Design Report

for

Dr. Joseph Biasillo Office Renovation

1929 Ridge Road
Town of West Seneca, New York

Prepared for:

Dr. Joseph F. Biasillo
55 Hilltowne Drive
Orchard Park, NY 14127

Date:

August 20, 2021

Prepared by:

4759 N. 5th Street
Lewiston, NY 14092
1-716-946-2415

TABLE OF CONTENTS

APPENDICES

DESIGN REPORT

This Design Report has been prepared to address the proposed Office Renovation at 1929 Ridge Road property (SBL 143.06-1-2) in the Town of West Seneca, Erie County, NY. The property is owned by Dr. Joseph F. Biasillo and will require a new curb cut and parking area associated with his chiropractic business.

Owner Contact Information:

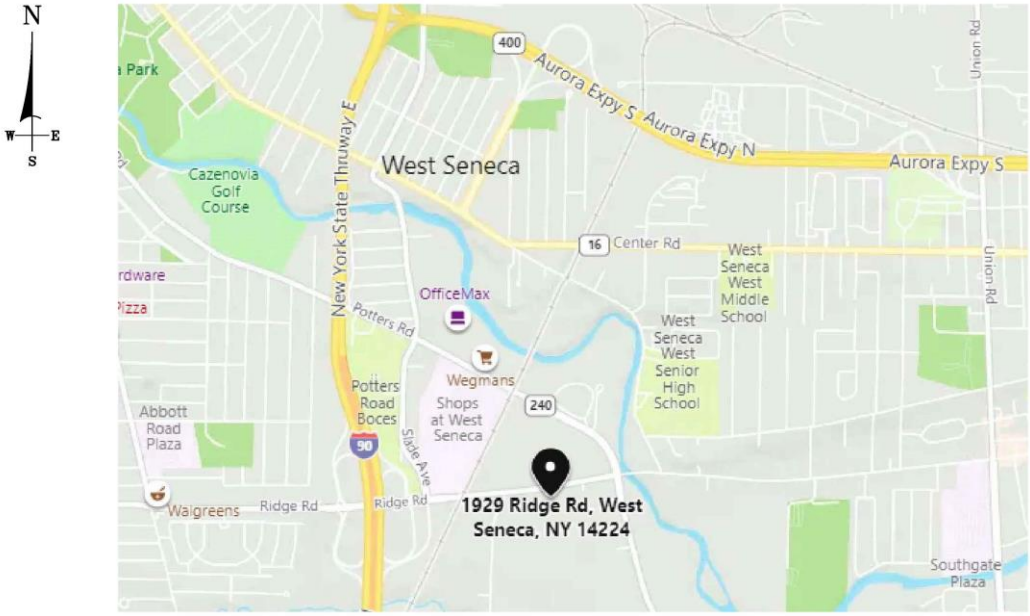
Contact Person:	Dr. Joseph F. Biasillo
Mailing Address:	55 Hilltowne Drive Orchard Park, NY 14127
Email Address:	jfbchiro@hotmail.com
Phone Number:	(716) 861-1409

Engineer of Record Information:

Firm:	Invictus Civil Engineering, P.C.
Contact Person:	Richard J. Haight, P.E.
Mailing Address:	4759 N 5th Street Lewiston, New York 14092
Email Address:	rhaight@invictuscivilengineering.com
Phone Number:	(716) 946-2415

I. PROJECT DESCRIPTION

The Applicant proposes to remodel the existing residential structure located on the 0.50+/- acre parcel at 1929 Ridge Road (SBL 143.06-1-2) in West Seneca into a chiropractic office (see Location Map and Aerial Photo below). A new curb cut and 18-space parking lot for the office are proposed. Stormwater runoff from the parking lot will be collected by on-site drainage structures with discharge to the existing storm drainage system within Ridge Road. No new utility services are proposed.



Location Map

Location w/ Aerial Photo

II. Description of Site Conditions and Improvements

Note: See the Project Drawings for additional information.

A. Existing Conditions:

The existing parcel, SBL 143.06-1-2, consists of approximately 0.50 acres. The site is currently occupied by a residential structure with the ground cover being primarily lawn and a few shade trees. The driveway and access to the existing structure are currently located on the adjacent parcel to the west.

i) SOILS INFORMATION

The soil type within the project site is as follows:

Niagara silt loam, 0 – 3% slopes 100% (NfA – Hydrologic Soil Group "C/D")

See Appendix A – Soils for a copy of the soil survey map and soils information obtained from the USDA Natural Resources Conservation Service Web Soil Survey National Cooperative Soil Survey.

Hydrologic Soil Group "D" was utilized for all areas in the hydraulic analyses as a conservative estimate.

ii) ENVIRONMENTAL

A review of the New York State Department of Environmental Conservation's (NYSDEC) Environmental Resource Mapper and EAF Mapper indicates that there are no State or Federally Regulated Freshwater Wetlands on the parcel.

The NYSDEC Environmental Resource Mapper also indicated that there were no Rare Plants or Animals and there are no Significant Communities.

iii) STORMWATER

The portion of the parcel to be impacted by the proposed parking lot currently drains overland in a northwesterly direction onto the adjacent parcel to the west before entering the roadside drainage on the south side of Ridge Road. The southern portion of the lot drains overland onto the adjacent parcels to the east, south and west. See Appendix B – Drainage and Pipe Sizing for a copy of the Existing Conditions Drainage Map.

iv) WATER/SANITARY SERVICE

There are existing domestic water and sanitary services to the existing structure on the lot.

v) ARCHAEOLOGICAL

The NYSDEC EAF Mapper indicates that the site is located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory. The Project will be registered on the SHPO Cultural Resource Information System (CRIS) should it be deemed necessary by the Town of West Seneca under the SEQRA process.

B. Proposed Conditions:

The project involves construction activities associated with the remodeling of the existing residential structure on the parcel into a chiropractic office, the construction of a new curb cut, 18-space parking lot and associated drainage.

i) ACCESS

A new 30'+/- wide curb cut with 25' radii is proposed for the project. Existing access to the structure on the parcel is located on the property to the west and no longer a viable option for the site. The access will taper to a 24' wide drive aisle within an 18-space parking lot. Two (2) accessible spaces will be provided. An Erie County Highway Department Work Permit will be required for the work within the Ridge Road Rights-of-Way. The curb cut and parking area will be constructed according to Erie County Highway Department and Town standards.

ii) STORMWATER

Stormwater runoff from the proposed access and parking area will be collected by two proposed on-site catch basin inlets and piped via an 8" PVC SDR35 outlet pipe to a proposed catch basin to be located within the existing curb line of Ridge Road. The catch basin will connect the site discharge with the existing piped storm drainage system for the roadway.

Stormwater runoff from the rear of the parcel to continue to drain as it does under existing conditions. The overland flow to the northwest corner of the parcel will be greatly diminished by the addition of the on-site storm drainage system.

A 10-Year design storm was utilized for the pipe sizing calculations; however, the 100-year storm was also analyzed to ensure that there would be no surcharge from the proposed structures. See Appendix B – Drainage and Pipe Sizing for the Proposed Conditions Drainage Maps and the hydraulic analysis utilized in the design of the pipe sizing.

iii) EROSION CONTROL

The project will not result in more than one acre of disturbance and will therefore not require authorization under SPDES General Permit No. 0-20-001. An Erosion and Sediment Control Plan has been prepared for the construction of the access, parking area, site grading and drainage.

iv) WATER/SANITARY SERVICE

No new services are required for this project.

Appendix A
Soils

Soil Map—Erie County, New York
(1929 Ridge Road West Seneca)

Map Scale: 1:453 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NfA	Niagara silt loam, 0 to 3 percent slopes	0.7	100.0%
Totals for Area of Interest		**0.7**	**100.0%**

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NfA	Niagara silt loam, 0 to 3 percent slopes	C/D	0.7	100.0%
Totals for Area of Interest			**0.7**	**100.0%**

Description

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

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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

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

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

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

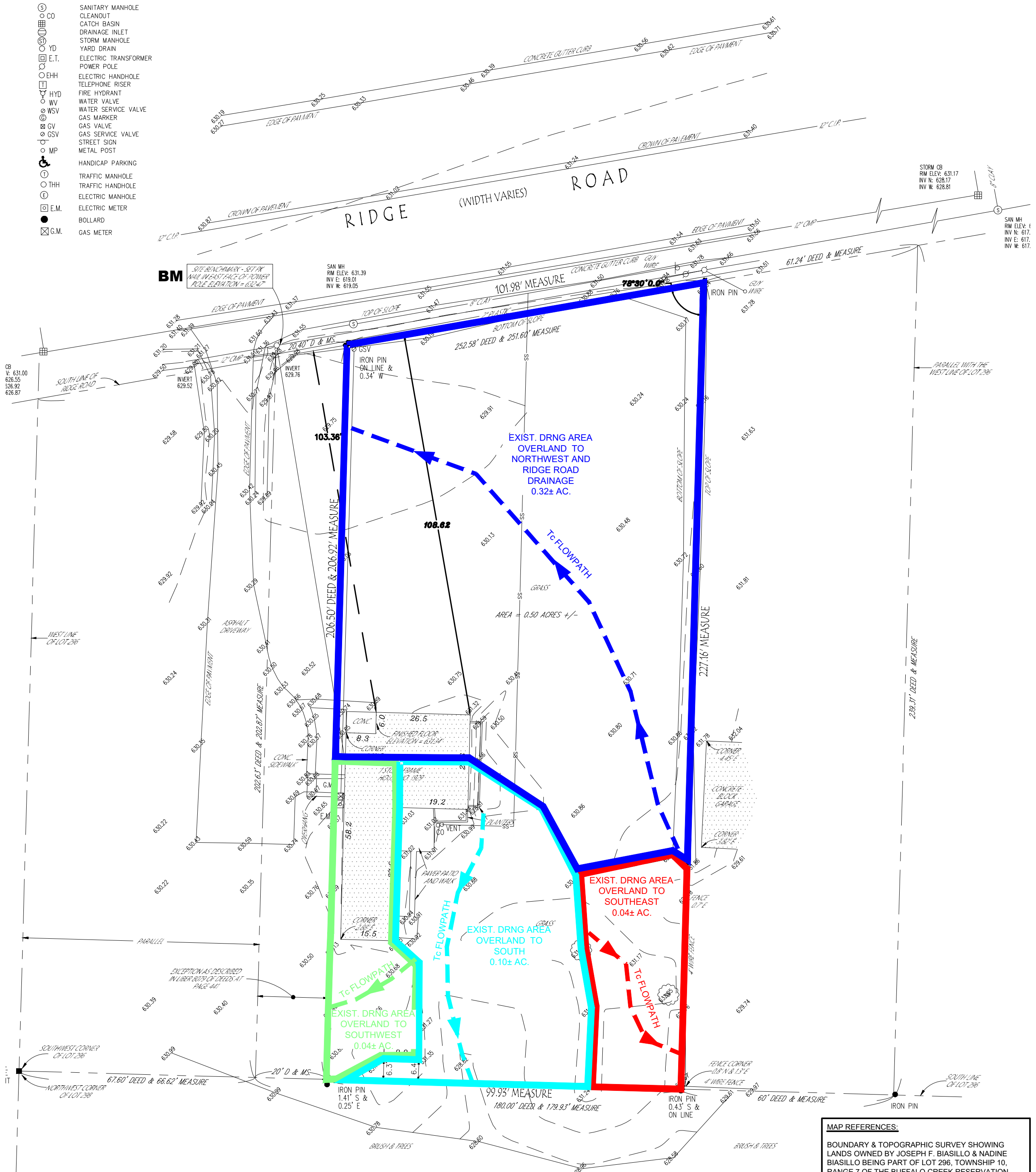
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Appendix B
Drainage and Pipe Sizing

LEGEND

- SS — SANITARY SEWER
- CS — COMBINED SEWER
- ST — STORM SEWER
- W — WATER LINE
- G — GAS LINE
- OT — OVERHEAD TELEPHONE WIRES
- UT — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC WIRES
- 100 — CONTOUR LINE
- CENTERLINE OF DITCH
- CROWN OF PAVEMENT
- HIGHWAY LINE
- PROPERTY LINE
- S — SANITARY MANHOLE
- CO — CLEANOUT
- CATCH BASIN
- DRAINAGE INLET
- ST — STORM MANHOLE
- YD — YARD DRAIN
- E.T. — ELECTRIC TRANSFORMER
- POWER POLE
- EHH — ELECTRIC HANDHOLE
- T — TELEPHONE RISER
- HYD — FIRE HYDRANT
- WV — WATER VALVE
- WSV — WATER SERVICE VALVE
- G — GAS MARKER
- GV — GAS VALVE
- GSV — GAS SERVICE VALVE
- STREET SIGN
- MP — METAL POST
- HANDICAP PARKING
- T — TRAFFIC MANHOLE
- THH — TRAFFIC HANDHOLE
- E — ELECTRIC MANHOLE
- E.M. — ELECTRIC METER
- BOLLARD
- G.M. — GAS METER



EXISTING CONDITIONS DRAINAGE MAP

SCALE: 1'=20'

MAP REFERENCES:

BOUNDARY & TOPOGRAPHIC SURVEY SHOWING LANDS OWNED BY JOSEPH F. BIASILLO & NADINE BIASILLO BEING PART OF LOT 296, TOWNSHIP 10, RANGE 7 OF THE BUFFALO CREEK RESERVATION, TOWN OF WEST SENECA, COUNTY OF ERIE AND STATE OF NEW YORK, PREPARED BY TERRA POINTE LAND SURVEYING, PLLC.; DATED JULY 1, 2021, JOB No. 1182-21.

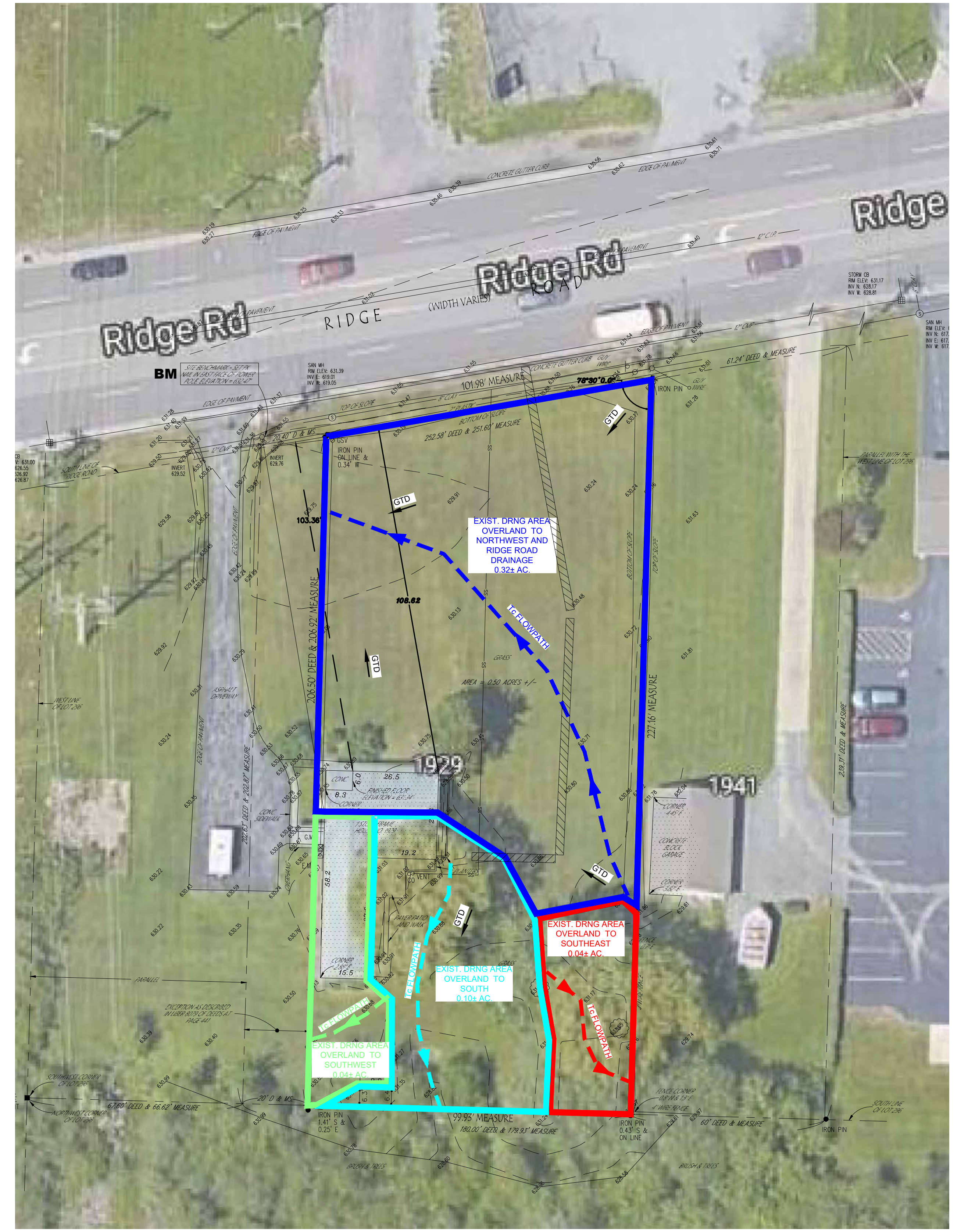
NOTES:

1) NORTH AS SHOWN ON THIS MAP IS TRUE NORTH AT 78°35' MERIDIAN WEST LONGITUDE, WEST ZONE 3103, NORTH AMERICAN DATUM 1983 (NAD83), U.S. SURVEY FEET AS ESTABLISHED BY GPS USING THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION REAL TIME NETWORK (NYSDOT RTN).

2) ELEVATIONS AS SHOWN ON THIS MAP OF SURVEY ARE BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), U.S. SURVEY FEET AS ESTABLISHED BY GPS USING THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION REAL TIME NETWORK (NYSDOT RTN).

3) THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM VISIBLE STRUCTURES, SURFACE MARKINGS AND INFORMATION FROM EXISTING DRAWINGS. TERRA POINTE LAND SURVEYING PLLC DOES NOT GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL OF THE UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION PROVIDED BY PUBLIC UTILITY COMPANIES. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES UPON INSTALLATION. EACH CONTRACTOR MUST CALL DIG SAFELY NEW YORK AT 1-800-962-7962 THREE DAYS PRIOR TO ANY EXCAVATION.

4) CONTOUR INTERVAL IS 1.0 FOOT.



EXISTING CONDITIONS DRAINAGE MAP W/ AERIAL

SCALE: 1'=20'

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch =20 ft.

N — W — E — S

NO.	ISSUE DATE	REVISION DESCRIPTION
9		
8		
7		
6		
5		
4		
3		
2		
1	08/24/2021	SITE PLAN SUBMITTAL - NOT FOR CONSTRUCTION
0	08/03/2021	SKETCH PLAN SUBMITTAL

CLIENT:

JOSEPH F. BIASILLO
55 HILLTOWNE DRIVE
ORCHARD PARK, NY 14127

PROJECT:

DR. JOSEPH BIASILLO
OFFICE RENOVATION
1929 RIDGE ROAD
WEST SENECA, NY 14224

INVICTUS
Civil Engineering, P.C.

4759 N 5th Street
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Phone: (716) 946-2415
Email: rhaight@invictuscivilengineering.com

SEAL / SIGNATURE

STATE OF NEW YORK — RICHARD J HAIGHT — 082525 — LICENSED PROFESSIONAL ENGINEER

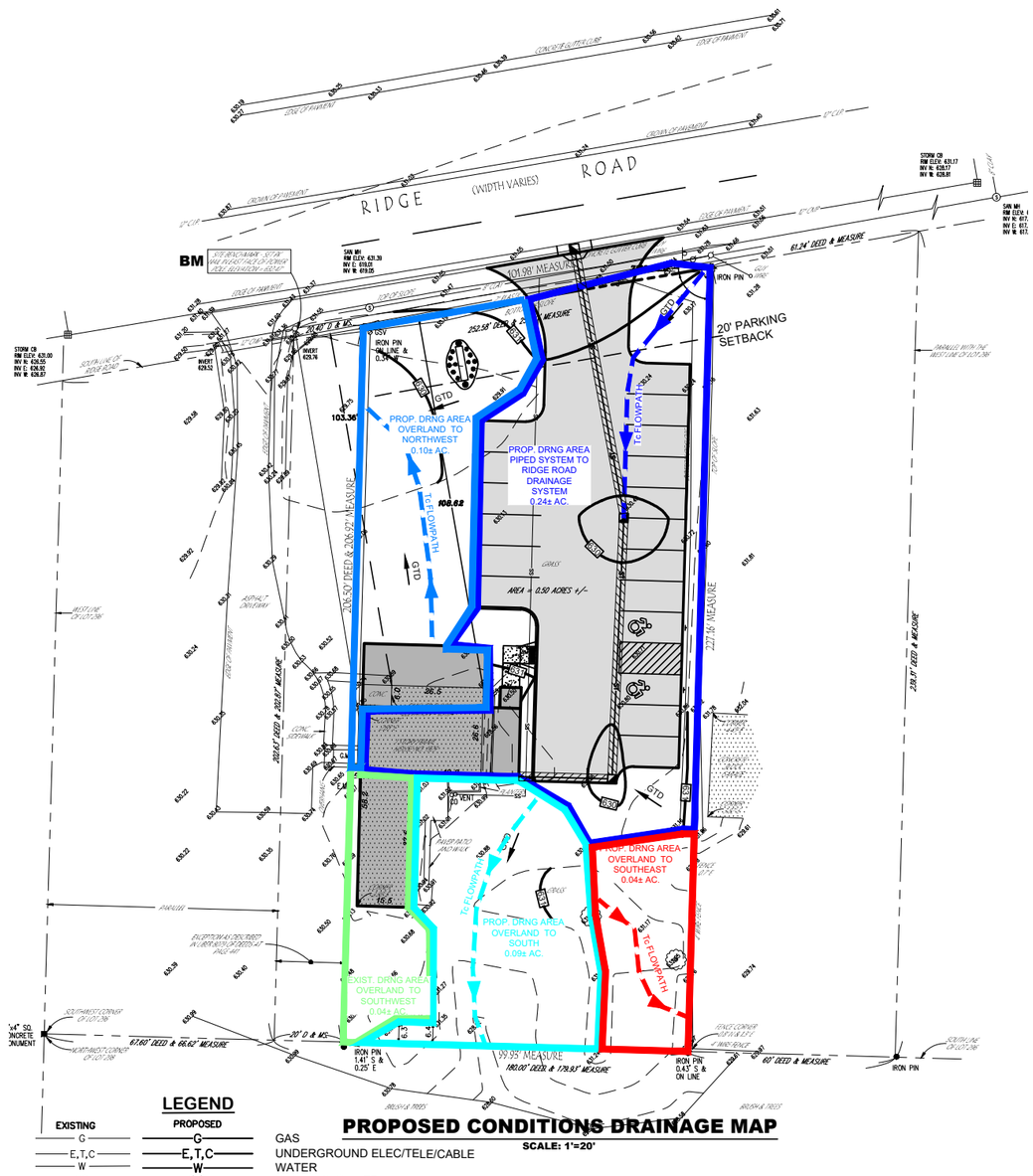
SHEET TITLE

EXISTING CONDITIONS DRAINAGE MAP

SHEET

DR-001

SCALE	PROJECT #	DATE
AS NOTED	21-1013	08/03/2021

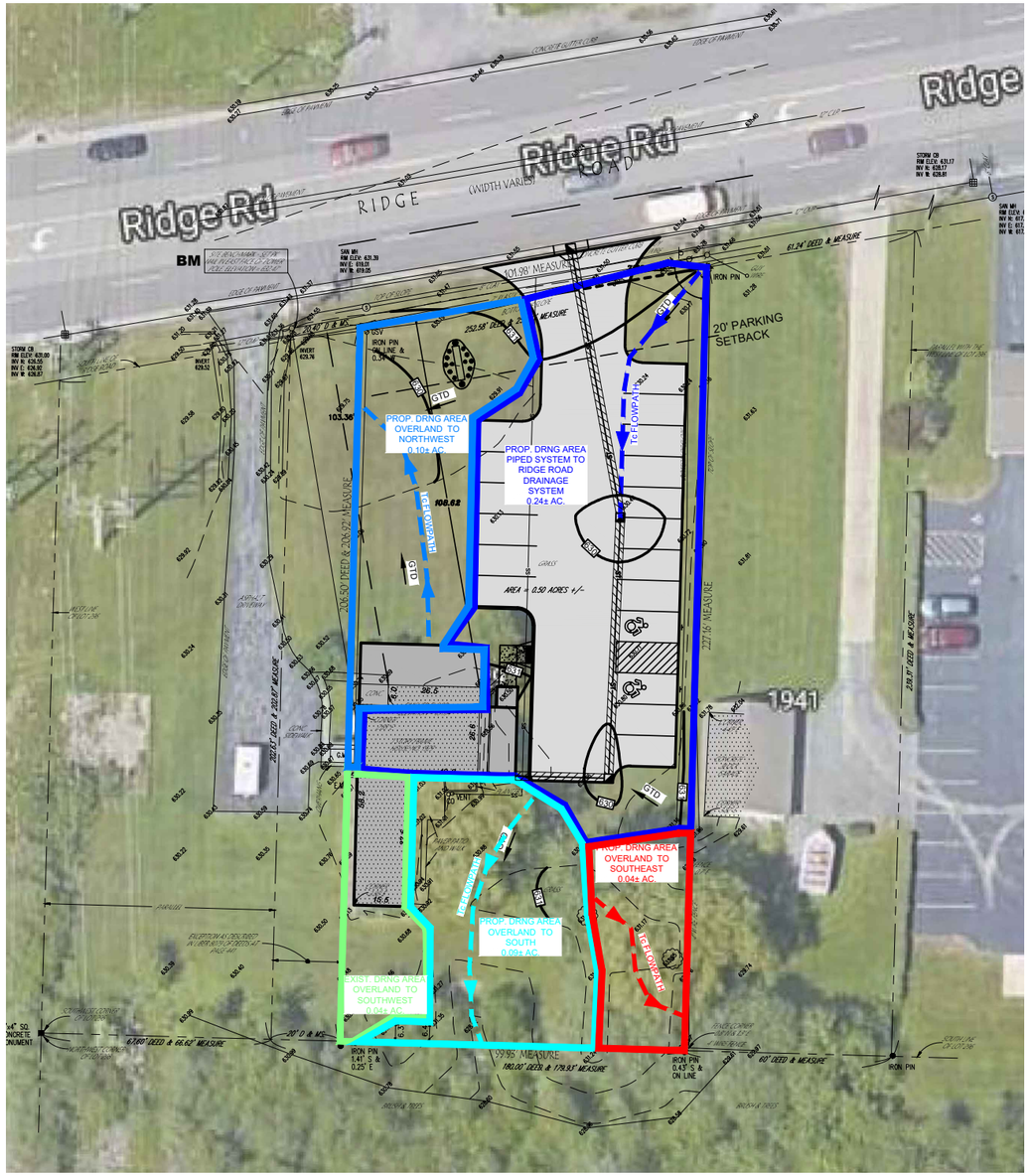


LEGEND

EXISTING	PROPOSED	
G	G	GAS
E,T,C	E,T,C	UNDERGROUND ELEC/TELE/CABLE
W	W	WATER
SS	SS	SANITARY SEWER
ST	ST	STORM SEWER
349	XXX	CONTOUR
XXX.X	XXX.X	SPOT ELEVATIONS
		FENCE
		PROPERTY/ROW LINE
		EASEMENT
		UTILITY POLE
		LIGHT
S		SANITARY MANHOLE
ST		STORM MANHOLE
CB		CATCHBASIN
YD		YARD DRAIN (INLET)
		HYDRANT
		SIGN
	GTD	GRADE TO DRAIN
		DRAINAGE FLOW ARROW
		SELECT BACKFILL
W W	W W	WATER SERVICE
SS SS	S S	SANITARY SERVICE
	BM	BENCH MARK
WV		WATER VALVE
		TEST PIT
	TBR	TO BE REMOVED

PROPOSED CONDITIONS DRAINAGE MAP

SCALE: 1"=20'



PROPOSED CONDITIONS DRAINAGE MAP W/ AERIAL

SCALE: 1"=20'

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

N

W E S

NO.	ISSUE DATE	REVISION DESCRIPTION
0	08/03/2021	SKETCH PLAN SUBMITTAL
1	08/24/2021	SITE PLAN SUBMITTAL - NOT FOR CONSTRUCTION
2		
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SEAL / SIGNATURE

STATE OF NEW YORK
RICHARD J HAIGHT
082525
LICENSED PROFESSIONAL ENGINEER

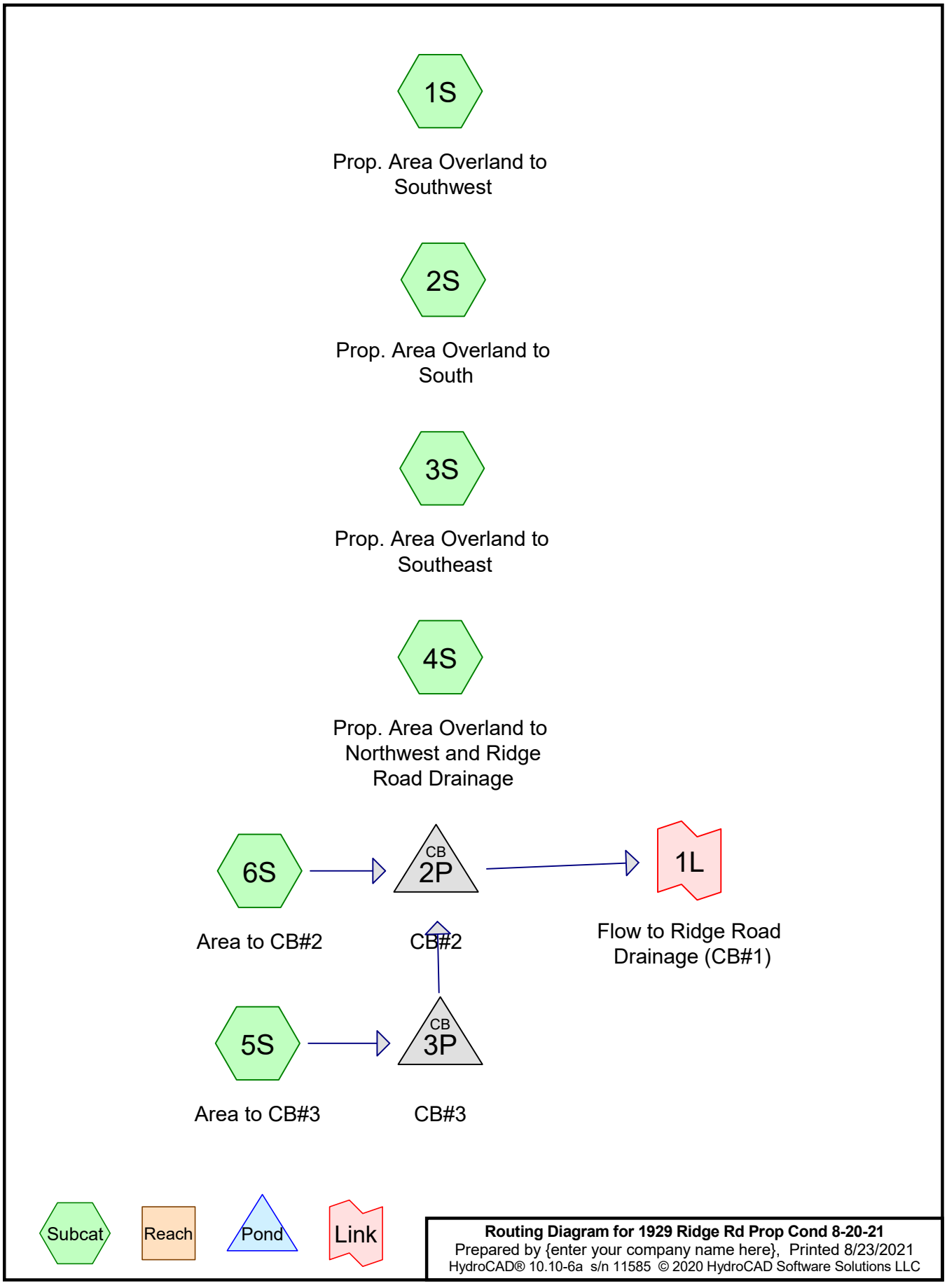
SHEET TITLE

PROPOSED CONDITIONS DRAINAGE MAP

SHEET

DR-002

SCALE	PROJECT #	DATE
AS NOTED	21-1013	08/03/2021



Routing Diagram for 1929 Ridge Rd Prop Cond 8-20-21
Prepared by {enter your company name here}, Printed 8/23/2021
HydroCAD® 10.10-6a s/n 11585 © 2020 HydroCAD Software Solutions LLC

Project Notes

Defined 9 rainfall events from WEST SENECA IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-yr	Type II 24-hr		Default	24.00	1	3.14	2
2	100-yr	Type II 24-hr		Default	24.00	1	5.23	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.289	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S)
0.154	98	Paved parking, HSG D (5S, 6S)
0.055	98	Roofs, HSG D (1S, 4S, 5S)
0.007	98	Unconnected pavement, HSG D (2S)
0.505	**88**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.505	HSG D	1S, 2S, 3S, 4S, 5S, 6S
0.000	Other	
0.505		**TOTAL AREA**

Ground Covers (all 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	0.289	0.000	0.289	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 6S
0.000	0.000	0.000	0.154	0.000	0.154	Paved parking	5S, 6S
0.000	0.000	0.000	0.055	0.000	0.055	Roofs	1S, 4S, 5S
0.000	0.000	0.000	0.007	0.000	0.007	Unconnected pavement	2S
0.000	**0.000**	**0.000**	**0.505**	**0.000**	**0.505**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	2P	628.01	627.86	77.0	0.0019	0.012	0.0	8.0	0.0
2	3P	628.16	628.01	73.0	0.0021	0.012	0.0	8.0	0.0

Time span=1.00-30.00 hrs, dt=0.14 hrs, 208 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Prop. Area Overland to Runoff Area=1,829 sf 42.86% Impervious Runoff Depth=1.94"
Flow Length=30' Slope=0.0100 '/' Tc=8.6 min CN=88 Runoff=0.11 cfs 0.007 af

Subcatchment 2S: Prop. Area Overland to Runoff Area=3,730 sf 8.71% Impervious Runoff Depth=1.42"
Flow Length=75' Slope=0.0225 '/' Tc=13.0 min UI Adjusted CN=81 Runoff=0.16 cfs 0.010 af

Subcatchment 3S: Prop. Area Overland to Runoff Area=1,740 sf 0.00% Impervious Runoff Depth=1.36"
Flow Length=50' Slope=0.0300 '/' Tc=8.4 min CN=80 Runoff=0.07 cfs 0.005 af

Subcatchment 4S: Prop. Area Overland to Runoff Area=4,450 sf 14.16% Impervious Runoff Depth=1.56"
Flow Length=75' Slope=0.0130 '/' Tc=16.2 min CN=83 Runoff=0.19 cfs 0.013 af

Subcatchment 5S: Area to CB#3 Runoff Area=3,600 sf 69.86% Impervious Runoff Depth=2.39"
Flow Length=20' Slope=0.0300 '/' Tc=4.0 min CN=93 Runoff=0.30 cfs 0.016 af

Subcatchment 6S: Area to CB#2 Runoff Area=6,630 sf 77.75% Impervious Runoff Depth=2.49"
Flow Length=80' Tc=11.7 min CN=94 Runoff=0.47 cfs 0.032 af

Pond 2P: CB#2 Peak Elev=628.72' Inflow=0.67 cfs 0.048 af
8.0" Round Culvert n=0.012 L=77.0' S=0.0019 '/' Outflow=0.67 cfs 0.048 af

Pond 3P: CB#3 Peak Elev=628.80' Inflow=0.30 cfs 0.016 af
8.0" Round Culvert n=0.012 L=73.0' S=0.0021 '/' Outflow=0.30 cfs 0.016 af

Link 1L: Flow to Ridge Road Drainage (CB#1) Inflow=0.67 cfs 0.048 af
Primary=0.67 cfs 0.048 af

Total Runoff Area = 0.505 ac Runoff Volume = 0.083 af Average Runoff Depth = 1.97"
57.19% Pervious = 0.289 ac 42.81% Impervious = 0.216 ac

Summary for Subcatchment 1S: Prop. Area Overland to Southwest

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

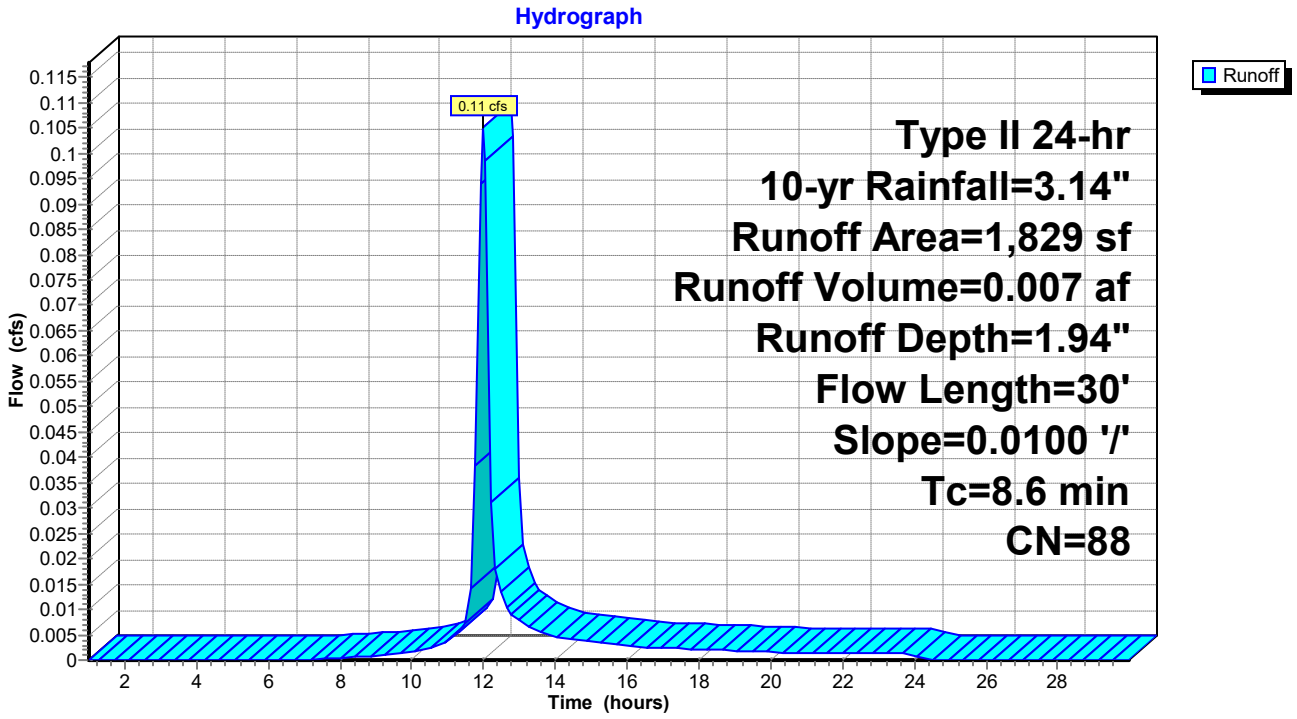
Runoff = 0.11 cfs @ 12.00 hrs, Volume= 0.007 af, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Description
784	98	Roofs, HSG D
1,045	80	>75% Grass cover, Good, HSG D
1,829	88	Weighted Average
1,045		57.14% Pervious Area
784		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	30	0.0100	0.06		**Sheet Flow, 30' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 1S: Prop. Area Overland to Southwest



Summary for Subcatchment 2S: Prop. Area Overland to South

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

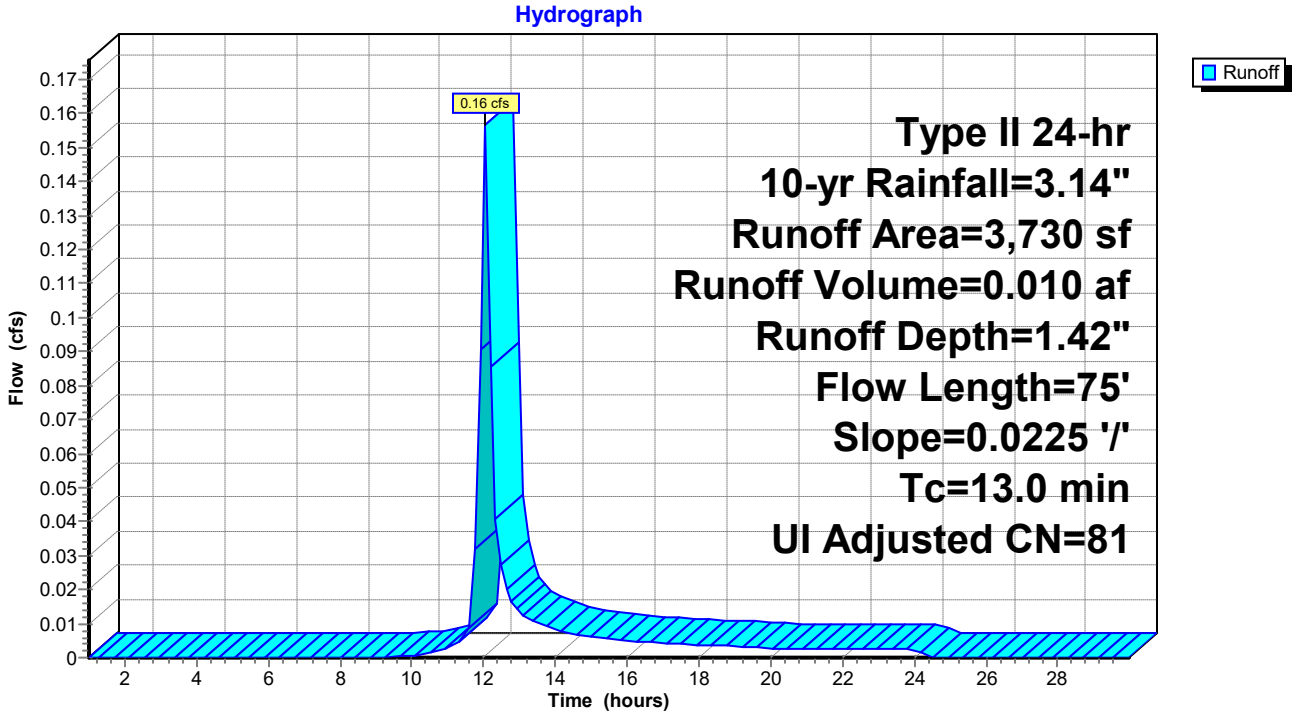
Runoff = 0.16 cfs @ 12.06 hrs, Volume= 0.010 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Adj	Description
325	98		Unconnected pavement, HSG D
3,405	80		>75% Grass cover, Good, HSG D
3,730	82	81	Weighted Average, UI Adjusted
3,405			91.29% Pervious Area
325			8.71% Impervious Area
325			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	75	0.0225	0.10		**Sheet Flow, 75' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 2S: Prop. Area Overland to South



Summary for Subcatchment 3S: Prop. Area Overland to Southeast

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

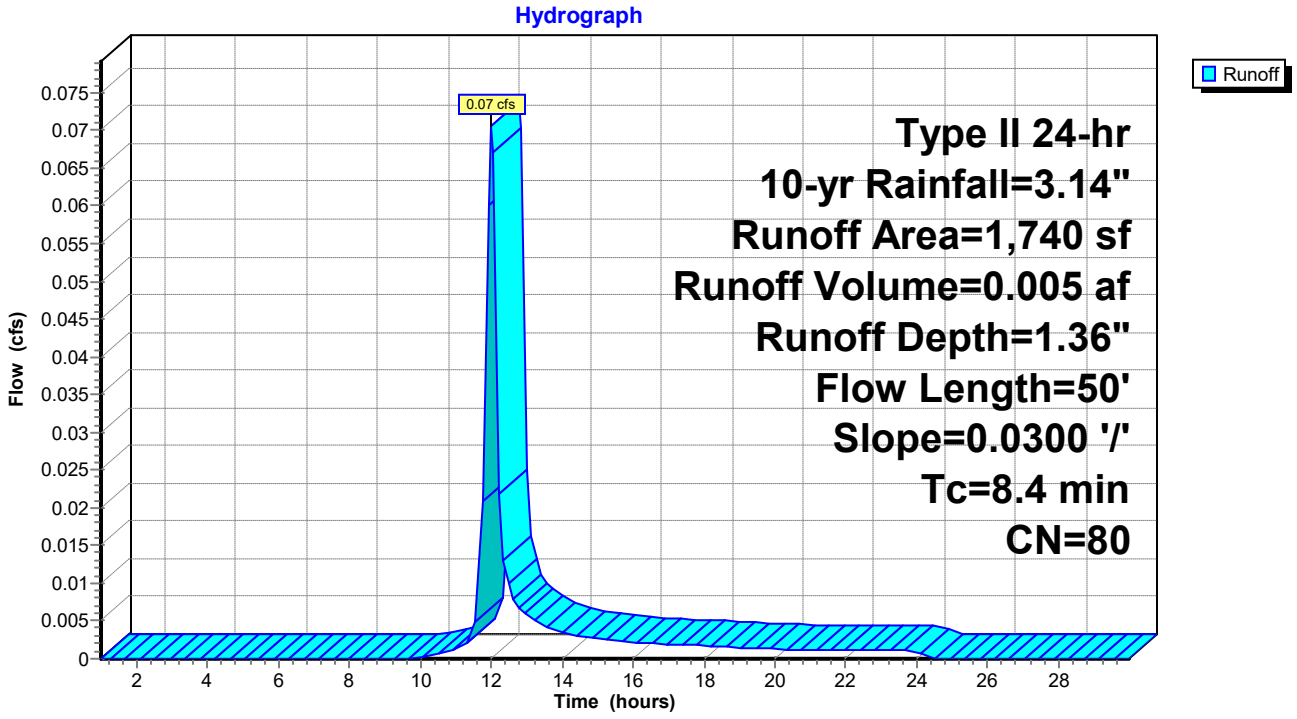
Runoff = 0.07 cfs @ 12.01 hrs, Volume= 0.005 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Description
1,740	80	>75% Grass cover, Good, HSG D
1,740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0300	0.10		**Sheet Flow, 50' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 3S: Prop. Area Overland to Southeast



Summary for Subcatchment 4S: Prop. Area Overland to Northwest and Ridge Road Drainage

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

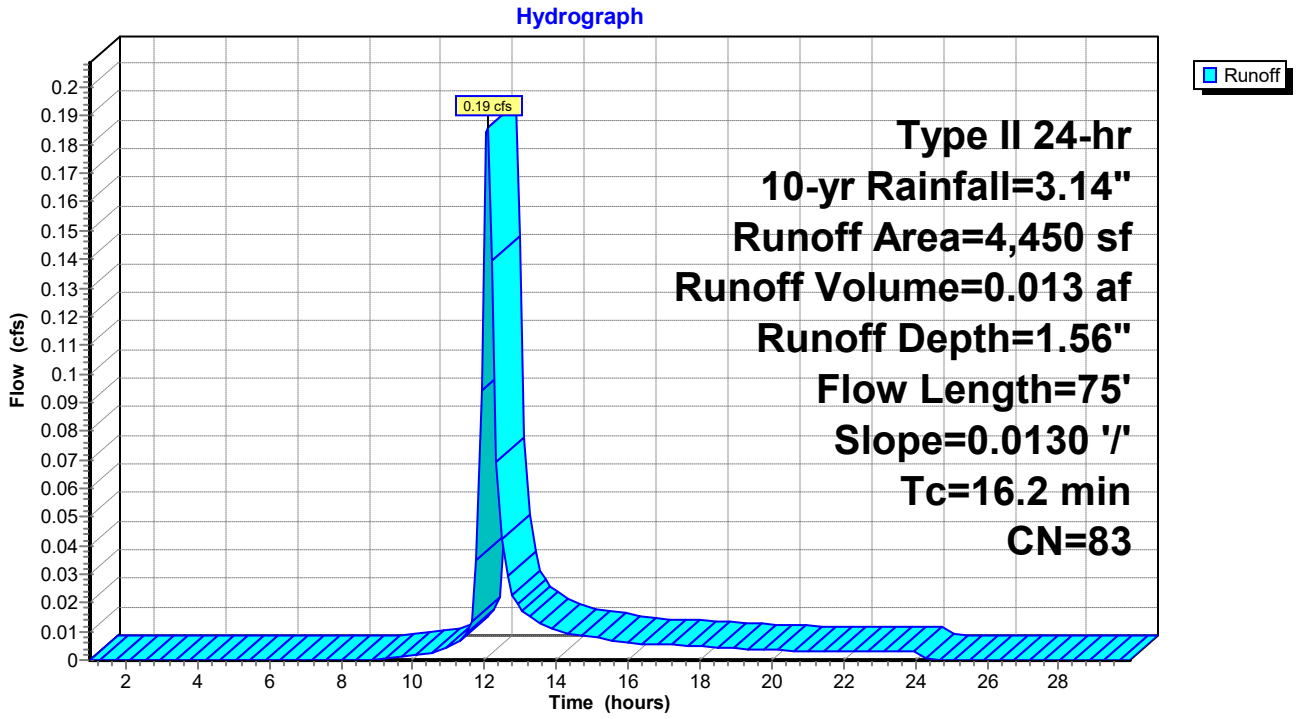
Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Description
630	98	Roofs, HSG D
3,820	80	>75% Grass cover, Good, HSG D
4,450	83	Weighted Average
3,820		85.84% Pervious Area
630		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	75	0.0130	0.08		**Sheet Flow, 75' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 4S: Prop. Area Overland to Northwest and Ridge Road Drainage



Summary for Subcatchment 5S: Area to CB#3

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

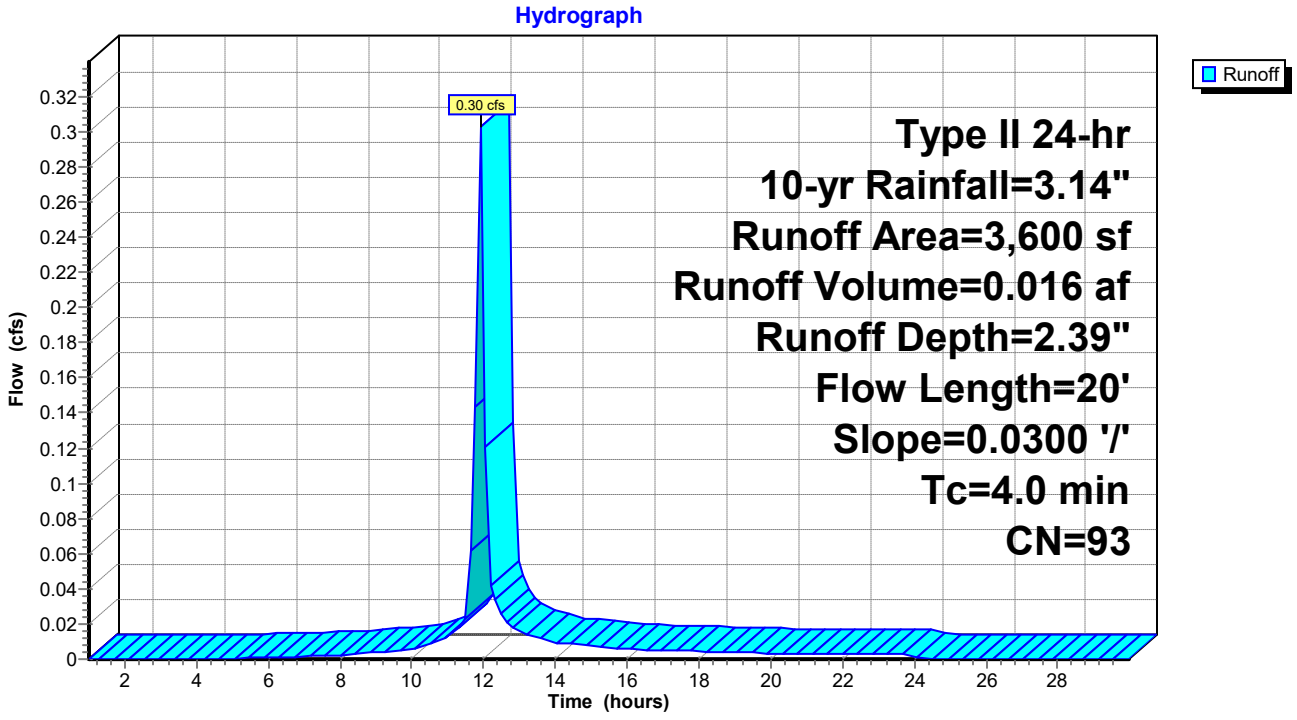
Runoff = 0.30 cfs @ 11.92 hrs, Volume= 0.016 af, Depth= 2.39"
Routed to Pond 3P : CB#3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Description
970	98	Roofs, HSG D
1,545	98	Paved parking, HSG D
1,085	80	>75% Grass cover, Good, HSG D
3,600	93	Weighted Average
1,085		30.14% Pervious Area
2,515		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	20	0.0300	0.08		**Sheet Flow, 20' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 5S: Area to CB#3



Summary for Subcatchment 6S: Area to CB#2

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

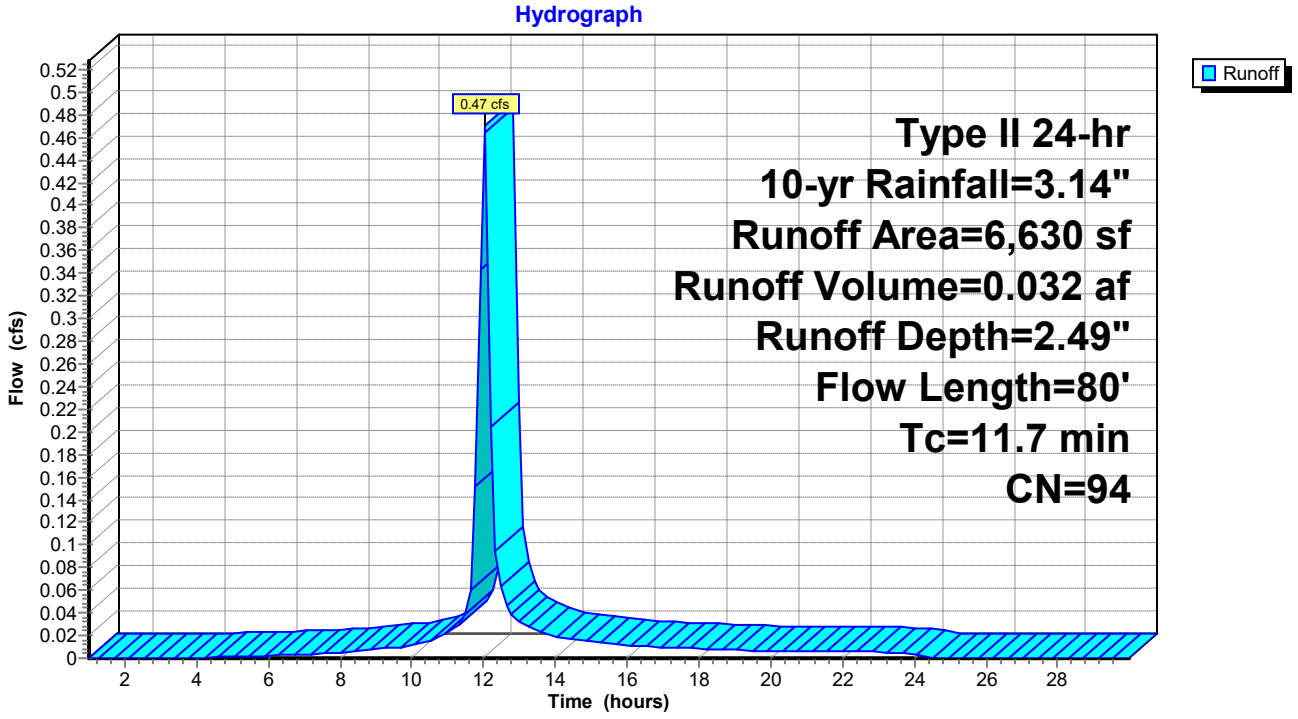
Runoff = 0.47 cfs @ 12.03 hrs, Volume= 0.032 af, Depth= 2.49"
Routed to Pond 2P : CB#2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 10-yr Rainfall=3.14"

Area (sf)	CN	Description
5,155	98	Paved parking, HSG D
1,475	80	>75% Grass cover, Good, HSG D
6,630	94	Weighted Average
1,475		22.25% Pervious Area
5,155		77.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	30	0.0050	0.04		**Sheet Flow, 30' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow, 50' Shallow Conc. Flow** Paved Kv= 20.3 fps
11.7	80	Total			

Subcatchment 6S: Area to CB#2



Summary for Pond 2P: CB#2

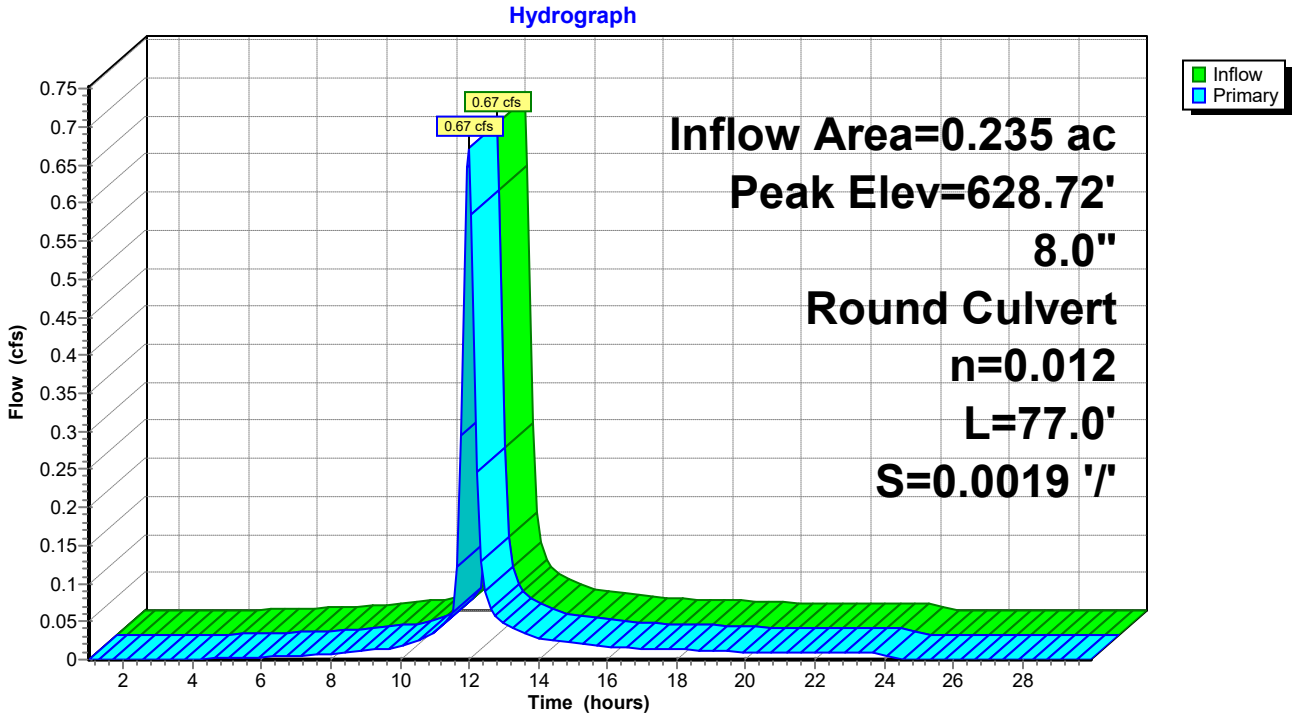
Inflow Area = 0.235 ac, 74.98% Impervious, Inflow Depth = 2.45" for 10-yr event
Inflow = 0.67 cfs @ 11.97 hrs, Volume= 0.048 af
Outflow = 0.67 cfs @ 11.97 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 11.97 hrs, Volume= 0.048 af
Routed to Link 1L : Flow to Ridge Road Drainage (CB#1)

Routing by Dyn-Stor-Ind method, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs / 2
Peak Elev= 628.72' @ 11.97 hrs
Flood Elev= 629.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	628.01'	**8.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 628.01' / 627.86' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.63 cfs @ 11.97 hrs HW=628.69' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.63 cfs @ 2.20 fps)

Pond 2P: CB#2



Summary for Pond 3P: CB#3

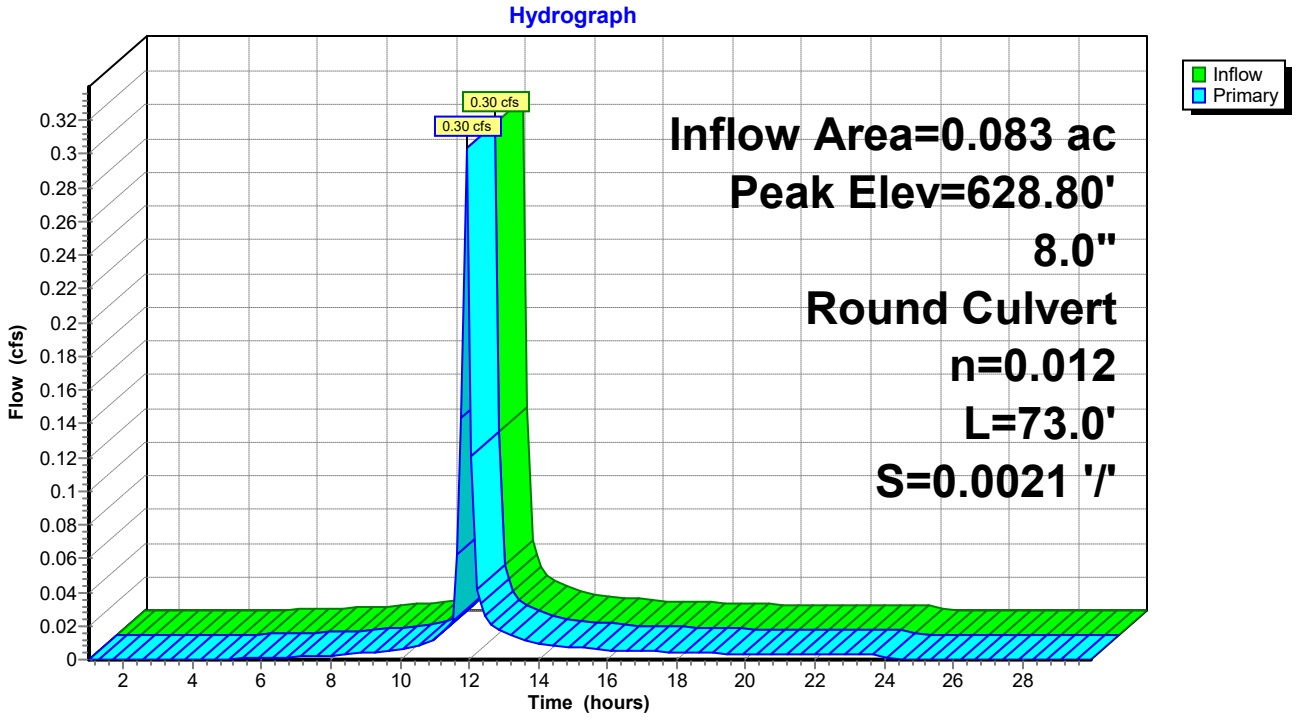
Inflow Area = 0.083 ac, 69.86% Impervious, Inflow Depth = 2.39" for 10-yr event
Inflow = 0.30 cfs @ 11.92 hrs, Volume= 0.016 af
Outflow = 0.30 cfs @ 11.92 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 11.92 hrs, Volume= 0.016 af
Routed to Pond 2P : CB#2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs / 2
Peak Elev= 628.80' @ 11.95 hrs
Flood Elev= 629.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	628.16'	**8.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 628.16' / 628.01' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.30 cfs @ 11.92 hrs HW=628.78' TW=628.69' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.30 cfs @ 1.15 fps)

Pond 3P: CB#3

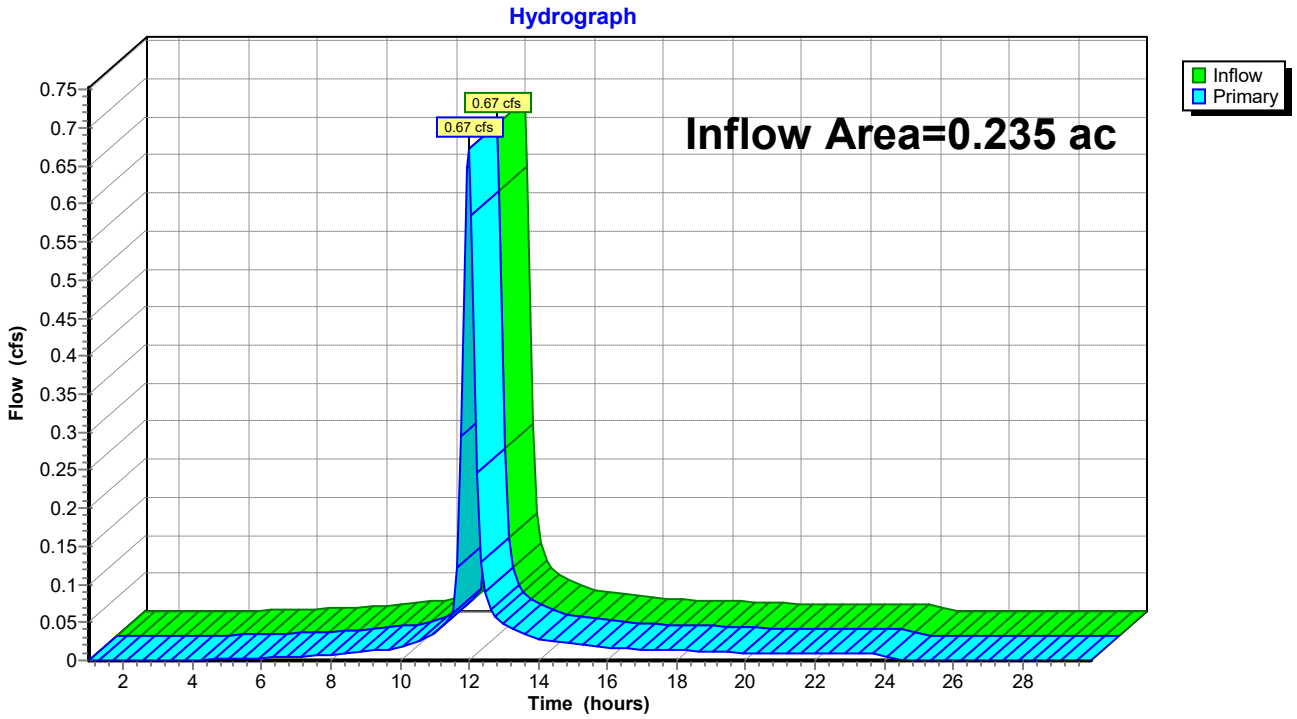


Summary for Link 1L: Flow to Ridge Road Drainage (CB#1)

Inflow Area = 0.235 ac, 74.98% Impervious, Inflow Depth = 2.45" for 10-yr event
Inflow = 0.67 cfs @ 11.97 hrs, Volume= 0.048 af
Primary = 0.67 cfs @ 11.97 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs

Link 1L: Flow to Ridge Road Drainage (CB#1)



Time span=1.00-30.00 hrs, dt=0.14 hrs, 208 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Prop. Area Overland to Runoff Area=1,829 sf 42.86% Impervious Runoff Depth=3.89"
Flow Length=30' Slope=0.0100 '/' Tc=8.6 min CN=88 Runoff=0.20 cfs 0.014 af

Subcatchment 2S: Prop. Area Overland to Runoff Area=3,730 sf 8.71% Impervious Runoff Depth=3.19"
Flow Length=75' Slope=0.0225 '/' Tc=13.0 min UI Adjusted CN=81 Runoff=0.35 cfs 0.023 af

Subcatchment 3S: Prop. Area Overland to Runoff Area=1,740 sf 0.00% Impervious Runoff Depth=3.09"
Flow Length=50' Slope=0.0300 '/' Tc=8.4 min CN=80 Runoff=0.16 cfs 0.010 af

Subcatchment 4S: Prop. Area Overland to Runoff Area=4,450 sf 14.16% Impervious Runoff Depth=3.38"
Flow Length=75' Slope=0.0130 '/' Tc=16.2 min CN=83 Runoff=0.40 cfs 0.029 af

Subcatchment 5S: Area to CB#3 Runoff Area=3,600 sf 69.86% Impervious Runoff Depth=4.42"
Flow Length=20' Slope=0.0300 '/' Tc=4.0 min CN=93 Runoff=0.54 cfs 0.030 af

Subcatchment 6S: Area to CB#2 Runoff Area=6,630 sf 77.75% Impervious Runoff Depth=4.54"
Flow Length=80' Tc=11.7 min CN=94 Runoff=0.83 cfs 0.058 af

Pond 2P: CB#2 Peak Elev=629.43' Inflow=1.20 cfs 0.088 af
8.0" Round Culvert n=0.012 L=77.0' S=0.0019 '/' Outflow=1.20 cfs 0.088 af

Pond 3P: CB#3 Peak Elev=629.60' Inflow=0.54 cfs 0.030 af
8.0" Round Culvert n=0.012 L=73.0' S=0.0021 '/' Outflow=0.54 cfs 0.030 af

Link 1L: Flow to Ridge Road Drainage (CB#1) Inflow=1.20 cfs 0.088 af
Primary=1.20 cfs 0.088 af

Total Runoff Area = 0.505 ac Runoff Volume = 0.163 af Average Runoff Depth = 3.89"
57.19% Pervious = 0.289 ac 42.81% Impervious = 0.216 ac

Summary for Subcatchment 1S: Prop. Area Overland to Southwest

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

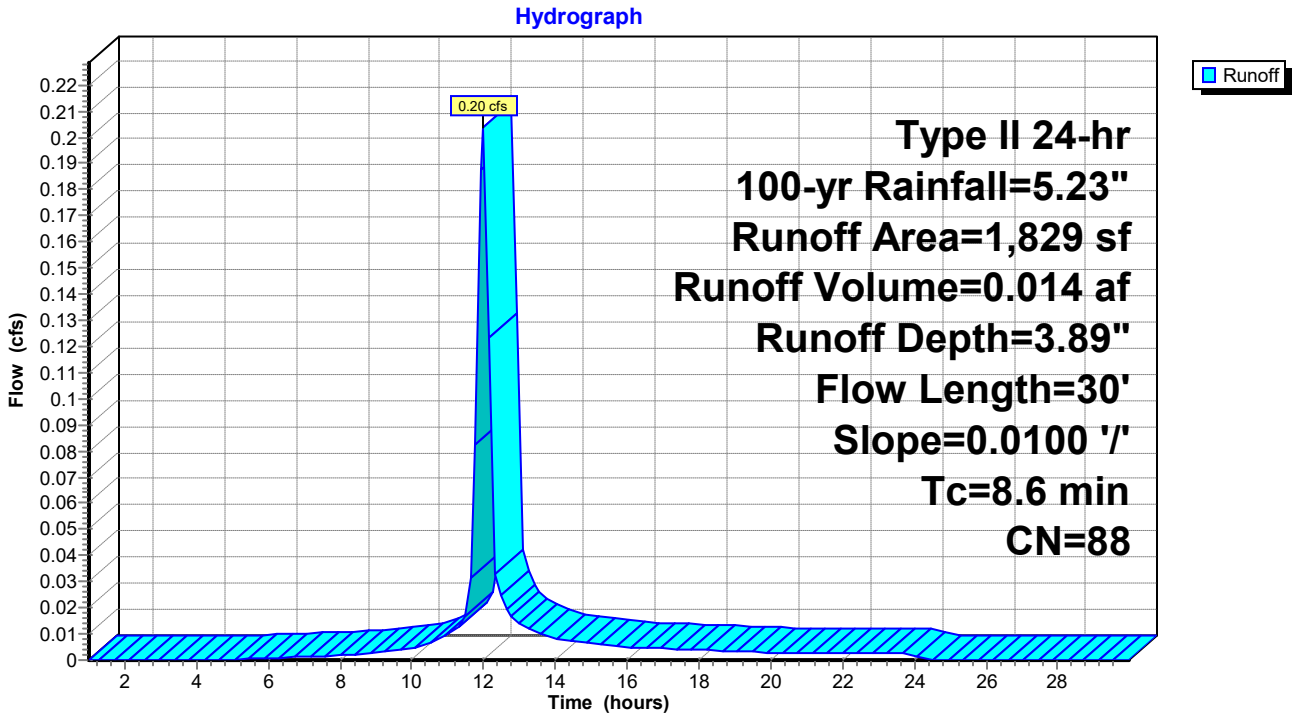
Runoff = 0.20 cfs @ 11.99 hrs, Volume= 0.014 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Description
784	98	Roofs, HSG D
1,045	80	>75% Grass cover, Good, HSG D
1,829	88	Weighted Average
1,045		57.14% Pervious Area
784		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	30	0.0100	0.06		**Sheet Flow, 30' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 1S: Prop. Area Overland to Southwest



Summary for Subcatchment 2S: Prop. Area Overland to South

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

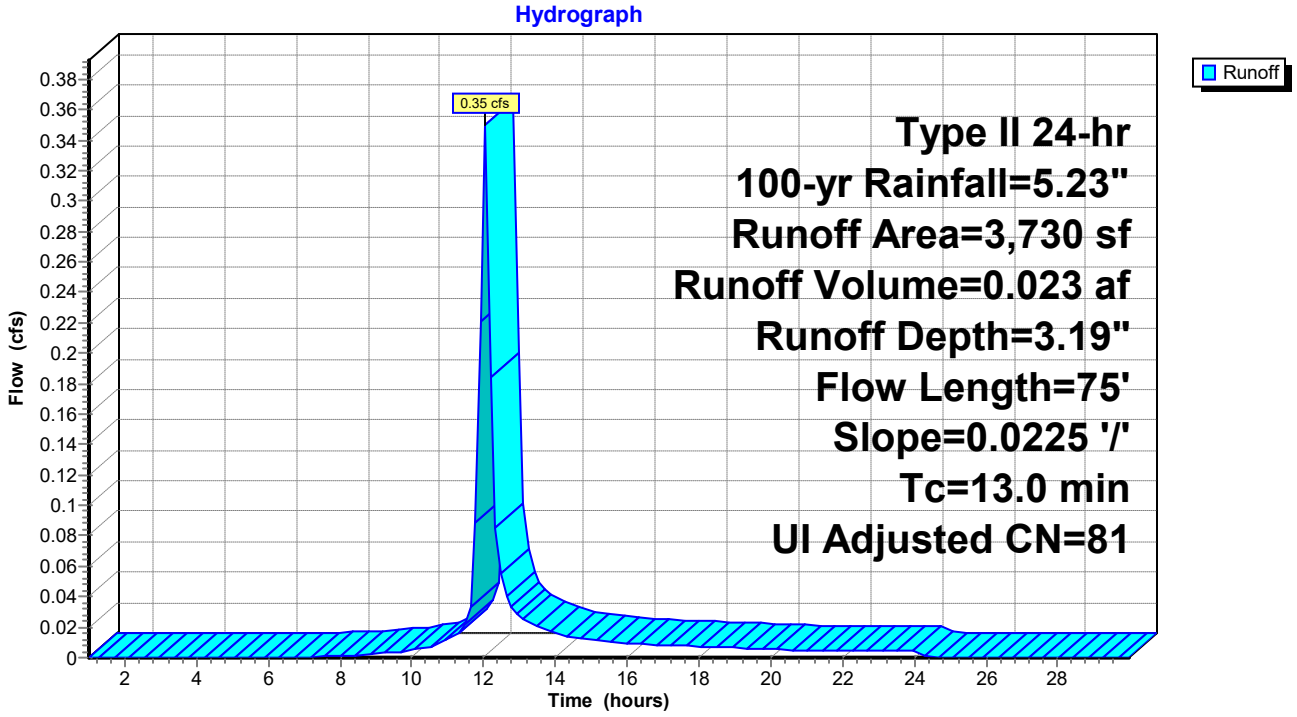
Runoff = 0.35 cfs @ 12.05 hrs, Volume= 0.023 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Adj	Description
325	98		Unconnected pavement, HSG D
3,405	80		>75% Grass cover, Good, HSG D
3,730	82	81	Weighted Average, UI Adjusted
3,405			91.29% Pervious Area
325			8.71% Impervious Area
325			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	75	0.0225	0.10		**Sheet Flow, 75' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 2S: Prop. Area Overland to South



Summary for Subcatchment 3S: Prop. Area Overland to Southeast

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

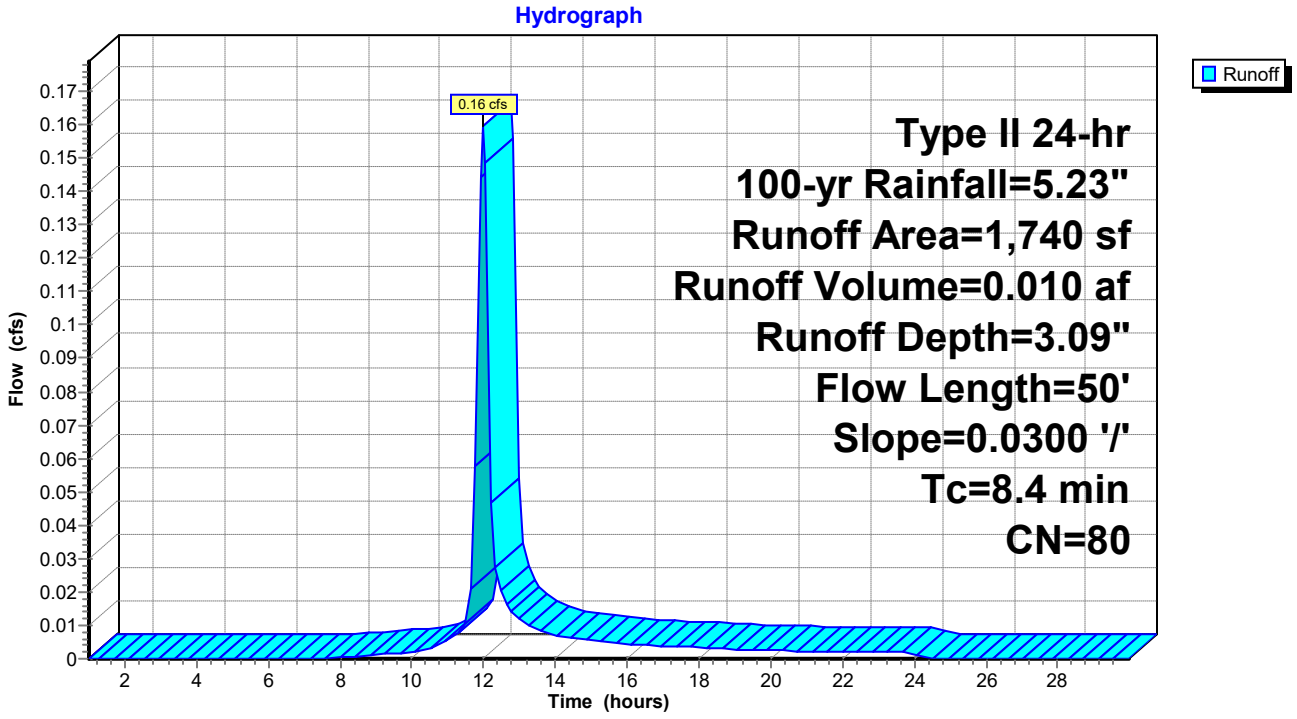
Runoff = 0.16 cfs @ 12.00 hrs, Volume= 0.010 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Description
1,740	80	>75% Grass cover, Good, HSG D
1,740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0300	0.10		**Sheet Flow, 50' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 3S: Prop. Area Overland to Southeast



Summary for Subcatchment 4S: Prop. Area Overland to Northwest and Ridge Road Drainage

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

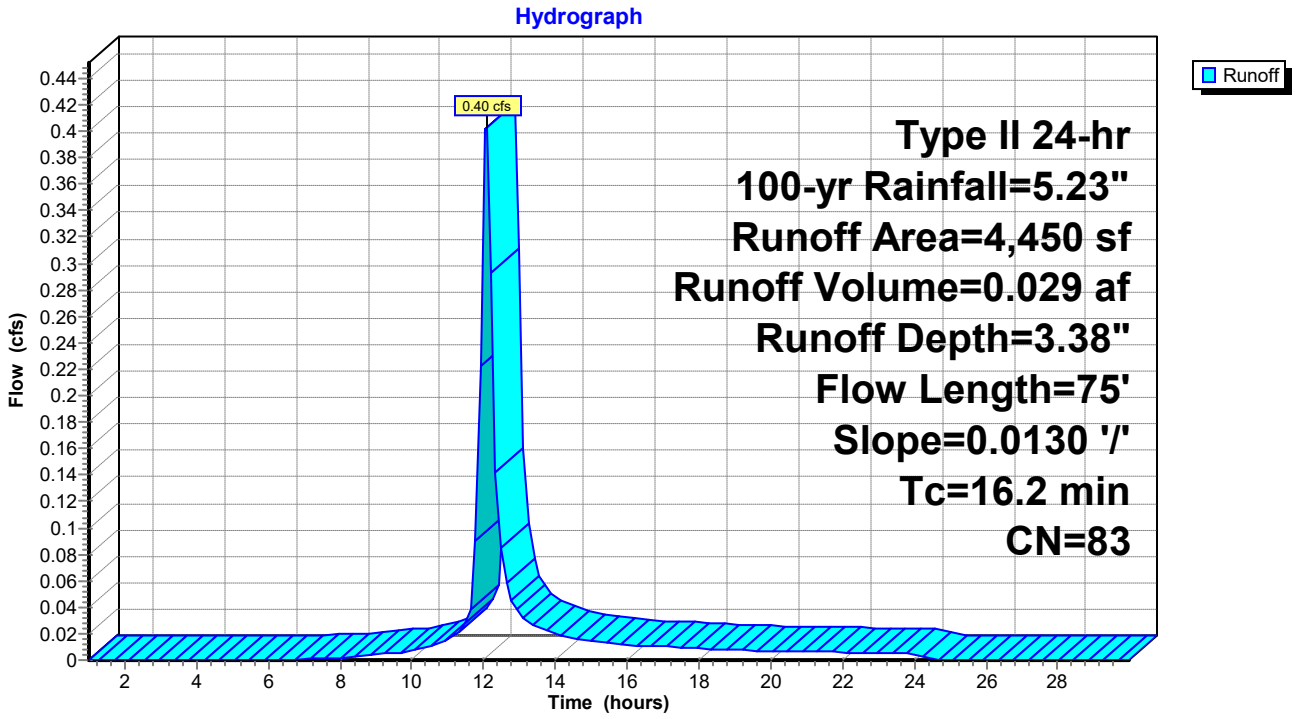
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Description
630	98	Roofs, HSG D
3,820	80	>75% Grass cover, Good, HSG D
4,450	83	Weighted Average
3,820		85.84% Pervious Area
630		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	75	0.0130	0.08		**Sheet Flow, 75' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 4S: Prop. Area Overland to Northwest and Ridge Road Drainage



Summary for Subcatchment 5S: Area to CB#3

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

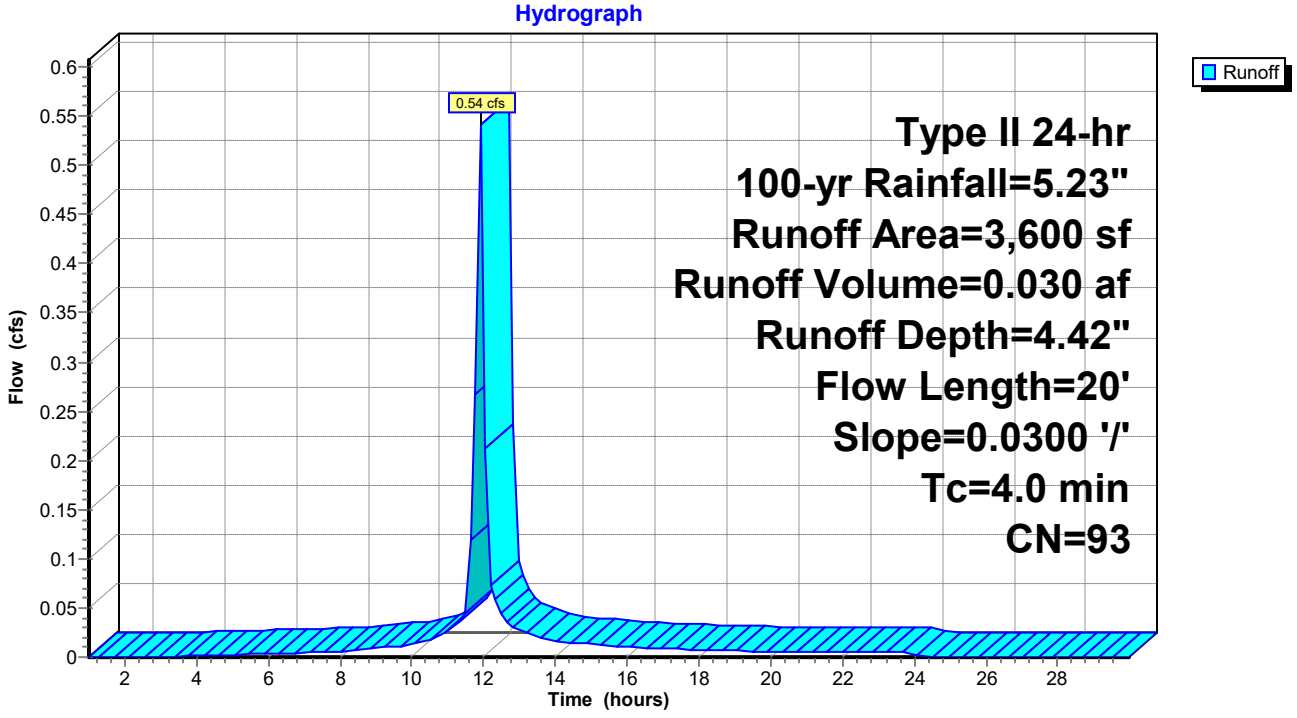
Runoff = 0.54 cfs @ 11.91 hrs, Volume= 0.030 af, Depth= 4.42"
Routed to Pond 3P : CB#3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Description
970	98	Roofs, HSG D
1,545	98	Paved parking, HSG D
1,085	80	>75% Grass cover, Good, HSG D
3,600	93	Weighted Average
1,085		30.14% Pervious Area
2,515		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	20	0.0300	0.08		**Sheet Flow, 20' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"

Subcatchment 5S: Area to CB#3



Summary for Subcatchment 6S: Area to CB#2

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

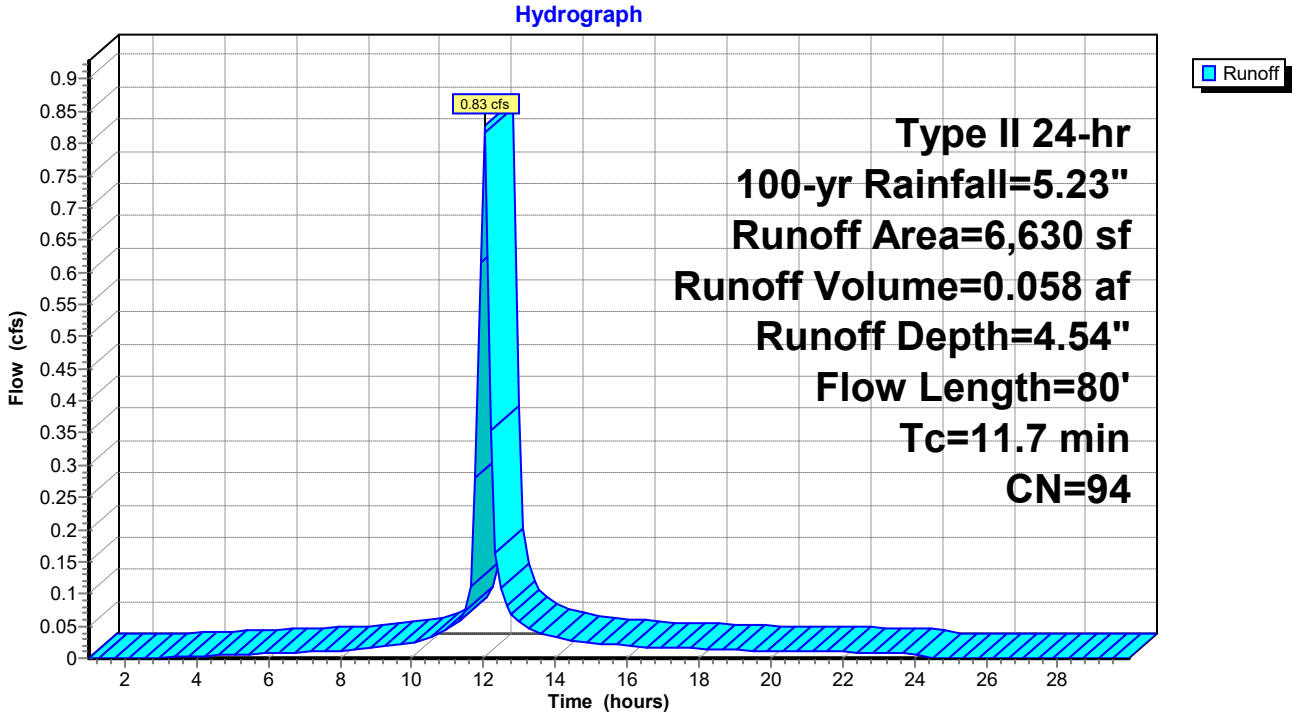
Runoff = 0.83 cfs @ 12.03 hrs, Volume= 0.058 af, Depth= 4.54"
Routed to Pond 2P : CB#2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs
Type II 24-hr 100-yr Rainfall=5.23"

Area (sf)	CN	Description
5,155	98	Paved parking, HSG D
1,475	80	>75% Grass cover, Good, HSG D
6,630	94	Weighted Average
1,475		22.25% Pervious Area
5,155		77.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	30	0.0050	0.04		**Sheet Flow, 30' Overland Flow** Grass: Dense n= 0.240 P2= 2.21"
0.3	50	0.0200	2.87		**Shallow Concentrated Flow, 50' Shallow Conc. Flow** Paved Kv= 20.3 fps
11.7	80	Total			

Subcatchment 6S: Area to CB#2



Summary for Pond 2P: CB#2

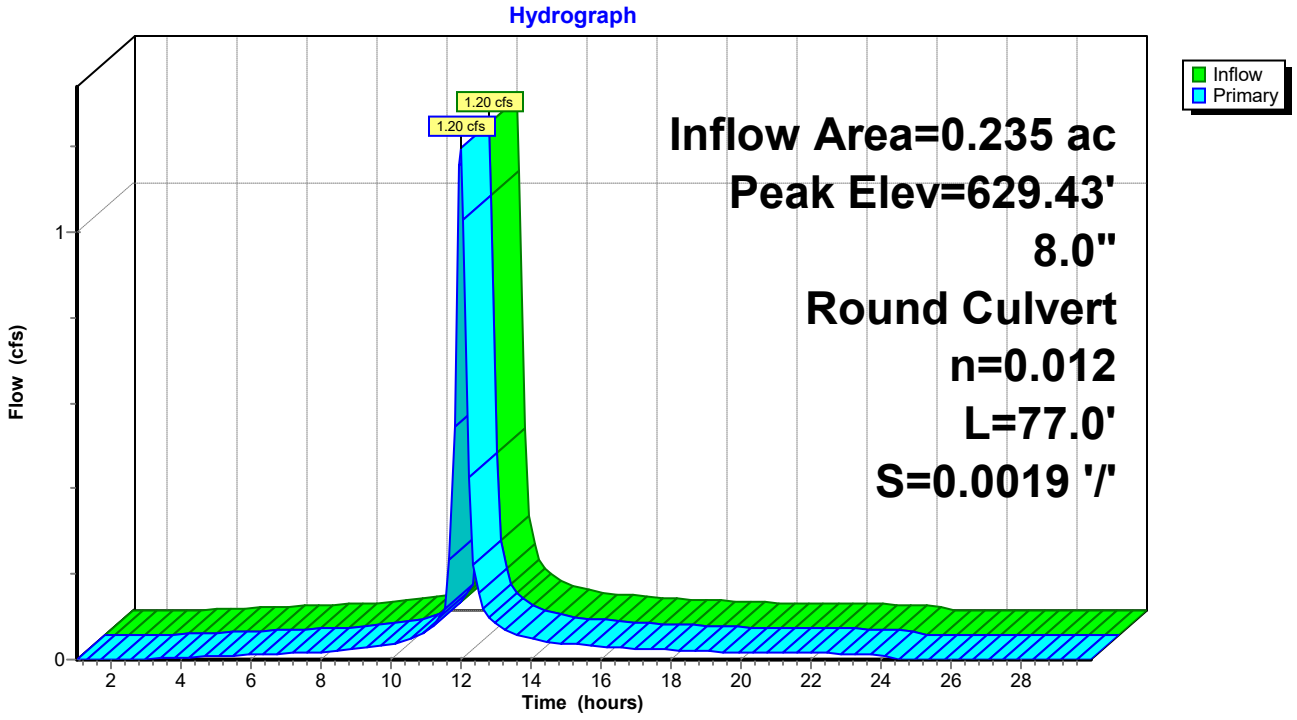
Inflow Area = 0.235 ac, 74.98% Impervious, Inflow Depth = 4.50" for 100-yr event
Inflow = 1.20 cfs @ 11.97 hrs, Volume= 0.088 af
Outflow = 1.20 cfs @ 11.97 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 11.97 hrs, Volume= 0.088 af
Routed to Link 1L : Flow to Ridge Road Drainage (CB#1)

Routing by Dyn-Stor-Ind method, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs / 2
Peak Elev= 629.43' @ 11.96 hrs
Flood Elev= 629.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	628.01'	**8.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 628.01' / 627.86' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=1.12 cfs @ 11.97 hrs HW=629.33' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.12 cfs @ 3.20 fps)

Pond 2P: CB#2



Summary for Pond 3P: CB#3

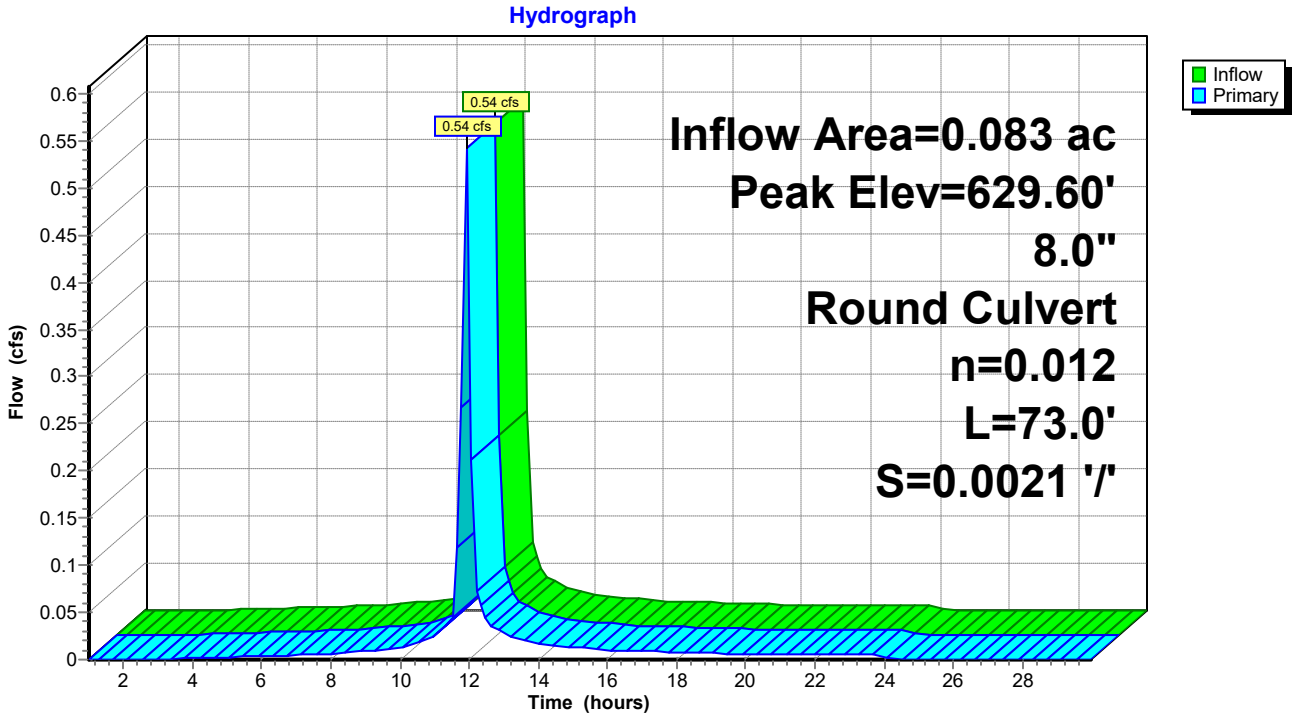
Inflow Area = 0.083 ac, 69.86% Impervious, Inflow Depth = 4.42" for 100-yr event
Inflow = 0.54 cfs @ 11.91 hrs, Volume= 0.030 af
Outflow = 0.54 cfs @ 11.91 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 11.91 hrs, Volume= 0.030 af
Routed to Pond 2P : CB#2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs / 2
Peak Elev= 629.60' @ 11.95 hrs
Flood Elev= 629.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	628.16'	**8.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 628.16' / 628.01' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Primary OutFlow Max=0.54 cfs @ 11.91 hrs HW=629.53' TW=629.35' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.54 cfs @ 1.53 fps)

Pond 3P: CB#3



Summary for Link 1L: Flow to Ridge Road Drainage (CB#1)

Inflow Area = 0.235 ac, 74.98% Impervious, Inflow Depth = 4.50" for 100-yr event
Inflow = 1.20 cfs @ 11.97 hrs, Volume= 0.088 af
Primary = 1.20 cfs @ 11.97 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-29.98 hrs, dt= 0.14 hrs

Link 1L: Flow to Ridge Road Drainage (CB#1)