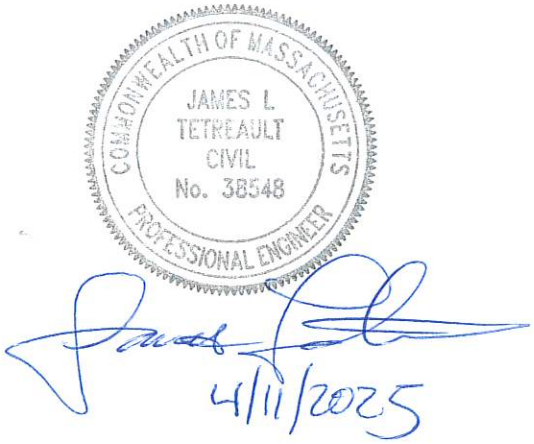
DRAINAGE REPORT FOR
PROPOSED SITE DEVELOPMENT
AT
1172 STAFFORD STREET, OXFORD, MA

Job #255-521 Client #521

APRIL 11, 2025



EXPEDITED ENGINEERING, LLC
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INTRODUCTION

The purpose of this Drainage Report is to confirm that, following the construction of 10 contractor's yard buildings, that the peak rate of runoff from this property to abutting properties that receive runoff from it will not increase in any of the 2, 10, 25 or 100 year return frequency storm events.

The property at 1172 Stafford Street drains onto six abutting properties.

The proposed project will cut off some of the area draining to some of these abutters to decrease the peak rate of flow to them. It will decrease the peak rate of flow to others by installing two infiltration structures.

Soils on site are Canton series soils categorized as hydrologic soil group B soils.

Calculations were made using the HydroCAD stormwater modeling program. The 2, 10, 25 and 100 year 24 hour storm event rainfalls used in these calculations were 3.19, 4.97, 6.08 and 7.79 inches, respectively. These rainfalls are derived from the NOAA web site.

Postdevelopment subcatchment #'s for areas draining to the same abutter are the predevelopment number plus 10. A copy of the printout for this location is included in this report. The first table, below, compares the peak predevelopment and postdevelopment rates of flows of stormwater at the design points:

DESIGN POINT	PEAK FLOW RATE (in cfs)			
	2 yr storm	10 yr storm	25 yr storm	100 yr storm
Flow to abutter Kisten				
Subcatchment #1 pre	0.12 pre	0.85 pre	1.54 pre	2.78 pre
Subcatchment #11 post	0.00	0.00	0.00	0.00
Flow to abutters Rivera & Vazquez				
Subcatchment #2 pre	0.01 pre	0.07 pre	0.13 pre	0.23 pre
Subcatchment #12 post	0.01	0.06	0.11	0.21
Flow to abutter Ukleja				
Subcatchment #3 pre	0.83 pre	3.60 pre	9.22 pre	16.39 pre
Reach #13 post	0.56	3.60	6.08	15.40
Flow to abutter Pecyna				
Subcatchment #4 pre	0.13 pre	0.89 pre	1.71 pre	3.10 pre
Subcatchment #14 post	0.12	0.03	1.62	2.96
Flow to abutter Calley				
Subcatchment #5 pre	0.01 pre	0.10 pre	0.19 pre	0.34 pre
Subcatchment #15 post	0.01	0.03	0.19	0.34
Flow to abutter Leigher				
Subcatchment #6 pre	0.09 pre	0.22 pre	1.09 pre	1.98 pre
Subcatchment #16 post	0.03	0.03	0.40	0.73

NOAA Atlas 14, Volume 10, Version 3
Location name: Rochdale, Massachusetts, USA*
Latitude: 42.1899°, Longitude: -71.9138°
Elevation: 813 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.341** (0.272-0.422)	**0.401** (0.320-0.498)	**0.500** (0.397-0.623)	**0.582** (0.459-0.730)	**0.695** (0.528-0.916)	**0.781** (0.579-1.05)	**0.869** (0.623-1.22)	**0.966** (0.655-1.41)	**1.10** (0.715-1.67)	**1.21** (0.765-1.88)
10-min	**0.483** (0.385-0.598)	**0.569** (0.453-0.705)	**0.709** (0.562-0.882)	**0.825** (0.650-1.03)	**0.985** (0.748-1.30)	**1.11** (0.821-1.49)	**1.23** (0.882-1.73)	**1.37** (0.928-1.99)	**1.56** (1.01-2.37)	**1.71** (1.08-2.66)
15-min	**0.568** (0.453-0.703)	**0.669** (0.533-0.829)	**0.834** (0.662-1.04)	**0.971** (0.766-1.22)	**1.16** (0.880-1.53)	**1.30** (0.965-1.76)	**1.45** (1.04-2.04)	**1.61** (1.09-2.34)	**1.83** (1.19-2.78)	**2.01** (1.28-3.13)
30-min	**0.775** (0.618-0.960)	**0.913** (0.727-1.13)	**1.14** (0.904-1.42)	**1.33** (1.04-1.66)	**1.58** (1.20-2.09)	**1.78** (1.32-2.40)	**1.98** (1.42-2.79)	**2.20** (1.49-3.20)	**2.51** (1.63-3.81)	**2.76** (1.74-4.29)
60-min	**0.983** (0.784-1.22)	**1.16** (0.922-1.44)	**1.44** (1.15-1.80)	**1.68** (1.33-2.11)	**2.01** (1.53-2.65)	**2.26** (1.67-3.05)	**2.51** (1.80-3.54)	**2.79** (1.89-4.06)	**3.18** (2.07-4.83)	**3.50** (2.22-5.44)
2-hr	**1.25** (1.00-1.54)	**1.48** (1.19-1.82)	**1.85** (1.48-2.29)	**2.16** (1.72-2.69)	**2.59** (1.98-3.40)	**2.91** (2.18-3.92)	**3.25** (2.36-4.58)	**3.64** (2.48-5.27)	**4.22** (2.75-6.38)	**4.71** (2.99-7.28)
3-hr	**1.43** (1.16-1.75)	**1.70** (1.37-2.08)	**2.14** (1.72-2.64)	**2.50** (2.00-3.10)	**3.01** (2.32-3.94)	**3.38** (2.54-4.55)	**3.78** (2.76-5.34)	**4.26** (2.90-6.14)	**4.98** (3.25-7.49)	**5.59** (3.56-8.61)
6-hr	**1.78** (1.45-2.17)	**2.14** (1.74-2.61)	**2.73** (2.21-3.34)	**3.21** (2.58-3.96)	**3.88** (3.01-5.06)	**4.38** (3.32-5.87)	**4.92** (3.62-6.92)	**5.57** (3.81-7.99)	**6.57** (4.30-9.82)	**7.43** (4.74-11.4)
12-hr	**2.19** (1.79-2.64)	**2.66** (2.18-3.22)	**3.44** (2.80-4.18)	**4.08** (3.30-4.99)	**4.96** (3.87-6.44)	**5.62** (4.29-7.49)	**6.33** (4.68-8.86)	**7.19** (4.94-10.2)	**8.52** (5.60-12.6)	**9.66** (6.18-14.7)
24-hr	**2.60** (2.14-3.12)	**3.19** (2.63-3.84)	**4.16** (3.42-5.02)	**4.97** (4.05-6.04)	**6.08** (4.78-7.83)	**6.90** (5.30-9.14)	**7.79** (5.80-10.8)	**8.88** (6.13-12.6)	**10.6** (6.96-15.6)	**12.0** (7.71-18.1)
2-day	**2.99** (2.48-3.56)	**3.69** (3.06-4.40)	**4.84** (3.99-5.79)	**5.78** (4.74-6.98)	**7.09** (5.61-9.08)	**8.05** (6.23-10.6)	**9.11** (6.83-12.6)	**10.4** (7.21-14.6)	**12.4** (8.23-18.2)	**14.2** (9.15-21.3)
3-day	**3.26** (2.72-3.86)	**4.02** (3.35-4.77)	**5.26** (4.36-6.27)	**6.29** (5.18-7.56)	**7.70** (6.12-9.84)	**8.75** (6.79-11.5)	**9.89** (7.45-13.7)	**11.3** (7.86-15.9)	**13.6** (8.98-19.8)	**15.5** (9.99-23.1)
4-day	**3.49** (2.92-4.13)	**4.29** (3.59-5.09)	**5.61** (4.67-6.67)	**6.69** (5.53-8.02)	**8.19** (6.52-10.4)	**9.29** (7.23-12.2)	**10.5** (7.92-14.5)	**12.0** (8.36-16.8)	**14.4** (9.54-20.9)	**16.4** (10.6-24.4)
7-day	**4.15** (3.50-4.89)	**5.04** (4.24-5.94)	**6.49** (5.43-7.68)	**7.69** (6.39-9.16)	**9.35** (7.48-11.8)	**10.6** (8.26-13.7)	**11.9** (9.00-16.3)	**13.5** (9.46-18.8)	**16.1** (10.7-23.3)	**18.3** (11.8-27.1)
10-day	**4.82** (4.07-5.65)	**5.75** (4.85-6.75)	**7.28** (6.12-8.58)	**8.54** (7.12-10.1)	**10.3** (8.25-12.9)	**11.6** (9.05-14.9)	**13.0** (9.80-17.6)	**14.6** (10.3-20.2)	**17.2** (11.5-24.8)	**19.4** (12.6-28.6)
20-day	**6.89** (5.87-8.02)	**7.88** (6.71-9.19)	**9.50** (8.05-11.1)	**10.8** (9.12-12.8)	**12.7** (10.2-15.7)	**14.1** (11.0-17.9)	**15.5** (11.7-20.6)	**17.1** (12.1-23.5)	**19.4** (13.0-27.7)	**21.2** (13.8-31.1)
30-day	**8.63** (7.39-10.0)	**9.65** (8.24-11.2)	**11.3** (9.62-13.2)	**12.7** (10.7-14.9)	**14.6** (11.8-17.9)	**16.0** (12.6-20.2)	**17.5** (13.1-22.9)	**19.0** (13.5-25.9)	**21.0** (14.1-29.8)	**22.5** (14.7-32.8)
45-day	**10.8** (9.27-12.4)	**11.8** (10.2-13.7)	**13.5** (11.6-15.7)	**15.0** (12.7-17.5)	**16.9** (13.7-20.6)	**18.4** (14.5-23.0)	**19.9** (14.9-25.7)	**21.3** (15.1-28.8)	**23.0** (15.6-32.5)	**24.2** (15.8-35.1)
60-day	**12.6** (10.8-14.5)	**13.6** (11.8-15.7)	**15.4** (13.2-17.8)	**16.9** (14.3-19.6)	**18.9** (15.3-22.8)	**20.5** (16.1-25.3)	**21.9** (16.4-28.1)	**23.2** (16.6-31.4)	**24.8** (16.8-34.9)	**25.8** (16.9-37.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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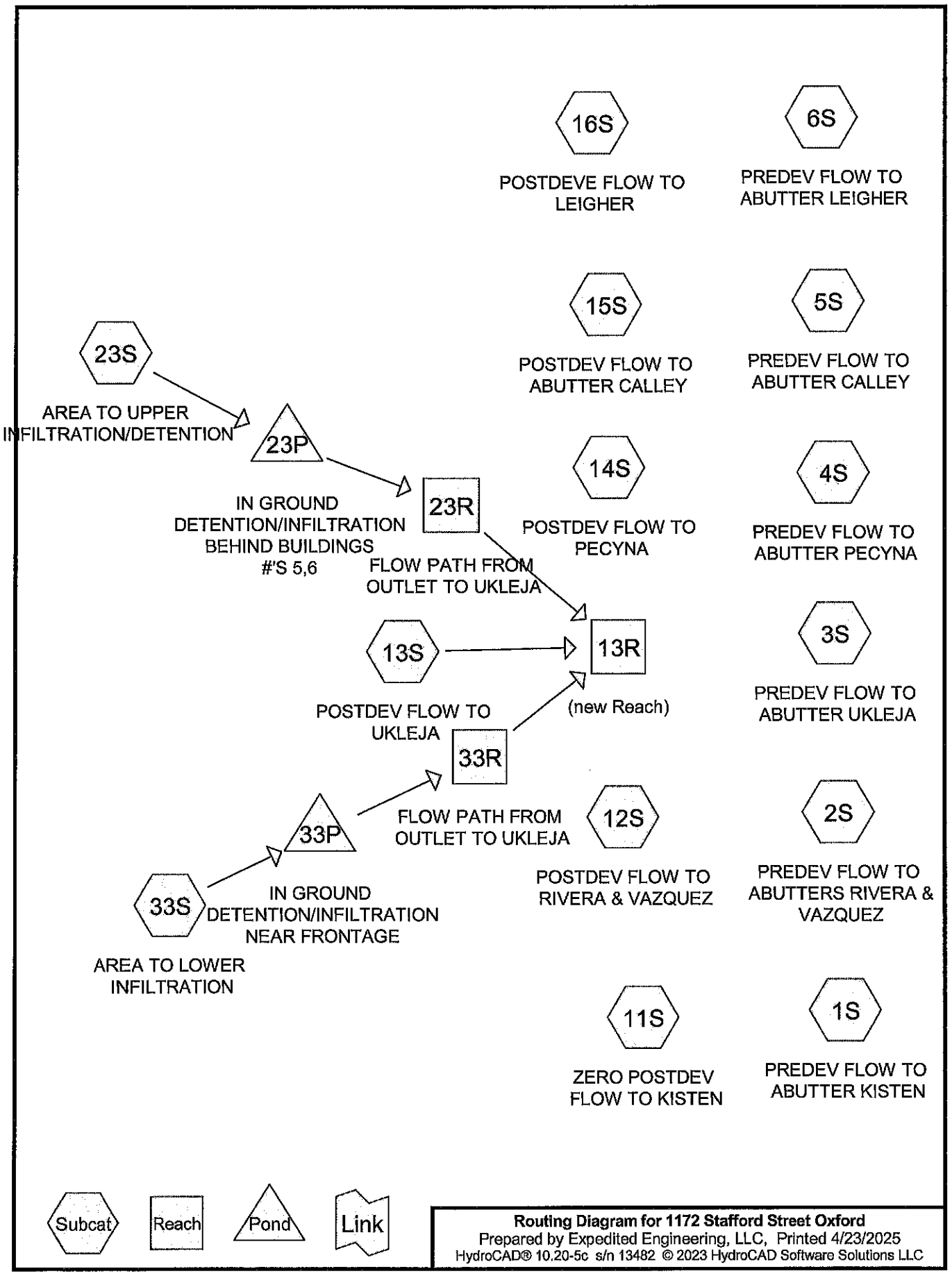
PF graphical



Routing Diagram for 1172 Stafford Street Oxford
Prepared by Expedited Engineering, LLC, Printed 4/23/2025

2 YEAR STORM

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER KISTEN

Runoff = 0.12 cfs @ 12.54 hrs, Volume= 0.024 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
61,214	55	Woods, Good, HSG B
61,214		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
6.0	574	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.9	624	Total			

Summary for Subcatchment 2S: PREDEV FLOW TO ABUTTERS RIVERA & VAZQUEZ

Runoff = 0.01 cfs @ 12.41 hrs, Volume= 0.002 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
4,016	55	Woods, Good, HSG B
4,016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	18	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	68	Total			

Summary for Subcatchment 3S: PREDEV FLOW TO ABUTTER UKLEJA

Runoff = 0.83 cfs @ 12.55 hrs, Volume= 0.158 af, Depth> 0.23"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
348,233	55	Woods, Good, HSG B
8,509	79	<50% Grass cover, Poor, HSG B
356,742	56	Weighted Average
356,742		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.9	871	0.1340	1.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.8	921	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER PECYNA

Runoff = 0.13 cfs @ 12.46 hrs, Volume= 0.023 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
59,011	55	Woods, Good, HSG B
59,011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.6	427	0.1570	1.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.8	477	Total			

Summary for Subcatchment 5S: PREDEV FLOW TO ABUTTER CALLEY

Runoff = 0.01 cfs @ 12.42 hrs, Volume= 0.002 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 6S: PREDEV FLOW TO ABUTTER LEIGHER

Runoff = 0.09 cfs @ 12.54 hrs, Volume= 0.017 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
43,389	55	Woods, Good, HSG B
43,389		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.4	724	0.1060	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.8	774	Total			

Summary for Subcatchment 11S: ZERO POSTDEV FLOW TO KISTEN

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= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR Rainfall=3.19"

Summary for Subcatchment 12S: POSTDEV FLOW TO RIVERA & VAZQUEZ

Runoff = 0.01 cfs @ 12.40 hrs, Volume= 0.001 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
3,516	55	Woods, Good, HSG B
3,516		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.1400	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	11	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	61	Total			

Summary for Subcatchment 13S: POSTDEV FLOW TO UKLEJA

Runoff = 0.56 cfs @ 12.16 hrs, Volume= 0.075 af, Depth> 0.29"
Routed to Reach 13R : (new Reach)

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
69,134	55	Woods, Good, HSG B
65,895	61	>75% Grass cover, Good, HSG B
135,029	58	Weighted Average
135,029		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.19"
0.1	63	0.2900	8.08		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.7	228	0.2100	2.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	341	Total			

Summary for Subcatchment 14S: POSTDEV FLOW TO PECYNA

Runoff = 0.12 cfs @ 12.47 hrs, Volume= 0.023 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
480	61	>75% Grass cover, Good, HSG B
57,048	55	Woods, Good, HSG B
57,528	55	Weighted Average
57,528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
4.0	446	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	496	Total			

Summary for Subcatchment 15S: POSTDEV FLOW TO ABUTTER CALLEY

Runoff = 0.01 cfs @ 12.42 hrs, Volume= 0.002 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 16S: POSTDEVE FLOW TO LEIGHER

Runoff = 0.03 cfs @ 12.41 hrs, Volume= 0.005 af, Depth> 0.21"

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
690	61	>75% Grass cover, Good, HSG B
11,949	55	Woods, Good, HSG B
12,639	55	Weighted Average
12,639		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.2000	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.9	202	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	252	Total			

Summary for Subcatchment 23S: AREA TO UPPER INFILTRATION/DETENTION

Runoff = 3.04 cfs @ 12.24 hrs, Volume= 0.280 af, Depth> 1.10"
Routed to Pond 23P : IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
64,641	98	Paved parking, HSG B
24,254	61	>75% Grass cover, Good, HSG B
44,057	55	Woods, Good, HSG B
132,952	77	Weighted Average
68,311		51.38% Pervious Area
64,641		48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
2.1	236	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	69	0.1740	6.26		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.2	355	Total			

Summary for Subcatchment 33S: AREA TO LOWER INFILTRATION

Runoff = 4.54 cfs @ 12.25 hrs, Volume= 0.426 af, Depth> 1.22"
Routed to Pond 33P : IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

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 YEAR Rainfall=3.19"

Area (sf)	CN	Description
92,519	98	Paved parking, HSG B
37,557	55	Woods, Good, HSG B
52,632	61	>75% Grass cover, Good, HSG B
182,708	79	Weighted Average
90,189		49.36% Pervious Area
92,519		50.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.2	348	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	130	0.0770	4.16		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.6	528	Total			

Summary for Reach 13R: (new Reach)

Inflow Area = 10.346 ac, 34.87% Impervious, Inflow Depth > 0.09" for 2 YEAR event
Inflow = 0.56 cfs @ 12.16 hrs, Volume= 0.075 af
Outflow = 0.56 cfs @ 12.16 hrs, Volume= 0.075 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 Reach 23R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth = 0.00" for 2 YEAR 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
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 291.71 cfs

10.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 226.0' Slope= 0.2035 '/'
Inlet Invert= 791.50', Outlet Invert= 745.50'

‡

Summary for Reach 33R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth = 0.00" for 2 YEAR 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
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50' Flow Area= 24.0 sf, Capacity= 75.51 cfs

10.00' x 1.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 22.00'
Length= 170.0' Slope= 0.0050 '/'
Inlet Invert= 746.00', Outlet Invert= 745.15'

‡

Summary for Pond 23P: IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth > 1.10" for 2 YEAR event
Inflow = 3.04 cfs @ 12.24 hrs, Volume= 0.280 af
Outflow = 0.33 cfs @ 11.85 hrs, Volume= 0.236 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.33 cfs @ 11.85 hrs, Volume= 0.236 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 23R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 805.62' @ 14.06 hrs Surf.Area= 5,977 sf Storage= 5,485 cf

Plug-Flow detention time= 170.3 min calculated for 0.235 af (84% of inflow)
Center-of-Mass det. time= 125.4 min (944.4 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	804.00'	7,824 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 32,874 cf Overall - 13,313 cf Embedded = 19,561 cf x 40.0% Voids
#2	805.00'	13,313 cf	**Cultec R-902HD v2** x 207 Inside #1 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 207 Chambers in 5 Rows Cap Storage= 18.0 cf x 2 x 5 rows = 180.2 cf
		21,137 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
804.00	5,977	0	0
809.50	5,977	32,874	32,874

Device	Routing	Invert	Outlet Devices
#1	Discarded	804.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	808.50'	**8.0" Round Culvert X 2.00** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 808.50' / 792.00' S= 0.2705 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Primary	806.50'	**8.0" Round Culvert** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 806.50' / 792.00' S= 0.2377 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.33 cfs @ 11.85 hrs HW=804.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=804.00' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Controls 0.00 cfs)

Summary for Pond 33P: IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 1.22" for 2 YEAR event
Inflow = 4.54 cfs @ 12.25 hrs, Volume= 0.426 af
Outflow = 0.14 cfs @ 11.65 hrs, Volume= 0.105 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.65 hrs, Volume= 0.105 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach 33R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 758.47' @ 19.38 hrs Surf.Area= 6,000 sf Storage= 14,020 cf

Plug-Flow detention time= 216.3 min calculated for 0.104 af (24% of inflow)
Center-of-Mass det. time= 117.4 min (932.7 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	11,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 42,000 cf Overall - 30,464 cf Embedded = 11,536 cf
#2	757.00'	24,073 cf	**retain_it retain_it 5.0'** x 84 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 7 Rows adjusted for 394.8 cf perimeter wall
		35,609 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
756.00	6,000	0	0
763.00	6,000	42,000	42,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	756.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	761.00'	**10.0" Round Culvert X 2.00** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 761.00' / 746.50' S= 0.1959 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Primary	760.00'	**6.0" Round Culvert** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 760.00' / 746.50' S= 0.1824 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.14 cfs @ 11.65 hrs HW=756.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=756.00' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Controls 0.00 cfs)

10 YEAR STORM

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER KISTEN

Runoff = 0.85 cfs @ 12.34 hrs, Volume= 0.100 af, Depth> 0.85"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
61,214	55	Woods, Good, HSG B
61,214		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
6.0	574	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.9	624	Total			

Summary for Subcatchment 2S: PREDEV FLOW TO ABUTTERS RIVERA & VAZQUEZ

Runoff = 0.07 cfs @ 12.18 hrs, Volume= 0.007 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
4,016	55	Woods, Good, HSG B
4,016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	18	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	68	Total			

Summary for Subcatchment 3S: PREDEV FLOW TO ABUTTER UKLEJA

Runoff = 5.24 cfs @ 12.37 hrs, Volume= 0.620 af, Depth> 0.91"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
348,233	55	Woods, Good, HSG B
8,509	79	<50% Grass cover, Poor, HSG B
356,742	56	Weighted Average
356,742		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.9	871	0.1340	1.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.8	921	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER PECYNA

Runoff = 0.93 cfs @ 12.23 hrs, Volume= 0.097 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
59,011	55	Woods, Good, HSG B
59,011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.6	427	0.1570	1.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.8	477	Total			

Summary for Subcatchment 5S: PREDEV FLOW TO ABUTTER CALLEY

Runoff = 0.10 cfs @ 12.20 hrs, Volume= 0.010 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 6S: PREDEV FLOW TO ABUTTER LEIGHER

Runoff = 0.60 cfs @ 12.34 hrs, Volume= 0.071 af, Depth> 0.85"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
43,389	55	Woods, Good, HSG B
43,389		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.4	724	0.1060	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.8	774	Total			

Summary for Subcatchment 11S: ZERO POSTDEV FLOW TO KISTEN

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= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR Rainfall=4.97"

Summary for Subcatchment 12S: POSTDEV FLOW TO RIVERA & VAZQUEZ

Runoff = 0.06 cfs @ 12.17 hrs, Volume= 0.006 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
3,516	55	Woods, Good, HSG B
3,516		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.1400	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	11	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	61	Total			

Summary for Subcatchment 13S: POSTDEV FLOW TO UKLEJA

Runoff = 3.60 cfs @ 12.10 hrs, Volume= 0.267 af, Depth> 1.04"
Routed to Reach 13R : (new Reach)

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
69,134	55	Woods, Good, HSG B
65,895	61	>75% Grass cover, Good, HSG B
135,029	58	Weighted Average
135,029		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.19"
0.1	63	0.2900	8.08		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.7	228	0.2100	2.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	341	Total			

Summary for Subcatchment 14S: POSTDEV FLOW TO PECYNA

Runoff = 0.89 cfs @ 12.25 hrs, Volume= 0.094 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
480	61	>75% Grass cover, Good, HSG B
57,048	55	Woods, Good, HSG B
57,528	55	Weighted Average
57,528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
4.0	446	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	496	Total			

Summary for Subcatchment 15S: POSTDEV FLOW TO ABUTTER CALLEY

Runoff = 0.10 cfs @ 12.20 hrs, Volume= 0.010 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 16S: POSTDEVE FLOW TO LEIGHER

Runoff = 0.22 cfs @ 12.18 hrs, Volume= 0.021 af, Depth> 0.86"

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
690	61	>75% Grass cover, Good, HSG B
11,949	55	Woods, Good, HSG B
12,639	55	Weighted Average
12,639		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.2000	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.9	202	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	252	Total			

Summary for Subcatchment 23S: AREA TO UPPER INFILTRATION/DETENTION

Runoff = 6.77 cfs @ 12.23 hrs, Volume= 0.613 af, Depth> 2.41"
Routed to Pond 23P : IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
64,641	98	Paved parking, HSG B
24,254	61	>75% Grass cover, Good, HSG B
44,057	55	Woods, Good, HSG B
132,952	77	Weighted Average
68,311		51.38% Pervious Area
64,641		48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
2.1	236	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	69	0.1740	6.26		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.2	355	Total			

Summary for Subcatchment 33S: AREA TO LOWER INFILTRATION

Runoff = 9.66 cfs @ 12.25 hrs, Volume= 0.902 af, Depth> 2.58"
Routed to Pond 33P : IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

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 YEAR Rainfall=4.97"

Area (sf)	CN	Description
92,519	98	Paved parking, HSG B
37,557	55	Woods, Good, HSG B
52,632	61	>75% Grass cover, Good, HSG B
182,708	79	Weighted Average
90,189		49.36% Pervious Area
92,519		50.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.2	348	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	130	0.0770	4.16		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.6	528	Total			

Summary for Reach 13R: (new Reach)

Inflow Area = 10.346 ac, 34.87% Impervious, Inflow Depth > 0.74" for 10 YEAR event
Inflow = 3.60 cfs @ 12.10 hrs, Volume= 0.642 af
Outflow = 3.60 cfs @ 12.10 hrs, Volume= 0.642 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 Reach 23R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth = 0.55" for 10 YEAR event
Inflow = 0.82 cfs @ 12.99 hrs, Volume= 0.141 af
Outflow = 0.82 cfs @ 13.04 hrs, Volume= 0.141 af, Atten= 0%, Lag= 3.1 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.11 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 2.8 min

Peak Storage= 88 cf @ 13.01 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 10.75'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 291.71 cfs

10.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 226.0' Slope= 0.2035 '/'
Inlet Invert= 791.50', Outlet Invert= 745.50'

‡

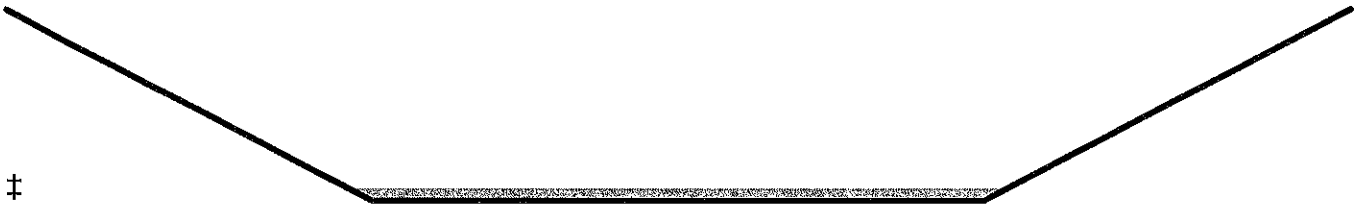
Summary for Reach 33R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 0.68" for 10 YEAR event
Inflow = 0.60 cfs @ 14.79 hrs, Volume= 0.237 af
Outflow = 0.60 cfs @ 14.91 hrs, Volume= 0.234 af, Atten= 0%, Lag= 7.5 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 5.6 min

Peak Storage= 167 cf @ 14.84 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 10.76'
Bank-Full Depth= 1.50' Flow Area= 24.0 sf, Capacity= 75.51 cfs

10.00' x 1.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 22.00'
Length= 170.0' Slope= 0.0050 '/'
Inlet Invert= 746.00', Outlet Invert= 745.15'



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Summary for Pond 23P: IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth > 2.41" for 10 YEAR event
Inflow = 6.77 cfs @ 12.23 hrs, Volume= 0.613 af
Outflow = 1.15 cfs @ 12.99 hrs, Volume= 0.409 af, Atten= 83%, Lag= 46.1 min
Discarded = 0.33 cfs @ 11.25 hrs, Volume= 0.268 af
Primary = 0.82 cfs @ 12.99 hrs, Volume= 0.141 af
Routed to Reach 23R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 807.07' @ 12.99 hrs Surf.Area= 5,977 sf Storage= 12,458 cf

Plug-Flow detention time= 152.6 min calculated for 0.408 af (67% of inflow)
Center-of-Mass det. time= 83.5 min (885.1 - 801.7)

Volume	Invert	Avail.Storage	Storage Description
#1	804.00'	7,824 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 32,874 cf Overall - 13,313 cf Embedded = 19,561 cf x 40.0% Voids
#2	805.00'	13,313 cf	**Cultec R-902HD v2** x 207 Inside #1 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 207 Chambers in 5 Rows Cap Storage= 18.0 cf x 2 x 5 rows = 180.2 cf
		21,137 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
804.00	5,977	0	0
809.50	5,977	32,874	32,874

Device	Routing	Invert	Outlet Devices
#1	Discarded	804.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	808.50'	**8.0" Round Culvert X 2.00** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 808.50' / 792.00' S= 0.2705 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Primary	806.50'	**8.0" Round Culvert** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 806.50' / 792.00' S= 0.2377 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.33 cfs @ 11.25 hrs HW=804.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.82 cfs @ 12.99 hrs HW=807.07' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 0.82 cfs @ 2.57 fps)

Summary for Pond 33P: IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 2.58" for 10 YEAR event
Inflow = 9.66 cfs @ 12.25 hrs, Volume= 0.902 af
Outflow = 0.74 cfs @ 14.79 hrs, Volume= 0.360 af, Atten= 92%, Lag= 152.6 min
Discarded = 0.14 cfs @ 10.25 hrs, Volume= 0.123 af
Primary = 0.60 cfs @ 14.79 hrs, Volume= 0.237 af
Routed to Reach 33R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 760.65' @ 14.79 hrs Surf.Area= 6,000 sf Storage= 25,876 cf

Plug-Flow detention time= 221.5 min calculated for 0.359 af (40% of inflow)
Center-of-Mass det. time= 133.4 min (932.0 - 798.6)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	11,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 42,000 cf Overall - 30,464 cf Embedded = 11,536 cf
#2	757.00'	24,073 cf	**retain_it retain_it 5.0'** x 84 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 7 Rows adjusted for 394.8 cf perimeter wall
		35,609 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
756.00	6,000	0	0
763.00	6,000	42,000	42,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	756.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	761.00'	**10.0" Round Culvert X 2.00** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 761.00' / 746.50' S= 0.1959 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Primary	760.00'	**6.0" Round Culvert** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 760.00' / 746.50' S= 0.1824 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.14 cfs @ 10.25 hrs HW=756.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.60 cfs @ 14.79 hrs HW=760.65' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 0.60 cfs @ 3.06 fps)

25 YEAR STORM

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER KISTEN

Runoff = 1.54 cfs @ 12.31 hrs, Volume= 0.164 af, Depth> 1.40"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
61,214	55	Woods, Good, HSG B
61,214		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
6.0	574	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.9	624	Total			

Summary for Subcatchment 2S: PREDEV FLOW TO ABUTTERS RIVERA & VAZQUEZ

Runoff = 0.13 cfs @ 12.17 hrs, Volume= 0.011 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
4,016	55	Woods, Good, HSG B
4,016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	18	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	68	Total			

Summary for Subcatchment 3S: PREDEV FLOW TO ABUTTER UKLEJA

Runoff = 9.22 cfs @ 12.34 hrs, Volume= 1.007 af, Depth> 1.48"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
348,233	55	Woods, Good, HSG B
8,509	79	<50% Grass cover, Poor, HSG B
356,742	56	Weighted Average
356,742		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.9	871	0.1340	1.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.8	921	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER PECYNA

Runoff = 1.71 cfs @ 12.22 hrs, Volume= 0.159 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
59,011	55	Woods, Good, HSG B
59,011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.6	427	0.1570	1.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.8	477	Total			

Summary for Subcatchment 5S: PREDEV FLOW TO ABUTTER CALLEY

Runoff = 0.19 cfs @ 12.19 hrs, Volume= 0.016 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 6S: PREDEV FLOW TO ABUTTER LEIGHER

Runoff = 1.09 cfs @ 12.31 hrs, Volume= 0.116 af, Depth> 1.40"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
43,389	55	Woods, Good, HSG B
43,389		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.4	724	0.1060	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.8	774	Total			

Summary for Subcatchment 11S: ZERO POSTDEV FLOW TO KISTEN

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= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR Rainfall=6.08"

Summary for Subcatchment 12S: POSTDEV FLOW TO RIVERA & VAZQUEZ

Runoff = 0.11 cfs @ 12.16 hrs, Volume= 0.009 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
3,516	55	Woods, Good, HSG B
3,516		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.1400	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	11	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	61	Total			

Summary for Subcatchment 13S: POSTDEV FLOW TO UKLEJA

Runoff = 6.08 cfs @ 12.10 hrs, Volume= 0.424 af, Depth> 1.64"
Routed to Reach 13R : (new Reach)

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
69,134	55	Woods, Good, HSG B
65,895	61	>75% Grass cover, Good, HSG B
135,029	58	Weighted Average
135,029		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.19"
0.1	63	0.2900	8.08		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.7	228	0.2100	2.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	341	Total			

Summary for Subcatchment 14S: POSTDEV FLOW TO PECYNA

Runoff = 1.62 cfs @ 12.23 hrs, Volume= 0.155 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
480	61	>75% Grass cover, Good, HSG B
57,048	55	Woods, Good, HSG B
57,528	55	Weighted Average
57,528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
4.0	446	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	496	Total			

Summary for Subcatchment 15S: POSTDEV FLOW TO ABUTTER CALLEY

Runoff = 0.19 cfs @ 12.19 hrs, Volume= 0.016 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 16S: POSTDEVE FLOW TO LEIGHER

Runoff = 0.40 cfs @ 12.17 hrs, Volume= 0.034 af, Depth> 1.41"

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
690	61	>75% Grass cover, Good, HSG B
11,949	55	Woods, Good, HSG B
12,639	55	Weighted Average
12,639		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.2000	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.9	202	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	252	Total			

Summary for Subcatchment 23S: AREA TO UPPER INFILTRATION/DETENTION

Runoff = 9.30 cfs @ 12.22 hrs, Volume= 0.841 af, Depth> 3.31"
Routed to Pond 23P : IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
64,641	98	Paved parking, HSG B
24,254	61	>75% Grass cover, Good, HSG B
44,057	55	Woods, Good, HSG B
132,952	77	Weighted Average
68,311		51.38% Pervious Area
64,641		48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
2.1	236	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	69	0.1740	6.26		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.2	355	Total			

Summary for Subcatchment 33S: AREA TO LOWER INFILTRATION

Runoff = 13.03 cfs @ 12.24 hrs, Volume= 1.224 af, Depth> 3.50"
Routed to Pond 33P : IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

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 25 YEAR Rainfall=6.08"

Area (sf)	CN	Description
92,519	98	Paved parking, HSG B
37,557	55	Woods, Good, HSG B
52,632	61	>75% Grass cover, Good, HSG B
182,708	79	Weighted Average
90,189		49.36% Pervious Area
92,519		50.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.2	348	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	130	0.0770	4.16		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.6	528	Total			

Summary for Reach 13R: (new Reach)

Inflow Area = 10.346 ac, 34.87% Impervious, Inflow Depth > 1.50" for 25 YEAR event
Inflow = 6.08 cfs @ 12.10 hrs, Volume= 1.293 af
Outflow = 6.08 cfs @ 12.10 hrs, Volume= 1.293 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 Reach 23R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth = 1.31" for 25 YEAR event
Inflow = 1.75 cfs @ 12.80 hrs, Volume= 0.333 af
Outflow = 1.75 cfs @ 12.84 hrs, Volume= 0.333 af, Atten= 0%, Lag= 2.4 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.80 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 2.4 min

Peak Storage= 141 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 11.18'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 291.71 cfs

10.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 226.0' Slope= 0.2035 '/'
Inlet Invert= 791.50', Outlet Invert= 745.50'

‡

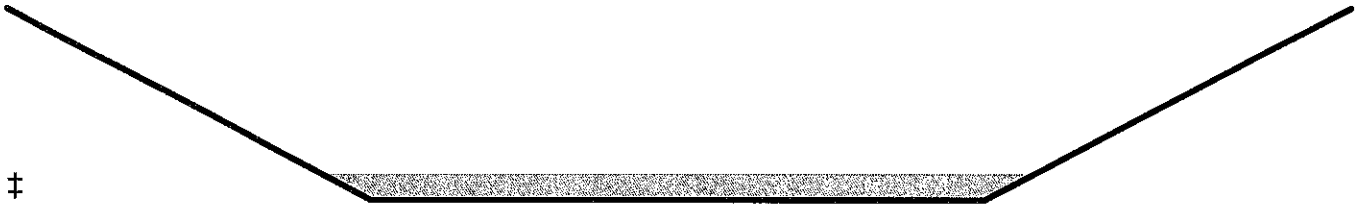
Summary for Reach 33R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 1.54" for 25 YEAR event
Inflow = 2.19 cfs @ 12.97 hrs, Volume= 0.539 af
Outflow = 2.18 cfs @ 13.05 hrs, Volume= 0.535 af, Atten= 0%, Lag= 5.0 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.99 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 4.2 min

Peak Storage= 375 cf @ 13.00 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 11.63'
Bank-Full Depth= 1.50' Flow Area= 24.0 sf, Capacity= 75.51 cfs

10.00' x 1.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 22.00'
Length= 170.0' Slope= 0.0050 '/'
Inlet Invert= 746.00', Outlet Invert= 745.15'



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Summary for Pond 23P: IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth > 3.31" for 25 YEAR event
Inflow = 9.30 cfs @ 12.22 hrs, Volume= 0.841 af
Outflow = 2.08 cfs @ 12.80 hrs, Volume= 0.621 af, Atten= 78%, Lag= 34.6 min
Discarded = 0.33 cfs @ 10.65 hrs, Volume= 0.288 af
Primary = 1.75 cfs @ 12.80 hrs, Volume= 0.333 af
Routed to Reach 23R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 807.92' @ 12.80 hrs Surf.Area= 5,977 sf Storage= 16,195 cf

Plug-Flow detention time= 126.2 min calculated for 0.621 af (74% of inflow)
Center-of-Mass det. time= 64.8 min (859.3 - 794.5)

Volume	Invert	Avail.Storage	Storage Description
#1	804.00'	7,824 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 32,874 cf Overall - 13,313 cf Embedded = 19,561 cf x 40.0% Voids
#2	805.00'	13,313 cf	**Cultec R-902HD v2** x 207 Inside #1 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 207 Chambers in 5 Rows Cap Storage= 18.0 cf x 2 x 5 rows = 180.2 cf
		21,137 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
804.00	5,977	0	0
809.50	5,977	32,874	32,874

Device	Routing	Invert	Outlet Devices
#1	Discarded	804.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	808.50'	**8.0" Round Culvert X 2.00** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 808.50' / 792.00' S= 0.2705 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Primary	806.50'	**8.0" Round Culvert** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 806.50' / 792.00' S= 0.2377 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.33 cfs @ 10.65 hrs HW=804.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=1.75 cfs @ 12.80 hrs HW=807.92' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 1.75 cfs @ 5.01 fps)

Summary for Pond 33P: IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 3.50" for 25 YEAR event
Inflow = 13.03 cfs @ 12.24 hrs, Volume= 1.224 af
Outflow = 2.33 cfs @ 12.97 hrs, Volume= 0.671 af, Atten= 82%, Lag= 43.5 min
Discarded = 0.14 cfs @ 9.50 hrs, Volume= 0.132 af
Primary = 2.19 cfs @ 12.97 hrs, Volume= 0.539 af
Routed to Reach 33R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 761.41' @ 12.97 hrs Surf.Area= 6,000 sf Storage= 29,989 cf

Plug-Flow detention time= 186.0 min calculated for 0.671 af (55% of inflow)
Center-of-Mass det. time= 108.0 min (899.6 - 791.6)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	11,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 42,000 cf Overall - 30,464 cf Embedded = 11,536 cf
#2	757.00'	24,073 cf	**retain_it retain_it 5.0'** x 84 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 7 Rows adjusted for 394.8 cf perimeter wall
		35,609 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
756.00	6,000	0	0
763.00	6,000	42,000	42,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	756.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	761.00'	**10.0" Round Culvert X 2.00** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 761.00' / 746.50' S= 0.1959 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Primary	760.00'	**6.0" Round Culvert** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 760.00' / 746.50' S= 0.1824 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.14 cfs @ 9.50 hrs HW=756.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=2.18 cfs @ 12.97 hrs HW=761.41' (Free Discharge)
├**2=Culvert** (Inlet Controls 1.17 cfs @ 2.18 fps)
└**3=Culvert** (Inlet Controls 1.02 cfs @ 5.19 fps)

100 YEAR STORM

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER KISTEN

Runoff = 2.78 cfs @ 12.30 hrs, Volume= 0.281 af, Depth> 2.40"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
61,214	55	Woods, Good, HSG B
61,214		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
6.0	574	0.1030	1.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.9	624	Total			

Summary for Subcatchment 2S: PREDEV FLOW TO ABUTTERS RIVERA & VAZQUEZ

Runoff = 0.23 cfs @ 12.16 hrs, Volume= 0.019 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
4,016	55	Woods, Good, HSG B
4,016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	18	0.3890	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	68	Total			

Summary for Subcatchment 3S: PREDEV FLOW TO ABUTTER UKLEJA

Runoff = 16.39 cfs @ 12.32 hrs, Volume= 1.705 af, Depth> 2.50"

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 100 YEAR Rainfall=7.79"

Area (sf)	CN	Description
348,233	55	Woods, Good, HSG B
8,509	79	<50% Grass cover, Poor, HSG B
356,742	56	Weighted Average
356,742		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.9	871	0.1340	1.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.8	921	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER PECYNA

Runoff = 3.10 cfs @ 12.21 hrs, Volume= 0.272 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
59,011	55	Woods, Good, HSG B
59,011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.6	427	0.1570	1.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.8	477	Total			

Summary for Subcatchment 5S: PREDEV FLOW TO ABUTTER CALLEY

Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.028 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 6S: PREDEV FLOW TO ABUTTER LEIGHER

Runoff = 1.98 cfs @ 12.30 hrs, Volume= 0.199 af, Depth> 2.40"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
43,389	55	Woods, Good, HSG B
43,389		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	50	0.0800	0.07		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
7.4	724	0.1060	1.63		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.8	774	Total			

Summary for Subcatchment 11S: ZERO POSTDEV FLOW TO KISTEN

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= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR Rainfall=7.79"

Summary for Subcatchment 12S: POSTDEV FLOW TO RIVERA & VAZQUEZ

Runoff = 0.21 cfs @ 12.15 hrs, Volume= 0.016 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
3,516	55	Woods, Good, HSG B
3,516		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.1400	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
0.1	11	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.0	61	Total			

Summary for Subcatchment 13S: POSTDEV FLOW TO UKLEJA

Runoff = 10.40 cfs @ 12.09 hrs, Volume= 0.702 af, Depth> 2.72"
Routed to Reach 13R : (new Reach)

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
69,134	55	Woods, Good, HSG B
65,895	61	>75% Grass cover, Good, HSG B
135,029	58	Weighted Average
135,029		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.19"
0.1	63	0.2900	8.08		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.7	228	0.2100	2.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	341	Total			

Summary for Subcatchment 14S: POSTDEV FLOW TO PECYNA

Runoff = 2.96 cfs @ 12.22 hrs, Volume= 0.265 af, Depth> 2.40"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
480	61	>75% Grass cover, Good, HSG B
57,048	55	Woods, Good, HSG B
57,528	55	Weighted Average
57,528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
4.0	446	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	496	Total			

Summary for Subcatchment 15S: POSTDEV FLOW TO ABUTTER CALLEY

Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.028 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
6,093	55	Woods, Good, HSG B
6,093		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.1300	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.5	172	0.1510	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.7	222	Total			

Summary for Subcatchment 16S: POSTDEVE FLOW TO LEIGHER

Runoff = 0.73 cfs @ 12.16 hrs, Volume= 0.058 af, Depth> 2.41"

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
690	61	>75% Grass cover, Good, HSG B
11,949	55	Woods, Good, HSG B
12,639	55	Weighted Average
12,639		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	50	0.2000	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
1.9	202	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	252	Total			

Summary for Subcatchment 23S: AREA TO UPPER INFILTRATION/DETENTION

Runoff = 13.26 cfs @ 12.22 hrs, Volume= 1.210 af, Depth> 4.76"
Routed to Pond 23P : IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
64,641	98	Paved parking, HSG B
24,254	61	>75% Grass cover, Good, HSG B
44,057	55	Woods, Good, HSG B
132,952	77	Weighted Average
68,311		51.38% Pervious Area
64,641		48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
2.1	236	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	69	0.1740	6.26		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
16.2	355	Total			

Summary for Subcatchment 33S: AREA TO LOWER INFILTRATION

Runoff = 18.32 cfs @ 12.24 hrs, Volume= 1.740 af, Depth> 4.98"
Routed to Pond 33P : IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

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 YEAR Rainfall=7.79"

Area (sf)	CN	Description
92,519	98	Paved parking, HSG B
37,557	55	Woods, Good, HSG B
52,632	61	>75% Grass cover, Good, HSG B
182,708	79	Weighted Average
90,189		49.36% Pervious Area
92,519		50.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0600	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.19"
3.2	348	0.1290	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	130	0.0770	4.16		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
17.6	528	Total			

Summary for Reach 13R: (new Reach)

Inflow Area = 10.346 ac, 34.87% Impervious, Inflow Depth > 2.77" for 100 YEAR event
Inflow = 15.40 cfs @ 12.56 hrs, Volume= 2.388 af
Outflow = 15.40 cfs @ 12.56 hrs, Volume= 2.388 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 Reach 23R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth > 2.61" for 100 YEAR event
Inflow = 5.44 cfs @ 12.57 hrs, Volume= 0.663 af
Outflow = 5.41 cfs @ 12.60 hrs, Volume= 0.662 af, Atten= 0%, Lag= 1.6 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.24 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 1.9 min

Peak Storage= 289 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 12.30'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 291.71 cfs

10.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 226.0' Slope= 0.2035 '/'
Inlet Invert= 791.50', Outlet Invert= 745.50'

‡

Summary for Reach 33R: FLOW PATH FROM OUTLET TO UKLEJA

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 2.94" for 100 YEAR event
Inflow = 8.02 cfs @ 12.59 hrs, Volume= 1.028 af
Outflow = 8.00 cfs @ 12.65 hrs, Volume= 1.024 af, Atten= 0%, Lag= 3.2 min
Routed to Reach 13R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.57 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 3.6 min

Peak Storage= 870 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.44' , Surface Width= 13.49'
Bank-Full Depth= 1.50' Flow Area= 24.0 sf, Capacity= 75.51 cfs

10.00' x 1.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 22.00'
Length= 170.0' Slope= 0.0050 '/'
Inlet Invert= 746.00', Outlet Invert= 745.15'

‡

Summary for Pond 23P: IN GROUND DETENTION/INFILTRATION BEHIND BUILDINGS #'S 5,6

Inflow Area = 3.052 ac, 48.62% Impervious, Inflow Depth > 4.76" for 100 YEAR event
Inflow = 13.26 cfs @ 12.22 hrs, Volume= 1.210 af
Outflow = 5.77 cfs @ 12.57 hrs, Volume= 0.976 af, Atten= 56%, Lag= 21.1 min
Discarded = 0.33 cfs @ 9.80 hrs, Volume= 0.314 af
Primary = 5.44 cfs @ 12.57 hrs, Volume= 0.663 af
Routed to Reach 23R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 809.48' @ 12.57 hrs Surf.Area= 5,977 sf Storage= 21,090 cf

Plug-Flow detention time= 104.6 min calculated for 0.973 af (80% of inflow)
Center-of-Mass det. time= 54.3 min (840.3 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	804.00'	7,824 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 32,874 cf Overall - 13,313 cf Embedded = 19,561 cf x 40.0% Voids
#2	805.00'	13,313 cf	**Cultec R-902HD v2** x 207 Inside #1 Effective Size= 69.1"W x 48.0"H => 17.30 sf x 3.67'L = 63.4 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 207 Chambers in 5 Rows Cap Storage= 18.0 cf x 2 x 5 rows = 180.2 cf
		21,137 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
804.00	5,977	0	0
809.50	5,977	32,874	32,874

Device	Routing	Invert	Outlet Devices
#1	Discarded	804.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	808.50'	**8.0" Round Culvert X 2.00** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 808.50' / 792.00' S= 0.2705 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Primary	806.50'	**8.0" Round Culvert** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 806.50' / 792.00' S= 0.2377 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.33 cfs @ 9.80 hrs HW=804.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=5.41 cfs @ 12.57 hrs HW=809.47' (Free Discharge)
├**2=Culvert** (Inlet Controls 2.68 cfs @ 3.84 fps)
└**3=Culvert** (Inlet Controls 2.73 cfs @ 7.82 fps)

Summary for Pond 33P: IN GROUND DETENTION/INFILTRATION NEAR FRONTAGE

Inflow Area = 4.194 ac, 50.64% Impervious, Inflow Depth > 4.98" for 100 YEAR event
Inflow = 18.32 cfs @ 12.24 hrs, Volume= 1.740 af
Outflow = 8.16 cfs @ 12.59 hrs, Volume= 1.172 af, Atten= 55%, Lag= 21.3 min
Discarded = 0.14 cfs @ 8.55 hrs, Volume= 0.144 af
Primary = 8.02 cfs @ 12.59 hrs, Volume= 1.028 af
Routed to Reach 33R : FLOW PATH FROM OUTLET TO UKLEJA

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 762.93' @ 12.59 hrs Surf.Area= 6,000 sf Storage= 35,213 cf

Plug-Flow detention time= 143.0 min calculated for 1.172 af (67% of inflow)
Center-of-Mass det. time= 75.2 min (858.5 - 783.3)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	11,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 42,000 cf Overall - 30,464 cf Embedded = 11,536 cf
#2	757.00'	24,073 cf	**retain_it retain_it 5.0'** x 84 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 7 Rows adjusted for 394.8 cf perimeter wall
		35,609 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
756.00	6,000	0	0
763.00	6,000	42,000	42,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	756.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	761.00'	**10.0" Round Culvert X 2.00** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 761.00' / 746.50' S= 0.1959 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Primary	760.00'	**6.0" Round Culvert** L= 74.0' Ke= 0.500 Inlet / Outlet Invert= 760.00' / 746.50' S= 0.1824 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.14 cfs @ 8.55 hrs HW=756.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=8.01 cfs @ 12.59 hrs HW=762.93' (Free Discharge)
├**2=Culvert** (Inlet Controls 6.47 cfs @ 5.93 fps)
└**3=Culvert** (Inlet Controls 1.55 cfs @ 7.89 fps)

Soil Map—Worcester County, Massachusetts, Southern Part

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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:
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: Worcester County, Massachusetts, Southern Part
Survey Area Data: Version 17, Aug 27, 2024

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.1	0.0%
3A	Scarboro and Walpole soils, 0 to 3 percent slopes	2.6	1.1%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	52.4	22.9%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	9.0	4.0%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	1.0	0.4%
300B	Montauk fine sandy loam, 3 to 8 percent slopes	0.1	0.0%
300C	Montauk fine sandy loam, 8 to 15 percent slopes	1.3	0.5%
302B	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	7.2	3.2%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	2.9	1.3%
407C	Charlton fine sandy loam, 8 to 15 percent slopes, extremely stony	1.4	0.6%
407E	Charlton fine sandy loam, 15 to 35 percent slopes, extremely stony	0.2	0.1%
420B	Canton fine sandy loam, 3 to 8 percent slopes	58.3	25.5%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	75.3	32.9%
422E	Canton fine sandy loam, 15 to 35 percent slopes, extremely stony	17.0	7.5%
Totals for Area of Interest		**228.7**	**100.0%**