

PRELIMINARY DRAINAGE REPORT

“Timber Crest Estates” Medway, MA

March 16, 2016

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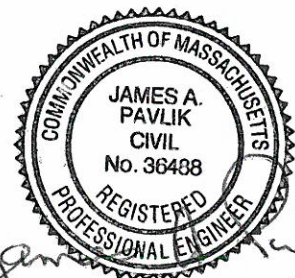
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PRELIMINARY DRAINAGE REPORT
"Timber Crest Estates"
MEDWAY, MASSACHUSETTS

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DRAINAGE REPORT
"Timber Crest Estates"
MEDWAY, MASSACHUSETTS

Section 1.0: Introduction

These drainage calculations have been prepared to accompany the proposed Timber Crest Estates site plans, part of a Comprehensive Permit filing under MGL Ch. 40B. The drainage calculations herein are preliminary in nature to document that stormwater runoff rates can be controlled using appropriate structural and low-impact development techniques, whereas the plans and drainage design will ultimately comply with the Massachusetts Department of Environmental Protection's (DEP's) Stormwater Management Regulations when finalized.

Section 2.0: Existing Conditions

Timber Crest Estates is located in the northerly area of Medway (refer to USGS Locust Map), containing 9 parcels of mostly woodlands, totaling 163.1 acres. The site is bordered by residential areas along Winthrop Street and Ohlson Circle to the west, Fairway Lane to the north, Holliston Street to the east, and Fern Path and Howe Street to the south. The site is in the AR-I zoning district. Homes in the area are generally ranch or colonial-style homes situated on lots ranging in size from approximately ¼ to 1+ acres.

The property is currently mostly wooded, except for a homesite at 102 Winthrop Street and two utility easements running parallel to each other across the site. These easements are for underground natural gas mains (Algonquin Gas Transmission Company) and overhead, electric power transmission lines (Boston Edison). The site topography is relatively gently sloping, characterized by small hills and lower valleys where the wetlands are located.

The site location is not within any mapped environmentally sensitive areas based on review of MassGIS data, except for a small certified vernal pool located in the northeast portion of the site and several other potential vernal pools. The site is not within any regulatory floodways (i.e., no 100-yr. floodplains, see attached Flood Insurance Rate Map), state-designated Outstanding Resource Waters, Areas of Critical Environmental Concern (see attached map), Zone II of public wells or Zone A of public water supplies, or priority habitat of endangered or rare species as mapped by the MA Division of Fisheries and Wildlife (see attached map).

The wetlands on the site have been delineated with most of the bordering vegetated wetlands approved via 2 Orders of Resource Area Delineation issued by the Medway Conservation Commission. The wetlands cover much of the interior portions of the site, and drain off-site to the northwest, northeast and southwest through three (3) different intermittent streams. Other discharge points are located along the west boundary of the

site, towards the Winthrop Street drainage system and an isolated wetland. As such, the site was delineated into several sub-catchment areas, and runoff conditions were calculated at 5 design discharge points, representing the flow to each of the wetland areas and 2 areas near Winthrop Street (please refer to Appendix A-1 for Pre-Development Drainage Calcs and Appendix C for the Pre-Development Watershed Plan). These areas were delineated as a result of field investigations and review of the topography.

Section 3.0: Proposed Development

Timber Crest Estates is a planned unit development with two separate independent neighborhoods, which are bisected by wetlands and open space. The project consists of 188 housing units, including 72 single family homes on the west portion of the site and 116 condominiums on the east portion of the site. The project has a subdivision roadway entrance for the single family house lots off of Winthrop Street, directly opposite from Stephanie Road. The subdivision roadways loop through the western portion of the site, ending in a cul de sac with an emergency access connecting to Ohlson Circle. The subdivision will be serviced by town sewer and water mains. Underground cable utilities and natural gas are also to be provided.

The eastern portion of the site containing the condominiums proposes a private roadway system that will connect Fairway Lane to the end of Fern Path. The condominiums will also be serviced by town sewer, requiring a pump station that will be privately maintained by the condominium association. Town water mains are proposed to be extended to these condos also, with underground cable utilities and natural gas also to be provided.

Several wetland crossings will be required to provide two access points for each portion of the development. Wetland replication areas will be provided at a ratio of 2:1. The site design features sustainable development technologies to minimize the impact on the environment. It utilizes several low impact/sustainable development techniques in the site design and stormwater management including the following:

- Narrower roadways and short driveways to reduce impervious area (porous pavement may also be utilized for parking),
- Roof drains, bioretention areas or rain gardens, and grass swales are planned or may be incorporated into the final design to the extent practicable.
- Stormwater infiltration basins and detention basins are proposed to control the majority of site runoff.

All stormwater runoff will be collected along roadway gutter-lines and directed to deep sump catch basins and/or swales. Runoff will then be directed to detention and infiltration basins which will store and infiltrate the runoff and slowly release it at a reduced flow rate from existing conditions. Some of the runoff will be discharged into the underlying soil thus providing recharge to the local aquifer. Refer to Appendix A-2 for the post-development runoff calculations and Appendix C for the watershed map.

Section 4.0: Drainage Design Methodology

To determine changes in storm runoff for the proposed project, the HydroCAD Stormwater Modeling System software was used. This software closely approximates the USDA Soil Conservation Service (SCS) TR-20 methodology for calculating runoff. The calculations determined the change in the existing and post-development runoff rates to each drainage area for each of the 2 year, 10 year, and 100 year storm events. All storm events analyzed comply with Technical Paper-40 (*Rainfall Frequency Atlas of the United States*) Rainfall Data.

The final project design will fully comply with the Department of Environmental Protections (DEP) Stormwater Management Regulations, incorporating a number of Best Management Practices (BMP's) for water quality, recharge and runoff control. These preliminary calculations document compliance with rate control and sizing of the detention and infiltration systems to be utilized. Other calculations regarding pretreatment, water quality, and recharge volumes will be provided as design progresses. The appendices contain detailed runoff calculations for each drainage area, storage volume calculations, and pre-and post-development drainage maps.

The preliminary design includes the following, which may be modified as the design is finalized:

- Soil test pits will need to be conducted to document soil types and groundwater conditions that we've assumed at this time based on NRCS soils maps (refer to Appendix B) and the site topography and wetland locations.
- Infiltration basins are used extensively on the subdivision area of the site, where permeable sand and gravel soils (Hydrologic Soil Group A) are shown on the NRCS maps. Generally the condominium portion of the site utilizes detention basins where less permeable soils are listed.
- Roof drains will be used at the back roof areas of certain lots in the subdivision area that drain toward the central wetland area, and for back roof areas of all the condominium homes.
- Although some areas of porous pavement are shown for visitor parking on the site plans for the condominiums, these areas have been treated as impervious area in the drainage calculations. If utilized in final design, these porous pavement areas would further reduce offsite runoff rates and volumes.

Section 5.0: Summary of Results

In accordance with the DEP requirements, drainage basins have been incorporated into the storm water design to control runoff for the 2 year, 10 year, and 100 year storm events below existing conditions. There are 5 off-site design points that were analyzed with a summary of runoff rates as follows.

Comparison of Pre- & Post-Development Runoff Rates

Design Point 1 - To Wetlands @ Winthrop Street

	<u>Pre development</u>	<u>Post development</u>
	Rate	Rate
<u>2 Year Storm (3.40")</u> <ul style="list-style-type: none">To Design Point 1	1.12 cfs	0.66 cfs
<u>10 Year Storm (4.70")</u> <ul style="list-style-type: none">To Design Point 1	4.65 cfs	3.51 cfs
<u>100 Year Storm (7.00")</u> <ul style="list-style-type: none">To Design Point 1	11.27 cfs	7.87 cfs

Design Point 2 - To Stream North

	<u>Pre development</u>	<u>Post development</u>
	Rate	Rate
<u>2 Year Storm (3.40")</u> <ul style="list-style-type: none">To Design Point 2	0.01 cfs	0.01 cfs
<u>10 Year Storm (4.70")</u> <ul style="list-style-type: none">To Design Point 2	0.35 cfs	0.15 cfs
<u>100 Year Storm (7.00")</u> <ul style="list-style-type: none">To Design Point 2	4.45 cfs	2.70 cfs

Design Point 3 - To Isolated Wetlands Onsite

	<u>Pre development</u>	<u>Post development</u>
	Rate	Rate
<u>2 Year Storm (3.40")</u> <ul style="list-style-type: none">To Design Point 3	0.00 cfs	0.00 cfs
<u>10 Year Storm (4.70")</u> <ul style="list-style-type: none">To Design Point 3	0.00 cfs	0.00 cfs
<u>100 Year Storm (7.00")</u> <ul style="list-style-type: none">To Design Point 3	0.13 cfs	0.11 cfs

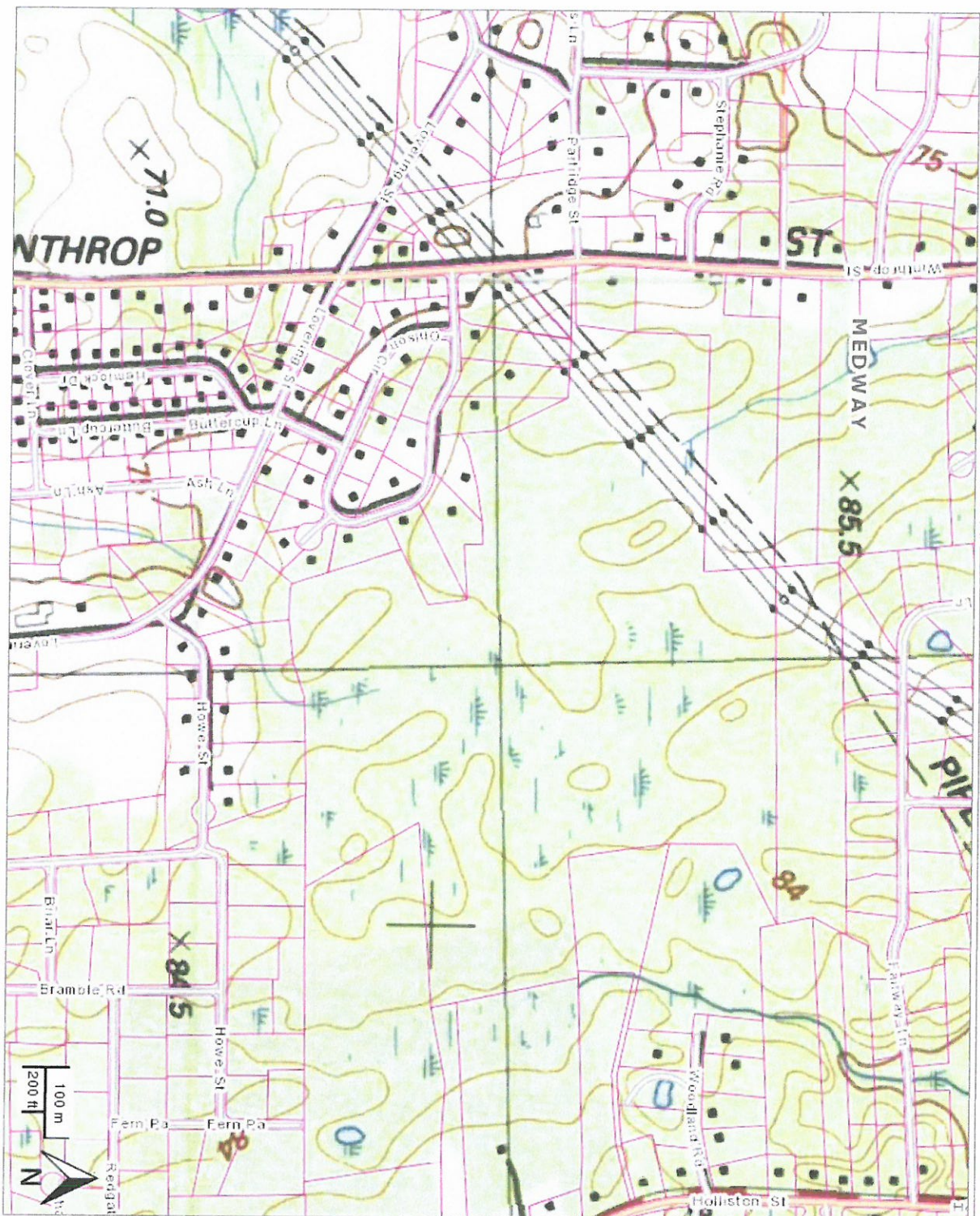
Design Point 4 - To Central Wetlands/Swamp Onsite

	<u>Pre development</u>	<u>Post development</u>
	Rate	Rate
<u>2 Year Storm (3.40")</u> <ul style="list-style-type: none">To Design Point 3	0.74 cfs	0.71 cfs
<u>10 Year Storm (4.70")</u> <ul style="list-style-type: none">To Design Point 3	5.43 cfs	4.69 cfs
<u>100 Year Storm (7.00")</u> <ul style="list-style-type: none">To Design Point 3	20.70 cfs	16.75 cfs

Design Point 5 - To East Wetlands

	<u>Pre development</u>	<u>Post development</u>
	Rate	Rate
<u>2 Year Storm (3.40")</u> <ul style="list-style-type: none">To Design Point 3	2.07 cfs	1.18 cfs
<u>10 Year Storm (4.70")</u> <ul style="list-style-type: none">To Design Point 3	5.94 cfs	4.64 cfs
<u>100 Year Storm (7.00")</u> <ul style="list-style-type: none">To Design Point 3	17.93 cfs	15.53 cfs

Timber Crest Estates - USGS Topographic Map



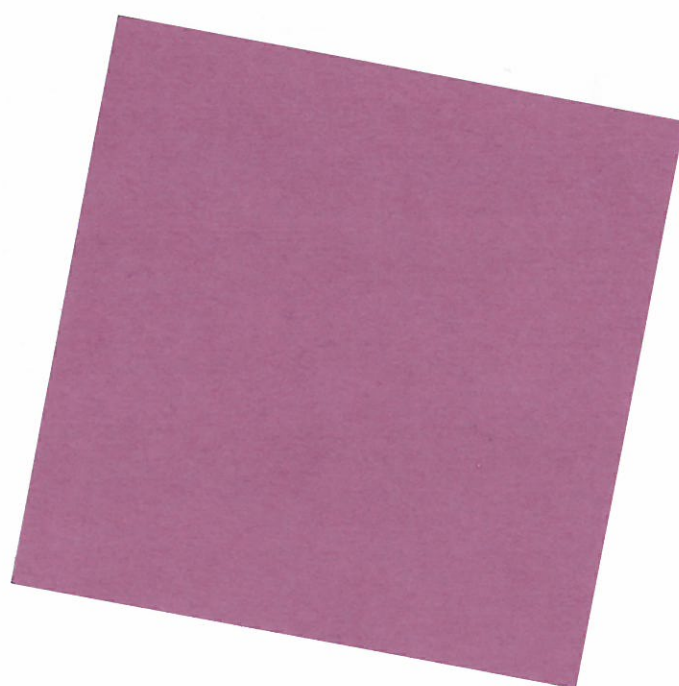
Tax Parcels for Query

Detailed Features

Tax Parcels

USGS Topographic Maps

Structures



Timber Crest Estates - Areas Of Critical Environmental Concern Map

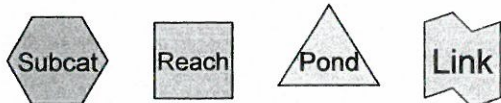
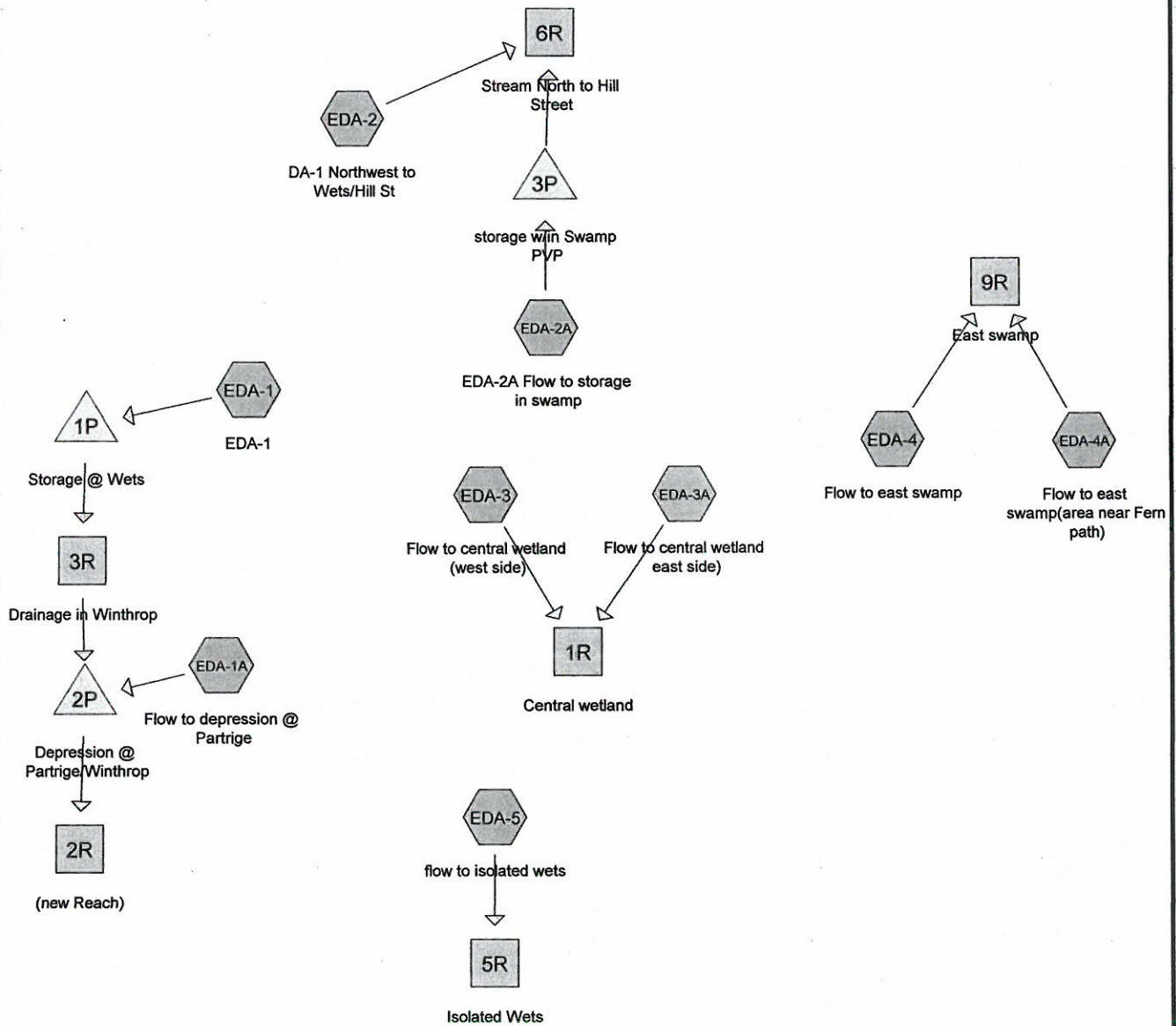


Timber Crest Estates NHESP Map



- NHESP Estimated Habitats of Rare Wildlife
- Potential Vernal Pools
- NHESP Priority Habitats of Rare Species
- NHESP Certified Vernal Pools
- Tax Parcels for Query
- Detailed Features
- Tax Parcels
- Structures

Appendix A-1
EXISTING HYDROLOGY CALCULATIONS
(STANDARD #2)



Routing Diagram for OE2765-PRE-030816
 Prepared by Microsoft, Printed 3/17/2016
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OE2765-PRE-030816

Prepared by Microsoft

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Timber Crest Estates, MA
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Printed 3/17/2016

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Summary for Subcatchment EDA-1: EDA-1

Runoff = 1.12 cfs @ 12.43 hrs, Volume= 0.197 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
126,847	70	Woods, Good, HSG C
47,785	79	1 acre lots, 20% imp, HSG C
25,570	51	1 acre lots, 20% imp, HSG A
75,185	30	Woods, Good, HSG A
275,387	59	Weighted Average
260,716		94.67% Pervious Area
14,671		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.2	360	0.0380	0.97		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
18.5	410	Total			

Summary for Subcatchment EDA-1A: Flow to depression @ Partridge

Runoff = 0.04 cfs @ 12.99 hrs, Volume= 0.022 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
35,109	30	Woods, Good, HSG A
34,369	51	1 acre lots, 20% imp, HSG A
21,736	79	1 acre lots, 20% imp, HSG C
91,214	50	Weighted Average
79,993		87.70% Pervious Area
11,221		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	650	0.0430	1.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
20.9	700	Total			

OE2765-PRE-030816

Prepared by Microsoft

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Timber Crest Estates, MA
Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Summary for Subcatchment EDA-2: DA-1 Northwest to Wets/Hill St

Runoff = 0.01 cfs @ 15.08 hrs, Volume= 0.008 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
44,037	30	Woods, Good, HSG A
28,000	70	Woods, Good, HSG C
72,037	46	Weighted Average
72,037		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0500	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.5	210	0.0400	1.00		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	260	Total			

Summary for Subcatchment EDA-2A: EDA-2A Flow to storage in swamp

Runoff = 0.16 cfs @ 14.94 hrs, Volume= 0.097 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
440,524	30	Woods, Good, HSG A
210,830	77	Woods, Good, HSG D
43,003	70	Woods, Good, HSG C
694,357	47	Weighted Average
694,357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
8.9	395	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	445	Total			

Summary for Subcatchment EDA-3: Flow to central wetland (west side)

Runoff = 0.01 cfs @ 23.99 hrs, Volume= 0.004 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
585,808	30	Woods, Good, HSG A
117,238	70	Woods, Good, HSG C
63,848	77	Woods, Good, HSG D
766,894	40	Weighted Average
766,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment EDA-3A: Flow to central wetland east side)

Runoff = 0.74 cfs @ 12.58 hrs, Volume= 0.220 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
271,480	30	Woods, Good, HSG A
210,377	70	Woods, Good, HSG C
99,197	77	Woods, Good, HSG D
581,054	53	Weighted Average
581,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, ab
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	145	0.0260	0.81		Shallow Concentrated Flow, bc
					Woodland Kv= 5.0 fps
19.3	195	Total			

Summary for Subcatchment EDA-4: Flow to east swamp

Runoff = 0.10 cfs @ 14.92 hrs, Volume= 0.066 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
277,589	30	Woods, Good, HSG A
173,077	70	Woods, Good, HSG C
18,524	77	Woods, Good, HSG D
469,190	47	Weighted Average
469,190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
4.5	235	0.0300	0.87		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
15.0	285	Total			

Summary for Subcatchment EDA-4A: Flow to east swamp(area near Fern path)

Runoff = 2.07 cfs @ 12.21 hrs, Volume= 0.210 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
106,159	70	Woods, Good, HSG C
18,576	77	Woods, Good, HSG D
124,735	71	Weighted Average
124,735		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.5	285	0.1500	1.94		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
13.8	335	Total			

Summary for Subcatchment EDA-5: flow to isolated wets

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
260,619	30	Woods, Good, HSG A
260,619		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.4	260	Total			

Summary for Reach 1R: Central wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.945 ac, 0.00% Impervious, Inflow Depth = 0.09" for 2-Yr Storm event
 Inflow = 0.74 cfs @ 12.58 hrs, Volume= 0.224 af
 Outflow = 0.74 cfs @ 12.58 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 0.11" for 2-Yr Storm event
 Inflow = 0.29 cfs @ 13.36 hrs, Volume= 0.075 af
 Outflow = 0.29 cfs @ 13.36 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 0.11" for 2-Yr Storm event
 Inflow = 0.26 cfs @ 13.33 hrs, Volume= 0.057 af
 Outflow = 0.26 cfs @ 13.33 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.983 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr Storm event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Stream North to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.594 ac, 0.00% Impervious, Inflow Depth = 0.01" for 2-Yr Storm event
Inflow = 0.01 cfs @ 15.08 hrs, Volume= 0.008 af
Outflow = 0.01 cfs @ 15.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 9R: East swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.635 ac, 0.00% Impervious, Inflow Depth = 0.24" for 2-Yr Storm event
Inflow = 2.07 cfs @ 12.21 hrs, Volume= 0.275 af
Outflow = 2.07 cfs @ 12.21 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Storage @ Wets

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 0.37" for 2-Yr Storm event
Inflow = 1.12 cfs @ 12.43 hrs, Volume= 0.197 af
Outflow = 0.36 cfs @ 13.33 hrs, Volume= 0.182 af, Atten= 67%, Lag= 54.4 min
Discarded = 0.10 cfs @ 13.33 hrs, Volume= 0.125 af
Primary = 0.26 cfs @ 13.33 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 260.05' @ 13.33 hrs Surf.Area= 4,179 sf Storage= 2,412 cf

Plug-Flow detention time= 220.6 min calculated for 0.182 af (92% of inflow)
Center-of-Mass det. time= 185.2 min (1,123.1 - 938.0)

Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.10 cfs @ 13.33 hrs HW=260.05' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.26 cfs @ 13.33 hrs HW=260.05' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.56 fps)

Summary for Pond 2P: Depression @ Partridge/Winthrop

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 0.11" for 2-Yr Storm event
 Inflow = 0.30 cfs @ 13.33 hrs, Volume= 0.080 af
 Outflow = 0.30 cfs @ 13.36 hrs, Volume= 0.080 af, Atten= 0%, Lag= 1.9 min
 Discarded = 0.01 cfs @ 13.36 hrs, Volume= 0.005 af
 Primary = 0.29 cfs @ 13.36 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 254.48' @ 13.36 hrs Surf.Area= 179 sf Storage= 29 cf

Plug-Flow detention time= 2.1 min calculated for 0.080 af (100% of inflow)
 Center-of-Mass det. time= 2.1 min (934.2 - 932.1)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	6,459 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
254.00	0	0.0	0	0	0
255.50	1,720	170.0	860	860	2,303
257.00	6,210	300.0	5,599	6,459	7,178

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' / S= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 13.36 hrs HW=254.48' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.29 cfs @ 13.36 hrs HW=254.48' (Free Discharge)

↑2=Culvert (Inlet Controls 0.29 cfs @ 1.60 fps)

Summary for Pond 3P: storage w/in Swamp PVP

Inflow Area = 15.940 ac, 0.00% Impervious, Inflow Depth = 0.07" for 2-Yr Storm event
 Inflow = 0.16 cfs @ 14.94 hrs, Volume= 0.097 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.14' @ 24.95 hrs Surf.Area= 32,288 sf Storage= 4,225 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	48,566 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	74,000	1,890.0	48,566	48,566	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.50'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=274.00' (Free Discharge)

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

Summary for Subcatchment EDA-1: EDA-1

Runoff = 4.65 cfs @ 12.30 hrs, Volume= 0.563 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
126,847	70	Woods, Good, HSG C
47,785	79	1 acre lots, 20% imp, HSG C
25,570	51	1 acre lots, 20% imp, HSG A
75,185	30	Woods, Good, HSG A
275,387	59	Weighted Average
260,716		94.67% Pervious Area
14,671		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.2	360	0.0380	0.97		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
18.5	410	Total			

Summary for Subcatchment EDA-1A: Flow to depression @ Partridge

Runoff = 0.57 cfs @ 12.45 hrs, Volume= 0.100 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
35,109	30	Woods, Good, HSG A
34,369	51	1 acre lots, 20% imp, HSG A
21,736	79	1 acre lots, 20% imp, HSG C
91,214	50	Weighted Average
79,993		87.70% Pervious Area
11,221		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	650	0.0430	1.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
20.9	700	Total			

Summary for Subcatchment EDA-2: DA-1 Northwest to Wets/Hill St

Runoff = 0.28 cfs @ 12.34 hrs, Volume= 0.054 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
44,037	30	Woods, Good, HSG A
28,000	70	Woods, Good, HSG C
72,037	46	Weighted Average
72,037		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0500	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.5	210	0.0400	1.00		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	260	Total			

Summary for Subcatchment EDA-2A: EDA-2A Flow to storage in swamp

Runoff = 2.90 cfs @ 12.45 hrs, Volume= 0.579 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
440,524	30	Woods, Good, HSG A
210,830	77	Woods, Good, HSG D
43,003	70	Woods, Good, HSG C
694,357	47	Weighted Average
694,357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
8.9	395	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	445	Total			

Summary for Subcatchment EDA-3: Flow to central wetland (west side)

Runoff = 0.43 cfs @ 13.84 hrs, Volume= 0.254 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
585,808	30	Woods, Good, HSG A
117,238	70	Woods, Good, HSG C
63,848	77	Woods, Good, HSG D
766,894	40	Weighted Average
766,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment EDA-3A: Flow to central wetland east side)

Runoff = 5.42 cfs @ 12.37 hrs, Volume= 0.807 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
271,480	30	Woods, Good, HSG A
210,377	70	Woods, Good, HSG C
99,197	77	Woods, Good, HSG D
581,054	53	Weighted Average
581,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, ab
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	145	0.0260	0.81		Shallow Concentrated Flow, bc
					Woodland Kv= 5.0 fps
19.3	195	Total			

Summary for Subcatchment EDA-4: Flow to east swamp

Runoff = 1.98 cfs @ 12.44 hrs, Volume= 0.391 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
277,589	30	Woods, Good, HSG A
173,077	70	Woods, Good, HSG C
18,524	77	Woods, Good, HSG D
469,190	47	Weighted Average
469,190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
4.5	235	0.0300	0.87		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
15.0	285	Total			

Summary for Subcatchment EDA-4A: Flow to east swamp(area near Fern path)

Runoff = 4.82 cfs @ 12.20 hrs, Volume= 0.452 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
106,159	70	Woods, Good, HSG C
18,576	77	Woods, Good, HSG D
124,735	71	Weighted Average
124,735		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.5	285	0.1500	1.94		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
13.8	335	Total			

Summary for Subcatchment EDA-5: flow to isolated wets

Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
260,619	30	Woods, Good, HSG A
260,619		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
14.4	260	Total			

Summary for Reach 1R: Central wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.945 ac, 0.00% Impervious, Inflow Depth = 0.41" for 10-Yr Storm event
Inflow = 5.43 cfs @ 12.37 hrs, Volume= 1.061 af
Outflow = 5.43 cfs @ 12.37 hrs, Volume= 1.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 0.70" for 10-Yr Storm event
Inflow = 3.43 cfs @ 12.63 hrs, Volume= 0.494 af
Outflow = 3.43 cfs @ 12.63 hrs, Volume= 0.494 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 0.78" for 10-Yr Storm event
Inflow = 3.91 cfs @ 12.45 hrs, Volume= 0.410 af
Outflow = 3.91 cfs @ 12.45 hrs, Volume= 0.410 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.983 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr Storm event
 Inflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Stream North to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.594 ac, 0.00% Impervious, Inflow Depth > 0.14" for 10-Yr Storm event
 Inflow = 0.35 cfs @ 19.59 hrs, Volume= 0.210 af
 Outflow = 0.35 cfs @ 19.59 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 9R: East swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.635 ac, 0.00% Impervious, Inflow Depth = 0.74" for 10-Yr Storm event
 Inflow = 5.94 cfs @ 12.25 hrs, Volume= 0.843 af
 Outflow = 5.94 cfs @ 12.25 hrs, Volume= 0.843 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Storage @ Wets

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 1.07" for 10-Yr Storm event
 Inflow = 4.65 cfs @ 12.30 hrs, Volume= 0.563 af
 Outflow = 4.03 cfs @ 12.45 hrs, Volume= 0.545 af, Atten= 13%, Lag= 8.6 min
 Discarded = 0.12 cfs @ 12.45 hrs, Volume= 0.135 af
 Primary = 3.91 cfs @ 12.45 hrs, Volume= 0.410 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 260.28' @ 12.45 hrs Surf.Area= 5,279 sf Storage= 3,528 cf

Plug-Flow detention time= 82.9 min calculated for 0.544 af (97% of inflow)
 Center-of-Mass det. time= 66.7 min (961.8 - 895.2)

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Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.12 cfs @ 12.45 hrs HW=260.28' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=3.90 cfs @ 12.45 hrs HW=260.28' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 3.90 cfs @ 1.38 fps)

Summary for Pond 2P: Depression @ Partridge/Winthrop

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 0.73" for 10-Yr Storm event
 Inflow = 4.47 cfs @ 12.45 hrs, Volume= 0.510 af
 Outflow = 3.56 cfs @ 12.63 hrs, Volume= 0.510 af, Atten= 20%, Lag= 11.0 min
 Discarded = 0.13 cfs @ 12.63 hrs, Volume= 0.016 af
 Primary = 3.43 cfs @ 12.63 hrs, Volume= 0.494 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 255.76' @ 12.63 hrs Surf.Area= 2,294 sf Storage= 1,376 cf

Plug-Flow detention time= 2.9 min calculated for 0.509 af (100% of inflow)
 Center-of-Mass det. time= 2.9 min (892.5 - 889.6)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	6,459 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
254.00	0	0.0	0	0	0
255.50	1,720	170.0	860	860	2,303
257.00	6,210	300.0	5,599	6,459	7,178

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' /' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

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Discarded OutFlow Max=0.13 cfs @ 12.63 hrs HW=255.75' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=3.43 cfs @ 12.63 hrs HW=255.75' (Free Discharge)

↑2=Culvert (Inlet Controls 3.43 cfs @ 4.36 fps)

Summary for Pond 3P: storage w/in Swamp PVP

Inflow Area = 15.940 ac, 0.00% Impervious, Inflow Depth = 0.44" for 10-Yr Storm event
Inflow = 2.90 cfs @ 12.45 hrs, Volume= 0.579 af
Outflow = 0.32 cfs @ 19.64 hrs, Volume= 0.156 af, Atten= 89%, Lag= 431.2 min
Primary = 0.32 cfs @ 19.64 hrs, Volume= 0.156 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 274.52' @ 19.64 hrs Surf.Area= 48,421 sf Storage= 19,244 cf

Plug-Flow detention time= 530.5 min calculated for 0.156 af (27% of inflow)
Center-of-Mass det. time= 334.2 min (1,286.3 - 952.2)

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	48,566 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	74,000	1,890.0	48,566	48,566	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.50'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.31 cfs @ 19.64 hrs HW=274.52' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.31 cfs @ 0.35 fps)

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Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Summary for Subcatchment EDA-1: EDA-1

Runoff = 11.27 cfs @ 12.27 hrs, Volume= 1.212 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
126,847	70	Woods, Good, HSG C
47,785	79	1 acre lots, 20% imp, HSG C
25,570	51	1 acre lots, 20% imp, HSG A
75,185	30	Woods, Good, HSG A
275,387	59	Weighted Average
260,716		94.67% Pervious Area
14,671		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.2	360	0.0380	0.97		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
18.5	410	Total			

Summary for Subcatchment EDA-1A: Flow to depression @ Partridge

Runoff = 2.06 cfs @ 12.34 hrs, Volume= 0.262 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
35,109	30	Woods, Good, HSG A
34,369	51	1 acre lots, 20% imp, HSG A
21,736	79	1 acre lots, 20% imp, HSG C
91,214	50	Weighted Average
79,993		87.70% Pervious Area
11,221		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	650	0.0430	1.04		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
20.9	700	Total			

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Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Summary for Subcatchment EDA-2: DA-1 Northwest to Wets/Hill St

Runoff = 1.58 cfs @ 12.14 hrs, Volume= 0.162 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
44,037	30	Woods, Good, HSG A
28,000	70	Woods, Good, HSG C
72,037	46	Weighted Average
72,037		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0500	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.5	210	0.0400	1.00		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.4	260	Total			

Summary for Subcatchment EDA-2A: EDA-2A Flow to storage in swamp

Runoff = 13.37 cfs @ 12.27 hrs, Volume= 1.669 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
440,524	30	Woods, Good, HSG A
210,830	77	Woods, Good, HSG D
43,003	70	Woods, Good, HSG C
694,357	47	Weighted Average
694,357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
8.9	395	0.0220	0.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
16.0	445	Total			

Summary for Subcatchment EDA-3: Flow to central wetland (west side)

Runoff = 5.50 cfs @ 12.51 hrs, Volume= 1.074 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
585,808	30	Woods, Good, HSG A
117,238	70	Woods, Good, HSG C
63,848	77	Woods, Good, HSG D
766,894	40	Weighted Average
766,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment EDA-3A: Flow to central wetland east side)

Runoff = 16.73 cfs @ 12.30 hrs, Volume= 1.956 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
271,480	30	Woods, Good, HSG A
210,377	70	Woods, Good, HSG C
99,197	77	Woods, Good, HSG D
581,054	53	Weighted Average
581,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, ab
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.0	145	0.0260	0.81		Shallow Concentrated Flow, bc
					Woodland Kv= 5.0 fps
19.3	195	Total			

Summary for Subcatchment EDA-4: Flow to east swamp

Runoff = 9.22 cfs @ 12.26 hrs, Volume= 1.128 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
277,589	30	Woods, Good, HSG A
173,077	70	Woods, Good, HSG C
18,524	77	Woods, Good, HSG D
469,190	47	Weighted Average
469,190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
4.5	235	0.0300	0.87		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
15.0	285	Total			

Summary for Subcatchment EDA-4A: Flow to east swamp(area near Fern path)

Runoff = 9.03 cfs @ 12.20 hrs, Volume= 0.829 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
106,159	70	Woods, Good, HSG C
18,576	77	Woods, Good, HSG D
124,735	71	Weighted Average
124,735		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.5	285	0.1500	1.94		Shallow Concentrated Flow, BC
					Woodland Kv= 5.0 fps
13.8	335	Total			

Summary for Subcatchment EDA-5: flow to isolated wets

Runoff = 0.13 cfs @ 14.85 hrs, Volume= 0.081 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
260,619	30	Woods, Good, HSG A
260,619		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.4	260	Total			

Summary for Reach 1R: Central wetland

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.945 ac, 0.00% Impervious, Inflow Depth = 1.17" for 100-Yr Storm event
Inflow = 20.70 cfs @ 12.35 hrs, Volume= 3.030 af
Outflow = 20.70 cfs @ 12.35 hrs, Volume= 3.030 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 1.80" for 100-Yr Storm event
Inflow = 14.77 cfs @ 12.45 hrs, Volume= 1.261 af
Outflow = 14.77 cfs @ 12.45 hrs, Volume= 1.261 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 1.99" for 100-Yr Storm event
Inflow = 10.52 cfs @ 12.34 hrs, Volume= 1.048 af
Outflow = 10.52 cfs @ 12.34 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.983 ac, 0.00% Impervious, Inflow Depth = 0.16" for 100-Yr Storm event
Inflow = 0.13 cfs @ 14.85 hrs, Volume= 0.081 af
Outflow = 0.13 cfs @ 14.85 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Stream North to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.594 ac, 0.00% Impervious, Inflow Depth > 0.96" for 100-Yr Storm event
Inflow = 4.45 cfs @ 12.88 hrs, Volume= 1.409 af
Outflow = 4.45 cfs @ 12.88 hrs, Volume= 1.409 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 9R: East swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.635 ac, 0.00% Impervious, Inflow Depth = 1.72" for 100-Yr Storm event
Inflow = 17.93 cfs @ 12.22 hrs, Volume= 1.956 af
Outflow = 17.93 cfs @ 12.22 hrs, Volume= 1.956 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Storage @ Wets

Inflow Area = 6.322 ac, 5.33% Impervious, Inflow Depth = 2.30" for 100-Yr Storm event
Inflow = 11.27 cfs @ 12.27 hrs, Volume= 1.212 af
Outflow = 10.68 cfs @ 12.34 hrs, Volume= 1.193 af, Atten= 5%, Lag= 4.2 min
Discarded = 0.16 cfs @ 12.34 hrs, Volume= 0.145 af
Primary = 10.52 cfs @ 12.34 hrs, Volume= 1.048 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 260.54' @ 12.34 hrs Surf.Area= 6,602 sf Storage= 5,031 cf

Plug-Flow detention time= 42.6 min calculated for 1.193 af (98% of inflow)
Center-of-Mass det. time= 33.9 min (904.1 - 870.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.16 cfs @ 12.34 hrs HW=260.54' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=10.49 cfs @ 12.34 hrs HW=260.54' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 10.49 cfs @ 1.96 fps)

Summary for Pond 2P: Depression @ Partrige/Winthrop

[93] Warning: Storage range exceeded by 17.24'

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 8.416 ac, 7.06% Impervious, Inflow Depth = 1.87" for 100-Yr Storm event
 Inflow = 12.58 cfs @ 12.34 hrs, Volume= 1.310 af
 Outflow = 15.11 cfs @ 12.45 hrs, Volume= 1.310 af, Atten= 0%, Lag= 6.2 min
 Discarded = 0.35 cfs @ 12.40 hrs, Volume= 0.049 af
 Primary = 14.77 cfs @ 12.45 hrs, Volume= 1.261 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.24' @ 12.45 hrs Surf.Area= 6,210 sf Storage= 6,459 cf

Plug-Flow detention time= 8.0 min calculated for 1.308 af (100% of inflow)
 Center-of-Mass det. time= 8.0 min (879.1 - 871.1)

Volume	Invert	Avail.Storage	Storage Description
#1	254.00'	6,459 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
254.00	0	0.0	0	0	0
255.50	1,720	170.0	860	860	2,303
257.00	6,210	300.0	5,599	6,459	7,178

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert

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L= 10.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' /' Cc= 0.900
n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.35 cfs @ 12.40 hrs HW=260.58' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=14.46 cfs @ 12.45 hrs HW=273.47' (Free Discharge)

↑2=Culvert (Inlet Controls 14.46 cfs @ 18.41 fps)

Summary for Pond 3P: storage w/in Swamp PVP

Inflow Area = 15.940 ac, 0.00% Impervious, Inflow Depth = 1.26" for 100-Yr Storm event
Inflow = 13.37 cfs @ 12.27 hrs, Volume= 1.669 af
Outflow = 4.11 cfs @ 12.89 hrs, Volume= 1.247 af, Atten= 69%, Lag= 37.2 min
Primary = 4.11 cfs @ 12.89 hrs, Volume= 1.247 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 274.60' @ 12.89 hrs Surf.Area= 52,312 sf Storage= 23,297 cf

Plug-Flow detention time= 183.9 min calculated for 1.247 af (75% of inflow)
Center-of-Mass det. time= 84.6 min (989.3 - 904.7)

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	48,566 cf	Custom Stage Data (Irregular) Listed below (Recalc)

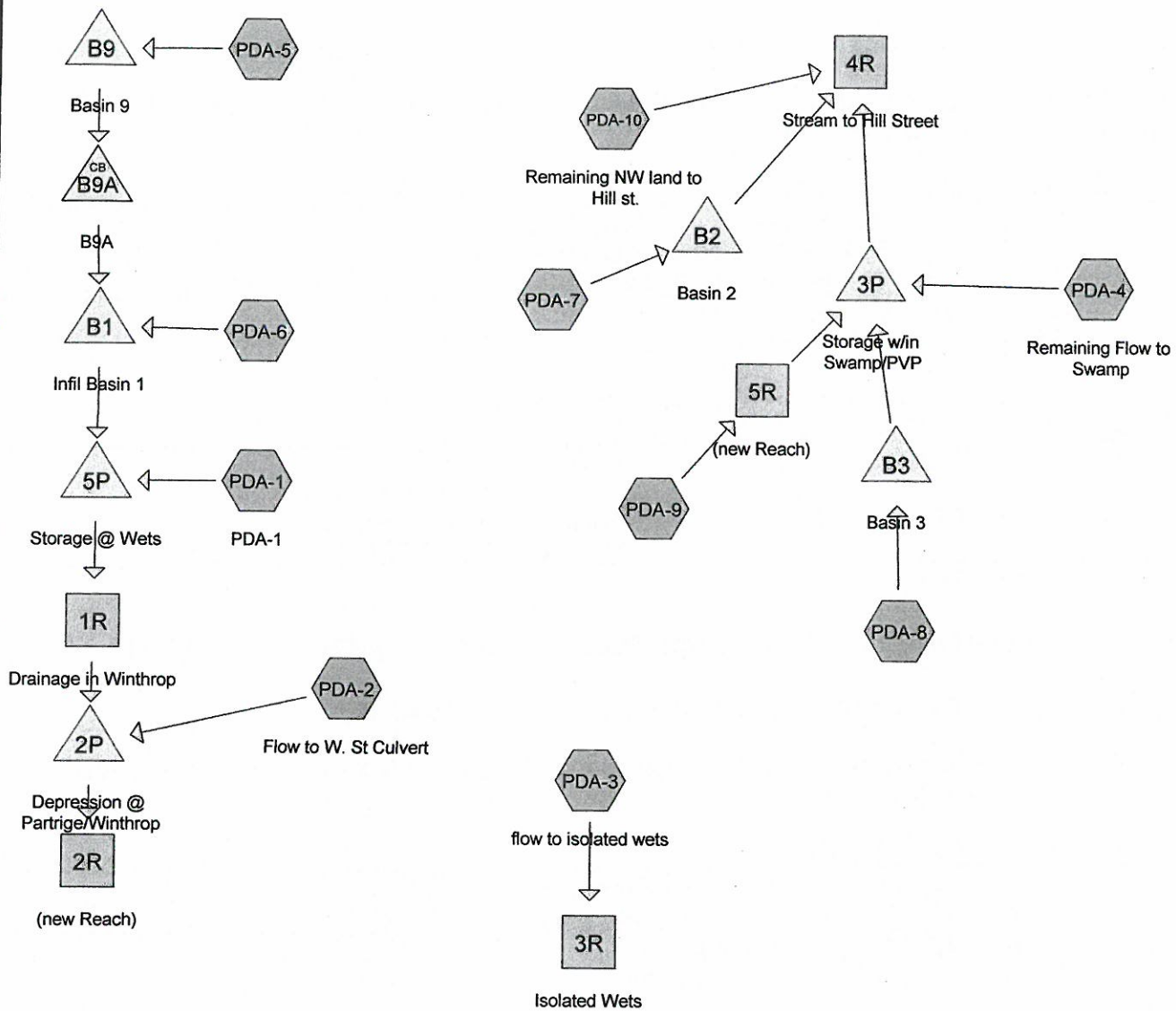
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	74,000	1,890.0	48,566	48,566	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.50'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.10 cfs @ 12.89 hrs HW=274.60' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 4.10 cfs @ 0.84 fps)

Appendix A-2
POST-DEVELOPMENT HYDROLOGY CALCULATIONS
(STANDARD #2)



Routing Diagram for OE2675-Post-West-North

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Type III 24-hr 2-year Rainfall=3.20"

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Summary for Subcatchment PDA-1: PDA-1[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.20 cfs @ 12.11 hrs, Volume= 0.026 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
17,918	72	Woods/grass comb., Good, HSG C
10,248	49	50-75% Grass cover, Fair, HSG A
7,678	43	Woods/grass comb., Fair, HSG A
35,844	59	Weighted Average
35,844		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	30	0.0400	0.18		Sheet Flow, AB
					Grass: Short $n=0.150$ $P2=3.20"$
1.0	240	0.0600	3.94		Shallow Concentrated Flow, BC
					Unpaved $K_v=16.1$ fps
3.8	270	Total			

Summary for Subcatchment PDA-10: Remaining NW land to Hill st.

Runoff = 0.01 cfs @ 15.55 hrs, Volume= 0.005 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
41,322	32	Woods/grass comb., Good, HSG A
18,254	76	Woods/grass comb., Fair, HSG C
59,576	45	Weighted Average
59,576		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB
					Woods: Light underbrush $n=0.400$ $P2=3.20"$
3.9	360	0.0090	1.53		Shallow Concentrated Flow, BC
					Unpaved $K_v=16.1$ fps
19.0	410	Total			

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Summary for Subcatchment PDA-2: Flow to W. St Culvert

Runoff = 0.29 cfs @ 12.15 hrs, Volume= 0.047 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
17,369	74	>75% Grass cover, Good, HSG C
21,937	49	50-75% Grass cover, Fair, HSG A
25,136	43	Woods/grass comb., Fair, HSG A
7,707	98	Paved parking, HSG C
72,149	58	Weighted Average
64,442		89.32% Pervious Area
7,707		10.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0360	0.19		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
2.1	485	0.0560	3.81		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
6.5	535	Total			

Summary for Subcatchment PDA-3: flow to isolated wets

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
219,362	30	Woods, Good, HSG A
219,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.4	260	Total			

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Type III 24-hr 2-year Rainfall=3.20"

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Summary for Subcatchment PDA-4: Remaining Flow to Swamp

Runoff = 0.86 cfs @ 12.43 hrs, Volume= 0.198 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
220,045	30	Woods, Good, HSG A
210,845	77	Woods, Good, HSG D
32,899	70	Woods, Good, HSG C
463,789	54	Weighted Average
463,789		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	50	0.0800	0.29		Sheet Flow, Range n= 0.130 P2= 3.20"
3.4	230	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.1	165	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.4	445	Total			

Summary for Subcatchment PDA-5:

Runoff = 1.15 cfs @ 12.13 hrs, Volume= 0.097 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (ac)	CN	Description
0.169	43	Woods/grass comb., Fair, HSG A
0.588	74	>75% Grass cover, Good, HSG C
0.285	76	Woods/grass comb., Fair, HSG C
0.111	98	Roofs, HSG C
0.036	98	Roofs, HSG A
1.189	73	Weighted Average
1.042		87.64% Pervious Area
0.147		12.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
0.8	192	0.0600	3.94		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
8.3	242	Total			

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Type III 24-hr 2-year Rainfall=3.20"

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Summary for Subcatchment PDA-6:

Runoff = 3.71 cfs @ 12.14 hrs, Volume= 0.314 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
48,925	74	>75% Grass cover, Good, HSG C
34,262	98	Paved parking, HSG C
31,808	98	Paved parking, HSG A
52,139	39	>75% Grass cover, Good, HSG A
167,134	73	Weighted Average
101,064		60.47% Pervious Area
66,070		39.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.9	127	0.0200	2.28		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
0.8	100	0.0100	2.03		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.2	475	0.0220	6.73	5.28	Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
8.5	752	Total			

Summary for Subcatchment PDA-7:

Runoff = 1.47 cfs @ 12.24 hrs, Volume= 0.170 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
27,162	74	>75% Grass cover, Good, HSG C
23,788	98	Paved parking, HSG C
24,566	98	Paved parking, HSG A
63,067	39	>75% Grass cover, Good, HSG A
138,583	66	Weighted Average
90,229		65.11% Pervious Area
48,354		34.89% Impervious Area

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Type III 24-hr 2-year Rainfall=3.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	191	0.0300	2.79		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
2.3	234	0.0070	1.70		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.5	470	0.0100	5.36	4.21	Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
14.2	945	Total			

Summary for Subcatchment PDA-8:

Runoff = 1.05 cfs @ 12.33 hrs, Volume= 0.149 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

Area (sf)	CN	Description
61,028	98	Paved parking, HSG A
77,580	39	>75% Grass cover, Good, HSG A
10,977	43	Woods/grass comb., Fair, HSG A
149,585	63	Weighted Average
88,557		59.20% Pervious Area
61,028		40.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
1.8	239	0.0190	2.22		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
0.8	80	0.0070	1.70		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.2	47	0.0100	4.54	3.56	Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
17.9	416	Total			

Summary for Subcatchment PDA-9:

Runoff = 0.01 cfs @ 13.77 hrs, Volume= 0.008 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.20"

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Area (sf)	CN	Description
38,132	49	50-75% Grass cover, Fair, HSG A
38,132		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
1.7	253	0.0250	2.55		Woods: Light underbrush n= 0.400 P2= 3.20"
					Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
13.0	303	Total			

Summary for Reach 1R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 0.05" for 2-year event
 Inflow = 0.24 cfs @ 13.94 hrs, Volume= 0.025 af
 Outflow = 0.24 cfs @ 13.94 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 0.11" for 2-year event
 Inflow = 0.30 cfs @ 13.92 hrs, Volume= 0.070 af
 Outflow = 0.30 cfs @ 13.92 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.036 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 4R: Stream to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 19.506 ac, 12.87% Impervious, Inflow Depth = 0.00" for 2-year event
 Inflow = 0.01 cfs @ 15.55 hrs, Volume= 0.005 af
 Outflow = 0.01 cfs @ 15.55 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.875 ac, 0.00% Impervious, Inflow Depth = 0.11" for 2-year event
 Inflow = 0.01 cfs @ 13.77 hrs, Volume= 0.008 af
 Outflow = 0.01 cfs @ 13.81 hrs, Volume= 0.008 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.60 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.4 min

Peak Storage= 1 cf @ 13.79 hrs
 Average Depth at Peak Storage= 0.03'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.21 cfs

12.0" Round Pipe
 n= 0.011 Concrete pipe, straight & clean
 Length= 115.0' Slope= 0.0217 '/
 Inlet Invert= 279.50', Outlet Invert= 277.00'

**Summary for Pond 2P: Depression @ Partridge/Winthrop**

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 0.12" for 2-year event
 Inflow = 0.31 cfs @ 13.92 hrs, Volume= 0.072 af
 Outflow = 0.31 cfs @ 13.92 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.2 min
 Discarded = 0.01 cfs @ 13.92 hrs, Volume= 0.002 af
 Primary = 0.30 cfs @ 13.92 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 255.50' @ 13.92 hrs Surf.Area= 1,723 sf Storage= 3 cf

Plug-Flow detention time= 0.1 min calculated for 0.072 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (910.1 - 910.0)

Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	5,599 cf	Custom Stage Data (Irregular) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
255.50	1,720	170.0	0	0	1,720
257.00	6,210	300.0	5,599	5,599	6,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	255.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.10 cfs @ 13.92 hrs HW=255.50' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=2.99 cfs @ 13.92 hrs HW=255.50' (Free Discharge)

↑2=Culvert (Inlet Controls 2.99 cfs @ 3.80 fps)

Summary for Pond 3P: Storage w/in Swamp/PVP

Inflow Area = 14.957 ac, 9.37% Impervious, Inflow Depth = 0.17" for 2-year event
 Inflow = 0.86 cfs @ 12.43 hrs, Volume= 0.206 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.27' @ 25.30 hrs Surf.Area= 39,707 sf Storage= 8,985 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	53,729 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	86,000	1,890.0	53,729	53,729	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.75'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=274.00' (Free Discharge)

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

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Summary for Pond 5P: Storage @ Wets

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 0.24" for 2-year event
 Inflow = 0.66 cfs @ 12.73 hrs, Volume= 0.115 af
 Outflow = 0.34 cfs @ 13.94 hrs, Volume= 0.115 af, Atten= 48%, Lag= 72.1 min
 Discarded = 0.10 cfs @ 13.94 hrs, Volume= 0.089 af
 Primary = 0.24 cfs @ 13.94 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 260.04' @ 13.94 hrs Surf.Area= 4,167 sf Storage= 2,402 cf

Plug-Flow detention time= 242.5 min calculated for 0.115 af (100% of inflow)
 Center-of-Mass det. time= 242.3 min (1,087.4 - 845.0)

Volume	Invert	Avail.Storage	Storage Description		
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.10 cfs @ 13.94 hrs HW=260.04' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.24 cfs @ 13.94 hrs HW=260.04' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 0.24 cfs @ 0.54 fps)

Summary for Pond B1: Infil Basin 1

Inflow Area = 5.026 ac, 33.10% Impervious, Inflow Depth = 0.82" for 2-year event
 Inflow = 3.71 cfs @ 12.14 hrs, Volume= 0.342 af
 Outflow = 0.86 cfs @ 12.75 hrs, Volume= 0.342 af, Atten= 77%, Lag= 37.0 min
 Discarded = 0.26 cfs @ 12.75 hrs, Volume= 0.253 af
 Primary = 0.60 cfs @ 12.75 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 262.43' @ 12.75 hrs Surf.Area= 4,581 sf Storage= 5,458 cf

Plug-Flow detention time= 162.4 min calculated for 0.341 af (100% of inflow)
 Center-of-Mass det. time= 162.4 min (1,023.0 - 860.6)

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Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	21,036 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
261.00	3,080	336.8	0	0	3,080
263.00	5,255	378.0	8,239	8,239	5,530
265.00	7,615	418.4	12,797	21,036	8,211

Device	Routing	Invert	Outlet Devices
#1	Discarded	261.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	262.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 262.00' / 261.80' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.26 cfs @ 12.75 hrs HW=262.43' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.26 cfs)**Primary OutFlow** Max=0.60 cfs @ 12.75 hrs HW=262.43' (Free Discharge)↑ **2=Culvert** (Barrel Controls 0.60 cfs @ 2.70 fps)**Summary for Pond B2: Basin 2**

Inflow Area = 3.181 ac, 34.89% Impervious, Inflow Depth = 0.64" for 2-year event
 Inflow = 1.47 cfs @ 12.24 hrs, Volume= 0.170 af
 Outflow = 0.92 cfs @ 12.53 hrs, Volume= 0.170 af, Atten= 38%, Lag= 17.4 min
 Discarded = 0.92 cfs @ 12.53 hrs, Volume= 0.170 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 276.64' @ 12.53 hrs Surf.Area= 4,786 sf Storage= 646 cf

Plug-Flow detention time= 5.2 min calculated for 0.170 af (100% of inflow)
 Center-of-Mass det. time= 5.2 min (903.9 - 898.7)

Volume	Invert	Avail.Storage	Storage Description
#1	276.50'	26,449 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.50	4,665	300.6	0	0	4,665
278.50	6,582	338.3	11,192	11,192	6,685
280.50	8,725	376.0	15,257	26,449	8,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.50'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.50'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.50' / 276.00' S= 0.0167 ' S= 0.0167 ' Cc= 0.900

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#3 Device 2 278.00' n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.92 cfs @ 12.53 hrs HW=276.64' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 0.92 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.50' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)
↑3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B3: Basin 3

Inflow Area = 3.434 ac, 40.80% Impervious, Inflow Depth = 0.52" for 2-year event
Inflow = 1.05 cfs @ 12.33 hrs, Volume= 0.149 af
Outflow = 0.68 cfs @ 12.64 hrs, Volume= 0.149 af, Atten= 35%, Lag= 18.4 min
Discarded = 0.68 cfs @ 12.64 hrs, Volume= 0.149 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 276.15' @ 12.64 hrs Surf.Area= 3,575 sf Storage= 513 cf

Plug-Flow detention time= 5.3 min calculated for 0.148 af (100% of inflow)
Center-of-Mass det. time= 5.3 min (920.8 - 915.6)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	20,056 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	3,475	231.6	0	0	3,475
278.00	4,980	269.4	8,410	8,410	5,063
280.00	6,709	307.1	11,646	20,056	6,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.00' / 275.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	278.40'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.68 cfs @ 12.64 hrs HW=276.14' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 0.68 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.00' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)
↑3=Orifice/Grate (Controls 0.00 cfs)

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Summary for Pond B9: Basin 9

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 0.98" for 2-year event
 Inflow = 1.15 cfs @ 12.13 hrs, Volume= 0.097 af
 Outflow = 0.66 cfs @ 12.36 hrs, Volume= 0.097 af, Atten= 43%, Lag= 13.5 min
 Discarded = 0.07 cfs @ 12.36 hrs, Volume= 0.070 af
 Primary = 0.59 cfs @ 12.36 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.44' @ 12.36 hrs Surf.Area= 2,860 sf Storage= 1,086 cf

Plug-Flow detention time= 131.1 min calculated for 0.097 af (100% of inflow)
 Center-of-Mass det. time= 131.1 min (998.6 - 867.5)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	1,898 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,111	406.0	0	0	2,111
271.70	3,360	426.0	1,898	1,898	3,467

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	271.40'	2.0" x 2.0" Horiz. Orifice/Grate X 36.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.07 cfs @ 12.36 hrs HW=271.44' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.59 cfs @ 12.36 hrs HW=271.44' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 0.59 cfs @ 0.64 fps)

Summary for Pond B9A: B9A

[57] Hint: Peaked at 269.38' (Flood elevation advised)

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 0.28" for 2-year event
 Inflow = 0.59 cfs @ 12.36 hrs, Volume= 0.028 af
 Outflow = 0.59 cfs @ 12.36 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.59 cfs @ 12.36 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 269.38' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 269.00' / 267.50' S= 0.0100 ' / Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

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Primary OutFlow Max=0.59 cfs @ 12.36 hrs HW=269.37' (Free Discharge)

↑1=Culvert (Barrel Controls 0.59 cfs @ 3.26 fps)

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Summary for Subcatchment PDA-1: PDA-1[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.071 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
17,918	72	Woods/grass comb., Good, HSG C
10,248	49	50-75% Grass cover, Fair, HSG A
7,678	43	Woods/grass comb., Fair, HSG A
35,844	59	Weighted Average
35,844		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	30	0.0400	0.18		Sheet Flow, AB
					Grass: Short $n=0.150$ $P2=3.20"$
1.0	240	0.0600	3.94		Shallow Concentrated Flow, BC
					Unpaved $K_v=16.1$ fps
3.8	270	Total			

Summary for Subcatchment PDA-10: Remaining NW land to Hill st.

Runoff = 0.15 cfs @ 12.55 hrs, Volume= 0.038 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, $dt=0.05$ hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
41,322	32	Woods/grass comb., Good, HSG A
18,254	76	Woods/grass comb., Fair, HSG C
59,576	45	Weighted Average
59,576		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB
					Woods: Light underbrush $n=0.400$ $P2=3.20"$
3.9	360	0.0090	1.53		Shallow Concentrated Flow, BC
					Unpaved $K_v=16.1$ fps
19.0	410	Total			

Summary for Subcatchment PDA-2: Flow to W. St Culvert

Runoff = 1.53 cfs @ 12.12 hrs, Volume= 0.135 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
17,369	74	>75% Grass cover, Good, HSG C
21,937	49	50-75% Grass cover, Fair, HSG A
25,136	43	Woods/grass comb., Fair, HSG A
7,707	98	Paved parking, HSG C
72,149	58	Weighted Average
64,442		89.32% Pervious Area
7,707		10.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0360	0.19		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
2.1	485	0.0560	3.81		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
6.5	535	Total			

Summary for Subcatchment PDA-3: flow to isolated wets

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
219,362	30	Woods, Good, HSG A
219,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.4	260	Total			

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Summary for Subcatchment PDA-4: Remaining Flow to Swamp

Runoff = 5.66 cfs @ 12.19 hrs, Volume= 0.672 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
220,045	30	Woods, Good, HSG A
210,845	77	Woods, Good, HSG D
32,899	70	Woods, Good, HSG C
463,789	54	Weighted Average
463,789		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	50	0.0800	0.29		Sheet Flow, Range n= 0.130 P2= 3.20"
3.4	230	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.1	165	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.4	445	Total			

Summary for Subcatchment PDA-5:

Runoff = 2.52 cfs @ 12.12 hrs, Volume= 0.199 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (ac)	CN	Description
0.169	43	Woods/grass comb., Fair, HSG A
0.588	74	>75% Grass cover, Good, HSG C
0.285	76	Woods/grass comb., Fair, HSG C
0.111	98	Roofs, HSG C
0.036	98	Roofs, HSG A
1.189	73	Weighted Average
1.042		87.64% Pervious Area
0.147		12.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
0.8	192	0.0600	3.94		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
8.3	242	Total			

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Summary for Subcatchment PDA-6:

Runoff = 8.00 cfs @ 12.13 hrs, Volume= 0.643 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
48,925	74	>75% Grass cover, Good, HSG C
34,262	98	Paved parking, HSG C
31,808	98	Paved parking, HSG A
52,139	39	>75% Grass cover, Good, HSG A
167,134	73	Weighted Average
101,064		60.47% Pervious Area
66,070		39.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.9	127	0.0200	2.28		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.8	100	0.0100	2.03		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
1.2	475	0.0220	6.73	5.28	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
8.5	752	Total			

Summary for Subcatchment PDA-7:

Runoff = 4.02 cfs @ 12.21 hrs, Volume= 0.396 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
27,162	74	>75% Grass cover, Good, HSG C
23,788	98	Paved parking, HSG C
24,566	98	Paved parking, HSG A
63,067	39	>75% Grass cover, Good, HSG A
138,583	66	Weighted Average
90,229		65.11% Pervious Area
48,354		34.89% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	191	0.0300	2.79		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
2.3	234	0.0070	1.70		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
1.5	470	0.0100	5.36	4.21	Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
14.2	945	Total			

Summary for Subcatchment PDA-8:

Runoff = 3.32 cfs @ 12.27 hrs, Volume= 0.370 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

Area (sf)	CN	Description
61,028	98	Paved parking, HSG A
77,580	39	>75% Grass cover, Good, HSG A
10,977	43	Woods/grass comb., Fair, HSG A
149,585	63	Weighted Average
88,557		59.20% Pervious Area
61,028		40.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
1.8	239	0.0190	2.22		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
0.8	80	0.0070	1.70		Shallow Concentrated Flow, CD Paved Kv= 20.3 fps
0.2	47	0.0100	4.54	3.56	Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
17.9	416	Total			

Summary for Subcatchment PDA-9:

Runoff = 0.22 cfs @ 12.35 hrs, Volume= 0.037 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.65"

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Area (sf)	CN	Description
38,132	49	50-75% Grass cover, Fair, HSG A
38,132		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
1.7	253	0.0250	2.55		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
13.0	303	Total			

Summary for Reach 1R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 0.78" for 10-year event
 Inflow = 3.21 cfs @ 12.60 hrs, Volume= 0.380 af
 Outflow = 3.21 cfs @ 12.60 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 0.80" for 10-year event
 Inflow = 3.26 cfs @ 12.74 hrs, Volume= 0.499 af
 Outflow = 3.26 cfs @ 12.74 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.036 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 4R: Stream to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 19.506 ac, 12.87% Impervious, Inflow Depth = 0.02" for 10-year event
 Inflow = 0.15 cfs @ 12.55 hrs, Volume= 0.038 af
 Outflow = 0.15 cfs @ 12.55 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

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Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.875 ac, 0.00% Impervious, Inflow Depth = 0.51" for 10-year event
Inflow = 0.22 cfs @ 12.35 hrs, Volume= 0.037 af
Outflow = 0.21 cfs @ 12.37 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.69 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 1.99 fps, Avg. Travel Time= 1.0 min

Peak Storage= 7 cf @ 12.36 hrs

Average Depth at Peak Storage= 0.13'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.21 cfs

12.0" Round Pipe

n= 0.011 Concrete pipe, straight & clean

Length= 115.0' Slope= 0.0217 ' /'

Inlet Invert= 279.50', Outlet Invert= 277.00'

**Summary for Pond 2P: Depression @ Partridge/Winthrop**

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 0.82" for 10-year event
Inflow = 3.63 cfs @ 12.55 hrs, Volume= 0.516 af
Outflow = 3.37 cfs @ 12.74 hrs, Volume= 0.516 af, Atten= 7%, Lag= 11.4 min
Discarded = 0.11 cfs @ 12.74 hrs, Volume= 0.016 af
Primary = 3.26 cfs @ 12.74 hrs, Volume= 0.499 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 255.65' @ 12.74 hrs Surf.Area= 2,053 sf Storage= 290 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.4 min (835.5 - 835.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	5,599 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
255.50	1,720	170.0	0	0	1,720
257.00	6,210	300.0	5,599	5,599	6,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	255.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.11 cfs @ 12.74 hrs HW=255.65' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)**Primary OutFlow** Max=3.26 cfs @ 12.74 hrs HW=255.65' (Free Discharge)↑**2=Culvert** (Inlet Controls 3.26 cfs @ 4.15 fps)**Summary for Pond 3P: Storage w/in Swamp/PVP**

Inflow Area = 14.957 ac, 9.37% Impervious, Inflow Depth = 0.57" for 10-year event
 Inflow = 5.80 cfs @ 12.20 hrs, Volume= 0.709 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.70' @ 25.35 hrs Surf.Area= 64,500 sf Storage= 30,878 cf

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

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

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	53,729 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	86,000	1,890.0	53,729	53,729	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.75'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=274.00' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Pond 5P: Storage @ Wets

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 1.02" for 10-year event
 Inflow = 3.51 cfs @ 12.45 hrs, Volume= 0.499 af
 Outflow = 3.33 cfs @ 12.60 hrs, Volume= 0.494 af, Atten= 5%, Lag= 9.3 min
 Discarded = 0.12 cfs @ 12.60 hrs, Volume= 0.114 af
 Primary = 3.21 cfs @ 12.60 hrs, Volume= 0.380 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 260.25' @ 12.60 hrs Surf.Area= 5,111 sf Storage= 3,350 cf

Plug-Flow detention time= 77.4 min calculated for 0.493 af (99% of inflow)
 Center-of-Mass det. time= 73.3 min (896.1 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.12 cfs @ 12.60 hrs HW=260.25' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=3.21 cfs @ 12.60 hrs HW=260.25' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 3.21 cfs @ 1.29 fps)

Summary for Pond B1: Infil Basin 1

Inflow Area = 5.026 ac, 33.10% Impervious, Inflow Depth = 1.80" for 10-year event
 Inflow = 9.74 cfs @ 12.14 hrs, Volume= 0.753 af
 Outflow = 3.54 cfs @ 12.50 hrs, Volume= 0.753 af, Atten= 64%, Lag= 22.1 min
 Discarded = 0.32 cfs @ 12.50 hrs, Volume= 0.326 af
 Primary = 3.22 cfs @ 12.50 hrs, Volume= 0.427 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 263.43' @ 12.50 hrs Surf.Area= 5,730 sf Storage= 10,622 cf

Plug-Flow detention time= 111.8 min calculated for 0.752 af (100% of inflow)
 Center-of-Mass det. time= 112.0 min (948.5 - 836.5)

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Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	21,036 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
261.00	3,080	336.8	0	0	3,080
263.00	5,255	378.0	8,239	8,239	5,530
265.00	7,615	418.4	12,797	21,036	8,211

Device	Routing	Invert	Outlet Devices
#1	Discarded	261.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	262.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 262.00' / 261.80' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.32 cfs @ 12.50 hrs HW=263.43' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)**Primary OutFlow** Max=3.22 cfs @ 12.50 hrs HW=263.43' (Free Discharge)↑**2=Culvert** (Inlet Controls 3.22 cfs @ 4.10 fps)**Summary for Pond B2: Basin 2**

Inflow Area = 3.181 ac, 34.89% Impervious, Inflow Depth = 1.49" for 10-year event
 Inflow = 4.02 cfs @ 12.21 hrs, Volume= 0.396 af
 Outflow = 1.04 cfs @ 12.76 hrs, Volume= 0.396 af, Atten= 74%, Lag= 32.9 min
 Discarded = 1.04 cfs @ 12.76 hrs, Volume= 0.396 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 277.37' @ 12.76 hrs Surf.Area= 5,457 sf Storage= 4,389 cf

Plug-Flow detention time= 30.2 min calculated for 0.395 af (100% of inflow)
 Center-of-Mass det. time= 30.2 min (900.4 - 870.2)

Volume	Invert	Avail.Storage	Storage Description
#1	276.50'	26,449 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.50	4,665	300.6	0	0	4,665
278.50	6,582	338.3	11,192	11,192	6,685
280.50	8,725	376.0	15,257	26,449	8,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.50'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.50'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.50' / 276.00' S= 0.0167 ' S= 0.0167 ' Cc= 0.900

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#3 Device 2 278.00' n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=1.04 cfs @ 12.76 hrs HW=277.37' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.50' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

↑3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B3: Basin 3

Inflow Area = 3.434 ac, 40.80% Impervious, Inflow Depth = 1.29" for 10-year event
Inflow = 3.32 cfs @ 12.27 hrs, Volume= 0.370 af
Outflow = 0.82 cfs @ 12.97 hrs, Volume= 0.370 af, Atten= 75%, Lag= 41.5 min
Discarded = 0.82 cfs @ 12.97 hrs, Volume= 0.370 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 277.12' @ 12.97 hrs Surf.Area= 4,286 sf Storage= 4,344 cf

Plug-Flow detention time= 42.4 min calculated for 0.369 af (100% of inflow)

Center-of-Mass det. time= 42.3 min (924.8 - 882.5)

Volume	Invert	Avail.Storage	Storage Description
#1	276.00'	20,056 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	3,475	231.6	0	0	3,475
278.00	4,980	269.4	8,410	8,410	5,063
280.00	6,709	307.1	11,646	20,056	6,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.00' / 275.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	278.40'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.82 cfs @ 12.97 hrs HW=277.12' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

↑3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B9: Basin 9

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 2.01" for 10-year event
 Inflow = 2.52 cfs @ 12.12 hrs, Volume= 0.199 af
 Outflow = 2.00 cfs @ 12.21 hrs, Volume= 0.199 af, Atten= 21%, Lag= 5.1 min
 Discarded = 0.07 cfs @ 12.21 hrs, Volume= 0.089 af
 Primary = 1.92 cfs @ 12.21 hrs, Volume= 0.111 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.56' @ 12.21 hrs Surf.Area= 3,086 sf Storage= 1,445 cf

Plug-Flow detention time= 88.8 min calculated for 0.199 af (100% of inflow)
 Center-of-Mass det. time= 89.0 min (934.8 - 845.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	271.00'	1,898 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,111	406.0	0	0	2,111
271.70	3,360	426.0	1,898	1,898	3,467

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	271.40'	2.0" x 2.0" Horiz. Orifice/Grate X 36.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.07 cfs @ 12.21 hrs HW=271.56' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=1.91 cfs @ 12.21 hrs HW=271.56' (Free Discharge)
 ↑2=Orifice/Grate (Orifice Controls 1.91 cfs @ 1.91 fps)

Summary for Pond B9A: B9A

[57] Hint: Peaked at 269.73' (Flood elevation advised)

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 1.12" for 10-year event
 Inflow = 1.92 cfs @ 12.21 hrs, Volume= 0.111 af
 Outflow = 1.92 cfs @ 12.21 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.92 cfs @ 12.21 hrs, Volume= 0.111 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 269.73' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 269.00' / 267.50' S= 0.0100 ' /' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

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Type III 24-hr 10-year Rainfall=4.65"

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Primary OutFlow Max=1.91 cfs @ 12.21 hrs HW=269.72' (Free Discharge)

↑1=Culvert (Barrel Controls 1.91 cfs @ 4.39 fps)

Summary for Subcatchment PDA-1: PDA-1

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

Runoff = 2.25 cfs @ 12.07 hrs, Volume= 0.158 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
17,918	72	Woods/grass comb., Good, HSG C
10,248	49	50-75% Grass cover, Fair, HSG A
7,678	43	Woods/grass comb., Fair, HSG A
35,844	59	Weighted Average
35,844		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	30	0.0400	0.18		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
1.0	240	0.0600	3.94		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
3.8	270	Total			

Summary for Subcatchment PDA-10: Remaining NW land to Hill st.

Runoff = 0.88 cfs @ 12.35 hrs, Volume= 0.125 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
41,322	32	Woods/grass comb., Good, HSG A
18,254	76	Woods/grass comb., Fair, HSG C
59,576	45	Weighted Average
59,576		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	360	0.0090	1.53		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
19.0	410	Total			

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Type III 24-hr 100-year Rainfall=6.70"

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Summary for Subcatchment PDA-2: Flow to W. St Culvert

Runoff = 3.95 cfs @ 12.11 hrs, Volume= 0.305 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
17,369	74	>75% Grass cover, Good, HSG C
21,937	49	50-75% Grass cover, Fair, HSG A
25,136	43	Woods/grass comb., Fair, HSG A
7,707	98	Paved parking, HSG C
72,149	58	Weighted Average
64,442		89.32% Pervious Area
7,707		10.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0360	0.19		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
2.1	485	0.0560	3.81		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
6.5	535	Total			

Summary for Subcatchment PDA-3: flow to isolated wets

Runoff = 0.11 cfs @ 14.85 hrs, Volume= 0.068 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
219,362	30	Woods, Good, HSG A
219,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 3.20"
3.9	210	0.0330	0.91		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
14.4	260	Total			

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Type III 24-hr 100-year Rainfall=6.70"

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Summary for Subcatchment PDA-4: Remaining Flow to Swamp

Runoff = 17.89 cfs @ 12.16 hrs, Volume= 1.639 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
220,045	30	Woods, Good, HSG A
210,845	77	Woods, Good, HSG D
32,899	70	Woods, Good, HSG C
463,789	54	Weighted Average
463,789		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	50	0.0800	0.29		Sheet Flow, Range n= 0.130 P2= 3.20"
3.4	230	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.1	165	0.0180	0.67		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.4	445	Total			

Summary for Subcatchment PDA-5:

Runoff = 4.67 cfs @ 12.12 hrs, Volume= 0.364 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (ac)	CN	Description
0.169	43	Woods/grass comb., Fair, HSG A
0.588	74	>75% Grass cover, Good, HSG C
0.285	76	Woods/grass comb., Fair, HSG C
0.111	98	Roofs, HSG C
0.036	98	Roofs, HSG A
1.189	73	Weighted Average
1.042		87.64% Pervious Area
0.147		12.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 3.20"
0.8	192	0.0600	3.94		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
8.3	242	Total			

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Summary for Subcatchment PDA-6:

Runoff = 14.97 cfs @ 12.12 hrs, Volume= 1.176 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
48,925	74	>75% Grass cover, Good, HSG C
34,262	98	Paved parking, HSG C
31,808	98	Paved parking, HSG A
52,139	39	>75% Grass cover, Good, HSG A
167,134	73	Weighted Average
101,064		60.47% Pervious Area
66,070		39.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.9	127	0.0200	2.28		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.8	100	0.0100	2.03		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
1.2	475	0.0220	6.73	5.28	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
8.5	752	Total			

Summary for Subcatchment PDA-7:

Runoff = 8.41 cfs @ 12.20 hrs, Volume= 0.788 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
27,162	74	>75% Grass cover, Good, HSG C
23,788	98	Paved parking, HSG C
24,566	98	Paved parking, HSG A
63,067	39	>75% Grass cover, Good, HSG A
138,583	66	Weighted Average
90,229		65.11% Pervious Area
48,354		34.89% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	191	0.0300	2.79		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
2.3	234	0.0070	1.70		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
1.5	470	0.0100	5.36	4.21	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.011 Concrete pipe, straight & clean
14.2	945	Total			

Summary for Subcatchment PDA-8:

Runoff = 7.40 cfs @ 12.26 hrs, Volume= 0.766 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

Area (sf)	CN	Description
61,028	98	Paved parking, HSG A
77,580	39	>75% Grass cover, Good, HSG A
10,977	43	Woods/grass comb., Fair, HSG A
149,585	63	Weighted Average
88,557		59.20% Pervious Area
61,028		40.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0120	0.06		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
1.8	239	0.0190	2.22		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.8	80	0.0070	1.70		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
0.2	47	0.0100	4.54	3.56	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
17.9	416	Total			

Summary for Subcatchment PDA-9:

Runoff = 0.95 cfs @ 12.21 hrs, Volume= 0.104 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=6.70"

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Area (sf)	CN	Description
38,132	49	50-75% Grass cover, Fair, HSG A
38,132		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.0250	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
1.7	253	0.0250	2.55		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
13.0	303	Total			

Summary for Reach 1R: Drainage in Winthrop

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 2.14" for 100-year event
 Inflow = 6.79 cfs @ 12.50 hrs, Volume= 1.045 af
 Outflow = 6.79 cfs @ 12.50 hrs, Volume= 1.045 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 2.05" for 100-year event
 Inflow = 5.85 cfs @ 12.74 hrs, Volume= 1.284 af
 Outflow = 5.85 cfs @ 12.74 hrs, Volume= 1.284 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Isolated Wets

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.036 ac, 0.00% Impervious, Inflow Depth = 0.16" for 100-year event
 Inflow = 0.11 cfs @ 14.85 hrs, Volume= 0.068 af
 Outflow = 0.11 cfs @ 14.85 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 4R: Stream to Hill Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 19.506 ac, 12.87% Impervious, Inflow Depth > 0.70" for 100-year event
 Inflow = 2.70 cfs @ 13.80 hrs, Volume= 1.133 af
 Outflow = 2.70 cfs @ 13.80 hrs, Volume= 1.133 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: (new Reach)

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.875 ac, 0.00% Impervious, Inflow Depth = 1.42" for 100-year event
Inflow = 0.95 cfs @ 12.21 hrs, Volume= 0.104 af
Outflow = 0.94 cfs @ 12.22 hrs, Volume= 0.104 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.70 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.57 fps, Avg. Travel Time= 0.7 min

Peak Storage= 19 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.21 cfs

12.0" Round Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 115.0' Slope= 0.0217 '
Inlet Invert= 279.50', Outlet Invert= 277.00'



Summary for Pond 2P: Depression @ Partridge/Winthrop

[93] Warning: Storage range exceeded by 0.77'

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 7.505 ac, 24.53% Impervious, Inflow Depth = 2.16" for 100-year event
Inflow = 8.01 cfs @ 12.49 hrs, Volume= 1.349 af
Outflow = 6.19 cfs @ 12.74 hrs, Volume= 1.349 af, Atten= 23%, Lag= 15.1 min
Discarded = 0.35 cfs @ 12.70 hrs, Volume= 0.066 af
Primary = 5.85 cfs @ 12.74 hrs, Volume= 1.284 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 257.77' @ 12.74 hrs Surf.Area= 6,210 sf Storage= 5,599 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.1 min (842.9 - 833.8)

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Volume	Invert	Avail.Storage	Storage Description
#1	255.50'	5,599 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
255.50	1,720	170.0	0	0	1,720
257.00	6,210	300.0	5,599	5,599	6,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	255.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	254.20'	12.0" Round Culvert L= 10.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 254.20' / 254.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.35 cfs @ 12.70 hrs HW=257.59' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=5.80 cfs @ 12.74 hrs HW=257.72' (Free Discharge)

↑2=Culvert (Inlet Controls 5.80 cfs @ 7.38 fps)

Summary for Pond 3P: Storage w/in Swamp/PVP

Inflow Area = 14.957 ac, 9.37% Impervious, Inflow Depth = 1.42" for 100-year event
 Inflow = 18.73 cfs @ 12.17 hrs, Volume= 1.764 af
 Outflow = 2.32 cfs @ 13.87 hrs, Volume= 0.971 af, Atten= 88%, Lag= 102.5 min
 Primary = 2.32 cfs @ 13.87 hrs, Volume= 0.971 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.82' @ 13.87 hrs Surf.Area= 72,701 sf Storage= 39,207 cf

Plug-Flow detention time= 285.8 min calculated for 0.969 af (55% of inflow)
 Center-of-Mass det. time= 157.2 min (1,033.5 - 876.3)

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	53,729 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	27,000	1,100.0	0	0	27,000
275.00	86,000	1,890.0	53,729	53,729	214,976

Device	Routing	Invert	Outlet Devices
#1	Primary	274.75'	50.0' long x 50.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.31 cfs @ 13.87 hrs HW=274.82' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 2.31 cfs @ 0.69 fps)

Summary for Pond 5P: Storage @ Wets

Inflow Area = 5.849 ac, 28.45% Impervious, Inflow Depth = 2.45" for 100-year event
 Inflow = 7.87 cfs @ 12.46 hrs, Volume= 1.196 af
 Outflow = 6.93 cfs @ 12.50 hrs, Volume= 1.182 af, Atten= 12%, Lag= 2.7 min
 Discarded = 0.14 cfs @ 12.50 hrs, Volume= 0.138 af
 Primary = 6.79 cfs @ 12.50 hrs, Volume= 1.045 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 260.41' @ 12.50 hrs Surf.Area= 5,902 sf Storage= 4,215 cf

Plug-Flow detention time= 39.5 min calculated for 1.181 af (99% of inflow)
 Center-of-Mass det. time= 34.2 min (867.1 - 832.9)

Volume	Invert	Avail.Storage	Storage Description		
#1	259.00'	8,718 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
259.00	850	120.0	0	0	850
261.00	9,400	360.0	8,718	8,718	10,030

Device	Routing	Invert	Outlet Devices
#1	Discarded	259.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	260.00'	10.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Discarded OutFlow Max=0.14 cfs @ 12.50 hrs HW=260.41' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=6.78 cfs @ 12.50 hrs HW=260.41' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 6.78 cfs @ 1.67 fps)

Summary for Pond B1: Infil Basin 1

[93] Warning: Storage range exceeded by 2.21'

Inflow Area = 5.026 ac, 33.10% Impervious, Inflow Depth = 3.43" for 100-year event
 Inflow = 20.01 cfs @ 12.14 hrs, Volume= 1.438 af
 Outflow = 7.68 cfs @ 12.46 hrs, Volume= 1.438 af, Atten= 62%, Lag= 19.0 min
 Discarded = 0.42 cfs @ 12.45 hrs, Volume= 0.399 af
 Primary = 7.25 cfs @ 12.46 hrs, Volume= 1.038 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 267.21' @ 12.46 hrs Surf.Area= 7,615 sf Storage= 21,036 cf

Plug-Flow detention time= 88.0 min calculated for 1.435 af (100% of inflow)
 Center-of-Mass det. time= 88.3 min (910.4 - 822.0)

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Volume	Invert	Avail.Storage	Storage Description
#1	261.00'	21,036 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
261.00	3,080	336.8	0	0	3,080
263.00	5,255	378.0	8,239	8,239	5,530
265.00	7,615	418.4	12,797	21,036	8,211

Device	Routing	Invert	Outlet Devices
#1	Discarded	261.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	262.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 262.00' / 261.80' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.42 cfs @ 12.45 hrs HW=267.18' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=7.07 cfs @ 12.46 hrs HW=266.98' (Free Discharge)

↑2=Culvert (Inlet Controls 7.07 cfs @ 9.00 fps)

Summary for Pond B2: Basin 2

Inflow Area = 3.181 ac, 34.89% Impervious, Inflow Depth = 2.97" for 100-year event
 Inflow = 8.41 cfs @ 12.20 hrs, Volume= 0.788 af
 Outflow = 1.56 cfs @ 12.89 hrs, Volume= 0.788 af, Atten= 82%, Lag= 41.2 min
 Discarded = 1.28 cfs @ 12.89 hrs, Volume= 0.750 af
 Primary = 0.28 cfs @ 12.89 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 278.60' @ 12.89 hrs Surf.Area= 6,681 sf Storage= 11,846 cf

Plug-Flow detention time= 76.7 min calculated for 0.788 af (100% of inflow)
 Center-of-Mass det. time= 76.6 min (926.2 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	276.50'	26,449 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.50	4,665	300.6	0	0	4,665
278.50	6,582	338.3	11,192	11,192	6,685
280.50	8,725	376.0	15,257	26,449	8,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.50'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.50'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.50' / 276.00' S= 0.0167 ' S= 0.0167 ' Cc= 0.900

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#3 Device 2 278.00' n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=1.28 cfs @ 12.89 hrs HW=278.60' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=0.28 cfs @ 12.89 hrs HW=278.60' (Free Discharge)

↑2=Culvert (Passes 0.28 cfs of 4.22 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.28 cfs @ 3.16 fps)

Summary for Pond B3: Basin 3

Inflow Area = 3.434 ac, 40.80% Impervious, Inflow Depth = 2.68" for 100-year event
Inflow = 7.40 cfs @ 12.26 hrs, Volume= 0.766 af
Outflow = 1.26 cfs @ 13.15 hrs, Volume= 0.766 af, Atten= 83%, Lag= 53.5 min
Discarded = 1.07 cfs @ 13.15 hrs, Volume= 0.745 af
Primary = 0.19 cfs @ 13.15 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 278.76' @ 13.15 hrs Surf.Area= 5,609 sf Storage= 12,447 cf

Plug-Flow detention time= 112.0 min calculated for 0.765 af (100% of inflow)
Center-of-Mass det. time= 111.8 min (971.7 - 859.9)

Volume	Invert	Avail.Storage	Storage Description		
#1	276.00'	20,056 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
276.00	3,475	231.6	0	0	3,475
278.00	4,980	269.4	8,410	8,410	5,063
280.00	6,709	307.1	11,646	20,056	6,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	276.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	276.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 276.00' / 275.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	278.40'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=1.07 cfs @ 13.15 hrs HW=278.76' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.07 cfs)

Primary OutFlow Max=0.19 cfs @ 13.15 hrs HW=278.76' (Free Discharge)

↑2=Culvert (Passes 0.19 cfs of 5.02 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.19 cfs @ 2.13 fps)

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Summary for Pond B9: Basin 9

[93] Warning: Storage range exceeded by 0.99'

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 3.68" for 100-year event
 Inflow = 4.67 cfs @ 12.12 hrs, Volume= 0.364 af
 Outflow = 5.55 cfs @ 12.15 hrs, Volume= 0.364 af, Atten= 0%, Lag= 1.8 min
 Discarded = 0.08 cfs @ 12.15 hrs, Volume= 0.103 af
 Primary = 5.47 cfs @ 12.15 hrs, Volume= 0.262 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.69' @ 12.15 hrs Surf.Area= 3,360 sf Storage= 1,898 cf

Plug-Flow detention time= 59.4 min calculated for 0.364 af (100% of inflow)
 Center-of-Mass det. time= 59.3 min (887.6 - 828.3)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	1,898 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,111	406.0	0	0	2,111
271.70	3,360	426.0	1,898	1,898	3,467

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	1.020 in/hr Exfiltration over Surface area
#2	Primary	271.40'	2.0" x 2.0" Horiz. Orifice/Grate X 36.00 C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 12.15 hrs HW=272.69' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=5.46 cfs @ 12.15 hrs HW=272.68' (Free Discharge)

↑2=Orifice/Grate (Orifice Controls 5.46 cfs @ 5.46 fps)

Summary for Pond B9A: B9A

[57] Hint: Peaked at 272.96' (Flood elevation advised)

[81] Warning: Exceeded Pond B9 by 0.26' @ 12.15 hrs

Inflow Area = 1.189 ac, 12.36% Impervious, Inflow Depth = 2.64" for 100-year event
 Inflow = 5.47 cfs @ 12.15 hrs, Volume= 0.262 af
 Outflow = 5.47 cfs @ 12.15 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.47 cfs @ 12.15 hrs, Volume= 0.262 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.96' @ 12.15 hrs

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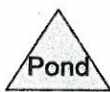
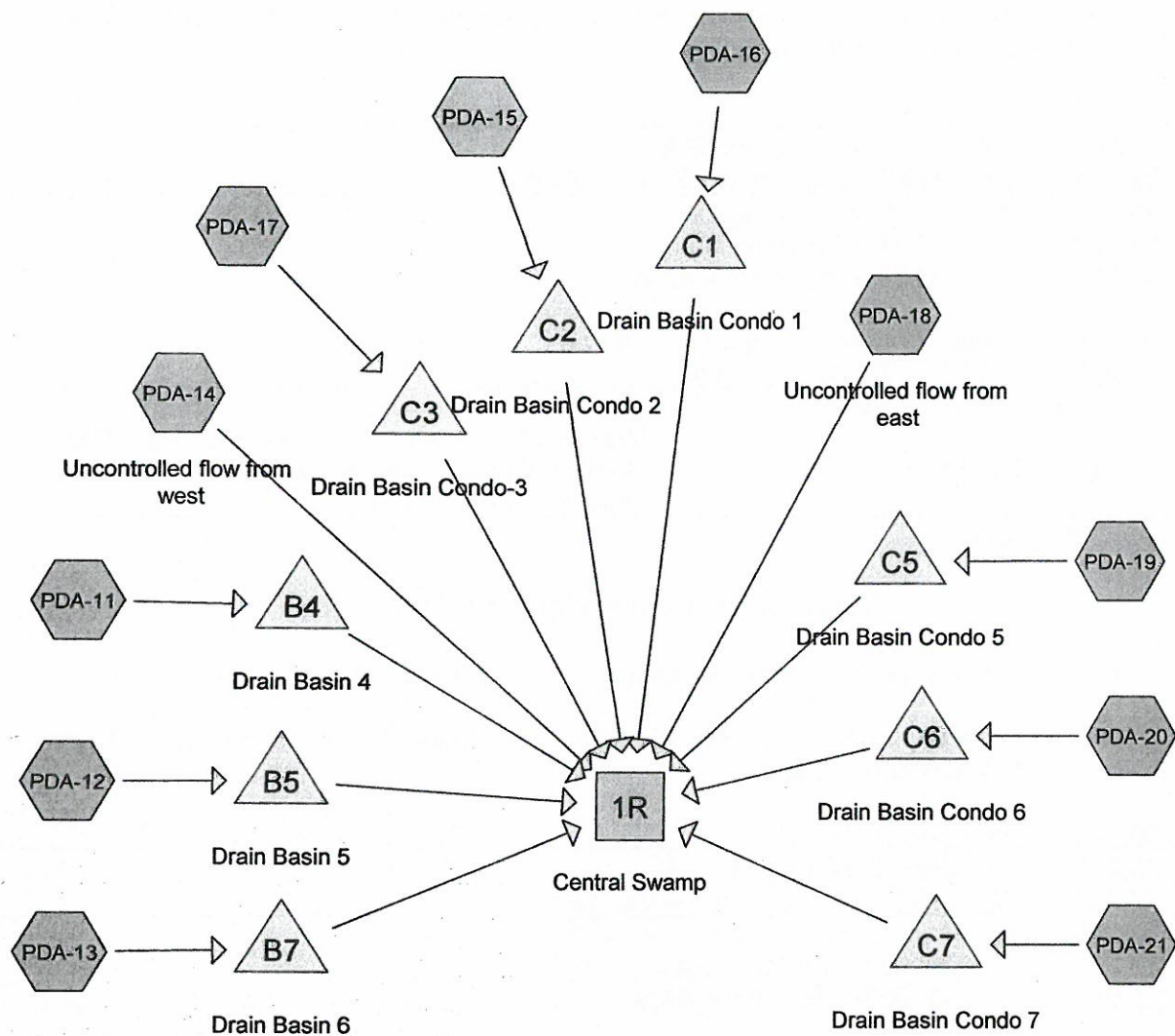
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Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 150.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 269.00' / 267.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=5.46 cfs @ 12.15 hrs HW=272.93' (Free Discharge)

↑1=Culvert (Barrel Controls 5.46 cfs @ 6.95 fps)



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Summary for Subcatchment PDA-11:

Runoff = 0.51 cfs @ 12.39 hrs, Volume= 0.090 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
45,302	98	Paved parking, HSG A
92,434	39	>75% Grass cover, Good, HSG A
137,736	58	Weighted Average
92,434		67.11% Pervious Area
45,302		32.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.0	198	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
14.3	248	Total			

Summary for Subcatchment PDA-12:

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 0.092 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
32,983	98	Paved parking, HSG A
37,272	39	>75% Grass cover, Good, HSG A
70,255	67	Weighted Average
37,272		53.05% Pervious Area
32,983		46.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	128	0.0200	2.87		Shallow Concentrated Flow, BC
					Paved Kv= 20.3 fps
0.8	334	0.0250	7.17	5.63	Pipe Channel, CD
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013
8.9	512	Total			

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Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Summary for Subcatchment PDA-13:

Runoff = 1.00 cfs @ 12.21 hrs, Volume= 0.127 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
44,415	98	Paved parking, HSG A
80,750	39	>75% Grass cover, Good, HSG A
6,128	98	Paved parking, HSG C
7,167	74	>75% Grass cover, Good, HSG C
138,460	62	Weighted Average
87,917		63.50% Pervious Area
50,543		36.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0080	0.10		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	99	0.0200	2.28		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
2.0	262	0.0120	2.22		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
0.2	49	0.0100	4.54	3.56	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
11.0	460	Total			

Summary for Subcatchment PDA-14: Uncontrolled flow from west

Runoff = 0.11 cfs @ 15.06 hrs, Volume= 0.068 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
239,485	30	Woods, Good, HSG A
122,926	70	Woods, Good, HSG C
65,500	77	Woods, Good, HSG D
60,920	39	>75% Grass cover, Good, HSG A
488,831	47	Weighted Average
488,831		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment PDA-15:

Runoff = 0.72 cfs @ 12.10 hrs, Volume= 0.054 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
5,000	98	Paved parking, HSG A
1,000	39	>75% Grass cover, Good, HSG A
1,500	80	>75% Grass cover, Good, HSG D
5,000	98	Paved parking, HSG D
12,500	91	Weighted Average
2,500		20.00% Pervious Area
10,000		80.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-16:

Runoff = 1.41 cfs @ 12.10 hrs, Volume= 0.106 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
24,559	98	Paved parking, HSG A
13,082	39	>75% Grass cover, Good, HSG A
1,000	80	>75% Grass cover, Good, HSG D
2,626	98	Paved parking, HSG D
41,267	79	Weighted Average
14,082		34.12% Pervious Area
27,185		65.88% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-17:

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

Runoff = 2.51 cfs @ 12.07 hrs, Volume= 0.178 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
23,913	98	Paved parking, HSG C
1,369	98	Paved parking, HSG D
9,200	74	>75% Grass cover, Good, HSG C
10,309	80	>75% Grass cover, Good, HSG D
44,791	89	Weighted Average
19,509		43.56% Pervious Area
25,282		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.2	193	0.0180	2.72		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
0.2	108	0.0800	9.97	29.90	Channel Flow, CD Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Earth, grassed & winding
5.0	321	Total			

Summary for Subcatchment PDA-18: Uncontrolled flow from east

Runoff = 0.15 cfs @ 12.51 hrs, Volume= 0.071 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Area (sf)	CN	Description
110,517	30	Woods, Good, HSG A
37,164	70	Woods, Good, HSG C
40,560	77	Woods, Good, HSG D
62,000	39	>75% Grass cover, Good, HSG A
24,500	74	>75% Grass cover, Good, HSG C
12,000	80	>75% Grass cover, Good, HSG D
286,741	50	Weighted Average
286,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.6	210	0.0370	0.96		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.9	260	Total			

Summary for Subcatchment PDA-19:

Runoff = 1.27 cfs @ 12.11 hrs, Volume= 0.098 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
25,700	98	Paved parking, HSG A
12,500	39	>75% Grass cover, Good, HSG A
38,200	79	Weighted Average
12,500		32.72% Pervious Area
25,700		67.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.1	5	0.0100	1.61		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
7.5	55	Total			

Summary for Subcatchment PDA-20:

Runoff = 2.92 cfs @ 12.11 hrs, Volume= 0.226 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Area (sf)	CN	Description
36,590	98	Paved parking, HSG C
15,682	74	>75% Grass cover, Good, HSG C
52,272	91	Weighted Average
15,682		30.00% Pervious Area
36,590		70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Subcatchment PDA-21:

Runoff = 1.41 cfs @ 12.11 hrs, Volume= 0.107 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
15,000	98	Paved parking, HSG C
15,600	74	>75% Grass cover, Good, HSG C
30,600	86	Weighted Average
15,600		50.98% Pervious Area
15,000		49.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Reach 1R: Central Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.800 ac, 20.02% Impervious, Inflow Depth > 0.25" for 2-Yr Storm event
 Inflow = 0.69 cfs @ 14.49 hrs, Volume= 0.654 af
 Outflow = 0.69 cfs @ 14.49 hrs, Volume= 0.654 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

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Summary for Pond B4: Drain Basin 4

Inflow Area = 3.162 ac, 32.89% Impervious, Inflow Depth = 0.34" for 2-Yr Storm event
 Inflow = 0.51 cfs @ 12.39 hrs, Volume= 0.090 af
 Outflow = 0.19 cfs @ 13.07 hrs, Volume= 0.090 af, Atten= 63%, Lag= 41.2 min
 Discarded = 0.19 cfs @ 13.07 hrs, Volume= 0.090 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.68' @ 13.07 hrs Surf.Area= 3,353 sf Storage= 584 cf

Plug-Flow detention time= 26.1 min calculated for 0.090 af (100% of inflow)
 Center-of-Mass det. time= 26.1 min (966.6 - 940.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.50'	21,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.50	3,174	340.4	0	0	3,174
272.50	5,447	401.7	8,519	8,519	6,869
274.50	7,970	439.4	13,337	21,857	9,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	271.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.00' S= 0.0333 ' /' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	272.00'	3.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	273.00'	12.0" W x 18.0" H Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.19 cfs @ 13.07 hrs HW=270.68' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.50' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

↑3=Orifice/Grate (Controls 0.00 cfs)

↑4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B5: Drain Basin 5

Inflow Area = 1.613 ac, 46.95% Impervious, Inflow Depth = 0.69" for 2-Yr Storm event
 Inflow = 0.96 cfs @ 12.15 hrs, Volume= 0.092 af
 Outflow = 0.70 cfs @ 12.29 hrs, Volume= 0.092 af, Atten= 27%, Lag= 8.3 min
 Discarded = 0.70 cfs @ 12.29 hrs, Volume= 0.092 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

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Peak Elev= 271.06' @ 12.29 hrs Surf.Area= 3,655 sf Storage= 232 cf

Plug-Flow detention time= 3.8 min calculated for 0.092 af (100% of inflow)

Center-of-Mass det. time= 3.8 min (893.5 - 889.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	21,026 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	3,608	247.5	0	0	3,608
273.00	5,223	286.6	8,781	8,781	5,354
275.00	7,068	326.3	12,245	21,026	7,385

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	273.00'	12.0" Round Culvert L= 20.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 273.00' / 272.00' S= 0.0500 ' S= 0.0500 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.70 cfs @ 12.29 hrs HW=271.06' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.70 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=271.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond B7: Drain Basin 6

Inflow Area = 3.179 ac, 36.50% Impervious, Inflow Depth = 0.48" for 2-Yr Storm event
 Inflow = 1.00 cfs @ 12.21 hrs, Volume= 0.127 af
 Outflow = 0.20 cfs @ 13.71 hrs, Volume= 0.127 af, Atten= 80%, Lag= 90.1 min
 Discarded = 0.20 cfs @ 13.71 hrs, Volume= 0.127 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 267.44' @ 13.71 hrs Surf.Area= 3,498 sf Storage= 1,453 cf

Plug-Flow detention time= 73.3 min calculated for 0.127 af (100% of inflow)
 Center-of-Mass det. time= 73.2 min (987.3 - 914.1)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	20,349 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
267.00	3,092	309.1	0	0	3,092
268.00	4,048	328.0	3,559	3,559	4,102
270.00	6,129	365.7	10,105	13,665	6,295
271.00	7,255	384.6	6,684	20,349	7,485

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Device	Routing	Invert	Outlet Devices
#1	Discarded	267.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	267.00'	12.0" Round Culvert L= 25.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 267.00' / 266.50' S= 0.0200 ' S Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	270.00'	3.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.20 cfs @ 13.71 hrs HW=267.44' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=267.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

↑3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C1: Drain Basin Condo 1

Inflow Area = 0.947 ac, 65.88% Impervious, Inflow Depth = 1.34" for 2-Yr Storm event
 Inflow = 1.41 cfs @ 12.10 hrs, Volume= 0.106 af
 Outflow = 0.12 cfs @ 13.63 hrs, Volume= 0.103 af, Atten= 91%, Lag= 91.9 min
 Primary = 0.12 cfs @ 13.63 hrs, Volume= 0.103 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 275.08' @ 13.63 hrs Surf.Area= 2,453 sf Storage= 2,226 cf

Plug-Flow detention time= 266.7 min calculated for 0.103 af (98% of inflow)

Center-of-Mass det. time= 254.5 min (1,101.0 - 846.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	274.00'	6,543 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	1,699	238.0	0	0	1,699
276.50	3,659	285.0	6,543	6,543	3,761

Device	Routing	Invert	Outlet Devices
#1	Primary	274.00'	12.0" Round Culvert L= 20.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 274.00' / 273.80' S= 0.0100 ' S Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Primary	274.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	275.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.12 cfs @ 13.63 hrs HW=275.08' (Free Discharge)

↑1=Culvert (Passes 0.02 cfs of 3.01 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.02 cfs @ 0.95 fps)

↑2=Orifice/Grate (Orifice Controls 0.10 cfs @ 4.80 fps)

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Summary for Pond C2: Drain Basin Condo 2

Inflow Area = 0.287 ac, 80.00% Impervious, Inflow Depth = 2.26" for 2-Yr Storm event
 Inflow = 0.72 cfs @ 12.10 hrs, Volume= 0.054 af
 Outflow = 0.19 cfs @ 12.47 hrs, Volume= 0.054 af, Atten= 73%, Lag= 22.3 min
 Discarded = 0.19 cfs @ 12.47 hrs, Volume= 0.054 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.58' @ 12.47 hrs Surf.Area= 1,013 sf Storage= 523 cf

Plug-Flow detention time= 15.9 min calculated for 0.054 af (100% of inflow)
 Center-of-Mass det. time= 15.8 min (818.9 - 803.0)

Volume	Invert	Avail.Storage	Storage Description		
#1	272.00'	2,400 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	795	124.9	0	0	795
274.00	1,657	162.6	2,400	2,400	1,704

Device	Routing	Invert	Outlet Devices
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	272.00'	12.0" Round Culvert L= 30.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 272.00' / 271.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	273.00'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.19 cfs @ 12.47 hrs HW=272.58' (Free Discharge)
 1=Exfiltration (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=272.00' (Free Discharge)
 2=Culvert (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C3: Drain Basin Condo-3

Inflow Area = 1.028 ac, 56.44% Impervious, Inflow Depth = 2.08" for 2-Yr Storm event
 Inflow = 2.51 cfs @ 12.07 hrs, Volume= 0.178 af
 Outflow = 0.12 cfs @ 14.86 hrs, Volume= 0.152 af, Atten= 95%, Lag= 167.0 min
 Primary = 0.12 cfs @ 14.86 hrs, Volume= 0.152 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.34' @ 14.86 hrs Surf.Area= 4,254 sf Storage= 4,681 cf

Plug-Flow detention time= 439.0 min calculated for 0.151 af (85% of inflow)
 Center-of-Mass det. time= 375.6 min (1,185.7 - 810.2)

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Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	14,064 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,900	257.0	0	0	2,900
272.00	3,740	276.0	3,311	3,311	3,749
274.00	7,200	370.0	10,753	14,064	8,624

Device	Routing	Invert	Outlet Devices
#1	Primary	271.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.50' S= 0.0167 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	273.00'	8.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.12 cfs @ 14.86 hrs HW=272.34' (Free Discharge)

- 1=Culvert (Passes 0.12 cfs of 3.06 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.12 cfs @ 5.40 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C5: Drain Basin Condo 5

Inflow Area = 0.877 ac, 67.28% Impervious, Inflow Depth = 1.34" for 2-Yr Storm event
 Inflow = 1.27 cfs @ 12.11 hrs, Volume= 0.098 af
 Outflow = 0.10 cfs @ 13.91 hrs, Volume= 0.098 af, Atten= 92%, Lag= 107.9 min
 Primary = 0.10 cfs @ 13.91 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.05' @ 13.91 hrs Surf.Area= 4,917 sf Storage= 1,882 cf

Plug-Flow detention time= 196.0 min calculated for 0.097 af (100% of inflow)
 Center-of-Mass det. time= 195.7 min (1,043.1 - 847.4)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	13,497 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	0	0.0	0	0	0
270.00	4,863	351.1	1,621	1,621	9,811
272.00	7,082	388.8	11,876	13,497	12,151

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.50' S= 0.0167 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	269.00'	2.0" Vert. Orifice/Grate C= 0.600

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#3 Primary 271.00' 4.0' long x 2.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00 3.50
 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.10 cfs @ 13.91 hrs HW=270.05' (Free Discharge)

1=Culvert (Passes 0.10 cfs of 2.48 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.10 cfs @ 4.74 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond C6: Drain Basin Condo 6

Inflow Area = 1.200 ac, 70.00% Impervious, Inflow Depth = 2.26" for 2-Yr Storm event
 Inflow = 2.92 cfs @ 12.11 hrs, Volume= 0.226 af
 Outflow = 0.13 cfs @ 15.12 hrs, Volume= 0.163 af, Atten= 95%, Lag= 180.4 min
 Primary = 0.13 cfs @ 15.12 hrs, Volume= 0.163 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.29' @ 15.12 hrs Surf.Area= 5,642 sf Storage= 6,333 cf

Plug-Flow detention time= 482.1 min calculated for 0.163 af (72% of inflow)
 Center-of-Mass det. time= 393.3 min (1,197.3 - 804.0)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	17,824 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	4,228	372.7	0	0	4,228
272.00	7,839	429.5	17,824	17,824	8,048

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.00' S= 0.0333 ' /' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	270.20'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	271.00'	8.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	269.00'	2.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.13 cfs @ 15.12 hrs HW=270.29' (Free Discharge)

1=Culvert (Passes 0.13 cfs of 2.96 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 1.01 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Orifice Controls 0.12 cfs @ 5.28 fps)

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Summary for Pond C7: Drain Basin Condo 7

Inflow Area = 0.702 ac, 49.02% Impervious, Inflow Depth = 1.84" for 2-Yr Storm event
 Inflow = 1.41 cfs @ 12.11 hrs, Volume= 0.107 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.37' @ 24.50 hrs Surf.Area= 3,999 sf Storage= 4,679 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	15,300 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	2,824	275.8	0	0	2,824
270.00	3,679	294.7	3,242	3,242	3,728
272.50	6,066	341.8	12,058	15,300	6,243

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 270.00' / 269.00' S= 0.0333 ' /' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	4.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=269.00' (Free Discharge)

↑ 1=Culvert (Controls 0.00 cfs)

↑ 2=Orifice/Grate (Controls 0.00 cfs)

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Summary for Subcatchment PDA-11:

Runoff = 2.35 cfs @ 12.24 hrs, Volume= 0.266 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
45,302	98	Paved parking, HSG A
92,434	39	>75% Grass cover, Good, HSG A
137,736	58	Weighted Average
92,434		67.11% Pervious Area
45,302		32.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.0	198	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
14.3	248	Total			

Summary for Subcatchment PDA-12:

Runoff = 2.56 cfs @ 12.14 hrs, Volume= 0.215 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
32,983	98	Paved parking, HSG A
37,272	39	>75% Grass cover, Good, HSG A
70,255	67	Weighted Average
37,272		53.05% Pervious Area
32,983		46.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	128	0.0200	2.87		Shallow Concentrated Flow, BC
					Paved Kv= 20.3 fps
0.8	334	0.0250	7.17	5.63	Pipe Channel, CD
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013
8.9	512	Total			

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Summary for Subcatchment PDA-13:

Runoff = 3.53 cfs @ 12.17 hrs, Volume= 0.333 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
44,415	98	Paved parking, HSG A
80,750	39	>75% Grass cover, Good, HSG A
6,128	98	Paved parking, HSG C
7,167	74	>75% Grass cover, Good, HSG C
138,460	62	Weighted Average
87,917		63.50% Pervious Area
50,543		36.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0080	0.10		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	99	0.0200	2.28		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
2.0	262	0.0120	2.22		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
0.2	49	0.0100	4.54	3.56	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
11.0	460	Total			

Summary for Subcatchment PDA-14: Uncontrolled flow from west

Runoff = 1.86 cfs @ 12.55 hrs, Volume= 0.407 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
239,485	30	Woods, Good, HSG A
122,926	70	Woods, Good, HSG C
65,500	77	Woods, Good, HSG D
60,920	39	>75% Grass cover, Good, HSG A
488,831	47	Weighted Average
488,831		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment PDA-15:

Runoff = 1.15 cfs @ 12.10 hrs, Volume= 0.088 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
5,000	98	Paved parking, HSG A
1,000	39	>75% Grass cover, Good, HSG A
1,500	80	>75% Grass cover, Good, HSG D
5,000	98	Paved parking, HSG D
12,500	91	Weighted Average
2,500		20.00% Pervious Area
10,000		80.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-16:

Runoff = 2.73 cfs @ 12.10 hrs, Volume= 0.201 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
24,559	98	Paved parking, HSG A
13,082	39	>75% Grass cover, Good, HSG A
1,000	80	>75% Grass cover, Good, HSG D
2,626	98	Paved parking, HSG D
41,267	79	Weighted Average
14,082		34.12% Pervious Area
27,185		65.88% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-17:

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

Runoff = 4.12 cfs @ 12.07 hrs, Volume= 0.299 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
23,913	98	Paved parking, HSG C
1,369	98	Paved parking, HSG D
9,200	74	>75% Grass cover, Good, HSG C
10,309	80	>75% Grass cover, Good, HSG D
44,791	89	Weighted Average
19,509		43.56% Pervious Area
25,282		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.2	193	0.0180	2.72		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
0.2	108	0.0800	9.97	29.90	Channel Flow, CD Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Earth, grassed & winding
5.0	321	Total			

Summary for Subcatchment PDA-18: Uncontrolled flow from east

Runoff = 2.26 cfs @ 12.17 hrs, Volume= 0.315 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

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Area (sf)	CN	Description
110,517	30	Woods, Good, HSG A
37,164	70	Woods, Good, HSG C
40,560	77	Woods, Good, HSG D
62,000	39	>75% Grass cover, Good, HSG A
24,500	74	>75% Grass cover, Good, HSG C
12,000	80	>75% Grass cover, Good, HSG D
286,741	50	Weighted Average
286,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.6	210	0.0370	0.96		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.9	260	Total			

Summary for Subcatchment PDA-19:

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.186 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
25,700	98	Paved parking, HSG A
12,500	39	>75% Grass cover, Good, HSG A
38,200	79	Weighted Average
12,500		32.72% Pervious Area
25,700		67.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.1	5	0.0100	1.61		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
7.5	55	Total			

Summary for Subcatchment PDA-20:

Runoff = 4.67 cfs @ 12.11 hrs, Volume= 0.369 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

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Area (sf)	CN	Description
36,590	98	Paved parking, HSG C
15,682	74	>75% Grass cover, Good, HSG C
52,272	91	Weighted Average
15,682		30.00% Pervious Area
36,590		70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Subcatchment PDA-21:

Runoff = 2.43 cfs @ 12.11 hrs, Volume= 0.187 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
15,000	98	Paved parking, HSG C
15,600	74	>75% Grass cover, Good, HSG C
30,600	86	Weighted Average
15,600		50.98% Pervious Area
15,000		49.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Reach 1R: Central Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.800 ac, 20.02% Impervious, Inflow Depth > 0.63" for 10-Yr Storm event
 Inflow = 4.64 cfs @ 12.44 hrs, Volume= 1.619 af
 Outflow = 4.64 cfs @ 12.44 hrs, Volume= 1.619 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond B4: Drain Basin 4

Inflow Area = 3.162 ac, 32.89% Impervious, Inflow Depth = 1.01" for 10-Yr Storm event
 Inflow = 2.35 cfs @ 12.24 hrs, Volume= 0.266 af
 Outflow = 0.25 cfs @ 15.25 hrs, Volume= 0.266 af, Atten= 89%, Lag= 180.9 min
 Discarded = 0.25 cfs @ 15.25 hrs, Volume= 0.266 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.77' @ 15.25 hrs Surf.Area= 4,546 sf Storage= 4,872 cf

Plug-Flow detention time= 227.6 min calculated for 0.265 af (100% of inflow)
 Center-of-Mass det. time= 227.4 min (1,122.2 - 894.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.50'	21,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.50	3,174	340.4	0	0	3,174
272.50	5,447	401.7	8,519	8,519	6,869
274.50	7,970	439.4	13,337	21,857	9,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	271.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.00' S= 0.0333 ' S= 0.0333 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	272.00'	3.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	273.00'	12.0" W x 18.0" H Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.25 cfs @ 15.25 hrs HW=271.77' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.50' (Free Discharge)

2=Culvert (Controls 0.00 cfs)

3=Orifice/Grate (Controls 0.00 cfs)

4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond B5: Drain Basin 5

Inflow Area = 1.613 ac, 46.95% Impervious, Inflow Depth = 1.60" for 10-Yr Storm event
 Inflow = 2.56 cfs @ 12.14 hrs, Volume= 0.215 af
 Outflow = 0.77 cfs @ 12.56 hrs, Volume= 0.215 af, Atten= 70%, Lag= 25.2 min
 Discarded = 0.77 cfs @ 12.56 hrs, Volume= 0.215 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

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Peak Elev= 271.52' @ 12.56 hrs Surf.Area= 3,999 sf Storage= 1,976 cf

Plug-Flow detention time= 16.4 min calculated for 0.215 af (100% of inflow)

Center-of-Mass det. time= 16.3 min (878.2 - 861.9)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	21,026 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	3,608	247.5	0	0	3,608
273.00	5,223	286.6	8,781	8,781	5,354
275.00	7,068	326.3	12,245	21,026	7,385

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	273.00'	12.0" Round Culvert L= 20.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 273.00' / 272.00' S= 0.0500 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.77 cfs @ 12.56 hrs HW=271.52' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.77 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=271.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond B7: Drain Basin 6

Inflow Area = 3.179 ac, 36.50% Impervious, Inflow Depth = 1.26" for 10-Yr Storm event
 Inflow = 3.53 cfs @ 12.17 hrs, Volume= 0.333 af
 Outflow = 0.27 cfs @ 15.53 hrs, Volume= 0.333 af, Atten= 92%, Lag= 201.6 min
 Discarded = 0.27 cfs @ 15.53 hrs, Volume= 0.333 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 268.78' @ 15.53 hrs Surf.Area= 4,807 sf Storage= 7,004 cf

Plug-Flow detention time= 311.6 min calculated for 0.332 af (100% of inflow)

Center-of-Mass det. time= 311.6 min (1,190.0 - 878.4)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	20,349 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
267.00	3,092	309.1	0	0	3,092
268.00	4,048	328.0	3,559	3,559	4,102
270.00	6,129	365.7	10,105	13,665	6,295
271.00	7,255	384.6	6,684	20,349	7,485

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Device	Routing	Invert	Outlet Devices
#1	Discarded	267.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	267.00'	12.0" Round Culvert L= 25.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 267.00' / 266.50' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	270.00'	3.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.27 cfs @ 15.53 hrs HW=268.78' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=267.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

↑3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C1: Drain Basin Condo 1

Inflow Area = 0.947 ac, 65.88% Impervious, Inflow Depth = 2.55" for 10-Yr Storm event
 Inflow = 2.73 cfs @ 12.10 hrs, Volume= 0.201 af
 Outflow = 0.68 cfs @ 12.51 hrs, Volume= 0.197 af, Atten= 75%, Lag= 24.6 min
 Primary = 0.68 cfs @ 12.51 hrs, Volume= 0.197 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 275.59' @ 12.51 hrs Surf.Area= 2,857 sf Storage= 3,574 cf

Plug-Flow detention time= 192.8 min calculated for 0.197 af (98% of inflow)
 Center-of-Mass det. time= 182.3 min (1,010.1 - 827.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	274.00'	6,543 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	1,699	238.0	0	0	1,699
276.50	3,659	285.0	6,543	6,543	3,761

Device	Routing	Invert	Outlet Devices
#1	Primary	274.00'	12.0" Round Culvert L= 20.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 274.00' / 273.80' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Primary	274.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	275.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.68 cfs @ 12.51 hrs HW=275.59' (Free Discharge)

↑1=Culvert (Passes 0.55 cfs of 4.35 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.55 cfs @ 2.79 fps)

↑2=Orifice/Grate (Orifice Controls 0.13 cfs @ 5.90 fps)

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Summary for Pond C2: Drain Basin Condo 2

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.287 ac, 80.00% Impervious, Inflow Depth > 3.69" for 10-Yr Storm event
 Inflow = 1.15 cfs @ 12.10 hrs, Volume= 0.088 af
 Outflow = 0.25 cfs @ 12.52 hrs, Volume= 0.088 af, Atten= 79%, Lag= 25.4 min
 Discarded = 0.23 cfs @ 12.52 hrs, Volume= 0.088 af
 Primary = 0.01 cfs @ 12.52 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 273.07' @ 12.52 hrs Surf.Area= 1,218 sf Storage= 1,072 cf

Plug-Flow detention time= 30.6 min calculated for 0.088 af (100% of inflow)
 Center-of-Mass det. time= 30.5 min (820.4 - 789.9)

Volume	Invert	Avail.Storage	Storage Description		
#1	272.00'	2,400 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	795	124.9	0	0	795
274.00	1,657	162.6	2,400	2,400	1,704

Device	Routing	Invert	Outlet Devices
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	272.00'	12.0" Round Culvert L= 30.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 272.00' / 271.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	273.00'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.23 cfs @ 12.52 hrs HW=273.07' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=273.07' (Free Discharge)

↑2=Culvert (Passes 0.01 cfs of 3.57 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.01 cfs @ 0.91 fps)

Summary for Pond C3: Drain Basin Condo-3

Inflow Area = 1.028 ac, 56.44% Impervious, Inflow Depth > 3.49" for 10-Yr Storm event
 Inflow = 4.12 cfs @ 12.07 hrs, Volume= 0.299 af
 Outflow = 0.18 cfs @ 14.97 hrs, Volume= 0.219 af, Atten= 96%, Lag= 174.0 min
 Primary = 0.18 cfs @ 14.97 hrs, Volume= 0.219 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 273.09' @ 14.97 hrs Surf.Area= 5,483 sf Storage= 8,298 cf

Plug-Flow detention time= 480.5 min calculated for 0.219 af (73% of inflow)

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Center-of-Mass det. time= 392.7 min (1,188.4 - 795.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	14,064 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,900	257.0	0	0	2,900
272.00	3,740	276.0	3,311	3,311	3,749
274.00	7,200	370.0	10,753	14,064	8,624

Device	Routing	Invert	Outlet Devices
#1	Primary	271.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	273.00'	8.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.18 cfs @ 14.97 hrs HW=273.09' (Free Discharge)

1=Culvert (Passes 0.18 cfs of 4.20 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.15 cfs @ 6.82 fps)
 3=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.01 fps)

Summary for Pond C5: Drain Basin Condo 5

Inflow Area = 0.877 ac, 67.28% Impervious, Inflow Depth = 2.55" for 10-Yr Storm event
 Inflow = 2.45 cfs @ 12.11 hrs, Volume= 0.186 af
 Outflow = 0.13 cfs @ 15.11 hrs, Volume= 0.178 af, Atten= 95%, Lag= 180.2 min
 Primary = 0.13 cfs @ 15.11 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.54' @ 15.11 hrs Surf.Area= 5,420 sf Storage= 4,390 cf

Plug-Flow detention time= 380.8 min calculated for 0.178 af (96% of inflow)
 Center-of-Mass det. time= 358.3 min (1,187.0 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	13,497 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	0	0.0	0	0	0
270.00	4,863	351.1	1,621	1,621	9,811
272.00	7,082	388.8	11,876	13,497	12,151

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900

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n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
 #2 Device 1 269.00' 2.0" Vert. Orifice/Grate C= 0.600
 #3 Primary 271.00' 4.0' long x 2.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00 3.50
 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.13 cfs @ 15.11 hrs HW=270.54' (Free Discharge)

1=Culvert (Passes 0.13 cfs of 3.40 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.13 cfs @ 5.81 fps)
 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond C6: Drain Basin Condo 6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.200 ac, 70.00% Impervious, Inflow Depth > 3.69" for 10-Yr Storm event
 Inflow = 4.67 cfs @ 12.11 hrs, Volume= 0.369 af
 Outflow = 0.41 cfs @ 13.11 hrs, Volume= 0.289 af, Atten= 91%, Lag= 60.1 min
 Primary = 0.41 cfs @ 13.11 hrs, Volume= 0.289 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.78' @ 13.11 hrs Surf.Area= 6,232 sf Storage= 9,232 cf

Plug-Flow detention time= 364.1 min calculated for 0.289 af (78% of inflow)
 Center-of-Mass det. time= 285.8 min (1,076.6 - 790.8)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	17,824 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	4,228	372.7	0	0	4,228
272.00	7,839	429.5	17,824	17,824	8,048

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.00' S= 0.0333 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	270.20'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	271.00'	8.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	269.00'	2.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.41 cfs @ 13.11 hrs HW=270.78' (Free Discharge)

1=Culvert (Passes 0.41 cfs of 3.77 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.27 cfs @ 3.08 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.26 fps)

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Summary for Pond C7: Drain Basin Condo 7

Inflow Area = 0.702 ac, 49.02% Impervious, Inflow Depth = 3.19" for 10-Yr Storm event
 Inflow = 2.43 cfs @ 12.11 hrs, Volume= 0.187 af
 Outflow = 0.02 cfs @ 24.03 hrs, Volume= 0.013 af, Atten= 99%, Lag= 715.4 min
 Primary = 0.02 cfs @ 24.03 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.10' @ 24.03 hrs Surf.Area= 4,658 sf Storage= 7,825 cf

Plug-Flow detention time= 874.6 min calculated for 0.013 af (7% of inflow)
 Center-of-Mass det. time= 637.4 min (1,445.7 - 808.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	269.00'	15,300 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	2,824	275.8	0	0	2,824
270.00	3,679	294.7	3,242	3,242	3,728
272.50	6,066	341.8	12,058	15,300	6,243

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 270.00' / 269.00' S= 0.0333 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	4.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.02 cfs @ 24.03 hrs HW=271.10' (Free Discharge)

↑ **1=Culvert** (Passes 0.02 cfs of 2.59 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.09 fps)

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Summary for Subcatchment PDA-11:

Runoff = 5.93 cfs @ 12.21 hrs, Volume= 0.582 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
45,302	98	Paved parking, HSG A
92,434	39	>75% Grass cover, Good, HSG A
137,736	58	Weighted Average
92,434		67.11% Pervious Area
45,302		32.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, AB
					Woods: Light underbrush n= 0.400 P2= 3.20"
2.0	198	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
14.3	248	Total			

Summary for Subcatchment PDA-12:

Runoff = 5.11 cfs @ 12.13 hrs, Volume= 0.413 af, Depth= 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
32,983	98	Paved parking, HSG A
37,272	39	>75% Grass cover, Good, HSG A
70,255	67	Weighted Average
37,272		53.05% Pervious Area
32,983		46.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	128	0.0200	2.87		Shallow Concentrated Flow, BC
					Paved Kv= 20.3 fps
0.8	334	0.0250	7.17	5.63	Pipe Channel, CD
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013
8.9	512	Total			

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Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Summary for Subcatchment PDA-13:

Runoff = 7.87 cfs @ 12.16 hrs, Volume= 0.684 af, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
44,415	98	Paved parking, HSG A
80,750	39	>75% Grass cover, Good, HSG A
6,128	98	Paved parking, HSG C
7,167	74	>75% Grass cover, Good, HSG C
138,460	62	Weighted Average
87,917		63.50% Pervious Area
50,543		36.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0080	0.10		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.7	99	0.0200	2.28		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
2.0	262	0.0120	2.22		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
0.2	49	0.0100	4.54	3.56	Pipe Channel, DE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
11.0	460	Total			

Summary for Subcatchment PDA-14: Uncontrolled flow from west

Runoff = 8.26 cfs @ 12.40 hrs, Volume= 1.175 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
239,485	30	Woods, Good, HSG A
122,926	70	Woods, Good, HSG C
65,500	77	Woods, Good, HSG D
60,920	39	>75% Grass cover, Good, HSG A
488,831	47	Weighted Average
488,831		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	50	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
6.6	325	0.0270	0.82		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.9	375	Total			

Summary for Subcatchment PDA-15:

Runoff = 1.72 cfs @ 12.09 hrs, Volume= 0.134 af, Depth> 5.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
5,000	98	Paved parking, HSG A
1,000	39	>75% Grass cover, Good, HSG A
1,500	80	>75% Grass cover, Good, HSG D
5,000	98	Paved parking, HSG D
12,500	91	Weighted Average
2,500		20.00% Pervious Area
10,000		80.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-16:

Runoff = 4.59 cfs @ 12.10 hrs, Volume= 0.340 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
24,559	98	Paved parking, HSG A
13,082	39	>75% Grass cover, Good, HSG A
1,000	80	>75% Grass cover, Good, HSG D
2,626	98	Paved parking, HSG D
41,267	79	Weighted Average
14,082		34.12% Pervious Area
27,185		65.88% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	31	0.0100	0.10		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.5	182	0.0100	2.03		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
6.6	213	Total			

Summary for Subcatchment PDA-17:

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

Runoff = 6.26 cfs @ 12.07 hrs, Volume= 0.463 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
23,913	98	Paved parking, HSG C
1,369	98	Paved parking, HSG D
9,200	74	>75% Grass cover, Good, HSG C
10,309	80	>75% Grass cover, Good, HSG D
44,791	89	Weighted Average
19,509		43.56% Pervious Area
25,282		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	20	0.0100	0.09		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
1.2	193	0.0180	2.72		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
0.2	108	0.0800	9.97	29.90	Channel Flow, CD Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.030 Earth, grassed & winding
5.0	321	Total			

Summary for Subcatchment PDA-18: Uncontrolled flow from east

Runoff = 8.97 cfs @ 12.14 hrs, Volume= 0.824 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Area (sf)	CN	Description
110,517	30	Woods, Good, HSG A
37,164	70	Woods, Good, HSG C
40,560	77	Woods, Good, HSG D
62,000	39	>75% Grass cover, Good, HSG A
24,500	74	>75% Grass cover, Good, HSG C
12,000	80	>75% Grass cover, Good, HSG D
286,741	50	Weighted Average
286,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0400	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.20"
3.6	210	0.0370	0.96		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.9	260	Total			

Summary for Subcatchment PDA-19:

Runoff = 4.13 cfs @ 12.11 hrs, Volume= 0.315 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
25,700	98	Paved parking, HSG A
12,500	39	>75% Grass cover, Good, HSG A
38,200	79	Weighted Average
12,500		32.72% Pervious Area
25,700		67.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB Grass: Short n= 0.150 P2= 3.20"
0.1	5	0.0100	1.61		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
7.5	55	Total			

Summary for Subcatchment PDA-20:

Runoff = 6.98 cfs @ 12.11 hrs, Volume= 0.562 af, Depth> 5.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Area (sf)	CN	Description
36,590	98	Paved parking, HSG C
15,682	74	>75% Grass cover, Good, HSG C
52,272	91	Weighted Average
15,682		30.00% Pervious Area
36,590		70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Subcatchment PDA-21:

Runoff = 3.80 cfs @ 12.11 hrs, Volume= 0.297 af, Depth> 5.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
15,000	98	Paved parking, HSG C
15,600	74	>75% Grass cover, Good, HSG C
30,600	86	Weighted Average
15,600		50.98% Pervious Area
15,000		49.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0100	0.11		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.2	15	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
7.6	65	Total			

Summary for Reach 1R: Central Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 30.800 ac, 20.02% Impervious, Inflow Depth > 1.46" for 100-Yr Storm event
 Inflow = 16.60 cfs @ 12.36 hrs, Volume= 3.757 af
 Outflow = 16.60 cfs @ 12.36 hrs, Volume= 3.757 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Summary for Pond B4: Drain Basin 4

Inflow Area = 3.162 ac, 32.89% Impervious, Inflow Depth = 2.21" for 100-Yr Storm event
 Inflow = 5.93 cfs @ 12.21 hrs, Volume= 0.582 af
 Outflow = 0.62 cfs @ 14.20 hrs, Volume= 0.566 af, Atten= 90%, Lag= 119.1 min
 Discarded = 0.34 cfs @ 14.20 hrs, Volume= 0.426 af
 Primary = 0.28 cfs @ 14.20 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 273.06' @ 14.20 hrs Surf.Area= 6,110 sf Storage= 11,775 cf

Plug-Flow detention time= 291.9 min calculated for 0.566 af (97% of inflow)
 Center-of-Mass det. time= 276.8 min (1,145.6 - 868.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.50'	21,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.50	3,174	340.4	0	0	3,174
272.50	5,447	401.7	8,519	8,519	6,869
274.50	7,970	439.4	13,337	21,857	9,529

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.50'	2.410 in/hr Exfiltration over Surface area
#2	Primary	271.00'	12.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.00' S= 0.0333 ' S= 0.0333 ' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	272.00'	3.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	273.00'	12.0" W x 18.0" H Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.34 cfs @ 14.20 hrs HW=273.06' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=0.28 cfs @ 14.20 hrs HW=273.06' (Free Discharge)

↑2=Culvert (Passes 0.28 cfs of 4.17 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.23 cfs @ 4.67 fps)

↑4=Orifice/Grate (Orifice Controls 0.05 cfs @ 0.81 fps)

Summary for Pond B5: Drain Basin 5

Inflow Area = 1.613 ac, 46.95% Impervious, Inflow Depth = 3.07" for 100-Yr Storm event
 Inflow = 5.11 cfs @ 12.13 hrs, Volume= 0.413 af
 Outflow = 0.90 cfs @ 12.70 hrs, Volume= 0.413 af, Atten= 82%, Lag= 34.1 min
 Discarded = 0.90 cfs @ 12.70 hrs, Volume= 0.413 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

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Peak Elev= 272.37' @ 12.70 hrs Surf.Area= 4,678 sf Storage= 5,640 cf

Plug-Flow detention time= 50.0 min calculated for 0.412 af (100% of inflow)

Center-of-Mass det. time= 50.0 min (892.3 - 842.4)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	21,026 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	3,608	247.5	0	0	3,608
273.00	5,223	286.6	8,781	8,781	5,354
275.00	7,068	326.3	12,245	21,026	7,385

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	273.00'	12.0" Round Culvert L= 20.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 273.00' / 272.00' S= 0.0500 ' S= 0.0500 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Discarded OutFlow Max=0.90 cfs @ 12.70 hrs HW=272.37' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.90 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=271.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond B7: Drain Basin 6

Inflow Area = 3.179 ac, 36.50% Impervious, Inflow Depth = 2.58" for 100-Yr Storm event
 Inflow = 7.87 cfs @ 12.16 hrs, Volume= 0.684 af
 Outflow = 0.50 cfs @ 15.40 hrs, Volume= 0.557 af, Atten= 94%, Lag= 194.5 min
 Discarded = 0.37 cfs @ 15.40 hrs, Volume= 0.504 af
 Primary = 0.13 cfs @ 15.40 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 270.44' @ 15.40 hrs Surf.Area= 6,612 sf Storage= 16,462 cf

Plug-Flow detention time= 410.0 min calculated for 0.556 af (81% of inflow)

Center-of-Mass det. time= 334.1 min (1,189.9 - 855.9)

Volume	Invert	Avail.Storage	Storage Description
#1	267.00'	20,349 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
267.00	3,092	309.1	0	0	3,092
268.00	4,048	328.0	3,559	3,559	4,102
270.00	6,129	365.7	10,105	13,665	6,295
271.00	7,255	384.6	6,684	20,349	7,485

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Device	Routing	Invert	Outlet Devices
#1	Discarded	267.00'	2.410 in/hr Exfiltration over Surface area
#2	Primary	267.00'	12.0" Round Culvert L= 25.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 267.00' / 266.50' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	270.00'	3.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.37 cfs @ 15.40 hrs HW=270.44' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.37 cfs)**Primary OutFlow** Max=0.13 cfs @ 15.40 hrs HW=270.44' (Free Discharge)↑**2=Culvert** (Passes 0.13 cfs of 5.72 cfs potential flow)↑**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 2.70 fps)**Summary for Pond C1: Drain Basin Condo 1**

Inflow Area = 0.947 ac, 65.88% Impervious, Inflow Depth = 4.31" for 100-Yr Storm event
 Inflow = 4.59 cfs @ 12.10 hrs, Volume= 0.340 af
 Outflow = 1.15 cfs @ 12.50 hrs, Volume= 0.334 af, Atten= 75%, Lag= 23.9 min
 Primary = 1.15 cfs @ 12.50 hrs, Volume= 0.334 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Peak Elev= 276.35' @ 12.50 hrs Surf.Area= 3,516 sf Storage= 5,988 cf

Plug-Flow detention time= 152.5 min calculated for 0.334 af (98% of inflow)

Center-of-Mass det. time= 141.1 min (953.8 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	6,543 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
274.00	1,699	238.0	0	0	1,699
276.50	3,659	285.0	6,543	6,543	3,761

Device	Routing	Invert	Outlet Devices
#1	Primary	274.00'	12.0" Round Culvert L= 20.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 274.00' / 273.80' S= 0.0100 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Primary	274.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	275.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.15 cfs @ 12.50 hrs HW=276.34' (Free Discharge)↑**1=Culvert** (Passes 0.99 cfs of 6.10 cfs potential flow)↑**3=Orifice/Grate** (Orifice Controls 0.99 cfs @ 5.04 fps)↑**2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.24 fps)

Summary for Pond C2: Drain Basin Condo 2

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.287 ac, 80.00% Impervious, Inflow Depth > 5.62" for 100-Yr Storm event
 Inflow = 1.72 cfs @ 12.09 hrs, Volume= 0.134 af
 Outflow = 0.50 cfs @ 12.43 hrs, Volume= 0.134 af, Atten= 71%, Lag= 20.2 min
 Discarded = 0.27 cfs @ 12.43 hrs, Volume= 0.120 af
 Primary = 0.24 cfs @ 12.43 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 273.48' @ 12.43 hrs Surf.Area= 1,403 sf Storage= 1,606 cf

Plug-Flow detention time= 33.8 min calculated for 0.134 af (100% of inflow)
 Center-of-Mass det. time= 33.7 min (814.2 - 780.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	272.00'	2,400 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	795	124.9	0	0	795
274.00	1,657	162.6	2,400	2,400	1,704

Device	Routing	Invert	Outlet Devices
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	272.00'	12.0" Round Culvert L= 30.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 272.00' / 271.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	273.00'	4.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=0.27 cfs @ 12.43 hrs HW=273.48' (Free Discharge)

↑ 1=Exfiltration (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=0.23 cfs @ 12.43 hrs HW=273.48' (Free Discharge)

↑ 2=Culvert (Passes 0.23 cfs of 4.56 cfs potential flow)

↑ 3=Orifice/Grate (Orifice Controls 0.23 cfs @ 2.69 fps)

Summary for Pond C3: Drain Basin Condo-3

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.028 ac, 56.44% Impervious, Inflow Depth > 5.40" for 100-Yr Storm event
 Inflow = 6.26 cfs @ 12.07 hrs, Volume= 0.463 af
 Outflow = 0.89 cfs @ 12.58 hrs, Volume= 0.367 af, Atten= 86%, Lag= 30.2 min
 Primary = 0.89 cfs @ 12.58 hrs, Volume= 0.367 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

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Peak Elev= 273.52' @ 12.58 hrs Surf.Area= 6,276 sf Storage= 10,863 cf

Plug-Flow detention time= 341.1 min calculated for 0.366 af (79% of inflow)

Center-of-Mass det. time= 265.6 min (1,050.3 - 784.7)

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	14,064 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,900	257.0	0	0	2,900
272.00	3,740	276.0	3,311	3,311	3,749
274.00	7,200	370.0	10,753	14,064	8,624

Device	Routing	Invert	Outlet Devices
#1	Primary	271.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 271.00' / 270.50' S= 0.0167 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	273.00'	8.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.89 cfs @ 12.58 hrs HW=273.52' (Free Discharge)

- 1=Culvert (Passes 0.89 cfs of 4.75 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.52 fps)
 3=Orifice/Grate (Orifice Controls 0.73 cfs @ 2.47 fps)

Summary for Pond C5: Drain Basin Condo 5

Inflow Area = 0.877 ac, 67.28% Impervious, Inflow Depth = 4.31" for 100-Yr Storm event
 Inflow = 4.13 cfs @ 12.11 hrs, Volume= 0.315 af
 Outflow = 0.33 cfs @ 13.48 hrs, Volume= 0.255 af, Atten= 92%, Lag= 82.2 min
 Primary = 0.33 cfs @ 13.48 hrs, Volume= 0.255 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.07' @ 13.48 hrs Surf.Area= 5,997 sf Storage= 7,412 cf

Plug-Flow detention time= 399.5 min calculated for 0.255 af (81% of inflow)

Center-of-Mass det. time= 325.1 min (1,138.6 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	13,497 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	0	0.0	0	0	0
270.00	4,863	351.1	1,621	1,621	9,811
272.00	7,082	388.8	11,876	13,497	12,151

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Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.50' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	269.00'	2.0" Vert. Orifice/Grate C= 0.600
#3	Primary	271.00'	4.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.33 cfs @ 13.48 hrs HW=271.07' (Free Discharge)

1=Culvert (Passes 0.15 cfs of 4.18 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.15 cfs @ 6.78 fps)

3=Broad-Crested Rectangular Weir (Weir Controls 0.18 cfs @ 0.66 fps)

Summary for Pond C6: Drain Basin Condo 6

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.200 ac, 70.00% Impervious, Inflow Depth > 5.62" for 100-Yr Storm event
 Inflow = 6.98 cfs @ 12.11 hrs, Volume= 0.562 af
 Outflow = 1.11 cfs @ 12.61 hrs, Volume= 0.472 af, Atten= 84%, Lag= 30.4 min
 Primary = 1.11 cfs @ 12.61 hrs, Volume= 0.472 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.39' @ 12.61 hrs Surf.Area= 7,020 sf Storage= 13,323 cf

Plug-Flow detention time= 299.1 min calculated for 0.472 af (84% of inflow)
 Center-of-Mass det. time= 232.8 min (1,014.3 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	17,824 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	4,228	372.7	0	0	4,228
272.00	7,839	429.5	17,824	17,824	8,048

Device	Routing	Invert	Outlet Devices
#1	Primary	269.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 269.00' / 268.00' S= 0.0333 ' S= 0.0333 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	270.20'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	271.00'	8.0" W x 12.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	269.00'	2.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.11 cfs @ 12.61 hrs HW=271.39' (Free Discharge)

- 1=Culvert (Passes 1.11 cfs of 4.59 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.43 cfs @ 4.88 fps)
- 3=Orifice/Grate (Orifice Controls 0.53 cfs @ 2.01 fps)
- 4=Orifice/Grate (Orifice Controls 0.16 cfs @ 7.32 fps)

Summary for Pond C7: Drain Basin Condo 7

Inflow Area = 0.702 ac, 49.02% Impervious, Inflow Depth > 5.08" for 100-Yr Storm event
 Inflow = 3.80 cfs @ 12.11 hrs, Volume= 0.297 af
 Outflow = 0.19 cfs @ 14.74 hrs, Volume= 0.122 af, Atten= 95%, Lag= 157.9 min
 Primary = 0.19 cfs @ 14.74 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.37' @ 14.74 hrs Surf.Area= 4,910 sf Storage= 9,090 cf

Plug-Flow detention time= 402.8 min calculated for 0.122 af (41% of inflow)
 Center-of-Mass det. time= 279.2 min (1,074.6 - 795.4)

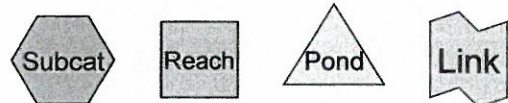
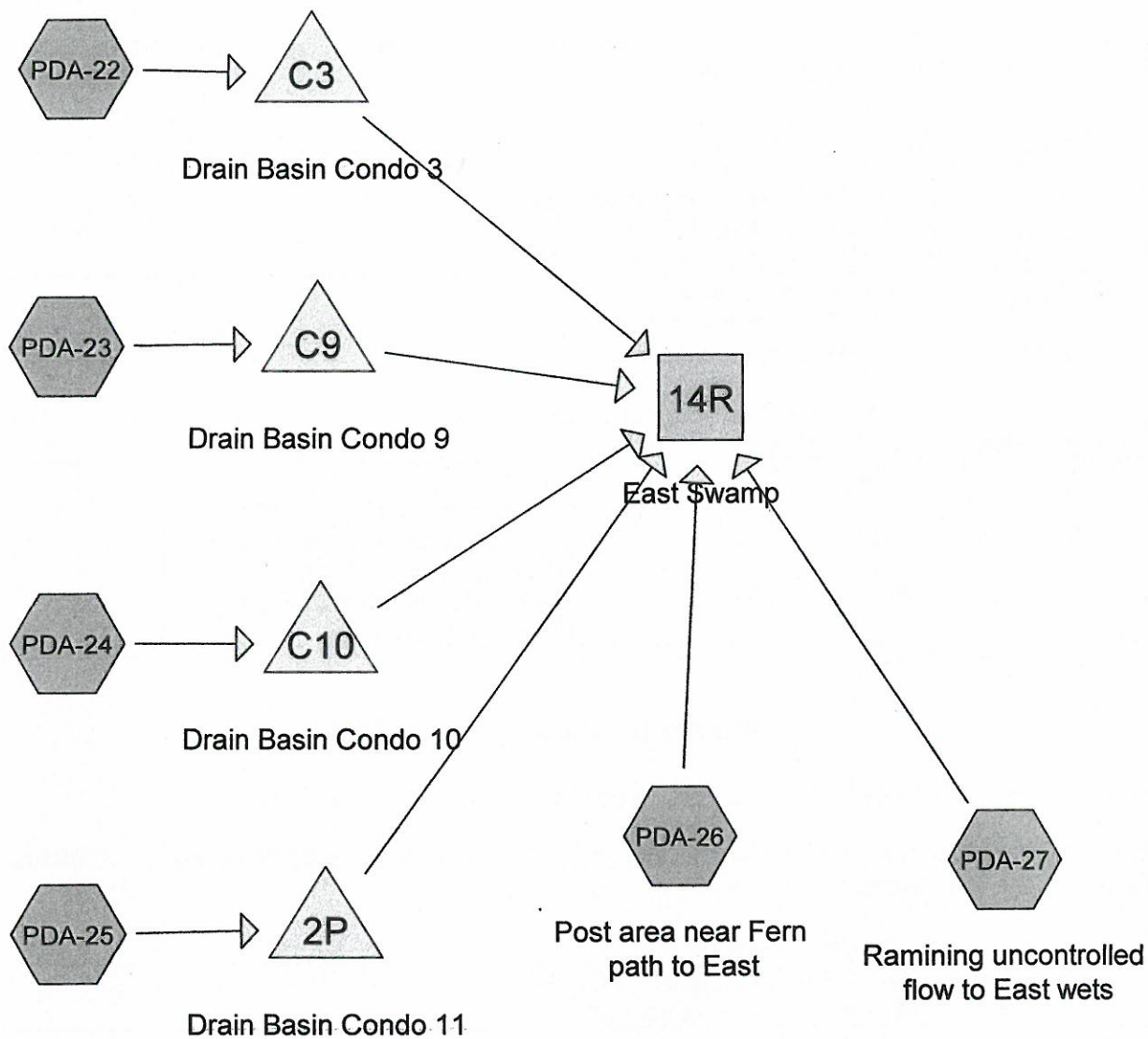
Volume	Invert	Avail.Storage	Storage Description
#1	269.00'	15,300 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
269.00	2,824	275.8	0	0	2,824
270.00	3,679	294.7	3,242	3,242	3,728
272.50	6,066	341.8	12,058	15,300	6,243

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	12.0" Round Culvert L= 30.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 270.00' / 269.00' S= 0.0333 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	271.00'	4.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.19 cfs @ 14.74 hrs HW=271.37' (Free Discharge)

- 1=Culvert (Passes 0.19 cfs of 3.11 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.19 cfs @ 2.15 fps)



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Summary for Subcatchment PDA-22:

Runoff = 4.18 cfs @ 12.11 hrs, Volume= 0.299 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (ac)	CN	Description
1.765	98	Paved parking, HSG A
1.247	39	>75% Grass cover, Good, HSG A
0.275	98	Paved parking, HSG D
0.110	80	>75% Grass cover, Good, HSG D
3.397	76	Weighted Average
1.357		39.95% Pervious Area
2.040		60.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.8	80	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.9	112	0.0100	2.03		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
7.3	242	Total			

Summary for Subcatchment PDA-23:

Runoff = 1.74 cfs @ 12.09 hrs, Volume= 0.120 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
20,500	98	Paved parking, HSG C
10,300	74	>75% Grass cover, Good, HSG C
30,800	90	Weighted Average
10,300		33.44% Pervious Area
20,500		66.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

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Summary for Subcatchment PDA-24:

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.097 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
6,100	98	Paved parking, HSG D
10,000	98	Paved parking, HSG C
2,000	80	>75% Grass cover, Good, HSG D
5,670	74	>75% Grass cover, Good, HSG C
23,770	91	Weighted Average
7,670		32.27% Pervious Area
16,100		67.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-25:

Runoff = 1.32 cfs @ 12.10 hrs, Volume= 0.089 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
* 5,307	98	Paved road, HSG C
1,913	98	Paved parking, HSG C
30,676	74	>75% Grass cover, Good, HSG C
37,896	79	Weighted Average
30,676		80.95% Pervious Area
7,220		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-26: Post area near Fern path to East

Runoff = 1.06 cfs @ 12.21 hrs, Volume= 0.095 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Area (sf)	CN	Description
8,250	74	>75% Grass cover, Good, HSG C
8,090	77	Woods, Good, HSG D
42,800	70	Woods, Good, HSG C
59,140	72	Weighted Average
59,140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Subcatchment PDA-27: Ramining uncontrolled flow to East wets

Runoff = 0.13 cfs @ 12.61 hrs, Volume= 0.050 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.20"

Area (sf)	CN	Description
123,796	30	Woods, Good, HSG A
15,000	39	>75% Grass cover, Good, HSG A
22,175	74	>75% Grass cover, Good, HSG C
86,479	70	Woods, Good, HSG C
13,524	77	Woods, Good, HSG D
260,974	50	Weighted Average
260,974		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Reach 14R: East Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.869 ac, 23.67% Impervious, Inflow Depth > 0.23" for 2-Yr Storm event
 Inflow = 1.18 cfs @ 12.21 hrs, Volume= 0.244 af
 Outflow = 1.18 cfs @ 12.21 hrs, Volume= 0.244 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Drain Basin Condo 11

Inflow Area = 0.870 ac, 19.05% Impervious, Inflow Depth > 1.23" for 2-Yr Storm event
 Inflow = 1.32 cfs @ 12.10 hrs, Volume= 0.089 af
 Outflow = 0.06 cfs @ 15.65 hrs, Volume= 0.045 af, Atten= 95%, Lag= 213.5 min
 Discarded = 0.06 cfs @ 15.65 hrs, Volume= 0.045 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 270.93' @ 15.65 hrs Surf.Area= 2,613 sf Storage= 2,303 cf

Plug-Flow detention time= 215.1 min calculated for 0.045 af (50% of inflow)
 Center-of-Mass det. time= 129.3 min (935.4 - 806.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.00'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,350	187.0	0	0	2,350
274.00	3,584	225.0	11,782	11,782	3,844

Device	Routing	Invert	Outlet Devices	
#1	Primary	271.00'	2.0" Vert. Orifice/Grate C= 0.600	
#2	Discarded	270.00'	1.020 in/hr Exfiltration over Surface area	

Discarded OutFlow Max=0.06 cfs @ 15.65 hrs HW=270.93' (Free Discharge)
 ↑2=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=270.00' (Free Discharge)
 ↑1=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C10: Drain Basin Condo 10

Inflow Area = 0.546 ac, 67.73% Impervious, Inflow Depth > 2.13" for 2-Yr Storm event
 Inflow = 1.39 cfs @ 12.09 hrs, Volume= 0.097 af
 Outflow = 0.04 cfs @ 16.16 hrs, Volume= 0.024 af, Atten= 97%, Lag= 244.2 min
 Primary = 0.04 cfs @ 16.16 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.06' @ 16.16 hrs Surf.Area= 3,487 sf Storage= 3,287 cf

Plug-Flow detention time= 304.0 min calculated for 0.024 af (24% of inflow)
 Center-of-Mass det. time= 181.5 min (952.3 - 770.8)

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Timber Crest Estates, Medway, MA
Type III 24-hr 2-Yr Storm Rainfall=3.20"

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Volume	Invert	Avail.Storage	Storage Description		
#1	271.00'	6,914 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,738	230.0	0	0	2,738
273.00	4,230	267.0	6,914	6,914	4,283
Device	Routing	Invert	Outlet Devices		
#1	Primary	271.00'	1.0" Vert. Orifice/Grate	C= 0.600	
#2	Primary	272.00'	12.0" Vert. Orifice/Grate	C= 0.600	

Primary OutFlow Max=0.04 cfs @ 16.16 hrs HW=272.06' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.03 cfs @ 4.86 fps)

2=Orifice/Grate (Orifice Controls 0.02 cfs @ 0.82 fps)

Summary for Pond C3: Drain Basin Condo 3

Inflow Area = 3.397 ac, 60.05% Impervious, Inflow Depth > 1.05" for 2-Yr Storm event
 Inflow = 4.18 cfs @ 12.11 hrs, Volume= 0.299 af
 Outflow = 1.07 cfs @ 12.55 hrs, Volume= 0.298 af, Atten= 74%, Lag= 26.3 min
 Discarded = 1.07 cfs @ 12.55 hrs, Volume= 0.298 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.62' @ 12.55 hrs Surf.Area= 5,584 sf Storage= 3,233 cf

Plug-Flow detention time= 20.6 min calculated for 0.297 af (100% of inflow)
 Center-of-Mass det. time= 20.1 min (834.6 - 814.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	272.00'	15,963 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	4,880	395.0	0	0	4,880
274.50	8,020	442.0	15,963	15,963	8,181
Device	Routing	Invert	Outlet Devices		
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area		
#2	Primary	272.00'	12.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.00' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf		
#3	Device 2	273.00'	7.0" Vert. Orifice/Grate C= 0.600		
#4	Device 2	273.80'	24.0" W x 1.0" H Vert. Orifice/Grate C= 0.600		

Discarded OutFlow Max=1.07 cfs @ 12.55 hrs HW=272.62' (Free Discharge)

1=Exfiltration (Exfiltration Controls 1.07 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=272.00' (Free Discharge)

2=Culvert (Controls 0.00 cfs)

3=Orifice/Grate (Controls 0.00 cfs)

4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C9: Drain Basin Condo 9

Inflow Area = 0.707 ac, 66.56% Impervious, Inflow Depth > 2.04" for 2-Yr Storm event
 Inflow = 1.74 cfs @ 12.09 hrs, Volume= 0.120 af
 Outflow = 0.13 cfs @ 13.50 hrs, Volume= 0.075 af, Atten= 93%, Lag= 84.5 min
 Primary = 0.13 cfs @ 13.50 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.10' @ 13.50 hrs Surf.Area= 3,149 sf Storage= 3,060 cf

Plug-Flow detention time= 225.1 min calculated for 0.075 af (62% of inflow)
 Center-of-Mass det. time= 151.8 min (926.4 - 774.6)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	6,190 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,440	207.0	0	0	2,440
272.00	3,800	245.0	6,190	6,190	3,880

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	271.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	271.40'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.13 cfs @ 13.50 hrs HW=271.10' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.11 cfs @ 4.85 fps)

2=Orifice/Grate (Orifice Controls 0.02 cfs @ 1.07 fps)

3=Orifice/Grate (Controls 0.00 cfs)

Summary for Subcatchment PDA-22:

Runoff = 8.59 cfs @ 12.11 hrs, Volume= 0.601 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (ac)	CN	Description
1.765	98	Paved parking, HSG A
1.247	39	>75% Grass cover, Good, HSG A
0.275	98	Paved parking, HSG D
0.110	80	>75% Grass cover, Good, HSG D
3.397	76	Weighted Average
1.357		39.95% Pervious Area
2.040		60.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.8	80	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.9	112	0.0100	2.03		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
7.3	242	Total			

Summary for Subcatchment PDA-23:

Runoff = 2.82 cfs @ 12.09 hrs, Volume= 0.200 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
20,500	98	Paved parking, HSG C
10,300	74	>75% Grass cover, Good, HSG C
30,800	90	Weighted Average
10,300		33.44% Pervious Area
20,500		66.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

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Type III 24-hr 10-Yr Storm Rainfall=4.70"

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Summary for Subcatchment PDA-24:

Runoff = 2.22 cfs @ 12.09 hrs, Volume= 0.159 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
6,100	98	Paved parking, HSG D
10,000	98	Paved parking, HSG C
2,000	80	>75% Grass cover, Good, HSG D
5,670	74	>75% Grass cover, Good, HSG C
23,770	91	Weighted Average
7,670		32.27% Pervious Area
16,100		67.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-25:

Runoff = 2.55 cfs @ 12.09 hrs, Volume= 0.172 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
* 5,307	98	Paved road, HSG C
1,913	98	Paved parking, HSG C
30,676	74	>75% Grass cover, Good, HSG C
37,896	79	Weighted Average
30,676		80.95% Pervious Area
7,220		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-26: Post area near Fern path to East

Runoff = 2.41 cfs @ 12.20 hrs, Volume= 0.205 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

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Area (sf)	CN	Description
8,250	74	>75% Grass cover, Good, HSG C
8,090	77	Woods, Good, HSG D
42,800	70	Woods, Good, HSG C
59,140	72	Weighted Average
59,140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Subcatchment PDA-27: Ramining uncontrolled flow to East wets

Runoff = 1.79 cfs @ 12.31 hrs, Volume= 0.247 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.70"

Area (sf)	CN	Description
123,796	30	Woods, Good, HSG A
15,000	39	>75% Grass cover, Good, HSG A
22,175	74	>75% Grass cover, Good, HSG C
86,479	70	Woods, Good, HSG C
13,524	77	Woods, Good, HSG D
260,974	50	Weighted Average
260,974		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Reach 14R: East Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.869 ac, 23.67% Impervious, Inflow Depth > 0.72" for 10-Yr Storm event
 Inflow = 4.64 cfs @ 12.29 hrs, Volume= 0.767 af
 Outflow = 4.64 cfs @ 12.29 hrs, Volume= 0.767 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Drain Basin Condo 11

Inflow Area = 0.870 ac, 19.05% Impervious, Inflow Depth > 2.37" for 10-Yr Storm event
 Inflow = 2.55 cfs @ 12.09 hrs, Volume= 0.172 af
 Outflow = 0.15 cfs @ 14.50 hrs, Volume= 0.098 af, Atten= 94%, Lag= 144.2 min
 Discarded = 0.07 cfs @ 14.50 hrs, Volume= 0.054 af
 Primary = 0.08 cfs @ 14.50 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 271.67' @ 14.50 hrs Surf.Area= 2,833 sf Storage= 4,319 cf

Plug-Flow detention time= 212.7 min calculated for 0.098 af (57% of inflow)

Center-of-Mass det. time= 134.4 min (925.8 - 791.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.00'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,350	187.0	0	0	2,350
274.00	3,584	225.0	11,782	11,782	3,844

Device	Routing	Invert	Outlet Devices	
#1	Primary	271.00'	2.0" Vert. Orifice/Grate C= 0.600	
#2	Discarded	270.00'	1.020 in/hr Exfiltration over Surface area	

Discarded OutFlow Max=0.07 cfs @ 14.50 hrs HW=271.67' (Free Discharge)

↑2=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.08 cfs @ 14.50 hrs HW=271.67' (Free Discharge)

↑1=Orifice/Grate (Orifice Controls 0.08 cfs @ 3.68 fps)

Summary for Pond C10: Drain Basin Condo 10

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.546 ac, 67.73% Impervious, Inflow Depth > 3.49" for 10-Yr Storm event
 Inflow = 2.22 cfs @ 12.09 hrs, Volume= 0.159 af
 Outflow = 0.36 cfs @ 12.57 hrs, Volume= 0.083 af, Atten= 84%, Lag= 28.8 min
 Primary = 0.36 cfs @ 12.57 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 272.28' @ 12.57 hrs Surf.Area= 3,659 sf Storage= 4,095 cf

Plug-Flow detention time= 194.7 min calculated for 0.083 af (52% of inflow)

Center-of-Mass det. time= 111.8 min (871.2 - 759.3)

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Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	6,914 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
271.00	2,738	230.0	0	0	2,738
273.00	4,230	267.0	6,914	6,914	4,283

Device	Routing	Invert	Outlet Devices
#1	Primary	271.00'	1.0" Vert. Orifice/Grate C= 0.600
#2	Primary	272.00'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.36 cfs @ 12.57 hrs HW=272.28' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.03 cfs @ 5.37 fps)

2=Orifice/Grate (Orifice Controls 0.33 cfs @ 1.82 fps)

Summary for Pond C3: Drain Basin Condo 3

Inflow Area = 3.397 ac, 60.05% Impervious, Inflow Depth > 2.12" for 10-Yr Storm event
 Inflow = 8.59 cfs @ 12.11 hrs, Volume= 0.601 af
 Outflow = 1.88 cfs @ 12.56 hrs, Volume= 0.601 af, Atten= 78%, Lag= 27.3 min
 Discarded = 1.28 cfs @ 12.56 hrs, Volume= 0.557 af
 Primary = 0.60 cfs @ 12.56 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 273.51' @ 12.56 hrs Surf.Area= 6,683 sf Storage= 8,689 cf

Plug-Flow detention time= 50.3 min calculated for 0.601 af (100% of inflow)

Center-of-Mass det. time= 50.0 min (848.8 - 798.8)

Volume	Invert	Avail.Storage	Storage Description
#1	272.00'	15,963 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	4,880	395.0	0	0	4,880
274.50	8,020	442.0	15,963	15,963	8,181

Device	Routing	Invert	Outlet Devices
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	272.00'	12.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.00' S= 0.0200 ' / S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	273.00'	7.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	273.80'	24.0" W x 1.0" H Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=1.28 cfs @ 12.56 hrs HW=273.51' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=0.60 cfs @ 12.56 hrs HW=273.51' (Free Discharge)

↑2=Culvert (Passes 0.60 cfs of 3.80 cfs potential flow)

↑3=Orifice/Grate (Orifice Controls 0.60 cfs @ 2.43 fps)

↑4=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond C9: Drain Basin Condo 9

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.707 ac, 66.56% Impervious, Inflow Depth > 3.39" for 10-Yr Storm event
 Inflow = 2.82 cfs @ 12.09 hrs, Volume= 0.200 af
 Outflow = 0.48 cfs @ 12.56 hrs, Volume= 0.144 af, Atten= 83%, Lag= 28.3 min
 Primary = 0.48 cfs @ 12.56 hrs, Volume= 0.144 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.55' @ 12.56 hrs Surf.Area= 3,471 sf Storage= 4,571 cf

Plug-Flow detention time= 171.8 min calculated for 0.144 af (72% of inflow)
 Center-of-Mass det. time= 107.6 min (870.2 - 762.5)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	6,190 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,440	207.0	0	0	2,440
272.00	3,800	245.0	6,190	6,190	3,880

Device	Routing	Invert	Outlet Devices
#1	Primary	270.00'	2.0" Vert. Orifice/Grate C= 0.600
#2	Primary	271.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	271.40'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.48 cfs @ 12.56 hrs HW=271.55' (Free Discharge)

↑1=Orifice/Grate (Orifice Controls 0.13 cfs @ 5.84 fps)

↑2=Orifice/Grate (Orifice Controls 0.26 cfs @ 3.00 fps)

↑3=Orifice/Grate (Orifice Controls 0.09 cfs @ 1.34 fps)

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Summary for Subcatchment PDA-22:

Runoff = 15.00 cfs @ 12.11 hrs, Volume= 1.056 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (ac)	CN	Description
1.765	98	Paved parking, HSG A
1.247	39	>75% Grass cover, Good, HSG A
0.275	98	Paved parking, HSG D
0.110	80	>75% Grass cover, Good, HSG D
3.397	76	Weighted Average
1.357		39.95% Pervious Area
2.040		60.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0200	0.15		Sheet Flow, AB
					Grass: Short n= 0.150 P2= 3.20"
0.8	80	0.0100	1.61		Shallow Concentrated Flow, BC
					Unpaved Kv= 16.1 fps
0.9	112	0.0100	2.03		Shallow Concentrated Flow, CD
					Paved Kv= 20.3 fps
7.3	242	Total			

Summary for Subcatchment PDA-23:

Runoff = 4.24 cfs @ 12.09 hrs, Volume= 0.308 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
20,500	98	Paved parking, HSG C
10,300	74	>75% Grass cover, Good, HSG C
30,800	90	Weighted Average
10,300		33.44% Pervious Area
20,500		66.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-24:

Runoff = 3.31 cfs @ 12.09 hrs, Volume= 0.242 af, Depth> 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
6,100	98	Paved parking, HSG D
10,000	98	Paved parking, HSG C
2,000	80	>75% Grass cover, Good, HSG D
5,670	74	>75% Grass cover, Good, HSG C
23,770	91	Weighted Average
7,670		32.27% Pervious Area
16,100		67.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-25:

Runoff = 4.28 cfs @ 12.09 hrs, Volume= 0.293 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
* 5,307	98	Paved road, HSG C
1,913	98	Paved parking, HSG C
30,676	74	>75% Grass cover, Good, HSG C
37,896	79	Weighted Average
30,676		80.95% Pervious Area
7,220		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, TR55-MIN

Summary for Subcatchment PDA-26: Post area near Fern path to East

Runoff = 4.45 cfs @ 12.19 hrs, Volume= 0.376 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Area (sf)	CN	Description
8,250	74	>75% Grass cover, Good, HSG C
8,090	77	Woods, Good, HSG D
42,800	70	Woods, Good, HSG C
59,140	72	Weighted Average
59,140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Subcatchment PDA-27: Ramining uncontrolled flow to East wets

Runoff = 6.97 cfs @ 12.22 hrs, Volume= 0.670 af, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Storm Rainfall=6.70"

Area (sf)	CN	Description
123,796	30	Woods, Good, HSG A
15,000	39	>75% Grass cover, Good, HSG A
22,175	74	>75% Grass cover, Good, HSG C
86,479	70	Woods, Good, HSG C
13,524	77	Woods, Good, HSG D
260,974	50	Weighted Average
260,974		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	50	0.0250	0.79		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.4	100	Total			

Summary for Reach 14R: East Swamp

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.869 ac, 23.67% Impervious, Inflow Depth > 1.68" for 100-Yr Storm event
 Inflow = 15.55 cfs @ 12.22 hrs, Volume= 1.800 af
 Outflow = 15.55 cfs @ 12.22 hrs, Volume= 1.800 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Drain Basin Condo 11

Inflow Area = 0.870 ac, 19.05% Impervious, Inflow Depth > 4.04" for 100-Yr Storm event
 Inflow = 4.28 cfs @ 12.09 hrs, Volume= 0.293 af
 Outflow = 0.22 cfs @ 14.75 hrs, Volume= 0.152 af, Atten= 95%, Lag= 159.5 min
 Discarded = 0.08 cfs @ 14.75 hrs, Volume= 0.065 af
 Primary = 0.14 cfs @ 14.75 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.85' @ 14.75 hrs Surf.Area= 3,201 sf Storage= 7,869 cf

Plug-Flow detention time= 223.6 min calculated for 0.151 af (52% of inflow)
 Center-of-Mass det. time= 143.2 min (922.2 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1	270.00'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,350	187.0	0	0	2,350
274.00	3,584	225.0	11,782	11,782	3,844

Device	Routing	Invert	Outlet Devices
#1	Primary	271.00'	2.0" Vert. Orifice/Grate C= 0.600
#2	Discarded	270.00'	1.020 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.08 cfs @ 14.75 hrs HW=272.85' (Free Discharge)
 ↑2=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.14 cfs @ 14.75 hrs HW=272.85' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.39 fps)

Summary for Pond C10: Drain Basin Condo 10

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.546 ac, 67.73% Impervious, Inflow Depth > 5.33" for 100-Yr Storm event
 Inflow = 3.31 cfs @ 12.09 hrs, Volume= 0.242 af
 Outflow = 1.26 cfs @ 12.33 hrs, Volume= 0.165 af, Atten= 62%, Lag= 14.5 min
 Primary = 1.26 cfs @ 12.33 hrs, Volume= 0.165 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 272.58' @ 12.33 hrs Surf.Area= 3,891 sf Storage= 5,213 cf

Plug-Flow detention time= 150.5 min calculated for 0.165 af (68% of inflow)
 Center-of-Mass det. time= 81.5 min (832.6 - 751.0)

OE2765-POST-EAST-030816

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Timber Crest Estates, Medway, MA
Type III 24-hr 100-Yr Storm Rainfall=6.70"

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Volume	Invert	Avail.Storage	Storage Description			
#1	271.00'	6,914 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
271.00	2,738	230.0	0	0	2,738	
273.00	4,230	267.0	6,914	6,914	4,283	
Device	Routing	Invert	Outlet Devices			
#1	Primary	271.00'	1.0" Vert. Orifice/Grate C= 0.600			
#2	Primary	272.00'	12.0" Vert. Orifice/Grate C= 0.600			

Primary OutFlow Max=1.26 cfs @ 12.33 hrs HW=272.58' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.03 cfs @ 5.97 fps)

2=Orifice/Grate (Orifice Controls 1.23 cfs @ 2.59 fps)

Summary for Pond C3: Drain Basin Condo 3

Inflow Area = 3.397 ac, 60.05% Impervious, Inflow Depth > 3.73" for 100-Yr Storm event
 Inflow = 15.00 cfs @ 12.11 hrs, Volume= 1.056 af
 Outflow = 3.59 cfs @ 12.53 hrs, Volume= 1.055 af, Atten= 76%, Lag= 25.3 min
 Discarded = 1.53 cfs @ 12.53 hrs, Volume= 0.797 af
 Primary = 2.05 cfs @ 12.53 hrs, Volume= 0.258 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 274.49' @ 12.53 hrs Surf.Area= 8,004 sf Storage= 15,871 cf

Plug-Flow detention time= 57.2 min calculated for 1.055 af (100% of inflow)
 Center-of-Mass det. time= 56.9 min (842.9 - 786.0)

Volume	Invert	Avail.Storage	Storage Description		
#1	272.00'	15,963 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
272.00	4,880	395.0	0	0	4,880
274.50	8,020	442.0	15,963	15,963	8,181

Device	Routing	Invert	Outlet Devices
#1	Discarded	272.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	272.00'	12.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#3	Device 2	273.00'	7.0" Vert. Orifice/Grate C= 0.600
#4	Device 2	273.80'	24.0" W x 1.0" H Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=1.53 cfs @ 12.53 hrs HW=274.49' (Free Discharge)

1=Exfiltration (Exfiltration Controls 1.53 cfs)

Primary OutFlow Max=2.05 cfs @ 12.53 hrs HW=274.49' (Free Discharge)

2=Culvert (Passes 2.05 cfs of 5.33 cfs potential flow)

3=Orifice/Grate (Orifice Controls 1.41 cfs @ 5.26 fps)

4=Orifice/Grate (Orifice Controls 0.64 cfs @ 3.87 fps)

Summary for Pond C9: Drain Basin Condo 9

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.707 ac, 66.56% Impervious, Inflow Depth > 5.22" for 100-Yr Storm event
 Inflow = 4.24 cfs @ 12.09 hrs, Volume= 0.308 af
 Outflow = 1.51 cfs @ 12.36 hrs, Volume= 0.245 af, Atten= 64%, Lag= 16.1 min
 Primary = 1.51 cfs @ 12.36 hrs, Volume= 0.245 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 271.96' @ 12.36 hrs Surf.Area= 3,770 sf Storage= 6,038 cf

Plug-Flow detention time= 134.7 min calculated for 0.245 af (80% of inflow)
 Center-of-Mass det. time= 80.4 min (834.0 - 753.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	270.00'	6,190 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
270.00	2,440	207.0	0	0	2,440
272.00	3,800	245.0	6,190	6,190	3,880

Device	Routing	Invert	Outlet Devices	
#1	Primary	270.00'	2.0" Vert. Orifice/Grate	C= 0.600
#2	Primary	271.00'	4.0" Vert. Orifice/Grate	C= 0.600
#3	Primary	271.40'	10.0" Vert. Orifice/Grate	C= 0.600

Primary OutFlow Max=1.51 cfs @ 12.36 hrs HW=271.96' (Free Discharge)

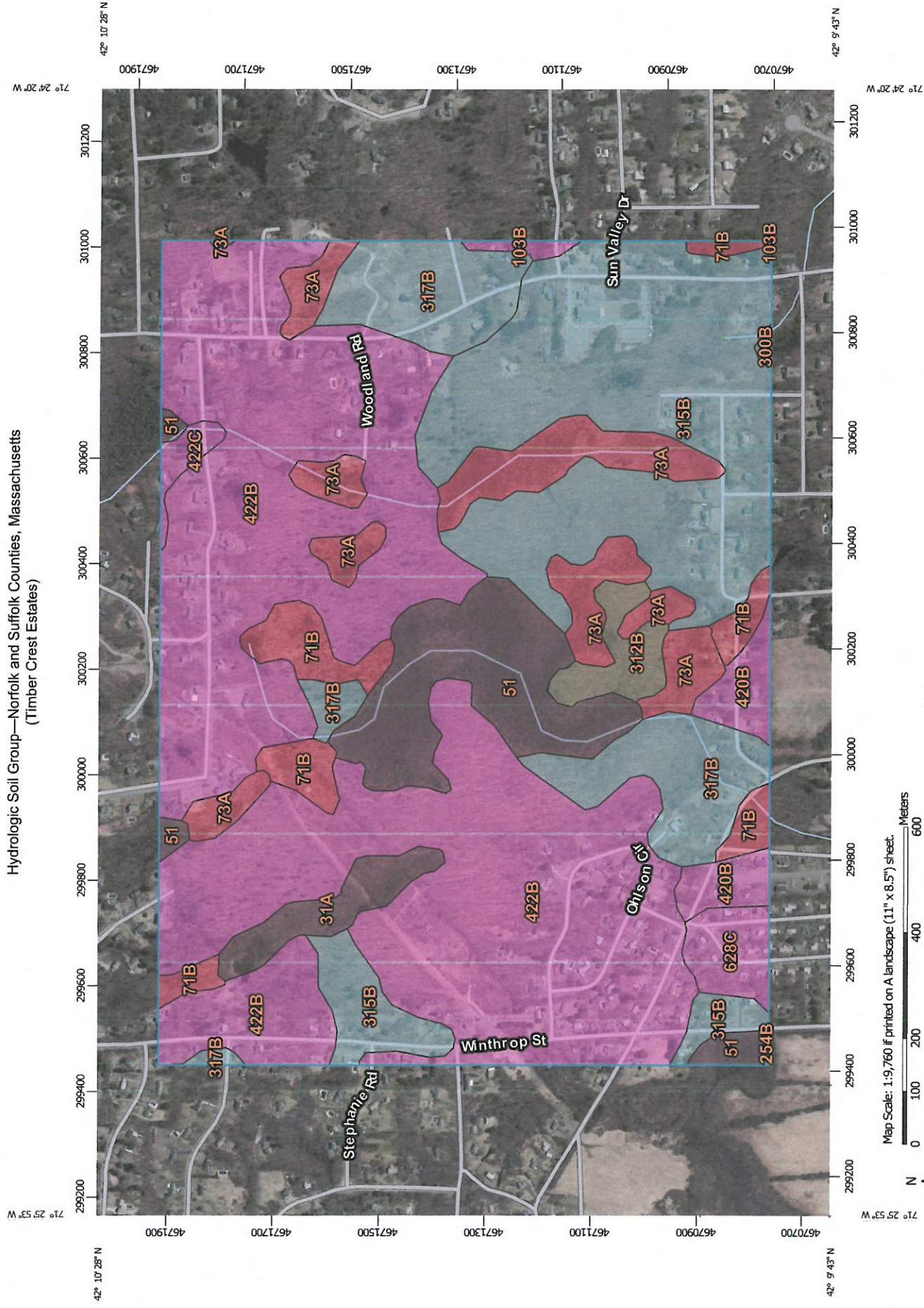
1=Orifice/Grate (Orifice Controls 0.14 cfs @ 6.59 fps)

2=Orifice/Grate (Orifice Controls 0.37 cfs @ 4.29 fps)

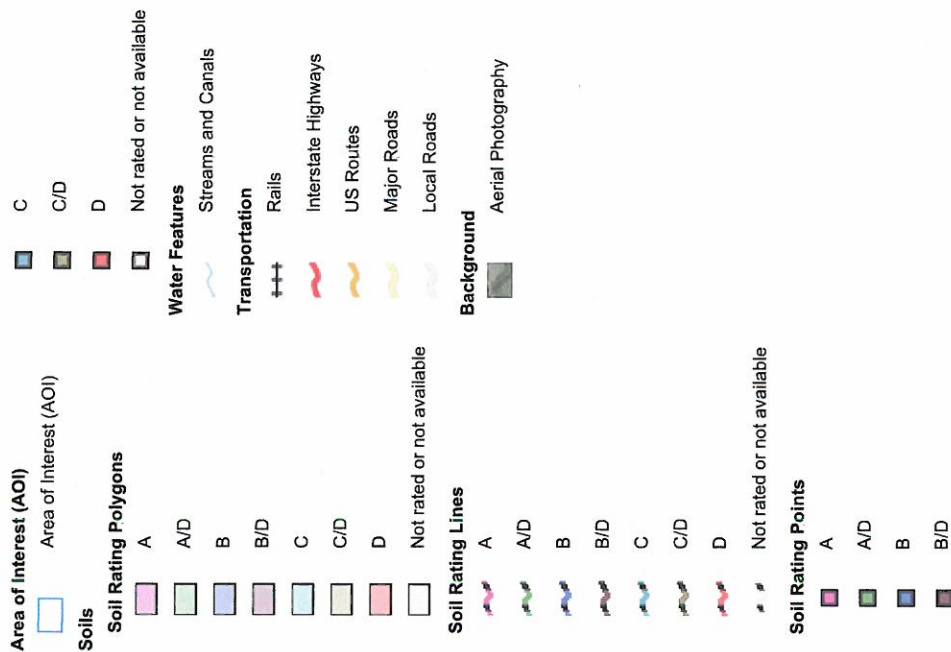
3=Orifice/Grate (Orifice Controls 0.99 cfs @ 2.55 fps)

Appendix B
NRCS SOIL INFORMATION

Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts (Timber Crest Estates)



MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 11, Sep 28, 2015

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

Date(s) aerial images were photographed: Apr 8, 2011—Apr 9, 2011

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Norfolk and Suffolk Counties, Massachusetts (MA616)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
31A	Walpole sandy loam, 0 to 3 percent slopes	B/D	7.9	1.8%
51	Swansea muck, 0 to 1 percent slopes	B/D	31.9	7.1%
71B	Ridgebury fine sandy loam, 2 to 8 percent slopes, extremely stony	D	16.1	3.6%
73A	Whitman fine sandy loam, 0 to 5 percent slopes, extremely stony	D	32.6	7.3%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A	1.3	0.3%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.2	0.0%
300B	Montauk fine sandy loam, 3 to 8 percent slopes	C	0.4	0.1%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	C/D	6.6	1.5%
315B	Scituate fine sandy loam, 3 to 8 percent slopes	C	92.4	20.7%
317B	Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	C	35.2	7.9%
420B	Canton fine sandy loam, 3 to 8 percent slopes	A	8.9	2.0%
422B	Canton fine sandy loam, 3 to 8 percent slopes, extremely stony	A	204.5	45.8%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	A	2.4	0.5%
628C	Canton-Urban land complex, 3 to 15 percent slopes	A	6.4	1.4%
Totals for Area of Interest			446.7	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 C
PRE- AND POST-DEVELOPMENT DRAINAGE MAPS

