ATTAR
ENGINEERING, INC
CIVIL ◦ STRUCTURAL ◦ MARINE

STORMWATER MANAGEMENT PLAN
FOUR SEASONS FARM
BRANCH ROAD (RT. 9A), WELLS, MAINE

Project No.: C165-18

December 4, 2018
Revised 2/5/19

♦ Scope

This stormwater management plan has been prepared for the proposed Four Seasons Farm Subdivision, a four unit, multi-family subdivision located on Branch Road in Wells, Maine. The project consists of gravel roads/driveways and typical single-family residential development.

The project requires a Maine Department of Environmental Protection (MDEP) Chapter 500 (Stormwater Management) Permit by Rule (PBR), therefore, it must meet the Basic Standards described in the MDEP publication, *Chapter 500, Stormwater Management*. The project must also meet the stormwater management requirements outlined in the Wells Town Code.

The project with create approximately 3.1 acres of developed area and 0.99 acres of impervious area.

♦ Site and Watershed Description

The project site is located on Branch Road in Wells, Maine. A 7½ minute series U.S.G.S. map of the project area is attached; the parcel is located to the east of Branch Road, near the intersection of Meetinghouse Road. The site drains, in general, from north to south, away from Branch Road.

The site is located in the Merriland River watershed (sources: USGS 7 ½ minute series, Wells Quadrangle; and Soil Survey of York County, Maine). The Merriland River is tributary to the Little River and Atlantic Ocean.

The site contains a mixture of uplands and wetlands, including a stream that traverses the site from north to south, conveying a majority of the site's runoff. An existing farm pond is located approximately 1,400' southerly of the project site, near the stream. The farm pond is in the stream's watershed, but is fed by another source.

The topography of the site is quite variable due to the overall grade from north to south and the stream channel. On-site elevations (datum is NAVD 1988) range from approximately 176' at Branch Road, to approximately 132' at the southerly property line.

The site is not located within a 100-Year Special Flood Hazard Area (Zone A) as determined by the Federal Emergency Management Agency (FEMA).

Proposed cuts and fills will vary between 2 and 8 feet. The deeper cuts/fills are associated with the proposed road connection at Branch Road and the stream and wetland crossing.

♦ Soils/Hydrologic Soil Groups

On and off-site soil types and the respective HSG's were taken from the Soil Survey of York County, Maine (Class D soil survey). Further description of the soils and their respective

HSG's appears on the drainage plans.

- **Methodology**

The stormwater quantity analysis was conducted using the HydroCAD Stormwater Modeling System by Applied Microcomputer Systems. The analysis was accomplished to determine the "Existing Condition" and "Developed Condition" stormwater flows. Both cases were analyzed for the 2, 10, and 25 year, 24-hour frequency storm events. The Existing Condition analyzes the site as it currently exists (wooded and undeveloped) and the Developed Condition models the site with the proposed development described above.

- **Water Quantity Analysis and Results**

Existing Condition

The site was modeled as four subcatchments (SC) for the Existing Condition analysis. All SC's include on and off-site areas, with the exception of SC 3, which contains only off-site areas.

Analysis Points (AP) were selected at two locations, downstream of the SC's. The Analysis Points are located downstream of the proposed developed areas and provide convenient locations to compare Existing Condition flows to Developed Condition flows.

SC 1 (tributary to AP 1) includes mostly off-site areas, consisting of Lots 1 and 2 of the original Taylor Property Development Subdivision. Only a small portion of the project site is included. This SC drains to an existing culvert under Branch Road.

SC 2 (tributary to AP 2) includes mostly off-site areas to the south of the project site. AP 2 is located at the southerly property line in the vicinity of the stream.

SC 3 (tributary to AP 2) includes off-site areas consisting of mostly woods, on the north side of Branch Road. This SC drains onto the project site via an existing, 24" diameter, culvert under Branch Road.

SC 4 (tributary to AP 2) includes on and off-site areas including a majority of the on-site area. Off-site areas include Lots 4 and 5 of the original Taylor Property Development Subdivision and other areas south of Branch Road.

Developed Condition

The Developed Condition analysis consists of fifteen subcatchments. Other features such as ponds and reaches were added to account for on-site routing, detention and treatment of stormwater.

Three Detention Ponds (Ponds 3, 4 and 7) are proposed. The Ponds will outlet to a level spreaders to promote sheet flow conditions prior to discharge to a wooded buffers. Pond 3 receives runoff from Four Seasons Farm Road and Unit 2. Pond 4 receives runoff from Unit 2. Pond 7 receives runoff from Unit 1.

Pond 8 models a culverted stream crossing. Pond 9 models a culverted wetland crossing.

All Developed Condition flows are routed to AP 1 and AP 2, described above.

Tables showing Existing Condition peak flows, Developed Condition peak flows and the change in peak flow from Existing Condition to Developed Condition are presented on a separate page.

The analysis indicates decreases in peak flow at AP 1 and AP 2 for all storm events, thus meeting the Town of Wells peak flow reduction criteria.

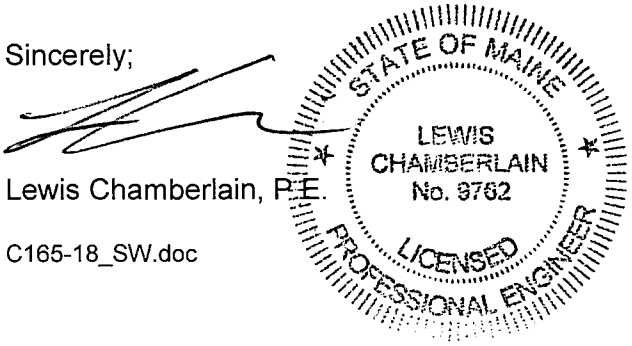
♦ **Water Quality**

In accordance with the MDEP *Chapter 500* Basic Standards, the project will be subject to temporary and permanent erosion & sedimentation control (E&S), inspection, maintenance and housekeeping standards. In addition, runoff from developed areas on the site will receive treatment in a detention pond and wooded buffers prior to being discharged from the site.

♦ **Summary**

The use of a detention pond to attenuate peak flows results in no significant increase in peak runoff quantity from the proposed Four Seasons Farm development. No adverse effects are anticipated on any downstream properties or drainage structures for the analyzed storm events, including the downstream farm pond. Runoff quality is addressed by the use of MDEP Basic Standards and other BMP's, including a detention pond, level spreader and wooded buffers.

Sincerely;



Lewis Chamberlain, P.E.

C165-18_SW.doc

BRANCH ROAD FARM SUBDIVISION - Existing Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	2.96	5.90	8.44
AP2	31.64	64.15	91.12

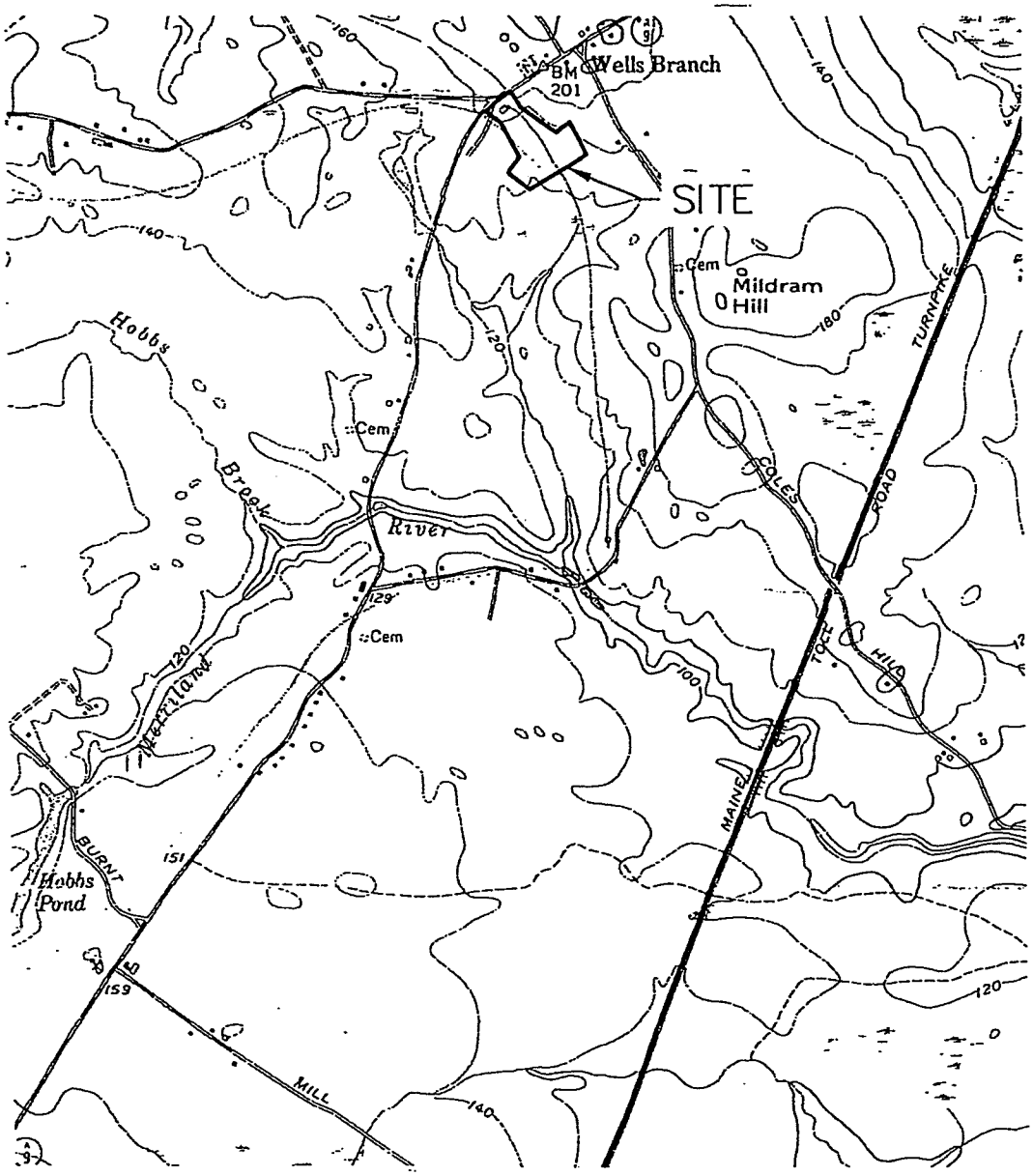
Rainfall Event Totals (in.)	
2-Year	3.30
10-Year	4.90
25-Year	6.20

BRANCH ROAD FARM SUBDIVISION - Developed Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	2.76	5.49	7.85
AP2	31.50	63.30	87.66

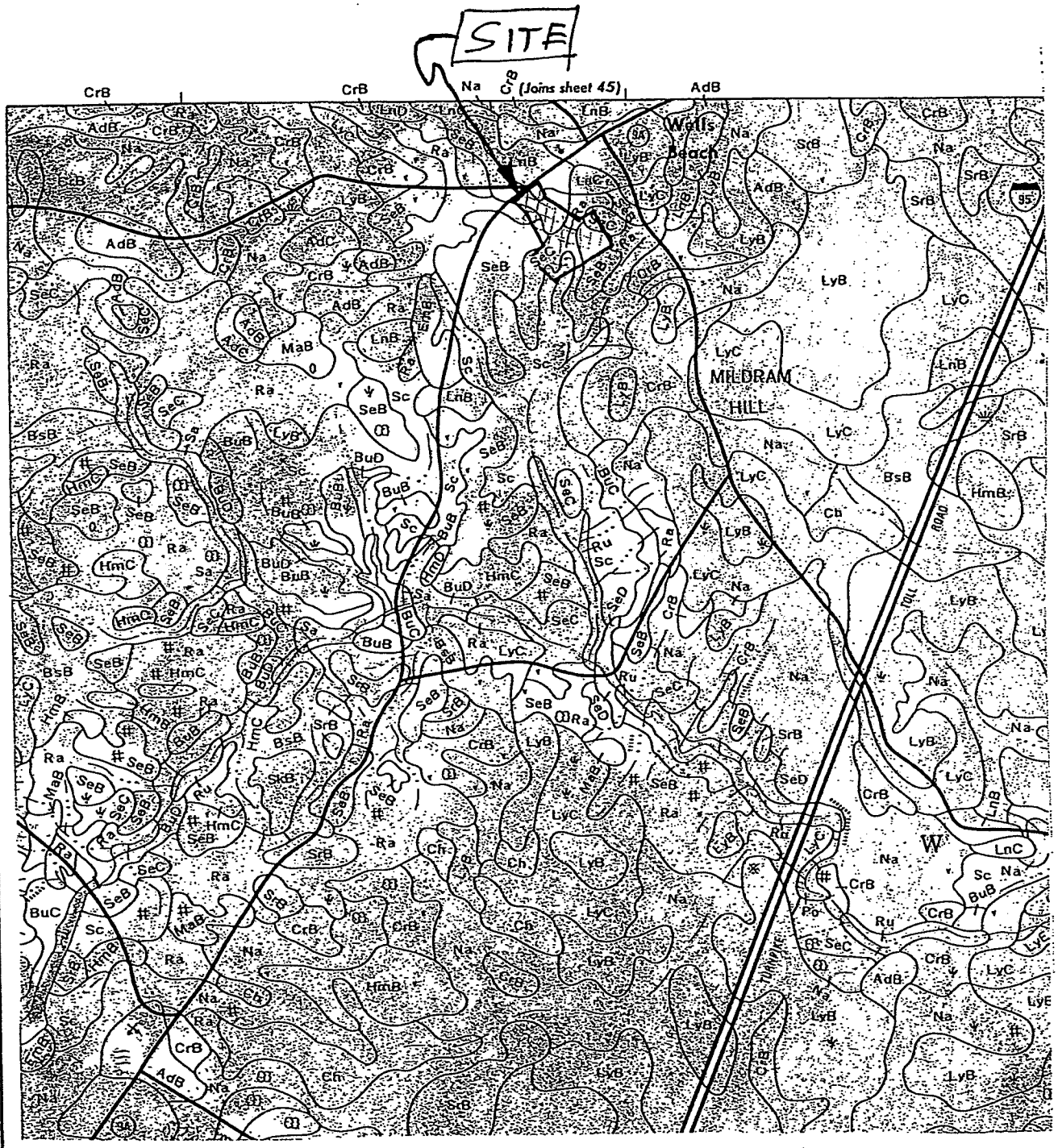
BRANCH ROAD FARM SUBDIVISION - Change in Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.20	-0.41	-0.59
AP2	-0.14	-0.85	-3.46



ATTAR
ENGINEERING, INC
CIVIL STRUCTURAL · MARINE
1284 STATE ROAD, ELIOT ME 03903

FOUR SEASONS FARM
NORTH BERWICK ROAD, WELLS, MAINE
USGS 7.5' SERIES – WELLS QUADRANGLE
APPROX. SCALE 1" = 2,000'
PROJECT NO. C165-18



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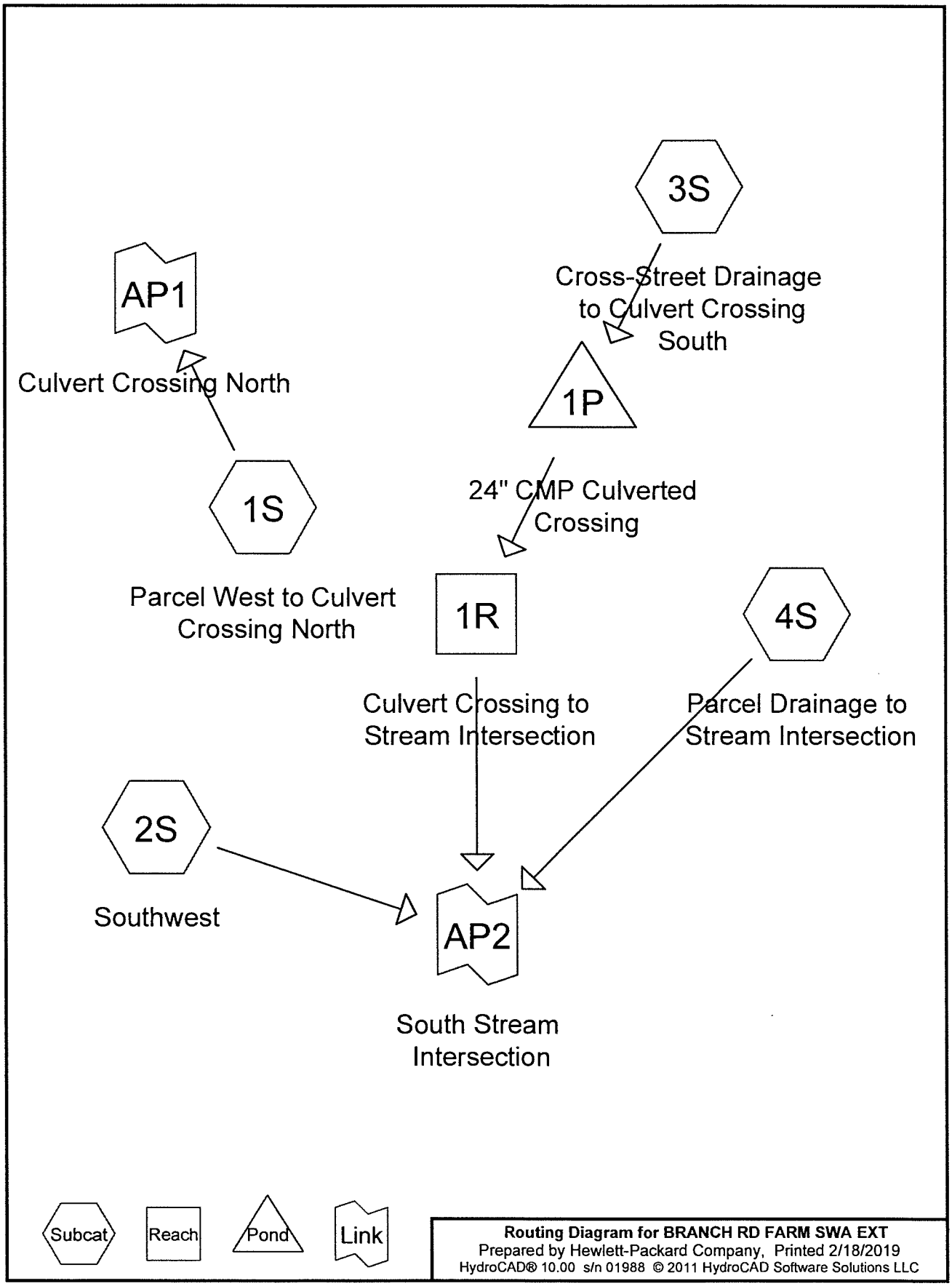
CIVIL - STRUCTURAL - MARINE
1284 STATE ROAD, ELIOT ME 03903

FOUR SEASONS FARM
1285 BRANCH ROAD (RT. 9A), WELLS, MAINE
SOIL SURVEY OF YORK COUNTY, MAINE
APPROX. SCALE 1" = 1,667'
PROJECT NO. C165-18

EXISTING CONDITION CALCULATIONS


3S
Cross-Street Drainage to Culvert Crossing South
AP1
Culvert Crossing North
1P
24" CMP Culverted Crossing
1S
Parcel West to Culvert Crossing North
1R
4S
Culvert Crossing to Stream Intersection
Parcel Drainage to Stream Intersection
2S
Southwest
AP2
South Stream Intersection
Subcat
Reach
Pond
Link
Routing Diagram for BRANCH RD FARM SWA EXT
Prepared by Hewlett-Packard Company, Printed 2/18/2019
HydroCAD® 10.00 s/n 01988 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.498	36	Woods, Fair, HSG A (3S)
7.032	73	Woods, Fair, HSG C (2S, 4S)
6.698	76	Woods/grass comb., Fair, HSG C (1S, 2S, 4S)
21.743	79	Woods, Fair, HSG D (2S, 3S, 4S)
8.121	82	Woods/grass comb., Fair, HSG D (1S, 4S)
0.097	98	Paved parking, HSG C (1S)
0.723	98	Paved parking, HSG D (1S, 3S, 4S)
0.081	98	Unconnected roofs, HSG C (1S)
0.204	98	Unconnected roofs, HSG D (4S)
45.199	**78**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Parcel West to Culvert Runoff Area=129,702 sf 8.57% Impervious Runoff Depth>1.23"
Flow Length=497' Tc=22.2 min UI Adjusted CN=78 Runoff=2.96 cfs 0.306 af

Subcatchment 2S: Southwest Runoff Area=149,633 sf 0.00% Impervious Runoff Depth>1.00"
Flow Length=580' Tc=18.1 min CN=74 Runoff=2.95 cfs 0.287 af

Subcatchment 3S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>1.23"
Flow Length=985' Tc=26.8 min CN=78 Runoff=12.48 cfs 1.393 af

Subcatchment 4S: Parcel Drainage to Runoff Area=1,097,484 sf 2.40% Impervious Runoff Depth>1.29"
Flow Length=1,543' Tc=25.3 min CN=79 Runoff=25.02 cfs 2.715 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.36' Max Vel=1.76 fps Inflow=12.08 cfs 1.392 af
n=0.070 L=1,170.0' S=0.0325 '/' Capacity=1,180.64 cfs Outflow=11.03 cfs 1.363 af

Pond 1P: 24" CMP Culverted Crossing Peak Elev=174.65' Storage=1,394 cf Inflow=12.48 cfs 1.393 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=12.08 cfs 1.392 af

Link AP1: Culvert Crossing North Inflow=2.96 cfs 0.306 af
Primary=2.96 cfs 0.306 af

Link AP2: South Stream Intersection Inflow=31.64 cfs 4.366 af
Primary=31.64 cfs 4.366 af

Total Runoff Area = 45.199 ac Runoff Volume = 4.702 af Average Runoff Depth = 1.25"
97.56% Pervious = 44.094 ac 2.44% Impervious = 1.105 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Parcel West to Culvert Runoff Area=129,702 sf 8.57% Impervious Runoff Depth>2.43"
Flow Length=497' Tc=22.2 min UI Adjusted CN=78 Runoff=5.90 cfs 0.604 af

Subcatchment2S: Southwest Runoff Area=149,633 sf 0.00% Impervious Runoff Depth>2.11"
Flow Length=580' Tc=18.1 min CN=74 Runoff=6.39 cfs 0.603 af

Subcatchment3S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>2.43"
Flow Length=985' Tc=26.8 min CN=78 Runoff=24.83 cfs 2.751 af

Subcatchment4S: Parcel Drainage to Runoff Area=1,097,484 sf 2.40% Impervious Runoff Depth>2.52"
Flow Length=1,543' Tc=25.3 min CN=79 Runoff=48.87 cfs 5.282 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.50' Max Vel=2.15 fps Inflow=20.63 cfs 2.749 af
n=0.070 L=1,170.0' S=0.0325 '/' Capacity=1,180.64 cfs Outflow=20.03 cfs 2.708 af

Pond 1P: 24" CMP Culverted Crossing Peak Elev=175.86' Storage=7,626 cf Inflow=24.83 cfs 2.751 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=20.63 cfs 2.749 af

Link AP1: Culvert Crossing North Inflow=5.90 cfs 0.604 af
Primary=5.90 cfs 0.604 af

Link AP2: South Stream Intersection Inflow=64.15 cfs 8.593 af
Primary=64.15 cfs 8.593 af

Total Runoff Area = 45.199 ac Runoff Volume = 9.240 af Average Runoff Depth = 2.45"
97.56% Pervious = 44.094 ac 2.44% Impervious = 1.105 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Parcel West to Culvert Runoff Area=129,702 sf 8.57% Impervious Runoff Depth>3.50"
Flow Length=497' Tc=22.2 min UI Adjusted CN=78 Runoff=8.44 cfs 0.868 af

Subcatchment2S: Southwest Runoff Area=149,633 sf 0.00% Impervious Runoff Depth>3.11"
Flow Length=580' Tc=18.1 min CN=74 Runoff=9.45 cfs 0.891 af

Subcatchment3S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>3.49"
Flow Length=985' Tc=26.8 min CN=78 Runoff=35.55 cfs 3.955 af

Subcatchment4S: Parcel Drainage to Runoff Area=1,097,484 sf 2.40% Impervious Runoff Depth>3.59"
Flow Length=1,543' Tc=25.3 min CN=79 Runoff=69.33 cfs 7.544 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.57' Max Vel=2.32 fps Inflow=25.57 cfs 3.953 af
n=0.070 L=1,170.0' S=0.0325 '/' Capacity=1,180.64 cfs Outflow=25.16 cfs 3.904 af

Pond 1P: 24" CMP Culverted Crossing Peak Elev=176.86' Storage=17,327 cf Inflow=35.55 cfs 3.955 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=25.57 cfs 3.953 af

Link AP1: Culvert Crossing North Inflow=8.44 cfs 0.868 af
Primary=8.44 cfs 0.868 af

Link AP2: South Stream Intersection Inflow=91.12 cfs 12.338 af
Primary=91.12 cfs 12.338 af

Total Runoff Area = 45.199 ac Runoff Volume = 13.257 af Average Runoff Depth = 3.52"
97.56% Pervious = 44.094 ac 2.44% Impervious = 1.105 ac

Summary for Subcatchment 1S: Parcel West to Culvert Crossing North

Runoff = 8.44 cfs @ 12.31 hrs, Volume= 0.868 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
4,237	98	Paved parking, HSG C
3,347	98	Paved parking, HSG D
101,945	76	Woods/grass comb., Fair, HSG C
16,637	82	Woods/grass comb., Fair, HSG D
3,536	98	Unconnected roofs, HSG C
129,702	79	Weighted Average, UI Adjusted CN = 78
118,582		91.43% Pervious Area
11,120		8.57% Impervious Area
3,536		31.80% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0700	0.11		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
14.8	447	0.0101	0.50		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
22.2	497	Total			

Summary for Subcatchment 2S: Southwest

Runoff = 9.45 cfs @ 12.25 hrs, Volume= 0.891 af, Depth> 3.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
6,091	76	Woods/grass comb., Fair, HSG C
14,906	79	Woods, Fair, HSG D
128,636	73	Woods, Fair, HSG C
149,633	74	Weighted Average
149,633		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0450	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
4.2	329	0.0668	1.29		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
5.1	201	0.0174	0.66		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
18.1	580	Total			

Summary for Subcatchment 3S: Cross-Street Drainage to Culvert Crossing South

Runoff = 35.55 cfs @ 12.37 hrs, Volume= 3.955 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
10,632	98	Paved parking, HSG D
21,714	36	Woods, Fair, HSG A
559,683	79	Woods, Fair, HSG D
592,029	78	Weighted Average
581,397		98.20% Pervious Area
10,632		1.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0900	0.13		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	413	0.0532	1.15		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
14.1	522	0.0153	0.62		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
26.8	985	Total			

Summary for Subcatchment 4S: Parcel Drainage to Stream Intersection

Runoff = 69.33 cfs @ 12.35 hrs, Volume= 7.544 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
17,514	98	Paved parking, HSG D
8,866	98	Unconnected roofs, HSG D
183,729	76	Woods/grass comb., Fair, HSG C
337,124	82	Woods/grass comb., Fair, HSG D
372,555	79	Woods, Fair, HSG D
177,696	73	Woods, Fair, HSG C
1,097,484	79	Weighted Average
1,071,104		97.60% Pervious Area
26,380		2.40% Impervious Area
8,866		33.61% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0900	0.13		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
8.5	639	0.0626	1.25		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
7.0	314	0.0222	0.74		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
3.1	540	0.0259	2.94	294.42	**Channel Flow, CF 1** Area= 100.0 sf Perim= 125.0' r= 0.80' n= 0.070 Sluggish weedy reaches w/pools
25.3	1,543	Total			

Summary for Reach 1R: Culvert Crossing to Stream Intersection

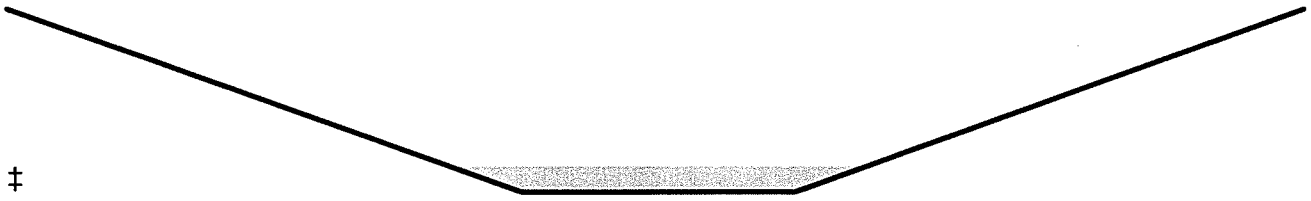
[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.57'

Inflow Area = 13.591 ac, 1.80% Impervious, Inflow Depth > 3.49" for 25 YEAR STORM event
Inflow = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af
Outflow = 25.16 cfs @ 12.86 hrs, Volume= 3.904 af, Atten= 2%, Lag= 14.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.32 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 19.5 min

Peak Storage= 12,718 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 4.00' Flow Area= 172.0 sf, Capacity= 1,180.64 cfs

15.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 7.0 '/' Top Width= 71.00'
Length= 1,170.0' Slope= 0.0325 '/'
Inlet Invert= 172.00', Outlet Invert= 134.00'



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Summary for Pond 1P: 24" CMP Culverted Crossing

Inflow Area = 13.591 ac, 1.80% Impervious, Inflow Depth > 3.49" for 25 YEAR STORM event
Inflow = 35.55 cfs @ 12.37 hrs, Volume= 3.955 af
Outflow = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af, Atten= 28%, Lag= 14.5 min
Primary = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.86' @ 12.61 hrs Surf.Area= 12,229 sf Storage= 17,327 cf

Plug-Flow detention time= 4.5 min calculated for 3.940 af (100% of inflow)

Center-of-Mass det. time= 4.3 min (804.5 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	34,600 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	100	0	0
174.00	500	300	300
176.00	7,900	8,400	8,700
178.00	18,000	25,900	34,600

Device	Routing	Invert	Outlet Devices
#1	Primary	173.00'	**24.0" Round CMP_Round 24"** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.00' / 172.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=25.55 cfs @ 12.61 hrs HW=176.85' (Free Discharge)
↑—**1=CMP_Round 24"** (Inlet Controls 25.55 cfs @ 8.13 fps)

Summary for Link AP1: Culvert Crossing North

Inflow Area = 2.978 ac, 8.57% Impervious, Inflow Depth > 3.50" for 25 YEAR STORM event
Inflow = 8.44 cfs @ 12.31 hrs, Volume= 0.868 af
Primary = 8.44 cfs @ 12.31 hrs, Volume= 0.868 af, Atten= 0%, Lag= 0.0 min

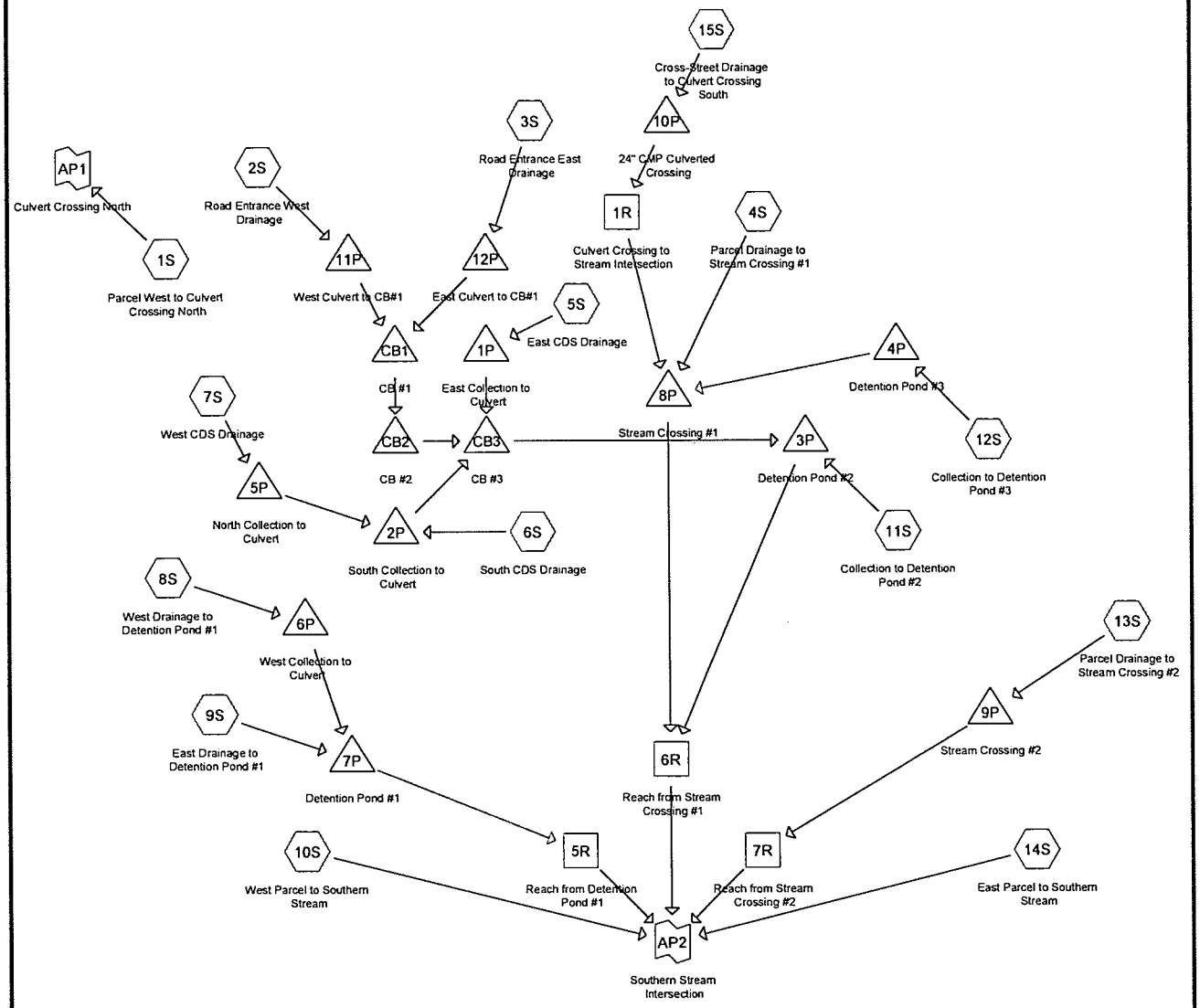
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: South Stream Intersection

Inflow Area = 42.221 ac, 2.01% Impervious, Inflow Depth > 3.51" for 25 YEAR STORM event
Inflow = 91.12 cfs @ 12.37 hrs, Volume= 12.338 af
Primary = 91.12 cfs @ 12.37 hrs, Volume= 12.338 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

DEVELOPED CONDITION CALCULATIONS



Routing Diagram for BRANCH RD FARM SWA DEV
Prepared by Hewlett-Packard Company, Printed 2/18/2019
HydroCAD® 10.00 s/n 01988 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.498	36	Woods, Fair, HSG A (15S)
7.477	73	Woods, Fair, HSG C (4S, 7S, 8S, 9S, 10S, 13S, 14S)
0.794	74	>75% Grass cover, Good, HSG C (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S)
5.745	76	Woods/grass comb., Fair, HSG C (1S, 2S, 3S, 4S, 7S, 8S, 9S, 10S, 11S, 13S, 14S)
20.325	79	Woods, Fair, HSG D (4S, 10S, 13S, 14S, 15S)
0.161	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S, 9S, 10S, 12S, 14S)
7.867	82	Woods/grass comb., Fair, HSG D (1S, 2S, 3S, 4S, 10S, 12S, 13S, 14S)
0.143	98	Paved parking, HSG C (1S, 2S, 3S)
0.553	98	Paved parking, HSG D (1S, 2S, 3S, 15S)
0.658	98	Unconnected pavement, HSG C (4S, 5S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S)
0.372	98	Unconnected pavement, HSG D (4S, 12S, 13S)
0.322	98	Unconnected roofs, HSG C (1S, 11S, 13S, 14S)
0.284	98	Unconnected roofs, HSG D (3S, 4S, 9S, 10S, 13S, 14S)
45.198	**79**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Parcel West to Culvert Runoff Area=120,593 sf 8.79% Impervious Runoff Depth>1.23"
Flow Length=497' Tc=22.2 min CN=78 Runoff=2.76 cfs 0.284 af

Subcatchment2S: Road Entrance West Runoff Area=34,282 sf 11.83% Impervious Runoff Depth>1.43"
Flow Length=219' Tc=9.4 min CN=81 Runoff=1.24 cfs 0.094 af

Subcatchment3S: Road Entrance East Runoff Area=60,392 sf 20.32% Impervious Runoff Depth>1.64"
Flow Length=388' Tc=7.7 min UI Adjusted CN=84 Runoff=2.67 cfs 0.190 af

Subcatchment4S: Parcel Drainage to Runoff Area=176,466 sf 5.77% Impervious Runoff Depth>1.50"
Flow Length=604' Tc=7.4 min CN=82 Runoff=7.21 cfs 0.507 af

Subcatchment5S: East CDS Drainage Runoff Area=5,372 sf 72.97% Impervious Runoff Depth>2.31"
Flow Length=84' Slope=0.0257 '/' Tc=7.6 min CN=92 Runoff=0.32 cfs 0.024 af

Subcatchment6S: South CDS Drainage Runoff Area=3,670 sf 62.53% Impervious Runoff Depth>2.04"
Flow Length=35' Slope=0.0257 '/' Tc=3.8 min CN=89 Runoff=0.23 cfs 0.014 af

Subcatchment7S: West CDS Drainage Runoff Area=12,178 sf 44.42% Impervious Runoff Depth>1.72"
Flow Length=197' Tc=7.6 min CN=85 Runoff=0.56 cfs 0.040 af

Subcatchment8S: West Drainage to Runoff Area=12,766 sf 17.30% Impervious Runoff Depth>1.12"
Flow Length=157' Tc=10.2 min UI Adjusted CN=76 Runoff=0.35 cfs 0.027 af

Subcatchment9S: East Drainage to Runoff Area=9,343 sf 31.98% Impervious Runoff Depth>1.57"
Flow Length=118' Tc=10.1 min CN=83 Runoff=0.37 cfs 0.028 af

Subcatchment10S: West Parcel to Runoff Area=148,979 sf 0.87% Impervious Runoff Depth>1.00"
Flow Length=580' Tc=18.1 min CN=74 Runoff=2.94 cfs 0.286 af

Subcatchment11S: Collection to Detention Runoff Area=7,630 sf 42.60% Impervious Runoff Depth>1.64"
Flow Length=83' Slope=0.0184 '/' Tc=8.6 min CN=84 Runoff=0.33 cfs 0.024 af

Subcatchment12S: Collection to Detention Runoff Area=5,853 sf 32.12% Impervious Runoff Depth>1.65"
Flow Length=65' Slope=0.0769 '/' Tc=4.0 min CN=84 Runoff=0.29 cfs 0.018 af

Subcatchment13S: Parcel Drainage to Runoff Area=454,742 sf 3.62% Impervious Runoff Depth>1.29"
Flow Length=1,057' Tc=23.4 min CN=79 Runoff=10.70 cfs 1.126 af

Subcatchment14S: East Parcel to Runoff Area=324,547 sf 4.34% Impervious Runoff Depth>1.12"
Flow Length=1,040' Tc=17.9 min UI Adjusted CN=76 Runoff=7.24 cfs 0.693 af

Subcatchment15S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>1.23"
Flow Length=985' Tc=26.8 min CN=78 Runoff=12.48 cfs 1.393 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.35' Max Vel=1.93 fps Inflow=12.08 cfs 1.392 af
n=0.070 L=698.0' S=0.0401 '/' Capacity=1,312.11 cfs Outflow=11.74 cfs 1.376 af

Reach 5R: Reach from Detention Pond Avg. Flow Depth=0.08' Max Vel=0.72 fps Inflow=0.62 cfs 0.055 af
n=0.070 L=247.0' S=0.0364 '/' Capacity=194.65 cfs Outflow=0.57 cfs 0.054 af

Reach 6R: Reach from Stream Avg. Flow Depth=0.54' Max Vel=1.53 fps Inflow=14.77 cfs 2.278 af
n=0.070 L=549.0' S=0.0146 '/' Capacity=161.31 cfs Outflow=14.56 cfs 2.254 af

Reach 7R: Reach from Stream Avg. Flow Depth=0.49' Max Vel=1.92 fps Inflow=10.68 cfs 1.125 af
n=0.070 L=477.0' S=0.0252 '/' Capacity=129.07 cfs Outflow=10.40 cfs 1.116 af

Pond 1P: East Collection to Culvert Peak Elev=151.28' Storage=4 cf Inflow=0.32 cfs 0.024 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.32 cfs 0.024 af

Pond 2P: South Collection to Culvert Peak Elev=151.41' Storage=133 cf Inflow=0.68 cfs 0.053 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.65 cfs 0.053 af

Pond 3P: Detention Pond #2 Peak Elev=151.14' Storage=1,274 cf Inflow=5.11 cfs 0.382 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=4.54 cfs 0.377 af

Pond 4P: Detention Pond #3 Peak Elev=148.26' Storage=70 cf Inflow=0.29 cfs 0.018 af
Primary=0.26 cfs 0.018 af Secondary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.018 af

Pond 5P: North Collection to Culvert Peak Elev=151.65' Storage=133 cf Inflow=0.56 cfs 0.040 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=0.53 cfs 0.039 af

Pond 6P: West Collection to Culvert Peak Elev=145.28' Storage=19 cf Inflow=0.35 cfs 0.027 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.35 cfs 0.027 af

Pond 7P: Detention Pond #1 Peak Elev=142.42' Storage=244 cf Inflow=0.71 cfs 0.055 af
Primary=0.62 cfs 0.055 af Secondary=0.00 cfs 0.000 af Outflow=0.62 cfs 0.055 af

Pond 8P: Stream Crossing #1 Peak Elev=144.12' Storage=449 cf Inflow=13.11 cfs 1.902 af
48.0" Round Culvert w/ 12.0" inside fill n=0.030 L=65.0' S=0.0154 '/' Outflow=13.11 cfs 1.901 af

Pond 9P: Stream Crossing #2 Peak Elev=147.77' Storage=586 cf Inflow=10.70 cfs 1.126 af
36.0" Round Culvert w/ 12.0" inside fill n=0.030 L=40.0' S=0.0125 '/' Outflow=10.68 cfs 1.125 af

Pond 10P: 24" CMP Culverted Crossing Peak Elev=174.65' Storage=1,394 cf Inflow=12.48 cfs 1.393 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=12.08 cfs 1.392 af

Pond 11P: West Culvert to CB#1 Peak Elev=152.96' Storage=117 cf Inflow=1.24 cfs 0.094 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=1.24 cfs 0.093 af

Pond 12P: East Culvert to CB#1 Peak Elev=153.27' Storage=147 cf Inflow=2.67 cfs 0.190 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0083 '/' Outflow=2.62 cfs 0.189 af

Pond CB1: CB #1 Peak Elev=153.21' Storage=22 cf Inflow=3.83 cfs 0.282 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0052 '/' Outflow=3.83 cfs 0.282 af

Pond CB2: CB #2 Peak Elev=152.27' Storage=20 cf Inflow=3.83 cfs 0.282 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=3.84 cfs 0.282 af

Pond CB3: CB #3 Peak Elev=151.83' Storage=24 cf Inflow=4.78 cfs 0.359 af
Discarded=0.00 cfs 0.000 af Primary=4.79 cfs 0.358 af Outflow=4.79 cfs 0.358 af

Link AP1: Culvert Crossing North Inflow=2.76 cfs 0.284 af
Primary=2.76 cfs 0.284 af

Link AP2: Southern Stream Intersection Inflow=31.50 cfs 4.402 af
Primary=31.50 cfs 4.402 af

Total Runoff Area = 45.198 ac Runoff Volume = 4.749 af Average Runoff Depth = 1.26"
94.84% Pervious = 42.868 ac 5.16% Impervious = 2.330 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Parcel West to Culvert Runoff Area=120,593 sf 8.79% Impervious Runoff Depth>2.43"
Flow Length=497' Tc=22.2 min CN=78 Runoff=5.49 cfs 0.561 af

Subcatchment2S: Road Entrance West Runoff Area=34,282 sf 11.83% Impervious Runoff Depth>2.71"
Flow Length=219' Tc=9.4 min CN=81 Runoff=2.34 cfs 0.177 af

Subcatchment3S: Road Entrance East Runoff Area=60,392 sf 20.32% Impervious Runoff Depth>2.98"
Flow Length=388' Tc=7.7 min UI Adjusted CN=84 Runoff=4.78 cfs 0.345 af

Subcatchment4S: Parcel Drainage to Runoff Area=176,466 sf 5.77% Impervious Runoff Depth>2.80"
Flow Length=604' Tc=7.4 min CN=82 Runoff=13.34 cfs 0.944 af

Subcatchment5S: East CDS Drainage Runoff Area=5,372 sf 72.97% Impervious Runoff Depth>3.77"
Flow Length=84' Slope=0.0257 '/' Tc=7.6 min CN=92 Runoff=0.51 cfs 0.039 af

Subcatchment6S: South CDS Drainage Runoff Area=3,670 sf 62.53% Impervious Runoff Depth>3.47"
Flow Length=35' Slope=0.0257 '/' Tc=3.8 min CN=89 Runoff=0.37 cfs 0.024 af

Subcatchment7S: West CDS Drainage Runoff Area=12,178 sf 44.42% Impervious Runoff Depth>3.08"
Flow Length=197' Tc=7.6 min CN=85 Runoff=0.99 cfs 0.072 af

Subcatchment8S: West Drainage to Runoff Area=12,766 sf 17.30% Impervious Runoff Depth>2.27"
Flow Length=157' Tc=10.2 min UI Adjusted CN=76 Runoff=0.72 cfs 0.056 af

Subcatchment9S: East Drainage to Runoff Area=9,343 sf 31.98% Impervious Runoff Depth>2.89"
Flow Length=118' Tc=10.1 min CN=83 Runoff=0.67 cfs 0.052 af

Subcatchment10S: West Parcel to Runoff Area=148,979 sf 0.87% Impervious Runoff Depth>2.11"
Flow Length=580' Tc=18.1 min CN=74 Runoff=6.36 cfs 0.600 af

Subcatchment11S: Collection to Detention Runoff Area=7,630 sf 42.60% Impervious Runoff Depth>2.98"
Flow Length=83' Slope=0.0184 '/' Tc=8.6 min CN=84 Runoff=0.59 cfs 0.044 af

Subcatchment12S: Collection to Detention Runoff Area=5,853 sf 32.12% Impervious Runoff Depth>2.99"
Flow Length=65' Slope=0.0769 '/' Tc=4.0 min CN=84 Runoff=0.52 cfs 0.033 af

Subcatchment13S: Parcel Drainage to Runoff Area=454,742 sf 3.62% Impervious Runoff Depth>2.52"
Flow Length=1,057' Tc=23.4 min CN=79 Runoff=20.91 cfs 2.190 af

Subcatchment14S: East Parcel to Runoff Area=324,547 sf 4.34% Impervious Runoff Depth>2.27"
Flow Length=1,040' Tc=17.9 min UI Adjusted CN=76 Runoff=15.02 cfs 1.409 af

Subcatchment15S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>2.43"
Flow Length=985' Tc=26.8 min CN=78 Runoff=24.83 cfs 2.751 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.48' Max Vel=2.32 fps Inflow=20.63 cfs 2.749 af
n=0.070 L=698.0' S=0.0401 '/' Capacity=1,312.11 cfs Outflow=20.42 cfs 2.727 af

Reach 5R: Reach from Detention Pond Avg. Flow Depth=0.12' Max Vel=0.94 fps Inflow=1.24 cfs 0.106 af
n=0.070 L=247.0' S=0.0364 '/' Capacity=194.65 cfs Outflow=1.16 cfs 0.105 af

Reach 6R: Reach from Stream Avg. Flow Depth=0.75' Max Vel=1.86 fps Inflow=26.36 cfs 4.394 af
n=0.070 L=549.0' S=0.0146 '/' Capacity=161.31 cfs Outflow=25.89 cfs 4.361 af

Reach 7R: Reach from Stream Avg. Flow Depth=0.71' Max Vel=2.42 fps Inflow=20.59 cfs 2.189 af
n=0.070 L=477.0' S=0.0252 '/' Capacity=129.07 cfs Outflow=20.32 cfs 2.176 af

Pond 1P: East Collection to Culvert Peak Elev=151.36' Storage=6 cf Inflow=0.51 cfs 0.039 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.51 cfs 0.039 af

Pond 2P: South Collection to Culvert Peak Elev=151.56' Storage=199 cf Inflow=1.20 cfs 0.095 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=1.16 cfs 0.094 af

Pond 3P: Detention Pond #2 Peak Elev=152.13' Storage=2,495 cf Inflow=9.12 cfs 0.696 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=7.42 cfs 0.690 af

Pond 4P: Detention Pond #3 Peak Elev=148.36' Storage=101 cf Inflow=0.52 cfs 0.033 af
Primary=0.47 cfs 0.033 af Secondary=0.00 cfs 0.000 af Outflow=0.47 cfs 0.033 af

Pond 5P: North Collection to Culvert Peak Elev=151.80' Storage=180 cf Inflow=0.99 cfs 0.072 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=0.94 cfs 0.071 af

Pond 6P: West Collection to Culvert Peak Elev=145.41' Storage=31 cf Inflow=0.72 cfs 0.056 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.72 cfs 0.055 af

Pond 7P: Detention Pond #1 Peak Elev=142.62' Storage=390 cf Inflow=1.38 cfs 0.107 af
Primary=1.24 cfs 0.106 af Secondary=0.00 cfs 0.000 af Outflow=1.24 cfs 0.106 af

Pond 8P: Stream Crossing #1 Peak Elev=144.61' Storage=867 cf Inflow=22.45 cfs 3.705 af
48.0" Round Culvert w/ 12.0" inside fill n=0.030 L=65.0' S=0.0154 '/' Outflow=22.44 cfs 3.704 af

Pond 9P: Stream Crossing #2 Peak Elev=148.66' Storage=1,493 cf Inflow=20.91 cfs 2.190 af
36.0" Round Culvert w/ 12.0" inside fill n=0.030 L=40.0' S=0.0125 '/' Outflow=20.59 cfs 2.189 af

Pond 10P: 24" CMP Culverted Crossing Peak Elev=175.86' Storage=7,626 cf Inflow=24.83 cfs 2.751 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=20.63 cfs 2.749 af

Pond 11P: West Culvert to CB#1 Peak Elev=153.22' Storage=184 cf Inflow=2.34 cfs 0.177 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=2.31 cfs 0.177 af

Pond 12P: East Culvert to CB#1 Peak Elev=153.71' Storage=258 cf Inflow=4.78 cfs 0.345 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0083 '/' Outflow=4.65 cfs 0.344 af

Pond CB1: CB #1 Peak Elev=154.86' Storage=44 cf Inflow=6.92 cfs 0.520 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0052 '/' Outflow=6.95 cfs 0.520 af

Pond CB2: CB #2 Peak Elev=152.82' Storage=27 cf Inflow=6.95 cfs 0.520 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=6.95 cfs 0.520 af

Pond CB3: CB #3 Peak Elev=152.81' Storage=37 cf Inflow=8.57 cfs 0.653 af
Discarded=0.00 cfs 0.000 af Primary=8.55 cfs 0.653 af Outflow=8.55 cfs 0.653 af

Link AP1: Culvert Crossing North Inflow=5.49 cfs 0.561 af
Primary=5.49 cfs 0.561 af

Link AP2: Southern Stream Intersection Inflow=63.30 cfs 8.651 af
Primary=63.30 cfs 8.651 af

Total Runoff Area = 45.198 ac Runoff Volume = 9.296 af Average Runoff Depth = 2.47"
94.84% Pervious = 42.868 ac 5.16% Impervious = 2.330 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Parcel West to Culvert Runoff Area=120,593 sf 8.79% Impervious Runoff Depth>3.50"
Flow Length=497' Tc=22.2 min CN=78 Runoff=7.85 cfs 0.807 af

Subcatchment2S: Road Entrance West Runoff Area=34,282 sf 11.83% Impervious Runoff Depth>3.81"
Flow Length=219' Tc=9.4 min CN=81 Runoff=3.26 cfs 0.250 af

Subcatchment3S: Road Entrance East Runoff Area=60,392 sf 20.32% Impervious Runoff Depth>4.13"
Flow Length=388' Tc=7.7 min UI Adjusted CN=84 Runoff=6.53 cfs 0.477 af

Subcatchment4S: Parcel Drainage to Runoff Area=176,466 sf 5.77% Impervious Runoff Depth>3.92"
Flow Length=604' Tc=7.4 min CN=82 Runoff=18.46 cfs 1.323 af

Subcatchment5S: East CDS Drainage Runoff Area=5,372 sf 72.97% Impervious Runoff Depth>4.97"
Flow Length=84' Slope=0.0257 '/' Tc=7.6 min CN=92 Runoff=0.67 cfs 0.051 af

Subcatchment6S: South CDS Drainage Runoff Area=3,670 sf 62.53% Impervious Runoff Depth>4.66"
Flow Length=35' Slope=0.0257 '/' Tc=3.8 min CN=89 Runoff=0.49 cfs 0.033 af

Subcatchment7S: West CDS Drainage Runoff Area=12,178 sf 44.42% Impervious Runoff Depth>4.23"
Flow Length=197' Tc=7.6 min CN=85 Runoff=1.35 cfs 0.099 af

Subcatchment8S: West Drainage to Runoff Area=12,766 sf 17.30% Impervious Runoff Depth>3.31"
Flow Length=157' Tc=10.2 min UI Adjusted CN=76 Runoff=1.05 cfs 0.081 af

Subcatchment9S: East Drainage to Runoff Area=9,343 sf 31.98% Impervious Runoff Depth>4.02"
Flow Length=118' Tc=10.1 min CN=83 Runoff=0.91 cfs 0.072 af

Subcatchment10S: West Parcel to Runoff Area=148,979 sf 0.87% Impervious Runoff Depth>3.11"
Flow Length=580' Tc=18.1 min CN=74 Runoff=9.41 cfs 0.887 af

Subcatchment11S: Collection to Detention Runoff Area=7,630 sf 42.60% Impervious Runoff Depth>4.13"
Flow Length=83' Slope=0.0184 '/' Tc=8.6 min CN=84 Runoff=0.80 cfs 0.060 af

Subcatchment12S: Collection to Detention Runoff Area=5,853 sf 32.12% Impervious Runoff Depth>4.13"
Flow Length=65' Slope=0.0769 '/' Tc=4.0 min CN=84 Runoff=0.71 cfs 0.046 af

Subcatchment13S: Parcel Drainage to Runoff Area=454,742 sf 3.62% Impervious Runoff Depth>3.60"
Flow Length=1,057' Tc=23.4 min CN=79 Runoff=29.71 cfs 3.128 af

Subcatchment14S: East Parcel to Runoff Area=324,547 sf 4.34% Impervious Runoff Depth>3.30"
Flow Length=1,040' Tc=17.9 min UI Adjusted CN=76 Runoff=21.83 cfs 2.052 af

Subcatchment15S: Cross-Street Drainage Runoff Area=592,029 sf 1.80% Impervious Runoff Depth>3.49"
Flow Length=985' Tc=26.8 min CN=78 Runoff=35.55 cfs 3.955 af

Reach 1R: Culvert Crossing to Stream Avg. Flow Depth=0.54' Max Vel=2.50 fps Inflow=25.57 cfs 3.953 af
n=0.070 L=698.0' S=0.0401 '/' Capacity=1,312.11 cfs Outflow=25.44 cfs 3.926 af

Reach 5R: Reach from Detention Pond Avg. Flow Depth=0.15' Max Vel=1.08 fps Inflow=1.76 cfs 0.152 af
n=0.070 L=247.0' S=0.0364 '/' Capacity=194.65 cfs Outflow=1.67 cfs 0.151 af

Reach 6R: Reach from Stream Avg. Flow Depth=0.87' Max Vel=2.03 fps Inflow=36.01 cfs 6.249 af
n=0.070 L=549.0' S=0.0146 '/' Capacity=161.31 cfs Outflow=34.26 cfs 6.210 af

Reach 7R: Reach from Stream Avg. Flow Depth=0.85' Max Vel=2.68 fps Inflow=28.01 cfs 3.126 af
n=0.070 L=477.0' S=0.0252 '/' Capacity=129.07 cfs Outflow=27.78 cfs 3.111 af

Pond 1P: East Collection to Culvert Peak Elev=151.41' Storage=8 cf Inflow=0.67 cfs 0.051 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.67 cfs 0.051 af

Pond 2P: South Collection to Culvert Peak Elev=151.67' Storage=251 cf Inflow=1.63 cfs 0.130 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=1.57 cfs 0.130 af

Pond 3P: Detention Pond #2 Peak Elev=152.85' Storage=3,755 cf Inflow=11.49 cfs 0.962 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=9.16 cfs 0.955 af

Pond 4P: Detention Pond #3 Peak Elev=148.43' Storage=123 cf Inflow=0.71 cfs 0.046 af
Primary=0.65 cfs 0.046 af Secondary=0.00 cfs 0.000 af Outflow=0.65 cfs 0.046 af

Pond 5P: North Collection to Culvert Peak Elev=151.90' Storage=216 cf Inflow=1.35 cfs 0.099 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=1.28 cfs 0.097 af

Pond 6P: West Collection to Culvert Peak Elev=145.50' Storage=42 cf Inflow=1.05 cfs 0.081 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=1.05 cfs 0.081 af

Pond 7P: Detention Pond #1 Peak Elev=142.78' Storage=510 cf Inflow=1.96 cfs 0.153 af
Primary=1.76 cfs 0.152 af Secondary=0.00 cfs 0.000 af Outflow=1.76 cfs 0.152 af

Pond 8P: Stream Crossing #1 Peak Elev=144.88' Storage=1,166 cf Inflow=27.97 cfs 5.295 af
48.0" Round Culvert w/ 12.0" inside fill n=0.030 L=65.0' S=0.0154 '/' Outflow=27.96 cfs 5.293 af

Pond 9P: Stream Crossing #2 Peak Elev=149.78' Storage=3,859 cf Inflow=29.71 cfs 3.128 af
36.0" Round Culvert w/ 12.0" inside fill n=0.030 L=40.0' S=0.0125 '/' Outflow=28.01 cfs 3.126 af

Pond 10P: 24" CMP Culverted Crossing Peak Elev=176.86' Storage=17,327 cf Inflow=35.55 cfs 3.955 af
24.0" Round Culvert n=0.013 L=60.0' S=0.0167 '/' Outflow=25.57 cfs 3.953 af

Pond 11P: West Culvert to CB#1 Peak Elev=153.42' Storage=262 cf Inflow=3.26 cfs 0.250 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0063 '/' Outflow=3.18 cfs 0.249 af

Pond 12P: East Culvert to CB#1 Peak Elev=154.16' Storage=464 cf Inflow=6.53 cfs 0.477 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0083 '/' Outflow=5.99 cfs 0.476 af

Pond CB1: CB #1 Peak Elev=156.55' Storage=66 cf Inflow=9.17 cfs 0.725 af
15.0" Round Culvert n=0.013 L=135.0' S=0.0052 '/' Outflow=9.13 cfs 0.725 af

Pond CB2: CB #2 Peak Elev=153.55' Storage=36 cf Inflow=9.13 cfs 0.725 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0053 '/' Outflow=9.16 cfs 0.725 af

Pond CB3: CB #3 Peak Elev=153.56' Storage=46 cf Inflow=11.32 cfs 0.905 af
Discarded=0.61 cfs 0.003 af Primary=10.72 cfs 0.902 af Outflow=11.33 cfs 0.905 af

Link AP1: Culvert Crossing North Inflow=7.85 cfs 0.807 af
Primary=7.85 cfs 0.807 af

Link AP2: Southern Stream Intersection Inflow=87.66 cfs 12.410 af
Primary=87.66 cfs 12.410 af

Total Runoff Area = 45.198 ac Runoff Volume = 13.320 af Average Runoff Depth = 3.54"
94.84% Pervious = 42.868 ac 5.16% Impervious = 2.330 ac

Summary for Subcatchment 1S: Parcel West to Culvert Crossing North

Runoff = 7.85 cfs @ 12.31 hrs, Volume= 0.807 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
4,237	98	Paved parking, HSG C
3,534	98	Unconnected roofs, HSG C
2,832	98	Paved parking, HSG D
746	80	>75% Grass cover, Good, HSG D
99,541	76	Woods/grass comb., Fair, HSG C
9,703	82	Woods/grass comb., Fair, HSG D
120,593	78	Weighted Average
109,990		91.21% Pervious Area
10,603		8.79% Impervious Area
3,534		33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0700	0.11		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
14.8	447	0.0101	0.50		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
22.2	497	Total			

Summary for Subcatchment 2S: Road Entrance West Drainage

Runoff = 3.26 cfs @ 12.13 hrs, Volume= 0.250 af, Depth> 3.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,225	98	Paved parking, HSG C
682	74	>75% Grass cover, Good, HSG C
13,381	76	Woods/grass comb., Fair, HSG C
2,829	98	Paved parking, HSG D
1,271	80	>75% Grass cover, Good, HSG D
14,894	82	Woods/grass comb., Fair, HSG D
34,282	81	Weighted Average
30,228		88.17% Pervious Area
4,054		11.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0400	0.20		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"
5.2	169	0.0059	0.54		**Shallow Concentrated Flow, SCF 1** Short Grass Pasture Kv= 7.0 fps
9.4	219	Total			

Summary for Subcatchment 3S: Road Entrance East Drainage

Runoff = 6.53 cfs @ 12.11 hrs, Volume= 0.477 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
746	98	Paved parking, HSG C
339	74	>75% Grass cover, Good, HSG C
1,779	76	Woods/grass comb., Fair, HSG C
7,780	98	Paved parking, HSG D
1,372	80	>75% Grass cover, Good, HSG D
44,630	82	Woods/grass comb., Fair, HSG D
3,746	98	Unconnected roofs, HSG D
60,392	85	Weighted Average, UI Adjusted CN = 84
48,120		79.68% Pervious Area
12,272		20.32% Impervious Area
3,746		30.52% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"
1.2	159	0.0943	2.15		**Shallow Concentrated Flow, SCF 1** Short Grass Pasture Kv= 7.0 fps
2.9	179	0.0214	1.02		**Shallow Concentrated Flow, SCF 2** Short Grass Pasture Kv= 7.0 fps
7.7	388	Total			

Summary for Subcatchment 4S: Parcel Drainage to Stream Crossing #1

Runoff = 18.46 cfs @ 12.11 hrs, Volume= 1.323 af, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
2,034	98	Unconnected pavement, HSG C
2,223	74	>75% Grass cover, Good, HSG C
7,484	76	Woods/grass comb., Fair, HSG C
1,200	73	Woods, Fair, HSG C
6,395	98	Unconnected pavement, HSG D
1,760	98	Unconnected roofs, HSG D
457	80	>75% Grass cover, Good, HSG D
148,829	82	Woods/grass comb., Fair, HSG D
6,084	79	Woods, Fair, HSG D
176,466	82	Weighted Average
166,277		94.23% Pervious Area
10,189		5.77% Impervious Area
10,189		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0500	0.22		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"
2.2	248	0.0726	1.89		**Shallow Concentrated Flow, SCF 1** Short Grass Pasture Kv= 7.0 fps
1.4	306	0.0392	3.62	362.21	**Channel Flow, CF 1** Area= 100.0 sf Perim= 125.0' r= 0.80' n= 0.070 Sluggish weedy reaches w/pools
7.4	604	Total			

Summary for Subcatchment 5S: East CDS Drainage

Runoff = 0.67 cfs @ 12.11 hrs, Volume= 0.051 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,920	98	Unconnected pavement, HSG C
1,281	74	>75% Grass cover, Good, HSG C
171	80	>75% Grass cover, Good, HSG D
5,372	92	Weighted Average
1,452		27.03% Pervious Area
3,920		72.97% Impervious Area
3,920		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	84	0.0257	0.18		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 6S: South CDS Drainage

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

Runoff = 0.49 cfs @ 12.06 hrs, Volume= 0.033 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
2,295	98	Unconnected pavement, HSG C
1,375	74	>75% Grass cover, Good, HSG C
3,670	89	Weighted Average
1,375		37.47% Pervious Area
2,295		62.53% Impervious Area
2,295		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	35	0.0257	0.15		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 7S: West CDS Drainage

Runoff = 1.35 cfs @ 12.11 hrs, Volume= 0.099 af, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
5,410	98	Unconnected pavement, HSG C
3,675	74	>75% Grass cover, Good, HSG C
1,778	76	Woods/grass comb., Fair, HSG C
1,315	73	Woods, Fair, HSG C
12,178	85	Weighted Average
6,768		55.58% Pervious Area
5,410		44.42% Impervious Area
5,410		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"
2.1	147	0.0169	1.17	15.22	**Channel Flow, CF 1** Area= 13.0 sf Perim= 15.0' r= 0.87' n= 0.150 Sheet flow over Short Grass
7.6	197	Total			

Summary for Subcatchment 8S: West Drainage to Detention Pond #1

Runoff = 1.05 cfs @ 12.15 hrs, Volume= 0.081 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
2,209	98	Unconnected pavement, HSG C
1,570	74	>75% Grass cover, Good, HSG C
2,004	76	Woods/grass comb., Fair, HSG C
6,983	73	Woods, Fair, HSG C
12,766	78	Weighted Average, UI Adjusted CN = 76
10,557		82.70% Pervious Area
2,209		17.30% Impervious Area
2,209		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0450	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
1.4	107	0.0660	1.28		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
10.2	157	Total			

Summary for Subcatchment 9S: East Drainage to Detention Pond #1

Runoff = 0.91 cfs @ 12.14 hrs, Volume= 0.072 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,262	98	Unconnected pavement, HSG C
1,726	98	Unconnected roofs, HSG D
2,499	74	>75% Grass cover, Good, HSG C
1,263	80	>75% Grass cover, Good, HSG D
1,300	76	Woods/grass comb., Fair, HSG C
1,293	73	Woods, Fair, HSG C
9,343	83	Weighted Average
6,355		68.02% Pervious Area
2,988		31.98% Impervious Area
2,988		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0400	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
0.9	68	0.0200	1.29		**Sheet Flow, SF 2** Smooth surfaces n= 0.011 P2= 3.30"
10.1	118	Total			

Summary for Subcatchment 10S: West Parcel to Southern Stream

Runoff = 9.41 cfs @ 12.25 hrs, Volume= 0.887 af, Depth> 3.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,296	98	Unconnected roofs, HSG D
888	80	>75% Grass cover, Good, HSG D
5,846	76	Woods/grass comb., Fair, HSG C
128,279	73	Woods, Fair, HSG C
506	82	Woods/grass comb., Fair, HSG D
12,164	79	Woods, Fair, HSG D
148,979	74	Weighted Average
147,683		99.13% Pervious Area
1,296		0.87% Impervious Area
1,296		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0450	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
4.2	329	0.0668	1.29		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
5.1	201	0.0174	0.66		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
18.1	580	Total			

Summary for Subcatchment 11S: Collection to Detention Pond #2

Runoff = 0.80 cfs @ 12.12 hrs, Volume= 0.060 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,500	98	Unconnected pavement, HSG C
1,750	98	Unconnected roofs, HSG C
4,242	74	>75% Grass cover, Good, HSG C
138	76	Woods/grass comb., Fair, HSG C
7,630	84	Weighted Average
4,380		57.40% Pervious Area
3,250		42.60% Impervious Area
3,250		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	83	0.0184	0.16		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 12S: Collection to Detention Pond #3

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

Runoff = 0.71 cfs @ 12.06 hrs, Volume= 0.046 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
856	98	Unconnected pavement, HSG C
2,064	74	>75% Grass cover, Good, HSG C
1,024	98	Unconnected pavement, HSG D
277	80	>75% Grass cover, Good, HSG D
1,632	82	Woods/grass comb., Fair, HSG D
5,853	84	Weighted Average
3,973		67.88% Pervious Area
1,880		32.12% Impervious Area
1,880		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	65	0.0769	0.27		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.30"

Summary for Subcatchment 13S: Parcel Drainage to Stream Crossing #2

Runoff = 29.71 cfs @ 12.32 hrs, Volume= 3.128 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
8,770	98	Unconnected pavement, HSG D
3,360	98	Unconnected roofs, HSG D
113,731	82	Woods/grass comb., Fair, HSG D
227,724	79	Woods, Fair, HSG D
2,560	98	Unconnected pavement, HSG C
1,750	98	Unconnected roofs, HSG C
934	74	>75% Grass cover, Good, HSG C
29,979	76	Woods/grass comb., Fair, HSG C
65,934	73	Woods, Fair, HSG C
454,742	79	Weighted Average
438,302		96.38% Pervious Area
16,440		3.62% Impervious Area
16,440		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0900	0.13		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
8.5	639	0.0626	1.25		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
8.2	368	0.0222	0.74		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
23.4	1,057	Total			

Summary for Subcatchment 14S: East Parcel to Southern Stream

Runoff = 21.83 cfs @ 12.25 hrs, Volume= 2.052 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
6,598	98	Unconnected pavement, HSG C
7,000	98	Unconnected roofs, HSG C
13,708	74	>75% Grass cover, Good, HSG C
87,018	76	Woods/grass comb., Fair, HSG C
120,692	73	Woods, Fair, HSG C
478	98	Unconnected roofs, HSG D
572	80	>75% Grass cover, Good, HSG D
8,769	82	Woods/grass comb., Fair, HSG D
79,712	79	Woods, Fair, HSG D
324,547	77	Weighted Average, UI Adjusted CN = 76
310,471		95.66% Pervious Area
14,076		4.34% Impervious Area
14,076		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0400	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
4.0	288	0.0590	1.21		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
4.7	702	0.0189	2.52	251.50	**Channel Flow, SCF 2** Area= 100.0 sf Perim= 125.0' r= 0.80' n= 0.070 Sluggish weedy reaches w/pools
17.9	1,040	Total			

Summary for Subcatchment 15S: Cross-Street Drainage to Culvert Crossing South

Runoff = 35.55 cfs @ 12.37 hrs, Volume= 3.955 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
10,632	98	Paved parking, HSG D
21,714	36	Woods, Fair, HSG A
559,683	79	Woods, Fair, HSG D
592,029	78	Weighted Average
581,397		98.20% Pervious Area
10,632		1.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.0900	0.13		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	413	0.0532	1.15		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
14.1	522	0.0153	0.62		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
26.8	985	Total			

Summary for Reach 1R: Culvert Crossing to Stream Intersection

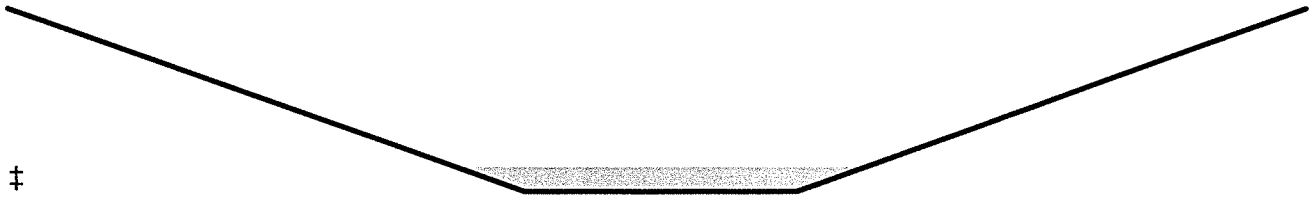
[79] Warning: Submerged Pond 10P Primary device # 1 OUTLET by 0.54'

Inflow Area = 13.591 ac, 1.80% Impervious, Inflow Depth > 3.49" for 25 YEAR STORM event
Inflow = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af
Outflow = 25.44 cfs @ 12.75 hrs, Volume= 3.926 af, Atten= 1%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.50 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 10.8 min

Peak Storage= 7,117 cf @ 12.67 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 4.00' Flow Area= 172.0 sf, Capacity= 1,312.11 cfs

15.00' x 4.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 7.0 '/' Top Width= 71.00'
Length= 698.0' Slope= 0.0401 '/'
Inlet Invert= 172.00', Outlet Invert= 144.00'



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Summary for Reach 5R: Reach from Detention Pond #1

[81] Warning: Exceeded Pond 7P by 1.00' @ 5.00 hrs

Inflow Area = 0.508 ac, 23.51% Impervious, Inflow Depth > 3.58" for 25 YEAR STORM event
Inflow = 1.76 cfs @ 12.21 hrs, Volume= 0.152 af
Outflow = 1.67 cfs @ 12.32 hrs, Volume= 0.151 af, Atten= 5%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.08 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 10.9 min

Peak Storage= 387 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 194.65 cfs

10.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 247.0' Slope= 0.0364 '/'
Inlet Invert= 143.00', Outlet Invert= 134.00'

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Summary for Reach 6R: Reach from Stream Crossing #1

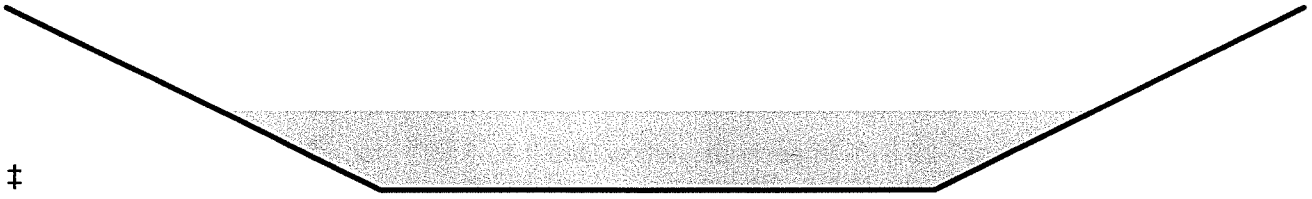
[79] Warning: Submerged Pond 8P Primary device # 1 OUTLET by 0.87'

Inflow Area = 20.612 ac, 6.00% Impervious, Inflow Depth > 3.64" for 25 YEAR STORM event
Inflow = 36.01 cfs @ 12.16 hrs, Volume= 6.249 af
Outflow = 34.26 cfs @ 12.32 hrs, Volume= 6.210 af, Atten= 5%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.03 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 10.8 min

Peak Storage= 9,243 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 2.00' Flow Area= 50.0 sf, Capacity= 161.31 cfs

15.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 5.0 '/' Top Width= 35.00'
Length= 549.0' Slope= 0.0146 '/'
Inlet Invert= 142.00', Outlet Invert= 134.00'



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Summary for Reach 7R: Reach from Stream Crossing #2

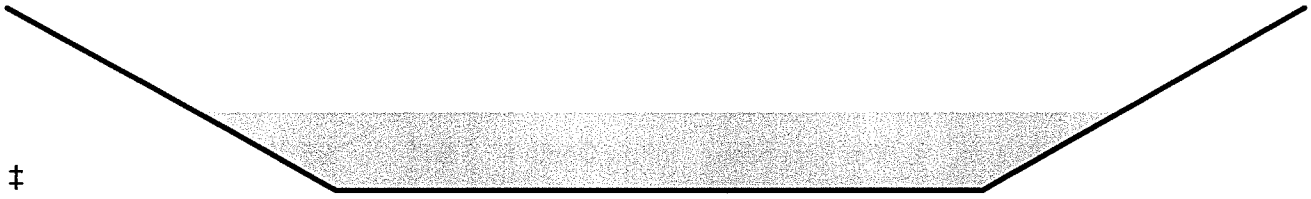
[79] Warning: Submerged Pond 9P Primary device # 1 INLET by 0.35'

Inflow Area = 10.439 ac, 3.62% Impervious, Inflow Depth > 3.59" for 25 YEAR STORM event
Inflow = 28.01 cfs @ 12.40 hrs, Volume= 3.126 af
Outflow = 27.78 cfs @ 12.49 hrs, Volume= 3.111 af, Atten= 1%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 8.1 min

Peak Storage= 4,945 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 129.07 cfs

10.00' x 2.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 2.5 '/' Top Width= 20.00'
Length= 477.0' Slope= 0.0252 '/'
Inlet Invert= 146.00', Outlet Invert= 134.00'



‡

Summary for Pond 1P: East Collection to Culvert

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.123 ac, 72.97% Impervious, Inflow Depth > 4.97" for 25 YEAR STORM event
Inflow = 0.67 cfs @ 12.11 hrs, Volume= 0.051 af
Outflow = 0.67 cfs @ 12.11 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.2 min
Primary = 0.67 cfs @ 12.11 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 151.41' @ 12.11 hrs Surf.Area= 26 sf Storage= 8 cf

Plug-Flow detention time= 0.5 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (751.6 - 751.3)

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	10	0	0
152.00	50	30	30
153.00	250	150	180
154.00	800	525	705

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	**15.0" Round CMP_Round 15"** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.00' / 150.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.65 cfs @ 12.11 hrs HW=151.41' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 0.65 cfs @ 2.80 fps)

Summary for Pond 2P: South Collection to Culvert

[79] Warning: Submerged Pond 5P Primary device # 1 INLET by 0.42'

Inflow Area = 0.364 ac, 48.62% Impervious, Inflow Depth > 4.29" for 25 YEAR STORM event
Inflow = 1.63 cfs @ 12.11 hrs, Volume= 0.130 af
Outflow = 1.57 cfs @ 12.15 hrs, Volume= 0.130 af, Atten= 4%, Lag= 2.2 min
Primary = 1.57 cfs @ 12.15 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 151.67' @ 12.15 hrs Surf.Area= 498 sf Storage= 251 cf

Plug-Flow detention time= 5.6 min calculated for 0.129 af (99% of inflow)
Center-of-Mass det. time= 4.0 min (775.2 - 771.2)

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	2,475 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	250	0	0
152.00	620	435	435
153.00	1,030	825	1,260
154.00	1,400	1,215	2,475

Device	Routing	Invert	Outlet Devices
#1	Primary	151.00'	**15.0" Round CMP_Round 15"** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.00' / 150.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.56 cfs @ 12.15 hrs HW=151.67' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 1.56 cfs @ 3.38 fps)

Summary for Pond 3P: Detention Pond #2

[81] Warning: Exceeded Pond CB3 by 0.62' @ 12.30 hrs

Inflow Area = 2.836 ac, 25.26% Impervious, Inflow Depth > 4.07" for 25 YEAR STORM event
Inflow = 11.49 cfs @ 12.15 hrs, Volume= 0.962 af
Outflow = 9.16 cfs @ 12.25 hrs, Volume= 0.955 af, Atten= 20%, Lag= 6.3 min
Primary = 9.16 cfs @ 12.25 hrs, Volume= 0.955 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 152.85' @ 12.25 hrs Surf.Area= 2,033 sf Storage= 3,755 cf

Plug-Flow detention time= 8.8 min calculated for 0.952 af (99% of inflow)
Center-of-Mass det. time= 6.1 min (781.4 - 775.3)

Volume	Invert	Avail.Storage	Storage Description
#1	149.50'	6,125 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.50	500	0	0
152.00	1,350	2,313	2,313
153.00	2,150	1,750	4,063
153.75	3,350	2,063	6,125

Device	Routing	Invert	Outlet Devices
#1	Primary	149.75'	**15.0" Round CMP_Round 15"** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 149.75' / 149.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.15 cfs @ 12.25 hrs HW=152.85' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 9.15 cfs @ 7.46 fps)

Summary for Pond 4P: Detention Pond #3

Inflow Area = 0.134 ac, 32.12% Impervious, Inflow Depth > 4.13" for 25 YEAR STORM event
Inflow = 0.71 cfs @ 12.06 hrs, Volume= 0.046 af
Outflow = 0.65 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 8%, Lag= 2.2 min
Primary = 0.65 cfs @ 12.10 hrs, Volume= 0.046 af
Secondary = 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= 148.43' @ 12.10 hrs Surf.Area= 325 sf Storage= 123 cf

Plug-Flow detention time= 8.4 min calculated for 0.046 af (99% of inflow)
Center-of-Mass det. time= 5.9 min (774.8 - 769.0)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	5,970 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	250	0	0
150.00	600	850	850
152.00	1,100	1,700	2,550
154.00	2,320	3,420	5,970

Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	**12.0" Round CMP_Round 12"** L= 30.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 147.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	152.50'	**20.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.65 cfs @ 12.10 hrs HW=148.43' (Free Discharge)
↑—**1=CMP_Round 12"** (Barrel Controls 0.65 cfs @ 2.98 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=148.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: North Collection to Culvert

Inflow Area = 0.280 ac, 44.42% Impervious, Inflow Depth > 4.23" for 25 YEAR STORM event
Inflow = 1.35 cfs @ 12.11 hrs, Volume= 0.099 af
Outflow = 1.28 cfs @ 12.14 hrs, Volume= 0.097 af, Atten= 5%, Lag= 1.9 min
Primary = 1.28 cfs @ 12.14 hrs, Volume= 0.097 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 151.90' @ 12.14 hrs Surf.Area= 370 sf Storage= 216 cf

Plug-Flow detention time= 11.9 min calculated for 0.097 af (99% of inflow)
Center-of-Mass det. time= 6.7 min (776.2 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	2,255 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.00	110	0	0
152.00	400	255	255
153.00	1,050	725	980
154.00	1,500	1,275	2,255

Device	Routing	Invert	Outlet Devices
#1	Primary	151.25'	**15.0" Round CMP_Round 15"** L= 30.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.25' / 151.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.26 cfs @ 12.14 hrs HW=151.89' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 1.26 cfs @ 2.89 fps)

Summary for Pond 6P: West Collection to Culvert

Inflow Area = 0.293 ac, 17.30% Impervious, Inflow Depth > 3.31" for 25 YEAR STORM event
Inflow = 1.05 cfs @ 12.15 hrs, Volume= 0.081 af
Outflow = 1.05 cfs @ 12.16 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.5 min
Primary = 1.05 cfs @ 12.16 hrs, Volume= 0.081 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 145.50' @ 12.16 hrs Surf.Area= 116 sf Storage= 42 cf

Plug-Flow detention time= 1.4 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (791.9 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	145.00'	1,425 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.00	50	0	0
146.00	180	115	115
148.00	470	650	765
149.00	850	660	1,425

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	**15.0" Round CMP_Round 15"** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.04 cfs @ 12.16 hrs HW=145.50' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 1.04 cfs @ 3.33 fps)

Summary for Pond 7P: Detention Pond #1

Inflow Area = 0.508 ac, 23.51% Impervious, Inflow Depth > 3.61" for 25 YEAR STORM event
Inflow = 1.96 cfs @ 12.15 hrs, Volume= 0.153 af
Outflow = 1.76 cfs @ 12.21 hrs, Volume= 0.152 af, Atten= 10%, Lag= 3.5 min
Primary = 1.76 cfs @ 12.21 hrs, Volume= 0.152 af
Secondary = 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= 142.78' @ 12.21 hrs Surf.Area= 811 sf Storage= 510 cf

Plug-Flow detention time= 10.0 min calculated for 0.151 af (99% of inflow)
Center-of-Mass det. time= 6.9 min (791.5 - 784.5)

Volume	Invert	Avail.Storage	Storage Description
#1	142.00'	2,550 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
142.00	500	0	0
144.00	1,300	1,800	1,800
144.50	1,700	750	2,550

Device	Routing	Invert	Outlet Devices
#1	Primary	142.00'	**12.0" Round CMP_Round 12"** L= 30.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 141.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	144.00'	**20.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.74 cfs @ 12.21 hrs HW=142.77' (Free Discharge)
↑—**1=CMP_Round 12"** (Barrel Controls 1.74 cfs @ 3.69 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=142.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 8P: Stream Crossing #1

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.50' @ 12.15 hrs

Inflow Area = 17.777 ac, 2.93% Impervious, Inflow Depth > 3.57" for 25 YEAR STORM event
Inflow = 27.97 cfs @ 12.70 hrs, Volume= 5.295 af
Outflow = 27.96 cfs @ 12.71 hrs, Volume= 5.293 af, Atten= 0%, Lag= 0.9 min
Primary = 27.96 cfs @ 12.71 hrs, Volume= 5.293 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 144.88' @ 12.71 hrs Surf.Area= 1,195 sf Storage= 1,166 cf

Plug-Flow detention time= 0.6 min calculated for 5.276 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (804.8 - 804.3)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	26,775 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.00	150	0	0
144.00	600	375	375
146.00	1,950	2,550	2,925
148.00	4,900	6,850	9,775
150.00	12,100	17,000	26,775

Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**48.0" Round CMP_Round 48" w/ 12.0" inside fill** L= 65.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.00' / 141.00' S= 0.0154 '/' Cc= 0.900 n= 0.030 Stream, clean & straight, Flow Area= 10.11 sf

Primary OutFlow Max=27.95 cfs @ 12.71 hrs HW=144.88' (Free Discharge)
↑—**1=CMP_Round 48"** (Barrel Controls 27.95 cfs @ 5.12 fps)

Summary for Pond 9P: Stream Crossing #2

Inflow Area = 10.439 ac, 3.62% Impervious, Inflow Depth > 3.60" for 25 YEAR STORM event
Inflow = 29.71 cfs @ 12.32 hrs, Volume= 3.128 af
Outflow = 28.01 cfs @ 12.40 hrs, Volume= 3.126 af, Atten= 6%, Lag= 4.8 min
Primary = 28.01 cfs @ 12.40 hrs, Volume= 3.126 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 149.78' @ 12.40 hrs Surf.Area= 2,749 sf Storage= 3,859 cf

Plug-Flow detention time= 1.3 min calculated for 3.116 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (796.6 - 795.5)

Volume	Invert	Avail.Storage	Storage Description
#1	146.50'	18,100 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.50	250	0	0
148.00	750	750	750
150.00	3,000	3,750	4,500
152.00	10,600	13,600	18,100

Device	Routing	Invert	Outlet Devices
#1	Primary	146.50'	**36.0" Round CMP_Round 36" w/ 12.0" inside fill** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.50' / 145.00' S= 0.0125 '/' Cc= 0.900 n= 0.030 Stream, clean & straight, Flow Area= 5.01 sf

Primary OutFlow Max=28.01 cfs @ 12.40 hrs HW=149.78' (Free Discharge)
↑—**1=CMP_Round 36"** (Barrel Controls 28.01 cfs @ 5.59 fps)

Summary for Pond 10P: 24" CMP Culverted Crossing

Inflow Area = 13.591 ac, 1.80% Impervious, Inflow Depth > 3.49" for 25 YEAR STORM event
Inflow = 35.55 cfs @ 12.37 hrs, Volume= 3.955 af
Outflow = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af, Atten= 28%, Lag= 14.5 min
Primary = 25.57 cfs @ 12.61 hrs, Volume= 3.953 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.86' @ 12.61 hrs Surf.Area= 12,229 sf Storage= 17,327 cf

Plug-Flow detention time= 4.5 min calculated for 3.940 af (100% of inflow)
Center-of-Mass det. time= 4.3 min (804.5 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	34,600 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	100	0	0
174.00	500	300	300
176.00	7,900	8,400	8,700
178.00	18,000	25,900	34,600

Device	Routing	Invert	Outlet Devices
#1	Primary	173.00'	**24.0" Round CMP_Round 24"** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.00' / 172.00' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=25.55 cfs @ 12.61 hrs HW=176.85' (Free Discharge)
1=CMP_Round 24" (Inlet Controls 25.55 cfs @ 8.13 fps)

Summary for Pond 11P: West Culvert to CB#1

Inflow Area = 0.787 ac, 11.83% Impervious, Inflow Depth > 3.81" for 25 YEAR STORM event
Inflow = 3.26 cfs @ 12.13 hrs, Volume= 0.250 af
Outflow = 3.18 cfs @ 12.16 hrs, Volume= 0.249 af, Atten= 3%, Lag= 1.5 min
Primary = 3.18 cfs @ 12.16 hrs, Volume= 0.249 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 153.42' @ 12.16 hrs Surf.Area= 452 sf Storage= 262 cf

Plug-Flow detention time= 3.7 min calculated for 0.249 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (782.4 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1	152.00'	2,275 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
152.00	50	0	0
153.00	200	125	125
154.00	800	500	625
155.00	2,500	1,650	2,275

Device	Routing	Invert	Outlet Devices
#1	Primary	152.35'	**15.0" Round CMP_Round 15"** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.35' / 152.10' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.14 cfs @ 12.16 hrs HW=153.41' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 3.14 cfs @ 3.81 fps)

Summary for Pond 12P: East Culvert to CB#1

Inflow Area = 1.386 ac, 20.32% Impervious, Inflow Depth > 4.13" for 25 YEAR STORM event
Inflow = 6.53 cfs @ 12.11 hrs, Volume= 0.477 af
Outflow = 5.99 cfs @ 12.15 hrs, Volume= 0.476 af, Atten= 8%, Lag= 2.3 min
Primary = 5.99 cfs @ 12.15 hrs, Volume= 0.476 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 154.16' @ 12.15 hrs Surf.Area= 1,032 sf Storage= 464 cf

Plug-Flow detention time= 2.1 min calculated for 0.476 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (773.4 - 772.0)

Volume	Invert	Avail.Storage	Storage Description
#1	152.00'	2,775 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
152.00	50	0	0
153.00	150	100	100
154.00	350	250	350
155.00	4,500	2,425	2,775

Device	Routing	Invert	Outlet Devices
#1	Primary	152.35'	**15.0" Round CMP_Round 15"** L= 30.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.35' / 152.10' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.97 cfs @ 12.15 hrs HW=154.16' (Free Discharge)
↑—**1=CMP_Round 15"** (Barrel Controls 5.97 cfs @ 4.87 fps)

Summary for Pond CB1: CB #1

[81] Warning: Exceeded Pond 11P by 3.13' @ 12.15 hrs
[81] Warning: Exceeded Pond 12P by 2.38' @ 12.15 hrs

Inflow Area = 2.173 ac, 17.24% Impervious, Inflow Depth > 4.00" for 25 YEAR STORM event
Inflow = 9.17 cfs @ 12.15 hrs, Volume= 0.725 af
Outflow = 9.13 cfs @ 12.16 hrs, Volume= 0.725 af, Atten= 0%, Lag= 0.2 min
Primary = 9.13 cfs @ 12.16 hrs, Volume= 0.725 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 156.55' @ 12.16 hrs Surf.Area= 13 sf Storage= 66 cf

Plug-Flow detention time= 0.3 min calculated for 0.725 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (776.6 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	151.50'	70 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.50	13	0	0
156.90	13	70	70

Device	Routing	Invert	Outlet Devices
#1	Primary	152.00'	**15.0" Round CMP_Round 15"** L= 135.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 152.00' / 151.30' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.08 cfs @ 12.16 hrs HW=156.50' (Free Discharge)
1=CMP_Round 15" (Barrel Controls 9.08 cfs @ 7.40 fps)

Summary for Pond CB2: CB #2

[88] Warning: Qout>Qin may require Finer Routing>1
[79] Warning: Submerged Pond CB1 Primary device # 1 INLET by 1.55'

Inflow Area = 2.173 ac, 17.24% Impervious, Inflow Depth > 4.00" for 25 YEAR STORM event
Inflow = 9.13 cfs @ 12.16 hrs, Volume= 0.725 af
Outflow = 9.16 cfs @ 12.16 hrs, Volume= 0.725 af, Atten= 0%, Lag= 0.0 min
Primary = 9.16 cfs @ 12.16 hrs, Volume= 0.725 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 153.55' @ 12.16 hrs Surf.Area= 13 sf Storage= 36 cf

Plug-Flow detention time= 0.3 min calculated for 0.725 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (776.8 - 776.6)

Volume	Invert	Avail.Storage	Storage Description
#1	150.75'	54 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.75	13	0	0
154.90	13	54	54

Device	Routing	Invert	Outlet Devices
#1	Primary	151.20'	**18.0" Round CMP_Round 18"** L= 95.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.20' / 150.70' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.09 cfs @ 12.16 hrs HW=153.53' (Free Discharge)
↑**1=CMP_Round 18"** (Barrel Controls 9.09 cfs @ 5.15 fps)

Summary for Pond CB3: CB #3

[88] Warning: Qout>Qin may require Finer Routing>1
[81] Warning: Exceeded Pond 1P by 2.17' @ 12.15 hrs
[81] Warning: Exceeded Pond 2P by 1.89' @ 12.15 hrs
[81] Warning: Exceeded Pond CB2 by 0.11' @ 12.10 hrs

Inflow Area = 2.661 ac, 24.12% Impervious, Inflow Depth > 4.08" for 25 YEAR STORM event
Inflow = 11.32 cfs @ 12.15 hrs, Volume= 0.905 af
Outflow = 11.33 cfs @ 12.15 hrs, Volume= 0.905 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.61 cfs @ 12.15 hrs, Volume= 0.003 af
Primary = 10.72 cfs @ 12.15 hrs, Volume= 0.902 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 153.56' @ 12.15 hrs Surf.Area= 13 sf Storage= 46 cf

Plug-Flow detention time= 0.3 min calculated for 0.902 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (775.3 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1	150.00'	57 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
150.00	13	0	0
154.40	13	57	57

Device	Routing	Invert	Outlet Devices
#1	Primary	150.60'	**18.0" Round CMP_Round 18"** L= 115.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 150.60' / 150.00' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	153.40'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50
Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.58 cfs @ 12.15 hrs HW=153.56' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 0.94 fps)

Primary OutFlow Max=10.71 cfs @ 12.15 hrs HW=153.55' (Free Discharge)
↑—**1=CMP_Round 18"** (Barrel Controls 10.71 cfs @ 6.06 fps)

Summary for Link AP1: Culvert Crossing North

Inflow Area = 2.768 ac, 8.79% Impervious, Inflow Depth > 3.50" for 25 YEAR STORM event
Inflow = 7.85 cfs @ 12.31 hrs, Volume= 0.807 af
Primary = 7.85 cfs @ 12.31 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: Southern Stream Intersection

Inflow Area = 42.430 ac, 4.92% Impervious, Inflow Depth > 3.51" for 25 YEAR STORM event
Inflow = 87.66 cfs @ 12.32 hrs, Volume= 12.410 af
Primary = 87.66 cfs @ 12.32 hrs, Volume= 12.410 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

OPERATION AND MAINTENANCE PROGRAM

ATTAR
ENGINEERING, INC
CIVIL • STRUCTURAL • MARINE

FOUR SEASONS FARM
BRANCH ROAD (RT. 9A), WELLS, MAINE

OPERATION AND MAINTENANCE PROGRAM
STORMWATER MANAGEMENT BMP's

The proposed Four Seasons Farm Subdivision located on Branch Road (Rt. 9A) in Wells, Maine contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater. These BMP's consist of stormwater detention areas, swales, buffer areas and culverts. All components should be inspected quarterly, and after every significant rain event of 1" in any 24-hour period.

Stormwater Detention Areas
The Stormwater Detention Areas shall be inspected to ensure that there is no channeling of stormwater and that no debris accumulates within the detention areas. The vegetative cover conditions shall be maintained. The inlets and outlets shall be inspected for erosion and any evidence of debris that could clog the outlet structures and culverts. Emergency spillways and level spreaders shall be inspected for any evidence of rilling and channeling and shall be maintained to promote a level, sheet-flow discharge.

Swales
All swales should be inspected for accumulation of debris, which could adversely affect the function of this BMP. These areas should also be maintained to have gradual slopes, which prevents channeling of stormwater and erosion of the bottom and sides of the swales.

Culverts
Culvert inlets and outlets should be inspected for debris, which could clog the BMP. Additionally, the placement of rip-rap should be inspected to ensure that all areas remain smooth and no areas exhibit erosion in the form of rills or gullies.

Wooded Buffer Areas
All wooded buffer areas shall be maintained in their natural, undisturbed condition. The forest duff layer shall be maintained and all debris shall be removed from the area.

Snow Removal
Snow shall be stockpiled in the approved snow storage areas only. Snow shall never be stockpiled in wetland areas. Additionally, a mostly sand mix (reduced salt) could be considered during winter months to prevent excessive salt from leaching to the wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

Record Keeping
Routine maintenance and inspections will be accomplished by the property owner, or homeowner's association. It is recommended that all inspections accomplished in accordance with this program be documented on the attached Inspection & Maintenance Log.

INSPECTION & MAINTENANCE LOG
FOUR SEASONS FARM – BRANCH ROAD (RT. 9A), WELLS, ME

Date	Purpose[1]	Maintenance Done[2]	By

1. Purpose is the reason for the inspection. For example; "quarterly' or "after a significant rain event."
2. Maintenance Done means any maintenance required as a result of the inspection, such as trash removal or re-seeding of areas.

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