management and Calculations

BETA Inc prepared a stormwater report titled, Former Uniroyal & Facemate Properties, Stormwater Management Report, dated May 2021, for ACOE Permit Review Only. This report provides a full basis for the existing stormwater modelling for the site the existing conditions. The report also considered proposed conditions of filling a portion of the land along the rear of the site and construction infiltration basins to manage stormwater runoff from the site in anticipation of future development along the front portion of the site.

The Baskin Redevelopment site development plans are proposing to fill additional land at the rear of the site and includes additional impervious areas for parking and buildings that were not accounted for in the BETA report. This Addendum provided additional stormwater modeling to describe the project. The baseline data used in the model was taken directly from the BETA report to provide consistency in comparing the results.

The project will discharge roof runoff directly to the municipal storm drains on the site. The proposed impervious surfaces, non-roof, will drain to tree box filters for treatment and infiltration. The drainage will overflow to a traditional pipe and manhole system to convey the runoff to a two subsurface stormwater management structures constructed of underground storage chambers. The flows are managed by a series of flow control weirs designed to attenuate peak flows and maximize infiltration within the individual structures.

The project's stormwater management results in peak flows and volumes that are less than or similar to the existing conditions modelling for the two, ten, twenty-five, and one-hundred-year events.

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Appendix A

Proposed Drainage Basin Map NRCS Soils Data





United States Department of Agriculture

NRCS

Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants Custom Soil Resource Report for Hampden County, Massachusetts, Central Part



Preface

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

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

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

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

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

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

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Soil Map

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

Custom Soil Resource Report Soil Map



	MAP L	EGEND		MAP INFORMATION		
Area of In	terest (AOI)	100	Spoil Area	The soil surveys that comprise your AOI were mapped at		
	Area of Interest (AOI)	۵	Stony Spot	1.23,000.		
Soils		۵	Very Stony Spot	Warning: Soil Map may not be valid at this scale		
	Soil Map Unit Polygons	Ŷ	Wet Spot			
~	Soil Map Unit Lines	~	Other	Enlargement of maps beyond the scale of mapping can cause		
	Soil Map Unit Points		Special Line Features	line placement. The maps do not show the small areas of		
Special	Point Features	Water Fe		contrasting soils that could have been shown at a more detai		
అ	Blowout	~	Streams and Canals	scale.		
\boxtimes	Borrow Pit	Transport	tation	Please rely on the bar scale on each map sheet for map		
×	Clay Spot	+++	Rails	measurements.		
\diamond	Closed Depression	~	Interstate Highways	Source of Many Natural Descurses Concernation Service		
X	Gravel Pit	~	US Routes	Web Soil Survey URL:		
00	Gravelly Spot	~	Major Roads	Coordinate System: Web Mercator (EPSG:3857)		
0	Landfill	-	Local Roads	Maps from the Web Soil Survey are based on the Web Merca		
٨.	Lava Flow	Backgrou	ind	projection, which preserves direction and shape but distorts		
عليه	Marsh or swamp	No.	Aerial Photography	distance and area. A projection that preserves area, such as Albers equal-area conic projection, should be used if more		
~	Mine or Quarry			accurate calculations of distance or area are required.		
0	Miscellaneous Water			This product is generated from the USDA-NRCS certified dat		
ŏ	Perennial Water			of the version date(s) listed below.		
Š	Rock Outcrop			Cail Current Areas - University County Massachusetta, Contra		
Ť	Saline Spot			Part		
T	Sandy Spot			Survey Area Data: Version 15, Sep 2, 2021		
•*•	Soverely Freded Spet			Soil map units are labeled (as space allows) for map scales		
÷				1:50,000 or larger.		
				Date/s) aerial images were photographed: Aug 25, 2013		
≫	Slide or Slip			9, 2013		
ø	Sodic Spot			The orthophoto or other base map on which the soil lines we compiled and digitized probably differs from the background		

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
602	Urban land	5.7	100.0%
Totals for Area of Interest		5.7	100.0%

Map Unit Descriptions

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

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

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

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

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

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

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

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

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

Hampden County, Massachusetts, Central Part

602—Urban land

Map Unit Setting

National map unit symbol: 99rq Frost-free period: 150 to 195 days Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Urban Land

Setting

Landform position (two-dimensional): Toeslope

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Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

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

The four hydrologic soil groups are:

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

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

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

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

 Hydrologic Soil Group and Surface Runoff–Hampden County, Massachusetts, Central Part

 Map symbol and soil name
 Pct. of map unit
 Surface Runoff
 Hydrologic Soil Group

 602—Urban land
 0
 0
 0
 0

 Urban land
 100
 Very high
 -

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

USDA

Data Source Information

Soil Survey Area: Hampden County, Massachusetts, Central Part Survey Area Data: Version 15, Sep 2, 2021



Appendix B

Stormwater Calculations: Proposed Hydrology Baskins Redevelopment 2-Year Detailed Calculations Summary Calculations: First Flush, 10-Yr, 25-Yr, 100-Yr



Rainfall Events Listing (selected events)

Event#	Event	Storm Type	Curve	Mode	Duration	B/B	Depth	AMC	
	Name				(hours)		(inches)		
 1	2-Year	Type III 24-hr		Default	24.00	1	3.12	2	

Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
37,635	74	>75% Grass cover, Good, HSG C (2S)
107,821	98	Paved parking, HSG C (11S, 12S, 13S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22, 23S)
79,355	98	Roofs, HSG D (3S, 5Sa, 5Sb, 6S, 37S)
224,811	94	TOTAL AREA

Soil Listing (all nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
0	HSG A	
0	HSG B	
145,456	HSG C	2S, 11S, 12S, 13S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22, 23S
79,355	HSG D	3S, 5Sa, 5Sb, 6S, 37S
0	Other	
224,811		TOTAL AREA

Pr Hydro R1

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Ground Covers (an nodes)								
HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su	
 0	0	37,635	0	0	37,635	>75% Grass cover, Good		
0	0	107,821	0	0	107,821	Paved parking		
0	0	0	79,355	0	79,355	Roofs		
0	0	145,456	79,355	0	224,811	TOTAL AREA		

Ground Covers (all nodes)

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Pipe Listing (all nodes)

Line#	Node	In-Invert	Out-Invert	Length	Slope	n	Width	Diam/Height	Inside-Fill
	Number	(feet)	(feet)	(feet)	(ft/ft)		(inches)	(inches)	(inches)
1	3P	98.00	91.00	250.0	0.0280	0.013	0.0	18.0	0.0
2	5P	100.75	100.65	20.0	0.0050	0.012	0.0	12.0	0.0
3	6P	100.60	100.50	20.0	0.0050	0.012	0.0	12.0	0.0
4	7P	99.00	96.00	20.0	0.1500	0.013	0.0	18.0	0.0
5	8P	100.50	100.00	50.0	0.0100	0.013	0.0	18.0	0.0
6	11P	101.53	101.08	90.0	0.0050	0.012	0.0	12.0	0.0
7	12P	101.18	101.13	10.0	0.0050	0.012	0.0	12.0	0.0
8	13P	100.65	100.60	10.0	0.0050	0.012	0.0	12.0	0.0
9	22P	103.25	102.63	125.0	0.0050	0.012	0.0	12.0	0.0
10	23P	102.65	102.60	10.0	0.0050	0.012	0.0	12.0	0.0
11	26P	101.30	101.25	10.0	0.0050	0.012	0.0	12.0	0.0
12	27P	101.70	101.55	30.0	0.0050	0.012	0.0	12.0	0.0
13	29P	101.08	100.61	95.0	0.0049	0.012	0.0	12.0	0.0
14	30P	100.60	100.50	20.0	0.0050	0.012	0.0	18.0	0.0
15	31P	101.90	101.25	130.0	0.0050	0.013	0.0	12.0	0.0
16	32P	101.25	101.00	50.0	0.0050	0.013	0.0	18.0	0.0
17	33P	101.00	100.58	85.0	0.0049	0.013	0.0	18.0	0.0
18	34P	102.55	102.05	100.0	0.0050	0.012	0.0	12.0	0.0
19	36P	102.10	101.60	10.0	0.0500	0.012	0.0	12.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment2S: Open Space	Runoff Area=37,635 sf 0.00% Impervious Runoff Depth=0.99" Flow Length=150' Tc=9.1 min CN=74 Runoff=0.84 cfs 3,090 cf
Subcatchment3S: Brewery Roof	Runoff Area=5,950 sf 100.00% Impervious Runoff Depth=2.89" Tc=6.0 min CN=98 Runoff=0.41 cfs 1,432 cf
Subcatchment5Sa: Athletic Roof	Runoff Area=27,766 sf 100.00% Impervious Runoff Depth=2.89" Tc=6.0 min CN=98 Runoff=1.93 cfs 6,682 cf
Subcatchment5Sb: Athletic Roof	Runoff Area=27,766 sf 100.00% Impervious Runoff Depth=2.89" Tc=6.0 min CN=98 Runoff=1.93 cfs 6,682 cf
Subcatchment6S: Residential Roof	Runoff Area=14,100 sf 100.00% Impervious Runoff Depth=2.89" Tc=6.0 min CN=98 Runoff=0.98 cfs 3,393 cf
Subcatchment11S: Parking/Pavement	Runoff Area=9,068 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=50	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.63 cfs 2,182 cf
Subcatchment12S: Parking/Pavement	Runoff Area=10,485 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=50	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.73 cfs 2,523 cf
Subcatchment13S: Parking/Pavement	Runoff Area=10,798 sf 100.00% Impervious Runoff Depth=2.89" Flow Length=60' Tc=6.0 min CN=98 Runoff=0.75 cfs 2,599 cf
Subcatchment15S: Parking/Pavement	Runoff Area=9,945 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=50	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.69 cfs 2,393 cf
Subcatchment16S: Parking/Pavement	Runoff Area=11,350 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=100	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.79 cfs 2,731 cf
Subcatchment17S: Parking/Pavement	Runoff Area=10,465 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=70	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.73 cfs 2,518 cf
Subcatchment18S: Parking/Pavement	Runoff Area=10,745 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=70	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.75 cfs 2,586 cf
Subcatchment19S: Parking/Pavement	Runoff Area=10,400 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=100	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.72 cfs 2,503 cf
Subcatchment20S: Parking/Pavement	Runoff Area=1,945 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=3	30' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.14 cfs 468 cf
Subcatchment21S: Parking/Pavement	Runoff Area=5,400 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=50	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.38 cfs 1,300 cf
Subcatchment22: Parking/Pavement	Runoff Area=6,920 sf 100.00% Impervious Runoff Depth=2.89"
Flow Length=35	' Slope=0.0200 '/' Tc=6.0 min CN=98 Runoff=0.48 cfs 1,665 cf

Pr Hydro R1 Prepared by HP Inc.				Type III 24-I	<i>hr 2-Year Ra</i> Printed	infall=3.12" 12/19/2021
HydroCAD® 10.10-5a s/n 1	<u>0894 © 2020 Hy</u>	droCAD Softw	are Solution	is LLC		Page 8
Subcatchment23S: Park	ing/Pavement Flow Length=1(Runoff Area 0.0' Slope=0.0	a=10,300 sf)200 '/' Tc=	100.00% Imper 6.0 min CN=98	vious Runoff D Runoff=0.72 c	0epth=2.89" fs 2,479 cf
Subcatchment37S: Groc	ery Roof	Runoff Are	ea=3,773 sf T	100.00% Imper c=6.0 min CN=9	vious Runoff D 98 Runoff=0.26	0epth=2.89" 5 cfs 908 cf
Pond 1P: Area behind lev	ree - Facemate	Peak El	ev=90.30' S	Storage=2,150 cf	Inflow=7.48 cf Outflow=5.30 cf	s 33,532 cf s 33,532 cf
Pond 3P: (new Pond)	18.0" Roun	d Culvert n=0).013 L=250	Peak Elev=98.5 [*] .0' S=0.0280 '/'	1' Inflow=1.27 (Outflow=1.27 (cfs 6,416 cf cfs 6,416 cf
Pond 5P: Tree Box	Discarded=0	Peak 0.00 cfs 81 cf	Elev=101.6 Primary=0.	5' Storage=19 c 68 cfs 2,313 cf	of Inflow=0.69 o Outflow=0.68 o	ofs 2,393 cf fs 2,393 cf
Pond 6P: DMH	12.0" Rou	nd Culvert n=	P 0.012 L=20:	Peak Elev=101.64 9.0' S=0.0050 '/'	4' Inflow=1.40 o Outflow=1.40 o	cfs 4,791 cf cfs 4,791 cf
Pond 7P: Storage Chamb	ers South Discarded=0.09 (Peak Ele ⊳cfs_5,149 cf	v=101.61' S Primary=1.2	otorage=3,730 cf 7 cfs 6,416 cf (Inflow=3.49 cf Outflow=1.36 cfs	s 11,565 cf s 11,565 cf
Pond 8P: Storage Chamb)ers North Discarded=0.13 (Peak Ele cfs_6,579 cf ⊟	v=101.32' S Primary=0.8	otorage=4,186 cf 0 cfs 4,929 cf (Inflow=3.49 cf Outflow=0.93 cfs	s 11,508 cf s 11,508 cf
Pond 11P: Tree Box	Discarded=0.0	Peak 00 cfs 185 cf	c Elev=102.1 Primary=0.	3' Storage=40 c 63 cfs 1,997 cf	of Inflow=0.63 of Outflow=0.63 of	ofs 2,182 cf fs 2,182 cf
Pond 12P: Tree Box	Discarded=0.0	Peak 00 cfs 182 cf	c Elev=102.0 Primary=0.	00' Storage=40 c 73 cfs 2,341 cf	of Inflow=0.73 of Outflow=0.73 of	ofs 2,523 cf fs 2,523 cf
Pond 13P: Tree Box	Discarded=0.0	Peak 00 cfs 163 cf	CElev=101.6 Primary=0.	5' Storage=37 c 74 cfs 2,435 cf	of Inflow=0.75 o Outflow=0.74 o	ofs 2,599 cf fs 2,599 cf
Pond 22P: Tree Box	Discarde	Pe: d=0.00 cfs 92:	ak Elev=103 2 cf Primary	3.47' Storage=19 /=0.13 cfs 376 c	ocf Inflow=0.14 f Outflow=0.13	4 cfs 468 cf 6 cfs 468 cf
Pond 23P: Tree Box	Discarded=0	Peak 0.00 cfs 81 cf	CElev=103.2 Primary=0.	24' Storage=16 c 72 cfs 2,421 cf	of Inflow=0.72 of Outflow=0.72 of	ofs 2,503 cf fs 2,503 cf
Pond 24P: (new Pond)	Discarded=0.0	Peak)5 cfs 1,665 c	Elev=106.79 f Secondar	o' Storage=555 c y=0.00 cfs 0 cf	of Inflow=0.48 of Outflow=0.05 of	cfs 1,665 cf fs 1,665 cf
Pond 26P: Tree Box	Discarded=0	Peak 0.00 cfs 96 cf	CElev=102.3 Primary=1.	33' Storage=30 c 12 cfs 3,789 cf	of Inflow=1.12 of Outflow=1.12 of	cfs 3,885 cf fs 3,885 cf
Pond 27P: DMH	12.0" Rou	nd Culvert n=	P 0.012 L=30	Peak Elev=102.48 9.0' S=0.0050 '/'	8' Inflow=1.51 o Outflow=1.51 o	cfs 4,922 cf cfs 4,922 cf
Pond 29P: DMH	12.0" Rou	nd Culvert n=	P 0.012 L=95:	?eak Elev=101.92 5.0' S=0.0049 '/'	2' Inflow=1.35 (Outflow=1.35 (cfs 4,338 cf cfs 4,338 cf

Pr Hydro R1 Prepared by HP Inc. <u>HydroCAD® 10.10-5a s/n 108</u>	Type III 24-hr 2-Year Rainfall=3.12" Printed 12/19/2021 94 © 2020 HydroCAD Software Solutions LLC Page 9
Pond 30P: DMH	Peak Elev=101.64' Inflow=2.10 cfs 6,774 cf 18.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=2.10 cfs 6,774 cf
Pond 31P: DMH	Peak Elev=102.59' Inflow=0.86 cfs 2,797 cf 12.0" Round Culvert n=0.013 L=130.0' S=0.0050 '/' Outflow=0.86 cfs 2,797 cf
Pond 32P: DMH	Peak Elev=102.23' Inflow=1.98 cfs 6,586 cf 18.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=1.98 cfs 6,586 cf
Pond 33P: DMH	Peak Elev=102.03' Inflow=3.49 cfs 11,508 cf 18.0" Round Culvert n=0.013 L=85.0' S=0.0049 '/' Outflow=3.49 cfs 11,508 cf
Pond 34P: Tree Box	Peak Elev=103.17' Storage=36 cf Inflow=0.79 cfs 2,731 cf Discarded=0.00 cfs 172 cf Primary=0.79 cfs 2,559 cf Outflow=0.79 cfs 2,731 cf
Pond 36P: Tree Box	Peak Elev=102.74' Storage=29 cf Inflow=0.73 cfs 2,518 cf Discarded=0.00 cfs 156 cf Primary=0.72 cfs 2,363 cf Outflow=0.73 cfs 2,518 cf
Link 1L: (new Link)	Inflow=5.30 cfs 33,532 cf Primary=5.30 cfs 33,532 cf

Total Runoff Area = 224,811 sf Runoff Volume = 48,134 cf Average Runoff Depth = 2.57" 16.74% Pervious = 37,635 sf 83.26% Impervious = 187,176 sf

Summary for Subcatchment 2S: Open Space

Runoff = 0.84 cfs @ 12.14 hrs, Volume= 3,090 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

	A	rea (sf)	CN	Description			
		37,635	74	74 >75% Grass cover, Good, HSG C			
		37,635	74	100.00% P	ervious Are	a	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
	8.1	50	0.0200	0.10		Sheet Flow, Open Space	
	0.4	50	0.0200	2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space	
	0.6	50	0.0400	1.40		Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps	
_	0.1	150	Total				

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 0.41 cfs @ 12.08 hrs, Volume= 1,432 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

Area (sf)	CN Description						
5,950	98 Roofs, HSG D						
5,950	98 100.00% Impervious Area						
Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)						
6.0	Direct Entry, Roof Runoff						
Subcatchment 3S: Brewery Roof							
Hydrograph							
0.46							



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 1.93 cfs @ 12.08 hrs, Volume= 6,682 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 1.93 cfs @ 12.08 hrs, Volume= 6,682 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"



Summary for Subcatchment 6S: Residential Roof

Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,393 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"



Summary for Subcatchment 11S: Parking/Pavement

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 2,182 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN	Description			
	9,068	98	Paved parking, HSG C			
	9,068	98	38 100.00% Impervious Area			
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description	
0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking	
					Smooth surfaces n= 0.011 P2= 3.30"	
0.7	50	Total.	Increased t	o minimum	Tc = 6.0 min	

Subcatchment 11S: Parking/Pavement


Summary for Subcatchment 12S: Parking/Pavement

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 2,523 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

_	Ar	ea (sf)	CN	Description		
		10,485	98	Paved park	ing, HSG C	
		10,485	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
-	0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 12S: Parking/Pavement



Summary for Subcatchment 13S: Parking/Pavement

Runoff = 0.75 cfs @ 12.08 hrs, Volume= 2,599 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN [Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 2,393 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

/	Area (sf)	CN	Description		
	9,945	98	Paved park	ing, HSG C	
	9,945	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description
0.7	50	0.020	0 1.22		Sheet Flow, pavement/parking
0.7	50	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 15S: Parking/Pavement



Summary for Subcatchment 16S: Parking/Pavement

Runoff = 0.79 cfs @ 12.08 hrs, Volume= 2,731 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN	Description		
	11,350	98	Paved park	ing, HSG C	
	11,350	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, Pavement/Parking
					Smooth surfaces n= 0.011 P2= 3.30"
10	400	Tatal			$T_{0} = C_{0} $ min



Subcatchment 16S: Parking/Pavement



Summary for Subcatchment 17S: Parking/Pavement

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 2,518 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

_	Ar	ea (sf)	CN	Description		
		10,465	98	Paved park	ing, HSG C	
		10,465	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
	0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 17S: Parking/Pavement



Summary for Subcatchment 18S: Parking/Pavement

Runoff = 0.75 cfs @ 12.08 hrs, Volume= 2,586 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

_	Ar	rea (sf)	CN	Description		
		10,745	98	Paved park	ing, HSG C	
		10,745	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
-	0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 18S: Parking/Pavement



Summary for Subcatchment 19S: Parking/Pavement

Runoff = 0.72 cfs @ 12.08 hrs, Volume= 2,503 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN	Description		
	10,400	98	Paved park	ing, HSG C	
	10,400	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, Pavement/Parking
					Smooth surfaces n= 0.011 P2= 3.30"
10	100	Total	Increased t		$T_{0} = 6.0 \text{ min}$

1.2 100 Total, Increased to minimum Tc = 6.0 min

Subcatchment 19S: Parking/Pavement



Summary for Subcatchment 20S: Parking/Pavement

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 468 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

_	Ar	ea (sf)	CN	Description		
		1,945	98	Paved park	ing, HSG C	
		1,945	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
	0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking
_						Smooth surfaces n= 0.011 P2= 3.30"
	0.5	30	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,300 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

	Ai	rea (sf)	CN	Description		
		5,400	98	Paved park	ing, HSG C	
		5,400	98	100.00% Im	npervious A	rea
(Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
	0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 21S: Parking/Pavement



Summary for Subcatchment 22: Parking/Pavement

Runoff = 0.48 cfs @ 12.08 hrs, Volume= 1,665 cf, Depth= 2.89"

0.2-

0.15

0.1

0.05

0 2 4 6 8

10 12 14 16 18 20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN I	Description				
6,920 98 Paved parking, HSG C							
	6,920	98 ⁻	100.00% In	npervious A	rea		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
0.5	35	0.0200	1.13		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"		
0.5	35	Total,	Increased t	to minimum	Tc = 6.0 min		
0.5 0.45 0.4			Subc	Catchmen	t 22: Parking/Pavement graph Type III 24-hr 2-Year Rainfall=3.12" Runoff Area=6,920 sf		
0.35 500.3					Runoff Volume=1,665 cf Runoff Depth=2.89"		
0.25					Flow Length=35'		

Time (hours)

Slope=0.0200 '/'

22 24 26 28 30 32 34 36 38 40 42 44 46 48

Tc=6.0 min

CN=98

Summary for Subcatchment 23S: Parking/Pavement

Runoff = 0.72 cfs @ 12.08 hrs, Volume= 2,479 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN	Description		
	10,300	98	Paved park	ing, HSG C	
	10,300	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, pavement/parking
					Smooth surfaces n= 0.011 P2= 3.30"
1 0	100	Total	Inorogod t		$T_{0} = 6.0 \text{ min}$



Subcatchment 23S: Parking/Pavement



Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 908 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 2-Year Rainfall=3.12"



Summary for Pond 1P: Area behind levee - Facemate

Inflow Area =	217,891 sf, 82.73% Impervious,	Inflow Depth = 1.85" for 2-Year event
Inflow =	7.48 cfs @ 12.10 hrs, Volume=	33,532 cf
Outflow =	5.30 cfs @ 12.23 hrs, Volume=	33,532 cf, Atten= 29%, Lag= 7.9 min
Primary =	5.30 cfs @ 12.23 hrs, Volume=	33,532 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 90.30' @ 12.23 hrs Surf.Area= 8,072 sf Storage= 2,150 cf

Plug-Flow detention time= 5.2 min calculated for 33,532 cf (100% of inflow) Center-of-Mass det. time= 5.0 min (784.9 - 779.9)

Volume	Inve	ert Avail.Sto	orage Storage	Description	
#1	90.0	00' 25,0	50 cf Custon	n Stage Data (Prismatic)Listed below (F	≀ecalc)
Elevatio (fee 90.0 92.0	on et) 00 00	Surf.Area (sq-ft) 6,140 18,910	Inc.Store (cubic-feet) 0 25,050	Cum.Store (cubic-feet) 0 25,050	
Device	Routing	Invert	Outlet Device	2S	
#1	Primary	90.00'	2.0" x 2.0" H	oriz. Orifice/Grate X 6.00 columns X 6	rows C= 0.600
#2	Primary	90.00'	Limited to we 2.0" x 2.0" H Limited to we	ir flow at low heads oriz. Orifice/Grate X 6.00 columns X 6 ir flow at low heads	rows C= 0.600
Primary	OutFlow	Max=5.30 cfs	@ 12.23 hrs H	W=90.30' TW=0.00' (Dynamic Tailwat	er)

-1=Orifice/Grate (Orifice Controls 2.65 cfs @ 2.65 fps)

-2=Orifice/Grate (Orifice Controls 2.65 cfs @ 2.65 fps)



Pond 1P: Area behind levee - Facemate

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Summary for Pond 3P: (new Pond)

Inflow Area = 50,596 sf,100.00% Impervious, Inflow Depth = 1.52" for 2-Year event Inflow 1.27 cfs @ 12.31 hrs, Volume= 6.416 cf = 1.27 cfs @ 12.31 hrs, Volume= Outflow 6,416 cf, Atten= 0%, Lag= 0.0 min = Primary = 1.27 cfs @ 12.31 hrs, Volume= 6,416 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 98.51' @ 12.31 hrs

Flood Elev= 105.00

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.00' / 91.00' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.27 cfs @ 12.31 hrs HW=98.51' TW=90.29' (Dynamic Tailwater) ☐ 1=Culvert (Inlet Controls 1.27 cfs @ 2.42 fps)



Pond 3P: (new Pond)

Summary for Pond 5P: Tree Box

Inflow Area	=	9,945 sf,	100.00% Impervious	Inflow Depth = 2.	89" for 2-Year event
Inflow	=	0.69 cfs @	12.08 hrs, Volume=	2,393 cf	
Outflow	=	0.68 cfs @	12.08 hrs, Volume=	2,393 cf,	Atten= 1%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.27 hrs, Volume=	81 cf	
Primary	=	0.68 cfs @	12.08 hrs, Volume=	2,313 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.65' @ 12.27 hrs Surf.Area= 41 sf Storage= 19 cf

Plug-Flow detention time= 4.7 min calculated for 2,393 cf (100% of inflow) Center-of-Mass det. time= 4.7 min (761.6 - 756.9)

Volume	Invert	Avail.Stor	rage Storag	e Description		
#1	100.20'	ĝ	1 cf Custo 259 cf	m Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.2	20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.0	00	80	61	259		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	100.75'	12.0" Roun L= 20.0' CF Inlet / Outlet n= 0.012 Co	Id Culvert PP, square edge Invert= 100.75' / prrugated PP, sm	headwall, Ke= 0.50 100.65' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr l Conductivity	Exfiltration over	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	100.75'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
Discord	ad OutFlaw		a @ 10.07 hrs		Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.27 hrs HW=101.65' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.69 cfs @ 12.08 hrs HW=101.59' TW=101.50' (Dynamic Tailwater) **1=Culvert** (Passes 0.69 cfs of 0.86 cfs potential flow)

1.35 fps)



Pond 5P: Tree Box

Summary for Pond 6P: DMH

Inflow Area	a =	20,245 sf,	100.00% In	npervious,	Inflow Depth = 2.84"	for 2-Year event
Inflow	=	1.40 cfs @	12.08 hrs,	Volume=	4,791 cf	
Outflow	=	1.40 cfs @	12.08 hrs,	Volume=	4,791 cf, Atten	= 0%, Lag= 0.0 min
Primary	=	1.40 cfs @	12.08 hrs,	Volume=	4,791 cf	·
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.64' @ 12.28 hrs Flood Elev= 105.00'						

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	12.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.40 cfs @ 12.08 hrs HW=101.50' TW=101.32' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 1.40 cfs @ 2.47 fps)





Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf,	100.00% In	npervious,	Inflow Depth = 2	.74" f	or 2-Y	ear event	
Inflow	=	3.49 cfs @	12.08 hrs,	Volume=	11,565 cf				
Outflow	=	1.36 cfs @	12.31 hrs,	Volume=	11,565 cf,	Atten=	61%,	Lag= 13.3 r	min
Discarded	=	0.09 cfs @	12.31 hrs,	Volume=	5,149 cf			-	
Primary	=	1.27 cfs @	12.31 hrs,	Volume=	6,416 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.61' @ 12.31 hrs Surf.Area= 3,348 sf Storage= 3,730 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 71.4 min calculated for 11,563 cf (100% of inflow) Center-of-Mass det. time= 71.3 min (831.5 - 760.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8.592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.09 cfs @ 12.31 hrs HW=101.61' (Free Discharge) **2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=1.27 cfs @ 12.31 hrs HW=101.61' TW=98.51' (Dynamic Tailwater) 1=Culvert (Passes 1.27 cfs of 11.62 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 1.27 cfs @ 3.46 fps)

Pond 7P: Storage Chambers South - Chamber Wizard Field A

Chamber Model = Cultec R-360HD (Cultec Recharger® 360HD)

Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf

60.0" Wide + 9.0" Spacing = 69.0" C-C Row Spacing

16 Chambers/Row x 3.67' Long +1.25' Cap Length x 2 = 61.17' Row Length +12.0" End Stone x 2 = 63.17' Base Length
9 Rows x 60.0" Wide + 9.0" Spacing x 8 + 12.0" Side Stone x 2 = 53.00' Base Width
6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

144 Chambers x 36.6 cf + 6.5 cf Cap Volume x 2 x 9 Rows = 5,393.1 cf Chamber Storage

13,391.3 cf Field - 5,393.1 cf Chambers = 7,998.2 cf Stone x 40.0% Voids = 3,199.3 cf Stone Storage

Chamber Storage + Stone Storage = 8,592.4 cf = 0.197 af Overall Storage Efficiency = 64.2%Overall System Size = $63.17' \times 53.00' \times 4.00'$

144 Chambers 496.0 cy Field 296.2 cy Stone







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Summary for Pond 8P: Storage Chambers North

Inflow Area	a =	50,305 sf,	100.00% In	npervious,	Inflow Depth = 2	.75" f	or 2-Y	ear event	
Inflow	=	3.49 cfs @	12.09 hrs,	Volume=	11,508 cf				
Outflow	=	0.93 cfs @	12.44 hrs,	Volume=	11,508 cf,	Atten=	73%,	Lag= 21.0	min
Discarded	=	0.13 cfs @	12.44 hrs,	Volume=	6,579 cf			-	
Primary	=	0.80 cfs @	12.44 hrs,	Volume=	4,929 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.32' @ 12.44 hrs Surf.Area= 4,786 sf Storage= 4,186 cf

Plug-Flow detention time= 84.8 min calculated for 11,508 cf (100% of inflow) Center-of-Mass det. time= 84.8 min (844.4 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12,209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	100.50'	18.0" Round Culvert
			L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.13 cfs @ 12.44 hrs HW=101.32' (Free Discharge) **2=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=0.80 cfs @ 12.44 hrs HW=101.32' TW=90.25' (Dynamic Tailwater) -1=Culvert (Passes 0.80 cfs of 2.86 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.80 cfs @ 2.97 fps)

Pond 8P: Storage Chambers North - Chamber Wizard Field A

Chamber Model = Cultec R-360HD (Cultec Recharger® 360HD)

Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf

60.0" Wide + 9.0" Spacing = 69.0" C-C Row Spacing

10 Chambers/Row x 3.67' Long +1.25' Cap Length x 2 = 39.17' Row Length +12.0" End Stone x 2 = 41.17' Base Length 20 Rows x 60.0" Wide + 9.0" Spacing x 19 + 12.0" Side Stone x 2 = 116.25' Base Width 6.0" Stone Base + 36.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

200 Chambers x 36.6 cf + 6.5 cf Cap Volume x 2 x 20 Rows = 7,587.3 cf Chamber Storage

19,142.5 cf Field - 7,587.3 cf Chambers = 11,555.2 cf Stone x 40.0% Voids = 4,622.1 cf Stone Storage

Chamber Storage + Stone Storage = 12,209.4 cf = 0.280 af Overall Storage Efficiency = 63.8% Overall System Size = 41.17' x 116.25' x 4.00'

200 Chambers 709.0 cy Field 428.0 cy Stone





Pond 8P: Storage Chambers North

Summary for Pond 11P: Tree Box

Inflow Area	a =	9,068 sf,	100.00% Impervious	, Inflow Depth = 2	.89" for 2-Year event
Inflow	=	0.63 cfs @	12.08 hrs, Volume	2,182 cf	
Outflow	=	0.63 cfs @	12.08 hrs, Volume	2,182 cf,	Atten= 0%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume	185 cf	-
Primary	=	0.63 cfs @	12.08 hrs, Volume	1,997 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.13' @ 12.09 hrs Surf.Area= 16 sf Storage= 40 cf Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 20.3 min calculated for 2,182 cf (100% of inflow) Center-of-Mass det. time= 20.3 min (777.3 - 756.9)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.20'	5	1 cf Custon 146 cf C	n Stage Data (P Dverall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
100.2 101.2 102.2 103.2 104.2 105.0	20 20 20 20 20 20 20	72 72 12 12 12 12 8	0 72 42 12 12 8	0 72 114 126 138 146		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	101.53'	12.0" Round L= 90.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge l Invert= 101.53' / rrugated PP, sm	neadwall, Ke= 0.50 101.08' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr E Conductivity	xfiltration over to Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	101.53'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.13' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.62 cfs @ 12.08 hrs HW=102.13' TW=101.91' (Dynamic Tailwater) **1=Culvert** (Passes 0.62 cfs of 0.63 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.62 cfs @ 1.94 fps)

Pond 11P: Tree Box



Summary for Pond 12P: Tree Box

Inflow Area	a =	10,485 sf,	100.00% In	npervious,	Inflow Depth = 2	.89" for 2	-Year event
Inflow	=	0.73 cfs @	12.08 hrs,	Volume=	2,523 cf		
Outflow	=	0.73 cfs @	12.08 hrs,	Volume=	2,523 cf,	Atten= 0%,	Lag= 0.0 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	182 cf		
Primary	=	0.73 cfs @	12.08 hrs,	Volume=	2,341 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.00' @ 12.09 hrs Surf.Area= 12 sf Storage= 40 cf

Plug-Flow detention time= 16.4 min calculated for 2,523 cf (100% of inflow) Center-of-Mass det. time= 16.4 min (773.4 - 756.9)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.00'	5	2 cf Custon 148 cf 0	1 Stage Data (P Dverall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	00	72	0	0		
101.0	00	72	72	72		
102.0	00	12	42	114		
103.0	00	12	12	126		
104.0	00	12	12	138		
105.0	00	8	10	148		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	101.18'	12.0" Round L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge Invert= 101.18' / rrugated PP. sm	headwall, Ke= 0.50 ' 101.13' S= 0.0050 nooth interior, Flow,	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr E	Exfiltration over to Groundwater	• Horizontal area Elevation = 90 00'	Phase-In= 0 01'
#3	Device 1	101.18'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discard		Max=0.00 cf		HW=102 00' (Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.00' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.69 cfs @ 12.08 hrs HW=102.00' TW=101.91' (Dynamic Tailwater) **1=Culvert** (Passes 0.69 cfs of 0.93 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.69 cfs @ 1.40 fps)



Pond 12P: Tree Box

Summary for Pond 13P: Tree Box

Inflow Area	ı =	10,798 sf,	100.00% In	npervious,	Inflow Depth = 2	.89" f	or 2-Y	ear event
Inflow	=	0.75 cfs @	12.08 hrs,	Volume=	2,599 cf			
Outflow	=	0.74 cfs @	12.08 hrs,	Volume=	2,599 cf,	Atten=	1%, L	.ag= 0.1 min
Discarded	=	0.00 cfs @	12.27 hrs,	Volume=	163 cf			-
Primary	=	0.74 cfs @	12.08 hrs,	Volume=	2,435 cf			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.65' @ 12.27 hrs Surf.Area= 33 sf Storage= 37 cf

Plug-Flow detention time= 9.9 min calculated for 2,598 cf (100% of inflow) Center-of-Mass det. time= 9.9 min (766.9 - 756.9)

Volume	Invert	Avail.Stor	rage Storage	e Description		
#1	100.00'	5	52 cf Custon 148 cf (n Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	00	72	0	0		
101.0	00	72	72	72		
102.0	00	12	42	114		
103.0	00	12	12	126		
104.0	00	12	12	138		
105.0	00	8	10	148		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	100.65'	12.0" Roun L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge Invert= 100.65' / prrugated PP, sm	headwall, Ke= 0.50 ' 100.60' S= 0.0050 nooth interior, Flow /	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr E	Exfiltration over	• Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	100.65'	Custom Wei Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discard		Max-0.00 of	- @ 12 27 bre	HW-101 65' (Eree Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.27 hrs HW=101.65' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.75 cfs @ 12.08 hrs HW=101.59' TW=101.52' (Dynamic Tailwater) **1=Culvert** (Passes 0.75 cfs of 0.95 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.75 cfs @ 1.24 fps)





Summary for Pond 22P: Tree Box

Inflow Area	a =	1,945 sf,	100.00% Impervio	us, Inflow Depth =	2.89" for 2-	-Year event
Inflow	=	0.14 cfs @	12.08 hrs, Volum	e= 468 cf	:	
Outflow	=	0.13 cfs @	12.09 hrs, Volum	e= 468 cf	, Atten= 0%,	Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Volum	e= 92 cf	:	
Primary	=	0.13 cfs @	12.09 hrs, Volum	e= 376 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.47' @ 12.09 hrs Surf.Area= 42 sf Storage= 19 cf

Plug-Flow detention time= 40.9 min calculated for 468 cf (100% of inflow) Center-of-Mass det. time= 40.9 min (797.8 - 756.9)

Volume	Invert	Avail.Sto	rage Storag	e Description		
#1	102.00'	6	69 cf Custo 196 cf	m Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	103.25'	12.0" Roun L= 125.0' C Inlet / Outlet n= 0.012 Co	d Culvert CPP, square edge Invert= 103.25' / prrugated PP, sm	headwall, Ke= 0.5 102.63' S= 0.0050 ooth interior, Flow	00) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr	Exfiltration over	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	103.25'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
			10 00 h	1111-400 471 (Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.47' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=103.47' TW=102.59' (Dynamic Tailwater) -**1=Culvert** (Passes 0.13 cfs of 0.16 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.13 cfs @ 1.49 fps)

Hydrograph Inflow
 Outflow 0.14 cfs Inflow Area=1,945 sf Discarded 0.13 cfs Primary 0.15 Peak Elev=103.47' 0.14 0.13 0.13 Storage=19 cf 0.12 0.11 0.1 0.09 (**c**) 0.09 Flow 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0-2 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 4 Ó Time (hours)

Pond 22P: Tree Box

Summary for Pond 23P: Tree Box

Inflow Area	a =	10,400 sf,	100.00% In	npervious,	Inflow Depth = 2	2.89" for 2-	-Year event
Inflow	=	0.72 cfs @	12.08 hrs,	Volume=	2,503 cf		
Outflow	=	0.72 cfs @	12.09 hrs,	Volume=	2,503 cf,	Atten= 0%,	Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	81 cf		
Primary	=	0.72 cfs @	12.09 hrs,	Volume=	2,421 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.24' @ 12.09 hrs Surf.Area= 39 sf Storage= 16 cf

Plug-Flow detention time= 5.0 min calculated for 2,503 cf (100% of inflow) Center-of-Mass det. time= 5.0 min (761.9 - 756.9)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	102.00'	6	9 cf Custom 196 cf O	Stage Data (P verall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Device	s		
#1	Primary	102.65'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	l Culvert P, square edge l nvert= 102.65' / rugated PP, sm	headwall, Ke= 0.50 102.60' S= 0.005(ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr Ex	xfiltration over	Horizontal area Elevation = 90 00'	Phase-In= 0 01'
#3	Device 1	102.65'	Custom Wein Head (feet) 0 Width (feet) (/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
Discard	ed OutFlow	Max=0.00 cfs	s @ 12.09 hrs	HW=103.24' (I	Free Discharge)	

-2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.72 cfs @ 12.09 hrs HW=103.24' TW=102.59' (Dynamic Tailwater) -1=Culvert (Passes 0.72 cfs of 0.89 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.72 cfs @ 2.32 fps)





Summary for Pond 24P: (new Pond)

Inflow Ar Inflow Outflow Discarde Seconda	ea = = = d = ry =	6,920 sf,10 0.48 cfs @ 12 0.05 cfs @ 12 0.05 cfs @ 12 0.00 cfs @ 0	0.00% Impervious, Inflow Depth = 2.89" for 2-Year event .08 hrs, Volume= 1,665 cf .80 hrs, Volume= 1,665 cf, Atten= 90%, Lag= 43.0 min .80 hrs, Volume= 1,665 cf .00 hrs, Volume= 0 cf			
Routing l Peak Ele	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 106.79' @ 12.80 hrs Surf.Area= 2,000 sf Storage= 555 cf					
Plug-Flov Center-o	w detentior f-Mass det	n time= 76.1 mir . time= 76.1 mir	n calculated for 1,665 cf (100% of inflow) n (833.0 - 756.9)			
Volume	Inver	t Avail.Stor	age Storage Description			
#1	106.00	' 1,12	0 cf 40.00'W x 50.00'L x 1.60'H Prismatoid 3,200 cf Overall x 35.0% Voids			
Device	Routing	Invert	Outlet Devices			
#1	Secondary Discarded	y 107.00' 106.00'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'			

Discarded OutFlow Max=0.05 cfs @ 12.80 hrs HW=106.79' (Free Discharge) **2=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=106.00' TW=100.20' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Hydrograph Inflow
 Outflow 0.48 cfs Discarded
 Secondary Inflow Area=6,920 sf Peak Elev=106.79' 0.5 0.45 Storage=555 cf 0.4 0.35 (cfs) 0.3 Flow 0.25 0.2 0.15 0.05 cfs 0.1 0.05 cfs 0.05 0.0 0-Ó 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Pond 24P: (new Pond)
Summary for Pond 26P: Tree Box

Inflow Area	ı =	16,145 sf,	100.00% In	npervious,	Inflow Depth = 2	2.89" for 2	2-Year event
Inflow	=	1.12 cfs @	12.08 hrs,	Volume=	3,885 cf		
Outflow	=	1.12 cfs @	12.09 hrs,	Volume=	3,885 cf,	Atten= 0%	, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.08 hrs,	Volume=	96 cf		
Primary	=	1.12 cfs @	12.09 hrs,	Volume=	3,789 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.33' @ 12.08 hrs Surf.Area= 50 sf Storage= 30 cf

Plug-Flow detention time= 5.7 min calculated for 3,885 cf (100% of inflow) Center-of-Mass det. time= 5.6 min (762.6 - 756.9)

Volume	Invert	: Avail.Stor	age Storage	Description			
#1	100.20	' ç	6 cf Custon 274 cf C	1 Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)	
Elevatio	on S	urf.Area	Inc.Store	Cum.Store			
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)			
100.2	20	36	0	0			
101.2	20	36	36	36			
102.2	20	48	42	78			
103.2	20	60	54	132			
104.2	20	72	66	198			
105.2	20	80	76	274			
Device	Routing	Invert	Outlet Device	es			
#1	Primary	101.30'	12.0" Round L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge Invert= 101.30' / rrugated PP. sm	headwall, Ke= 0.50 101.25' S= 0.0050 ooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf	
#2	Discarded	100.20'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'				
#3	Device 1	101.30'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	. 62 (C= 3.28) 2.50 4.00		
Discard	Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=102.33' (Free Discharge)						

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.12 cfs @ 12.09 hrs HW=102.33' TW=102.23' (Dynamic Tailwater) -**1=Culvert** (Passes 1.12 cfs of 1.23 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 1.12 cfs @ 1.40 fps)

Pond 26P: Tree Box



Summary for Pond 27P: DMH

 Inflow Area =
 21,815 sf,100.00% Impervious, Inflow Depth = 2.71" for 2-Year event

 Inflow =
 1.51 cfs @ 12.09 hrs, Volume=
 4,922 cf

 Outflow =
 1.51 cfs @ 12.09 hrs, Volume=
 4,922 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 1.51 cfs @ 12.09 hrs, Volume=
 4,922 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.48' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.09 hrs HW=102.48' TW=102.03' (Dynamic Tailwater) -1=Culvert (Barrel Controls 1.51 cfs @ 3.17 fps)



Pond 27P: DMH

Summary for Pond 29P: DMH

Inflow Area =19,553 sf,100.00% Impervious, Inflow Depth =2.66"for 2-Year eventInflow =1.35 cfs @12.08 hrs, Volume=4,338 cfOutflow =1.35 cfs @12.08 hrs, Volume=4,338 cf, Atten= 0%, Lag= 0.0 minPrimary =1.35 cfs @12.08 hrs, Volume=4,338 cfPouting by Dyn Stor Ind method. Time Span= 0.00.48 00 hrs. dt= 0.01 hrs. (2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.92' @ 12.10 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.08'	12.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.35 cfs @ 12.08 hrs HW=101.91' TW=101.52' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.35 cfs @ 2.63 fps)



Pond 29P: DMH

Summary for Pond 30P: DMH

Inflow Area =30,351 sf,100.00% Impervious, Inflow Depth =2.68" for 2-Year eventInflow =2.10 cfs @12.08 hrs, Volume=6,774 cfOutflow =2.10 cfs @12.08 hrs, Volume=6,774 cfPrimary =2.10 cfs @12.08 hrs, Volume=6,774 cfRouting by Dyn-Stor-Ind method. Time Span= 0.00-48.00 hrs. dt= 0.01 hrs. (3)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.64' @ 12.28 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.09 cfs @ 12.08 hrs HW=101.52' TW=101.32' (Dynamic Tailwater) -1=Culvert (Outlet Controls 2.09 cfs @ 2.64 fps)



Pond 30P: DMH

Summary for Pond 31P: DMH

Inflow Are	a =	12,345 sf,100.00% Impervious,	Inflow Depth = 2.72" for 2-Year event
Inflow	=	0.86 cfs @ 12.09 hrs, Volume=	2,797 cf
Outflow	=	0.86 cfs @ 12.09 hrs, Volume=	2,797 cf, Atten= 0%, Lag= 0.0 min
Primary	=	0.86 cfs @ 12.09 hrs, Volume=	2,797 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.59' @ 12.09 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= $101.90' / 101.25'$ S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE smooth interior. Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.09 hrs HW=102.59' TW=102.23' (Dynamic Tailwater) -1=Culvert (Outlet Controls 0.85 cfs @ 2.07 fps)





Summary for Pond 32P: DMH

Inflow Area = 28,490 sf,100.00% Impervious, Inflow Depth = 2.77" for 2-Year event Inflow 1.98 cfs @ 12.09 hrs, Volume= 6.586 cf = Outflow 1.98 cfs @ 12.09 hrs, Volume= 6,586 cf, Atten= 0%, Lag= 0.0 min = 6,586 cf Primary = 1.98 cfs @ 12.09 hrs, Volume= Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.23' @ 12.09 hrs Flood Elev= 106.00'

DeviceRoutingInvertOutlet Devices#1Primary101.25'**18.0'' Round Culvert**
L = 50.0' CPP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.97 cfs @ 12.09 hrs HW=102.23' TW=102.03' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.97 cfs @ 2.30 fps)



Pond 32P: DMH

Summary for Pond 33P: DMH

Inflow Area = 50,305 sf,100.00% Impervious, Inflow Depth = 2.75" for 2-Year event Inflow 3.49 cfs @ 12.09 hrs, Volume= 11.508 cf = 3.49 cfs @ 12.09 hrs, Volume= Outflow 11,508 cf, Atten= 0%, Lag= 0.0 min = 3.49 cfs @ 12.09 hrs, Volume= Primary = 11,508 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.03' @ 12.09 hrs

Flood Elev= 102.03 @ 12

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.48 cfs @ 12.09 hrs HW=102.03' TW=100.99' (Dynamic Tailwater) -1=Culvert (Barrel Controls 3.48 cfs @ 3.80 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Area	a =	11,350 sf,	100.00% In	npervious,	Inflow Depth = 2	.89" fo	or 2-Year ever	nt
Inflow	=	0.79 cfs @	12.08 hrs,	Volume=	2,731 cf			
Outflow	=	0.79 cfs @	12.08 hrs,	Volume=	2,731 cf,	Atten=	0%, Lag= 0.1	min
Discarded	=	0.00 cfs @	12.08 hrs,	Volume=	172 cf			
Primary	=	0.79 cfs @	12.08 hrs,	Volume=	2,559 cf			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.17' @ 12.08 hrs Surf.Area= 38 sf Storage= 36 cf Flood Elev= 107.00' Surf.Area= 8 sf Storage= 52 cf

Plug-Flow detention time= 12.6 min calculated for 2,731 cf (100% of inflow) Center-of-Mass det. time= 12.6 min (769.6 - 756.9)

Volume	Invert	Avail.Stor	age Storage	Description			
#1	101.60'	5	2 cf Custom 148 cf C	Stage Data (P Overall x 35.0%	rismatic) Listed below (Recalc) Voids		
Elevatic (fee	n Su t)	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
101.6	0	72	0	0			
102.6	60	72	72	72			
103.6	0	12	42	114			
104.6	0	12	12	126			
105.6	60	12	12	138			
106.6	60	8	10	148			
Device	Routing	Invert	Outlet Device	S			
#1	Primary	102.55'	12.0" Round L= 100.0' CF Inlet / Outlet I n= 0.012 Cor	l Culvert PP, square edge nvert= 102.55' / rugated PP, sm	e headwall, Ke= 0.500 102.05' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf		
#2	Discarded	101.60'	1.020 in/hr Exfiltration over Horizontal area above 101.55' Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01'				
#3	Device 1	102.55'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 2.50 Width (feet) 0.33 1.00 4.00 4.00				

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.17' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.79 cfs @ 12.08 hrs HW=103.17' TW=102.48' (Dynamic Tailwater) 1=Culvert (Passes 0.79 cfs of 1.10 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 0.79 cfs @ 2.37 fps)

Pond 34P: Tree Box



Summary for Pond 36P: Tree Box

Inflow Area	ı =	10,465 sf,	100.00% In	npervious,	Inflow Depth = 2	2.89" for 2	2-Year event
Inflow	=	0.73 cfs @	12.08 hrs,	Volume=	2,518 cf		
Outflow	=	0.73 cfs @	12.09 hrs,	Volume=	2,518 cf,	Atten= 0%	, Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	156 cf		
Primary	=	0.72 cfs @	12.09 hrs,	Volume=	2,363 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.74' @ 12.09 hrs Surf.Area= 63 sf Storage= 29 cf Flood Elev= 106.00' Surf.Area= 10 sf Storage= 50 cf

Plug-Flow detention time= 7.4 min calculated for 2,518 cf (100% of inflow) Center-of-Mass det. time= 7.4 min (764.4 - 756.9)

Volume	Invert	Avail.Stor	age Storage	Description			
#1	101.60'	5	2 cf Custom 148 cf C	Stage Data (P overall x 35.0%	rismatic) Listed below (Recalc) Voids		
Elevatio (fee	n Su t)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
101.6	60	72	0	0			
102.6	60	72	72	72			
103.6	60	12	42	114			
104.6	60	12	12	126			
105.6	60	12	12	138			
106.6	60	8	10	148			
Device	Routing	Invert	Outlet Device	s			
#1	Primary	102.10'	12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.10' / 101.60' S= 0.0500 '/' Cc= 0.900 n= 0.012 Corrugated PP smooth interior. Flow Area= 0.79 sf				
#2	Discarded	101.60'	1.020 in/hr Exfiltration over Horizontal area above 101.10' Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01'				
#3	Device 1	102.10'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 2.50 Width (feet) 0.33 1.00 4.00 4.00				

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.74' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.72 cfs @ 12.09 hrs HW=102.74' TW=102.48' (Dynamic Tailwater) 1=Culvert (Passes 0.72 cfs of 1.15 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 0.72 cfs @ 2.07 fps)





Summary for Link 1L: (new Link)

Inflow A	Area	=		217,891 sf	,82.73% Ir	npervious,	Inflow Depth =	1.85"	for 2-	Year event
Inflow		=	5	.30 cfs @	12.23 hrs,	Volume=	33,532 c	f		
Primar	у	=	5	.30 cfs @	12.23 hrs,	Volume=	33,532 c	f, Atter	า= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	0-1.2"	Type III 24-hr		Default	24.00	1	1.20	2
2	1-Year	Type III 24-hr		Default	24.00	1	2.48	2
3	10-Year	Type III 24-hr		Default	24.00	1	5.04	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.23	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.07	2

Rainfall Events Listing (selected events)

Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
37,635	74	>75% Grass cover, Good, HSG C (2S)
107,821	98	Paved parking, HSG C (11S, 12S, 13S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22, 23S)
79,355	98	Roofs, HSG D (3S, 5Sa, 5Sb, 6S, 37S)
224,811	94	TOTAL AREA

Summary for Subcatchment 2S: Open Space

Runoff = 0.01 cfs @ 12.47 hrs, Volume= 193 cf, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	vrea (sf)	CN I	Description		
	37,635	74 >	>75% Gras	s cover, Go	ood, HSG C
	37,635	74 ⁻	100.00% P	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0200	0.10		Sheet Flow, Open Space
0.4	50	0.0200	2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space
0.6	50	0.0400	1.40		Grassed Waterway Kv= 15.0 fps Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps
9.1	150	Total			· · ·

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 489 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 2,281 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 2,281 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

Ai	rea	(sf)	C	N	De	escri	iptic	n																	
	27,	766		98	Ro	oofs,	, HS	SG	D																
	27,	766	9	98	10	0.00)%	Imp	berv	ious	s Ar	ea													
Tc (min)	Le (ngti feet	ר)	Slop (ft/f	e t)	Velo (ft/	ocit sec	y :)	Cap	oaci (cf:	ty s)	De	scri	ptic	n										
6.0												Diı	rect	En	try	, Ro	oof	Ru	nof	f					
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Time (hours)

Summary for Subcatchment 6S: Residential Roof

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,158 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

Area (sf)	CN Description	
14,100	98 Roofs, HSG D	
14,100	98 100.00% Impervious Area	
Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)	
6.0	Direct Entry, Roof Runoff	
	Subcatchment 6S: Residential Roof	
	Hydrograph	
0.38		noff
0.3		



Summary for Subcatchment 11S: Parking/Pavement

0.23 cfs @ 12.08 hrs, Volume= 745 cf, Depth= 0.99" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

	Ar	rea (sf)	CN	Description		
		9,068	98	Paved park	ing, HSG C	
		9,068	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
_	0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min



Subcatchment 11S: Parking/Pavement



Summary for Subcatchment 12S: Parking/Pavement

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 861 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

	Ar	ea (sf)	CN	Description		
		10,485	98	Paved park	ing, HSG C	
		10,485	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
_	0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 12S: Parking/Pavement



Summary for Subcatchment 13S: Parking/Pavement

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 887 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	rea (sf)	CN [Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	00.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total.	ncreased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 817 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	rea (sf)	CN	Description		
	9,945	98	Paved park	ing, HSG C	
	9,945	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
0.7	50	0.020	0 1.22	· · ·	Sheet Flow, pavement/parking
					Smooth surfaces $n = 0.011 P2 = 3.30$ "
0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 15S: Parking/Pavement



Summary for Subcatchment 16S: Parking/Pavement

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 932 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	rea (sf)	CN	Description		
	11,350	98	Paved park	ing, HSG C	
	11,350	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, Pavement/Parking
					Smooth surfaces n= 0.011 P2= 3.30"
10	400	Tatal			$T_{0} = C_{0} $ min

1.2 100 Total, Increased to minimum Tc = 6.0 min

Subcatchment 16S: Parking/Pavement



Summary for Subcatchment 17S: Parking/Pavement

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 860 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

_	Ar	ea (sf)	CN	Description		
		10,465	98	Paved park	ing, HSG C	
		10,465	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
	0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 17S: Parking/Pavement



Summary for Subcatchment 18S: Parking/Pavement

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 883 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

 Ar	ea (sf)	CN	Description		
	10,745	98	Paved park	ing, HSG C	
	10,745	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 18S: Parking/Pavement



Summary for Subcatchment 19S: Parking/Pavement

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 854 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	rea (sf)	CN	Description			
10,400 98 Paved parking, HSG C						
	10,400	98	100.00% In	npervious A	rea	
Tc (min)	Length (feet)	Slope (ft/ft)	e Velocity) (ft/sec)	Capacity (cfs)	Description	
1.2	100	0.0200) 1.40		Sheet Flow, Pavement/Parking	
					Smooth surfaces n= 0.011 P2= 3.30"	
10	400	T	1			

1.2 100 Total, Increased to minimum Tc = 6.0 min

Subcatchment 19S: Parking/Pavement



Summary for Subcatchment 20S: Parking/Pavement

Runoff 0.05 cfs @ 12.08 hrs, Volume= 160 cf, Depth= 0.99" =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	rea (sf)	CN	Description		
	1,945	98	Paved park	ing, HSG C	
	1,945	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking
0.5	30	Total	Increased t	o minimum	$T_c = 6.0 \text{ min}$
0.0	00	rotal,	morodood		

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 444 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

A	Area (sf)	CN	Description		
	5,400	98	Paved park	ing, HSG C	
	5,400	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking
					Smooth surfaces n= 0.011 P2= 3.30"
0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 21S: Parking/Pavement



Summary for Subcatchment 22: Parking/Pavement

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 568 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

	Ar	rea (sf)	CN	Description		
		6,920	98	Paved park	ing, HSG C	
		6,920	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
	0.5	35	0.020	0 1.13		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"
_	0.5	35	Total,	Increased t	to minimum	Tc = 6.0 min

Subcatchment 22: Parking/Pavement



Summary for Subcatchment 23S: Parking/Pavement

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 846 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"

Ar	rea (sf)	CN	Description			
	10,300 98 Paved parking, HSG C					
	10,300	98	100.00% In	npervious A	rea	
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description	
1.2	100	0.0200	0 1.40		Sheet Flow, pavement/parking	
					Smooth surfaces n= 0.011 P2= 3.30"	
10	400	Tatal			$T_{a} = C O min$	

1.2 100 Total, Increased to minimum Tc = 6.0 min

Subcatchment 23S: Parking/Pavement



Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 310 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 0-1.2" Rainfall=1.20"



Summary for Pond 1P: Area behind levee - Facemate

Inflow Are Inflow Outflow Primary	ea = = = =	217,891 sf, 8 2.00 cfs @ 12 1.88 cfs @ 12 1.88 cfs @ 12	2.73% Impervious 2.09 hrs, Volume= 2.12 hrs, Volume= 2.12 hrs, Volume=	, Inflow Depth = 7,662 c 7,662 c 7,662 c	0.42" for 0-1.2" event f f, Atten= 6%, Lag= 1.9 min f
Routing b Peak Elev	y Dyn-Sto /= 90.05'	or-Ind method, ⁻ @ 12.12 hrs S	Time Span= 0.00-4 surf.Area= 6,474 sf	8.00 hrs, dt= 0.0 Storage= 330 c	1 hrs / 3 f
Plug-Flow Center-of- Volume	/ detentio -Mass de Inve	n time= 6.1 min t. time= 6.1 min rt Avail.Stor	calculated for 7,66 (794.2 - 788.0)	60 cf (100% of infl scription	ow)
#1	90.0	0' 25.05	0 cf Custom Sta	age Data (Prisma	tic)Listed below (Recalc)
				.go (
Elevation	n (Surf.Area	Inc.Store	Cum.Store	
(feet)		(sq-ft)	(cubic-feet)	(cubic-feet)	
90.00)	6,140	0	0	
92.00)	18,910	25,050	25,050	
Device I	Routing	Invert	Outlet Devices		
#1 I	Primary	90.00'	2.0" x 2.0" Horiz	. Orifice/Grate X	6.00 columns X 6 rows C= 0.600
			Limited to weir flo	w at low heads	
#2 I	Primary	90.00'	2.0" x 2.0" Horiz	. Orifice/Grate X	6.00 columns X 6 rows C= 0.600
			Limited to weir flo	w at low heads	
Primary (OutFlow	Max=1.87 cfs @	0 12.12 hrs HW=9	0.05' TW=0.00'	(Dynamic Tailwater)

1=Orifice/Grate (Weir Controls 0.94 cfs @ 0.75 fps) **2=Orifice/Grate** (Weir Controls 0.94 cfs @ 0.75 fps)



Pond 1P: Area behind levee - Facemate

Summary for Pond 3P: (new Pond)

Inflow Area = 50,596 sf,100.00% Impervious, Inflow Depth = 0.18" for 0-1.2" event Inflow 0.15 cfs @ 12.53 hrs, Volume= 767 cf = 0.15 cfs @ 12.53 hrs, Volume= Outflow 767 cf, Atten= 0%, Lag= 0.0 min = Primary = 0.15 cfs @ 12.53 hrs, Volume= 767 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 98.17' @ 12.53 hrs Flood Elev= 105.00' ...

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.00' / 91.00' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.15 cfs @ 12.53 hrs HW=98.17' TW=90.03' (Dynamic Tailwater) ☐ 1=Culvert (Inlet Controls 0.15 cfs @ 1.39 fps)



Pond 3P: (new Pond)
Summary for Pond 5P: Tree Box

Inflow Area	a =	9,945 sf,	100.00% Impe	ervious,	Inflow Depth = 0	.99" for	0-1.2" event
Inflow	=	0.25 cfs @	12.08 hrs, Vo	olume=	817 cf		
Outflow	=	0.25 cfs @	12.09 hrs, Vo	olume=	817 cf,	Atten= 0%	6, Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Vo	olume=	71 cf		
Primary	=	0.25 cfs @	12.09 hrs, Vo	olume=	746 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.13' @ 12.09 hrs Surf.Area= 36 sf Storage= 12 cf

Plug-Flow detention time= 10.4 min calculated for 817 cf (100% of inflow) Center-of-Mass det. time= 10.4 min (792.4 - 782.0)

Volume	Invert	Avail.Stor	age Storage	e Description				
#1	100.20'	g	1 cf Custor 259 cf	n Stage Data (P Overall x 35.0%	r ismatic) Listed belo Voids	ow (Recalc)		
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store				
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
100.2	20	36	0	0				
101.2	20	36	36	36				
102.2	20	48	42	78				
103.2	20	60	54	132				
104.2	20	72	66	198				
105.0	00	80	61	259				
Device	Routing	Invert	Outlet Devic	es				
#1	Primary	100.75'	12.0" Roun	d Culvert				
			L= 20.0' CF	PP, square edge	headwall, Ke= 0.50	0		
			Inlet / Outlet	Invert= 100.75' /	100.65' S= 0.0050) '/' Cc= 0.900		
			n= 0.012 Co	prrugated PP, sm	ooth interior, Flow	Area= 0.79 sf		
#2	Discarded	100.20'	1.020 in/hr I	Exfiltration over	[•] Horizontal area			
			Conductivity	to Groundwater	Elevation = 90.00'	Phase-In= 0.01'		
#3	Device 1	100.75'	Custom We	ir/Orifice, Cv= 2	62 (C= 3.28)			
			Head (feet)	0.00 1.00 1.00	2.50			
			Width (feet)	0.33 1.00 4.00	4.00			
Discord	Discourded OutElow Max-0.00 ate @ 12.00 bre HW-101.12! (Erec Discharge)							

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=101.13' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.25 cfs @ 12.09 hrs HW=101.13' TW=101.02' (Dynamic Tailwater) **1=Culvert** (Passes 0.25 cfs of 0.31 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.25 cfs @ 1.43 fps)

0.28

0.26

0.24

0.22 0.2 0.18

0.1-0.08-0.06-0.04-0.02-0-

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(cts) 0.16 0.14 0.12



8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Pond 6P: DMH

Inflow Area = 20,245 sf,100.00% Impervious, Inflow Depth = 0.94" for 0-1.2" event Inflow 0.51 cfs @ 12.09 hrs, Volume= 1.592 cf = 0.51 cfs @ 12.09 hrs, Volume= Outflow 1,592 cf, Atten= 0%, Lag= 0.0 min = 0.51 cfs @ 12.09 hrs, Volume= Primary = 1,592 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.02' @ 12.09 hrs Flood Elev= 105.00' Device Routing Invert Outlet Devices

			• 44.01 2 0 11000
#1	Primary	100.60'	12.0" Round Culvert
			L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=101.02' TW=100.54' (Dynamic Tailwater) ☐ 1=Culvert (Barrel Controls 0.51 cfs @ 2.38 fps)





Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf,	100.00% In	npervious,	Inflow Depth = 0.8	86" for	0-1.2" event
Inflow	=	1.26 cfs @	12.09 hrs,	Volume=	3,624 cf		
Outflow	=	0.23 cfs @	12.53 hrs,	Volume=	3,624 cf, 7	Atten= 81	%, Lag= 26.6 min
Discarded	=	0.09 cfs @	12.53 hrs,	Volume=	2,857 cf		•
Primary	=	0.15 cfs @	12.53 hrs,	Volume=	767 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 100.77' @ 12.53 hrs Surf.Area= 3,348 sf Storage= 1,419 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 84.2 min calculated for 3,623 cf (100% of inflow) Center-of-Mass det. time= 84.2 min (862.0 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8,592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.09 cfs @ 12.53 hrs HW=100.77' (Free Discharge) **2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.15 cfs @ 12.53 hrs HW=100.77' TW=98.17' (Dynamic Tailwater) 1=Culvert (Passes 0.15 cfs of 8.58 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 0.15 cfs @ 1.69 fps) 0.15 cfs cfs

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4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Time (hours)

Pond 7P: Storage Chambers South

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Summary for Pond 8P: Storage Chambers North

Inflow Area	a =	50,305 sf,	100.00% In	npervious,	Inflow Depth = 0.8	36" for 0-1	.2" event
Inflow	=	1.26 cfs @	12.09 hrs,	Volume=	3,620 cf		
Outflow	=	0.16 cfs @	12.62 hrs,	Volume=	3,620 cf, A	Atten= 87%,	Lag= 32.1 min
Discarded	=	0.12 cfs @	12.62 hrs,	Volume=	3,436 cf		-
Primary	=	0.04 cfs @	12.62 hrs,	Volume=	184 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 100.61' @ 12.62 hrs Surf.Area= 4,786 sf Storage= 1,406 cf

Plug-Flow detention time= 81.8 min calculated for 3,619 cf (100% of inflow) Center-of-Mass det. time= 81.7 min (860.5 - 778.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12,209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices					
#1	Primary	100.50'	18.0" Round Culvert					
			L= 50.0' CPP, square edge headwall, Ke= 0.500					
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900					
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf					
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area					
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'					
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)					
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00					
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00					

Discarded OutFlow Max=0.12 cfs @ 12.62 hrs HW=100.61' (Free Discharge) **2=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=0.04 cfs @ 12.62 hrs HW=100.61' TW=90.02' (Dynamic Tailwater) -1=Culvert (Passes 0.04 cfs of 0.06 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.04 cfs @ 1.10 fps)



Pond 8P: Storage Chambers North

Summary for Pond 11P: Tree Box

Inflow Area	a =	9,068 sf,	100.00% Impe	ervious, I	nflow Depth =	0.99"	for 0-1.2" event		
Inflow	=	0.23 cfs @	12.08 hrs, Vo	olume=	745 cf				
Outflow	=	0.23 cfs @	12.09 hrs, Vo	olume=	745 cf	, Atten	= 0%, Lag= 0.2 m	າin	
Discarded	=	0.00 cfs @	12.09 hrs, Vo	olume=	161 cf		-		
Primary	=	0.23 cfs @	12.09 hrs, Vo	olume=	584 cf				
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3									

Peak Elev= 101.83' @ 12.09 hrs Surf.Area= 34 sf Storage= 37 cf

Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 46.9 min calculated for 745 cf (100% of inflow) Center-of-Mass det. time= 46.9 min (829.0 - 782.0)

Volume	Invert	Avail.Stor	rage Storag	ge Description		
#1	100.20'	5	51 cf Custo 146 cf	om Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.2	20	72	0	0		
101.2	20	72	72	72		
102.2	20	12	42	114		
103.2	20	12	12	126		
104.2	20	12	12	138		
105.0	00	8	8	146		
Device	Routing	Invert	Outlet Devi	ces		
#1	Primary	101.53'	12.0" Rou	nd Culvert		
			L= 90.0' C Inlet / Outle n= 0.012 C	PP, square edge t Invert= 101.53' / corrugated PP, sm	headwall, Ke= 0.50 101.08' S= 0.0050 booth interior, Flow /	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr	Exfiltration over	Horizontal area	
			Conductivit	y to Groundwater	Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	101.53'	Custom W	eir/Orifice, Cv= 2	62 (C= 3.28)	
			Head (feet)	0.00 1.00 1.00	2.50	
			Width (feet)	0.33 1.00 4.00	4.00	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=101.83' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.23 cfs @ 12.09 hrs HW=101.83' TW=101.50' (Dynamic Tailwater) **1=Culvert** (Passes 0.23 cfs of 0.24 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.23 cfs @ 1.72 fps)



Pond 11P: Tree Box

Summary for Pond 12P: Tree Box

Inflow Area	a =	10,485 sf,	100.00% Impervious,	Inflow Depth = 0.99	for 0-1.2" event
Inflow	=	0.26 cfs @	12.08 hrs, Volume=	861 cf	
Outflow	=	0.26 cfs @	12.09 hrs, Volume=	861 cf, Att	ten= 0%, Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	159 cf	
Primary	=	0.26 cfs @	12.09 hrs, Volume=	703 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.59' @ 12.09 hrs Surf.Area= 36 sf Storage= 36 cf

Plug-Flow detention time= 37.6 min calculated for 861 cf (100% of inflow) Center-of-Mass det. time= 37.7 min (819.7 - 782.0)

Volume	Invert	Avail.Stor	rage Storage	Description		
#1	100.00'	5	52 cf Custom 148 cf O	Stage Data (P verall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
100.0	00	72	0	0		
101.0	00	72	72	72		
102.0	00	12	42	114		
103.0	00	12	12	126		
104.0	00	12	12	138		
105.0	00	8	10	148		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	101.18'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	Culvert P, square edge nvert= 101.18' / rugated PP. sm	headwall, Ke= 0.50 101.13' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr Ex Conductivity to	xfiltration over o Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	101.18'	Custom Weir Head (feet) 0 Width (feet) (/Orifice, Cv= 2 .00 1.00 1.00).33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
Discard	ed OutFlow	Max=0.00 cfs	s @ 12.09 hrs	HW=101.59' (Free Discharge)	

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.26 cfs @ 12.09 hrs HW=101.59' TW=101.50' (Dynamic Tailwater) **1=Culvert** (Passes 0.26 cfs of 0.36 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.26 cfs @ 1.35 fps)



Pond 12P: Tree Box

Summary for Pond 13P: Tree Box

Inflow Area	ı =	10,798 sf,	100.00% Im	npervious,	Inflow Depth = 0.	.99" for 0-	1.2" event
Inflow	=	0.27 cfs @	12.08 hrs,	Volume=	887 cf		
Outflow	=	0.27 cfs @	12.09 hrs,	Volume=	887 cf,	Atten= 0%,	Lag= 0.4 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	141 cf		
Primary	=	0.27 cfs @	12.09 hrs,	Volume=	746 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.12' @ 12.09 hrs Surf.Area= 65 sf Storage= 28 cf

Plug-Flow detention time= 21.1 min calculated for 887 cf (100% of inflow) Center-of-Mass det. time= 21.1 min (803.2 - 782.0)

Volume	Invert	Avail.Stor	age Storage	e Description		
#1	100.00'	5	2 cf Custor 148 cf (n Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	n S	urf.Area	Inc.Store	Cum.Store		
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	0	72	0	0		
101.0	0	72	72	72		
102.0	0	12	42	114		
103.0	0	12	12	126		
104.0	0	12	12	138		
105.0	0	8	10	148		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	100.65'	12.0" Roun L= 10.0' CP Inlet / Outlet n= 0.012 Cc	d Culvert 'P, square edge Invert= 100.65' / rrugated PP. sm	headwall, Ke= 0.50 100.60' S= 0.0050 ooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr E Conductivity	Exfiltration over to Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	100.65'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
Discard	ed OutFlow	/ Max=0.00 cfs	s @ 12.09 hrs	HW=101.12' (Free Discharge)	

1-2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.27 cfs @ 12.09 hrs HW=101.12' TW=101.06' (Dynamic Tailwater) **1=Culvert** (Passes 0.27 cfs of 0.37 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.27 cfs @ 1.17 fps)



Pond 13P: Tree Box

Summary for Pond 22P: Tree Box

Inflow Area	=	1,945 sf,	100.00% Impervious,	Inflow Depth = 0.99	for 0-1.2" event
Inflow	=	0.05 cfs @	12.08 hrs, Volume=	160 cf	
Outflow	=	0.05 cfs @	12.09 hrs, Volume=	160 cf, Atte	en= 0%, Lag= 0.3 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	69 cf	
Primary	=	0.05 cfs @	12.09 hrs, Volume=	91 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.37' @ 12.09 hrs Surf.Area= 40 sf Storage= 18 cf

Plug-Flow detention time= 78.8 min calculated for 160 cf (100% of inflow) Center-of-Mass det. time= 78.9 min (860.9 - 782.0)

Volume	Invert	Avail.Stor	age Storage	e Description		
#1	102.00'	6	9 cf Custon 196 cf (n Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	103.25'	12.0" Roun L= 125.0' C Inlet / Outlet n= 0.012 Co	d Culvert PP, square edge Invert= 103.25' / rrugated PP, sm	headwall, Ke= 0.5 102.63' S= 0.0050 ooth interior, Flow	00) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr E Conductivity	Exfiltration over	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	103.25'	Custom Wei Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
			<u> </u>			

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.37' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.05 cfs @ 12.09 hrs HW=103.37' TW=102.26' (Dynamic Tailwater) **1=Culvert** (Barrel Controls 0.05 cfs @ 1.31 fps)

1-3=Custom Weir/Orifice (Passes 0.05 cfs of 0.05 cfs potential flow)

Pond 22P: Tree Box



Summary for Pond 23P: Tree Box

Inflow Area	a =	10,400 sf,	100.00% Impervious	Inflow Depth = 0.99	for 0-1.2" event
Inflow	=	0.26 cfs @	12.08 hrs, Volume=	854 cf	
Outflow	=	0.26 cfs @	12.09 hrs, Volume=	854 cf, Att	en= 0%, Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	72 cf	
Primary	=	0.26 cfs @	12.09 hrs, Volume=	782 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.98' @ 12.09 hrs Surf.Area= 36 sf Storage= 12 cf

Plug-Flow detention time= 11.6 min calculated for 854 cf (100% of inflow) Center-of-Mass det. time= 11.6 min (793.7 - 782.0)

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	102.00'	6	69 cf Custon 196 cf C	Stage Data (Pr Overall x 35.0% V	ismatic) Listed belo √oids	ow (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
102.0 103.0 104.0 105.0 106.0)0 00 00 00 00 00	36 36 48 60 68	0 36 42 54 64	0 36 78 132 196		
Device #1	Routing Primary	Invert 102.65'	Outlet Device 12.0" Round L= 10.0' CP Inlet / Outlet I n= 0.012 Con	es J Culvert P, square edge h nvert= 102.65' /	leadwall, Ke= 0.50 102.60' S= 0.0050	0) '/' Cc= 0.900
#2 #3	Discarded Device 1	102.00' 102.65'	1.020 in/hr E Conductivity f Custom Wei Head (feet) (Width (feet)	xfiltration over to Groundwater E r/Orifice, Cv= 2. 0.00 1.00 1.00 2 0.33 1.00 4.00	Horizontal area Elevation = 90.00' 62 (C= 3.28) 2.50 4.00	Phase-In= 0.01'
Discard	ed OutFlow	Max=0.00 cf	s @ 12.09 hrs	HW=102.98' (F	⁻ ree Discharge)	

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.26 cfs @ 12.09 hrs HW=102.98' TW=102.25' (Dynamic Tailwater) -**1=Culvert** (Passes 0.26 cfs of 0.31 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.26 cfs @ 1.79 fps)



Pond 23P: Tree Box

Summary for Pond 24P: (new Pond)

Inflow Ar Inflow Outflow Discarde Seconda	ea = = = d = ry =	6,920 sf,10 0.17 cfs @ 12 0.05 cfs @ 12 0.05 cfs @ 12 0.00 cfs @ 0	00.00% Impervious, Inflow Depth = 0.99" for 0-1.2" event 2.08 hrs, Volume= 568 cf 2.43 hrs, Volume= 568 cf, Atten= 73%, Lag= 20.9 min 2.43 hrs, Volume= 568 cf 0.00 hrs, Volume= 0 cf			
Routing I Peak Ele	oy Dyn-Sto v= 106.16'	r-Ind method, @ 12.43 hrs	Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Surf.Area= 2,000 sf Storage= 109 cf			
Plug-Flov Center-o	w detentior f-Mass det	time= 12.1 mi . time= 12.1 mi	n calculated for 568 cf (100% of inflow) n(794.1 - 782.0)			
	100.00					
#1	106.00	1,12	$3,200 \text{ cf } 0.00^{\circ}\text{W x } 50.00^{\circ}\text{L x } 1.60^{\circ}\text{H } \text{Prismatold}$			
Device	Routing	Invert	Outlet Devices			
#1	Secondary	y 107.00'	30.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64			
#2	Discarded	106.00'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'			
Discarde	Discarded OutFlow Max=0.05 cfs @ 12.43 hrs HW=106.16' (Free Discharge)					

2=Exfiltration (Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=106.00' TW=100.20' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 24P: (new Pond)



Summary for Pond 26P: Tree Box

Inflow Area	ı =	16,145 sf,	100.00% Imp	ervious,	Inflow Depth = 0	.99" for 0-	-1.2" event
Inflow	=	0.41 cfs @	12.08 hrs, V	'olume=	1,326 cf		
Outflow	=	0.41 cfs @	12.09 hrs, V	'olume=	1,326 cf,	Atten= 0%,	Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, V	'olume=	85 cf		-
Primary	=	0.40 cfs @	12.09 hrs, V	'olume=	1,241 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.86' @ 12.09 hrs Surf.Area= 44 sf Storage= 22 cf

Plug-Flow detention time= 13.4 min calculated for 1,326 cf (100% of inflow) Center-of-Mass det. time= 13.4 min (795.4 - 782.0)

Volume	Invert	Avail.Stor	age Storag	e Description		
#1	100.20'	ĉ	6 cf Custo 274 cf	m Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.2	20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.2	20	80	76	274		
Device	Routing	Invert	Outlet Devic	ces		
#1	Primary	101.30'	12.0" Rou	nd Culvert	beadwall Ke= 0.50	0
			Inlet / Outle	t Invert= 101 30' /	101.25' S= 0.005(0'' Cc= 0.900
			n = 0.012 C	orrugated PP_sm	noth interior Flow	Area= 0 79 sf
#2	Discarded	100 20'	1.020 in/hr	Exfiltration over	[•] Horizontal area	
	Biedardeu	100.20	Conductivity	/ to Groundwater	Elevation = $90.00'$	Phase-In= 0.01'
#3	Device 1	101.30'	Custom We	eir/Orifice. Cv= 2		
			Head (feet)	0.00 1.00 1.00	2.50	
			Width (feet)	0.33 1.00 4.00	4.00	
			× /			
Discord	ad OutElaw	$M_{OV} = 0.00 \text{ of}$	a 12 00 hr		Eroo Dischargo)	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=101.86' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=101.86' TW=101.77' (Dynamic Tailwater) **1=Culvert** (Passes 0.40 cfs of 0.57 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.40 cfs @ 1.38 fps)

Pond 26P: Tree Box



Summary for Pond 27P: DMH

Inflow Area =21,815 sf,100.00% Impervious, Inflow Depth =0.83" for 0-1.2" eventInflow =0.54 cfs @12.09 hrs, Volume=1,507 cfOutflow =0.54 cfs @12.09 hrs, Volume=1,507 cf, Atten= 0%, Lag= 0.0 minPrimary =0.54 cfs @12.09 hrs, Volume=1,507 cfPouting by Dyn Stor Ind method. Time Span= 0.00.48.00 hrs. dt= 0.01 hrs. / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.13' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=102.13' TW=101.58' (Dynamic Tailwater) -1=Culvert (Barrel Controls 0.54 cfs @ 2.47 fps)



Pond 27P: DMH

Summary for Pond 29P: DMH

Inflow Area = 19,553 sf,100.00% Impervious, Inflow Depth = 0.79" for 0-1.2" event Inflow 0.49 cfs @ 12.09 hrs, Volume= 1.286 cf = 0.49 cfs @ 12.09 hrs, Volume= Outflow 1,286 cf, Atten= 0%, Lag= 0.0 min = 0.49 cfs @ 12.09 hrs, Volume= Primary = 1,286 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.50' @ 12.09 hrs Flood Elev= 105.00' Device Routing Invert Outlet Devices

#1 Primary	101.08'	12.0" Round Culvert
		L= 95.0' CPP, square edge headwall, Ke= 0.500
		Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.49 cfs @ 12.09 hrs HW=101.50' TW=101.06' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 0.49 cfs @ 2.29 fps)



Pond 29P: DMH

Summary for Pond 30P: DMH

 Inflow Area =
 30,351 sf,100.00% Impervious, Inflow Depth =
 0.80" for 0-1.2" event

 Inflow =
 0.76 cfs @
 12.09 hrs, Volume=
 2,032 cf

 Outflow =
 0.76 cfs @
 12.09 hrs, Volume=
 2,032 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 0.76 cfs @
 12.09 hrs, Volume=
 2,032 cf

 Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.06' @ 12.09 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.76 cfs @ 12.09 hrs HW=101.06' TW=100.54' (Dynamic Tailwater) ☐ 1=Culvert (Barrel Controls 0.76 cfs @ 2.50 fps)



Pond 30P: DMH

Summary for Pond 31P: DMH

Inflow Area = Inflow = Outflow = Primary =	12,345 sf,10 0.31 cfs @ 1 0.31 cfs @ 1 0.31 cfs @ 1	00.00% Impervious, 2.09 hrs, Volume= 2.09 hrs, Volume= 2.09 hrs, Volume=	Inflow Depth = 0.85" 873 cf 873 cf, Atter 873 cf	for 0-1.2" event = 0%, Lag= 0.0 min		
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.26' @ 12.09 hrs Flood Elev= 105.00'						

Device	Rouling	Inven	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert
			L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= $101.90' / 101.25'$ S= $0.0050' / Cc= 0.900$ n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=102.25' TW=101.77' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 0.31 cfs @ 1.84 fps)





Summary for Pond 32P: DMH

Inflow Are	a =	28,490 sf	,100.00% Impervious,	Inflow Depth = 0.89	9" for 0-1.2" event	
Inflow	=	0.71 cfs @	12.09 hrs, Volume=	2,113 cf		
Outflow	=	0.71 cfs @	12.09 hrs, Volume=	2,113 cf, At	ten= 0%, Lag= 0.0 min	
Primary	=	0.71 cfs @	12.09 hrs, Volume=	2,113 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.77' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	18.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.71 cfs @ 12.09 hrs HW=101.77' TW=101.58' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 0.71 cfs @ 1.94 fps)



Pond 32P: DMH

Summary for Pond 33P: DMH

Inflow Area = 50,305 sf,100.00% Impervious, Inflow Depth = 0.86" for 0-1.2" event Inflow 1.26 cfs @ 12.09 hrs, Volume= 3.620 cf = 1.26 cfs @ 12.09 hrs, Volume= Outflow 3,620 cf, Atten= 0%, Lag= 0.0 min = Primary = 1.26 cfs @ 12.09 hrs, Volume= 3,620 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.58' @ 12.09 hrs

Flood Elev= 101.56 @ 12

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.26 cfs @ 12.09 hrs HW=101.58' TW=100.36' (Dynamic Tailwater) -1=Culvert (Barrel Controls 1.26 cfs @ 2.95 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Area	a =	11,350 sf,	100.00% Impervious	, Inflow Depth = 0.99"	for 0-1.2" event		
Inflow	=	0.29 cfs @	12.08 hrs, Volume=	932 cf			
Outflow	=	0.29 cfs @	12.09 hrs, Volume=	932 cf, Atte	en= 0%, Lag= 0.2 min		
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	151 cf			
Primary	=	0.28 cfs @	12.09 hrs, Volume=	782 cf			
Routing by Dyn-Stor-Ind method, Time Span- 0.00-18.00 hrs, dt- 0.01 hrs / 3							

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.90' @ 12.09 hrs Surf.Area= 54 sf Storage= 32 cf Flood Elev= 107.00' Surf.Area= 8 sf Storage= 52 cf

Plug-Flow detention time= 28.8 min calculated for 932 cf (100% of inflow) Center-of-Mass det. time= 28.8 min (810.8 - 782.0)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	101.60'	5	2 cf Custom 148 cf O	Stage Data (P verall x 35.0%	rismatic) Listed below (Recalc) Voids
Elevatio	n Su	Irf.Area	Inc.Store	Cum.Store	
(lee	()	(sq-it)	(cubic-leet)	(Jeel-Sidus)	
101.6	0	72	0	0	
102.6	0	72	72	72	
103.6	0	12	42	114	
104.6	0	12	12	126	
105.6	0	12	12	138	
106.6	0	8	10	148	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	102.55'	12.0" Round L= 100.0' CF Inlet / Outlet In n= 0.012 Cor	Culvert PP, square edge nvert= 102.55' / rugated PP, sm	e headwall, Ke= 0.500 102.05' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf
#2	Discarded	101.60'	1.020 in/hr Ex Conductivity to Excluded Hori	xfiltration over o Groundwater izontal area = 0	Horizontal area above 101.55' Elevation = 90.00' sf Phase-In= 0.01'
#3	Device 1	102.55'	Custom Wein Head (feet) 0 Width (feet) 0	/Orifice, Cv= 2 .00 1.00 1.00).33 1.00 4.00	.62 (C= 3.28) 2.50 4.00

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.90' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.28 cfs @ 12.09 hrs HW=102.90' TW=102.13' (Dynamic Tailwater) 1=Culvert (Passes 0.28 cfs of 0.39 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 0.28 cfs @ 1.83 fps)





Summary for Pond 36P: Tree Box

Inflow Area =		10,465 sf,	100.00% Im	pervious,	Inflow Depth = 0.99" for 0-1.2" event		
Inflow	=	0.26 cfs @	12.08 hrs, \	Volume=	860 cf		
Outflow	=	0.26 cfs @	12.09 hrs, \	Volume=	860 cf, Att	en= 0%, Lag= 0.3 min	
Discarded	=	0.00 cfs @	12.09 hrs, \	Volume=	135 cf	-	
Primary	=	0.26 cfs @	12.09 hrs, \	Volume=	725 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.43' @ 12.09 hrs Surf.Area= 72 sf Storage= 21 cf Flood Elev= 106.00' Surf.Area= 10 sf Storage= 50 cf

Plug-Flow detention time= 16.4 min calculated for 859 cf (100% of inflow) Center-of-Mass det. time= 16.5 min (798.5 - 782.0)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	101.60'	5	2 cf Custom 148 cf O	Stage Data (Proverall x 35.0%)	r ismatic) Listed below (Recalc) Voids
Elevatio	n Su	Irf.Area	Inc.Store	Cum.Store	
(tee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)	
101.6	60	72	0	0	
102.6	60	72	72	72	
103.6	60	12	42	114	
104.6	0	12	12	126	
105.6	0	12	12	138	
106.6	60	8	10	148	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	102.10'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	Culvert P, square edge h nvert= 102.10' / rugated PP, smo	neadwall, Ke= 0.500 101.60' S= 0.0500 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf
#2	Discarded	101.60'	1.020 in/hr Ex Conductivity to Excluded Hori	xfiltration over o Groundwater I izontal area = 0	Horizontal area above 101.10' Elevation = 90.00' sf Phase-In= 0.01'
#3	Device 1	102.10'	Custom Wein Head (feet) 0 Width (feet) 0	/Orifice, Cv= 2. .00 1.00 1.00).33 1.00 4.00	.62 (C= 3.28) 2.50 4.00

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.43' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.26 cfs @ 12.09 hrs HW=102.43' TW=102.13' (Dynamic Tailwater) 1=Culvert (Passes 0.26 cfs of 0.45 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 0.26 cfs @ 1.78 fps)





Summary for Link 1L: (new Link)

Inflow A	Area =	217,891 sf, 82.73% Impervious,	Inflow Depth = 0.42"	for 0-1.2" event
Inflow	=	1.88 cfs @ 12.12 hrs, Volume=	7,662 cf	
Primary	/ =	1.88 cfs @ 12.12 hrs, Volume=	7,662 cf, Atter	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Summary for Subcatchment 2S: Open Space

Runoff = 0.47 cfs @ 12.14 hrs, Volume= 1,872 cf, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	A	rea (sf)	CN	Description		
		37,635	74	>75% Gras	s cover, Go	ood, HSG C
37,635 74 100.00% Pervious Area			100.00% Pe	ervious Are	a	
	Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	8.1	50	0.020	0 0.10		Sheet Flow, Open Space
	0.4	50	0.020	0 2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space
	0.6	50	0.040	0 1.40		Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps
	9.1	150	Total			

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 1,116 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 1.52 cfs @ 12.08 hrs, Volume= 5,208 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 1.52 cfs @ 12.08 hrs, Volume= 5,208 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"


Summary for Subcatchment 6S: Residential Roof

Runoff = 0.77 cfs @ 12.08 hrs, Volume= 2,645 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"



24 26

Time (hours)

28 30

32 34 36 38 40

42

44 46 48

0-

Ó

2

4 6 8 10

12 14 16

18 20 22

Summary for Subcatchment 11S: Parking/Pavement

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 1,701 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	Area (sf)	CN	Description		
	9,068	98	Paved park	ing, HSG C	
	9,068	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description
0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking
					Smooth surfaces $n = 0.011 P2 = 3.30^{\circ}$
0.7	50	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 11S: Parking/Pavement



Summary for Subcatchment 12S: Parking/Pavement

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,967 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Aı	rea (sf)	CN	Description		
_		10,485	98	Paved park	ing, HSG C	
		10,485	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
-	0.7	50	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 12S: Parking/Pavement



Summary for Subcatchment 13S: Parking/Pavement

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 2,025 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN E	Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	00.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total. I	ncreased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 1,865 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Ar	ea (sf)	CN	Description			
		9,945	98	Paved park	ing, HSG C		
		9,945	98	98 100.00% Impervious Area			
(m	Tc nin)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description	
(0.7	50	0.020	0 1.22		Sheet Flow, pavement/parking	
	0.7	50	Total	Increased t		Smooth surfaces $n = 0.011 P2 = 3.30^{\circ}$	

Subcatchment 15S: Parking/Pavement



Summary for Subcatchment 16S: Parking/Pavement

Runoff = 0.62 cfs @ 12.08 hrs, Volume= 2,129 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Area (sf)	CN	D	Description		
	11,350	98	F	aved park	ing, HSG C	
	11,350	98	1	00.00% Im	npervious A	rea
T (mir	ີc Lengt າ) (fee	h Slo t) (f	ope t/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.	2 10	0 0.02	200	1.40		Sheet Flow, Pavement/Parking
						Smooth surfaces n= 0.011 P2= 3.30"
1	2 10		<u> </u>	noroood t	o minimum	$T_{0} = 6.0 \text{ min}$



Subcatchment 16S: Parking/Pavement



Summary for Subcatchment 17S: Parking/Pavement

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,963 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

Ar	rea (sf)	CN	Description				
	10,465	98	Paved park	ing, HSG C			
	10,465	98	98 100.00% Impervious Area				
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description		
0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"		
0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min		

Subcatchment 17S: Parking/Pavement



Summary for Subcatchment 18S: Parking/Pavement

Runoff 0.59 cfs @ 12.08 hrs, Volume= 2,015 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

Ar	ea (sf)	CN	Description				
	10,745	98	Paved park	ing, HSG C)		
	10,745	98	98 100.00% Impervious Area				
Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description		
0.9	70	0.020	0 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"		
0.9	70	Total,	Increased t	o minimum	Tc = 6.0 min		

Subcatchment 18S: Parking/Pavement



Summary for Subcatchment 19S: Parking/Pavement

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 1,951 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Area	a (sf)	CN	Description		
	10),400	98	Paved park	ing, HSG C	
	10),400	98	100.00% In	npervious A	rea
T (mir	່ວ L າ)	ength (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.	2	100	0.0200	0 1.40		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
1.	2	100	Total,	Increased t	to minimum	Tc = 6.0 min

Subcatchment 19S: Parking/Pavement



Summary for Subcatchment 20S: Parking/Pavement

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 365 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Ar	rea (sf)	CN	Description		
		1,945	98	Paved park	ing, HSG C	
		1,945	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking
_	0.5	30	Total	Increased t	o minimum	$\frac{51100011}{100011} \frac{50110000}{1000000} = 1000000000000000000000000000000000000$
	0.0	30	i Ulai,	inciedseu i		

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 1,013 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN	Description					
	5,400	98	Paved park	Paved parking, HSG C				
	5,400	98	98 100.00% Impervious Area					
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description			
0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking			
					Smooth surfaces $n = 0.011 P2 = 3.30^{\circ}$			
0.7	50	Total.	Increased t	o minimum	1 Tc = 6.0 min			

Subcatchment 21S: Parking/Pavement



Summary for Subcatchment 22: Parking/Pavement

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,298 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

	Ar	rea (sf)	CN	Description						
		6,920	98	Paved park	Paved parking, HSG C					
		6,920	98	100.00% In	100.00% Impervious Area					
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description				
	0.5	35	0.020	0 1.13		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"				
-	0.5	35	Total,	Increased t	o minimum	Tc = 6.0 min				

Subcatchment 22: Parking/Pavement



Summary for Subcatchment 23S: Parking/Pavement

Runoff = 0.56 cfs @ 12.08 hrs, Volume= 1,932 cf, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN	Description		
	10,300	98	Paved park	ing, HSG C	
	10,300	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, pavement/parking
					Smooth surfaces n= 0.011 P2= 3.30"
10	400	Tatal	1		



Subcatchment 23S: Parking/Pavement



Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 708 cf, Depth= 2.25"

0.01 0

0 2

4 6 8 10

12 14 16

18 20 22

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 1-Year Rainfall=2.48"



24 26

Time (hours)

28 30 32 34 36

38 40

42

44 46 48

Summary for Pond 1P: Area behind levee - Facemate

Inflow Area	a =	217,891 sf,	82.73%	6 Impervio	ous, Inflow D	Depth = 1.33"	for 1-Year event			
Inflow	= 5	5.41 cfs @	12.10 h	rs, Volum	ne= 2	24,163 cf				
Outflow	= 4	.12 cfs @	12.19 h	rs, Volum	ne= 2	24,163 cf, Atter	ו= 24%, Lag= 5.5 min			
Primary	= 4	.12 cfs @	12.19 h	rs, Volum	1e= 2	24,163 cf				
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 90.18' @ 12.19 hrs Surf.Area= 7,309 sf Storage= 1,231 cf										
Plug-Flow Center-of-N	Plug-Flow detention time= 4.9 min calculated for 24,163 cf (100% of inflow) Center-of-Mass det. time= 4.8 min(786.4-781.6)									
Volume	Invert	Avail.S	torage	Storage	Description					
#1	90.00'	25,	,050 cf	Custom	Stage Data	(Prismatic)Liste	ed below (Recalc)			
Elevation (feet)	Su	urf.Area (sq-ft)	Inc (cubic	Store -feet)	Cum.Sto (cubic-fee	re et)				

0

90.00' 2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600

25,050

#2	Primary	90.00'	Limited to weir flow at low heads 2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
----	---------	--------	---

0

25,050

Invert Outlet Devices

Primary OutFlow Max=4.12 cfs @ 12.19 hrs HW=90.18' TW=0.00' (Dynamic Tailwater)

-1=Orifice/Grate (Orifice Controls 2.06 cfs @ 2.06 fps)

6,140

18,910

90.00

92.00

#1

Device Routing

Primary

-2=Orifice/Grate (Orifice Controls 2.06 cfs @ 2.06 fps)



Pond 1P: Area behind levee - Facemate

Summary for Pond 3P: (new Pond)

Inflow Area = 50,596 sf,100.00% Impervious, Inflow Depth = 1.03" for 1-Year event Inflow 0.85 cfs @ 12.36 hrs, Volume= 4.345 cf = Outflow 0.85 cfs @ 12.36 hrs, Volume= 4,345 cf, Atten= 0%, Lag= 0.0 min = Primary = 0.85 cfs @ 12.36 hrs, Volume= 4,345 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 98.41' @ 12.36 hrs Flood Elev= 105.00 Device Routing Invert **Outlet Devices** #1 Primary 98.00' 18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500

> Inlet / Outlet Invert= 98.00' / 91.00' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf



Pond 3P: (new Pond)

Summary for Pond 5P: Tree Box

Inflow Area	=	9,945 sf,	100.00% In	npervious,	Inflow Depth = 2	2.25" for 1-	Year event
Inflow	=	0.55 cfs @	12.08 hrs,	Volume=	1,865 cf		
Outflow	=	0.54 cfs @	12.09 hrs,	Volume=	1,865 cf,	Atten= 1%,	Lag= 0.1 min
Discarded	=	0.00 cfs @	12.11 hrs,	Volume=	79 cf		
Primary	=	0.54 cfs @	12.09 hrs,	Volume=	1,787 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.42' @ 12.11 hrs Surf.Area= 39 sf Storage= 15 cf

Plug-Flow detention time= 5.6 min calculated for 1,865 cf (100% of inflow) Center-of-Mass det. time= 5.7 min (767.7 - 762.1)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.20'	9	1 cf Custom 259 cf C	Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatic (fee	on Su t)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
100 2	20 20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.0	00	80	61	259		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	100.75'	12.0" Round L= 20.0' CPI Inlet / Outlet I n= 0.012 Cor	l Culvert P, square edge nvert= 100.75' / rugated PP. sm	headwall, Ke= 0.50 100.65' S= 0.0050 nooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr E	xfiltration over	Horizontal area	Phase-In= 0.01 '
#3	Device 1	100.75'	Custom Wein Head (feet) C Width (feet) C	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discard	ed OutFlow	Max=0.00 cfs	. @ 12 11 hrs	HW=101 42' (Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=101.42' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=101.41' TW=101.30' (Dynamic Tailwater) **1=Culvert** (Passes 0.54 cfs of 0.72 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.54 cfs @ 1.50 fps)

Hydrograph InflowOutflow 0.55 cfs 0.54 cfs Inflow Area=9,945 sf Discarded Primary 0.6 Peak Elev=101.42' 0.54 cfs 0.55 Storage=15 cf 0.5 0.45 0.4 0.35 Flow (cfs) 0.3 0.25 0.2 0.15 0.1 0.05 0-2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Ó Time (hours)

Pond 5P: Tree Box

Summary for Pond 6P: DMH

Inflow Area = 20,245 sf,100.00% Impervious, Inflow Depth = 2.20" for 1-Year event Inflow 1.11 cfs @ 12.08 hrs, Volume= 3.719 cf = 1.11 cfs @ 12.08 hrs, Volume= Outflow 3,719 cf, Atten= 0%, Lag= 0.0 min = Primary = 1.11 cfs @ 12.08 hrs, Volume= 3,719 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.37' @ 12.32 hrs Flood Elev= 105.00' Dovice Pouting Invert Outlet Devices

Device	Rouling	Inven	Outlet Devices
#1	Primary	100.60'	12.0" Round Culvert
			L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= $100.60' / 100.50'$ S= $0.0050' / Cc= 0.900$ n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.08 hrs HW=101.29' TW=101.07' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.10 cfs @ 2.67 fps)





Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf,	100.00% Impervious	Inflow Depth = 2.1	1" for 1-Year event
Inflow	=	2.76 cfs @	12.08 hrs, Volume=	8,894 cf	
Outflow	=	0.94 cfs @	12.36 hrs, Volume=	8,894 cf, At	tten= 66%, Lag= 16.2 min
Discarded	=	0.09 cfs @	12.36 hrs, Volume=	4,549 cf	-
Primary	=	0.85 cfs @	12.36 hrs, Volume=	4,345 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.35' @ 12.36 hrs Surf.Area= 3,348 sf Storage= 3,031 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 73.6 min calculated for 8,892 cf (100% of inflow) Center-of-Mass det. time= 73.6 min (838.6 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8,592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.09 cfs @ 12.36 hrs HW=101.35' (Free Discharge) **2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.85 cfs @ 12.36 hrs HW=101.35' TW=98.41' (Dynamic Tailwater) 1=Culvert (Passes 0.85 cfs of 10.77 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 0.85 cfs @ 3.02 fps)



Pond 7P: Storage Chambers South

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Ò

Summary for Pond 8P: Storage Chambers North

Inflow Area	a =	50,305 sf,	100.00% In	npervious,	Inflow Depth = 2.	.11" fo	or 1-Ye	ear event	
Inflow	=	2.75 cfs @	12.09 hrs,	Volume=	8,853 cf				
Outflow	=	0.62 cfs @	12.49 hrs,	Volume=	8,853 cf,	Atten=	78%,	Lag= 23.9) min
Discarded	=	0.13 cfs @	12.49 hrs,	Volume=	5,792 cf				
Primary	=	0.49 cfs @	12.49 hrs,	Volume=	3,061 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.09' @ 12.49 hrs Surf.Area= 4,786 sf Storage= 3,293 cf

Plug-Flow detention time= 86.8 min calculated for 8,853 cf (100% of inflow) Center-of-Mass det. time= 86.8 min (851.3 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12,209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices				
#1	Primary	100.50'	18.0" Round Culvert				
			L= 50.0' CPP, square edge headwall, Ke= 0.500				
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900				
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf				
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area				
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'				
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)				
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00				
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00				

Discarded OutFlow Max=0.13 cfs @ 12.49 hrs HW=101.09' (Free Discharge) **2=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=0.49 cfs @ 12.49 hrs HW=101.09' TW=90.10' (Dynamic Tailwater) -1=Culvert (Passes 0.49 cfs of 1.62 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.49 cfs @ 2.52 fps)



Pond 8P: Storage Chambers North

Summary for Pond 11P: Tree Box

Inflow Area	a =	9,068 sf	,100.00% In	npervious,	Inflow Depth	= 2.25"	for 1-	Year event
Inflow	=	0.50 cfs @	12.08 hrs,	Volume=	1,70	1 cf		
Outflow	=	0.50 cfs @	12.08 hrs,	Volume=	1,70	1 cf, Atte	en= 0%,	Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	18	1 cf		
Primary	=	0.49 cfs @	12.08 hrs,	Volume=	1,52	0 cf		
Douting by	Dun Sta	r Ind motho	d Timo Sna	n = 0.00.4	00 bro dt-	0 01 bro /	2	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.03' @ 12.09 hrs Surf.Area= 22 sf Storage= 39 cf Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 24.7 min calculated for 1,701 cf (100% of inflow) Center-of-Mass det. time= 24.7 min (786.8 - 762.1)

Volume	Invert	Avail.Stor	age Storag	e Description	
#1	100.20'	5	1 cf Custo 146 cf	n Stage Data (Prismatio Overall x 35.0% Voids	Listed below (Recalc)
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
100.2	20	72	0	0	
101.2	20	72	72	72	
102.2	20	12	42	114	
103.2	20	12	12	126	
104.2	20	12	12	138	
105.0	00	8	8	146	
Device	Routing	Invert	Outlet Devic	es	
#1	Primary	101.53'	12.0" Rour L= 90.0' C Inlet / Outlet n= 0.012 C	d Culvert PP, square edge headwa Invert= 101.53' / 101.08' prrugated PP, smooth inte	l, Ke= 0.500 S= 0.0050 '/' Cc= 0.900 erior, Flow Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr Conductivity	Exfiltration over Horizon to Groundwater Elevatio	n tal area n = 90.00' Phase-In= 0.01'
#3	Device 1	101.53'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2.62 (C= 0.00 1.00 1.00 2.50 0.33 1.00 4.00 4.00	3.28)

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.03' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.49 cfs @ 12.08 hrs HW=102.03' TW=101.76' (Dynamic Tailwater) **1=Culvert** (Passes 0.49 cfs of 0.52 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.49 cfs @ 1.99 fps)

Pond 11P: Tree Box



Summary for Pond 12P: Tree Box

Inflow Area	a =	10,485 sf,	100.00% In	npervious,	Inflow Depth = 2	2.25" for	1-Year event
Inflow	=	0.57 cfs @	12.08 hrs,	Volume=	1,967 cf		
Outflow	=	0.57 cfs @	12.08 hrs,	Volume=	1,967 cf,	Atten= 0%	, Lag= 0.0 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	177 cf		
Primary	=	0.57 cfs @	12.08 hrs,	Volume=	1,789 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.86' @ 12.09 hrs Surf.Area= 20 sf Storage= 39 cf

Plug-Flow detention time= 19.9 min calculated for 1,966 cf (100% of inflow) Center-of-Mass det. time= 20.0 min (782.1 - 762.1)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.00'	5	2 cf Custom 148 cf O	Stage Data (P verall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	0	72	0	0		
101.0	0	72	72	72		
102.0	0	12	42	114		
103.0	0	12	12	126		
104.0	0	12	12	138		
105.0	0	8	10	148		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	101.18'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	Culvert P, square edge nvert= 101.18' / rugated PP, sm	headwall, Ke= 0.50 101.13' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr Ex	xfiltration over	Horizontal area	Phase-In= 0 01'
#3	Device 1	101.18'	Custom Weir Head (feet) 0 Width (feet) 0	/ Orifice, Cv= 2 .00 1.00 1.00).33 1.00 4.00	2.50 4.00	
Discard	od OutFlow	Max-0.00 cf	a @ 12.00 hrs	HW-101 86' (Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=101.86' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.56 cfs @ 12.08 hrs HW=101.86' TW=101.76' (Dynamic Tailwater) **1=Culvert** (Passes 0.56 cfs of 0.79 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.56 cfs @ 1.47 fps)



Pond 12P: Tree Box

Summary for Pond 13P: Tree Box

Inflow Area	ı =	10,798 sf,	100.00% Im	pervious,	Inflow Depth = 2	2.25" f	or 1-\	Year event	
Inflow	=	0.59 cfs @	12.08 hrs,	Volume=	2,025 cf				
Outflow	=	0.59 cfs @	12.09 hrs,	Volume=	2,025 cf,	Atten=	1%,	Lag= 0.2 m	nin
Discarded	=	0.00 cfs @	12.11 hrs,	Volume=	159 cf				
Primary	=	0.59 cfs @	12.09 hrs,	Volume=	1,866 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.42' @ 12.11 hrs Surf.Area= 47 sf Storage= 34 cf

Plug-Flow detention time= 11.9 min calculated for 2,025 cf (100% of inflow) Center-of-Mass det. time= 11.9 min (774.0 - 762.1)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.00'	5	2 cf Custon 148 cf C	1 Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	0	72	0	0		
101.0	0	72	72	72		
102.0	0	12	42	114		
103.0	0	12	12	126		
104.0	0	12	12	138		
105.0	00	8	10	148		
Device	Routing	Invert	Outlet Device	s		
#1	Primary	100.65'	12.0" Round L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge Invert= 100.65' / rrugated PP, sm	headwall, Ke= 0.50 100.60' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr E	xfiltration over	Horizontal area	Phase-In= 0.01'
#3	Device 1	100.65'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discard	od OutFlow	Max-0.00 cf	a @ 12 11 hre	H\\/-101 /2' (Free Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=101.42' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.59 cfs @ 12.09 hrs HW=101.40' TW=101.32' (Dynamic Tailwater) **1=Culvert** (Passes 0.59 cfs of 0.80 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.59 cfs @ 1.34 fps)

Pond 13P: Tree Box



Summary for Pond 22P: Tree Box

Inflow Area	a =	1,945 sf,	100.00% In	npervious,	Inflow Depth = 2	2.25" for 1	-Year event
Inflow	=	0.11 cfs @	12.08 hrs,	Volume=	365 cf		
Outflow	=	0.11 cfs @	12.09 hrs,	Volume=	365 cf,	Atten= 0%	Lag= 0.3 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	89 cf		
Primary	=	0.11 cfs @	12.09 hrs,	Volume=	276 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.44' @ 12.09 hrs Surf.Area= 41 sf Storage= 19 cf

Plug-Flow detention time= 49.1 min calculated for 365 cf (100% of inflow) Center-of-Mass det. time= 49.2 min (811.3 - 762.1)

Volume	Invert	Avail.Sto	rage Storag	e Description		
#1	102.00'	6	69 cf Custor 196 cf	n Stage Data (Pr Overall x 35.0% `	ismatic) ⊥isted belo Voids	ow (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	103.25'	12.0" Roun L= 125.0' C Inlet / Outlet n= 0.012 Co	d Culvert CPP, square edge Invert= 103.25' / prrugated PP, smo	headwall, Ke= 0.5 102.63' S= 0.0050 poth interior, Flow	600) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr l Conductivity	Exfiltration over to Groundwater E	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	103.25'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2. 0.00 1.00 1.00 1 0.33 1.00 4.00	62 (C= 3.28) 2.50 4.00	
Discord			a @ 12.00 hrs		Trac Discharge)	

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.44' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.11 cfs @ 12.09 hrs HW=103.44' TW=102.48' (Dynamic Tailwater) -**1=Culvert** (Passes 0.11 cfs of 0.12 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.11 cfs @ 1.39 fps)

Hydrograph InflowOutflow 0.11 cfs Inflow Area=1,945 sf Discarded 0.11 cfs Primary Peak Elev=103.44' 0.11 0.11 0.1 Storage=19 cf 0.09 0.08 0.07 (cfs) 0.06 Flow 0.05 0.04 0.03 0.02 0.01 0-2 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 4 Ó Time (hours)

Pond 22P: Tree Box

Summary for Pond 23P: Tree Box

Inflow Area	a =	10,400 sf,	100.00% In	npervious,	Inflow Depth = 2	2.25" for	1-Year event
Inflow	=	0.57 cfs @	12.08 hrs,	Volume=	1,951 cf		
Outflow	=	0.57 cfs @	12.09 hrs,	Volume=	1,951 cf,	Atten= 0%	6, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	80 cf		
Primary	=	0.57 cfs @	12.09 hrs,	Volume=	1,871 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.17' @ 12.09 hrs Surf.Area= 38 sf Storage= 15 cf

Plug-Flow detention time= 6.1 min calculated for 1,951 cf (100% of inflow) Center-of-Mass det. time= 6.1 min (768.2 - 762.1)

Volume	Invert	Avail.Stor	rage Storage	e Description				
#1	102.00'	6	9 cf Custon 196 cf (n Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	w (Recalc)		
Elevation	Su	Irf.Area	Inc.Store	Cum.Store				
(feet)		(sq-ft)	(cubic-feet)	(cubic-feet)				
102.00		36	0	0				
103.00		36	36	36				
104.00		48	42	78				
105.00		60	54	132				
106.00		68	64	196				
Device F	Routing	Invert	Outlet Device	es				
#1 F	Primary	102.65'	12.0" Roun	d Culvert				
			L= 10.0' CP	P, square edge l	headwall, Ke= 0.50	0		
			Inlet / Outlet	Invert= 102.65'/	102.60° S= 0.0050	$0^{\prime\prime}$ Cc= 0.900		
		400.001	n= 0.012 Co	rrugated PP, sm	ooth interior, Flow /	Area= 0.79 sf		
#2 L	Discarded	102.00'	1.020 in/hr E	xfiltration over	Horizontal area			
			Conductivity	to Groundwater	Elevation = 90.00°	Phase-In= 0.01'		
#3 L	Device 1	102.65'	Custom Wei	r/Orifice, Cv= 2	.62 (C= 3.28)			
			Head (feet)	0.00 1.00 1.00	2.50			
			Width (feet)	0.33 1.00 4.00	4.00			
Discarded)iscarded OutFlow Max=0.00 cfs @ 12.09 hrs. HW=103.17' (Free Discharge)							

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.57 cfs @ 12.09 hrs HW=103.17' TW=102.48' (Dynamic Tailwater) 1=Culvert (Passes 0.57 cfs of 0.70 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 0.57 cfs @ 2.19 fps)



Pond 23P: Tree Box

Summary for Pond 24P: (new Pond)

Inflow Ar Inflow Outflow Discarde Seconda	ea = = = ed = ry =	6,920 sf,10 0.38 cfs @ 12 0.05 cfs @ 12 0.05 cfs @ 12 0.00 cfs @ 0	0.00% 2.08 hrs 2.62 hrs 2.62 hrs 2.62 hrs 0.00 hrs	Impervious, , Volume= , Volume= , Volume= , Volume=	Inflow De	epth = 2 1,298 cf 1,298 cf, 1,298 cf, 0 cf	.25" for 1- Atten= 87%	-Year event , Lag= 31.9 min
Routing I	hv Dvn-Sto	r-Ind method]	Time Si	an = 0.00-43	8 00 hrs <i>i</i>	dt= 0 01 k	nrs/3	
Peak Ele	ev= 106.57	@ 12.62 hrs	Surf.Ar	ea= 2.000 st	f Storage	e= 396 cf	11370	
		6						
Plug-Flov	w detentior	n time= 51.1 mi	n calcu	lated for 1,2	98 cf (100)% of inflo	ow)	
Center-o	f-Mass det	. time= 51.1 mi	n (813	.2 - 762.1)				
Volumo	Invor	t Avail Star		Storage Dee	orintion			
volume	IIIver		aye c	slorage Des	сприон			
#1	106.00)' 1,12	0 cf 4	0.00'W x 50).00'L x 1	.60'H Pri	smatoid	
			3	3,200 cf Ove	rall x 35.0	0% Voids	1	
Dovice	Douting	Invort	Outlot	Dovisoo				
Device	Routing	Inven	Oullet	Devices				
#1	Secondar	y 107.00'	30.0' I	ong x 10.0'	' breadth	Broad-C	rested Rec	tangular Weir
			Head	(feet) 0.20	0.40 0.60	0.80 1.	.00 1.20 1.4	40 1.60
			Coef.	(English) 2.	49 2.56 2	2.70 2.69	3 2.68 2.69	2.67 2.64
#2	Discarded	106.00'	1.020	in/hr Exfiltr	ation ove	er Horizo	ntal area	
			Condu	ctivity to Gro	oundwate	r Elevatio	on = 90.00'	Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.62 hrs HW=106.57' (Free Discharge) **2=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=106.00' TW=100.20' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir(Controls 0.00 cfs)




Summary for Pond 26P: Tree Box

Inflow Area	a =	16,145 sf,	100.00% Imperviou	s, Inflow Depth = 2	2.25" for 1·	-Year event
Inflow	=	0.89 cfs @	12.08 hrs, Volume	= 3,028 cf		
Outflow	=	0.88 cfs @	12.09 hrs, Volume	= 3,028 cf,	Atten= 0%,	Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume	= 94 cf		-
Primary	=	0.88 cfs @	12.09 hrs, Volume	= 2,934 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.20' @ 12.09 hrs Surf.Area= 48 sf Storage= 27 cf

Plug-Flow detention time= 6.9 min calculated for 3,028 cf (100% of inflow) Center-of-Mass det. time= 6.9 min (769.0 - 762.1)

Volume	Invert	Avail.Stor	age Storage	Description					
#1 100.20' 96 cf Custom Stage Data (Prismatic)Listed below (Recalc) 274 cf Overall x 35.0% Voids									
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store					
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)					
100.2	20	36	0	0					
101.2	20	36	36	36					
102.2	20	48	42	78					
103.2	20	60	54	132					
104.2	20	72	66	198					
105.20 80		80	76	274					
Device	Routing	Invert	Outlet Device	S					
#1	Primary	101.30'	12.0" Round L= 10.0' CPI Inlet / Outlet I n= 0.012 Cor	I Culvert P, square edge nvert= 101.30' / rugated PP, sm	headwall, Ke= 0.50 101.25' S= 0.0050 ooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf			
#2	Discarded	100.20'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'						
#3	Device 1	101.30'	Custom Wein Head (feet) (Width (feet) (r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00				
Discard	Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.20' (Free Discharge)								

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.88 cfs @ 12.09 hrs HW=102.20' TW=102.09' (Dynamic Tailwater) **1=Culvert** (Passes 0.88 cfs of 1.16 cfs potential flow)

3=Custom Weir/Orifice (Weir Controls 0.88 cfs @ 1.55 fps)

Pond 26P: Tree Box



Summary for Pond 27P: DMH

 Inflow Area =
 21,815 sf,100.00% Impervious, Inflow Depth = 2.07" for 1-Year event

 Inflow =
 1.19 cfs @ 12.09 hrs, Volume=
 3,772 cf

 Outflow =
 1.19 cfs @ 12.09 hrs, Volume=
 3,772 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 1.19 cfs @ 12.09 hrs, Volume=
 3,772 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.37' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.19 cfs @ 12.09 hrs HW=102.37' TW=101.89' (Dynamic Tailwater) -1=Culvert (Barrel Controls 1.19 cfs @ 2.99 fps)





Summary for Pond 29P: DMH

Inflow Area = 19,553 sf,100.00% Impervious, Inflow Depth = 2.03" for 1-Year event Inflow 1.07 cfs @ 12.08 hrs, Volume= 3.309 cf = 1.07 cfs @ 12.08 hrs, Volume= Outflow 3,309 cf, Atten= 0%, Lag= 0.0 min = Primary = 1.07 cfs @ 12.08 hrs, Volume= 3,309 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.76' @ 12.09 hrs Flood Elev= 105.00' Device Routing Invert **Outlet Devices** 101.08' #1 Primary 12.0" Round Culvert

L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.07 cfs @ 12.08 hrs HW=101.76' TW=101.32' (Dynamic Tailwater) ☐ 1=Culvert (Outlet Controls 1.07 cfs @ 2.66 fps)



Summary for Pond 30P: DMH

 Inflow Area =
 30,351 sf,100.00% Impervious, Inflow Depth = 2.05" for 1-Year event

 Inflow =
 1.65 cfs @ 12.09 hrs, Volume=
 5,176 cf

 Outflow =
 1.65 cfs @ 12.09 hrs, Volume=
 5,176 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 1.65 cfs @ 12.09 hrs, Volume=
 5,176 cf

 Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.38' @ 12.31 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.65 cfs @ 12.09 hrs HW=101.32' TW=101.07' (Dynamic Tailwater) ☐ 1=Culvert (Outlet Controls 1.65 cfs @ 2.88 fps)



Pond 30P: DMH

Summary for Pond 31P: DMH

Inflow Area =12,345 sf,100.00% Impervious, Inflow Depth =2.09" for 1-Year eventInflow =0.67 cfs @12.09 hrs, Volume=2,147 cfOutflow =0.67 cfs @12.09 hrs, Volume=2,147 cf, Atten= 0%, Lag= 0.0 minPrimary =0.67 cfs @12.09 hrs, Volume=2,147 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.48' @ 12.09 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.90' / 101.25' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.09 hrs HW=102.48' TW=102.09' (Dynamic Tailwater) -1=Culvert (Outlet Controls 0.67 cfs @ 2.04 fps)





Summary for Pond 32P: DMH

Inflow Area =28,490 sf,100.00% Impervious, Inflow Depth =2.14" for 1-Year eventInflow =1.56 cfs @12.09 hrs, Volume=5,081 cfOutflow =1.56 cfs @12.09 hrs, Volume=5,081 cfPrimary =1.56 cfs @12.09 hrs, Volume=5,081 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.09' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	18.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.56 cfs @ 12.09 hrs HW=102.09' TW=101.89' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.56 cfs @ 2.21 fps)



Pond 32P: DMH

Summary for Pond 33P: DMH

 Inflow Area =
 50,305 sf,100.00% Impervious, Inflow Depth = 2.11" for 1-Year event

 Inflow =
 2.75 cfs @ 12.09 hrs, Volume=
 8,853 cf

 Outflow =
 2.75 cfs @ 12.09 hrs, Volume=
 8,853 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.75 cfs @ 12.09 hrs, Volume=
 8,853 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.89' @ 12.09 hrs Flood Elev= 106.00'

#1 Primary 101.00' 18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900	Device	Routing	Invert	Outlet Devices	
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf	#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf	

Primary OutFlow Max=2.74 cfs @ 12.09 hrs HW=101.89' TW=100.79' (Dynamic Tailwater) -1=Culvert (Barrel Controls 2.74 cfs @ 3.59 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Area	a =	11,350 sf,	100.00% Impervious,	Inflow Depth = 2.25	5" for 1-Year event
Inflow	=	0.62 cfs @	12.08 hrs, Volume=	2,129 cf	
Outflow	=	0.62 cfs @	12.09 hrs, Volume=	2,129 cf, At	ten= 0%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	168 cf	-
Primary	=	0.62 cfs @	12.09 hrs, Volume=	1,961 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.09' @ 12.09 hrs Surf.Area= 43 sf Storage= 35 cf Flood Elev= 107.00' Surf.Area= 8 sf Storage= 52 cf

Plug-Flow detention time= 15.4 min calculated for 2,128 cf (100% of inflow) Center-of-Mass det. time= 15.4 min (777.5 - 762.1)

Volume	Invert	Avail.Stor	age Storage	Description			
#1	101.60'	5	2 cf Custom 148 cf C	Stage Data (P Overall x 35.0%	rismatic) Listed below (Recalc) Voids		
Elevatic (fee	n Su t)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
101.6	0	72	0	0			
102.6	0	72	72	72			
103.6	0	12	42	114			
104.6	0	12	12	126			
105.6	0	12	12	138			
106.6	60	8	10	148			
Device	Routing	Invert	Outlet Device	S			
#1	Primary	102.55'	12.0" Round L= 100.0' CF Inlet / Outlet I n= 0.012 Cor	I Culvert PP, square edge nvert= 102.55' / rugated PP, sm	e headwall, Ke= 0.500 102.05' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf		
#2	Discarded	101.60'	1.020 in/hr Exfiltration over Horizontal area above 101.55' Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01'				
#3	Device 1	102.55'	Custom Wein Head (feet) C Width (feet) C	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00		

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.09' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.62 cfs @ 12.09 hrs HW=103.09' TW=102.37' (Dynamic Tailwater) 1=Culvert (Passes 0.62 cfs of 0.88 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 0.62 cfs @ 2.24 fps)



Pond 34P: Tree Box

Summary for Pond 36P: Tree Box

Inflow Area	a =	10,465 sf,	100.00% In	npervious,	Inflow Depth = 2.25	for 1-Year event
Inflow	=	0.57 cfs @	12.08 hrs,	Volume=	1,963 cf	
Outflow	=	0.57 cfs @	12.09 hrs,	Volume=	1,963 cf, Att	en= 0%, Lag= 0.3 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	152 cf	-
Primary	=	0.57 cfs @	12.09 hrs,	Volume=	1,811 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.65' @ 12.09 hrs Surf.Area= 69 sf Storage= 26 cf Flood Elev= 106.00' Surf.Area= 10 sf Storage= 50 cf

Plug-Flow detention time= 9.0 min calculated for 1,963 cf (100% of inflow) Center-of-Mass det. time= 9.0 min (771.1 - 762.1)

Volume	Invert	Avail.Stor	rage Storage	Description			
#1101.60'52 cfCustom Stage Data (Prismatic)Listed below (Recalc) 148 cf Overall x 35.0% Voids							
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store			
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)			
101.6	60	72	0	0			
102.6	60	72	72	72			
103.6	60	12	42	114			
104.6	60	12	12	126			
105.6	60	12	12	138			
106.6	60	8	10	148			
Device	Routing	Invert	Outlet Devices	S			
#1	Primary	102.10'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	Culvert P, square edge nvert= 102.10' / rugated PP_sm	headwall, Ke= 0.500 101.60' S= 0.0500 '/' Cc= 0.900 ooth interior Flow Area= 0.79 sf		
#2	Discarded	101.60'	1.020 in/hr Exfiltration over Horizontal area above 101.10' Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01'				
#3	Device 1	102.10'	Custom Weir Head (feet) 0 Width (feet) 0	/Orifice, Cv= 2 .00 1.00 1.00).33 1.00 4.00	.62 (C= 3.28) 2.50 4.00		

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=102.65' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.57 cfs @ 12.09 hrs HW=102.65' TW=102.37' (Dynamic Tailwater) 1=Culvert (Passes 0.57 cfs of 0.94 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 0.57 cfs @ 2.03 fps)



Pond 36P: Tree Box

Summary for Link 1L: (new Link)

Inflow A	Area	=	217,891 sf,	, 82.73% Im	npervious,	Inflow Depth =	1.33"	for 1-	Year event
Inflow	=	=	4.12 cfs @	12.19 hrs,	Volume=	24,163 cf			
Primary	y =	=	4.12 cfs @	12.19 hrs,	Volume=	24,163 cf,	Atten=	= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Summary for Subcatchment 2S: Open Space

Runoff = 2.17 cfs @ 12.13 hrs, Volume= 7,515 cf, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

	A	rea (sf)	CN	Description		
		37,635	74	>75% Gras	s cover, Go	ood, HSG C
		37,635	74	100.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	8.1	50	0.020	0.10		Sheet Flow, Open Space
	0.4	50	0.020	0 2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space
	0.6	50	0.040	0 1.40		Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps
_	9.1	150	Total			· ·

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 0.67 cfs @ 12.08 hrs, Volume= 2,382 cf, Depth= 4.80"



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 3.14 cfs @ 12.08 hrs, Volume= 11,114 cf, Depth= 4.80"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 3.14 cfs @ 12.08 hrs, Volume= 11,114 cf, Depth= 4.80"



Summary for Subcatchment 6S: Residential Roof

Runoff = 1.60 cfs @ 12.08 hrs, Volume= 5,644 cf, Depth= 4.80"



Summary for Subcatchment 11S: Parking/Pavement

Runoff = 1.03 cfs @ 12.08 hrs, Volume= 3,630 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

Area (sf)	CN Description							
9,068	98 Paved parki	ing, HSG C						
9,068	98 100.00% Im	npervious Area						
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity Description (cfs)						
0.7 50	0.0200 1.22	Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"						
0.7 50	Total, Increased to	o minimum Tc = 6.0 min						
	Subcatchment 11S: Parking/Pavement							
		Hydrograph						
Flow (cfs)		Type III 24-hr 10-Year Rainfall=5.04" Runoff Area=9,068 sf Runoff Volume=3,630 cf Runoff Depth=4.80" Flow Length=50' Slope=0.0200 '/' Tc=6.0 min						

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 12S: Parking/Pavement

Runoff = 1.19 cfs @ 12.08 hrs, Volume= 4,197 cf, Depth= 4.80"

Area (sf)	CN Description
10,485	98 Paved parking, HSG C
10,485	98 100.00% Impervious Area
Tc Length	n Slope Velocity Capacity Description
(min) (feet)) (ft/ft) (ft/sec) (cfs)
0.7 50	0.0200 1.22 Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.20"
0.7 50	311001111112000000000000000000000000000
0.7 50	
	Subcatchment 12S: Parking/Pavement
	Hudrograph
	Hydrograph
Í	
	i ype iii 24-nr
,	
	Runoff Area=10,485 sf
	Dup off Volumo = 4.407 of
<u>a</u>	Runon volume=4,197 Cl
(cts	Runoff Depth=4.80"
<u>No</u>	Flow Length=50'
LL I	
	Siope=0.0200 7
	Tc=6.0 min
	CN=98
0 2 4	6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
	lime (nours)

Summary for Subcatchment 13S: Parking/Pavement

Runoff = 1.22 cfs @ 12.08 hrs, Volume= 4,322 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

Α	rea (sf)	CN E	Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	00.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total, I	ncreased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 1.13 cfs @ 12.08 hrs, Volume= 3,981 cf, Depth= 4.80"

Ai	rea (sf)	CN I	Description						
	9,945	98	Paved park	ing, HSG C)				
	9,945	98	100.00% In	npervious A	rea				
Tc	Length	Slope	Velocity	Capacity	Descrip	tion			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
0.7	50	0.0200	1.22		Sheet F	low, pave	ement/park	king	
0.7	50	T . 4 . 1			Smooth	surraces	n= 0.011	P2= 3.30"	
0.7	50	l otal,	Increased	o minimum	1 = 0.0	min			
			Subo	atchmon	15Q. D	arkina/E	Davomon	•	
			Subc	atchinen	L 133. F	ai kiliy/r	avenien	L	
				Hydro	ograph				-
Í									Runoff
-			1.13 cfs						
							Тур	e III 24-hr	
1-					++-	10-Ye	ar Rain	fall=5.04"	-
						Dun	off Aroa	-0.045 of	
						Kulle		1-9,945 51	
-						lunoff	Volume	=3,981 cf	
cfs)						Ru	noff Dei	oth=4 80"	
) 3 .									
음							FIOW LE	engtn=50	
							Slope=	=0.0200 '/'	
-							Ť	=60 min	
								CN=98	
									_
0-									*
0	Z 4	υδΊ	∪ 1∠ 14 16	Tim	e (hours)	5 30 32 5	04 OO OO 41	v 4∠ 44 40 48	

Summary for Subcatchment 16S: Parking/Pavement

Runoff = 1.28 cfs @ 12.08 hrs, Volume= 4,543 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

Area (s	f) CN	Description		
11,35	50 98	Paved park	ing, HSG C	
11,35	50 98	100.00% In	npervious A	Area
Tc Leng (min) (fe	gth Slop et) (ft/	be Velocity ft) (ft/sec)	Capacity (cfs)	Description
1.2 1	00 0.020	00 1.40		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
1.2 1	00 Total	, Increased t	o minimum	י Tc = 6.0 min
		Subc	atchment	t 16S: Parking/Pavement
			Hvdro	baraph
Elow (cts)				Type III 24-hr 10-Year Rainfall=5.04" Runoff Area=11,350 sf Runoff Volume=4,543 cf Runoff Depth=4.80" Flow Length=100' Slope=0.0200 '/' Tc=6.0 min CN=98

Time (hours)

Summary for Subcatchment 17S: Parking/Pavement

Runoff = 1.18 cfs @ 12.08 hrs, Volume= 4,189 cf, Depth= 4.80"

A	rea (sf)	CN [Description		
	10,465	98 F	Paved park	ing, HSG C	
	10,465	98 1	100.00% Im	npervious A	rea
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	l
0.9	70	0.0200	1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
0.9	70	Total,	Increased t	o minimum	n Tc = 6.0 min
			Suba	atchmont	178. Darking/Payamont
			Subc		. 175. Farking/Favement
		1 1	1 1 1	Hydro	igraph
			1.18 cfs		
					Type III 24-hr
1–					10-Year Rainfall=5.04"
					Runoff Area=10,465 sf
					Runoff Volume=4,189 cf
(cfs)					Runoff Depth=4.80"
N I					Flow Length=70'
-					Slope=0.0200 '/'
-					Tc=6 0 min
-					CIN-30
0	2 4	6 8 10) 12 14 16	18 20 22	24 26 28 30 32 34 36 38 40 42 44 46 48
0				Time	e (hours)

Summary for Subcatchment 18S: Parking/Pavement

Runoff = 1.22 cfs @ 12.08 hrs, Volume= 4,301 cf, Depth= 4.80"

Area (sf)	CN Description	
10,745	98 Paved parking, HSG C	
10,745	98 100.00% Impervious Area	
Tc Length	n Slope Velocity Capacity Description	
(min) (feet)) (ft/ft) (ft/sec) (cfs)	
0.9 70	0 0.0200 1.30 Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"	
0.9 70	D Total, Increased to minimum Tc = 6.0 min	
	Subcatchment 18S: Parking/Pavement	
	Hydrograph	
1	Type III 24-hr 10-Year Rainfall=5.04" Runoff Area=10,745 sf Runoff Volume=4,301 cf Runoff Depth=4.80" Flow Length=70' Slope=0.0200 '/' Tc=6.0 min CN=98	Ť
0 2 4	0 0 10 12 14 10 18 20 22 24 26 28 30 32 34 30 38 40 42 44 46 48 Time (hours)	

Summary for Subcatchment 19S: Parking/Pavement

Runoff = 1.18 cfs @ 12.08 hrs, Volume= 4,163 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

Area (sf)) CN Description						
10,400) 98 Paved parking, HSG C						
10,400	0 98 100.00% Impervious Area						
Tc Length (min) (feet)	th Slope Velocity Capacity Description et) (ft/ft) (ft/sec) (cfs)						
1.2 100	00 0.0200 1.40 Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"						
1.2 100	00 Total, Increased to minimum Tc = 6.0 min						
	Subcatchment 19S: Parking/Pavement						
Flow (cfs)	Type III 24-hr 10-Year Rainfall=5.04" Runoff Area=10,400 sf Runoff Volume=4,163 cf Runoff Depth=4.80" Flow Length=100' Slope=0.0200 '/' Tc=6.0 min CN=98	Runoff					

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 20S: Parking/Pavement

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 779 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

	A	rea (sf)	CN	Description					
		1,945	98	Paved park	ing, HSG C				
		1,945	98	98 100.00% Impervious Area					
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description			
	0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"			
-	0.5	30	Total,	Increased t	o minimum	Tc = 6.0 min			

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.61 cfs @ 12.08 hrs, Volume= 2,161 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

A	rea (sf)	CN	Description		
	5,400	98	Paved park	ing, HSG C	
	5,400	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking
0.7	50	Total.	Increased t	o minimum	Tc = 6.0 min
	A Tc (<u>min)</u> 0.7	Area (sf) 5,400 5,400 Tc Length (min) (feet) 0.7 50	Area (sf) CN 5,400 98 5,400 98 Tc Length Slop (min) (feet) (ft/f 0.7 50 0.020 0.7 50 Total.	Area (sf) CN Description 5,400 98 Paved park 5,400 98 100.00% In Tc Length Slope Velocity (min) (feet) (ft/ft) (ft/sec) 0.7 50 0.0200 1.22 0.7 50 Total. Increased to	Area (sf)CNDescription5,40098Paved parking, HSG C5,40098100.00% Impervious ATcLengthSlopeVelocity(min)(feet)(ft/ft)(ft/sec)0.7500.02001.220.750Total.Increased to minimum

Subcatchment 21S: Parking/Pavement



Summary for Subcatchment 22: Parking/Pavement

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 2,770 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

	Ar	rea (sf)	CN	Description						
		6,920	98	Paved park	Paved parking, HSG C					
		6,920	98	100.00% Impervious Area						
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description				
	0.5	35	0.020	0 1.13		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"				
_	0.5	35	Total,	, Increased to minimum Tc = 6.0 min						

Subcatchment 22: Parking/Pavement



Summary for Subcatchment 23S: Parking/Pavement

Runoff = 1.17 cfs @ 12.08 hrs, Volume= 4,123 cf, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=5.04"

Are	a (sf)	CN E	Description				
10,300 98 Paved parking, HSG C							
1(0,300 98 100.00% Impervious Area						
Tc L (min)	ength (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
1.2	100	0.0200	1.40		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"		
1.2	100	Total, I	ncreased t	o minimum	n Tc = 6.0 min		
			Subca	atchment	t 23S: Parking/Pavement		
				Hydro	ograph		
Flow (cfs)				Hydro	Type III 24-hr 10-Year Rainfall=5.04" Runoff Area=10,300 sf Runoff Volume=4,123 cf Runoff Depth=4.80" Flow Length=100' Slope=0.0200 '/' Tc=6.0 min CN=98		
0-							

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.43 cfs @ 12.08 hrs, Volume= 1,510 cf, Depth= 4.80"



Summary for Pond 1P: Area behind levee - Facemate

Inflow Area	=	217,891 sf,	82.73%	Impervious,	Inflow Dep	th = 3.52"	for 10-	Year event	
Inflow	= 14	.23 cfs @	12.10 hrs	s, Volume=	63,9	992 cf			
Outflow	= 8	8.58 cfs @	12.37 hrs	s, Volume=	63,9	992 cf, Atter	n= 40%,	Lag= 16.0 min	
Primary	= 8	8.58 cfs @	12.37 hrs	s, Volume=	63,9	992 cf			
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 90.79' @ 12.37 hrs Surf.Area= 11,212 sf Storage= 6,892 cf									
Plug-Flow c	Plug-Flow detention time= 7.3 min calculated for 63,992 cf (100% of inflow)								
Center-of-M	Center-of-Mass det. time= 7.1 min (782.4 - 775.3)								
			,	,					
Volume	Invert	Avail.S	torage	Storage Des	cription				
#1	90.00'	25,	050 cf	Custom Sta	ge Data (Pı	r ismatic) List	ted below	v (Recalc)	
Elevation	Su	urf.Area	Inc.S	Store	Cum.Store				
(feet)		(sq-ft)	(cubic-	feet) (cubic-feet)				
90.00		6,140		0	0				

Limited to weir flow at low heads

Limited to weir flow at low heads

25,050

2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600

2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600

25,050

Outlet Devices

Primary OutFlow Max=8.58 cfs @ 12.37 hrs HW=90.79' TW=0.00' (Dynamic Tailwater)

1=Orifice/Grate (Orifice Controls 4.29 cfs @ 4.29 fps) **2=Orifice/Grate** (Orifice Controls 4.29 cfs @ 4.29 fps)

Invert

90.00'

90.00'

18,910

92.00

#1

#2

Device Routing

Primary

Primary



Pond 1P: Area behind levee - Facemate

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Summary for Pond 3P: (new Pond)

 Inflow Area =
 50,596 sf,100.00% Impervious, Inflow Depth = 3.22" for 10-Year event

 Inflow =
 2.95 cfs @ 12.24 hrs, Volume=
 13,562 cf

 Outflow =
 2.95 cfs @ 12.24 hrs, Volume=
 13,562 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.95 cfs @ 12.24 hrs, Volume=
 13,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 98.81' @ 12.24 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= $98.00' / 91.00'$ S= $0.0280 '/$ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.95 cfs @ 12.24 hrs HW=98.81' TW=90.75' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 2.95 cfs @ 3.06 fps)



Pond 3P: (new Pond)

Summary for Pond 5P: Tree Box

Inflow Area =		9,945 sf,	100.00% Impervious,	Inflow Depth = 5.30	for 10-Year event
Inflow	=	1.16 cfs @	12.17 hrs, Volume=	4,394 cf	
Outflow	=	1.17 cfs @	12.17 hrs, Volume=	4,394 cf, Att	en= 0%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.18 hrs, Volume=	84 cf	
Primary	=	1.16 cfs @	12.17 hrs, Volume=	4,310 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.57' @ 12.18 hrs Surf.Area= 52 sf Storage= 34 cf

Plug-Flow detention time= 2.9 min calculated for 4,393 cf (100% of inflow) Center-of-Mass det. time= 2.9 min (750.4 - 747.5)

Volume	Invert	Avail.Stor	brage Storage Description				
#1	100.20'	ç	01 cf Custom 259 cf O	Stage Data (P verall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)	
Elevatio	n Sı	urf.Area	Inc.Store	Cum.Store			
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)			
100.2	0	36	0	0			
101.2	0	36	36	36			
102.2	0	48	42	78			
103.2	0	60	54	132			
104.2	0	72	66	198			
105.0	0	80	61	259			
Device	Routing	Invert	Outlet Devices	6			
#1	Primary	100.75'	12.0" Round	Culvert			
	2		L= 20.0' CPF	, square edge	headwall, Ke= 0.50	0	
			Inlet / Outlet Ir	nvert= 100.75' /	100.65' S= 0.0050) '/' Cc= 0.900	
			n= 0.012 Corr	rugated PP, sm	ooth interior, Flow	Area= 0.79 sf	
#2	Discarded	100.20'	1.020 in/hr Ex	filtration over	[,] Horizontal area		
			Conductivity to	o Groundwater	Elevation = 90.00'	Phase-In= 0.01'	
#3	Device 1	100.75'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)				
			Head (feet) 0.	.00 1.00 1.00	2.50		
			Width (feet) 0	.33 1.00 4.00	4.00		
D'		Mar. 0.00.5	O 40 40 km				

Discarded OutFlow Max=0.00 cfs @ 12.18 hrs HW=102.57' (Free Discharge) **1**–2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.17 cfs @ 12.17 hrs HW=102.57' TW=102.47' (Dynamic Tailwater) -1=Culvert (Inlet Controls 1.17 cfs @ 1.49 fps)

1-3=Custom Weir/Orifice (Passes 1.17 cfs of 5.80 cfs potential flow)



Pond 5P: Tree Box
Summary for Pond 6P: DMH

Inflow Are	a =	20,245 sf,100.00% Impervious	, Inflow Depth = 5.00" for 10-Year event
Inflow	=	2.26 cfs @ 12.09 hrs, Volume=	8,433 cf
Outflow	=	2.26 cfs @ 12.09 hrs, Volume=	8,433 cf, Atten= 0%, Lag= 0.0 min
Primary	=	2.26 cfs @ 12.09 hrs, Volume=	8,433 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.48' @ 12.18 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	12.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=102.27' TW=101.92' (Dynamic Tailwater) -1=Culvert (Inlet Controls 2.26 cfs @ 2.88 fps)



Pond 6P: DMH

Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf,	100.00% In	npervious,	Inflow Depth =	4.75"	for 10-	Year event
Inflow	=	5.69 cfs @	12.08 hrs,	Volume=	20,031	cf		
Outflow	=	3.05 cfs @	12.24 hrs,	Volume=	20,031	cf, Atte	n= 46%,	Lag= 9.3 min
Discarded	=	0.10 cfs @	12.24 hrs,	Volume=	6,469	cf		-
Primary	=	2.95 cfs @	12.24 hrs,	Volume=	13,562	cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.27' @ 12.24 hrs Surf.Area= 3,348 sf Storage= 5,410 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 65.3 min calculated for 20,031 cf (100% of inflow) Center-of-Mass det. time= 65.3 min (816.0 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8.592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.10 cfs @ 12.24 hrs HW=102.27' (Free Discharge) **2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=2.95 cfs @ 12.24 hrs HW=102.27' TW=98.81' (Dynamic Tailwater) 1=Culvert (Passes 2.95 cfs of 13.51 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 2.95 cfs @ 3.90 fps)



Pond 7P: Storage Chambers South

Summary for Pond 8P: Storage Chambers North

Inflow Area =		50,305 sf,100.00% Impervious,			Inflow Depth = 4.	.66" fo	or 10-`	Year event	
Inflow	=	5.69 cfs @	12.09 hrs,	Volume=	19,514 cf				
Outflow	=	2.09 cfs @	12.33 hrs,	Volume=	19,514 cf,	Atten=	63%,	Lag= 14.4 m	nin
Discarded	=	0.13 cfs @	12.33 hrs,	Volume=	8,362 cf			-	
Primary	=	1.96 cfs @	12.33 hrs,	Volume=	11,152 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 101.94' @ 12.33 hrs Surf.Area= 4,786 sf Storage= 6,504 cf

Plug-Flow detention time= 80.6 min calculated for 19,510 cf (100% of inflow) Center-of-Mass det. time= 80.6 min (830.9 - 750.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12,209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices				
#1	Primary	100.50'	18.0" Round Culvert				
			L= 50.0' CPP, square edge headwall, Ke= 0.500				
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900				
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf				
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area				
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'				
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)				
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00				
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00				

Discarded OutFlow Max=0.13 cfs @ 12.33 hrs HW=101.94' (Free Discharge) **2=Exfiltration** (Controls 0.13 cfs)

Primary OutFlow Max=1.96 cfs @ 12.33 hrs HW=101.94' TW=90.79' (Dynamic Tailwater) -1=Culvert (Passes 1.96 cfs of 6.80 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 1.96 cfs @ 3.64 fps)



Pond 8P: Storage Chambers North

Summary for Pond 11P: Tree Box

Inflow Area =	9,068 sf,100.00% Impervious,	Inflow Depth = 4.80" for 10-Year event
Inflow =	1.03 cfs @ 12.08 hrs, Volume=	3,630 cf
Outflow =	1.03 cfs @ 12.08 hrs, Volume=	3,630 cf, Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @ 12.11 hrs, Volume=	192 cf
Primary =	1.02 cfs @ 12.08 hrs, Volume=	3,437 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.68' @ 12.11 hrs Surf.Area= 12 sf Storage= 42 cf Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 13.3 min calculated for 3,629 cf (100% of inflow) Center-of-Mass det. time= 13.4 min (761.2 - 747.9)

Volume	Invert	Avail.Stor	rage Storag	e Description		
#1	100.20'	5	51 cf Custo 146 cf	m Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio (fee	on Su et)	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
100.2 101.2 102.2 103.2 104.2 105.0	20 20 20 20 20 20 20	72 72 12 12 12 12 8	0 72 42 12 12 8	0 72 114 126 138 146		
Device	Routing	Invert	Outlet Devic	ces		
#1	Primary	101.53'	12.0" Rour L= 90.0' C Inlet / Outlet n= 0.012 C	n d Culvert PP, square edge t Invert= 101.53' / orrugated PP, sm	headwall, Ke= 0.50 101.08' S= 0.0050 nooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'			
#3	Device 1	101.53'	Custom We Head (feet) Width (feet)	eir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	. 62 (C= 3.28) 2.50 4.00	

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=102.68' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=102.63' TW=102.56' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 0.81 cfs @ 1.16 fps)

3=Custom Weir/Orifice (Passes 0.81 cfs of 1.27 cfs potential flow)

Pond 11P: Tree Box



Summary for Pond 12P: Tree Box

Inflow Area	ı =	10,485 sf,	100.00% In	npervious,	Inflow Depth = 4	.80" for '	10-Year event
Inflow	=	1.19 cfs @	12.08 hrs,	Volume=	4,197 cf		
Outflow	=	1.19 cfs @	12.08 hrs,	Volume=	4,197 cf,	Atten= 0%	, Lag= 0.0 min
Discarded	=	0.00 cfs @	12.11 hrs,	Volume=	188 cf		
Primary	=	1.18 cfs @	12.08 hrs,	Volume=	4,008 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.67' @ 12.11 hrs Surf.Area= 12 sf Storage= 43 cf

Plug-Flow detention time= 10.7 min calculated for 4,196 cf (100% of inflow) Center-of-Mass det. time= 10.8 min (758.7 - 747.9)

Volume	Inver	t Avail.Sto	rage Storag	e Description				
#1	100.00	' 5	52 cf Custo 148 cf	m Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)		
Elevatio	on S	urf.Area	Inc.Store	Cum.Store				
(tee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
100.0	00	72	0	0				
101.0	00	72	72	72				
102.0	00	12	42	114				
103.0	00	12	12	126				
104.0	00	12	12	138				
105.0	00	8	10	148				
Device	Routing	Invert	Outlet Devic	es				
#1	Primary	101.18'	12.0" Roun	d Culvert				
	-		L= 10.0' CF	PP, square edge	headwall, Ke= 0.50	0		
			Inlet / Outlet	Invert= 101.18' /	101.13' S= 0.0050) '/' Cc= 0.900		
			n= 0.012 Co	orrugated PP, sm	ooth interior, Flow	Area= 0.79 sf		
#2	Discarded	100.00'	1.020 in/hr	Exfiltration over	Horizontal area			
			Conductivity	to Groundwater	Elevation = 90.00'	Phase-In= 0.01'		
#3	Device 1	101.18'	Custom We	ir/Orifice, Cv= 2	62 (C= 3.28)			
			Head (feet)	0.00 1.00 1.00	2.50			
			Width (feet)	0.33 1.00 4.00	4.00			
Discard	Discorded OutElow Max-0.00 of $(2, 12, 11)$ hrs $HW=102.67'$ (Erec Discharge)							
Piscala				, 1100-10 2 .07 (rice Discharge/			

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.88 cfs @ 12.08 hrs HW=102.62' TW=102.56' (Dynamic Tailwater)

3=Custom Weir/Orifice (Passes 0.88 cfs of 2.69 cfs potential flow)

Pond 12P: Tree Box



Summary for Pond 13P: Tree Box

Inflow Area	=	10,798 sf,	100.00% Im	pervious,	Inflow Depth = 4	.80" for '	10-Year event
Inflow	=	1.22 cfs @	12.08 hrs, \	Volume=	4,322 cf		
Outflow	=	1.22 cfs @	12.08 hrs, \	Volume=	4,322 cf,	Atten= 0%	, Lag= 0.0 min
Discarded	=	0.00 cfs @	12.20 hrs, \	Volume=	170 cf		
Primary	=	1.22 cfs @	12.08 hrs, \	Volume=	4,152 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.34' @ 12.20 hrs Surf.Area= 12 sf Storage= 41 cf

Plug-Flow detention time= 6.7 min calculated for 4,321 cf (100% of inflow) Center-of-Mass det. time= 6.7 min (754.6 - 747.9)

Volume	Inver	t Avail.Sto	rage Storage	Description		
#1	100.00	י' 5	52 cf Custon 148 cf 0	1 Stage Data (P Dverall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.0	00	72	0	0		
101.0	00	72	72	72		
102.0	00	12	42	114		
103.0	00	12	12	126		
104.0	00	12	12	138		
105.0	00	8	10	148		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	100.65'	12.0" Round	d Culvert		
			L= 10.0' CP Inlet / Outlet	P, square edge Invert= 100.65' /	headwall, Ke= 0.50 100.60' S= 0.0050	0 0 '/' Cc= 0.900
	.	(00.00)	n= 0.012 Co	rrugated PP, sm	ooth interior, Flow	Area= 0.79 sf
#2	Discarded	100.00'	1.020 in/hr E	xfiltration over	Horizontal area	
що	Device 1	100 651	Conductivity		$Elevation = 90.00^{\circ}$	Phase-In= 0.01
#3	Device I	100.65		r/Ormce, CV = 2	.02 (C= 3.28)	
			Midth (feet)		2.50	
				0.55 1.00 4.00	4.00	
Discard	ed OutFlow	v Max=0.00 cf	s @ 12.20 hrs	HW=102.34' (Free Discharge)	

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.22 cfs @ 12.08 hrs HW=102.17' TW=102.07' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 1.22 cfs @ 1.55 fps)

3=Custom Weir/Orifice (Passes 1.22 cfs of 4.15 cfs potential flow)

Pond 13P: Tree Box



Summary for Pond 22P: Tree Box

Inflow Area	ı =	1,945 sf,	100.00% Impervious,	Inflow Depth = 4.80"	for 10-Year event
Inflow	=	0.22 cfs @	12.08 hrs, Volume=	779 cf	
Outflow	=	0.22 cfs @	12.09 hrs, Volume=	779 cf, Atte	n= 0%, Lag= 0.2 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	98 cf	
Primary	=	0.22 cfs @	12.09 hrs, Volume=	681 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.55' @ 12.09 hrs Surf.Area= 43 sf Storage= 20 cf

Plug-Flow detention time= 27.8 min calculated for 778 cf (100% of inflow) Center-of-Mass det. time= 27.9 min (775.8 - 747.9)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	102.00'	6	9 cf Custom 196 cf C	Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
102.0)0	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Device	s		
#1	Primary	103.25'	12.0" Round L= 125.0' CF Inlet / Outlet I n= 0.012 Cor	l Culvert PP, square edge nvert= 103.25' / rugated PP, sm	headwall, Ke= 0.5 102.63' S= 0.0050	00) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr E Conductivity t	xfiltration over o Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	103.25'	Custom Wein Head (feet) C Width (feet) C	r/ Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discard 12=Fx	ed OutFlow	Max=0.00 cfs	s @ 12.09 hrs	HW=103.55' (Free Discharge)	

-2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.22 cfs @ 12.09 hrs HW=103.55' TW=102.95' (Dynamic Tailwater) -1=Culvert (Passes 0.22 cfs of 0.27 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 0.22 cfs @ 1.71 fps)

Pond 22P: Tree Box



Summary for Pond 23P: Tree Box

Inflow Area	a =	10,400 sf,	100.00% Im	npervious,	Inflow Depth = 4	.80" for	10-Year event
Inflow	=	1.18 cfs @	12.08 hrs,	Volume=	4,163 cf		
Outflow	=	1.18 cfs @	12.08 hrs,	Volume=	4,163 cf,	Atten= 0%	, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	84 cf		
Primary	=	1.18 cfs @	12.08 hrs,	Volume=	4,079 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.43' @ 12.09 hrs Surf.Area= 41 sf Storage= 18 cf

Plug-Flow detention time= 3.2 min calculated for 4,162 cf (100% of inflow) Center-of-Mass det. time= 3.3 min (751.1 - 747.9)

Volume	Invert	Avail.Stor	rage Storage	Description		
#1	102.00'	6	9 cf Custom 196 cf O	Stage Data (P verall x 35.0%	rismatic) Listed belo Voids	w (Recalc)
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store		
	, ()) ()					
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	102.65'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Cor	l Culvert P, square edge l nvert= 102.65' / rugated PP. sm	headwall, Ke= 0.50 102.60' S= 0.0050 ooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr Ex	xfiltration over	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	102.65'	Custom Wein Head (feet) 0 Width (feet) (/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
Discard	ed OutFlow	Max=0.00 cfs	s @ 12.09 hrs	HW=103.43' (Free Discharge)	

-2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.17 cfs @ 12.08 hrs HW=103.43' TW=102.95' (Dynamic Tailwater) -**1=Culvert** (Passes 1.17 cfs of 1.45 cfs potential flow) **1**-3=Custom Weir/Orifice (Weir Controls 1.17 cfs @ 2.52 fps)

Pond 23P: Tree Box



Summary for Pond 24P: (new Pond)

Inflow Area =	6,920 sf,100.00% Impervious,	Inflow Depth = 4.80" for 10-Year event
Inflow =	0.78 cfs @ 12.08 hrs, Volume=	2,770 cf
Outflow =	0.49 cfs @ 12.18 hrs, Volume=	2,770 cf, Atten= 37%, Lag= 5.9 min
Discarded =	0.05 cfs @ 12.18 hrs, Volume=	2,357 cf
Secondary =	0.44 cfs @ 12.18 hrs, Volume=	413 cf
Deuting by Dug	Star Ind mathed Time Spane 0.00.40	200 hrs. dt= 0.01 hrs. / 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 107.03' @ 12.18 hrs Surf.Area= 2,000 sf Storage= 723 cf

Plug-Flow detention time= 88.5 min calculated for 2,769 cf (100% of inflow) Center-of-Mass det. time= 88.5 min (836.3 - 747.9)

Volume	Invert	Avail.Stor	age	Storage Description
#1	106.00'	1,12	0 cf	40.00'W x 50.00'L x 1.60'H Prismatoid 3,200 cf Overall x 35.0% Voids
Device	Routing	Invert	Outl	et Devices
#1	Secondary	107.00'	30.0 Hea Coe	' long x 10.0' breadth Broad-Crested Rectangular Weir d (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 f. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	106.00'	1.02 Con	0 in/hr Exfiltration over Horizontal area ductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
				- / - · · · · · · · · · · · · · · · · ·

Discarded OutFlow Max=0.05 cfs @ 12.18 hrs HW=107.03' (Free Discharge) **2=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.44 cfs @ 12.18 hrs HW=107.03' TW=102.57' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir (Weir Controls 0.44 cfs @ 0.45 fps)

Pond 24P: (new Pond)



Summary for Pond 26P: Tree Box

Inflow Area	ı =	16,145 sf,	100.00% In	npervious,	Inflow Depth = 4	.80" for 1	0-Year event
Inflow	=	1.83 cfs @	12.08 hrs,	Volume=	6,462 cf		
Outflow	=	1.83 cfs @	12.09 hrs,	Volume=	6,462 cf,	Atten= 0%,	Lag= 0.3 min
Discarded	=	0.00 cfs @	12.08 hrs,	Volume=	100 cf		
Primary	=	1.83 cfs @	12.09 hrs,	Volume=	6,362 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.86' @ 12.08 hrs Surf.Area= 56 sf Storage= 39 cf

Plug-Flow detention time= 3.6 min calculated for 6,461 cf (100% of inflow) Center-of-Mass det. time= 3.7 min (751.6 - 747.9)

Volume	Inver	t Avail.Stor	rage Storage	Description		
#1	100.20	י פ	96 cf Custom 274 cf C	Stage Data (P overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.2	20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.2	20	80	76	274		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	101.30'	12.0" Round	l Culvert		
			L= 10.0' CPI	^{>} , square edge	headwall, Ke= 0.50	0
			Inlet / Outlet I	nvert= 101.30' /	101.25' S= 0.0050) '/' Cc= 0.900
			n= 0.012 Cor	rugated PP, sm	ooth interior, Flow	Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr E	xfiltration over	Horizontal area	
		404.00	Conductivity t	o Groundwater	Elevation = $90.00'$	Phase-In= 0.01'
#3	Device 1	101.30	Custom Wei	/Orifice, Cv= 2	62 (C= 3.28)	
			Head (feet)	0.00 1.00 1.00	2.50	
			vviatn (feet) (0.33 1.00 4.00	4.00	
Discard	ed OutFlov	v Max=0.00 cf	s @ 12.08 hrs	HW=102.86' (Free Discharge)	

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.83 cfs @ 12.09 hrs HW=102.86' TW=102.63' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 1.83 cfs @ 2.33 fps)

3=Custom Weir/Orifice (Passes 1.83 cfs of 6.14 cfs potential flow)

Pond 26P: Tree Box



Summary for Pond 27P: DMH

 Inflow Area =
 21,815 sf,100.00% Impervious, Inflow Depth = 4.62" for 10-Year event

 Inflow =
 2.47 cfs @ 12.09 hrs, Volume=
 8,393 cf

 Outflow =
 2.47 cfs @ 12.09 hrs, Volume=
 8,393 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.47 cfs @ 12.09 hrs, Volume=
 8,393 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.84' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.47 cfs @ 12.09 hrs HW=102.84' TW=102.41' (Dynamic Tailwater) -1=Culvert (Inlet Controls 2.47 cfs @ 3.14 fps)





Summary for Pond 29P: DMH

 Inflow Area =
 19,553 sf,100.00% Impervious, Inflow Depth = 4.57" for 10-Year event

 Inflow =
 2.21 cfs @ 12.08 hrs, Volume=
 7,446 cf

 Outflow =
 2.21 cfs @ 12.08 hrs, Volume=
 7,446 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.21 cfs @ 12.08 hrs, Volume=
 7,446 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.63' @ 12.11 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.08'	12.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.20 cfs @ 12.08 hrs HW=102.56' TW=102.07' (Dynamic Tailwater) -1=Culvert (Outlet Controls 2.20 cfs @ 2.80 fps)



Pond 29P: DMH

Summary for Pond 30P: DMH

Inflow Area =30,351 sf,100.00% Impervious, Inflow Depth =4.59" for 10-Year eventInflow =3.42 cfs @12.08 hrs, Volume=11,598 cfOutflow =3.42 cfs @12.08 hrs, Volume=11,598 cf, Atten= 0%, Lag= 0.0 minPrimary =3.42 cfs @12.08 hrs, Volume=11,598 cfPointing by Dyn-Stor-Ind method. Time Span= 0.00-48.00 hrs. dt= 0.01 hrs. / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.31' @ 12.22 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.43 cfs @ 12.08 hrs HW=102.07' TW=101.90' (Dynamic Tailwater) -1=Culvert (Outlet Controls 3.43 cfs @ 2.47 fps)



Pond 30P: DMH

Summary for Pond 31P: DMH

 Inflow Area =
 12,345 sf,100.00% Impervious, Inflow Depth = 4.63" for 10-Year event

 Inflow =
 1.39 cfs @ 12.09 hrs, Volume=
 4,760 cf

 Outflow =
 1.39 cfs @ 12.09 hrs, Volume=
 4,760 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 1.39 cfs @ 12.09 hrs, Volume=
 4,760 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.95' @ 12.08 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.90' / 101.25' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.39 cfs @ 12.09 hrs HW=102.95' TW=102.63' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.39 cfs @ 2.11 fps)



Pond 31P: DMH

Summary for Pond 32P: DMH

 Inflow Area =
 28,490 sf,100.00% Impervious, Inflow Depth = 4.68" for 10-Year event

 Inflow =
 3.22 cfs @ 12.09 hrs, Volume=
 11,122 cf

 Outflow =
 3.22 cfs @ 12.09 hrs, Volume=
 11,122 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 3.22 cfs @ 12.09 hrs, Volume=
 11,122 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.63' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	18.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.23 cfs @ 12.09 hrs HW=102.63' TW=102.41' (Dynamic Tailwater) -1=Culvert (Outlet Controls 3.23 cfs @ 2.49 fps)





Summary for Pond 33P: DMH

Inflow Area = 50,305 sf,100.00% Impervious, Inflow Depth = 4.66" for 10-Year event Inflow 5.69 cfs @ 12.09 hrs, Volume= 19.514 cf = 5.69 cfs @ 12.09 hrs, Volume= Outflow 19,514 cf, Atten= 0%, Lag= 0.0 min = 5.69 cfs @ 12.09 hrs, Volume= Primary = 19,514 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.41' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.68 cfs @ 12.09 hrs HW=102.41' TW=101.56' (Dynamic Tailwater) ☐ 1=Culvert (Barrel Controls 5.68 cfs @ 4.26 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Ar Inflow Outflow Discarde Primary	rea = = 1 = 1 ed = 0 = 1	11,350 sf,10 .28 cfs @ 12 .28 cfs @ 12 .00 cfs @ 12 .28 cfs @ 12	0.00% Imperviou 2.08 hrs, Volume 2.08 hrs, Volume 2.08 hrs, Volume 2.08 hrs, Volume	is, Inflow Deptl = 4,54 = 4,54 = 1 = 4,34	h = 4.80" 43 cf 43 cf, Atten 78 cf 65 cf	for 10-Year event = 0%, Lag= 0.1 min		
Routing l Peak Ele Flood Ele	by Dyn-Stor ev= 103.37' (ev= 107.00'	-Ind method,] @ 12.08 hrs Surf.Area= 8	Time Span= 0.00 Surf.Area= 26 sf sf Storage= 52	-48.00 hrs, dt= Storage= 38 o cf	0.01 hrs / 3 cf	;		
Plug-Flov Center-o	w detention f-Mass det.	time= 8.2 min time= 8.3 min	calculated for 4,4 (756.2 - 747.9)	542 cf (100% o	f inflow)			
Volume	Invert	Avail.Stor	age Storage D	escription				
#1	101.60'	5	2 cf Custom S 148 cf Ove	t age Data (Pri erall_x 35.0% V	smatic) Liste ′oids	ed below (Recalc)		
Elevatio (fee	n Su t)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)				
101.6	0	72	0	0				
102.6	0	72	72	72				
103.6	0	12	42	114				
104.6	0	12	12	126				
105.6	0	12	12	138				
106.6	0	8	10	148				
Device	Routing	Invert	Outlet Devices					
#1 #2	Primary Discarded	102.55' 101.60'	12.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.55' / 102.05' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf 1.020 in/hr Exfiltration over Horizontal area above 101.55'					
#3	Device 1	102.55'	Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01' Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 2.50 Width (feet) 0.33 1.00 4.00 4.00					

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.37' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.28 cfs @ 12.08 hrs HW=103.37' TW=102.84' (Dynamic Tailwater) 1=Culvert (Passes 1.28 cfs of 1.52 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 1.28 cfs @ 2.59 fps) Pond 34P: Tree Box



Summary for Pond 36P: Tree Box

Inflow Are Inflow Outflow Discarde Primary	ea = = = d =	10,465 sf,10 1.18 cfs @ 12 1.19 cfs @ 12 0.00 cfs @ 12 1.18 cfc @ 12	0.00% Imperviou 2.08 hrs, Volume 2.09 hrs, Volume 2.08 hrs, Volume	s, Inflow De = 4 = 4 = 4	pth = 4.80" ,189 cf ,189 cf, Atten 161 cf ,028 cf	for 10-Year event = 0%, Lag= 0.3 min
Routing to Peak Ele Flood Ele	– by Dyn-Sto v= 103.04' ev= 106.00	or-Ind method, 7 @ 12.08 hrs ' Surf.Area= 1	Fime Span= 0.00 Surf.Area= 46 sf 0 sf Storage= 5	-48.00 hrs, d Storage= 3 0 cf	t= 0.01 hrs / 3 4 cf	
Plug-Flov Center-o Volume	w detentior f-Mass det Inver	n time= 4.9 min . time= 5.0 min t Avail.Stor	calculated for 4, (752.9 - 747.9) age Storage De	188 cf (100% escription	of inflow)	
#1	101.60)' 5	2 cf Custom S	tage Data (P	Prismatic)Liste	d below (Recalc)
			148 cf Ove	erall x 35.0%	Voids	
	-					
Elevation	n S	Surf.Area	Inc.Store	Cum.Store		
	.)	(sq-it) 70		(Jeel-Siduo)		
101.6	0	72	0	0		
102.0	0	12	12	12		
103.0	0	12	42	114		
104.0	0	12	12	120		
105.0	0	12	12	130		
100.0	0	0	10	140		
Device	Routing	Invert	Outlet Devices			
#1	Primary	102.10'	12.0" Round C	ulvert		
	5		L= 10.0' CPP, :	square edge	headwall, Ke	= 0.500
			Inlet / Outlet Inv	ert= 102.10'/	/ 101.60' S=	0.0500 '/' Cc= 0.900
			n= 0.012 Corrug	gated PP, sm	nooth interior,	Flow Area= 0.79 sf
#2 Discarded 101.60' 1		1.020 in/hr Exfiltration over Horizontal area above 101.10'				

Conductivity to Groundwater Elevation = 90.00' Excluded Horizontal area = 0 sf Phase-In= 0.01'

102.10' Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 2.50 Width (feet) 0.33 1.00 4.00 4.00

Primary OutFlow Max=1.18 cfs @ 12.09 hrs HW=103.03' TW=102.84' (Dynamic Tailwater)

-1=Culvert (Passes 1.18 cfs of 1.61 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 1.18 cfs @ 1.97 fps)

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.04' (Free Discharge)

#3

Device 1

2=Exfiltration (Controls 0.00 cfs)

Pond 36P: Tree Box



Summary for Link 1L: (new Link)

Inflow A	Area =	217,891 sf,	, 82.73% Ir	npervious,	Inflow Depth =	3.52	" for 10)-Year event
Inflow	=	8.58 cfs @	12.37 hrs,	Volume=	63,992 c	f		
Primary	/ =	8.58 cfs @	12.37 hrs,	Volume=	63,992 c	f, Att	en= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Summary for Subcatchment 2S: Open Space

Runoff = 3.08 cfs @ 12.13 hrs, Volume= 10,598 cf, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

	A	rea (sf)	CN	Description		
		37,635	74	>75% Gras	s cover, Go	ood, HSG C
		37,635	74	100.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
	8.1	50	0.020	0.10		Sheet Flow, Open Space
	0.4	50	0.020	0 2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space
	0.6	50	0.040	0 1.40		Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps
_	9.1	150	Total			· ·

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 2,971 cf, Depth= 5.99"



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 3.89 cfs @ 12.08 hrs, Volume= 13,864 cf, Depth= 5.99"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 3.89 cfs @ 12.08 hrs, Volume= 13,864 cf, Depth= 5.99"



Summary for Subcatchment 6S: Residential Roof

Runoff = 1.98 cfs @ 12.08 hrs, Volume= 7,040 cf, Depth= 5.99"



Summary for Subcatchment 11S: Parking/Pavement

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 4,528 cf, Depth= 5.99"

Ai	rea (sf)	CN [Description		
	9,068	98 F	Paved park	ing, HSG C	
	9,068	98 ´	100.00% In	npervious A	Area
				•	
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.7	50	0.0200	1.22		Sheet Flow, Pavement/Parking
					Smooth surfaces n= 0.011 P2= 3.30"
0.7	50	Total,	Increased t	o minimum	n Tc = 6.0 min
			Subca	atchment	t 11S: Parking/Pavement
				Hydro	ograph
-					
			1.27 cfs		Type III 24 br
-					i ype iii 24-iii
					25-Year Rainfall=6.23"
1-	/				Runoff Area=9.068 sf
					Runott volume=4,528 ct
(cfs					Runoff Depth=5.99"
Ň					
Ĕ					
					Slope=0.0200 '/'
					Te=6.0 min
					CN=98
-					
0-4		111111111111	····í···í···í·		
0	2 4	6 8 10) 12 14 16	18 20 22 Tim	24 26 28 30 32 34 36 38 40 42 44 46 48 ne (hours)
Summary for Subcatchment 12S: Parking/Pavement

Runoff = 1.47 cfs @ 12.08 hrs, Volume= 5,235 cf, Depth= 5.99"

<i>F</i>	Area (sf)	CN [Description		
	10,485	98 F	Paved park	ing, HSG C	С
	10,485	98 ´	100.00% In	npervious A	Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	y Description
0.7	50	0.0200	1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
0.7	50	Total,	Increased f	o minimum	m Tc = 6.0 min
			Suba	atahmant	nt 198. Darking/Davamant
			Subc	atchmen	it 125: Parking/Pavement
		1 1	1 1 1	Hydro	rograph
Flow (cfs) .L			1.47 cfs		Type III 24-hr 25-Year Rainfall=6.23" Runoff Area=10,485 sf Runoff Volume=5,235 cf Runoff Depth=5.99" Flow Length=50' Slope=0.0200 '/'
0-	0 2 4	6 8 10	0 12 14 16	18 20 22 Tim	Tc=6.0 min CN=98

Summary for Subcatchment 13S: Parking/Pavement

Runoff = 1.51 cfs @ 12.08 hrs, Volume= 5,391 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

A	rea (sf)	CN E	Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	00.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total, I	ncreased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,966 cf, Depth= 5.99"

A	rea (sf)	CN [Description		
	9,945	98 F	Paved park	ing, HSG C	
	9,945	98 -	100.00% In	pervious A	rea
Тс	Longth	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
0.7	50	0.0200	1.22	<u>_</u>	Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"
0.7	50	Total,	Increased t	o minimum	n Tc = 6.0 min
			Subc	atchment	15S: Parking/Pavement
			Cubo	Hvdro	pgraph
Flow (cfs)			1.39 cfs 1.39 cfs 1.30 c		Type III 24-hr 25-Year Rainfall=6.23" Runoff Area=9,945 sf Runoff Volume=4,966 cf Runoff Depth=5.99" Flow Length=50' Slope=0.0200 '/' Tc=6.0 min CN=98
0-	2 4	6 8 10) 12 14 16	18 20 22 Time	24 26 28 30 32 34 36 38 40 42 44 46 48 e (hours)

Summary for Subcatchment 16S: Parking/Pavement

Runoff = 1.59 cfs @ 12.08 hrs, Volume= 5,667 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

Area (sf) Cl	N Description					
11,350 9	8 Paved parki	ing, HSG C				
11,350 9	98 100.00% Im	npervious A	rea			
Tc Length S (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	locity Capacity Description /sec) (cfs)				
1.2 100 0.0	0200 1.40		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"			
1.2 100 To	otal, Increased t	o minimum	Tc = 6.0 min			
	Subc	atchmont	16S. Parking/Pavement			
	Subce					
		Hydro	graph			
Elow (cts)			Type III 24-hr 25-Year Rainfall=6.23" Runoff Area=11,350 sf Runoff Volume=5,667 cf Runoff Depth=5.99" Flow Length=100' Slope=0.0200 '/' Tc=6.0 min CN=98			

6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

0-

0 2 4

Summary for Subcatchment 17S: Parking/Pavement

Runoff = 1.47 cfs @ 12.08 hrs, Volume= 5,225 cf, Depth= 5.99"

A	rea (sf)	CN E	Description			
	10,465	98 F	Paved park	ing, HSG C	C	
	10,465	98 1	00.00% In	npervious A	Area	
	,			•		
Tc	Length	Slope	Velocity	Capacity	Description	
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
0.9	70	0.0200	1.30		Sheet Flow, Pavement/Parking	
					Smooth surfaces n= 0.011 P2= 3.30"	
0.9	70	Total, I	ncreased t	o minimum	n Tc = 6.0 min	
			Subca	atchment	t 17S: Parking/Pavement	
				Hydro	ograph	
(
-						Runoff
					Type III 24-br	
-						
					25-Year Rainfall=6.23"	
-					Runoff Area=10,465 sf	
1_	/ /		- + -		Runoff Volume=5,225 cf	
(s						
(ct					Runoff Deptn=5.99"	
N I					Flow Lenath=70'	
ш.						
-					Siope=0.0200 /	
					Tc=6.0 min	
-						
					· · · · · · · · · · · · · · · · · · ·	
-						
		mm				
0-	2 1	6 8 10	12 1 <i>1</i> 16	18 20 22		
0	2 4	0 0 10	12 14 10	Time	ne (hours)	

Summary for Subcatchment 18S: Parking/Pavement

Runoff = 1.51 cfs @ 12.08 hrs, Volume= 5,365 cf, Depth= 5.99"

A	rea (sf)	CN E	Description		
	10,745	98 F	Paved park	ing, HSG C	
	10,745	98 1	00.00% In	npervious A	Area
ŢĊ	Length	Slope	Velocity	Capacity	Description
(min)	(teet)	(ft/ft)	(ft/sec)	(cts)	
0.9	70	0.0200	1.30		Sheet Flow, Pavement/Parking
	70	T-4-1 1			Smooth suffaces $n = 0.011 P2 = 3.30^{\circ}$
0.9	70	lotal, I	ncreased t	o minimum	1 IC = 6.0 min
			Subc	atchmont	t 18S: Parking/Payomont
			Subc		t 105. Farking/Favement
				Hydro	ograph
ſ					
-			1.51 cfs		
					Type III 24-hr
-					25-Year Rainfall=6 23"
1					Runoff Area=10,745 St
1_	/				Runoff Volume=5,365 cf
					Runoff Denth=5 99"
 ≱					
ББ					Flow Length=70'
-					Slope=0.0200 '/'
					To=6.0 min
-					
					CN=98
-					
0-					
0	24	6 8 10	12 14 16	18 20 22 Tim	24 26 28 30 32 34 36 38 40 42 44 46 48 e (hours)

Summary for Subcatchment 19S: Parking/Pavement

Runoff = 1.46 cfs @ 12.08 hrs, Volume= 5,193 cf, Depth= 5.99"

Area (sf) CN	Description						
10,4	00 98	Paved park	ing, HSG C)				
10,4	00 98	100.00% In	npervious A	rea				
Tc Len (min) (fe	gth Slop eet) (ft/	be Velocity ft) (ft/sec)	Capacity (cfs)	Descriptio	on			
1.2	100 0.020	00 1.40		Sheet Flo Smooth s	ow, Paveme urfaces n=	ent/Parking 0.011 P2= 3.3	30"	
1.2	100 Total	, Increased t	to minimum	n Tc = 6.0 n	nin			
		Cuba	- t - h	400. De	rline (Des			
		Subc	atchment	(195: Pa	rking/Pav	ement		
7	1 1 1		Hydro	ograph			-	
(cts)		1 1 1 1 <t< td=""><td></td><td>Ri</td><td>25-Year Runoff A Inoff Vo Runof</td><td>Type III 24 Rainfall=6 Area=10,40 Iume=5,19 ff Depth=5</td><td>4-hr .23'' 0 sf 3 cf .99''</td><td>Runoff</td></t<>		Ri	25-Year Runoff A Inoff Vo Runof	Type III 24 Rainfall=6 Area=10,40 Iume=5,19 ff Depth=5	4-hr .23'' 0 sf 3 cf .99''	Runoff
о <mark>ш</mark>					Flow	w Length=* lope=0.020 Tc=6.0 CN	100')0 '/' min =98	
0 2	4 6 8	10 12 14 16	18 20 22 Time	24 26 28 e (hours)	30 32 34 3	6 38 40 42 44	46 48	

Summary for Subcatchment 20S: Parking/Pavement

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 971 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

	Ar	ea (sf)	CN	Description		
		1,945	98	Paved park	ing, HSG C	
		1,945	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
	0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking
_						Smooth surfaces $n = 0.011 P2 = 3.30^{\circ}$
	0.5	30	Total.	Increased t	o minimum	Tc = 6.0 min

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.76 cfs @ 12.08 hrs, Volume= 2,696 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

_	Ar	rea (sf)	CN	Description		
		5,400	98	Paved park	ing, HSG C	
		5,400	98	100.00% Im	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity) (ft/sec)	Capacity (cfs)	Description
	0.7	50	0.020	0 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
-	0.7	50	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 21S: Parking/Pavement



Summary for Subcatchment 22: Parking/Pavement

Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,455 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

A	rea (sf)	CN D	Description						
	6,920	98 F	aved park	ing, HSG C					
	6,920	98 1	00.00% In	npervious A	rea				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descriptio	n			
0.5	35	0.0200	1.13		Sheet Flo Smooth su	w, pavem urfaces na	ent/park i = 0.011	i ng P2= 3.30"	
0.5	35	Total, I	ncreased f	to minimum	Tc = 6.0 m	in			
			Subo	atchmen	t 22: Parl	king/Pav	ement		
	Hydrograph								
Í							++		Runoff
1-*			0.97 cfs				Туре	e III 24-hi	r
					2	25-Year	Rainf	all=6.23''	•
-						Runof	f Area	=6,920 s	F
					Ru	noff Vo	olume=	=3,455 cl	F
/ (cfs)						Runo	off Dep	th=5.99'	•
Flow						FI	ow Le	ngth=35	•
-						S	lope=	0.0200 '/	•
							Тс	=6.0 min	1
-								CN=98	3

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 23S: Parking/Pavement

Runoff = 1.44 cfs @ 12.08 hrs, Volume= 5,143 cf, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=6.23"

Area (sf)	CN Description	۱
10,300	98 Paved park	king, HSG C
10,300	98 100.00% In	mpervious Area
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity Description (cfs)
1.2 100	0.0200 1.40	Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"
1.2 100	Total, Increased	to minimum Tc = 6.0 min
	Subc	atchment 23S: Parking/Pavement
		Hydrograph
Flow (cfs)		Type III 24-hr 25-Year Rainfall=6.23" Runoff Area=10,300 sf Runoff Volume=5,143 cf Runoff Depth=5.99" Flow Length=100' Slope=0.0200 '/' Tc=6.0 min CN=98

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 1,884 cf, Depth= 5.99"



Summary for Pond 1P: Area behind levee - Facemate

Inflow Are	a =	217,891 sf,	82.73% Impervious,	Inflow Depth = 4.6	2" for 25-Year event
Inflow	=	19.00 cfs @	12.11 hrs, Volume=	83,972 cf	
Outflow	=	10.34 cfs @	12.42 hrs, Volume=	83,972 cf, A	Atten= 46%, Lag= 18.4 min
Primary	=	10.34 cfs @	12.42 hrs, Volume=	83,972 cf	-

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 91.15' @ 12.42 hrs Surf.Area= 13,505 sf Storage= 11,329 cf

Plug-Flow detention time= 9.0 min calculated for 83,972 cf (100% of inflow) Center-of-Mass det. time= 8.9 min (782.0 - 773.1)

Volume	Inv	ert Avail.Sto	rage Storage	Description	
#1	90.	00' 25,0	50 cf Custor	n Stage Data (Prismatio	c) Listed below (Recalc)
Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
90.0	00	6,140	0	0	
92.0	00	18,910	25,050	25,050	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	90.00'	2.0" x 2.0" H	oriz. Orifice/Grate X 6.	00 columns X 6 rows C= 0.600
			Limited to we	ir flow at low heads	
#2	Primary	90.00'	2.0" x 2.0" F	oriz. Orifice/Grate X 6.	00 columns X 6 rows C= 0.600
			Limited to we	ir flow at low heads	
Primary	OutFlow	/ Max=10.34 cfs	a@ 12.42 hrs	HW=91.15' TW=0.00'	(Dynamic Tailwater)

-1=Orifice/Grate (Orifice Controls 5.17 cfs @ 5.17 fps)
 -2=Orifice/Grate (Orifice Controls 5.17 cfs @ 5.17 fps)



Pond 1P: Area behind levee - Facemate

Summary for Pond 3P: (new Pond)

 Inflow Area =
 50,596 sf,100.00% Impervious, Inflow Depth = 4.37" for 25-Year event

 Inflow =
 4.34 cfs @ 12.20 hrs, Volume=
 18,442 cf

 Outflow =
 4.34 cfs @ 12.20 hrs, Volume=
 18,442 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 4.34 cfs @ 12.20 hrs, Volume=
 18,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 99.01' @ 12.20 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.00' / 91.00' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.34 cfs @ 12.20 hrs HW=99.01' TW=90.99' (Dynamic Tailwater) ☐ 1=Culvert (Inlet Controls 4.34 cfs @ 3.42 fps)



Pond 3P: (new Pond)

Summary for Pond 5P: Tree Box

Inflow Area	a =	9,945 sf,	100.00% Imperv	rious, Inflo	ow Depth = 6	5.98" i	for 25-	Year event
Inflow	=	2.25 cfs @	12.10 hrs, Volu	me=	5,789 cf			
Outflow	=	2.20 cfs @	12.11 hrs, Volu	me=	5,789 cf,	Atten=	= 3%, L	.ag= 0.4 min
Discarded	=	0.00 cfs @	12.11 hrs, Volu	me=	85 cf			
Primary	=	2.20 cfs @	12.11 hrs, Volu	me=	5,703 cf			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.65' @ 12.11 hrs Surf.Area= 65 sf Storage= 56 cf

Plug-Flow detention time= 2.3 min calculated for 5,787 cf (100% of inflow) Center-of-Mass det. time= 2.4 min (746.6 - 744.2)

Volume	Invert	Avail.Stor	rage Sto	rage De	escription		
#1	100.20'	ç	91 cf Cu 259	stom St cf Ove	tage Data (P rall_x 35.0%	rismatic) Listed beloved by the set of the	ow (Recalc)
Elevatio	n Si	urf.Area	Inc.Stor	е	Cum.Store		
(fee	t)	(sq-ft)	(cubic-fee	t)	(cubic-feet)		
100.2	0	36		0	0		
101.2	0	36	3	6	36		
102.2	0	48	4	-2	78		
103.2	0	60	5	54	132		
104.2	0	72	6	6	198		
105.0	0	80	6	51	259		
Device	Routing	Invert	Outlet De	evices			
#1	Primary	100.75'	12.0" R	ound C	ulvert		
	2		L= 20.0'	CPP, s	square edge	headwall, Ke= 0.50	0
			Inlet / Ou	tlet Inve	ert= 100.75' /	' 100.65' S= 0.005	0 '/' Cc= 0.900
			n= 0.012	Corrug	gated PP, sm	nooth interior, Flow	Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/	hr Exfi	Itration over	r Horizontal area	
			Conducti	vity to C	Groundwater	Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	100.75'	Custom	Weir/O	rifice, Cv= 2	2.62 (C= 3.28)	
			Head (fe	et) 0.00	0 1.00 1.00	2.50	
			Width (fe	et) 0.3	3 1.00 4.00	4.00	
D:			<u> </u>				

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=103.64' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=2.26 cfs @ 12.11 hrs HW=103.62' TW=103.27' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 2.26 cfs @ 2.87 fps)

-3=Custom Weir/Orifice (Passes 2.26 cfs of 19.54 cfs potential flow)



Pond 5P: Tree Box

Summary for Pond 6P: DMH

 Inflow Area =
 20,245 sf,100.00% Impervious, Inflow Depth = 6.43" for 25-Year event

 Inflow =
 3.60 cfs @
 12.10 hrs, Volume=
 10,846 cf

 Outflow =
 3.60 cfs @
 12.10 hrs, Volume=
 10,846 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 3.60 cfs @
 12.10 hrs, Volume=
 10,846 cf

 Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.29' @ 12.12 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	12.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.58 cfs @ 12.10 hrs HW=103.24' TW=102.35' (Dynamic Tailwater) -1=Culvert (Inlet Controls 3.58 cfs @ 4.56 fps)





Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf,	100.00% Impervious,	Inflow Depth = 6	.03" for 25-Year event
Inflow	=	7.75 cfs @	12.10 hrs, Volume=	25,444 cf	
Outflow	=	4.44 cfs @	12.20 hrs, Volume=	25,444 cf,	Atten= 43%, Lag= 6.3 min
Discarded	=	0.10 cfs @	12.20 hrs, Volume=	7,001 cf	-
Primary	=	4.34 cfs @	12.20 hrs, Volume=	18,442 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.65' @ 12.20 hrs Surf.Area= 3,348 sf Storage= 6,313 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 61.5 min calculated for 25,444 cf (100% of inflow) Center-of-Mass det. time= 61.5 min (808.5 - 747.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8.592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.10 cfs @ 12.20 hrs HW=102.65' (Free Discharge) **2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=4.34 cfs @ 12.20 hrs HW=102.65' TW=99.01' (Dynamic Tailwater) -1=Culvert (Passes 4.34 cfs of 14.49 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 4.34 cfs @ 4.30 fps)



Pond 7P: Storage Chambers South

Summary for Pond 8P: Storage Chambers North

Inflow Area	a =	50,305 sf,	100.00% In	npervious,	Inflow Depth = 5	.84" fe	or 25-	Year event	
Inflow	=	7.04 cfs @	12.09 hrs,	Volume=	24,489 cf				
Outflow	=	3.02 cfs @	12.27 hrs,	Volume=	24,489 cf,	Atten=	57%,	Lag= 11.1	min
Discarded	=	0.14 cfs @	12.27 hrs,	Volume=	9,179 cf			-	
Primary	=	2.88 cfs @	12.27 hrs,	Volume=	15,310 cf				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.25' @ 12.27 hrs Surf.Area= 4,786 sf Storage= 7,603 cf

Plug-Flow detention time= 77.9 min calculated for 24,489 cf (100% of inflow) Center-of-Mass det. time= 77.9 min (824.7 - 746.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12,209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	100.50'	18.0" Round Culvert
			L= 50.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.14 cfs @ 12.27 hrs HW=102.25' (Free Discharge) **2=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=2.88 cfs @ 12.27 hrs HW=102.25' TW=91.08' (Dynamic Tailwater) 1=Culvert (Passes 2.88 cfs of 8.50 cfs potential flow) -3=Custom Weir/Orifice (Weir Controls 2.88 cfs @ 3.88 fps)



Summary for Pond 11P: Tree Box

Inflow Area	=	9,068 sf,	100.00% Impervious,	Inflow Depth = 5.99	for 25-Year event
Inflow	=	1.27 cfs @	12.08 hrs, Volume=	4,528 cf	
Outflow	=	1.26 cfs @	12.08 hrs, Volume=	4,528 cf, Att	en= 1%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.11 hrs, Volume=	194 cf	
Primary	=	1.26 cfs @	12.08 hrs, Volume=	4,333 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.38' @ 12.11 hrs Surf.Area= 12 sf Storage= 45 cf Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 11.0 min calculated for 4,528 cf (100% of inflow) Center-of-Mass det. time= 11.0 min (755.6 - 744.6)

Volume	Invert	Avail.Stor	rage Storag	e Description			
#1	100.20'	5	51 cf Custo 146 cf	m Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)	
Elevatio (fee	on Su et)	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
100.2 101.2 102.2 103.2 104.2 105.0	20 20 20 20 20 20 20	72 72 12 12 12 12 8	0 72 42 12 12 8	0 72 114 126 138 146			
Device	Routing	Invert	Outlet Devic	ces			
#1	Primary	101.53'	12.0" Rour L= 90.0' C Inlet / Outlet n= 0.012 C	n d Culvert PP, square edge t Invert= 101.53' / orrugated PP, sm	headwall, Ke= 0.50 101.08' S= 0.0050 nooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf	
#2	Discarded	100.20'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'				
#3	Device 1	101.53'	Custom We Head (feet) Width (feet)	eir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	. 62 (C= 3.28) 2.50 4.00		

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=103.38' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.96 cfs @ 12.08 hrs HW=103.32' TW=103.23' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 0.96 cfs @ 1.22 fps)

3=Custom Weir/Orifice (Passes 0.96 cfs of 5.45 cfs potential flow)

Pond 11P: Tree Box



Summary for Pond 12P: Tree Box

Inflow Area	=	10,485 sf,	100.00% Impe	ervious,	Inflow Depth =	5.99"	for 25-	Year event
Inflow	=	1.47 cfs @	12.08 hrs, Vo	olume=	5,235 cf			
Outflow	=	1.46 cfs @	12.08 hrs, Vo	olume=	5,235 cf,	, Atten	=0%, L	.ag= 0.1 min
Discarded	=	0.00 cfs @	12.11 hrs, Vo	olume=	191 cf			
Primary	=	1.46 cfs @	12.08 hrs, Vo	olume=	5,045 cf			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.38' @ 12.11 hrs Surf.Area= 12 sf Storage= 46 cf

Plug-Flow detention time= 8.9 min calculated for 5,235 cf (100% of inflow) Center-of-Mass det. time= 8.9 min (753.5 - 744.6)

Volume	Inver	t Avail.Sto	rage Storag	e Description				
#1	100.00	י' 5	52 cf Custo 148 cf	m Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)		
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store				
(tee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
100.0	00	72	0	0				
101.0	00	72	72	72				
102.0	00	12	42	114				
103.0	00	12	12	126				
104.0	00	12	12	138				
105.0	00	8	10	148				
Device	Routing	Invert	Outlet Devic	es				
#1	Primary	101.18'	12.0" Roun	d Culvert		_		
			L= 10.0' CF	PP, square edge	headwall, Ke= 0.50	0		
			Inlet / Outlet	Invert= 101.18' /	101.13' S= 0.0050	0'' Cc= 0.900		
			n= 0.012 Co	orrugated PP, sm	ooth interior, Flow	Area= 0.79 sf		
#2	Discarded	100.00'	1.020 in/hr	Exfiltration over	Horizontal area			
			Conductivity	to Groundwater	Elevation = 90.00'	Phase-In= 0.01'		
#3	Device 1	101.18'	Custom We	eir/Orifice, Cv= 2	62 (C= 3.28)			
			Head (feet)	0.00 1.00 1.00	2.50			
			Width (feet)	0.33 1.00 4.00	4.00			
Discard	Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=103.37' (Free Discharge)							

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.09 cfs @ 12.08 hrs HW=103.31' TW=103.23' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.09 cfs @ 1.39 fps)

3=Custom Weir/Orifice (Passes 1.09 cfs of 7.18 cfs potential flow)

Pond 12P: Tree Box



Summary for Pond 13P: Tree Box

Inflow Area	ı =	10,798 sf,	100.00% Im	pervious,	Inflow Depth = 5	.99" for 2	5-Year event
Inflow	=	1.51 cfs @	12.08 hrs, \	Volume=	5,391 cf		
Outflow	=	1.51 cfs @	12.09 hrs, \	Volume=	5,391 cf,	Atten= 1%,	Lag= 0.1 min
Discarded	=	0.00 cfs @	12.15 hrs, \	Volume=	172 cf		
Primary	=	1.50 cfs @	12.09 hrs, \	Volume=	5,220 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.82' @ 12.15 hrs Surf.Area= 12 sf Storage= 43 cf

Plug-Flow detention time= 5.7 min calculated for 5,391 cf (100% of inflow) Center-of-Mass det. time= 5.7 min (750.3 - 744.6)

Volume	Inver	t Avail.Sto	rage Storage	e Description				
#1	100.00	י' 5	52 cf Custor 148 cf (n Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)		
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store				
	, ()) ()	(54-11)						
100.0	00	72	0	0				
101.0	00	72	72	12				
102.0	00	12	42	114				
103.0	00	12	12	126				
104.0	00	12	12	138				
105.0	00	8	10	148				
Device	Routing	Invert	Outlet Devic	es				
#1	Primary	100.65'	12.0" Roun L= 10.0' CF Inlet / Outlet n= 0.012 Cc	d Culvert PP, square edge Invert= 100.65' / prrugated PP. sm	headwall, Ke= 0.50 100.60' S= 0.0050 ooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf		
#2	Discarded	100.00'	1.020 in/hr E Conductivity	Exfiltration over to Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'		
#3	Device 1	100.65'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00			
Discard	Discarded OutFlow Max=0.00 cfs @ 12.15 hrs HW=102.82' (Free Discharge)							

1–2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.52 cfs @ 12.09 hrs HW=102.63' TW=102.47' (Dynamic Tailwater)

3=Custom Weir/Orifice (Passes 1.52 cfs of 8.65 cfs potential flow)

Pond 13P: Tree Box



Summary for Pond 22P: Tree Box

Inflow Area	a =	1,945 sf,	100.00% In	npervious,	Inflow Depth = 5	.99" for	25-Year event
Inflow	=	0.27 cfs @	12.08 hrs,	Volume=	971 cf		
Outflow	=	0.27 cfs @	12.09 hrs,	Volume=	971 cf,	Atten= 0%	6, Lag= 0.5 min
Discarded	=	0.00 cfs @	12.09 hrs,	Volume=	99 cf		
Primary	=	0.27 cfs @	12.09 hrs,	Volume=	872 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.61' @ 12.09 hrs Surf.Area= 43 sf Storage= 21 cf

Plug-Flow detention time= 23.3 min calculated for 971 cf (100% of inflow) Center-of-Mass det. time= 23.4 min (768.0 - 744.6)

Volume	Invert	Avail.Sto	rage Storag	e Description		
#1	102.00'	6	69 cf Custo 196 cf	m Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
102.0	00	36	0	0		
103.0	00	36	36	36		
104.0	00	48	42	78		
105.0	00	60	54	132		
106.0	00	68	64	196		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	103.25'	12.0" Rour L= 125.0' C Inlet / Outlet n= 0.012 Co	Id Culvert CPP, square edge Invert= 103.25' / prrugated PP, sm	headwall, Ke= 0.5 102.63' S= 0.0050 ooth interior, Flow	00) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	102.00'	1.020 in/hr Conductivity	Exfiltration over	Horizontal area Elevation = 90 00'	Phase-In= 0.01'
#3	Device 1	103.25'	Custom We Head (feet) Width (feet)	eir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00	
			10 00 hm			

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.61' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.27 cfs @ 12.09 hrs HW=103.61' TW=103.31' (Dynamic Tailwater) -**1=Culvert** (Outlet Controls 0.27 cfs @ 1.58 fps)

1-3=Custom Weir/Orifice (Passes 0.27 cfs of 0.30 cfs potential flow)

Hydrograph 0.27 cfs Inflow
 Outflow Inflow Area=1,945 sf Discarded Primary 0.3 Peak Elev=103.61' 0.27 cfs 0.28 0.26 Storage=21 cf 0.24 0.22 0.2 0.18 (cfs) 0.16 Flow 0.14 0.12 0.1 0.08 0.06 0.04 0.02 0-2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Ó Time (hours)

Pond 22P: Tree Box

Summary for Pond 23P: Tree Box

Inflow Area	ı =	10,400 sf,	100.00% Impervious	, Inflow Depth = 5	5.99" for 25-Year event
Inflow	=	1.46 cfs @	12.08 hrs, Volume=	5,193 cf	
Outflow	=	1.46 cfs @	12.09 hrs, Volume=	5,193 cf,	Atten= 0%, Lag= 0.3 min
Discarded	=	0.00 cfs @	12.09 hrs, Volume=	: 85 cf	-
Primary	=	1.45 cfs @	12.09 hrs, Volume=	5,108 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.61' @ 12.09 hrs Surf.Area= 43 sf Storage= 21 cf

Plug-Flow detention time= 2.7 min calculated for 5,193 cf (100% of inflow) Center-of-Mass det. time= 2.7 min (747.3 - 744.6)

Volume	Invert	Avail.Sto	rage Storage	Description				
#1	102.00'	6	69 cf Custon 196 cf C	n Stage Data (P Overall x 35.0%	r ismatic) Listed belo Voids	ow (Recalc)		
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)				
102.0 103.0 104.0 105.0 106.0)0)0)0)0)0	36 36 48 60 68	0 36 42 54 64	0 36 78 132 196				
Device #1	Routing Primary	Invert 102.65'	Outlet Devices 12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 102.65' / 102.60' S= 0.0050 '/' Cc= 0.900					
#2 #3	Discarded Device 1	102.00' 102.65'	1.020 in/hr Exfiltration over Horizontal areaConductivity to Groundwater Elevation = 90.00'Phase-In= 0.01'Custom Weir/Orifice, Cv= 2.62 (C= 3.28)Head (feet)0.001.004.004.00					
Discard	Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=103.61' (Free Discharge)							

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.44 cfs @ 12.09 hrs HW=103.61' TW=103.31' (Dynamic Tailwater) -1=Culvert (Passes 1.44 cfs of 2.00 cfs potential flow)

1-3=Custom Weir/Orifice (Weir Controls 1.44 cfs @ 2.30 fps)

Pond 23P: Tree Box



Summary for Pond 24P: (new Pond)

Inflow Area	ı =	6,920 sf,	100.00% In	npervious,	Inflow Depth = 5.9	99" for	25-Year event			
Inflow	=	0.97 cfs @	12.08 hrs,	Volume=	3,455 cf					
Outflow	=	0.95 cfs @	12.10 hrs,	Volume=	3,455 cf, A	tten= 2°	%, Lag= 1.3 min			
Discarded	=	0.05 cfs @	12.10 hrs,	Volume=	2,632 cf					
Secondary	=	0.90 cfs @	12.10 hrs,	Volume=	823 cf					
Routing by Peak Elev=	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 107.05' @ 12.10 hrs Surf.Area= 2,000 sf Storage= 737 cf									

Plug-Flow detention time= 81.7 min calculated for 3,454 cf (100% of inflow) Center-of-Mass det. time= 81.7 min (826.3 - 744.6)

Volume	Invert	Avail.Storag	ge Storage Description					
#1	106.00'	1,120	cf 40.00'W x 50.00'L x 1.60'H Prismatoid 3,200 cf Overall x 35.0% Voids					
Device	Routing	Invert C	Dutlet Devices					
#1	Secondary	107.00' 3 H C	0.0' long x 10.0' breadth Broad-Crested Rectangular Weir lead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64					
#2	Discarded	106.00' 1 C	.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'					
D !								

Discarded OutFlow Max=0.05 cfs @ 12.10 hrs HW=107.05' (Free Discharge) **2=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.89 cfs @ 12.10 hrs HW=107.05' TW=103.60' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir (Weir Controls 0.89 cfs @ 0.57 fps) Pond 24P: (new Pond)



Summary for Pond 26P: Tree Box

Inflow Area	ı =	16,145 sf,	100.00% In	npervious,	Inflow Depth = 5	.99" for 2	5-Year event
Inflow	=	2.26 cfs @	12.08 hrs,	Volume=	8,061 cf		
Outflow	=	2.27 cfs @	12.09 hrs,	Volume=	8,061 cf,	Atten= 0%,	Lag= 0.1 min
Discarded	=	0.00 cfs @	12.08 hrs,	Volume=	102 cf		
Primary	=	2.26 cfs @	12.09 hrs,	Volume=	7,959 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.25' @ 12.08 hrs Surf.Area= 61 sf Storage= 47 cf

Plug-Flow detention time= 3.1 min calculated for 8,061 cf (100% of inflow) Center-of-Mass det. time= 3.1 min (747.7 - 744.6)

Volume	Inver	t Avail.Stor	rage Storage	Description		
#1 100.20'		י פ	96 cf Custom 274 cf C	Stage Data (P Overall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.20		36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.20 60		60	54	132		
104.20		72	66	198		
105.20		80	76	274		
Device	Routing	Invert	Outlet Device	S		
#1	Primary	101.30'	12.0" Round	I Culvert		
			L= 10.0' CPI	P, square edge	headwall, Ke= 0.50	0
			Inlet / Outlet I	nvert= 101.30' /	101.25' S= 0.0050) '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf			
#2 Discarded 100.20' 1.020 in/hr Exfiltration over Horizonta			Horizontal area			
		404.00	Conductivity t	o Groundwater	Elevation = 90.00°	Phase-In= 0.01'
#3	Device 1	101.30	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)			
			Head (feet)	0.00 1.00 1.00	2.50	
			vviatn (teet) (J.33 1.00 4.00	4.00	
Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.25' (Free Discharge)						

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=2.22 cfs @ 12.09 hrs HW=103.25' TW=102.90' (Dynamic Tailwater)

3=Custom Weir/Orifice (Passes 2.22 cfs of 11.56 cfs potential flow)

Pond 26P: Tree Box


Summary for Pond 27P: DMH

Inflow Area =21,815 sf,100.00% Impervious, Inflow Depth =5.80" for 25-Year eventInflow =3.06 cfs @12.08 hrs, Volume=10,550 cfOutflow =3.06 cfs @12.08 hrs, Volume=10,550 cf, Atten= 0%, Lag= 0.0 minPrimary =3.06 cfs @12.08 hrs, Volume=10,550 cfDeuting by Dup Star lad method. Time Spans 0.00.48 00 hrs. dt= 0.01 hrs. / 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.34' @ 12.09 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.06 cfs @ 12.08 hrs HW=103.33' TW=102.68' (Dynamic Tailwater) -1=Culvert (Inlet Controls 3.06 cfs @ 3.90 fps)



Pond 27P: DMH

Summary for Pond 29P: DMH

 Inflow Area =
 19,553 sf,100.00% Impervious, Inflow Depth = 5.76" for 25-Year event

 Inflow =
 2.72 cfs @ 12.08 hrs, Volume=
 9,378 cf

 Outflow =
 2.72 cfs @ 12.08 hrs, Volume=
 9,378 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.72 cfs @ 12.08 hrs, Volume=
 9,378 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.31' @ 12.11 hrs Flood Elev= 105.00'

#1 Primary 101.08' 12.0" Round Culvert	
L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf	

Primary OutFlow Max=2.72 cfs @ 12.08 hrs HW=103.23' TW=102.47' (Dynamic Tailwater) -1=Culvert (Outlet Controls 2.72 cfs @ 3.47 fps)



Pond 29P: DMH

Summary for Pond 30P: DMH

 Inflow Area =
 30,351 sf,100.00% Impervious, Inflow Depth = 5.77" for 25-Year event

 Inflow =
 4.23 cfs @ 12.08 hrs, Volume=
 14,598 cf

 Outflow =
 4.23 cfs @ 12.08 hrs, Volume=
 14,598 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 4.23 cfs @ 12.08 hrs, Volume=
 14,598 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.74' @ 12.17 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.22 cfs @ 12.08 hrs HW=102.47' TW=102.23' (Dynamic Tailwater) -1=Culvert (Inlet Controls 4.22 cfs @ 2.39 fps)





Summary for Pond 31P: DMH

Inflow Area = 12,345 sf,100.00% Impervious, Inflow Depth = 5.81" for 25-Year event Inflow 1.72 cfs @ 12.09 hrs, Volume= 5.980 cf = 1.72 cfs @ 12.09 hrs, Volume= Outflow 5,980 cf, Atten= 0%, Lag= 0.0 min = Primary = 1.72 cfs @ 12.09 hrs, Volume= 5,980 cf Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.31' @ 12.09 hrs

Flood Elev= 103.31 @ 12.0

Device	Routing	Invert	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert L= 130.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.90' / 101.25' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
			-

Primary OutFlow Max=1.68 cfs @ 12.09 hrs HW=103.31' TW=102.91' (Dynamic Tailwater) -1=Culvert (Outlet Controls 1.68 cfs @ 2.14 fps)





Summary for Pond 32P: DMH

 Inflow Area =
 28,490 sf,100.00% Impervious, Inflow Depth = 5.87" for 25-Year event

 Inflow =
 3.99 cfs @ 12.09 hrs, Volume=
 13,939 cf

 Outflow =
 3.99 cfs @ 12.09 hrs, Volume=
 13,939 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 3.99 cfs @ 12.09 hrs, Volume=
 13,939 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.92' @ 12.10 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	18.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.00 cfs @ 12.09 hrs HW=102.91' TW=102.69' (Dynamic Tailwater) -1=Culvert (Outlet Controls 4.00 cfs @ 2.55 fps)



Pond 32P: DMH

Summary for Pond 33P: DMH

 Inflow Area =
 50,305 sf,100.00% Impervious, Inflow Depth = 5.84" for 25-Year event

 Inflow =
 7.04 cfs @ 12.09 hrs, Volume=
 24,489 cf

 Outflow =
 7.04 cfs @ 12.09 hrs, Volume=
 24,489 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 7.04 cfs @ 12.09 hrs, Volume=
 24,489 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.71' @ 12.11 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.03 cfs @ 12.09 hrs HW=102.68' TW=101.86' (Dynamic Tailwater) -1=Culvert (Outlet Controls 7.03 cfs @ 4.43 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Area	a =	11,350 sf,100.00% Impervious,			Inflow Depth = 5.	.99" for 2	25-Year event
Inflow	=	1.59 cfs @	12.08 hrs,	Volume=	5,667 cf		
Outflow	=	1.59 cfs @	12.08 hrs,	Volume=	5,667 cf,	Atten= 0%	, Lag= 0.0 min
Discarded	=	0.00 cfs @	12.08 hrs,	Volume=	180 cf		
Primary	=	1.59 cfs @	12.08 hrs,	Volume=	5,487 cf		
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.63' @ 12.08 hrs Surf.Area= 12 sf Storage= 40 cf							

Flood Elev= 107.00' Surf.Area= 8 sf Storage= 52 cf

Plug-Flow detention time= 6.9 min calculated for 5,667 cf (100% of inflow) Center-of-Mass det. time= 6.8 min (751.4 - 744.6)

Volume	Invert	Avail.Stor	age Storage	e Description		
#1	101.60'	5	2 cf Custon 148 cf 0	n Stage Data (P Overall x 35.0%	rismatic) Listed below (Recalc) Voids	
Elevatio (fee	n Su t)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
101.6 102.6 103.6 104.6 105.6 106.6	0 0 0 0 0 0 0	72 72 12 12 12 12 12 8	0 72 42 12 12 10	0 72 114 126 138 148		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	102.55'	12.0" Round L= 100.0' C Inlet / Outlet n= 0.012 Co	d Culvert PP, square edge Invert= 102.55' / rrugated PP, sm	e headwall, Ke= 0.500 102.05' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf	
#2	Discarded	101.60'	1.020 in/hr E Conductivity Excluded Ho	Exfiltration over to Groundwater rizontal area = 0	Horizontal area above 101.55' Elevation = 90.00' sf Phase-In= 0.01'	
#3	Device 1	102.55'	Custom Wei Head (feet) (Width (feet)	stom Weir/Orifice, Cv= 2.62 (C= 3.28) ad (feet) 0.00 1.00 1.00 2.50 dth (feet) 0.33 1.00 4.00 4.00		

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.63' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.57 cfs @ 12.08 hrs HW=103.63' TW=103.33' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.57 cfs @ 2.32 fps) -3=Custom Weir/Orifice (Passes 1.57 cfs of 1.93 cfs potential flow) Pond 34P: Tree Box



Summary for Pond 36P: Tree Box

Inflow Area =	10,465 sf,100.00% Impervious,	Inflow Depth = 5.99" for 25-Year event
Inflow =	1.47 cfs @ 12.08 hrs, Volume=	5,225 cf
Outflow =	1.47 cfs @ 12.09 hrs, Volume=	5,225 cf, Atten= 0%, Lag= 0.2 min
Discarded =	0.00 cfs @ 12.08 hrs, Volume=	163 cf
Primary =	1.47 cfs @ 12.09 hrs, Volume=	5,062 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.48' @ 12.08 hrs Surf.Area= 19 sf Storage= 39 cf Flood Elev= 106.00' Surf.Area= 10 sf Storage= 50 cf

Plug-Flow detention time= 4.1 min calculated for 5,224 cf (100% of inflow) Center-of-Mass det. time= 4.2 min (748.7 - 744.6)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	101.60'	5	2 cf Custom 148 cf O	Stage Data (P verall x 35.0%	rismatic) Listed below (Recalc) Voids
Elevatio	n Su	rf.Area	Inc.Store	Cum.Store	
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)	
101.6	0	72	0	0	
102.6	0	72	72	72	
103.6	0	12	42	114	
104.6	60	12	12	126	
105.6	0	12	12	138	
106.6	60	8	10	148	
Device	Routing	Invert	Outlet Devices	S	
#1	Primary	102.10'	12.0" Round L= 10.0' CPF Inlet / Outlet In n= 0.012 Corr	Culvert P, square edge nvert= 102.10' / rugated PP, sm	headwall, Ke= 0.500 101.60' S= 0.0500 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf
#2	Discarded	101.60'	1.020 in/hr Ex Conductivity to Excluded Hori	cfiltration over o Groundwater zontal area = 0	Horizontal area above 101.10' Elevation = 90.00' sf Phase-In= 0.01'
#3	Device 1	102.10'	Custom Wein Head (feet) 0 Width (feet) 0	/Orifice, Cv= 2 .00 1.00 1.00 .33 1.00 4.00	.62 (C= 3.28) 2.50 4.00

Discarded OutFlow Max=0.00 cfs @ 12.08 hrs HW=103.48' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.40 cfs @ 12.09 hrs HW=103.47' TW=103.34' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.40 cfs @ 1.78 fps) -3=Custom Weir/Orifice (Passes 1.40 cfs of 3.59 cfs potential flow) Pond 36P: Tree Box



Summary for Link 1L: (new Link)

Inflow A	Area	=	217,891 sf,	82.73% Impervious,	Inflow Depth = 4.62"	for 25-Year event
Inflow	:	=	10.34 cfs @	12.42 hrs, Volume=	83,972 cf	
Primar	y :	=	10.34 cfs @	12.42 hrs, Volume=	83,972 cf, Atte	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Summary for Subcatchment 2S: Open Space

Runoff = 4.53 cfs @ 12.13 hrs, Volume= 15,645 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

	A	rea (sf)	CN	Description		
		37,635	74	>75% Gras	s cover, Go	bod, HSG C
37,635 74 100.0			100.00% P	ervious Are	а	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	8.1	50	0.0200	0.10		Sheet Flow, Open Space
	0.4	50	0.0200	2.12		Grass: Dense n= 0.240 P2= 3.30" Shallow Concentrated Flow, Open Space
	0.6	50	0.0400	1.40		Shallow Concentrated Flow, Open Space Short Grass Pasture Kv= 7.0 fps
	01	150	Total			

Subcatchment 2S: Open Space



Summary for Subcatchment 3S: Brewery Roof

Runoff = 1.08 cfs @ 12.08 hrs, Volume= 3,882 cf, Depth= 7.83"



Summary for Subcatchment 5Sa: Athletic Roof

Runoff = 5.05 cfs @ 12.08 hrs, Volume= 18,118 cf, Depth= 7.83"



Summary for Subcatchment 5Sb: Athletic Roof

Runoff = 5.05 cfs @ 12.08 hrs, Volume= 18,118 cf, Depth= 7.83"



Summary for Subcatchment 6S: Residential Roof

Runoff = 2.56 cfs @ 12.08 hrs, Volume= 9,200 cf, Depth= 7.83"



Summary for Subcatchment 11S: Parking/Pavement

Runoff = 1.65 cfs @ 12.08 hrs, Volume= 5,917 cf, Depth= 7.83"

A	vrea (sf)	CN E	Description			
	9,068	98 F	Paved park	ing, HSG C		
	9,068	98 1	00.00% In	npervious A	rea	
Tc (min)	Length	Slope	Velocity	Capacity	Description	
0.7	<u>(IEEL)</u> 50		1 22	(015)	Sheet Flow Payement/Parking	
0.7	50	0.0200	1.22		Smooth surfaces n= 0.011 P2= 3.30"	
0.7	50	Total, I	ncreased t	o minimum	Tc = 6.0 min	
		,				
			Subca	atchment	11S: Parking/Pavement	
				Hydro	graph	
Elow (cts) 0 0		6 8 10	1.65 cfs 1.01 cfs 1.02 cfs 1.01 cfs 1.0	18 20 22 Time	Type III 24-hr 100-Year Rainfall=8.07" Runoff Area=9,068 sf Runoff Volume=5,917 cf Runoff Depth=7.83" Flow Length=50' Slope=0.0200 '/' Tc=6.0 min CN=98	Runoff

Summary for Subcatchment 12S: Parking/Pavement

Runoff = 1.91 cfs @ 12.08 hrs, Volume= 6,842 cf, Depth= 7.83"

0 2

4 6

8 10 12 14 16 18 20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area (sf)	CN Description	
10,485	98 Paved parking, HSG	C
10,485	98 100.00% Impervious	Area
Tc Length (min) (feet)	Slope Velocity Capacit (ft/ft) (ft/sec) (cfs	y Description)
0.7 50	0.0200 1.22	Sheet Flow, Pavement/Parking
		Smooth surfaces n= 0.011 P2= 3.30"
0.7 50	Total, Increased to minimu	m Tc = 6.0 min
	Subcatchme	nt 12S: Parking/Pavement
	Hyd	rograph
2-1		
		Type III 24-hr
		100-Year Rainfall=8.07"
		Runoff Area=10,485 sf
		Runoff Volume=6,842 cf
(cts)		Runoff Depth=7.83"
8 1		Flow Length=50'
		Slope=0.0200 '/'
		Tc=6.0 min
		CN=98

22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Summary for Subcatchment 13S: Parking/Pavement

Runoff = 1.96 cfs @ 12.08 hrs, Volume= 7,046 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

A	rea (sf)	CN E	Description		
	10,798	98 F	Paved park	ing, HSG C	
	10,798	98 1	00.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	10	0.0050	0.04		Sheet Flow, Landscapeing
0.7	50	0.0200	1.22		Grass: Dense n= 0.240 P2= 3.30" Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
4.6	60	Total, I	ncreased t	o minimum	Tc = 6.0 min

Subcatchment 13S: Parking/Pavement



Summary for Subcatchment 15S: Parking/Pavement

Runoff = 1.81 cfs @ 12.08 hrs, Volume= 6,489 cf, Depth= 7.83"

A	rea (sf)	CN I	Description							
	9,945	98 I	Paved park	ing, HSG C)					
	9,945	98 -	100.00% In	npervious A	Area					
	,			1						
Тс	Length	Slope	Velocity	Capacity	Descri	ption				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
0.7	50	0.0200	1.22		Sheet	Flow, pa	avement	parking		
					Smoot	h surface	es n=0.	011 P2= 3.30)"	
0.7	50	Total,	Increased	to minimum	TC = 6.	0 min				
			Suba	otobrooni		Dorking	/Deven	t		
			Subc	atchmen	155.1	arking	j/Paven	nent		
				Hydro	ograph					
2-										Runoff
			1.81 cfs							
-							Ī	ype III 24	-hr	
-						100-7	oar Ra	ainfall=8 (יידו	
-						Ru	ησττ Α	rea=9,945) ST	
						Runof	f Volu	me=6,489	cf	
Sfs)						P	unoff	Donth=7.8	22"	
≝ ≥ 1-ŕ									55	
Εlο							Flow	/ Length=	50'	
-							Slo	pe=0.0200) '/'	
								1C=6.0 n	nin	
-								CN=	:98	
-									i i	
0-		11								
0	2 4	6 8 10) 12 14 16	18 20 22 Tim	24 26 e (hours)	28 30 32	34 36	38 40 42 44 4	46 48	

Summary for Subcatchment 16S: Parking/Pavement

Runoff = 2.06 cfs @ 12.08 hrs, Volume= 7,406 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

Are	ea (sf)	CN	Description		
1	1,350	98	Paved park	ing, HSG C	
1	1,350	98	100.00% Im	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
1.2	100	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 16S: Parking/Pavement



Summary for Subcatchment 17S: Parking/Pavement

Runoff = 1.90 cfs @ 12.08 hrs, Volume= 6,829 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area (sf)	CN Description	1	
10,465	98 Paved park	king, HSG C	
10,465	98 100.00% In	npervious Area	
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity Description (cfs)	
0.9 70	0.0200 1.30	Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"	
0.9 70	Total, Increased	to minimum Tc = 6.0 min	
	Subc	atchment 17S: Parking/Pavement	
2	1 1 1 1 1 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - - - 1 - - - <td>Type III 24-hr 100-Year Rainfall=8.07" Runoff Area=10,465 sf Runoff Volume=6,829 cf Runoff Depth=7.83" Flow Length=70' Slope=0.0200 '/' Tc=6.0 min CN=98</td> <td>inoff</td>	Type III 24-hr 100-Year Rainfall=8.07" Runoff Area=10,465 sf Runoff Volume=6,829 cf Runoff Depth=7.83" Flow Length=70' Slope=0.0200 '/' Tc=6.0 min CN=98	inoff

8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

0 2

4 6

Summary for Subcatchment 18S: Parking/Pavement

Runoff = 1.95 cfs @ 12.08 hrs, Volume= 7,011 cf, Depth= 7.83"

0

0 2

4 6

8 10 12 14 16 18 20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

	Area (sf)	CN	Description	ו		
	10,745	98	Paved park	king, HSG C		
	10,745	98	100.00% Ir	npervious A	rea	
T (mir	c Lengt n) (feet	h Sloj) (ft/	be Velocity ft) (ft/sec)	Capacity (cfs)	Description	
0.	9 7	0 0.020	00 1.30		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"	
0.	9 7	0 Total	, Increased	to minimum	Tc = 6.0 min	
w (cfs)	2-		Subc	atchment Hydrog	18S: Parking/Pavement graph Type III 24-hr 100-Year Rainfall=8.07" Runoff Area=10,745 sf Runoff Volume=7,011 cf Runoff Depth=7.83"	Runoff
<u>6</u>	1-1				Flow Length=70'	

Slope=0.0200 '/'

22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Tc=6.0 min

CN=98

Summary for Subcatchment 19S: Parking/Pavement

Runoff = 1.89 cfs @ 12.08 hrs, Volume= 6,786 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

A	rea (sf)	CN	Description		
	10,400	98	Paved park	ing, HSG C	
	10,400	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
1.2	100	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 19S: Parking/Pavement



Summary for Subcatchment 20S: Parking/Pavement

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,269 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

	A	rea (sf)	CN	Description		
		1,945	98	Paved park	ing, HSG C	
		1,945	98	100.00% In	npervious A	rea
	Tc (min)	Length (feet)	Slop (ft/fl	e Velocity t) (ft/sec)	Capacity (cfs)	Description
	0.5	30	0.020	0 1.10		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"
-	0.5	30	Total,	Increased t	o minimum	Tc = 6.0 min

Subcatchment 20S: Parking/Pavement



Summary for Subcatchment 21S: Parking/Pavement

Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,524 cf, Depth= 7.83"

0 2 4 6

8 10 12 14 16 18 20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area (sf)	CN Description			
5,400	98 Paved park	ing, HSG C		
5,400	98 100.00% In	npervious A	rea	
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity (cfs)	Description	
0.7 50	0.0200 1.22		Sheet Flow, Pavement/Parking Smooth surfaces n= 0.011 P2= 3.30"	
0.7 50	Total, Increased	o minimum	Tc = 6.0 min	
Flow (cfs)	Subc	atchment Hydrog	21S: Parking/Pavement graph Type III 24-hr 100-Year Rainfall=8.07" Runoff Area=5,400 sf Runoff Volume=3,524 cf Runoff Depth=7.83" Flow Length=50'	Runoff

Time (hours)

Slope=0.0200 '/'

22 24 26 28 30 32 34 36 38 40 42 44 46 48

Tc=6.0 min

CN=98

Summary for Subcatchment 22: Parking/Pavement

Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,515 cf, Depth= 7.83"

A	rea (sf)	CN	Description		
	6,920	98	Paved park	ing, HSG C	
	6,920	98	100.00% In	pervious A	rea
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.5	35	0.0200	1.13		Sheet Flow, pavement/parking
0.5	25	Tatal			Smooth surfaces $h = 0.011 P2 = 3.30^{\circ}$
0.5	35	lotal,	Increased 1	o minimum	I I C = 6.0 min
			Subo	atchmen	t 22. Parking/Pavement
			Oust	atonnon	
		1 1		Hyaro	igraph
ĺ					Runoff
			1.26 cfs		
-					i ype iii 24-nr
					100-Year Rainfall=8.07"
1-					Runoff Area=6.920 sf
<u> </u>					Runon volume-4,515 Cl
(cfs					Runoff Depth=7.83"
NO					Flow Length=35'
<u></u> "					
					Siope=0.0200 /
-					Tc=6.0 min
					CN=98
-					
0-					
0	2 4	6 8 1	0 12 14 16	18 20 22 Tim	24 26 28 30 32 34 36 38 40 42 44 46 48 (hours)
				1 11 11	

Summary for Subcatchment 23S: Parking/Pavement

Runoff = 1.87 cfs @ 12.08 hrs, Volume= 6,721 cf, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 100-Year Rainfall=8.07"

 A	rea (sf)	CN	Description		
	10,300	98	Paved park	ing, HSG C)
	10,300	98	100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description
1.2	100	0.020	0 1.40		Sheet Flow, pavement/parking Smooth surfaces n= 0.011 P2= 3.30"
 1.2	100	Total.	Increased t	to minimum	Tc = 6.0 min

Subcatchment 23S: Parking/Pavement



Summary for Subcatchment 37S: Grocery Roof

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 2,462 cf, Depth= 7.83"



Summary for Pond 1P: Area behind levee - Facemate

Inflow Ar	ea =	217,891 sf,	, 82.73% Impervious,	Inflow Depth = 6.38	3" for 100-Year event
Inflow	=	27.20 cfs @	12.11 hrs, Volume=	115,896 cf	
Outflow	=	12.55 cfs @	12.46 hrs, Volume=	115,896 cf, At	tten= 54%, Lag= 20.7 min
Primary	=	12.55 cfs @	12.46 hrs, Volume=	115,896 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 91.70' @ 12.46 hrs Surf.Area= 16,979 sf Storage= 19,622 cf

Plug-Flow detention time= 12.0 min calculated for 115,896 cf (100% of inflow) Center-of-Mass det. time= 11.9 min (782.4 - 770.5)

Volume	Inv	ert Avail.Sto	rage Storage	e Description		
#1	90.0	00' 25,0	50 cf Custon	n Stage Data (Prismatic) Listed below (Recalc)		
Elevatio (fee 90.0 92.0	on et) 00 00	Surf.Area (sq-ft) 6,140 18,910	Inc.Store (cubic-feet) 0 25,050	Cum.Store (cubic-feet) 0 25,050		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	90.00'	2.0" x 2.0" H Limited to we	Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 eir flow at low heads		
#2	Primary	90.00'	2.0" x 2.0" H Limited to we	Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 eir flow at low heads		
Primary	Primary OutFlow Max=12.55 cfs @ 12.46 hrs HW=91.70' TW=0.00' (Dynamic Tailwater)					

-1=Orifice/Grate (Orifice Controls 6.27 cfs @ 6.27 fps) -2=Orifice/Grate (Orifice Controls 6.27 cfs @ 6.27 fps)



Pond 1P: Area behind levee - Facemate

Summary for Pond 3P: (new Pond)

 Inflow Area =
 50,596 sf,100.00% Impervious, Inflow Depth = 6.26" for 100-Year event

 Inflow =
 6.95 cfs @ 12.17 hrs, Volume=
 26,398 cf

 Outflow =
 6.95 cfs @ 12.17 hrs, Volume=
 26,398 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 6.95 cfs @ 12.17 hrs, Volume=
 26,398 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 99.41' @ 12.17 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	18.0" Round Culvert L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 98.00' / 91.00' S= 0.0280 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.95 cfs @ 12.17 hrs HW=99.41' TW=91.32' (Dynamic Tailwater) ☐ 1=Culvert (Inlet Controls 6.95 cfs @ 4.04 fps)



Pond 3P: (new Pond)

Summary for Pond 5P: Tree Box

Inflow Area	a =	9,945 sf,	100.00% Impervious,	Inflow Depth = 9.68	" for 100-Year event
Inflow	=	3.01 cfs @	12.09 hrs, Volume=	8,020 cf	
Outflow	=	3.06 cfs @	12.10 hrs, Volume=	8,020 cf, At	ten= 0%, Lag= 0.7 min
Discarded	=	0.00 cfs @	12.10 hrs, Volume=	87 cf	
Primary	=	3.06 cfs @	12.10 hrs, Volume=	7,933 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 105.22' @ 12.10 hrs Surf.Area= 80 sf Storage= 91 cf

Plug-Flow detention time= 1.9 min calculated for 8,018 cf (100% of inflow) Center-of-Mass det. time= 1.9 min (743.2 - 741.3)

Volume	Invert	Avail.Stor	rage Storag	e Description		
#1	100.20'	ç	1 cf Custo 259 cf	m Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store		
	<u>()</u>					
100.2	20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.0	00	80	61	259		
Device	Routing	Invert	Outlet Devic	es		
#1	Primary	100.75'	12.0" Rour L= 20.0' Cl Inlet / Outlet n= 0.012 Co	id Culvert PP, square edge t Invert= 100.75' / orrugated PP. sm	headwall, Ke= 0.50 ' 100.65' S= 0.0050 nooth interior. Flow ,	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr Conductivity	Exfiltration over	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	100.75'	Custom We Head (feet) Width (feet)	eir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00	
Discord		. Max-0.00 af	- @ 10 10 hm	- UNA-405 041 /		

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=105.21' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=3.04 cfs @ 12.10 hrs HW=105.18' TW=104.54' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 3.04 cfs @ 3.87 fps)

1-3=Custom Weir/Orifice (Passes 3.04 cfs of 26.31 cfs potential flow)



Pond 5P: Tree Box

Summary for Pond 6P: DMH

 Inflow Area =
 20,245 sf,100.00% Impervious, Inflow Depth = 8.69" for 100-Year event

 Inflow =
 4.90 cfs @ 12.10 hrs, Volume=
 14,654 cf

 Outflow =
 4.90 cfs @ 12.10 hrs, Volume=
 14,654 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 4.90 cfs @ 12.10 hrs, Volume=
 14,654 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.56' @ 12.10 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	12.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.86 cfs @ 12.10 hrs HW=104.52' TW=102.87' (Dynamic Tailwater) -1=Culvert (Inlet Controls 4.86 cfs @ 6.19 fps)



Pond 6P: DMH

Summary for Pond 7P: Storage Chambers South

Inflow Area	a =	50,596 sf	,100.00% Impervious,	Inflow Depth = 8	.04" for 100-Year event
Inflow	=	10.33 cfs @	12.10 hrs, Volume=	33,894 cf	
Outflow	=	7.06 cfs @	12.17 hrs, Volume=	33,894 cf,	Atten= 32%, Lag= 4.5 min
Discarded	=	0.10 cfs @	12.17 hrs, Volume=	7,496 cf	
Primary	=	6.95 cfs @	12.17 hrs, Volume=	26,398 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.18' @ 12.17 hrs Surf.Area= 3,348 sf Storage= 7,425 cf Flood Elev= 106.00' Surf.Area= 3,348 sf Storage= 8,592 cf

Plug-Flow detention time= 56.6 min calculated for 33,887 cf (100% of inflow) Center-of-Mass det. time= 56.6 min (799.9 - 743.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	3,199 cf	53.00'W x 63.17'L x 4.00'H Field A
			13,391 cf Overall - 5,393 cf Embedded = 7,998 cf x 40.0% Voids
#2A	100.50'	5,393 cf	Cultec R-360HD x 144 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			144 Chambers in 9 Rows
			Cap Storage= +6.5 cf x 2 x 9 rows = 116.3 cf
		8.592 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	99.00'	18.0" Round Culvert
	-		L= 20.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 99.00' / 96.00' S= 0.1500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00

Discarded OutFlow Max=0.10 cfs @ 12.17 hrs HW=103.18' (Free Discharge) **2=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=6.95 cfs @ 12.17 hrs HW=103.18' TW=99.41' (Dynamic Tailwater) 1=Culvert (Passes 6.95 cfs of 15.77 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 6.95 cfs @ 4.33 fps)


Pond 7P: Storage Chambers South

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Summary for Pond 8P: Storage Chambers North

Inflow Area	a =	50,305 sf,	100.00% Impervic	ous, Inflow	/ Depth =	7.68"	for 100)-Year event
Inflow	=	9.05 cfs @	12.09 hrs, Volum	ie=	32,206 c	f		
Outflow	=	4.61 cfs @	12.23 hrs, Volum	ie=	32,206 c	f, Atten	= 49%,	Lag= 8.2 min
Discarded	=	0.14 cfs @	12.23 hrs, Volum	ie=	10,134 c	f		•
Primary	=	4.47 cfs @	12.23 hrs, Volum	ie=	22,072 c	f		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 102.68' @ 12.23 hrs Surf.Area= 4,786 sf Storage= 9,068 cf

Plug-Flow detention time= 73.7 min calculated for 32,200 cf (100% of inflow) Center-of-Mass det. time= 73.7 min (816.7 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.00'	4,622 cf	116.25'W x 41.17'L x 4.00'H Field A
			19,143 cf Overall - 7,587 cf Embedded = 11,555 cf x 40.0% Voids
#2A	100.50'	7,587 cf	Cultec R-360HD x 200 Inside #1
			Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf
			Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap
			200 Chambers in 20 Rows
			Cap Storage= +6.5 cf x 2 x 20 rows = 258.4 cf
		12.209 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices					
#1	Primary	100.50'	18.0" Round Culvert					
			L= 50.0' CPP, square edge headwall, Ke= 0.500					
			Inlet / Outlet Invert= 100.50' / 100.00' S= 0.0100 '/' Cc= 0.900					
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf					
#2	Discarded	100.00'	1.020 in/hr Exfiltration over Horizontal area					
			Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'					
#3	Device 1	100.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28)					
			Head (feet) 0.00 1.25 1.25 2.50 2.50 3.00					
			Width (feet) 0.33 0.33 0.66 0.66 2.00 2.00					

Discarded OutFlow Max=0.14 cfs @ 12.23 hrs HW=102.68' (Free Discharge) **2=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=4.47 cfs @ 12.23 hrs HW=102.68' TW=91.48' (Dynamic Tailwater) 1=Culvert (Passes 4.47 cfs of 9.93 cfs potential flow) 3=Custom Weir/Orifice (Weir Controls 4.47 cfs @ 4.34 fps)



Pond 8P: Storage Chambers North

Summary for Pond 11P: Tree Box

Inflow Area	a =	9,068 sf,	100.00% In	npervious,	Inflow De	epth = [·]	7.83"	for 1	00-Yea	r event
Inflow	=	1.65 cfs @	12.08 hrs,	Volume=	5	5,917 cf				
Outflow	=	1.64 cfs @	12.09 hrs,	Volume=	5	5,917 cf,	Atten	= 1%	, Lag= ().1 min
Discarded	=	0.00 cfs @	12.10 hrs,	Volume=		197 cf				
Primary	=	1.64 cfs @	12.09 hrs,	Volume=	5	5,720 cf				
Douting by Dyn Stor Ind mothod Time Shane 0.00.49.00 hrs. dt= 0.01 hrs./2										

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.69' @ 12.10 hrs Surf.Area= 10 sf Storage= 50 cf Flood Elev= 105.00' Surf.Area= 8 sf Storage= 51 cf

Plug-Flow detention time= 8.7 min calculated for 5,917 cf (100% of inflow) Center-of-Mass det. time= 8.7 min (749.8 - 741.1)

Volume	Invert	Avail.Stor	age Storage	Description				
#1	100.20'	5	51 cf Custom Stage Data (Prismatic) Listed below (Recalc) 146 cf Overall x 35.0% Voids					
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store				
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
100.2	20	72	0	0				
101.2	20	72	72	72				
102.2	20	12	42	114				
103.2	20	12	12	126				
104.2	20	12	12	138				
105.0	00	8	8	146				
Device	Routing	Invert	Outlet Device	S				
#1	Primary	101.53'	12.0" Round Culvert L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.53' / 101.08' S= 0.0050 '/' Cc= 0.900					
#2	Discarded	100.20'	1.020 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'					
#3	Device 1	101.53'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2.6 0.00 1.00 1.00 2 0.33 1.00 4.00 4	32 (C= 3.28) 2.50 4.00			

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=104.69' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.34 cfs @ 12.09 hrs HW=104.62' TW=104.45' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 1.34 cfs @ 1.71 fps)

3=Custom Weir/Orifice (Passes 1.34 cfs of 13.77 cfs potential flow)

Pond 11P: Tree Box



Summary for Pond 12P: Tree Box

Inflow Area	a =	10,485 sf,	100.00% Impervious,	Inflow Depth = 7.83 "	for 100-Year event
Inflow	=	1.91 cfs @	12.08 hrs, Volume=	6,842 cf	
Outflow	=	1.90 cfs @	12.09 hrs, Volume=	6,842 cf, Atte	n= 0%, Lag= 0.1 min
Discarded	=	0.00 cfs @	12.10 hrs, Volume=	193 cf	
Primary	=	1.90 cfs @	12.09 hrs, Volume=	6,649 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.68' @ 12.10 hrs Surf.Area= 9 sf Storage= 51 cf

Plug-Flow detention time= 7.1 min calculated for 6,842 cf (100% of inflow) Center-of-Mass det. time= 7.1 min (748.2 - 741.1)

Volume	Inver	t Avail.Sto	rage Storag	e Description						
#1	100.00)' Ę	52 cf Custom Stage Data (Prismatic) Listed below (Recalc) 148 cf Overall x 35.0% Voids							
Elevatio	on S	Surf.Area	Inc.Store	Cum.Store						
(tee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)						
100.0	00	72	0	0						
101.0	00	72	72	72						
102.0	00	12	42	114						
103.0	00	12	12	126						
104.0	00	12	12	138						
105.0	00	8	10	148						
Device	Routing	Invert	Outlet Devic	es						
#1	Primary	101.18'	12.0" Roun	d Culvert		_				
			L= 10.0' CF	PP, square edge	headwall, Ke= 0.50	0				
			Inlet / Outlet	Invert= 101.18' /	101.13' S= 0.0050	0'' Cc= 0.900				
			n= 0.012 Co	orrugated PP, sm	ooth interior, Flow	Area= 0.79 sf				
#2	Discarded	100.00'	1.020 in/hr	Exfiltration over	Horizontal area					
			Conductivity	to Groundwater	Elevation = 90.00'	Phase-In= 0.01'				
#3	Device 1	101.18'	Custom We	eir/Orifice, Cv= 2	62 (C= 3.28)					
			Head (feet)	0.00 1.00 1.00	2.50					
			Width (feet)	0.33 1.00 4.00	4.00					
Discard	Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=104.68' (Free Discharge)									

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.53 cfs @ 12.09 hrs HW=104.62' TW=104.45' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 1.53 cfs @ 1.95 fps)

3=Custom Weir/Orifice (Passes 1.53 cfs of 13.27 cfs potential flow)

Pond 12P: Tree Box



Summary for Pond 13P: Tree Box

Inflow Area	a =	10,798 sf,	100.00% Impervious,	Inflow Depth = 7.83"	for 100-Year event
Inflow	=	1.96 cfs @	12.08 hrs, Volume=	7,046 cf	
Outflow	=	1.95 cfs @	12.08 hrs, Volume=	7,046 cf, Atte	en= 1%, Lag= 0.0 min
Discarded	=	0.00 cfs @	12.12 hrs, Volume=	174 cf	
Primary	=	1.95 cfs @	12.08 hrs, Volume=	6,872 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.61' @ 12.12 hrs Surf.Area= 12 sf Storage= 47 cf

Plug-Flow detention time= 4.6 min calculated for 7,044 cf (100% of inflow) Center-of-Mass det. time= 4.6 min (745.7 - 741.1)

Volume	Invert	Avail.Stor	age Storage	e Description					
#1	100.00'	5	52 cf Custor 148 cf (n Stage Data (P Overall x 35.0%	rismatic) Listed belo Voids	ow (Recalc)			
Elevatio	n Su	ırf.Area	Inc.Store	Cum.Store					
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)					
100.0	0	72	0	0					
101.0	0	72	72	72					
102.0	0	12	42	114					
103.0	0	12	12	126					
104.0	0	12	12	138					
105.0	0	8	10	148					
Device	Routing	Invert	Outlet Device	es					
#1	Primary	100.65'	12.0" Roun L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert PP, square edge Invert= 100.65' / prrugated PP, sm	headwall, Ke= 0.50 100.60' S= 0.0050 nooth interior, Flow	0) '/' Cc= 0.900 Area= 0.79 sf			
#2	Discarded	100.00'	1.020 in/hr E	Exfiltration over	Horizontal area	Phase-In= 0.01'			
#3	Device 1	100.65'	Custom We Head (feet) Width (feet)	ir/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	2.50 4.00				
Discard	Discarded OutElow Max=0.00 cfc @ 12.12 brs. $HW=103.60'$ (Eree Discharge)								

Discarded OutFlow Max=0.00 cfs @ 12.12 hrs HW=103.60' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.96 cfs @ 12.08 hrs HW=103.44' TW=103.17' (Dynamic Tailwater)

3=Custom Weir/Orifice (Passes 1.96 cfs of 17.00 cfs potential flow)

Pond 13P: Tree Box



Summary for Pond 22P: Tree Box

Inflow Area	a =	1,945 sf,	,100.00% In	npervious,	Inflow Depth = 7	.83" for 10	0-Year event
Inflow	=	0.35 cfs @	12.08 hrs,	Volume=	1,269 cf		
Outflow	=	0.71 cfs @	12.15 hrs,	Volume=	1,269 cf,	Atten= 0%,	Lag= 4.0 min
Discarded	=	0.00 cfs @	12.13 hrs,	Volume=	101 cf		
Primary	=	0.71 cfs @	12.15 hrs,	Volume=	1,187 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.65' @ 12.13 hrs Surf.Area= 56 sf Storage= 39 cf

Plug-Flow detention time= 18.7 min calculated for 1,269 cf (100% of inflow) Center-of-Mass det. time= 18.8 min (759.9 - 741.1)

Volume	Invert	Avail.Stor	rage Storage	e Description					
#1	102.00'	6	69 cf Custom Stage Data (Prismatic)Listed below (Recalc) 196 cf Overall x 35.0% Voids						
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)					
102.0 103.0 104.0 105.0 106.0)0 00 00 00 00 00	36 36 48 60 68	0 36 42 54 64	0 36 78 132 196					
Device	Routing	Invert	Outlet Device	es					
#1	Primary	103.25'	12.0" Round Culvert L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 103.25' / 102.63' S= 0.0050 '/' Cc= 0.900						
#2	Discarded	102.00'	1.020 in/hr E	1.020 in/hr Exfiltration over Horizontal area					
#3	Device 1	103.25'	Custom Wei Head (feet) (Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	.62 (C= 3.28) 2.50 4.00				

Discarded OutFlow Max=0.00 cfs @ 12.13 hrs HW=104.64' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=104.39' TW=104.55' (Dynamic Tailwater)

1-3=Custom Weir/Orifice (Controls 0.00 cfs)

Hydrograph Inflow
 Outflow 0.71 cfs Inflow Area=1,945 sf Discarded Primary 0.75 Peak Elev=104.65' 0.71 cfs 0.7 Storage=39 cf 0.65 0.6 0.55 0.5 cfs (cfs) 0.45 0.4 Flow 0.35 0.3 0.25 0.2 0.15 0.1 0.05 0-2 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 4 6 Ó Time (hours)

Pond 22P: Tree Box

Summary for Pond 23P: Tree Box

Inflow Area	ı =	10,400 sf,	100.00% Imp	ervious,	Inflow Depth = 7	7.83" for	100-Year event
Inflow	=	1.89 cfs @	12.08 hrs, V	olume=	6,786 cf		
Outflow	=	1.98 cfs @	12.11 hrs, V	olume=	6,786 cf,	Atten= 0%	, Lag= 1.6 min
Discarded	=	0.00 cfs @	12.12 hrs, V	olume=	86 cf		
Primary	=	1.98 cfs @	12.11 hrs, V	olume=	6,701 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.88' @ 12.12 hrs Surf.Area= 59 sf Storage= 44 cf

Plug-Flow detention time= 2.2 min calculated for 6,786 cf (100% of inflow) Center-of-Mass det. time= 2.2 min (743.3 - 741.1)

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	102.00'	6	69 cf Custon 196 cf C	n Stage Data (P Dverall x 35.0%	r ismatic) Listed belo Voids	w (Recalc)
Elevatio (fee	on Su et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
102.0 103.0 104.0 105.0 106.0)0)0)0)0)0	36 36 48 60 68	0 36 42 54 64	0 36 78 132 196		
Device #1	Routing Primary	Invert 102.65'	Outlet Device 12.0" Round L= 10.0' CP Inlet / Outlet	es d Culvert P, square edge h Invert= 102.65' /	neadwall, Ke= 0.50 102.60' S= 0.0050	0) '/' Cc= 0.900
#2 #3	Discarded Device 1	102.00' 102.65'	1.020 in/hr E Conductivity Custom Wei Head (feet) (Width (feet)	initial constraints initiants initial constraits <th< td=""><td>Horizontal area Elevation = 90.00' .62 (C= 3.28) 2.50 4.00</td><td>Phase-In= 0.01'</td></th<>	Horizontal area Elevation = 90.00' .62 (C= 3.28) 2.50 4.00	Phase-In= 0.01'
Discard	Discarded OutFlow Max=0.00 cfs @ 12.12 hrs HW=104.88' (Free Discharge)					

1–2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=104.84' TW=104.94' (Dynamic Tailwater) 1=Culvert (Controls 0.00 cfs)

1-3=Custom Weir/Orifice (Controls 0.00 cfs)

Pond 23P: Tree Box



Summary for Pond 24P: (new Pond)

Inflow Area =	6,920 sf,100.00% Impervious,	Inflow Depth = 7.83" for 100-Year event
Inflow =	1.26 cfs @ 12.08 hrs, Volume=	4,515 cf
Outflow =	1.25 cfs @ 12.09 hrs, Volume=	4,515 cf, Atten= 0%, Lag= 0.4 min
Discarded =	0.05 cfs @ 12.09 hrs, Volume=	2,985 cf
Secondary =	1.20 cfs @ 12.09 hrs, Volume=	1,530 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 107.06' @ 12.09 hrs Surf.Area= 2,000 sf Storage= 745 cf

Plug-Flow detention time= 74.8 min calculated for 4,515 cf (100% of inflow) Center-of-Mass det. time= 74.8 min (815.9 - 741.1)

Volume	Invert	Avail.Stora	age	Storage Description
#1	106.00'	1,120	0 cf	40.00'W x 50.00'L x 1.60'H Prismatoid 3,200 cf Overall x 35.0% Voids
Device	Routing	Invert	Outle	et Devices
#1	Secondary	107.00'	30.0 Head Coef	Long x 10.0' breadth Broad-Crested Rectangular Weir d (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 f. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	106.00'	1.02 Con	0 in/hr Exfiltration over Horizontal area ductivity to Groundwater Elevation = 90.00' Phase-In= 0.01'
			<u> </u>	

Discarded OutFlow Max=0.05 cfs @ 12.09 hrs HW=107.06' (Free Discharge) **2=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=1.20 cfs @ 12.09 hrs HW=107.06' TW=105.01' (Dynamic Tailwater) —1=Broad-Crested Rectangular Weir (Weir Controls 1.20 cfs @ 0.63 fps) Pond 24P: (new Pond)



Summary for Pond 26P: Tree Box

Inflow Area	ı =	16,145 sf,	100.00% Impervious,	Inflow Depth = 7.8	83" for 100-Year event
Inflow	=	2.94 cfs @	12.08 hrs, Volume=	10,535 cf	
Outflow	=	3.01 cfs @	12.10 hrs, Volume=	10,535 cf, /	Atten= 0%, Lag= 0.9 min
Discarded	=	0.00 cfs @	12.11 hrs, Volume=	104 cf	
Primary	=	3.00 cfs @	12.10 hrs, Volume=	10,431 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.48' @ 12.11 hrs Surf.Area= 74 sf Storage= 76 cf

Plug-Flow detention time= 2.4 min calculated for 10,533 cf (100% of inflow) Center-of-Mass det. time= 2.5 min (743.6 - 741.1)

Volume	Invert	Avail.Stor	age Storage	Description		
#1	100.20'	g	6 cf Custon 274 cf (1 Stage Data (P Dverall x 35.0%	rismatic)Listed belo Voids	ow (Recalc)
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
100.2	20	36	0	0		
101.2	20	36	36	36		
102.2	20	48	42	78		
103.2	20	60	54	132		
104.2	20	72	66	198		
105.2	20	80	76	274		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	101.30'	12.0" Round L= 10.0' CP Inlet / Outlet n= 0.012 Co	d Culvert P, square edge Invert= 101.30' / rrugated PP. sm	headwall, Ke= 0.50 101.25' S= 0.0050 ooth interior. Flow	0) '/' Cc= 0.900 Area= 0.79 sf
#2	Discarded	100.20'	1.020 in/hr E Conductivity	Exfiltration over to Groundwater	Horizontal area Elevation = 90.00'	Phase-In= 0.01'
#3	Device 1	101.30'	Custom Wei Head (feet) Width (feet)	r/Orifice, Cv= 2 0.00 1.00 1.00 0.33 1.00 4.00	. 62 (C= 3.28) 2.50 4.00	
Discard	ed OutFlow	Max=0.00 cfs	s @ 12.11 hrs	HW=104.47' (Free Discharge)	

2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=2.66 cfs @ 12.10 hrs HW=104.40' TW=103.91' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 2.66 cfs @ 3.38 fps)

1-3=Custom Weir/Orifice (Passes 2.66 cfs of 23.02 cfs potential flow)

Pond 26P: Tree Box



Summary for Pond 27P: DMH

 Inflow Area =
 21,815 sf,100.00% Impervious, Inflow Depth = 7.64" for 100-Year event

 Inflow =
 4.03 cfs @ 12.10 hrs, Volume=
 13,888 cf

 Outflow =
 4.03 cfs @ 12.10 hrs, Volume=
 13,888 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 4.03 cfs @ 12.10 hrs, Volume=
 13,888 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.85' @ 12.12 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.70'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.70' / 101.55' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.16 cfs @ 12.10 hrs HW=104.69' TW=103.48' (Dynamic Tailwater) **1=Culvert** (Inlet Controls 4.16 cfs @ 5.29 fps)



Pond 27P: DMH

Summary for Pond 29P: DMH

Inflow Area =19,553 sf,100.00% Impervious, Inflow Depth =7.59" for 100-Year eventInflow =3.53 cfs @12.09 hrs, Volume=12,369 cfOutflow =3.53 cfs @12.09 hrs, Volume=12,369 cf, Atten= 0%, Lag= 0.0 minPrimary =3.53 cfs @12.09 hrs, Volume=12,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.53' @ 12.10 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.08'	12.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.08' / 100.61' S= 0.0049 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.53 cfs @ 12.09 hrs HW=104.45' TW=103.18' (Dynamic Tailwater) -1=Culvert (Outlet Controls 3.53 cfs @ 4.50 fps)



Pond 29P: DMH

Summary for Pond 30P: DMH

 Inflow Area =
 30,351 sf,100.00% Impervious, Inflow Depth =
 7.61" for 100-Year event

 Inflow =
 5.49 cfs @
 12.08 hrs, Volume=
 19,241 cf

 Outflow =
 5.49 cfs @
 12.08 hrs, Volume=
 19,241 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 5.49 cfs @
 12.08 hrs, Volume=
 19,241 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.41' @ 12.14 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.60'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.60' / 100.50' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.48 cfs @ 12.08 hrs HW=103.18' TW=102.76' (Dynamic Tailwater) ☐ 1=Culvert (Inlet Controls 5.48 cfs @ 3.10 fps)



Summary for Pond 31P: DMH

 Inflow Area =
 12,345 sf,100.00% Impervious, Inflow Depth =
 7.67" for 100-Year event

 Inflow =
 2.63 cfs @
 12.11 hrs, Volume=
 7,887 cf

 Outflow =
 2.63 cfs @
 12.11 hrs, Volume=
 7,887 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 2.63 cfs @
 12.11 hrs, Volume=
 7,887 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.99' @ 12.11 hrs Flood Elev= 105.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.90'	12.0" Round Culvert
			Inlet / Outlet Invert= 101.90' / 101.25' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.69 cfs @ 12.11 hrs HW=104.90' TW=103.88' (Dynamic Tailwater) -1=Culvert (Outlet Controls 2.69 cfs @ 3.43 fps)



Pond 31P: DMH

Summary for Pond 32P: DMH

Inflow Area =28,490 sf,100.00% Impervious, Inflow Depth = 7.72" for 100-Year eventInflow =5.20 cfs @ 12.11 hrs, Volume=18,318 cfOutflow =5.20 cfs @ 12.11 hrs, Volume=18,318 cf, Atten= 0%, Lag= 0.0 minPrimary =5.20 cfs @ 12.11 hrs, Volume=18,318 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 104.12' @ 12.12 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.25'	18.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.25' / 101.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.94 cfs @ 12.11 hrs HW=103.91' TW=103.58' (Dynamic Tailwater) -1=Culvert (Inlet Controls 4.94 cfs @ 2.79 fps)



Pond 32P: DMH

Summary for Pond 33P: DMH

Inflow Area =	50,305 sf,100.00% Impervious,	Inflow Depth = 7.68" for 100-Year event
Inflow =	9.05 cfs @ 12.09 hrs, Volume=	32,206 cf
Outflow =	9.05 cfs @ 12.09 hrs, Volume=	32,206 cf, Atten= 0%, Lag= 0.0 min
Primary =	9.05 cfs @ 12.09 hrs, Volume=	32,206 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 103.65' @ 12.12 hrs Flood Elev= 106.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	101.00'	18.0" Round Culvert L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.00' / 100.58' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.00 cfs @ 12.09 hrs HW=103.51' TW=102.28' (Dynamic Tailwater) **1=Culvert** (Outlet Controls 9.00 cfs @ 5.10 fps)



Pond 33P: DMH

Summary for Pond 34P: Tree Box

Inflow Area =	11,350 sf,100.00% Impervious,	Inflow Depth = 7.83" for 100-Year event
Inflow =	2.06 cfs @ 12.08 hrs, Volume=	7,406 cf
Outflow =	2.10 cfs @ 12.10 hrs, Volume=	7,406 cf, Atten= 0%, Lag= 0.8 min
Discarded =	0.00 cfs @ 12.09 hrs, Volume=	182 cf
Primary =	2.09 cfs @ 12.10 hrs, Volume=	7,224 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 105.06' @ 12.09 hrs Surf.Area= 12 sf Storage= 46 cf Flood Elev= 107.00' Surf.Area= 8 sf Storage= 52 cf

Plug-Flow detention time= 5.4 min calculated for 7,406 cf (100% of inflow) Center-of-Mass det. time= 5.4 min (746.5 - 741.1)

Volume	Invert	Avail.Stor	rage Storage	Description	
#1	101.60'	5	52 cf Custom 148 cf O	Stage Data (P verall x 35.0%	rismatic) Listed below (Recalc) Voids
Elevatio	on Su	Irf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-π)	(cubic-teet)	(cubic-feet)	
101.6	50	72	0	0	
102.6	50	72	72	72	
103.6	60	12	42	114	
104.6	60	12	12	126	
105.6	60	12	12	138	
106.6	60	8	10	148	
Device	Routing	Invert	Outlet Devices	6	
#1	Primary	102.55'	12.0" Round L= 100.0' CP Inlet / Outlet Ir n= 0.012 Corr	Culvert P, square edge overt= 102.55' / rugated PP, sm	e headwall, Ke= 0.500 102.05' S= 0.0050 '/' Cc= 0.900 ooth interior, Flow Area= 0.79 sf
#2	Discarded	101.60'	1.020 in/hr Ex Conductivity to Excluded Hori	f iltration over Groundwater zontal area = 0	Horizontal area above 101.55' Elevation = 90.00' sf Phase-In= 0.01'
#3	Device 1	102.55'	Custom Weir Head (feet) 0. Width (feet) 0	Orifice, Cv= 2 00 1.00 1.00 .33 1.00 4.00	.62 (C= 3.28) 2.50 4.00

Discarded OutFlow Max=0.00 cfs @ 12.09 hrs HW=105.06' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.62 cfs @ 12.10 hrs HW=104.96' TW=104.69' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.62 cfs @ 2.06 fps) -3=Custom Weir/Orifice (Passes 1.62 cfs of 15.30 cfs potential flow)



Summary for Pond 36P: Tree Box

Inflow Area	ı =	10,465 sf,	100.00% Impervious,	Inflow Depth = 7.83"	for 100-Year event
Inflow	=	1.90 cfs @	12.08 hrs, Volume=	6,829 cf	
Outflow	=	1.94 cfs @	12.10 hrs, Volume=	6,829 cf, Atter	n= 0%, Lag= 0.8 min
Discarded	=	0.00 cfs @	12.11 hrs, Volume=	165 cf	-
Primary	=	1.94 cfs @	12.10 hrs, Volume=	6,664 cf	
Routing by	Dyn-Sto	or-Ind metho	d, Time Span= 0.00-48	3.00 hrs, dt= 0.01 hrs / 3	3
Peak Elev=	= 104.88	' @ 12.11 hrs	s Surf.Area= 12 sf S	torage= 45 cf	
Flood Elev=	= 106.00)' Surf.Area	= 10 sf Storage= 50 o	of	

Plug-Flow detention time= 3.4 min calculated for 6,829 cf (100% of inflow) Center-of-Mass det. time= 3.4 min (744.5 - 741.1)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	101.60'	5	2 cf Custom 148 cf O	Stage Data (Powerall x 35.0%)	rismatic) Listed below (Recalc) Voids
Elevatio	on Su	urf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
101.6	60	72	0	0	
102.6	60	72	72	72	
103.6	60	12	42	114	
104.6	60	12	12	126	
105.6	50	12	12	138	
106.6	50	8	10	148	
Device	Routing	Invert	Outlet Devices	S	
#1	Primary	102.10'	12.0" Round	Culvert	
			L= 10.0' CPF	P, square edge l	neadwall, Ke= 0.500
			Inlet / Outlet Ir	1vert= 102.10'/	101.60' S= 0.0500 '/' Cc= 0.900
	D ¹	404.00	n= 0.012 Cori	rugated PP, sm	ooth interior, Flow Area= 0.79 st
#2	Discarded	101.60	1.020 In/nr EX	crittration over	Horizontal area above 101.10°
			Evoluded Hori	zontal area = 0	
#3	Device 1	102 10'	Custom Weir		62 (C = 3.28)
#0	Device 1	102.10	Head (feet) 0	$00 \ 1 \ 00 \ 1 \ 00$	2 50
			Width (feet) 0	0.33 1.00 4.00	4.00
			()		

Discarded OutFlow Max=0.00 cfs @ 12.11 hrs HW=104.88' (Free Discharge) **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.03 cfs @ 12.10 hrs HW=104.77' TW=104.69' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.03 cfs @ 1.31 fps) -3=Custom Weir/Orifice (Passes 1.03 cfs of 8.89 cfs potential flow) Pond 36P: Tree Box



Summary for Link 1L: (new Link)

Inflow A	Area =	217,891 sf, 82.73% Impervious,	Inflow Depth = 6.38"	for 100-Year event
Inflow	=	12.55 cfs @ 12.46 hrs, Volume=	115,896 cf	
Primary	/ =	12.55 cfs @ 12.46 hrs, Volume=	115,896 cf, Atter	n= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs



Link 1L: (new Link)

Appendix C

Stormwater Management Checklist

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

Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

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

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

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

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

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

B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Signature and Date

Checklist

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

New development

Redevelopment

Mix of New Development and Redevelopment

Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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

Checklist (continued)

Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

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

Standard 3: Recharge

Soil Analysis provided.

- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.

Static Simple Dynamic

Dynamic Field¹

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

\square	Recharge BMPs	have been	sized to in	nfiltrate the	Required	Recharge	Volume.

- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

Checklist ((continued)
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Standard 4: Water Quality (continued)

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

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

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

Standard 6: Critical Areas

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

Checklist (continued)

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

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

Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

- Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- Bike Path and/or Foot Path
- Redevelopment Project
- Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

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

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

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

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

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

Checklist (continued)

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

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

- The project is *not* covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

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

Standard 10: Prohibition of Illicit Discharges

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

STORMWATER CHECKLIST NARRATIVE

Stormwater Management Standards

The proposed stormwater management Best Management Practices have been designed to meet the DEP's Stormwater Management Policy to the maximum extent practicable. Summaries of compliance with the ten DEP Stormwater Management Standards and City of Chicopee's Stormwater Management Rules are provided in the following sections.

MassDEP Stormwater Management Standards

Minimum Standard 1: No New Untreated Discharges

As a Redevelopment Project the requirements of Standard 1 are not applicable to this project. Additional information is included in the stormwater checklist.

There are no new untreated discharges from impervious areas proposed as a part of this project. The stormwater runoff from the proposed parking, walk, and roadway areas will be collected in a through surface flow into tree box filters, pre-treated, and flow through detention/infiltration systems prior to discharge. These discharges will connect to the existing storm drain system on the site.

Minimum Standard 2: Peak Rate Attenuation

The hydrologic conditions for the pre- and post-developed conditions of the site were modeled using Hydro-CAD Rel. 8.00. This is a hydrology and hydraulics program based on the SCS TR-55 and TR-20 methodology. The soil runoff curve numbers and time of concentration were developed using SCS TR-55 standard procedures for calculating travel times. The rainfall data used in the existing conditions model was an SCS Type III, 24-hour storm distribution. The rainfall data was obtained from the data published Technical Paper No. 40, prepared by the National Weather Service (NWS TP40). For all proposed conditions calculations, rainfall data obtained via NOAA Atlas-14, Volume 10, Version 3: Chicopee, MA.

For comparison of the pre- and post-development site hydrology, the design point selected is the discharge to the Min Street pump station. Tabulated below is a summary of the pre- and post-development runoff rates and volumes for the site.

Analysis Point		1-Year	2-Year	10-Year	25-Year	100-Year
Design Point 1	BETA - Existing	5.76	6.76	9.42	10.38	11.81
Station	BETA - Proposed	3.38	4.87	7.75	9.13	10.87

Baskin Redevelopment	4.12	5.3	8.58	10.34	12.55
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Table 2: Runoff Volume (AC-FT)

Analysis Point		1-Year	2-Year	10-Year	25-Year	100-Year
Dogion Doint 1	BETA - Existing	.606	.792	1.413	1.692	2.176
Main St Pump	BETA - Proposed	.42	.626	1.313	1.766	2.486
Station	Baskin Redevelopment	.555	.770	1.469	1.928	2.660

The above table demonstrates the pre- and post-development runoff rates remain similar before and after development. The inclusion of best management practices slows and infiltrates storm water to mitigate increases due to the development of impervious areas within the site.

Minimum Standard 3: Recharge

The project is a redevelopment project and the site is made up of Urban Fill type soils, as depicted on the soil map provided in Appendix A. The current stormwater design relies on U.S. National Resources Conservation Service (NRCS) soil mapping and utilizes conservative infiltration rates for the mapped soils.

Minimum Standard 4: Water Quality

As a Redevelopment Project with more than 40% existing impervious coverage, the requirements of Standard 4 are not applicable to this project.

Standard 4 of the 2008 Massachusetts Stormwater Standards requires that new stormwater management systems be designed to achieve an 80% TSS removal rate before discharge. The Massachusetts Department of Environmental Protections has published presumed removal rates for each of the BMP's featured in their design guidelines.

This site has been designed so that all runoff from the new parking and ingress/egress surfaces are directed into tree box filters which have a removal rate of 80% for TSS when designed and maintained in accordance with the handbook. From the tree box filters, stormwater is then piped to one of the two proposed underground storage system or detention basins. No TSS removal credit is requested for either the infiltration systems or detention basins.

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

The Site includes former mill buildings known to contain potentially hazardous substances. Ongoing remediation efforts may involve handling of these materials, and measures to prevent spills or exposure will be required of each remediation plan. Backfill operations under this project

may include contaminated materials which will be handled in accordance with the Massachusetts Contingency Plan (MCP) and other local, state, and federal guidelines. These pollutant sources are anticipated only during the construction period, and in the long-term the project Site will not be classified as a LUHPPL. A basic Spill control and prevention plan is included in Appendix B.

Minimum Standard 6: Critical Areas

The project does not propose discharges to a critical area.

Minimum Standard 7: Redevelopments and Other Projects Subject to the Standards Only

to the Maximum Extent Practicable

The project is a redevelopment project under the definition of (2) "Development, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area." Certain standards have been met only to the maximum extent practicable as noted.

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

Construction Period Pollution Prevention and Erosion and Sedimentation control measures are included on the Site Plans and in the Stormwater Operations and Maintenance Plan included in Appendix E of the Stormwater Report. In addition, a separate Construction Period Pollution Prevention Plan is included with this Stormwater report in located Appendix F.

Minimum Standard 9: Operation and Maintenance Plan

The Stormwater Operations and Maintenance Plan included in Appendix E of the Stormwater Report. A separate Construction Period Pollution Prevention Plan is included with this Stormwater report in Appendix F. Construction Period Pollution Prevention and Erosion and Sedimentation control measures will be provided on the Site Plans.

Minimum Standard 10: Construction Erosion and Sedimentation Control

No illicit discharges associated with the proposed access road construction or long-term use of the roadway will exist. Further discussion of illicit discharge prevention is included in the Long Term Pollution Prevention Plan included with this report in Appendix H.

Chicopee Stormwater Management (Chapter 231)

The following summary has been prepared to illustrate the project's conformance with the fourteen objectives detailed in Chapter 231 of the City of Chicopee bylaw.

Objective 1: Reduce the adverse water quality impacts of stormwater and combined sewer overflow discharges to rivers, lakes, reservoirs, and streams in order to attain federal water quality standards.



The existing and original proposed stormwater is directed to the Chicopee River and the Main Street Pump Station. The proposed Baskin Redevelopment continues this overall stormwater management design objective with discharge to these locations. A net decrease in runoff volume and peak discharge rate is anticipated up to the 100-year storm; at the 100-yr event there is a slight increase in rate and volume. The project has been designed to maintain the required water quality volume, and TSS removal will be improved compared to existing conditions.

Objective 2: Prevent the Discharge of Pollutants, including hazardous chemicals into stormwater runoff.

The proposed design incorporates tree filter box structures and subsurface infiltration structures to minimize the risk of pollution to stormwater runoff from the Site. No hazardous chemicals are anticipated to be present at the Site during normal operation.

Objective 3: Minimize the volume and rate of stormwater which is discharged to rivers, streams, reservoirs, lakes, and combined sewers.

The proposed design incorporates tree box filters and two large subsurface infiltration basins to capture, store, and control runoff associated with e increased developed impervious area. A net decrease in peak runoff rate and volume from all watersheds up to the 100-year storm is anticipated as part of the project; at the 100-yr event there is a slight increase in rate and volume.

Objective 4: Prevent erosion and sedimentation form improper land development, and reduce stream channel erosion caused by increased runoff.

The proposed design incorporates basic erosion controls consisting of straw wattles, stabilized construction entrance, and inlet protection minimize sedimentation and erosion from the Site. The project will disturb greater than one acre and will require the development of a detailed Stormwater Pollution Prevention Plan (SWPPP) prior to construction.

Objective 5: Provide for recharge of groundwater aquifers and maintain the base flow of streams.

The project proposes an increase in impervious area over the present existing conditions but is a redevelopment project. Throughout the project development measures to offset impervious surfaces and promote infiltration have been introduced including tree box filters throughout the parking areas and two subsurface stormwater detention/infiltration structures. As a result, an improvement in recharge potential is anticipated.

Objective 6: Provide stormwater facilities that are attractive, maintain the natural integrity of the environment, and are designed to protect public safety.

Throughout the project measures to offset impervious surfaces and promote infiltration have been introduced including tree box filters throughout the parking areas and two subsurface stormwater detention/infiltration structures.

Objective 7: Maintain or reduce predevelopment runoff characteristics after development to



the extent feasible.

Both pre- and post-development runoff characteristics are maintained with similar overall site drainage patterns. The discharge facilities and locations are the same.

Objective 8: Minimize damage to public and private property from flooding.

The proposed stormwater management system has been designed to capture up to the 100-year storm and manage the peak flows and volumes below pre-development values, and at the 100-year event slightly above the existing based on the current higher precipitation data.

Objective 9: To prevent pollutants from entering Chicopee's municipal separate storm sewer system (MS4).

The project does not propose any alterations near to the City's MS4 system. Inlet protection is proposed at existing catch basins near the Site.

Objective 10: To prohibit illicit connections and unauthorized discharges to the MS4 and; Objective 11: To require the removal of all such illicit connections.

There are currently no known non-stormwater illicit discharges within the project limits and new discharges are prohibited.

Objective 12: To comply with state and federal statutes and regulations relating to stormwater discharges.

The proposed stormwater management Best Management Practices have been designed to fully meet the DEP's Stormwater Management Policy to the maximum extent practical for a redevelopment project.

Objective 13: To establish the legal authority to ensure compliance through inspection, monitoring, and enforcement.

The responsible party for operation and maintenance of the stormwater design is The City of Chicopee. A long-term operation and maintenance plan is provided as Appendix D.

Objective 14: To prevent contamination to drinking water supplies

No private drinking water wells are located within 500 feet of the Site. The Site is not within an Interim Wellhead Protection Area, Zone II, or Potentially Productive Aquifer. No risk of contamination todrinking water supplies is anticipated as part of this project.

Conclusion

In conclusion, the proposed Baskin Redevelopment meets the requirements for a redevelopment project and Standards 2, 3, and 7-11. Additionally, the stormwater management system maintains similar flow characteristics within the hydrologic analysis area for the design storm events evaluated to maintain existing conditions. There is a reduction in peak flow rate to the main street



pump station, up to the 100-year event with only a slight increase during that event. The stormwater management system has also been designed to promote total suspended solids removal and to improve the overall water quality to downstream resources and offsite areas.



Appendix D

Long Term Pollution Prevention Plan

LONG TERM POLLUTION PREVENTION PLAN

1.1 Project Description

The proposed project will be redevelopment of the former Baskins Mills site at 75 West Main Street in Chicopee, Massachusetts.

After completion of construction and final stabilization, this long-term pollution prevention plan, as required by the 2008 Massachusetts Stormwater Standards, outlines the continuing measures that will be taken to ensure that there are no negative impacts to stormwater from this redevelopment project. Many of the long term pollution prevention measures are also discussed in the proposed Stormwater Operations & Maintenance Plan included in Appendix D.

1.2 Contact Information

In case of an emergency, please contact:

Facility Manager of Brisa Development 2009 Flatbush Avenue Brooklyn, NY 11234

Owner Facility Manager of Brisa Development 2009 Flatbush Avenue Brooklyn, NY 11234

Brisa Development (Brisa) or their representative will be responsible for implementation of the long-term pollution prevention plan. Brisa will ensure their managers and facility personnel conducting maintenance or work required by this plan are trained in the proper implementation of these procedures.

1.3 Good Housekeeping

Good housekeeping is an important pollution prevention measure both during construction and post construction usage. The good housekeeping measures to be utilized for the proposed road include prompt cleanup of any contamination or spills, preventative maintenance, collection, removal, proper disposal of debris or trash, street sweeping, regular maintenance of drainage features and structures and repairs as necessary. A more detailed description of these measures can be found in the Stormwater Management System Operation and Maintenance Plan, located in Appendix D.

1.4 Spill Prevention and Material Storage

Following construction, there will be no material storage within the proposed roadway. Any material that may be needed for maintenance purposes will be stored at the College's maintenance facility with all applicable spill prevention and cover requirements met. Fertilizers, herbicides, and pesticides will not be used on or stored along the roadway. Following construction, there will be no vehicle washing at this site. Spill response is described in Section 1.6 below. A more detailed

description of spill prevention good housekeeping procedures can be found in the Construction Period Pollution Prevention Plan, to be developed in advance of the start of construction.

1.5 Stormwater Best Management Practices

The proposed stormwater treatment system best management practices will be inspected throughout construction and following the completion of construction on a continuing and regular basis. The inspections and maintenance for the proposed access road are outlined in the Stormwater Management System Operation and Maintenance Plan in Appendix D. This plan includes the maintenance schedule for all components of the stormwater system associated with the proposed roadway.

1.6 Prevention of Illicit Discharges and Spill Response

It is not anticipated that there will be any Illicit Discharges associated with this project. No materials will be stored on site, no wastewater will be generated at, or transported through the site. No stormwater that has contacted any process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease will be released from the site. Since no material storage will occur at the site, stormwater contamination would only occur due to contact with an uncontained spill associated with vehicular travel on the proposed road. Detailed spill response procedures are outlined in the Construction Period Pollution Prevention Plan, to be developed in advance of the start of construction.

These spill response procedures will remain in effect following completion of construction with several key changes. Brisa will designate a spill response and prevention team and the facility manager will have the responsibility for contacting any off site members of the spill response team in the event of an incident. This spill prevention team will be trained in implementation of the spill response plans and in accordance with applicable requirements under the Hazardous Waste Operations and Emergency Response regulations in 29 CFR 1910.120.

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Appendix E

Operations and Maintenance Plan

OPERATIONS & MAINTENANCE

1.0 Introduction & Responsibilities

The following Operation and Maintenance Plan has been prepared for Brisa Redevelopment located at 75 West Main Street in Chicopee, Massachusetts. The purpose of the plan is to provide guidance and procedures for the proper maintenance of the stormwater management system associated with the proposed Baskins Redevelopment Project.

Although Massachusetts Department of Environmental Protection (MADEP) generally presumes that the landowner of the property on which the best management practice (BMP) is located is the entity responsible for the operation and maintenance.

Stormwater Management System Owner:

Brisa Development LLC 2009 Flatbush Avenue Brooklyn, NY 11234

Party Responsible for Operation and Maintenance:

Brisa Development LLC 2009 Flatbush Avenue Brooklyn, NY 11234

As part of the operation and maintenance of the stormwater management system, the responsible party shall maintain an operation and maintenance log for the past three years recording all operation and maintenance activities, including inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and the disposal location). Brisa will make the logs available to MADEP and the Chicopee Conservation Commission upon request. Members and agents of MADEP and the Chicopee Conservation Commission will also be allowed to enter and inspect the premises to evaluate and ensure that the responsible party complies with the operation and maintenance plan for each best management practice.

In addition to maintaining an operation and maintenance log, annual maintenance reporting will also be submitted to the City of Chicopee Engineer and Conservation Commission for a period of five years.

2.0 Pollution Prevention and Source Control

Source controls can reduce the types and concentrations of contaminants in stormwater runoff and improve water quality. The following narrative describes preventative activities that will be performed to reduce pollution.

2.1 Pavement Sweeping

Street sand/dirt accumulates on roads and parking lots and runs off in response to precipitation. Therefore, street sweeping will occur immediately after the winter snowmelt and prior to heavy spring rains to prevent accumulated sediment from reaching the storm drain system. Once removed from paved surfaces, the sweepings will be handled and disposed of properly. Street sweepings will be disposed of in accordance with MADEP Policy #BWP-94-092: Reuse & Disposal of Street Sweepings.

2.2 Snow Management

As snow melts, road salts, sand, litter and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. To prevent increased pollutant concentrations in stormwater discharges, the amount of road salt applied will be reduced to the maximum extent practicable, while maintaining safe driving conditions. Salt and/or sand storage areas will be covered and placed on impervious surfaces in locations where stormwater is directed away from the stockpile.

The key to selecting effective snow disposal sites is to locate them adjacent to or on pervious surfaces in upland areas and away from water and wetland resources. At these locations snowmelt can filter into soil, leaving behind sand and debris that can be removed in the springtime. Stockpiling of snow on top of stormwater collection structures will be avoided as sand and debris may block the storm drain system causing localized flooding and a high volume of sediment and debris may be discharged quickly to surface waters.

2.3 Chemical and Pesticide Applications

To prevent increase pollutant concentrations in stormwater discharges, fungicides, herbicides, insecticides, and pesticides will be avoided in and around wetland resource areas and areas that lead to a storm drain. Only workers who are licensed to apply pesticides and other similar materials will be permitted to do so. All chemicals, fungicides, herbicides, insecticides, and pesticides will be purchased, stored, mixed, transported, and used in accordance with manufacturer's specifications. If chemicals and pesticides are mixed or otherwise handled outside, the licensed applicator will insure that they are not located in close proximity to surface waters or storm drains. Chemicals that must be used in and around wetland resource areas or storm drains will be mixed, stored, transported, and used in accordance with guidelines already established by the manufacturer's specifications for that intended purpose.

If an accidental or intentional release of a chemical, fungicide, herbicide, insecticide, or pesticide takes place on the property, the site manager will be immediately notified and they will notify Facilities Management. The release of chemicals will be cleaned in accordance with the 310 CMR 40.00 (Massachusetts Contingency Plan).

2.4 Motor Vehicle Fluid Release

Immediate response to any release of hazardous material from a vehicle regardless of size or function will be performed to minimize introduction into the storm drain system. Antifreeze, diesel fuel, gasoline, hydraulic fluids and oils will be managed immediately through cleanup and proper disposal.

If an improper discharge or release from a motor vehicle takes place on the property, the site manager will be immediately notified and they will notify the Facilities Management. Speedi-dry or other absorbent material will be applied to the motor vehicle fluid spill. After working the contaminants into the absorbent material, the fluid waste will be picked up using a spill containment kit and will be placed into a 30 or 55-gallon drum that has been identified for that purpose.

3.0 BMP Operation & Maintenance

Best management practices (BMPs) require specific maintenance for each structural control. Generally these activities include visual inspections and physical maintenance. An operation and maintenance log is also attached to track scheduled activities. The following sections describe the

maintenance requirements for each BMP located on the property and include a table at the end of each section summarizing the maintenance activities and frequency.

3.1 Deep Sump Catch Basins

Deep sump catch basins will be inspected at least twice times per year. The visual inspection will ascertain whether the catch basin is functioning properly (no blockages or obstructions to the outlet and/or hood) and to measure the amount of solid materials that have accumulated in the sump. This will be done with a calibrated dipstick, tape measure or other measuring instrument so that the depth of deposition in the sump can be tracked. Inspections will be completed visually from ground level. If further investigation is warranted that requires entering the structure, applicable Confined Space Entry safety regulations and procedures will be followed per 29 CFR 1910.146.

Deep sump catch basins will be cleaned once per year or whenever the depth of sediment is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin (2 feet of sediment for sump depths of 4 feet). Cleanings will also coincide with at the end of foliage and snow removal season. Clamshell buckets may be used to remove sediment. In addition, vacuum trucks may also be used to remove trapped sediment, as they are more expedient, and are less likely to damage hoods on outlet pipes. Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MADEP classifies them as solid waste (310 CMR 19.00). Unless there is evidence that they have been contaminated by a spill or other method, MADEP does not routinely require cleanings to be tested before disposal. Contaminated catch basin cleanings will be evaluated in accordance with the Hazardous Waste Regulations (310 CMR 30.00) and handled as hazardous waste.

TABLE 1

Activity	Frequency
Inspect units	Two times per year
Clean units	Once per year or whenever the depth of sediment is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin

Deep Sump Catch Basin Maintenance Activity Summary

3.6 Subsurface Detention Structures

Access to subsurface detention structures is achieved through manholes located at each end of the structures. These large structural arches are connected via manholes and can only be accessed through these structures. The last downstream manholes have a weir to control the release rate. Inspections will occur twice per year to ensure that the subsurface detention piping is functioning and that there are no blockages or obstructions to the flow through the weir structure and outlet pipe. Sediment accumulation will also be identified during inspections. Inspections will be completed visually from ground level. If further investigation is warranted that requires entering the structure, applicable Confined Space Entry safety regulations and procedures will be followed per 29 CFR 1910.146.

The subsurface detention structures will be cleaned if large amounts of sediment are identified in the network or if sediment begins to obstruct the weir or outlet pipe. Cleaning will include the removal of any accumulated debris and sediment using a jetting system and then a vacuum truck or other catch basin cleaning device. Care will be taken to avoid washing mobilized sediment or debris through the outlet control and pipe. Sediments removed from subsurface detention structures should be disposed of in accordance with all applicable local, state, and federal regulations and laws including the Massachusetts Hazardous Waste Management Act (M.G.L. c. 21C) and Hazardous Waste Regulations (310 CMR 30.00).

TABLE 4

Subsurface Detention Structure Maintenance Activity Summary

Activity	Frequency
Inspect units	Twice per year
Clean units	Once sediment begins to obstruct small diameter outlet pipe or large amounts are identified in the pipe network

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Operation and Maintenance Log Form

Inspection Date:	Inspector Name:
Deep Sump Catch Basin	
Locations Inspected:	
Sediment Depths:	
Maintenance Required:	s 🗆 No
Date/Type of Maintenance Performed:	
Subsurface Detention Structure	
Locations Inspected:	
Deficiencies Identified:	
Maintenance Required:	s 🗆 No
Date/Type of Maintenance Performed:	

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Appendix F

Construction Pollution Prevention Plan

CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN

1.1 Description of Construction Activities

The construction of the Baskin Revevelopment and associated drainage and stormwater management features will involve the following principal components:

- Construction of approximately square feet of parking with ingress/egress
- Installation of two subsurface stormwater management structures
- Installation of a new underground infiltration and detention stormwater system
- Installation of four new Continuous Deflective Separation (CDS) stormwater treatment units
- Installation of new a drainage conveyance system including catch basins, manholes, and corrugated plastic piping (CPP)
- Restoration of all surfaces outside of the proposed roadway as shown on the construction drawings
- Restoration of other items within the project limits disturbed by construction activities
- Rehabilitation of existing Baskin building
- Construction of new Athletic Facility, Grocery Store, and Residential housing units.

1.2 Construction Sequence

Construction activities for this project will be based on the Contractor's preference for installation of components and may be affected by weather, availability and progress of subcontractors, and any other adjustments deemed necessary by the contractor to complete the job in a timely manner.

In general, the work will be phased for the contract as follows:

- 1. Conduct a Pre-Construction meeting with the Owner, Owner's Representative, and Contractor. The meeting will include review of environmental permit requirements, construction documents and procedures, review limits of disturbance (material storage and staging areas), review restoration requirements, review schedule and phasing, and exchange of contact personnel and information.
- 2. Coordination with the City of Chicopee representative for the installation of erosion controls and for work within wetlands jurisdictional areas. Install erosion control barriers in advance of each phase of work as shown on the construction drawings. Install stabilized construction entrances at all points of entry or exit from the disturbed portion of the site. Install sediment and erosion controls prior to any upgradient disturbance and in locations were necessary to control release of sediments.
- 3. Clear and grade parking and roadway base installing all slope stabilization measures. Stockpiles shall be located within the limit of work. Provide erosion control barriers around soil stockpile areas.
- 4. For any construction that will require dewatering, install temporary sediment basins and erosion and sediment controls at the point of discharge.

- 5. Construct drainage collection and conveyance system including outfalls and connections with level controls. Provide inlet protection on all drainage structures subsequent to installation.
- 6. Complete construction of pavement areas including the installation of subbase and pavement courses. Install appurtenances such as curbing, walks, landscaping materials, and underground utilities.
- 7. Construct the stormwater management system including the subsurface system after all upstream areas have been stabilized. Structures to be cleaned of sediment and exposed areas loamed and seeded at completion of pavement and drainage system.

Once construction has been completed, permanent stabilization has occurred throughout the project, temporary erosion and sediment control devices shall be removed.

1.3 Pollution Control Measures

1.3.1 Erosion and Sediment Control

Erosion and sediment control Best Management Practices (BMPs) will be maintained throughout the project in accordance with the specifications included in the Project Manual. Implementation of specific BMPs is summarized below:

- Dust Control Prevent dust from becoming a nuisance or hazard. Carefully monitor for fugitive dust. If noticed, control dust during the work on-site using water, calcium chloride and/or salt applied judiciously until the problem is controlled. All vehicles used to transport materials which could be a source of dust generation must be covered.
- Stockpiling of Temporarily Stored Materials Do not store material or equipment in any wetland or environmentally sensitive area. Stockpile sites shall be level, devoid of mature stands of natural vegetation, and removed from drainage facilities and features, wetlands, and stream corridors. Stockpiles must be surrounded by hay bales and siltation fences.
- Temporary seeding and mulching On areas that will remain disturbed but inactive for more than 14 days, provide fast germinating native seed as approved by the engineer and straw mulch crimped or tacked and anchored in place to prevent erosion.
- Preservation of existing features not to be disturbed by construction activities No trees, shrubs or turf shall be removed unless specified by the Engineer. Check the actual locations of water, sewer, gas, electric, cable, and telephone service connection lines to avoid potential interferences.
- Hay bales and Silt Fence and/or Compost Filter Tubes Place and maintain both hay bales and a staked filter fabric siltation fence where shown on the drawings. Install hay bales by anchoring bales butted together to existing ground with at least 2 stakes per bale. Install the siltation fence parallel and immediately adjacent to the hay bales as shown on the drawings. Siltation fences need to be buried 6 inches into trench to prevent undermining by stormwater run-off. Trapped sediment must be removed from silt fences before the deposit reaches 1/3 the height of the above ground fence height or lower based on manufacturer's specifications.

- Cleaning of New Catch Basins and Drain Manholes Clean new manholes and catch basins of silt, debris and foreign matter of any kind, prior to final inspection.
- Permanent Seeding and Mulching Place seed only between the periods from April 15th to June 1st, and from August 15th to October 1st, unless otherwise approved by the Engineer. Lime and starter fertilizer application rates shall be based on laboratory soil tests. The starter seed mixture shall be applied at a rate of 4 lbs/ 1000 sf.
- Inlet Protection/Tree Filter Boxes Fit stormwater structures with sediment trapping devices to minimize the transport of sediment through the subsurface stormwater collection system.
- Stabilized Construction Entrance Stabilized construction entrances shall be used to reduce transport of sediment on tires of vehicles leaving the construction area. Entrance shall be clean, washed, uniformly-graded stone over filter fabric of sufficient length to remove sediment from exiting vehicles. If sediment is observed off-site it is to be removed daily.

1.3.2 Control of Other Pollutants

Control of other potential pollutants will be provided as follows:

- 1. Waste materials Construction debris from the site will be disposed in a legal manner. No construction waste material will be buried on the site. All personnel will receive instructions regarding the correct procedure for waste disposal including litter. Notices describing these practices shall be posted in the construction office.
- 2. Hazardous waste In the event that hazardous waste is encountered, all hazardous waste materials will be disposed of in the manner specified by local, state or federal regulation or by the manufacturer.
- 3. Sanitary waste Portable sanitary units will be provided throughout the course of the project for use of Contractor's employees. A licensed sanitary waste management contractor will regularly collect all sanitary waste from the portable units.
- 4. Off-site Tracking Roads will be swept periodically in the area of activity to limit the extent of tracking. Stabilized construction entrances shall be used to the extent feasible to reduce mud from tires on vehicles leaving the construction area. Trucks carrying loose materials (soil, gravel, stone, debris) entering or leaving the site shall be covered.
- 5. Non-Stormwater Discharges Some non-stormwater discharges will occur at the site during the construction period. A description of these discharges and how they will be mitigated if necessary are as follows:
 - Dewatering discharges Water pumped from the construction area during dewatering operations. These discharges will be directed to structural controls to prevent migration of fines from the existing soil during the dewatering operation.
 - Pavement wash waters Water used during pavement sweeping/cleaning. These discharges will be directed to siltation basins, catch basins with sedimentation controls or vegetative buffer strips.

- Dust Control Water spray used during construction shall be sufficient to control dust but shall not be excessive. Such water spray will only be used during active dust generation and shall be stopped shortly after the activity has ceased.
- Vehicle wash water Only spot washing of vehicles and construction equipment, necessary for the safe and proper operation of such equipment shall be performed. Detergents may not be used for spot washing. Cleaning solvents may be used, as long as the solvent is dispensed using a wiper or hand-held airless sprayer and all of the solvent is collected using wipers or equivalent after application.
- Storm water system flushing Water used to flush debris and sediment in the constructed storm water system shall be clean. The discharge shall be monitored during flushing activities. If substantial sediment is observed from the system, flushing shall cease until proper sediment barriers can be erected at the outflow and the sediment can be captured and collected.
- Uncontaminated air conditioning or compressor condensate The volume of water generated from this source is near negligible and will likely infiltrate into underlying soils or evaporate to the atmosphere.

1.3.3 Housekeeping Measures for Spill Prevention

The following good housekeeping practices shall be employed at the construction site to deter chemical spills from occurring. These measures are also described below:

- 1. Handling of Potential Pollutants
 - 1.1 Storage Materials stored on site will be stored in a neat, orderly manner in their appropriate containers in a covered area. If storage in a covered area is not possible, the materials shall be covered with polyethylene or polypropylene sheeting to protect them from the elements.
 - 1.2 Labeling Products will be stored in their original containers with the manufacturer's label affixed.
 - 1.3 Mixing Substances will not be mixed with one another unless recommended by the manufacturer.
 - 1.4 Disposal Whenever possible, all of a product will be used before disposal of the container. Manufacturers' recommendations for proper use and disposal will be followed.
- 2. Product-Specific Practices
 - 2.1 Petroleum products On-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Asphalt substances used on site will be applied according to the manufacturer's recommendations.
 - 2.2 Concrete Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water uncontrolled at the site.

2.3 Paints and Coatings - Containers will be tightly sealed and stored when not required for use. Excess paint/coatings will be properly disposed of according to manufacturers' instructions, state and local regulations.

1.4 Spill Response

Spill response shall be implemented whenever a spill of oil or hazardous substances occurs. The objective of the spill response will be to protect human health and the environment by limiting the extent and/or toxicity of the spill. Spill responders shall be properly trained in accordance with the requirements under the Hazardous Waste Operations and Emergency Response regulations in 29 CFR 1910.120.

- 1. Responsibility The Contractor shall designate his spill prevention and response team. Team members may be comprised of on-site personnel employed by the contractor or off-site contract personnel. Where off-site personnel are employed for spill response duties, the name and telephone number of the spill response organization shall be conspicuously posted.
- 2. Equipment Materials and equipment necessary for spill cleanup will be present on the site at all times. Equipment and materials will include but not limited to brooms, shovels, rags, gloves, absorbent materials (sand, sawdust, etc.), and plastic or metal trash containers. The materials and equipment necessary for spill cleanup will be dependent upon the nature and quantity of the material stored on site.
- 3. Response Spills will be contained and the spilled materials will be removed immediately upon discovery. All available resources at the Contractor's disposal will be used to control the limit and extent of any emergency spills and to protect the welfare of employees and the public in and around the spill area. Dewatering activities at or near the spill area shall cease until the spilled materials are collected.
- 4. Decontamination Sufficient water will be provided and used to decontaminate personnel and spill control equipment following an emergency response. Decontamination wash water may not be discharged to the storm water distribution system.
- 5. Safety Personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances.
- 6. Reporting
 - 6.1 The owner or owner's representative will be notified immediately of all spills.
 - 6.2 Spills of oil or hazardous substances, in excess of the state reportable quantities listed in 310 CMR 40.1600 of the Massachusetts Contingency Plan shall be reported to the DEP at 888-304-1133 within two hours of discovery.
 - 6.3 Spills of oil or hazardous substances, in excess of the Federal reportable quantities established in 40 CFR 110, 117 and 302, shall be reported to the National Response Center at 800-424-8802 immediately upon discovery.

- 6.4 Spills of oil which cause a sheen or emulsion in water (unless specifically authorized) shall be reported to the DEP and the National Response Center within the timeframes discussed in 6.2 and 6.3 above.
- 7. Recordkeeping The spill prevention plan will be reviewed and modified, as appropriate, to include measures to prevent a spill from recurring as well as improved methods for cleaning up any future spills. A description of each spill, what caused it, and the cleanup measures used will be kept with the plan.
- 8. Incidental spills shall be collected immediately upon identification. The cause of the spill will be investigated and corrective measures will be implemented to ensure that further spills do not occur again (e.g., equipment hydraulic repair).

1.5 Listing of Materials

The following is a general list of materials anticipated on site during construction activities. Any variation or addition to this list shall require an amendment to this list by indicating the change, dated and initialed by the responsible individual making the change.

- 1. Bituminous concrete also known as hot mix asphalt
- 2. Portland cement concrete mix
- 3. Lumber
- 4. Aggregates
- 5. Calcium chloride (for dust control).
- 6. Diesel fuel and lubricating oils
- 7. Precast concrete structures with frame and covers
- 8. Bituminous dampproofing coatings
- 9. CCP piping
- 10. Lawn seed mix, lime and fertilizer
- 11. Cleaning solvents
- 12. Detergents

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Appendix G

BETA Former Uniroyal & Facemate Properties Stormwater Management Report May 2021

Chicopee, MA Former Uniroyal & **Facemate Properties** May 2021

STORMWATER MANAGEMENT REPORT

ACOE PERMIT REVIEW ONLY



1 Springfield Street www.BETA-Inc.com

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Massachusetts Department of Environmental Protection Bureau of Resource Protection - Wetlands Program Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

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

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

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

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

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



B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Signature and Date

Checklist

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

New development



Mix of New Development and Redevelopment



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

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

Standard 1: No New Untreated Discharges

No new untreated discharges

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



Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

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

Standard 3: Recharge

Soil Analysis provided.

- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.

Static	Simple Dynamic
--------	----------------

Dynamic Field¹

- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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



Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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



Checklist ((continued)
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Standard 4: Water Quality (continued)

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

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

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

Standard 6: Critical Areas

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



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

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - Limited Project
 - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - Bike Path and/or Foot Path
 - Redevelopment Project
 - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

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

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

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

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

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



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

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

Standard 9: Operation and Maintenance Plan

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

Standard 10: Prohibition of Illicit Discharges

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

Chicopee, MA

1.0 OVERVIEW

1.1 PROJECT PURPOSE

Under this project, the City proposes to backfill a portion of the Chicopee Falls Local Protection Project easement and adjacent upland areas in order to facilitate future redevelopment of the former Uniroyal and Facemate properties (the "Site"). As a result of these proposed measures, existing stormwater runoff characteristics will be altered. In accordance with the Massachusetts Stormwater Handbook and best engineering practices, this Stormwater Management Report will outline the proposed modifications to the Site's stormwater management systems implemented to maintain the integrity of the Flood Control System and the Chicopee River.

1.2 CONTACT INFORMATION

City Chicopee 274 Front Street, 4th Floor City Hall Annex, Chicopee, MA 01013 Attn: Lee Pouliot, AICP, ASLA, Director of Planning & Development Tel: (413) 594-1515

1.3 PROJECT DESCRIPTION

The project site is a portion of the former Uniroyal Site, located at 154 Grove Street, and the former Facemate Site (also known as the "Baskin Parcel") located at 75 West Main Street, both located in the City of Chicopee, MA (the "Site"). The City of Chicopee Assessor's Office identifies the properties as Lots 124-00003, 124-00012, 143-00001, 147-00006, 147-00009, 147-00010, and 202-0015A. The properties are generally zoned as Industrial with a small strip of land zoned as Residential A (Refer to Figure 1: Site Locus).

The Site is situated along the Chicopee River, bounded by the river to the west and Front Street, Grove Street, Oak Street, and West Main Street to the east. Historic use at the Site primarily included mill buildings used for various manufacturing operations since the late 1800s. Since acquisition of the lots by the City of Chicopee circa 2009, the majority of the former mill buildings have been demolished and environmental clean-up operations are currently being conducted throughout the Site. As of July 2020, seven large buildings remain at the Site, of which two (Buildings 15 and 29) are proposed to be demolished while the rest are to be retained.

This stormwater analysis has been prepared to support a fill operation along the western boundary of the Site. The fill area is a low-lying portion of the Site adjacent to an existing flood control levee. Constructed circa 1938-1942, the levee is a portion of the "Chicopee Falls Local Protection Project" and mitigates risk of flooding from the Chicopee River. The top-of-levee elevations range from 98' +/- to 100' +/- in this area. A flood control easement is present directly east of the levee, where several drainage systems are in place to control stormwater behind the levee. Catch basins, drain inlets, interceptor drains, and a toe drain collect runoff from this low-lying area and divert it to either the Main Street Pump Station (from the Facemate Property) or the Oak Street Pump Station (from the Uniroyal Property). Both pump stations discharge stormwater runoff to the Chicopee River.

1.4 Additional Data Sources

- Report entitled "Chicopee Falls Local Protection Project," Design Memoranda No. 1 through 6. Prepared by US Army Engineer Division, New England Corps of Engineers, dated December 1962.
- Letter entitled "Chicopee Levee Slope Stability" prepared by O'Reilly, Talbot, & Okun Associates (OTO), dated May 12, 2021.



Chicopee, MA

2.0 EXISTING CONDITIONS DESCRIPTION

The existing Site is currently vacant, apart from Lot 124-00012 which is used as a business and "Building C" on Lot 143-0001 which is used as storage by the Chicopee Police Department. The majority of the Site's land area beyond the vacant buildings is bare soil, grass, or limited vegetation. Former buildings have been remediated, demolished, and their footprints backfilled. Paved and unpaved driveways provide access to various portions of the Site. Miscellaneous site features include utility poles with overhead wire, a perimeter fence, and erosion controls.

Stormwater management is accomplished generally through several closed drainage systems throughout the Site, and include four primary discharge points:

- The Oak Street Pump Station, located on the southwestern portion of the Uniroyal Property
- The Main Street Pump Station, located approximately 570 ft. north of the Facemate Property.
- An outfall located at the southwestern corner of the Uniroyal Property which discharges to the Chicopee River (Hereafter referred to as the "South Outfall")
- An outfall located on Lot 0202-0015A just south of the Facemate Property which discharges to the Chicopee River (Hereafter referred to as the "North Outfall")

Stormwater runoff from the eastern ("Upper") portions of the Uniroyal property are conveyed through a catch basin – manhole system and directed to the South Outfall. Stormwater runoff from the western ("Lower" and "Middle") portions of the Uniroyal property is conveyed via overland flow to the area adjacent to the flood control levee. This stormwater is then collected either by catch basins associated with the "interceptor drain," or an underground toe drain that collects groundwater. Both the toe drain and interceptor drain convey stormwater to the Oak Street Pump Station where it is discharged to the Chicopee River. Stormwater runoff from Uniroyal Buildings 26 and 27 is collected via a roof drain system and conveyed to the Oak Street Pump Station as well. Stormwater runoff in the northeastern portion of the Uniroyal property is conveyed via catch basin connections to the drainage system beneath Oak Street, but this area is outside the limit of work for this project.

Stormwater runoff from the Facemate property is conveyed via overland flow to the area adjacent to the flood control levee. This stormwater is then collected either by catch basins associated with the "interceptor drain," or an underground toe drain that collects groundwater Both the toe drain and interceptor drain convey runoff to the Main Street Pump Station, where it is discharged to the Chicopee River. Some stormwater runoff from the eastern portions of the Facemate property may also be captured by a series of catch basins that convey flow to the North Outfall. However, the Site is generally not graded towards these drain inlets and no alterations are proposed to their catchment area.

A further description of the stormwater runoff characteristics with respect to the HydroCAD model and Watershed Plans is provided in Section 4.4 below.

Topography at the Site is generally graded to the west towards the low-lying area adjacent to the flood control levee. Due to ongoing demolition and remediation work, several areas of uneven grading are present throughout the property; however long-term grading is assumed to result in these areas being backfilled and graded westward. A portion of the Site is within the 200' Riverfront Area associated with the Chicopee River. The area west of the levee is classified as a regulatory floodway. No wetlands or other resource areas are known to exist on the property (Refer to Figures 2 and 3).

Natural Resources Conservation Service soil maps indicate soils in the project area are considered Urban land and is not designated a Hydrologic Soil Group (HSG). As a conservative measure, HSG D has been applied to the hydrologic calculations. This ensures that proposed basins are sized to reflect a worst-case scenario. Refer to Appendix C for relevant NRCS Soil Maps.


3.0 PROPOSED CONDITIONS WITH MITIGATION

This project proposes to backfill a portion of the low-lying area behind the flood control levee in order to facilitate future redevelopment of the Site. Backfill material may include contaminated soils or other materials in accordance with the City's Fill Management Plan, to be overseen by a Licensed Site Professional (LSP). Backfill material will be "Capped" with geotextile fabric and 3' of clean fill, except where deemed unnecessary by the LSP. Clean fill material will include loam and seed to establish turf for stability and erosion control.

The Oak Street Pump Station and its associated discharge pipe are proposed to be decommissioned, partially demolished, and abandoned in place. The existing interceptor and toe drains will be abandoned in place with existing inverts plugged. The abandonment of these systems is based on the results of a geotechnical analysis by OTO indicating that levee stability will be maintained without a functioning toe drain.

To manage stormwater, the interceptor drain will be replaced with several infiltration basins proposed along the western side of the properties, generally 3' – 5' below the top of the levee. These infiltration basins will retain stormwater runoff and discharge into a new catch basin to manhole drainage system. Stormwater runoff collected within the Uniroyal Property will be conveyed to the South Outfall, while that collected within the Facemate Property will be conveyed to the Main Street Pump Station. No alterations are proposed to the upgradient portions of the Uniroyal and Facemate Properties, and the existing drainage systems in these areas will continue to function. However, stormwater runoff previously conveyed to the Oak Street Pump Station will instead be directed to the new drainage system.

Proposed perforated drain pipes connecting the manholes will be located within crushed stone. These pipes and the crushed stone are intended to capture any groundwater that may build up behind the levee per geotechnical engineer recommendations. Note that a full evaluation of pre- and post-development levee stability is to be conducted under a separate report.

The proposed system also includes the abandonment of a 24" RCP "Bypass" drain pipe located between the Facemate and Uniroyal Sites. Per discussions with the City and record plans, this pipe was used to convey process water to the Uniroyal Site. At the time of this report, the pipe has not been during the preceding 19 years and it is anticipated that the North Outfall will be sufficient to discharge any flows in the Facemate drainage system.



4.0 CALCULATIONS AND ASSUMPTIONS

4.1 OBJECTIVES

The calculations presented in this report are an analysis of site hydrology and stormwater runoff, including scenarios for both Pre- and Post-Development conditions. The project is considered a redevelopment project and the objective of this analysis is to demonstrate that measures have been implemented to comply with the Massachusetts Stormwater Management Standards and City of Chicopee Stormwater requirements to the maximum extent practicable. Analysis of the Existing and Proposed Conditions is included for the one (1), two (2), ten (10), twenty-five (25), and one hundred (100) year rainfall events. A description of the project and how it relates to the ten Stormwater Management Standards is included.

4.2 CALCULATION METHODS

Stormwater runoff is analyzed using the following:

 "HydroCAD™ Stormwater Modeling System," by Applied Microcomputer Systems based upon SCS Technical Releases No. 55 and 20 for generating hydraulic calculations including peak flows and runoff volumes

4.3 EQUATIONS AND SOURCES OF DATA USED

Rainfall for the Pre-development Facemate parcel obtained via Technical Paper 40 (TP-40 Hampden County) to reflect original design calculations for the Main Street Pumping Station

1 yr. = 2.50 in. 2 yr. = 3.00 in. 10 yr. = 4.60 in. 25 yr. = 5.30 in 100 yr. = 6.50 in.

For all other calculations, rainfall data obtained via NOAA Atlas-14, Volume 10, Version 3: Chicopee, MA

1 yr. = 2.48 in. 2 yr. = 3.12 in. 10 yr. = 5.04 in. 25 yr. = 6.23 in 100 yr.= 8.07 in.

Refer to Appendix G for rainfall data.

4.4 POINTS OF ANALYSIS

<u>POA1L</u> – Into an existing Interceptor Drain, towards the Main St. Pump Station.

- Receives runoff from the Facemate property (Watershed 1S or 1Sa and 1Sb).
- In the pre-development conditions, runoff is collected in a low-lying area with drain inlets (Pond 1P).
- In the post-development conditions, runoff is collected in two new infiltration basins with catch basins (Ponds 1Pa and 1Pb) and directed through a new run of HDPE pipe (Reaches 1Ra, 1Rb, and 1R).

<u>POA2L</u> – Into the Chicopee River, west of the Uniroyal Property

- Receives stormwater runoff from the lower/middle Uniroyal property (Watershed 2S or 2Sa, 2Sb, and 2Sc), the Upper Uniroyal property (Watershed 3S), and Buildings 26/27 (Watershed B26, B27).
- In the pre-development conditions, stormwater from Watershed 2S is collected in a low-lying area with drain inlets (Pond 2P) then directed to the Oak Street Pump Station (POA 2La) for discharge to the Chicopee River (POA 2L). Watersheds B26 and B27 convey stormwater through roof leaders and drain pipes directly to POA 2La. Watershed 3S is collected by a closed drainage system and directed through a 30" RCP outfall (Reach 3R) to the Chicopee River (POA 2L).
- In the post-development conditions, stormwater from Watershed 2Sa, 2Sb, and 2Sc is collected in three new infiltration basins (Ponds 2Pa, 2Pb, and 2Pc) then directed through new drain pipes (Reaches 2Ra, 2Rb, 2Rc) to a new discharge pipe (Reach 2R). Stormwater runoff from B26 and B27 is also directed to Reach 2R. Stormwater from Reach 2R as well as Watershed 3S (unchanged) is directed to the existing 30" RCP outfall (Reach 3R) for discharge to the Chicopee River (POA 2L).



4.5 CALCULATIONS

Refer to Appendix D for figures showing the pre- and post- development watersheds. Refer to Appendices E and F for copies of the pre- and post-development HydroCAD calculations. Additional calculations relating to the design are provided in Appendix G.

4.6 SOIL CHARACTERISTICS

The proposed design will include the construction of infiltration basins atop a newly backfilled area. As such, the soil directly beneath the infiltration basins will be entirely new material and existing soil characteristics cannot be used to evaluate infiltration potential.

Volume 3, Chapter 1, Page 22 of the Massachusetts Stormwater Handbook identifies the "Rawl's Rates," standard infiltration rates associated with common soil classifications. These soil classifications are detailed in the USDA soil textural triangle, provided on Volume 3, Chapter 1, Page 14 of the Massachusetts Stormwater Handbook.

The design of the infiltration basins stipulates that the basin subbase will contain a maximum clay composition of 20% and a maximum silt concentration of 50%. Based on the textural triangle, this will result in a soil classification of Sandy Loam, Loamy Sand, or Sand with infiltration rates of 1.02 in/hr. or greater.

In addition, basin drawdown will primarily be accomplished via the catch basin inlet provided in each infiltration basin, rather than depending on soil infiltration.

4.7 Assumptions and Limitations

This stormwater analysis includes only the aforementioned backfill activities and associated alterations. It does not include any future redevelopment of the Sites which would require a separate analysis.

This analysis also includes several conservative design assumptions. Firstly, it was assumed that many upgradient areas would drain into the proposed basin areas, even though they may instead be captured by local low points or catch basins. This ensures that the design will function in the event of future, minor grading activities. Secondly, the flowpaths were considered only for the portion of the Site that will be altered, as existing grading would otherwise result in a long, sinuous flowpath that may not reflect future conditions.



5.0	SUMMARY	OF RESULTS
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<u>Peak Rate of</u> <u>Runoff</u>		Flow (cubic feet per second)									
		1-Year Storm		2 Year Storm		10 Year Storm		25 Year Storm		100 Year Storm	
Ou	tlet To:	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
POA1	Main St. Pump Sta	<mark>5.76</mark>	<mark>3.38</mark>	<mark>6.76</mark>	<mark>4.87</mark>	<mark>9.42</mark>	<mark>7.75</mark>	<mark>10.38</mark>	<mark>9.13</mark>	<mark>11.81</mark>	10.87
POA2	Chicopee River	15.73	10.40	19.41	15.36	29.98	28.13	36.17	34.72	45.39	44.38
Proje	ect Total:	21.49	13.74	26.17	20.21	39.40	35.87	46.55	43.84	57.20	55.26

Runoff Volume		Runoff Volume (Acre-Feet)									
		1-Year Storm		2 Year Storm		10 Year Storm		25 Year Storm		100 Year Storm	
Ou	tlet To:	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
POA1	Main St. Pump Sta	0.606	0.420	<mark>0.792</mark>	<mark>0.626</mark>	<mark>1.413</mark>	<mark>1.313</mark>	<mark>1.692</mark>	<mark>1.766</mark>	<mark>2.176</mark>	<mark>2.486</mark>
POA2	Chicopee River	2.417	1.699	3.302	2.466	6.056	4.987	7.798	6.636	10.513	9.251
Proj€	ect Total:	3.02	2.12	4.09	3.09	7.47	6.30	9.49	8.40	12.69	11.74

*Increase in runoff volume is the result of the increased precipitation rates used in the post-development model to better reflect actual site conditions (Refer to Section 4.3). If Atlas-14 rates are used for the predevelopment model, the runoff volumes for these storm events are 2.067 acre-feet and 2.816 acre-feet for the 25- and 100-year storm events, respectively.

Supplemental Calculations:

(Refer to Appendix G)

Recharge Volume Required = 0 cu. ft. (No loss of recharge as no new impervious area proposed) Recharge Volume Provided = 0 cu. ft. (Infiltration in basins assumed to be captured by perforated pipe)

Water Quality Volume Required:

	Facemate Property:	709 cu. ft.
	Uniroyal Property:	2,745 cu. ft.
Water Quality Volume	Provided:	
	Facemate Property:	1,865 cu. ft.
	Uniroyal Property:	3,235 cu. ft.

Existing TSS Removal Rate = 0 % Proposed TSS Removal Rate = 44% (Refer to Section 7.0)



6.0 COMMENTS AND CONCLUSIONS

As a result of the proposed mitigation measures, stormwater runoff will be captured, peak flows will be controlled, and water quality volume will be provided. The provided analysis has demonstrated that there will be no adverse impacts as a result of the project. The proposed stormwater management Best Management Practices have been designed to meet the DEP's Stormwater Management Policy to the maximum extent practicable. Summaries of compliance with the ten DEP Stormwater Management Standards and City of Chicopee's Stormwater Management Rules are provided in the following sections.

7.0 SUMMARY OF COMPLIANCE WITH TEN STORMWATER MANAGEMENT STANDARDS

The City of Chicopee is proposing alterations at the Former Uniroyal and Facemate Properties in Chicopee, MA. The following summary has been prepared to illustrate the project's conformance with MassDEP's Stormwater Management Standards. Note that the project is a redevelopment project and need only meet certain standards the maximum extent practicable.

Standard 1: No New Untreated Discharges

No new stormwater conveyances (e.g., outfalls) may discharge directly untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth

No new untreated discharges to wetlands are created as part of this project. Existing site conditions currently allow runoff to flow, untreated, into the Chicopee River. The redevelopment proposes to capture and provide limited treatment of this runoff within infiltration basins and deep sump catch basins. Runoff discharged from the Uniroyal property will be conveyed to an existing outfall with outlet control protection that discharges to the Chicopee River. Runoff discharged from the Facemate property will be conveyed to the Main Street Pump Station.– project complies.

Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

The proposed design results in a net decrease to impervious area to prevent an increase in peak discharge rates, and many barren areas on the Site will be revegetated. The proposed infiltration basins are designed to capture and control the release of stormwater runoff. A net decrease in peak runoff rate and runoff volume is anticipated as part of the project – project complies.

Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.

As no new impervious areas are proposed, there will be no loss in annual recharge from the posdevelopment site compared to pre-development conditions. The re-vegetation of existing impervious area will improve the Site's ability to infiltrate runoff. – project complies.

Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual postconstruction load of Total Suspended Solids.

In accordance with this standard, the project is required to store a "water quality volume" equal to 0.5inches of runoff times the total impervious area of the post-development site. The catch basins within the



proposed infiltration basins have been designed to be up to 6 inches above the basin bottom to provide the required water quality volume. Appendix B includes a Long-Term Pollution Prevention Plan.

The proposed treatment train includes deep sump drainage structures to provide limited TSS removal that does not currently exist. Although infiltration basins are proposed, they have been modeled as sediment forebays in the TSS Removal Calculations as no pretreatment has been provided.

While a TSS removal of 80% has not been achieved, the post-development project site will remain vacant, and no vehicle traffic areas will discharge to the proposed BMPs. Sedimentation potential is thus limited. Future site redevelopment activities will be required to meet the 80% TSS removal requirement. – project complies to the maximum extent practicable.

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

Land use with high potential pollutant loads must have source control and pollution prevention measures implemented in accordance with the Massachusetts Stormwater Handbook.

The Site includes former mill buildings known to contain potentially hazardous substances. Ongoing remediation efforts may involve handling of these materials, and measures to prevent spills or exposure will be required of each remediation plan. Backfill operations under this project may include contaminated materials which will be handled in accordance with the Massachusetts Contingency Plan (MCP) and other local, state, and federal guidelines. These pollutant sources are anticipated only during the construction period, and in the long-term the project Site will not be classified as a LUHPPL. A basic Spill control and prevention plan is included in Appendix B. - project complies to the maximum extent practicable

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of specific source control, pollution prevention measures.

The project does not propose discharges to a critical area. - project complies

Standard 7: Redevelopment

A redevelopment project is required to meet certain Stormwater Management Standards only to the maximum extent practicable.

The project is a redevelopment project under the definition of (2): "Development, rehabilitation, expansion, and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area." Certain standards have been met only to the maximum extent practicable as noted in previous sections.

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

A plan to control construction related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities shall be developed and implemented.

The project will disturb greater than one acre and thus will require the development of a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. Note that SWPPPs have been previously prepared and submitted for the project Sites under NDPES ID MAR1000LL and MAR1000XS. These SWPPP's may need to be updated to reflect current site conditions and proposed improvements. A Construction Period Pollution Prevention and Sediment Control Plan has been provided as Appendix A of this report.



Standard 9: Long Term Operation and Maintenance Plan

A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Operations and Maintenance of Stormwater management systems will be the responsibility of the City of Chicopee. Therefore, inspection and maintenance of the stormwater management system will be in accordance with a Regulator-Approved version of the attached Operation and Maintenance Plan.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

There are currently no known non-stormwater illicit discharges within the project limits and new discharges are prohibited. An illicit discharge compliance statement is attached.

8.0 Summary of Compliance with Stormwater Management Rules

The following summary has been prepared to illustrate the project's conformance with the fourteen objectives detailed in Chapter 231 of the City of Chicopee bylaw.

Objective 1: Reduce the adverse water quality impacts of stormwater and combined sewer overflow discharges to rivers, lakes, reservoirs, and streams in order to attain federal water quality standards.

Existing stormwater is currently directed to the Chicopee River and the Main Street Pump Station. The proposed design will continue to discharge to these locations. A net decrease in runoff volume and peak discharge rate is anticipated. The project has been designed to maintain the required water quality volume, and TSS removal will be improved compared to existing conditions.– project complies.

Objective 2: Prevent the Discharge of Pollutants, including hazardous chemicals into stormwater runoff.

The proposed design incorporates deep sump, hooded drainage structures and infiltration basins to minimize the risk of pollution to stormwater runoff from the Site. No hazardous chemicals are anticipated to be present at the Site during normal operation. Refer to the Illicit Discharge Compliance Statement. – project complies.

Objective 3: Minimize the volume and rate of stormwater which is discharged to rivers, streams, reservoirs, lakes, and combined sewers.

The proposed design incorporates several infiltration basins to capture, store, and control runoff coupled with a decrease in impervious area. A net decrease in peak runoff rate and volume from all watersheds up to the 100-year storm is anticipated as part of the project – project complies.

Objective 4: Prevent erosion and sedimentation form improper land development, and reduce stream channel erosion caused by increased runoff.

The proposed design incorporates basic erosion controls consisting of straw wattles, stabilized construction entrance, and inlet protection minimize sedimentation and erosion from the Site. The project will disturb greater than one acre and will require the development of a detailed Stormwater Pollution Prevention Plan (SWPPP) prior to construction. – project complies.

Objective 5: Provide for recharge of groundwater aquifers and maintain the base flow of streams.

The project proposes a reduction in impervious area. As a result, an improvement in recharge potential is anticipated. – project complies.



ACOE Permit Review Only

Objective 6: Provide stormwater facilities that are attractive, maintain the natural integrity of the environment, and are designed to protect public safety.

Proposed infiltration basins are intended to blend in with proposed topography and minimize visual impact. Basin depths are typically no greater than 4' below surrounding grades to mitigate public safety concerns – project complies.

Objective 7: Maintain or reduce predevelopment runoff characteristics after development to the extent feasible.

Both pre- and post-development runoff characteristics are directed to a low-lying area behind the flood control levee. – project complies.

Objective 8: Minimize damage to public and private property from flooding.

The proposed infiltration basins have been designed to capture the 100-year storm with a 1' freeboard. A net decrease in peak runoff rate and runoff volume is anticipated from all watersheds. – project complies.

Objective 9: To prevent pollutants from entering Chicopee's municipal separate storm sewer system (MS4).

The project does not propose any alterations near to the City's MS4 system. Inlet protection is proposed at existing catch basins near the Site. – project complies.

Objective 10: To prohibit illicit connections and unauthorized discharges to the MS4 and;

Objective 11: To require the removal of all such illicit connections.

There are currently no known non-stormwater illicit discharges within the project limits and new discharges are prohibited. Refer to attached Illicit Discharge Compliance Statement. – project complies.

Objective 12: To comply with state and federal statutes and regulations relating to stormwater discharges.

The proposed stormwater management Best Management Practices have been designed to fully meet the DEP's Stormwater Management Policy as detailed in Section 6.0. – project complies.

Objective 13: To establish the legal authority to ensure compliance through inspection, monitoring, and enforcement.

The responsible party for operation and maintenance of the stormwater design is The City of Chicopee. A long-term operation and maintenance plan is provided as Appendix B. – project complies.

Objective 14: To prevent contamination to drinking water supplies

No private drinking water wells are located within 500 feet of the Site. The Site is not within an Interim Wellhead Protection Area, Zone II, or Potentially Productive Aquifer. No risk of contamination to drinking water supplies is anticipated as part of this project. – project complies.



It is the intent of the Owner, the City of Chicopee to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease. To the extent of my knowledge, the proposed project does not create any illicit discharges and all illicit discharges are prohibited in the future.

City of Chicopee





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APPENDIX A – CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN

Construction Period Pollution Prevention and Erosion Control Plan

Former Uniroyal and Facemate Properties – Chicopee MA ACOE Permit Review Only

Introduction

The anticipated area of disturbance during this project is greater than one acre; therefore, filing a notice of intent with EPA and development of a Stormwater Pollution Prevention Plan (SWPPP) is required. The following plan provides general guidance for the prevention of pollution and erosion and sedimentation during construction.

Potential Erosion and Sedimentation

Portions of the project involve soil disturbance; therefore, site preparation, scheduling, and construction practices need to be carefully planned to prevent construction debris and erosion from adversely impacting downstream resources. Although it is not always possible to avoid all impacts, the following guidelines shall be followed:

- Minimize land disturbance area and soil exposure to stormwater and wind erosion.
- Minimize time that area is disturbed.
- Avoid routing stormwater runoff or dewatering flows through disturbed areas.
- Inspect and maintain erosion controls until all soils are stabilized.
- Maintain good housekeeping practices.
- Stabilize disturbed soils as soon as possible to limit exposure.

Erosion and Sedimentation Plan

This Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan have been prepared in accordance with the Department of Environmental Protection's Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas.

Pre-Construction and Site Preparation

- Contractor shall install all erosion control barriers in accordance with the construction documents prior to commencing any land disturbance activity.
- Inspect and maintain erosion controls until all soils are stabilized.
- Monitor weather reports daily and stabilize/prepare site if storm event in excess of the 2-year storm is expected.

Good Housekeeping

- Avoid stockpiling of soil within 100 feet of wetland resources and wellhead protection areas. If necessary, provide sufficient erosion controls to prevent migration of sediments.
- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.



Construction Period Pollution Prevention and Erosion Control Plan

Former Uniroyal and Facemate Properties – Chicopee MA ACOE Permit Review Only

Inspection and Maintenance of Erosion Controls during Construction

Inspect erosion controls weekly and after every storm event until all soils are stabilized.

- Erosion Control Barrier: Check for sedimentation accumulation, removing sediments when they reach excessive volumes (approximately 1/3 the height of the barrier). Also remove sediments when runoff ponds for 24 or more hours to prevent potential mosquito breeding habitat. Restake/replace tubes and silt fence as necessary to maintain their effectiveness.
- Stabilized Construction Entrance: Check to observe overall integrity and effectiveness of crushed stone entrance. Reshape pad as needed for drainage and runoff control, and top dress with clean stone if needed. Remove tracked-out sediment by the end of each workday.
- Catch basin Inlet Protection: Check for sedimentation accumulation, removing sediments when they reach excessive volumes.

<u> Plans</u>

See proposed construction drawings for locations of all proposed erosion and sedimentation controls.

Pollutant-Generating Activity	Pollutants or Pollutant Constituents	Location on Site
Equipment Re-fueling	Diesel Fuel, Gasoline	Staging Area*
Leaking or Broken Hydraulic Lines	Hydraulic Oil	Building Work Areas and Laydown Area
Minor Equipment Maintenance	Diesel Fuel, Gasoline, Hydraulic Oil, Motor Oil, Anti-Freeze	Staging Area*
Applying Fertilizer	Nitrogen, Phosphorous	Newly Seeded Areas
Portable Sanitary Toilets	Bacteria, Parasites and Viruses	Staging Area*
Vehicle Accident	Diesel Fuel, Gasoline	Entire Site
Trash Containers/Dumpsters	Paper, Plastic, and Food Waste	Staging Area*

Potential Construction Site Pollutants

*All vehicle and equipment staging to be conducted within the central and lower areas of Site.



APPENDIX B – LONG TERM OPERATION AND MAINTENANCE PLAN

Former Uniroyal and Facemate Properties – Chicopee, MA ACOE Permit Review Only

General Information Project Name: Former Uniroyal and Facemate Properties Project Type: Site Redevelopment Address: 154 Grove Street & 75 West Main Street, Chicopee MA SWMS Owner: City of Chicopee 274 Front Street, 4th Floor City Hall Annex Chicopee, MA 01013 (413) 594-1515 **Responsible Party: City of Chicopee** Contact: Lee Pouliot, AICP, ASLA Signature:

This stormwater management system (SWMS) operations and maintenance plan has been prepared in accordance with the Massachusetts Department of Environmental Protection's Stormwater Management Standards.

It shall be the responsibility of the Owner to provide a revised plan indicating any change of ownership or responsible party.



Former Uniroyal and Facemate Properties – Chicopee, MA ACOE Permit Review Only

Long-Term Pollution Prevention

The following measures and good housekeeping practices shall be followed at the Site to mitigate risk of pollution.

Material Storage and Handling

- Avoid stockpiling of soil or materials within 100 feet of wetland resources and wellhead protection areas. If necessary, provide sufficient erosion controls to prevent migration of sediments.
- All materials shall be stored or disposed in accordance with all local, state, and federal regulations.
- All sand piles shall be contained and stabilized to prevent the discharge of sand to wetlands or water bodies and, where feasible, covered.
- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- All solid waste, if encountered, shall be handled and disposed of in accordance with all local, state, and federal regulations.
- No snow shall be stored within waterbodies, resource areas, wellhead protection areas, or associated buffer zones.

Stormwater BMPs

- Refer to Inspection and Maintenance Procedures
- Refer to Illicit Discharge Compliance Statement

Spill Prevention and Response

- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.
- Review on-site equipment and activities to ensure no illicit discharges are created.

Vegetation and Landscaping

- Refer to Inspection and Maintenance Procedures
- No fertilizers, pesticides, and/or herbicides shall be used at the Site.
- No road salt or sand for ice management shall be used or stored at the Site.



Former Uniroyal and Facemate Properties – Chicopee, MA ACOE Permit Review Only

Spill Prevention Plan

Remediation activities conducted at the Uniroyal and Facemate properties may involve the handling of hazardous waste materials or other pollutant sources. The purpose of this plan is to outline the source control and pollution prevention measures to minimize the risk of pollution to stormwater runoff.

Predicted Release

Any potential spills at the Site are anticipated to be during remediation activities relating to the existing mill buildings. During these activities, materials will be handled and either re-used on-site or removed from the Site for disposal. Spills in this area could be conveyed via overland flow towards the proposed Infiltration Basins.

Oil and Pollutant Control

The proposed drainage system will include hoods at all proposed catch basins to control accidental releases of oil into the system. Regular maintenance will be required to remove and legally dispose of any captured oil.

Sorbent Materials, Spill Response Supplies, and Equipment

During the proposed work, spill response supplies shall be maintained within the staging area. These supplies shall include sorbent pads, booms, and granular material (i.e., Speedy Dry), and a shovel, all stored within a covered over-pack drum or similar container. The supplies shall be made readily available to be deployed during a fuel spill or release.

Inspections and recordkeeping of the spill response equipment supplies must be maintained as part of this plan, and training shall be conducted to inform the employees on where the equipment is located and the procedure for using the material as part of the oil spill response training curriculum.

Additional Requirements

All remediation activities conducted at the Site shall be conducted by workers licensed to do such work in the state of Massachusetts. Remediation shall be in accordance with local, state, and federal law including all required measures to prevent spread of hazardous materials.



Former Uniroyal and Facemate Properties – Chicopee, MA ACOE Permit Review Only

BMP Inspection and Maintenance Procedures

Effectiveness of Best Management Practices (BMPs) is maximized when properly maintained. The following inspections schedule and maintenance required of BMPs for this project (see attached plan) shall be as outlined and documented below.

- Catch basins (CB) and Manholes (MH): Inspect and maintain after the first several rainfall events, after all major storms, and at least once every 3 months.
 - Check grates periodically and following heavy rainfall to verify that the inlet openings are not clogged by debris. Remove debris from grate.
 - Remove all accumulated debris.
 - Clean sump if it is greater than 50% full.
 - Note condition of frames, grates, concrete bricks, and hoods. Repair or replace damaged materials.
- Infiltration Basin: Inspect and maintain basin after the first several rainfall events, after all major storms, and at least once every 6 months.
 - Remove accumulated sediment, trash, debris, leaves, and grass clippings, particularly in area of trash racks.
 - Mow the buffer area, side slopes, and basin bottom.
 - Rake basin floor and remove tree or other plant seedlings before they become established.
 - Check for ponding within basin.
 - Check for erosion along basin slopes.
 - Inspect to ensure proper functioning.
- Vegetation: Monitor establishment and health of vegetation in fill area at least once a month for the first several months, then at least once every 6 months.
 - Check vegetation growth rate, health, and stability.
 - Note presence of any failing vegetation.
 - Reseed low-growth areas as necessary.

Approximate Maintenance Budget

Inspection and maintenance for this site is estimated as follows.

1.	Inspections	\$400
2.	Infiltration Basins	\$300
3.	Deep Sump Catch Basin	\$300
Anı	<u>nual Total</u>	\$1,000

Public Safety and Features

- 1. Provide police detail for extended occupation of roadway if traffic dictates.
- 2. All excavations and entry into closed structures will be completed in accordance with OSHA requirements.



Former Uniroyal and Facemate Properties – Chicopee, MA ACOE Permit Review Only

BMP Inspection and Maintenance Documentation Form

Inspection No.: _ Date: _____ Weather: _____

Date & Amount of Last Precipitation Event:

Inspector Name: _____

Inspection Signature:

BMP	Condition/Stability	Comment & Recommendations	Date Corrected
Catch Basins			
Manholes			
Infiltration Basins			
Vegetation			
Other			
Additional Comments			



Hydrologic Soil Group—Hampden County, Massachusetts, Central Part



National Cooperative Soil Survey

Conservation Service



Hydrologic Soil Group-Hampden County, Massachusetts, Central Part



Hydrologic Soil Group

	1	I	1	
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		5.0	11.7%
602	Urban land		32.8	76.2%
739C	Urban land-Hinckley- Windsor association, 0 to 15 percent slopes	D	5.2	12.2%
Totals for Area of Interest			43.1	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher











APPENDIX E – EXISTING CONDITIONS CALCULATIONS



Summary for Subcatchment 1S: EX-DA-1S - Facemate Site

Runoff = 8.36 cfs @ 12.09 hrs, Volume= 0.606 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.50"

A	rea (sf)	CN	Description		
1	73,521	89	<50% Gras	s cover, Po	oor, HSG D
	17,024	98	Paved park	ing, HSG D)
	6,237	98	Roofs, HSG	6 D	
	21,109	79	Woods, Fai	r, HSG D	
2	17,891	89	Weighted A	verage	
1	94,630		89.32% Per	vious Area	
	23,261		10.68% Imp	pervious Ar	ea
Тс	Longth	Slope	Velocity	Canacity	Description
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)	Description
0.6	50	0.0280	0 1.33		Sheet Flow, Sheet Flow
					Smooth surfaces n= 0.011 P2= 3.00"
3.7	190	0.0150	0.86		Shallow Concentrated Flow, Shallow Conc. 1
					Short Grass Pasture Kv= 7.0 fps
0.6	86	0.1360	2.58		Shallow Concentrated Flow, Shallow Conc. 2
					Short Grass Pasture Kv= 7.0 fps
1.1					Direct Entry, Minimum TC

Summary for Pond 1P: Area Behind Levee - Facemate

Inflow Area	a =	5.002 ac, 1	10.68% Imperviou	s, Inflow Depth =	1.45" for 1-Year event
Inflow	=	8.36 cfs @	12.09 hrs, Volun	ne= 0.606	6 af
Outflow	=	5.76 cfs @	12.18 hrs, Volun	ne= 0.606	af, Atten= 31%, Lag= 5.4 min
Primary	=	5.76 cfs @	12.18 hrs, Volun	ne= 0.606	S af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 90.36' @ 12.18 hrs Surf.Area= 8,424 sf Storage= 2,605 cf

6.0

326 Total

Plug-Flow detention time= 9.9 min calculated for 0.606 af (100% of inflow) Center-of-Mass det. time= 10.0 min (831.3 - 821.3)

Volume	Invert	Avail.Storage	Storage	Description	
#1	90.00'	25,050 cf	Custom	Stage Data (Pris	smatic) Listed below (Recalc)
Elevation (feet)	Surf.A (si	Area In q-ft) (cub	c.Store ic-feet)	Cum.Store (cubic-feet)	
90.00	6,	140	0	0	
92.00	18,	910	25,050	25,050	

Existing Conditions - Facemate - TP40	Type III 24-hr 2-Year Rainfall=3.00"
Prepared by BETA Group, Inc	Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC	Page 3

Summary for Subcatchment 1S: EX-DA-1S - Facemate Site

Runoff = 10.86 cfs @ 12.09 hrs, Volume= 0.792 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.00"

A	rea (sf)	CN	Description				
1	73,521	89	<50% Grass cover, Poor, HSG D				
	17,024	98	Paved park	ing, HSG D)		
	6,237	98	Roofs, HSC	θĎ			
	21,109	79	Woods, Fai	r, HSG D			
2	17,891	89	Weighted A	verage			
1	94,630		89.32% Per	rvious Area			
	23,261		10.68% Imp	pervious Ar	ea		
Tc	Length	Slope	 Velocity 	Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
0.6	50	0.0280	0 1.33		Sheet Flow, Sheet Flow		
					Smooth surfaces n= 0.011 P2= 3.00"		
3.7	190	0.0150	0.86		Shallow Concentrated Flow, Shallow Conc. 1		
					Short Grass Pasture Kv= 7.0 fps		
0.6	86	0.1360	0 2.58		Shallow Concentrated Flow, Shallow Conc. 2		
					Short Grass Pasture Kv= 7.0 fps		
1.1					Direct Entry, Minimum TC		
6.0	326	Total					

Summary for Pond 1P: Area Behind Levee - Facemate

Inflow Area = 5.002 ac, 10.68% Impervious, Inflow Depth = 1.90" for	or 2-Year event
Inflow = 10.86 cfs @ 12.09 hrs, Volume= 0.792 af	
Outflow = 6.76 cfs @ 12.20 hrs, Volume= 0.792 af, Atten=	38%, Lag= 6.7 min
Primary = 6.76 cfs @ 12.20 hrs, Volume= 0.792 af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 90.49' @ 12.20 hrs Surf.Area= 9,286 sf Storage= 3,801 cf

Plug-Flow detention time= 9.8 min calculated for 0.791 af (100% of inflow)

Center-of-Mass det. time= 9.9 min (823.5 - 813.7)						
Volumo	Invort	Avoil Storago	Storage Description			

Volume	Invert	Avail.Storage	Storage	Description	
#1	90.00'	25,050 cf	Custom	Stage Data (Prismatic) Listed be	low (Recalc)
Elevation (feet)	Surf.A (so	rea Ind I-ft) (cubi	c.Store c-feet)	Cum.Store (cubic-feet)	
90.00	6,1	140	Ó	0	
92.00	18.9	910	25.050	25.050	

Existin Prepare HydroCA	ng Condition ed by BETA AD® 10.00-25	ons - Facem Group, Inc s/n 10405 © 2	ate - TP40 Type 019 HydroCAD Software Solutions LLC	III 24-hr 1-Year Rainfall=2.50" Printed 3/10/2021 Page 2
Device	Routing	Invert	Outlet Devices	
#1	Primary	90.00'	2.0" x 2.0" Horiz. Catch Basin X 6.00 co X 6 rows C= 0.600 in 24.0" Grate (32% c	olumns open area)

#2	Primary	90.00'	Limited to weir flow at I 2.0" x 2.0" Horiz. Catch X 6 rows C= 0.600 in 2 Limited to weir flow at I	ow heads Basin X 6.00 columns 4.0" Grate (32% open area) ow heads
mary	OutFlow	Max=5.74 cfs @	2 12.18 hrs HW=90.35	(Free Discharge)

Primary OutFlow Max=5.74 cfs @ 12.18 hrs HW=90.35' (Free Discharge) 1=Catch Basin (Orifice Controls 2.87 cfs @ 2.87 (ps) 2=Catch Basin (Orifice Controls 2.87 cfs @ 2.87 fps)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Area =	5.002 ac, 10.68% Impervious, Inflow	v Depth = 1.45" for 1-Year event
Inflow =	5.76 cfs @ 12.18 hrs, Volume=	0.606 af
Primary =	5.76 cfs @ 12.18 hrs, Volume=	0.606 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Existing Conditions - Facemate - TP40

Prepare	ed by BET	A Group, Inc	Printed 3/10/2021				
HydroCA	2019 HydroCAD Software Solutions LLC Page 4						
			· · · · · · · · · · · · · · · · · · ·				
Device	Routing	Invert	Outlet Devices				
#1	Primary	90.00'	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns				
	-		X 6 rows C= 0.600 in 24.0" Grate (32% open area)				
			Limited to weir flow at low heads				
#2	Primary	90.00'	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns				
			X 6 rows C= 0.600 in 24.0" Grate (32% open area)				
			Limited to weir flow at low heads				
Primary 1=Ca 2=Ca	Primary OutFlow Max=6.75 cfs @ 12.20 hrs HW=90.49' (Free Discharge) -1=Catch Basin (Orifice Controls 3.38 cfs @ 3.38 fps) -2=Catch Basin (Orifice Controls 3.38 cfs @ 3.38 fps)						
	Summary for Link 1L: Facemate Interceptor Drain						
Inflow A	rea =	5.002 ac, 10.	68% Impervious, Inflow Depth = 1.90" for 2-Year event				
Inflow	=	6.76 cfs @ 1	2.20 hrs, Volume= 0.792 af				
Primary	Primary = 6.76 cfs @ 12.20 hrs, Volume= 0.792 af, Atten= 0%, Lag= 0.0 min						
Primary	Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs						

Type III 24-hr 2-Year Rainfall=3.00"

Summary for Subcatchment 1S: EX-DA-1S - Facemate Site

Runoff = 18.98 cfs @ 12.09 hrs, Volume= 1.413 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=4.60"

_	A	rea (sf)	CN	Description					
	1	73,521	89	<50% Gras	<50% Grass cover, Poor, HSG D				
		17,024	98	Paved park	ing, HSG D	g, HSG D			
		6,237	98	Roofs, HSG	6 D	D			
_		21,109	79	Woods, Fai	air, HSG D				
	2	17,891	89 Weighted Average						
	1	94,630		89.32% Per	vious Area				
		23,261		10.68% Imp	pervious Ar	ea			
	_								
	Tc	Length	Slop	e Velocity	Capacity	Description			
_	(min)	(feet)	(ft/f) (ft/sec)	(cfs)				
	0.6	50	0.028	0 1.33		Sheet Flow, Sheet Flow			
						Smooth surfaces n= 0.011 P2= 3.00"			
	3.7	190	0.015	0.86		Shallow Concentrated Flow, Shallow Conc. 1			
						Short Grass Pasture Kv= 7.0 fps			
	0.6	86	0.136	0 2.58		Shallow Concentrated Flow, Shallow Conc. 2			
						Short Grass Pasture Kv= 7.0 fps			
	1.1					Direct Entry, Minimum TC			

Summary for Pond 1P: Area Behind Levee - Facemate

Inflow Are	a =	5.002 ac, 1	0.68% Impervious,	Inflow Depth = 3.39" for 10-Year event
Inflow	=	18.98 cfs @	12.09 hrs, Volume	e= 1.413 af
Outflow	=	9.42 cfs @	12.25 hrs, Volume	e= 1.413 af, Atten= 50%, Lag= 9.6 min
Primary	=	9.42 cfs @	12.25 hrs, Volume	e= 1.413 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 90.96' @ 12.25 hrs Surf.Area= 12,250 sf Storage= 8,799 cf

6.0

326 Total

Plug-Flow detention time= 10.8 min calculated for 1.412 af (100% of inflow) Center-of-Mass det. time= 10.8 min (808.2 - 797.3)

Volume	Invert	Avail.S	torage S	torage	Description	
#1	90.00'	25,	050 cf C	ustom	Stage Data (Pri	smatic) Listed below (Recalc)
Elevation (feet)	Surf.A (s	Area q-ft)	Inc.St (cubic-fe	tore eet)	Cum.Store (cubic-feet)	
90.00	6, 18	,140 910	25 (0	0 25.050	

Existing Conditions - Facemate - TP40	Type III 24-hr 25-Year Rainfall=5.30
Prepared by BETA Group, Inc	Printed 3/10/2021
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Summary for Subcatchment 1S: EX-DA-1S - Facemate Site

22.52 cfs @ 12.09 hrs, Volume= 1.692 af, Depth= 4.06" Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=5.30"

A	rea (sf)	CN	Description				
1	173,521 89 <50% Grass cover, Poo		s cover, Po	or, HSG D			
	17,024 98 Paved parking, HSG D		ing, HSG D)			
	6,237	98	Roofs, HSC	ΒĎ			
	21,109	79	Woods, Fai	r, HSG D			
2	17,891	89	Weighted A	verage			
1	194,630		89.32% Pervious Area				
23,261 10.68% Impervious Area			ea				
Tc	Length	Slope	e Velocity	Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
0.6	50	0.0280) 1.33		Sheet Flow, Sheet Flow		
					Smooth surfaces n= 0.011 P2= 3.00"		
3.7	190	0.0150	0.86		Shallow Concentrated Flow, Shallow Conc. 1		
					Short Grass Pasture Kv= 7.0 fps		
0.6	86	0.1360	2.58		Shallow Concentrated Flow, Shallow Conc. 2		
					Short Grass Pasture Kv= 7.0 fps		
1.1					Direct Entry, Minimum TC		
6.0	326	Total					

Summary for Pond 1P: Area Behind Levee - Facemate

Inflow Are	a =	5.002 ac, 10.68% Impervious, Inflow Depth = 4.06" for 25-Year event
Inflow	=	22.52 cfs @ 12.09 hrs, Volume= 1.692 af
Outflow	=	10.38 cfs @ 12.27 hrs, Volume= 1.692 af, Atten= 54%, Lag= 10.8 min
Primary	=	10.38 cfs @ 12.27 hrs, Volume= 1.692 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 91.16' @ 12.27 hrs Surf.Area= 13,565 sf Storage= 11,457 cf

Plug-Flow detention time= 11.5 min calculated for 1.691 af (100% of inflow) Center-of-Mass det. time= 11.5 min (803.9 - 792.4)

Volume	Invert	Avail.Stora	ige Storage	Description	
#1	90.00'	25,050	ocf Custon	n Stage Data (Pris	matic) Listed below (Recalc)
Elevation	Surf.A	Area	Inc.Store	Cum.Store	
(feet)	(s	q-ft) (d	cubic-feet)	(cubic-feet)	
90.00	6,	140	0	0	
92.00	18	910	25.050	25.050	

Existin Prepare HydroCA	g Condition d by BETA D® 10.00-25	ons - Facem Group, Inc s/n 10405 © 2	ate - TP40 Type III 24-h	10-Year Rainfall=4.60' Printed 3/10/2021 Page 6
Device	Routing	Invert	Outlet Devices	
#1	Primary	90.00'	2.0" x 2.0" Horiz Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0" Grate (32% open ar Limited to weir flow at low beads	ea)
#2	Primary	90.00'	2.0" x 2.0" Horiz, Catch Basin X 6.00 columns	

X 6 rows C= 0.600 in 24.0" Grate (32% open area) Limited to weir flow at low heads Primary OutFlow Max=9.42 cfs @ 12.25 hrs HW=90.96' (Free Discharge)

L=Catch Basin (Orifice Controls 4.71 cfs @ 4.71 fps)
 L=Catch Basin (Orifice Controls 4.71 cfs @ 4.71 fps)
 L=Catch Basin (Orifice Controls 4.71 cfs @ 4.71 fps)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Area =	5.002 ac, 10.68% Impervious, Inflow	Depth = 3.39" for 10-Year event
Inflow =	9.42 cfs @ 12.25 hrs, Volume=	1.413 af
Primary =	9.42 cfs @ 12.25 hrs, Volume=	1.413 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Existing Conditions - Facemate - TP40 Prepared by RETA Group, Inc.				Type III 24-hr 25	Year Rainfall=5.30" Printed 3/10/2021
HydroCA	HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 8				
Device	Routing	Invert	Outlet Devices		
#1	Primary	90.00'	2.0" x 2.0" Horiz. Catch Ba	asin X 6.00 columns	
			X 6 rows C= 0.600 in 24.0"	Grate (32% open area)	
			Limited to weir flow at low	heads	
#2	Primary	90.00	2.0" x 2.0" Horiz. Catch Ba	isin X 6.00 columns	
			X 6 rows C= 0.600 in 24.0"	Grate (32% open area)	
			Limited to weir flow at low	heads	
Primary OutFlow Max=10.37 cfs @ 12.27 hrs HW=91.16' (Free Discharge) -1=Catch Basin (Orifice Controls 5.19 cfs @ 5.19 fps) -2=Catch Basin (Orifice Controls 5.19 cfs @ 5.19 fps)					
Summary for Link 1L: Facemate Interceptor Drain					
Inflow A Inflow Primary	rea = = =	5.002 ac, 10. 10.38 cfs @ 13 10.38 cfs @ 13	68% Impervious, Inflow Dep 2.27 hrs, Volume= 1 2.27 hrs, Volume= 1	oth = 4.06" for 25-Year 1.692 af 1.692 af, Atten= 0%, Lag	r event = 0.0 min
Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs					
Summary for Subcatchment 1S: EX-DA-1S - Facemate Site

Runoff = 28.57 cfs @ 12.09 hrs, Volume= 2.176 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=6.50"

A	rea (sf)	CN	Description		
1	73,521	89	<50% Gras	s cover, Po	or, HSG D
	17,024	98	Paved park	ing, HSG D	
	6,237	98	Roofs, HSG	6 D	
	21,109	79	Woods, Fai	r, HSG D	
2	17,891	89	Weighted A	verage	
1	94,630		89.32% Per	vious Area	
	23,261		10.68% Imp	pervious Ar	ea
Tc	Length	Slope	 Velocity 	Capacity	Description
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)	
0.6	50	0.0280) 1.33		Sheet Flow, Sheet Flow
					Smooth surfaces n= 0.011 P2= 3.00"
3.7	190	0.0150	0.86		Shallow Concentrated Flow, Shallow Conc. 1
					Short Grass Pasture Kv= 7.0 fps
0.6	86	0.1360) 2.58		Shallow Concentrated Flow, Shallow Conc. 2
					Short Grass Pasture Kv= 7.0 fps
1.1					Direct Entry, Minimum TC
6.0	326	Total			

Summary for Pond 1P: Area Behind Levee - Facemate

Inflow Area	a =	5.002 ac, 10	0.68% Impervious,	Inflow Depth = 5	5.22" for 100-'	Year event
Inflow	=	28.57 cfs @	12.09 hrs, Volume	= 2.176 af		
Outflow	=	11.81 cfs @	12.30 hrs, Volume	= 2.176 at	, Atten= 59%,	Lag= 12.9 min
Primary	=	11.81 cfs @	12.30 hrs, Volume	= 2.176 af		

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 91.50' @ 12.30 hrs Surf.Area= 15,747 sf Storage= 16,465 cf

Plug-Flow detention time= 12.9 min calculated for 2.175 af (100% of inflow) Center-of-Mass det. time= 12.9 min (798.4 - 785.6)

Volume	Invert	Avail.Storage	Storage	Description	
#1	90.00'	25,050 cf	Custom	Stage Data (Prisn	natic) Listed below (Recalc)
Elevation (feet)	Surf.A	rea Inc I-ft) (cubi	c.Store c-feet)	Cum.Store (cubic-feet)	
90.00	6,1	140	0	0	
92.00	18,9	910 2	25,050	25,050	

Existin Prepare	g Conditied by BETA	ons - Facem	Type III 24-hr	100-Year Rainfall=6.50" Printed 3/10/2021	
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC					Page 10
Device	Routing	Invert	Outlet Devices		

#1	Primary	90.00'	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns
			X 6 rows C= 0.600 in 24.0" Grate (32% open area)
			Limited to weir flow at low heads
#2	Primary	90.00'	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns
	-		X 6 rows C= 0.600 in 24.0" Grate (32% open area)
			Limited to weir flow at low heads
iman		Max-11 81 cfs	@ 12 30 hrs HW/-91 50' (Free Discharge)

Primary OutFlow Max=11.81 cfs @ 12.30 hrs HW=91.50' (Free Discharge) 1=Catch Basin (Orifice Controls 5.90 cfs @ 5.90 fps) 2=Catch Basin (Orifice Controls 5.90 cfs @ 5.90 fps)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Are	a =	5.002 ac, 1	10.68% Impervious,	Inflow Depth = 5.22	for 100-Year event
Inflow	=	11.81 cfs @	12.30 hrs, Volume	= 2.176 af	
Primary	=	11.81 cfs @	12.30 hrs, Volume:	= 2.176 af, A	tten= 0%, Lag= 0.0 min



Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr 1-Year Rainfall=2.48"				
Prepared by BETA Group, Inc	Printed 3/10/2021				
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC	C Page 1				
Summary for Subcatchment 2S: EX-DA-2S - Uniroyal Site					

Runoff = 24.02 cfs @ 12.10 hrs, Volume= 1.759 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

Α	rea (sf)	CN D	escription				
4	96,843	89 <	89 <50% Grass cover, Poor, HSG D				
	67,169	98 P	aved park	ing, HSG D)		
	12,351	98 R	loofs, HSC	6 D			
	31,364	79 V	Voods, Fai	r, HSG D			
6	607,728	90 V	Veighted A	verage			
5	528,208	8	6.92% Per	vious Area			
	79,520	1	3.08% lmp	pervious Ar	ea		
Tc	Length	Slope	Velocity	Capacity	Description		
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
4.0	50	0.0520	0.21		Sheet Flow, Sheet Flow		
					Grass: Short n= 0.150 P2= 3.00"		
2.3	245	0.0650	1.78		Shallow Concentrated Flow, Shallow Conc. 1		
					Short Grass Pasture Kv= 7.0 fps		
6.3	295	Total					
	s	ummary	for Sub	catchmer	nt 3S: EX-DA-3S - Upper Uniroyal Site		
Runoff	=	6.32 cf	s@ 12.0	9 hrs, Volu	me= 0.472 af, Depth= 1.85"		
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"							
Α	rea (sf)	CN D	escription				
	64,274	89 <	50% Gras	s cover, Po	oor, HSG D		
	17 187	08 D	aved nark	ing HSG D			

	51,767	98	Roofs, HSG	S D		
1	33,228	94 \	Neighted A	verage		
	64,274	4	48.24% Pervious Area			
	68,954	51.76% Impervious Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
6.0					Direct Entry, Minimum TC	

Summary for Subcatchment B26: Building 26

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

Existin Prepare HydroCA	g Condi ed by BE D® 10.00-	tions - Uniroy FA Group, Inc 25 s/n 10405 ©:	Type III 2	24-hr 1-Year Rainfall=2.48" Printed 3/10/2021 Page 3		
		Summary	for Pond 2	P: Area Behin	d Levee - Uni	iroyal
Inflow Area = 13.952 ac, 13.08% Impervious, Inflow Depth = 1.51" for 1-Year event Inflow = 24.02 cfs @ 12.10 hrs, Volume= 1.759 af Outflow = 8.33 cfs @ 12.40 hrs, Volume= 1.759 af Primary = 8.33 cfs @ 12.40 hrs, Volume= 1.759 af						1-Year event 5%, Lag= 18.1 min
Routing Peak Ele	by Stor-Ir ev= 84.33	nd method, Time	Span= 0.00-8 Surf.Area= 71,	30.00 hrs, dt= 0.0 240 sf Storage=)5 hrs = 22,614 cf	
Plug-Flo Center-o	ow detenti of-Mass d	on time= 58.1 m et. time= 58.4 m	in calculated f in (875.8 - 81	for 1.758 af (1009 7.4)	% of inflow)	
Volume	Inv	ert Avail.Sto	rade Storad	e Description		
#1	84.	00' 168,1	15 cf Custor	n Stage Data (Pr	ismatic) Listed I	below (Recalc)
Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
84.0	00	64,860	0 0			
86.0	00	103,255	168,115	168,115		
Device	Routina	Invert	Outlet Devic	es		
#1	Primary	84.00'	2.0" x 2.0" H	oriz. Catch Basi	n X 6.00 colum	ins ins
	,		X 6 rows C=	0.600 in 24.0" G	Grate (32% open	n area)
#2	Brimon	94.00	Limited to w	eir flow at low he	ads	inc.
#2	Filliary	84.00	X 6 rows C=	0.600 in 24.0" G	Frate (32% open) area)
			Limited to w	eir flow at low he	ads	
#3	Primary	84.00'	2.0" x 2.0" H	loriz. Catch Basi	n X 6.00 colum	ns
			Limited to w	eir flow at low he	ads	i area)

Primary OutFlow Max=8.33 cfs @ 12.40 hrs HW=84.33' (Free Discharge) -1-Catch Basin (Orifice Controls 2.78 cfs @ 2.78 fps) -2-Catch Basin (Orifice Controls 2.78 cfs @ 2.78 fps) -3-Catch Basin (Orifice Controls 2.78 cfs @ 2.78 (ps)

Summary for Link 2L: Chicopee River

Inflow Area	a =	18.001 ac, 2	4.44% Impervious,	Inflow Depth = 1.	61" for 1-Year event
Inflow	=	15.73 cfs @	12.11 hrs, Volume	= 2.417 af	
Primary	=	15.73 cfs @	12.11 hrs, Volume	= 2.417 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Existing Condi	tions - Uniroyal - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48"				
HydroCAD® 10.00-	A Group, Inc Printed 3/10/2021 25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 2				
	1 dgc 2				
Area (sf)	CN Description				
10,635	98 Roofs, HSG D				
10,635	100.00% Impervious Area				
Tc Length (min) (feet)	Slope Velocity Capacity Description (tt/tt) (tt/sec) (cfs)				
6.0	Direct Entry, Minimum TC				
	Summary for Subcatchment B27: Building 27				
Runoff =	1.74 cfs @ 12.09 hrs, Volume= 0.140 af, Depth= 2.25"				
Runoff by SCS TF Type III 24-hr 1-Y	R-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs ear Rainfall=2.48"				
Area (sf)	CN Description				
32,552	98 Roofs, HSG D				
32,552	100.00% Impervious Area				
Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)				
6.0	Direct Entry, Minimum TC				
	Summary for Reach 3R: Uniroyal South Outfall (Exist.)				
Inflow Area =	3.058 ac, 51.76% Impervious, Inflow Depth = 1.85° for 1-Year event				

Inflow = 6.32 cfs @ 12.09 hrs, Volume= 0.472 af Outflow = 6.26 cfs @ 12.10 hrs, Volume= 0.472 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 11.48 fps, Min. Travel Time= 0.3 min Avg. Velocity = 3.80 fps, Avg. Travel Time= 0.8 min

Peak Storage= 96 cf @ 12.09 hrs Average Depth at Peak Storage= 0.42' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs

30.0" Round Pipe n= 0.011 Concrete pipe, straight & clean Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr 1-Year Rainfall=2.48"
Prepared by BETA Group, Inc	Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC	C Page 4

Summary for Link 2La: Oak Street Pump Station

 Inflow Area =
 14.943 ac, 18.85% Impervious, Inflow Depth =
 1.56" for 1-Year event

 Inflow =
 9.44 cfs @
 12.14 hrs, Volume=
 1.945 af

 Primary =
 9.44 cfs @
 12.14 hrs, Volume=
 1.945 af, Atten= 0%, Lag= 0.0 min

Existin Prepare HydroCA	g Con d by B D® 10.0	ditions - Unir ETA Group, In 10-25 s/n 10405	r oyal - Atla c © 2019 Hydr	as 14 oCAD Softwa	Type III 24-hr 2-1	/ear Rainfall=3.12" Printed 3/10/2021 Page 5
		Summary	for Subc	atchment 2	S: EX-DA-2S - Uniroyal Site	
Runoff	=	32.97 cfs @	12.09 hrs,	Volume=	2.435 af, Depth= 2.09"	
Runoff b Type III 2	y SCS 24-hr 2	TR-20 method, -Year Rainfall≕	UH=SCS, \ 3.12"	Veighted-CN	, Time Span= 0.00-80.00 hrs, dt=	0.05 hrs

Α	rea (sf)	CN	Description		
4	96,843	89	<50% Gras	s cover, Po	por, HSG D
	67,169	98	Paved park	ing, HSG E)
	12,351	98	Roofs, HSC	6 D	
	31,364	79	Woods, Fai	r, HSG D	
6	07,728	90	Weighted A	verage	
5	28,208		86.92% Per	vious Area	1
	79,520		13.08% lmp	pervious Ar	rea
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cts)	
4.0	50	0.0520	0.21		Sheet Flow, Sheet Flow
					Grass: Short n= 0.150 P2= 3.00"
2.3	245	0.0650	1.78		Shallow Concentrated Flow, Shallow Conc. 1
					Short Grass Pasture Kv= 7.0 fps
6.3	295	Total			
	s	umma	ry for Sub	catchme	nt 3S: EX-DA-3S - Upper Uniroyal Site
Runoff	=	8.29 c	fs @ 12.0	9 hrs, Volu	ume= 0.629 af, Depth= 2.47"
Runoff b Type III :	y SCS TF 24-hr 2-Y	R-20 me ⁄ear Rai	thod, UH=S nfall=3.12"	SCS, Weigl	hted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
A	rea (sf)	CN	Description		

	64,274	89	<50% Gras	s cover, Po	oor, HSG D
	17,187	98	Paved park	ing, HSG D)
	51,767	98	Roofs, HSC	ΒĎ	
1	33,228	94	Weighted A	verage	
	64,274		48.24% Per	vious Area	
	68,954		51.76% Imp	pervious Ar	ea
Tc	Length	Slop	e Velocity	Capacity	Description
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)	
6.0					Direct Entry, Minimum TC

Summary for Subcatchment B26: Building 26

Runoff	=	0.72 cfs @	12.09 hrs,	Volume=	0.059 af,	Depth= 2.89"

Primary OutFlow Max=9.90 cfs @ 12.43 hrs HW=84.47 (Free Discharge)
-1-Catch Basin (Orifice Controls 3.30 cfs @ 3.30 (fps)
-2-Catch Basin (Orifice Controls 3.30 cfs @ 3.30 (fps)
-3-Catch Basin (Orifice Controls 3.30 cfs @ 3.30 (fps)

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Inflow Area = Inflow = Primary =

Summary for Link 2L: Chicopee River

 18.001 ac, 24.44% Impervious, Inflow Depth = 2.20" for 2-Year event

 19.41 cfs @ 12.10 hrs, Volume=
 3.302 af

 19.41 cfs @ 12.10 hrs, Volume=
 3.302 af, Atten= 0%, Lag= 0.0 min

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page Area (sf) CN Description 10,635 38 Roofs, HSG D 10,635 100.00% Impervious Area Tc Length Slope 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Area (sf) CN Description 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow area = 3.058 ac, 51.76% Imper	Prepared by	by BETA G	s - Uniroya roup, Inc	II - Atlas 1	4		Type III 2	Prin	Rainfall=3.12 ited 3/10/202
Area (sf) CN Description 10,635 98 Roofs, HSG D 10,635 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (ds) 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.800 af, Depth= 2.89" Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.800 af, Depth= 2.89" Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.800 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Direct Entry, Minimum TC Direct Entry, Minimum TC 32,552 100.00% Impervious Area Direct Entry, Minimum TC Direct Entry, Minimum TC 6.0 Direct Entry, Minimum TC Direct Entry, Minimum TC Direct 2.02 from 2.29 af <th>HydroCAD® 1</th> <th>) 10.00-25 s/</th> <th>n 10405 © 20</th> <th>)19 HydroCA</th> <th>D Software</th> <th>Solutions LL</th> <th>С</th> <th></th> <th>Page</th>	HydroCAD® 1) 10.00-25 s/	n 10405 © 20)19 HydroCA	D Software	Solutions LL	С		Page
10.635 98 Rodis, HSG D 10.635 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (teet) (tit) (tit) Direct Entry, Minimum TC 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff Runoff 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type II 24-hr Area (sf) Area (sf) ON Description 32,552 100.00% Impervious Area Tc Length Slope Area (sf) C Length Slope Other Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" C Length Slope of 2.09 hrs, Volume 0.629 af Outflow = 8.2	Aroo		Decoriptio						
10,635 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Description 32,552 98 Roofs, HSG D 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 0.00 Direct Entry, Minimum TC 6.0 Direct Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow 4rea = 3.058		1635 98	Roofs HS						
To Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Description 32,552 98 Roofs, HSG D 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow = 8.29 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.7 min Rax, Velocity = 12.43 (ps, Min, Travel Time 0.2 min May, Velocity = 12.43 (ps, Min, Travel Time 0.2 min Average Depth at Peak Storage= 0.48' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0" Round Pipe	10,0	,000 00 1635	100.00%	Impervious	Area				
Tc Length Slope Velocity Capacity Description 6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Direct Entry, Minimum TC 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description 32,552 100.00% Impervious Area Tc Length Slope Velocity Capacity Description 32,552 100.00% Impervious Area 6.0 Direct Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event	10,0	,000	100.00701	inpervious /	a cu				
6.0 Direct Entry, Minimum TC Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Description	Tc Ler (min) (f	ength Slo (feet) (ft	/pe Velocit	y Capacity	Descript	tion			
Summary for Subcatchment B27: Building 27 Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Description 32,552 100.00% Impervious Area Tc Length Slope Velocity 6.0 Direct Entry, Minimum TC Building X: 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow = 8.29 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.629 af Reak Storage= 117 cf @ 12.09 hrs Year event Average Depth at Peak Storage= 0.48" Bank-Full Depth= 2.50" Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0° Round Pipe -0.011 Corcrete pipe, straight & dean	6.0				Direct E	intry, Minin	num TC		
Runoff = 2.21 cfs @ 12.09 hrs, Volume= 0.180 af, Depth= 2.89" Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12" Area (sf) CN Description 32,552 98 Roofs, HSG D 32,552 100.00% Impervious Area Tc Length Slope (feet) (ft/ft) (ft/sco.) 6.0 Direct Entry, Minimum TC Summary for Reach 3R: Uniroyal South Outfall (Exist.) nflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event nflow = 8.29 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.629 af Velocity = 4.08 fps, Min. Travel Time = 0.2 min Xay. Velocity = 4.08 fps, Avg. Travel Time = 0.2 min Vag. Velocity = 4.08 fps, Avg. Travel Time = 0.7 min Saak-Full Depth = 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 80.0" Round Pipe =0.011 Correte pipe, straight & clean			Summ	ary for Su	bcatchm	ent B27: I	Building 2	27	
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Inflow Area = 3.058 ac, 51.76% Impervious, Inflow Depth = 2.47" for 2-Year event Inflow = 8.29 cfs @ 12.09 hrs, Volume= 0.629 af Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.629 af, Atten= 1%, Lag= 0.4 min Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity = 12.43 fps, Min. Travel Time= 0.2 min Avg. Velocity = 4.08 fps, Avg. Travel Time= 0.2 min Peak Storage= 117 cf @ 12.09 hrs Average Depth at Peak Storage= 0.48" Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0" Round Pipe n= 0.011 Concrete pipe, straight & clean		S	Summary fo	or Reach 3	3R: Uniro	yal South	Outfall (Exist.)	
Inflow = 8.29 cfs @ 12.09 hrs, Volume = 0.629 af Outflow = 8.29 cfs @ 12.09 hrs, Volume = 0.629 af, Atten= 1%, Lag= 0.4 min Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity = 12.43 fps, Min. Travel Time= 0.2 min Avg. Velocity = 4.08 fps, Avg. Travel Time= 0.7 min Peak Storage= 117 cf @ 12.09 hrs Average Depth at Peak Storage= 0.48' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0'' Round Pipe n= 0.011 Concrete pipe, straight & clean	Inflow Area -	- 30)58 ac 51 7	6% Impenvi	oue Inflow	v Depth -	2.47" for	2-Vear event	
Outflow = 8.23 cfs (a) 12.09 hrs, Volume= 0.629 af, Atten= 1%, Lag= 0.4 min Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 12.43 fps, Min. Travel Time= 0.2 min Avg. Velocity= 12.43 fps, Avg. Travel Time= 0.7 min Peak Storage= 117 cf (a) 12.09 hrs Average Depth at Peak Storage= 0.48' Bank-Full Depth= 2.50' Flow Area= 9.01' Round Pipe n= 0.01' Concrete pipe, straight & clean	Inflow =	= 8.2	9 cfs @ 12.	.09 hrs. Vol	ume=	0.629 a	f. 101	2-Tear event	
Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 12.43 fps, Min. Travel Time= 0.2 min Avg. Velocity = 4.08 fps, Avg. Travel Time= 0.7 min Peak Storage= 117 cf @ 12.09 hrs Average Depth at Peak Storage= 0.48' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0' Round Pipe n= 0.011 Concrete pipe, straight & clean	Outflow =	= 8.2	3 cfs @ 12.	.09 hrs, Vol	ume=	0.629 a	f, Atten= 1	%, Lag= 0.4 n	nin
Peak Storage= 117 cf @ 12.09 hrs Average Depth at Peak Storage= 0.48' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 101.22 cfs 30.0' Round Pipe n= 0.011 Concrete pipe, straight & clean	Routing by S Max. Velocity Avg. Velocity	Stor-Ind+Tr ity= 12.43 fp ity = 4.08 fp	ans method, os, Min. Trav s, Avg. Trav	, Time Span vel Time= 0 vel Time= 0.	= 0.00-80. .2 min 7 min	00 hrs, dt=	0.05 hrs		
30.0" Round Pipe ⊫ 0.011 Concrete pipe, straight & clean	Peak Storag Average Dep Bank-Full De	ge= 117 cf (epth at Peak Depth= 2.50	@ 12.09 hrs Storage= 0 Flow Area=	1.48' = 4.9 sf, Ca	pacity= 10	1.22 cfs			
Length= 175.0' Slope= 0.0436 '/'	30.0" Round n= 0.011 Cc Length= 175	nd Pipe Concrete pip 75.0' Slope:	e, straight & = 0.0436 '/'	clean					

Existin Prepare HydroCA	ed by BET	tions - Uniroy A Group, Inc 25 s/n 10405 © 2	T. Solutions LLC	ype III 24-hr 2-	Year Rainfall=3.12" Printed 3/10/2021 Page 7	
		Summary	for Pond 2P: Area	Behind Leve	e - Uniroyal	
Inflow A Inflow Outflow Primary	rea = = = =	13.952 ac, 13. 32.97 cfs @ 1: 9.91 cfs @ 1: 9.91 cfs @ 1:	08% Impervious, Inflow 2.09 hrs, Volume= 2.43 hrs, Volume= 2.43 hrs, Volume=	w Depth = 2.0 2.435 af 2.435 af, <i>A</i> 2.435 af	9" for 2-Year e Atten= 70%, Lag	event g= 20.4 min
Routing	by Stor-In	d method, Time	Span= 0.00-80.00 hrs,	dt= 0.05 hrs	5 cf	
Volume #1 Elevatio	ow detention of-Mass de Inve 84.0	on time= 57.1 m et. time= 57.4 m ert <u>Avail.Sto</u> 00' 168,1 ⁻ Surf.Area	in calculated for 2.434 a in (865.6 - 808.2) rage Storage Descript [5 cf Custom Stage D Inc.Store Cum	at (100% of infl tion Data (Prismatic) n.Store	ow)) Listed below (F	Recalc)
(fee	et)	(sq-ft)	(cubic-feet) (cubic	c-feet)		
84.0 86.0	00	64,860 103,255	0 168,115 16	0 68,115		
Device	Routing	Invert	Outlet Devices			
#1	Primary	84.00'	2.0" x 2.0" Horiz. Cato X 6 rows C= 0.600 in 2 Limited to weir flow at	ch Basin X 6.00 24.0" Grate (32 t low heads	0 columns 2% open area)	
#2	Primary	84.00'	2.0" x 2.0" Horiz. Cato X 6 rows C= 0.600 in 2 Limited to weir flow at	ch Basin X 6.00 24.0" Grate (32	0 columns 2% open area)	
#3	Primary	84.00'	2.0" x 2.0" Horiz. Cate	ch Basin X 6.00	0 columns	

Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr 2-Year Rainfall=3.12"
Prepared by BETA Group, Inc	Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC	Page 8

Summary for Link 2La: Oak Street Pump Station

 14.943 ac, 18.85% Impervious, Inflow Depth = 2.15" for 2-Year event

 11.23 cfs @ 12.13 hrs, Volume=
 2.674 af

 11.23 cfs @ 12.13 hrs, Volume=
 2.674 af, Atten= 0%, Lag= 0.0 min
 Inflow Area = Inflow = Primary =

Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr	10-Year Rainfall=5.04"
Prepared by BETA Group, Inc		Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions L	LC	Page 9

Summary for Subcatchment 2S: EX-DA-2S - Uniroyal Site

Runoff = 59.95 cfs @ 12.09 hrs, Volume= 4.552 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=5.04"

A	rea (sf)	CN D	escription		
4	96,843	89 <	50% Gras	s cover, Po	oor, HSG D
	67,169	98 P	aved park	ing, HSG D)
	12,351	98 R	oofs, HSC	5 D	
	31,364	79 V	/oods, Fai	r, HSG D	
6	607,728	90 V	/eighted A	verage	
5	528,208	8	6.92% Per	vious Area	
	79,520	1:	3.08% lmp	ervious Ar	ea
_					
IC	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(CfS)	
4.0	50	0.0520	0.21		Sheet Flow, Sheet Flow
	0.15		4 70		Grass: Short n= 0.150 P2= 3.00"
2.3	245	0.0650	1.78		Shallow Concentrated Flow, Shallow Conc. 1
					Short Grass Pasture KV= 7.0 fps
6.3	295	lotal			
	_				
	S	Summary	/ for Sub	catchme	nt 3S: EX-DA-3S - Upper Uniroyal Site
Runoff	=	14.15 cfs	s@ 12.0	9 hrs, Volu	ime= 1.108 af, Depth= 4.35"
Runoff b Type III :	y SCS TI 24-hr 10-	R-20 metl -Year Rai	nod, UH=8 nfall=5.04	SCS, Weigh	nted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
A	rea (st)	CN D	escription		
	64,274	89 <	50% Gras	s cover, Po	oor, HSG D

	17,187	98	Paved park	ing, HSG D	
	51,767	98	Roofs, HSC	ΒĎ	
1	33,228	94	Weighted A	verage	
	64,274		48.24% Per	vious Area	
	68,954		51.76% Imp	pervious Ar	ea
Tc	Length	Slope	 Velocity 	Capacity	Description
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)	
6.0					Direct Entry, Minimum TC

Summary for Subcatchment B26: Building 26

0.098 af, Depth= 4.80" 1.18 cfs @ 12.09 hrs, Volume= Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=5.04"

Existin Prepare	ad by BF	itions - TA Grou	Uniroyal	- Atlas 14			Type III 24-h	r 10-Year Rainfall Printed 3/1	=5.0 0/202
HydroCA	D® 10.00	-25 s/n 1	0405 © 201	9 HydroCAE	Software S	Solutions LLC	0	P	ade
									-
A	.rea (sf)	CN I	Description						
	10,635	98	Roofs, HSC	6 D					
	10,635		100.00% In	npervious A	rea				
Тс	Length	Slope	Velocity	Capacity	Descripti	on			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
6.0					Direct Er	ntry, Minim	um IC		
			Summa	ry for Sub	catchme	ent B27: E	Building 27		
Runoff	=	3.60 c	fs @ 12.0	9 hrs, Volu	me=	0.299 af	, Depth= 4.8	80"	
Runoff k	N SCS T	R-20 me	thod UH-9	SCS Weid	ted-CN T	ime Snan-	0.00-80.00 h	rs. dt= 0.05 brs	
Type III	24-hr 10	-Year Ra	ainfall=5.04	"	100 014, 1	inte opun=	0.00 00.00 11	13, di= 0.00 m3	
21 -									
A	.rea (sf)	CN	Description						
	32,552	98	Roofs, HSC	G D					
	32,552		100.00% In	pervious A	rea				
Tc	Lenath	Slope	Velocity	Capacity	Descripti	on			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Booonpa	011			
6.0					Direct Er	ntry, Minim	um TC		
		-							
		Sur	nmary fo	r Reach 3	R: Uniro	yal South	Outfall (Ex	ist.)	
Inflow A	rea =	3 058	ac 51.76	% Impervio	us Inflow	Depth =	1.35" for 10	-Year event	
Inflow	=	14.15 c	fs @ 12.0	9 hrs, Volu	me=	1.108 af			
Outflow	=	14.06 c	fs @ 12.0	9 hrs, Volu	me=	1.108 af	, Atten= 1%,	Lag= 0.3 min	
Routing	by Stor-I	nd+Tran	s method, T	Fime Span=	= 0.00-80.0	0 hrs, dt= ().05 hrs		
Max. Ve	locity= 1	4.52 fps,	Min. Trave	el Time= 0.:	2 min				
Avg. Ve	ocity = 4	.74 fps,	Avg. Irave	1 1 ime= 0.6	min				
Peak St	orage= 1	71 cf @	12.09 hrs						
Average	Depth a	t Peak S	torage= 0.6	33'					
Bank-Fu	II Depth=	= 2.50' F	low Area=	4.9 sf, Cap	acity= 101	.22 cfs			
20 0" P	ound Din	•							
n= 0.01	1 Concre	e ite pipe :	straight & c	lean					
Length=	175.0	Slope= 0	.0436 1/						
Inlet Inv	ert= 85.8	5', Outle	t Invert= 78	3.22'					
_	-								
()								
()								

Existing Conditions - Uniroyal - Atlas 14 Prepared by BETA Group, Inc						7	Type I	II 24-hi	10-Year Prin	Rainfall=5.04" ited 3/10/2021
HydroCAD®	10.00-25 s/	/n 10405 (© 2019 Hy	droCAD S	Software So	utions LLC	2			Page 11
		Summa	ry for P	ond 2P:	Area Be	hind Le	vee -	Uniro	/al	
Inflow Area Inflow = Outflow = Primary = Routing by 3 Peak Elev=	= 13.9 = 59.9 = 13.7 = 13.7 Stor-Ind me 84.90' @ 1	952 ac, 1 15 cfs @ 11 cfs @ 11 cfs @ 11 cfs @ ethod, Tir 12.50 hrs	3.08% Im 12.09 hrs 12.50 hrs 12.50 hrs ne Span= Surf.Are	pervious s, Volum s, Volum s, Volum 0.00-80 a= 82,14	s, Inflow D le= le= le= .00 hrs, dt= l2 sf Stora	epth = 3 4.552 af 4.552 af 4.552 af 4.552 af = 0.05 hrs age= 66,1	3.91" , Atter 166 cf	for 10- n= 77%	Year event , Lag= 24.3	3 min
Plug-Flow d Center-of-M	letention tir lass det. tir	me= 61.8 me= 62.1	min calcu min (852	lated for .8 - 790.	4.549 af (7)	100% of i	nflow)			
Volume	Invert	Avail.S	torage	Storage I	Description					
#1	84.00'	168	,115 cf	Custom	Stage Data	(Prismat	tic) Lis	ted belo	ow (Recalc)
Elevation (feet)	Surf (.Area sq-ft)	Inc.S (cubic-	Store feet)	Cum.St (cubic-fe	ore et)				
84.00	6	4,860		0		0				
86.00	10	3,255	168	,115	168,1	15				
Device Ro	outina	Inve	rt Outlet	Devices	;					

Existing Conc Prepared by BE HydroCAD® 10.00	litions - Uniroyal - Atlas 14 TA Group, Inc 0-25 s/n 10405 © 2019 HydroCAD Software	Type III 24-hr 10-Year Rai Printed Solutions LLC	nfall=5.04" 3/10/2021 Page 12
	Summary for Link 2La: Oal	k Street Pump Station	
Inflow Area = Inflow = Primary =	14.943 ac, 18.85% Impervious, Inflow 16.09 cfs @ 12.12 hrs, Volume= 16.09 cfs @ 12.12 hrs, Volume=	v Depth = 3.97" for 10-Year event 4.948 af 4.948 af, Atten= 0%, Lag= 0.0 min	

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

#1	84.0	0' 168,1	15 cf Custon	n Stage Data (Prismatic) Listed below (Recalc)		
Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Stor (cubic-fee	t)		
84.0 86.0	00 00	64,860 103,255	0 168,115	168,11	0 5		
Device	Routing	Invert	Outlet Device	es			
#1 #2	Primary Primary	84.00' 84.00'	2.0" x 2.0" H X 6 rows C= Limited to we 2.0" x 2.0" H	oriz. Catch Ba 0.600 in 24.0" eir flow at low oriz. Catch Ba	asin X 6.00 columns Grate (32% open area) heads asin X 6.00 columns		
#3	Primary	84.00'	X 6 rows C= 0.600 in 24.0" Grate (32% open area) Limited to weir flow at low heads 2.0" x 2.0" Horiz Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0" Grate (32% open area) Limited to weir flow at low heads				
Primary 1=Ca 2=Ca 3=Ca	OutFlow tch Basin tch Basin tch Basin	Max=13.70 cfs (Orifice Contro (Orifice Contro (Orifice Contro	@ 12.50 hrs I ols 4.57 cfs @ ols 4.57 cfs @ ols 4.57 cfs @	HW=84.90' (I 4.57 fps) 4.57 fps) 4.57 fps)	Free Discharge)		

Summary for Link 2L: Chicopee River

Inflow Area	a =	18.001 ac, 2	4.44% Impervious,	Inflow Depth = 4	.04" for 10-Year event
Inflow	=	29.98 cfs @	12.10 hrs, Volume	= 6.056 af	
Primary	=	29.98 cfs @	12.10 hrs, Volume	= 6.056 af	, Atten= 0%, Lag= 0.0 min

Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr	25-Year Rainfall=6.23"
Prepared by BETA Group, Inc		Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LL	C	Page 13

Summary for Subcatchment 2S: EX-DA-2S - Uniroyal Site

Runoff = 76.54 cfs @ 12.09 hrs, Volume= 5.895 af, Depth= 5.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

Ar	ea (sf)	CN D	escription		
4	96,843	89 <	50% Gras	s cover, Po	or, HSG D
	67,169	98 P	aved park	ing, HSG D)
	12,351	98 R	loofs, HSG	5 D	
	31,364	79 V	Voods, Fai	r, HSG D	
6	07,728	90 V	Veighted A	verage	
5	28,208	8	6.92% Per	vious Area	
	79,520	1	3.08% lmp	ervious Ar	ea
_					
IC	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cts)	
4.0	50	0.0520	0.21		Sheet Flow, Sheet Flow
					Grass: Short n= 0.150 P2= 3.00"
2.3	245	0.0650	1.78		Shallow Concentrated Flow, Shallow Conc. 1
					Short Grass Pasture Kv= 7.0 fps
6.3	295	Total			
	s	ummary	for Sub	catchmer	nt 3S: EX-DA-3S - Upper Uniroyal Site
Runoff	=	17.74 cf	s@ 12.0	9 hrs, Volu	me= 1.408 af, Depth= 5.52"
Runoff by Type III 2	y SCS TI 24-hr 25-	R-20 met Year Rai	hod, UH=S nfall=6.23'	SCS, Weigh	nted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Ar	ea (sf)	CN D	escription		
	64,274	89 <	50% Gras	s cover, Po	or, HSG D

	17,107	90	Paveu park	апу, пов и)			
	51,767	98	Roofs, HSC	GD				
	133,228	94	Weighted A	verage				
	64,274		48.24% Pervious Area					
	68,954		51.76% Im	pervious Ar	ea			
٦	c Length	Slop	e Velocity	Capacity	Description			
(mii	n) (feet)	(ft/f	t) (ft/sec)	(cfs)				
6	0				Direct Entry, Minimum TC			

Summary for Subcatchment B26: Building 26

Runoff = 1.46 cfs @ 12.09 hrs, Volume= 0.122 af, Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

		~						
A	10.625		Description					
	10,635	90	100 00% li	mpervious A	rea			
	10,000		100.00701	nportiouo /				
Tc (min)	Length	Slop	e Velocity	Capacity	Descripti	on		
6.0	(ieei)	(101	(I/Sec)	(015)	Direct En	ntry, Minim	um TC	
			Summa	ary for Sul	ocatchme	ent B27: E	Building 27	
Runoff	=	4.46	cfs @ 12.0	09 hrs, Volu	me=	0.373 af	f, Depth= 5.9	19"
Runoff b	y SCS TF	R-20 m	ethod, UH=	SCS, Weig	nted-CN, T	ime Span=	= 0.00-80.00 h	rs, dt= 0.05 hrs
Type III	24-hr 25-	Year F	Rainfall=6.23	3"				
A	rea (sf)	CN	Description	n				
	32,552	98	Roofs, HS	G D				
	32,552		100.00% li	mpervious A	rea			
Тс	Length	Slop	ve Velocity	Capacity	Descripti	on		
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)	Description	011		
6.0					Direct En	ntry, Minim	um TC	
		_	_					
		SL	ummary to	or Reach 3	R: Uniroy	al South	Outfall (Ex	ist.)
Inflow A	·ea =	3.05	8 ac 51 76	% Impervic	us Inflow	Depth = !	5.52" for 25	-Year event
Inflow	=	17.74	cfs @ 12.0	09 hrs, Volu	me=	1.408 af	f	
Outflow	=	17.64	cfs @ 12.0	09 hrs, Volu	me=	1.408 af	f, Atten= 1%,	Lag= 0.3 min
Routing	by Stor-Ir	nd+Tra	ns method	Time Span:	= 0 00-80 0	10 hrs dt= (0.05 hrs	
Max. Ve	ocity= 15	.49 fps	s, Min. Trav	el Time= 0.	2 min	o 1110, at= t	0.00 1.00	
Avg. Vel	ocity = 5.	07 fps,	Avg. Trave	el Time= 0.6	min			
	vrage= 20	1 cf @	12.00 bre					
Poak St	Depth at	Peak	Storage= 0.	71'				
Peak Ste Average		2.50'	Flow Area=	4.9 sf, Cap	acity= 101	.22 cfs		
Peak Ste Average Bank-Fu	II Depth=							
Peak Ste Average Bank-Fu	II Depth=							
Peak Sto Average Bank-Fu 30.0" Ro n= 0.011	II Depth= ound Pipe Concret	e te pipe	. straight &	clean				
Peak Sto Average Bank-Fu 30.0" R n= 0.011 Length=	Il Depth= ound Pipe Concret 175.0' S	e te pipe Slope=	, straight & 0.0436 '/'	clean				

Existing Co Prepared by HydroCAD® 1	DINCENTIANS	- Uniroyal - A oup, Inc 10405 © 2019 H	Type III 24-hr	25-Year Rainfall=6.23" Printed 3/10/2021 Page 15		
	s	ummary for I	Pond 2P:	Area Behind	Levee - Uniroya	al
Inflow Area = Inflow = Outflow = Primary =	= 13.95 76.54 15.59 15.59	52 ac, 13.08% I cfs @ 12.09 h cfs @ 12.52 h cfs @ 12.52 h	mpervious irs, Volum irs, Volum irs, Volum	, Inflow Depth = e= 5.895 e= 5.895 e= 5.895	5.07" for 25-Y af af, Atten= 80%, af	′ear event Lag= 25.8 min
Routing by S Peak Elev= 8	tor-Ind met 35.16' @ 12	hod, Time Spar .52 hrs Surf.A	⊫ 0.00-80. rea= 87,22	00 hrs, dt= 0.05 0 sf Storage= 8	hrs 8,569 cf	
Plug-Flow de Center-of-Ma	etention time ass det. time	e= 66.7 min cal e= 67.0 min (85	culated for 50.8 - 783.8	5.891 af (100%) 3)	of inflow)	
Volume	Invert	Avail.Storage	Storage D	Description		
#1	84.00'	168,115 cf	Custom S	Stage Data (Prisi	matic) Listed below	w (Recalc)
Elevation (feet) 84.00	Surf.A (so	rea Inc q-ft) (cubio 860	Store c-feet)	Cum.Store (cubic-feet)		

04.0		04,000	0	0	
86.0	00	103,255	168,115	168,115	
Device	Routing	Invert	Outlet Devices		
#1	Primary	84.00'	2.0" x 2.0" Horiz	Catch Basin X 6.00 colun	nns
	-		X 6 rows C= 0.60	0 in 24.0" Grate (32% ope	n area)
			Limited to weir fl	ow at low heads	
#2	Primary	84.00'	2.0" x 2.0" Horiz	Catch Basin X 6.00 colun	nns
			X 6 rows C= 0.60	0 in 24.0" Grate (32% ope	n area)
			Limited to weir fl	ow at low heads	
#3	Primary	84.00'	2.0" x 2.0" Horiz	Catch Basin X 6.00 colun	nns
			X 6 rows C= 0.60	0 in 24.0" Grate (32% ope	n area)
			Limited to weir fl	ow at low heads	
Primary	OutFlow	Max=15.58 cfs	@ 12.52 hrs HW:	=85.16' (Free Discharge)	
1=Ca	tch Basin	(Orifice Contro	ls 5.19 cfs @ 5.19	fps)	
-2=Ca	tch Basin	(Orifice Contro	ls 5.19 cfs @ 5.19	fps)	
└─3=Ca	tch Basin	(Orifice Contro	ls 5.19 cfs @ 5.19	fps)	

Summary for Link 2L: Chicopee River

Inflow Area	a =	18.001 ac, 2	4.44% Impervious,	Inflow Depth = 5.	20" for 25-Year event
Inflow	=	36.17 cfs @	12.10 hrs, Volume	= 7.798 af	
Primary	=	36.17 cfs @	12.10 hrs, Volume	= 7.798 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr	25-Year Rainfall=6.23"
Prepared by BETA Group, Inc		Printed 3/10/2021
HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LL	C	Page 16

Summary for Link 2La: Oak Street Pump Station

 Inflow Area =
 14.943 ac, 18.85% Impervious, Inflow Depth =
 5.13" for 25-Year event

 Inflow =
 18.70 cfs @
 12.12 hrs, Volume =
 6.390 af

 Primary =
 18.70 cfs @
 12.12 hrs, Volume =
 6.390 af, Atten = 0%, Lag = 0.0 min

Existing Conditions - Uniroyal - Atlas 14	Type III 24-hr	100-Year Rainfall=8.07"
Prepared by BETA Group, Inc		Printed 3/10/2021
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Summary for Subcatchment 2S: EX-DA-2S - Uniroyal Site

Runoff = 101.97 cfs @ 12.09 hrs, Volume= 7.992 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

Α	rea (sf)	CN E	CN Description						
4	96,843	89 <	89 <50% Grass cover, Poor, HSG D						
	67,169	98 F	98 Paved parking, HSG D						
	12,351	98 F	98 Roofs, HSG D						
	31,364	79 V	Voods, Fai	r, HSG D					
6	07,728	90 V	90 Weighted Average						
5	28,208	8	6.92% Per	vious Area					
	79,520	1	3.08% Imp	pervious Ar	ea				
Tc	Length	Slope	Velocity	Capacity	Description				
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)					
4.0	50	0.0520	0.21		Sheet Flow, Sheet Flow				
					Grass: Short n= 0.150 P2= 3.00"				
2.3	245	0.0650	1.78		Shallow Concentrated Flow, Shallow Conc. 1				
					Short Grass Pasture Kv= 7.0 fps				
6.3	295	Total							
	S	ummar	y for Sub	catchmer	nt 3S: EX-DA-3S - Upper Uniroyal Site				
Runoff	=	23.25 cf	s@ 12.0	9 hrs, Volu	ime= 1.874 af, Depth= 7.35"				
Runoff b Type III	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"								
A	rea (sf)	CN E	Description						
	64.274	89 <	:50% Gras	s cover. Po	or, HSG D				
	17.187 98 Paved parking, HSG D								

17	,187	98	Paved parking, HSG D					
51	1,767	98	Roofs, HSG D					
133	3,228	94	Weighted A	verage				
64	1,274		48.24% Pervious Area					
68	3,954		51.76% lmp	ervious Are	ea			
Tc L	.ength	Slope	 Velocity 	Capacity	Description			
(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)				
6.0					Direct Entry, Minimum TC			

Summary for Subcatchment B26: Building 26

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.159 af, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

	D® 10.00-	25 s/n	10405 © 201	9 HydroCAL	O Software	Solutions L	LC			
А	rea (sf)	CN	Description	1						
	10,635	98	Roofs, HS	G D						
	10,635		100.00% lr	npervious A	Area					
Tc (min)	Length (feet)	Slop (ft/f	e Velocity	Capacity (cfs)	Descript	tion				
6.0			, , , , , , , , , , , , , , , , , , , ,		Direct E	intry, Mini	mum TC			
			Summa	ry for Sul	ocatchm	ent B27:	Buildir	ng 27		
Runoff	=	5.78	cfs @ 12.0	9 hrs, Volu	ume=	0.488	af, Dept	h= 7.83		
_										
Runoff b	by SCS TH	R-20 m	ethod, UH=	SCS, Weig	hted-CN,	Time Spar	n= 0.00-8	0.00 hrs	, dt= 0.05 h	rs
Type III	24-hr 100)-Year	Rainfall=8.0	7"						
Δ	rea (sf)	CN	Description	1						
	32,552	98	Roofs, HS	G D						
	32,552		100.00% lr	npervious A	Area					
Tc	l onath	Slon	 Velocity 	O						
(min)	(feet)	(ft/f	t) (ft/sec)	Capacity (cfs)	Descript	tion				
(min) 6.0	(feet)	(ft/f	t) (ft/sec)	Capacity (cfs)	Descript	tion Entry, Mini	mum TC			
(min) 6.0	(feet)	(ft/f	(ft/sec)	(cfs) r Reach 3	Descript Direct E R: Uniro	tion Intry, Mini Intry Sout	mum TC	all (Exis	it.)	
(min) 6.0	(feet)	(ft/f Su 3.05	(ft/sec)	(cfs) r Reach 3	Descript Direct E SR: Uniro	tion Entry, Mini Dyal Sout V Depth =	mum TC th Outfa 7.35"	III (Exis	it.) Year event	
(min) 6.0 Inflow A nflow	(feet) (feet) rea = =	(ft/f Su 3.05 23.25	(ft/sec)	r Reach 3 % Impervice 9 hrs, Volu	Descript Direct E SR: Uniro bus, Inflow	tion Entry, Mini byal Sour v Depth = 1.874	mum TC th Outfa 7.35" af	III (Exis	it.) Year event	
(min) 6.0 nflow A nflow Dutflow	(feet) rea = = =	3.05 23.25 23.12	(ft/sec) (ft/sec) (mmary fo 8 ac, 51.76 cfs @ 12.0 cfs @ 12.0	(cfs) r Reach 3 % Impervic 9 hrs, Volu 9 hrs, Volu	Direct E BR: Uniro bus, Inflow ume= ume=	tion Entry, Mini Dyal Sour v Depth = 1.874 1.874	mum TC th Outfa 7.35" af af, Atter	III (Exis for 100- n= 1%, L	it.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing	rea = = = by Stor-Ir	(ft/f (ft/f 3.05 23.25 23.12 nd+Tra	(ft/sec) (ft/sec) (ft/sec) (ft/sec) 8 ac, 51.76 cfs @ 12.0 cfs @ 12.0 ns method,	capacity (cfs) r Reach 3 % Impervic 9 hrs, Volu 9 hrs, Volu Time Span:	Direct E BR: Uniro bus, Inflow ume= ume= = 0.00-80.1	tion Entry, Mini Dyal Sour v Depth = 1.874 1.874 00 hrs, dt:	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	for 100- 1= 1%, L	it.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing Max. Ve	(feet) (feet) rea = = = by Stor-Ir	(ft/f Su 3.05 23.25 23.12 nd+Trai 5.72 fps	(ft/sec) (ft/sec) (mmary fo 8 ac, 51.76 cfs @ 12.0 cfs @ 12.0 ns method, , Min. Trav	r Reach 3 % Impervic 9 hrs, Volu 9 hrs, Volu Time Span: el Time= 0.	Direct E Direct E BR: Uniro bus, Inflow ume= ume= = 0.00-80.1 2 min	tion Entry, Mini Dyal Sou v Depth = 1.874 1.874 00 hrs, dt=	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	n ll (Exis for 100- n= 1%, L s	it.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Dutflow Routing Vlax. Ve Avg. Ve	(feet) (feet) rea = = = by Stor-Ir locity= 16 locity= 5.	(ft/f Su 3.05 23.25 23.12 23.12 nd+Trai 5.72 fps 49 fps,	(ft/sec) (ft/sec) (mmary fo 8 ac, 51.76 cfs @ 12.0 cfs @ 12.0 ns method, , Min. Trav Avg. Trave	capacity (cfs) r Reach 3 % Impervice 19 hrs, Volu 9 hrs, Volu 10 hrs, Volu Time Span- el Time= 0.5	Direct E Direct E BR: Uniro bus, Inflow ume= ume= = 0.00-80.1 2 min 5 min	tion Entry, Mini Dyal Sou v Depth = 1.874 1.874 1.874 00 hrs, dt	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	III (Exis for 100- n= 1%, L S	it.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing Max. Ve Avg. Ve Peak St	rea = = = by Stor-Ir locity= 16 locity= 5.	(ft/f (ft/f 3.05 23.25 23.12 nd+Tran 5.72 fps 49 fps, 43 cf @	(ff/sec) (ff/sec) (ff/sec) (ff/sec) (ff @ 12.0 (ff %) (ff %) (f	capacity (cfs) r Reach 3 % Impervice 19 hrs, Volu 9 hrs, Volu 19 hrs, Volu Time Span- el Time= 0.5	Direct E Direct E BR: Uniro bus, Inflow ume= ume= = 0.00-80.0 2 min 5 min	tion intry, Mini byal Sou v Depth = 1.874 1.874 00 hrs, dt	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	III (Exis for 100- n= 1%, L s	it.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing Max. Ve Avg. Ve Peak Ste Average	(feet) rea = = by Stor-Ir locity= 16 locity = 5. orage= 24 Depth at	(ft/f (ft/f 3.05 23.25 23.12 nd+Trai 5.72 fps 49 fps, 13 cf @ : Peak \$	(ft/sec) (ft	capacity (cfs) r Reach 3 % Impervic 9 hrs, Volu 9 hrs, Volu 9 hrs, Volu 10 hrs, Volu 11 me Span= el Time= 0.5	Direct E Direct E Cartering Direct E Cartering Direct E Direct E Di Direct E Direct E Direct E Direct E Direct E Direct E	tion intry, Mini byal Sour v Depth = 1.874 1.874 00 hrs, dt	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	III (Exis for 100- n= 1%, L s	t.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing Max. Ve Avg. Ve Peak Ste Average Bank-Fu	(feet) (feet) rea = = = = by Stor-Ir locity = 16 locity = 5. orage= 24 Depth at II Depth=	(ft/f 3.05 23.25 23.12 nd+Trat 5.72 fps 49 fps, 43 cf @ Peak 2.50'	(ft/sec) (ft	(cfs) r Reach 3 % Impervici 9 hrs, Volu 9 hrs, Volu 10 mespana el Time 20.5 32' 4.9 sf, Cap	Direct E Direct E aR: Uniro bus, Inflow Jme= Jme= 2 min 5 min bacity= 10 ^o	tion Entry, Mini byal Sou v Depth = 1.874 1.874 00 hrs, dt= 1.22 cfs	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	III (Exis for 100- n= 1%, L s	t.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Inflow Outflow Routing Max. Ve Avg. Ve Peak Str Average Bank-Fu	(feet) (feet) rea = = = = by Stor-Ir locity = 16 locity = 5. orage = 24 Depth at II Depth=	(ft/f 3.05 23.25 23.12 nd+Trai 3.72 fps 49 fps, 13 cf @ Peak 2.50'	(ft/sec) (ft	(cfs) r Reach 3 % Impervic 19 hrs, Volu 19 hrs, Volu 19 hrs, Volu 10 me Span- 10 Time= 0.5 11 me= 0.5 122' 4.9 sf, Cap	Direct E Direct E aR: Uniro bus, Inflow Jme= Jme= 2 min 5 min bacity= 10	tion Entry, Mini byal Sou v Depth = 1.874 1.874 00 hrs, dt= 1.22 cfs	mum TC th Outfa 7.35" af af, Atter = 0.05 hrs	n ll (Exis for 100- n= 1%, L s	t.) Year event .ag= 0.3 mi	n
(min) 6.0 Inflow A Outflow Routing Max. Ve Avg. Ve Peak Ste Average Bank-Fu 30.0" R	(feet) (feet) rea = = = = by Stor-Ir locity= 16 locity= 5. orage= 22 c Depth at all Depth= ound Pipet	(ft/f (ft/f 3.05 23.25 23.12 ad+Trai 3.72 fps 49 fps, 43 cf @ 2.50'	(ft/sec) (ft	r Reach 3 % Impervice 99 hrs, Volu 99 hrs, Volu 99 hrs, Volu 17 ime Span: el Time = 0.5 32' 4.9 sf, Cap	Direct E Direct E BR: Uniro bus, Inflow ume= ume= = 0.00-80.1 2 min 5 min bacity= 10 ⁻	tion intry, Mini byal Sour v Depth = 1.874 1.874 00 hrs, dt 1.22 cfs	mum TC th Outfa 7.35" af, Atter = 0.05 hrs	III (Exis for 100- n= 1%, L s	it.) Year event .ag= 0.3 mi	n



Existing Conditions - Uniroyal - Atlas 14 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc Printed 3/10/2021 Printed 3/10/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 19	Existing Conditions - Uniroyal - Atlas 14 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc Printed 3/10/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 20
Summary for Pond 2P: Area Behind Levee - Uniroyal	Summary for Link 2La: Oak Street Pump Station
Inflow Area = 13.952 ac, 13.08% Impervious, Inflow Depth = 6.87" for 100-Year event Inflow = 101.97 cfs @ 12.09 hrs, Volume= 7.992 af Outflow = 18.06 cfs @ 12.55 hrs, Volume= 7.992 af Primary = 18.06 cfs @ 12.55 hrs, Volume= 7.992 af	Inflow Area = 14.943 ac, 18.85% Impervious, Inflow Depth = 6.94* for 100-Year event Inflow 22.43 cfs @ 12.11 hrs, Volume = 8.639 af Primary 22.43 cfs @ 12.11 hrs, Volume = 8.639 af, Atten= 0%, Lag= 0.0 min Drimery endem Lifture 20.20 Construction 8.610 Arten
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 85.56' @ 12.55 hrs Surf.Area= 94,872 sf Storage= 124,854 cf	Printary outlow = ninow, nine Spare 0.00-80.00 nrs, $d = 0.05$ nrs
Plug-Flow detention time= 75.2 min calculated for 7.987 af (100% of inflow) Center-of-Mass det. time= 75.4 min (851.3 - 775.9)	
Volume Invert Avail.Storage Storage Description #1 84.00' 168,115 cf Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq.ft) (cubic-feet) (cubic-feet) 84.00 64,860 0 0 86.00 103,255 168,115 168,115	
Device Routing Invert Outlet Devices	
#1 Primary 84.00' 2.0" x 2.0" Horiz Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0" Grate (32% open area) Limited to weir flow at low heads	
#2 Primary 84.00 2.0° x 2.0° Horiz Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0° Grate (32% open area)	
#3 Primary 84.00 2.0 * x 2.0 * Horiz Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0 * Grate (32% open area) Limited to weir flow at low heads	
Primary OutFlow Max=18.06 dts @ 12.55 hrs HW=85.56' (Free Discharge)	

2=Catch Basin (Orifice Controls 6.02 cfs @ 6.02 fps) **3=Catch Basin** (Orifice Controls 6.02 cfs @ 6.02 fps)

Summary for Link 2L: Chicopee River

Inflow Ar	ea =	18.001 ac, 2	24.44% Impervious,	Inflow Depth = 7	7.01" for 100-Year event
Inflow	=	45.39 cfs @	12.10 hrs, Volume	⊨ 10.513 af	
Primary	=	45.39 cfs @	12.10 hrs, Volume	⊨ 10.513 af	, Atten= 0%, Lag= 0.0 min

APPENDIX F – PROPOSED CONDITIONS CALCULATIONS



Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr	1-Year Rainfall=2.48"
Prepared by BETA Group, Inc		Printed 5/18/2021
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Summary for Subcatchment 1Sa: PR-DA-1S - CB-17B Catchment

0.197 af, Depth= 1.04" Runoff = 2.69 cfs @ 12.10 hrs. Volume=

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN E	Description						
	74.164	80 >	30 >75% Grass cover, Good, HSG D						
	6.867	98 F	B Paved parking, HSG D						
	6,237	98 F	Roofs, HSG	S D					
	2,569	98 V	Water Surface, HSG D						
	9,314	79 V	Woods, Fair, HSG D						
	99.151	83 V	3 Weighted Average						
	83,478	6	84.19% Pervious Area						
	15,674	1	5.81% Imp	pervious Ar	ea				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
0.6	50	0.0280	1.33		Sheet Flow, Sheet Flow				
					Smooth surfaces n= 0.011 P2= 3.00"				
2.6	190	0.0150	1.22		Shallow Concentrated Flow, Shallow Conc. 1				
					Nearly Bare & Untilled Kv= 10.0 fps				
0.7	96	0.0490	2.21		Shallow Concentrated Flow, Shallow Conc. 2				
					Nearly Bare & Untilled Kv= 10.0 fps				
2.1					Direct Entry, Minimum TC				
6.0	336	Total							
	S	ummarv	/ for Sub	catchmer	t 1Sb: PR-DA-1S - CB-16B Catchment				
Runoff	=	3.01 cf	s@ 12.1	0 hrs. Volu	me= 0.222 af. Depth= 0.98"				
rtanon		0.01 0.	00 12.1	0 1110, 1010					
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"									

Area (sf)	CN	Description					
93,694	80	>75% Gras	s cover, Go	ood, HSG D			
10,157	98	Paved park	Paved parking, HSG D				
2,498	98	Water Surfa	Water Surface, HSG D				
11,795	79	Woods, Fai	r, HSG D				
118,144	82	Weighted A	verage				
105,489		89.29% Per	vious Area				
12,655		10.71% lmp	ervious Ar	ea			
To Loweth	01-1		0	Description			
IC Length	510		Capacity	Description			
(min) (reet)	(11/	IT) (IT/SEC)	(CIS)				
6.0				Direct Entry, Minimum TC			

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 2

Summary for Subcatchment 2Sa: PR-DA-2S - CB-8A Catchment

0.326 af, Depth= 0.93" Runoff = 3.63 cfs @ 12.17 hrs. Volume=

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN E	Description					
1	65,088	80 >	80 >75% Grass cover, Good, HSG D					
	5,904	98 F	98 Paved parking, HSG D					
	1,265	98 F	98 Roofs, HSG D					
	3,083	98 V	98 Water Surface, HSG D					
	8,216	79 V	Voods, Fai	r, HSG D				
1	83,555	81 V	Veighted A	verage				
1	73,304	g	4.42% Per	vious Area				
	10,251	5	5.58% Impe	ervious Area	a			
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
8.8	50	0.0070	0.09		Sheet Flow, Sheet Flow			
					Grass: Short n= 0.150 P2= 3.00"			
3.1	235	0.0070	1.25		Shallow Concentrated Flow, Shallow Conc. 1			
					Grassed Waterway Kv= 15.0 fps			
11.9	285	Total						
	S	ummary	y for Sub	catchmen	t 2Sb: PR-DA-2S - CB-11A Catchment			
Runoff	=	5.81 cf	s@ 12.1	5 hrs, Volu	me= 0.493 af, Depth= 0.93"			
- <i>"</i> ''	000 T							
Runoff b	by SCS II	<-20 met	nod, UH=	SCS, Weigr	nted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs			
Type III.	24-nr 1-1	ear Rair	itali=2.48					
Δ	rea (sf)	CN F	Description					
	265 478	80 5	75% Grae	s cover Go	od HSG D			
4	10 628	00 2	aved park	ing HSG D	Nod, 1100 D			
	1 422	98 V	Vater Surfa	ace HSG D				
	77 520	01 V	Voightod A	vorogo	·			
4	DEE 170	01 0	F 66% Dor	verage				
4	12 050	8	3.00 /0 Per	vious Area	2			
	12,000	4	no+70 impe	n vious Alea	a			
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				

50 0.0090 2.0 175 0.0090 1.42

0.10

225 Total 10.0

8.0

Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr	1-Year Rainfall=2.48'
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Summary for Subcatchment 2Sc: PR-DA-2S - CB-13A Catchment

4.22 cfs @ 12.10 hrs, Volume= 0.309 af, Depth= 1.10" Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

A	rea (sf)	CN [Description					
1	08,361	80 >	>75% Grass cover, Good, HSG D					
	30,845	98 F	Paved parking, HSG D					
	1,607	98 \	Nater Surface, HSG D					
	5,822	79 \	Woods, Fair, HSG D					
1	46,635	84 \	Neighted A	verage				
1	14,183	7	77.87% Per	vious Area				
	32,452	2	22.13% lmp	pervious Are	ea			
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
5.6	50	0.0220	0.15		Sheet Flow, Sheet Flow			
					Grass: Short n= 0.150 P2= 3.00"			
0.3	40	0.0220	2.22		Shallow Concentrated Flow, Shallow Conc.			
					Grassed Waterway Kv= 15.0 fps			
0.1					Direct Entry, Minimum TC			
6.0	90	Total						

Summary for Subcatchment 3S: PR-DA-3S - Upper Uniroyal Site

5.30 cfs @ 12.09 hrs. Volume= 0.386 af. Depth= 1.51"

Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

Area (sf)	CN	Description
8,648	89	<50% Grass cover, Poor, HSG D
55,625	80	>75% Grass cover, Good, HSG D
17,187	98	Paved parking, HSG D
51,767	98	Roofs, HSG D
133,228	90	Weighted Average
64,274		48.24% Pervious Area
68,954		51.76% Impervious Area
Tc Length	Slop	be Velocity Capacity Description
(min) (feet)	(ft/	ft) (ft/sec) (cfs)
6.0		Direct Entry, Minimum TC

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 4

Sheet Flow, Sheet Flow

Grassed Waterway Kv= 15.0 fps

Grass: Short n= 0.150 P2= 3.00" Shallow Concentrated Flow, Shallow Conc. 1

Summary for Subcatchment B26: Building 26

0.57 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 2.25" Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

Α	rea (sf)	CN	Description		
	10,635	98	Roofs, HSG) D	
	10,635		100.00% In	npervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum TC

Summary for Subcatchment B27: Building 27

1.74 cfs @ 12.09 hrs. Volume= 0.140 af. Depth= 2.25" Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 1-Year Rainfall=2.48"

Are	ea (sf)	CN	Description			
	32,552	98	Roofs, HSG	5 D		
3	32,552		100.00% Im	pervious A	rea	
Tc (min)	Length (feet)	Slope (ft/ft)	e Velocity) (ft/sec)	Capacity (cfs)	Description	
6.0					Direct Entry, Minimum TC	
			Sumr	nary for F	Reach 1R: Discharge Pipe	
Inflow Are Inflow Outflow	ea = = =	4.988 3.43 c 3.38 c	3 ac, 13.049 cfs @ 12.2 cfs @ 12.23	% Impervio 7 hrs, Volu 8 hrs, Volu	us, Inflow Depth = 1.01" for 1-Year event me= 0.420 af me= 0.420 af, Atten= 1%, Lag= 0.5 min	
Routing b Max. Velo Avg. Velo	Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.08 fps, Min. Travel Time= 0.3 min Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.7 min					
Peak Storage= 56 cf @ 12.27 hrs Average Depth at Peak Storage= 0.77' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs						
24.0" Ro	und Pipe					

Length= 50.0' Slope= 0.0020 '/' Inlet Invert= 85.35', Outlet Invert= 85.25' Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 5



Summary for Reach 1Ra: Perforated Pipe

0 197 af

2.276 ac, 15.81% Impervious, Inflow Depth = 1.04" for 1-Year event Inflow Area = Inflow Outflow

1.54 cfs @ 12.24 hrs, Volume= 1.53 cfs @ 12.30 hrs, Volume= 0.197 af, Atten= 1%, Lag= 3.9 min Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.92 fps, Min. Travel Time= 2.0 min Avg. Velocity= 1.19 fps, Avg. Travel Time= 4.9 min

Peak Storage= 184 cf @ 12.26 hrs Average Depth at Peak Storage= 0.51' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.23 cfs

18.0" Round Pipe n= 0.012 Length= 350.0' Slope= 0.0030 '/' Inlet Invert= 87 20' Outlet Invert= 86 15'



Summary for Reach 1Rb: Perforated Pipe

 4.988 ac, 13.04% Impervious, Inflow Depth = 1.01" for 1-Year event

 3.44 cfs @ 12.24 hrs, Volume=
 0.420 af

 3.43 cfs @ 12.27 hrs, Volume=
 0.420 af, Atten= 0%, Lag= 1.7 rr
 Inflow Area = Inflow Outflow 0.420 af 0.420 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.09 fps, Min. Travel Time= 0.8 min Avg. Velocity = 1.23 fps, Avg. Travel Time= 2.0 min

Peak Storage= 167 cf @ 12.25 hrs Average Depth at Peak Storage= 0.77' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe Length= 150.0' Slope= 0.0020 '/' Inlet Invert= 85.65', Outlet Invert= 85.35'

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18.0" Round Pipe n= 0.012 Length= 555.0' Slope= 0.0036 '/' Inlet Invert= 92.00', Outlet Invert= 90.00'



Summary for Reach 2Rb: Perforated Pipe B

Inflow Area = Inflow Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.33 fps, Min. Travel Time= 1.5 min Avg. Velocity = 1.77 fps, Avg. Travel Time= 3.7 min

Peak Storage= 484 cf @ 12.47 hrs Average Depth at Peak Storage= 0.83' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 14.85 cfs

24.0" Round Pipe n= 0.012 Length= 395.0' Slope= 0.0037 '/' Inlet Invert= 89.50', Outlet Invert= 88.05'



Summary for Reach 2Rc: Perforated Pipe C

1.128 af. Atten= 0%. Lag= 0.8 min

 13.951 ac,
 9.01% Impervious, Inflow Depth =
 0.97" for 1-Year event

 7.38 cfs @
 12.44 hrs, Volume=
 1.127 af

 7.34 cfs @
 12.45 hrs, Volume=
 1.128 af, Atten= 0%, Lag= 0.8 r
 Inflow Area = Inflow Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.38 fps, Min. Travel Time= 0.5 min Avg. Velocity = 1.74 fps, Avg. Travel Time= 1.2 min

Peak Storage= 218 cf @ 12.44 hrs Average Depth at Peak Storage= 0.94' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 24.65 cfs Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 6



Summary for Reach 2R: Discharge Pipe

Inflow Area = Inflow = Outflow =

 14.943 ac, 15.05% Impervious, Inflow Depth =
 1.05" for 1-Year event

 7.96 cfs @
 12.43 hrs, Volume=
 1.313 af

 7.92 cfs @
 12.44 hrs, Volume=
 1.314 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 4.55 fps, Min. Travel Time= 0.5 min Avg. Velocity = 1.59 fps, Avg. Travel Time= 1.5 min

Peak Storage= 245 cf @ 12.44 hrs Average Depth at Peak Storage= 0.96' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 25.19 cfs

30.0" Round Pipe n= 0.012 Length= 140.0' Slope= 0.0032 '/' Inlet Invert= 87.15', Outlet Invert= 86.70'



Summary for Reach 2Ra: Perforated Pipe A

Inflow Area = Inflow = Outflow =

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 0.93" for
 1-Year event

 2.23 cfs @
 12.39 hrs, Volume=
 0.326 af
 0.326 af

 2.20 cfs @
 12.47 hrs, Volume=
 0.326 af, Atten= 1%, Lag= 5.0 min
 Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3

Max, Velocity= 3.44 fps, Min, Travel Time= 2.7 min Avg. Velocity = 1.46 fps, Avg. Travel Time= 6.3 min

Peak Storage= 354 cf @ 12.43 hrs Average Depth at Peak Storage= 0.58' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.83 cfs

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30.0" Round Pipe n= 0.012 Length= 130.0' Slope= 0.0031 '/' Inlet Invert= 87.55', Outlet Invert= 87.15'



Summary for Reach 3R: Uniroyal South Outfall (Exist.)

Inflow Area = Inflow Inflow = Outflow =

18.001 ac, 21.28% Impervious, Inflow Depth = 1.13" for 1-Year event 10.75 cfs @ 12.12 hrs, Volume= 1.699 af 10.75 cfs @ 12.12 hrs, Volume= 10.40 cfs @ 12.13 hrs, Volume= 1.699 af. Atten= 3%. Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 11.82 fps, Min. Travel Time= 0.2 min Avg. Velocity = 4.10 fps, Avg. Travel Time= 0.7 min

Peak Storage= 157 cf @ 12.12 hrs Average Depth at Peak Storage= 0.60' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 85.65 cfs

30.0" Round Pipe n= 0.013 Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Summary for Reach 4Ra: 15" HDPE

Inflow Area = Inflow Inflow = Outflow =

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 0.93"
 for 1-Year event

 2.23 cfs @
 12.39 hrs, Volume=
 0.326 af
 .4ten= 0%, Lag= 0.1 r

 2.23 cfs @
 12.39 hrs, Volume=
 0.326 af, Atten= 0%, Lag= 0.1 r
 0.326 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 6.51 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.39 hrs Average Depth at Peak Storage= 0.40' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.50', Outlet Invert= 93.40'



Summary for Reach 4Rb: 15" HDPE

 Inflow Area =
 6.371 ac, 4.34% Impervious, Inflow Depth =
 0.93" for 1-Year event

 Inflow =
 3.17 cfs @
 12.38 hrs, Volume=
 0.493 af

 Outflow =
 3.17 cfs @
 12.37 hrs, Volume=
 0.493 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.17 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.99 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.37 hrs Average Depth at Peak Storage= 0.49' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 4Rc: 15" HDPE

Inflow Area = Inflow = Outflow =
 3.366 ac, 22.13% Impervious, Inflow Depth = 1.10" for 1-Year event

 2.62 cfs @ 12.21 hrs, Volume=
 0.309 af

 2.62 cfs @ 12.21 hrs, Volume=
 0.309 af, Atten= 0%, Lag= 0.0 min

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	Summary for Reach 5Rb: 15" HDPE	
Inflow Area =	2.712 ac, 10.71% Impervious, Inflow Depth = 0.98" for 1-Y	ear event

Proposed Conditions - Uniroval and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48"

 Outflow
 =
 2.01 cfs @
 12.21 hrs, Volume=
 0.222 af, Atten= 0%, Lag= 0.1 min

 Routing by Stor-Ind+Trans method. Time Soan=
 0.00-80.00 hrs. dt= 0.05 hrs
 12.21 hrs, Volume=
 0.222 af, Atten= 0%, Lag= 0.1 min

Max. Velocity = 4.48 fps, Min. Travel Time= 0.0 min Avg. Velocity = 1.80 fps, Avg. Travel Time= 0.1 min

Peak Storage= 6 cf @ 12.21 hrs Average Depth at Peak Storage= 0.49' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.14 cfs

15.0" Round Pipe n= 0.012 Length= 13.0' Slope= 0.0077 '/" Inlet Invert= 93.60', Outlet Invert= 93.50'



98.00 99.00

100.00

Summary for Pond 1Pa: CB-17B Basin

Inflow Area	a =	2.276 ac, 15.81% Impervious, Inflow Depth = 1.04" for 1-Year event
Inflow	=	2.69 cfs @ 12.10 hrs, Volume= 0.197 af
Outflow	=	1.54 cfs @ 12.23 hrs, Volume= 0.197 af, Atten= 43%, Lag= 8.3 min
Primary	=	1.54 cfs @ 12.23 hrs, Volume= 0.197 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 97.51' @ 12.23 hrs Surf.Area= 4,853 sf Storage= 1,881 cf

Plug-Flow detention time= 80.9 min calculated for 0.197 af (100% of inflow)

Center-of-Mass det. time= 81.0 min (926.6 - 845.7)

7,100 10,500

13,000

volume	Invert	Avail.Storage	Storage	e Description	
#1	97.00'	25,350 cf	Custon	n Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.A (s	Area Inc q-ft) (cubi	Store.	Cum.Store (cubic-feet)	
07.00		500	0		

4,800

13,600

25,350

4,800

8,800

11,750

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Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 6.81 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.63 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.21 hrs Average Depth at Peak Storage= 0.44' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/" Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 5Ra: 12" HDPE

Inflow Area = Inflow = Outflow =
 2.276 ac, 15.81% Impervious, Inflow Depth = 1.04" for 1-Year event

 1.54 cfs @ 12.23 hrs, Volume=
 0.197 af

 1.54 cfs @ 12.24 hrs, Volume=
 0.197 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 5.98 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.50 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.24 hrs Average Depth at Peak Storage= 0.36^{\prime} Bank-Full Depth= 1.00^{\prime} Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 1-Year Rainfall=2.48" Prepared by BETA Group, Inc HydroCAD9 10.025 \$\sin 10405 @ 2019 HydroCAD Software Solutions LLC Page 12 Page 12

_			/
Device	Routing	Invert	Outlet Devices
#1	Primary	97.33'	2.0" x 2.0" Horiz. Catch Basin X 5.00 columns
			X 5 rows C= 0.600 in 24.0" x 24.0" Grate (17% open area)
			Limited to weir flow at low heads
#2	Primary	97.00'	1.020 in/hr Exfiltration over Surface area
	,		Conductivity to Groundwater Elevation = 82.50'
			·
Primary	OutFlow N	Aax=1.54 cfs @	12.23 hrs HW=97.51' (Free Discharge)
1-0-	tch Basin /	Orifice Contro	le 1 42 cfc @ 2 05 fpc)

1=Catch Basin (Orifice Controls 1.42 cfs @ 2.05 fps) **2=Exfiltration** (Controls 0.12 cfs)

Summary for Pond 1Pb: CB-16B Basin

Inflow Area	a =	2.712 ac,	10.71% Impervious,	Inflow Depth =	0.98" for	1-Year event
Inflow	=	3.01 cfs @	12.10 hrs, Volume)= 0.222 a	af	
Outflow	=	2.02 cfs @	12.21 hrs, Volume	e 0.222 a	af, Atten= 33	3%, Lag= 6.5 min
Primary	=	2.02 cfs @	12.21 hrs, Volume	e 0.222 a	af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 97.50' @ 12.21 hrs Surf.Area= 5,052 sf Storage= 2,014 cf

Plug-Flow detention time= 83.0 min calculated for 0.222 af (100% of inflow) Center-of-Mass det. time= 83.0 min (932.4 - 849.4)

#1	97.0	27.6	53 cf Custon	n Stage Data (Pr	rismatic) Listed below (Recalc)
				5	
Elevatio	n	Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
97.0)0	2,945	0	0	
98.0	0	7,130	5.038	5.038	
99.0	00	11,400	9,265	14,303	
100.0	00	15,300	13,350	27,653	
Device	Routing	Invert	Outlet Devic	es	
#1	Primary	97.33	2.0" x 2.0" H	oriz. Catch Basi	in X 6.00 columns
			X 6 rows C=	0.600 in 24.0" x	24.0" Grate (25% open area)
			Limited to we	eir flow at low he	eads
#2	Primary	97.00	1.020 in/hr E	xfiltration over	Surface area
			Conductivity	to Groundwater	Elevation = 82.50'

□-Catch Basin (Weir Controls 1.88 cfs @ 1.36 fps) □=2=Exfiltration (Controls 0.12 cfs)

					_			
		5	Summary for F	Pond 2Pa:	CB-8A Ba	sin		
Inflow A Inflow Outflow Primary	rea = 4 = 3. = 2. = 2.	.214 ac, 5 63 cfs @ 1 23 cfs @ 1 23 cfs @ 1	.58% Imperviou 2.17 hrs, Volun 2.39 hrs, Volun 2.39 hrs, Volun	s, Inflow De ne= (ne= (ne= (pth = 0.93 0.326 af 0.326 af, A 0.326 af	' for 1-Yea ten= 39%, I	ar event _ag= 12.9 m	in
Routing Peak Ele	by Stor-Ind m ev= 97.51' @	ethod, Time 12.39 hrs	e Span= 0.00-80 Surf.Area= 9,83	0.00 hrs, dt= 0 7 sf Storage	0.05 hrs e= 3,270 cf			
Plug-Flo Center-c	w detention t of-Mass det. t	me= 78.8 n me= 78.8 n	nin calculated fo nin (937.4 - 858	r 0.326 af (10 .6)	00% of inflo	w)		
Volume	Invert	Avail.Sto	orage Storage	Description				
#1	97.00'	47,7	80 cf Custom	Stage Data ((Prismatic)	Listed below	(Recalc)	
Elevatio (fee	n Sur t)	f.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Stor (cubic-fee	re et)			
97.0	0	3,000	0		0			
98.0	0 '	6,420	9,710	9,71	10			
99.0	0 '	9,000	17,710	27,42	20			
100.0	0 4	1,720	20,300	47,70	00			
Device	Routing	Invert	Outlet Device:	s				
#1	Primary	97.33'	2.0" x 2.0" Ho X 6 rows C= 0 Limited to wei	riz. Catch Ba 0.600 in 24.0 ir flow at low	asin X 6.00 " x 24.0" Gr heads	columns ate (25% op	en area)	
#2	Primary	97.00'	1.020 in/hr Ex Conductivity to	filtration over o Groundwat	er Surface a ter Elevation	area n = 80.00'		
Primary 1=Ca 2=Ex	OutFlow Ma tch Basin (W filtration (Co	x=2.22 cfs /eir Controls ontrols 0.24	@ 12.39 hrs HV s 1.98 cfs @ 1.3 cfs)	V=97.51' (F 8 fps)	ree Dischar	ge)		
		S	ummary for P	ond 2Pb: 0	CB-11A Ba	asin		
Inflow A	rea = 6 = 5.	.371 ac, 4 81 cfs @ 1	.34% Imperviou 2.15 hrs, Volum	s, Inflow De ne= (pth = 0.93 0.493 af 0.493 af. Ai	' for 1-Yea ten= 45%, 1	ar event _aq= 13.8 m	nin

Plug-Flow detention time= 56.7 min calculated for 0.493 af (100% of inflow) Center-of-Mass det. time= 56.6 min (913.4 - 856.8)

Volume Invert <u>Avail.Storage</u> Storage Description

volume	meent	/wan.otorage	Otorage Description
#1	94.50'	78,798 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr	1-Year Rainfall=2.48"
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HydroCA	D® 10.00-	25 s/n 10405 ©	ns LLC Page 7					
Elevatio	Elevation Surf.Area		Inc.Store	Cum.Store				
(fee	(feet) (sq-ft)		(cubic-feet) (cubic-feet)					
94.5	94.50 1.720		0	0				
95.0	95.00 7.950		2,418	2,418				
96.0	00	23,855	15,903	18,320				
97.0	00	30,550	27,203	45,523				
98.0	00	36,000	33,275	78,798				
Device	Routing	Invert	Outlet Devices					
#1	Primary	94.83'	2.0" x 2.0" Hor	iz. Catch Basi	in X 6.00 columns			
			X 6 rows C= 0.	600 in 24.0" x	24.0" Grate (25% open area)			
			Limited to weir flow at low heads					
#2	Primary	94.50'	1.020 in/hr Exfiltration over Surface area					
			Conductivity to	Elevation = 80.50'				
Primary 1=Ca 2=Ex	OutFlow tch Basin filtration	Max=3.17 cfs (Orifice Contro (Controls 0.27	@ 12.38 hrs HW bls 2.90 cfs @ 2.9 cfs)	=95.19' (Free 90 fps)	e Discharge)			
		S	ummary for Po	ond 2Pc: CB	3-13A Basin			
Inflow A Inflow Outflow Primary	rea = = = =	3.366 ac, 22 4.22 cfs @ 1 2.62 cfs @ 1 2.62 cfs @ 1	13% Impervious 2.10 hrs, Volum 2.21 hrs, Volum 2.21 hrs, Volum	, Inflow Depth e= 0.3 e= 0.3 e= 0.3	h = 1.10" for 1-Year event 309 af 309 af, Atten= 38%, Lag= 7.0 min 309 af			

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 95.09' @ 12.21 hrs Surf.Area= 6,482 sf Storage= 2,557 cf

Plug-Flow detention time= 61.4 min calculated for 0.309 af (100% of inflow) Center-of-Mass det. time= 61.3 min (903.2 - 841.9)

Volume	Inv	ert Avail.Stor	rage Storage	Description	
#1	94.	50' 31,21	16 cf Custom	Stage Data (Pri	smatic) Listed below (Recalc)
Elevatio (fee 94.5 95.0 96.0 97.0 98.0	on et) 50 00 00 00	Surf.Area (sq-ft) 1,580 6,285 8,420 10,550 14,275	Inc.Store (cubic-feet) 0 1,966 7,353 9,485 12,413	Cum.Store (cubic-feet) 0 1,966 9,319 18,804 31,216	
Device	Routina	Invert	Outlet Device	s	
#1	Primary	94.83	2.0" x 2.0" Ho	oriz. Catch Basin	n X 6.00 columns
#2	Primary	94.50'	X 6 rows C= 0 Limited to wei 1.020 in/hr Ex Conductivity to	0.600 in 24.0" x : ir flow at low he filtration over \$ o Groundwater	24.0" Grate (25% open area) ads Surface area Elevation = 80.50'

Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr	1-Year Rainfall=2.48"
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Primary OutFlow Max=2.62 cfs @ 12.21 hrs HW=95.09' (Free Discharge) 1=Catch Basin (Orifice Controls 2.46 cfs @ 2.46 fps) 2=Exfiltration (Controls 0.16 cfs)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Area	a =	4.988 ac, 1	13.04% Imp	ervious,	Inflow Depth	= 1.	01" for 1-'	Year event
Inflow	=	3.38 cfs @	12.28 hrs,	Volume	= 0.42	0 af		
Primary	=	3.38 cfs @	12.28 hrs,	Volume	= 0.42	0 af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Chicopee River

Inflow Are	a =	18.001 ac, 2	1.28% Imp	ervious,	Inflow	Depth =	1.1	3" for 1-1	'ear event	
Inflow	=	10.40 cfs @	12.13 hrs,	Volume	=	1.699 a	af			
Primary	=	10.40 cfs @	12.13 hrs,	Volume	=	1.699 a	af, .	Atten= 0%,	Lag= 0.0 mil	n

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

 Proposed Conditions - Uniroyal and Facemate - Atlas 14
 Type III 24-hr
 2-Year Rainfall=3.12"

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Summary for Subcatchment 1Sa: PR-DA-1S - CB-17B Catchment

Runoff = 4.03 cfs @ 12.09 hrs, Volume= 0.293 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN D	escription						
	74,164	80 >	75% Gras	s cover, Go	ood, HSG D				
	6,867	98 F	aved park	ing, HSG D					
	6,237	98 F	98 Roofs, HSG D						
	2,569	98 V	98 Water Surface, HSG D						
	9,314	79 V	Voods, Fai	r, HSG D					
	99,151	83 V	Veighted A	verage					
	83,478	8	4.19% Per	vious Area					
	15,674	1	5.81% lmp	pervious Ar	ea				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
0.6	50	0.0280	1.33		Sheet Flow, Sheet Flow				
					Smooth surfaces n= 0.011 P2= 3.00"				
2.6	190	0.0150	1.22		Shallow Concentrated Flow, Shallow Conc. 1				
					Nearly Bare & Untilled Kv= 10.0 fps				
0.7	96	0.0490	2.21		Shallow Concentrated Flow, Shallow Conc. 2				
					Nearly Bare & Untilled Kv= 10.0 tps				
2.1					Direct Entry, Minimum TC				
6.0	336	Total							
	S	ummary	for Sub	catchmer	nt 1Sb: PR-DA-1S - CB-16B Catchment				
Runoff	=	4.58 cf	s@ 12.0	9 hrs. Volu	me= 0.333 af. Depth= 1.47"				
			-		· •				
Runoff b Type III :	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfal=3.12"								

Area	a (sf)	CN	Description	I				
93	3,694	80	>75% Gras	s cover, Go	ood, HSG D			
10	0,157	98	Paved park	ing, HSG D)			
2	2,498	98	Water Surf	ace, HSG D)			
11	1,795	79	Woods, Fair, HSG D					
118	3,144	82	Weighted A	Verage				
105	5,489		89.29% Pervious Area					
12	2,655		10.71% lm	pervious Ar	ea			
Tc L	.ength	Slop	e Velocity	Capacity	Description			
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)				
6.0					Direct Entry, Minimum TC			

Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr 2-Year Rainfall=3.12"
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Summary for Subcatchment 2Sa: PR-DA-2S - CB-8A Catchment

Runoff	=	5.63 cfs @	12.17 hrs.	Volume=	0.494 af.	Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

	roo (cf)	CN	Description				
1	165.099 90 > 75% Gross sover Good HSC D						
'	5 00/	00	Paved park	ing HSG F			
	1 265	98	Roofs HSG				
	3 083	98	Water Surfa	ace HSG F			
	8,216	79	Woods, Fai	r. HSG D	·		
1	83 555	81	Weighted A	verage			
1	73 304	01	94 42% Per	vious Area			
	10,251		5.58% Impe	ervious Are	a		
	-, -						
Tc	Length	Slope	e Velocity	Capacity	Description		
_ (min)	(feet)	(ft/ft) (ft/sec)	(cfs)	·		
8.8	50	0.0070	0.09		Sheet Flow, Sheet Flow		
					Grass: Short n= 0.150 P2= 3.00"		
3.1	235	0.0070) 1.25		Shallow Concentrated Flow, Shallow Conc. 1		
					Grassed Waterway Kv= 15.0 fps		
11.9	285	Total					
	S	ummai	ry for Sub	catchmer	nt 2Sb: PR-DA-2S - CB-11A Catchment		
			•				
Runoff	=	8.99 0	cfs @ 12.1	5 hrs, Volu	ime= 0.747 af, Depth= 1.41"		
Runoff b Type III 2	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"						

	A	rea (st)	CN	Description		
	2	65,478	80	>75% Gras	s cover, Go	ood, HSG D
		10,628	98	Paved park	ing, HSG D	
_		1,422	98	Water Surfa	ace, HSG D)
	2	77,528	81	Weighted A	verage	
	2	65,478		95.66% Per	vious Area	
		12,050		4.34% Impe	ervious Area	a
	Тс	Length	Slope	Velocity	Capacity	Description
	Tc (min)	Length (feet)	Slope (ft/ft	Velocity (ft/sec)	Capacity (cfs)	Description
-	Tc (min) 8.0	Length (feet) 50	Slope (ft/ft 0.0090	Velocity (ft/sec) 0.10	Capacity (cfs)	Description Sheet Flow, Sheet Flow
-	Tc (min) 8.0	Length (feet) 50	Slope (ft/ft 0.0090	Velocity (ft/sec) 0.10	Capacity (cfs)	Description Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 3.00"
-	Tc (min) 8.0 2.0	Length (feet) 50 175	Slope (ft/ft 0.0090	Velocity (ft/sec) 0.10 1.42	Capacity (cfs)	Description Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 3.00" Shallow Concentrated Flow, Shallow Conc. 1
-	Tc (min) 8.0 2.0	Length (feet) 50 175	Slope (ft/ft 0.0090 0.0090	Velocity (ft/sec) 0.10 1.42	Capacity (cfs)	Description Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 3.00" Shallow Concentrated Flow, Shallow Conc. 1 Grassed Waterway Kv= 15.0 fps

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 18

Summary for Subcatchment 2Sc: PR-DA-2S - CB-13A Catchment

0.453 af, Depth= 1.62" Runoff = 6.25 cfs @ 12.09 hrs. Volume=

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

A	rea (sf)	CN	Description							
1	08,361	80	80 >75% Grass cover, Good, HSG D							
	30,845	98	98 Paved parking, HSG D							
	1,607	98	Water Surfa	ace, HSG D)					
	5,822	822 79 Woods, Fair, HSG D								
1	46,635	84								
114,183 77.87% Pervious Area			77.87% Per	vious Area						
	32,452		22.13% lmp	ervious Ar	ea					
Тс	Length	Slor	e Velocity	Canacity	Description					
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)	Booonpation					
5.6	50	0.022	0 0.15	()	Sheet Flow. Sheet Flow					
					Grass: Short n= 0.150 P2= 3.00"					
0.3	40	0.022	20 2.22		Shallow Concentrated Flow, Shallow Conc.					
					Grassed Waterway Kv= 15.0 fps					
0.1					Direct Entry, Minimum TC					
6.0	90	Total								
	s	umma	ary for Sub	catchmer	nt 3S: PR-DA-3S - Upper Uniroyal Site					
Runoff	=	7.28	cfs @ 12.0	9 hrs, Volu	me= 0.534 af, Depth= 2.09"					
Runoff b Type III 2	y SCS TF 24-hr 2-Y	R-20 m 'ear Ra	ethod, UH=S ainfall=3.12"	SCS, Weigh	nted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs					
A	rea (sf)	CN	Description							
	8.648	89	<50% Gras	s cover. Po	or. HSG D					
	55,625	80	>75% Gras	s cover, Go	ood, HSG D					
	17,187	98	Paved park	ing, HSG D)					
	51,767	98	Roofs, HSG	Ð						
1	33.228	90	Weighted A	verage						
	64.274		48.24% Per	vious Area						
	68,954		51.76% lmr	ervious Ar	63					

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

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 19

Summary for Subcatchment B26: Building 26

Runoff 0.72 cfs @ 12.09 hrs, Volume= 0.059 af. Depth= 2.89" =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

Area (sf)	CN	Description		
10,635	98	Roofs, HSC) D	
10,635		100.00% Im	npervious A	rea
Tc Length (min) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description
6.0				Direct Entry, Minimum TC

Summary for Subcatchment B27: Building 27

2.21 cfs @ 12.09 hrs. Volume= 0.180 af. Depth= 2.89" Runoff =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 2-Year Rainfall=3.12"

Area (sf)	CN	Description
32,552	98	Roofs, HSG D
32,552		100.00% Impervious Area
Tc Length	Slop	e Velocity Capacity Description

(min) (feet) (ft/ft) (ft/sec) (cfs) Direct Entry, Minimum TC

6.0

Inflow Area = Inflow = Outflow =

Summary for Reach 1R: Discharge Pipe

4.988 ac, 13.04% Impervious, Inflow Depth = 1.51" for 2-Year event 4.87 cfs @ 12.28 hrs, Volume= 4.87 cfs @ 12.29 hrs, Volume= 0 626 af 0.626 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.39 fps, Min. Travel Time= 0.2 min Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.6 min

Peak Storage= 72 cf @ 12.28 hrs Average Depth at Peak Storage= 0.93' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe n= 0.012 Length= 50.0' Slope= 0.0020 '/' Inlet Invert= 85.35', Outlet Invert= 85.25'

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 20



Summary for Reach 1Ra: Perforated Pipe

Inflow Area = Inflow = Outflow = 2.11 cfs @ 12.26 hrs, Volume= 2.11 cfs @ 12.31 hrs, Volume=

2.276 ac, 15.81% Impervious, Inflow Depth = 1.54" for 2-Year event 2.11 cfs @ 12.26 hrs, Volume= 0.293 af 0.293 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.18 fps, Min. Travel Time= 1.8 min Avg. Velocity = 1.26 fps, Avg. Travel Time= 4.6 min

Peak Storage= 232 cf @ 12.28 hrs Average Depth at Peak Storage= 0.60' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.23 cfs

18.0" Round Pipe n= 0.012 Length= 350.0' Slope= 0.0030 '/' Inlet Invert= 87.20'. Outlet Invert= 86.15'



Summary for Reach 1Rb: Perforated Pipe

Inflow Area = Inflow Outflow

 4.988 ac,
 13.04% Impervious, Inflow Depth =
 1.51"
 for 2-Year event

 4.88 cfs @
 12.26 hrs, Volume=
 0.626 af
 0.626 af

 4.87 cfs @
 12.28 hrs, Volume=
 0.626 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.39 fps, Min. Travel Time= 0.7 min Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.9 min

Peak Storage= 216 cf @ 12.27 hrs Average Depth at Peak Storage= 0.94' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe Length= 150.0' Slope= 0.0020 '/' Inlet Invert= 85.65', Outlet Invert= 85.35' Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 21



Summary for Reach 2R: Discharge Pipe

 14.943 ac, 15.05% Impervious, Inflow Depth =
 1.55" for 2-Year event

 10.97 cfs @
 12.39 hrs, Volume=
 1.932 af

 10.95 cfs @
 12.41 hrs, Volume=
 1.932 af, Atten= 0%, Lag= 1.0 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 4.95 fps, Min. Travel Time= 0.5 min Avg. Velocity = 1.72 fps, Avg. Travel Time= 1.4 min

Peak Storage= 310 cf @ 12.40 hrs Average Depth at Peak Storage= 1.15' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 25.19 cfs

30.0" Round Pipe n= 0.012 Length= 140.0' Slope= 0.0032 '/' Inlet Invert= 87.15', Outlet Invert= 86.70'



Summary for Reach 2Ra: Perforated Pipe A

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 1.41"
 for 2-Year event

 3.06 cfs @
 12.42 hrs, Volume=
 0.494 af
 0.494 af

 3.05 cfs @
 12.49 hrs, Volume=
 0.494 af, Atten= 0%, Lag= 4.6 r
 Inflow Area = Inflow = Outflow = 0.494 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 3.76 fps, Min. Travel Time= 2.5 min Avg. Velocity = 1.55 fps, Avg. Travel Time= 6.0 min

Peak Storage= 451 cf @ 12.45 hrs Average Depth at Peak Storage= 0.70' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.83 cfs Proposed Conditions - Uniroval and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 22

18.0" Round Pipe n= 0.012 Length= 555.0' Slope= 0.0036 '/' Inlet Invert= 92.00', Outlet Invert= 90.00'



Summary for Reach 2Rb: Perforated Pipe B

Inflow Area = Outflow =

 10.585 ac,
 4.84% Impervious, Inflow Depth =
 1.41"
 for 2-Year event

 7.11 cfs @
 12.47 hrs, Volume=
 1.241 af
 1.241 af

 7.10 cfs @
 12.51 hrs, Volume=
 1.241 af, Atten= 0%, Lag= 2.7 r
 1.241 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.67 fps, Min. Travel Time= 1.4 min Avg. Velocity = 1.91 fps, Avg. Travel Time= 3.4 min

Peak Storage= 600 cf @ 12.49 hrs Average Depth at Peak Storage= 0.97' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 14.85 cfs

24.0" Round Pipe n= 0.012 Length= 395.0' Slope= 0.0037 '/' Inlet Invert= 89.50', Outlet Invert= 88.05'



Summary for Reach 2Rc: Perforated Pipe C

Inflow Area = Inflow Inflow = Outflow =

 13.951 ac,
 9.01% Impervious, Inflow Depth =
 1.46"
 for 2-Year event

 10.13 cfs @
 12.43 hrs, Volume=
 1.694 af

 10.12 cfs @
 12.44 hrs, Volume=
 1.694 af, Atten= 0%, Lag= 0.9 r
 1.694 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.77 fps, Min. Travel Time= 0.5 min Avg. Velocity = 1.87 fps, Avg. Travel Time= 1.2 min

Peak Storage= 276 cf @ 12.43 hrs Average Depth at Peak Storage= 1.12' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 24.65 cfs

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12 Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 23

30.0" Round Pipe n= 0.012 Length= 130.0' Slope= 0.0031 '/' Inlet Invert= 87.55', Outlet Invert= 87.15'



Summary for Reach 3R: Uniroyal South Outfall (Exist.)

18.001 ac, 21.28% Impervious, Inflow Depth = 1.64" for 2-Year event 15.57 cfs @ 12.11 hrs, Volume= 2.466 af Inflow Area = 15.57 cfs @ 12.11 hrs, Volume= 15.36 cfs @ 12.11 hrs, Volume= Inflow Outflow = 2.466 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 13.22 fps, Min. Travel Time= 0.2 min Avg. Velocity = 4.46 fps, Avg. Travel Time= 0.7 min

Peak Storage= 204 cf @ 12.11 hrs Average Depth at Peak Storage= 0.72' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 85.65 cfs

30.0" Round Pipe n = 0.013Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Summary for Reach 4Ra: 15" HDPE

Inflow Area = Inflow Outflow

4.214 ac, 5.58% Impervious, Inflow Depth = 1.41" for 2-Year event 3.06 cfs @ 12.42 hrs. Volume= 0.494 af

3.06 cfs @ 12.42 hrs, Volume= 3.06 cfs @ 12.42 hrs, Volume= 0.494 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.11 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.04 fps, Avg. Travel Time= 0.0 min

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 24

Peak Storage= 2 cf @ 12.42 hrs Average Depth at Peak Storage= 0.48' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.50', Outlet Invert= 93.40'



Summary for Reach 4Rb: 15" HDPE

Inflow Area = Inflow = Outflow =

 6.371 ac,
 4.34% Impervious, Inflow Depth =
 1.41"
 for 2-Year event

 4.07 cfs @
 12.44 hrs, Volume=
 0.747 af
 0.747 af

 4.07 cfs @
 12.44 hrs, Volume=
 0.747 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max, Velocity= 7.67 fps, Min, Travel Time= 0.0 min

Avg. Velocity = 3.22 fps, Avg. Travel Time= 0.1 min Peak Storage= 5 cf @ 12.44 hrs

Average Depth at Peak Storage= 0.56' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 4Rc: 15" HDPE

Inflow Area = Inflow Outflow

 3.366 ac, 22.13% Impervious, Inflow Depth = 1.62" for 2-Year event

 3.36 cfs @ 12.24 hrs, Volume=
 0.453 af

 3.37 cfs @ 12.25 hrs, Volume=
 0.453 af, Atten= 0%, Lag= 0.1 r

0.453 af, Atten= 0%, Lag= 0.1 min

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 25

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.29 fps, Min. Travel Time= 0.0 min Avg. Velocity= 2.79 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.24 hrs Average Depth at Peak Storage= 0.50' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 5Ra: 12" HDPE

 2.276 ac, 15.81% Impervious, Inflow Depth = 1.54" for 2-Year event

 2.11 cfs @ 12.26 hrs, Volume=
 0.293 af

 2.11 cfs @ 12.26 hrs, Volume=
 0.293 af, Atten= 0%, Lag= 0.0 r
 Inflow Area = Inflow 0.293 af. Atten= 0%. Lag= 0.0 min Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 6.51 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.65 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.25 hrs Average Depth at Peak Storage= 0.43' Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe n = 0.012Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'

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Proposed Conditions - Uniroyal and Facemate - Atlas 14	Type III 24-hr 2-Year Rainfall=3.12"	
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Summary for Reach 5Rb: 15" HDPE

Inflow Area = 2.712 ac, 10.71% Impervious, Inflow Depth = 1.47" for 2-Year event 2.84 cfs @ 12.21 hrs, Volume= 2.85 cfs @ 12.21 hrs, Volume= 0.333 af Inflow Inflow = Outflow = 0.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs. dt= 0.05 hrs Max. Velocity= 4.91 fps, Min. Travel Time= 0.0 min Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.1 min

Peak Storage= 8 cf @ 12.21 hrs Average Depth at Peak Storage= 0.60' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.14 cfs

15.0" Round Pipe n= 0.012 Length= 13.0' Slope= 0.0077 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Summary for Pond 1Pa: CB-17B Basin

Inflow Area	a =	2.276 ac,	15.81% Impe	ervious, Inflow	/ Depth = 1.54	for 2-Ye	ar event
Inflow	=	4.03 cfs @	12.09 hrs,	Volume=	0.293 af		
Outflow	=	2.11 cfs @	12.26 hrs,	Volume=	0.293 af, At	tten= 48%,	Lag= 9.7 min
Primary	=	2.11 cfs @	12.26 hrs,	Volume=	0.293 af		

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 97.68' @ 12.26 hrs Surf.Area= 5,624 sf Storage= 2,758 cf

Plug-Flow detention time= 69.0 min calculated for 0.293 af (100% of inflow) Center-of-Mass det. time= 69.1 min (903.2 - 834.1)

Volume	Invert A	vail.Storage	Storage	e Description	
#1	97.00'	25,350 cf	Custor	n Stage Data (Prisr	natic) Listed below (Recalc)
Elevation	Surf.Are	a Ind	.Store	Cum.Store	
(feet)	(sq-1	it) (cubi	c-feet)	(cubic-feet)	
97.00	2,50	00	0	0	
98.00	7,10	00	4,800	4,800	
99.00	10,50	00	8,800	13,600	
100.00	13.00	00	11.750	25.350	

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Device	Routing	Invert	Outlet Devices				
#1	Primary	97.33'	2.0" x 2.0" Horiz. Catch Basin X 5.00 columns X 5 rows C= 0.600 in 24.0" x 24.0" Grate (17% open area)				
#2	Primary	97.00'	1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 82.50'				
Primary OutFlow Max=2.11 cfs @ 12.26 hrs HW=97.68' (Free Discharge) -1=Catch Basin (Orifice Controls 1.97 cfs @ 2.84 fps) -2=Exfiltration (Controls 0.14 cfs)							
Summary for Pond 1Pb: CB-16B Basin							

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12

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Inflow Area	a =	2.712 ac, 1	0.71% Impervious,	Inflow Depth = 1.47"	for 2-Year event
Inflow	=	4.58 cfs @	12.09 hrs, Volume	= 0.333 af	
Outflow	=	2.84 cfs @	12.21 hrs, Volume	 = 0.333 af, Atte 	en= 38%, Lag= 7.0 min
Primary	=	2.84 cfs @	12.21 hrs, Volume	= 0.333 af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 97.65' @ 12.21 hrs Surf.Area= 5,648 sf Storage= 2,776 cf

Plug-Flow detention time= 69.0 min calculated for 0.333 af (100% of inflow) Center-of-Mass det. time= 69.1 min (906.6 - 837.5)

Volume	Inv	ert Avail.Sto	rage	Storage [Description	
#1	97.	00' 27,6	53 cf	Custom S	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevatio (fee 97.0	on et) 00	Surf.Area (sq-ft) 2,945	Inc (cubic	Store c-feet) 0	Cum.Store (cubic-feet) 0	
98.0	00	7,130		5,038	5,038	
100.0	00	15,300	1	9,265 3,350	27,653	
Device	Routing	Invert	Outl	et Devices		
#1	Primary	97.33'	2.0" X 6 I Limi	x 2.0" Hor rows C= 0 ted to weir	iz. Catch Basi 600 in 24.0" x flow at low he	n X 6.00 columns 24.0" Grate (25% open area) ads
#2	Primary	97.00'	1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 82.50'			
Primary OutFlow Max=2.84 cfs @ 12.21 hrs HW=97.64' (Free Discharge)						

-2=Exfiltration (Controls 0.14 cfs)

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 2-Year Rainfall=3.12" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 28

Summary for Pond 2Pa: CB-8A Basin

nflow Area	a =	4.214 ac,	5.58% Impervious, Inflow D	epth = 1.41" for 2-Year event
nflow	=	5.63 cfs @	12.17 hrs, Volume=	0.494 af
Dutflow	=	3.06 cfs @	12.42 hrs, Volume=	0.494 af, Atten= 46%, Lag= 14.9 min
Primary	=	3.06 cfs @	12.42 hrs, Volume=	0.494 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 97.66' @ 12.42 hrs Surf.Area= 11,885 sf Storage= 4,928 cf

Plug-Flow detention time= 67.5 min calculated for 0.494 af (100% of inflow) Center-of-Mass det. time= 67.4 min (913.7 - 846.3)

Volume	Invert	Avail.Storage	Storage	Description		
#1	97.00'	47,780 cf	Custom	Stage Data (Prisr	natic) Listed below (Recalc)	
Elevation	Surf.A	rea In	c.Store	Cum.Store		
(feet)	(so	-ft) (cub	ic-feet)	(cubic-feet)		
97.00	3,0	000	0	0		
98.00	16,4	120	9,710	9,710		
99.00	19,0	000	17,710	27,420		
100.00	01.	700	20.260	47 700		

100.0	0	21,720	20,500	47,700
Device	Routing	Invert	Outlet Devices	
#1	Primary	97.33'	2.0" x 2.0" Horiz. Ca	atch Basin X 6.00 columns
			X 6 rows C= 0.600 i	n 24.0" x 24.0" Grate (25% open area)
			Limited to weir flow	at low heads
#2	Primary	97.00'	1.020 in/hr Exfiltrati	ion over Surface area
			Conductivity to Grou	undwater Elevation = 80.00'

Primary OutFlow Max=3.06 cfs @ 12.42 hrs HW=97.66' (Free Discharge) 1=Catch Basin (Orifice Controls 2.77 cfs @ 2.77 fps) 2=Exfiltration (Controls 0.29 cfs)

Summary for Pond 2Pb: CB-11A Basin

Inflow Area	a =	6.371 ac,	4.34% Impervious, Inflo	ow Depth = 1.41" for 2-Year ever	nt
Inflow	=	8.99 cfs @	12.15 hrs, Volume=	0.747 af	
Outflow	=	4.07 cfs @	12.44 hrs, Volume=	0.747 af, Atten= 55%, Lag= 1	7.2 min
Primary	=	4.07 cfs @	12.44 hrs, Volume=	0.747 af	
			_		
Routing by	Stor-In	d method, Ti	me Span= 0.00-80.00 hrs	s, dt= 0.05 hrs	
Peak Elev:	= 95.42'	@ 12.44 hrs	Surf.Area= 14,680 sf	Storage= 7,206 cf	

Plug-Flow detention time= 47.1 min calculated for 0.746 af (100% of inflow)

Center-of-Mass det. time= 47.2 min (891.7 - 844.5)

Volume	Invert	Avail.Storage	Storage Description
#1	94.50'	78,798 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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TIYUIUCAD	S 10.00-23 3/11	10403 @ 20	19 Hyulochd 3	Unware Solution	3 110	Page 2:
Elevation	Surf.A	rea	Inc.Store	Cum.Store		
(feet)) (so	-ft) (c	ubic-feet)	(cubic-feet)		
94.50) 1,7	720	0	0		
95.00) 7,9	950	2,418	2,418		
96.00) 23,8	355	15,903	18,320		
97.00	30,5	550	27,203	45,523		
98.00	36,0	000	33,275	78,798		
Device	Routing	Invert	Outlet Devices			
#1	Primary	94.83'	2.0" x 2.0" Hor	iz. Catch Basir	n X 6.00 columns	
			X 6 rows C= 0.	600 in 24.0" x 2	24.0" Grate (25% open area)	
		1	Limited to weir	flow at low hea	ads	
#2	Primary	94.50'	1.020 in/hr Exf	iltration over S	Surface area	
			Conductivity to	Groundwater I	Elevation = 80.50'	
Primary C 1=Cato 2=Exfi	DutFlow Max= h Basin (Orific Itration (Contr	4.06 cfs @ ce Controls rols 0.36 cfs	12.44 hrs HW 3.71 cfs @ 3.7 s)	'=95.42' (Free 71 fps)	Discharge)	
		Sur	nmary for Po	ond 2Pc: CB-	-13A Basin	
Inflow Are Inflow Outflow Primary	ea = 3.36 = 6.25 = 3.36 = 3.36	6 ac, 22.13 cfs @ 12.1 cfs @ 12.3 cfs @ 12.3	3% Impervious 09 hrs, Volum 24 hrs, Volum 24 hrs, Volum	, Inflow Depth e= 0.45 e= 0.45 e= 0.45	= 1.62" for 2-Year event 53 af 53 af, Atten= 46%, Lag= 9.0 min 53 af	
Routing b Peak Elev	y Stor-Ind meth /= 95.27' @ 12.	nod, Time S 24 hrs Su	Span= 0.00-80. rf.Area= 6,863	00 hrs, dt= 0.05 sf Storage= 3	5 hrs 3,746 cf	
Plug-Flow Center-of	v detention time -Mass det. time	e= 52.1 min = 52.2 min	calculated for (883.0 - 830.7	0.453 af (100% 7)	6 of inflow)	
Volume	Invert	Avail.Stora	ge Storage D	Description		
#1	94.50'	31,216	cf Custom S	Stage Data (Pri	smatic) Listed below (Recalc)	
Flevation	Surf A	rea	Inc Store	Cum Store		
(feet)		i-ft) (c	ubic-feet)	(cubic-feet)		
94.50	1 1	580	0	0		
95.00		285	1 966	1 966		
96.00	, 0,2	120	7 353	9 319		
97.00	, 0,-) 10 4	550	9 485	18 804		
98.00	14.2	275	12,413	31,216		

Device	Routing	Invert	Outlet Devices	
#1	Primary	94.83'	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns	
	-		X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area)	
			Limited to weir flow at low heads	
#2	Primary	94.50'	1.020 in/hr Exfiltration over Surface area	
			Conductivity to Groundwater Elevation = 80.50'	

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfall=5.04" Prepared by BETA Group, Inc Printed 5/18/2021 Printed 5/18/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 31

Summary for Subcatchment 1Sa: PR-DA-1S - CB-17B Catchment

Runoff = 8.35 cfs @ 12.09 hrs, Volume= 0.609 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=5.04"

	74,164 6,867	80	>75% Gras		
	6,867		F1070 0100	s cover, Go	od, HSG D
		98	Paved park	ing, HSG D)
	6,237	98	Roofs, HSG	6 D	
	2,569	98	Water Surfa	ace, HSG D	
	9,314	79	Woods, Fai	r, HSG D	
	99,151	83	Weighted A	verage	
	83,478		84.19% Per	vious Area	
	15,674		15.81% Imp	pervious Ar	ea
_				. .	
IC	Length	Slop	e Velocity	Capacity	Description
(min)	(feet)	(ft/ft) (ft/sec)	(CfS)	
0.6	50	0.028	0 1.33		Sheet Flow, Sheet Flow
					Smooth surfaces n= 0.011 P2= 3.00"
2.6	190	0.015	0 1.22		Shallow Concentrated Flow, Shallow Conc. 1
					Nearly Bare & Untilled Kv= 10.0 fps
0.7	96	0.049	0 2.21		Shallow Concentrated Flow, Shallow Conc. 2
~ .					Nearly Bare & Untilled Kv= 10.0 fps
2.1					Direct Entry, Minimum TC
6.0	336	Total			
	S	umma	ry for Sub	catchmer	tt 1Sb: PR-DA-1S - CB-16B Catchment

Runoff = 9.67 cfs @ 12.09 hrs, Volume= 0.704 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=5.04"

Area (sf)	CN	Description		
93,694	80	>75% Gras	s cover, Go	pod, HSG D
10,157	98	Paved park	ing, HSG D)
2,498	98	Water Surfa	ace, HSG D)
11,795	79	Woods, Fai	r, HSG D	
118,144	82	Weighted A	verage	
105,489		89.29% Per	vious Area	1
12,655		10.71% lmp	pervious Ar	ea
Tc Length (min) (feet)	Sloj (ft/	be Velocity ft) (ft/sec)	Capacity (cfs)	Description
6.0		, , , , , , , , , , , , , , , , , , , ,	<u> </u>	Direct Entry, Minimum TC

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Primary OutFlow Max=3.36 cfs @ 12.24 hrs HW=95.27' (Free Discharge) 1=Catch Basin (Orifice Controls 3.19 cfs @ 3.19 fps) 2=Exfiltration (Controls 0.17 cfs)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Area	a =	4.988 ac,	13.04% Impe	ervious, I	Inflow Depth =	1.51"	for 2-Y	ear event
Inflow	=	4.87 cfs @	12.29 hrs,	Volume=	0.626	af		
Primary	=	4.87 cfs @	12.29 hrs,	Volume=	0.626	af, Atter	n= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Chicopee River

Inflow A	Area =	18.001 ac, 2	1.28% Impervious,	Inflow Depth = 1	.64" for 2-Year event
Inflow	=	15.36 cfs @	12.11 hrs, Volume	= 2.466 af	
Primar	y =	15.36 cfs @	12.11 hrs, Volume	= 2.466 af	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfall=5.04" Prepared by BETA Group, Inc HydroCAD9 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 32

Summary for Subcatchment 2Sa: PR-DA-2S - CB-8A Catchment

Runoff	=	12.21 cfs @	12.17 hrs,	Volume=	1.061 af,	Depth=	3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Year Rainfall=5.04"

	rea (sf)	CN I	Description		
1	65,088	80 ;	>75% Gras	s cover, Go	od, HSG D
	5,904	98 I	Paved park	ing, HSG D	1
	1,265	98 I	Roofs, HSG	5 D	
	3,083	98 N	Nater Surfa	ace, HSG D	
	8,216	79 \	Noods, Fai	r, HSG D	
1	83,555	81 N	Neighted A	verage	
1	73,304	9	94.42% Per	vious Area	
	10,251	1	5.58% Impe	ervious Area	3
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
8.8	50	0.0070	0.09		Sheet Flow, Sheet Flow
3.1	235	0 0070	1 25		Grass: Short n= 0.150 P2= 3.00" Shallow Concentrated Flow Shallow Conc. 1
0.1	200	0.0010	1.20		Grassed Waterway Ky= 15.0 fps
11.9	285	Total			
	S	ummar	y for Sub	catchmen	t 2Sb: PR-DA-2S - CB-11A Catchment
			_		
Runoff	=	19.46 c	fs @ 12.1	4 hrs, Volu	me= 1.604 af, Depth= 3.02"
Dupoff b					
RUNOII D		2 00 ma		CC Mainh	tod CN Time Coop 0.00 00 hrs dt 0.05 hrs
Type III (y SCS IF	R-20 me	thod, UH=S	SCS, Weigh	ted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III 2	y SCS 11 24-hr 10-	R-20 me Year Ra	thod, UH=8 infall=5.04	SCS, Weigh	tted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III 2	y SCS 11 24-hr 10- rea (sf)	R-20 me Year Ra CN I	thod, UH=S infall=5.04 Description	SCS, Weigh	ted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III 2	y SCS 11 24-hr 10- rea (sf) 65,478	R-20 me Year Ra <u>CN I</u> 80 :	thod, UH=S infall=5.04 Description >75% Gras	SCS, Weigh	ed, HSG D
Type III 2 Ai	y SCS 11 24-hr 10- rea (sf) 65,478 10,628	R-20 me Year Ra <u>CN I</u> 80 : 98 I	thod, UH=S infall=5.04' Description >75% Gras Paved park	SCS, Weigh	eted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III 2	y SCS 11 24-hr 10- rea (sf) 65,478 10,628 1,422	R-20 me Year Ra <u>CN [</u> 80 ; 98 [98]	thod, UH=S infall=5.04 Description 75% Gras Paved park Nater Surfa	SCS, Weigh s cover, Go ing, HSG D ace, HSG D	od, HSG D
Type III 2 2 2	y SCS IF 24-hr 10- 65,478 10,628 <u>1,422</u> 77,528	R-20 me Year Ra <u>CN 1</u> 80 3 98 1 98 1 81 1	thod, UH=5 infall=5.04 Description 75% Gras Paved park Nater Surfa Neighted A	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage	eted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs od, HSG D
Type III 2 	y SCS II 24-hr 10- 65,478 10,628 1,422 77,528 65,478	R-20 me Year Ra <u>CN 1</u> 80 ; 98 1 98 1 81 \	thod, UH=S infall=5.04 >75% Gras Paved park <u>Nater Surfa</u> Neighted A 95.66% Per	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area	eted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III 2 2 2 2	y SCS II 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050	R-20 me Year Ra 80 ; 98 I 98 N 81 N	thod, UH=S infall=5.04 Description 75% Gras Paved park Nater Surfa Neighted A 05.66% Per 1.34% Impe	SCS, Weigh s cover, Go ing, HSG D ace, HSG D werage vious Area ervious Area	a
Type III 2 2 2 2	y SCS II 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050	R-20 me Year Ra 0 1 98 1 98 1 98 1 98 1 98 1 98 1 98 1 98	thod, UH=S infall=5.04 Description 75% Gras Paved park Nater Surfa Neighted A 05.66% Per 1.34% Impe	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area ervious Area	a
Type III 2 Ai 2 2 2 2 2	y SCS II 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050 Length	R-20 me Year Ra 0 1 98 1 98 1 81 1 50000	thod, UH=5 infall=5.04 <u>Description</u> 75% Gras Paved park <u>Nater Surfa</u> Neighted A 95.66% Per 1.34% Impe	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area ervious Area Capacity	a Description
Type III 2 2 2 	y SCS IF 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050 Length (feet)	R-20 me Year Ra 0 1 98 1 98 1 98 1 98 0 81 0 98 0 81 0 98 0 98 0 98 0 98 0 98 0 98 0 98 0 98	thod, UH=5 infall=5.04 25% Gras 2aved park <u>Nater Surfa</u> Neighted A 95.66% Per 1.34% Impe Velocity (ft/sec)	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area ervious Area Capacity (cfs)	a Description
Type III 2 3 	y SCS IF 24-hr 10- rea (sf) 65,478 10,628 1,422 77,528 65,478 12,050 Length (feet) 50	R-20 me Year Ra 80 : 98 I 98 V 81 V Slope (ft/ft) 0.0090	thod, UH=S infall=5.04 Description >75% Gras Paved park Nater Surfa Weighted A 95.66% Per 1.34% Impe Velocity (ft/sec) 0.10	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area ervious Area Capacity (cfs)	a Description Sheet Flow, Sheet Flow
Type III 2 	y SCS IF 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050 Length (feet) 50	R-20 me Year Ra 0 1 98 1 98 1 81 1 5 5 5 5 5 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7	thod, UH=S infall=5.04' Description >75% Gras Paved park <u>Vater Surfa</u> Weighted A 95.66% Per 1.34% Impe Velocity (ft/sec) 0.10	SCS, Weigh s cover, Go ing, HSG D ace, HSG D verage vious Area ervious Area capacity (cfs)	ted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs od, HSG D Description Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 3.00"
Type III 2 	y SCS IF 24-hr 10- 65,478 10,628 1,422 77,528 65,478 12,050 Length (feet) 50 175	R-20 me Year Ra 0 1 98 1 98 1 81 1 5 5 5 1 5 5 1 5 1 5 1 5 1 5 1 5 1 5	thod, UH=5 infall=5.04' >75% Gras Paved park <u>Nater Surfa</u> Neighted A 95.66% Per 1,34% Imper Velocity (ft/sec) 0.10 1.42	SCS, Weigh s cover, Go ing, HSG D verage vious Area ervious Area Capacity (cfs)	ted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs d, HSG D bescription Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 3.00" Shallow Concentrated Flow, Shallow Conc. 1

10.0 225 Total

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	S	ummary	for Sub	catchmer	nt 2Sc: PR-DA	-2S -	CB-13A Catch	ment	
Runoff	=	12.68 cfs	@ 12.0	9 hrs, Volu	ume= 0.9	928 af,	Depth= 3.31"		
Runoff b Type III :	y SCS TI 24-hr 10	R-20 meth -Year Rair	nod, UH=S nfall=5.04'	SCS, Weigl	hted-CN, Time S	Span= ().00-80.00 hrs, dt	= 0.05 hrs	
A	rea (sf)	CN D	escription						
1	08,361	80 >7	75% Gras	s cover, Go	ood, HSG D				
	30,845	98 Pa	aved park	ing, HSG E)				
	1,607	98 W	ater Surfa	ace, HSG E)				
	5,822	79 W	oods, Fai	r, HSG D					
1	46,635	84 VV	eighted A	verage					
1	32 452	22	2 13% Imr	vious Area	1 100				
	02,402	~~~~			ca				
Tc	Length	Slope	Velocity	Capacity	Description				
<u>(IIIII)</u> 56	(1001)	0.0220	(1/Sec)	(CIS)	Sheet Flow S	hoot El	0.11		
5.0	50	0.0220	0.15		Grass: Short	n=0.15	50 P2= 3.00"		
0.3	40	0.0220	2.22		Shallow Conc Grassed Wate	entrate	d Flow, Shallow	Conc.	
0.1					Direct Entry, M	Vinimu	m TC		
6.0	90	Total							
	s	ummary	for Sub	catchme	nt 3S: PR-DA-	-3S - U	Ipper Uniroyal	Site	
Runoff	=	13.23 cfs	@ 12.0	9 hrs, Volu	ume= 0.9	998 af,	Depth= 3.91"		
Runoff b		R=20 meth	od UH-S	SCS Weid	hted-CN Time S	Snan- (00-80 00 brs. dt	- 0.05 brs	
Type III :	24-hr 10	Year Rair	nfall=5.04	'		pun= c		- 0.00 113	
71 -									
A	rea (sf)	CN D	escription						
	8,648	89 <5	50% Gras	s cover, Po	oor, HSG D				
	55,625	80 >7	75% Gras	s cover, Go	pod, HSG D				
	17,187	98 Pa	aved park	ing, HSG L)				
4	22 220	90 K	ouis, ISC	Vorogo					
1	64 274	50 VV 49	3 24% Por	vious Area					
	68,954	51	1.76% Imp	ervious Ar	ea				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
6.0					Direct Entry, M	Minimu	m TC		

Propose Prepared	Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfall=5.04" Prepared by BETA Group, Inc Printed 5/18/2021									
HydroCAD	HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 34									
	Summary for Subcatchment B26: Building 26									
Runoff	=	1.18 cfs	@ 12.0	9 hrs, Volu	me=	0.098 af, E	Depth= 4.80"			
Runoff by Type III 24	SCS TR I-hr 10-`	-20 meth Year Rair	nod, UH=S nfall=5.04	SCS, Weigh	nted-CN, Tim	ne Span= 0.0	00-80.00 hrs,	dt= 0.05 hrs		
Are	a (sf)	CN D	escription							
1	0,635	98 R	oofs, HSG) D						
1	0,635	10	00.00% In	npervious A	rea					
Tc I (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	ı				
6.0					Direct Entr	ry, Minimum	TC			
	Summary for Subcatchment B27: Building 27									
Runoff	=	3.60 cfs	@ 12.0	9 hrs, Volu	me=	0.299 af, E	Depth= 4.80"			
Runoff by Type III 24	SCS TR I-hr 10-`	-20 meth Year Raii	nod, UH=S	SCS, Weigh	nted-CN, Tim	ne Span= 0.0	00-80.00 hrs,	dt= 0.05 hrs		

Area (sf) CN Description									
32,552 98 Roofs, HSG D									
32,552 100.00% Impervious Area									
Tc Length Slope Velocity Capacity Description _(min) (feet) (ft/ft) (ft/sec) (cfs)									
6.0 Direct Entry, Minimum TC									
Summary for Reach 1R: Discharge Pipe									
Inflow Area = 4.988 ac, 13.04% Impervious, Inflow Depth = 3.16" for 10-Year event Inflow = 7.76 cfs @ 12.34 hrs, Volume = 1.313 af Outlus = 7.76 cfs @ 12.34 hrs, Volume = 1.313 af									
Outhow = $7.75 \text{ crs} \oplus 12.35 \text{ hrs}$, Volume= 1.313 ar , Atten= 0%, Lag= 0.5 min									
Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.78 fps, Min. Travel Time= 0.2 min Avg. Velocity = 1.48 fps, Avg. Travel Time= 0.6 min									
Peak Storage= 103 cf @ 12.35 hrs Average Depth at Peak Storage= 1.24' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs									
24.0" Round Pipe									

Length= 50.0' Slope= 0.0020 '/' Inlet Invert= 85.35'. Outlet Invert= 85.25'

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Summary for Reach 1Ra: Perforated Pipe

Inflow Area = Inflow = Outflow = 3.28 cfs @ 12.34 hrs, Volume= 3.28 cfs @ 12.39 hrs, Volume=

2.276 ac, 15.81% Impervious, Inflow Depth = 3.21" for 10-Year event 0.609 af 0.609 af, Atten= 0%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.57 fps, Min. Travel Time= 1.6 min Avg. Velocity = 1.43 fps, Avg. Travel Time= 4.1 min

Peak Storage= 322 cf @ 12.36 hrs Average Depth at Peak Storage= 0.77' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.23 cfs

18.0" Round Pipe n= 0.012 Length= 350.0' Slope= 0.0030 '/' Inlet Invert= 87.20', Outlet Invert= 86.15'



Summary for Reach 1Rb: Perforated Pipe

 4.988 ac, 13.04% Impervious, Inflow Depth = 3.16" for 10-Year event

 7.77 cfs @ 12.32 hrs, Volume=
 1.313 af

 7.76 cfs @ 12.34 hrs, Volume=
 1.313 af, Atten= 0%, Lag= 1.4 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.78 fps, Min. Travel Time= 0.7 min Avg. Velocity = 1.48 fps, Avg. Travel Time= 1.7 min

Peak Storage= 308 cf @ 12.33 hrs Average Depth at Peak Storage= 1.24' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe Length= 150.0' Slope= 0.0020 '/' Inlet Invert= 85.65', Outlet Invert= 85.35'



Summary for Reach 2R: Discharge Pipe

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfall=5.04"

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 14.943 ac, 15.05% Impervious, Inflow Depth = 3.20" for 10-Year event

 16.83 cfs @ 12.40 hrs, Volume=
 3.989 af

 16.82 cfs @ 12.41 hrs, Volume=
 3.989 af, Atten= 0%, Lag= 0.8 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 5.50 fps, Min. Travel Time= 0.4 min Avg. Velocity = 2.06 fps, Avg. Travel Time= 1.1 min

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Peak Storage= 428 cf @ 12.40 hrs Average Depth at Peak Storage= 1.49' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 25.19 cfs

30.0" Round Pipe n= 0.012 Length= 140.0' Slope= 0.0032 '/' Inlet Invert= 87.15', Outlet Invert= 86.70'



Summary for Reach 2Ra: Perforated Pipe A

 4.214 ac,
 5.58% Impervious, Inflow Depth = 3.02" for 10-Year event

 4.77 cfs @
 12.51 hrs, Volume=
 1.061 af

 4.76 cfs @
 12.58 hrs, Volume=
 1.061 af, Atten= 0%, Lag= 4.0 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.18 fps, Min. Travel Time= 2.2 min Avg. Velocity = 1.77 fps, Avg. Travel Time= 5.2 min

Peak Storage= 633 cf @ 12.54 hrs Average Depth at Peak Storage= 0.92' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.83 cfs

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18.0" Round Pipe n= 0.012 Length= 555.0' Slope= 0.0036 '/' Inlet Invert= 92.00', Outlet Invert= 90.00'



Summary for Reach 2Rb: Perforated Pipe B

 10.585 ac,
 4.84% Impervious, Inflow Depth =
 3.02" for 10-Year event

 10.68 cfs @
 12.56 hrs, Volume=
 2.665 af

 10.67 cfs @
 12.60 hrs, Volume=
 2.665 af, Atten= 0%, Lag= 2.4 min
 Inflow Area = Inflow = Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 5.14 fps, Min. Travel Time= 1.3 min Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.0 min

Peak Storage= 820 cf @ 12.57 hrs Average Depth at Peak Storage= 1.26' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 14.85 cfs

24.0" Round Pipe n= 0.012 Length= 395.0' Slope= 0.0037 '/' Inlet Invert= 89.50', Outlet Invert= 88.05'



Summary for Reach 2Rc: Perforated Pipe C

 13.951 ac,
 9.01% Impervious, Inflow Depth = 3.09" for 10-Year event

 15.59 cfs @
 12.49 hrs, Volume=
 3.592 af

 15.58 cfs @
 12.50 hrs, Volume=
 3.592 af, Atten= 0%, Lag= 0.8 m
 Inflow Area = Inflow Outflow = 3.592 af. Atten= 0%. Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 5.31 fps, Min. Travel Time= 0.4 min Avg. Velocity = 2.17 fps, Avg. Travel Time= 1.0 min

Peak Storage= 381 cf @ 12.49 hrs Average Depth at Peak Storage= 1.44' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 24.65 cfs

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Peak Storage= 3 cf @ 12.51 hrs Average Depth at Peak Storage= 0.61' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.50', Outlet Invert= 93.40'



Summary for Reach 4Rb: 15" HDPE

 6.371 ac,
 4.34% Impervious, Inflow Depth =
 3.02" for 10-Year event

 5.92 cfs @
 12.53 hrs, Volume=
 1.604 af

 5.92 cfs @
 12.53 hrs, Volume=
 1.604 af
 Inflow Area = Inflow Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.42 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.80 fps, Avg. Travel Time= 0.0 min

Peak Storage= 7 cf @ 12.53 hrs Average Depth at Peak Storage= 0.70' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 4Rc: 15" HDPE

Inflow Area = Inflow Outflow

 3.366 ac, 22.13% Impervious, Inflow Depth = 3.31" for 10-Year event

 5.21 cfs @
 12.32 hrs, Volume=
 0.928 af

 5.21 cfs @
 12.32 hrs, Volume=
 0.928 af

0.928 af, Atten= 0%, Lag= 0.1 min

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30.0" Round Pipe n = 0.012Length= 130.0' Slope= 0.0031 '/' Inlet Invert= 87.55', Outlet Invert= 87.15'



Summary for Reach 3R: Uniroyal South Outfall (Exist.)

Inflow Area = Inflow = Outflow =

 18.001 ac, 21.28% Impervious, Inflow Depth = 3.32" for 10-Year event

 28.43 cfs @ 12.10 hrs, Volume=
 4.987 af

 28.13 cfs @ 12.11 hrs, Volume=
 4.987 af, Atten= 1%, Lag= 0.2 m
 4.987 af. Atten= 1%. Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 15.65 fps, Min. Travel Time= 0.2 min Avg. Velocity = 5.32 fps, Avg. Travel Time= 0.5 min

Peak Storage= 316 cf @ 12.10 hrs Average Depth at Peak Storage= 0.99' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 85.65 cfs

30.0" Round Pipe n= 0.013 Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Summary for Reach 4Ra: 15" HDPE

Inflow Area = Inflow Outflow

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 3.02" for
 10-Year event

 4.77 cfs @
 12.51 hrs, Volume=
 1.061 af
 1.061 af, Atten= 0%, Lag= 0.0 m
 1.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.99 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.47 fps, Avg. Travel Time= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.17 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.22 fps, Avg. Travel Time= 0.1 min

Peak Storage= 6 cf @ 12.32 hrs Average Depth at Peak Storage= 0.64' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 5Ra: 12" HDPE

Inflow Area = Inflow Outflow =

 2.276 ac, 15.81% Impervious, Inflow Depth = 3.21" for 10-Year event

 3.28 cfs @ 12.34 hrs, Volume=
 0.609 af

 3.28 cfs @ 12.34 hrs, Volume=
 0.609 af, Atten= 0%, Lag= 0.0 m
 0.609 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.27 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.34 hrs Average Depth at Peak Storage= 0.56' Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe n = 0.012Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfall=5.04" Prepared by BETA Group, Inc Printed 5/18/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 41	Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 10-Year Rainfal=5.04 Prepared by BETA Group, Inc Printed 5/18/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 42
Summary for Reach 5Rb: 15" HDPE	Device Routing Invert Outlet Devices
Inflow Area = 2.712 ac, 10.71% Impervious, Inflow Depth = 3.11" for 10-Year event Inflow = 4.52 cfs @ 12.28 hrs, Volume= 0.704 af Outflow = 4.52 cfs @ 12.28 hrs, Volume= 0.704 af	 #1 Primary 97.33' 2.0" x 2.0" Horiz. Catch Basin X 5.00 columns X 5 rows C= 0.600 in 24.0" X 24.0" Grate (17% open area) Limited to weir flow at low heads #2 Primary 97.00' 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 82.50'
Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 5.47 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.15 fps, Avg. Travel Time= 0.1 min	Primary OutFlow Max=3.28 cfs @ 12.34 hrs HW=98.18' (Free Discharge) 1=Catch Basin (Orifice Controls 3.09 cfs @ 4.45 fps) 2=Exfiltration (Controls 0.19 cfs)
Peak Storage= 11 cf @ 12.28 hrs Average Depth at Peak Storage= 0.80' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.14 cfs	Summary for Pond 1Pb: CB-16B Basin
15.0" Round Pipe n= 0.012 Length= 13.0' Slope= 0.0077 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'	Inflow Area = 2.712 ac, 10.71% Impervious, Inflow Depth = 3.11" for 10-Year event Inflow = 9.67 cfs @ 12.09 hrs, Volume= 0.704 af Outflow = 4.52 cfs @ 12.28 hrs, Volume= 0.704 af Primary = 4.52 cfs @ 12.28 hrs, Volume= 0.704 af Routing by Stor-Ind method, Time Spane 0.00-80.00 hrs, dt= 0.05 hrs 0.05 hrs Page Flav= 9.41 (@ 12.28 hrs, Surf Area 7.713 sf. Storage 6.050 cf
	Plug-Flow detention time= 47.2 min calculated for 0.704 af (100% of inflow) Center-of-Mass det. time= 47.0 min (863.0 - 816.0)
	Volume Invert Avail.Storage Storage Description
Summary for Pond 1Pa: CB-17B Basin	#1 97.00' 27,653 cf Custom Stage Data (Prismatic) Listed below (Recalc)
Inflow Area = 2.276 ac, 15.81% Impervious, Inflow Depth = 3.21" for 10-Year event Inflow = 8.35 cfs @ 12.09 hrs, Volume= 0.609 af Outflow = 3.28 cfs @ 12.34 hrs, Volume= 0.609 af, Atten= 61%, Lag= 14.9 min Primary = 3.28 cfs @ 12.34 hrs, Volume= 0.609 af	Elevation Surf.Area Inc.Store Cum.Store (feet) (sq.ft) (cubic-feet) (cubic-feet) 97.00 2,945 0 0 98.00 7,130 5,038 5,038 99.00 11,400 9,265 14,303
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.19' @ 12.34 hrs Surf.Area= 7,729 sf Storage= 6,172 cf	100.00 15,300 13,350 27,653 Device Routing Invert Outlet Devices #1 Primary 97.33' 2.0" x 2.0" Horiz. Catch Basin X 6.00 columns
Plug-Flow detention time= 51.1 min calculated for 0.609 af (100% of inflow) Center-of-Massdet, time= 51.2 min (864.3 - 813.1)	X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads #2 Primary 97.00" 1.020 in/hr Exfiltration over Surface area

Volume	Invert	Avail.Storage	Storage	e Description	
#1	97.00'	25,350 cf	Custon	n Stage Data (Pris	matic) Listed below (Recalc)
Elevation	Surf.A	rea Inc	.Store	Cum.Store	
(feet)	(sq	-ft) (cubi	c-feet)	(cubic-feet)	
97.00	2,5	500	0	0	
98.00	7,1	00	4,800	4,800	
99.00	10,5	500	8,800	13,600	
100.00	13.0	000	11.750	25.350	

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Primary OutFlow Max=4.51 cfs @ 12.28 hrs HW=98.13' (Free Discharge) 1=Catch Basin (Orifice Controls 4.32 cfs @ 4.32 fps) 2=Exfiltration (Controls 0.19 cfs)

Fage 43	Tiyuloo/	10.00	20 3/11 10400 @	2013 Hydroo/(E			
n	Elevati	on	Surf.Area	Inc.Store	Cum.Store		
	(fe	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
for 10-Year event	94.	50	1,720	0	0		
	95.	00	7,950	2,418	2,418		
n= 61%. Lag= 20.5 min	96.	00	23,855	15,903	18,320		
	97.	00	30,550	27,203	45,523		
	98.	00	36,000	33,275	78,798		
	Device	Routing	Invert	Outlet Devic	es		
	#1	Primary	94.83	2.0" x 2.0" H	loriz. Catch Basin X 6.00 columns		
		,,		X 6 rows C=	0 600 in 24 0" x 24 0" Grate (25% open area)		
				Limited to w	eir flow at low heads		
	#2	Primary	94 50'	1.020 in/hr E	Exfiltration over Surface area		
	<i>n</i> 2	i iiiiai y	04.00	Conductivity	to Groundwater Elevation - 80 50'		
ted below (Becale)				Conductivity	to orbandwater Elevation = 00.00		
sieu below (Recalc)	Primary		Max=5.02 cfc	@ 12.53 hre ⊨	W-96 05' (Free Discharge)		
	1-C	atch Rasi	(Orifice Contr	de 5.32 efe @	5.32 fpc)		
	_2-E	filtration	(Controle 0.60	ofe)	3.32 ip3)		
	2-27	and adom	(CONTIONS 0.00	013)			
					Dand 2Day CB 42A Basin		
			3	ummary for	PONG ZPC: CB-13A Dasin		
	Inflow A	Area =	3.366 ac, 22	.13% Impervio	us, Inflow Depth = 3.31" for 10-Year event		
	Inflow	=	12.68 cfs @ 1	2.09 hrs, Volu	ime= 0.928 af		
	Outflow	/ =	5.21 cfs @ 1	2.32 hrs, Volu	Ime= 0.928 af, Atten= 59%, Lag= 13.8 min		
lumns	Primary	/ =	5.21 cfs @ 1	2.32 hrs, Volu	ime= 0.928 af		
e (25% open area)							
	Routing	by Stor-I	nd method, Time	e Span= 0.00-8	30.00 hrs, dt= 0.05 hrs		
a	Peak E	lev= 95.91	l' @ 12.32 hrs	Surf.Area= 8,2	28 sf Storage= 8,572 cf		
= 80.00'							
	Plug-Fl	ow detent	ion time= 38.4 m	nin calculated f	or 0.927 af (100% of inflow)		
e)	Center-of-Mass det. time= 38.5 min (848.7 - 810.2)						
	Volume	e Inv	ert Avail.Sto	orage Storage	e Description		
	#1	94.	50' 31.2	16 cf Custor	n Stage Data (Prismatic) Listed below (Recalc)		
in					5 (, , , , , , , , , , , , , , , , , ,		
	Elevati	on	Surf.Area	Inc.Store	Cum.Store		
for 10 Veer event	(fe	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
IOF TO-Fear event	94	50	1 580	0	0		
n 70% Lon 22.4 min	95	00	6 285	1 966	1 966		
n= 70%, Lag= 23.4 min	96	00	8 420	7 353	0.310		
	97	00	10,550	0,485	18 804		
		00	14 275	12 412	21 216		
	30.	00	14,275	12,413	51,210		
	Dovice	Pouting	Invort		00		
	Device	r.outing	Invert				
	#1	Primary	94.83	2.0" x 2.0" H	Ioriz. Catch Basin X 6.00 columns		
				x 6 rows C=	0.600 in 24.0" x 24.0" Grate (25% open area)		
				Limited to w	eir flow at low heads		
	#2	Primary	94.50	1.020 in/hr E	xtiltration over Surface area		
sted below (Recalc)				Conductivity	to Groundwater Elevation = 80.50'		

 Proposed Conditions - Uniroyal and Facemate - Atlas 14
 Type III 24-hr
 10-Year Rainfall=5.04"

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Summary for Pond 2Pa: CB-8A Basi

Inflow Are	a =	4.214 ac,	5.58% Impervious, Inflow	Depth = 3.02" for 10-Year event
Inflow	=	12.21 cfs @	12.17 hrs, Volume=	1.061 af
Outflow	=	4.77 cfs @	12.51 hrs, Volume=	1.061 af, Atten= 61%, Lag= 20.5 min
Primary	=	4.77 cfs @	12.51 hrs, Volume=	1.061 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.15' @ 12.51 hrs Surf.Area= 16,802 sf Storage= 12,172 cf

Plug-Flow detention time= 54.0 min calculated for 1.061 af (100% of inflow) Center-of-Mass det. time= 53.9 min (878.1 - 824.2)

Volume	Inve	rt Ava	il.Storage	Storage	Description				
#1	97.00)'	47,780 cf	Custom	Stage Data (Pris	smatic) Listed below (Recalc)			
Elevation (feet)	5	Surf.Area	Inc (cubi	Store	Cum.Store				
97.00	1	3,000	(****	0	0				
98.00 99.00)	16,420 19,000	-	9,710 17,710	9,710 27,420				
100.00	1	21,720	2	20,360	47,780				
Device	Routing	Ir	nvert Out	et Device	s				
#1	Primary	9	7.33' 2.0" X 6	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area)					

#2	Primary	97.00'	Limited to weir flow at low heads 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 80.00'
Drimon		Max=4 77 cfc @	12.51 brs HW/=08.15' (Free Discharge)

Primary OutFlow Max=4.77 cfs @ 12.51 hrs HW=98.15' (Free Discharge 1=Catch Basin (Orifice Controls 4.35 cfs @ 4.35 fps) 2=Exfiltration (Controls 0.41 cfs)

Summary for Pond 2Pb: CB-11A Basi

					Elevatio	on
Inflow Area =	6.3	71 ac 4.34%	Impervious Inflov	w Depth = 3.02" for 10-Year event	(fee	et)
Inflow =	19.46	6 cfs @ 12.14 h	nrs. Volume=	1.604 af	94.5	50
Outflow =	5.92	2 cfs @ 12.53 h	nrs. Volume=	1.604 af. Atten= 70%. Lag= 23.4 min	95.0	00
Primary =	5.92	2 cfs @ 12.53 h	nrs, Volume=	1.604 af	96.0	00
					97.0	00
Routing by St	or-Ind me	thod, Time Spar	n= 0.00-80.00 hrs,	, dt= 0.05 hrs	98.0	00
Peak Elev= 9	6.05' @ 1	2.53 hrs Surf.A	rea= 24,189 sf S	Storage= 19,517 cf		-
					Device	Rout
Plug-Flow de	tention tim	ne= 43.5 min cal	Iculated for 1.604 a	af (100% of inflow)	#1	Prim
Center-of-Ma	ss det. tin	ne= 43.3 min (8	65.8 - 822.4)			
Volume	Invert	Avail.Storage	Storage Descrip	otion	 #2	Prim
#1	94.50'	78,798 cf	Custom Stage D	Data (Prismatic) Listed below (Recalc)		

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Primary OutFlow Max=5.21 cfs @ 12.32 hrs HW=95.91' (Free Discharge) 1=Catch Basin (Orifice Controls 5.00 cfs @ 5.00 fps) 2=Exfiltration (Controls 0.21 cfs)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Area	a =	4.988 ac,	13.04% Imp	ervious,	Inflow	Depth =	3.16	6" for	10-Yea	r event
Inflow	=	7.75 cfs @	12.35 hrs,	Volume	=	1.313	af			
Primary	=	7.75 cfs @	12.35 hrs,	Volume	=	1.313	af, A	Atten= 0	%, Lag	= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Chicopee River

Inflow Area	a =	18.001 ac, 2	1.28% lmp	ervious,	Inflow Depth =	3.3	2" for 10-	-Year event
Inflow	=	28.13 cfs @	12.11 hrs,	Volume=	= 4.987	af		
Primary	=	28.13 cfs @	12.11 hrs,	Volume=	= 4.987	af, A	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.0-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 46

Summary for Subcatchment 1Sa: PR-DA-1S - CB-17B Catchment

Runoff = 11.09 cfs @ 12.09 hrs, Volume= 0.817 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

A	rea (sf)	CN	CN Description								
	74,164	80 >75% Grass cover, Good, HSG D									
	6.867 98 Paved parking, HSG D										
	6,237	98	Roofs, HSC	G D							
	2.569	98	Water Surf	ace, HSG D)						
	9,314	79	Woods, Fa	r. HSG D							
	00 151	83	Weighted (verage							
	83 /78	00	8/ 10% Do	vious Area							
	15 674		15 910/ Im	vious Area	22						
	15,074		15.01 /0 111	Jei vious Ai	đđ						
То	Longth	Slop	Volocity	Conocity	Description						
(min)	(feet)	3i0pi		Capacity (efa)	Description						
<u>(min)</u>	(reet)	(171) (IVSEC)	(CIS)							
0.6	50	0.028) 1.33		Sheet Flow, Sheet Flow						
					Smooth surfaces n= 0.011 P2= 3.00"						
2.6	190	0.015) 1.22		Shallow Concentrated Flow, Shallow Conc. 1						
					Nearly Bare & Untilled Kv= 10.0 fps						
0.7	96	0.049) 2.21		Shallow Concentrated Flow, Shallow Conc. 2						
					Nearly Bare & Untilled Kv= 10.0 fps						
2.1					Direct Entry, Minimum TC						
6.0	336	Total			•						
0.0	000	. 5100									
	6	umma	ry for Sub	catchmor	t 1Sh: PP-DA-1S - CR-16B Catchmont						
	3	unilla	y loi Sub	catorimer	it 150. FIN-DA-15 - CD-10B Catchinent						
- <i>"</i>											
Runoff = 12.93 cfs @ 12.09 hrs, Volume= 0.949 af, Depth= 4.20"					me= 0.949 at, Depth= 4.20"						

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

	0.1	D :

	AI	ea (si)	CN	Des	scription		
		93,694	80	>75	% Grass	s cover, Go	ood, HSG D
		10,157	98	Pav	ed parki	ing, HSG D)
		2,498	98	Wa	ter Surfa	ice, HSG D)
		11,795	79	Wo	ods, Fai	r, HSG D	
	1	18,144	82	We	ighted A	verage	
	1	05,489		89.2	29% Per	vious Area	
		12,655		10.7	71% lmp	ervious Are	ea
٦	Тс	Length	Slop	⊳e ∖	/elocity	Capacity	Description
(mi	n)	(feet)	(ft/1	ft)	(ft/sec)	(cfs)	
6	.0						Direct Entry, Minimum TC

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD9 U100-25 sh 10405 © 2019 HydroCAD Software Solutions LLC Page 47 Page 47

Summary for Subcatchment 2Sa: PR-DA-2S - CB-8A Catchment

Runoff = 16.47 cfs @ 12.16 hrs, Volume= 1.438 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

A	rea (sf)	CN	Description						
1	65,088	088 80 >75% Grass cover, Good, HSG D							
	5,904	5,904 98 Paved parking, HSG D							
	1,265	98	Roofs, HSC	ЭD					
	3,083	98	Water Surfa	ace, HSG D)				
	8,216	79	Woods, Fai	r, HSG D					
1	83,555	81	Weighted A	verage					
1	73,304		94.42% Per	vious Area					
	10,251		5.58% Impe	ervious Area	a				
Tc	Length	Slop	e Velocity	Capacity	Description				
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
8.8	50	0.007	0 0.09		Sheet Flow, Sheet Flow				
					Grass: Short n= 0.150 P2= 3.00"				
3.1	235	0.007	0 1.25		Shallow Concentrated Flow, Shallow Conc. 1				
					Grassed Waterway Kv= 15.0 fps				
11.9	285	Total							
	S	umma	rv for Sub	catchmer	t 2Sb: PR-DA-2S - CB-11A Catchment				
	-		,						
Runoff	=	26.22	cfs @ 12.1	4 hrs. Volu	me= 2.174 af. Depth= 4.09"				

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

	A	rea (sf)	CN	CN Description							
	2	65.478	80	80 >75% Grass cover, Good, HSG D							
		10.628	98	Paved park	ing, HSG D)					
		1,422	98	Water Surfa	ace, HSG D)					
277 528 81 Weighted Avera				Weighted A	verage						
	2	65,478		95.66% Per	vious Area						
		12,050		4.34% Impe	ervious Area	a					
	,										
	Tc	Length	Slop	e Velocity	Capacity	Description					
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)						
	8.0	50	0.009	0 0.10		Sheet Flow, Sheet Flow					
						Grass: Short n= 0.150 P2= 3.00"					
	2.0	175	0.009	0 1.42		Shallow Concentrated Flow, Shallow Conc. 1					
						Grassed Waterway Kv= 15.0 fps					
	10.0	225	Total								

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD9 10.00-25 sh 10405 © 2019 HydroCAD Software Solutions LLC Paree 48

Summary for Subcatchment 2Sc: PR-DA-2S - CB-13A Catchment

Runoff = 16.74 cfs @ 12.09 hrs, Volume= 1.238 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23*

A	rea (sf)	CN	Description					
1	08,361	80	>75% Gras	s cover, Go	ood, HSG D			
	30,845	98	98 Paved parking, HSG D					
	1,607	98	98 Water Surface, HSG D					
	5,822	79	Woods, Fai	r, HSG D				
1	46,635	84	Weighted A	verage				
1	14,183		77.87% Per	vious Area				
	32,452		22.13% imp	pervious Ar	ea			
Тс	Longth	Slope	Velocity	Canacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description			
5.6	50	0.0220	0 15	(013)	Sheet Flow Sheet Flow			
0.0	00	0.0220			Grass: Short n= 0.150 P2= 3.00"			
0.3	40	0.0220	2.22		Shallow Concentrated Flow, Shallow Conc.			
					Grassed Waterway Kv= 15.0 fps			
0.1					Direct Entry, Minimum TC			
6.0	90	Total						
	S	umma	ry for Sub	catchme	nt 3S: PR-DA-3S - Upper Uniroyal Site			
Runoff	=	16.89 c	rfs @ 12.0	9 hrs, Volu	ime= 1.292 af, Depth= 5.07"			
Runoff b Type III :	y SCS TI 24-hr 25-	R-20 me Year Ra	ethod, UH=8 ainfall=6.23	SCS, Weigh	nted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs			
А	rea (sf)	CN	Description					
	8,648	89	<50% Gras	s cover, Po	or, HSG D			
	55,625	80	>75% Gras	s cover, Go	bod, HSG D			
	17,187	98	Paved park	ing, HSG D)			
	51,767	98	Roofs, HSG) D				
1	33,228	90	Weighted A	verage				
	64,274		48.24% Per	vious Area				
	68,954		51.76% lmp	pervious Ar	ea			
Tc	Length	Slope	e Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
6.0					Direct Entry, Minimum TC			

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 49

Summary for Subcatchment B26: Building 26

Runoff = 1.46 cfs @ 12.09 hrs. Volume= 0.122 af. Depth= 5.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

A	vrea (sf)	CN	Description		
	10,635	98	Roofs, HSG) D	
	10,635		100.00% Im	pervious A	rea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity) (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum TC

Summary for Subcatchment B27: Building 27

0.373 af. Depth= 5.99" Runoff 4.46 cfs @ 12.09 hrs. Volume= =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 25-Year Rainfall=6.23"

Α	rea (sf)	CN [Description		
	32,552	98 F	Roofs, HSG	D	
	32,552	1	100.00% Im	pervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum TC

Summary for Reach 1R: Discharge Pipe

4.988 ac. 13.04% Impervious. Inflow Depth = 4.25" for 25-Year event Inflow Area = 9.13 cfs @ 12.38 hrs, Volume= 9.13 cfs @ 12.39 hrs, Volume= 1.766 af 1.766 af, Atten= 0%, Lag= 0.4 min Inflow Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.90 fps, Min. Travel Time= 0.2 min Avg. Velocity = 1.58 fps, Avg. Travel Time= 0.5 min

Peak Storage= 117 cf @ 12.38 hrs Average Depth at Peak Storage= 1.39' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe n= 0.012 Length= 50.0' Slope= 0.0020 '/' Inlet Invert= 85.35', Outlet Invert= 85.25'

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 51



Summary for Reach 2R: Discharge Pipe

 14.943 ac, 15.05% Impervious, Inflow Depth = 4.29" for 25-Year event

 19.57 cfs @ 12.40 hrs, Volume=
 5.344 af

 19.55 cfs @ 12.42 hrs, Volume=
 5.344 af, Atten= 0%, Lag= 0.8 m
 Inflow Area = 5.344 af 5.344 af, Atten= 0%, Lag= 0.8 min Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 5.67 fps, Min. Travel Time= 0.4 min Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.0 min

Peak Storage= 483 cf @ 12.41 hrs Average Depth at Peak Storage= 1.66' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 25.19 cfs

30.0" Round Pipe n= 0.012 n= 0.012 Length= 140.0' Slope= 0.0032 '/' Inlet Invert= 87.15', Outlet Invert= 86.70'



Summary for Reach 2Ra: Perforated Pipe A

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 4.09" for
 25-Year event

 5.57 cfs @
 12.54 hrs, Volume=
 1.438 af

 5.56 cfs @
 12.61 hrs, Volume=
 1.438 af, Atten= 0%, Lag= 4.0 m
 Inflow Area = Inflow Outflow = 1.438 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 4.31 fps, Min. Travel Time= 2.1 min Avg. Velocity = 1.90 fps, Avg. Travel Time= 4.9 min

Peak Storage= 716 cf @ 12.57 hrs Average Depth at Peak Storage= 1.03' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.83 cfs Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 50



Summary for Reach 1Ra: Perforated Pipe

Inflow Area = Inflow Outflow =

2.276 ac, 15.81% Impervious, Inflow Depth = 4.31" for 25-Year event 3.84 cfs @ 12.38 hrs, Volume= 3.84 cfs @ 12.43 hrs, Volume= 0.817 af 0.817 af, Atten= 0%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.71 fps, Min. Travel Time= 1.6 min Avg. Velocity= 1.52 fps, Avg. Travel Time= 3.8 min

Peak Storage= 362 cf @ 12.40 hrs Average Depth at Peak Storage= 0.85' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.23 cfs

18.0" Round Pipe n= 0.012 Length= 350.0' Slope= 0.0030 '/' Inlet Invert= 87 20' Outlet Invert= 86 15'



Summary for Reach 1Rb: Perforated Pipe

Inflow Area = Inflow Inflow = Outflow =

 4.988 ac, 13.04% Impervious, Inflow Depth = 4.25" for 25-Year event

 9.13 cfs @ 12.36 hrs, Volume=
 1.766 af

 9.13 cfs @ 12.38 hrs, Volume=
 1.766 af, Atten= 0%, Lag= 1.1 m
 1.766 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.90 fps, Min. Travel Time= 0.6 min Avg. Velocity = 1.58 fps, Avg. Travel Time= 1.6 min

Peak Storage= 351 cf @ 12.37 hrs Average Depth at Peak Storage= 1.40' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe n= 0.012 Length= 150.0' Slope= 0.0020 '/' Inlet Invert= 85.65'. Outlet Invert= 85.35'

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18.0" Round Pipe n= 0.012 Length= 555.0' Slope= 0.0036 '/' Inlet Invert= 92.00', Outlet Invert= 90.00'



Summary for Reach 2Rb: Perforated Pipe B

Inflow Area = Outflow = Inflow

 10.585 ac,
 4.84% Impervious, Inflow Depth = 4.09" for 25-Year event

 12.29 cfs @
 12.59 hrs, Volume=
 3.611 af

 12.28 cfs @
 12.63 hrs, Volume=
 3.611 af, Atten= 0%, Lag= 2.4 m
 3.611 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 5.28 fps, Min. Travel Time= 1.2 min Avg. Velocity = 2.37 fps, Avg. Travel Time= 2.8 min

Peak Storage= 919 cf @ 12.61 hrs Average Depth at Peak Storage= 1.39' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 14.85 cfs

24.0" Round Pipe n= 0.012 Length= 395.0' Slope= 0.0037 '/' Inlet Invert= 89.50', Outlet Invert= 88.05'



Summary for Reach 2Rc: Perforated Pipe C

Inflow Area = Inflow Inflow = Outflow =

 13.951 ac,
 9.01% Impervious, Inflow Depth = 4.17"
 for 25-Year event

 18.14 cfs @
 12.52 hrs, Volume=
 4.849 af

 18.13 cfs @
 12.54 hrs, Volume=
 4.849 af, Atten= 0%, Lag= 0.8 m
 4.849 af. Atten= 0%. Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max, Velocity= 5.49 fps, Min, Travel Time= 0.4 min Avg. Velocity = 2.31 fps, Avg. Travel Time= 0.9 min

Peak Storage= 429 cf @ 12.53 hrs Average Depth at Peak Storage= 1.59' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 24.65 cfs Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 53

30.0" Round Pipe n= 0.012 Length= 130.0' Slope= 0.0031 '/' Inlet Invert= 87.55', Outlet Invert= 87.15'



Summary for Reach 3R: Uniroyal South Outfall (Exist.)

 18.001 ac, 21.28% Impervious, Inflow Depth = 4.42" for 25-Year event

 35.08 cfs @ 12.10 hrs, Volume=
 6.636 af

 34.72 cfs @ 12.10 hrs, Volume=
 6.636 af, Atten= 1%, Lag= 0.2 m
 Inflow Area = Inflow Outflow 6.636 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 16.56 fps, Min. Travel Time= 0.2 min Avg. Velocity = 5.78 fps, Avg. Travel Time= 0.5 min

Peak Storage= 369 cf @ 12.10 hrs Average Depth at Peak Storage= 1.11' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 85.65 cfs

30.0" Round Pipe n= 0.013 Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Summary for Reach 4Ra: 15" HDPE

Inflow Area = Inflow Outflow

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 4.09" for 25-Year event

 5.57 cfs @
 12.54 hrs, Volume=
 1.438 af

 5.57 cfs @
 12.54 hrs, Volume=
 1.438 af, Atten= 0%, Lag= 0.0 m
 1.438 af 1.438 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.30 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.70 fps, Avg. Travel Time= 0.0 min

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 55

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.50 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.44 fps, Avg. Travel Time= 0.0 min

Peak Storage= 7 cf @ 12.36 hrs Average Depth at Peak Storage= 0.71' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 5Ra: 12" HDPE

Inflow Area	a =	2.276 ac,	15.81% Imp	ervious,	Inflow Dep	th = 4	.31" fo	r 25-`	Year eve	ent
Inflow	=	3.84 cfs @	12.38 hrs,	Volume	= Ö	.817 af				
Outflow	=	3.84 cfs @	12.38 hrs,	Volume	= 0	.817 af,	Atten=	0%,	Lag= 0.	1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.53 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.38 hrs Average Depth at Peak Storage= 0.62' Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe n = 0.012Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 54

Peak Storage= 3 cf @ 12.54 hrs Average Depth at Peak Storage= 0.67' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.50', Outlet Invert= 93.40'



Summary for Reach 4Rb: 15" HDPE

Inflow Area = Inflow = Outflow

 4.34% Impervious, Inflow Depth = 4.09" for 25-Year event

 12.57 hrs, Volume=
 2.174 af

 12.57 hrs, Volume=
 2.174 af, Atten= 0%, Lag= 0.0 min
 6.371 ac, 4.34% Impervious, Ir 6.74 cfs @ 12.57 hrs, Volume= 6.74 cfs @ 12.57 hrs, Volume=

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.67 fps, Min. Travel Time= 0.0 min Avg. Velocity= 4.08 fps, Avg. Travel Time= 0.0 min

Peak Storage= 8 cf @ 12.57 hrs Average Depth at Peak Storage= 0.76' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 4Rc: 15" HDPE

Inflow Area = Inflow = Outflow

6.14 cfs @ 12.36 hrs, Volume= 6.14 cfs @ 12.36 hrs, Volume=

3.366 ac, 22.13% Impervious, Inflow Depth = 4.41" for 25-Year event 1.238 af 1.238 af, Atten= 0%, Lag= 0.0 min

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Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-h	r 25-Year Rainfall=6.23
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Summary for Reach 5Rb: 15" HDPE

2.712 ac, 10.71% Impervious, Inflow Depth = 4.20" for 25-Year event 5.33 cfs @ 12.32 hrs. Volume= 0.949 af Inflow Area = Inflow 5.33 cfs @ 12.32 hrs, Volume= 5.33 cfs @ 12.32 hrs, Volume= Outflow 0.949 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs. dt= 0.05 hrs Max. Velocity= 5.63 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.30 fps, Avg. Travel Time= 0.1 min

Peak Storage= 12 cf @ 12.32 hrs Average Depth at Peak Storage= 0.90' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.14 cfs

15.0" Round Pine n= 0.012 Length= 13.0' Slope= 0.0077 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Summary for Pond 1Pa: CB-17B Basin

Inflow Are	a =	2.276 ac, 15.81% Impervious, Inflow Depth = 4.31" for 25-Year event	
Inflow	=	11.09 cfs @ 12.09 hrs, Volume= 0.817 af	
Outflow	=	3.84 cfs @ 12.38 hrs, Volume= 0.817 af, Atten= 65%, Lag= 17.3 min	
Primary	=	3.84 cfs @ 12.38 hrs, Volume= 0.817 af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.50' @ 12.38 hrs Surf.Area= 8,803 sf Storage= 8,782 cf

Plug-Flow detention time= 46.2 min calculated for 0.816 af (100% of inflow) Center-of-Mass det. time= 46.4 min (851.2 - 804.8)

Volume	Invert	Avail.Stor	age Storag	e Description	
#1	97.00'	25,35	0 cf Custor	n Stage Data (Pri	smatic) Listed below (Recalc)
Elevation	Surf.A	rea	Inc.Store	Cum.Store	
(feet)	(SI	q-ft)	(cubic-feet)	(cubic-feet)	
97.00	2,	500	0	0	
98.00	7,	100	4,800	4,800	
99.00	10,	500	8,800	13,600	
100.00	13.	000	11.750	25.350	

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Dovice	Pouting	Invort	Outlot Dovio		
Jevice #1	Brimony	07.22	2 0" x 2 0" H	eriz Catab Pasin X 5 00 colu	mac
#1	Primary	97.33	2.0 X 2.0 H	0 600 in 24 0" x 24 0" Croto (17% open eree)
			Limited to we	bir flow at low beads	1776 Open alea)
#2	Primary	97.00	1 020 in/br E	viltration over Surface area	
72	Trindiy	57.00	Conductivity	to Groundwater Elevation = 8	2.50'
Drimory		1av-3 84 cfc (@ 12.38 bre ∐	W-98 50' (Free Discharge)	
	tch Basin (Orifice Contro	⊜ 12.30 m 3 m	5 21 fns)	
-2=Fx	filtration ()	Controls 0 22	cfs)	5.21 (p3)	
		CONTRICTO CILL	0.0)		
		Si	ummary for I	Pond 1Pb: CB-16B Basin	
nflow A	rea =	2.712 ac, 10.	.71% Imperviou	us, Inflow Depth = 4.20" for	or 25-Year event
nflow	= 12	2.93 cfs @ 1	2.09 hrs, Volu	me= 0.949 af	
Dutflow	= 5	5.33 cfs @ 1	2.32 hrs, Volu	me= 0.949 af, Atten=	59%, Lag= 13.6 min
rimary	= 5	5.33 cfs @ 1	2.32 hrs, Volu	me= 0.949 af	
Douting	by Ctor Ind	mothed Time	Cnon 0.00 0	0.00 hrs. dt. 0.05 hrs.	
	Dy Stor-Ind	nethou, nine	Span= 0.00-6	0.00 HIS, 01= 0.05 HIS	
Car Li	5v= 30.43 @	S 12.02 1113 V	Jun.Alea- 3,00	00 31 01018ge= 0,050 Ci	
Plua-Flo	w detention	time= 41.1 m	nin calculated for	or 0.949 af (100% of inflow)	
Center-	of-Mass det.	time= 41.3 m	nin (848.7 - 80	7.5)	
			(
/olume	Invert	t Avail.Sto	rage Storage	Description	
#1	97.00	27,6	53 cf Custom	n Stage Data (Prismatic) Liste	d below (Recalc)
Elevatio	on S	urf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
97.0	00	2,945	0	0	
98.0	00	7,130	5,038	5,038	
99.0	00	11,400	9,265	14,303	
100.0	00	15,300	13,350	27,653	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	97.33'	2.0" x 2.0" H	oriz. Catch Basin X 6.00 colu	mns
			X 6 rows C=	0.600 in 24.0" x 24.0" Grate (25% open area)
			Limited to we	eir flow at low heads	. ,
#2	Primary	97.00'	1.020 in/hr E	xfiltration over Surface area	
	-		Conductivity	to Groundwater Elevation = 8	2.50'
Primary	OutFlow N	/lax=5.32 cfs	@ 12.32 hrs H	W=98.45' (Free Discharge)	
F−1=Ca	tch Basin (Orifice Contro	ols 5.10 cfs @	5.10 fps)	
└─2=Ex	filtration (Controls 0.23	cfs)		

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr 25-Year Rainfall=6.23"

Proposed Conditions - Uniroyal and Facemate - Atlas 14 Type III 24-hr	25-Year Rainfall=6.23"
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Summary for Pond 2Pa: CB-8A Basin

Inflow Area =		4.214 ac,	5.58% Impervious, Inflow D	epth = 4.09" for 25-Year event
Inflow	=	16.47 cfs @	12.16 hrs, Volume=	1.438 af
Outflow	=	5.57 cfs @	12.54 hrs, Volume=	1.438 af, Atten= 66%, Lag= 22.7 min
Primary	=	5.57 cfs @	12.54 hrs, Volume=	1.438 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.46' @ 12.54 hrs Surf.Area= 17,617 sf Storage= 17,609 cf

Plug-Flow detention time= 51.5 min calculated for 1.437 af (100% of inflow) Center-of-Mass det. time= 51.6 min (867.1 - 815.5)

Volume	Ir	nvert	Avail.Sto	rage	Storage	Description	
#1	97	7.00'	47,7	80 cf	Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevatio (fee	on et)	Surf.A (so	rea q-ft)	Inc. (cubic	Store -feet)	Cum.Store (cubic-feet)	
97.0	00	3,	000		0	0	
98.0	00	16,	420	9	9,710	9,710	
99.0	00	19,	000	1	7,710	27,420	
100.0	00	21,	720	2	0,360	47,780	
Device	Routin	a	Invert	Outle	t Device	s	

#1	Primary	97.33	2.0" x 2.0" Horiz. Catch Basin X 6.00 columns
			X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area)
			Limited to weir flow at low heads
#2	Primary	97.00'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 80.00'

Primary OutFlow Max=5.57 cfs @ 12.54 hrs HW=98.46' (Free Discharge) 1=Catch Basin (Orifice Controls 5.13 cfs @ 5.13 fps) 2=Exfiltration (Controls 0.44 cfs)

Summary for Pond 2Pb: CB-11A Basin

Inflow Are	a =	6.371 ac,	4.34% Impervious, Inflow	v Depth = 4.09" for 25-Year event			
Inflow	=	26.22 cfs @	12.14 hrs, Volume=	2.174 af			
Outflow	=	6.74 cfs @	12.57 hrs, Volume=	2.174 af, Atten= 74%, Lag= 25.6 min			
Primary	=	6.74 cfs @	12.57 hrs, Volume=	2.174 af			
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 96.42' @ 12.57 hrs Surf.Area= 26,637 sf Storage= 28,812 cf							

Plug-Flow detention time= 47.3 min calculated for 2.172 af (100% of inflow) Center-of-Mass det. time= 47.4 min (861.2 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	94.50'	78,798 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
94.5	50	1,720	0	0	
95.0	00	7,950	2,418	2,418	
96.0	00	23,855	15,903	18,320	
97.0	00	30,550	27,203	45,523	
98.0	00	36,000	33,275	78,798	
Device	Routing	Invert	Outlet Devices		
#1	Primarv	94.83	2.0" x 2.0" Hori	z. Catch Basi	n X 6.00 columns
#2	Primary	94.50'	X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 80.50'		

Primary OutFlow Max=6.74 cfs @ 12.57 hrs HW=96.41' (Free Discharge) 1=Catch Basin (Orifice Controls 6.06 cfs @ 6.06 fps) 2=Exfiltration (Controls 0.67 cfs)

Summary for Pond 2Pc: CB-13A Basin

Inflow Area	a =	3.366 ac, 22.13% Impervious, Inflow Depth = 4.41" for 25-Year event
Inflow	=	16.74 cfs @ 12.09 hrs, Volume= 1.238 af
Outflow	=	6.14 cfs @ 12.36 hrs, Volume= 1.238 af, Atten= 63%, Lag= 16.0 min
Primary	=	6.14 cfs @ 12.36 hrs, Volume= 1.238 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 96.34' @ 12.36 hrs Surf.Area= 9,134 sf Storage= 12,260 cf

Plug-Flow detention time= 35.7 min calculated for 1.237 af (100% of inflow) Center-of-Mass det. time= 35.9 min (837.9 - 802.1)

Volume	Inv	vert Ava	ail.Storage	Storage De	escription		
#1	94.	.50'	31,216 c	Custom St	age Data (Pris	smatic) Listed below (Recalc)	
Elevatio	n	Surf.Area	Ir	nc.Store	Cum.Store		
(fee	et)	(sq-ft)	(cul	oic-feet)	(cubic-feet)		
94.5	50	1,580		0	0		
95.0	00	6,285		1,966	1,966		
96.0	00	8,420		7,353	9,319		
97.0	00	10,550		9,485	18,804		
98.0	00	14,275		12,413	31,216		
Device	Routing	ı lı	nvert Ou	utlet Devices			
#1	Primary	, O	1 83' 20	" x 2 0" Hori-	Catch Basin	X 6 00 columns	

Primary X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) 94.50' 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 80.50' #2 Primary

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Primary OutFlow Max=6.14 cfs @ 12.36 hrs HW=96.33' (Free Discharge) 1=Catch Basin (Orifice Controls 5.91 cfs @ 5.91 fps) 2=Exfiltration (Controls 0.24 cfs)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Are	ea =	4.988 ac,	13.04% Impervious,	Inflow Depth = 4	.25" for 25-Year event
Inflow	=	9.13 cfs @	12.39 hrs, Volume	= 1.766 af	
Primary	=	9.13 cfs @	12.39 hrs, Volume	= 1.766 af,	, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Chicopee River

nflow Ar	ea =	18.001 ac, 21.28% Impervious, Infle	ow Depth = 4.42"	for 25-Year event
nflow	=	34.72 cfs @ 12.10 hrs, Volume=	6.636 af	
Primary	=	34.72 cfs @ 12.10 hrs, Volume=	6.636 af, Atte	n= 0%, Lag= 0.0 min

Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr	100-Year Rainfall=8.07"
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Summary for Subcatchment 1Sa: PR-DA-1S - CB-17B Catchment

Runoff = 15.34 cfs @ 12.09 hrs, Volume= 1.146 af, Depth= 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

Ar	rea (sf)	CN I	Description					
	74,164	80 ;	>75% Gras	s cover, Go	ood, HSG D			
	6,867	98 I	Paved park	ing, HSG D				
	6,237	98 I	Roofs, HSC	ΒĎ				
	2,569	98 N	Nater Surfa	ace, HSG D)			
	9,314	79 \	Noods, Fai	r, HSG D				
	99.151	83 N	Neiahted A	verage				
	83,478	8	34.19% Per	vious Area				
	15,674		15.81% lmp	pervious Ar	ea			
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·			
0.6	50	0.0280	1.33		Sheet Flow, Sheet Flow			
					Smooth surfaces n= 0.011 P2= 3.00"			
2.6	190	0.0150	1.22		Shallow Concentrated Flow, Shallow Conc. 1			
					Nearly Bare & Untilled Kv= 10.0 fps			
0.7	96	0.0490	2.21		Shallow Concentrated Flow, Shallow Conc. 2			
					Nearly Bare & Untilled Kv= 10.0 fps			
2.1					Direct Entry, Minimum TC			
6.0	336	Total						
	S	ummar	v for Sub	catchmer	t 1Sb: PR-DA-1S - CB-16B Catchment			
Runoff	=	18.00 c	fs @ 12.0	9 hrs, Volu	me= 1.339 af, Depth= 5.93"			
Runoff by	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs							

Area (sf)	CN	Description
93,694	80	>75% Grass cover, Good, HSG D
10,157	98	Paved parking, HSG D
2,498	98	Water Surface, HSG D
11,795	79	Woods, Fair, HSG D
118,144	82	Weighted Average
105,489		89.29% Pervious Area
12,655		10.71% Impervious Area
	Area (sf) 93,694 10,157 2,498 11,795 118,144 105,489 12,655	Area (sf) CN 93,694 80 10,157 98 2,498 98 11,795 79 118,144 82 105,489 12,655

Direct Entry, Minimum TC

Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr	100-Year Rainfall=8.07"
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Summary for Subcatchment 2Sa: PR-DA-2S - CB-8A Catchment

Runoff = 23.11 cfs @ 12.16 hrs, Volume= 2.040 af, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

A	rea (sf)	CN	Description		
	65,088	80	>75% Gras	s cover, Go	od, HSG D
	5,904	98	Paved park	ing, HSG D	
	1,265	98	Roofs, HSC	θĎ	
	3,083	98	Water Surfa	ace, HSG D	
	8,216	79	Woods, Fai	r, HSG D	
	83,555	81	Weighted A	verage	
	73,304		94.42% Per	rvious Area	
	10,251		5.58% Impe	ervious Area	3
Tc	Length	Slope	e Velocity	Capacity	Description
<u>(min)</u>	(feet)	(ft/ft) (ft/sec)	(cfs)	
8.8	50	0.0070	0.09		Sheet Flow, Sheet Flow
					Grass: Short n= 0.150 P2= 3.00"
3.1	235	0.0070) 1.25		Shallow Concentrated Flow, Shallow Conc. 1
					Grassed Waterway Kv= 15.0 fps
11.9	285	Total			
	S	ummai	ry for Sub	catchmen	t 2Sb: PR-DA-2S - CB-11A Catchment
Runoff	=	36.75 0	rfs @ 12.1	4 hrs, Volu	me= 3.084 af, Depth= 5.81"
Runoff b	by SCS T	R-20 me	ethod, UH=	SCS, Weigh	ited-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
Type III	24-hr 10	0-Year F	Rainfall=8.0	7"	
		~			
A	rea (st)	CN	Description		
2	265,478	80	>75% Gras	s cover, Go	od, HSG D
	10,628	98	Paved park	ing, HSG D	
	1,422	98	Water Surfa	ace, HSG D	
	77 500	04			
4	277,520	81	vveighted P	verage	

2	277,528 265,478 12,050	81 V 9 4	Veighted A 5.66% Per .34% Impe	verage vious Area ervious Area	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0090	0.10		Sheet Flow, Sheet Flow
					Grass: Short n= 0.150 P2= 3.00"
2.0	175	0.0090	1.42		Shallow Concentrated Flow, Shallow Conc. 1
					Grassed Waterway Kv= 15.0 fps
10.0	225	Total			

Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr	100-Year Rainfall=8.07'
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Summary for Subcatchment 2Sc: PR-DA-2S - CB-13A Catchment

Runoff = 23.02 cfs @ 12.09 hrs, Volume= 1.729 af, Depth= 6.16"

Tc Length Slope Velocity Capacity Description nin) (feet) (ft/ft) (ft/sec) (cfs)

(min) (feet) 6.0

Runoff

=

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

_	A	ea (sf)	CN	Description		
	1	08,361	80	>75% Gras	s cover, Go	od, HSG D
		30,845	98	Paved park	ing, HSG D)
		1,607	98	Water Surfa	ace, HSG D	
_		5,822	79	Woods, Fai	r, HSG D	
	1	46,635	84	Weighted A	verage	
	1	14,183		77.87% Per	vious Area	
		32,452		22.13% lmp	pervious Ar	ea
	Tc	Length	Slope	 Velocity 	Capacity	Description
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)	
	5.6	50	0.0220	0.15		Sheet Flow, Sheet Flow
						Grass: Short n= 0.150 P2= 3.00"
	0.3	40	0.0220) 2.22		Shallow Concentrated Flow, Shallow Conc.
						Grassed Waterway Kv= 15.0 fps
_	0.1					Direct Entry, Minimum TC
	6.0	90	Total			

Summary for Subcatchment 3S: PR-DA-3S - Upper Uniroyal Site

22.50 cfs @ 12.09 hrs, Volume= 1.752 af, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area (sf)	CN	Description
8,648	89	<50% Grass cover, Poor, HSG D
55,625	80	>75% Grass cover, Good, HSG D
17,187	98	Paved parking, HSG D
51,767	98	Roofs, HSG D
133,228	90	Weighted Average
64,274		48.24% Pervious Area
68,954		51.76% Impervious Area
Tc Length (min) (feet)	Slop (ft/	be Velocity Capacity Description tt) (ft/sec) (cfs)
6.0		Direct Entry, Minimum TC

Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc HydroCADB 010.025 sh 10405 © 2019 HydroCAD Software Solutions LLC Page 64

Summary for Subcatchment B26: Building 26

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.159 af, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area (sf)	CN Description	
10,635	98 Roofs, HSG D	
10,635	100.00% Impervious Are	a
Tc Length (min) (feet) 6.0	Slope Velocity Capacity (ft/ft) (ft/sec) (cfs)	Description Direct Entry, Minimum TC

Summary for Subcatchment B27: Building 27

Runoff = 5.78 cfs @ 12.09 hrs, Volume= 0.488 af, Depth= 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Type III 24-hr 100-Year Rainfall=8.07"

Area	ı (sf)	CN D	escription							
32,	,552	98 R	oofs, HSG	D						
32,	,552	1	00.00% lm	pervious A	rea					
Tc Le (min) (ength (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	n				
6.0					Direct Entr	y, Minimu	ım TC			
	Summary for Reach 1R: Discharge Pipe									
Inflow Area	=	4.988 10.88 cf	ac, 13.04% s @ 12.43	6 Impervio 3 hrs, Volu	us, Inflow D me=	epth = 5. 2.486 af	.98" for 1	00-Year e	event	
Outflow :	=	10.87 cf:	s@ 12.44	4 hrs, Volu	me=	2.486 af,	Atten= 0%	, Lag= 0).4 min	
Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.98 fps, Min. Travel Time= 0.2 min Avg. Velocity = 1.70 fps, Avg. Travel Time= 0.5 min										
Peak Storage= 137 cf @ 12.43 hrs Average Depth at Peak Storage= 1.63' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs										
24.0" Round Pipe										

n= 0.012 Length= 50.0' Slope= 0.0020 '/' Inlet Invert= 85.35', Outlet Invert= 85.25' Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 65



Summary for Reach 1Ra: Perforated Pipe

2.276 ac, 15.81% Impervious, Inflow Depth = 6.04" for 100-Year event Inflow Area = Inflow Outflow

4.55 cfs @ 12.42 hrs, Volume= 4.55 cfs @ 12.47 hrs, Volume= 1.146 af 1.146 af, Atten= 0%, Lag= 2.7 min Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.85 fps, Min. Travel Time= 1.5 min Avg. Velocity= 1.64 fps, Avg. Travel Time= 3.5 min

Peak Storage= 414 cf @ 12.44 hrs Average Depth at Peak Storage= 0.95' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.23 cfs

18.0" Round Pipe n= 0.012 Length= 350.0' Slope= 0.0030 '/' Inlet Invert= 87 20' Outlet Invert= 86 15'



Summary for Reach 1Rb: Perforated Pipe

 4.988 ac, 13.04% Impervious, Inflow Depth = 5.98" for 100-Year event

 10.88 cfs @ 12.41 hrs, Volume=
 2.486 af

 10.88 cfs @ 12.43 hrs, Volume=
 2.486 af, Atten= 0%, Lag= 1.3 min
 Inflow Area = Inflow = Outflow = 2.486 af 2.486 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 3.98 fps, Min. Travel Time= 0.6 min Avg. Velocity = 1.71 fps, Avg. Travel Time= 1.5 min

Peak Storage= 410 cf @ 12.42 hrs Average Depth at Peak Storage= 1.63' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 10.96 cfs

24.0" Round Pipe Length= 150.0' Slope= 0.0020 '/' Inlet Invert= 85.65', Outlet Invert= 85.35'

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18.0" Round Pipe n= 0.012 Length= 555.0' Slope= 0.0036 '/' Inlet Invert= 92.00', Outlet Invert= 90.00'



Summary for Reach 2Rb: Perforated Pipe B

 10.585 ac,
 4.84% Impervious, Inflow Depth = 5.81" for 100-Year event

 14.46 cfs @
 12.64 hrs, Volume = 5.123 af

 14.45 cfs @
 12.68 hrs, Volume = 5.123 af, Atten = 0%, Lag = 2.5 mir
 Inflow Area = 5.123 af 5.123 af, Atten= 0%, Lag= 2.5 min Inflow Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 5.39 fps, Min. Travel Time= 1.2 min Avg. Velocity = 2.57 fps, Avg. Travel Time= 2.6 min

Peak Storage= 1,060 cf @ 12.66 hrs Average Depth at Peak Storage= 1.59' Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 14.85 cfs

24.0" Round Pipe n= 0.012 Length= 395.0' Slope= 0.0037 '/' Inlet Invert= 89.50', Outlet Invert= 88.05'



Summary for Reach 2Rc: Perforated Pipe C

6.852 af. Atten= 0%, Lag= 0.8 min

 13.951 ac,
 9.01% Impervious, Inflow Depth =
 5.89" for 100-Year event

 21.52 cfs @
 12.57 hrs, Volume=
 6.852 af

 21.50 cfs @
 12.58 hrs, Volume=
 6.852 af, Atten= 0%, Lag= 0.8 mir
 Inflow Area = Inflow Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max. Velocity= 5.66 fps, Min. Travel Time= 0.4 min Avg. Velocity = 2.52 fps, Avg. Travel Time= 0.9 min

Peak Storage= 494 cf @ 12.57 hrs Average Depth at Peak Storage= 1.81' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 24.65 cfs Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Printed 5/18/2021 Page 66



Summary for Reach 2R: Discharge Pipe

 14.943 ac,
 15.05% Impervious, Inflow Depth =
 6.02" for 100-Year event

 23.23 cfs @
 12.41 hrs, Volume=
 7.499 af

 23.21 cfs @
 12.42 hrs, Volume=
 7.499 af, Atten= 0%, Lag= 0.8 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 5.82 fps, Min. Travel Time= 0.4 min Avg. Velocity = 2.46 fps, Avg. Travel Time= 0.9 min

Peak Storage= 558 cf @ 12.41 hrs Average Depth at Peak Storage= 1.89' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 25.19 cfs

30.0" Round Pipe n= 0.012 Length= 140.0' Slope= 0.0032 '/' Inlet Invert= 87.15', Outlet Invert= 86.70'



Summary for Reach 2Ra: Perforated Pipe A

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 5.81" for 100-Year event

 6.65 cfs @
 12.58 hrs, Volume=
 2.040 af

 6.64 cfs @
 12.65 hrs, Volume=
 2.040 af, Atten= 0%, Lag= 4.4 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 3 Max, Velocity= 4.40 fps, Min, Travel Time= 2.1 min Avg. Velocity = 2.05 fps, Avg. Travel Time= 4.5 min

Peak Storage= 837 cf @ 12.62 hrs Average Depth at Peak Storage= 1.19' Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.83 cfs

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30.0" Round Pipe n= 0.012 Length= 130.0' Slope= 0.0031 '/' Inlet Invert= 87.55', Outlet Invert= 87.15'



Summary for Reach 3R: Uniroyal South Outfall (Exist.)

Inflow Area = Inflow Inflow = Outflow =

18.001 ac, 21.28% Impervious, Inflow Depth = 6.17" for 100-Year event 44.81 cfs @ 12.10 hrs, Volume= 44.38 cfs @ 12.10 hrs, Volume= 9.251 af 9.251 af. Atten= 1%. Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 17.62 fps, Min. Travel Time= 0.2 min Avg. Velocity = 6.39 fps, Avg. Travel Time= 0.5 min

Peak Storage= 443 cf @ 12.10 hrs Average Depth at Peak Storage= 1.28' Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 85.65 cfs

30.0" Round Pipe n= 0.013 Length= 175.0' Slope= 0.0436 '/' Inlet Invert= 85.85', Outlet Invert= 78.22'



Summary for Reach 4Ra: 15" HDPE

Inflow Area = Inflow Inflow = Outflow =

 4.214 ac,
 5.58% Impervious, Inflow Depth =
 5.81" for 100-Year event

 6.65 cfs @
 12.58 hrs, Volume=
 2.040 af

 6.65 cfs @
 12.58 hrs, Volume=
 2.040 af
 2.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.65 fps, Min. Travel Time= 0.0 min Avg. Velocity = 4.00 fps, Avg. Travel Time= 0.0 min

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Peak Storage= 4 cf @ 12.58 hrs Average Depth at Peak Storage= 0.75' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.50', Outlet Invert= 93.40'



Summary for Reach 4Rb: 15" HDPE

6.371 ac, 4.34% Impervious, In 7.83 cfs @ 12.61 hrs, Volume= 7.83 cfs @ 12.61 hrs, Volume=
 4.34% Impervious, Inflow Depth = 5.81"
 for 100-Year event

 12.61 hrs, Volume=
 3.084 af

 12.61 hrs, Volume=
 3.084 af, Atten= 0%, Lag= 0.0 min
 Inflow Area = Inflow = Outflow =

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.94 fps, Min. Travel Time= 0.0 min Avg. Velocity = 4.44 fps, Avg. Travel Time= 0.0 min

Peak Storage= 9 cf @ 12.61 hrs Average Depth at Peak Storage= 0.84' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 4Rc: 15" HDPE

Inflow Area = Inflow Outflow

 3.366 ac, 22.13% Impervious, Inflow Depth = 6.16" for 100-Year event

 7.34 cfs @ 12.40 hrs, Volume=
 1.729 af

 7.34 cfs @ 12.40 hrs, Volume=
 1.729 af, Atten= 0%, Lag= 0.0 min
 1.729 af, Atten= 0%, Lag= 0.0 min

Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr	100-Year Rainfall=8.07"
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	-

Summary for Reach 5Rb: 15" HDPE

 2.712 ac,
 10.71% Impervious, Inflow Depth =
 5.93" for
 100-Year event

 6.36 cfs @
 12.37 hrs, Volume=
 1.339 af
 1.339 af

 6.36 cfs @
 12.37 hrs, Volume=
 1.339 af, Atten= 0%, Lag= 0.2 min
 Inflow Area = Inflow 6.36 cfs @ 12.37 hrs, Volume= 6.36 cfs @ 12.37 hrs, Volume= Outflow

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 5.70 fps, Min. Travel Time= 0.0 min Avg. Velocity = 2.48 fps, Avg. Travel Time= 0.1 min

Peak Storage= 15 cf @ 12.37 hrs Average Depth at Peak Storage= 1.07' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.14 cfs

15.0" Round Pine n= 0.012 Length= 13.0' Slope= 0.0077 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Summary for Pond 1Pa: CB-17B Basin

Inflow Are	ea =	2.276 ac, 15.81% Impervious, Inflow Depth = 6.04" for 100-Year event
Inflow	=	15.34 cfs @ 12.09 hrs, Volume= 1.146 af
Outflow	=	4.55 cfs @ 12.42 hrs, Volume= 1.146 af, Atten= 70%, Lag= 20.0 min
Primary	=	4.55 cfs @ 12.42 hrs, Volume= 1.146 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.97' @ 12.42 hrs Surf.Area= 10,404 sf Storage= 13,304 cf

Plug-Flow detention time= 44.2 min calculated for 1.146 af (100% of inflow) Center-of-Mass det. time= 44.1 min (839.4 - 795.3)

Volume	Invert	Avail.Storage	Storage	Description
#1	97.00'	25,350 cf	Custom	Stage Data (Prismatic) Listed below (Recalc)
Elevation	Surf.A	rea Inc	Store	Cum.Store

Elevation (feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
97.00	2,500	0	0
98.00	7,100	4,800	4,800
99.00	10,500	8,800	13,600
100.00	13,000	11,750	25,350

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Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 8.83 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.72 fps, Avg. Travel Time= 0.0 min

Peak Storage= 8 cf @ 12.40 hrs Peak Storage= o cr @ 12.40 fts Average Depth at Peak Storage= 0.80' Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.90 cfs

15.0" Round Pipe n= 0.012 Length= 10.0' Slope= 0.0200 '/' Inlet Invert= 91.00', Outlet Invert= 90.80'



Summary for Reach 5Ra: 12" HDPE

Inflow Area = Inflow = Outflow = Inflow

 2.276 ac, 15.81% Impervious, Inflow Depth = 6.04" for 100-Year event

 4.55 cfs @ 12.42 hrs, Volume=
 1.146 af

 4.55 cfs @ 12.42 hrs, Volume=
 1.146 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Max. Velocity= 7.78 fps, Min. Travel Time= 0.0 min Avg. Velocity = 3.44 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 12.42 hrs Average Depth at Peak Storage= 0.70' Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe n = 0.012Length= 5.0' Slope= 0.0200 '/' Inlet Invert= 93.60', Outlet Invert= 93.50'



Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07" Printed 5/18/2021 Page 72

Routing	Invert	Outlet Devices
Primary	97.33'	2.0" x 2.0" Horiz. Catch Basin X 5.00 columns
		X 5 rows C= 0.600 in 24.0" x 24.0" Grate (17% open area)
		Limited to weir flow at low heads
Primary	97.00'	1.020 in/hr Exfiltration over Surface area
		Conductivity to Groundwater Elevation = 82.50'
OutFlow	Max=4.55 cfs @	2 12.42 hrs HW=98.97' (Free Discharge)
	Routing Primary Primary OutFlow	Routing Invert Primary 97.33' Primary 97.00' OutFlow Max=4.55 cfs @

1=Catch Basin (Orifice Controls 4.28 cfs @ 6.17 fps) 2=Exfiltration (Controls 0.27 cfs)

Summary for Pond 1Pb: CB-16B Basin

Inflow Are	ea =	2.712 ac, 1	10.71% Impervious,	Inflow Depth = 5.	.93" for 100-	-Year event
Inflow	=	18.00 cfs @	12.09 hrs, Volume	= 1.339 af		
Outflow	=	6.36 cfs @	12.37 hrs, Volume	 = 1.339 af, 	Atten= 65%,	Lag= 16.6 min
Primary	=	6.36 cfs @	12.37 hrs, Volume	= 1.339 af		

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 98.92' @ 12.37 hrs Surf.Area= 11,067 sf Storage= 13,425 cf

Plug-Flow detention time= 37.4 min calculated for 1.339 af (100% of inflow) Center-of-Mass det. time= 37.6 min (835.4 - 797.8)

#1	97.	00' 27,6	53 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevatio	on	Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
97.0	00	2,945	0	0	
98.0	00	7,130	5,038	5,038	
99.0	00	11,400	9,265	14,303	
100.0	00	15,300	13,350	27,653	
Device	Routing	Invert	Outlet Device	s	
#1	Primary	97.33'	2.0" x 2.0" Ho	oriz. Catch Basi	n X 6.00 columns
			X 6 rows C=	0.600 in 24.0" x	24.0" Grate (25% open area)
			Limited to we	ir flow at low he	ads
#2	Primary	97.00'	1.020 in/hr E	diltration over	Surface area
			Conductivity	o Groundwater	Elevation = 82.50'

1=Catch Basin (Orifice Controls 6.07 cfs @ 6.07 fps) **2=Exfiltration** (Controls 0.28 cfs)

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Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07" Prepared by BETA Group, Inc Printed 5/18/2021 HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 73	Proposed Conditions - Uniroyal and Facemate - Atlas 1 Type III 24-hr 100-Year Rainfall=8.07 Prepared by BETA Group, Inc Printed 5/18/202: HydroCAD® 10.00-25 s/n 10405 © 2019 HydroCAD Software Solutions LLC Page 74
Summary for Pond 2Pa: CB-8A Basin	Elevation Surf.Area Inc.Store Cum.Store
Inflow Area = 4.214 ac, 5.58% Impervious, Inflow Depth = 5.81" for 100-Year event	94.50 1,720 0 0 55.00 7,050 2,418 2,418
$Inflow = 23.11 \text{ cfs} \oplus 12.16 \text{ hrs}, \text{ volume} = 2.040 \text{ at}$	96.00 23.855 15.903 18.320
Outlow = 0.00 c/s @ 12.00 m/s, Volume= 2.040 al, Auter = 71%, Lag = 20.0 min	97.00 30.550 27.203 45.523
	98.00 36,000 33,275 78,798
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs	
Peak Elev= 98.97' @ 12.58 hrs Surf.Area= 18,921 sf Storage= 26,838 cf	Device Routing Invert Outlet Devices
	#1 Primary 94.83' 2.0" x 2.0" Horiz. Catch Basin X 6.00 columns
Plug-Flow detention time= 52.5 min calculated for 2.038 af (100% of inflow)	X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area)
Center-of-Mass det. time= 52.6 min (858.3 - 805.7)	Limited to weir flow at low heads
Velues and Augil Observe Description	#2 Primary 94.50 1.020 invir Extration over Surrace area
Volume Invert Avail.storage Storage Description	Conductivity to Groundwater Elevation = 80.50
#1 97.00 47,780 ci Custom Stage Data (Frismatic) Listed below (Recald)	Primary OutFlow May-7.83 cfs @ 12.61 brs. HW-96.97' (Free Discharge)
Elevation Sulf Area Inc Store Cum Store	-1=Catch Basin (Orifice Controls 7.04 cfs @ 7.04 fps)
(feet) (sq-ft) (cubic-feet) (cubic-feet)	2=Exfiltration (Controls 0.79 cfs)
97.00 3.000 0 0	
98.00 16.420 9.710 9.710	Summary for Pond 2Pc: CB-13A Basin
99.00 19.000 17.710 27.420	-
100.00 21,720 20,360 47,780	Inflow Area = 3.366 ac, 22.13% Impervious, Inflow Depth = 6.16" for 100-Year event
	Inflow = 23.02 cfs @ 12.09 hrs, Volume= 1.729 af
Device Routing Invert Outlet Devices	Outflow = 7.34 cfs @ 12.40 hrs, Volume= 1.729 af, Atten= 68%, Lag= 18.6 min
#1 Primary 97.33' 2.0" x 2.0" Horiz. Catch Basin X 6.00 columns	Primary = 7.34 cfs @ 12.40 hrs, Volume= 1.729 af
X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area)	
Limited to weir flow at low heads	Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs
#2 Primary 97.00 1.020 in/hr Exhitration over Surface area	Peak Elev= 96.98 @ 12.40 hrs Suff.Area= 10,512 sr Storage= 18,618 cr
Conductivity to Groundwater Elevation = 80.00	Plug-Flow detention time - 34.9 min calculated for 1.728 of (100% of inflow)
Primary OutFlow, Max-6.65 cfs @ 12.58 hrs. HW-98.97' (Free Discharge)	Center-of-Mass det time= 35.1 min (827.8 - 792.8)
The Catch Basin (Orifice Controls 6.16 cfs @ 6.16 fps)	
2=Exfiltration (Controls 0.48 cfs)	Volume Invert Avail.Storage Storage Description
	#1 94.50' 31,216 cf Custom Stage Data (Prismatic) Listed below (Recalc)
Summary for Pond 2Pb: CB-11A Basin	
-	Elevation Surf.Area Inc.Store Cum.Store
Inflow Area = 6.371 ac, 4.34% Impervious, Inflow Depth = 5.81" for 100-Year event	(feet)(sq-ft) (cubic-feet) (cubic-feet)
Inflow = 36.75 cfs @ 12.14 hrs, Volume= 3.084 af	94.50 1,580 0 0
Outflow = 7.83 cfs @ 12.61 hrs, Volume= 3.084 af, Atten= 79%, Lag= 28.2 min	95.00 6,285 1,966 1,966
Primary = 7.83 cfs @ 12.61 hrs, Volume= 3.084 af	96.00 8,420 7,353 9,319
	97.00 10,550 9,485 18,804
Routing by Stor-Ind method, Lime Span= 0.00-80.00 hrs, dt= 0.05 hrs	90.00 14,275 12,413 31,216
reak Elev= 96.97 @ 12.61 nrs Suff.Area= 30,344 st Storage= 44,584 ct	Device Routing Invert Outlet Devices
Plug Flow detention time- 56.8 min color/lated for 2 094 of (1009/ of inflow)	44 Primary 04 921 2 01 × 2 01
Flug-Flow determine inter= 50.6 min (accurated to 5.004 at (100% 0f filliow) Center.of.Mass det time = 56.6 min (260.6 + 80.3 9.)	#1 Finitely 34.03 ± 0.420 For -0.600 in 2.0° x 2.0° calc -0.600 in 2.5° open area)
Genter-or-Wass det. ume= 50.0 mm (600.0 - 603.8)	Limited to weir flow at low heads
Volume Invert Avail.Storage Storage Description	#2 Primary 94.50 1.020 in/br Exfiltration over Surface area

 Proposed Conditions - Uniroyal and Facemate - Atlas 1
 Type III 24-hr
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Primary OutFlow Max=7.34 cfs @ 12.40 hrs HW=96.98' (Free Discharge) 1=Catch Basin (Orifice Controls 7.06 cfs @ 7.06 fps) 2=Exfiltration (Controls 0.28 cfs)

Summary for Link 1L: Facemate Interceptor Drain

Inflow Are	a =	4.988 ac, 1	13.04% Imp	ervious,	Inflow I	Depth =	5.98"	for 10	0-Year event
Inflow	=	10.87 cfs @	12.44 hrs,	Volume:	=	2.486	af		
Primary	=	10.87 cfs @	12.44 hrs,	Volume	=	2.486	af, Atte	en= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Chicopee River

Inflow Are	ea =	18.001 ac, 2	1.28% Imp	ervious,	Inflow Depth	= 6.	17" for	100-Yea	r event
Inflow	=	44.38 cfs @	12.10 hrs,	Volume	= 9.25	1 af			
Primary	=	44.38 cfs @	12.10 hrs.	Volume	= 9.25	1 af.	Atten= 0)%. Lag=	0.0 min

APPENDIX G – SUPPLEMENTAL CALCULATIONS

	ringfield Street 4	CALC	SLB	Facemale	ACUE		NO. DATE	5100 05/13/21
	5pee, MA 01013 331.5326 .BETA-Inc.com	DESC	Recharge a	nd Water	Quality Volu	ume	SHEET	1 OF 2
Facemate System								
Post-Development Impervio	us Area =						23261	sq. ft.
Pre-Development Imperviou	s Area =						23261	sq. ft.
Net New Impervious Area = Post-Development Roof Are	a =						0 6240	sq. ft. sq. ft.
Required Recharge Volum Recharge Volume (R _V) Requ	uired = N	ew Imper	vious Area	ı x Runof	f Depth (fr	om HSG)		
R_V (Urban Land*) =	0.00	sf. x	0.10	in x	0.083	ft/in =	0	cu. ft.
R _v Required =							0	cu. ft.
Provided Recharge Volum	e							
Therefore, no recharge volu	me provid	led.						
Therefore, no recharge voluRequired Water Quality VolumeWater Quality Volume (WQvWQvRequired =	<i>me provid</i> Diume /) Require 17,021	led. ed = Impe sf. x	ervious Are 0.5	a x Runc in x	off Depth (0.083	Excluding ft/in =	roof area) 709	cu. ft.
Therefore, no recharge volume Required Water Quality Volume Water Quality Volume (WQ _V WQ _V Required = WQ _V Required =	<i>me provic</i> <u>olume</u> /) Require 17,021	led. ed = Impe sf. x	ervious Are <mark>0.5</mark>	a x Runc in x	off Depth (0.083	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes	<i>me provid</i> <u>plume</u> /) Require 17,021	led. ed = Impe sf. x	ervious Are <mark>0.5</mark>	a x Runc in x	off Depth (0.083	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V	me provid plume /) Require 17,021	ed = Impe sf. x	ervious Are 0.5 est Invert	a x Runc in x	off Depth (0.083	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V	<i>me provid</i> <u>olume</u>) Require 17,021 Volume be Basin -	ed = Impe sf. x elow Low CB-16B	ervious Are 0.5 est Invert	a x Runo in x Basin -	off Depth (0.083 CB-17B	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert	<i>me provid</i> <u>olume</u>) Require 17,021 Volume be Basin - 6 97.33 010	ed = Impe sf. x elow Lowe CB-16B ft	ervious Are 0.5 est Invert	a x Runc in x Basin - 97.33	off Depth (0.083 CB-17B ft	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQ_V WQ_V Required = WQ_V Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A_s)	<i>me provid</i> <u>olume</u>) Require 17,021 Volume be Basin - 97.33 910 2,945	ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft.	ervious Are 0.5 est Invert	a x Runc in x Basin - 97.33 955 2,500	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volum Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage Volume Provided : Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for	me provid plume) Require 17,021 Volume be Basin - 97.33 910 2,945 or determined	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. inaiton of	ervious Are 0.5 est Invert storage vo	a x Runc in x Basin - 97.33 955 2,500	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQv Provided =	me provid <u>plume</u>) Require 17,021 Volume be Basin - 6 97.33 910 2,945 pr determin 1.865	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. inaiton of cu. ft.	ervious Are 0.5 est Invert storage vo	a x Runc in x Basin - 97.33 955 2,500	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volum Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage Volume Provided : Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQv Provided =	me provid plume) Require 17,021 Volume be Basin - 97.33 910 2,945 pr determe 1,865	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. <i>inaiton of</i> cu. ft.	ervious Are 0.5 est Invert <i>storage vo</i>	a x Runc in x Basin - 97.33 955 2,500	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volum Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQv Provided = Time to Empty - Drawdown	me provid plume) Require 17,021 Volume be Basin - 6 97.33 910 2,945 pr determin 1,865 n Time	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. <i>inaiton of</i> cu. ft.	ervious Are 0.5 est Invert storage vo	a x Rund in x Basin - 97.33 955 2,500	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volum Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage Volume Provided : Storage Volume @ Invert Bottom Surface Area (As) Refer to HydroCAD model for WQv Provided = Time to Empty - Drawdown Time to Drawdown = Volume	me provid plume) Require 17,021 Volume be Basin - 97.33 910 2,945 pr determe 1,865 n Time e below o	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. <i>inaiton of</i> cu. ft. utlet / Infi	ervious Are 0.5 est Invert <i>storage vo</i>	a x Rund in x Basin - 97.33 955 2,500 Jume	off Depth (0.083 CB-17B ft cu. ft. sq. ft.	Excluding ft/in =	roof area) 709 709	cu. ft. cu. ft.
Therefore, no recharge volue Required Water Quality Volume Water Quality Volume (WQv WQv Required = WQv Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQv Provided = Time to Empty - Drawdown Time to Drawdown = Volume Basin 1: T _D =	me provid <u>plume</u>) Require 17,021 Volume be Basin - 6 97.33 910 2,945 pr determine 1,865 <u>n Time</u> e below o 910	led. ed = Impe sf. x elow Lowe CB-16B ft cu. ft. sq. ft. <i>inaiton of</i> cu. ft. utlet / Infi cf. /	ervious Are 0.5 est Invert <i>storage vo</i> Itration Rat 0.0142	a x Rund in x Basin - 97.33 955 2,500 olume	off Depth (0.083 CB-17B ft cu. ft. sq. ft. sq. ft.	Excluding ft/in = sq. ft. =	roof area) 709 709	cu. ft. cu. ft.



JOB Uniroyal & Facemate ACOE CALC SLB

DESC Recharge and Water Quality Volume SHEET 2 OF 2

Uniroyal System								
Post-Development Impervio	us Area* =						160783	sq. ft.
Pre-Development Imperviou	s Area* =						191661	
Net New Impervious Area =							-30878	sq. ft.
Post-Development Roof Are	a* =						94954	sq. ft.
Note: Areas do not include imp	ervipus porti	ons of Wa	atershed 3S	s, which is	beyond the	e limits of w	ork	
Required Recharge Volum	e							
Recharge Volume (R _V) Requ	uired = Nev	w Impervi	ious Area	x Runoff	Depth (fro	m HSG)		
R_{v} (Urban Land*) =	-30878	sf. x	0.10	in x	0.083	ft/in =	-257.32	cu. ft.
R_v Required =					0.000		-257	cu. ft.
Provided Recharge Volum	<u>e</u>							
Infiltration provided within ba	asins anticip	pated to b	e collecte	d via und	erdrain			
Therefore, no recharge volu	me provide	d.						
Required Water Quality Vo) Boguirod	_ Impor	vioue Arec	v Bunofi	Donth (E	voluding r	of orce)	
) Required	= imper	vious Area		Deptn (⊏	xcluaing n	Joi area)	
WQ_V Required =	65,829	sf. x	0.5	in x	0.083	ft/in =	2743	cu. ft.
WQ _v Required = WQ _v Required =	65,829	sf. x	0.5	in x	0.083	ft/in =	2743 2743	cu. ft. cu. ft.
WQ _V Required = WQ _v Required = Provided Volumes	65,829	sf. x	0.5	in x	0.083	ft/in =	2743 2743	cu. ft. cu. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u>	65,829	sf. x	0.5	in x	0.083	ft/in =	2743 2743	cu. ft. cu. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V	65,829 /olume bel	sf. x ow Lowes	0.5 st Invert	in x	0.083	ft/in =	2743 2743	cu. ft. cu. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V	65,829 /olume bel Basin - (sf. x ow Lowes C B-8A	0.5 st Invert	in x Basin -	0.083 CB-11A	ft/in =	2743 2743 Basin	cu. ft. cu. ft. - CB-13A
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev.	65,829 /olume bel Basin - (97.33	sf. x ow Lowes CB-8A ft	0.5 st Invert	in x Basin - 94.83	0.083 CB-11A ft	ft/in =	2743 2743 Basin • 94.83	cu. ft. cu. ft. • CB-13A ft
WQ _V Required = WQ_V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev. Storage Volume @ Invert	65,829 /olume bel Basin - (97.33 1,460	sf. x ow Lowes CB-8A ft cu. ft.	0.5 st Invert	in x Basin - 94.83 945	0.083 CB-11A ft cu. ft.	ft/in =	2743 2743 Basin - 94.83 830	cu. ft. cu. ft. • CB-13A ft cu. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s)	65,829 /olume bel Basin - (97.33 1,460 3000	sf. x ow Lowes C B-8A ft cu. ft. sq. ft.	0.5 st Invert	in x Basin - 94.83 945 1720	0.083 CB-11A ft cu. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580	cu. ft. cu. ft. • CB-13A ft cu. ft. sq. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for	65,829 /olume bela Basin - (97.33 1,460 3000 or determin	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s	0.5 st Invert torage volu	in x Basin - 94.83 945 1720 ume	0.083 CB-11A ft cu. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580	cu. ft. cu. ft. • CB-13A ft cu. ft. sq. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQ _V Provided =	65,829 /olume bela Basin - 0 97.33 1,460 3000 or determin 3,235	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s cu. ft.	0.5 st Invert torage vol	in x Basin - 94.83 945 1720 ume	0.083 CB-11A ft cu. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580	cu. ft. cu. ft. • CB-13A ft cu. ft. sq. ft.
WQ _V Required = WQ _V Required = <u>Provided Volumes</u> Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQ _V Provided = <u>Time to Empty - Drawdown</u>	65,829 /olume belo Basin - (97.33 1,460 3000 or determin 3,235 <u>n Time</u>	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s cu. ft.	0.5 st Invert torage vol	in x Basin - 94.83 945 1720 ume	0.083 CB-11A ft cu. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580	cu. ft. cu. ft. • CB-13A ft cu. ft. sq. ft.
WQ_V Required = WQ_V Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQ_V Provided = <u>Time to Empty - Drawdown</u> Time to Drawdown = Volume	65,829 /olume below Basin - (97.33 1,460 3000 or determine 3,235 n Time e below out	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s cu. ft.	0.5 st Invert torage volu	in x Basin - 94.83 945 1720 ume	0.083 CB-11A ft cu. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580	cu. ft. cu. ft. • CB-13A ft cu. ft. sq. ft.
WQ_V Required = WQ_V Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQ_V Provided = <u>Time to Empty - Drawdown</u> Time to Drawdown = Volume Basin 1: T _D =	65,829 /olume bela Basin - (97.33 1,460 3000 or determina 3,235 <u>n Time</u> e below out 1,460	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s cu. ft.	0.5 st Invert torage volu ration Rate 0.0142	in x Basin - 94.83 945 1720 ume e x Surfac ft/hr* x	0.083 CB-11A ft cu. ft. sq. ft. sq. ft.	ft/in =	2743 2743 Basin 94.83 830 1580 34.3	cu. ft. cu. ft. cu. ft. cu. ft. sq. ft.
WQ _V Required = WQ _V Required = Provided Volumes Volume Provided : Storage V Invert Elev. Storage Volume @ Invert Bottom Surface Area (A _s) Refer to HydroCAD model for WQ _V Provided = <u>Time to Empty - Drawdown</u> Time to Drawdown = Volume Basin 1: T_D = Basin 2: T_D =	65,829 /olume belo Basin - (97.33 1,460 3000 or determin 3,235 <u>n Time</u> e below out 1,460 945	sf. x ow Lowes CB-8A ft cu. ft. sq. ft. aiton of s cu. ft. cu. ft.	0.5 st Invert torage volu ration Rate 0.0142 0.0142	in x Basin - 94.83 945 1720 ume x Surfac ft/hr* x ft/hr* x	0.083 CB-11A ft cu. ft. sq. ft. se Area 3000 1.720	ft/in = sq. ft. = sq. ft. =	2743 2743 Basin 94.83 830 1580 34.3 38.8	cu. ft. cu. ft. ft cu. ft. sq. ft. hrs hrs

Capacties	of Outlet Pipes				Date:	5/13/2021
Project:	Uniroyal & Fac	emate ACOE			Job No.	5100
Town:	Chicopee, MA				Calc. by:	SLB
	Facemate Drain	age System				
	Mannings Form	ula				
	Q = VA = (1.49/r	n)(A)(r _H) ^{2/3} (S) ^{1/2}				
	n = rou	ghness coefficient		r _H =	hydraulic rad	dius = A/P
	A = cro	ss section area		P =	wetted perin	neter
	S = SIO	ре				
	Pipe - CB-17B to O=VA=(1.49/n)//	o CB-16B (1RA) \)(r,,)²'³(S)'' [∠]			18	in HDPF
	n =	0.012		۲u	0.375	
	A =	1.77 sf.		P	4.71	
	S =	<u>0.0016</u> ft/ft		-		
	0			V	2 50	
	$Q_{\rm FULL} =$	<u>4.56</u> <u>CIS</u>		V _{FULL} =	2.58	
	TOU-yr flow	4.55 CIS	Οĸ			
	Pipe - CB-16B to Q=VA=(1.49/n)(A	o DM-14 (1R & 1RB) \)(r _H) ²¹³ (S) ¹¹²			<u>2</u> 4	in HDPE
	n =	0.012		r _H	0.5	5
	A =	3.14 sf.		Р	6.28	}
	S =	<u>0.0020</u> ft/ft				
	Q _{FIII1} =	10.99 cfs		V _{F1/11} =	3.50	
	100-yr flow	10.88 cfs	OK	, OLL		

Capacties	s of Outlet Pipes	Date: 5/13/2021						
Project:	Uniroyal & Fac	Job No.	5100					
Town:	Chicopee, MA		Calc. by: SLB					
		ana Cuatara						
	<u>Uniroyal Drain</u>	age System						
	Pipe - CB-8A B							
	Q=VA=(1.49/n)($(A)(r_{H})^{2/3}(S)^{1/2}$		<u>18</u>	<u>18</u> in HDPE			
	n =	0.012	r _F	0.375				
	A =	1.77 sf.	Р	4.71				
	S =	<u>0.0035</u> ft/ft						
	Q _{FULL} =	6.75 cfs	V _{FULL} =	= 3.82				
	100-yr flow =	6.64 cfs	OK					
Pine - $CB_{-}11\Delta$ Basin to $CB_{-}13\Delta$ Basin (2Pb)								
	Q=VA=(1.49/n)(<u>24</u>	in HDPE					
	n =	0.012	r _F	ı 0.5				
	A =	3.14 sf.	Р	6.28				
	S =	<u>0.0035</u> ft/ft						
	0 ₅₁₀₁ =	14.54 cfs	V _{E1011} =	- 4.63				
	100-yr flow =	14.45 cfs	OK					
	Pipe - CB-13A	Basin to DMH-14 (2Rc)					
	Q=VA=(1.49/n)(30	in HDPE				
	n =	0.012	r,	0.625				
	A =	4.91 sf.	Р	7.85				
	S =	<u>0.0025</u> ft/ft						
	0	22.28 cfs	V	- 151				
	$Q_{FULL} =$	22.20 <u>cls</u>		4.04				
			OR					
	Pipe - DMH-14/ O = VA = (1.49/p)(A to DMH-17 (2R)	20					
	Q=VA=(1.49/11)($(A)(I_{\rm H})$ (3)	r.	. 0.625	ΙΙΙ Πυγε			
	11 =	0.012	۱ ^۲	1 0.020 7 05				
	A =	4.71 SI.	Р	7.00				
	5 =	<u>0.0032</u> 11/11						
	Q _{FULL} =	<u>25.20 cfs</u>	V _{FULL} =	= 5.13				
	100-yr flow =	23.2 cfs	OK					

Capacties of Project: Town:	of Outlet Pipes Uniroyal & Facemate ACOE Chicopee, MA			ate: ob No. alc. by:	5/13/2021 5100 SLB	
	Find Min Slope	to Provide Self Clea	ning Velocities (2	2.0 ft/s)		
	Q=VA=(1.49/n)(A)(r _H) ^{2/3} (S) ^{1/2}		15 in HDPE		
	n =	0.012	r _H	0.313		
HALF FULL	A = S =	0.61 sf. <u>0.0012</u> ft/ft	Р	1.96		
HALF FULL	Q _{FULL} =	<u>1.22</u> cfs	V _{FULL} =	1.98	ОК	
	Q=VA=(1.49/n)(A)(r _H) ^{2/3} (S) ^{1/2}	<u>18</u> in HDPE			
	n =	0.012	r _H	0.375		
HALF FULL	A = S =	0.88 sf. <u>0.001</u> ft/ft	Р	2.36		
HALF FULL	Q _{FULL} =	<u>1.80</u> cfs	V _{FULL} =	2.04	ОК	
Q=VA=(1.49/n)(A)(r _H) ^{2/3} (S) ^{1/2}				<u>24</u>	in HDPE	
	n =	0.012	r _H	0.500		
HALF FULL	A = S =	1.57 sf. <u>0.0007</u> ft/ft	Р	3.14		
HALF FULL	Q _{FULL} =	<u>3.25</u> cfs	V _{FULL} =	2.07	ОК	
	Q=VA=(1.49/n)(A)(r _H) ^{2/3} (S) ^{1/2}		<u>30</u>	in HDPE	
	n =	0.012	r _H	0.625		
HALF FULL	A = S =	2.45 sf. <u>0.0005</u> ft/ft	Р	3.93		
HALF FULL	Q _{FULL} =	<u>4.98 cfs</u>	V _{FULL} =	2.03	ОК	

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu

2. Select BMP from Drop Down Menu

3. After BMP is selected, TSS Removal and other Columns are automatically completed.

	Location:	Stormwater Basins (Facema					
	В	С	D	E	F		
	1	TSS Removal	Starting TSS	Amount	Remaining		
	BMP	Rate ¹	Load*	Removed (C*D)	Load (D-E)		
TSS Removal culation Worksheet	Sediment Forebay	0.25	1.00	0.25	0.75		
	Deep Sump and Hooded Catch Basin	0.25	0.75	0.19	0.56		
		0.00	0.56	0.00	0.56		
		0.00	0.56	0.00	0.56		
ر د		0.00	0.56	0.00	0.56		
Total TSS Removal = Project: Facemate and Uniroyal ACOE				44%	Separate Form Needs to be Completed for Each Outlet or BMP Train		
Prepared By: SLB				*Equals remaining load from	n previous BMP (E)		
Date: 5/13/2021				which enters the BMP			
New outprosted TCC Coloudation Chart							

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed 1. From MassDEP Stormwater Handbook Vol. 1 V



NOAA Atlas 14, Volume 10, Version 3 Location name: Chicopee, Massachusetts, USA* Latitude: 42.1547°, Longitude: -72.5856° Elevation: 130.77 ft** * source: ESRI Maps ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.333 (0.257-0.427)	0.400 (0.308-0.514)	0.510 (0.391-0.657)	0.601 (0.459-0.779)	0.726 (0.537-0.986)	0.821 (0.596-1.14)	0.919 (0.648-1.33)	1.03 (0.689-1.53)	1.18 (0.763-1.82)	1.30 (0.823-2.05)
10-min	0.472 (0.364-0.605)	0.567 (0.437-0.728)	0.722 (0.554-0.931)	0.851 (0.650-1.10)	1.03 (0.761-1.40)	1.16 (0.843-1.62)	1.30 (0.918-1.88)	1.46 (0.977-2.16)	1.67 (1.08-2.58)	1.84 (1.17-2.91)
15-min	0.555 (0.428-0.712)	0.667 (0.514-0.856)	0.850 (0.652-1.10)	1.00 (0.764-1.30)	1.21 (0.895-1.64)	1.37 (0.993-1.90)	1.53 (1.08-2.21)	1.71 (1.15-2.54)	1.97 (1.27-3.03)	2.17 (1.37-3.42)
30-min	0.751 (0.579-0.963)	0.903 (0.695-1.16)	1.15 (0.883-1.48)	1.36 (1.04-1.76)	1.64 (1.21-2.23)	1.85 (1.35-2.58)	2.08 (1.46-3.00)	2.32 (1.56-3.45)	2.66 (1.73-4.11)	2.94 (1.86-4.64)
60-min	0.947 (0.730-1.21)	1.14 (0.877-1.46)	1.45 (1.11-1.87)	1.71 (1.31-2.22)	2.07 (1.53-2.81)	2.34 (1.70-3.25)	2.62 (1.85-3.78)	2.93 (1.97-4.35)	3.36 (2.18-5.19)	3.71 (2.35-5.86)
2-hr	1.21 (0.940-1.54)	1.45 (1.12-1.84)	1.83 (1.42-2.34)	2.15 (1.66-2.77)	2.60 (1.94-3.51)	2.93 (2.15-4.06)	3.28 (2.34-4.74)	3.69 (2.49-5.45)	4.30 (2.79-6.60)	4.82 (3.06-7.55)
3-hr	1.38 (1.08-1.75)	1.66 (1.30-2.10)	2.11 (1.64-2.67)	2.48 (1.92-3.17)	2.99 (2.25-4.03)	3.37 (2.49-4.66)	3.78 (2.72-5.47)	4.28 (2.89-6.30)	5.04 (3.28-7.70)	5.69 (3.62-8.89)
6-hr	1.72 (1.36-2.16)	2.09 (1.65-2.62)	2.69 (2.11-3.39)	3.19 (2.49-4.04)	3.88 (2.95-5.20)	4.38 (3.27-6.05)	4.94 (3.60-7.16)	5.64 (3.83-8.25)	6.75 (4.41-10.3)	7.72 (4.93-12.0)
12-hr	2.10 (1.68-2.61)	2.61 (2.07-3.24)	3.43 (2.72-4.28)	4.11 (3.24-5.16)	5.05 (3.87-6.74)	5.73 (4.32-7.88)	6.49 (4.79-9.40)	7.48 (5.10-10.9)	9.07 (5.93-13.7)	10.5 (6.70-16.2)
24-hr	2.48 (2.00-3.05)	3.12 (2.51-3.84)	4.17 (3.34-5.15)	5.04 (4.01-6.27)	6.23 (4.82-8.27)	7.10 (5.40-9.71)	8.07 (6.01-11.6)	9.35 (6.40-13.5)	11.4 (7.51-17.2)	13.3 (8.52-20.4)
2-day	2.85 (2.31-3.47)	3.60 (2.92-4.39)	4.82 (3.89-5.91)	5.84 (4.69-7.20)	7.23 (5.65-9.53)	8.25 (6.32-11.2)	9.39 (7.05-13.5)	10.9 (7.50-15.7)	13.4 (8.84-20.0)	15.6 (10.1-23.9)
3-day	3.11 (2.54-3.77)	3.93 (3.20-4.76)	5.25 (4.27-6.40)	6.35 (5.13-7.79)	7.87 (6.17-10.3)	8.96 (6.91-12.1)	10.2 (7.69-14.6)	11.9 (8.17-17.0)	14.6 (9.63-21.7)	17.0 (11.0-25.9)
4-day	3.35 (2.74-4.04)	4.21 (3.44-5.08)	5.61 (4.58-6.81)	6.77 (5.49-8.28)	8.38 (6.59-10.9)	9.54 (7.37-12.9)	10.9 (8.20-15.5)	12.6 (8.70-18.0)	15.5 (10.2-23.0)	18.1 (11.7-27.4)
7-day	3.98 (3.29-4.76)	4.93 (4.07-5.92)	6.50 (5.34-7.83)	7.79 (6.37-9.46)	9.58 (7.58-12.4)	10.9 (8.44-14.5)	12.3 (9.33-17.4)	14.2 (9.88-20.2)	17.3 (11.5-25.6)	20.1 (13.0-30.3)
10-day	4.61 (3.83-5.49)	5.62 (4.66-6.70)	7.27 (6.00-8.71)	8.63 (7.09-10.4)	10.5 (8.35-13.5)	11.9 (9.24-15.8)	13.4 (10.1-18.8)	15.4 (10.7-21.7)	18.5 (12.3-27.2)	21.3 (13.8-32.0)
20-day	6.59 (5.53-7.79)	7.67 (6.42-9.07)	9.42 (7.86-11.2)	10.9 (9.01-13.0)	12.9 (10.3-16.3)	14.4 (11.2-18.7)	16.0 (12.0-21.8)	17.9 (12.5-25.0)	20.7 (13.9-30.2)	23.1 (15.0-34.6)
30-day	8.27 (6.98-9.72)	9.38 (7.90-11.0)	11.2 (9.38-13.2)	12.7 (10.6-15.1)	14.7 (11.8-18.4)	16.3 (12.7-20.9)	17.9 (13.4-24.0)	19.7 (13.9-27.4)	22.3 (15.0-32.3)	24.4 (15.9-36.3)
45-day	10.4 (8.80-12.1)	11.5 (9.76-13.5)	13.4 (11.3-15.7)	15.0 (12.5-17.7)	17.1 (13.7-21.2)	18.8 (14.6-23.8)	20.4 (15.3-27.0)	22.1 (15.7-30.6)	24.4 (16.4-35.2)	26.1 (17.1-38.8)
60-day	12.1 (10.3-14.1)	13.3 (11.3-15.5)	15.3 (12.9-17.9)	16.9 (14.2-19.9)	19.1 (15.4-23.6)	20.9 (16.3-26.4)	22.6 (16.9-29.6)	24.2 (17.2-33.4)	26.3 (17.8-37.9)	27.8 (18.2-41.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical








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Maps & aerials

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Large scale terrain





Large scale aerial



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Disclaimer



Chart 43



Chart 44











Figure 2.3.2: USDA, NRCS, 2007 National Soil Survey Handbook, Part 618, Exhibit 8, http://soils.usda.gov/technical/handbook/contents/part618ex.html#ex8 Massachusetts Stormwater Handbook

Table 2.3.3. 1982 Rawls Rates¹⁸

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

¹⁸ Rawls, Brakensiek and Saxton, 1982

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