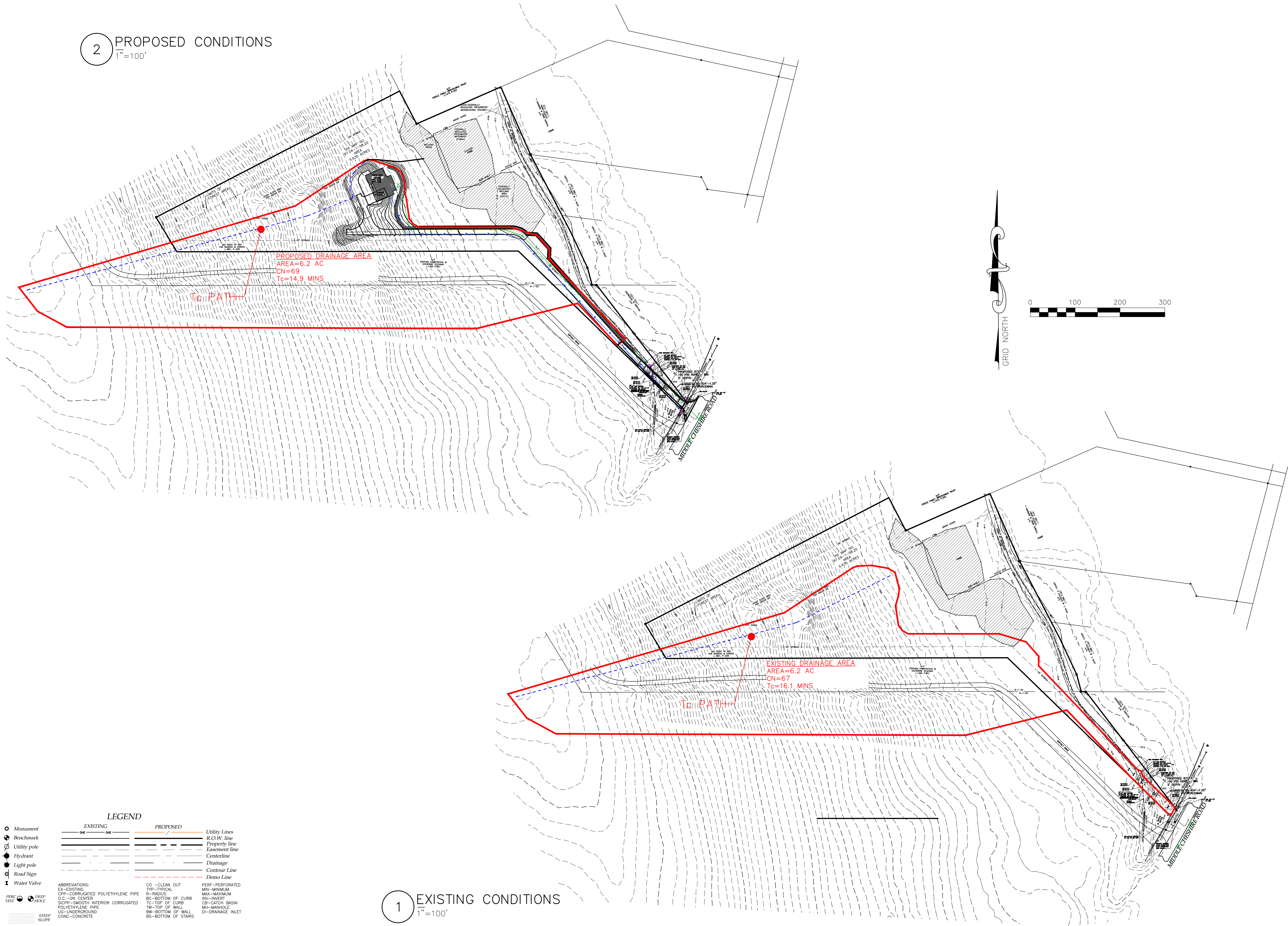
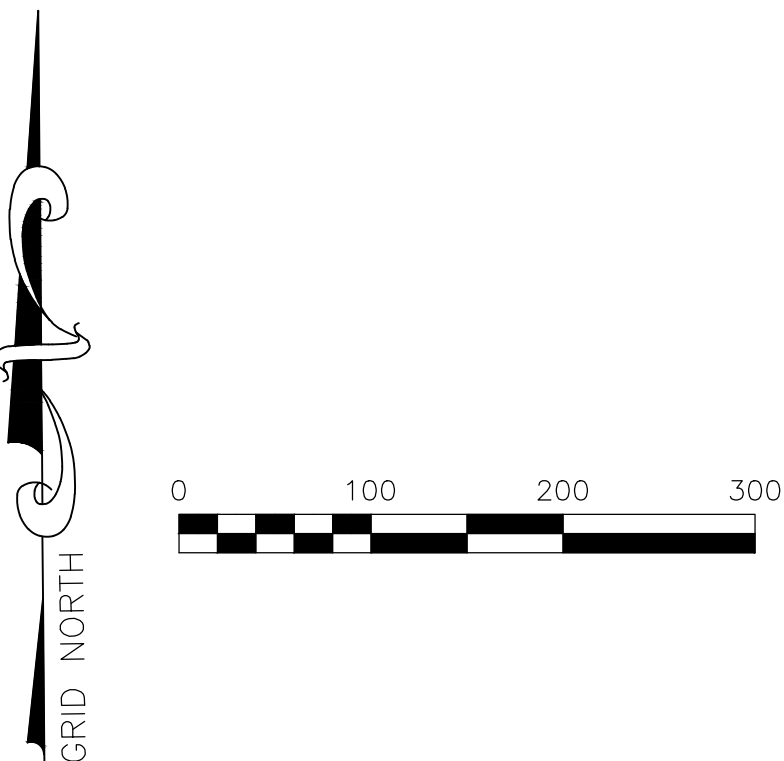




2 PROPOSED CONDITIONS
1"=100'

1 EXISTING CONDITIONS
1"=100'



LEGEND

Monument	EXISTING	PROPOSED	Utility Lines
Benchmark	R.O.W. line	Property line	R.O.W. line
Utility pole	Easement line	Centerline	Easement line
Hydrant	Drainage	Contour line	Drainage
Light pole	Demo line		Contour line
Road sign			Demo line
Water Valve			

ABBREVIATIONS:

EX-EXISTING	CO - CLEAN OUT	PERF - PERFORATED
CPP - CORRUGATED POLYETHYLENE PIPE	TOP - TYPICAL	MIN - MINIMUM
O.C. - ON CENTER	R - RADIUS	MAX - MAXIMUM
SICPP - SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE	BC - BOTTOM OF CURB	IN - INVERT
US - UNDERGROUND	TC - TOP OF CURB	CB - CATCH BASIN
CONC - CONCRETE	TW - TOP OF WALL	MH - MANHOLE
	BF - BOTTOM OF WALL	DI - DRAINAGE INLET
	BS - BOTTOM OF STAIRS	

PERC TEST DEEP HOLE

STEEP SLOPE

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS AND APPROVALS

NO.	DATE	DESCRIPTION OF REVISION OR APPROVAL	BY

NEW RESIDENCE SITE PLAN FOR:
RICHARD NELSON
SHOWING LAND IN:
MIDDLE CHESHIRE ROAD
TOWN OF CANANDAIGUA

COUNTY OF ONTARIO

STATE OF NEW YORK

DRAWING TITLE:
FIGURE 02

DRAWN BY:	JWJ
DESIGNED BY:	JWJ
CHECKED BY:	BAM
SCALE:	AS NOTED
JOB NO.:	22-182
DATE:	11/18/2022
TAX MAP#:	97.04-1-SR.200

MarksEngineering

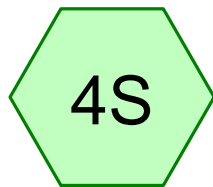
47 BEEMAN ST.
CANANDAIGUA, NY 14424
www.marksengineering.com bmarks@marksengineering.com

Phone: 585-905-5360
Fax: 585-485-6205

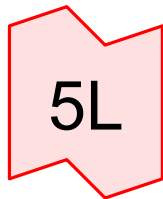
STATE OF NEW YORK
BENJAMIN A. MARKS
Professional Engineer
No. 093182
STAMP

STAMP

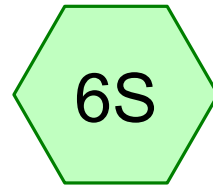
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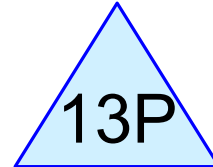
Existing Drainage



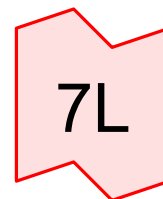
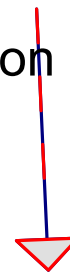
Existing Site discharge



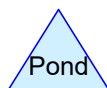
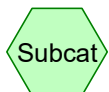
Proposed drainage



Infiltration Trench



Proposed Site discharge



Routing Diagram for 22-182 HydroCAD

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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.330	80	>75% Grass cover, Good, HSG D (6S)
3.200	58	Meadow, non-grazed, HSG B (4S, 6S)
2.600	78	Meadow, non-grazed, HSG D (4S, 6S)
0.840	98	Paved parking, HSG D (4S, 6S)
3.200	55	Woods, Good, HSG B (4S, 6S)
2.230	77	Woods, Good, HSG D (4S, 6S)
12.400	68	TOTAL AREA

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Page 3

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
6.400	HSG B	4S, 6S
0.000	HSG C	
6.000	HSG D	4S, 6S
0.000	Other	
12.400		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.330	0.000	0.330	>75% Grass cover, Good	6S
0.000	3.200	0.000	2.600	0.000	5.800	Meadow, non-grazed	4S, 6S
0.000	0.000	0.000	0.840	0.000	0.840	Paved parking	4S, 6S
0.000	3.200	0.000	2.230	0.000	5.430	Woods, Good	4S, 6S
0.000	6.400	0.000	6.000	0.000	12.400	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	13P	913.00	912.80	40.0	0.0050	0.013	4.0	0.0	0.0

22-182 HydroCAD

Type II 24-hr 1-yr Rainfall=1.90"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: Existing Drainage

Runoff Area=6.200 ac 3.55% Impervious Runoff Depth=0.14"
Flow Length=875' Tc=16.1 min CN=67 Runoff=0.40 cfs 0.074 af

Subcatchment6S: Proposed drainage

Runoff Area=6.200 ac 10.00% Impervious Runoff Depth=0.18"
Flow Length=839' Tc=14.9 min CN=69 Runoff=0.74 cfs 0.094 af

Pond 13P: Infiltration Trench

Peak Elev=913.13' Storage=2,003 cf Inflow=0.74 cfs 0.094 af
Discarded=0.04 cfs 0.040 af Primary=0.03 cfs 0.015 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.054 af

Link 5L: Existing Site discharge

Inflow=0.40 cfs 0.074 af
Primary=0.40 cfs 0.074 af

Link 7L: Proposed Site discharge

Inflow=0.03 cfs 0.015 af
Primary=0.03 cfs 0.015 af

Total Runoff Area = 12.400 ac Runoff Volume = 0.168 af Average Runoff Depth = 0.16"
93.23% Pervious = 11.560 ac 6.77% Impervious = 0.840 ac

22-182 HydroCAD

Type II 24-hr 1-yr Rainfall=1.90"

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Summary for Subcatchment 4S: Exisitng Drainage

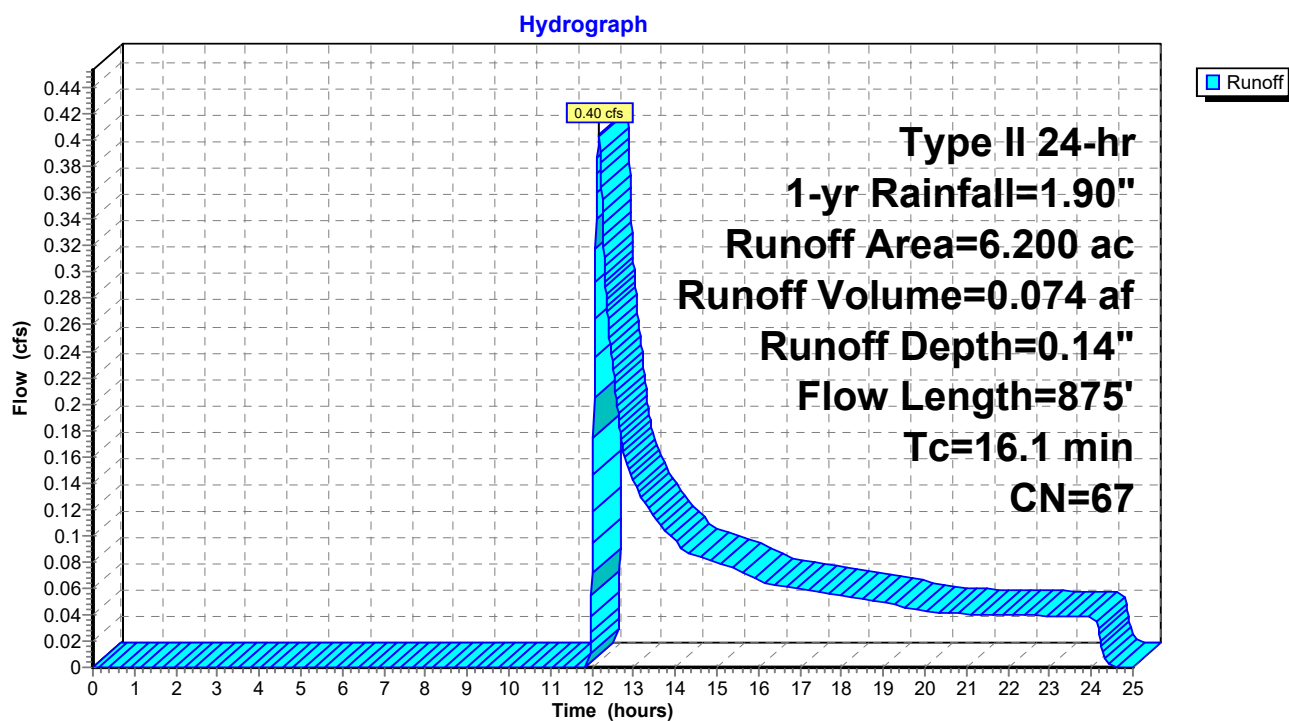
Runoff = 0.40 cfs @ 12.17 hrs, Volume= 0.074 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=1.90"

Area (ac)	CN	Description
1.300	78	Meadow, non-grazed, HSG D
1.600	58	Meadow, non-grazed, HSG B
1.600	55	Woods, Good, HSG B
1.480	77	Woods, Good, HSG D
0.220	98	Paved parking, HSG D
6.200	67	Weighted Average
5.980		96.45% Pervious Area
0.220		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.1300	0.20		Sheet Flow, Sheet Flow - meadow Grass: Dense n= 0.240 P2= 2.19"
0.2	30	0.1500	2.71		Shallow Concentrated Flow, Shallow Concentrated - Meadow Short Grass Pasture Kv= 7.0 fps
4.8	480	0.1100	1.66		Shallow Concentrated Flow, Shallow Concentrated - Woods Woodland Kv= 5.0 fps
1.1	60	0.0350	0.94		Shallow Concentrated Flow, Shallow Concentrated-Woods Woodland Kv= 5.0 fps
0.1	25	0.4000	3.16		Shallow Concentrated Flow, Shallow Cocentrated - Woods Woodland Kv= 5.0 fps
1.7	180	0.1200	1.73		Shallow Concentrated Flow, Shallow Concentrated - Woods Woodland Kv= 5.0 fps
16.1	875	Total			

Subcatchment 4S: Existing Drainage



22-182 HydroCAD

Type II 24-hr 1-yr Rainfall=1.90"

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Summary for Subcatchment 6S: Proposed drainage

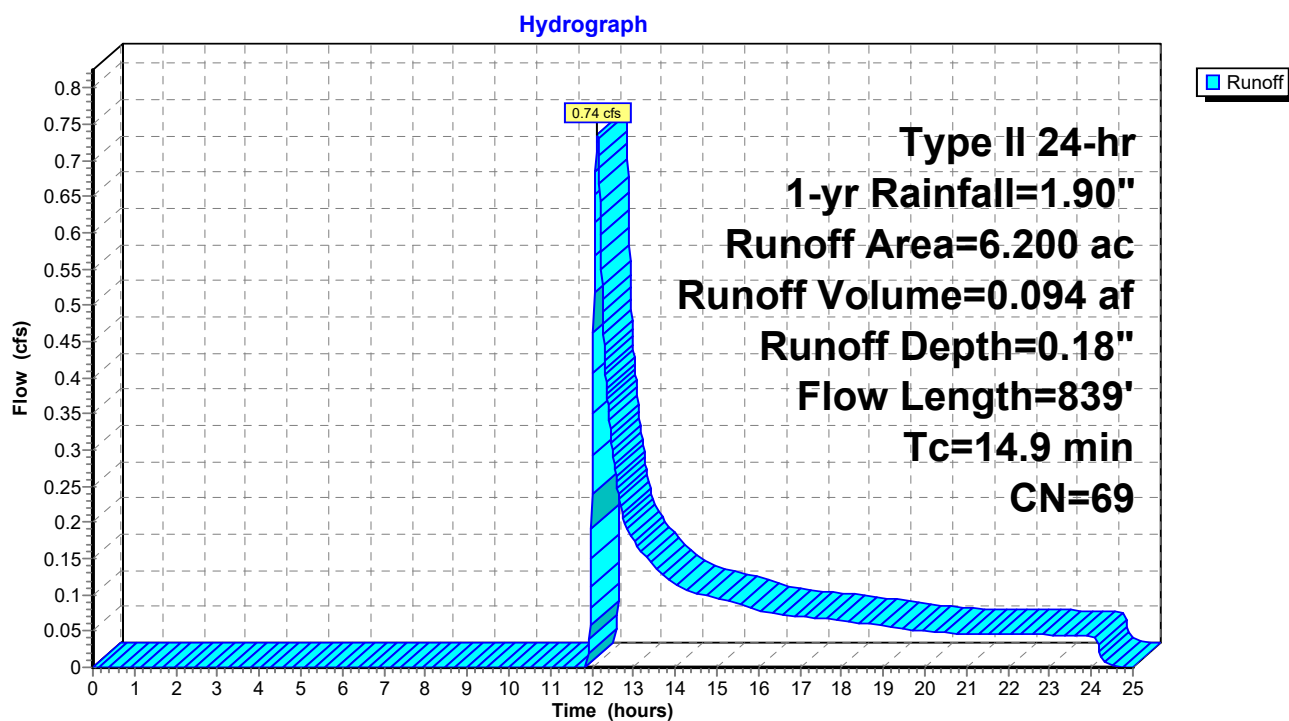
Runoff = 0.74 cfs @ 12.13 hrs, Volume= 0.094 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=1.90"

Area (ac)	CN	Description
1.600	55	Woods, Good, HSG B
1.600	58	Meadow, non-grazed, HSG B
1.300	78	Meadow, non-grazed, HSG D
0.620	98	Paved parking, HSG D
0.330	80	>75% Grass cover, Good, HSG D
0.750	77	Woods, Good, HSG D
6.200	69	Weighted Average
5.580		90.00% Pervious Area
0.620		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.1300	0.20		Sheet Flow, Shet Flow - Meadow Grass: Dense n= 0.240 P2= 2.19"
0.2	30	0.1500	2.71		Shallow Concentrated Flow, Shallow Concentrated - Meadow Short Grass Pasture Kv= 7.0 fps
4.8	480	0.1100	1.66		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
1.1	60	0.0350	0.94		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.1	24	0.4000	3.16		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.4	45	0.1700	2.06		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.1	55	0.0200	6.41	22.43	Channel Flow, CHannel Flow Area= 3.5 sf Perim= 4.0' r= 0.88' n= 0.030 Earth, grassed & winding
0.0	45	0.1300	16.34	57.18	Channel Flow, Channel Flow Area= 3.5 sf Perim= 4.0' r= 0.88' n= 0.030 Earth, grassed & winding
14.9	839	Total			

Subcatchment 6S: Proposed drainage



22-182 HydroCAD

Type II 24-hr 1-yr Rainfall=1.90"

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Summary for Pond 13P: Infiltration Trench

Inflow Area = 6.200 ac, 10.00% Impervious, Inflow Depth = 0.18" for 1-yr event
 Inflow = 0.74 cfs @ 12.13 hrs, Volume= 0.094 af
 Outflow = 0.06 cfs @ 18.27 hrs, Volume= 0.054 af, Atten= 92%, Lag= 368.7 min
 Discarded = 0.04 cfs @ 18.27 hrs, Volume= 0.040 af
 Primary = 0.03 cfs @ 18.27 hrs, Volume= 0.015 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Peak Elev= 913.13' @ 18.27 hrs Surf.Area= 3,206 sf Storage= 2,003 cf

Plug-Flow detention time= 338.4 min calculated for 0.054 af (58% of inflow)
 Center-of-Mass det. time= 179.8 min (1,128.5 - 948.6)

Volume	Invert	Avail.Storage	Storage Description
#1	913.00'	69 cf	4.0" Round 4" infiltration Pipe L= 795.0' S= 0.0140 '/'
#2	912.50'	8,010 cf	Infiltration Trench (Prismatic) Listed below (Recalc)
		8,079 cf	Total Available Storage

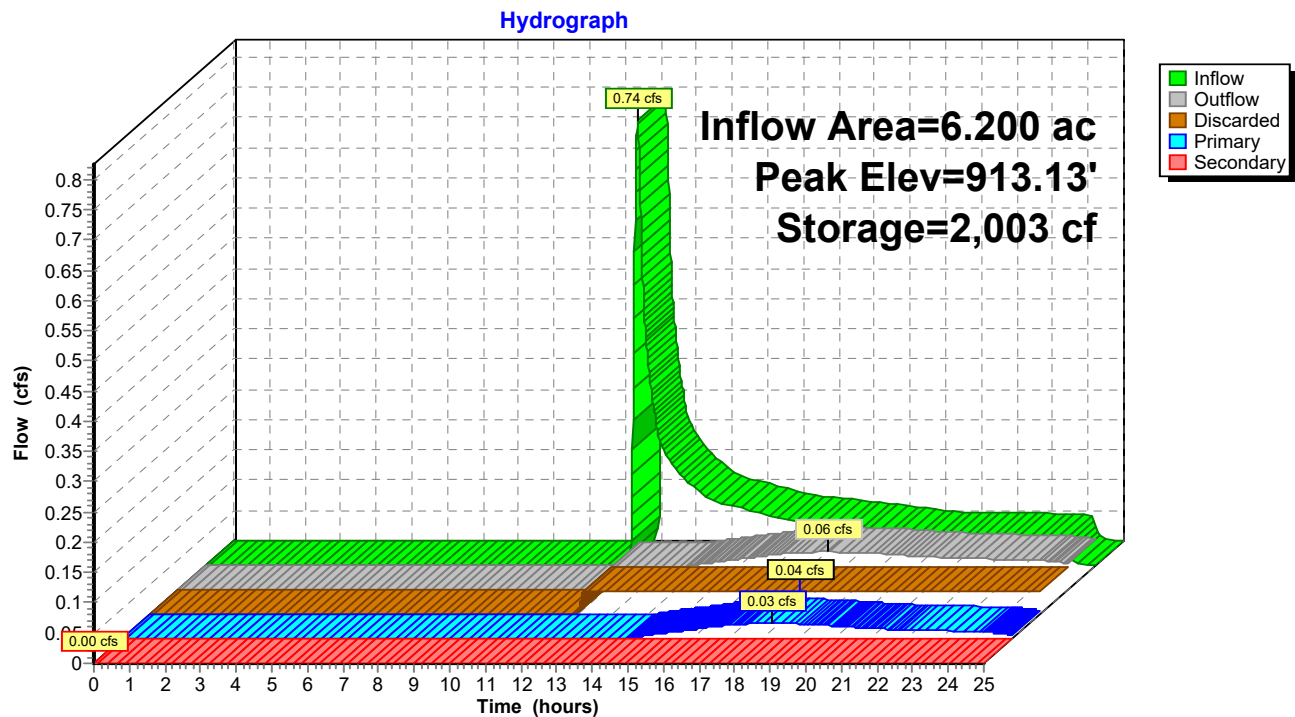
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.50	3,204	0	0
915.00	3,204	8,010	8,010

Device	Routing	Invert	Outlet Devices
#1	Discarded	912.50'	0.500 in/hr Exfiltration over Surface area
#2	Primary	913.00'	4.0" Round 4" outlet culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 913.00' / 912.80' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#3	Secondary	915.50'	3.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.04 cfs @ 18.27 hrs HW=913.13' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.02 cfs @ 18.27 hrs HW=913.13' (Free Discharge)
 ↑ **2=4" outlet culvert** (Barrel Controls 0.02 cfs @ 1.13 fps)

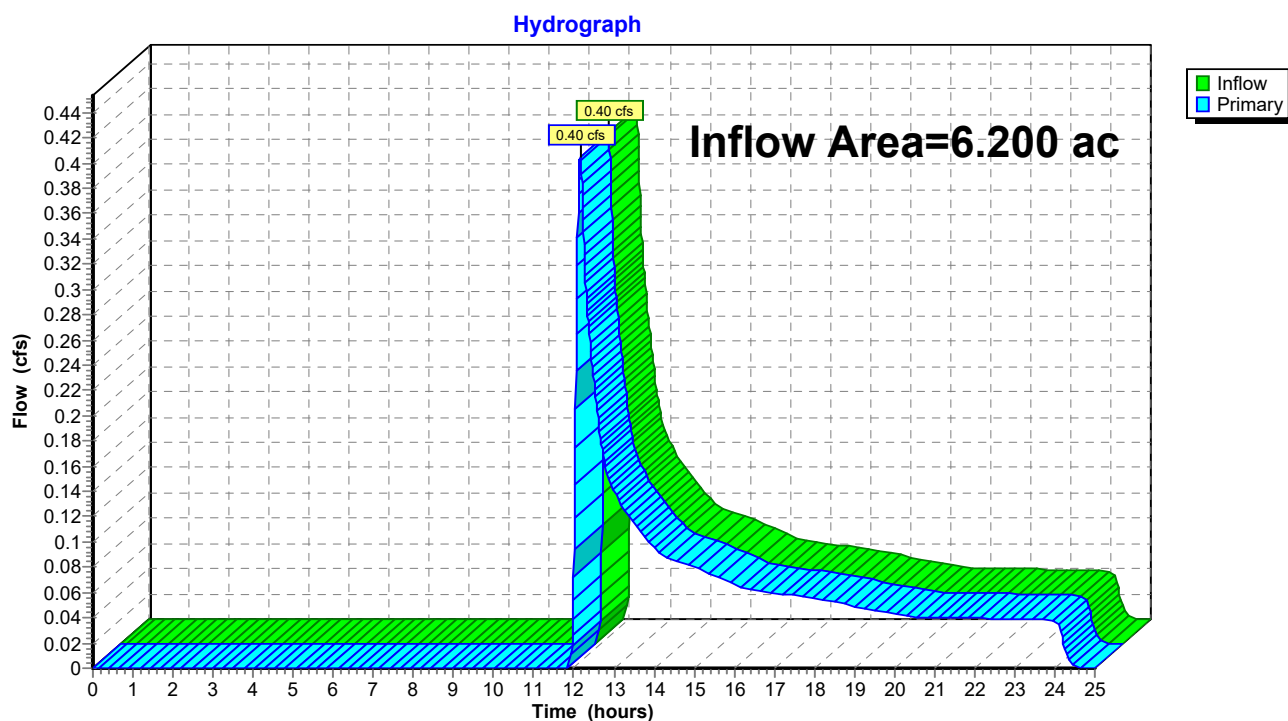
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=912.50' (Free Discharge)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13P: Infiltration Trench

Summary for Link 5L: Existing Site discharge

Inflow Area = 6.200 ac, 3.55% Impervious, Inflow Depth = 0.14" for 1-yr event
Inflow = 0.40 cfs @ 12.17 hrs, Volume= 0.074 af
Primary = 0.40 cfs @ 12.17 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Link 5L: Existing Site discharge

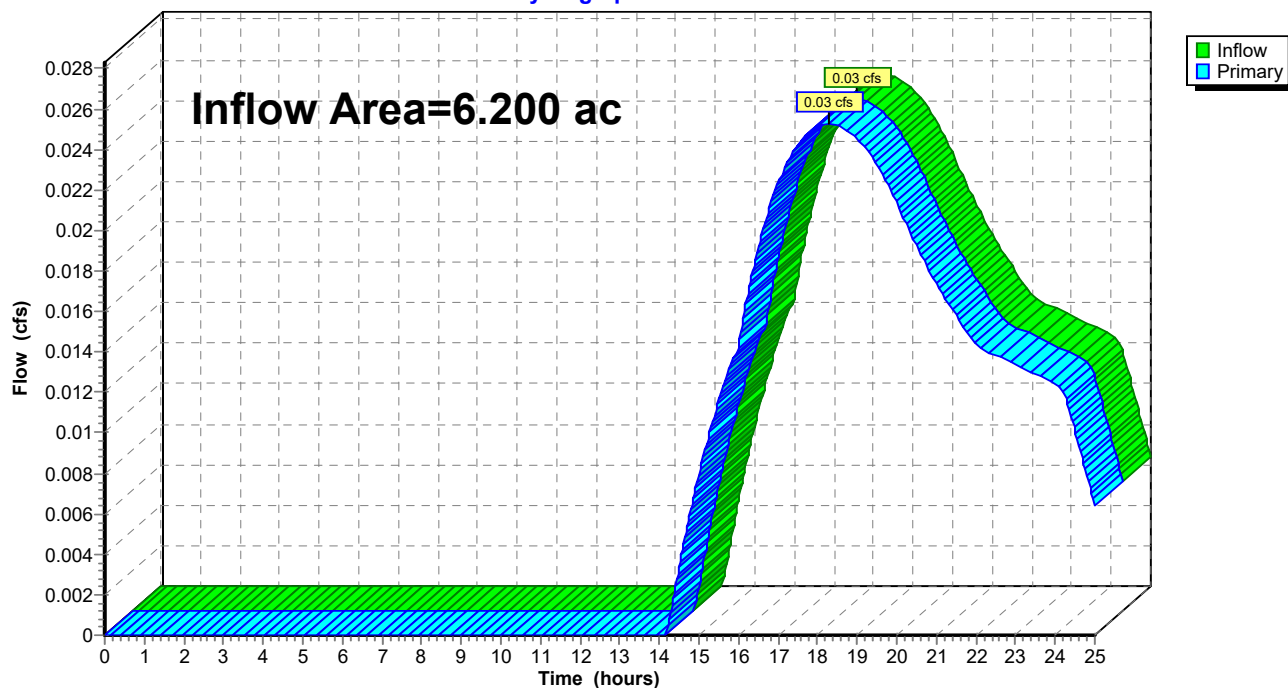
Summary for Link 7L: Proposed Site discharge

Inflow Area = 6.200 ac, 10.00% Impervious, Inflow Depth > 0.03" for 1-yr event
Inflow = 0.03 cfs @ 18.27 hrs, Volume= 0.015 af
Primary = 0.03 cfs @ 18.27 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Link 7L: Proposed Site discharge

Hydrograph



22-182 HydroCAD

Type II 24-hr 2-yr Rainfall=2.19"

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Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment4S: Existing Drainage

Runoff Area=6.200 ac 3.55% Impervious Runoff Depth=0.24"
Flow Length=875' Tc=16.1 min CN=67 Runoff=1.02 cfs 0.122 af

Subcatchment6S: Proposed drainage

Runoff Area=6.200 ac 10.00% Impervious Runoff Depth=0.29"
Flow Length=839' Tc=14.9 min CN=69 Runoff=1.55 cfs 0.149 af

Pond 13P: Infiltration Trench

Peak Elev=913.31' Storage=2,599 cf Inflow=1.55 cfs 0.149 af
Discarded=0.04 cfs 0.040 af Primary=0.11 cfs 0.066 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.106 af

Link 5L: Existing Site discharge

Inflow=1.02 cfs 0.122 af
Primary=1.02 cfs 0.122 af

Link 7L: Proposed Site discharge

Inflow=0.11 cfs 0.066 af
Primary=0.11 cfs 0.066 af

Total Runoff Area = 12.400 ac Runoff Volume = 0.271 af Average Runoff Depth = 0.26"
93.23% Pervious = 11.560 ac 6.77% Impervious = 0.840 ac

22-182 HydroCAD

Type II 24-hr 2-yr Rainfall=2.19"

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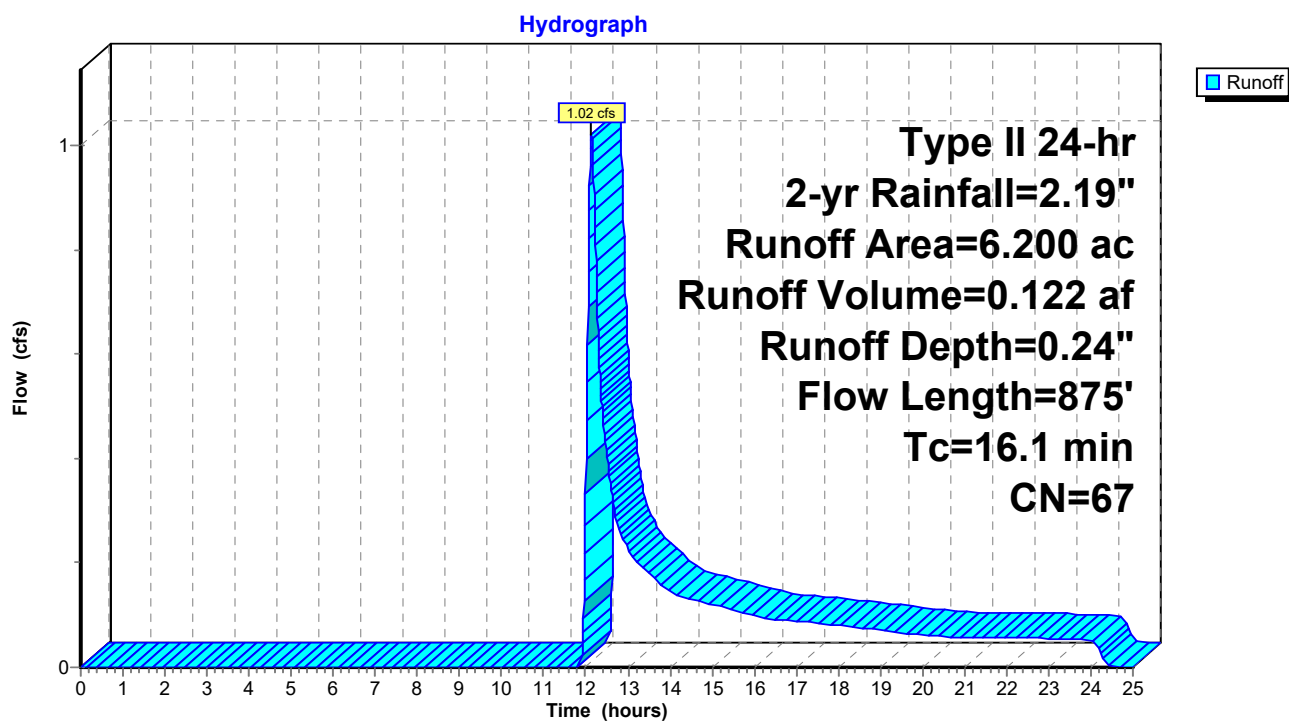
Summary for Subcatchment 4S: Exisitng Drainage

Runoff = 1.02 cfs @ 12.14 hrs, Volume= 0.122 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.19"

Area (ac)	CN	Description
1.300	78	Meadow, non-grazed, HSG D
1.600	58	Meadow, non-grazed, HSG B
1.600	55	Woods, Good, HSG B
1.480	77	Woods, Good, HSG D
0.220	98	Paved parking, HSG D
6.200	67	Weighted Average
5.980		96.45% Pervious Area
0.220		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.1300	0.20		Sheet Flow, Sheet Flow - meadow Grass: Dense n= 0.240 P2= 2.19"
0.2	30	0.1500	2.71		Shallow Concentrated Flow, Shallow Concentrated - Meadow Short Grass Pasture Kv= 7.0 fps
4.8	480	0.1100	1.66		Shallow Concentrated Flow, Shallow Concentrated - Woods Woodland Kv= 5.0 fps
1.1	60	0.0350	0.94		Shallow Concentrated Flow, Shallow Concentrated-Woods Woodland Kv= 5.0 fps
0.1	25	0.4000	3.16		Shallow Concentrated Flow, Shallow Cocentrated - Woods Woodland Kv= 5.0 fps
1.7	180	0.1200	1.73		Shallow Concentrated Flow, Shallow Concentrated - Woods Woodland Kv= 5.0 fps
16.1	875	Total			

Subcatchment 4S: Existing Drainage

22-182 HydroCAD

Type II 24-hr 2-yr Rainfall=2.19"

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Summary for Subcatchment 6S: Proposed drainage

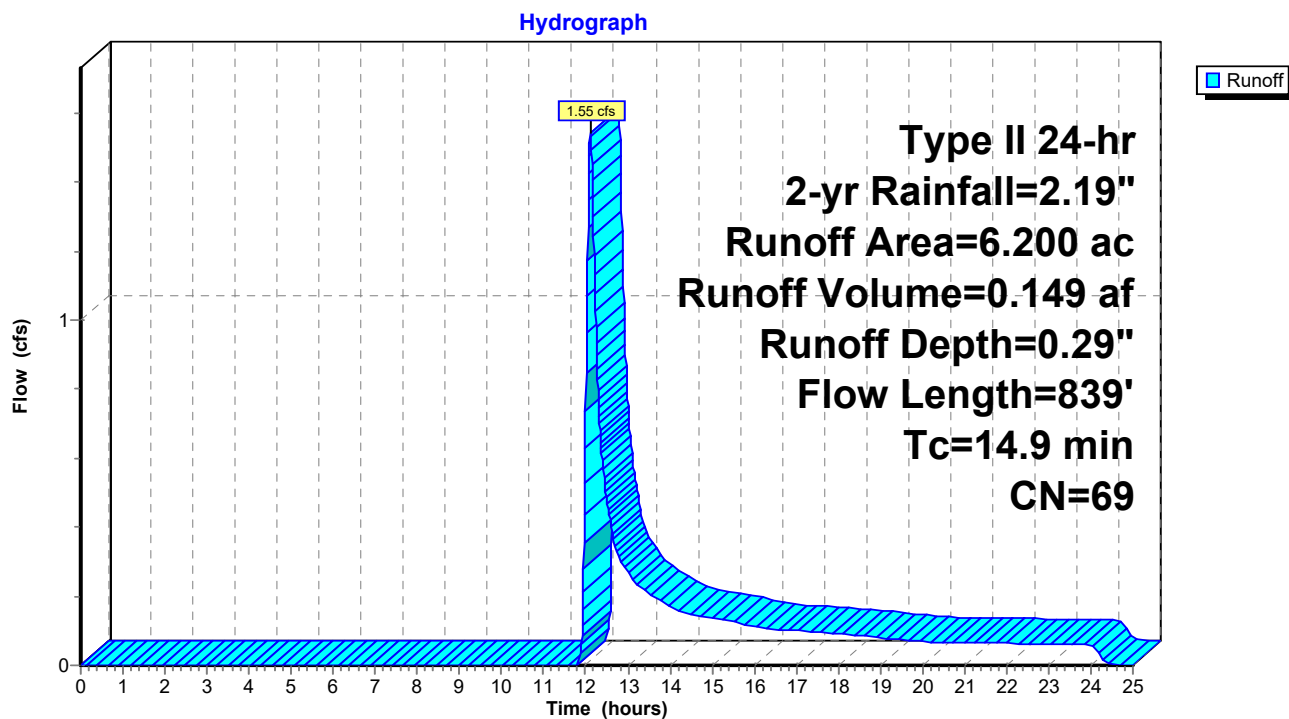
Runoff = 1.55 cfs @ 12.11 hrs, Volume= 0.149 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.19"

Area (ac)	CN	Description
1.600	55	Woods, Good, HSG B
1.600	58	Meadow, non-grazed, HSG B
1.300	78	Meadow, non-grazed, HSG D
0.620	98	Paved parking, HSG D
0.330	80	>75% Grass cover, Good, HSG D
0.750	77	Woods, Good, HSG D
6.200	69	Weighted Average
5.580		90.00% Pervious Area
0.620		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	100	0.1300	0.20		Sheet Flow, Shet Flow - Meadow Grass: Dense n= 0.240 P2= 2.19"
0.2	30	0.1500	2.71		Shallow Concentrated Flow, Shallow Concentrated - Meadow Short Grass Pasture Kv= 7.0 fps
4.8	480	0.1100	1.66		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
1.1	60	0.0350	0.94		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.1	24	0.4000	3.16		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.4	45	0.1700	2.06		Shallow Concentrated Flow, Shallow Concentrated - Woodland Woodland Kv= 5.0 fps
0.1	55	0.0200	6.41	22.43	Channel Flow, CHannel Flow Area= 3.5 sf Perim= 4.0' r= 0.88' n= 0.030 Earth, grassed & winding
0.0	45	0.1300	16.34	57.18	Channel Flow, Channel Flow Area= 3.5 sf Perim= 4.0' r= 0.88' n= 0.030 Earth, grassed & winding
14.9	839	Total			

Subcatchment 6S: Proposed drainage



22-182 HydroCAD

Type II 24-hr 2-yr Rainfall=2.19"

Prepared by {enter your company name here}

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Summary for Pond 13P: Infiltration Trench

Inflow Area = 6.200 ac, 10.00% Impervious, Inflow Depth = 0.29" for 2-yr event
 Inflow = 1.55 cfs @ 12.11 hrs, Volume= 0.149 af
 Outflow = 0.15 cfs @ 14.62 hrs, Volume= 0.106 af, Atten= 90%, Lag= 150.5 min
 Discarded = 0.04 cfs @ 14.62 hrs, Volume= 0.040 af
 Primary = 0.11 cfs @ 14.62 hrs, Volume= 0.066 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Peak Elev= 913.31' @ 14.62 hrs Surf.Area= 3,210 sf Storage= 2,599 cf

Plug-Flow detention time= 264.4 min calculated for 0.106 af (71% of inflow)
 Center-of-Mass det. time= 145.0 min (1,070.3 - 925.3)

Volume	Invert	Avail.Storage	Storage Description
#1	913.00'	69 cf	4.0" Round 4" infiltration Pipe L= 795.0' S= 0.0140 '/'
#2	912.50'	8,010 cf	Infiltration Trench (Prismatic) Listed below (Recalc)
		8,079 cf	Total Available Storage

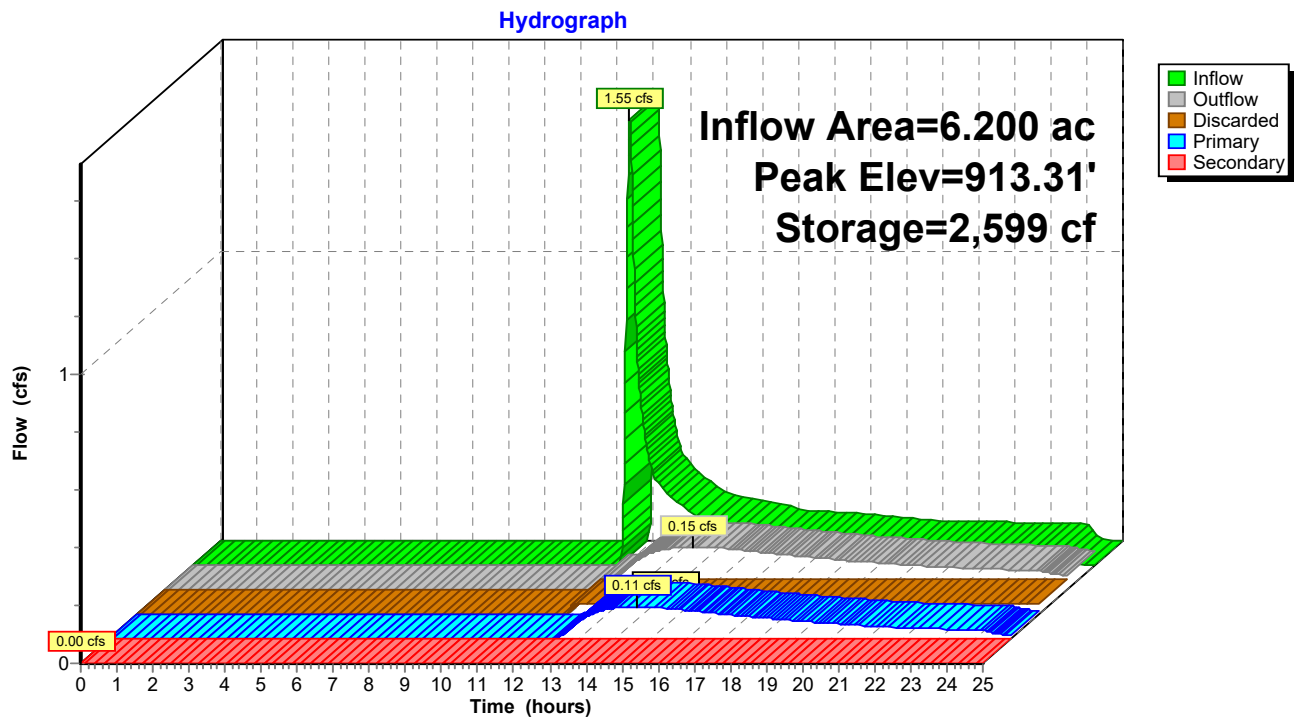
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
912.50	3,204	0	0
915.00	3,204	8,010	8,010

Device	Routing	Invert	Outlet Devices
#1	Discarded	912.50'	0.500 in/hr Exfiltration over Surface area
#2	Primary	913.00'	4.0" Round 4" outlet culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 913.00' / 912.80' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#3	Secondary	915.50'	3.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.04 cfs @ 14.62 hrs HW=913.31' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.11 cfs @ 14.62 hrs HW=913.31' (Free Discharge)
 ↑ **2=4" outlet culvert** (Barrel Controls 0.11 cfs @ 1.69 fps)

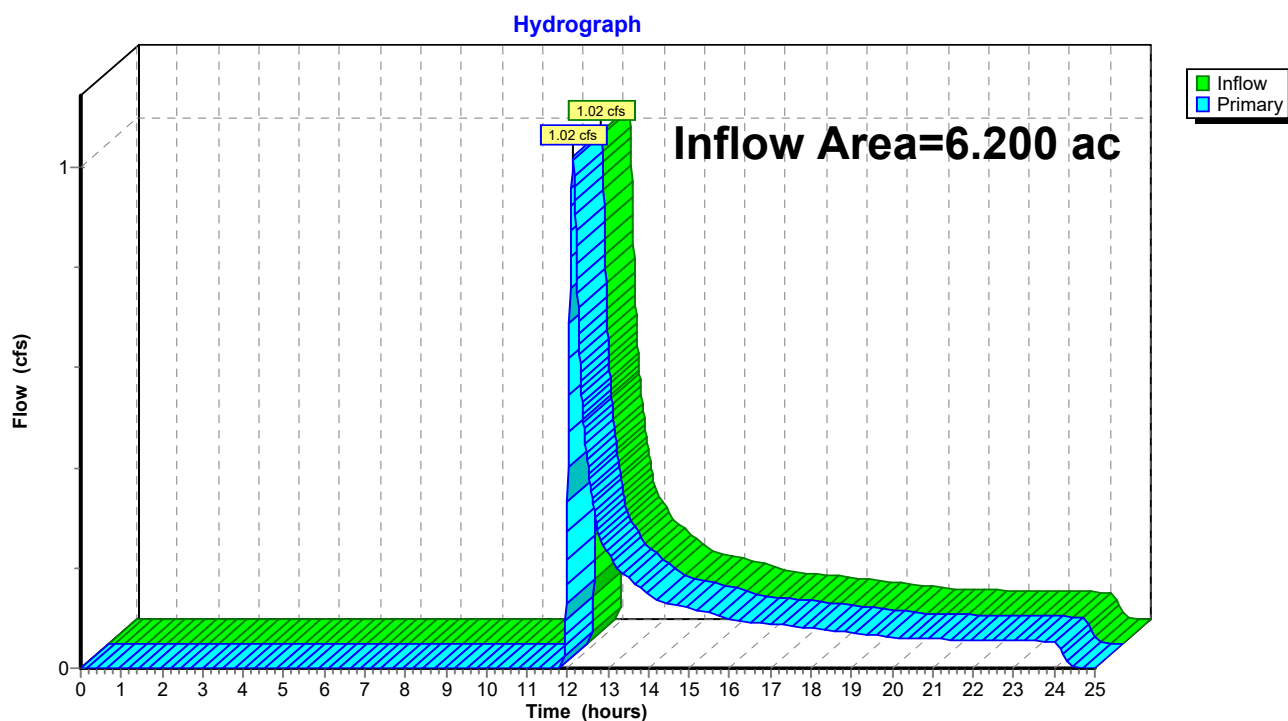
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=912.50' (Free Discharge)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13P: Infiltration Trench

Summary for Link 5L: Existing Site discharge

Inflow Area = 6.200 ac, 3.55% Impervious, Inflow Depth = 0.24" for 2-yr event
Inflow = 1.02 cfs @ 12.14 hrs, Volume= 0.122 af
Primary = 1.02 cfs @ 12.14 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Link 5L: Existing Site discharge

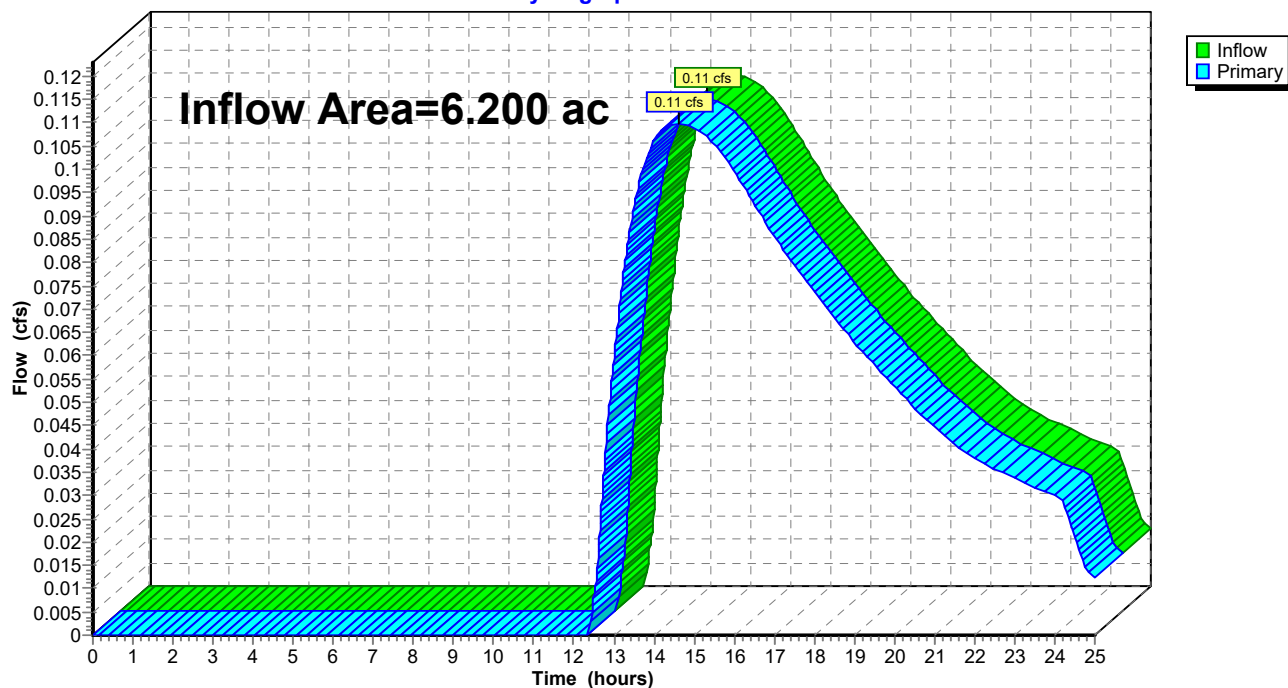
Summary for Link 7L: Proposed Site discharge

Inflow Area = 6.200 ac, 10.00% Impervious, Inflow Depth > 0.13" for 2-yr event
Inflow = 0.11 cfs @ 14.62 hrs, Volume= 0.066 af
Primary = 0.11 cfs @ 14.62 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Link 7L: Proposed Site discharge

Hydrograph



CALCULATIONS:Project: **Richard Nelson**

Overall WQv & RRv Calculations

Project No.: 22-182

Date: 3/8/2023

By: JWJ

Sheet 1 of 2

Subarea A

P (90% Rainfall Event) =

1.00 inches

Water Quality Area =

6.1 acres

Total Contributing area

Impervious Area =

0.6 acres

I = % Impervious =

9.0 %

Weighted S Value =

0.28Hydrologic Soil Group (HSG) Specific Reduction Factor "S" =

Soil Classification	Area (ac)	S Factor	Weighted #
A Soils	0	0.5	0
B Soils	2.4	0.4	0.96
C Soils	0	0.3	0
D Soils	3.7	0.2	0.74

Total Area = 6.1 acres

Total Weighted # = 1.7

Weighted S Value = **0.28** $R_v = 0.05 + 0.009(I)$ **Rv = 0.1311475**

Required WQv - based on Enhanced Phosphorus removal (Chapter 10) of NYSDEC Design Manual

Req WQv = (Total drainage area)(1-year runoff volume)

0.09 af (inflow volume from hydrocad for contributing areas)

3,920 cf**Minimum Allowable RRv for enhanced Phosphorous Removal**

RRv= P1-yr * Rv* Aic*S 0.0259749

1131 cf

P1-yr= 1.89

Rv=.05+.009(I) 0.95

Aic= 0.62

S= 0.28

	<u>CALCULATIONS:</u> Project: Richard Nelson WQv and RRV Summary	Project No.: 22-182 Date: 3/8/2023 By: JWW Sheet 2 of 2
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Overall Required WQv = 3920 cf

Minimum Allowable RRV = 1131 cf

WQv Total

WQv from Infiltration Trench 3,925 cf

Total WQv Provided = 3,925 cf

RRv Total

RRv Provided by Infiltration Trench 3,532 cf
cf
cf
cf
cf

Total RRV Provided = 3,532 cf

Total WQv Provided =	7,457 cf	>	3,920 cf
Total RRV Provided =	3,532 cf	>	1,131 cf

Infiltration Trench Worksheet

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
4	6.1	0.6	0.13	0.17	3920.40	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops			13%	0.17	3,920	<<WQv after adjusting for Disconnected Rooftops	
Design Elements							
Pretreatment Techniques to Prevent Clogging							
Infiltration Rate			0.50	in/hr	Okay		
Pretreatment Sizing			25%	of WQv	25% minimum 50% if >2 in/hr; 100% if >5in/hour		
Required Pretreatment Volume			980	ft ³			
Pretreatment Provided			1,120	ft ³			
Pretreatment techniques utilized			stone diaphragm		Pretreatment can be provided in the form of a sedimentation basin, sump pit, grass channel, plunge pool or other measure		
Size the Infiltration Trench							
Ap = Vw / (ndt)							
Design Volume		Vw	3,920	ft ³			
Porosity		n	0.4				
Design Depth		dt	3.5	ft	maximum of four feet		
Depth to Groundwater			3.0	ft	>3 feet from seasonally high water table		
Required Surface Area		Ap	2800	ft ²			
Width		W	4	ft	Provide the dimensions here		
Length		L	801	ft	Provide the dimensions here		
Surface Area Provided			2803.5	ft ²	Okay		
Volume Provided			3,925	ft ³	Storage Volume provided in infiltration trench (not including pretreatment.		
Determine Runoff Reduction							
RRv	3,532	ft³	90% of the storage provided				
Volume Treated	388	ft ³	This is the portion of the WQv that is not reduced/infiltrated				

CALCULATIONS:

Project: **Richard Nelson**
Pretreatment sizing

Project No.: **22-182**
Date: **3/8/2023**
By: **JWJ**
Sheet 1 of 1

Infiltration Trench

WQv for Infiltration Trench = **3920** cf

Pretreatment Size = 25% * WQv = 969 cf

Pretreatment is provided in Stone Diaphragm (40% voids)

Length = **700** ft

Width = **2** ft

Depth = **2** ft

Voids = 0.4

Volume Provided = 1120 cf