DRAINAGE ANALYSIS

CLIPPER TRADERS, LLC SUBDIVISION

105 Bartlett Street
PORTSTMOUTH, NH

October 2018

REVISED November 2018

STATE OF NEW HAMPSHIRE - JOSEPH L MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER

11/6/18

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed project off Bartlett Street in Portsmouth, NH. The site is shown on the Town of Portsmouth Tax Map 157 as Lots 1 & 2 and Map 164 as lots 1, 2, 3 & 4. The total proposal is to subdivide the above described lots into 5 individual lots. The total area of the drainage analysis in the existing conditions is 8.47 acres. This area increases in the proposed conditions to 12.67 acres due to the separation of drainage from the existing sewer.

The proposed development will include construction of a new roadway ending in a cul-de-sac, new utilities to support current and future build-out conditions. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to minimize that occurrence. Since the project is located along the North Mill Pond and the project will be "separating" drainage that is currently combined with sewer, there will be an unavoidable increase in the runoff generated from the site. This runoff will not flow across any abutting properties.

Three underground sand filters are proposed for the project. A closed drainage system will support the new roadway that will end in a cul-de-sac. This cul-de-sac will be used as a forebay to a proposed underground sand filter before discharge to the North Mill Pond. Deep sump catch basins will also be installed as required for the pretreatment of runoff. The roof runoff from the building on proposed Lot 4 will be treated in a stone drip apron located at the northeast corner of the building along the drip line which will then discharge to the North Mill Pond. A new drainage trunk line will be constructed to support the separation of drainage from the sewer and will support offline deep sump catch basins as required. The separated drain will be treated utilizing two underground sand filters before discharging to the North Mill Pond.

CLIPPER TRADERS, LLC SUBDIVISION

BARTLETT STREET, NEW HAMPSHIRE

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the Town of Portsmouth, NH Assessor's Tax Map 157 as Lots 1 & 2 and Map 164 as lots 1, 2, 3 & 4. Bounding the site to the north is the North Mill Pond. To the West of the site is Bartlett Street. The property to the east is currently owned by Pan Am Railway. To the south the property is bound by the railroad and the many commercial and residential properties along Islington Street.

This report includes information about the existing site and the proposed development necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watershed areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.0 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data was used from the Extreme Precipitation Tables, provided by the Northeast Climate Center. Runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year and 50-year and utilize the "Extreme Precipitation" storm events plus 15%. Since this project disturbs more than 50,000 square-feet of contiguous terrain within the 250 foot shoreland zone, an Alteration of Terrain (AoT) permit from the New Hampshire Department of Environmental Services (NHDES) is required.

Watershed basin boundaries have been delineated using topographic maps prepared by Ambit Engineering and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire, the site is made up of one soil type:

799 – Urban land – Canton complex, well drained with a typical depth to restrictive feature of more than 80 inches. This soil has a Hydrologic Soil Group (HSG) classification of A, with a Low runoff class.

One Test Pit was performed on the site to support this design. The test pit indicated that the soil is a moderately well drained soil with a typical depth to restrictive feature of 36" inches. This soil has a Hydrologic Soil Group (HSG) classification of A.

The physical characteristics of the site consist of grades that generally slope toward the North Mill Pond. Elevations on the site range from 13 to 0 feet above sea level. The existing site is mostly developed and includes existing structures located throughout the lot with a paved parking. Vegetation around the developed portion of the lot consists of established grasses, shrubs and trees.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0259E (effective date May 17, 2005), the project site is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix. The proposed outfalls are located in a flood hazard zone.

PRE-DEVELOPMENT DRAINAGE

Large portions of the existing site drains via overland flow from the south side of the lot to the north, where runoff drains off the site via overland flow directly into the North Mill Pond. Other portions are collected in catch basins and discharge directly to the North Mill Pond. A substantial area (4.14 acres) is captured in catch basins that are then discharged to the brick sewer that traverses the site. None of the existing runoff receives any treatment.

In the pre-development condition, the site has been analyzed with 15 subcatchements (ES1, ES1a, ES1b, ES2, ES2a, ES2b, ES2c, ES3, ES4, ES5, ES6, ES7, ES8, ES9 and ES10) based on localized topography and discharge location. Subcatchments ES1a, ES1b, ES2a, ES2b and ES2c are unchanged in the proposed condition and will not be studied further in this analysis. Subcatchments ES2, ES3, ES5, ES6, ES7, ES8 and Es10 discharge to the combined sewer in the existing condition and are analyzed at Discharge Point 2 (DP2). These catch basins are proposed to

be removed (separated) from the sewer by this project. The remaining subcatchments are analyzed collectively at Discharge Point (DP1) which represents the North Mill Pond.

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
ES1	23,090	5.0	98	2.99	4.55	DP1
ES2	65,464	7.6	81	5.81	10.07	DP1
ES3	28,735	5.0	91	3.45	5.46	DP1
ES4	148,459	5.3	69	9.66	19.42	DP1
ES5	17,243	5.0	87	1.93	3.15	DP1
ES6	18,912	5.0	86	2.07	3.41	DP1
ES7	13,792	5.0	88	1.57	2.55	DP1
ES8	38,484	5.0	83	3.93	6.67	DP1
ES9	170,146	7.4	57	5.56	14.26	DP1
ES10	27,141	7.8	76	2.07	3.80	DP1

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been broken down into sixteen on-site watershed basins (PS1, PS2, PS3, PS4, PS4a, PS4b, PS4c, PS4d, PS4e, PS4f, PS5, PS6, PS7, PS8, PS9 and PS10) based on localized topography, drainage structure locations and discharge locations. All basins are collectively analyzed at Design Point 1 (DP1). This allows for a direct review of Design Points to show the comparison of runoff from the site in the pre development and post-development conditions.

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
PS1	23,090	5.0	97	2.98	4.54	DP1
PS2	65,464	7.6	81	5.81	10.07	DP1
PS3	28,735	5.0	89	3.34	5.36	DP1
PS4	76,501	5.3	42	0.31	2.58	DP1
PS4a	14,755	5.0	98	1.91	2.91	DP1
PS4b	20,314	5.0	98	2.63	4.01	DP1
PS4c	12,582	5.0	92	1.54	2.41	DP1
PS4d	14,029	5.0	81	1.36	2.36	DP1
PS4e	17,277	5.0	76	1.45	2.67	DP1
PS4f	1,740	5.0	98	0.23	0.34	DP1
PS5	17,243	5.0	87	1.93	3.15	DP1
PS6	18,912	5.0	86	2.07	3.41	DP1
PS7	13,792	5.0	88	1.57	2.55	DP1
PS8	36,146	5.0	82	3.60	6.18	DP1
PS9	164,174	7.4	55	4.65	12.68	DP1
PS10	27,141	7.8	74	1.94	3.65	DP1

The overall impervious coverage of the area analyzed in this report for all basins, decreases from 7.35 acres (57%) in the pre-development condition to 6.97 acres (55%) in the post-development condition. Since the project will decrease the amount of impervious area in the post-development condition, groundwater recharge is not required. The underground sand filter system along with deep sump catch basins and forebay provide water quality treatment to the area of new roadway and parking lot on Lot 4. The separated drain from the sewer is treated in each of two underground sand filter systems. The roof runoff from the building on Lot 4 is treated at the stone drip apron located along the drip line at the northeast corner of the building.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Ql0 (CFS)		Q50(CFS)	
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
DP 1	7.89	17.98	19.80	34.46	41.26	69.81
DP2	10.37	0.00	18.40	0.00	30.71	0.00

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is low due to the existing vegetation. During construction, the major potential for erosion is wind and storm water runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

Silt Soxx (or approved alternative) located at the toe of disturbed slopes

- Stabilized construction entrances at all access points to the site
- Rock sediment barriers at catch basins and in drainage swales
- Temporary mulching and seeding for disturbed areas Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping and surfacing the access drives and parking areas with either compacted gravel or asphalt paving.

CONCLUSION

The proposed development has been designed to provide much needed treatment to the runoff from this highly industrialized site to the greatest extent feasible. This report indicates that the development decreases the amount of impervious surface on the project. With the design of the deep sump catch basins, forebay, three underground sand filter systems and the separation of the combined drain, the post-development quality of runoff is significantly improved and the environment is better served due to separation of the drain from the sewer. The increases in peak rates of runoff in the developed condition should be viewed as favorable considering that a substantial amount of runoff is being removed from the City's sewer system thereby reducing combined sewer overflows within the system during wet weather events.

REFERENCES

1. Town of Portsmouth, NH, *Land Development Regulations*.

2. Town of Portsmouth, NH, *Zoning Ordinance*.

3. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).

4. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.

5. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.0* dated 2007.

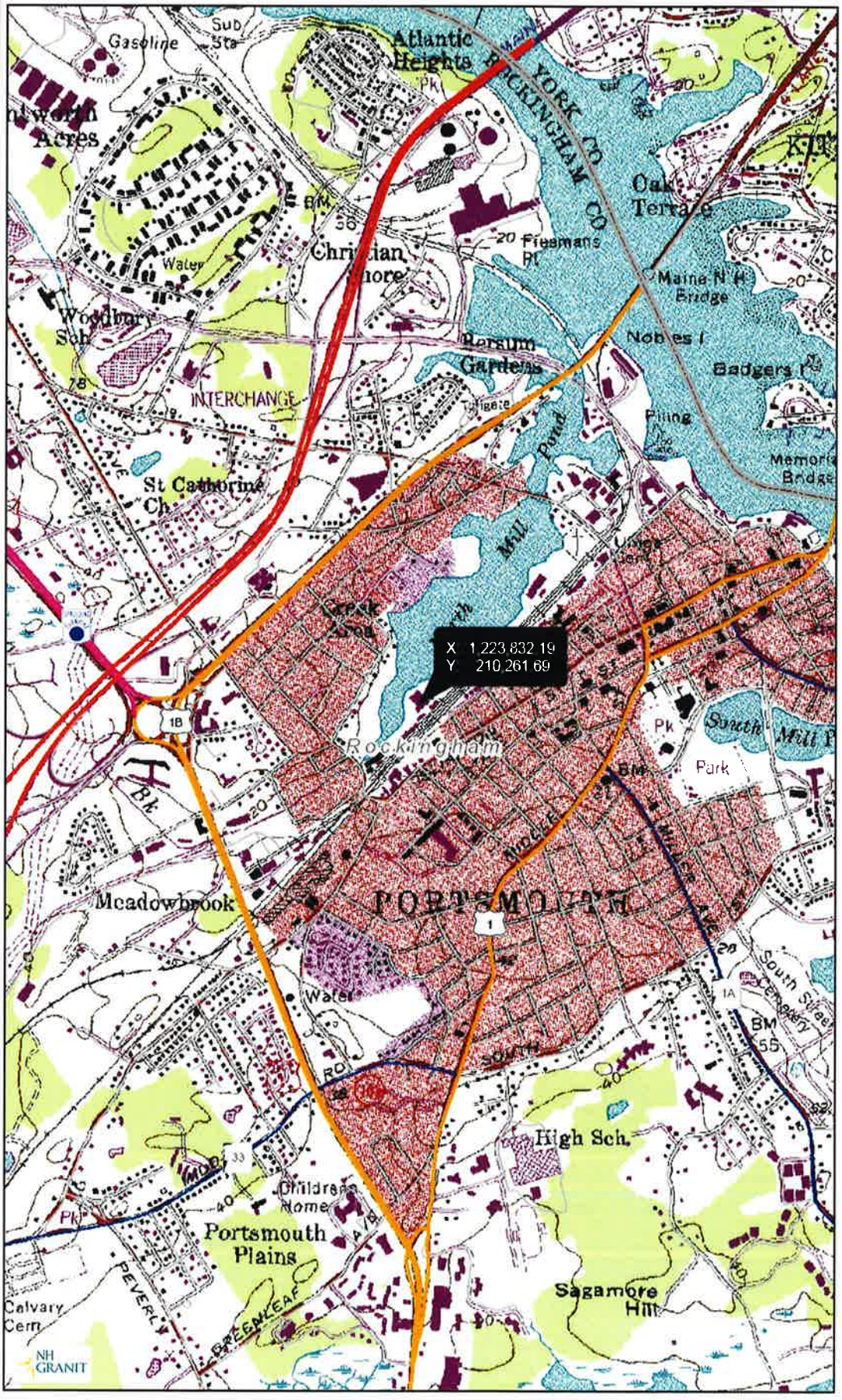
6. Northeast Regional Climate Center, *Extreme Precipitation Tables*, accessed April 10, 2018.

7. New Hampshire Code of Administrative Rules, *Env-Wq 1500*, effective 08-15-2017.

APPENDIX A

VICINITY MAP

Map by NH GRANIT



Legend

- State
- County
- City/Town
- Interstates
- Turnpikes
- US Routes
- State Routes
- Local Roads

Map Scale

1: 18,608

Map Generated: 1/8/2016

Notes

APPENDIX B

TABLES, CHARTS, ETC.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New Hampshire
Location	
Longitude	70.770 degrees West
Latitude	43.069 degrees North
Elevation	0 feet
Date/Time	Tue, 17 Apr 2018 15:07:43 -0400

Inches of Rain - 24 HR Event

2 YR = 3.21 x 15% = 3.69

10 YR = 4.87 x 15% = 5.60

25 YR = 6.17 x 15% = 7.10

50 Yr = 7.39 x 15% = 8.50

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.49	0.66	0.81	1.00	**1yr**	0.70	0.98	1.14	1.57	2.01	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.61	0.83	1.02	1.21	**2yr**	0.88	1.18	1.40	1.87	2.40	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.71	0.98	1.25	1.50	**5yr**	1.08	1.47	1.73	2.32	2.96	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.42	0.65	0.80	1.12	1.45	1.76	**10yr**	1.25	1.72	2.04	2.72	3.47	4.87	5.53	**10yr**	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	0.50	0.76	0.94	1.35	1.77	2.19	**25yr**	1.53	2.14	2.53	3.38	4.28	6.17	7.10	**25yr**	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	0.56	0.86	1.07	1.54	2.07	2.58	**50yr**	1.78	2.52	2.98	3.99	5.02	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.64	0.97	1.22	1.76	2.41	3.04	**100yr**	2.08	2.97	3.51	4.70	5.89	8.85	10.38	**100yr**	7.84	9.98	11.38	12.96	14.28	**100yr**
200yr	0.73	1.10	1.40	2.02	2.82	3.59	**200yr**	2.43	3.51	4.14	5.55	6.91	10.61	12.55	**200yr**	9.39	12.07	13.75	15.55	17.03	**200yr**
500yr	0.88	1.30	1.68	2.44	3.47	4.47	**500yr**	2.99	4.37	5.14	6.90	8.55	13.49	16.15	**500yr**	11.93	15.53	17.67	19.78	21.50	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.23	2.50	**1yr**	1.98	2.40	2.86	3.17	3.89	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.79	4.19	**5yr**	3.35	4.03	4.72	5.54	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.32	1.60	**10yr**	1.14	1.56	1.81	2.39	3.06	4.37	4.87	**10yr**	3.87	4.68	5.45	6.42	7.20	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.71	5.90	**25yr**	4.17	5.68	6.66	7.80	8.69	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.52	2.12	2.35	3.08	3.94	5.32	6.82	**50yr**	4.71	6.56	7.74	9.06	10.03	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.47	**100yr**	1.74	2.41	2.63	3.42	4.36	5.98	7.87	**100yr**	5.29	7.57	9.00	10.53	11.58	**100yr**
200yr	0.59	0.89	1.13	1.63	2.28	2.82	**200yr**	1.97	2.75	2.93	3.79	4.80	6.70	9.09	**200yr**	5.93	8.74	10.46	12.25	13.39	**200yr**
500yr	0.69	1.02	1.31	1.91	2.71	3.37	**500yr**	2.34	3.29	3.41	4.33	5.47	7.79	10.98	**500yr**	6.89	10.56	12.75	14.99	16.21	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.99	3.16	**1yr**	2.64	3.04	3.58	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.70	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.96	**5yr**	3.84	4.77	5.38	6.37	7.15	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.95	5.34	6.19	**10yr**	4.72	5.96	6.81	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.56	**25yr**	1.76	2.51	2.95	4.07	5.14	7.79	8.33	**25yr**	6.90	8.01	9.13	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.12	3.05	3.59	4.99	6.30	9.76	10.44	**50yr**	8.64	10.03	11.41	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.37	6.15	7.74	12.22	13.07	**100yr**	10.81	12.57	14.25	15.67	17.07	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.57	9.50	15.33	16.40	**200yr**	13.57	15.77	17.84	19.31	20.90	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.88	6.91	10.00	12.50	20.72	22.13	**500yr**	18.34	21.28	24.00	25.46	27.31	**500yr**

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.06)

Type/Node Name: **Subsurface Sand Filter (System 1)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable

YES		Have you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.06(b)?	
1.40	ac	A = Area draining to the practice[1]	
1.10	ac	A_I = Impervious area draining to the practice	
0.79	decimal	I = percent impervious area draining to the practice, in decimal form	
0.76	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.06	ac-in	WQV= 1" x Rv x A	
3,848	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
962	cf	25% x WQV (check calc for sediment forebay volume)	
2,886	cf	75% x WQV (check calc for surface sand filter volume)	
Proprietary System		Method of Pretreatment? (not required for clean or roof runoff)	
3,009	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← ≥ 25%WQV
781	sf	A_{SA} = surface area of the practice	
-	iph	I_{DESIGN} = design infiltration rate[2]	
N/A	Yes/No	If I_{DESIGN} is < 0.50 iph, has an underdrain been provided?	
-	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← ≤ 72-hrs
6.50	feet	E_{FC} = elevation of the bottom of the filter course material	
	feet	E_{UD} = invert elevation of the underdrain (UD), if applicable	
5.83	feet	E_{BTM} = elevation of the bottom of the practice (i.e., bottom of the stone reservoir).	
4.00	feet	E_{SHWT} = elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
3.00	feet	E_{ROCK} = elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
6.50	feet	$D_{FC\ to\ UD}$ = depth to UD from the bottom of the filter course[3]	← ≥ 1'
3.50	feet	$D_{FC\ to\ ROCK}$ = depth to bedrock from the bottom of the filter course[3]	← ≥ 1'
2.50	feet	$D_{FC\ to\ SHWT}$ = depth to SHWT from the bottom of the filter course[3]	← ≥ 1'
1.83	feet	$D_{BTM\ to\ SHWT}$ = depth to SHWT from the bottom of the practice[3]	← ≥ 2'
8.37	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
9.00	ft	Elevation of the top of the practice	
YES		10 peak elevation ≤ Elevation of the top of the practice	← yes

If a surface sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 18"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes
		The filter shall not be covered in grass. What is covering the filter?	

If an underground sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 24"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:

YES	ac	Drainage Area no larger than 5 ac?	← yes
796	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ WQV
18.0	inches	D_{FC} = filter course thickness	← 18"
Sheet	D1	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	← ≥2:1
Sheet	D1	Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (concrete? Asphalt? Pavers? Etc)	
	acres	A_{SA} = surface area of the pervious pavement	
-	:1	ratio of the contributing area to the pervious surface area	← 5:1
	inches	D_{FC} = filter course thickness	← 12"
Sheet		Note what sheet in the plan set contains the filter course spec.	← 304.1 sand

1. If the practice is a tree box filter, the drainage area shall be < 0.1 acre

2. Rate of the limiting layer (either the filter course or the underlying soil). See Vol. 2 of the NH Stormwater Manual, Ch. 2-4, for guidance on determining the infiltration rate.

3. If not within a GPA or WSIPA: SHWT/Bedrock must be at least 1 foot below the filter course material (or an underdrain must drain the SHWT to at least one foot below the filter course material). If within a GPA or WSIPA: SHWT must be at least two feet below the bottom of the practice OR the filter course material must be at least twice as thick as required and the SHWT must be at least one foot below the filter course material.

4. Volume without depending on infiltration. The storage above the filter media shall not include the volume above the outlet structure, if any.

5. The volume includes the storage above the filter but below the invert of the outlet structure (if any), the filter media voids, and the pretreatment area.

Designer's Notes:

Each underground sand filter system is designed utilizing a filter media bed with the following dimensions:

10 W X 22 L X 5 D = 1,100 c.f.

Therefore, system 1 is designed to treat at least 0.28 X WQV as shown above.

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.06)

Type/Node Name: **Subsurface Sand Filter (System 2)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable

YES		Have you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.06(b)?	
2.20	ac	A = Area draining to the practice[1]	
1.54	ac	A_I = Impervious area draining to the practice	
0.70	decimal	I = percent impervious area draining to the practice, in decimal form	
0.68	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.50	ac-in	WQV= 1" x Rv x A	
5,430	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,358	cf	25% x WQV (check calc for sediment forebay volume)	
4,073	cf	75% x WQV (check calc for surface sand filter volume)	
Proprietary System		Method of Pretreatment? (not required for clean or roof runoff)	
3,009	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← ≥ 25%WQV
781	sf	A_{SA} = surface area of the practice	
-	iph	I_{DESIGN} = design infiltration rate[2]	
N/A	Yes/No	If I_{DESIGN} is < 0.50 iph, has an underdrain been provided?	
-	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← ≤ 72-hrs
6.50	feet	E_{FC} = elevation of the bottom of the filter course material	
	feet	E_{UD} = invert elevation of the underdrain (UD), if applicable	
5.83	feet	E_{BTM} = elevation of the bottom of the practice (i.e., bottom of the stone reservoir).	
4.00	feet	E_{SHWT} = elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
3.00	feet	E_{ROCK} = elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
6.50	feet	$D_{FC\ to\ UD}$ = depth to UD from the bottom of the filter course[3]	← ≥ 1'
3.50	feet	$D_{FC\ to\ ROCK}$ = depth to bedrock from the bottom of the filter course[3]	← ≥ 1'
2.50	feet	$D_{FC\ to\ SHWT}$ = depth to SHWT from the bottom of the filter course[3]	← ≥ 1'
1.83	feet	$D_{BTM\ to\ SHWT}$ = depth to SHWT from the bottom of the practice[3]	← ≥ 2'
8.37	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
9.00	ft	Elevation of the top of the practice	
YES		10 peak elevation ≤ Elevation of the top of the practice	← yes

If a surface sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 18"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes
		The filter shall not be covered in grass. What is covering the filter?	

If an underground sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 24"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:

YES	ac	Drainage Area no larger than 5 ac?	← **yes**
796	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← **≥ WQV**
18.0	inches	D_{FC} = filter course thickness	← **18"**
Sheet	D1	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	← **≥2:1**
Sheet	D1	Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (concrete? Asphalt? Pavers? Etc)	
	acres	A_{SA} = surface area of the pervious pavement	
-	:1	ratio of the contributing area to the pervious surface area	← **5:1**
	inches	D_{FC} = filter course thickness	← **12"**
Sheet		Note what sheet in the plan set contains the filter course spec.	← **304.1 sand**

1. If the practice is a tree box filter, the drainage area shall be < 0.1 acre

2. Rate of the limiting layer (either the filter course or the underlying soil). See Vol. 2 of the NH Stormwater Manual, Ch. 2-4, for guidance on determining the infiltration rate.

3. If not within a GPA or WSIPA: SHWT/Bedrock must be at least 1 foot below the filter course material (or an underdrain must drain the SHWT to at least one foot below the filter course material). If within a GPA or WSIPA: SHWT must be at least two feet below the bottom of the practice OR the filter course material must be at least twice as thick as required and the SHWT must be at least one foot below the filter course material.

4. Volume without depending on infiltration. The storage above the filter media shall not include the volume above the outlet structure, if any.

5. The volume includes the storage above the filter but below the invert of the outlet structure (if any), the filter media voids, and the pretreatment area.

Designer's Notes:

Each underground sand filter system is designed utilizing a filter media bed with the following dimensions:

10 W X 22 L X 5 D = 1,100 c.f.

Therefore, system 2 is designed to treat at least 0.20 X WQV as shown above.

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.06)

Type/Node Name: **Subsurface Sand Filter (System 3)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable

YES		Have you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.06(b)?	
2.00	ac	A = Area draining to the practice[1]	
1.59	ac	A_I = Impervious area draining to the practice	
0.80	decimal	I = percent impervious area draining to the practice, in decimal form	
0.77	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.53	ac-in	WQV= 1" x Rv x A	
5,558	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,389	cf	25% x WQV (check calc for sediment forebay volume)	
4,168	cf	75% x WQV (check calc for surface sand filter volume)	
Proprietary System		Method of Pretreatment? (not required for clean or roof runoff)	
3,009	cf	V_{SED} = sediment forebay volume, if used for pretreatment	← ≥ 25%WQV
781	sf	A_{SA} = surface area of the practice	
-	iph	I_{DESIGN} = design infiltration rate[2]	
N/A	Yes/No	If I_{DESIGN} is < 0.50 iph, has an underdrain been provided?	
-	hours	T_{DRAIN} = drain time = V / (A_{SA} * I_{DESIGN})	← ≤ 72-hrs
6.50	feet	E_{FC} = elevation of the bottom of the filter course material	
	feet	E_{UD} = invert elevation of the underdrain (UD), if applicable	
5.83	feet	E_{BTM} = elevation of the bottom of the practice (i.e., bottom of the stone reservoir).	
4.00	feet	E_{SHWT} = elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
3.00	feet	E_{ROCK} = elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
6.50	feet	$D_{FC\ to\ UD}$ = depth to UD from the bottom of the filter course[3]	← ≥ 1'
3.50	feet	$D_{FC\ to\ ROCK}$ = depth to bedrock from the bottom of the filter course[3]	← ≥ 1'
2.50	feet	$D_{FC\ to\ SHWT}$ = depth to SHWT from the bottom of the filter course[3]	← ≥ 1'
1.83	feet	$D_{BTM\ to\ SHWT}$ = depth to SHWT from the bottom of the practice[3]	← ≥ 2'
8.37	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
9.00	ft	Elevation of the top of the practice	
YES		10 peak elevation ≤ Elevation of the top of the practice	← yes

If a surface sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 18"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes
		The filter shall not be covered in grass. What is covering the filter?	

If an underground sand filter is proposed:

YES	ac	Drainage Area check.	← < 10 ac
	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ 75%WQV
	inches	D_{FC} = filter course thickness	← 24"
Sheet		Note what sheet in the plan set contains the filter course specification	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:

YES	ac	Drainage Area no larger than 5 ac?	← yes
796	cf	V = volume of storage[4, 5] (attach a stage-storage table)	← ≥ WQV
18.0	inches	D_{FC} = filter course thickness	← 18"
Sheet	D1	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	← ≥2:1
Sheet	D1	Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (concrete? Asphalt? Pavers? Etc)	
	acres	A_{SA} = surface area of the pervious pavement	
-	:1	ratio of the contributing area to the pervious surface area	← 5:1
	inches	D_{FC} = filter course thickness	← 12"
Sheet		Note what sheet in the plan set contains the filter course spec.	← 304.1 sand

1. If the practice is a tree box filter, the drainage area shall be < 0.1 acre

2. Rate of the limiting layer (either the filter course or the underlying soil). See Vol. 2 of the NH Stormwater Manual, Ch. 2-4, for guidance on determining the infiltration rate.

3. If not within a GPA or WSIPA: SHWT/Bedrock must be at least 1 foot below the filter course material (or an underdrain must drain the SHWT to at least one foot below the filter course material). If within a GPA or WSIPA: SHWT must be at least two feet below the bottom of the practice OR the filter course material must be at least twice as thick as required and the SHWT must be at least one foot below the filter course material.

4. Volume without depending on infiltration. The storage above the filter media shall not include the volume above the outlet structure, if any.

5. The volume includes the storage above the filter but below the invert of the outlet structure (if any), the filter media voids, and the pretreatment area.

Designer's Notes:

Each underground sand filter system is designed utilizing a filter media bed with the following dimensions:

10 W X 22 L X 5 D = 1,100 c.f.

Therefore, system 3 is designed to treat at least 0.19 X WQV as shown above.

PWD Stormwater Plan Review Infiltration Testing Log

Version 1 *7/1/2015*

Project Name: Clipper Traders
Project Address: Bartlett St,
Testing Company: Ambit Engineering
Phone Number:
Date: OCT. 10, 2019
Weather: Sun
Tester's Name: Joe Mullady
Email Address:

Test Number: 1
Test Depth (feet): 24"
Test Pit/Boring Hole Number: 1
Surface Elevation (feet): ~ 10.0
Test Method: KSAT
Instrument Diameter (inches): 4"

Soil Characterization

Depth (feet):	Soil Texture:	Limiting Layers Type and Depth (feet):
Fill To 24"	Granular To 24"	

Presoak

Time:	Time Interval:	Measurement, (feet):	Drop in water level, (feet):
	0	2'	1'
	30		
	30		

Infiltration Testing

Time:	Time Interval (~~10 or 30~~ 60 minutes):	Measurement, (feet):	Drop in water level, (feet):	Infiltration rate (inches per hour):	Remarks:
To = 12:35	0	I_o 2' → 11"	—	—	Stabilized @ 11"
1:32	60	I_o 2' → 11"	7"	7"	Stabilized @ 11"
2:35	60	I_o 2' → 11"	7"	7"	Stabilized @ 11"
3:35	60	I_o 2' → 11"	6"	6"	Stabilized @ 11"
4:35	60	I_o 2' → 11"	7"	7"	

Stabilized Infiltration Testing Rate (inches per hour):

AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD-UNIT 3
PORTSMOUTH, NH 03801-7114
603-430-9282

TEST PIT LOGS

TEST PIT #1 Logged By SDR Designer Job No. 2429

Witnessed By Date 10/15/18

ESHWT: 36" Observed H2O: 36" Restrictive Layer 36" Refusal : NONE TO 44"

Roots: Percolation Rate Notes:

DEPTH	DESCRIPTION
0-20	10 YR 3/1 FINE SANDY LOAM (FILL) GRANULAR, FRIABLE
20-36	10YR 2/1 FINE SANDY LOAM (FILL) GRANULAR, FRIABLE
36-44	10YR 5/4 FINE LOAMY SAND, FIRM, MASSIVE
	2.5Y 6/2 REDOX DEPLETIONS
	7.5YR 4/4 REDOX CONCENTRATIONS

TEST PIT #2 Logged By Designer Job No.

Witnessed By : Date

ESHWT: Observed H2O: Restrictive Layer: Refusal:

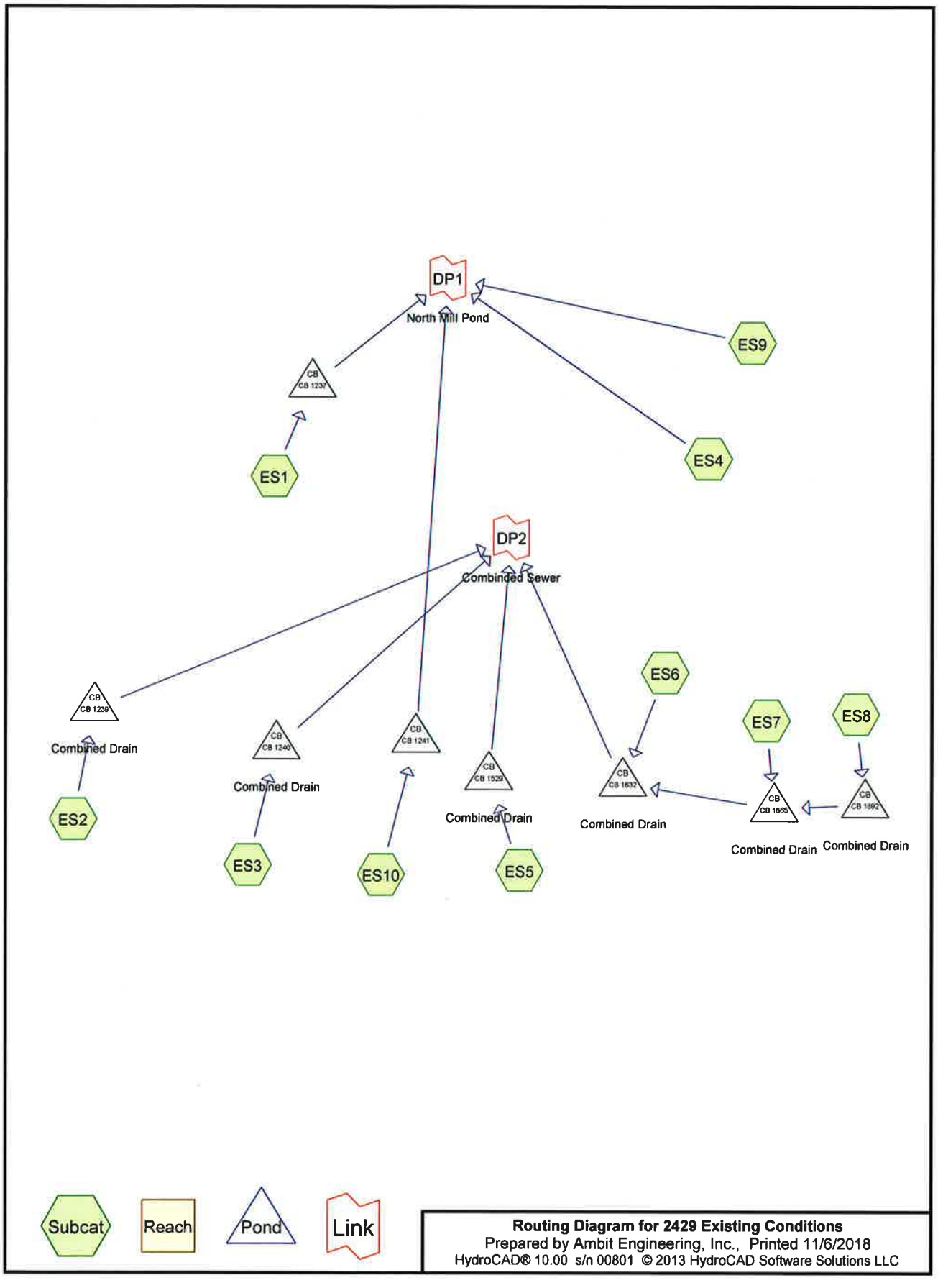
Roots: None Percolation Rate: Notes

DEPTH	DESCRIPTION

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 2429 Existing Conditions
Prepared by Ambit Engineering, Inc., Printed 11/6/2018
HydroCAD® 10.00 s/n 00801 © 2013 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.697	39	>75% Grass cover, Good, HSG A (ES4, ES6, ES8, ES9)
0.412	77	Fallow, bare soil, HSG A (ES2, ES3, ES4)
0.114	96	Gravel surface, HSG A (ES10)
1.892	98	Gravel surface, HSG A (ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
3.505	98	Paved parking, HSG A (ES1, ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
1.731	98	Roofs, HSG A (ES1, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
0.126	98	Unconnected pavement, sidewalk, HSG A (ES1, ES2, ES3, ES4, ES9)
0.071	98	Unconnected roofs, HSG A (ES10)
3.196	30	Woods, Good, HSG A (ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
0.914	32	Woods/grass comb., Good, HSG A (ES4, ES9)
12.660	**72**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.660	HSG A	ES1, ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
12.660		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 ES1: Runoff Area=23,090 sf 100.00% Impervious Runoff Depth=3.46"
Flow Length=209' Tc=5.0 min CN=98 Runoff=1.96 cfs 0.153 af

Subcatchment ES10: Runoff Area=27,141 sf 50.56% Impervious Runoff Depth=1.50"
Flow Length=300' Tc=7.8 min CN=76 Runoff=1.01 cfs 0.078 af

Subcatchment ES2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=1.86"
Flow Length=400' Tc=7.6 min CN=81 Runoff=3.08 cfs 0.233 af

Subcatchment ES3: Runoff Area=28,735 sf 86.24% Impervious Runoff Depth=2.72"
Flow Length=140' Tc=5.0 min CN=91 Runoff=2.11 cfs 0.150 af

Subcatchment ES4: Runoff Area=148,459 sf 52.87% Impervious Runoff Depth=1.07"
Flow Length=342' Tc=5.3 min CN=69 Runoff=4.03 cfs 0.304 af

Subcatchment ES5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=2.35"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.12 cfs 0.078 af

Subcatchment ES6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=2.27"
Flow Length=171' Tc=5.0 min CN=86 Runoff=1.19 cfs 0.082 af

Subcatchment ES7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=2.44"
Flow Length=144' Tc=5.0 min CN=88 Runoff=0.93 cfs 0.064 af

Subcatchment ES8: Runoff Area=38,484 sf 77.66% Impervious Runoff Depth=2.02"
Flow Length=253' Tc=5.0 min CN=83 Runoff=2.15 cfs 0.149 af

Subcatchment ES9: Runoff Area=170,146 sf 37.83% Impervious Runoff Depth=0.49"
Flow Length=452' Tc=7.4 min CN=57 Runoff=1.26 cfs 0.159 af

Pond CB 1237: Peak Elev=6.22' Inflow=1.96 cfs 0.153 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=1.96 cfs 0.153 af

Pond CB 1239: Combined Drain Peak Elev=15.21' Inflow=3.08 cfs 0.233 af
8.0" Round Culvert n=0.013 L=156.0' S=0.0050 '/' Outflow=3.08 cfs 0.233 af

Pond CB 1240: Combined Drain Peak Elev=9.42' Inflow=2.11 cfs 0.150 af
8.0" Round Culvert n=0.013 L=158.0' S=0.0050 '/' Outflow=2.11 cfs 0.150 af

Pond CB 1241: Peak Elev=5.51' Inflow=1.01 cfs 0.078 af
8.0" Round Culvert n=0.013 L=103.0' S=0.0050 '/' Outflow=1.01 cfs 0.078 af

Pond CB 1529: Combined Drain Peak Elev=10.51' Inflow=1.12 cfs 0.078 af
6.0" Round Culvert n=0.013 L=109.0' S=0.0050 '/' Outflow=1.12 cfs 0.078 af

Pond CB 1632: Combined Drain Peak Elev=20.31' Inflow=4.27 cfs 0.295 af
8.0" Round Culvert n=0.013 L=107.0' S=0.0050 '/' Outflow=4.27 cfs 0.295 af

Pond CB 1665: Combined Drain Peak Elev=22.93' Inflow=3.07 cfs 0.213 af
10.0" Round Culvert n=0.013 L=95.0' S=0.0140 '/' Outflow=3.07 cfs 0.213 af

Pond CB 1692: Combined Drain Peak Elev=24.73' Inflow=2.15 cfs 0.149 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0053 '/' Outflow=2.15 cfs 0.149 af

Link DP1: North Mill Pond Inflow=7.89 cfs 0.694 af
Primary=7.89 cfs 0.694 af

Link DP2: Combinded Sewer Inflow=10.37 cfs 0.756 af
Primary=10.37 cfs 0.756 af

Total Runoff Area = 12.660 ac Runoff Volume = 1.450 af Average Runoff Depth = 1.37"
42.13% Pervious = 5.334 ac 57.87% Impervious = 7.326 ac

Summary for Subcatchment ES1:

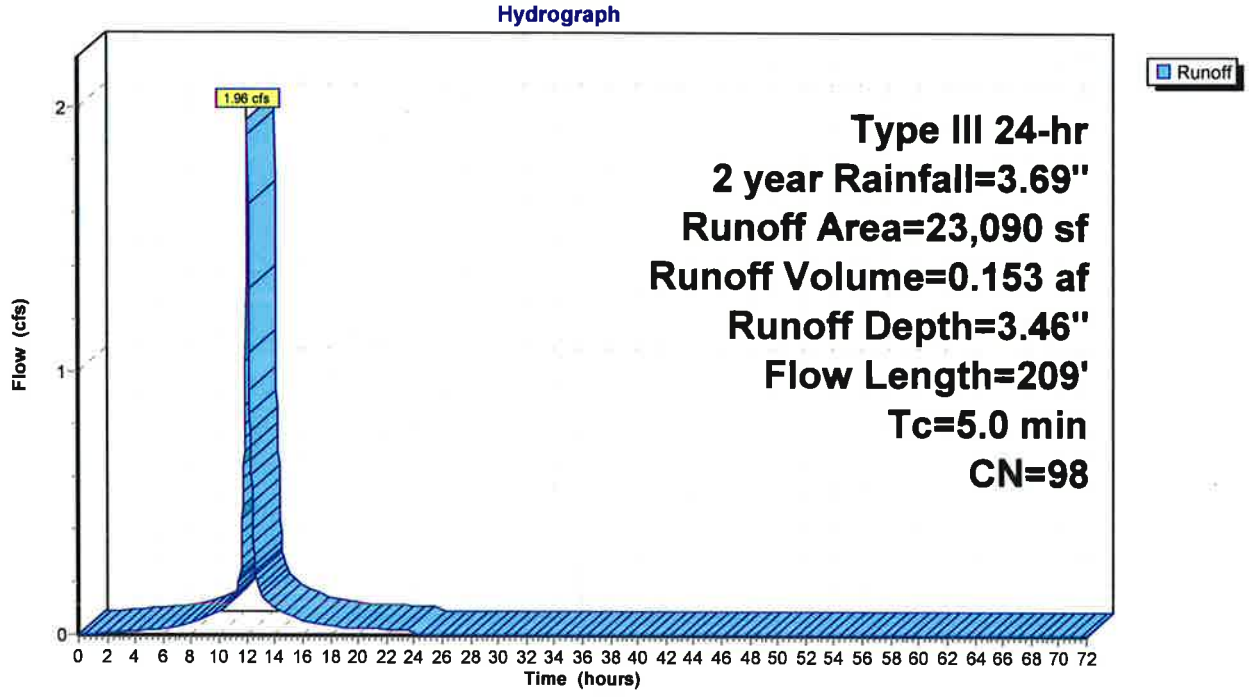
Runoff = 1.96 cfs @ 12.07 hrs, Volume= 0.153 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	5,133	98	Roofs, HSG A
	17,020	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	23,090	98	Weighted Average
	23,090		100.00% Impervious Area
	937		4.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES1:



Summary for Subcatchment ES10:

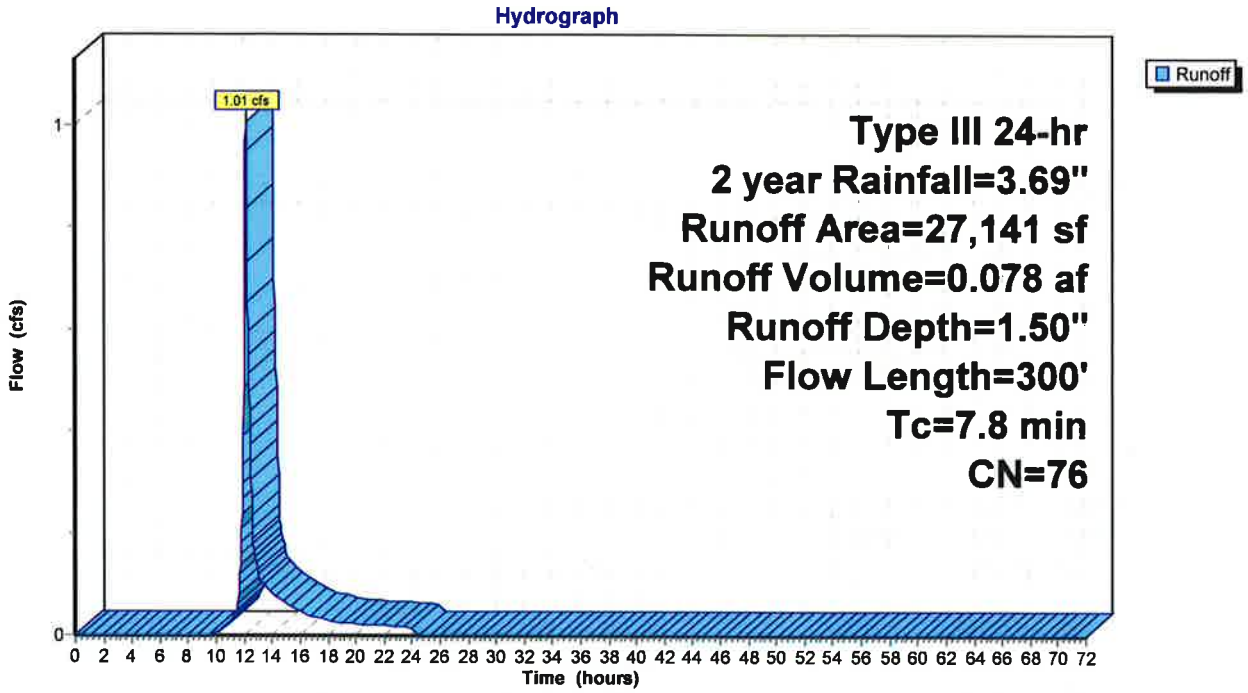
Runoff = 1.01 cfs @ 12.12 hrs, Volume= 0.078 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
10,611	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
27,141	76	Weighted Average
13,419		49.44% Pervious Area
13,722		50.56% Impervious Area
3,111		22.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment ES10:



Summary for Subcatchment ES2:

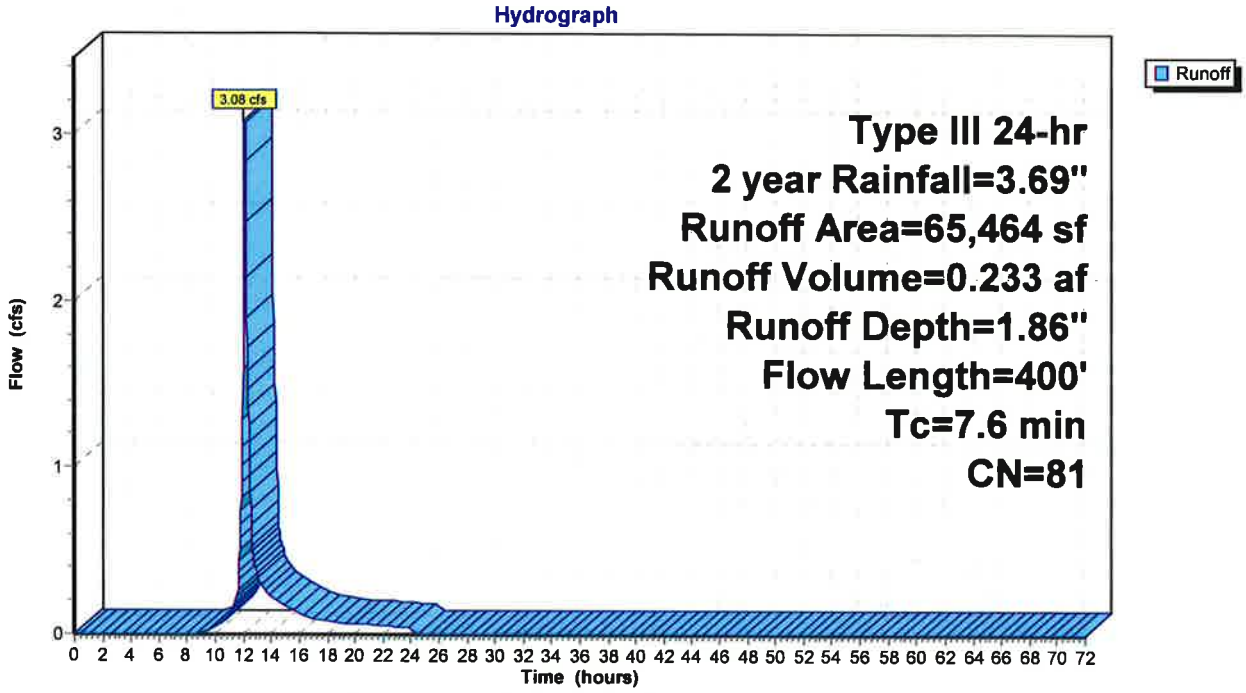
Runoff = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment ES2:



Summary for Subcatchment ES3:

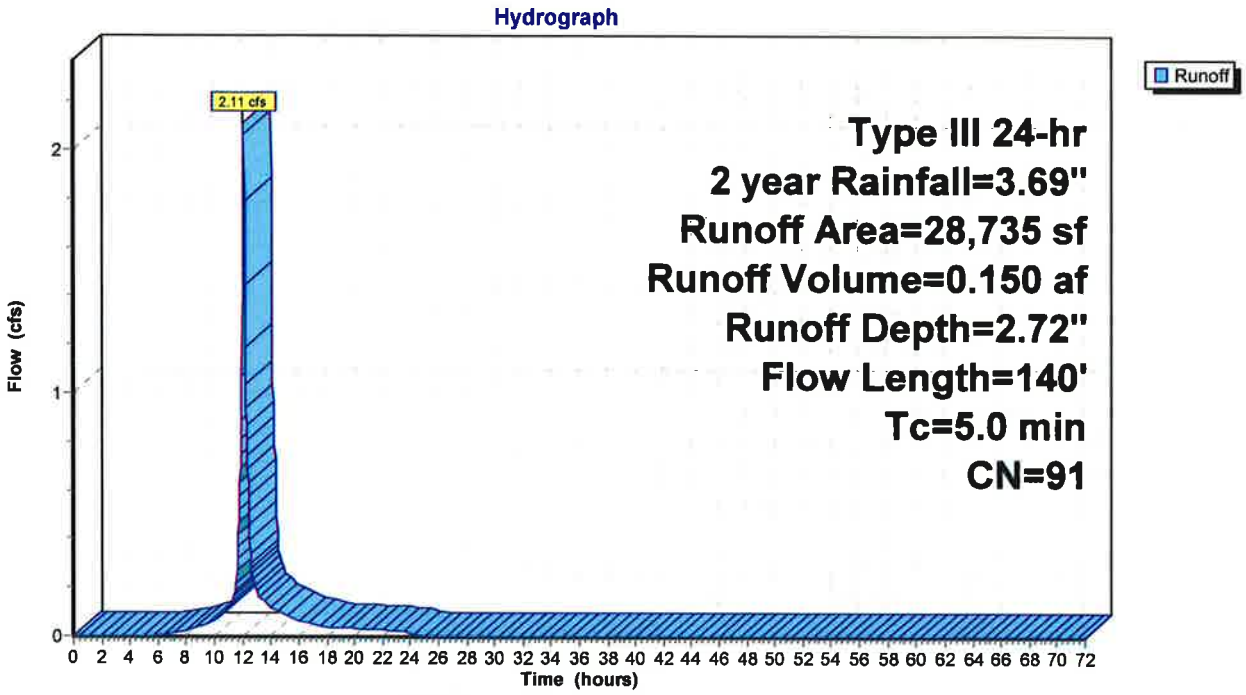
Runoff = 2.11 cfs @ 12.07 hrs, Volume= 0.150 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	19,765	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	28,735	91	Weighted Average
	3,954		13.76% Pervious Area
	24,781		86.24% Impervious Area
	692		2.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES3:



Summary for Subcatchment ES4:

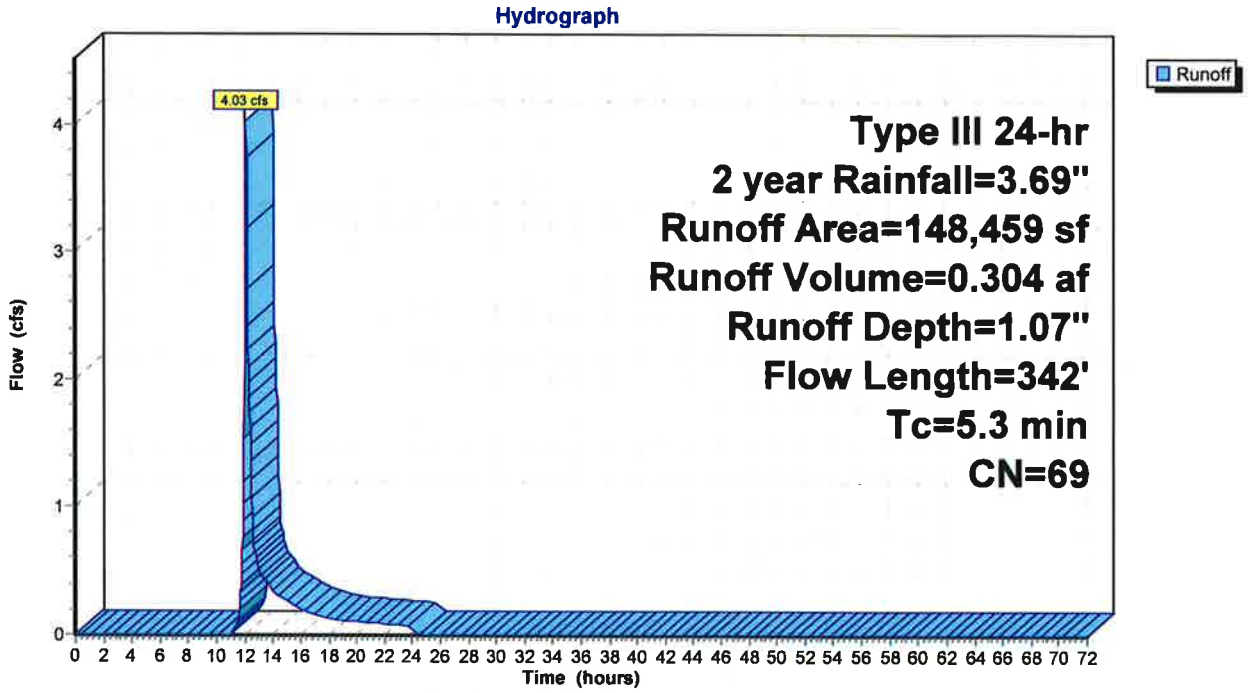
Runoff = 4.03 cfs @ 12.09 hrs, Volume= 0.304 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	28,300	98	Roofs, HSG A
	40,115	98	Paved parking, HSG A
	25,323	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	7,831	39	>75% Grass cover, Good, HSG A
*	9,267	98	Gravel surface, HSG A
	7,355	77	Fallow, bare soil, HSG A
	148,459	69	Weighted Average
	69,964		47.13% Pervious Area
	78,495		52.87% Impervious Area
	813		1.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment ES4:



Summary for Subcatchment ES5:

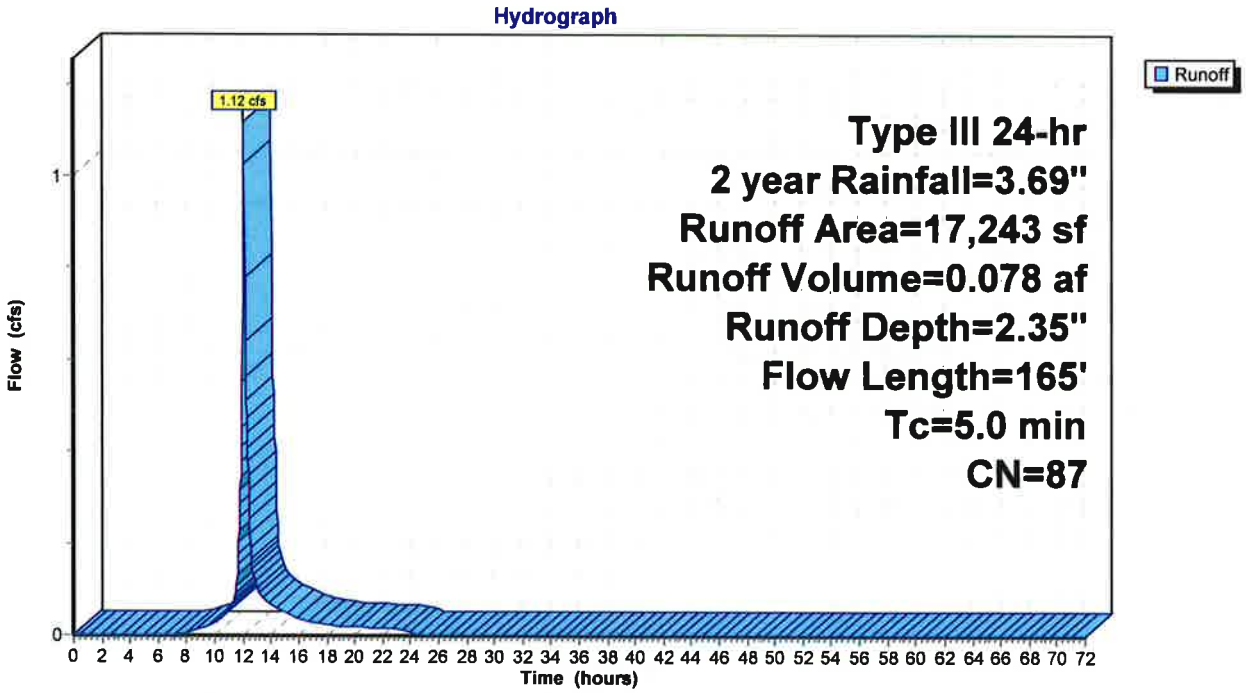
Runoff = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES5:



Summary for Subcatchment ES6:

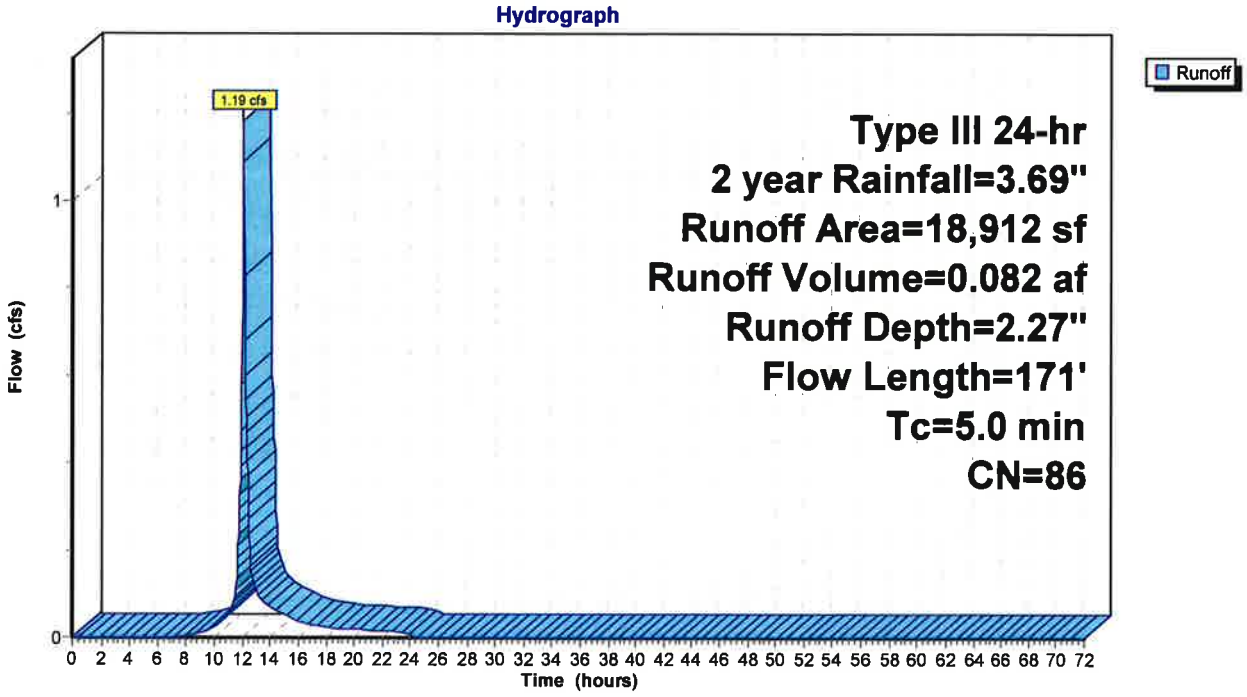
Runoff = 1.19 cfs @ 12.07 hrs, Volume= 0.082 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES6:



Summary for Subcatchment ES7:

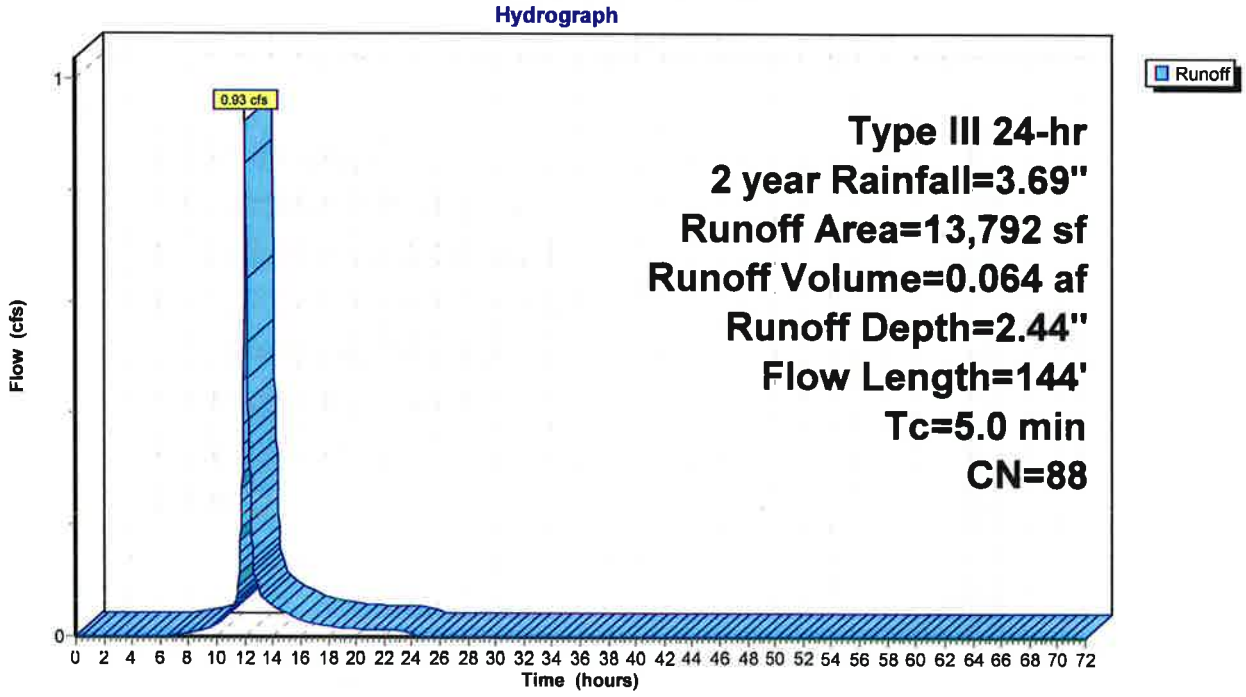
Runoff = 0.93 cfs @ 12.07 hrs, Volume= 0.064 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES7:



Summary for Subcatchment ES8:

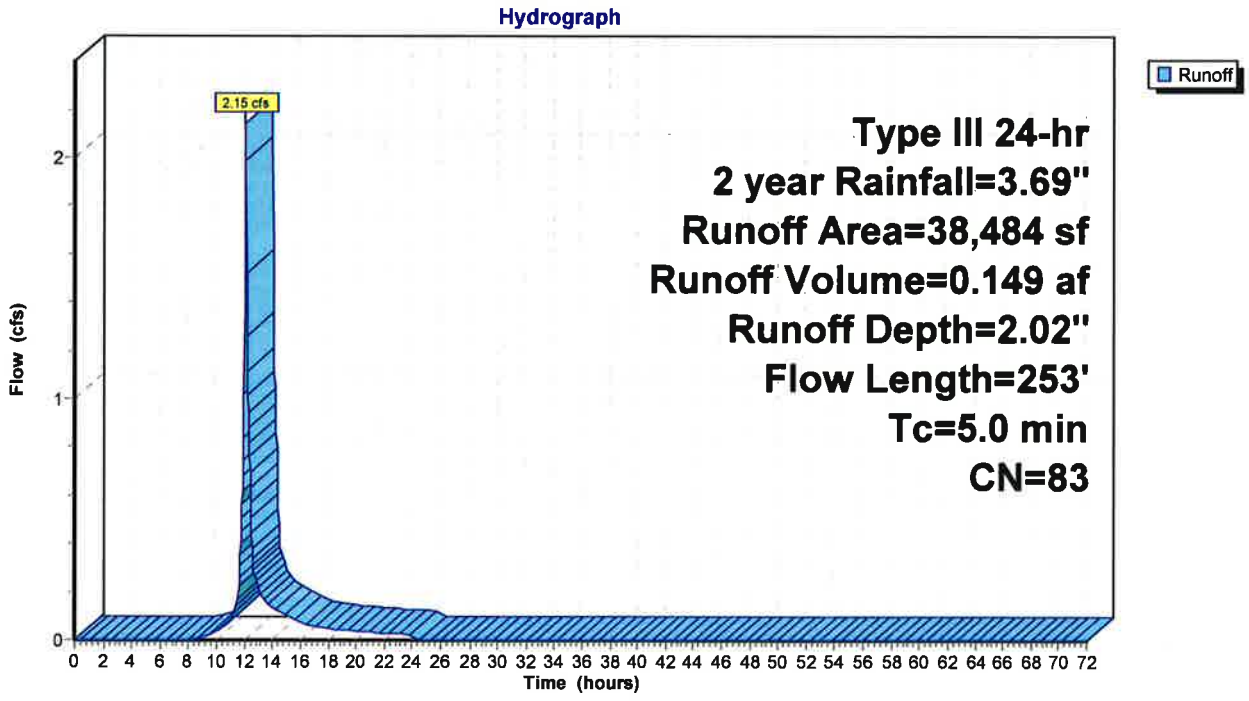
Runoff = 2.15 cfs @ 12.08 hrs, Volume= 0.149 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	18,114	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	7,858	98	Gravel surface, HSG A
	38,484	83	Weighted Average
	8,598		22.34% Pervious Area
	29,886		77.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES8:



Summary for Subcatchment ES9:

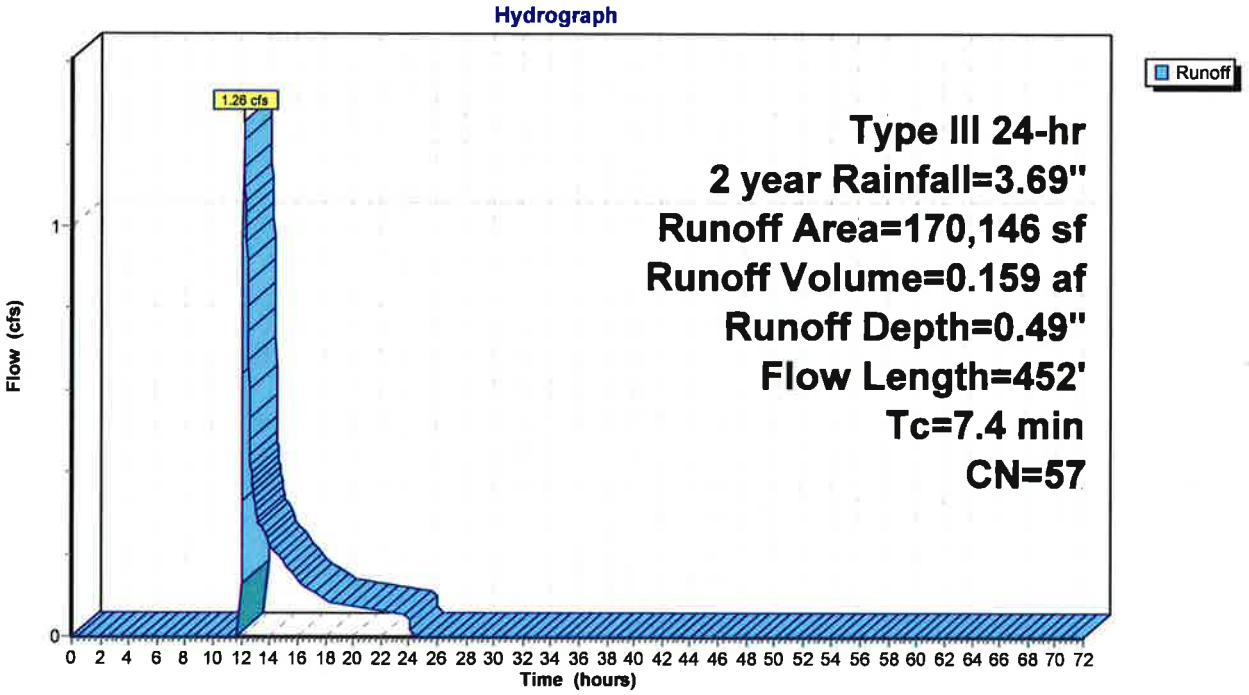
Runoff = 1.26 cfs @ 12.15 hrs, Volume= 0.159 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	4,750	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	52,002	98	Gravel surface, HSG A
	170,146	57	Weighted Average
	105,773		62.17% Pervious Area
	64,373		37.83% Impervious Area
	234		0.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment ES9:



Summary for Pond CB 1237:

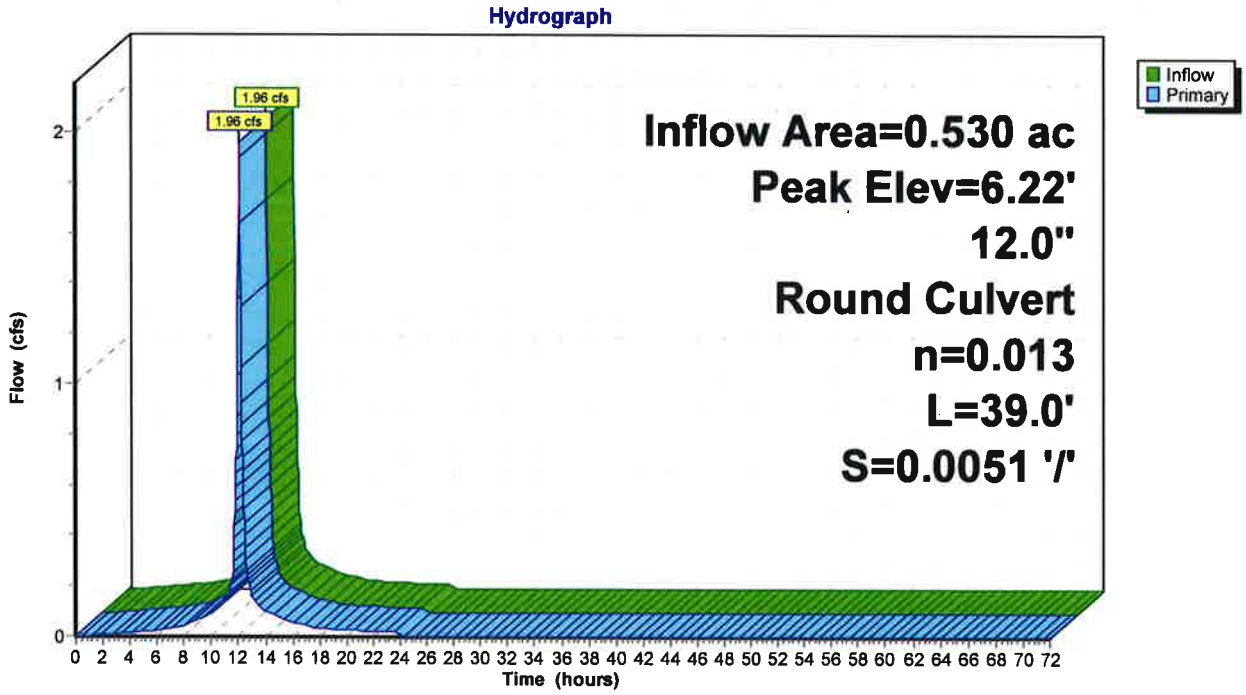
Inflow Area = 0.530 ac,100.00% Impervious, Inflow Depth = 3.46" for 2 year event
Inflow = 1.96 cfs @ 12.07 hrs, Volume= 0.153 af
Outflow = 1.96 cfs @ 12.07 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Primary = 1.96 cfs @ 12.07 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.22' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.93 cfs @ 12.07 hrs HW=6.21' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 1.93 cfs @ 3.34 fps)

Pond CB 1237:



Summary for Pond CB 1239: Combined Drain

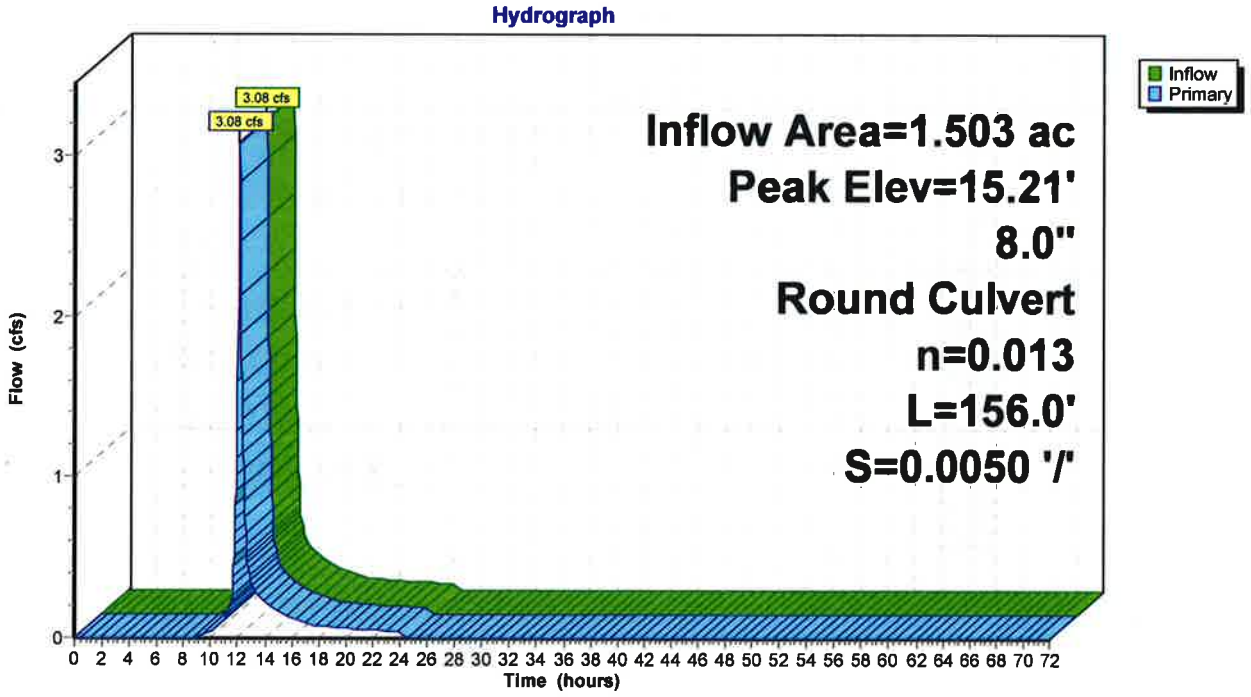
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 1.86" for 2 year event
Inflow = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af
Outflow = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 15.21' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.32'	**8.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.32' / 2.54' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.05 cfs @ 12.11 hrs HW=14.98' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 3.05 cfs @ 8.75 fps)

Pond CB 1239: Combined Drain



Summary for Pond CB 1240: Combined Drain

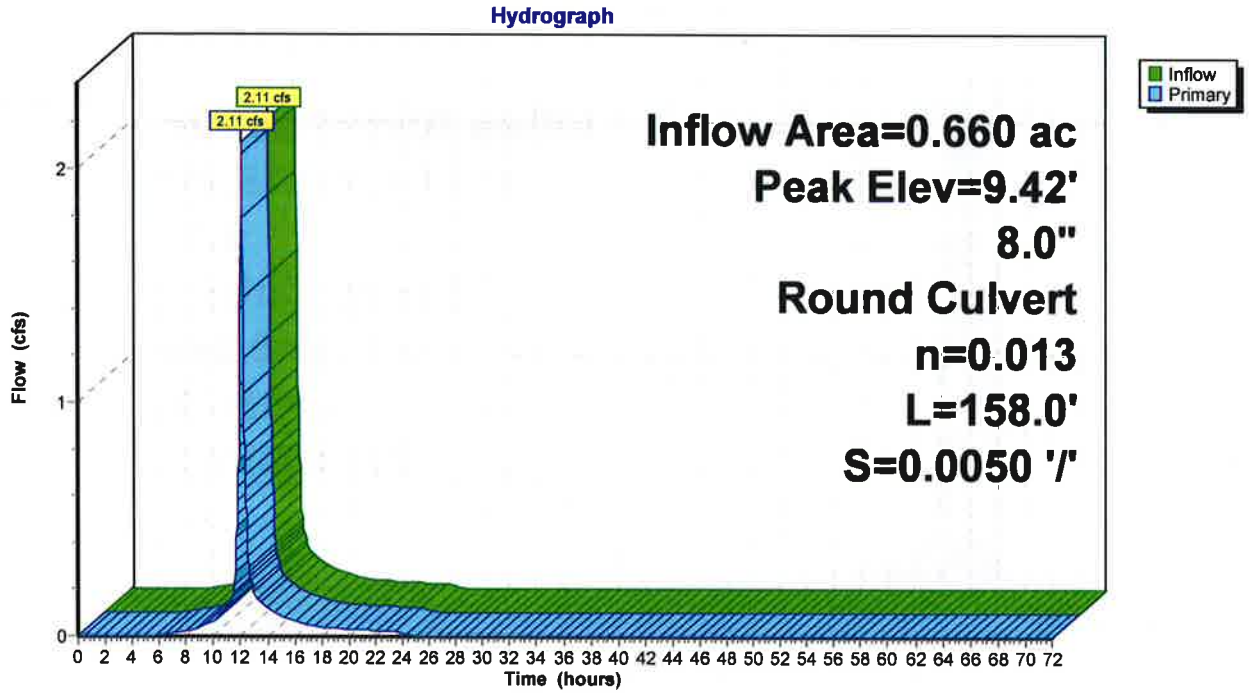
Inflow Area = 0.660 ac, 86.24% Impervious, Inflow Depth = 2.72" for 2 year event
Inflow = 2.11 cfs @ 12.07 hrs, Volume= 0.150 af
Outflow = 2.11 cfs @ 12.07 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 2.11 cfs @ 12.07 hrs, Volume= 0.150 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.42' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.85'	**8.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.85' / 3.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.08 cfs @ 12.07 hrs HW=9.23' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.08 cfs @ 5.95 fps)

Pond CB 1240: Combined Drain



Summary for Pond CB 1241:

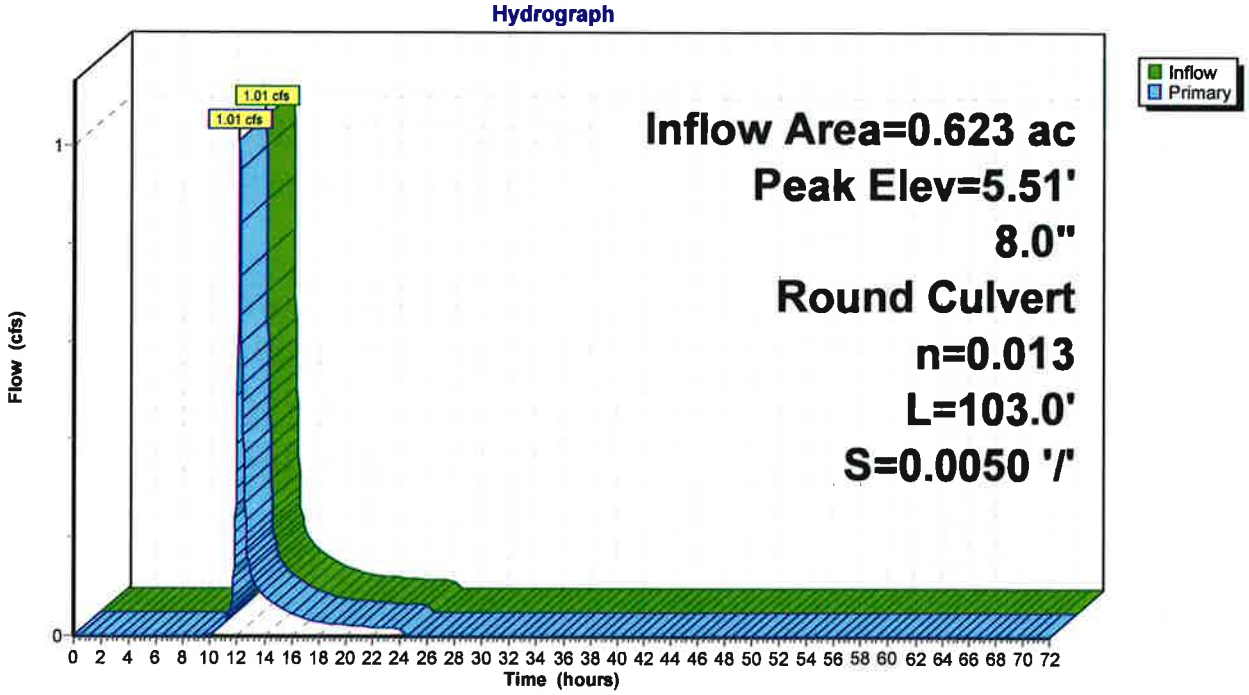
Inflow Area = 0.623 ac, 50.56% Impervious, Inflow Depth = 1.50" for 2 year event
Inflow = 1.01 cfs @ 12.12 hrs, Volume= 0.078 af
Outflow = 1.01 cfs @ 12.12 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.12 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 5.51' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.44'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.44' / 3.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.01 cfs @ 12.12 hrs HW=5.50' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.01 cfs @ 2.88 fps)

Pond CB 1241:



Summary for Pond CB 1529: Combined Drain

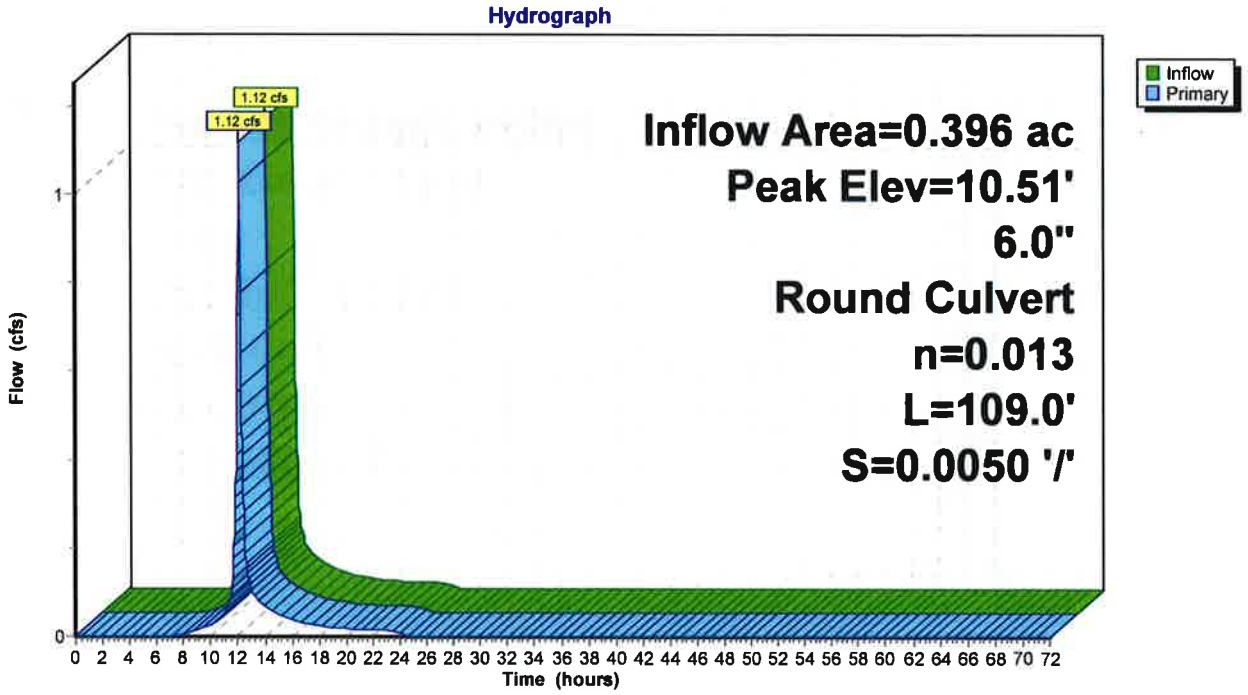
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 2.35" for 2 year event
Inflow = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af
Outflow = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 10.51' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.47'	**6.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.47' / 4.92' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.10 cfs @ 12.07 hrs HW=10.34' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 1.10 cfs @ 5.60 fps)

Pond CB 1529: Combined Drain



Summary for Pond CB 1632: Combined Drain

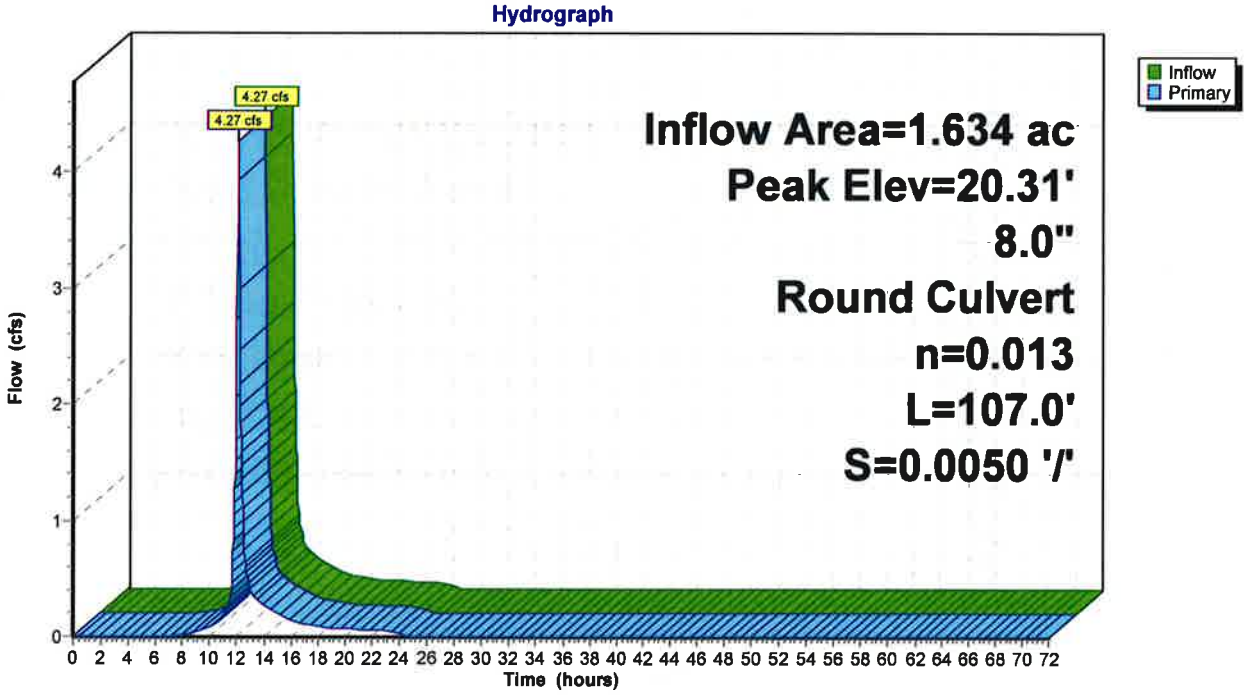
Inflow Area = 1.634 ac, 80.32% Impervious, Inflow Depth = 2.17" for 2 year event
Inflow = 4.27 cfs @ 12.07 hrs, Volume= 0.295 af
Outflow = 4.27 cfs @ 12.07 hrs, Volume= 0.295 af, Atten= 0%, Lag= 0.0 min
Primary = 4.27 cfs @ 12.07 hrs, Volume= 0.295 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 20.31' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.38'	**8.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.38' / 2.84' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=4.19 cfs @ 12.07 hrs HW=19.75' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.19 cfs @ 12.00 fps)

Pond CB 1632: Combined Drain



Summary for Pond CB 1665: Combined Drain

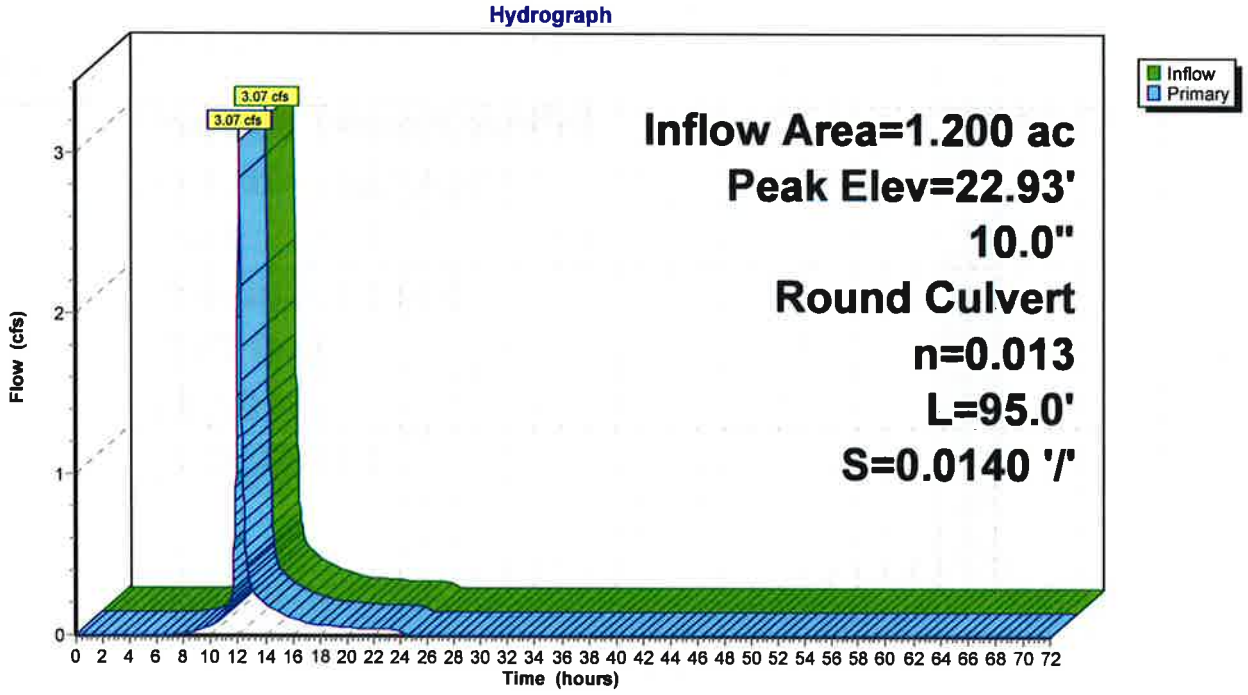
Inflow Area = 1.200 ac, 79.86% Impervious, Inflow Depth = 2.13" for 2 year event
Inflow = 3.07 cfs @ 12.08 hrs, Volume= 0.213 af
Outflow = 3.07 cfs @ 12.08 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.08 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 22.93' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.11'	**10.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.11' / 5.78' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.02 cfs @ 12.08 hrs HW=22.28' TW=19.75' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 3.02 cfs @ 5.54 fps)

Pond CB 1665: Combined Drain



Summary for Pond CB 1692: Combined Drain

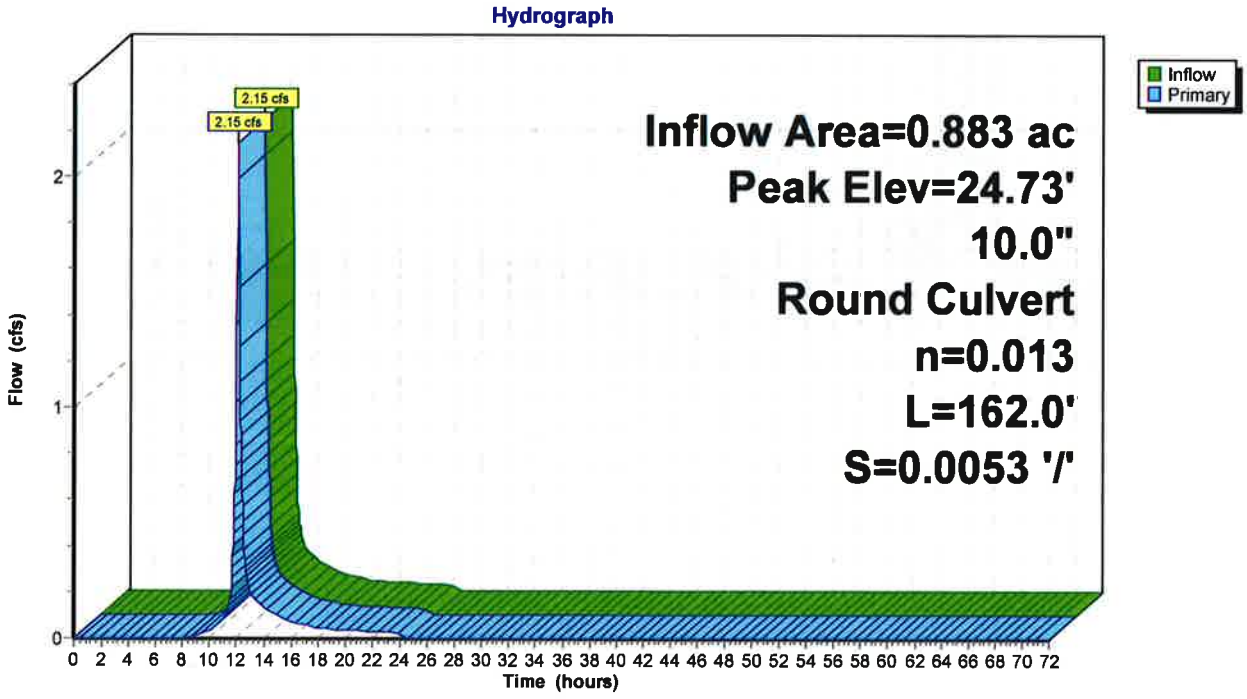
Inflow Area = 0.883 ac, 77.66% Impervious, Inflow Depth = 2.02" for 2 year event
Inflow = 2.15 cfs @ 12.08 hrs, Volume= 0.149 af
Outflow = 2.15 cfs @ 12.08 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 2.15 cfs @ 12.08 hrs, Volume= 0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 24.73' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.17'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.17' / 7.31' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=2.12 cfs @ 12.08 hrs HW=24.14' TW=22.28' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.12 cfs @ 3.88 fps)

Pond CB 1692: Combined Drain

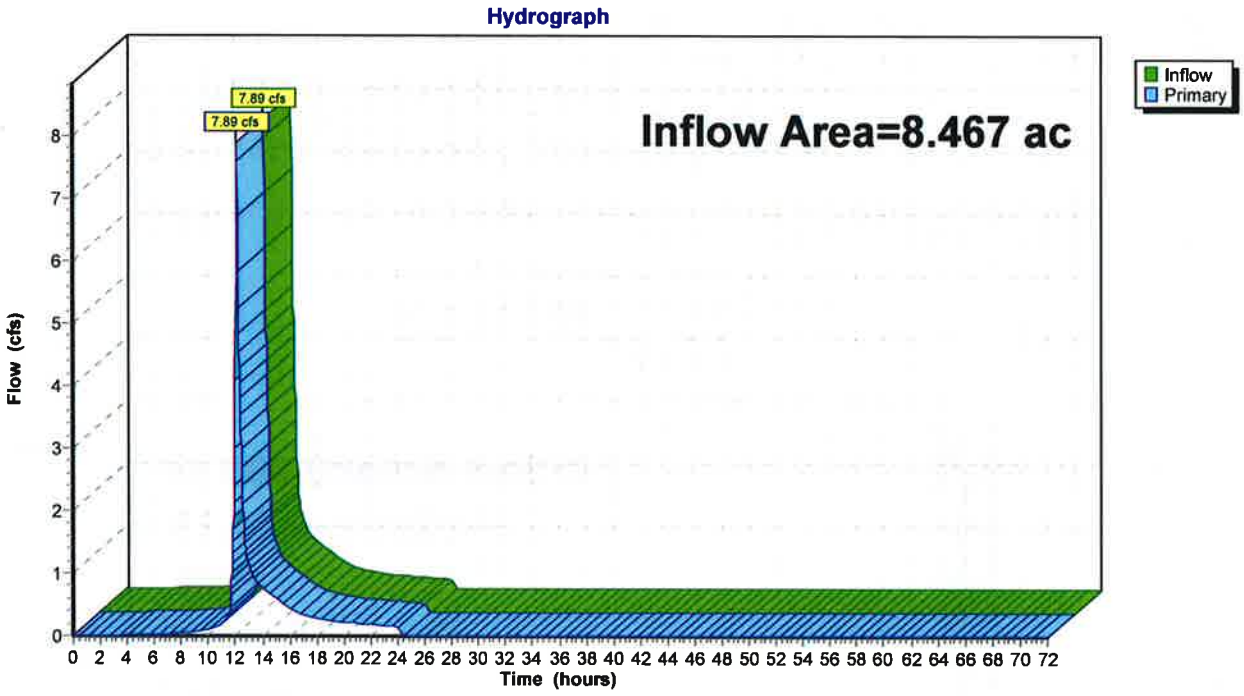


Summary for Link DP1: North Mill Pond

Inflow Area = 8.467 ac, 48.72% Impervious, Inflow Depth = 0.98" for 2 year event
Inflow = 7.89 cfs @ 12.10 hrs, Volume= 0.694 af
Primary = 7.89 cfs @ 12.10 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

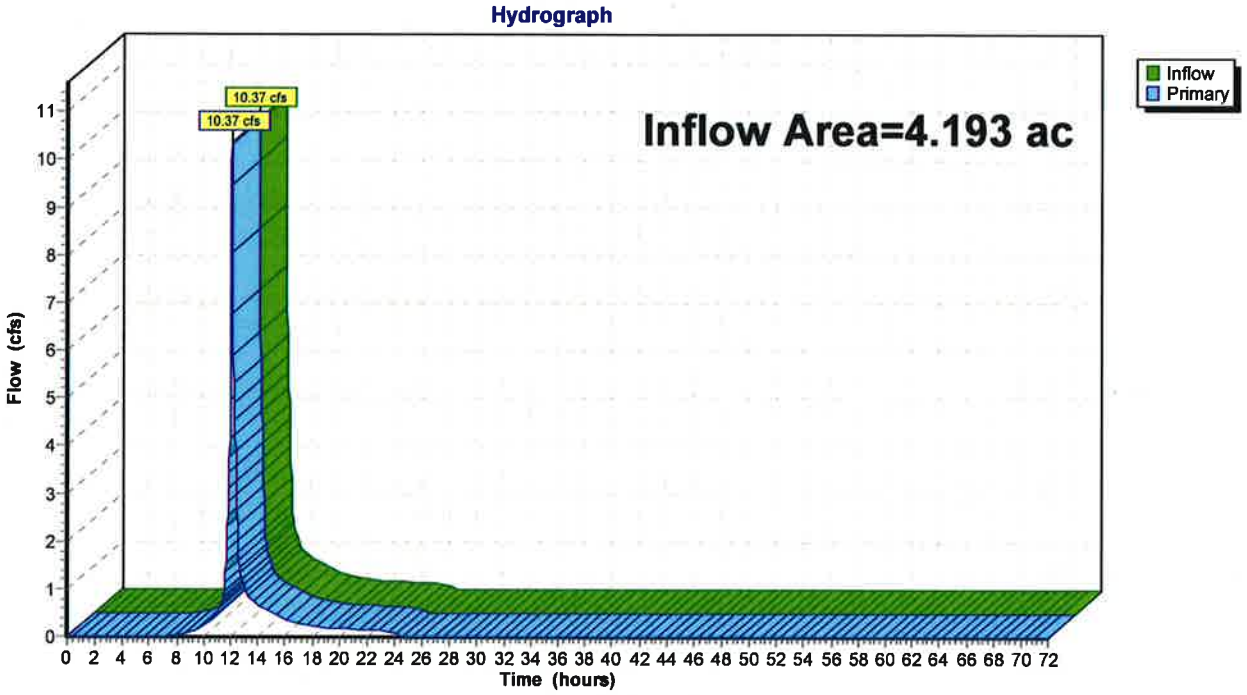


Summary for Link DP2: Combinded Sewer

Inflow Area = 4.193 ac, 76.36% Impervious, Inflow Depth = 2.16" for 2 year event
Inflow = 10.37 cfs @ 12.08 hrs, Volume= 0.756 af
Primary = 10.37 cfs @ 12.08 hrs, Volume= 0.756 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Combinded Sewer



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 ES1: Runoff Area=23,090 sf 100.00% Impervious Runoff Depth=5.36"
Flow Length=209' Tc=5.0 min CN=98 Runoff=2.99 cfs 0.237 af

Subcatchment ES10: Runoff Area=27,141 sf 50.56% Impervious Runoff Depth=3.04"
Flow Length=300' Tc=7.8 min CN=76 Runoff=2.07 cfs 0.158 af

Subcatchment ES2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=3.52"
Flow Length=400' Tc=7.6 min CN=81 Runoff=5.81 cfs 0.441 af

Subcatchment ES3: Runoff Area=28,735 sf 86.24% Impervious Runoff Depth=4.57"
Flow Length=140' Tc=5.0 min CN=91 Runoff=3.45 cfs 0.251 af

Subcatchment ES4: Runoff Area=148,459 sf 52.87% Impervious Runoff Depth=2.40"
Flow Length=342' Tc=5.3 min CN=69 Runoff=9.66 cfs 0.683 af

Subcatchment ES5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=4.14"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.93 cfs 0.136 af

Subcatchment ES6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=4.03"
Flow Length=171' Tc=5.0 min CN=86 Runoff=2.07 cfs 0.146 af

Subcatchment ES7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=4.24"
Flow Length=144' Tc=5.0 min CN=88 Runoff=1.57 cfs 0.112 af

Subcatchment ES8: Runoff Area=38,484 sf 77.66% Impervious Runoff Depth=3.72"
Flow Length=253' Tc=5.0 min CN=83 Runoff=3.93 cfs 0.274 af

Subcatchment ES9: Runoff Area=170,146 sf 37.83% Impervious Runoff Depth=1.44"
Flow Length=452' Tc=7.4 min CN=57 Runoff=5.56 cfs 0.468 af

Pond CB 1237: Peak Elev=6.72' Inflow=2.99 cfs 0.237 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=2.99 cfs 0.237 af

Pond CB 1239: Combined Drain Peak Elev=45.84' Inflow=5.81 cfs 0.441 af
8.0" Round Culvert n=0.013 L=156.0' S=0.0050 '/' Outflow=5.81 cfs 0.441 af

Pond CB 1240: Combined Drain Peak Elev=18.92' Inflow=3.45 cfs 0.251 af
8.0" Round Culvert n=0.013 L=158.0' S=0.0050 '/' Outflow=3.45 cfs 0.251 af

Pond CB 1241: Peak Elev=8.46' Inflow=2.07 cfs 0.158 af
8.0" Round Culvert n=0.013 L=103.0' S=0.0050 '/' Outflow=2.07 cfs 0.158 af

Pond CB 1529: Combined Drain Peak Elev=20.53' Inflow=1.93 cfs 0.136 af
6.0" Round Culvert n=0.013 L=109.0' S=0.0050 '/' Outflow=1.93 cfs 0.136 af

Pond CB 1632: Combined Drain Peak Elev=56.55' Inflow=7.58 cfs 0.532 af
8.0" Round Culvert n=0.013 L=107.0' S=0.0050 '/' Outflow=7.58 cfs 0.532 af

Pond CB 1665: Combined Drain Peak Elev=64.92' Inflow=5.51 cfs 0.386 af
10.0" Round Culvert n=0.013 L=95.0' S=0.0140 '/' Outflow=5.51 cfs 0.386 af

Pond CB 1692: Combined Drain Peak Elev=71.36' Inflow=3.93 cfs 0.274 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0053 '/' Outflow=3.93 cfs 0.274 af

Link DP1: North Mill Pond Inflow=19.80 cfs 1.546 af
Primary=19.80 cfs 1.546 af

Link DP2: Combinded Sewer Inflow=18.40 cfs 1.360 af
Primary=18.40 cfs 1.360 af

Total Runoff Area = 12.660 ac Runoff Volume = 2.906 af Average Runoff Depth = 2.75"
42.13% Pervious = 5.334 ac 57.87% Impervious = 7.326 ac

Summary for Subcatchment ES1:

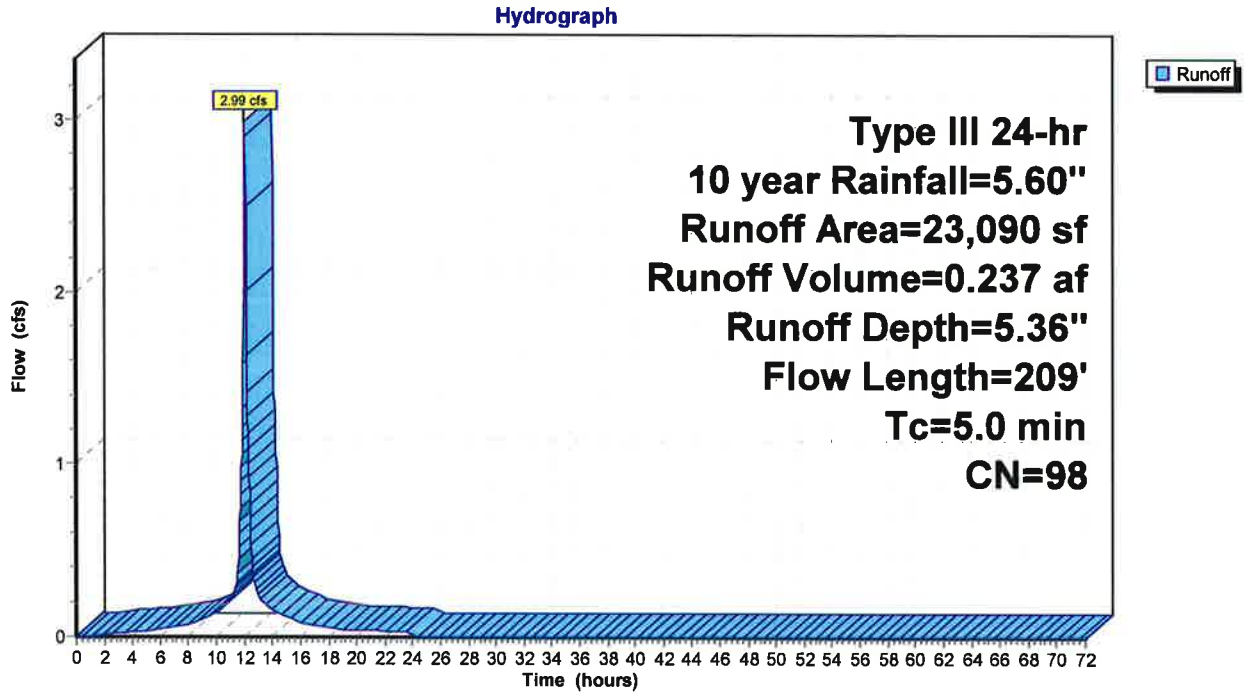
Runoff = 2.99 cfs @ 12.07 hrs, Volume= 0.237 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,133	98	Roofs, HSG A
	17,020	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	23,090	98	Weighted Average
	23,090		100.00% Impervious Area
	937		4.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES1:



Summary for Subcatchment ES10:

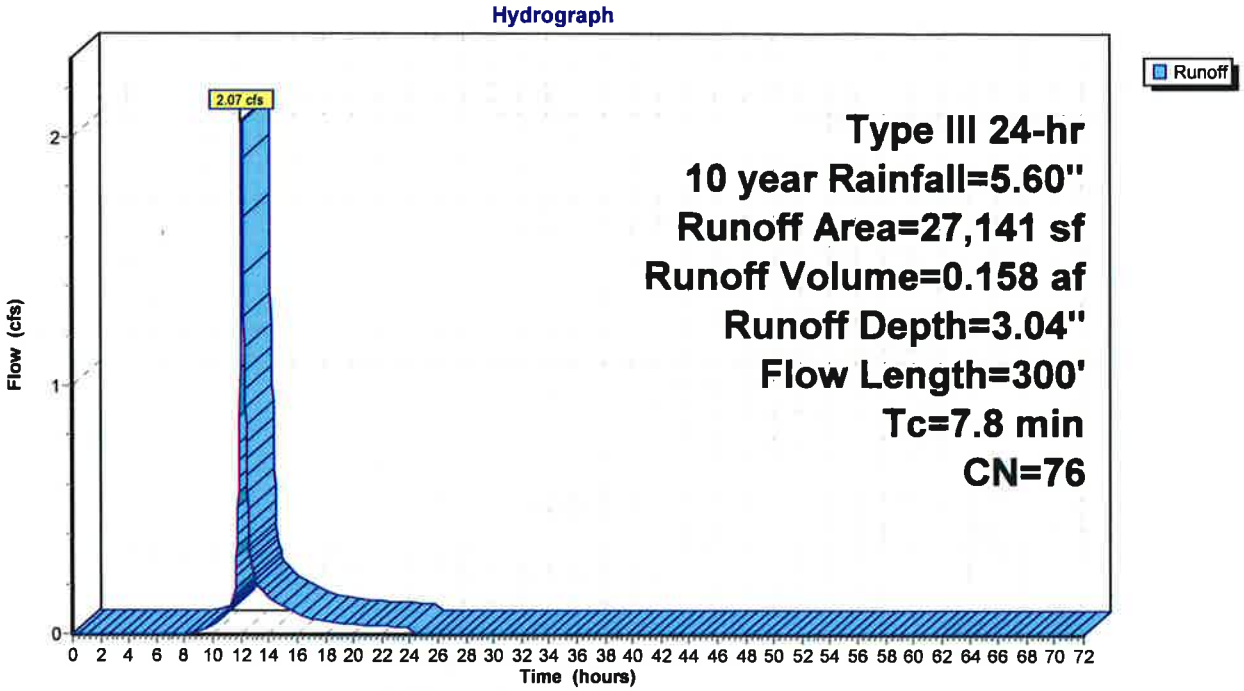
Runoff = 2.07 cfs @ 12.11 hrs, Volume= 0.158 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
10,611	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
27,141	76	Weighted Average
13,419		49.44% Pervious Area
13,722		50.56% Impervious Area
3,111		22.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment ES10:



Summary for Subcatchment ES2:

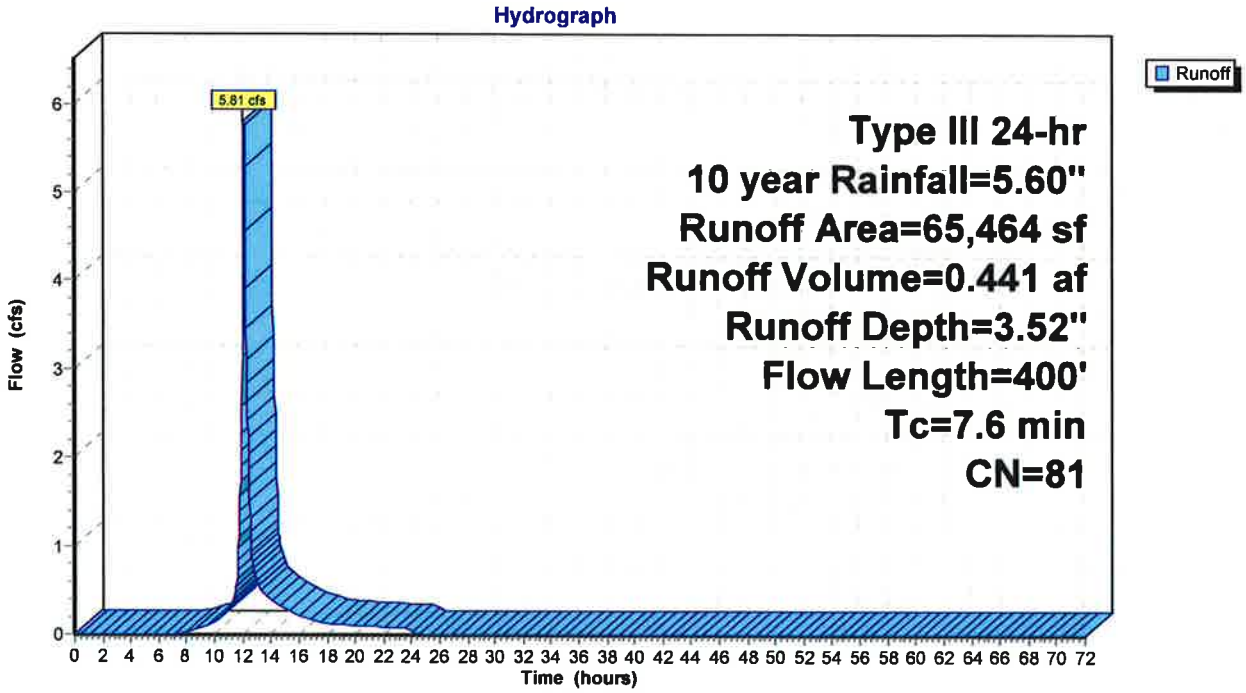
Runoff = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment ES2:



Summary for Subcatchment ES3:

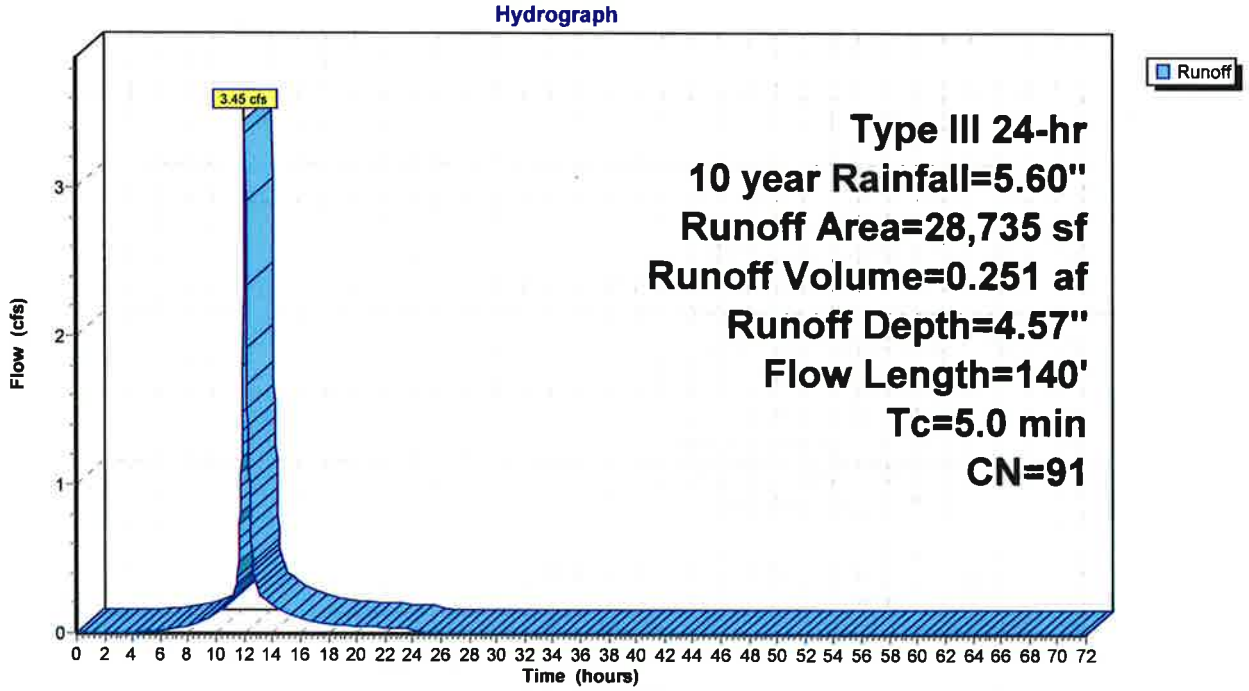
Runoff = 3.45 cfs @ 12.07 hrs, Volume= 0.251 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	19,765	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	28,735	91	Weighted Average
	3,954		13.76% Pervious Area
	24,781		86.24% Impervious Area
	692		2.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES3:



Summary for Subcatchment ES4:

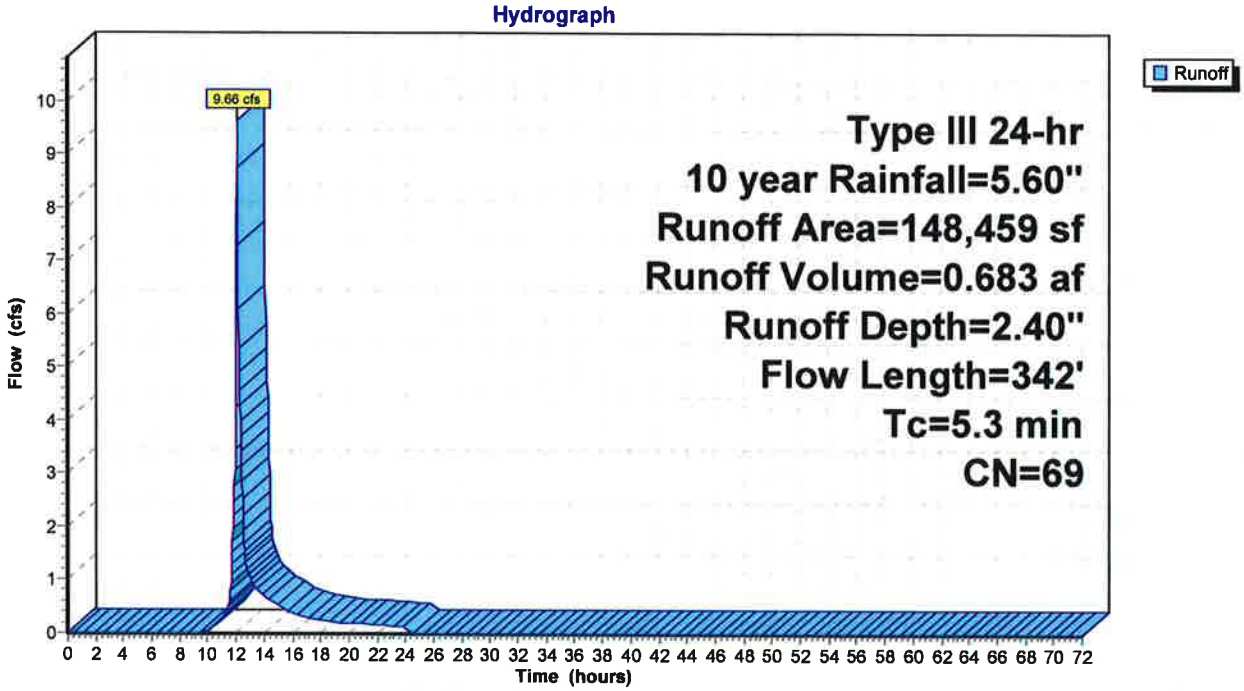
Runoff = 9.66 cfs @ 12.08 hrs, Volume= 0.683 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	28,300	98	Roofs, HSG A
	40,115	98	Paved parking, HSG A
	25,323	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	7,831	39	>75% Grass cover, Good, HSG A
*	9,267	98	Gravel surface, HSG A
	7,355	77	Fallow, bare soil, HSG A
	148,459	69	Weighted Average
	69,964		47.13% Pervious Area
	78,495		52.87% Impervious Area
	813		1.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment ES4:



Summary for Subcatchment ES5:

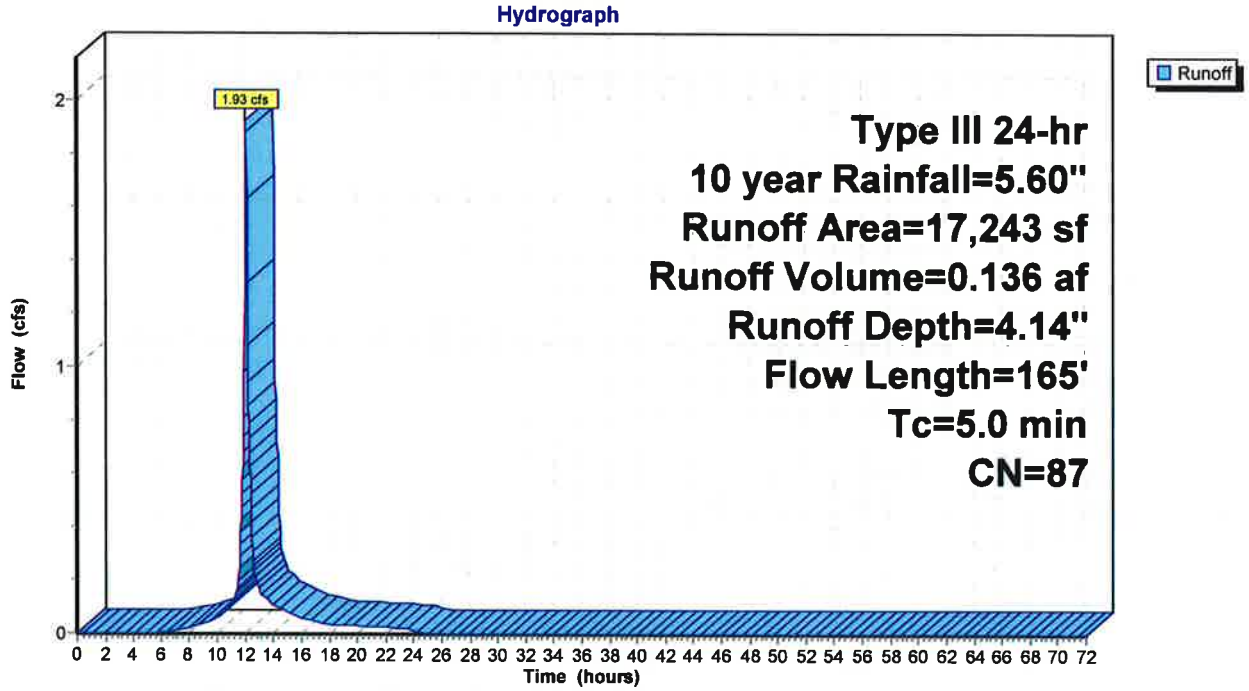
Runoff = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES5:



Summary for Subcatchment ES6:

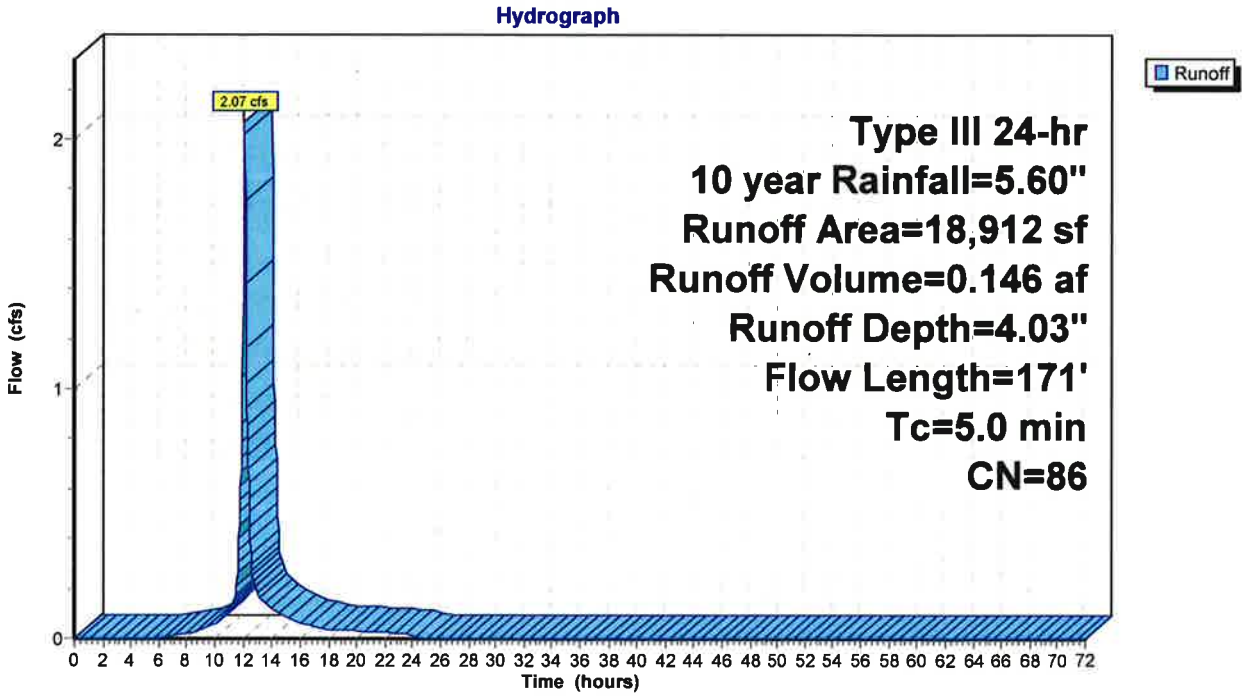
Runoff = 2.07 cfs @ 12.07 hrs, Volume= 0.146 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES6:



Summary for Subcatchment ES7:

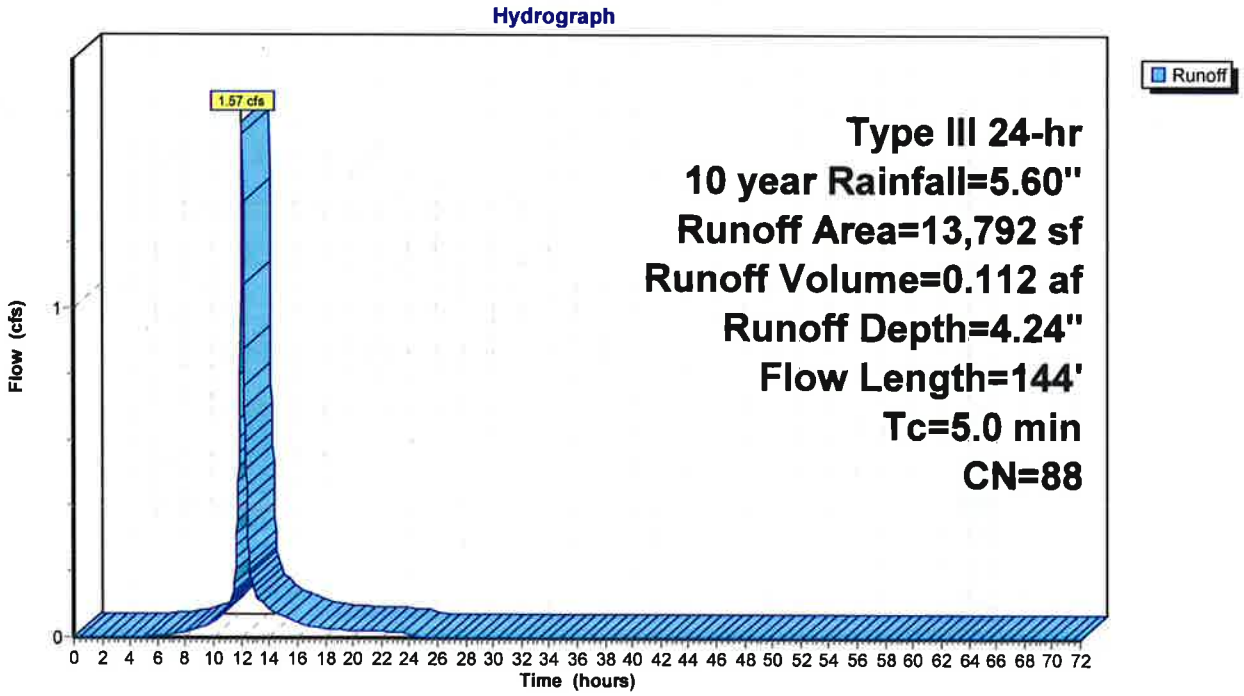
Runoff = 1.57 cfs @ 12.07 hrs, Volume= 0.112 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES7:



Summary for Subcatchment ES8:

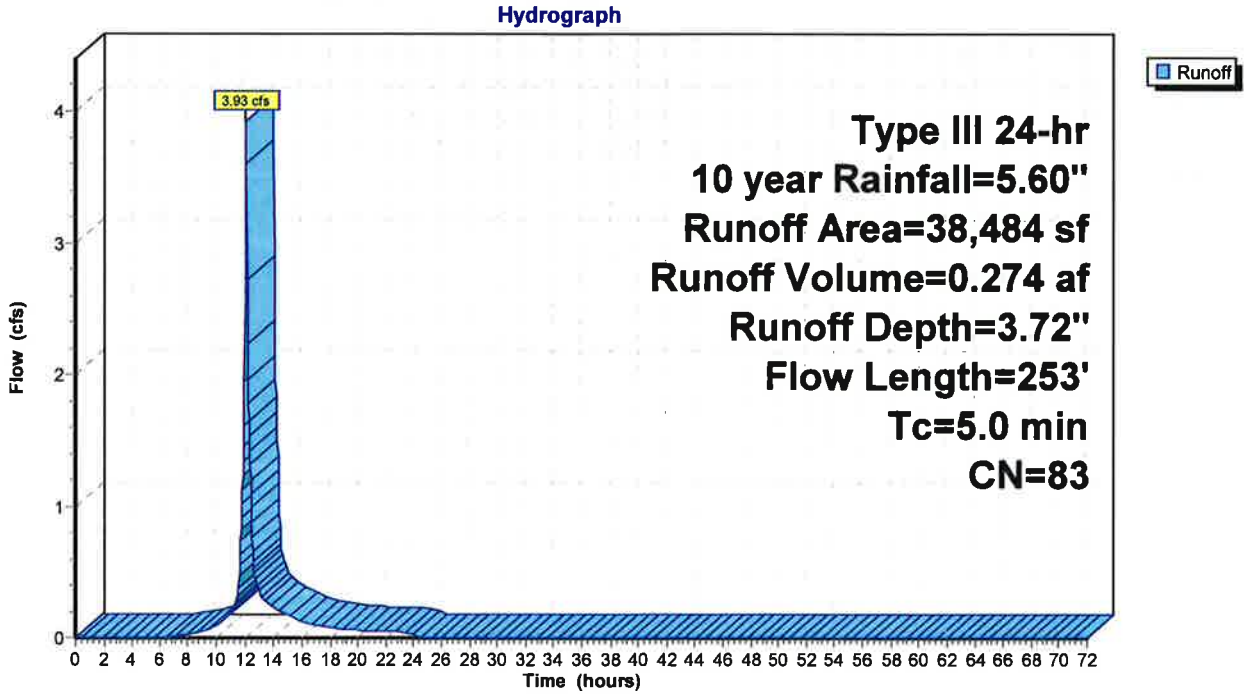
Runoff = 3.93 cfs @ 12.07 hrs, Volume= 0.274 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	18,114	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	7,858	98	Gravel surface, HSG A
	38,484	83	Weighted Average
	8,598		22.34% Pervious Area
	29,886		77.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES8:



Summary for Subcatchment ES9:

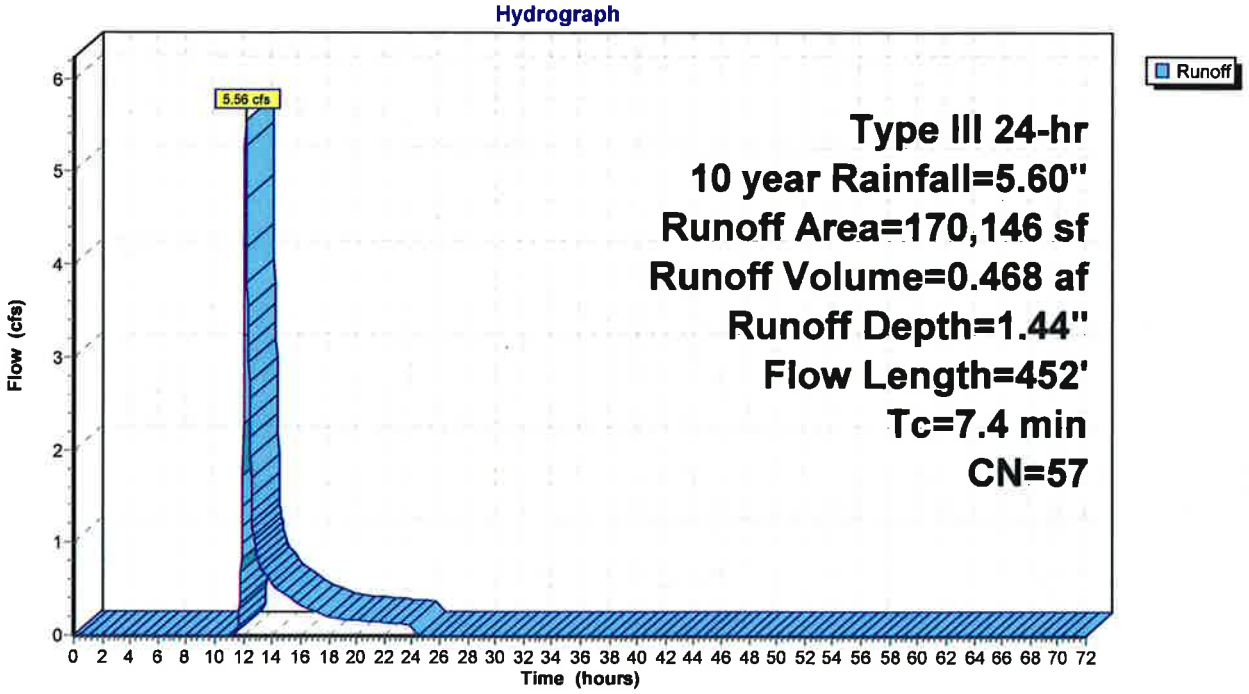
Runoff = 5.56 cfs @ 12.12 hrs, Volume= 0.468 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	4,750	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	52,002	98	Gravel surface, HSG A
	170,146	57	Weighted Average
	105,773		62.17% Pervious Area
	64,373		37.83% Impervious Area
	234		0.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment ES9:



Summary for Pond CB 1237:

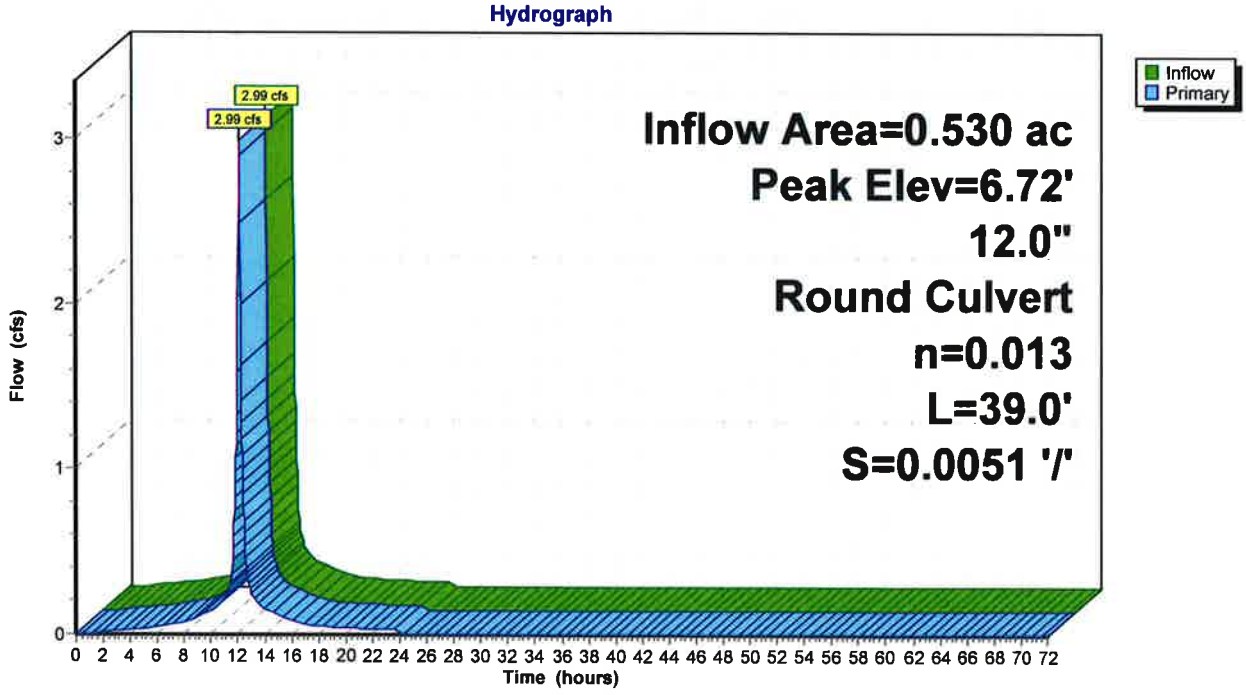
Inflow Area = 0.530 ac,100.00% Impervious, Inflow Depth = 5.36" for 10 year event
Inflow = 2.99 cfs @ 12.07 hrs, Volume= 0.237 af
Outflow = 2.99 cfs @ 12.07 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.0 min
Primary = 2.99 cfs @ 12.07 hrs, Volume= 0.237 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.72' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.94 cfs @ 12.07 hrs HW=6.68' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.94 cfs @ 3.75 fps)

Pond CB 1237:



Summary for Pond CB 1239: Combined Drain

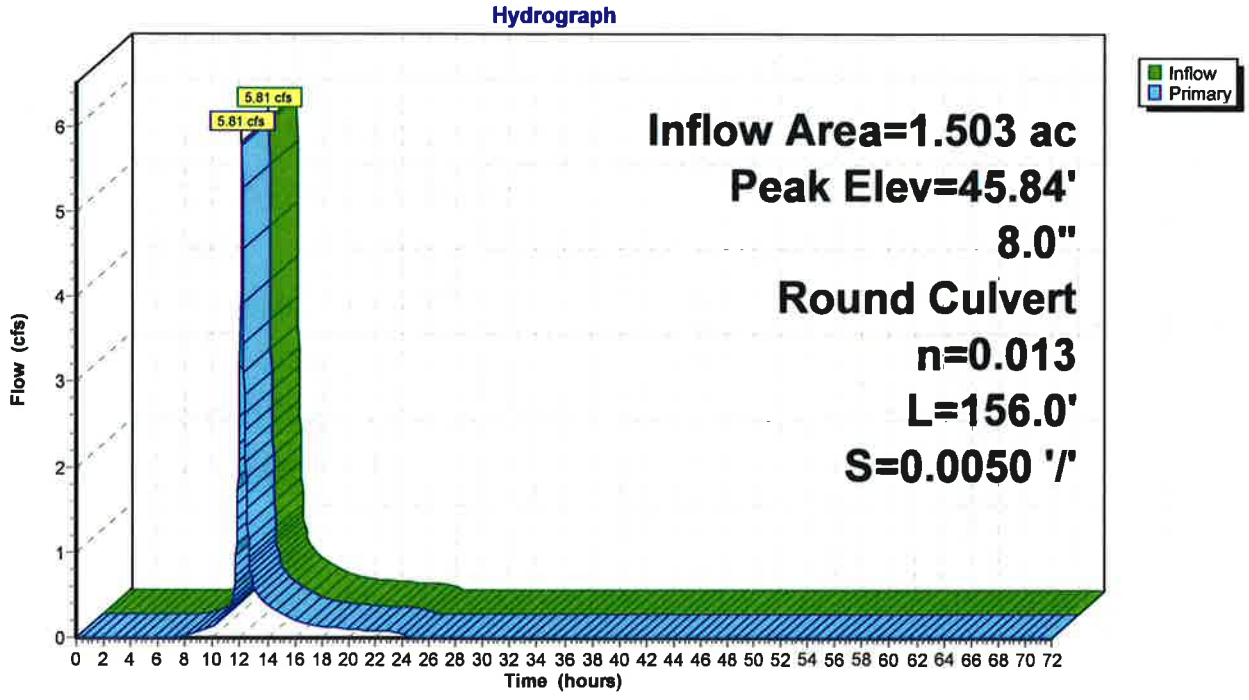
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 3.52" for 10 year event
Inflow = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af
Outflow = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af, Atten= 0%, Lag= 0.0 min
Primary = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 45.84' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.32'	**8.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.32' / 2.54' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.75 cfs @ 12.11 hrs HW=44.92' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 5.75 cfs @ 16.46 fps)

Pond CB 1239: Combined Drain



Summary for Pond CB 1240: Combined Drain

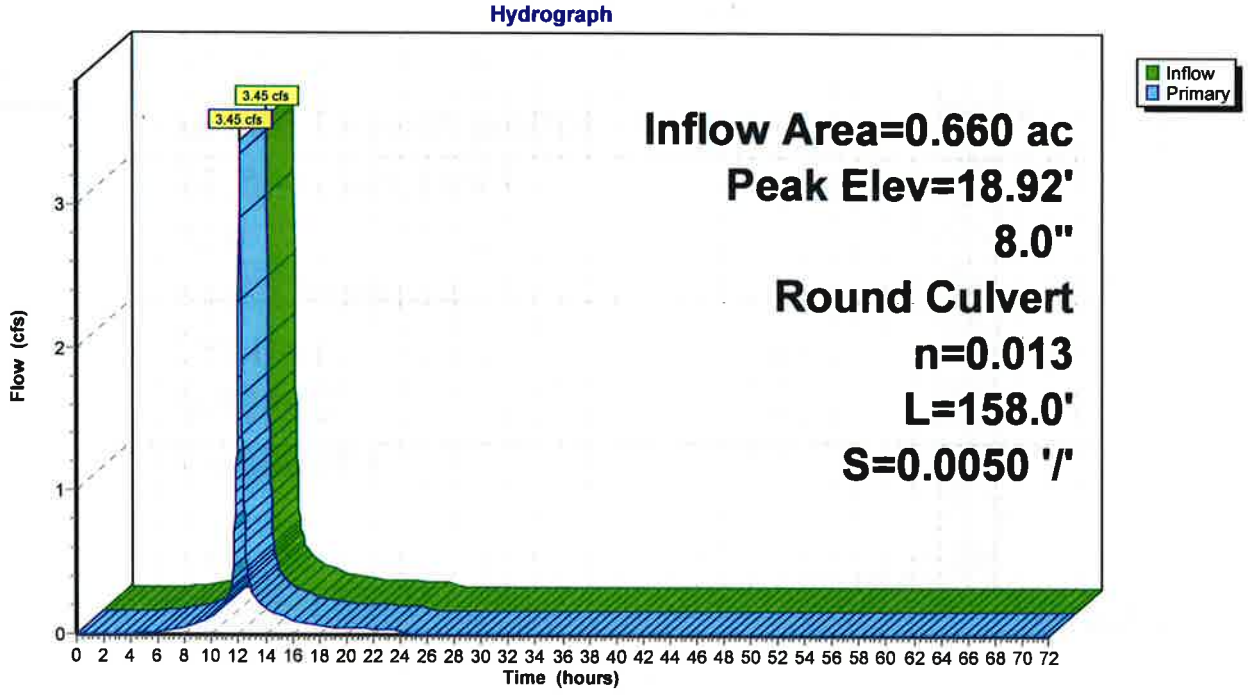
Inflow Area = 0.660 ac, 86.24% Impervious, Inflow Depth = 4.57" for 10 year event
Inflow = 3.45 cfs @ 12.07 hrs, Volume= 0.251 af
Outflow = 3.45 cfs @ 12.07 hrs, Volume= 0.251 af, Atten= 0%, Lag= 0.0 min
Primary = 3.45 cfs @ 12.07 hrs, Volume= 0.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 18.92' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.85'	**8.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.85' / 3.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.39 cfs @ 12.07 hrs HW=18.43' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.39 cfs @ 9.72 fps)

Pond CB 1240: Combined Drain



Summary for Pond CB 1241:

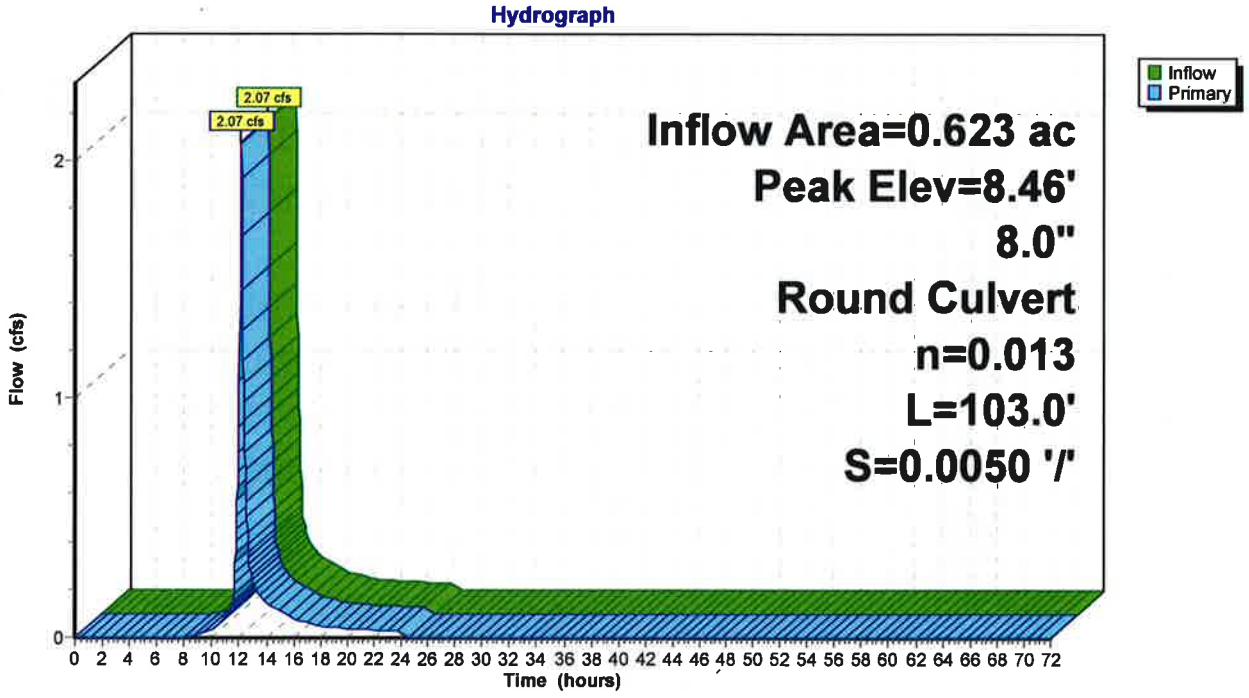
Inflow Area = 0.623 ac, 50.56% Impervious, Inflow Depth = 3.04" for 10 year event
Inflow = 2.07 cfs @ 12.11 hrs, Volume= 0.158 af
Outflow = 2.07 cfs @ 12.11 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
Primary = 2.07 cfs @ 12.11 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.46' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.44'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.44' / 3.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.06 cfs @ 12.11 hrs HW=8.40' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.06 cfs @ 5.89 fps)

Pond CB 1241:



Summary for Pond CB 1529: Combined Drain

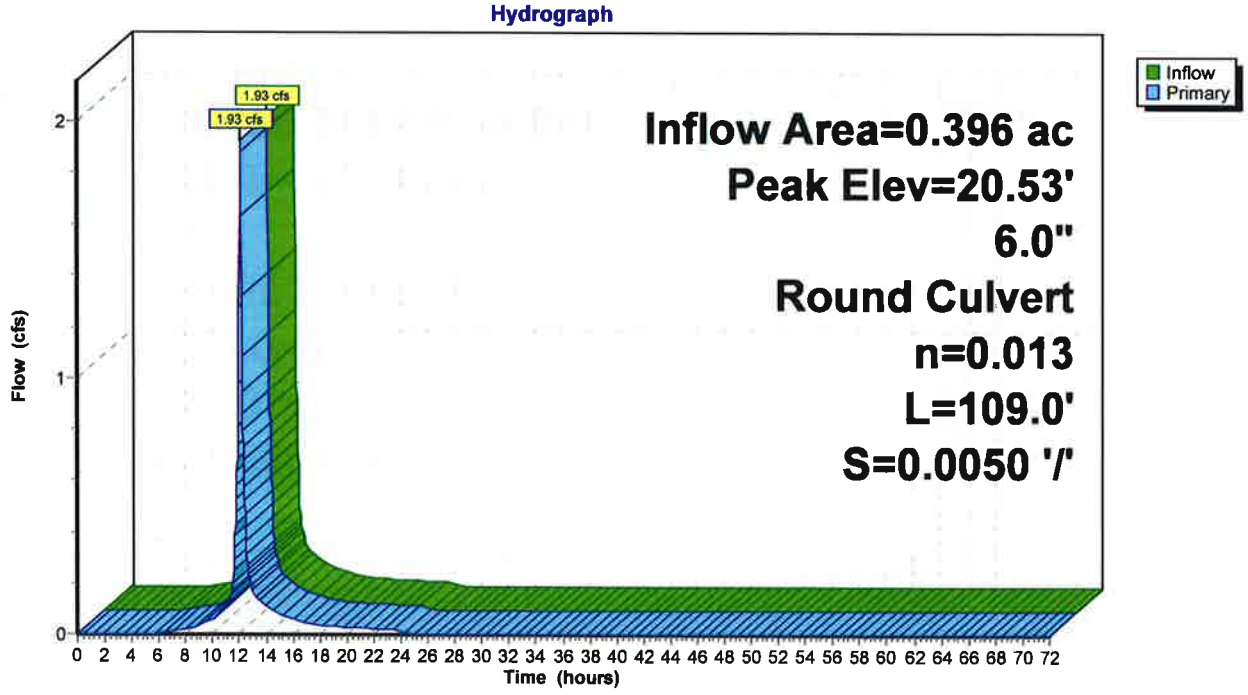
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 4.14" for 10 year event
Inflow = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af
Outflow = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 20.53' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.47'	**6.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.47' / 4.92' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.89 cfs @ 12.07 hrs HW=20.03' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.89 cfs @ 9.64 fps)

Pond CB 1529: Combined Drain



Summary for Pond CB 1632: Combined Drain

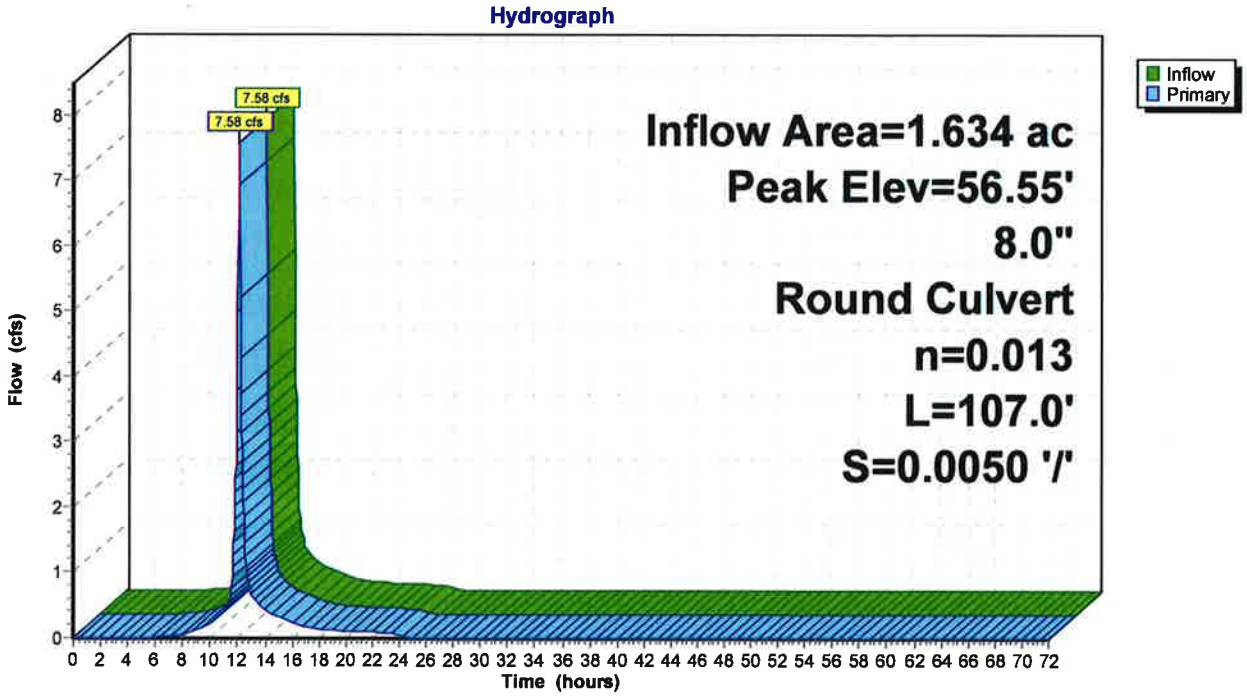
Inflow Area = 1.634 ac, 80.32% Impervious, Inflow Depth = 3.90" for 10 year event
Inflow = 7.58 cfs @ 12.07 hrs, Volume= 0.532 af
Outflow = 7.58 cfs @ 12.07 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.0 min
Primary = 7.58 cfs @ 12.07 hrs, Volume= 0.532 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 56.55' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.38'	**8.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.38' / 2.84' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=7.44 cfs @ 12.07 hrs HW=54.78' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 7.44 cfs @ 21.31 fps)

Pond CB 1632: Combined Drain



Summary for Pond CB 1665: Combined Drain

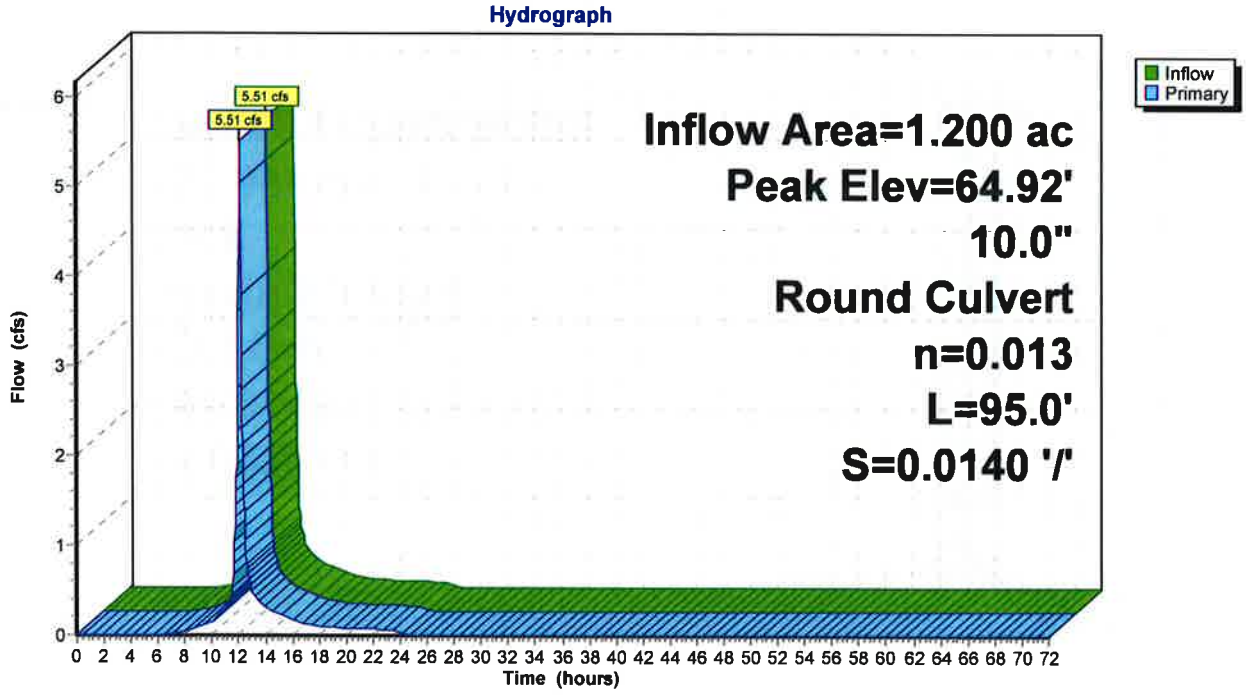
Inflow Area = 1.200 ac, 79.86% Impervious, Inflow Depth = 3.86" for 10 year event
Inflow = 5.51 cfs @ 12.07 hrs, Volume= 0.386 af
Outflow = 5.51 cfs @ 12.07 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.07 hrs, Volume= 0.386 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 64.92' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.11'	**10.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.11' / 5.78' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=5.41 cfs @ 12.07 hrs HW=62.87' TW=54.77' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.41 cfs @ 9.91 fps)

Pond CB 1665: Combined Drain



Summary for Pond CB 1692: Combined Drain

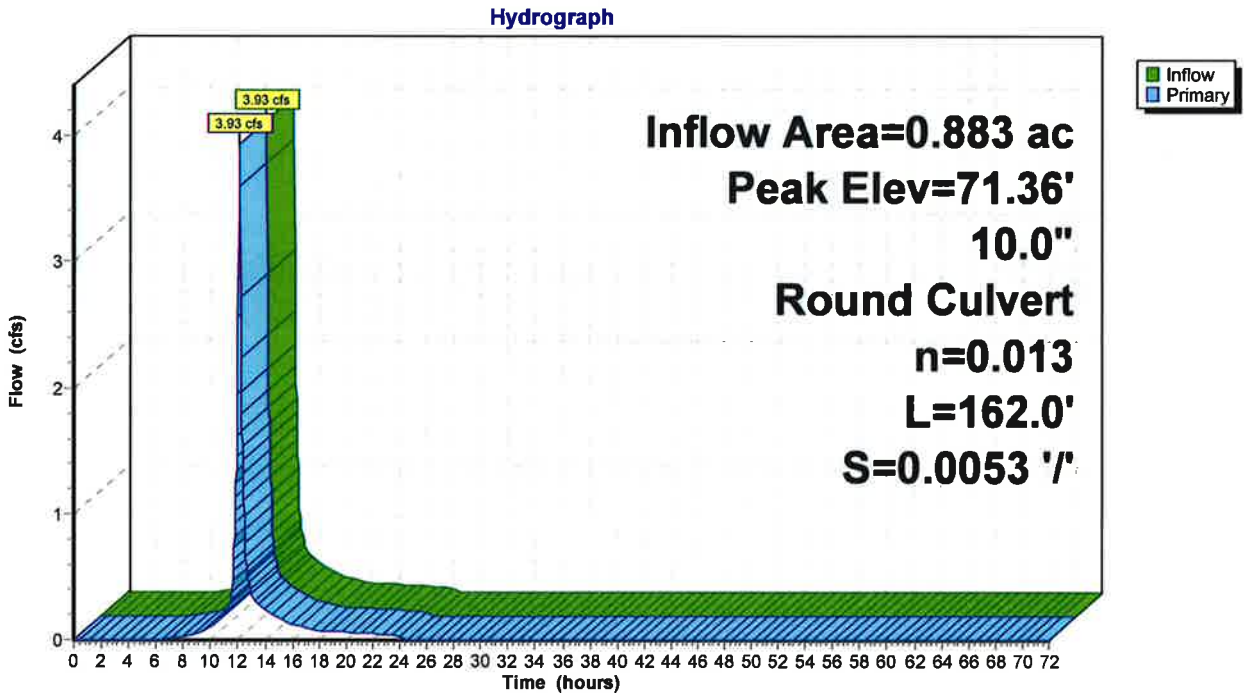
Inflow Area = 0.883 ac, 77.66% Impervious, Inflow Depth = 3.72" for 10 year event
Inflow = 3.93 cfs @ 12.07 hrs, Volume= 0.274 af
Outflow = 3.93 cfs @ 12.07 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min
Primary = 3.93 cfs @ 12.07 hrs, Volume= 0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 71.36' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.17'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.17' / 7.31' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.86 cfs @ 12.07 hrs HW=69.07' TW=62.85' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.86 cfs @ 7.08 fps)

Pond CB 1692: Combined Drain

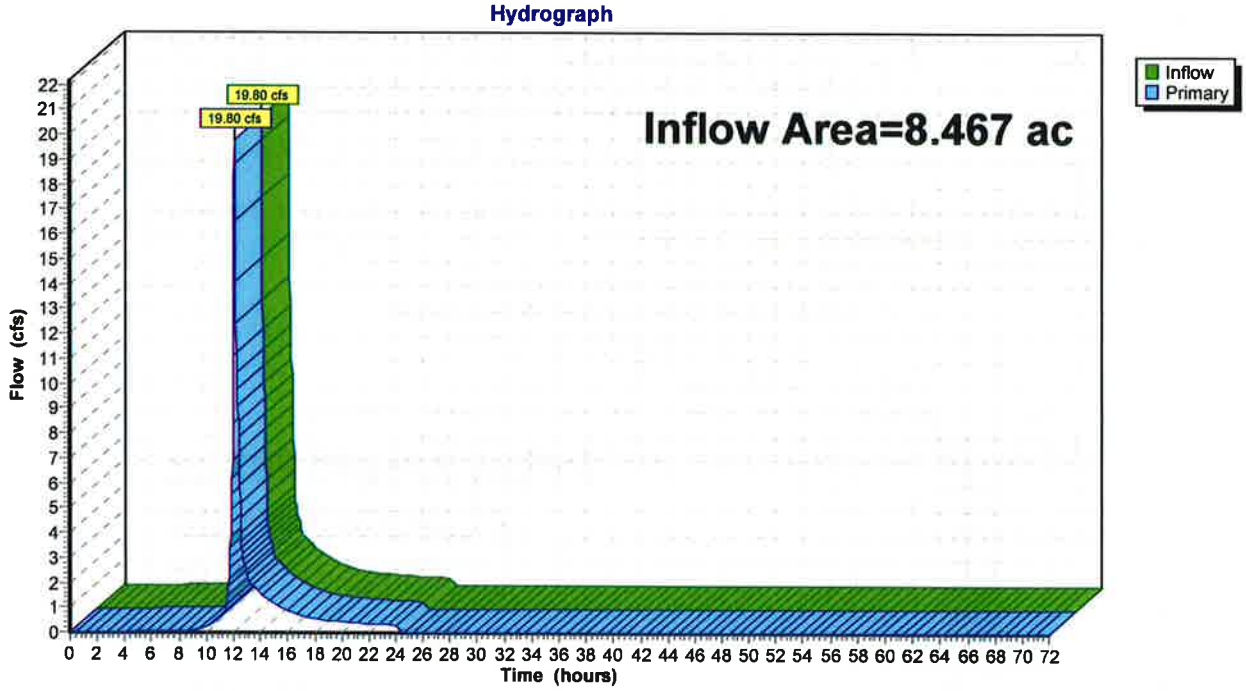


Summary for Link DP1: North Mill Pond

Inflow Area = 8.467 ac, 48.72% Impervious, Inflow Depth = 2.19" for 10 year event
Inflow = 19.80 cfs @ 12.09 hrs, Volume= 1.546 af
Primary = 19.80 cfs @ 12.09 hrs, Volume= 1.546 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

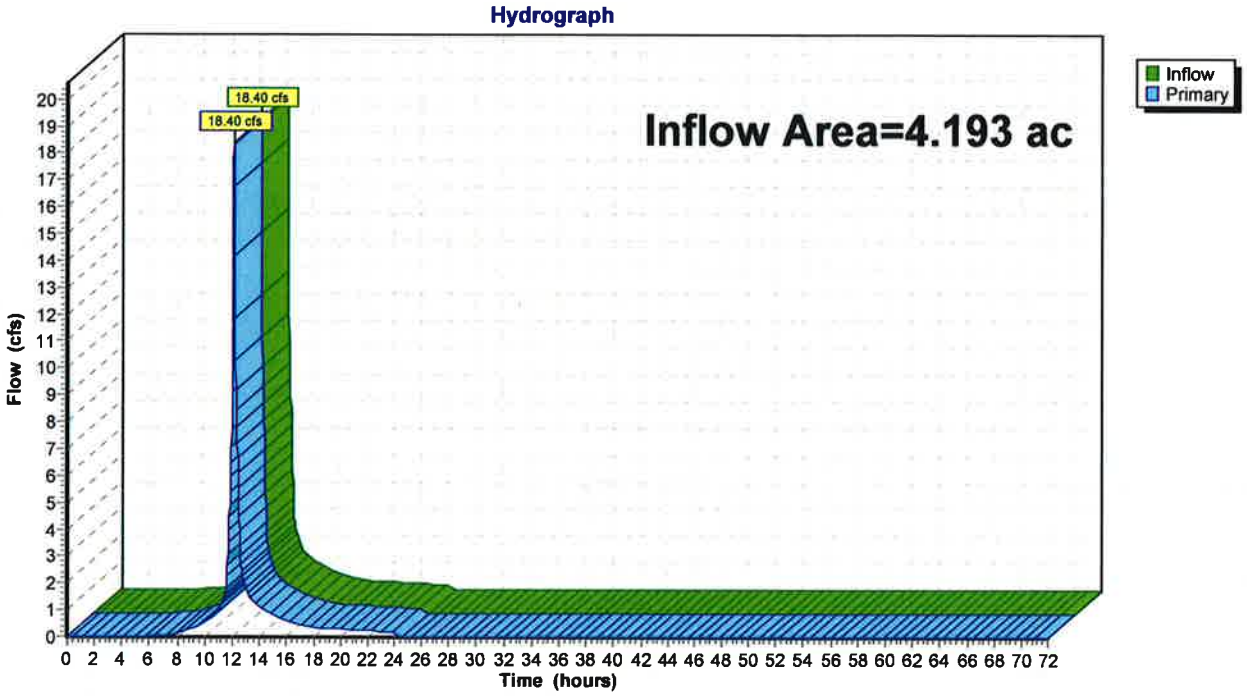


Summary for Link DP2: Combinded Sewer

Inflow Area = 4.193 ac, 76.36% Impervious, Inflow Depth = 3.89" for 10 year event
Inflow = 18.40 cfs @ 12.08 hrs, Volume= 1.360 af
Primary = 18.40 cfs @ 12.08 hrs, Volume= 1.360 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Combinded Sewer



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 ES1: Runoff Area=23,090 sf 100.00% Impervious Runoff Depth=8.26"
Flow Length=209' Tc=5.0 min CN=98 Runoff=4.55 cfs 0.365 af

Subcatchment ES10: Runoff Area=27,141 sf 50.56% Impervious Runoff Depth=5.61"
Flow Length=300' Tc=7.8 min CN=76 Runoff=3.80 cfs 0.292 af

Subcatchment ES2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=6.22"
Flow Length=400' Tc=7.6 min CN=81 Runoff=10.07 cfs 0.778 af

Subcatchment ES3: Runoff Area=28,735 sf 86.24% Impervious Runoff Depth=7.42"
Flow Length=140' Tc=5.0 min CN=91 Runoff=5.46 cfs 0.408 af

Subcatchment ES4: Runoff Area=148,459 sf 52.87% Impervious Runoff Depth=4.78"
Flow Length=342' Tc=5.3 min CN=69 Runoff=19.42 cfs 1.357 af

Subcatchment ES5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=6.94"
Flow Length=165' Tc=5.0 min CN=87 Runoff=3.15 cfs 0.229 af

Subcatchment ES6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=6.82"
Flow Length=171' Tc=5.0 min CN=86 Runoff=3.41 cfs 0.247 af

Subcatchment ES7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=7.06"
Flow Length=144' Tc=5.0 min CN=88 Runoff=2.55 cfs 0.186 af

Subcatchment ES8: Runoff Area=38,484 sf 77.66% Impervious Runoff Depth=6.46"
Flow Length=253' Tc=5.0 min CN=83 Runoff=6.67 cfs 0.475 af

Subcatchment ES9: Runoff Area=170,146 sf 37.83% Impervious Runoff Depth=3.36"
Flow Length=452' Tc=7.4 min CN=57 Runoff=14.26 cfs 1.095 af

Pond CB 1237: Peak Elev=7.51' Inflow=4.55 cfs 0.365 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=4.55 cfs 0.365 af

Pond CB 1239: Combined Drain Peak Elev=131.16' Inflow=10.07 cfs 0.778 af
8.0" Round Culvert n=0.013 L=156.0' S=0.0050 '/' Outflow=10.07 cfs 0.778 af

Pond CB 1240: Combined Drain Peak Elev=41.67' Inflow=5.46 cfs 0.408 af
8.0" Round Culvert n=0.013 L=158.0' S=0.0050 '/' Outflow=5.46 cfs 0.408 af

Pond CB 1241: Peak Elev=17.59' Inflow=3.80 cfs 0.292 af
8.0" Round Culvert n=0.013 L=103.0' S=0.0050 '/' Outflow=3.80 cfs 0.292 af

Pond CB 1529: Combined Drain Peak Elev=45.73' Inflow=3.15 cfs 0.229 af
6.0" Round Culvert n=0.013 L=109.0' S=0.0050 '/' Outflow=3.15 cfs 0.229 af

Pond CB 1632: Combined Drain Peak Elev=150.97' Inflow=12.63 cfs 0.908 af
8.0" Round Culvert n=0.013 L=107.0' S=0.0050 '/' Outflow=12.63 cfs 0.908 af

Pond CB 1665: Combined Drain Peak Elev=174.45' Inflow=9.22 cfs 0.662 af
10.0" Round Culvert n=0.013 L=95.0' S=0.0140 '/' Outflow=9.22 cfs 0.662 af

Pond CB 1692: Combined Drain Peak Elev=192.98' Inflow=6.67 cfs 0.475 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0053 '/' Outflow=6.67 cfs 0.475 af

Link DP1: North Mill Pond Inflow=41.26 cfs 3.108 af
Primary=41.26 cfs 3.108 af

Link DP2: Combinded Sewer Inflow=30.71 cfs 2.323 af
Primary=30.71 cfs 2.323 af

Total Runoff Area = 12.660 ac Runoff Volume = 5.431 af Average Runoff Depth = 5.15"
42.13% Pervious = 5.334 ac 57.87% Impervious = 7.326 ac

Summary for Subcatchment ES1:

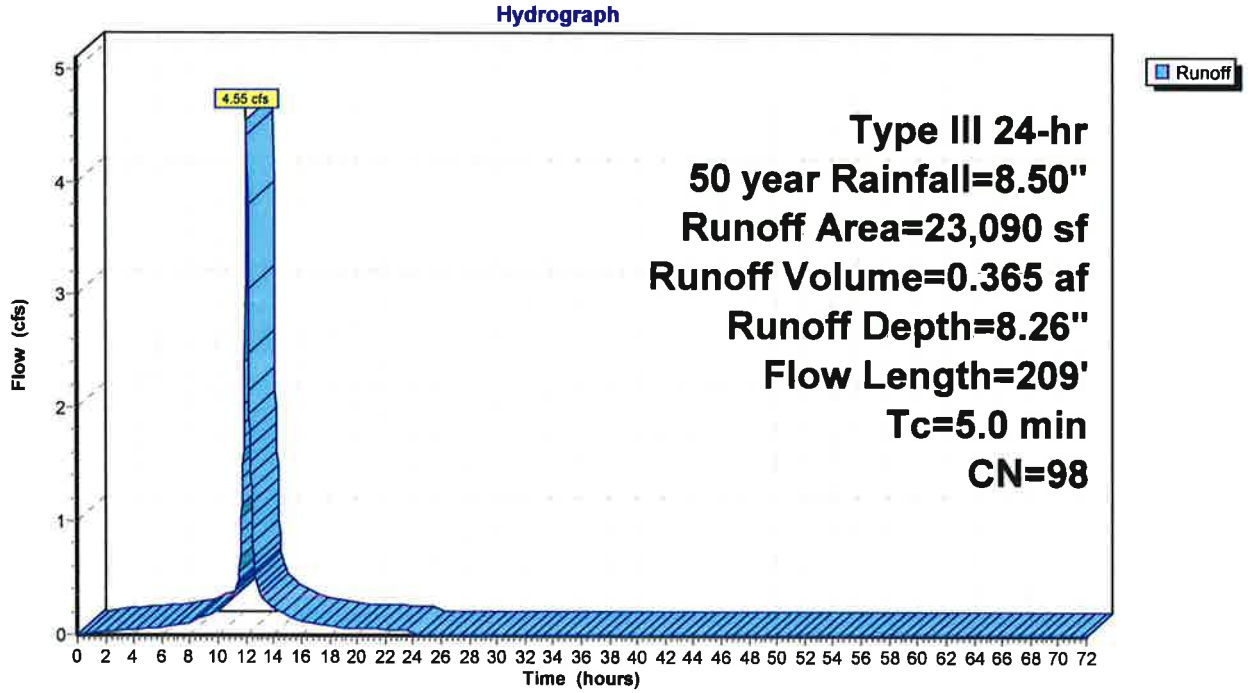
Runoff = 4.55 cfs @ 12.07 hrs, Volume= 0.365 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,133	98	Roofs, HSG A
	17,020	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	23,090	98	Weighted Average
	23,090		100.00% Impervious Area
	937		4.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES1:



Summary for Subcatchment ES10:

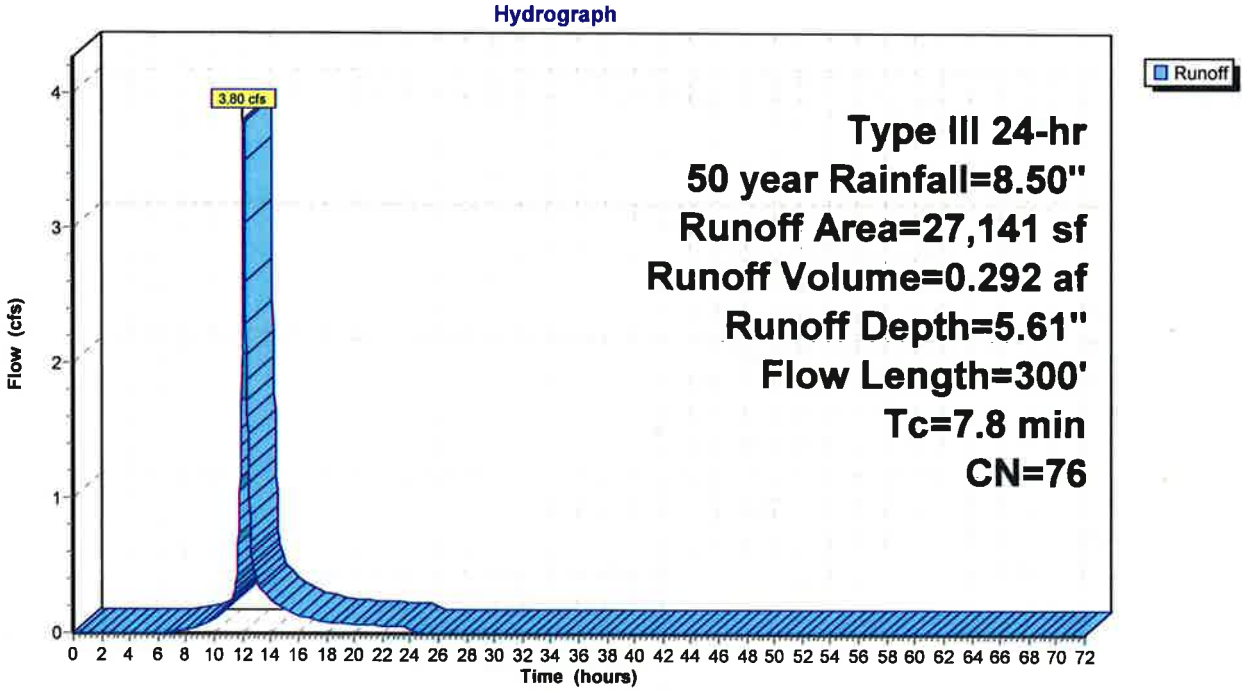
Runoff = 3.80 cfs @ 12.11 hrs, Volume= 0.292 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
10,611	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
27,141	76	Weighted Average
13,419		49.44% Pervious Area
13,722		50.56% Impervious Area
3,111		22.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment ES10:



Summary for Subcatchment ES2:

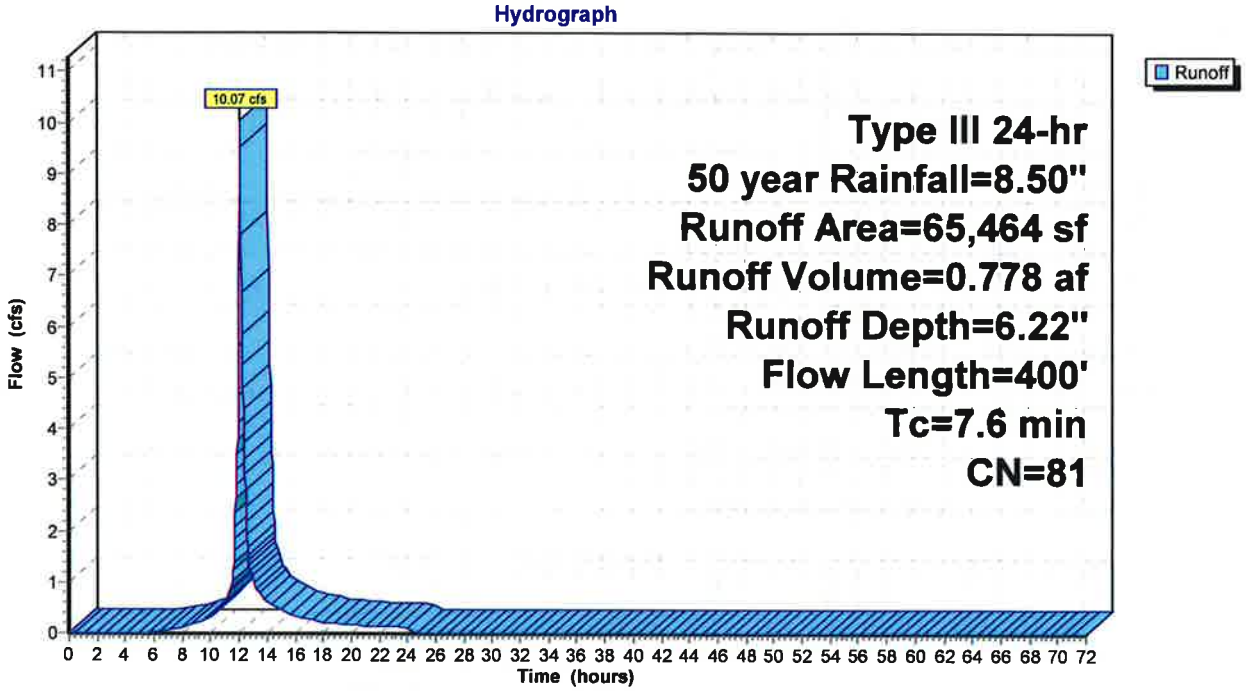
Runoff = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment ES2:



Summary for Subcatchment ES3:

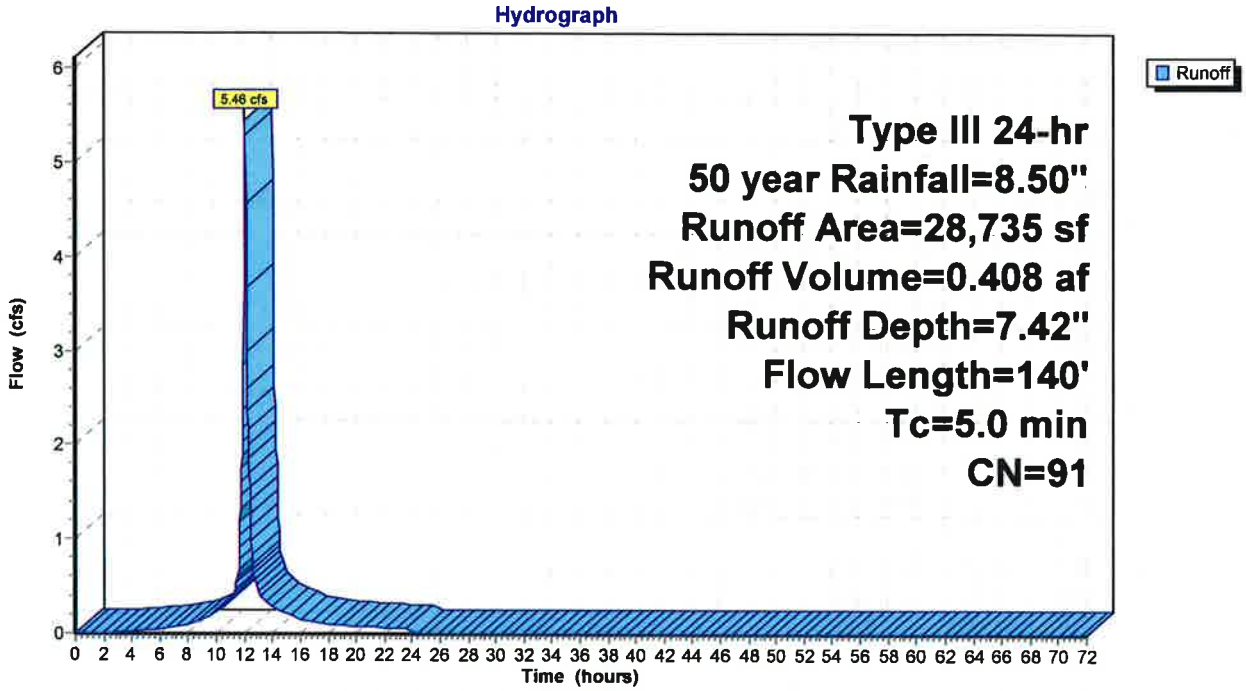
Runoff = 5.46 cfs @ 12.07 hrs, Volume= 0.408 af, Depth= 7.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	19,765	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	28,735	91	Weighted Average
	3,954		13.76% Pervious Area
	24,781		86.24% Impervious Area
	692		2.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES3:



Summary for Subcatchment ES4:

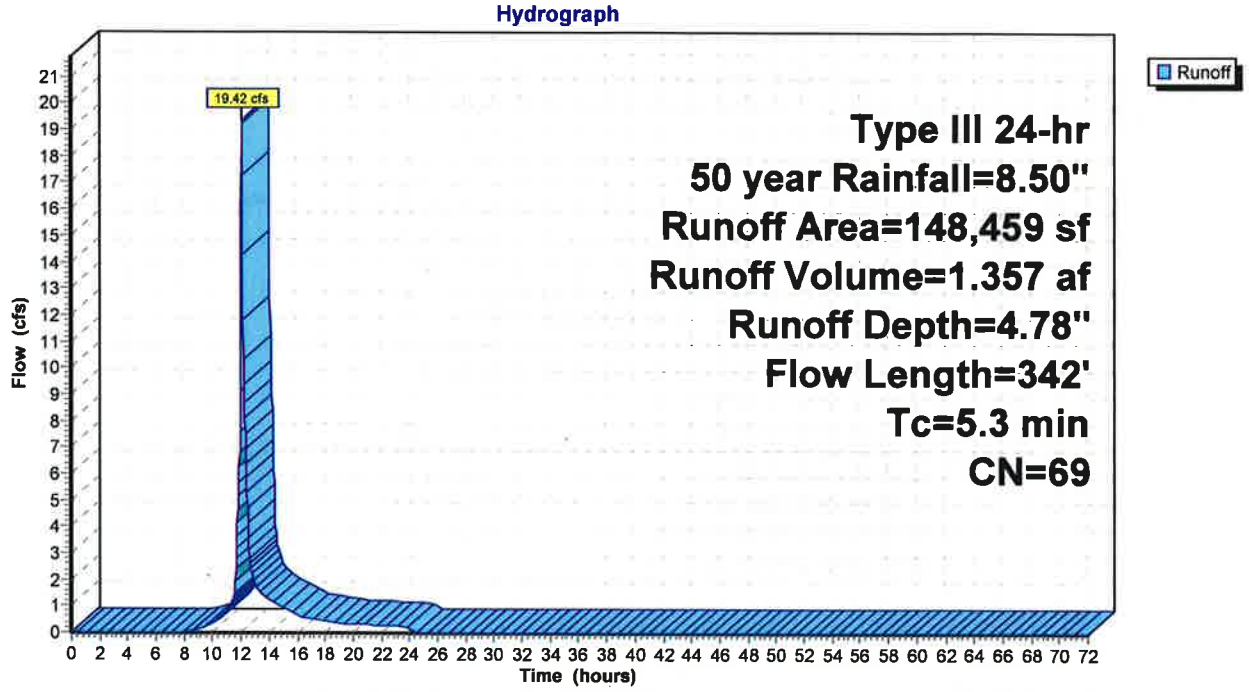
Runoff = 19.42 cfs @ 12.08 hrs, Volume= 1.357 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	28,300	98	Roofs, HSG A
	40,115	98	Paved parking, HSG A
	25,323	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	7,831	39	>75% Grass cover, Good, HSG A
*	9,267	98	Gravel surface, HSG A
	7,355	77	Fallow, bare soil, HSG A
	148,459	69	Weighted Average
	69,964		47.13% Pervious Area
	78,495		52.87% Impervious Area
	813		1.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment ES4:



Summary for Subcatchment ES5:

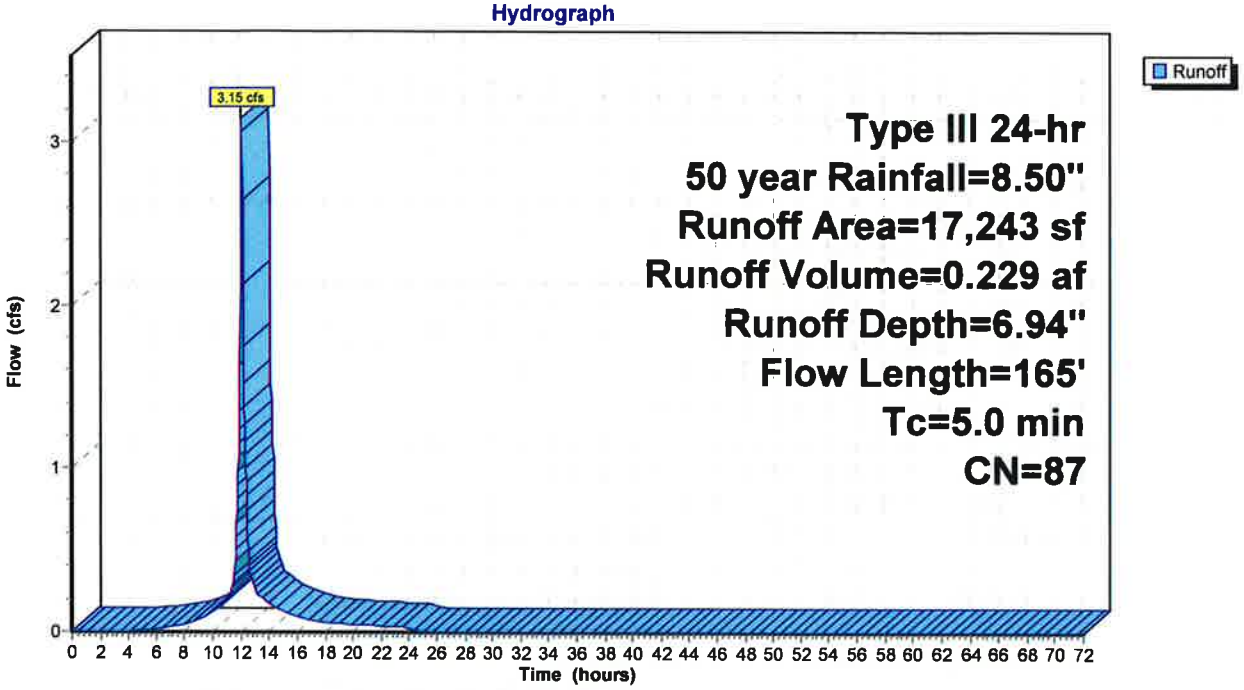
Runoff = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES5:



Summary for Subcatchment ES6:

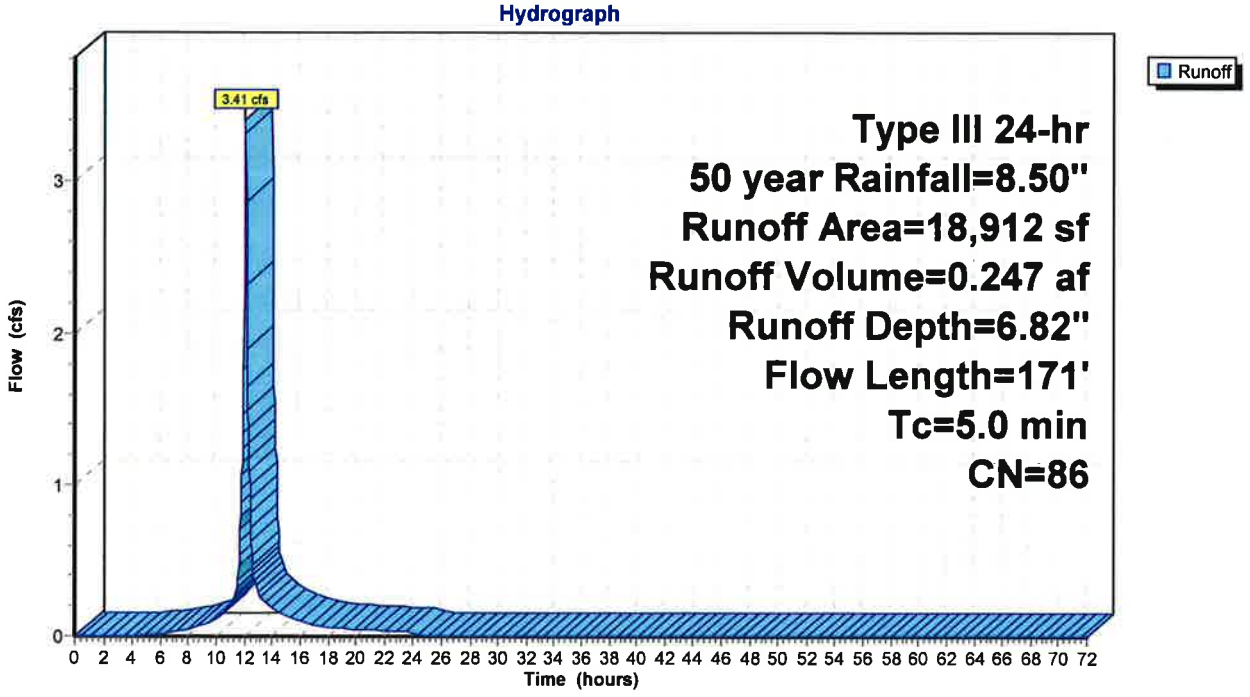
Runoff = 3.41 cfs @ 12.07 hrs, Volume= 0.247 af, Depth= 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES6:



Summary for Subcatchment ES7:

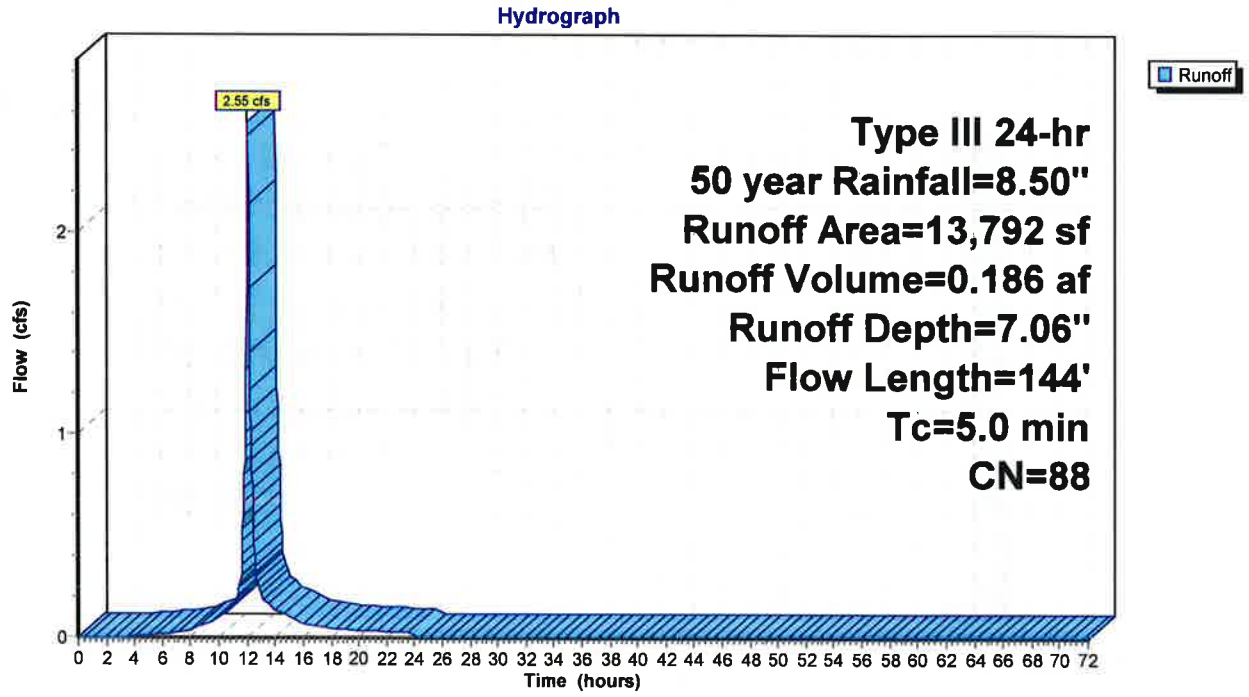
Runoff = 2.55 cfs @ 12.07 hrs, Volume= 0.186 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES7:



Summary for Subcatchment ES8:

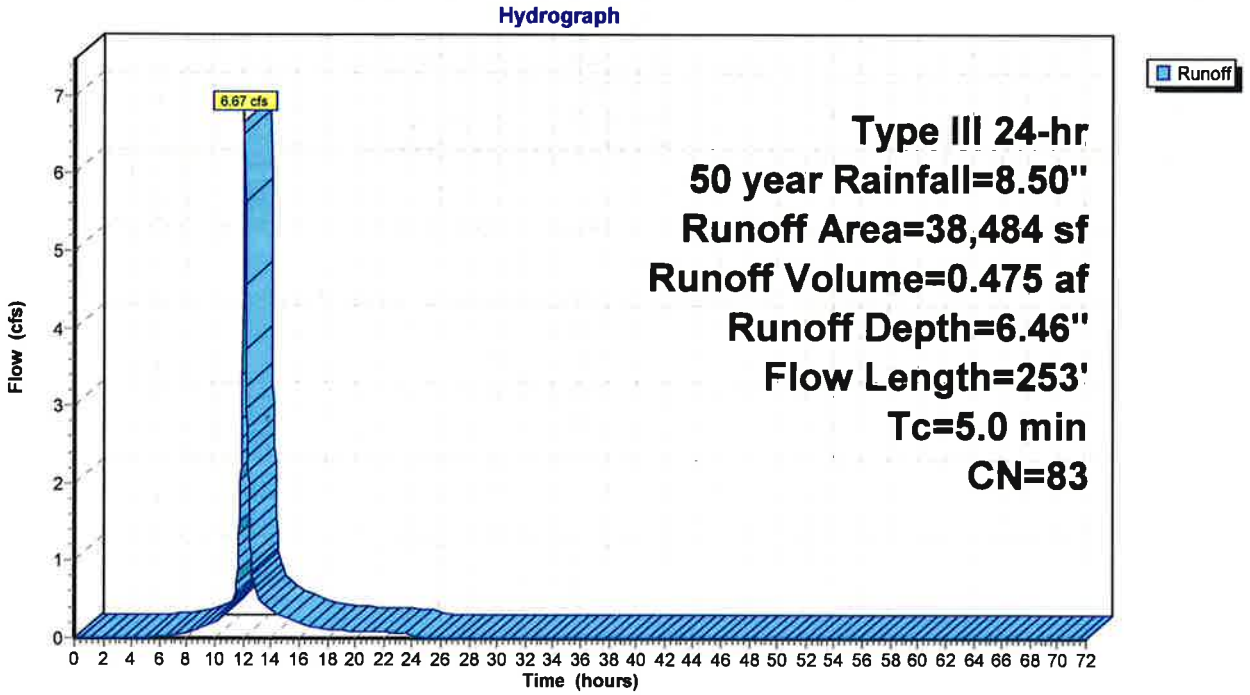
Runoff = 6.67 cfs @ 12.07 hrs, Volume= 0.475 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	18,114	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	7,858	98	Gravel surface, HSG A
	38,484	83	Weighted Average
	8,598		22.34% Pervious Area
	29,886		77.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES8:



Summary for Subcatchment ES9:

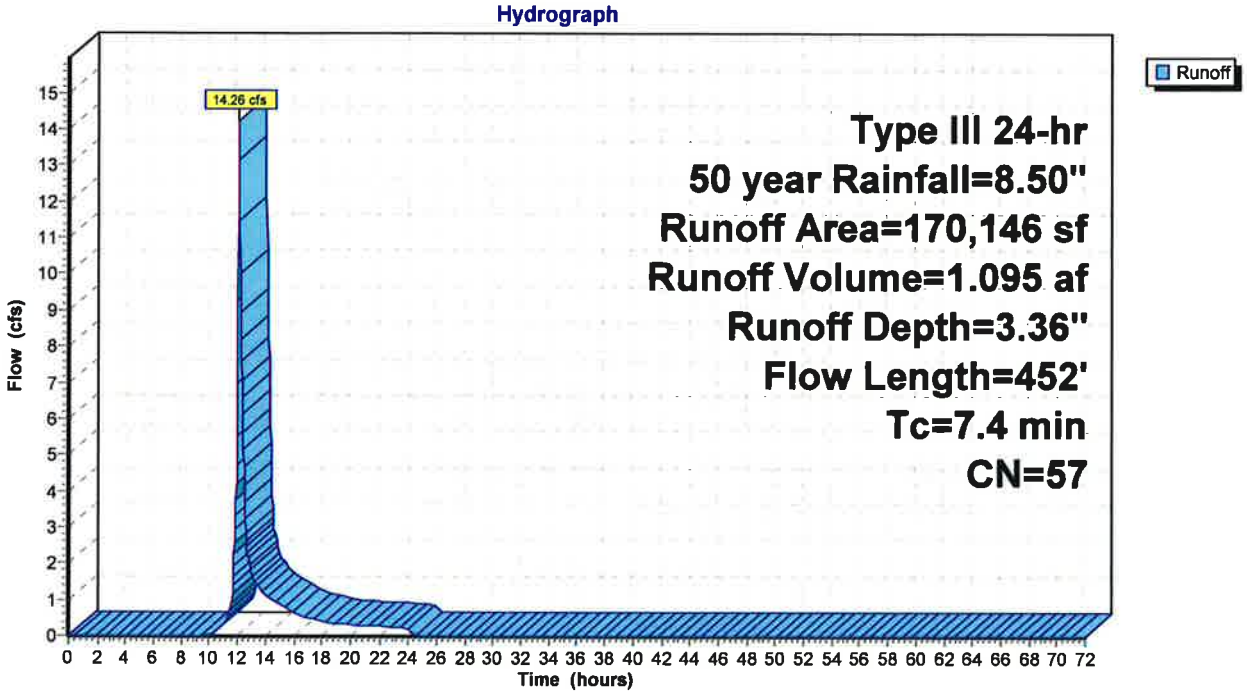
Runoff = 14.26 cfs @ 12.11 hrs, Volume= 1.095 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	4,750	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	52,002	98	Gravel surface, HSG A
	170,146	57	Weighted Average
	105,773		62.17% Pervious Area
	64,373		37.83% Impervious Area
	234		0.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment ES9:



Summary for Pond CB 1237:

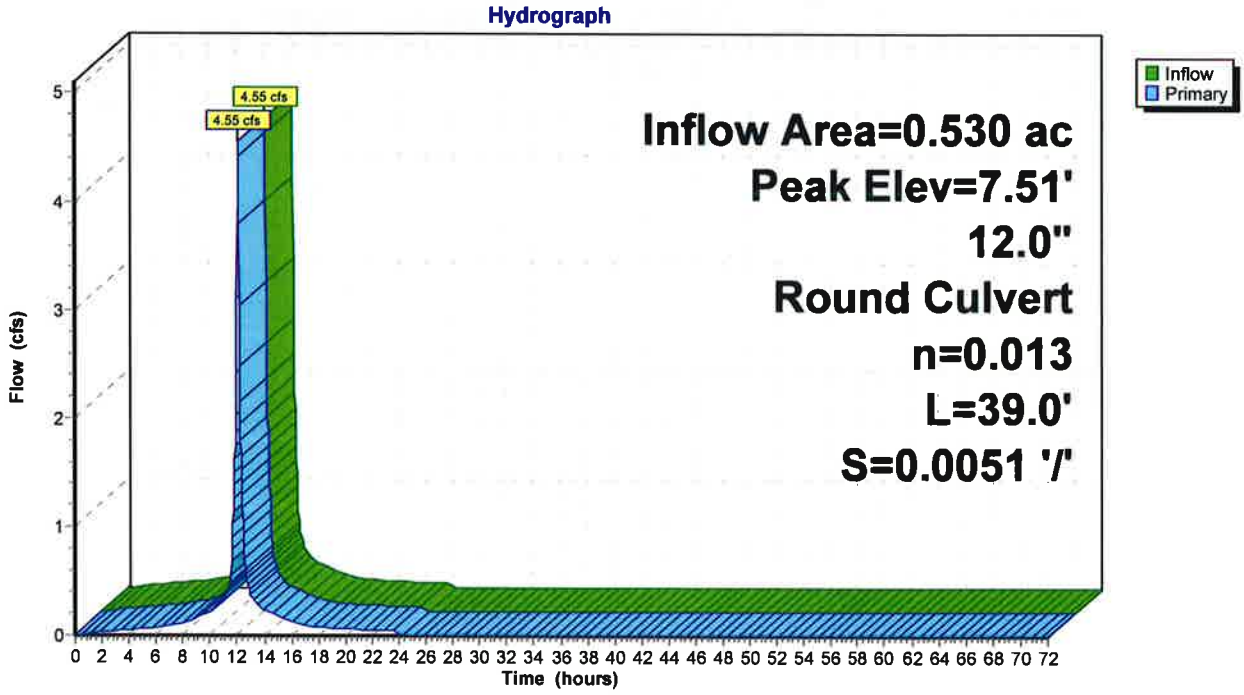
Inflow Area = 0.530 ac,100.00% Impervious, Inflow Depth = 8.26" for 50 year event
Inflow = 4.55 cfs @ 12.07 hrs, Volume= 0.365 af
Outflow = 4.55 cfs @ 12.07 hrs, Volume= 0.365 af, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.07 hrs, Volume= 0.365 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.51' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.48 cfs @ 12.07 hrs HW=7.47' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 4.48 cfs @ 5.70 fps)

Pond CB 1237:



Summary for Pond CB 1239: Combined Drain

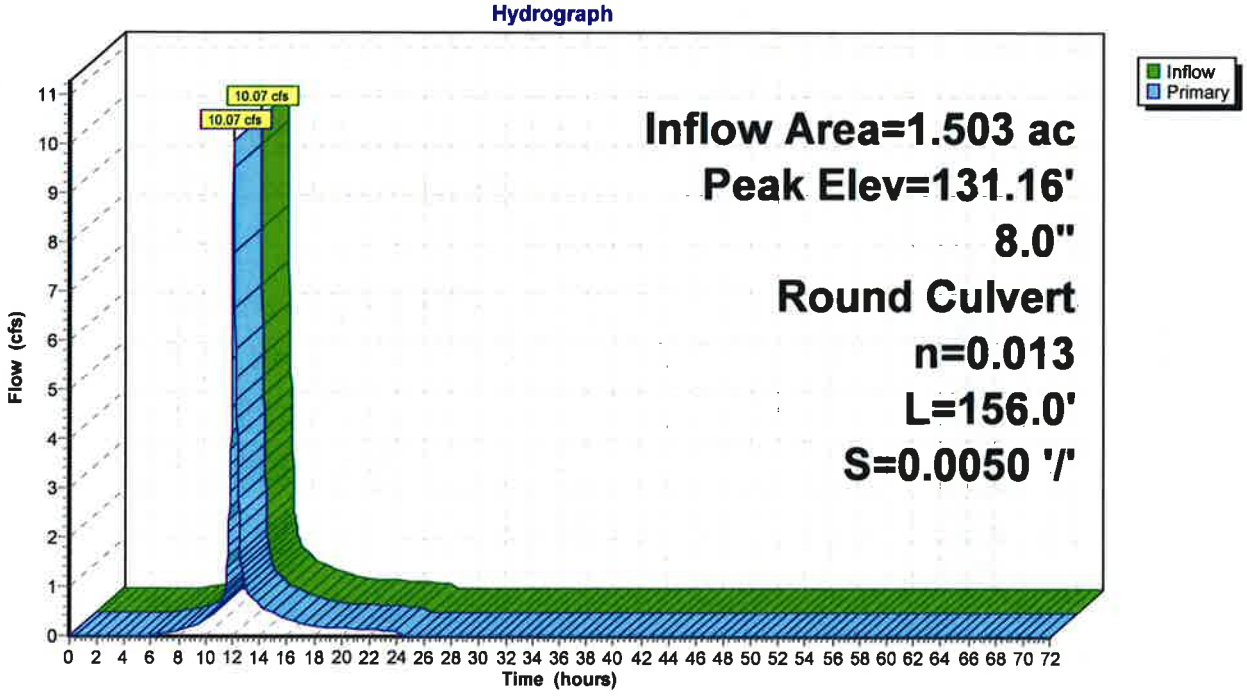
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 6.22" for 50 year event
Inflow = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af
Outflow = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af, Atten= 0%, Lag= 0.0 min
Primary = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 131.16' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.32'	**8.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.32' / 2.54' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=9.95 cfs @ 12.11 hrs HW=128.33' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.95 cfs @ 28.52 fps)

Pond CB 1239: Combined Drain



Summary for Pond CB 1240: Combined Drain

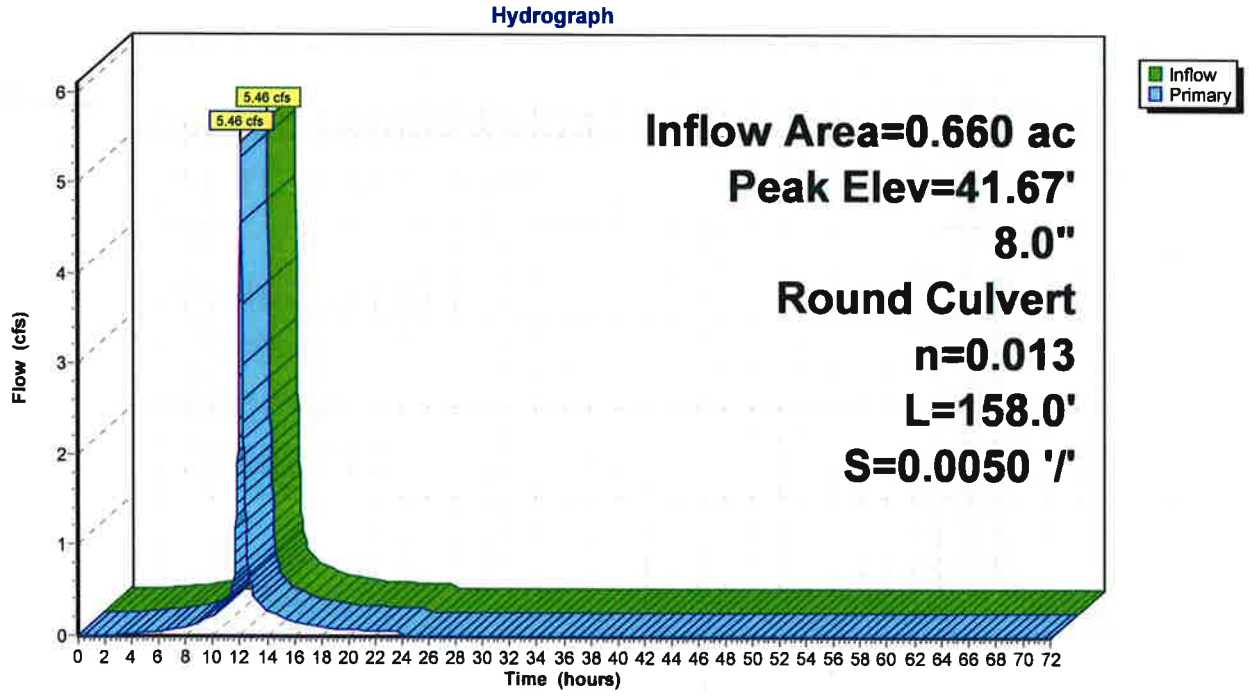
Inflow Area = 0.660 ac, 86.24% Impervious, Inflow Depth = 7.42" for 50 year event
Inflow = 5.46 cfs @ 12.07 hrs, Volume= 0.408 af
Outflow = 5.46 cfs @ 12.07 hrs, Volume= 0.408 af, Atten= 0%, Lag= 0.0 min
Primary = 5.46 cfs @ 12.07 hrs, Volume= 0.408 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 41.67' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.85'	**8.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.85' / 3.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.36 cfs @ 12.07 hrs HW=40.46' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 5.36 cfs @ 15.37 fps)

Pond CB 1240: Combined Drain



Summary for Pond CB 1241:

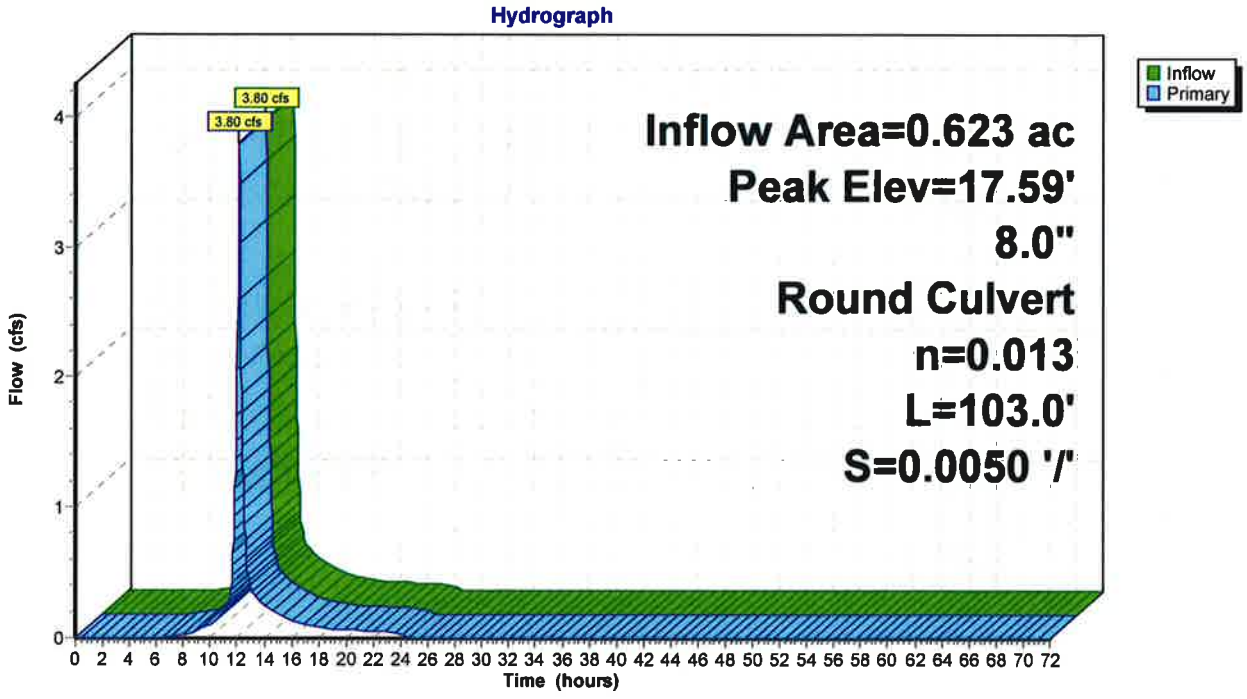
Inflow Area = 0.623 ac, 50.56% Impervious, Inflow Depth = 5.61" for 50 year event
Inflow = 3.80 cfs @ 12.11 hrs, Volume= 0.292 af
Outflow = 3.80 cfs @ 12.11 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min
Primary = 3.80 cfs @ 12.11 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 17.59' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.44'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.44' / 3.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.77 cfs @ 12.11 hrs HW=17.34' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 3.77 cfs @ 10.79 fps)

Pond CB 1241:



Summary for Pond CB 1529: Combined Drain

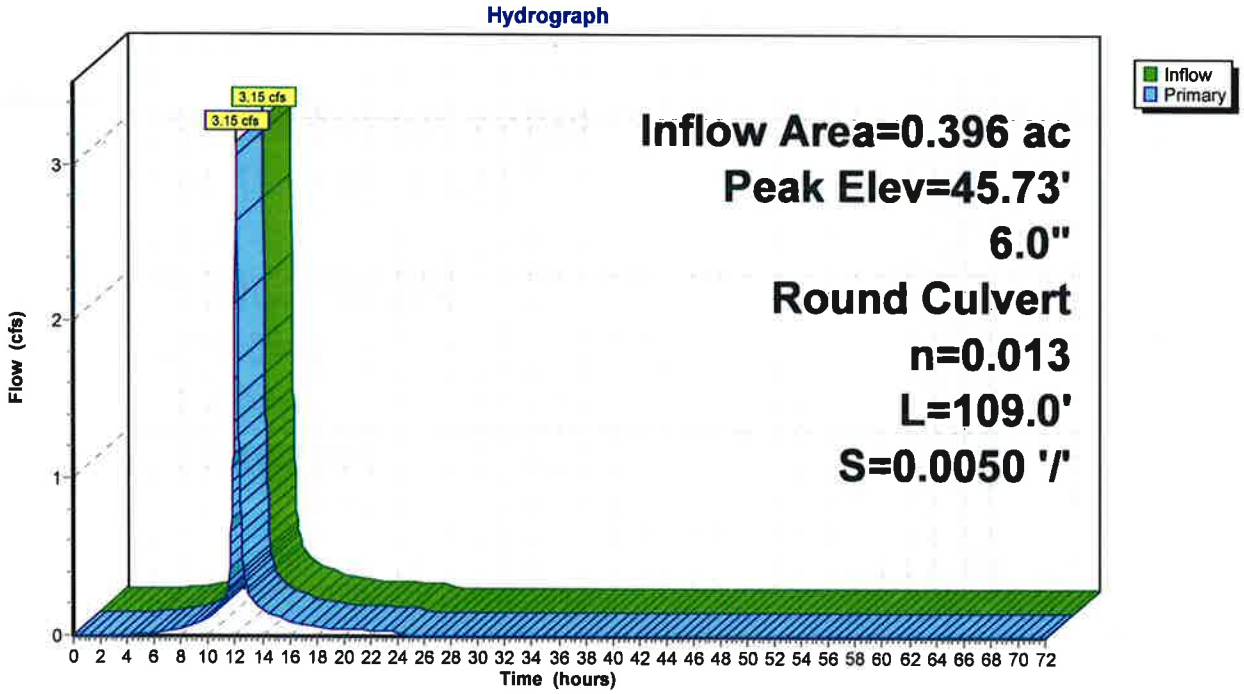
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 6.94" for 50 year event
Inflow = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af
Outflow = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 45.73' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.47'	**6.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.47' / 4.92' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=3.09 cfs @ 12.07 hrs HW=44.42' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 3.09 cfs @ 15.75 fps)

Pond CB 1529: Combined Drain



Summary for Pond CB 1632: Combined Drain

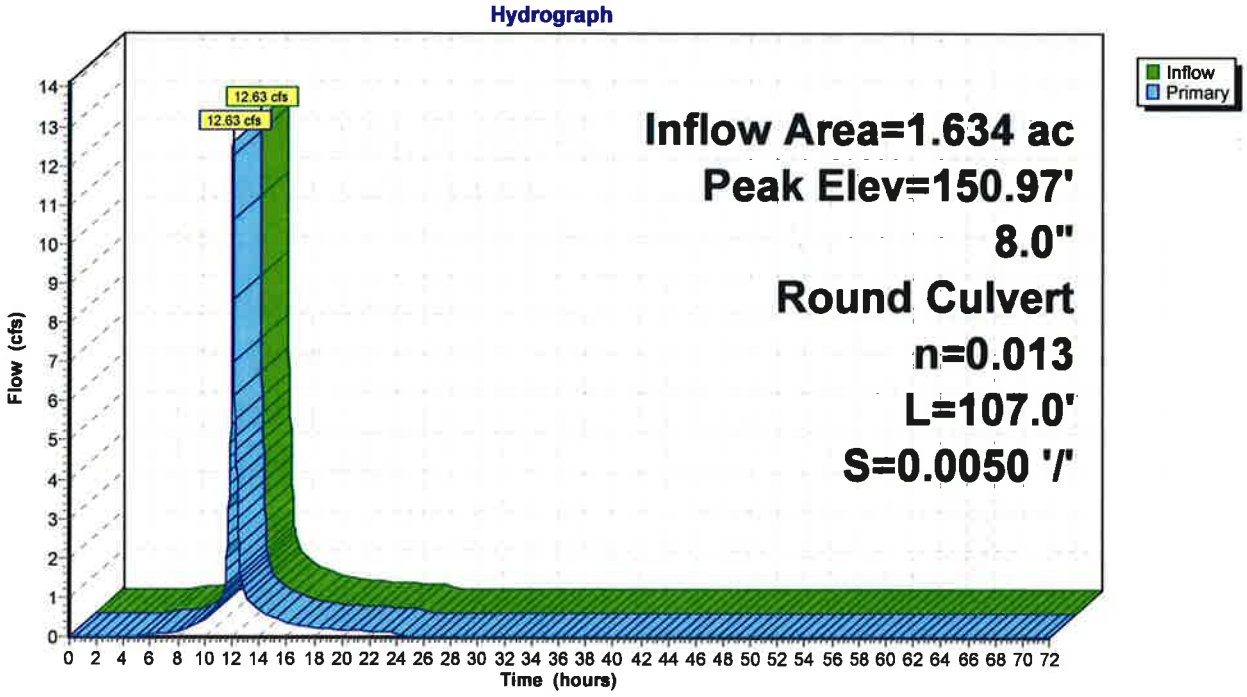
Inflow Area = 1.634 ac, 80.32% Impervious, Inflow Depth = 6.67" for 50 year event
Inflow = 12.63 cfs @ 12.07 hrs, Volume= 0.908 af
Outflow = 12.63 cfs @ 12.07 hrs, Volume= 0.908 af, Atten= 0%, Lag= 0.0 min
Primary = 12.63 cfs @ 12.07 hrs, Volume= 0.908 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 150.97' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.38'	**8.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.38' / 2.84' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=12.41 cfs @ 12.07 hrs HW=146.13' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.41 cfs @ 35.55 fps)

Pond CB 1632: Combined Drain



Summary for Pond CB 1665: Combined Drain

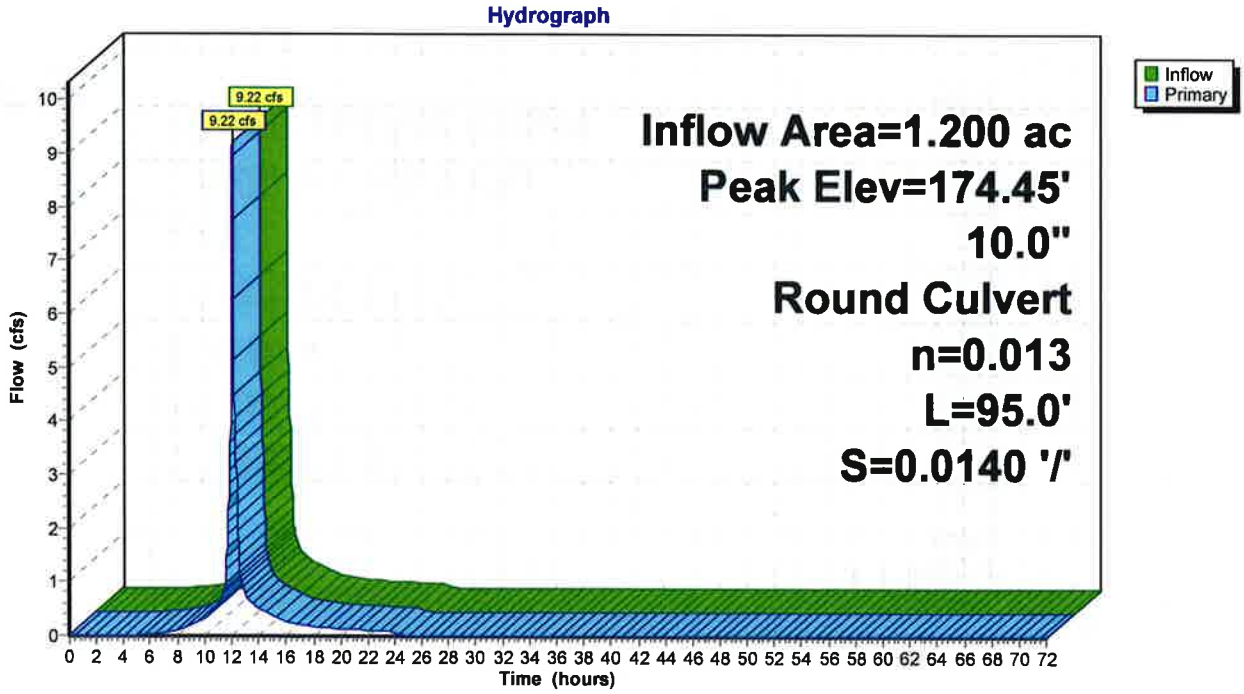
Inflow Area = 1.200 ac, 79.86% Impervious, Inflow Depth = 6.61" for 50 year event
Inflow = 9.22 cfs @ 12.07 hrs, Volume= 0.662 af
Outflow = 9.22 cfs @ 12.07 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.0 min
Primary = 9.22 cfs @ 12.07 hrs, Volume= 0.662 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 174.45' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.11'	**10.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.11' / 5.78' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=9.06 cfs @ 12.07 hrs HW=168.82' TW=146.12' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 9.06 cfs @ 16.61 fps)

Pond CB 1665: Combined Drain



Summary for Pond CB 1692: Combined Drain

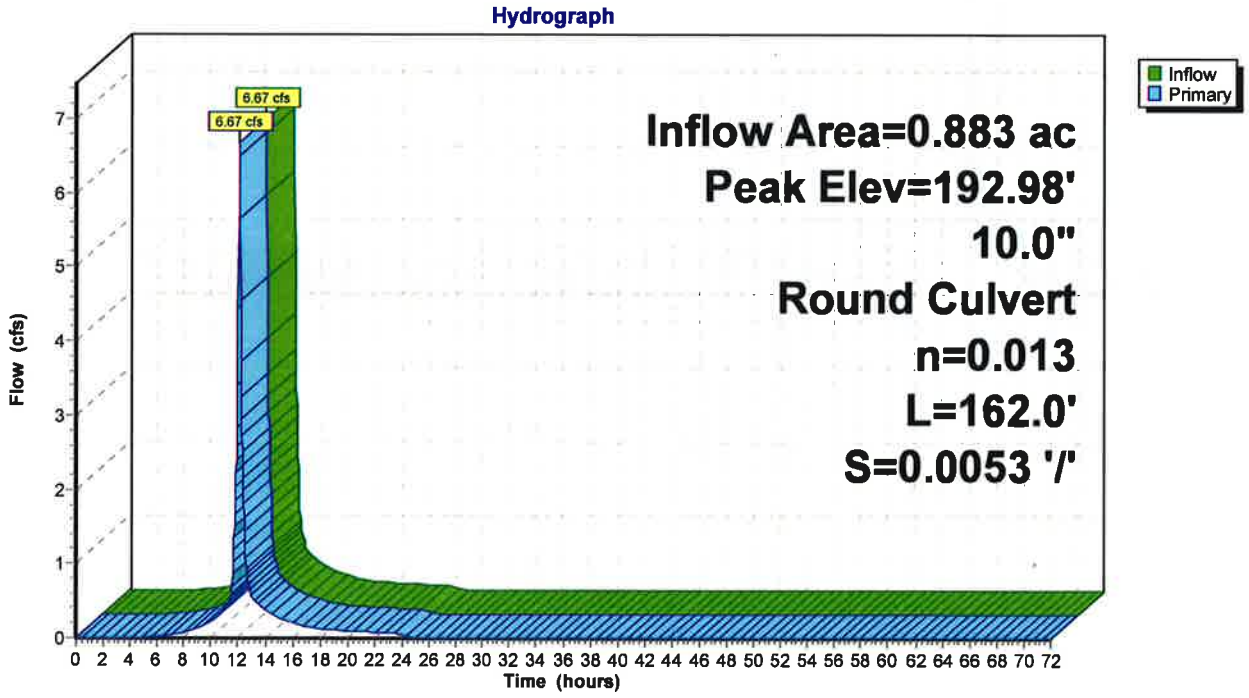
Inflow Area = 0.883 ac, 77.66% Impervious, Inflow Depth = 6.46" for 50 year event
Inflow = 6.67 cfs @ 12.07 hrs, Volume= 0.475 af
Outflow = 6.67 cfs @ 12.07 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.0 min
Primary = 6.67 cfs @ 12.07 hrs, Volume= 0.475 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 192.98' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.17'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.17' / 7.31' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=6.56 cfs @ 12.07 hrs HW=186.70' TW=168.78' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 6.56 cfs @ 12.02 fps)

Pond CB 1692: Combined Drain

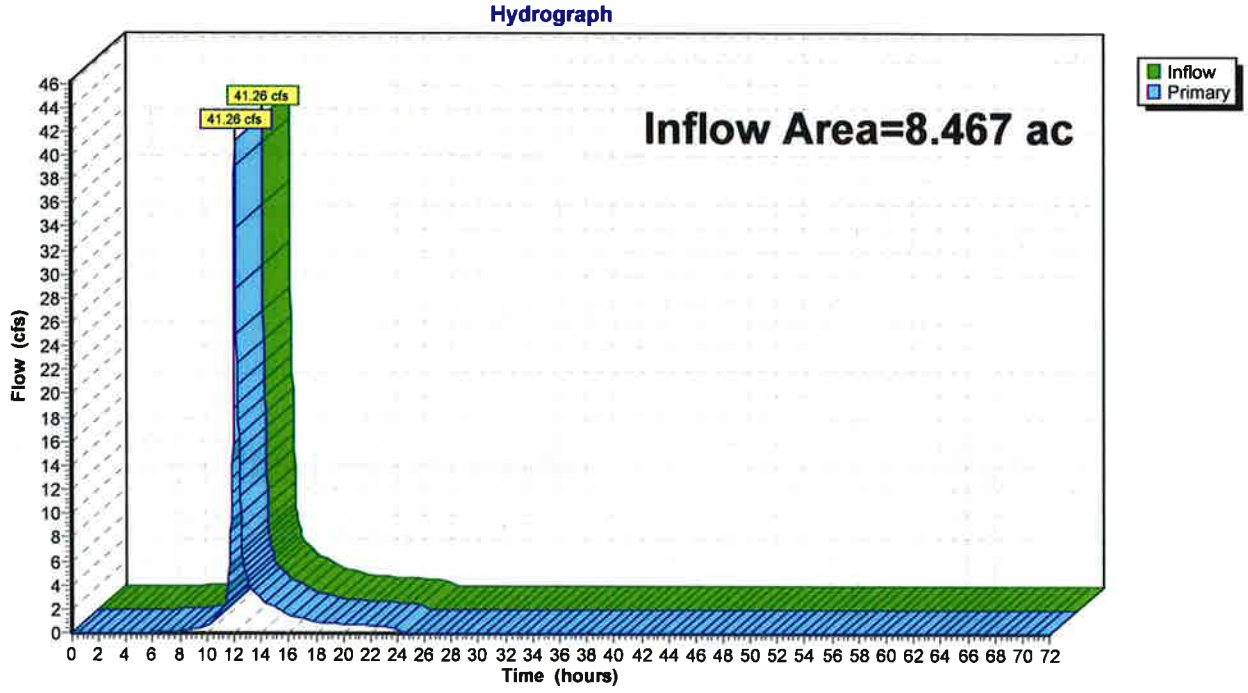


Summary for Link DP1: North Mill Pond

Inflow Area = 8.467 ac, 48.72% Impervious, Inflow Depth = 4.40" for 50 year event
Inflow = 41.26 cfs @ 12.09 hrs, Volume= 3.108 af
Primary = 41.26 cfs @ 12.09 hrs, Volume= 3.108 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

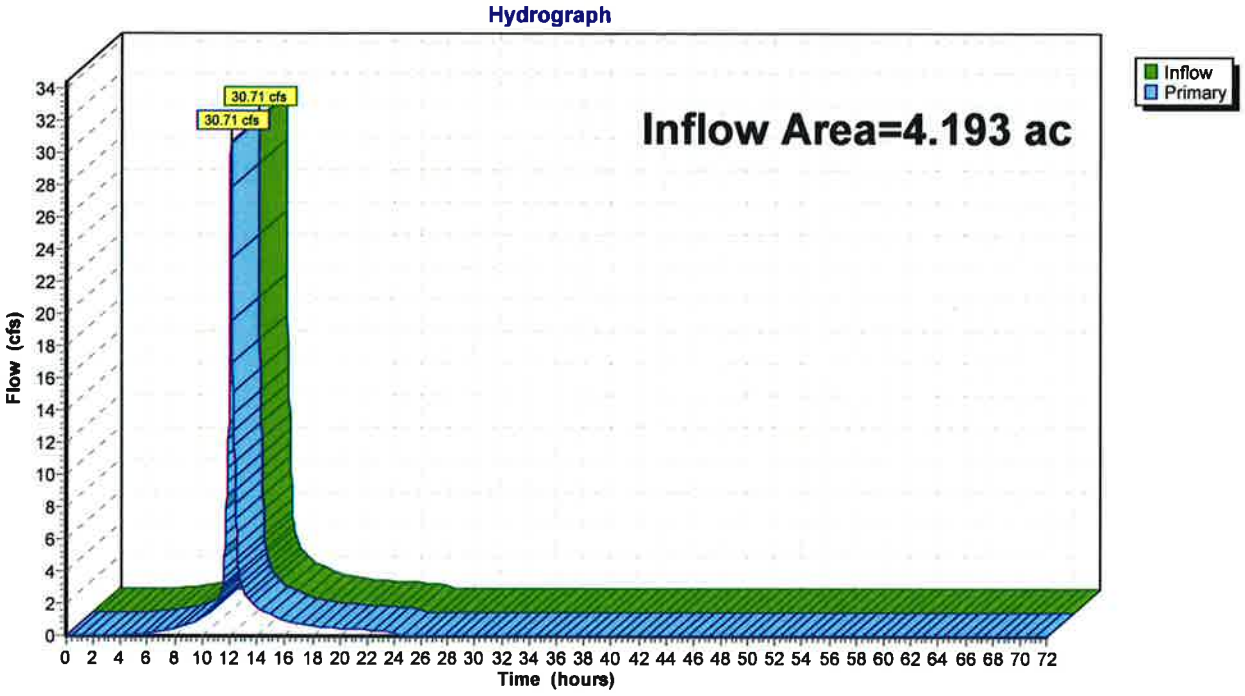


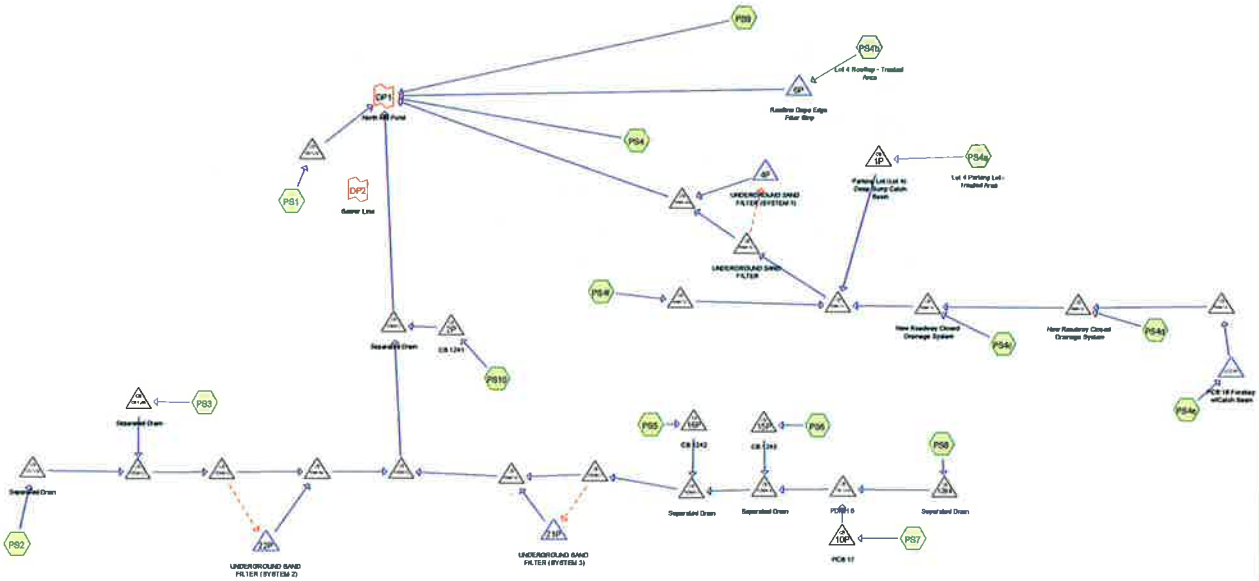
Summary for Link DP2: Combinded Sewer

Inflow Area = 4.193 ac, 76.36% Impervious, Inflow Depth = 6.65" for 50 year event
Inflow = 30.71 cfs @ 12.08 hrs, Volume= 2.323 af
Primary = 30.71 cfs @ 12.08 hrs, Volume= 2.323 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Combinded Sewer





Subcat Reach Pond Link

Routing Diagram for 2429 Proposed Conditions
Prepared by Ambit Engineering, Inc., Printed 11/6/2018
HydroCAD® 10.00 s/n 00801 © 2013 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.054	39	>75% Grass cover, Good, HSG A (PS1, PS10, PS3, PS4, PS4c, PS4d, PS4e, PS6, PS8, PS9)
0.412	77	Fallow, bare soil, HSG A (PS2, PS3, PS4)
0.114	96	Gravel surface, HSG A (PS10)
1.595	98	Gravel surface, HSG A (PS2, PS3, PS5, PS6, PS7, PS8, PS9)
2.835	98	Paved parking, HSG A (PS1, PS10, PS2, PS3, PS4, PS4a, PS5, PS6, PS7, PS8, PS9)
0.548	98	Paved roads w/curbs & sewers, HSG A (PS4c, PS4d, PS4e, PS4f)
1.735	98	Roofs, HSG A (PS1, PS2, PS3, PS4b, PS4c, PS4d, PS4e, PS4f, PS5, PS6, PS7, PS8, PS9)
0.078	98	Sidewalk new, HSG A (PS1, PS4)
0.126	98	Unconnected pavement, sidewalk, HSG A (PS1, PS2, PS3, PS4, PS9)
0.071	98	Unconnected roofs, HSG A (PS10)
3.196	30	Woods, Good, HSG A (PS10, PS2, PS3, PS4, PS5, PS6, PS7, PS8, PS9)
0.904	32	Woods/grass comb., Good, HSG A (PS4, PS9)
12.670	**71**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.670	HSG A	PS1, PS10, PS2, PS3, PS4, PS4a, PS4b, PS4c, PS4d, PS4e, PS4f, PS5, PS6, PS7, PS8, PS9
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
12.670		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 PS1: Runoff Area=23,090 sf 98.87% Impervious Runoff Depth=3.34"
Flow Length=209' Tc=5.0 min CN=97 Runoff=1.94 cfs 0.148 af

Subcatchment PS10: Runoff Area=27,141 sf 47.00% Impervious Runoff Depth=1.37"
Flow Length=300' Tc=7.8 min CN=74 Runoff=0.91 cfs 0.071 af

Subcatchment PS2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=1.86"
Flow Length=400' Tc=7.6 min CN=81 Runoff=3.08 cfs 0.233 af

Subcatchment PS3: Runoff Area=28,735 sf 83.35% Impervious Runoff Depth=2.53"
Flow Length=140' Tc=5.0 min CN=89 Runoff=1.99 cfs 0.139 af

Subcatchment PS4: Runoff Area=76,501 sf 7.14% Impervious Runoff Depth=0.04"
Flow Length=342' Tc=5.3 min CN=41 Runoff=0.01 cfs 0.006 af

Subcatchment PS4a: Lot 4 Parking Lot - Runoff Area=14,755 sf 100.00% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=98 Runoff=1.25 cfs 0.098 af

Subcatchment PS4b: Lot 4 Rooftop - Runoff Area=20,314 sf 100.00% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=98 Runoff=1.72 cfs 0.134 af

Subcatchment PS4c: Runoff Area=12,582 sf 89.27% Impervious Runoff Depth=2.82"
Tc=5.0 min CN=92 Runoff=0.95 cfs 0.068 af

Subcatchment PS4d: Runoff Area=14,029 sf 70.87% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=81 Runoff=0.72 cfs 0.050 af

Subcatchment PS4e: Runoff Area=17,277 sf 61.96% Impervious Runoff Depth=1.50"
Tc=5.0 min CN=76 Runoff=0.71 cfs 0.050 af

Subcatchment PS4f: Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=98 Runoff=0.15 cfs 0.012 af

Subcatchment PS5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=2.35"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.12 cfs 0.078 af

Subcatchment PS6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=2.27"
Flow Length=171' Tc=5.0 min CN=86 Runoff=1.19 cfs 0.082 af

Subcatchment PS7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=2.44"
Flow Length=144' Tc=5.0 min CN=88 Runoff=0.93 cfs 0.064 af

Subcatchment PS8: Runoff Area=36,146 sf 76.21% Impervious Runoff Depth=1.94"
Flow Length=253' Tc=5.0 min CN=82 Runoff=1.94 cfs 0.134 af

Subcatchment PS9: Runoff Area=164,174 sf 35.57% Impervious Runoff Depth=0.41"
Flow Length=452' Tc=7.4 min CN=55 Runoff=0.84 cfs 0.129 af

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin Peak Elev=8.09' Inflow=1.25 cfs 0.098 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0213 '/' Outflow=1.25 cfs 0.098 af

Pond 2P: CB 1241 Peak Elev=6.43' Inflow=0.91 cfs 0.071 af
12.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=0.91 cfs 0.071 af

Pond 4P: UNDERGROUND SAND FILTER Peak Elev=6.78' Storage=0.014 af Inflow=0.56 cfs 0.200 af
Outflow=0.57 cfs 0.191 af

Pond 6P: Roofline Dripe Edge Filter Strip Peak Elev=9.51' Storage=0.001 af Inflow=1.72 cfs 0.134 af
12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=1.71 cfs 0.134 af

Pond 10P: PCB 17 Peak Elev=8.81' Inflow=0.93 cfs 0.064 af
12.0" Round Culvert n=0.013 L=5.0' S=0.0040 '/' Outflow=0.93 cfs 0.064 af

Pond 15P: CB 1243 Peak Elev=8.67' Inflow=1.19 cfs 0.082 af
12.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=1.19 cfs 0.082 af

Pond 16P: CB 1242 Peak Elev=8.37' Inflow=1.12 cfs 0.078 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=1.12 cfs 0.078 af

Pond 21P: UNDERGROUND SAND FILTER Peak Elev=7.87' Storage=0.015 af Inflow=0.60 cfs 0.226 af
Outflow=0.56 cfs 0.217 af

Pond 22P: UNDERGROUND SAND FILTER Peak Elev=6.98' Storage=0.017 af Inflow=0.53 cfs 0.224 af
Outflow=0.51 cfs 0.215 af

Pond 1264: Separated Drain Peak Elev=9.06' Inflow=1.94 cfs 0.134 af
24.0" Round Culvert n=0.013 L=162.0' S=0.0040 '/' Outflow=1.94 cfs 0.134 af

Pond CB 1237: Peak Elev=6.21' Inflow=1.94 cfs 0.148 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=1.94 cfs 0.148 af

Pond CB 1239: Separated Drain Peak Elev=7.57' Inflow=3.08 cfs 0.233 af
24.0" Round Culvert n=0.013 L=117.0' S=0.0040 '/' Outflow=3.08 cfs 0.233 af

Pond CB 1240: Separated Drain Peak Elev=7.41' Inflow=1.99 cfs 0.139 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=1.99 cfs 0.139 af

Pond CB 1244: PDMH 6 Peak Elev=8.72' Inflow=2.86 cfs 0.199 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0040 '/' Outflow=2.86 cfs 0.199 af

Pond OCS #1: PCB 16 Forebay w/Catch Basin Peak Elev=9.83' Storage=473 cf Inflow=0.71 cfs 0.050 af
Outflow=0.32 cfs 0.050 af

Pond PDMH 1: Separated Drain Peak Elev=6.34' Inflow=10.68 cfs 0.785 af
36.0" Round Culvert n=0.013 L=85.0' S=0.0040 '/' Outflow=10.68 cfs 0.785 af

Pond PDMH 10: New Roadway Closed Drainage System Peak Elev=7.33' Inflow=1.91 cfs 0.168 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0039 '/' Outflow=1.91 cfs 0.168 af

Pond PDMH 11: Peak Elev=7.08' Inflow=3.31 cfs 0.277 af
24.0" Round Culvert n=0.013 L=16.0' S=0.0037 '/' Outflow=3.31 cfs 0.277 af

Pond PDMH 12: Peak Elev=7.08' Inflow=0.15 cfs 0.012 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0039 '/' Outflow=0.15 cfs 0.012 af

Pond PDMH 13: New Roadway Closed Drainage System Peak Elev=7.78' Inflow=0.97 cfs 0.100 af
12.0" Round Culvert n=0.013 L=195.0' S=0.0050 '/' Outflow=0.97 cfs 0.100 af

Pond PDMH 14: Peak Elev=8.54' Inflow=0.32 cfs 0.050 af
12.0" Round Culvert n=0.013 L=238.0' S=0.0050 '/' Outflow=0.32 cfs 0.050 af

Pond PDMH 15: UNDERGROUND SAND FILTER Peak Elev=6.88' Inflow=3.31 cfs 0.277 af
Primary=2.86 cfs 0.077 af Secondary=0.56 cfs 0.200 af Outflow=3.31 cfs 0.277 af

Pond PDMH 15a: Peak Elev=6.70' Inflow=3.23 cfs 0.268 af
24.0" Round Culvert n=0.013 L=4.5' S=0.0044 '/' Outflow=3.23 cfs 0.268 af

Pond PDMH 2: Peak Elev=7.36' Inflow=4.96 cfs 0.373 af
24.0" Round Culvert n=0.013 L=115.0' S=0.0040 '/' Outflow=4.96 cfs 0.373 af

Pond PDMH 3: Separated Drain Peak Elev=8.23' Inflow=5.17 cfs 0.358 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0041 '/' Outflow=5.17 cfs 0.358 af

Pond PDMH 4: Separated Drain Peak Elev=8.52' Inflow=4.04 cfs 0.281 af
24.0" Round Culvert n=0.013 L=116.0' S=0.0040 '/' Outflow=4.04 cfs 0.281 af

Pond PDMH 5: Peak Elev=6.69' Inflow=9.79 cfs 0.714 af
36.0" Round Culvert n=0.013 L=43.0' S=0.0040 '/' Outflow=9.79 cfs 0.714 af

Pond PDMH 7: Peak Elev=8.02' Inflow=5.17 cfs 0.358 af
Primary=4.61 cfs 0.132 af Secondary=0.60 cfs 0.226 af Outflow=5.17 cfs 0.358 af

Pond PDMH 7a: Peak Elev=7.76' Inflow=5.02 cfs 0.350 af
24.0" Round Culvert n=0.013 L=19.0' S=0.0042 '/' Outflow=5.02 cfs 0.350 af

Pond PDMH 8: Peak Elev=7.08' Inflow=4.96 cfs 0.373 af
Primary=4.52 cfs 0.149 af Secondary=0.53 cfs 0.224 af Outflow=4.96 cfs 0.373 af

Pond PDMH 8a: Peak Elev=6.91' Inflow=4.85 cfs 0.364 af
24.0" Round Culvert n=0.013 L=59.0' S=0.0041 '/' Outflow=4.85 cfs 0.364 af

Link DP1: North Mill Pond Inflow=17.98 cfs 1.471 af
Primary=17.98 cfs 1.471 af

Link DP2: Sewer Line
Primary=0.00 cfs 0.000 af

Total Runoff Area = 12.670 ac Runoff Volume = 1.497 af Average Runoff Depth = 1.42"
44.84% Pervious = 5.681 ac 55.16% Impervious = 6.988 ac

Summary for Subcatchment PS1:

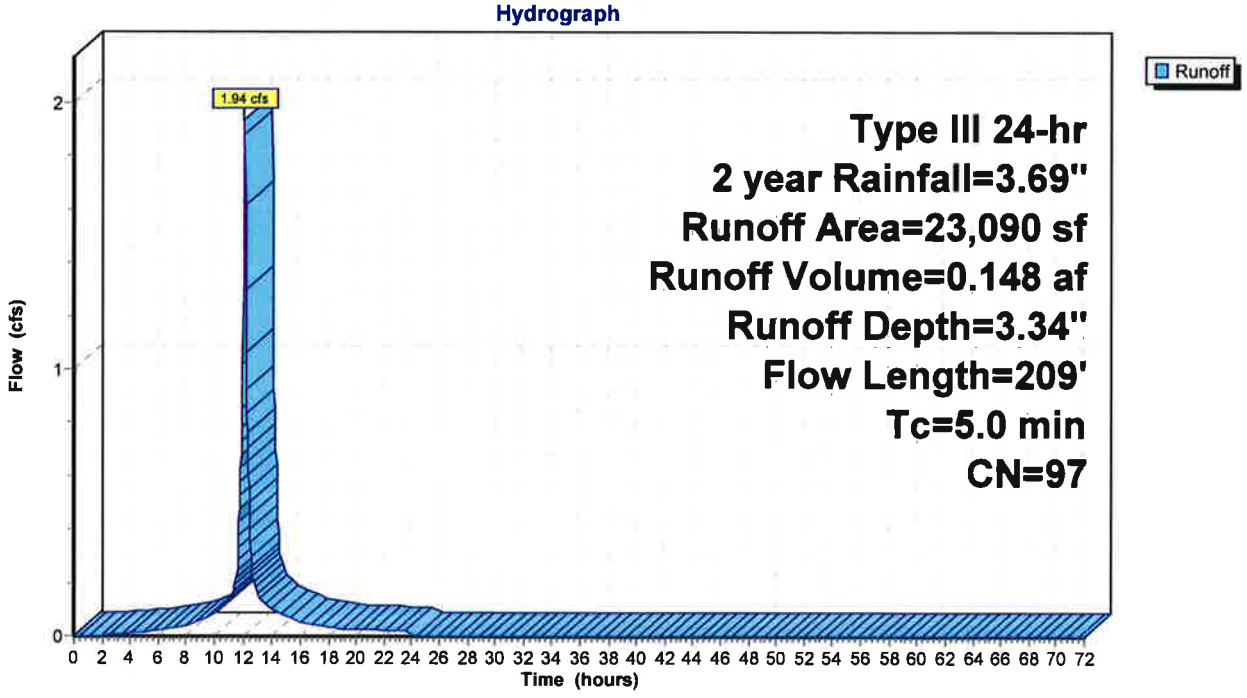
Runoff = 1.94 cfs @ 12.07 hrs, Volume= 0.148 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	3,527	98	Roofs, HSG A
	16,758	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	262	39	>75% Grass cover, Good, HSG A
*	1,606	98	Sidewalk new, HSG A
	23,090	97	Weighted Average
	262		1.13% Pervious Area
	22,828		98.87% Impervious Area
	937		4.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS1:



Summary for Subcatchment PS10:

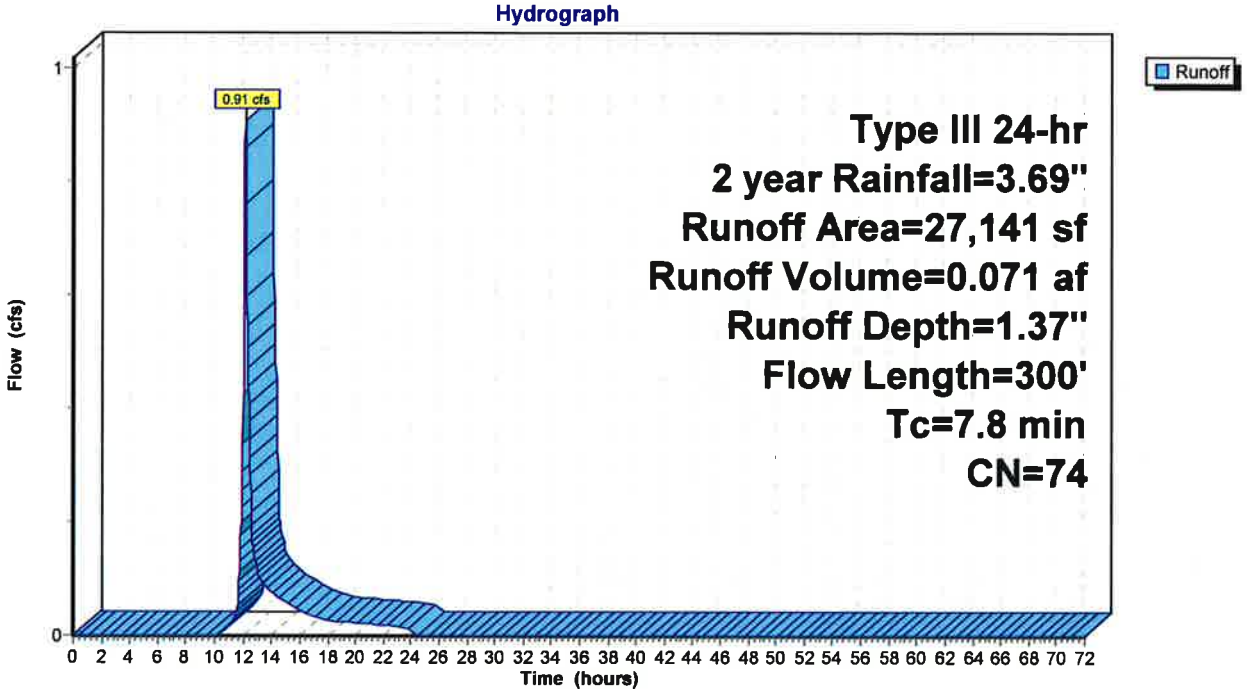
Runoff = 0.91 cfs @ 12.12 hrs, Volume= 0.071 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
9,646	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
965	39	>75% Grass cover, Good, HSG A
27,141	74	Weighted Average
14,384		53.00% Pervious Area
12,757		47.00% Impervious Area
3,111		24.39% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment PS10:



Summary for Subcatchment PS2:

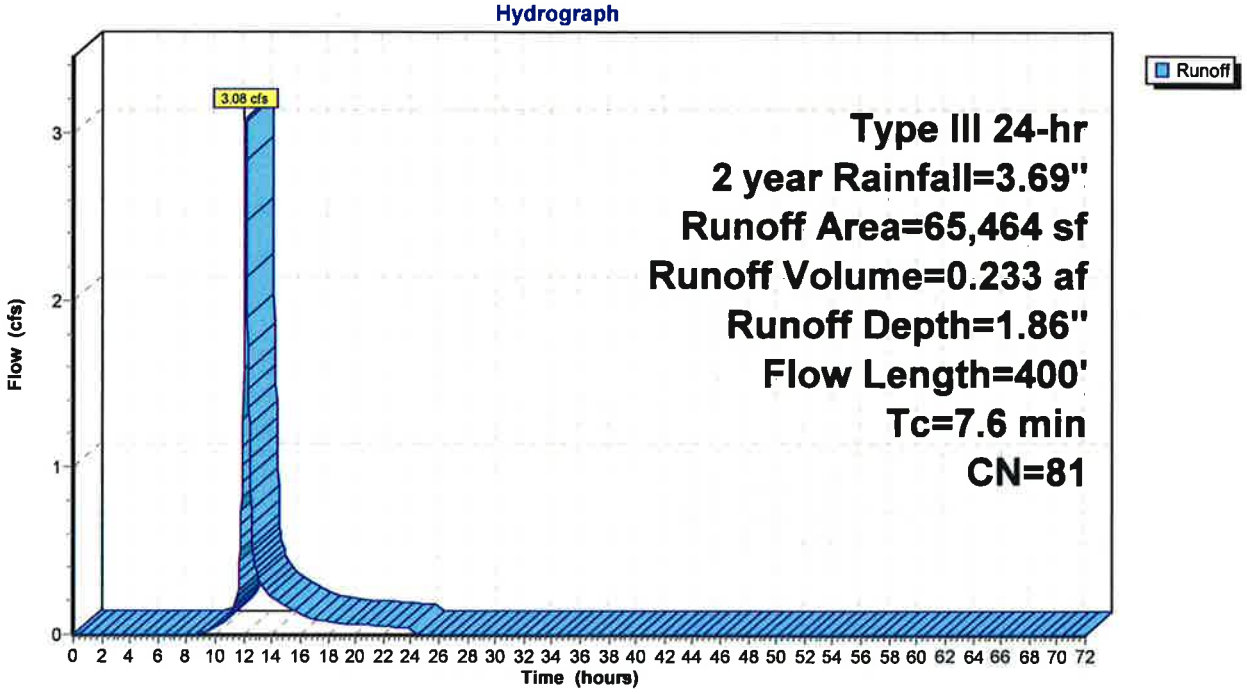
Runoff = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment PS2:



Summary for Subcatchment PS3:

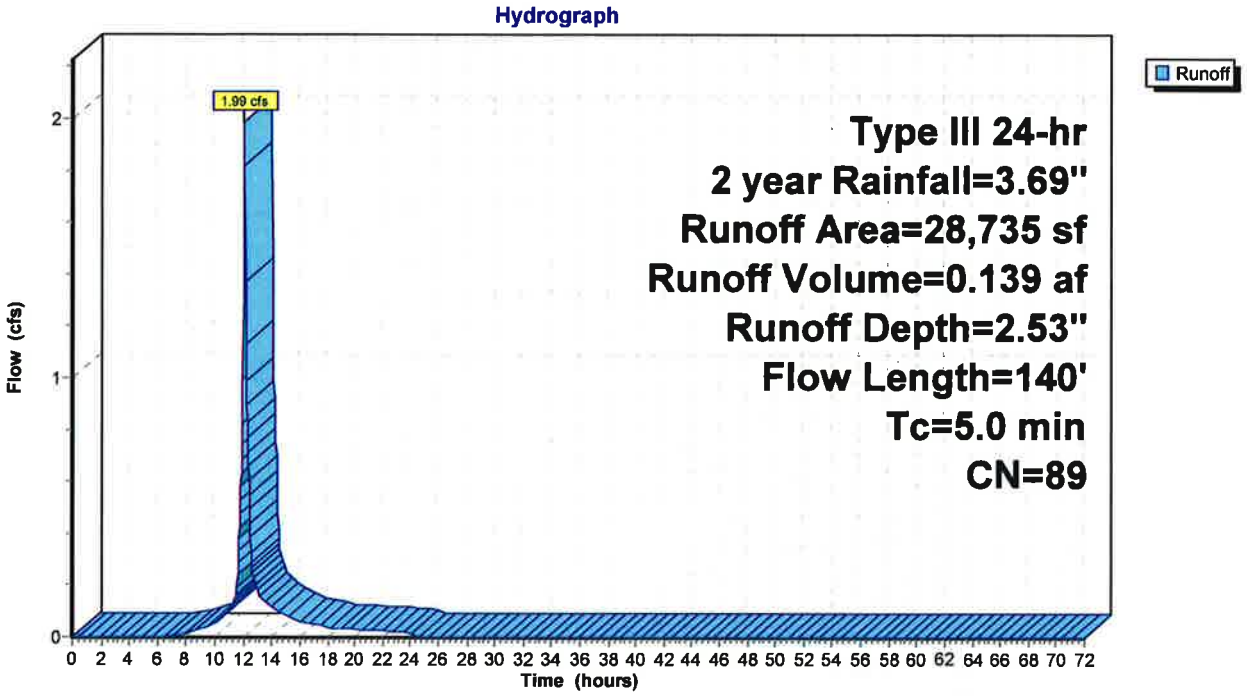
Runoff = 1.99 cfs @ 12.07 hrs, Volume= 0.139 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	18,934	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	831	39	>75% Grass cover, Good, HSG A
	28,735	89	Weighted Average
	4,785		16.65% Pervious Area
	23,950		83.35% Impervious Area
	692		2.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS3:



Summary for Subcatchment PS4:

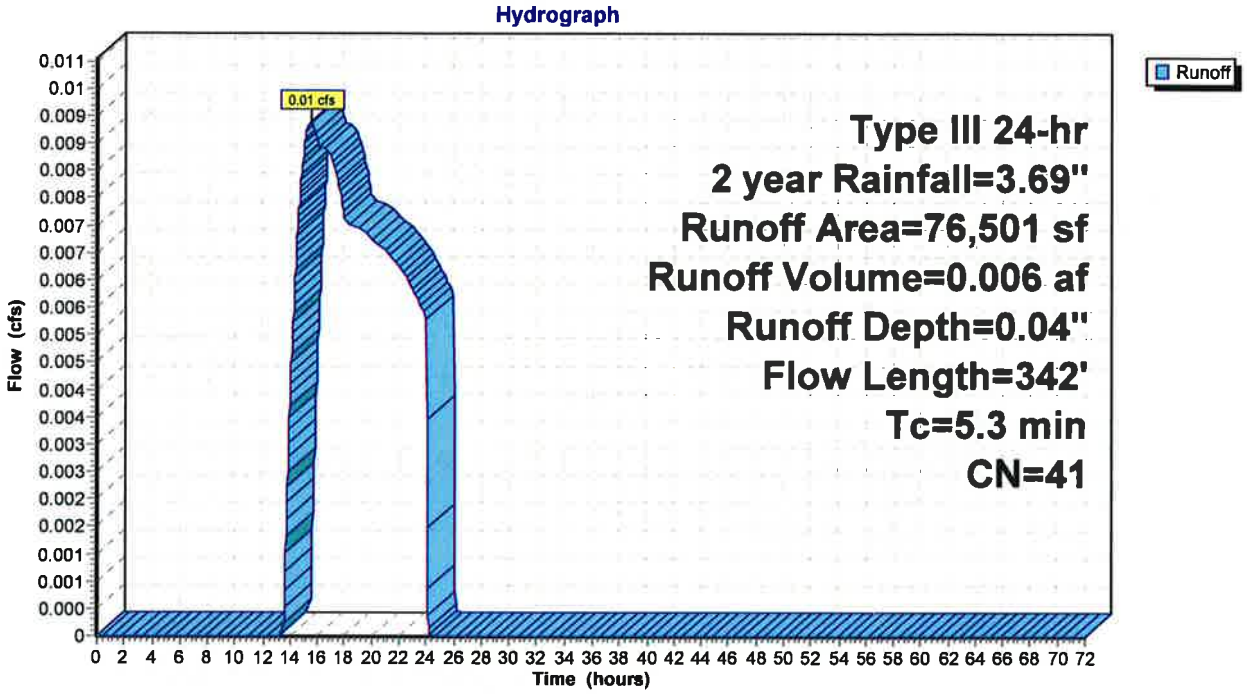
Runoff = 0.01 cfs @ 15.51 hrs, Volume= 0.006 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	2,855	98	Paved parking, HSG A
	24,921	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	4,789	39	>75% Grass cover, Good, HSG A
	7,355	77	Fallow, bare soil, HSG A
	230	39	>75% Grass cover, Good, HSG A
	4,292	39	>75% Grass cover, Good, HSG A
*	1,791	98	Sidewalk new, HSG A
	76,501	41	Weighted Average
	71,042		92.86% Pervious Area
	5,459		7.14% Impervious Area
	813		14.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment PS4:



Summary for Subcatchment PS4a: Lot 4 Parking Lot - Treated Area

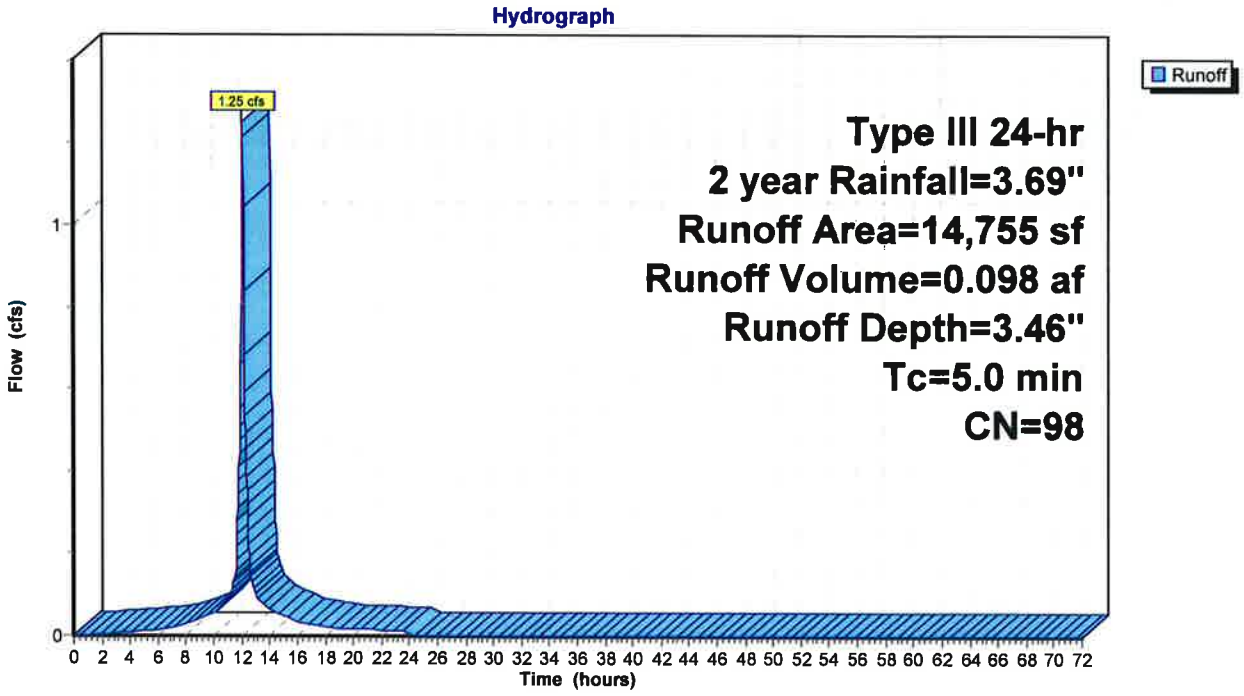
Runoff = 1.25 cfs @ 12.07 hrs, Volume= 0.098 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
14,755	98	Paved parking, HSG A
14,755		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4a: Lot 4 Parking Lot - Treated Area



Summary for Subcatchment PS4b: Lot 4 Rooftop - Treated Area

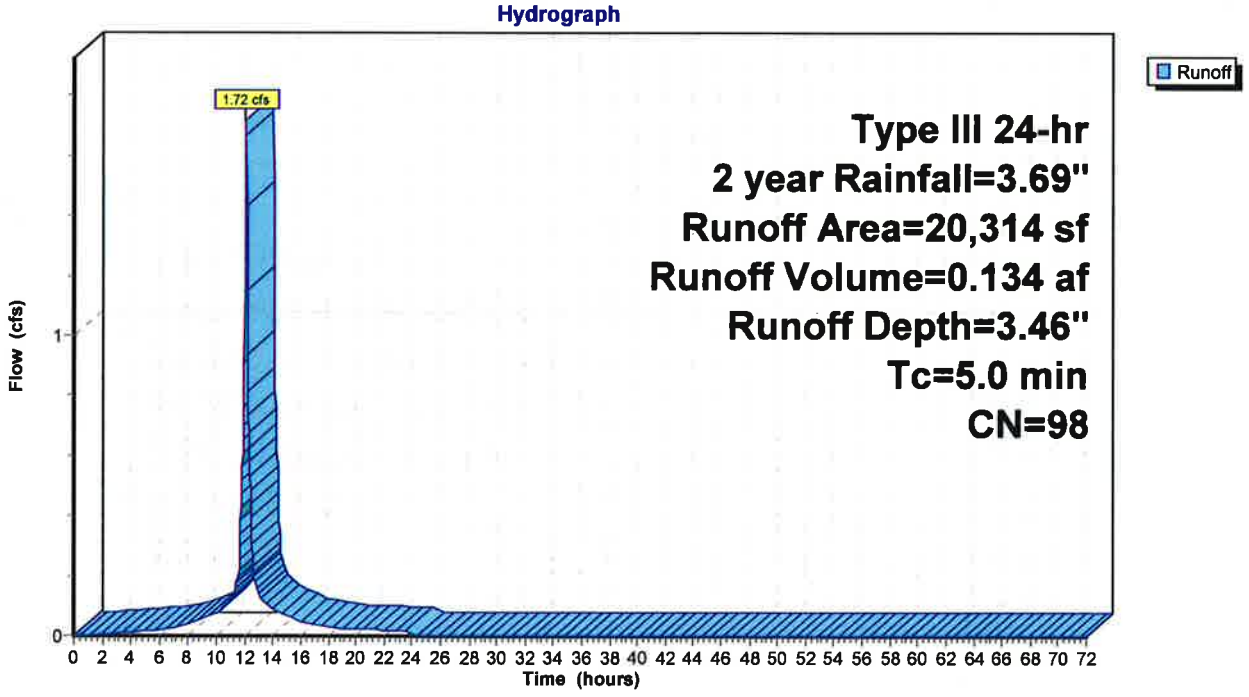
Runoff = 1.72 cfs @ 12.07 hrs, Volume= 0.134 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
20,314	98	Roofs, HSG A
20,314		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4b: Lot 4 Rooftop - Treated Area



Summary for Subcatchment PS4c:

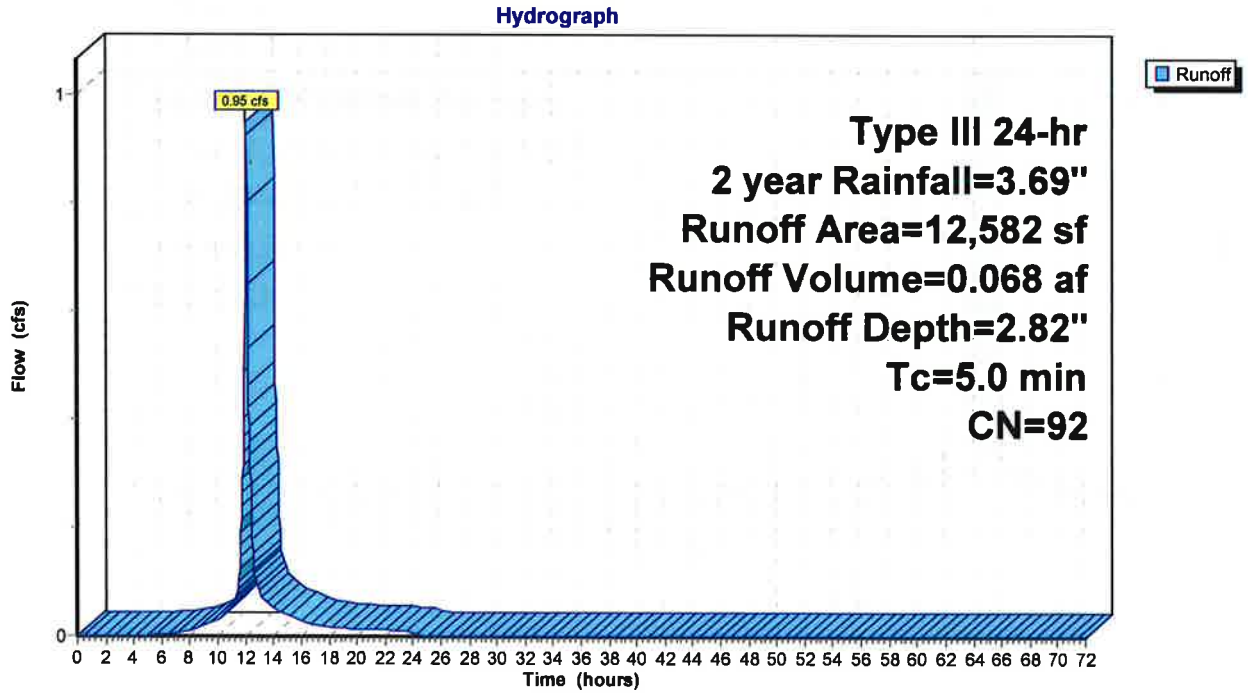
Runoff = 0.95 cfs @ 12.07 hrs, Volume= 0.068 af, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
6,553	98	Paved roads w/curbs & sewers, HSG A
4,679	98	Roofs, HSG A
1,350	39	>75% Grass cover, Good, HSG A
12,582	92	Weighted Average
1,350		10.73% Pervious Area
11,232		89.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4c:



Summary for Subcatchment PS4d:

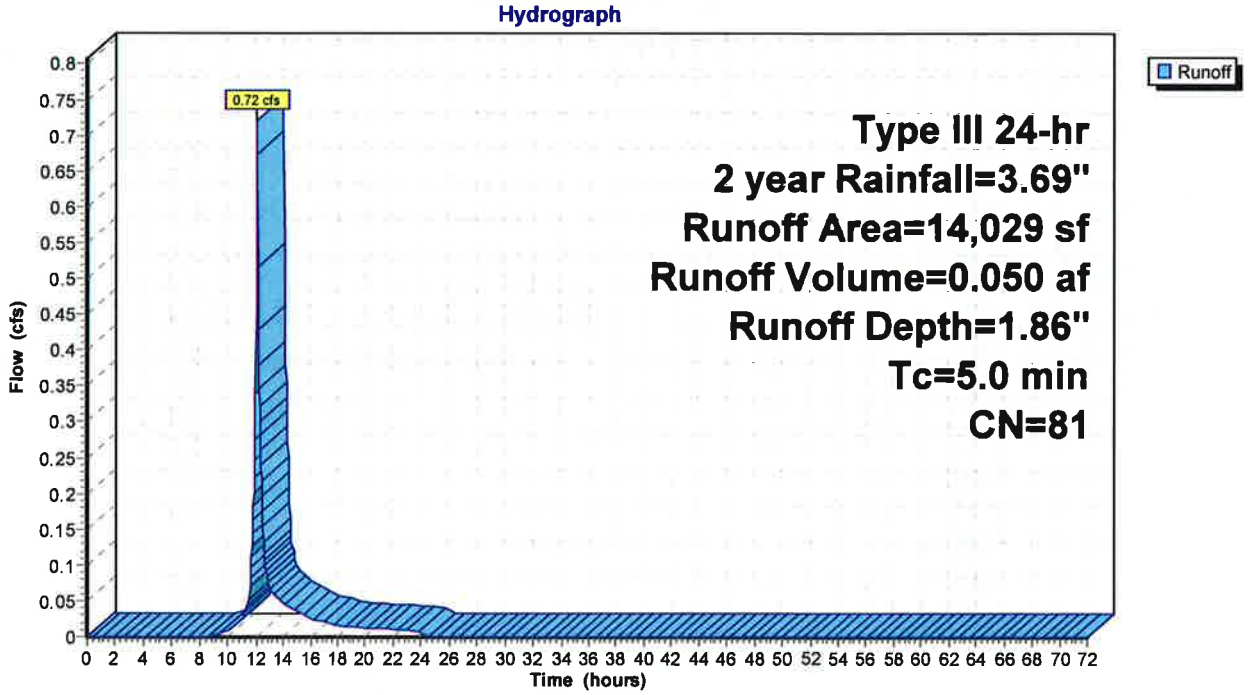
Runoff = 0.72 cfs @ 12.08 hrs, Volume= 0.050 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
6,695	98	Paved roads w/curbs & sewers, HSG A
4,086	39	>75% Grass cover, Good, HSG A
2,262	98	Roofs, HSG A
986	98	Roofs, HSG A
14,029	81	Weighted Average
4,086		29.13% Pervious Area
9,943		70.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4d:



Summary for Subcatchment PS4e:

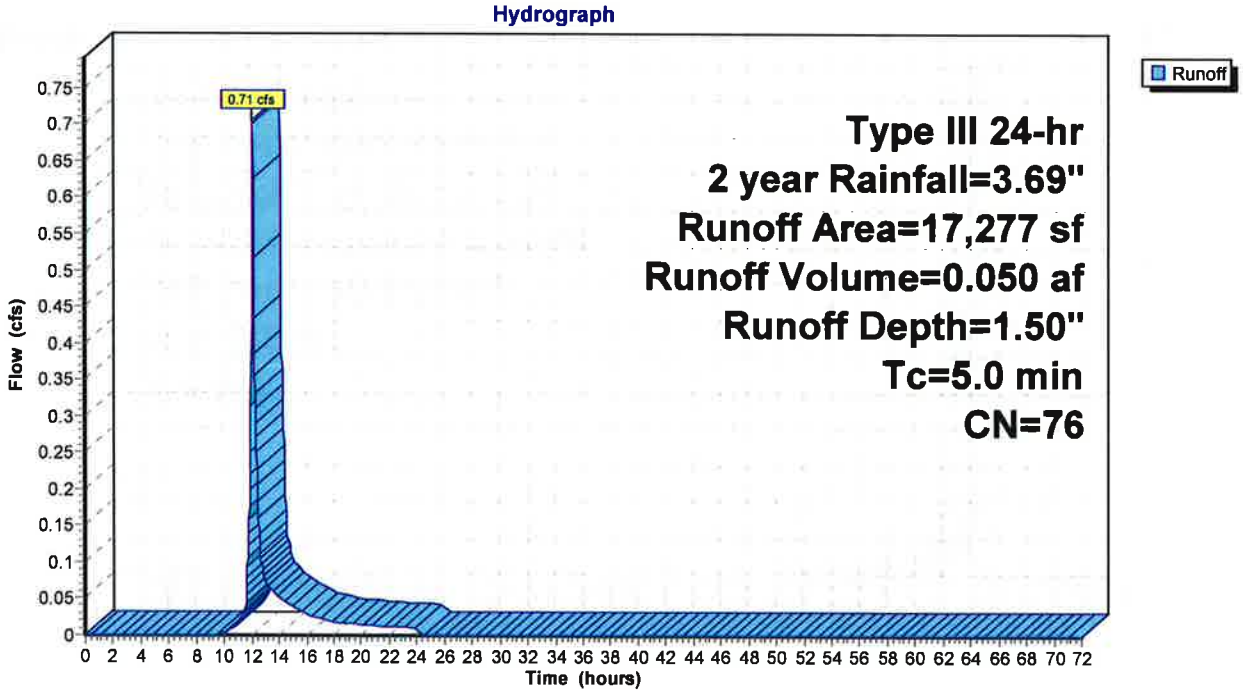
Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.050 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
9,743	98	Paved roads w/curbs & sewers, HSG A
961	98	Roofs, HSG A
2,279	39	>75% Grass cover, Good, HSG A
1,831	39	>75% Grass cover, Good, HSG A
2,463	39	>75% Grass cover, Good, HSG A
17,277	76	Weighted Average
6,573		38.04% Pervious Area
10,704		61.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4e:



Summary for Subcatchment PS4f:

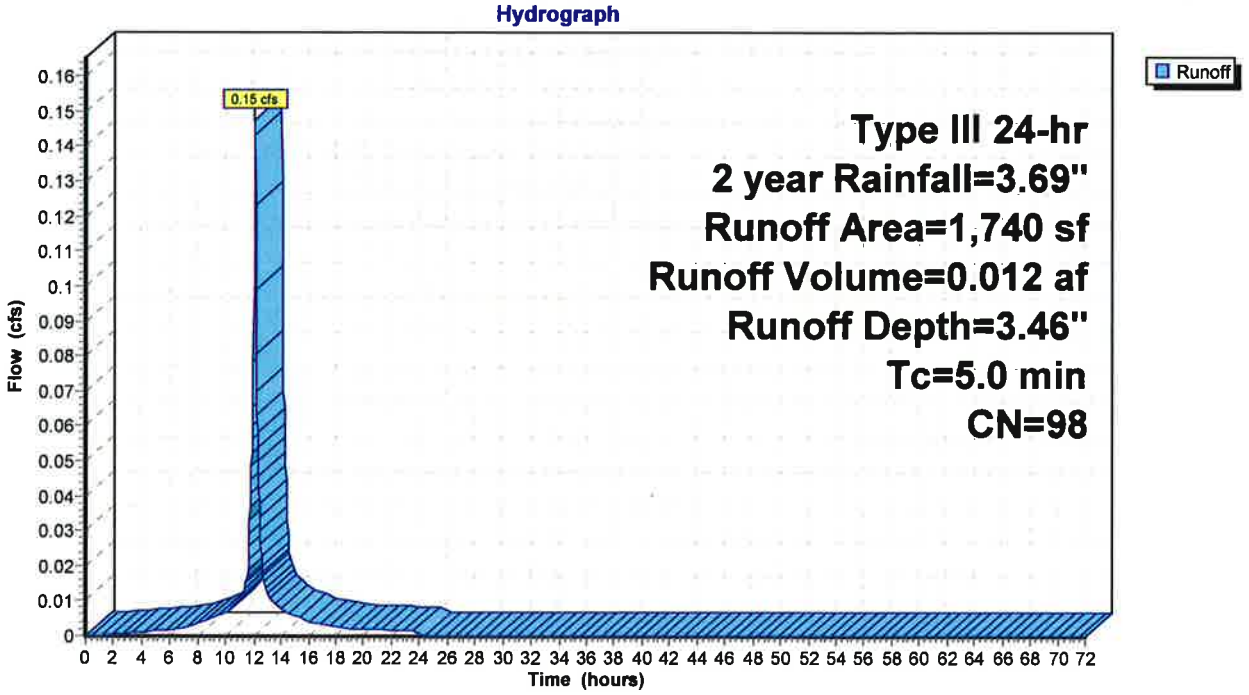
Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

Area (sf)	CN	Description
870	98	Paved roads w/curbs & sewers, HSG A
870	98	Roofs, HSG A
1,740	98	Weighted Average
1,740		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4f:



Summary for Subcatchment PS5:

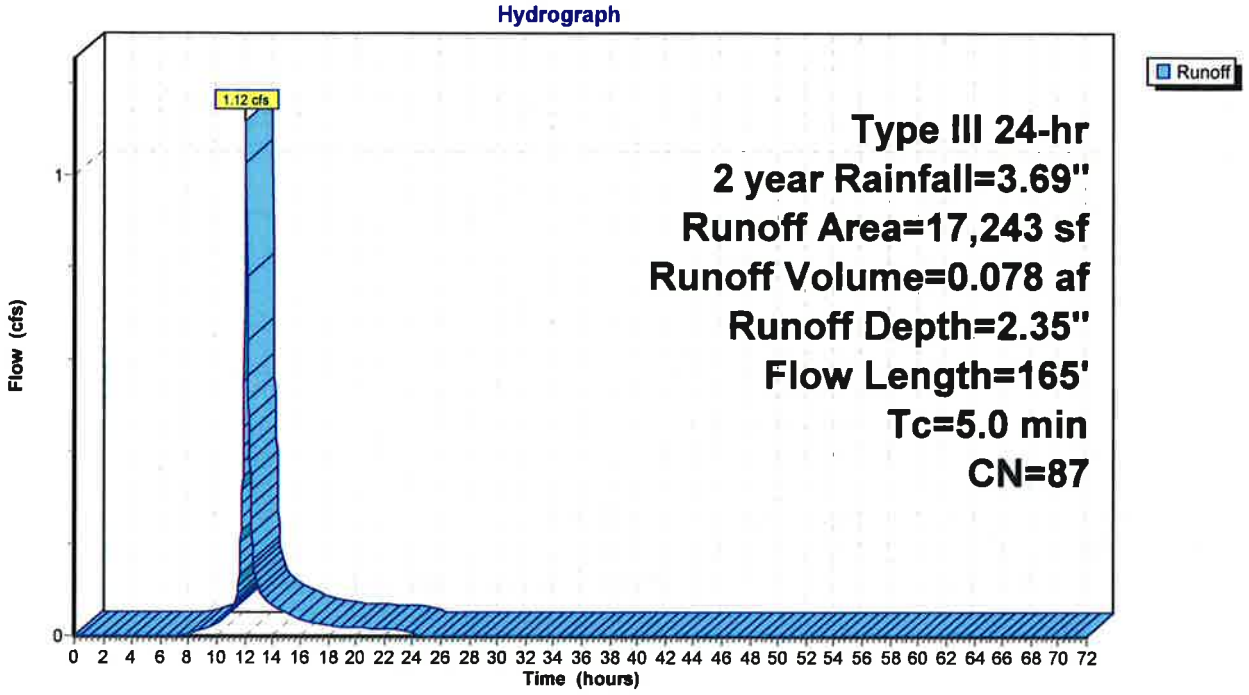
Runoff = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS5:



Summary for Subcatchment PS6:

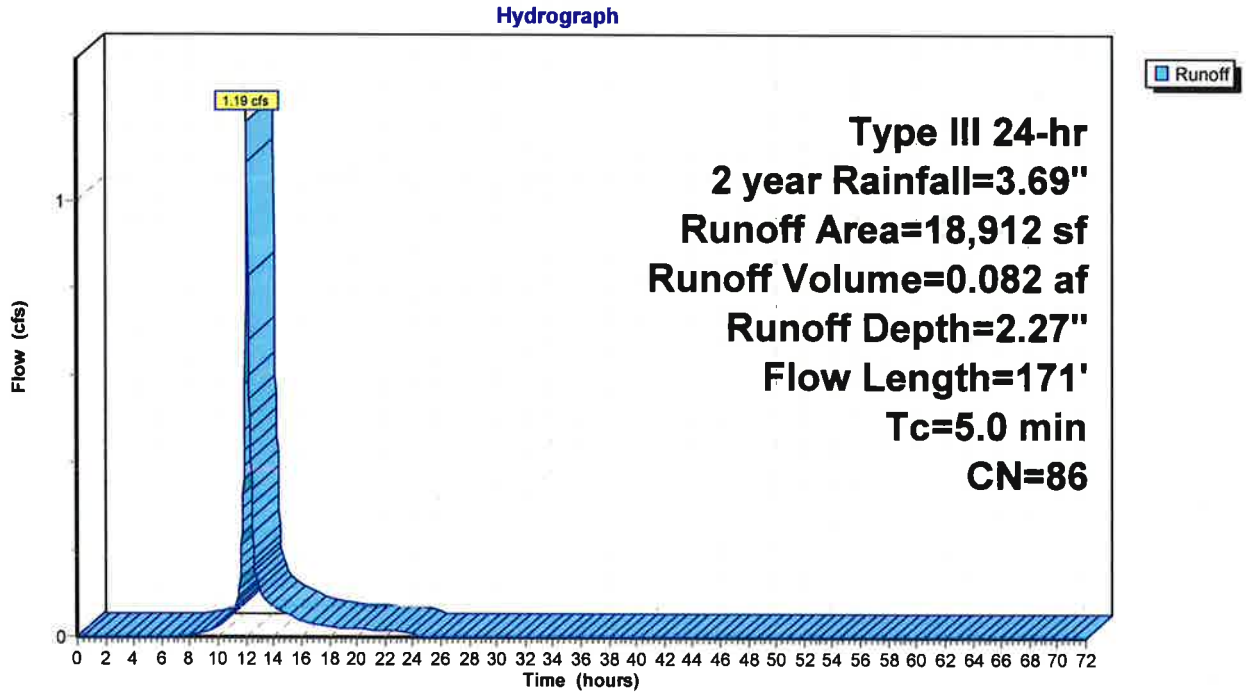
Runoff = 1.19 cfs @ 12.07 hrs, Volume= 0.082 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS6:



Summary for Subcatchment PS7:

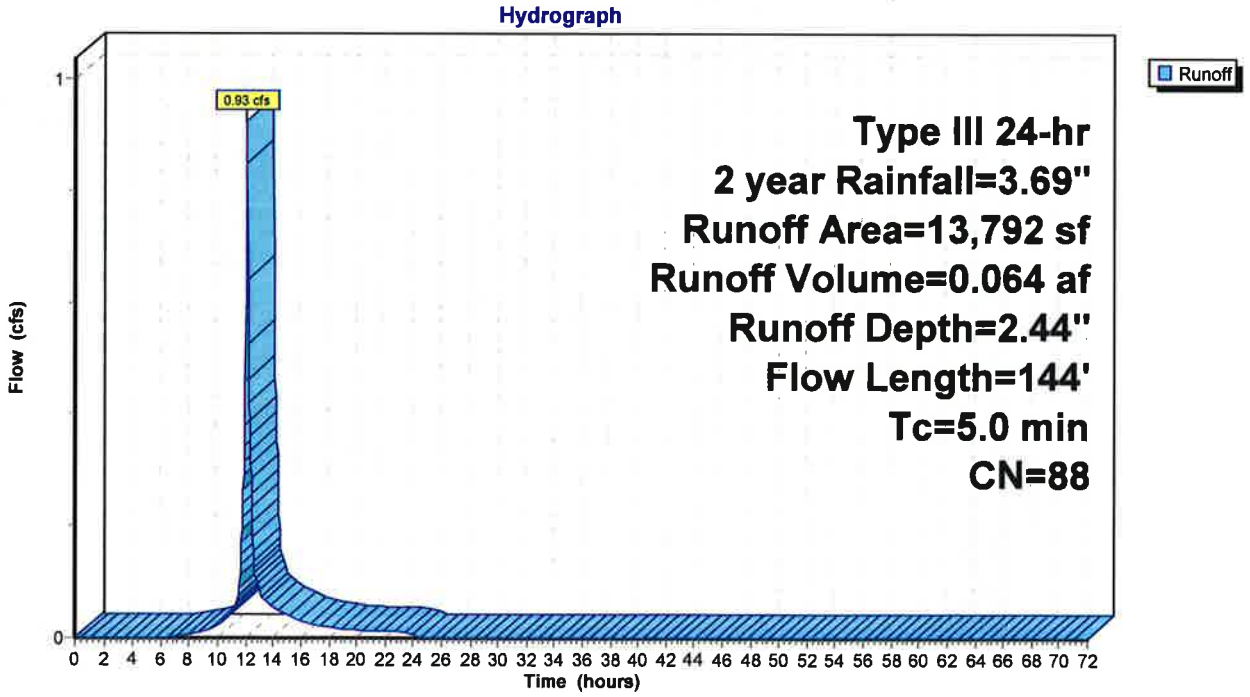
Runoff = 0.93 cfs @ 12.07 hrs, Volume= 0.064 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS7:



Summary for Subcatchment PS8:

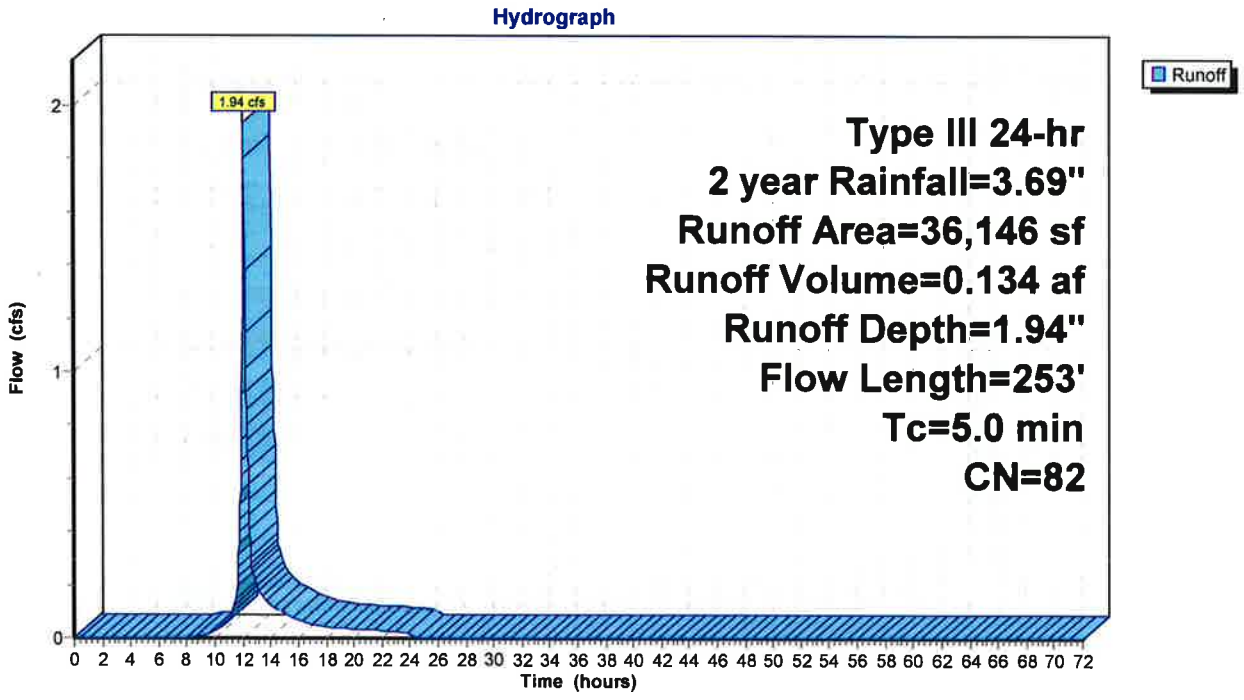
Runoff = 1.94 cfs @ 12.08 hrs, Volume= 0.134 af, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	17,049	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	6,585	98	Gravel surface, HSG A
	36,146	82	Weighted Average
	8,598		23.79% Pervious Area
	27,548		76.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS8:



Summary for Subcatchment PS9:

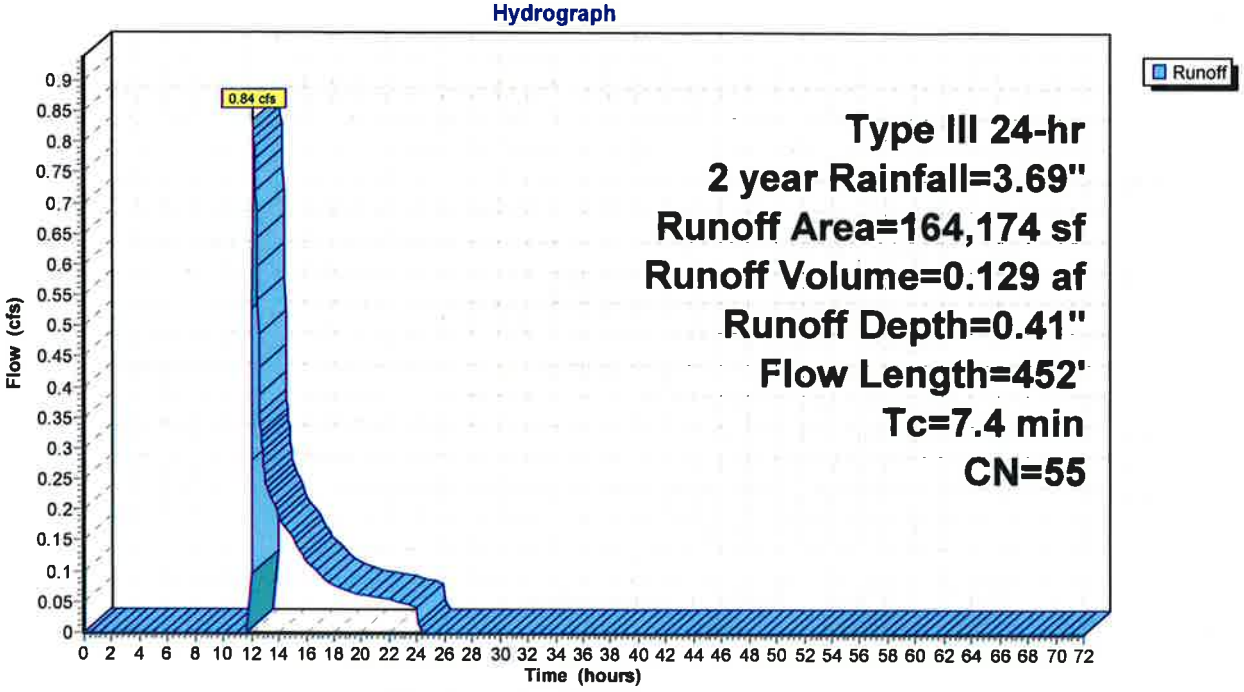
Runoff = 0.84 cfs @ 12.18 hrs, Volume= 0.129 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 year Rainfall=3.69"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	1,171	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	49,609	98	Gravel surface, HSG A
	164,174	55	Weighted Average
	105,773		64.43% Pervious Area
	58,401		35.57% Impervious Area
	234		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment PS9:



Summary for Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin

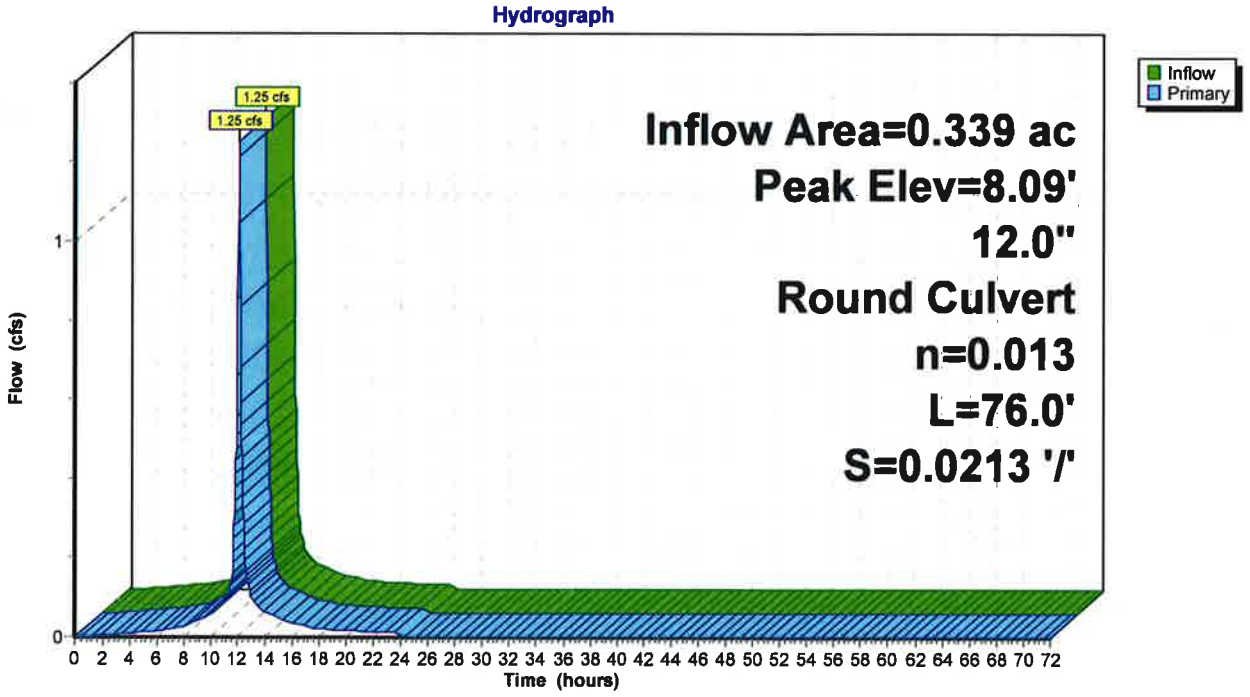
Inflow Area = 0.339 ac,100.00% Impervious, Inflow Depth = 3.46" for 2 year event
Inflow = 1.25 cfs @ 12.07 hrs, Volume= 0.098 af
Outflow = 1.25 cfs @ 12.07 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min
Primary = 1.25 cfs @ 12.07 hrs, Volume= 0.098 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.09' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 5.88' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.07 hrs HW=8.08' TW=7.07' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.23 cfs @ 2.60 fps)

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin



Summary for Pond 2P: CB 1241

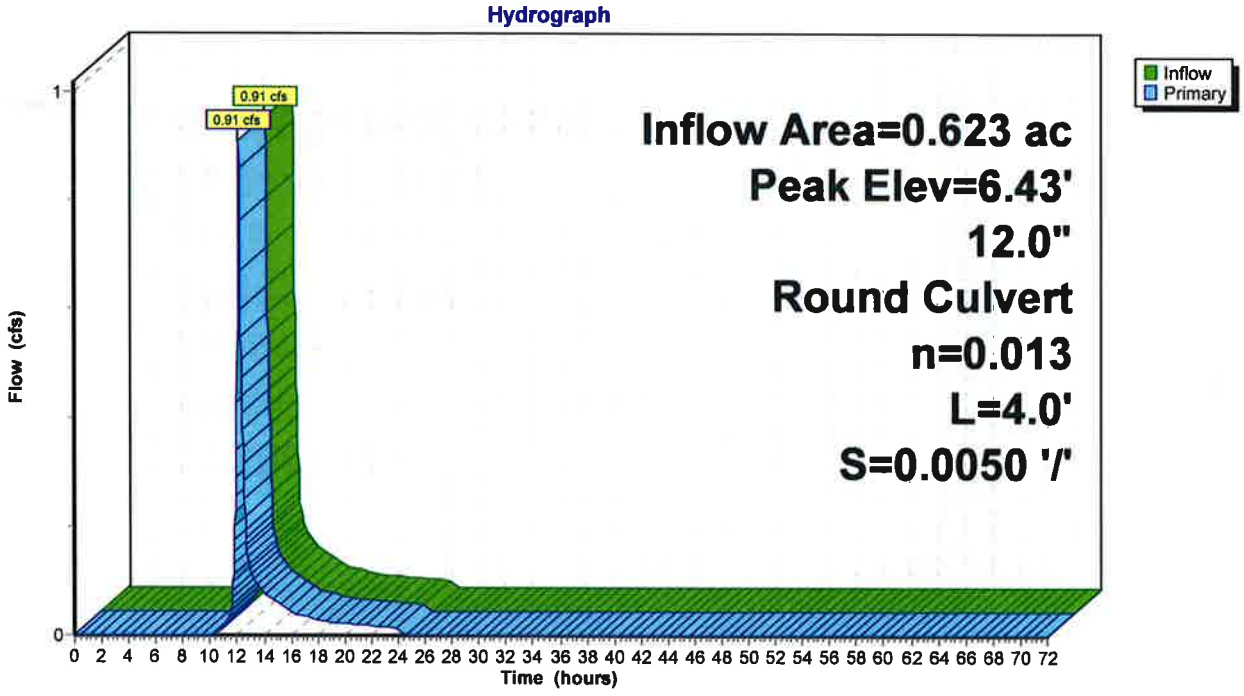
Inflow Area = 0.623 ac, 47.00% Impervious, Inflow Depth = 1.37" for 2 year event
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.071 af
Outflow = 0.91 cfs @ 12.12 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.12 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.43' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.87'	**12.0" Round Culvert** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.87' / 4.85' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.92 cfs @ 12.12 hrs HW=6.41' TW=6.31' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 0.92 cfs @ 1.17 fps)

Pond 2P: CB 1241



Summary for Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)

Inflow	=	0.56 cfs @	11.80 hrs, Volume=	0.200 af
Outflow	=	0.57 cfs @	12.53 hrs, Volume=	0.191 af, Atten= 0%, Lag= 43.5 min
Primary	=	0.57 cfs @	12.53 hrs, Volume=	0.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.78' @ 12.10 hrs Surf.Area= 0.005 ac Storage= 0.014 af

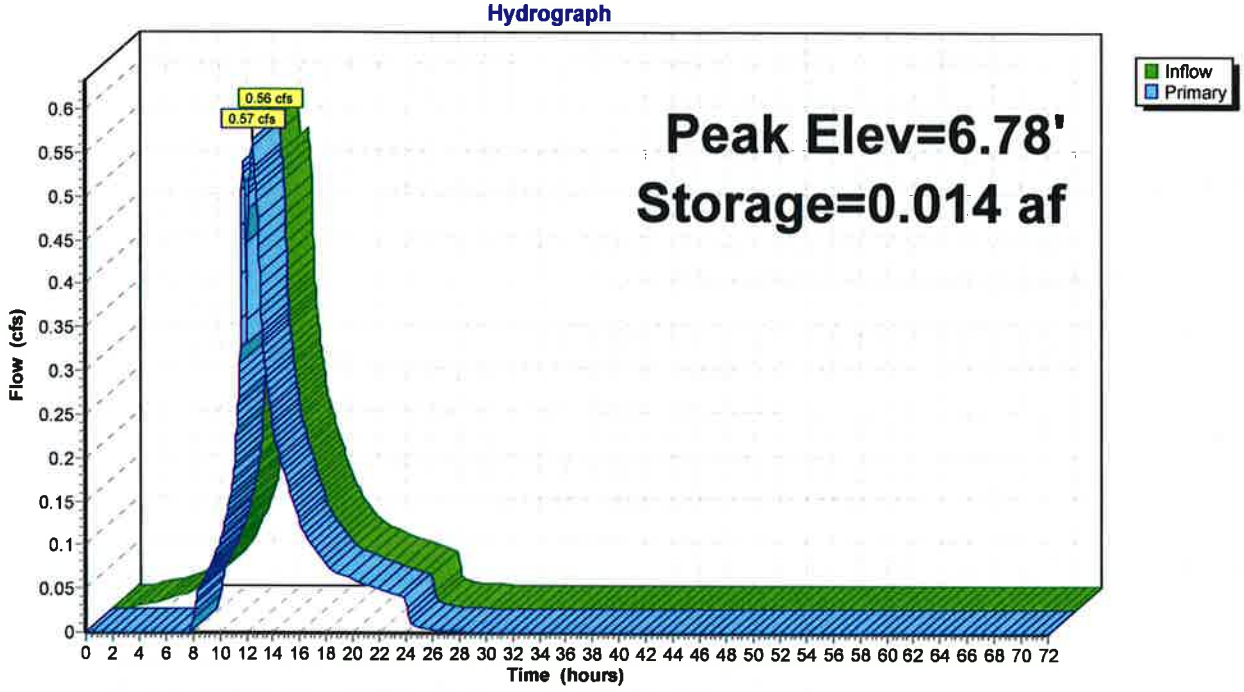
Plug-Flow detention time= 54.7 min calculated for 0.191 af (96% of inflow)
Center-of-Mass det. time= 28.7 min (858.3 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.81'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.81'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.81'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.81' / 5.80' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.81'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.50'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.56 cfs @ 12.53 hrs HW=6.42' TW=6.22' (Dynamic Tailwater)
↑└─**1=Culvert** (Inlet Controls 0.56 cfs @ 1.69 fps)
↑ ├─**2=Orifice/Grate** (Passes 0.56 cfs of 0.75 cfs potential flow)
 └─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)



Summary for Pond 6P: Roofline Dripe Edge Filter Strip

Inflow Area = 0.466 ac,100.00% Impervious, Inflow Depth = 3.46" for 2 year event
Inflow = 1.72 cfs @ 12.07 hrs, Volume= 0.134 af
Outflow = 1.71 cfs @ 12.08 hrs, Volume= 0.134 af, Atten= 1%, Lag= 0.5 min
Primary = 1.71 cfs @ 12.08 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.51' @ 12.08 hrs Surf.Area= 0.004 ac Storage= 0.001 af

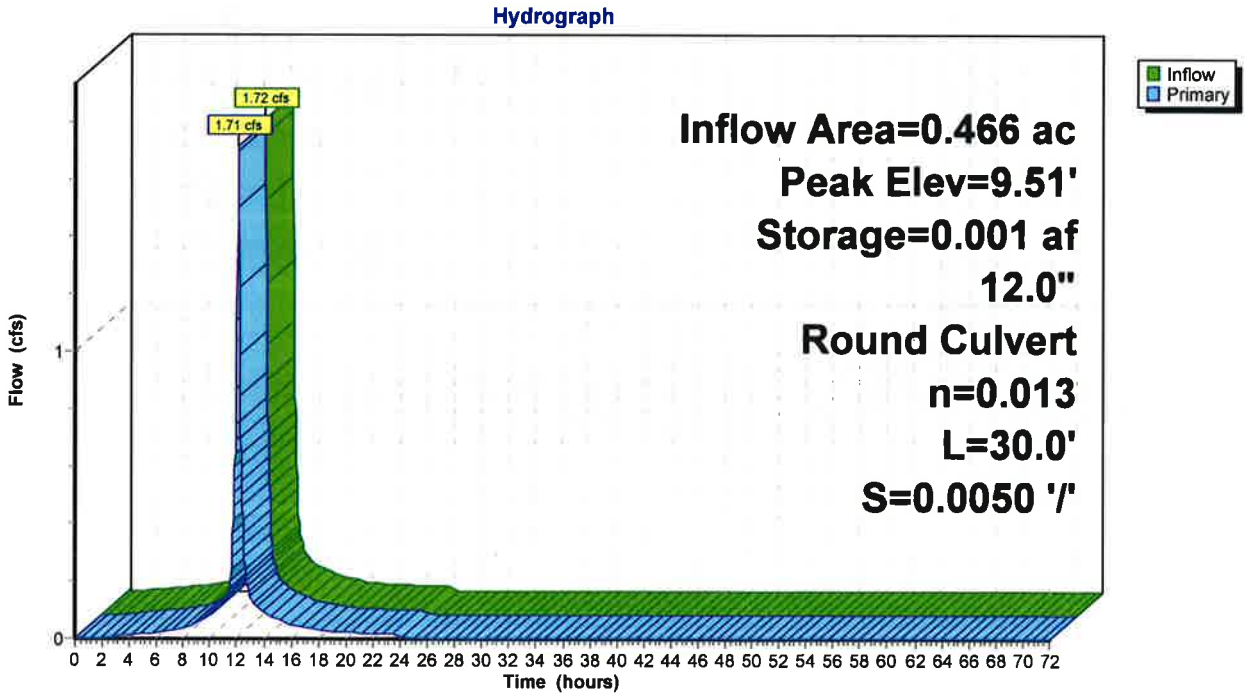
Plug-Flow detention time= 2.8 min calculated for 0.134 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (754.8 - 752.6)

Volume	Invert	Avail.Storage	Storage Description
#1	8.65'	0.007 af	**2.00'W x 93.00'L x 4.35'H Prismatoid** 0.019 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	8.65'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.65' / 8.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.69 cfs @ 12.08 hrs HW=9.50' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.69 cfs @ 3.19 fps)

Pond 6P: Roofline Dripe Edge Filter Strip



Summary for Pond 10P: PCB 17

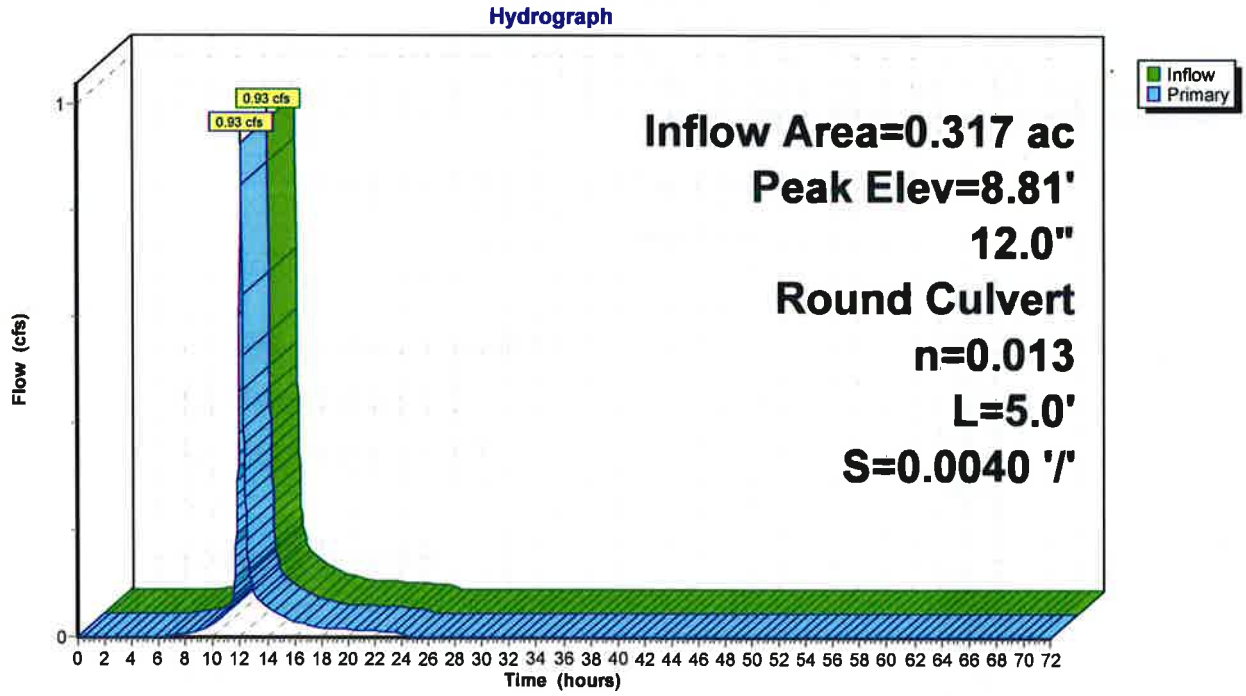
Inflow Area = 0.317 ac, 86.00% Impervious, Inflow Depth = 2.44" for 2 year event
Inflow = 0.93 cfs @ 12.07 hrs, Volume= 0.064 af
Outflow = 0.93 cfs @ 12.07 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 12.07 hrs, Volume= 0.064 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.81' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.56'	**12.0" Round Culvert** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.56' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.07 hrs HW=8.79' TW=8.70' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.91 cfs @ 1.15 fps)

Pond 10P: PCB 17



Summary for Pond 15P: CB 1243

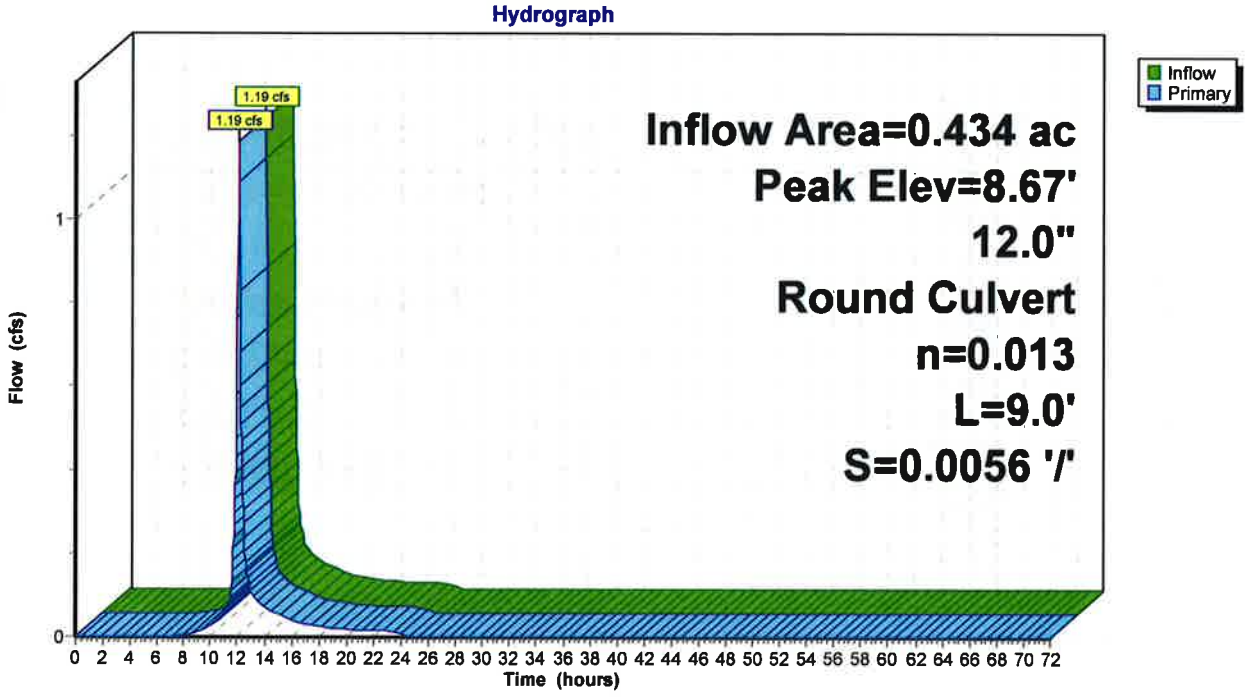
Inflow Area = 0.434 ac, 81.61% Impervious, Inflow Depth = 2.27" for 2 year event
Inflow = 1.19 cfs @ 12.07 hrs, Volume= 0.082 af
Outflow = 1.19 cfs @ 12.07 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.07 hrs, Volume= 0.082 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.67' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.21'	**12.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.21' / 7.16' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.07 hrs HW=8.65' TW=8.50' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.17 cfs @ 1.48 fps)

Pond 15P: CB 1243



Summary for Pond 16P: CB 1242

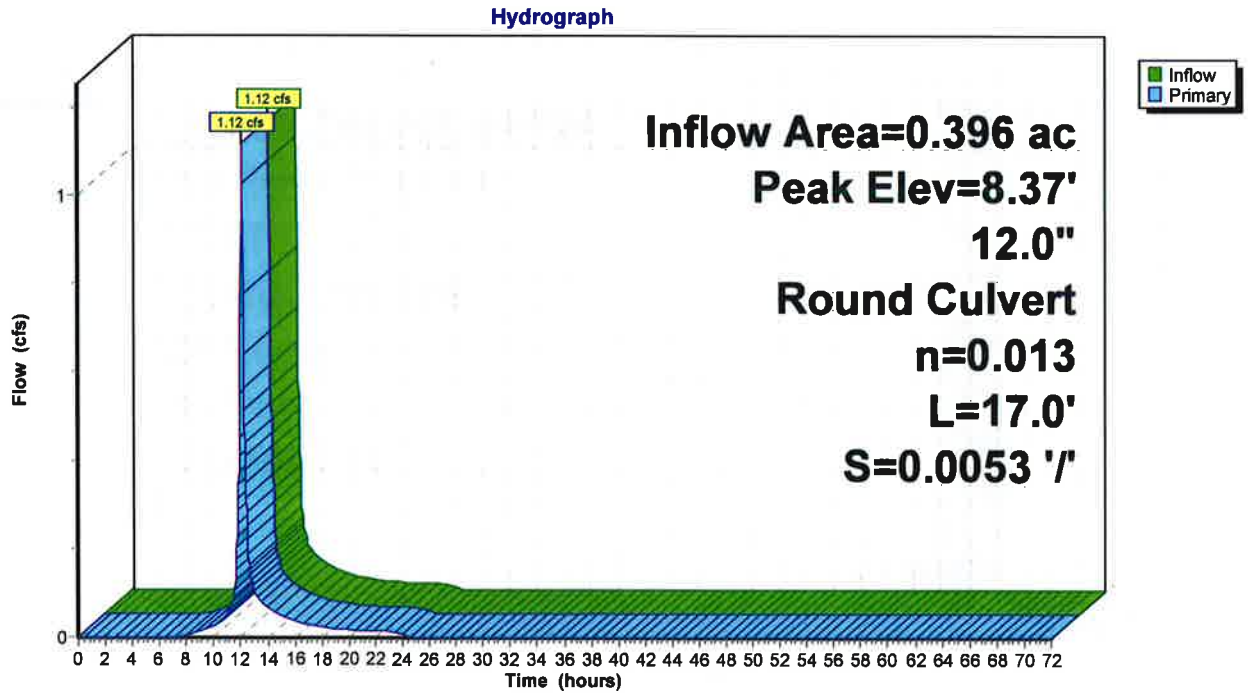
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 2.35" for 2 year event
Inflow = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af
Outflow = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.07 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.37' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.79'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.79' / 6.70' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.10 cfs @ 12.07 hrs HW=8.35' TW=8.21' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.10 cfs @ 1.40 fps)

Pond 16P: CB 1242



Summary for Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)

Inflow	=	0.60 cfs @	12.05 hrs, Volume=	0.226 af
Outflow	=	0.56 cfs @	12.54 hrs, Volume=	0.217 af, Atten= 6%, Lag= 29.9 min
Primary	=	0.56 cfs @	12.54 hrs, Volume=	0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.87' @ 12.10 hrs Surf.Area= 0.005 ac Storage= 0.015 af

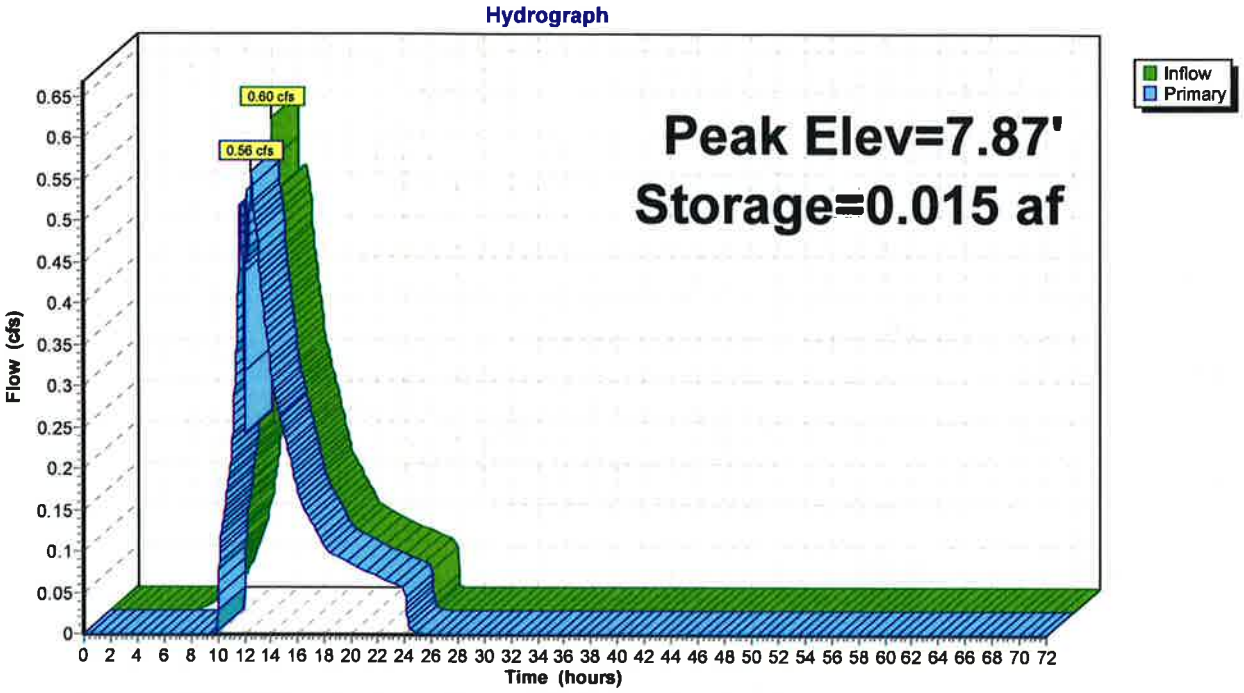
Plug-Flow detention time= 39.9 min calculated for 0.217 af (96% of inflow)
Center-of-Mass det. time= 19.4 min (890.9 - 871.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1.58'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	1.58'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	6.58'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.58' / 6.57' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	3.58'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	9.25'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.56 cfs @ 12.54 hrs HW=7.19' TW=7.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.56 cfs @ 1.66 fps)
↑—**2=Orifice/Grate** (Passes 0.56 cfs of 0.74 cfs potential flow)
└—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)



Summary for Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)

Inflow	=	0.53 cfs @	11.64 hrs, Volume=	0.224 af
Outflow	=	0.51 cfs @	12.93 hrs, Volume=	0.215 af, Atten= 3%, Lag= 77.2 min
Primary	=	0.51 cfs @	12.93 hrs, Volume=	0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.98' @ 12.11 hrs Surf.Area= 0.005 ac Storage= 0.017 af

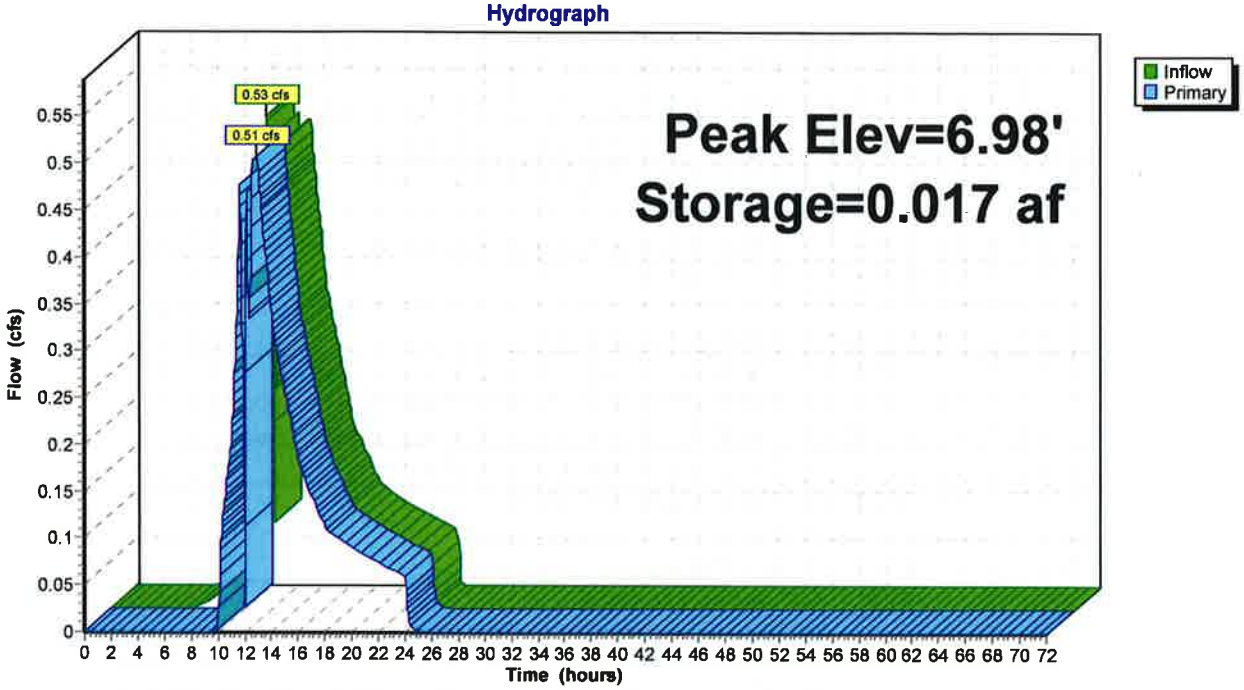
Plug-Flow detention time= 41.5 min calculated for 0.215 af (96% of inflow)
Center-of-Mass det. time= 20.5 min (905.5 - 884.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.32'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.32'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.32'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.32' / 5.31' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.32'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.00'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.51 cfs @ 12.93 hrs HW=5.89' TW=5.71' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.51 cfs @ 1.60 fps)
↑**2=Orifice/Grate** (Passes 0.51 cfs of 0.71 cfs potential flow)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)



Summary for Pond 1264: Separated Drain

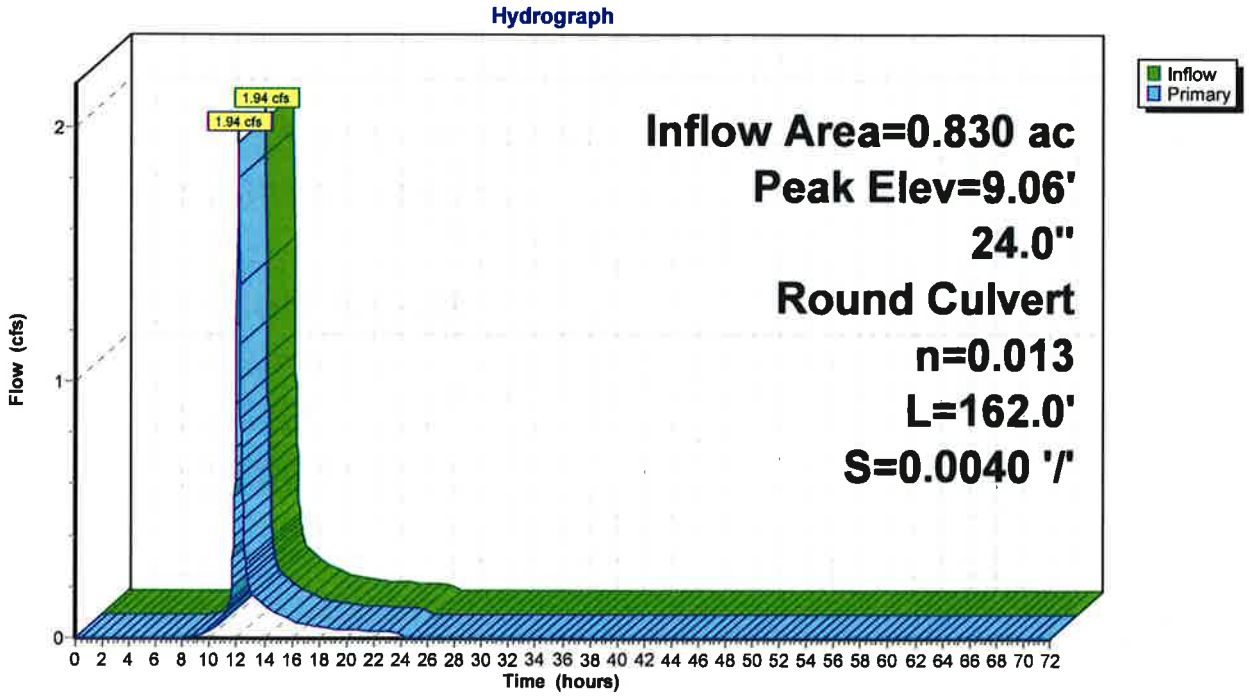
Inflow Area = 0.830 ac, 76.21% Impervious, Inflow Depth = 1.94" for 2 year event
Inflow = 1.94 cfs @ 12.08 hrs, Volume= 0.134 af
Outflow = 1.94 cfs @ 12.08 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.08 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.06' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**24.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.19' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.91 cfs @ 12.08 hrs HW=9.05' TW=8.70' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.91 cfs @ 2.19 fps)

Pond 1264: Separated Drain



Summary for Pond CB 1237:

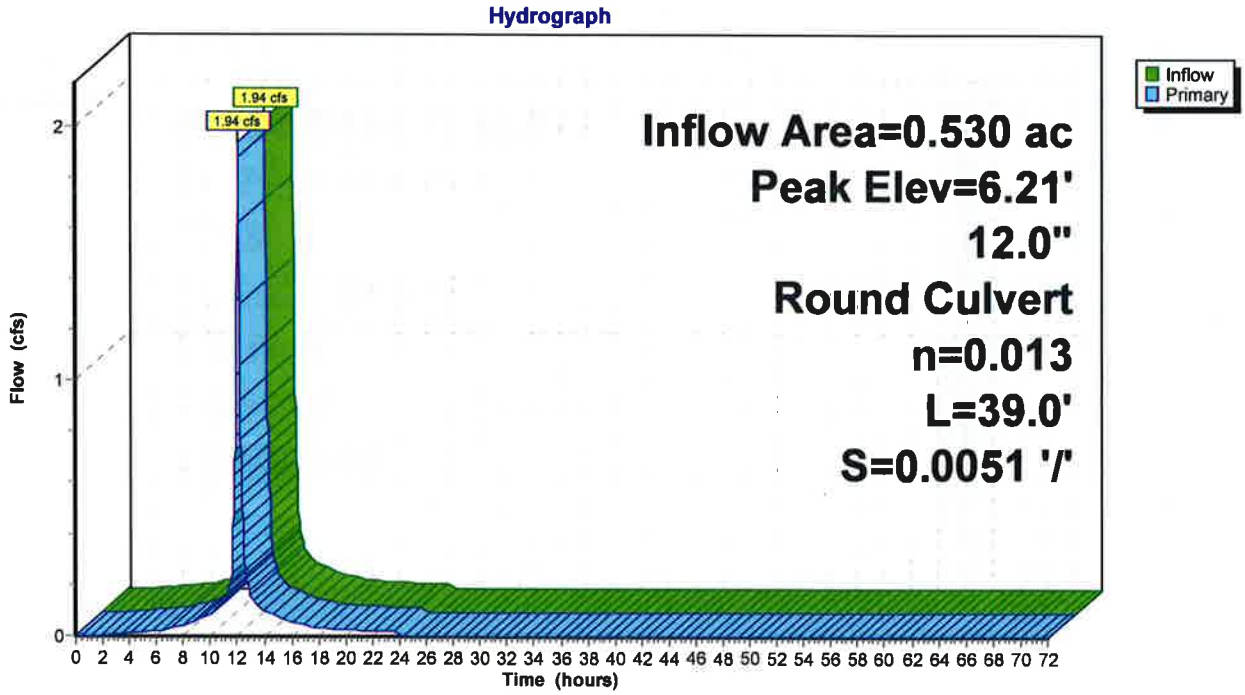
Inflow Area = 0.530 ac, 98.87% Impervious, Inflow Depth = 3.34" for 2 year event
Inflow = 1.94 cfs @ 12.07 hrs, Volume= 0.148 af
Outflow = 1.94 cfs @ 12.07 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.07 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.21' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.07 hrs HW=6.20' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.90 cfs @ 3.33 fps)

Pond CB 1237:



Summary for Pond CB 1239: Separated Drain

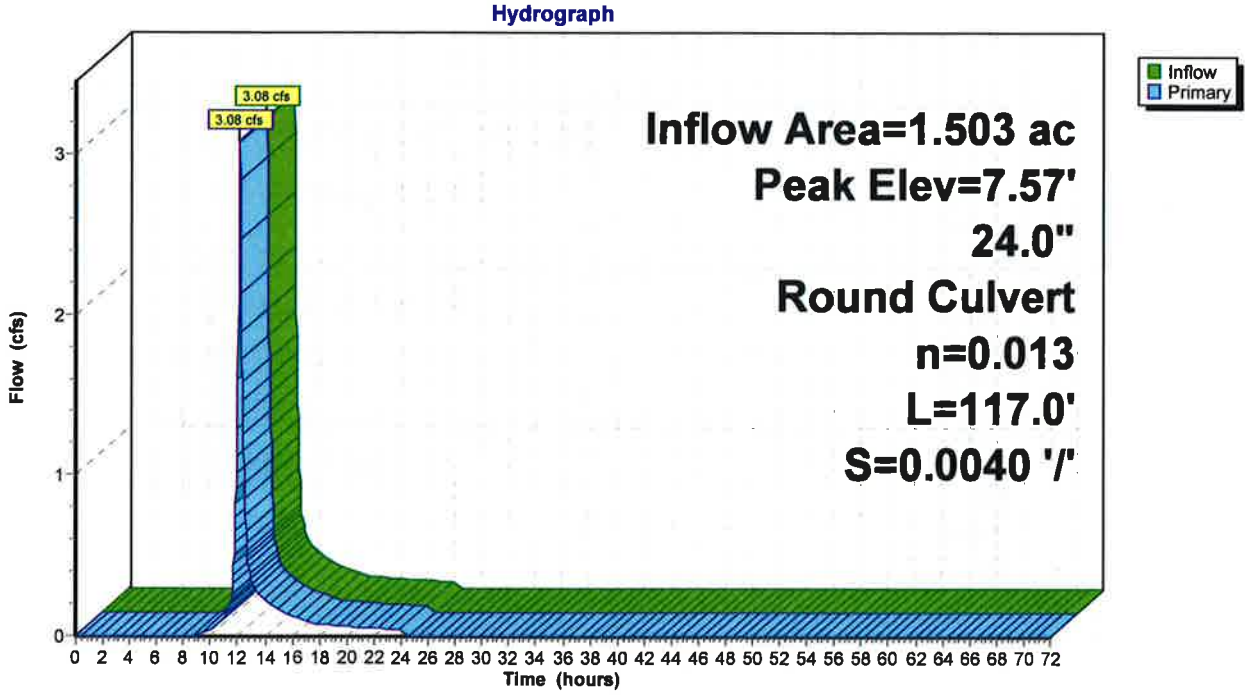
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 1.86" for 2 year event
Inflow = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af
Outflow = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min
Primary = 3.08 cfs @ 12.11 hrs, Volume= 0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.57' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.26'	**24.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.26' / 5.79' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.06 cfs @ 12.11 hrs HW=7.55' TW=7.34' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.06 cfs @ 2.03 fps)

Pond CB 1239: Separated Drain



Summary for Pond CB 1240: Separated Drain

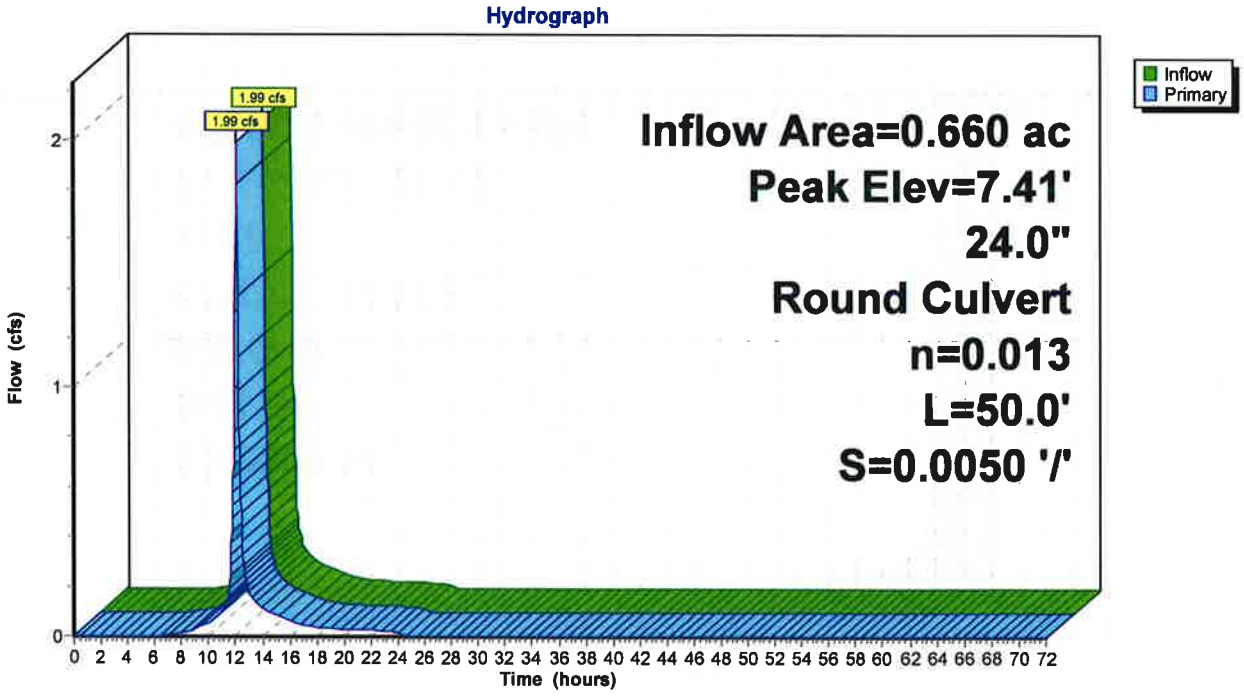
Inflow Area = 0.660 ac, 83.35% Impervious, Inflow Depth = 2.53" for 2 year event
Inflow = 1.99 cfs @ 12.07 hrs, Volume= 0.139 af
Outflow = 1.99 cfs @ 12.07 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min
Primary = 1.99 cfs @ 12.07 hrs, Volume= 0.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.41' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.04' / 5.79' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.01 cfs @ 12.07 hrs HW=7.35' TW=7.30' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 2.01 cfs @ 1.31 fps)

Pond CB 1240: Separated Drain



Summary for Pond CB 1244: PDMH 6

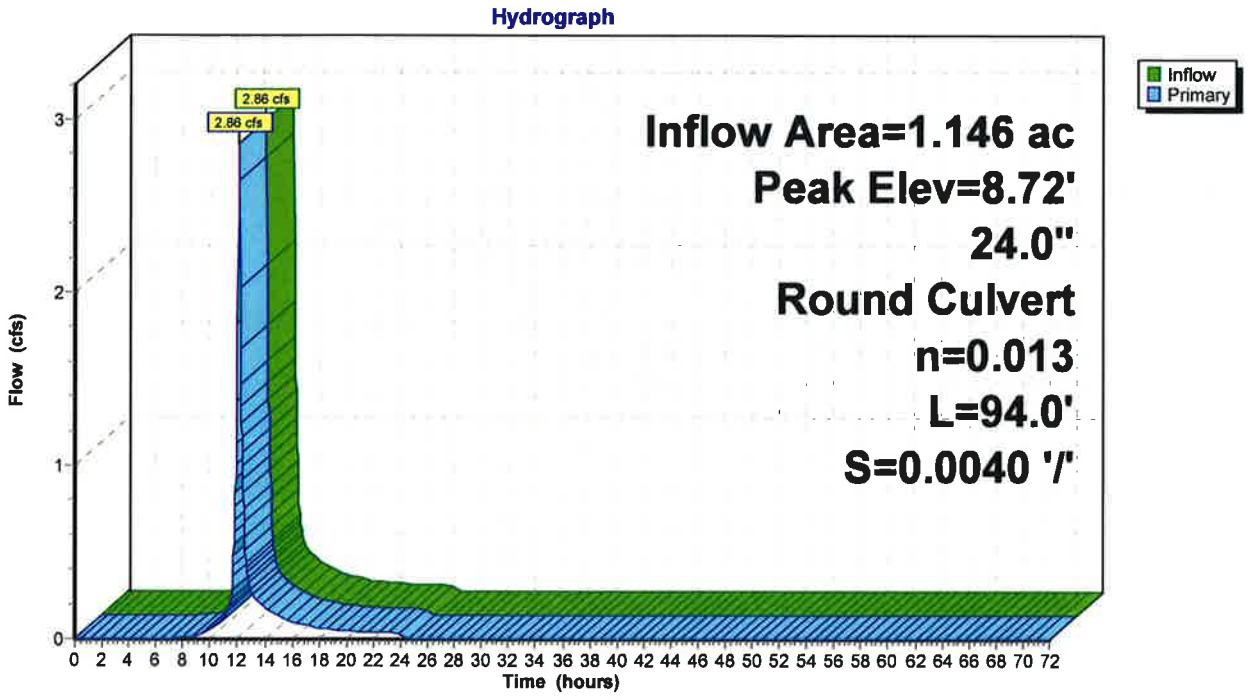
Inflow Area = 1.146 ac, 78.92% Impervious, Inflow Depth = 2.08" for 2 year event
Inflow = 2.86 cfs @ 12.08 hrs, Volume= 0.199 af
Outflow = 2.86 cfs @ 12.08 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 12.08 hrs, Volume= 0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.72' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.54'	**24.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.54' / 7.16' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.82 cfs @ 12.08 hrs HW=8.70' TW=8.50' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.82 cfs @ 2.14 fps)

Pond CB 1244: PDMH 6



Summary for Pond OCS #1: PCB 16 Forebay w/Catch Basin

Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 1.50" for 2 year event
Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.050 af
Outflow = 0.32 cfs @ 12.29 hrs, Volume= 0.050 af, Atten= 55%, Lag= 12.5 min
Primary = 0.32 cfs @ 12.29 hrs, Volume= 0.050 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.83' @ 12.29 hrs Surf.Area= 1,509 sf Storage= 473 cf

Plug-Flow detention time= 44.5 min calculated for 0.050 af (100% of inflow)
Center-of-Mass det. time= 44.9 min (891.6 - 846.6)

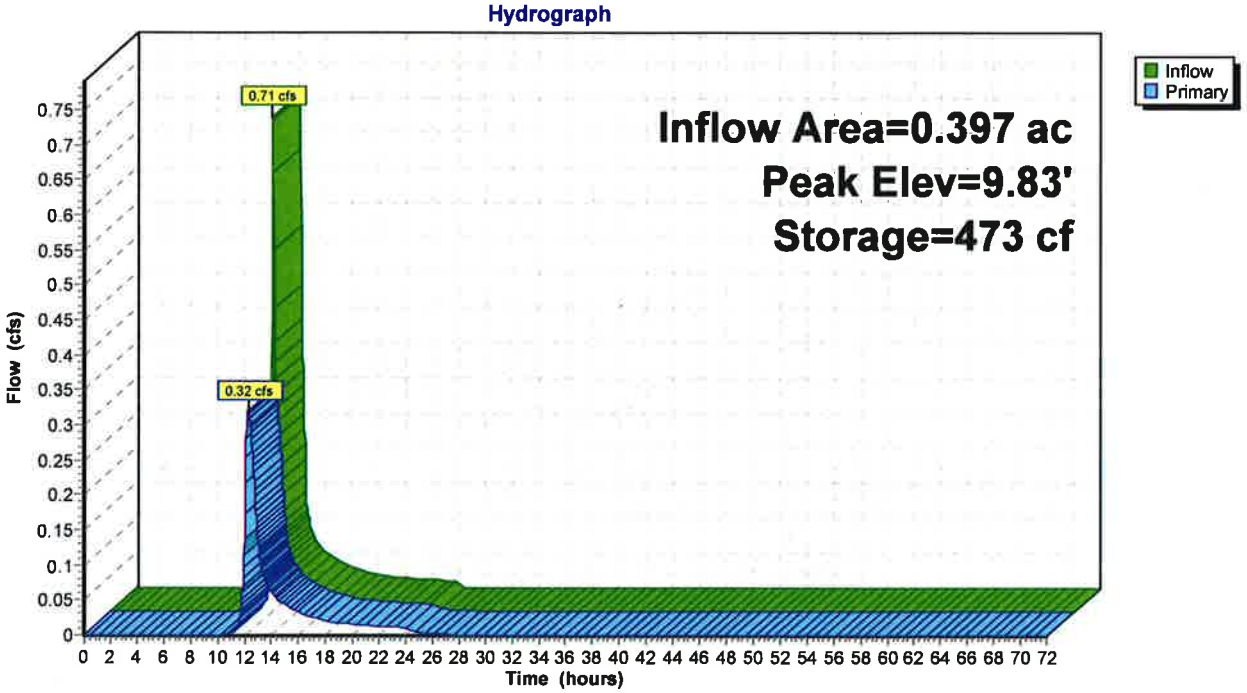
Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	2,543 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.50	1,375	133.0	0	0	1,375
11.00	2,038	161.7	2,543	2,543	2,083

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.25' / 8.19' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.50'	**3.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.29 hrs HW=9.83' TW=8.54' (Dynamic Tailwater)
↑1=**Culvert** (Passes 0.32 cfs of 3.67 cfs potential flow)
↑2=**Orifice/Grate** (Orifice Controls 0.32 cfs @ 2.17 fps)
3=**Orifice/Grate** (Controls 0.00 cfs)

Pond OCS #1: PCB 16 Forebay w/Catch Basin



Summary for Pond PDMH 1: Separated Drain

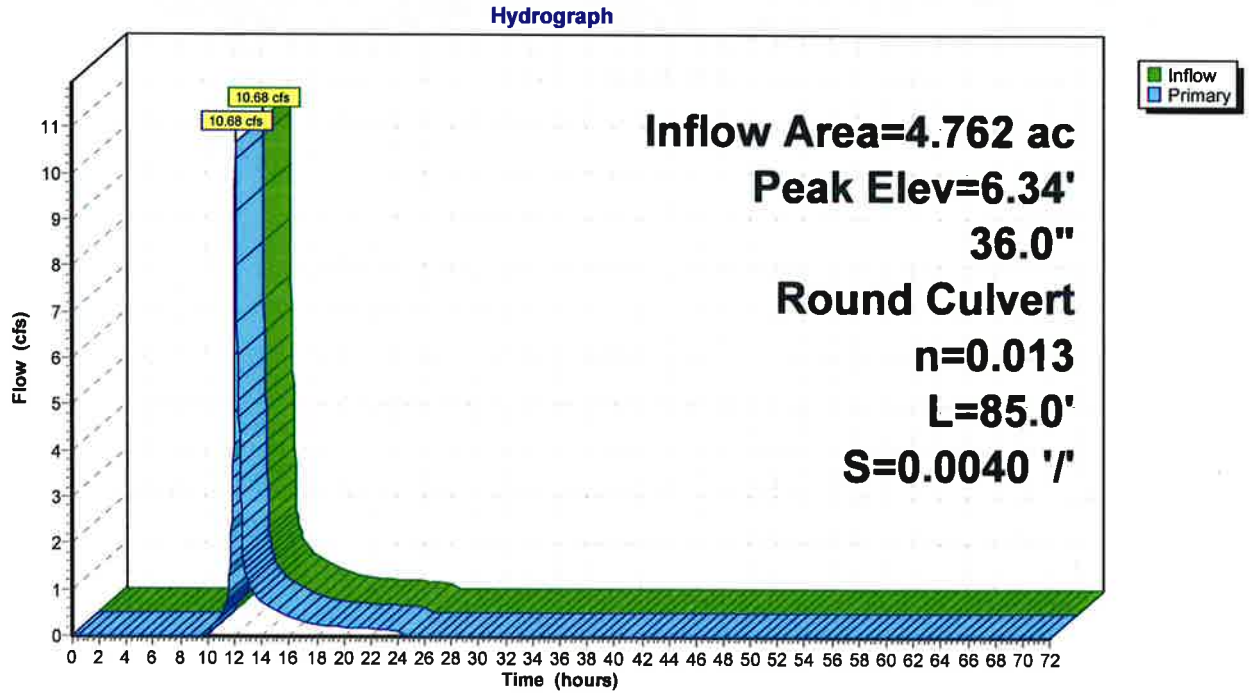
Inflow Area = 4.762 ac, 71.85% Impervious, Inflow Depth = 1.98" for 2 year event
Inflow = 10.68 cfs @ 12.10 hrs, Volume= 0.785 af
Outflow = 10.68 cfs @ 12.10 hrs, Volume= 0.785 af, Atten= 0%, Lag= 0.0 min
Primary = 10.68 cfs @ 12.10 hrs, Volume= 0.785 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.34' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.85' / 4.51' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=10.56 cfs @ 12.10 hrs HW=6.33' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 10.56 cfs @ 4.44 fps)

Pond PDMH 1: Separated Drain



Summary for Pond PDMH 10: New Roadway Closed Drainage System

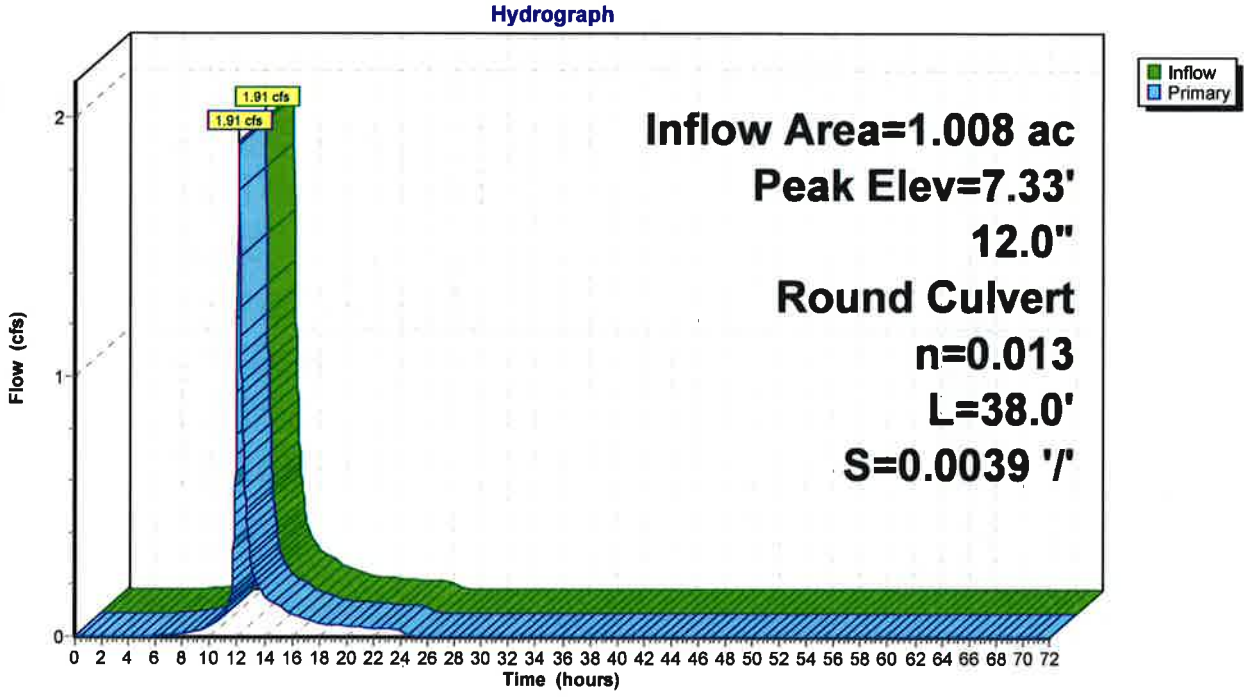
Inflow Area = 1.008 ac, 72.64% Impervious, Inflow Depth = 2.00" for 2 year event
Inflow = 1.91 cfs @ 12.08 hrs, Volume= 0.168 af
Outflow = 1.91 cfs @ 12.08 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.08 hrs, Volume= 0.168 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.33' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.03'	**12.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.03' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.08 hrs HW=7.32' TW=7.07' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.88 cfs @ 2.40 fps)

Pond PDMH 10: New Roadway Closed Drainage System



Summary for Pond PDMH 11:

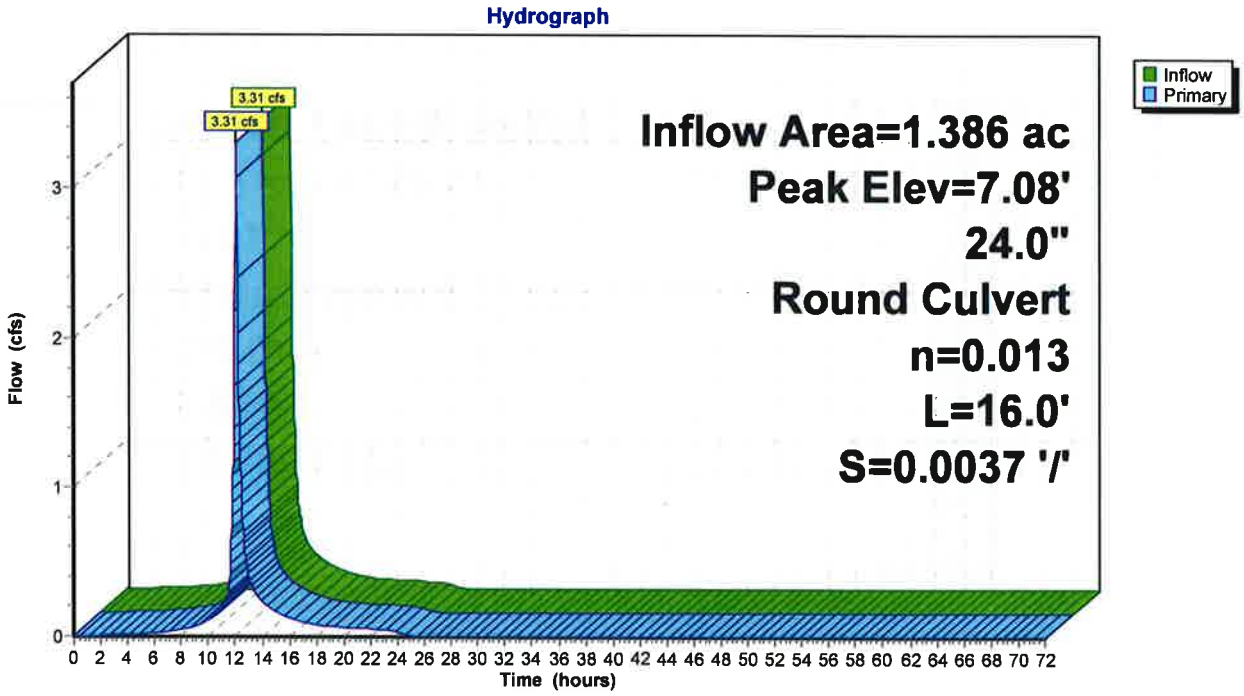
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 2.39" for 2 year event
Inflow = 3.31 cfs @ 12.07 hrs, Volume= 0.277 af
Outflow = 3.31 cfs @ 12.07 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.07 hrs, Volume= 0.277 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.08' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.88'	**24.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.88' / 5.82' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.25 cfs @ 12.07 hrs HW=7.07' TW=6.87' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.25 cfs @ 1.67 fps)

Pond PDMH 11:



Summary for Pond PDMH 12:

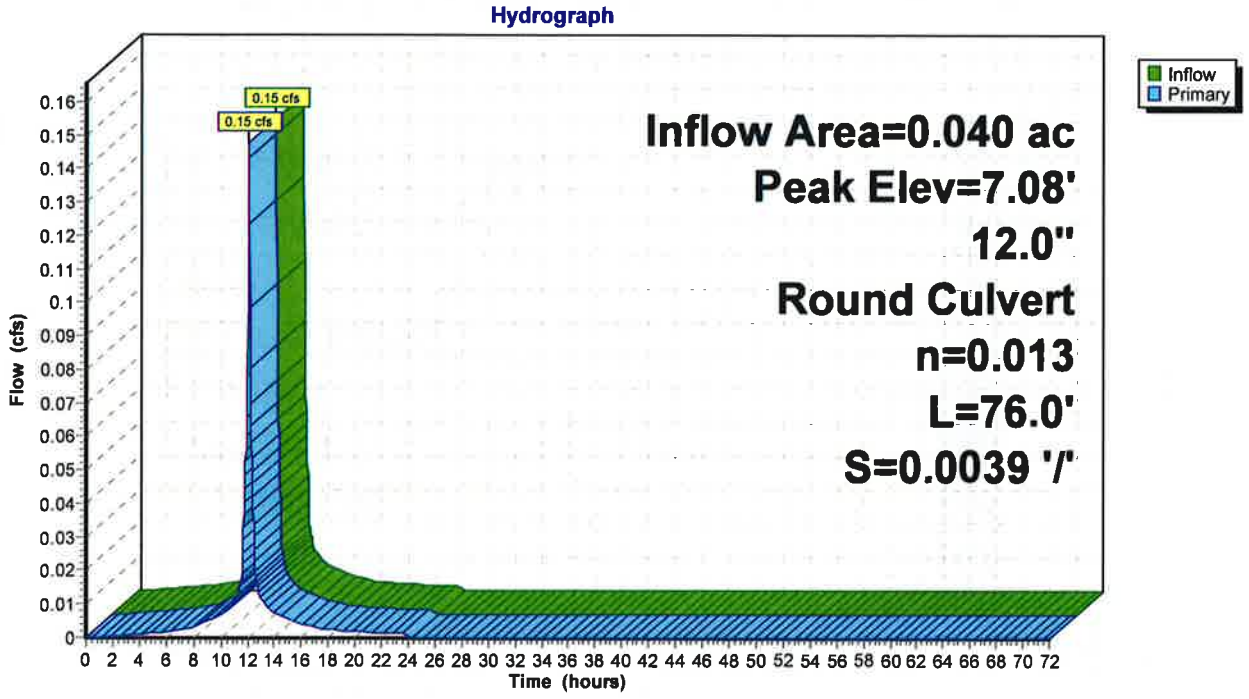
Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth = 3.46" for 2 year event
Inflow = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.08' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.18'	**12.0" Round 76** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.18' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.07 hrs HW=7.07' TW=7.07' (Dynamic Tailwater)
↑**1=76** (Outlet Controls 0.14 cfs @ 0.26 fps)

Pond PDMH 12:



Summary for Pond PDMH 13: New Roadway Closed Drainage System

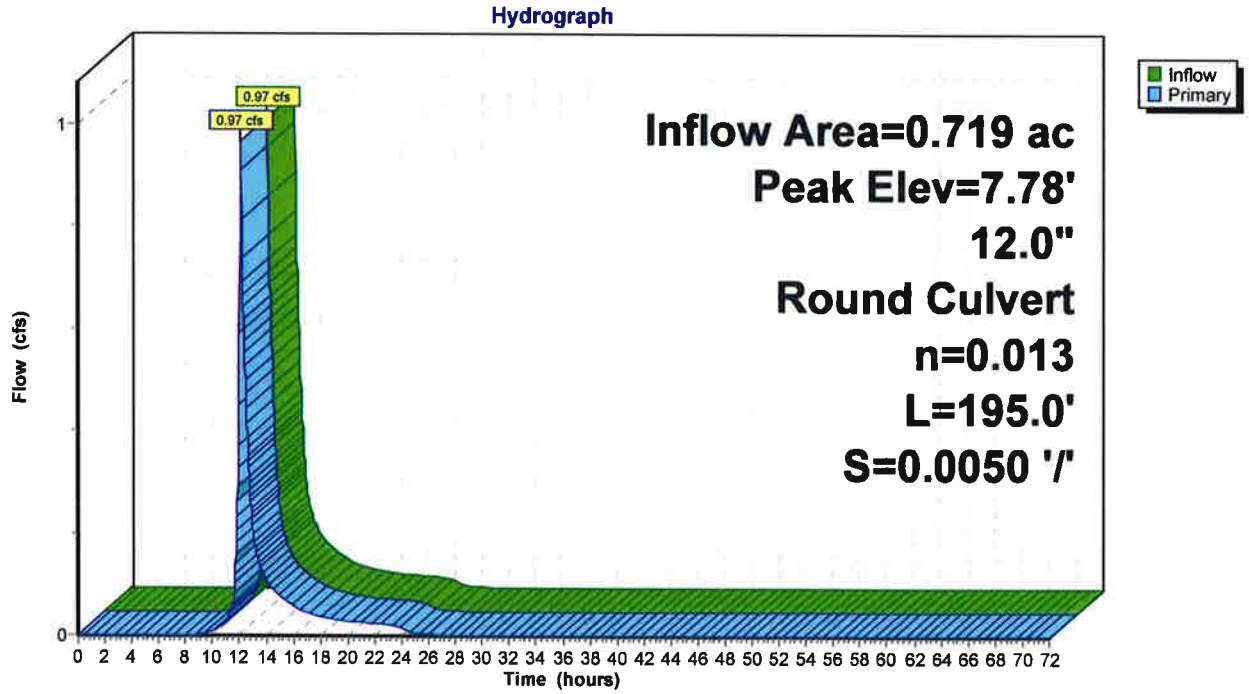
Inflow Area = 0.719 ac, 65.95% Impervious, Inflow Depth = 1.66" for 2 year event
Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.100 af
Outflow = 0.97 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.09 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.78' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**12.0" Round Culvert** L= 195.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.00' / 6.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.09 hrs HW=7.77' TW=7.32' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.96 cfs @ 2.04 fps)

Pond PDMH 13: New Roadway Closed Drainage System



Summary for Pond PDMH 14:

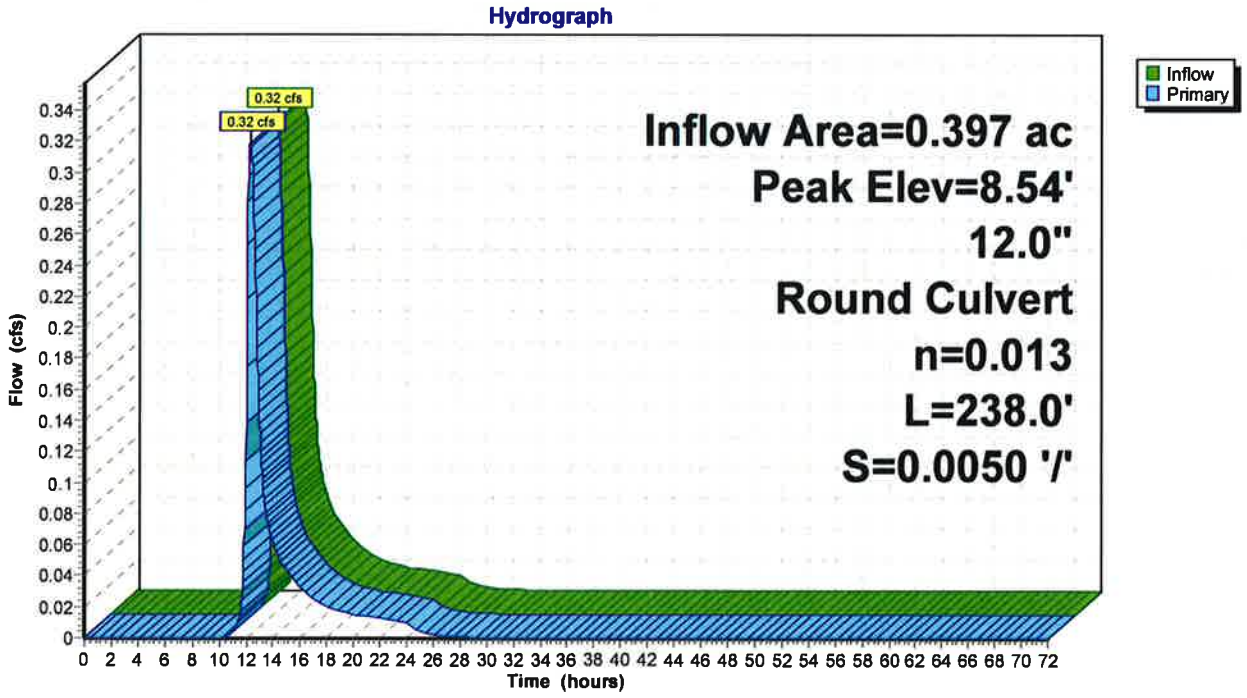
Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 1.50" for 2 year event
Inflow = 0.32 cfs @ 12.29 hrs, Volume= 0.050 af
Outflow = 0.32 cfs @ 12.29 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.29 hrs, Volume= 0.050 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.54' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**12.0" Round Culvert** L= 238.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.19' / 7.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.29 hrs HW=8.54' TW=7.54' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.32 cfs @ 1.98 fps)

Pond PDMH 14:



Summary for Pond PDMH 15: UNDERGROUND SAND FILTER

Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 2.39" for 2 year event
Inflow = 3.31 cfs @ 12.07 hrs, Volume= 0.277 af
Outflow = 3.31 cfs @ 12.07 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 12.08 hrs, Volume= 0.077 af
Secondary = 0.56 cfs @ 11.80 hrs, Volume= 0.200 af

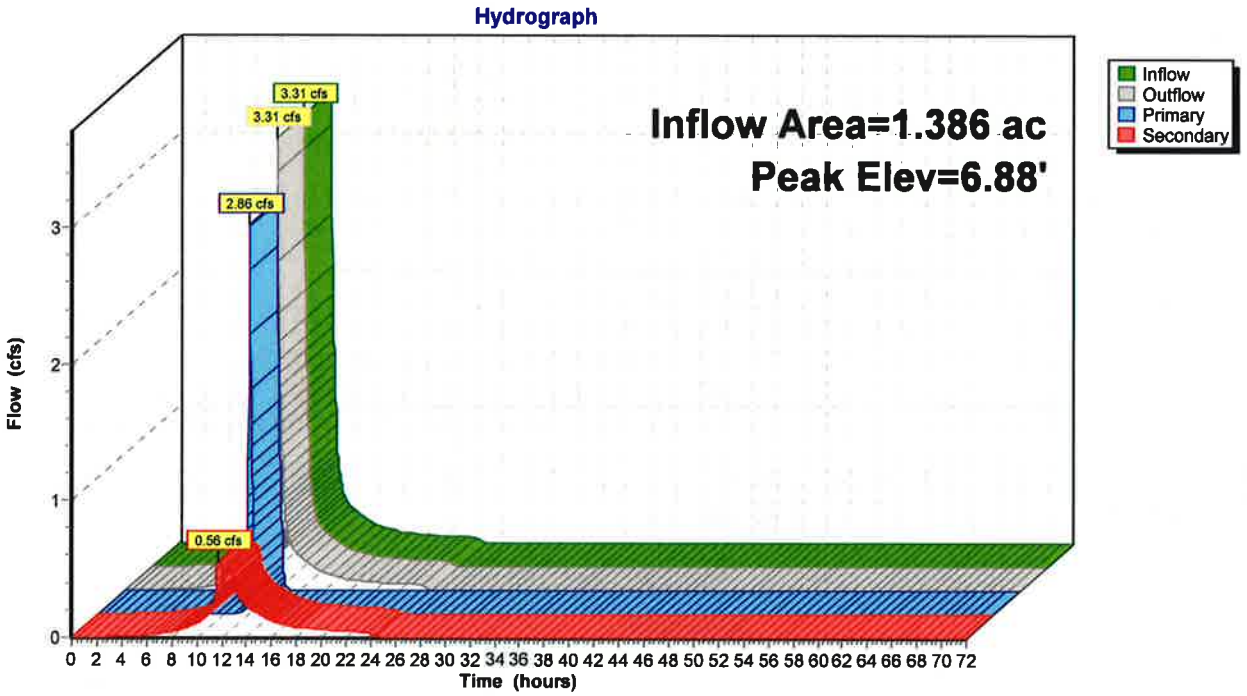
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.88' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.82'	**24.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.82' / 5.75' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.82'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.82' / 5.81' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.50'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.81 cfs @ 12.08 hrs HW=6.87' TW=6.69' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 2.81 cfs of 3.02 cfs potential flow)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 2.81 cfs @ 1.50 fps)

Secondary OutFlow Max=0.56 cfs @ 11.80 hrs HW=6.59' TW=6.41' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.56 cfs @ 1.61 fps)

Pond PDMH 15: UNDERGROUND SAND FILTER



Summary for Pond PDMH 15a:

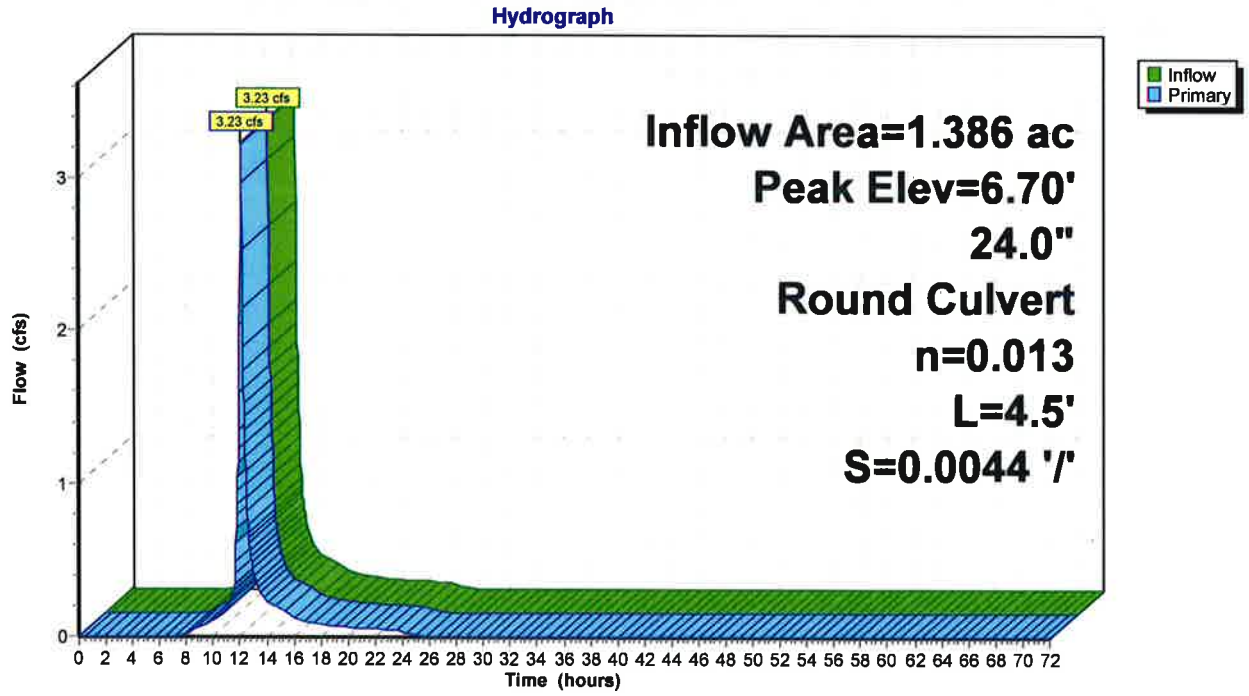
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 2.32" for 2 year event
Inflow = 3.23 cfs @ 12.08 hrs, Volume= 0.268 af
Outflow = 3.23 cfs @ 12.08 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Primary = 3.23 cfs @ 12.08 hrs, Volume= 0.268 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.70' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.75'	**24.0" Round Culvert** L= 4.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.75' / 5.73' S= 0.0044 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.20 cfs @ 12.08 hrs HW=6.69' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 3.20 cfs @ 3.23 fps)

Pond PDMH 15a:



Summary for Pond PDMH 2:

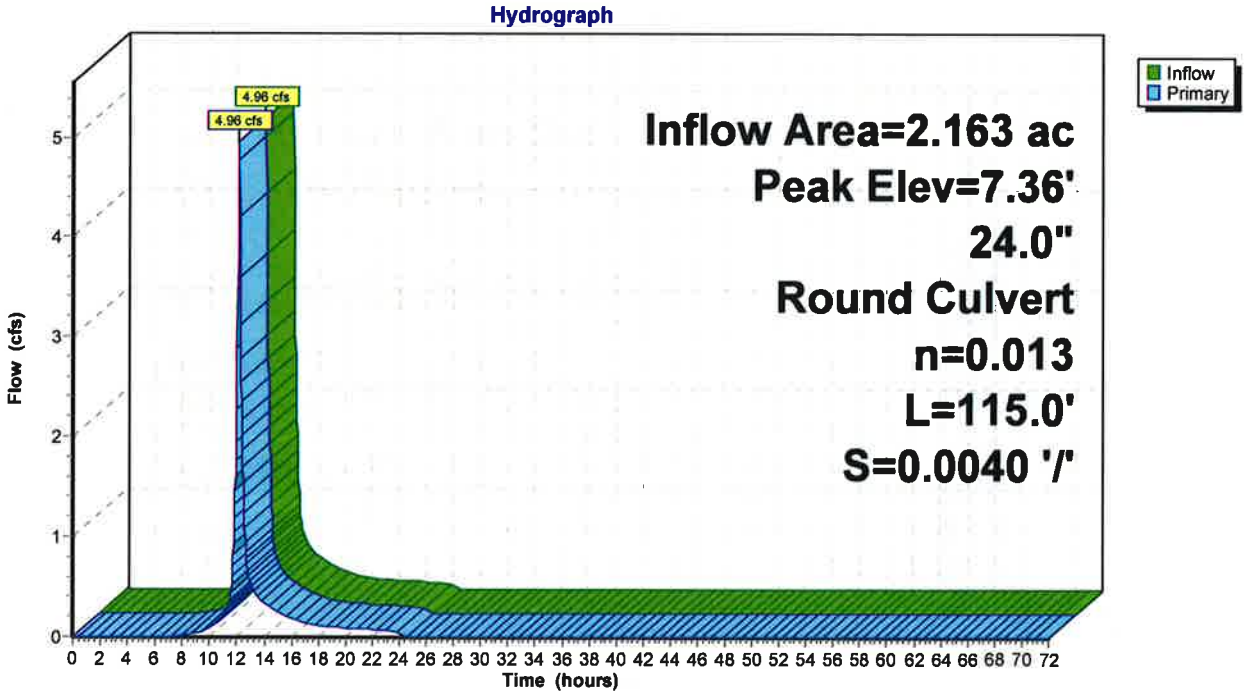
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 2.07" for 2 year event
Inflow = 4.96 cfs @ 12.10 hrs, Volume= 0.373 af
Outflow = 4.96 cfs @ 12.10 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min
Primary = 4.96 cfs @ 12.10 hrs, Volume= 0.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.36' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.79'	**24.0" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.79' / 5.33' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.92 cfs @ 12.10 hrs HW=7.35' TW=7.07' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.92 cfs @ 2.57 fps)

Pond PDMH 2:



Summary for Pond PDMH 3: Separated Drain

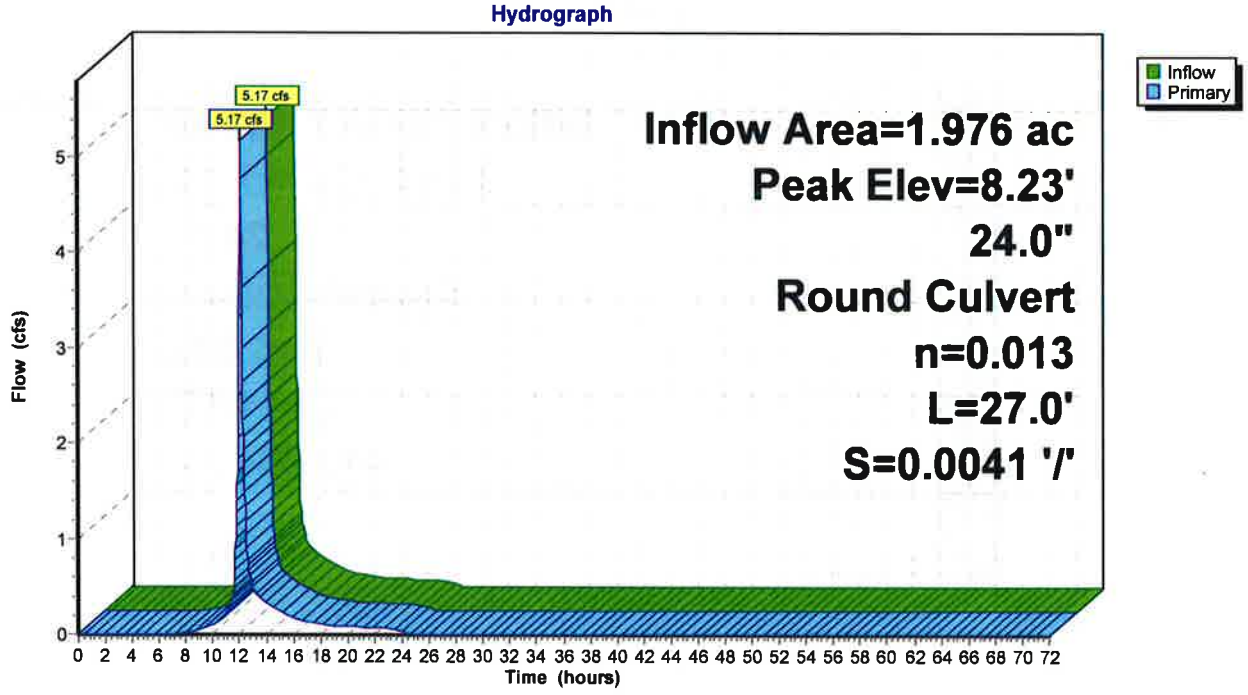
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 2.18" for 2 year event
Inflow = 5.17 cfs @ 12.07 hrs, Volume= 0.358 af
Outflow = 5.17 cfs @ 12.07 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min
Primary = 5.17 cfs @ 12.07 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.23' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**24.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.70' / 6.59' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.08 cfs @ 12.07 hrs HW=8.21' TW=8.00' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.08 cfs @ 2.77 fps)

Pond PDMH 3: Separated Drain



Summary for Pond PDMH 4: Separated Drain

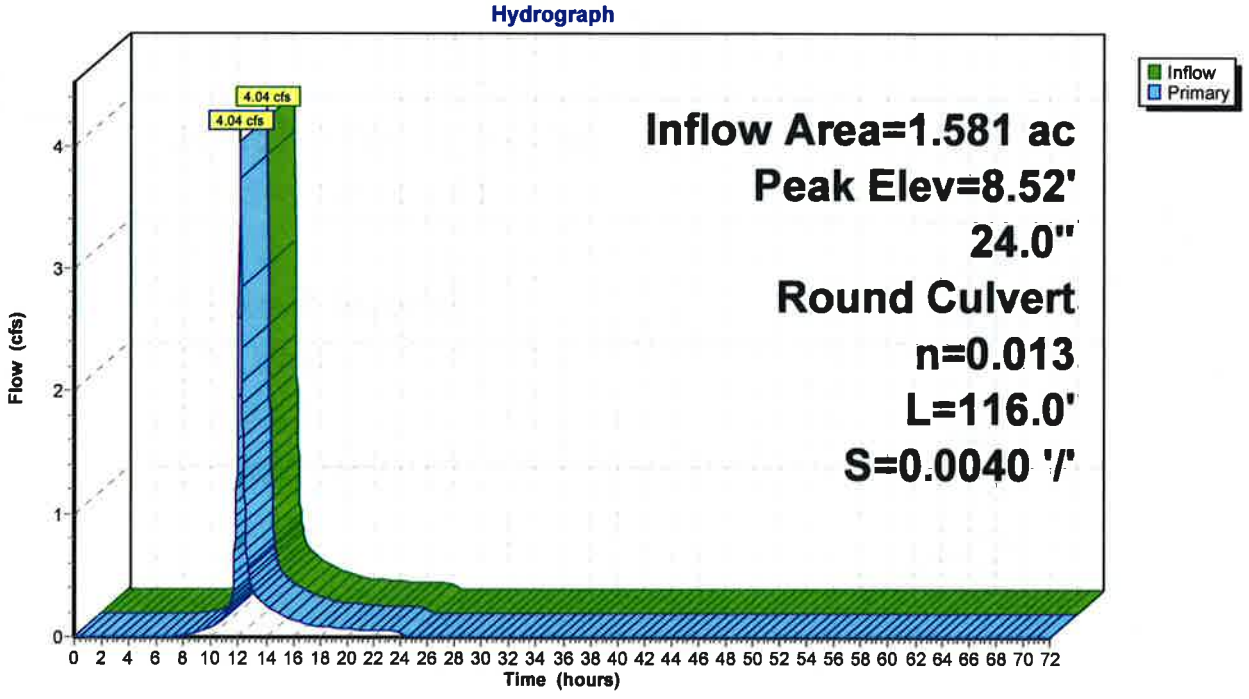
Inflow Area = 1.581 ac, 79.66% Impervious, Inflow Depth = 2.13" for 2 year event
Inflow = 4.04 cfs @ 12.08 hrs, Volume= 0.281 af
Outflow = 4.04 cfs @ 12.08 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min
Primary = 4.04 cfs @ 12.08 hrs, Volume= 0.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.52' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.16'	**24.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.16' / 6.70' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.98 cfs @ 12.08 hrs HW=8.50' TW=8.21' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.98 cfs @ 2.51 fps)

Pond PDMH 4: Separated Drain



Summary for Pond PDMH 5:

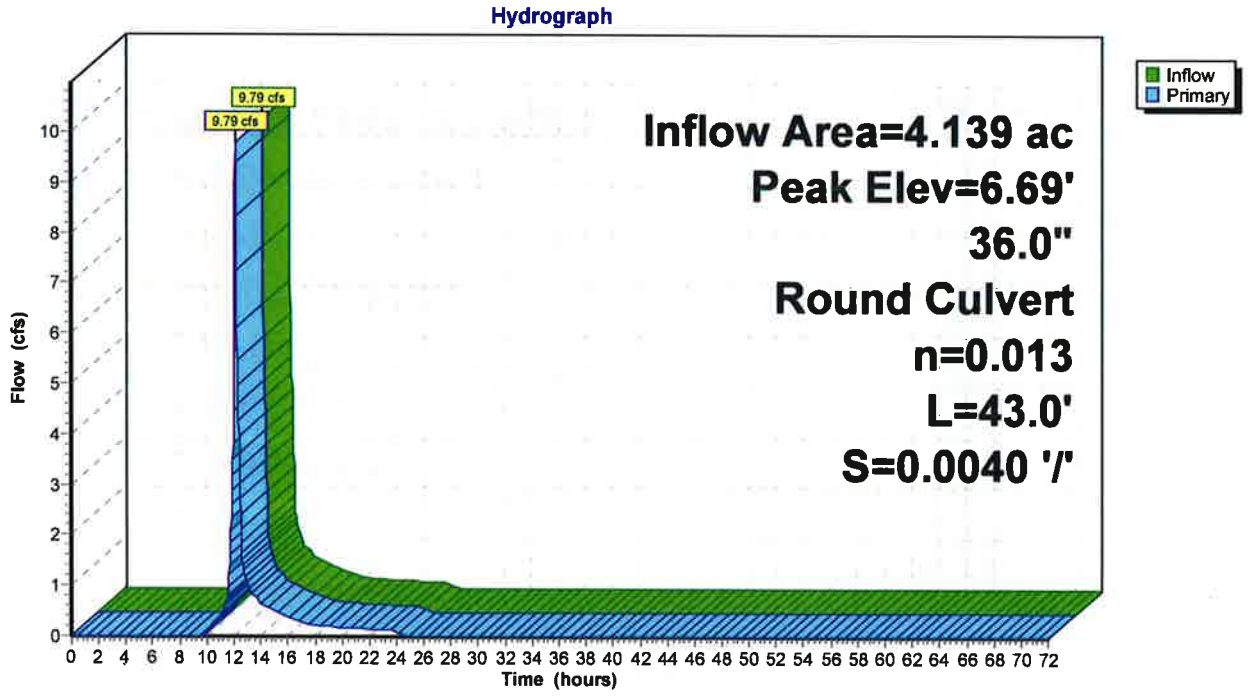
Inflow Area = 4.139 ac, 75.59% Impervious, Inflow Depth = 2.07" for 2 year event
Inflow = 9.79 cfs @ 12.10 hrs, Volume= 0.714 af
Outflow = 9.79 cfs @ 12.10 hrs, Volume= 0.714 af, Atten= 0%, Lag= 0.0 min
Primary = 9.79 cfs @ 12.10 hrs, Volume= 0.714 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.69' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.02'	**36.0" Round Culvert** L= 43.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.02' / 4.85' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=9.72 cfs @ 12.10 hrs HW=6.69' TW=6.33' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 9.72 cfs @ 3.49 fps)

Pond PDMH 5:



Summary for Pond PDMH 7:

Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 2.18" for 2 year event
Inflow = 5.17 cfs @ 12.07 hrs, Volume= 0.358 af
Outflow = 5.17 cfs @ 12.07 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min
Primary = 4.61 cfs @ 12.08 hrs, Volume= 0.132 af
Secondary = 0.60 cfs @ 12.05 hrs, Volume= 0.226 af

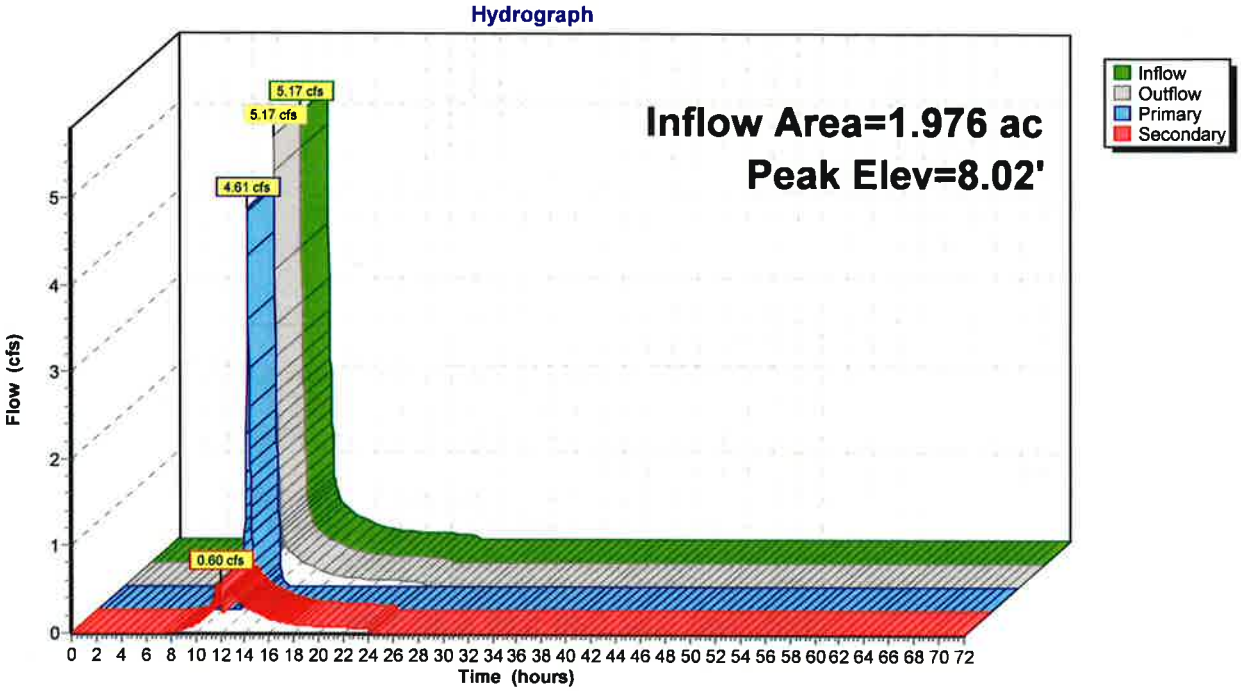
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.02' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.59'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.50' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	6.59'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.58' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	7.25'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.54 cfs @ 12.08 hrs HW=8.00' TW=7.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.54 cfs @ 1.92 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 4.54 cfs of 7.86 cfs potential flow)

Secondary OutFlow Max=0.59 cfs @ 12.05 hrs HW=7.92' TW=7.72' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.59 cfs @ 1.69 fps)

Pond PDMH 7:


Hydrograph
Inflow Area=1.976 ac
Peak Elev=8.02'
5.17 cfs
5.17 cfs
4.61 cfs
0.60 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Summary for Pond PDMH 7a:

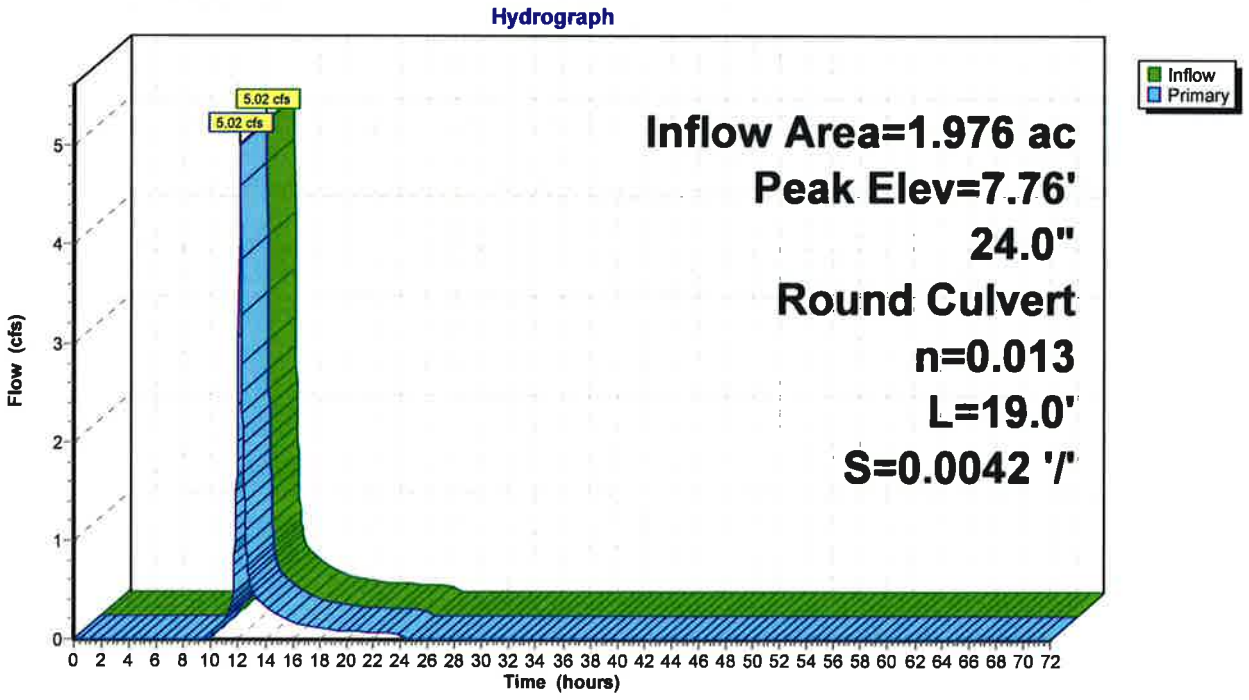
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 2.12" for 2 year event
Inflow = 5.02 cfs @ 12.08 hrs, Volume= 0.350 af
Outflow = 5.02 cfs @ 12.08 hrs, Volume= 0.350 af, Atten= 0%, Lag= 0.0 min
Primary = 5.02 cfs @ 12.08 hrs, Volume= 0.350 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.76' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.50'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.50' / 6.42' S= 0.0042 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.98 cfs @ 12.08 hrs HW=7.75' TW=6.68' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 4.98 cfs @ 3.43 fps)

Pond PDMH 7a:



Summary for Pond PDMH 8:

Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 2.07" for 2 year event
Inflow = 4.96 cfs @ 12.10 hrs, Volume= 0.373 af
Outflow = 4.96 cfs @ 12.10 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min
Primary = 4.52 cfs @ 12.10 hrs, Volume= 0.149 af
Secondary = 0.53 cfs @ 11.64 hrs, Volume= 0.224 af

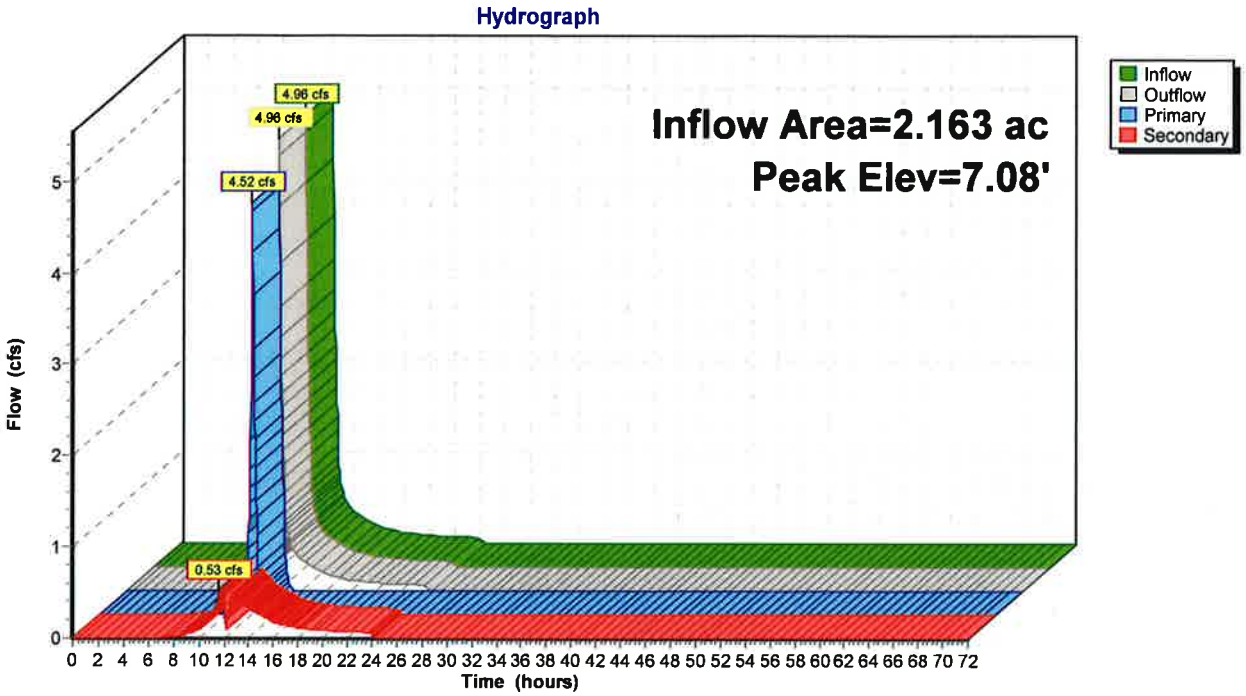
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.08' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.33'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.26' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.33'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.32' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.46 cfs @ 12.10 hrs HW=7.06' TW=6.90' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.46 cfs @ 1.54 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 4.46 cfs of 10.21 cfs potential flow)

Secondary OutFlow Max=0.53 cfs @ 11.64 hrs HW=6.03' TW=5.87' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.53 cfs @ 1.50 fps)

Pond PDMH 8:


Hydrograph
Inflow Area=2.163 ac
Peak Elev=7.08'
4.96 cfs
4.96 cfs
4.52 cfs
0.53 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
Time (hours)

Summary for Pond PDMH 8a:

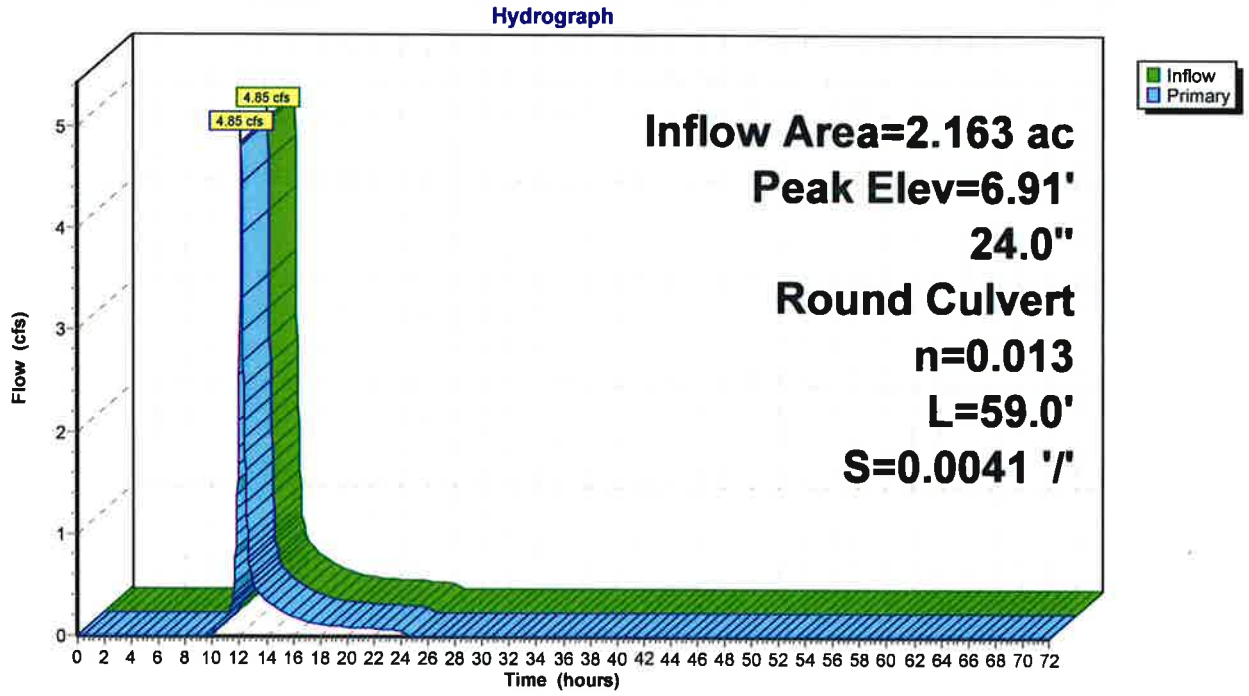
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 2.02" for 2 year event
Inflow = 4.85 cfs @ 12.11 hrs, Volume= 0.364 af
Outflow = 4.85 cfs @ 12.11 hrs, Volume= 0.364 af, Atten= 0%, Lag= 0.0 min
Primary = 4.85 cfs @ 12.11 hrs, Volume= 0.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.91' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.26'	**24.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.26' / 5.02' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.79 cfs @ 12.11 hrs HW=6.89' TW=6.67' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 4.79 cfs @ 2.38 fps)

Pond PDMH 8a:

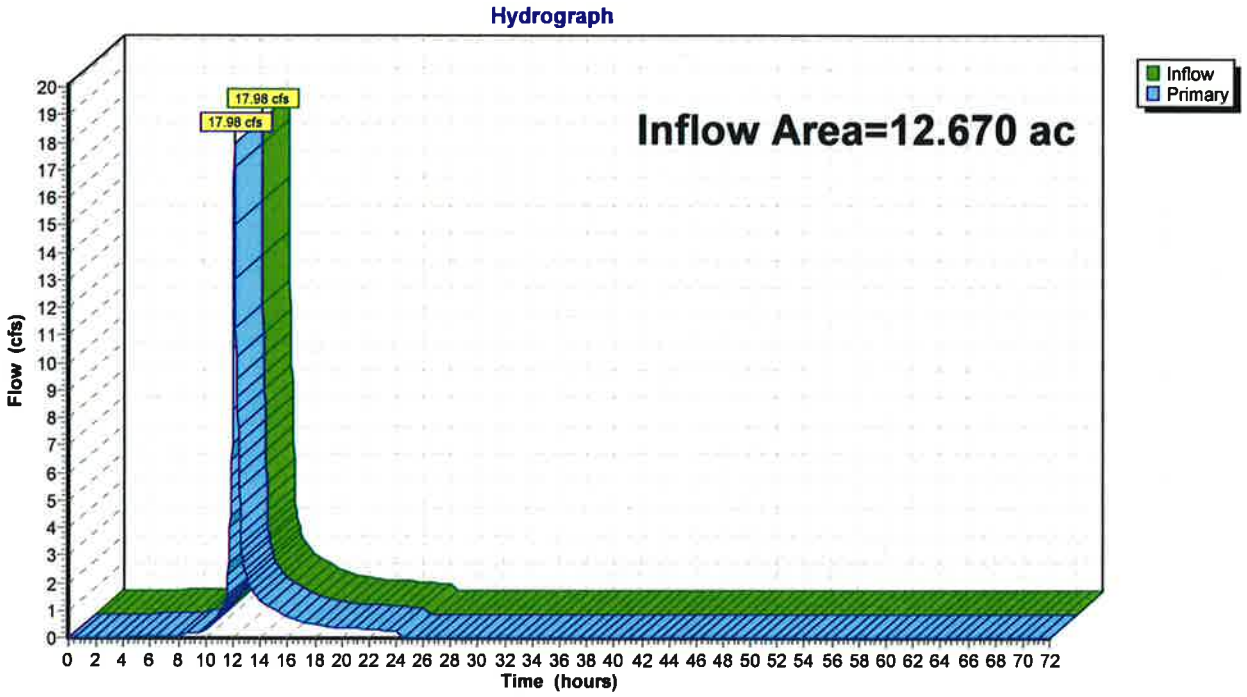


Summary for Link DP1: North Mill Pond

Inflow Area = 12.670 ac, 55.16% Impervious, Inflow Depth = 1.39" for 2 year event
Inflow = 17.98 cfs @ 12.09 hrs, Volume= 1.471 af
Primary = 17.98 cfs @ 12.09 hrs, Volume= 1.471 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

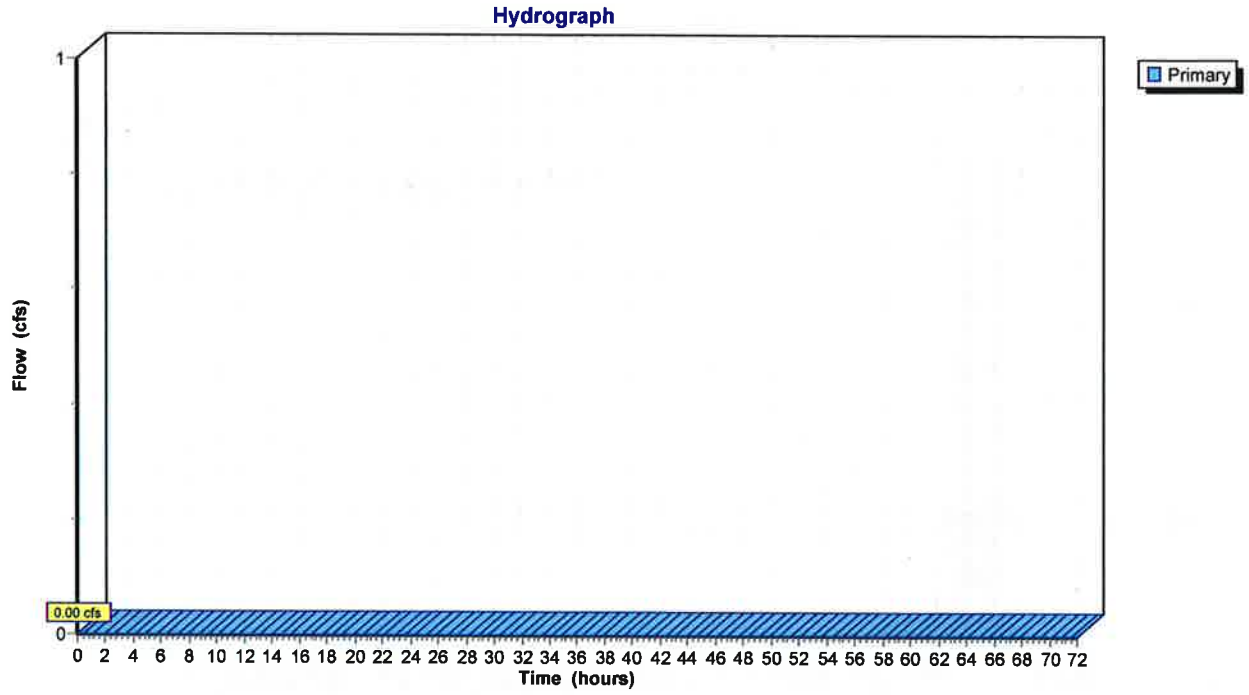


Summary for Link DP2: Sewer Line

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Sewer Line



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 PS1: Runoff Area=23,090 sf 98.87% Impervious Runoff Depth=5.25"
Flow Length=209' Tc=5.0 min CN=97 Runoff=2.98 cfs 0.232 af

Subcatchment PS10: Runoff Area=27,141 sf 47.00% Impervious Runoff Depth=2.85"
Flow Length=300' Tc=7.8 min CN=74 Runoff=1.94 cfs 0.148 af

Subcatchment PS2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=3.52"
Flow Length=400' Tc=7.6 min CN=81 Runoff=5.81 cfs 0.441 af

Subcatchment PS3: Runoff Area=28,735 sf 83.35% Impervious Runoff Depth=4.35"
Flow Length=140' Tc=5.0 min CN=89 Runoff=3.34 cfs 0.239 af

Subcatchment PS4: Runoff Area=76,501 sf 7.14% Impervious Runoff Depth=0.43"
Flow Length=342' Tc=5.3 min CN=41 Runoff=0.31 cfs 0.063 af

Subcatchment PS4a: Lot 4 Parking Lot - Runoff Area=14,755 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=1.91 cfs 0.151 af

Subcatchment PS4b: Lot 4 Rooftop - Runoff Area=20,314 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=2.63 cfs 0.208 af

Subcatchment PS4c: Runoff Area=12,582 sf 89.27% Impervious Runoff Depth=4.68"
Tc=5.0 min CN=92 Runoff=1.54 cfs 0.113 af

Subcatchment PS4d: Runoff Area=14,029 sf 70.87% Impervious Runoff Depth=3.52"
Tc=5.0 min CN=81 Runoff=1.36 cfs 0.095 af

Subcatchment PS4e: Runoff Area=17,277 sf 61.96% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=76 Runoff=1.45 cfs 0.100 af

Subcatchment PS4f: Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=0.23 cfs 0.018 af

Subcatchment PS5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=4.14"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.93 cfs 0.136 af

Subcatchment PS6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=4.03"
Flow Length=171' Tc=5.0 min CN=86 Runoff=2.07 cfs 0.146 af

Subcatchment PS7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=4.24"
Flow Length=144' Tc=5.0 min CN=88 Runoff=1.57 cfs 0.112 af

Subcatchment PS8: Runoff Area=36,146 sf 76.21% Impervious Runoff Depth=3.62"
Flow Length=253' Tc=5.0 min CN=82 Runoff=3.60 cfs 0.250 af

Subcatchment PS9: Runoff Area=164,174 sf 35.57% Impervious Runoff Depth=1.29"
Flow Length=452' Tc=7.4 min CN=55 Runoff=4.65 cfs 0.406 af

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin Peak Elev=8.31' Inflow=1.91 cfs 0.151 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0213 '/' Outflow=1.91 cfs 0.151 af

Pond 2P: CB 1241 Peak Elev=7.36' Inflow=1.94 cfs 0.148 af
12.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=1.94 cfs 0.148 af

Pond 4P: UNDERGROUND SAND FILTER Peak Elev=7.10' Storage=0.015 af Inflow=0.56 cfs 0.300 af
Outflow=0.55 cfs 0.291 af

Pond 6P: Roofline Dripe Edge Filter Strip Peak Elev=9.82' Storage=0.002 af Inflow=2.63 cfs 0.208 af
12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=2.61 cfs 0.208 af

Pond 10P: PCB 17 Peak Elev=9.82' Inflow=1.57 cfs 0.112 af
12.0" Round Culvert n=0.013 L=5.0' S=0.0040 '/' Outflow=1.57 cfs 0.112 af

Pond 15P: CB 1243 Peak Elev=9.86' Inflow=2.07 cfs 0.146 af
12.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=2.07 cfs 0.146 af

Pond 16P: CB 1242 Peak Elev=9.53' Inflow=1.93 cfs 0.136 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=1.93 cfs 0.136 af

Pond 21P: UNDERGROUND SAND FILTER Peak Elev=8.47' Storage=0.018 af Inflow=0.82 cfs 0.348 af
Outflow=0.70 cfs 0.340 af

Pond 22P: UNDERGROUND SAND FILTER Peak Elev=8.08' Storage=0.022 af Inflow=0.87 cfs 0.346 af
Outflow=0.80 cfs 0.337 af

Pond 1264: Separated Drain Peak Elev=9.73' Inflow=3.60 cfs 0.250 af
24.0" Round Culvert n=0.013 L=162.0' S=0.0040 '/' Outflow=3.60 cfs 0.250 af

Pond CB 1237: Peak Elev=6.71' Inflow=2.98 cfs 0.232 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=2.98 cfs 0.232 af

Pond CB 1239: Separated Drain Peak Elev=8.98' Inflow=5.81 cfs 0.441 af
24.0" Round Culvert n=0.013 L=117.0' S=0.0040 '/' Outflow=5.81 cfs 0.441 af

Pond CB 1240: Separated Drain Peak Elev=8.79' Inflow=3.34 cfs 0.239 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=3.34 cfs 0.239 af

Pond CB 1244: PDMH 6 Peak Elev=9.54' Inflow=5.18 cfs 0.362 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0040 '/' Outflow=5.18 cfs 0.362 af

Pond OCS #1: PCB 16 Forebay w/Catch Basin Peak Elev=10.19' Storage=1,052 cf Inflow=1.45 cfs 0.100 af
Outflow=0.53 cfs 0.100 af

Pond PDMH 1: Separated Drain Peak Elev=6.94' Inflow=19.27 cfs 1.456 af
36.0" Round Culvert n=0.013 L=85.0' S=0.0040 '/' Outflow=19.27 cfs 1.456 af

Pond PDMH 10: New Roadway Closed Drainage System Peak Elev=8.26' Inflow=3.31 cfs 0.307 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0039 '/' Outflow=3.31 cfs 0.307 af

Pond PDMH 11: Peak Elev=7.50' Inflow=5.45 cfs 0.477 af
24.0" Round Culvert n=0.013 L=16.0' S=0.0037 '/' Outflow=5.45 cfs 0.477 af

Pond PDMH 12: Peak Elev=7.50' Inflow=0.23 cfs 0.018 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0039 '/' Outflow=0.23 cfs 0.018 af

Pond PDMH 13: New Roadway Closed Drainage System Peak Elev=8.87' Inflow=1.78 cfs 0.195 af
12.0" Round Culvert n=0.013 L=195.0' S=0.0050 '/' Outflow=1.78 cfs 0.195 af

Pond PDMH 14: Peak Elev=8.97' Inflow=0.53 cfs 0.100 af
12.0" Round Culvert n=0.013 L=238.0' S=0.0050 '/' Outflow=0.53 cfs 0.100 af

Pond PDMH 15: UNDERGROUND SAND FILTER Peak Elev=7.22' Inflow=5.45 cfs 0.477 af
Primary=4.92 cfs 0.177 af Secondary=0.56 cfs 0.300 af Outflow=5.45 cfs 0.477 af

Pond PDMH 15a: Peak Elev=6.99' Inflow=5.32 cfs 0.468 af
24.0" Round Culvert n=0.013 L=4.5' S=0.0044 '/' Outflow=5.32 cfs 0.468 af

Pond PDMH 2: Peak Elev=8.74' Inflow=8.96 cfs 0.680 af
24.0" Round Culvert n=0.013 L=115.0' S=0.0040 '/' Outflow=8.96 cfs 0.680 af

Pond PDMH 3: Separated Drain Peak Elev=9.12' Inflow=9.18 cfs 0.645 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0041 '/' Outflow=9.18 cfs 0.645 af

Pond PDMH 4: Separated Drain Peak Elev=9.39' Inflow=7.25 cfs 0.508 af
24.0" Round Culvert n=0.013 L=116.0' S=0.0040 '/' Outflow=7.25 cfs 0.508 af

Pond PDMH 5: Peak Elev=7.38' Inflow=17.37 cfs 1.308 af
36.0" Round Culvert n=0.013 L=43.0' S=0.0040 '/' Outflow=17.37 cfs 1.308 af

Pond PDMH 7: Peak Elev=8.76' Inflow=9.18 cfs 0.645 af
Primary=8.36 cfs 0.296 af Secondary=0.82 cfs 0.348 af Outflow=9.18 cfs 0.645 af

Pond PDMH 7a: Peak Elev=8.27' Inflow=8.89 cfs 0.636 af
24.0" Round Culvert n=0.013 L=19.0' S=0.0042 '/' Outflow=8.89 cfs 0.636 af

Pond PDMH 8: Peak Elev=8.37' Inflow=8.96 cfs 0.680 af
Primary=8.17 cfs 0.335 af Secondary=0.87 cfs 0.346 af Outflow=8.96 cfs 0.680 af

Pond PDMH 8a: Peak Elev=7.90' Inflow=8.65 cfs 0.672 af
24.0" Round Culvert n=0.013 L=59.0' S=0.0041 '/' Outflow=8.65 cfs 0.672 af

Link DP1: North Mill Pond Inflow=34.46 cfs 2.834 af
Primary=34.46 cfs 2.834 af

Link DP2: Sewer Line
Primary=0.00 cfs 0.000 af

Total Runoff Area = 12.670 ac Runoff Volume = 2.859 af Average Runoff Depth = 2.71"
44.84% Pervious = 5.681 ac 55.16% Impervious = 6.988 ac

Summary for Subcatchment PS1:

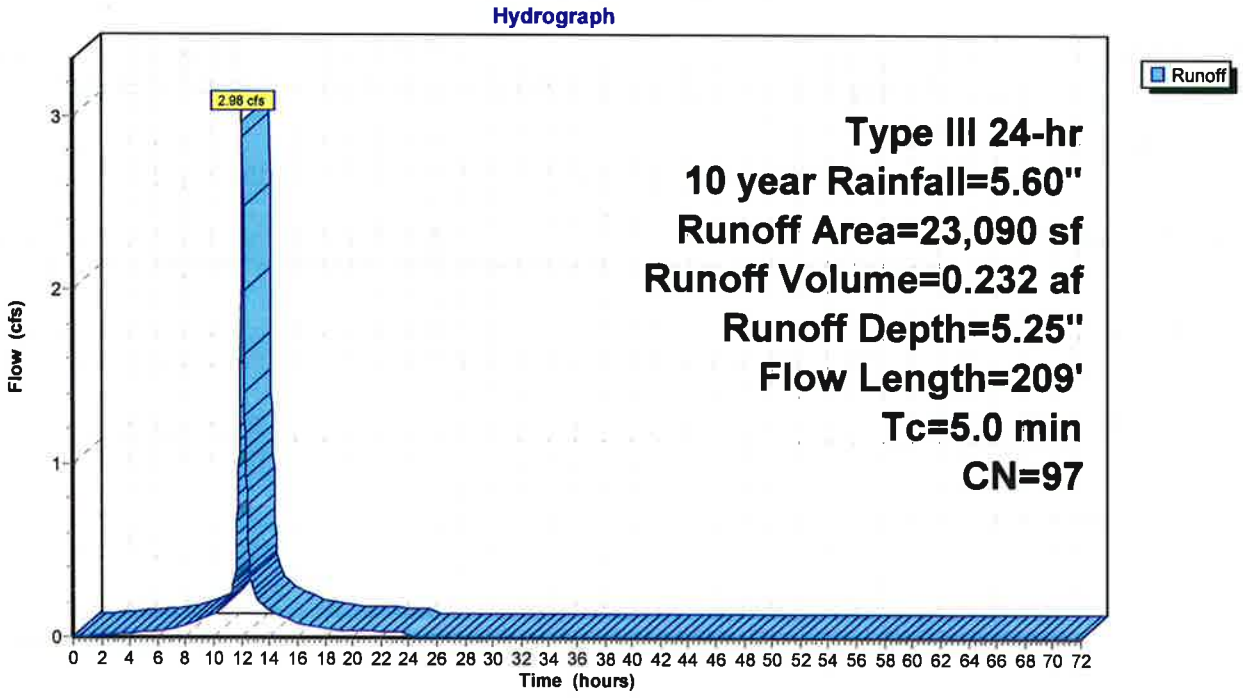
Runoff = 2.98 cfs @ 12.07 hrs, Volume= 0.232 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,527	98	Roofs, HSG A
	16,758	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	262	39	>75% Grass cover, Good, HSG A
*	1,606	98	Sidewalk new, HSG A
	23,090	97	Weighted Average
	262		1.13% Pervious Area
	22,828		98.87% Impervious Area
	937		4.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS1:



Summary for Subcatchment PS10:

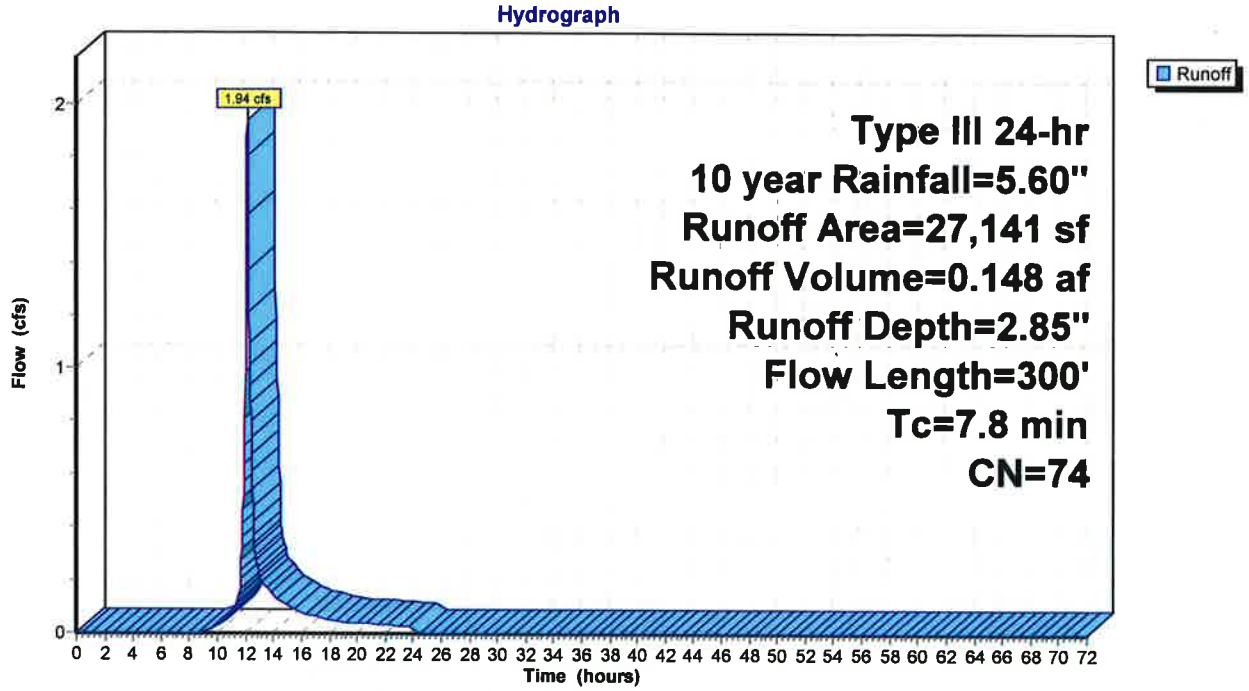
Runoff = 1.94 cfs @ 12.11 hrs, Volume= 0.148 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
9,646	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
965	39	>75% Grass cover, Good, HSG A
27,141	74	Weighted Average
14,384		53.00% Pervious Area
12,757		47.00% Impervious Area
3,111		24.39% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment PS10:



Summary for Subcatchment PS2:

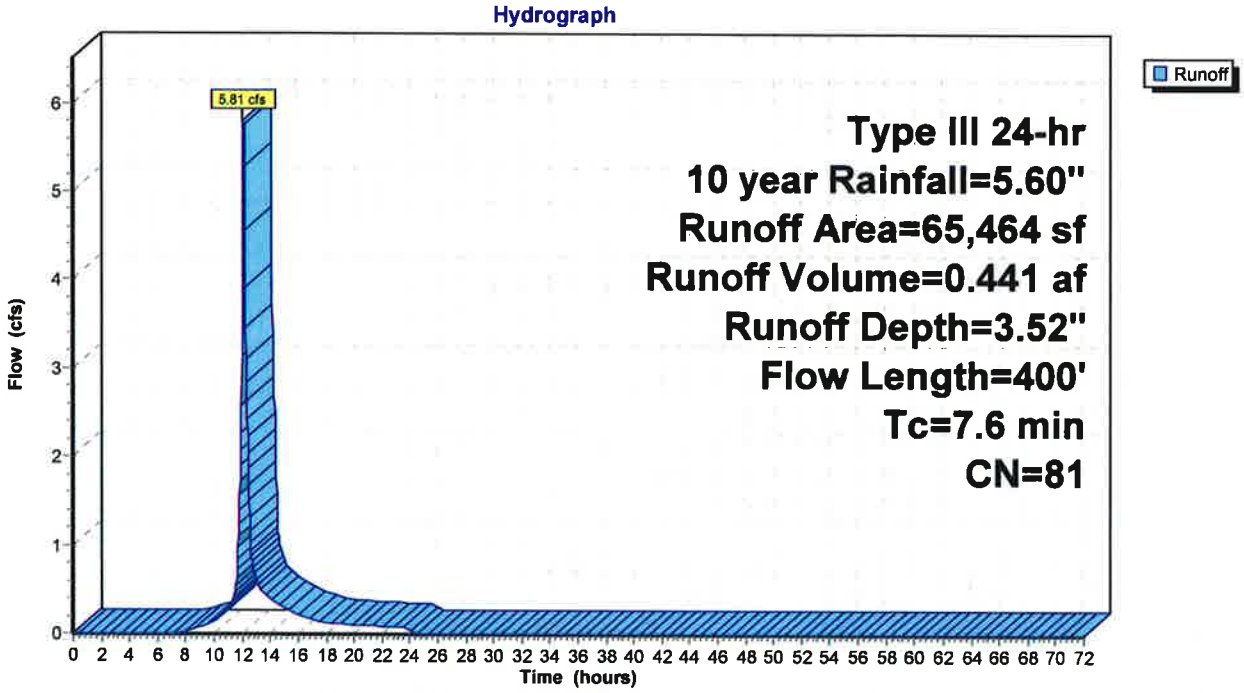
Runoff = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment PS2:



Summary for Subcatchment PS3:

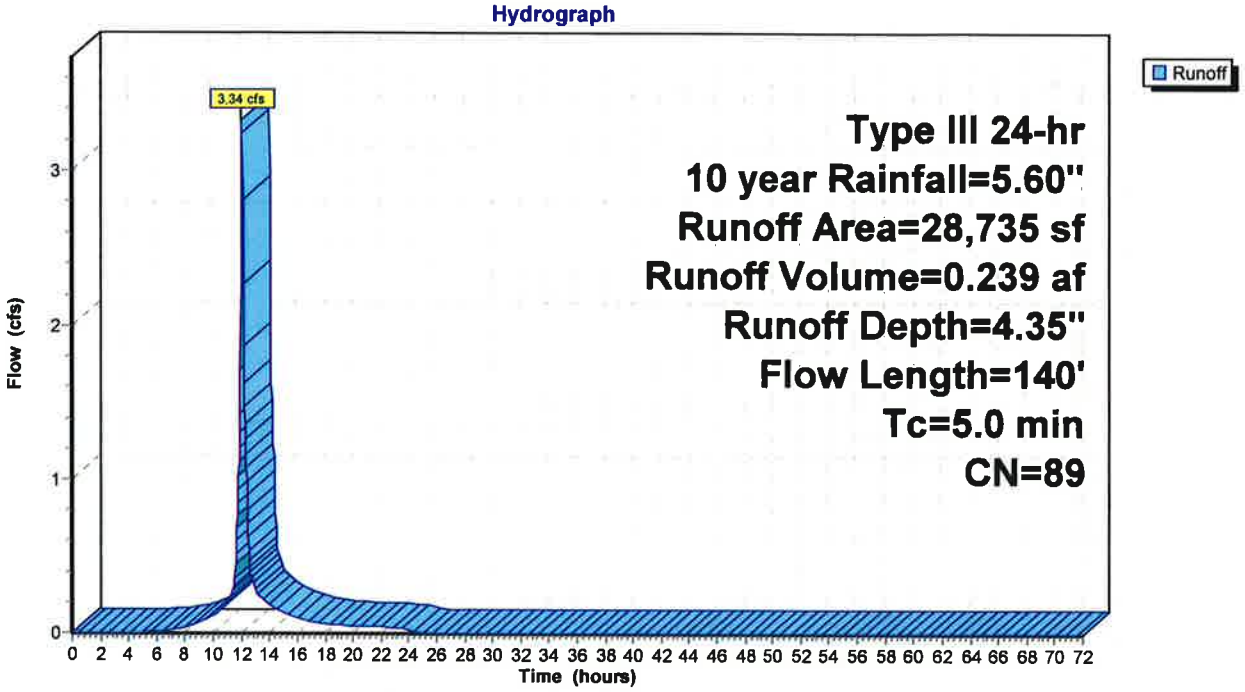
Runoff = 3.34 cfs @ 12.07 hrs, Volume= 0.239 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	18,934	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	831	39	>75% Grass cover, Good, HSG A
	28,735	89	Weighted Average
	4,785		16.65% Pervious Area
	23,950		83.35% Impervious Area
	692		2.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS3:



Summary for Subcatchment PS4:

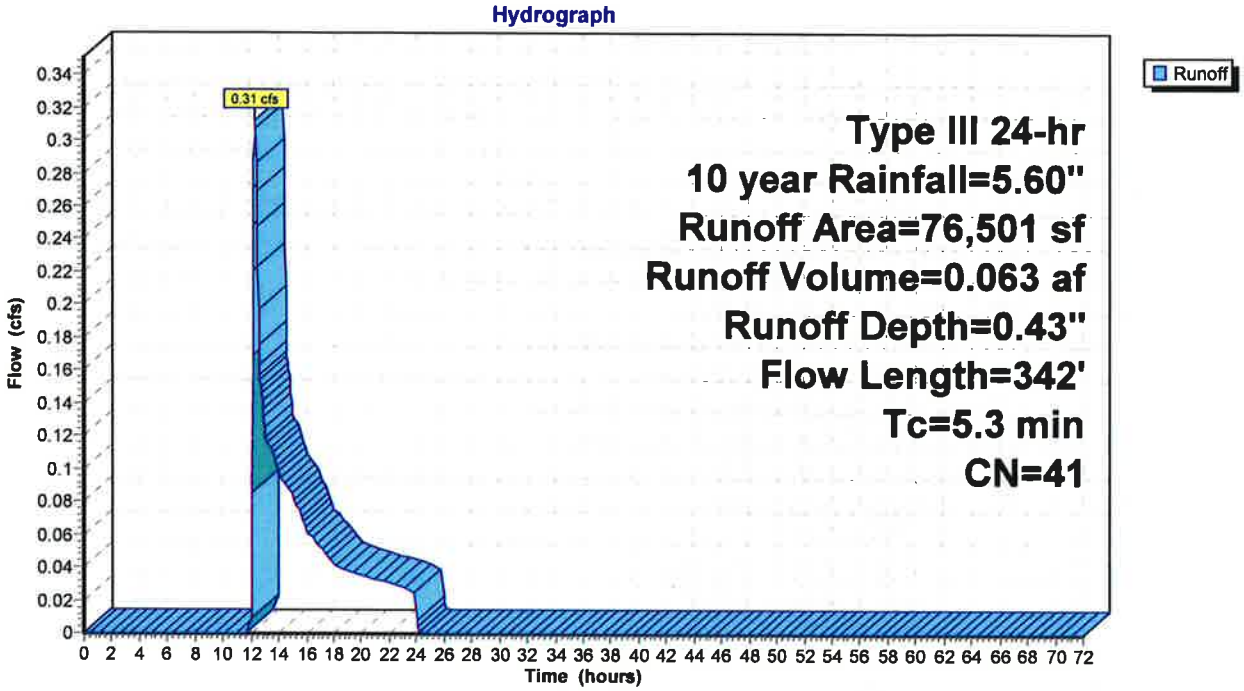
Runoff = 0.31 cfs @ 12.32 hrs, Volume= 0.063 af, Depth= 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	2,855	98	Paved parking, HSG A
	24,921	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	4,789	39	>75% Grass cover, Good, HSG A
	7,355	77	Fallow, bare soil, HSG A
	230	39	>75% Grass cover, Good, HSG A
	4,292	39	>75% Grass cover, Good, HSG A
*	1,791	98	Sidewalk new, HSG A
	76,501	41	Weighted Average
	71,042		92.86% Pervious Area
	5,459		7.14% Impervious Area
	813		14.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment PS4:



Summary for Subcatchment PS4a: Lot 4 Parking Lot - Treated Area

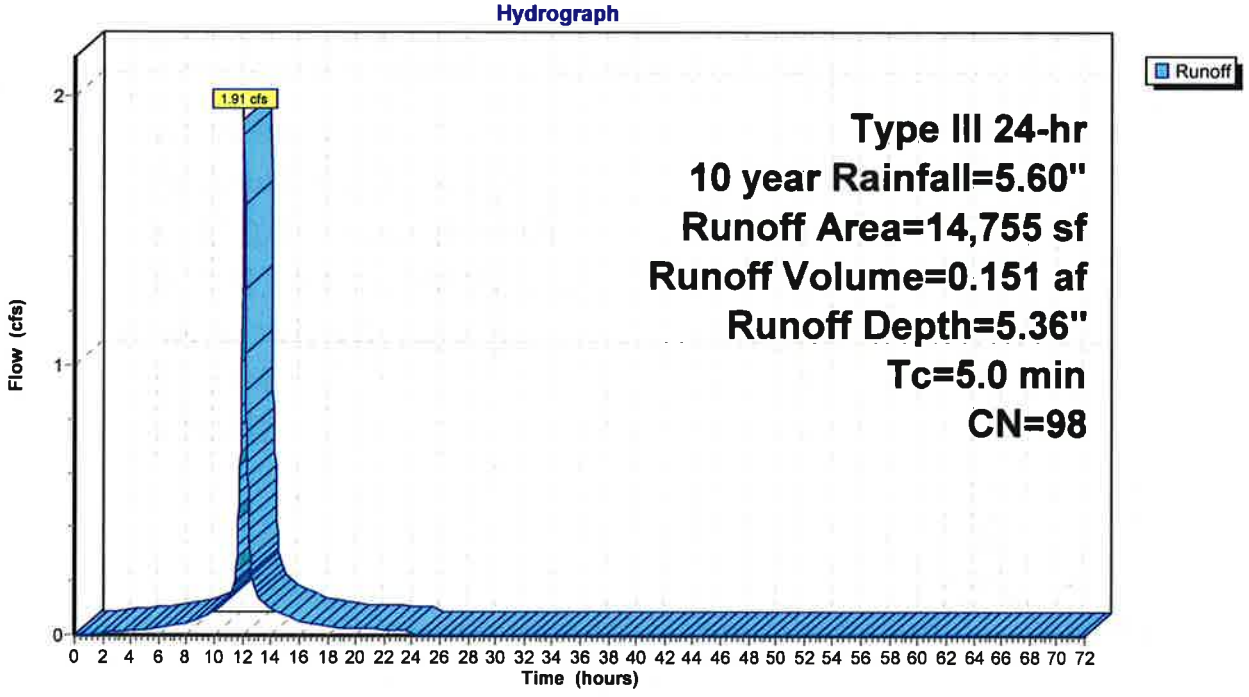
Runoff = 1.91 cfs @ 12.07 hrs, Volume= 0.151 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
14,755	98	Paved parking, HSG A
14,755		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4a: Lot 4 Parking Lot - Treated Area



Summary for Subcatchment PS4b: Lot 4 Rooftop - Treated Area

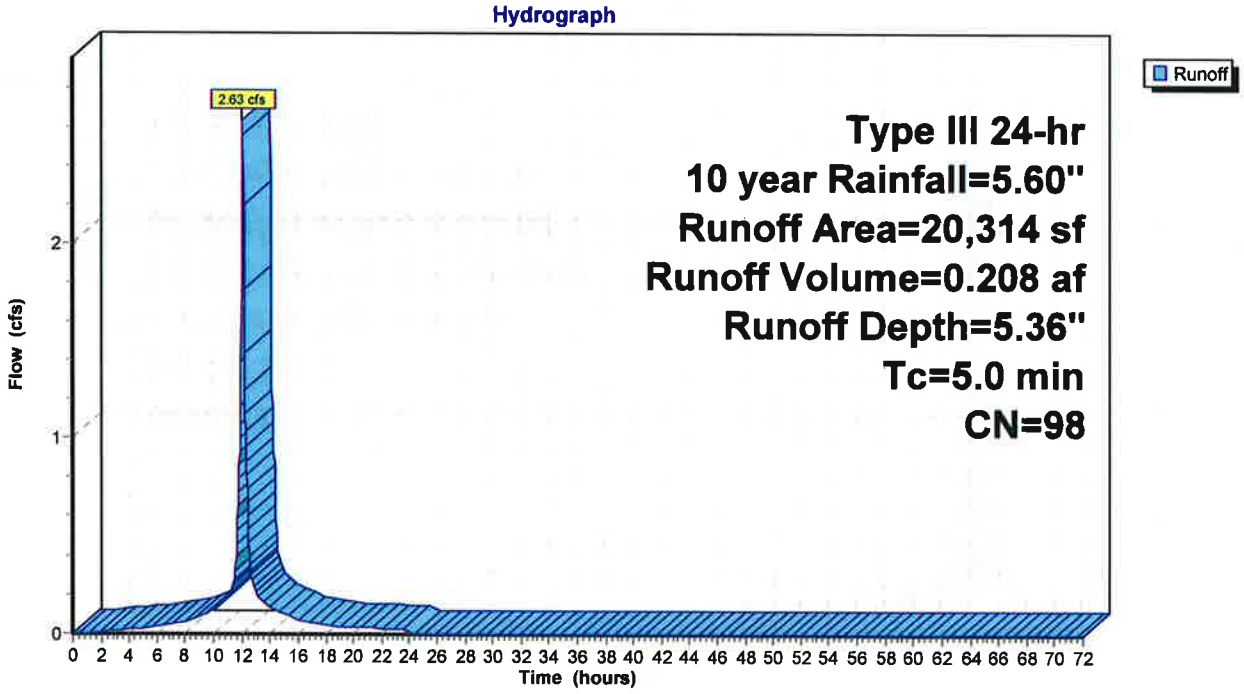
Runoff = 2.63 cfs @ 12.07 hrs, Volume= 0.208 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
20,314	98	Roofs, HSG A
20,314		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment PS4b: Lot 4 Rooftop - Treated Area



Summary for Subcatchment PS4c:

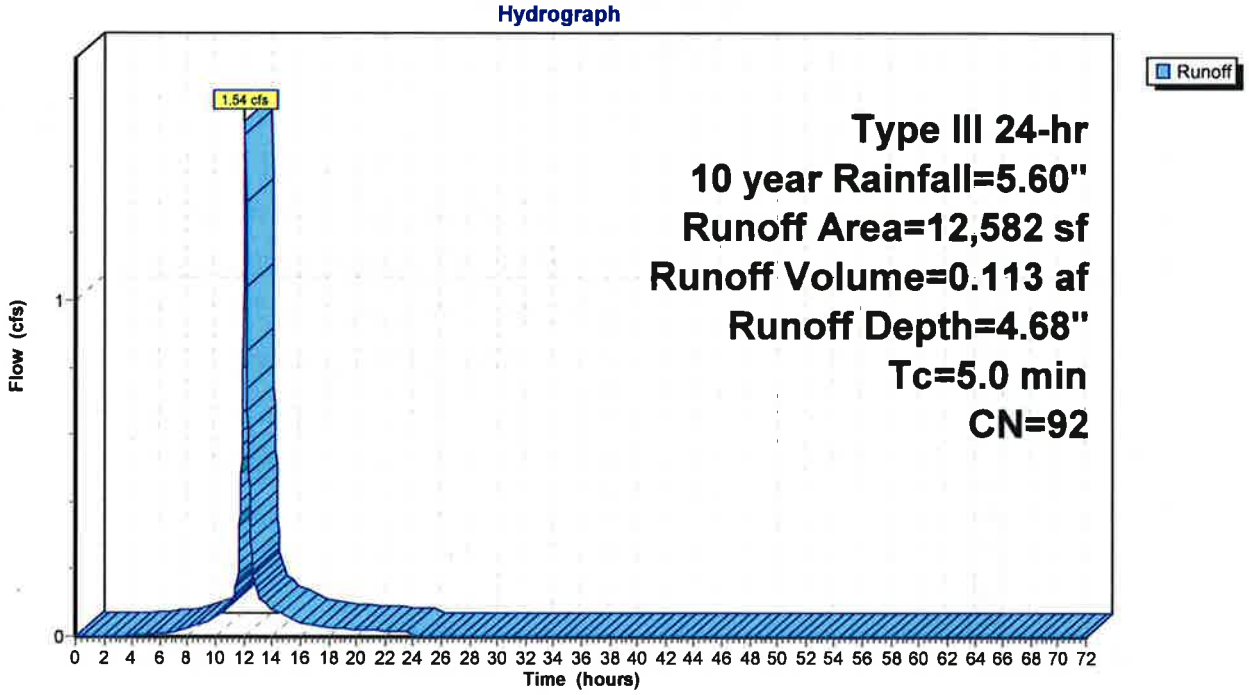
Runoff = 1.54 cfs @ 12.07 hrs, Volume= 0.113 af, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
6,553	98	Paved roads w/curbs & sewers, HSG A
4,679	98	Roofs, HSG A
1,350	39	>75% Grass cover, Good, HSG A
12,582	92	Weighted Average
1,350		10.73% Pervious Area
11,232		89.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4c:



Summary for Subcatchment PS4d:

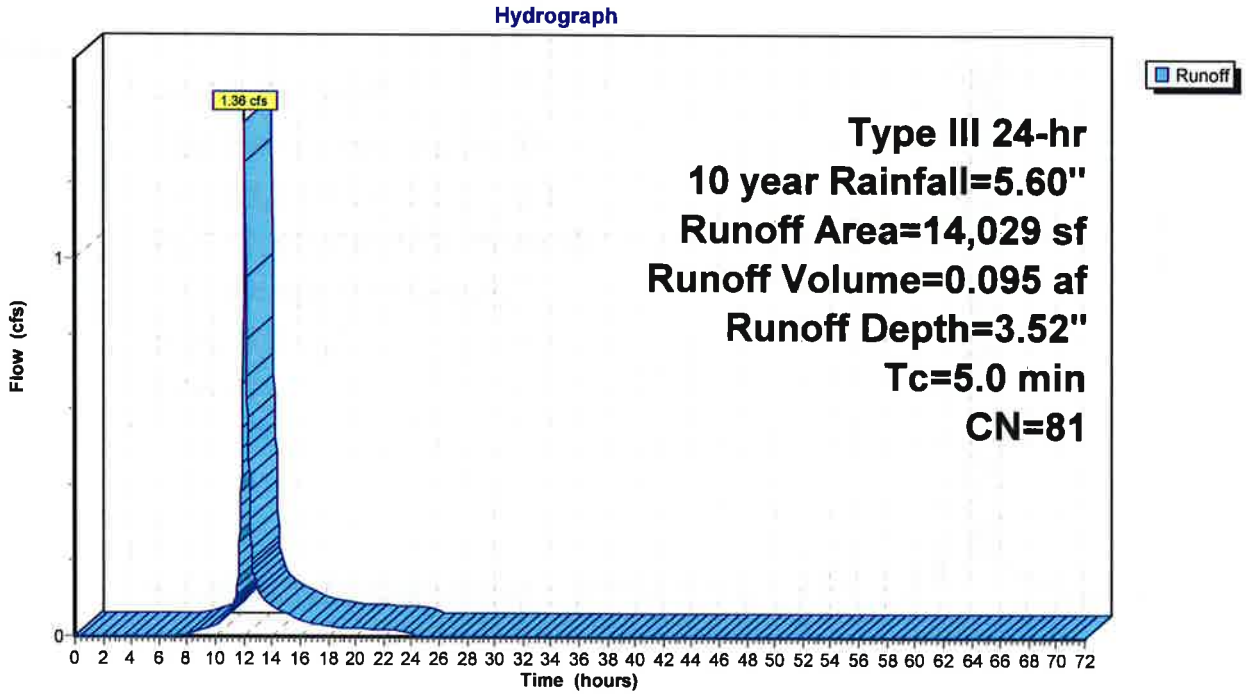
Runoff = 1.36 cfs @ 12.07 hrs, Volume= 0.095 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
6,695	98	Paved roads w/curbs & sewers, HSG A
4,086	39	>75% Grass cover, Good, HSG A
2,262	98	Roofs, HSG A
986	98	Roofs, HSG A
14,029	81	Weighted Average
4,086		29.13% Pervious Area
9,943		70.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4d:



Summary for Subcatchment PS4e:

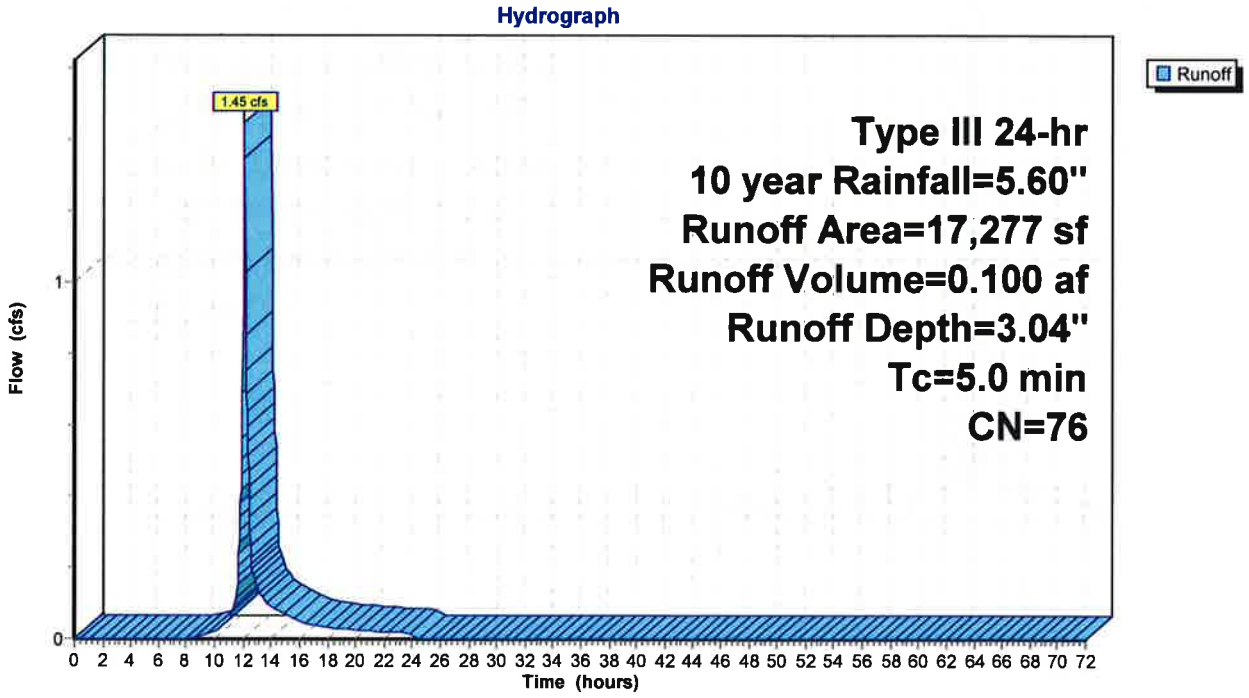
Runoff = 1.45 cfs @ 12.08 hrs, Volume= 0.100 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
9,743	98	Paved roads w/curbs & sewers, HSG A
961	98	Roofs, HSG A
2,279	39	>75% Grass cover, Good, HSG A
1,831	39	>75% Grass cover, Good, HSG A
2,463	39	>75% Grass cover, Good, HSG A
17,277	76	Weighted Average
6,573		38.04% Pervious Area
10,704		61.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4e:



Summary for Subcatchment PS4f:

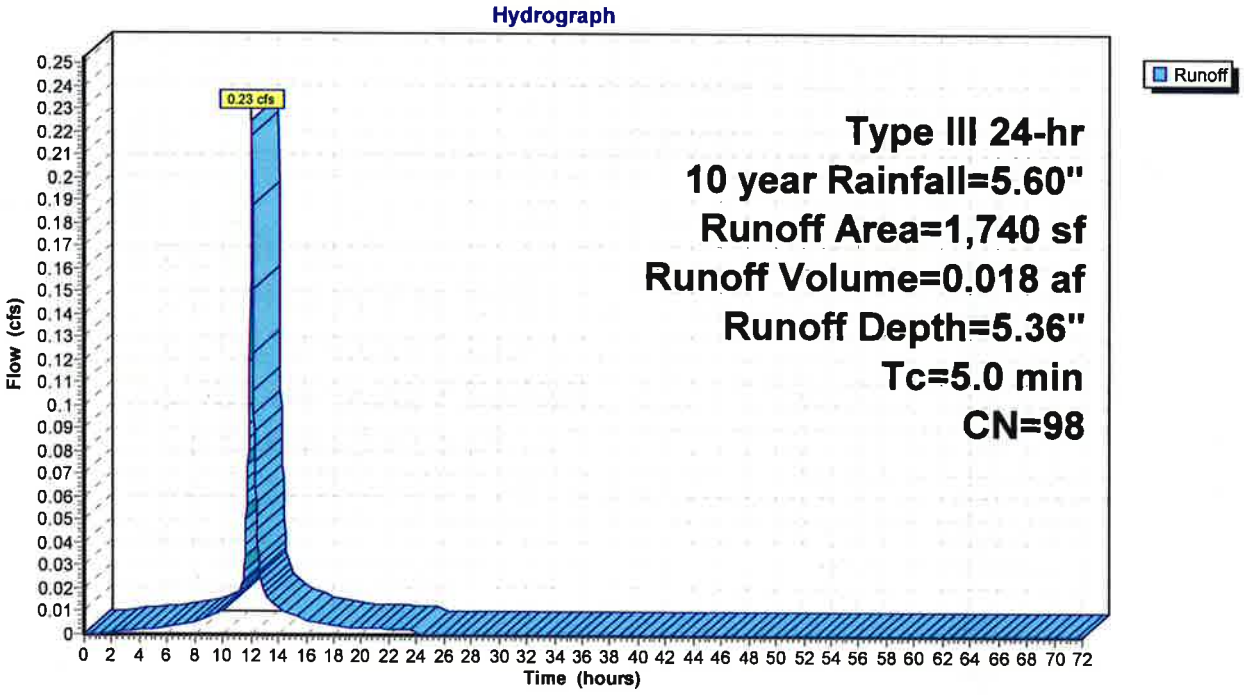
Runoff = 0.23 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
870	98	Paved roads w/curbs & sewers, HSG A
870	98	Roofs, HSG A
1,740	98	Weighted Average
1,740		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4f:



Summary for Subcatchment PS5:

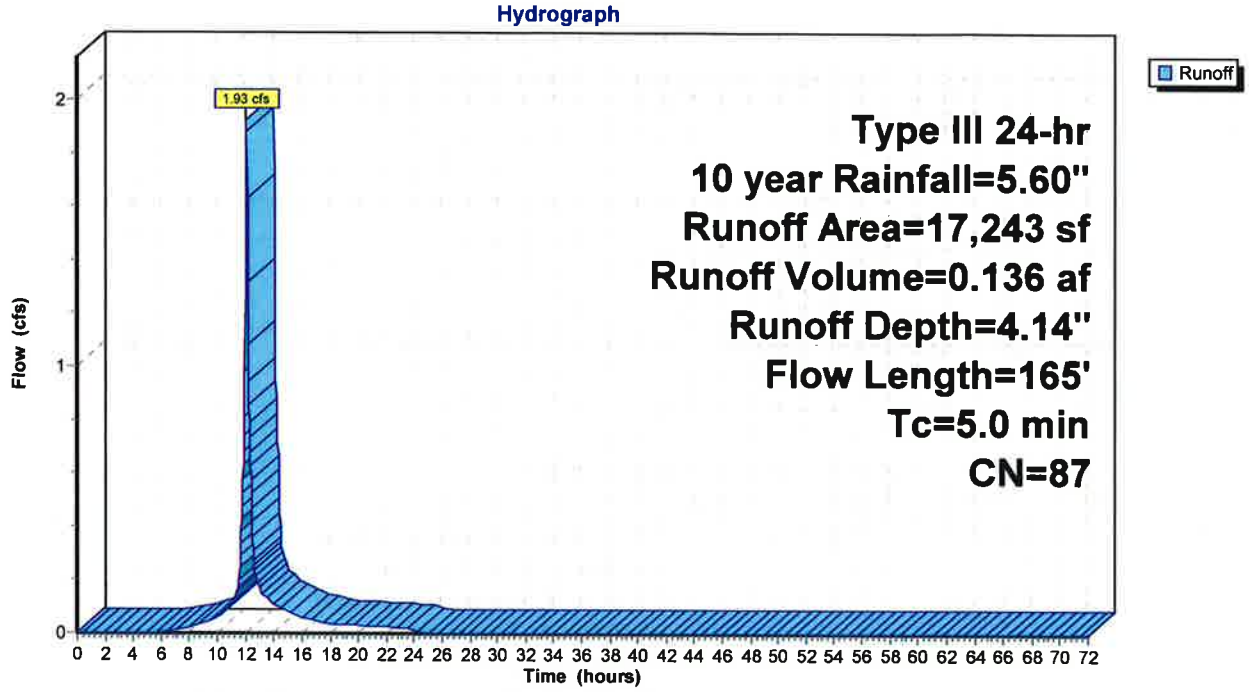
Runoff = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS5:



Summary for Subcatchment PS6:

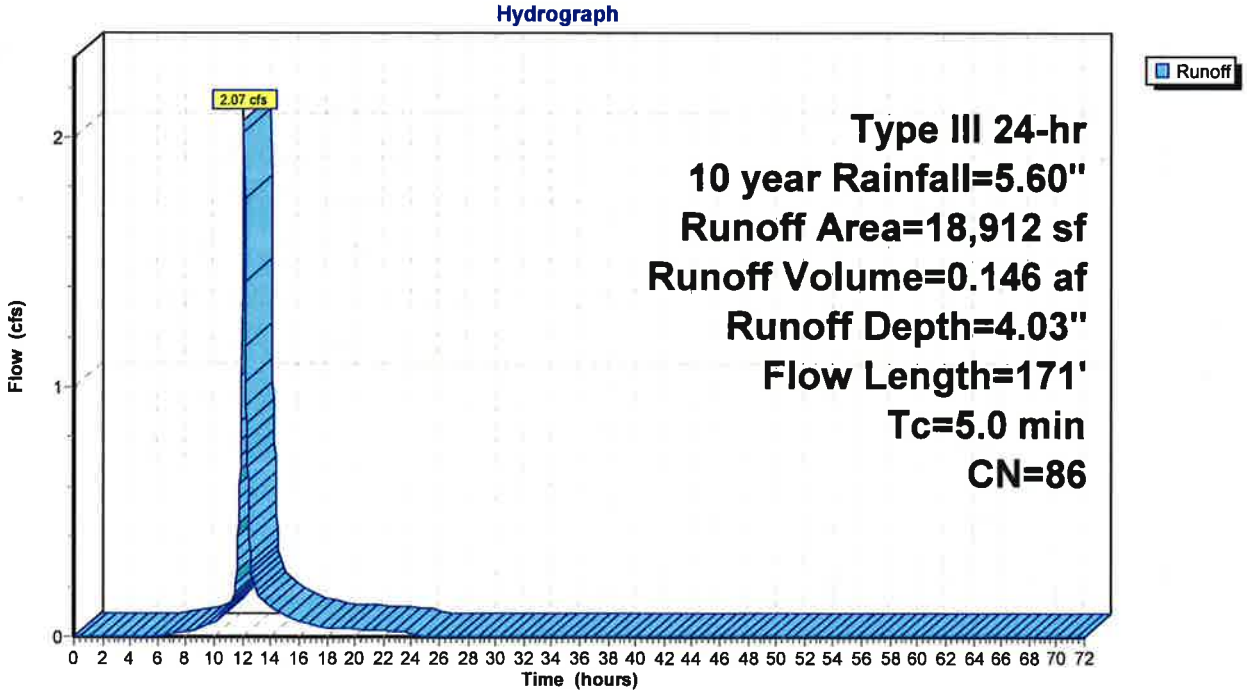
Runoff = 2.07 cfs @ 12.07 hrs, Volume= 0.146 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS6:



Summary for Subcatchment PS7:

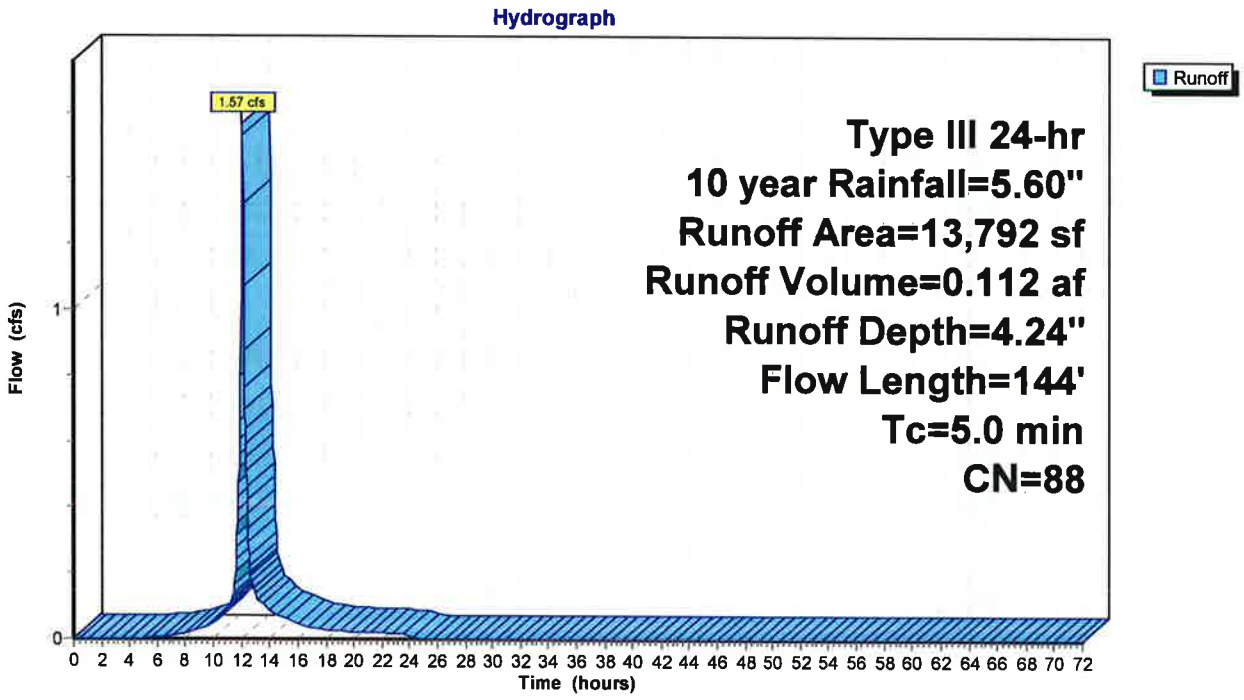
Runoff = 1.57 cfs @ 12.07 hrs, Volume= 0.112 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS7:



Summary for Subcatchment PS8:

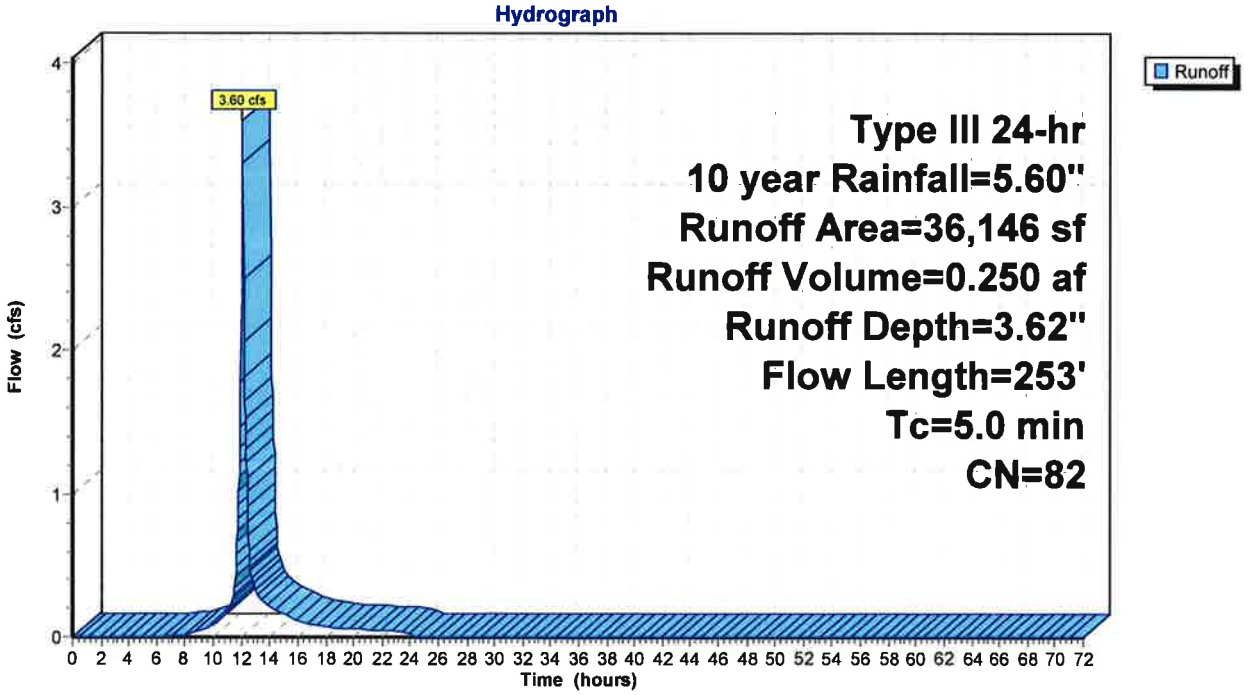
Runoff = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	17,049	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	6,585	98	Gravel surface, HSG A
	36,146	82	Weighted Average
	8,598		23.79% Pervious Area
	27,548		76.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS8:



Summary for Subcatchment PS9:

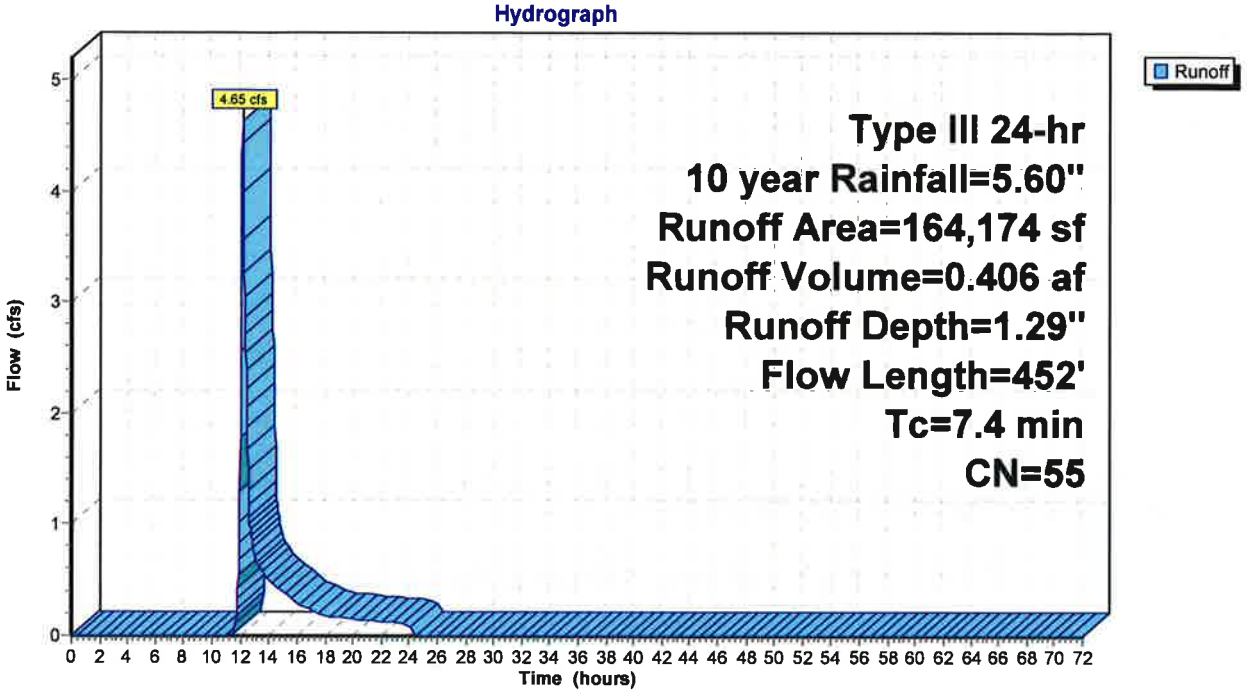
Runoff = 4.65 cfs @ 12.12 hrs, Volume= 0.406 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	1,171	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	49,609	98	Gravel surface, HSG A
	164,174	55	Weighted Average
	105,773		64.43% Pervious Area
	58,401		35.57% Impervious Area
	234		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment PS9:



Summary for Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin

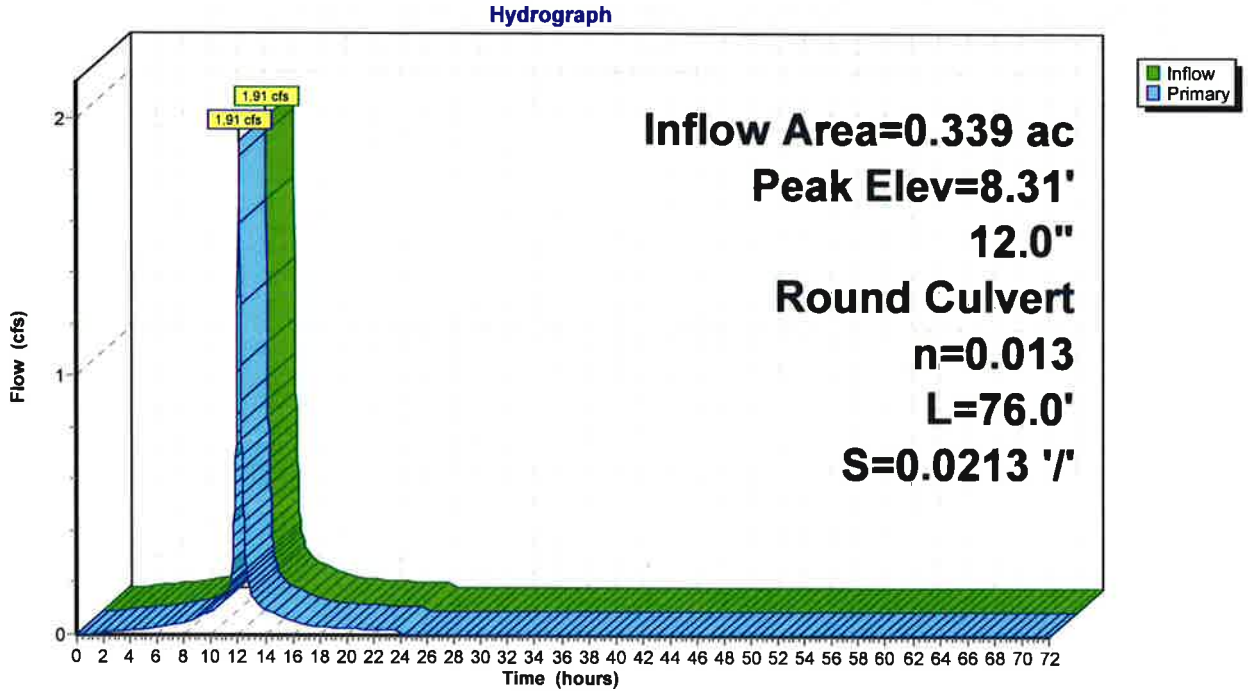
Inflow Area = 0.339 ac,100.00% Impervious, Inflow Depth = 5.36" for 10 year event
Inflow = 1.91 cfs @ 12.07 hrs, Volume= 0.151 af
Outflow = 1.91 cfs @ 12.07 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.07 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.31' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 5.88' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.88 cfs @ 12.07 hrs HW=8.30' TW=7.48' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 1.88 cfs @ 3.83 fps)

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin



Summary for Pond 2P: CB 1241

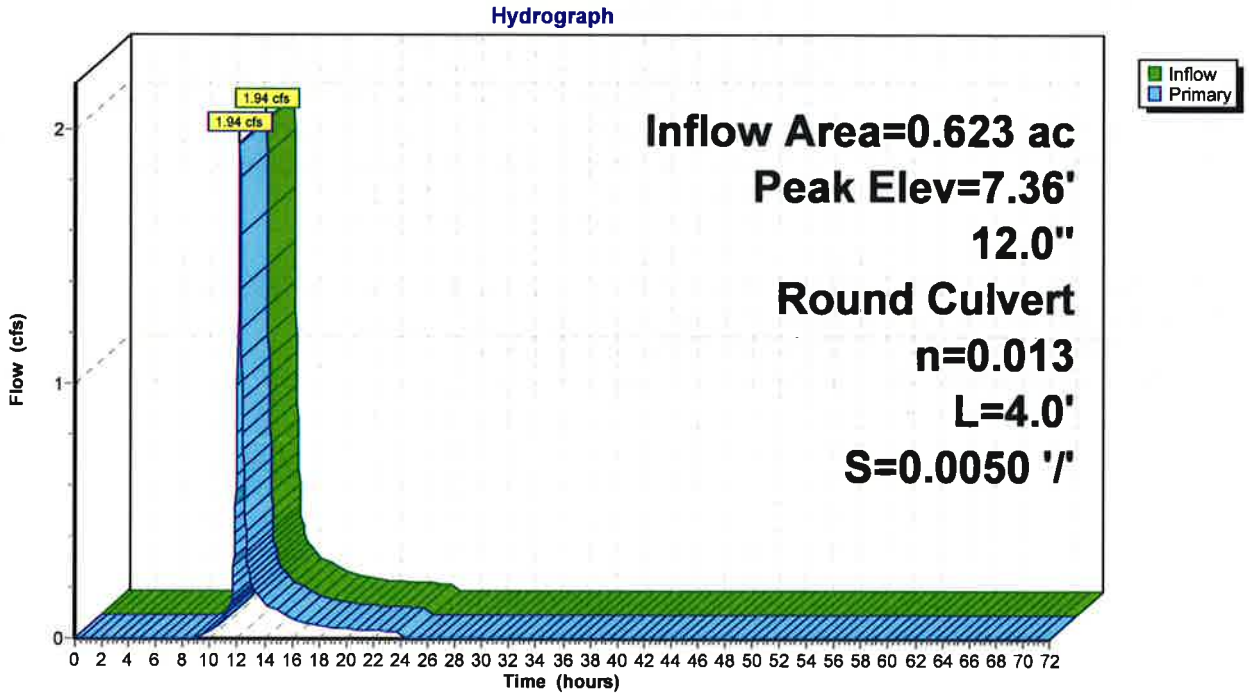
Inflow Area = 0.623 ac, 47.00% Impervious, Inflow Depth = 2.85" for 10 year event
Inflow = 1.94 cfs @ 12.11 hrs, Volume= 0.148 af
Outflow = 1.94 cfs @ 12.11 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.11 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.36' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.87'	**12.0" Round Culvert** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.87' / 4.85' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.93 cfs @ 12.11 hrs HW=7.32' TW=6.90' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.93 cfs @ 2.46 fps)

Pond 2P: CB 1241



Summary for Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)

Inflow	=	0.56 cfs @	11.66 hrs, Volume=	0.300 af
Outflow	=	0.55 cfs @	12.95 hrs, Volume=	0.291 af, Atten= 2%, Lag= 77.1 min
Primary	=	0.55 cfs @	12.95 hrs, Volume=	0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.10' @ 12.10 hrs Surf.Area= 0.005 ac Storage= 0.015 af

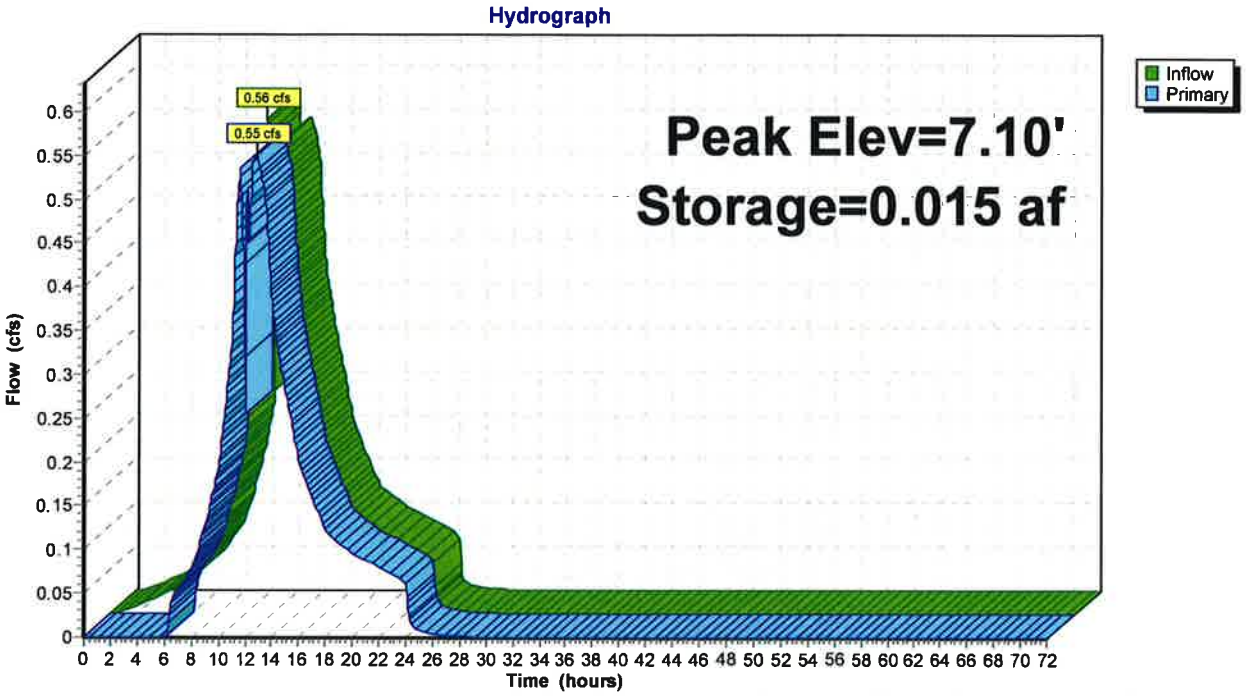
Plug-Flow detention time= 41.1 min calculated for 0.291 af (97% of inflow)
Center-of-Mass det. time= 23.2 min (850.2 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.81'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.81'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.81'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.81' / 5.80' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.81'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.50'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.55 cfs @ 12.95 hrs HW=6.41' TW=6.21' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.55 cfs @ 1.68 fps)
↑—**2=Orifice/Grate** (Passes 0.55 cfs of 0.74 cfs potential flow)
—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)



Summary for Pond 6P: Roofline Dripe Edge Filter Strip

Inflow Area = 0.466 ac,100.00% Impervious, Inflow Depth = 5.36" for 10 year event
Inflow = 2.63 cfs @ 12.07 hrs, Volume= 0.208 af
Outflow = 2.61 cfs @ 12.08 hrs, Volume= 0.208 af, Atten= 1%, Lag= 0.6 min
Primary = 2.61 cfs @ 12.08 hrs, Volume= 0.208 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.82' @ 12.08 hrs Surf.Area= 0.004 ac Storage= 0.002 af

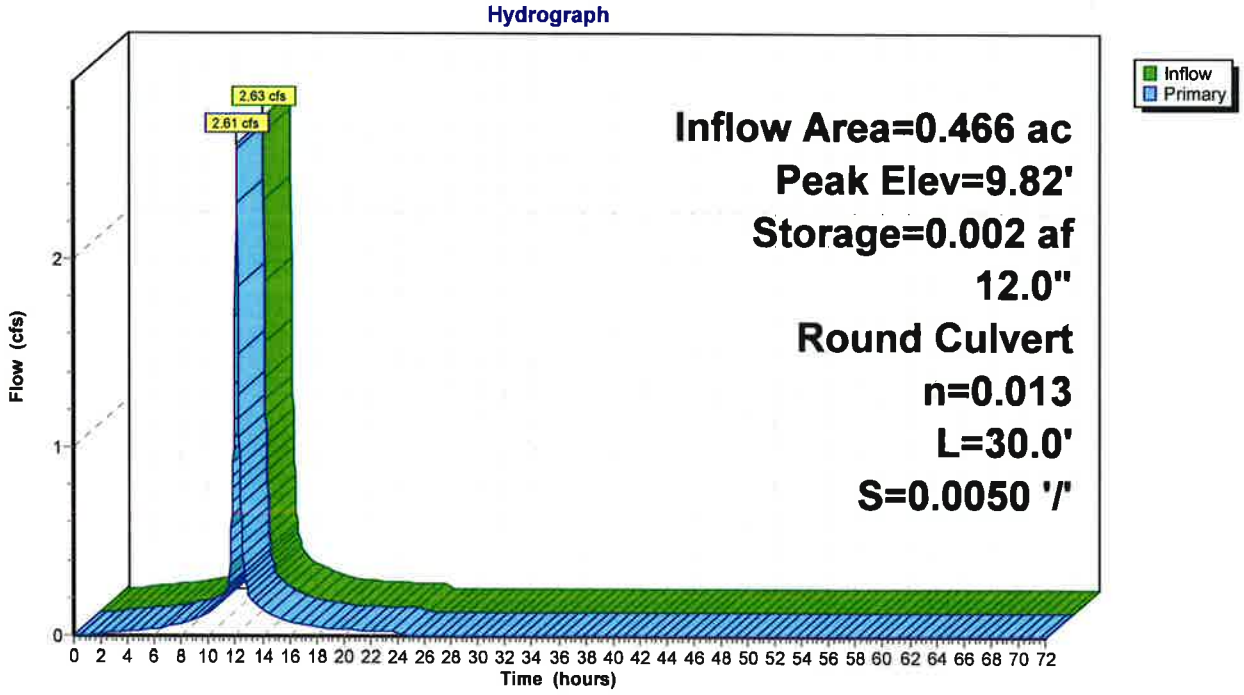
Plug-Flow detention time= 1.8 min calculated for 0.208 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (747.1 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	8.65'	0.007 af	**2.00'W x 93.00'L x 4.35'H Prismatoid** 0.019 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	8.65'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.65' / 8.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.57 cfs @ 12.08 hrs HW=9.81' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.57 cfs @ 3.56 fps)

Pond 6P: Roofline Dripe Edge Filter Strip



Summary for Pond 10P: PCB 17

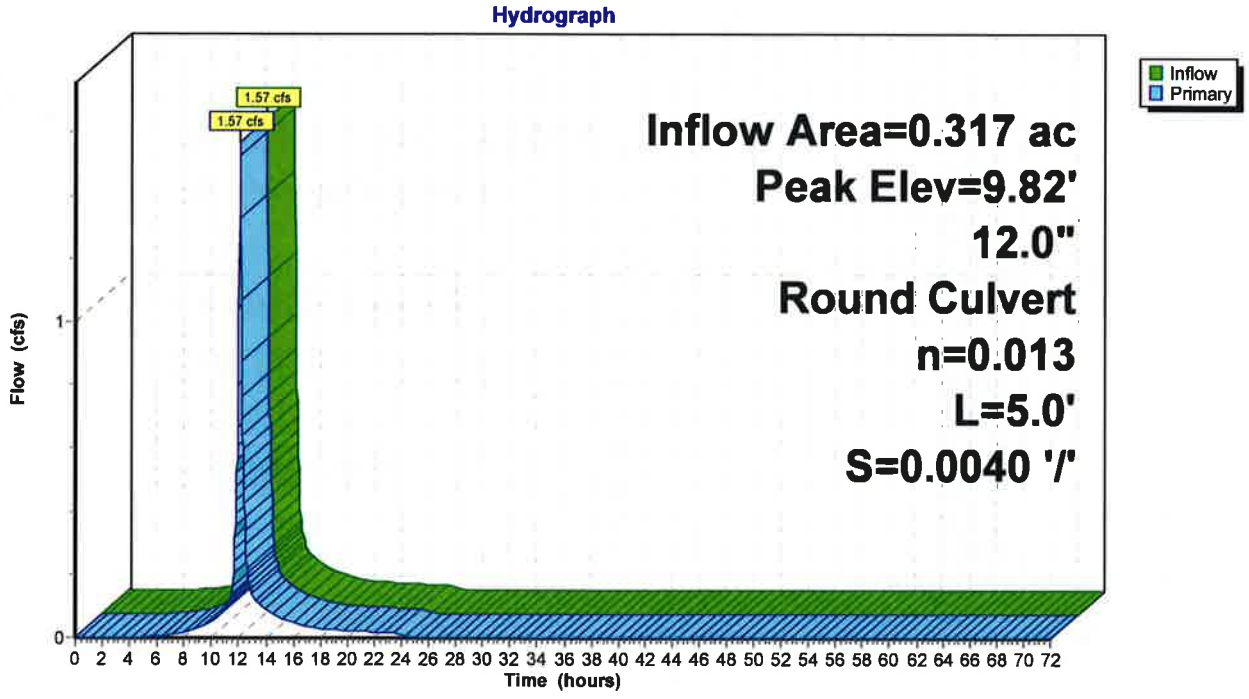
Inflow Area = 0.317 ac, 86.00% Impervious, Inflow Depth = 4.24" for 10 year event
Inflow = 1.57 cfs @ 12.07 hrs, Volume= 0.112 af
Outflow = 1.57 cfs @ 12.07 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min
Primary = 1.57 cfs @ 12.07 hrs, Volume= 0.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.82' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.56'	**12.0" Round Culvert** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.56' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.54 cfs @ 12.07 hrs HW=9.77' TW=9.51' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.54 cfs @ 1.96 fps)

Pond 10P: PCB 17



Summary for Pond 15P: CB 1243

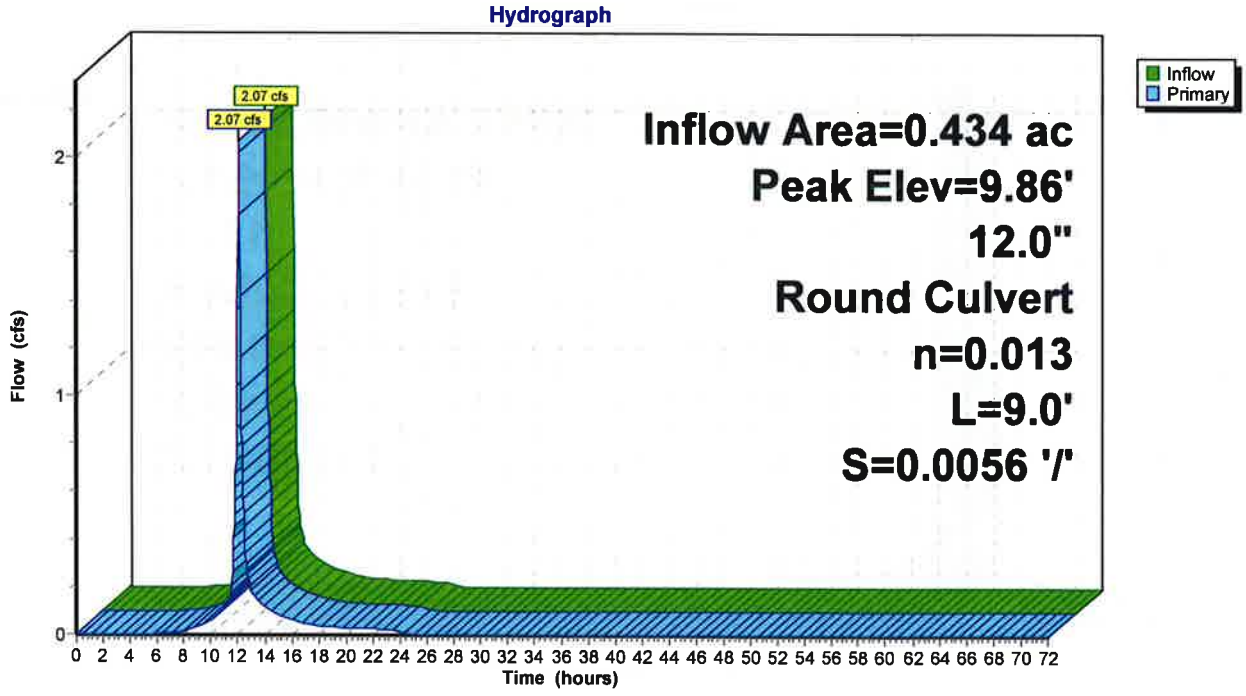
Inflow Area = 0.434 ac, 81.61% Impervious, Inflow Depth = 4.03" for 10 year event
Inflow = 2.07 cfs @ 12.07 hrs, Volume= 0.146 af
Outflow = 2.07 cfs @ 12.07 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min
Primary = 2.07 cfs @ 12.07 hrs, Volume= 0.146 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.86' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.21'	**12.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.21' / 7.16' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.04 cfs @ 12.07 hrs HW=9.82' TW=9.35' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 2.04 cfs @ 2.59 fps)

Pond 15P: CB 1243



Summary for Pond 16P: CB 1242

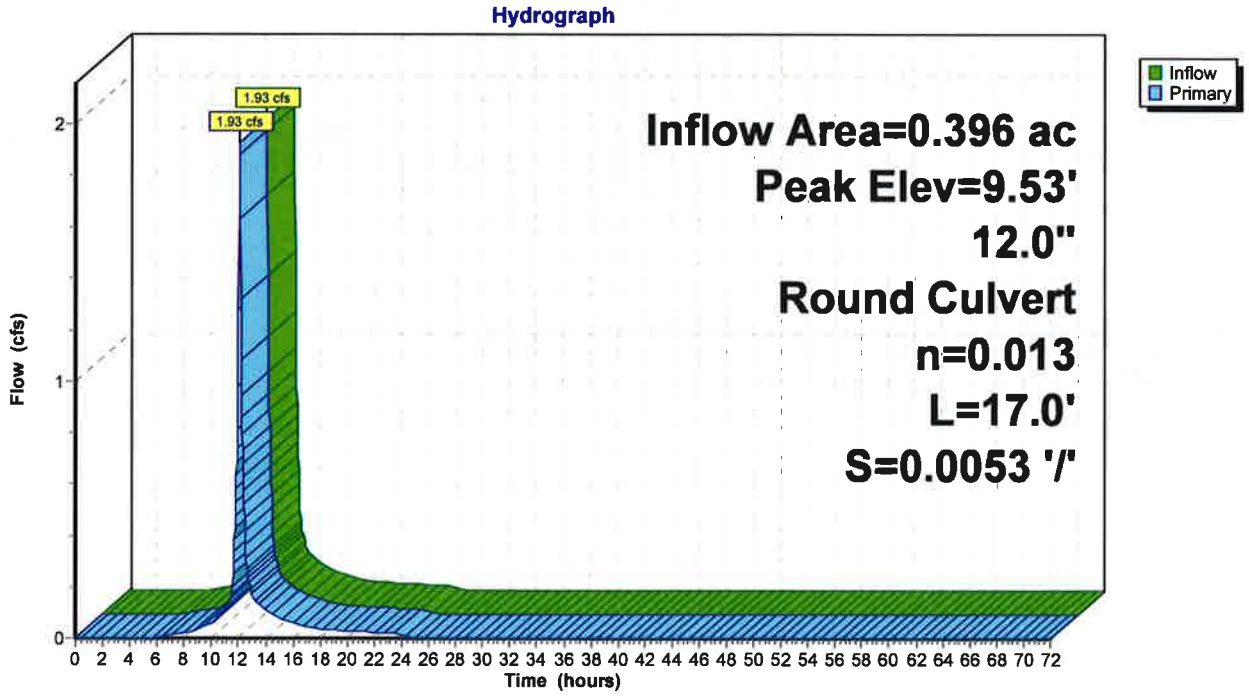
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 4.14" for 10 year event
Inflow = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af
Outflow = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.93 cfs @ 12.07 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.53' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.79'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.79' / 6.70' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.89 cfs @ 12.07 hrs HW=9.48' TW=9.08' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.89 cfs @ 2.41 fps)

Pond 16P: CB 1242



Summary for Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)

Inflow	=	0.82 cfs @	12.05 hrs, Volume=	0.348 af
Outflow	=	0.70 cfs @	12.14 hrs, Volume=	0.340 af, Atten= 15%, Lag= 5.1 min
Primary	=	0.70 cfs @	12.14 hrs, Volume=	0.340 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.47' @ 12.10 hrs Surf.Area= 0.005 ac Storage= 0.018 af

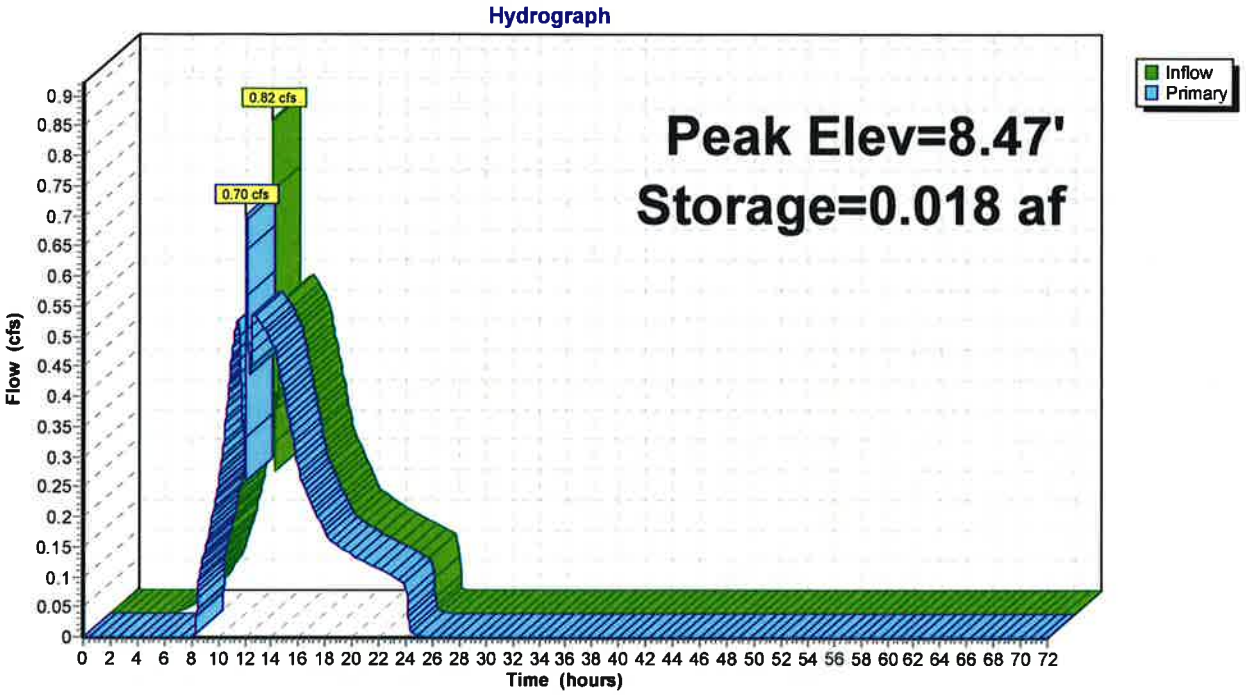
Plug-Flow detention time= 30.9 min calculated for 0.340 af (98% of inflow)
Center-of-Mass det. time= 16.5 min (879.7 - 863.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1.58'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	1.58'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	6.58'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.58' / 6.57' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	3.58'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	9.25'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.71 cfs @ 12.14 hrs HW=8.33' TW=8.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.71 cfs @ 2.02 fps)
↑—**2=Orifice/Grate** (Passes 0.71 cfs of 0.89 cfs potential flow)
—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)



Summary for Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)

Inflow	=	0.87 cfs @	12.07 hrs, Volume=	0.346 af
Outflow	=	0.80 cfs @	12.17 hrs, Volume=	0.337 af, Atten= 8%, Lag= 6.3 min
Primary	=	0.80 cfs @	12.17 hrs, Volume=	0.337 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.08' @ 12.12 hrs Surf.Area= 0.005 ac Storage= 0.022 af

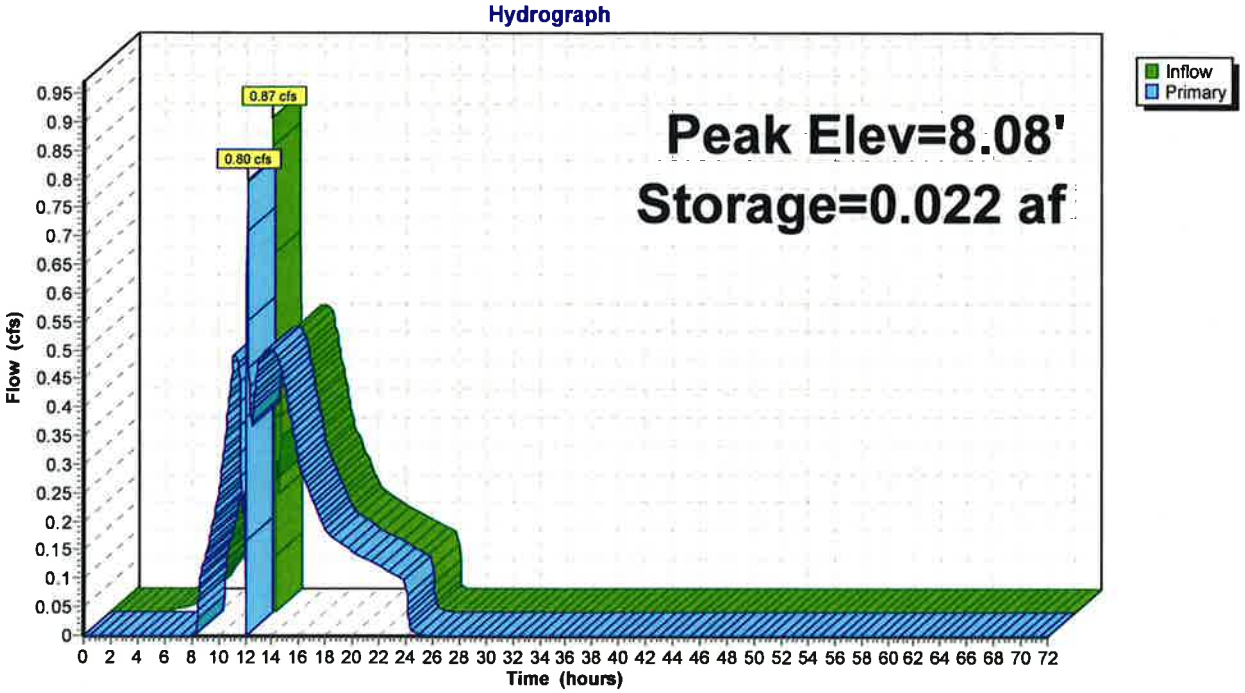
Plug-Flow detention time= 31.7 min calculated for 0.337 af (98% of inflow)
Center-of-Mass det. time= 17.5 min (895.1 - 877.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.32'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.32'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.32'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.32' / 5.31' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.32'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.00'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.80 cfs @ 12.17 hrs HW=7.78' TW=7.42' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.80 cfs @ 2.28 fps)
↑—**2=Orifice/Grate** (Passes 0.80 cfs of 1.01 cfs potential flow)
—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)



Summary for Pond 1264: Separated Drain

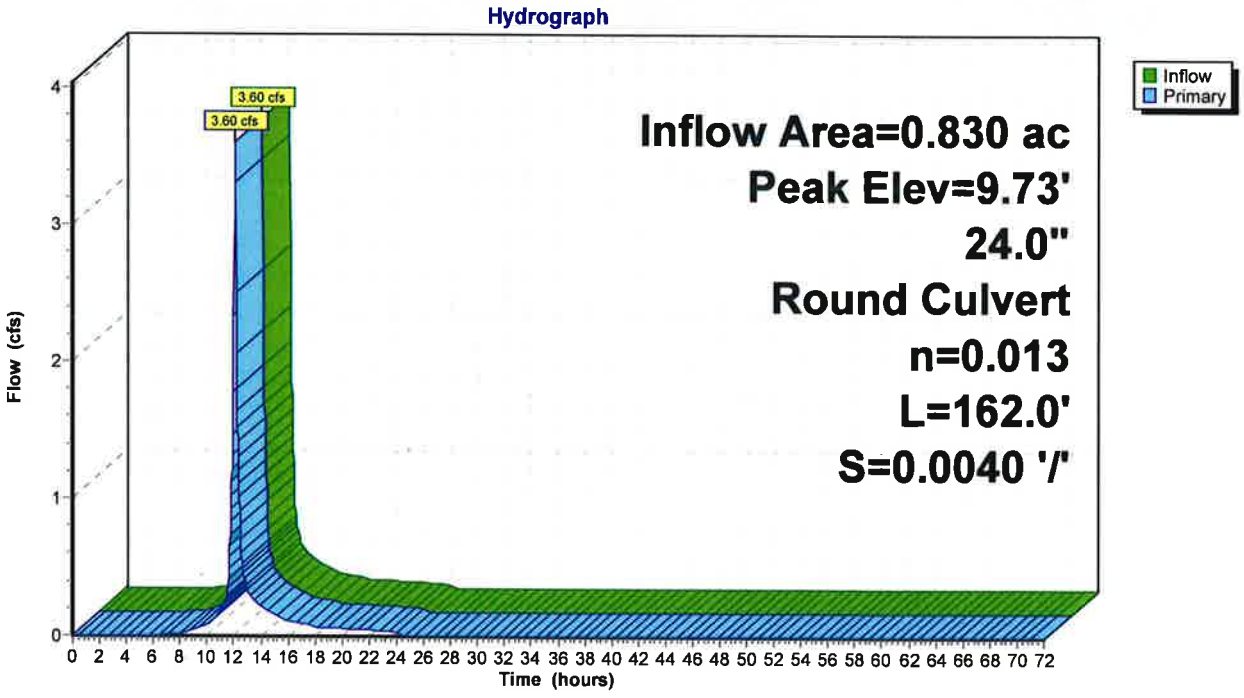
Inflow Area = 0.830 ac, 76.21% Impervious, Inflow Depth = 3.62" for 10 year event
Inflow = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af
Outflow = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.07 hrs, Volume= 0.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.73' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**24.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.19' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.52 cfs @ 12.07 hrs HW=9.70' TW=9.51' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.52 cfs @ 1.92 fps)

Pond 1264: Separated Drain



Summary for Pond CB 1237:

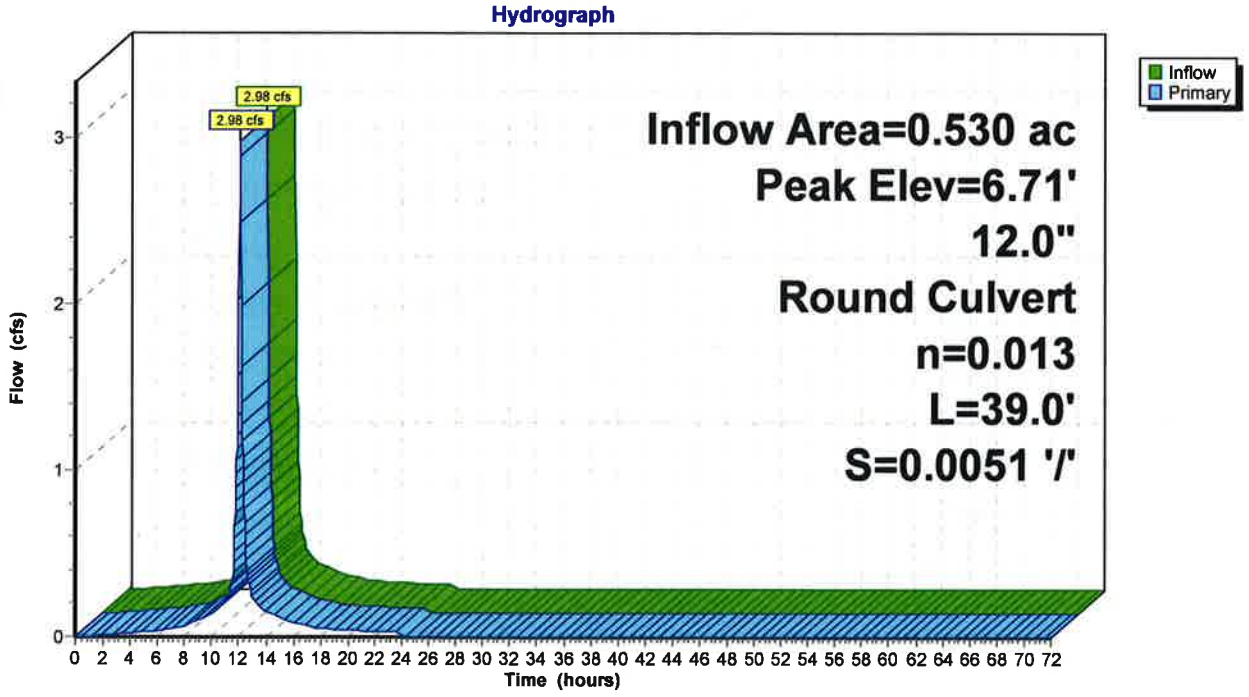
Inflow Area = 0.530 ac, 98.87% Impervious, Inflow Depth = 5.25" for 10 year event
Inflow = 2.98 cfs @ 12.07 hrs, Volume= 0.232 af
Outflow = 2.98 cfs @ 12.07 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.07 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.71' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.93 cfs @ 12.07 hrs HW=6.68' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 2.93 cfs @ 3.72 fps)

Pond CB 1237:



Summary for Pond CB 1239: Separated Drain

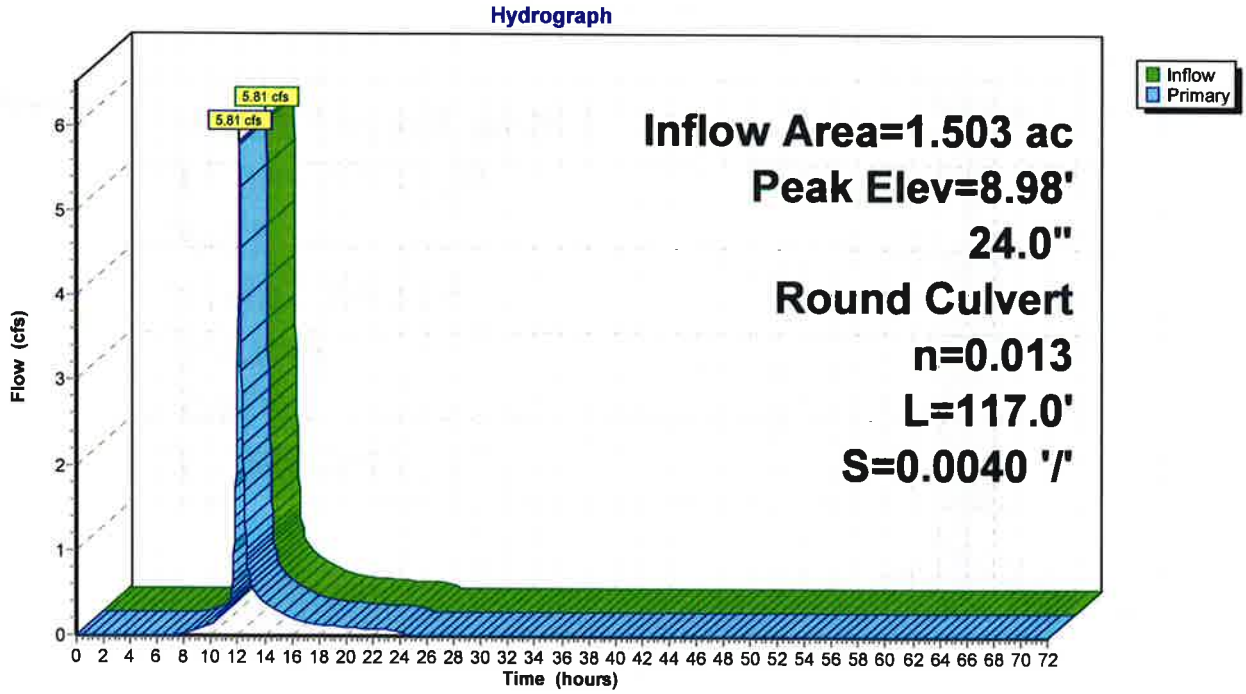
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 3.52" for 10 year event
Inflow = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af
Outflow = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af, Atten= 0%, Lag= 0.0 min
Primary = 5.81 cfs @ 12.11 hrs, Volume= 0.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.98' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.26'	**24.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.26' / 5.79' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.80 cfs @ 12.11 hrs HW=8.90' TW=8.66' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 5.80 cfs @ 1.85 fps)

Pond CB 1239: Separated Drain



Summary for Pond CB 1240: Separated Drain

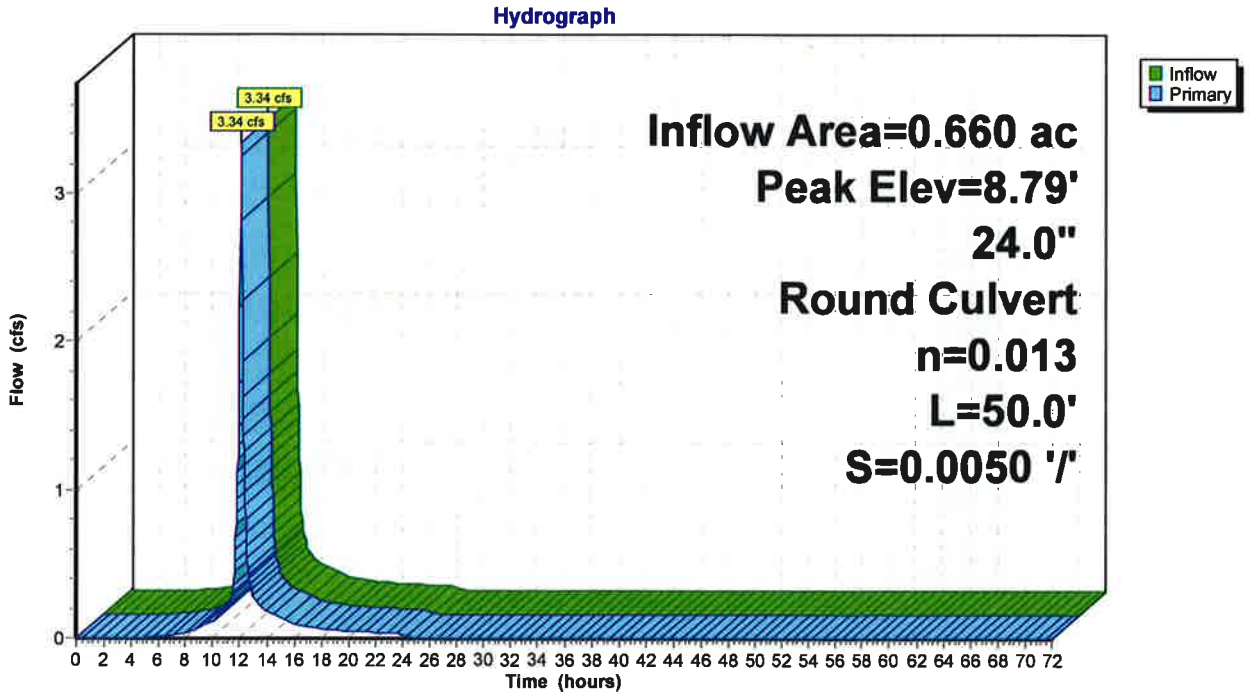
Inflow Area = 0.660 ac, 83.35% Impervious, Inflow Depth = 4.35" for 10 year event
Inflow = 3.34 cfs @ 12.07 hrs, Volume= 0.239 af
Outflow = 3.34 cfs @ 12.07 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 3.34 cfs @ 12.07 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.79' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.04' / 5.79' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.39 cfs @ 12.07 hrs HW=8.57' TW=8.52' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.39 cfs @ 1.08 fps)

Pond CB 1240: Separated Drain



Summary for Pond CB 1244: PDMH 6

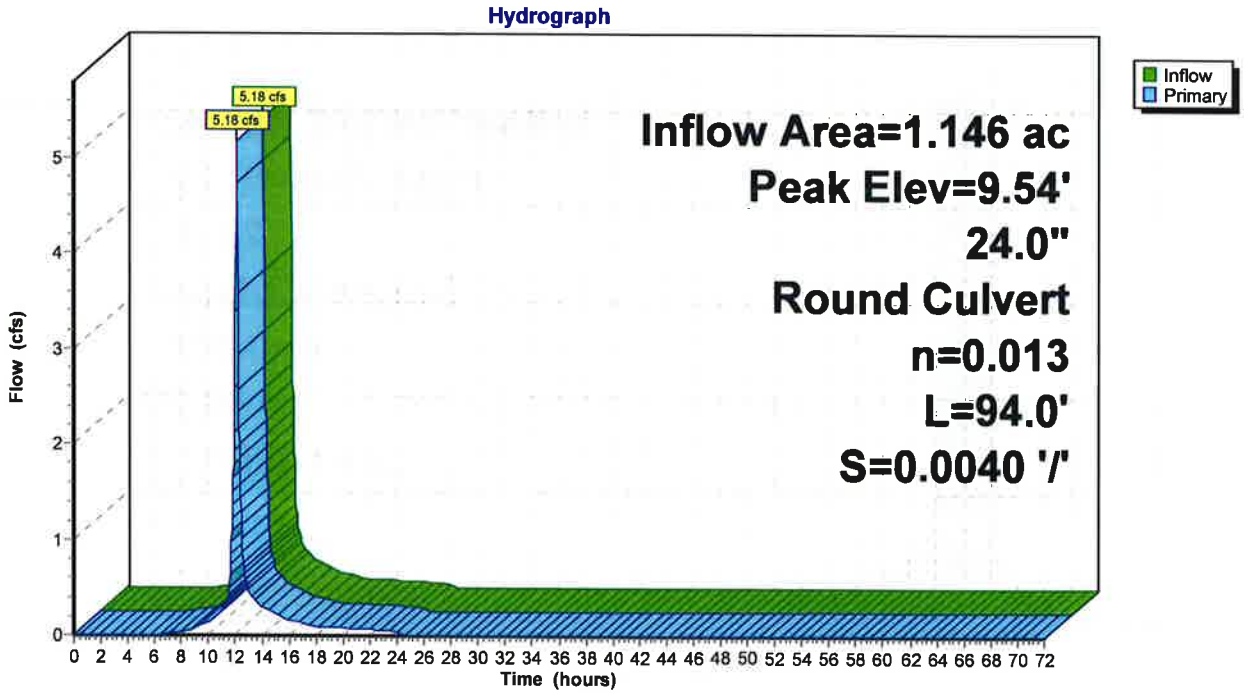
Inflow Area = 1.146 ac, 78.92% Impervious, Inflow Depth = 3.79" for 10 year event
Inflow = 5.18 cfs @ 12.07 hrs, Volume= 0.362 af
Outflow = 5.18 cfs @ 12.07 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min
Primary = 5.18 cfs @ 12.07 hrs, Volume= 0.362 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.54'	**24.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.54' / 7.16' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.10 cfs @ 12.07 hrs HW=9.51' TW=9.35' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 5.10 cfs @ 2.05 fps)

Pond CB 1244: PDMH 6



Summary for Pond OCS #1: PCB 16 Forebay w/Catch Basin

Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 3.04" for 10 year event
Inflow = 1.45 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 0.53 cfs @ 12.34 hrs, Volume= 0.100 af, Atten= 63%, Lag= 16.1 min
Primary = 0.53 cfs @ 12.34 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 10.19' @ 12.34 hrs Surf.Area= 1,665 sf Storage= 1,052 cf

Plug-Flow detention time= 38.1 min calculated for 0.100 af (100% of inflow)
Center-of-Mass det. time= 37.8 min (864.0 - 826.2)

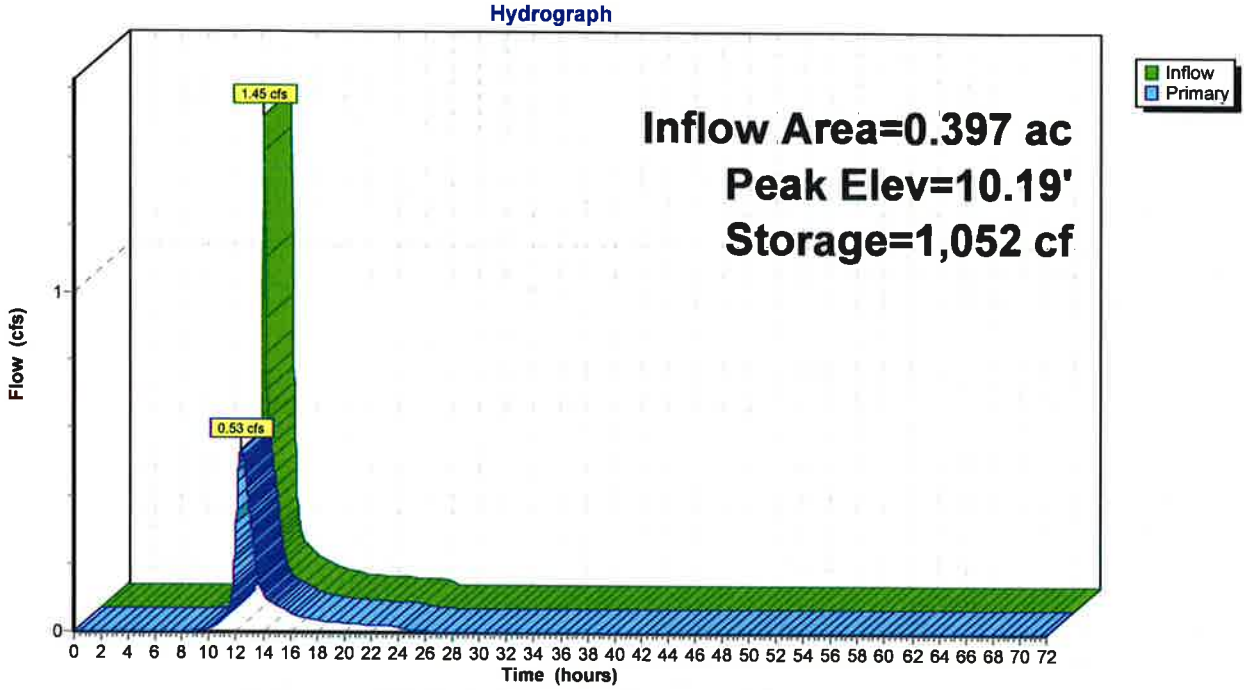
Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	2,543 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.50	1,375	133.0	0	0	1,375
11.00	2,038	161.7	2,543	2,543	2,083

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.25' / 8.19' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.50'	**3.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 12.34 hrs HW=10.19' TW=8.65' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.53 cfs of 4.54 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 3.63 fps)
3=Orifice/Grate (Controls 0.00 cfs)

Pond OCS #1: PCB 16 Forebay w/Catch Basin



Summary for Pond PDMH 1: Separated Drain

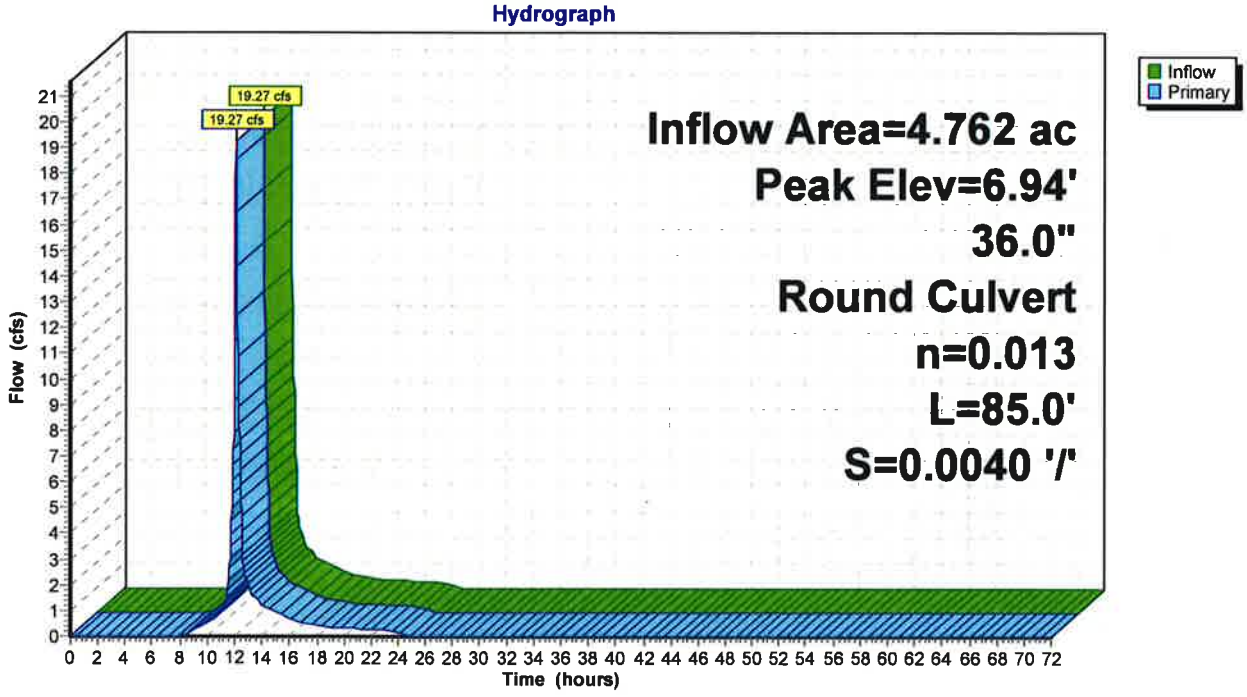
Inflow Area = 4.762 ac, 71.85% Impervious, Inflow Depth = 3.67" for 10 year event
Inflow = 19.27 cfs @ 12.10 hrs, Volume= 1.456 af
Outflow = 19.27 cfs @ 12.10 hrs, Volume= 1.456 af, Atten= 0%, Lag= 0.0 min
Primary = 19.27 cfs @ 12.10 hrs, Volume= 1.456 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.94' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.85' / 4.51' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=19.13 cfs @ 12.10 hrs HW=6.93' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 19.13 cfs @ 5.14 fps)

Pond PDMH 1: Separated Drain



Summary for Pond PDMH 10: New Roadway Closed Drainage System

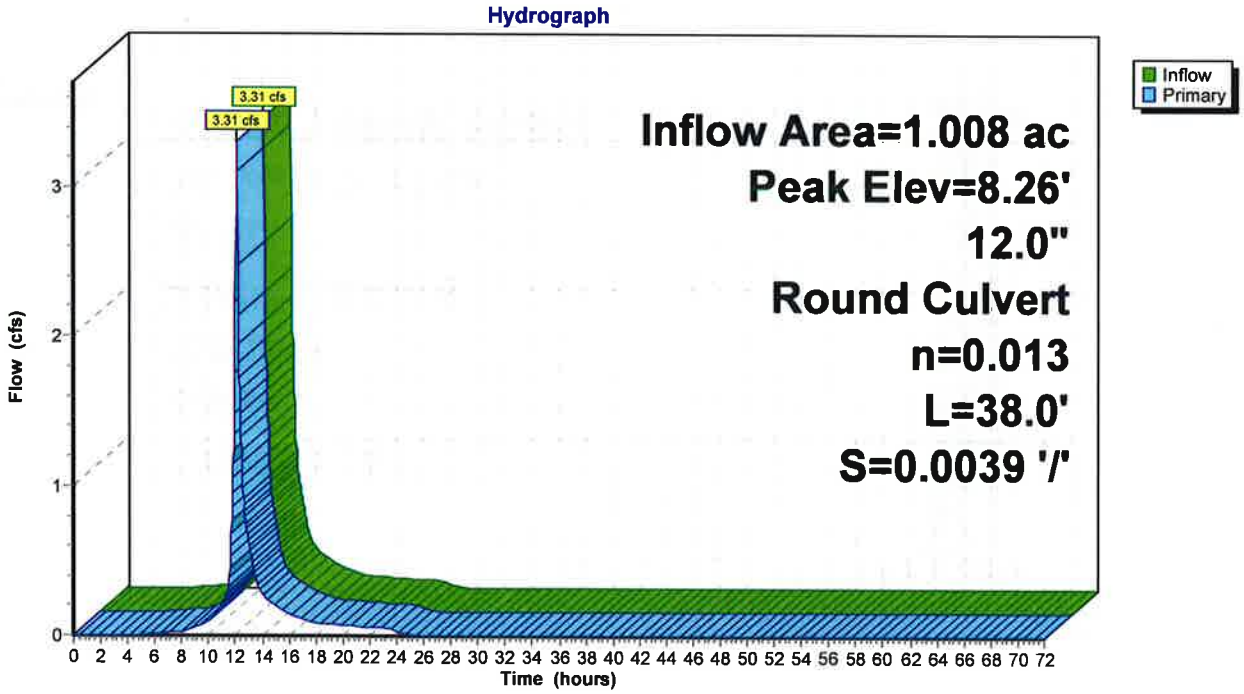
Inflow Area = 1.008 ac, 72.64% Impervious, Inflow Depth = 3.66" for 10 year event
Inflow = 3.31 cfs @ 12.08 hrs, Volume= 0.307 af
Outflow = 3.31 cfs @ 12.08 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.08 hrs, Volume= 0.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.26' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.03'	**12.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.03' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.26 cfs @ 12.08 hrs HW=8.23' TW=7.48' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 3.26 cfs @ 4.16 fps)

Pond PDMH 10: New Roadway Closed Drainage System



Summary for Pond PDMH 11:

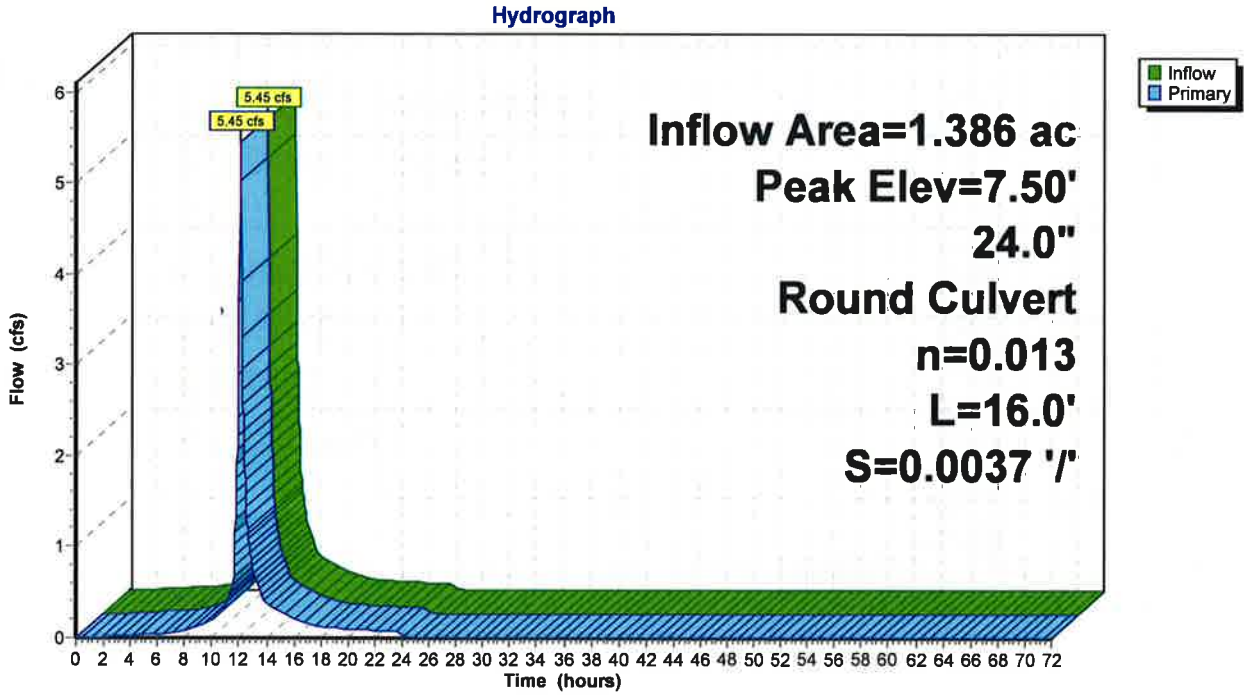
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 4.13" for 10 year event
Inflow = 5.45 cfs @ 12.07 hrs, Volume= 0.477 af
Outflow = 5.45 cfs @ 12.07 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min
Primary = 5.45 cfs @ 12.07 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.50' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.88'	**24.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.88' / 5.82' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.36 cfs @ 12.07 hrs HW=7.48' TW=7.21' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.36 cfs @ 1.99 fps)

Pond PDMH 11:



Summary for Pond PDMH 12:

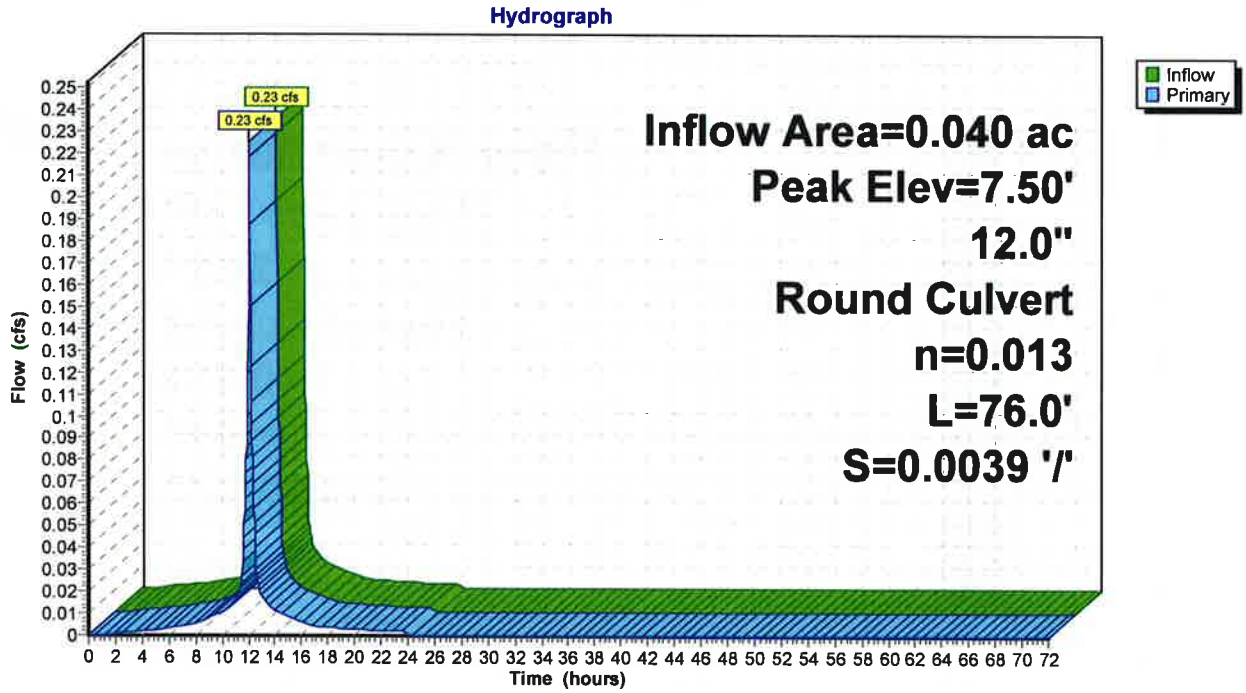
Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth = 5.36" for 10 year event
Inflow = 0.23 cfs @ 12.07 hrs, Volume= 0.018 af
Outflow = 0.23 cfs @ 12.07 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.07 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.50' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.18'	**12.0" Round 76** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.18' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.07 hrs HW=7.49' TW=7.48' (Dynamic Tailwater)
↑**1=76** (Inlet Controls 0.21 cfs @ 0.27 fps)

Pond PDMH 12:



Summary for Pond PDMH 13: New Roadway Closed Drainage System

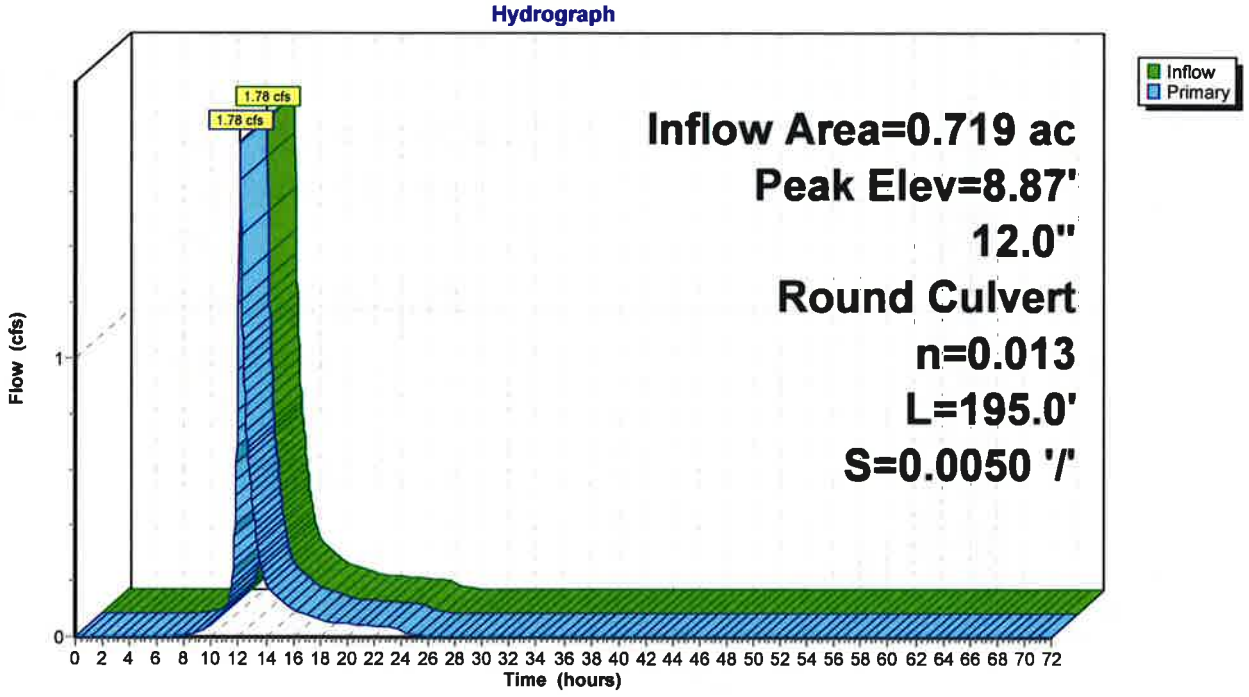
Inflow Area = 0.719 ac, 65.95% Impervious, Inflow Depth = 3.25" for 10 year event
Inflow = 1.78 cfs @ 12.08 hrs, Volume= 0.195 af
Outflow = 1.78 cfs @ 12.08 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.08 hrs, Volume= 0.195 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.87' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**12.0" Round Culvert** L= 195.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.00' / 6.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.77 cfs @ 12.08 hrs HW=8.83' TW=8.23' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.77 cfs @ 2.25 fps)

Pond PDMH 13: New Roadway Closed Drainage System



Summary for Pond PDMH 14:

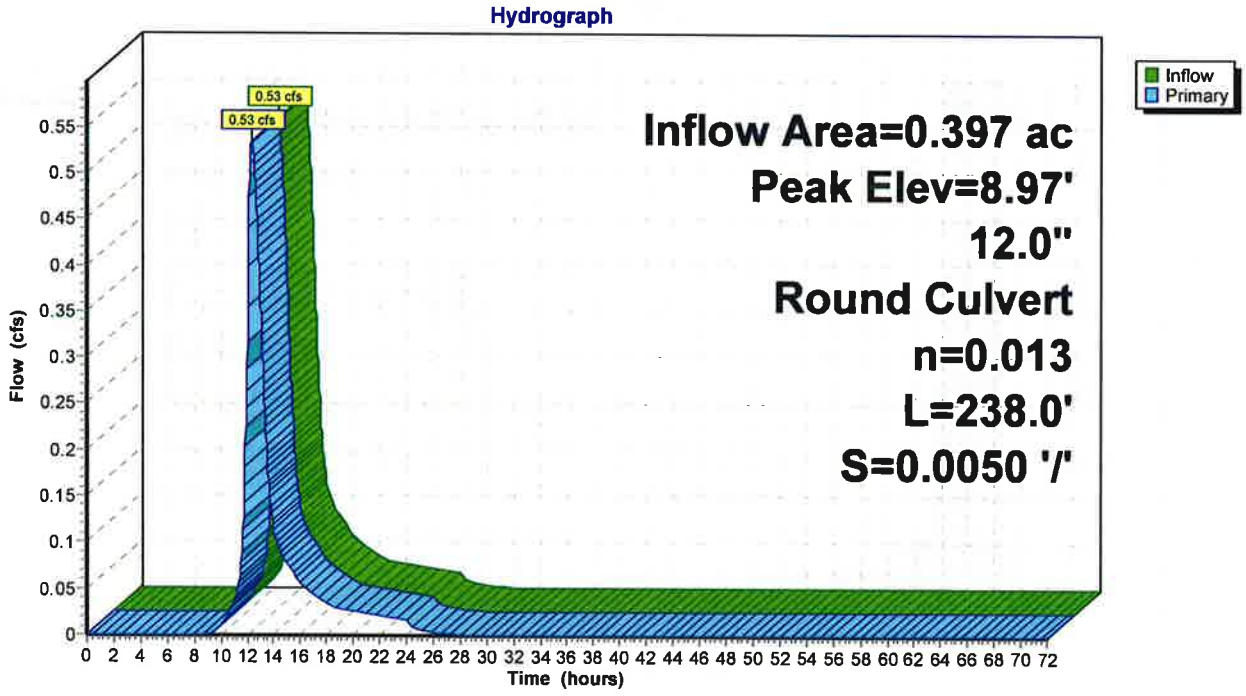
Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 3.04" for 10 year event
Inflow = 0.53 cfs @ 12.34 hrs, Volume= 0.100 af
Outflow = 0.53 cfs @ 12.34 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.34 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.97' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**12.0" Round Culvert** L= 238.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.19' / 7.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.34 hrs HW=8.65' TW=7.72' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.53 cfs @ 2.20 fps)

Pond PDMH 14:



Summary for Pond PDMH 15: UNDERGROUND SAND FILTER

Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 4.13" for 10 year event
Inflow = 5.45 cfs @ 12.07 hrs, Volume= 0.477 af
Outflow = 5.45 cfs @ 12.07 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.08 hrs, Volume= 0.177 af
Secondary = 0.56 cfs @ 11.66 hrs, Volume= 0.300 af

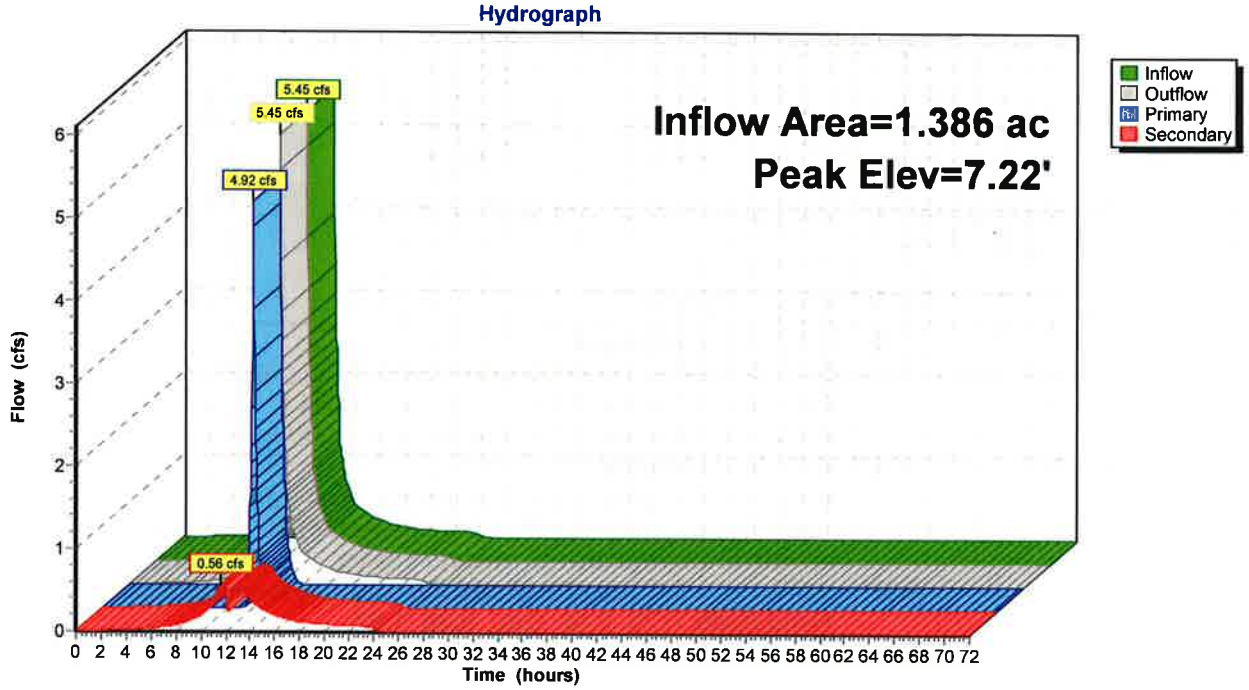
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.22' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.82'	**24.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.82' / 5.75' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.82'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.82' / 5.81' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.50'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.85 cfs @ 12.08 hrs HW=7.21' TW=6.98' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.85 cfs @ 2.93 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 4.85 cfs of 6.99 cfs potential flow)

Secondary OutFlow Max=0.56 cfs @ 11.66 hrs HW=6.60' TW=6.42' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.56 cfs @ 1.62 fps)

Pond PDMH 15: UNDERGROUND SAND FILTER



Summary for Pond PDMH 15a:

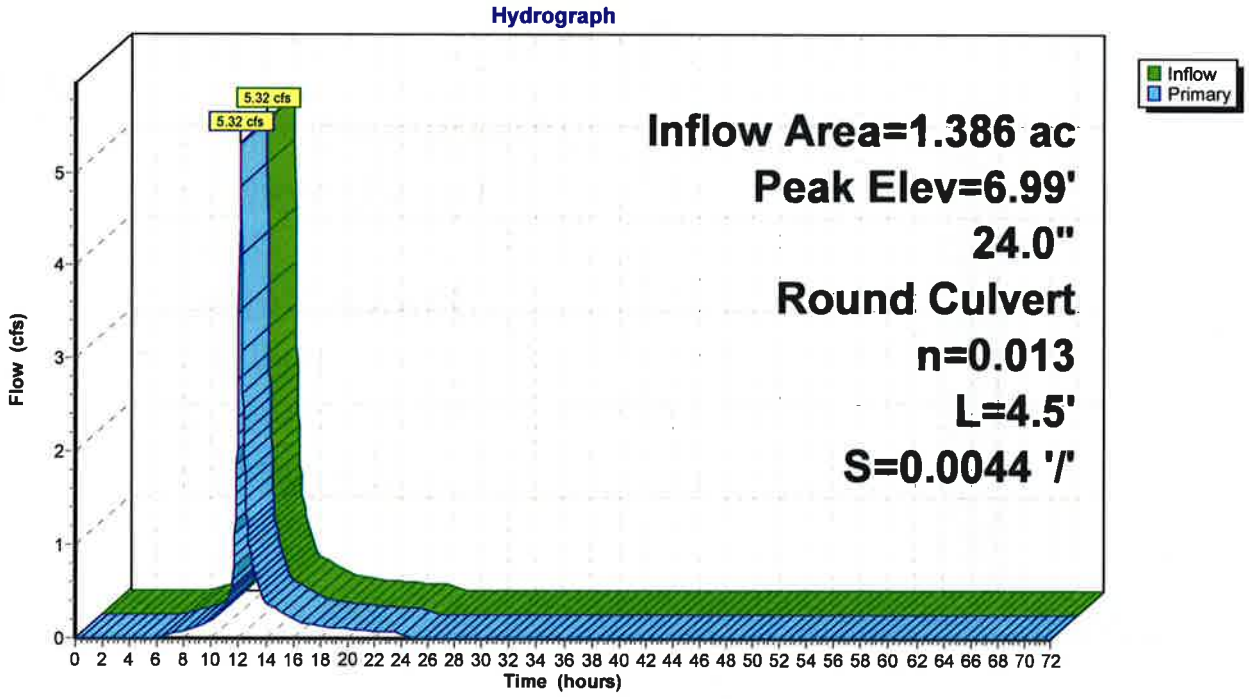
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 4.05" for 10 year event
Inflow = 5.32 cfs @ 12.08 hrs, Volume= 0.468 af
Outflow = 5.32 cfs @ 12.08 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min
Primary = 5.32 cfs @ 12.08 hrs, Volume= 0.468 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 6.99' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.75'	**24.0" Round Culvert** L= 4.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.75' / 5.73' S= 0.0044 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.26 cfs @ 12.08 hrs HW=6.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 5.26 cfs @ 3.69 fps)

Pond PDMH 15a:



Summary for Pond PDMH 2:

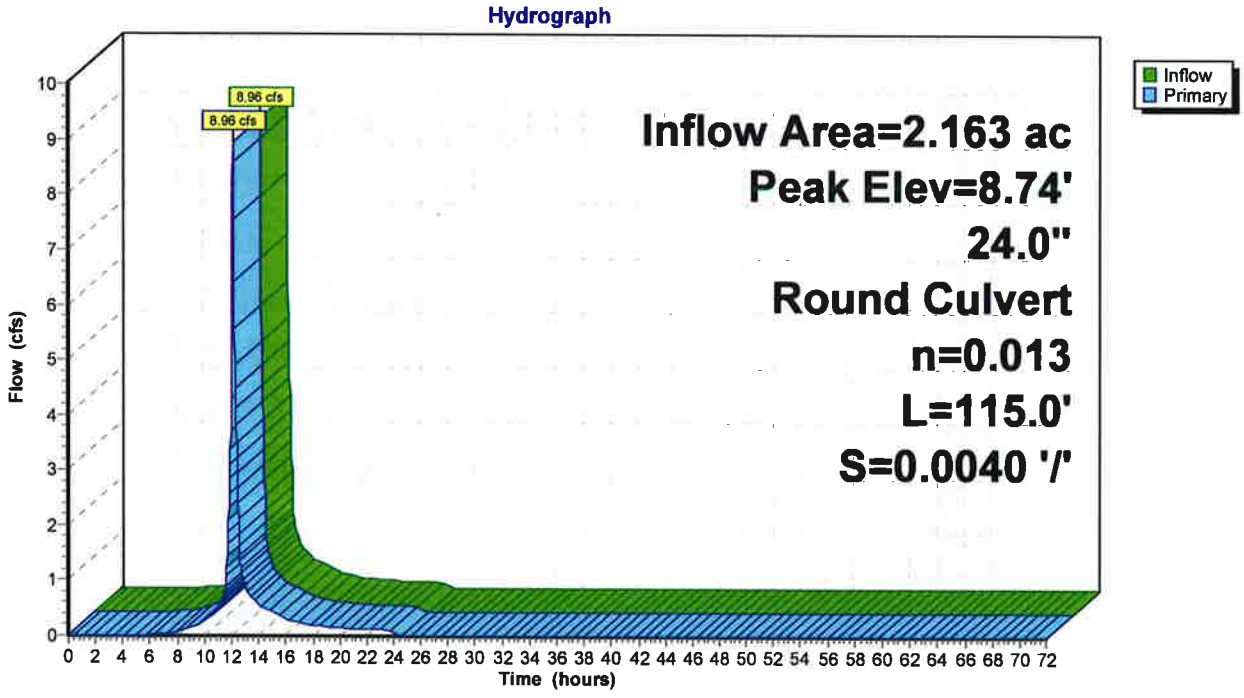
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 3.77" for 10 year event
Inflow = 8.96 cfs @ 12.09 hrs, Volume= 0.680 af
Outflow = 8.96 cfs @ 12.09 hrs, Volume= 0.680 af, Atten= 0%, Lag= 0.0 min
Primary = 8.96 cfs @ 12.09 hrs, Volume= 0.680 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.74' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.79'	**24.0" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.79' / 5.33' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.92 cfs @ 12.09 hrs HW=8.71' TW=8.34' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.92 cfs @ 2.84 fps)

Pond PDMH 2:



Summary for Pond PDMH 3: Separated Drain

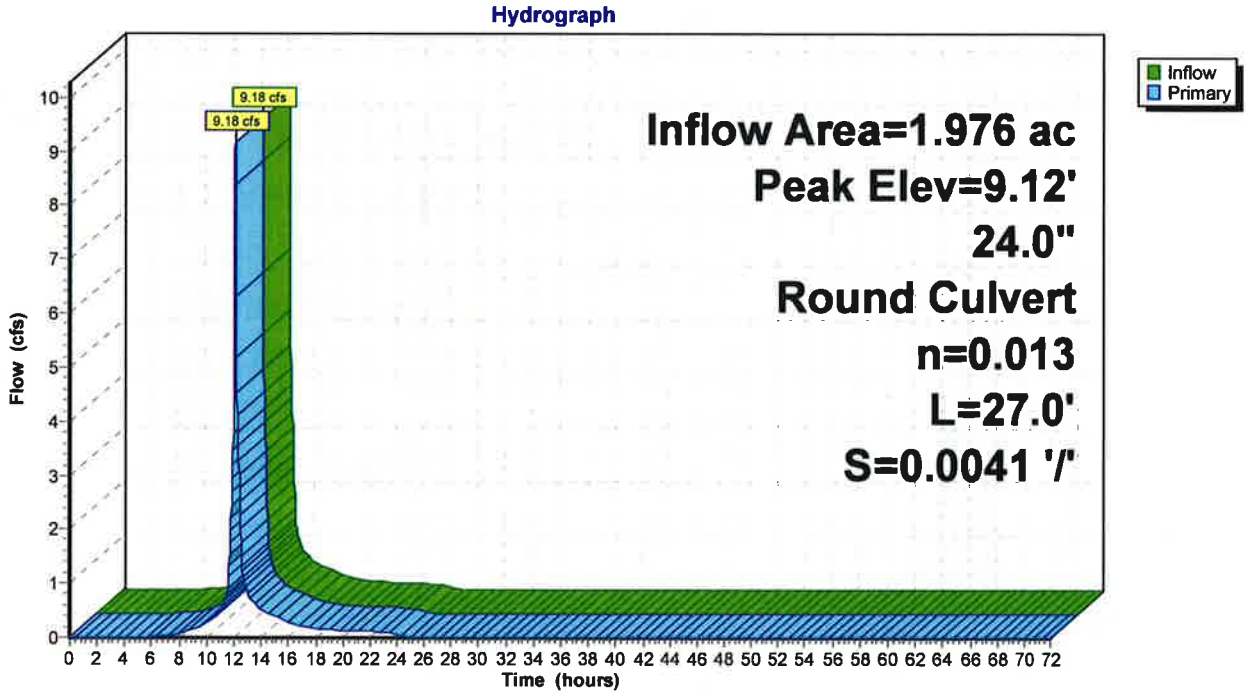
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 3.91" for 10 year event
Inflow = 9.18 cfs @ 12.07 hrs, Volume= 0.645 af
Outflow = 9.18 cfs @ 12.07 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.0 min
Primary = 9.18 cfs @ 12.07 hrs, Volume= 0.645 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.12' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**24.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.70' / 6.59' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.01 cfs @ 12.07 hrs HW=9.08' TW=8.73' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 9.01 cfs @ 2.87 fps)

Pond PDMH 3: Separated Drain



Summary for Pond PDMH 4: Separated Drain

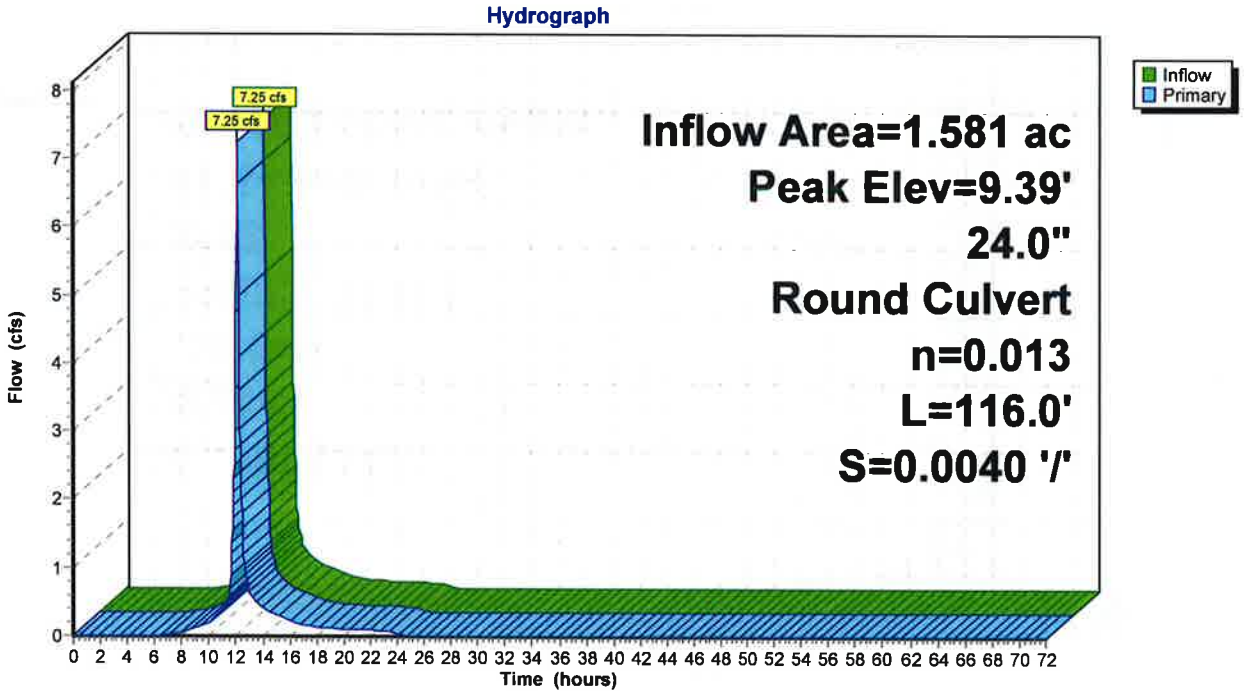
Inflow Area = 1.581 ac, 79.66% Impervious, Inflow Depth = 3.86" for 10 year event
Inflow = 7.25 cfs @ 12.07 hrs, Volume= 0.508 af
Outflow = 7.25 cfs @ 12.07 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min
Primary = 7.25 cfs @ 12.07 hrs, Volume= 0.508 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.39' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.16'	**24.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.16' / 6.70' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.11 cfs @ 12.07 hrs HW=9.35' TW=9.08' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 7.11 cfs @ 2.57 fps)

Pond PDMH 4: Separated Drain



Summary for Pond PDMH 5:

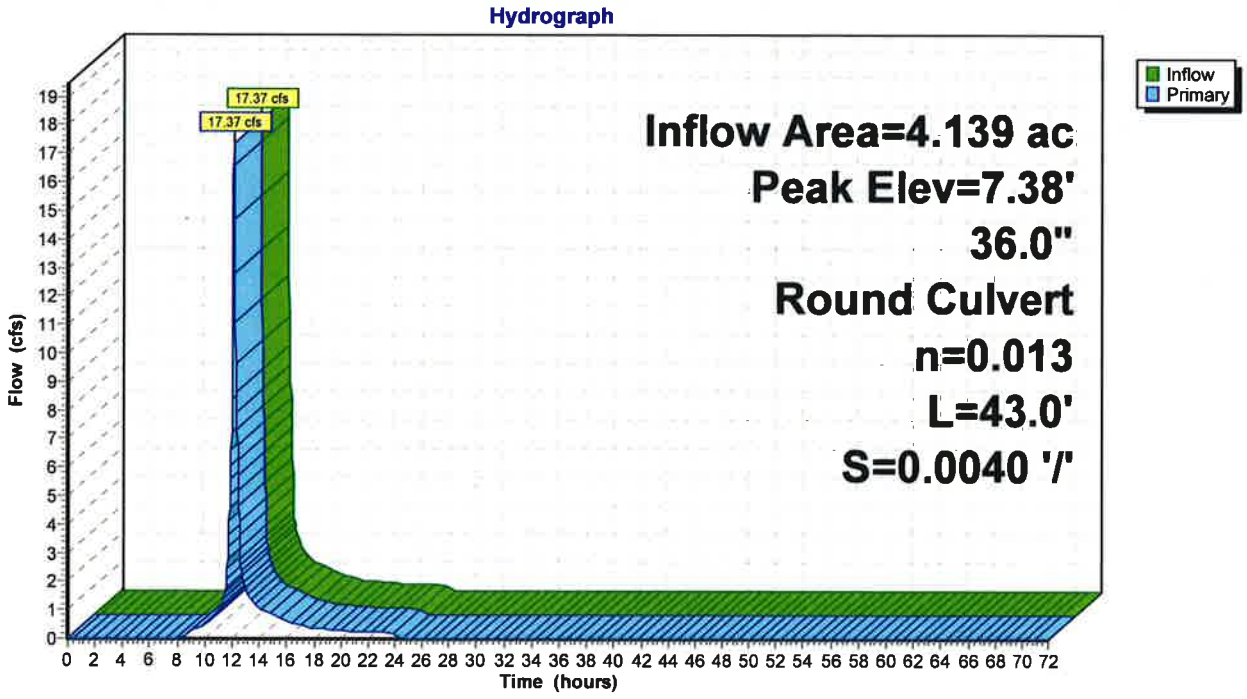
Inflow Area = 4.139 ac, 75.59% Impervious, Inflow Depth = 3.79" for 10 year event
Inflow = 17.37 cfs @ 12.09 hrs, Volume= 1.308 af
Outflow = 17.37 cfs @ 12.09 hrs, Volume= 1.308 af, Atten= 0%, Lag= 0.0 min
Primary = 17.37 cfs @ 12.09 hrs, Volume= 1.308 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.38' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.02'	**36.0" Round Culvert** L= 43.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.02' / 4.85' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=17.29 cfs @ 12.09 hrs HW=7.38' TW=6.94' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 17.29 cfs @ 3.99 fps)

Pond PDMH 5:



Summary for Pond PDMH 7:

Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 3.91" for 10 year event
Inflow = 9.18 cfs @ 12.07 hrs, Volume= 0.645 af
Outflow = 9.18 cfs @ 12.07 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.0 min
Primary = 8.36 cfs @ 12.08 hrs, Volume= 0.296 af
Secondary = 0.82 cfs @ 12.05 hrs, Volume= 0.348 af

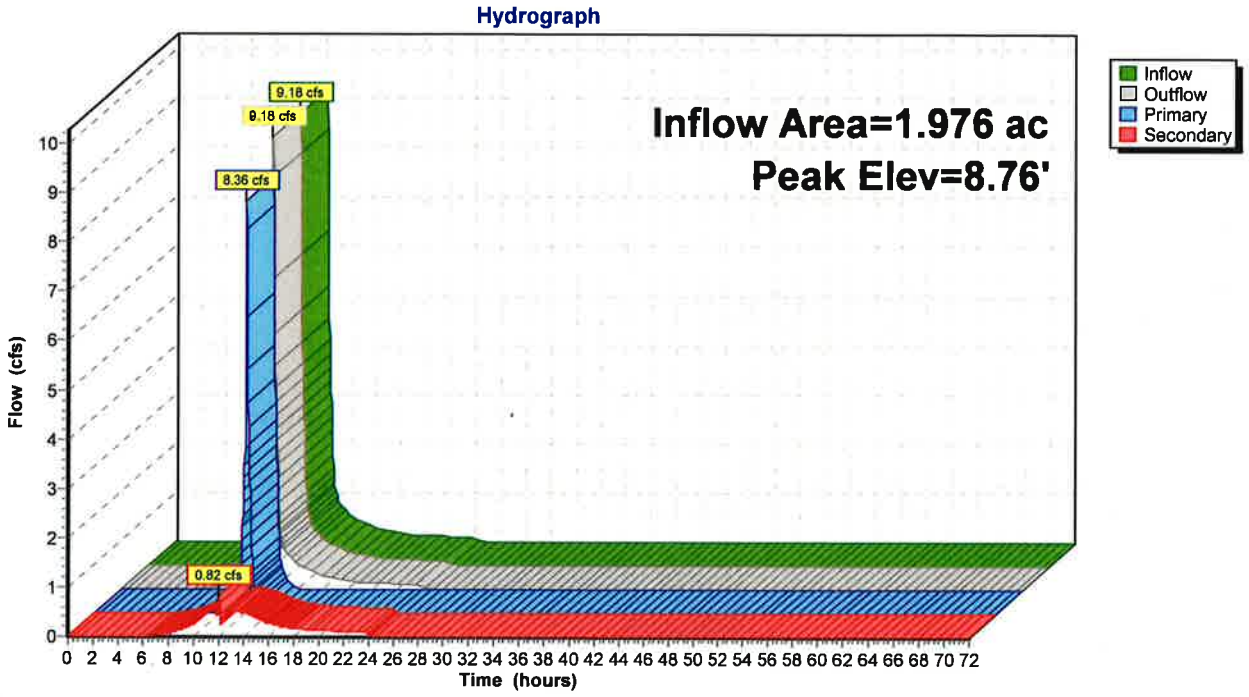
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.76' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.59'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.50' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	6.59'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.58' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	7.25'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=8.24 cfs @ 12.08 hrs HW=8.73' TW=8.25' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.24 cfs @ 2.62 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 8.24 cfs of 21.81 cfs potential flow)

Secondary OutFlow Max=0.81 cfs @ 12.05 hrs HW=8.67' TW=8.29' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.81 cfs @ 2.32 fps)

Pond PDMH 7:


Hydrograph
Inflow Area=1.976 ac
Peak Elev=8.76'
9.18 cfs
9.18 cfs
8.36 cfs
0.82 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond PDMH 7a:

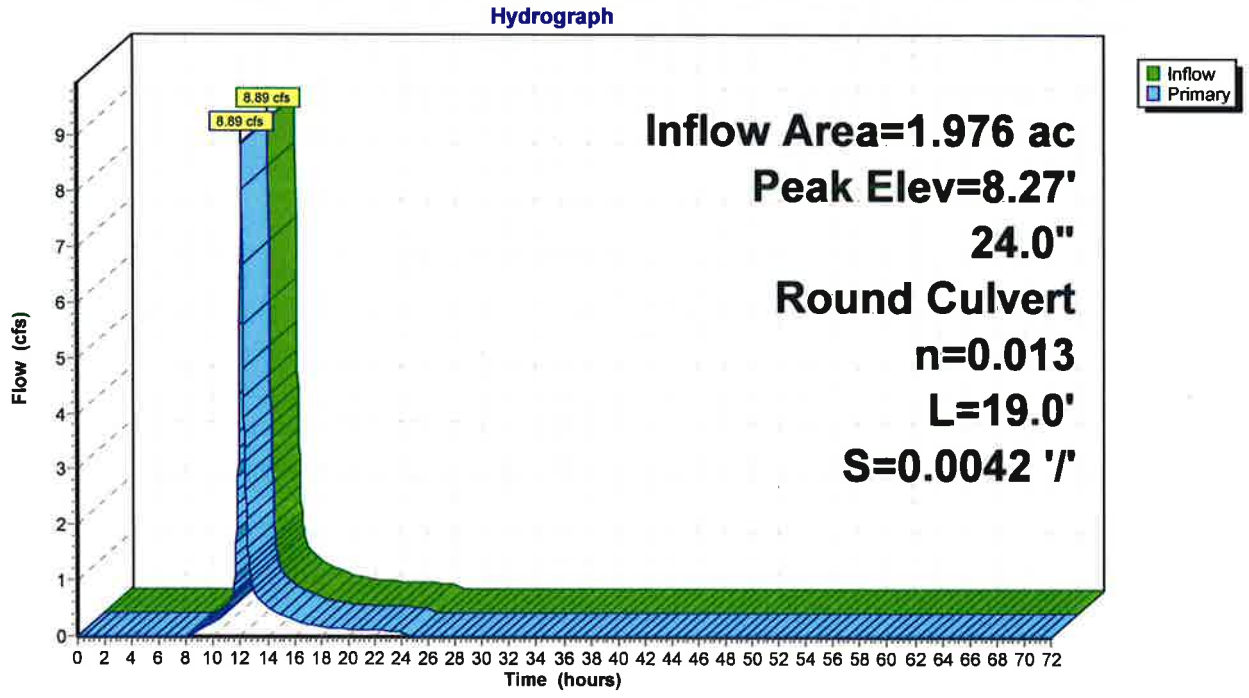
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 3.86" for 10 year event
Inflow = 8.89 cfs @ 12.08 hrs, Volume= 0.636 af
Outflow = 8.89 cfs @ 12.08 hrs, Volume= 0.636 af, Atten= 0%, Lag= 0.0 min
Primary = 8.89 cfs @ 12.08 hrs, Volume= 0.636 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.27' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.50'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.50' / 6.42' S= 0.0042 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.78 cfs @ 12.08 hrs HW=8.26' TW=7.35' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 8.78 cfs @ 4.00 fps)

Pond PDMH 7a:



Summary for Pond PDMH 8:

Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 3.77" for 10 year event
Inflow = 8.96 cfs @ 12.09 hrs, Volume= 0.680 af
Outflow = 8.96 cfs @ 12.09 hrs, Volume= 0.680 af, Atten= 0%, Lag= 0.0 min
Primary = 8.17 cfs @ 12.10 hrs, Volume= 0.335 af
Secondary = 0.87 cfs @ 12.07 hrs, Volume= 0.346 af

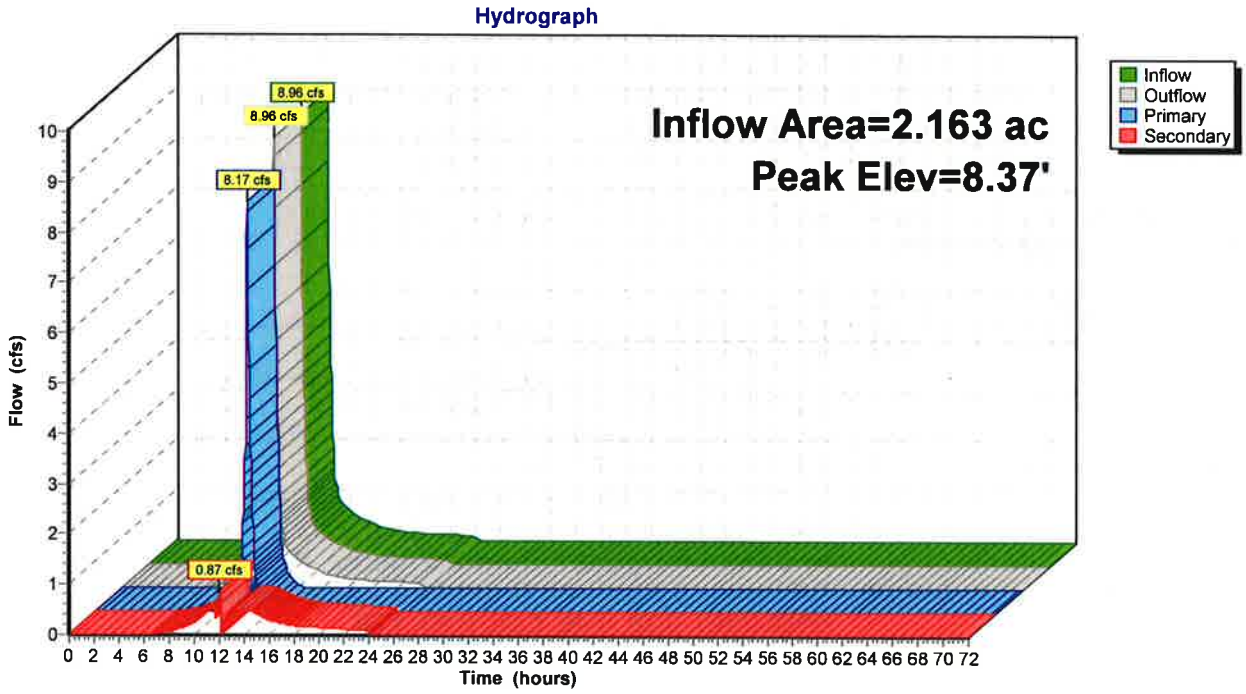
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.37' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.33'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.26' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.33'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.32' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=8.08 cfs @ 12.10 hrs HW=8.33' TW=7.88' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.08 cfs @ 2.57 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 8.08 cfs of 36.23 cfs potential flow)

Secondary OutFlow Max=0.85 cfs @ 12.07 hrs HW=8.15' TW=7.74' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.85 cfs @ 2.44 fps)

Pond PDMH 8:


Hydrograph
Inflow Area=2.163 ac
Peak Elev=8.37'
8.96 cfs
8.96 cfs
8.17 cfs
0.87 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Summary for Pond PDMH 8a:

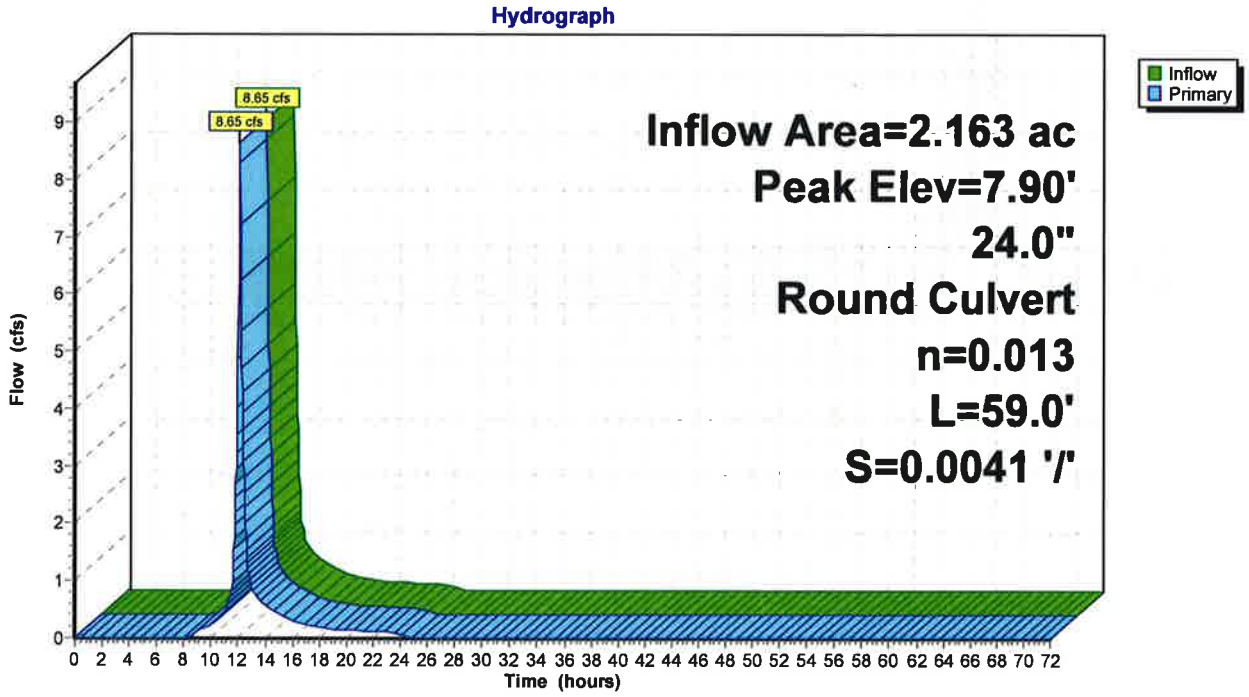
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 3.73" for 10 year event
Inflow = 8.65 cfs @ 12.11 hrs, Volume= 0.672 af
Outflow = 8.65 cfs @ 12.11 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
Primary = 8.65 cfs @ 12.11 hrs, Volume= 0.672 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.90' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.26'	**24.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.26' / 5.02' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.56 cfs @ 12.11 hrs HW=7.86' TW=7.35' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.56 cfs @ 2.72 fps)

Pond PDMH 8a:

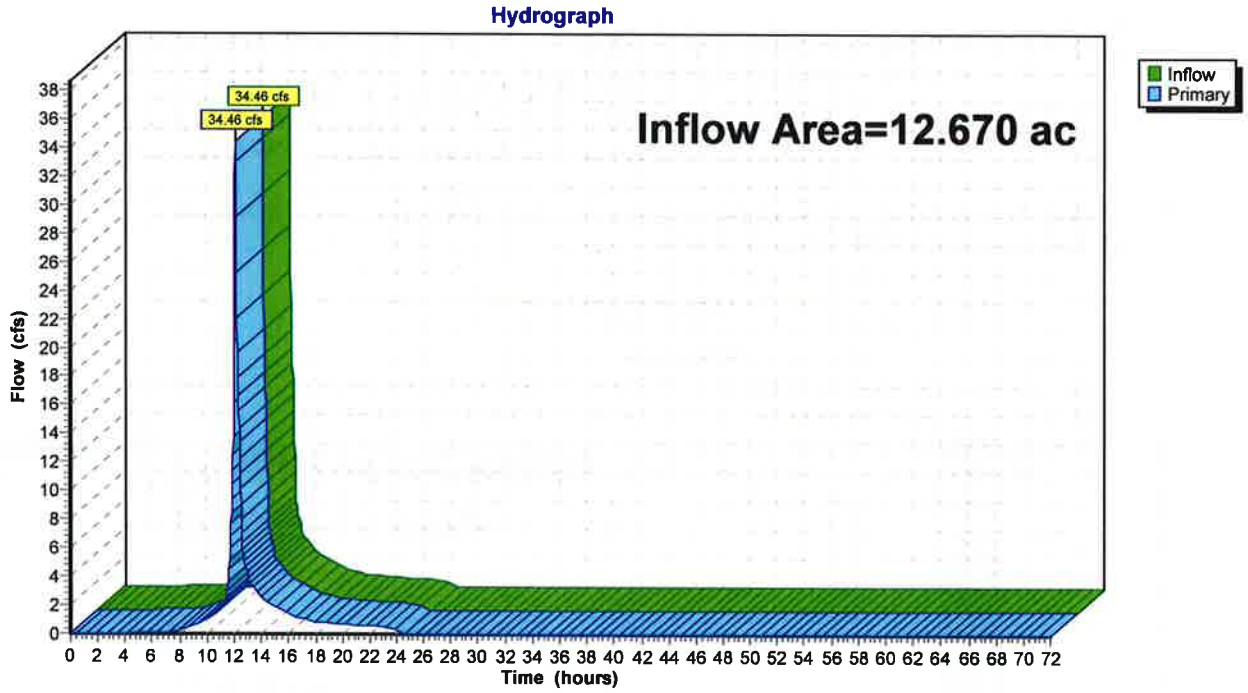


Summary for Link DP1: North Mill Pond

Inflow Area = 12.670 ac, 55.16% Impervious, Inflow Depth = 2.68" for 10 year event
Inflow = 34.46 cfs @ 12.09 hrs, Volume= 2.834 af
Primary = 34.46 cfs @ 12.09 hrs, Volume= 2.834 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

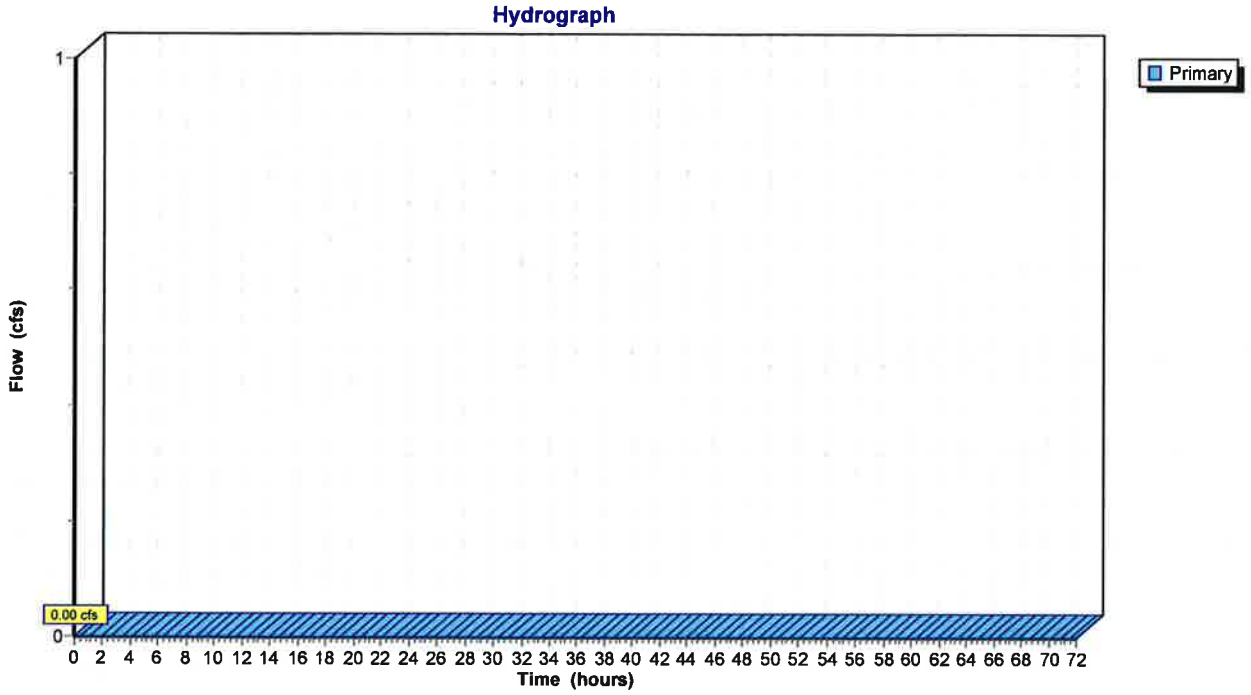


Summary for Link DP2: Sewer Line

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Sewer Line



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 7
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 PS1: Runoff Area=23,090 sf 98.87% Impervious Runoff Depth=8.14"
Flow Length=209' Tc=5.0 min CN=97 Runoff=4.54 cfs 0.360 af

Subcatchment PS10: Runoff Area=27,141 sf 47.00% Impervious Runoff Depth=5.38"
Flow Length=300' Tc=7.8 min CN=74 Runoff=3.65 cfs 0.279 af

Subcatchment PS2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=6.22"
Flow Length=400' Tc=7.6 min CN=81 Runoff=10.07 cfs 0.778 af

Subcatchment PS3: Runoff Area=28,735 sf 83.35% Impervious Runoff Depth=7.18"
Flow Length=140' Tc=5.0 min CN=89 Runoff=5.36 cfs 0.395 af

Subcatchment PS4: Runoff Area=76,501 sf 7.14% Impervious Runoff Depth=1.58"
Flow Length=342' Tc=5.3 min CN=41 Runoff=2.58 cfs 0.231 af

Subcatchment PS4a: Lot 4 Parking Lot - Runoff Area=14,755 sf 100.00% Impervious Runoff Depth=8.26"
Tc=5.0 min CN=98 Runoff=2.91 cfs 0.233 af

Subcatchment PS4b: Lot 4 Rooftop - Runoff Area=20,314 sf 100.00% Impervious Runoff Depth=8.26"
Tc=5.0 min CN=98 Runoff=4.01 cfs 0.321 af

Subcatchment PS4c: Runoff Area=12,582 sf 89.27% Impervious Runoff Depth=7.54"
Tc=5.0 min CN=92 Runoff=2.41 cfs 0.181 af

Subcatchment PS4d: Runoff Area=14,029 sf 70.87% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=81 Runoff=2.36 cfs 0.167 af

Subcatchment PS4e: Runoff Area=17,277 sf 61.96% Impervious Runoff Depth=5.61"
Tc=5.0 min CN=76 Runoff=2.67 cfs 0.186 af

Subcatchment PS4f: Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=8.26"
Tc=5.0 min CN=98 Runoff=0.34 cfs 0.027 af

Subcatchment PS5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=6.94"
Flow Length=165' Tc=5.0 min CN=87 Runoff=3.15 cfs 0.229 af

Subcatchment PS6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=6.82"
Flow Length=171' Tc=5.0 min CN=86 Runoff=3.41 cfs 0.247 af

Subcatchment PS7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=7.06"
Flow Length=144' Tc=5.0 min CN=88 Runoff=2.55 cfs 0.186 af

Subcatchment PS8: Runoff Area=36,146 sf 76.21% Impervious Runoff Depth=6.34"
Flow Length=253' Tc=5.0 min CN=82 Runoff=6.18 cfs 0.438 af

Subcatchment PS9: Runoff Area=164,174 sf 35.57% Impervious Runoff Depth=3.13"
Flow Length=452' Tc=7.4 min CN=55 Runoff=12.68 cfs 0.983 af

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin Peak Elev=8.97' Inflow=2.91 cfs 0.233 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0213 '/' Outflow=2.91 cfs 0.233 af

Pond 2P: CB 1241 Peak Elev=9.41' Inflow=3.65 cfs 0.279 af
12.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=3.65 cfs 0.279 af

Pond 4P: UNDERGROUND SAND FILTER Peak Elev=7.48' Storage=0.017 af Inflow=0.65 cfs 0.427 af
Outflow=0.60 cfs 0.418 af

Pond 6P: Roofline Dripe Edge Filter Strip Peak Elev=10.47' Storage=0.003 af Inflow=4.01 cfs 0.321 af
12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=3.97 cfs 0.321 af

Pond 10P: PCB 17 Peak Elev=15.09' Inflow=2.55 cfs 0.186 af
12.0" Round Culvert n=0.013 L=5.0' S=0.0040 '/' Outflow=2.55 cfs 0.186 af

Pond 15P: CB 1243 Peak Elev=15.54' Inflow=3.41 cfs 0.247 af
12.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=3.41 cfs 0.247 af

Pond 16P: CB 1242 Peak Elev=14.84' Inflow=3.15 cfs 0.229 af
12.0" Round Culvert n=0.013 L=17.0' S=0.0053 '/' Outflow=3.15 cfs 0.229 af

Pond 21P: UNDERGROUND SAND FILTER Peak Elev=16.61' Storage=0.024 af Inflow=1.73 cfs 0.497 af
Outflow=3.07 cfs 0.489 af

Pond 22P: UNDERGROUND SAND FILTER Peak Elev=13.81' Storage=0.024 af Inflow=2.64 cfs 0.486 af
Outflow=2.44 cfs 0.477 af

Pond 1264: Separated Drain Peak Elev=14.60' Inflow=6.18 cfs 0.438 af
24.0" Round Culvert n=0.013 L=162.0' S=0.0040 '/' Outflow=6.18 cfs 0.438 af

Pond CB 1237: Peak Elev=7.50' Inflow=4.54 cfs 0.360 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=4.54 cfs 0.360 af

Pond CB 1239: Separated Drain Peak Elev=13.71' Inflow=10.07 cfs 0.778 af
24.0" Round Culvert n=0.013 L=117.0' S=0.0040 '/' Outflow=10.07 cfs 0.778 af

Pond CB 1240: Separated Drain Peak Elev=13.14' Inflow=5.36 cfs 0.395 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=5.36 cfs 0.395 af

Pond CB 1244: PDMH 6 Peak Elev=14.60' Inflow=8.72 cfs 0.624 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0040 '/' Outflow=8.72 cfs 0.624 af

Pond OCS #1: PCB 16 Forebay w/Catch Basin Peak Elev=10.83' Storage=2,208 cf Inflow=2.67 cfs 0.186 af
Outflow=1.26 cfs 0.186 af

Pond PDMH 1: Separated Drain Peak Elev=8.14' Inflow=38.33 cfs 2.559 af
36.0" Round Culvert n=0.013 L=85.0' S=0.0040 '/' Outflow=38.33 cfs 2.559 af

Pond PDMH 10: New Roadway Closed Drainage System Peak Elev=10.17' Inflow=5.34 cfs 0.537 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0039 '/' Outflow=5.34 cfs 0.537 af

Pond PDMH 11: Peak Elev=8.18' Inflow=8.55 cfs 0.798 af
24.0" Round Culvert n=0.013 L=16.0' S=0.0037 '/' Outflow=8.55 cfs 0.798 af

Pond PDMH 12: Peak Elev=8.19' Inflow=0.34 cfs 0.027 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0039 '/' Outflow=0.34 cfs 0.027 af

Pond PDMH 13: New Roadway Closed Drainage System Peak Elev=11.86' Inflow=2.98 cfs 0.355 af
12.0" Round Culvert n=0.013 L=195.0' S=0.0050 '/' Outflow=2.98 cfs 0.355 af

Pond PDMH 14: Peak Elev=11.96' Inflow=1.26 cfs 0.189 af
12.0" Round Culvert n=0.013 L=238.0' S=0.0050 '/' Outflow=1.26 cfs 0.189 af

Pond PDMH 15: UNDERGROUND SAND FILTER Peak Elev=7.67' Inflow=8.55 cfs 0.798 af
Primary=7.94 cfs 0.371 af Secondary=0.65 cfs 0.427 af Outflow=8.55 cfs 0.798 af

Pond PDMH 15a: Peak Elev=7.37' Inflow=8.37 cfs 0.789 af
24.0" Round Culvert n=0.013 L=4.5' S=0.0044 '/' Outflow=8.37 cfs 0.789 af

Pond PDMH 2: Peak Elev=13.06' Inflow=15.14 cfs 1.173 af
24.0" Round Culvert n=0.013 L=115.0' S=0.0040 '/' Outflow=15.14 cfs 1.173 af

Pond PDMH 3: Separated Drain Peak Elev=13.78' Inflow=15.28 cfs 1.100 af
24.0" Round Culvert n=0.013 L=27.0' S=0.0041 '/' Outflow=15.28 cfs 1.100 af

Pond PDMH 4: Separated Drain Peak Elev=14.43' Inflow=12.14 cfs 0.871 af
24.0" Round Culvert n=0.013 L=116.0' S=0.0040 '/' Outflow=12.14 cfs 0.871 af

Pond PDMH 5: Peak Elev=9.01' Inflow=34.78 cfs 2.280 af
36.0" Round Culvert n=0.013 L=43.0' S=0.0040 '/' Outflow=34.78 cfs 2.280 af

Pond PDMH 7: Peak Elev=12.82' Inflow=15.28 cfs 1.100 af
Primary=14.95 cfs 0.609 af Secondary=1.73 cfs 0.497 af Outflow=15.28 cfs 1.100 af

Pond PDMH 7a: Peak Elev=11.28' Inflow=17.97 cfs 1.098 af
24.0" Round Culvert n=0.013 L=19.0' S=0.0042 '/' Outflow=17.97 cfs 1.098 af

Pond PDMH 8: Peak Elev=12.02' Inflow=15.14 cfs 1.173 af
Primary=15.14 cfs 0.703 af Secondary=2.64 cfs 0.486 af Outflow=15.14 cfs 1.173 af

Pond PDMH 8a: Peak Elev=11.00' Inflow=16.82 cfs 1.182 af
24.0" Round Culvert n=0.013 L=59.0' S=0.0041 '/' Outflow=16.82 cfs 1.182 af

Link DP1: North Mill Pond Inflow=69.81 cfs 5.243 af
Primary=69.81 cfs 5.243 af

Link DP2: Sewer Line
Primary=0.00 cfs 0.000 af

Total Runoff Area = 12.670 ac Runoff Volume = 5.241 af Average Runoff Depth = 4.96"
44.84% Pervious = 5.681 ac 55.16% Impervious = 6.988 ac

Summary for Subcatchment PS1:

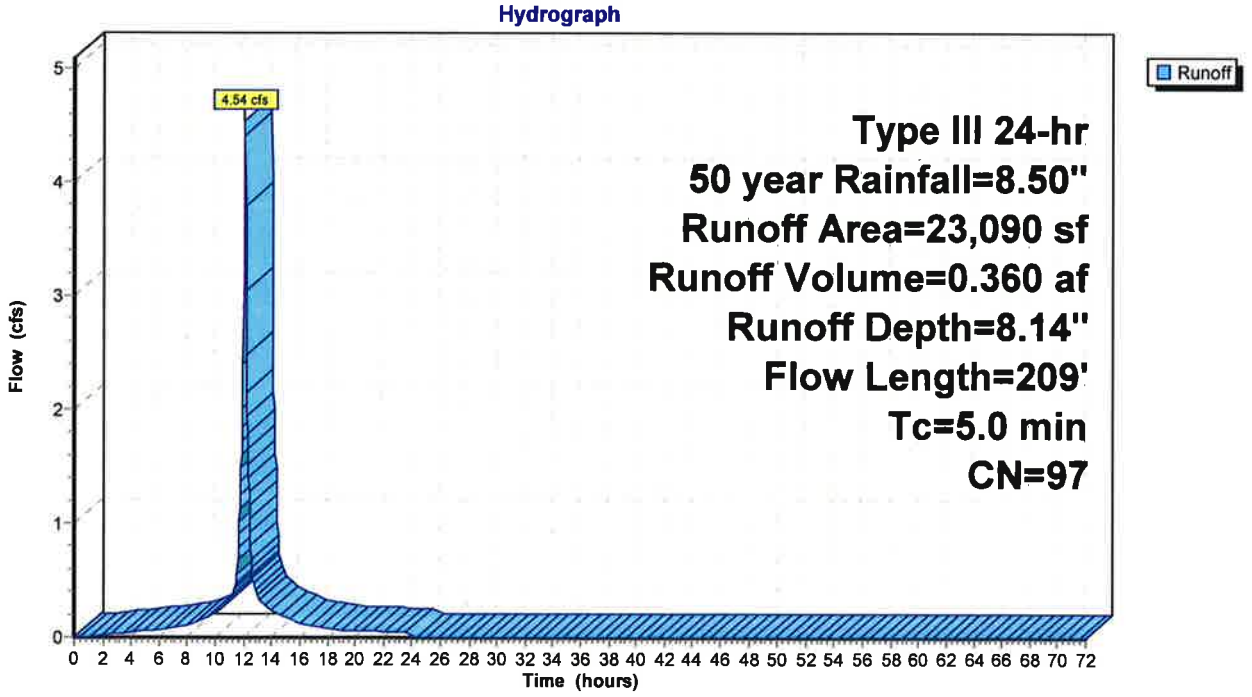
Runoff = 4.54 cfs @ 12.07 hrs, Volume= 0.360 af, Depth= 8.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,527	98	Roofs, HSG A
	16,758	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	262	39	>75% Grass cover, Good, HSG A
*	1,606	98	Sidewalk new, HSG A
	23,090	97	Weighted Average
	262		1.13% Pervious Area
	22,828		98.87% Impervious Area
	937		4.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS1:



Summary for Subcatchment PS10:

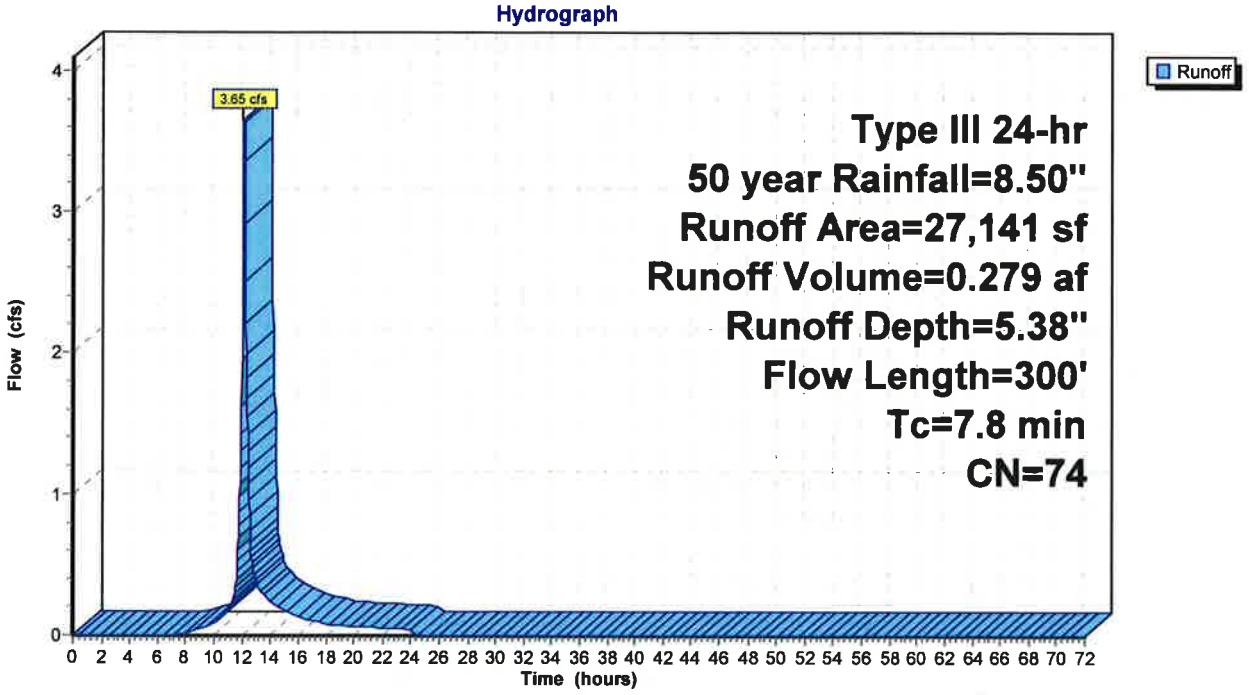
Runoff = 3.65 cfs @ 12.11 hrs, Volume= 0.279 af, Depth= 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
9,646	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
965	39	>75% Grass cover, Good, HSG A
27,141	74	Weighted Average
14,384		53.00% Pervious Area
12,757		47.00% Impervious Area
3,111		24.39% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment PS10:



Summary for Subcatchment PS2:

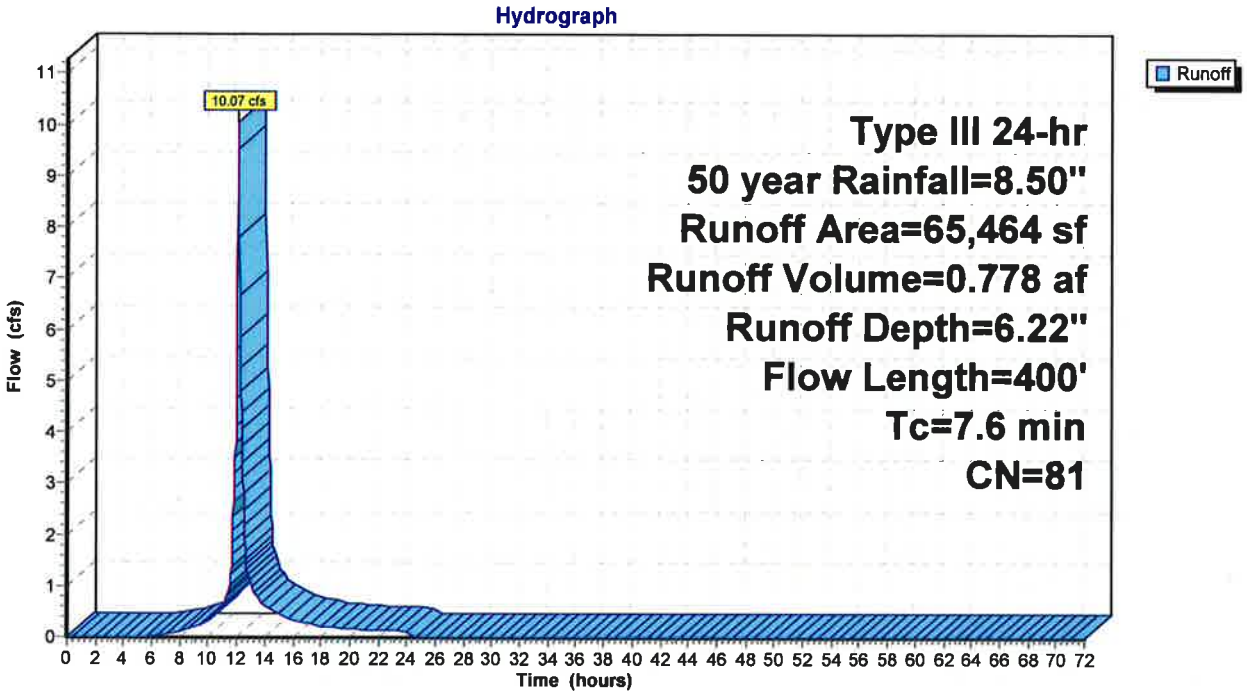
Runoff = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment PS2:



Summary for Subcatchment PS3:

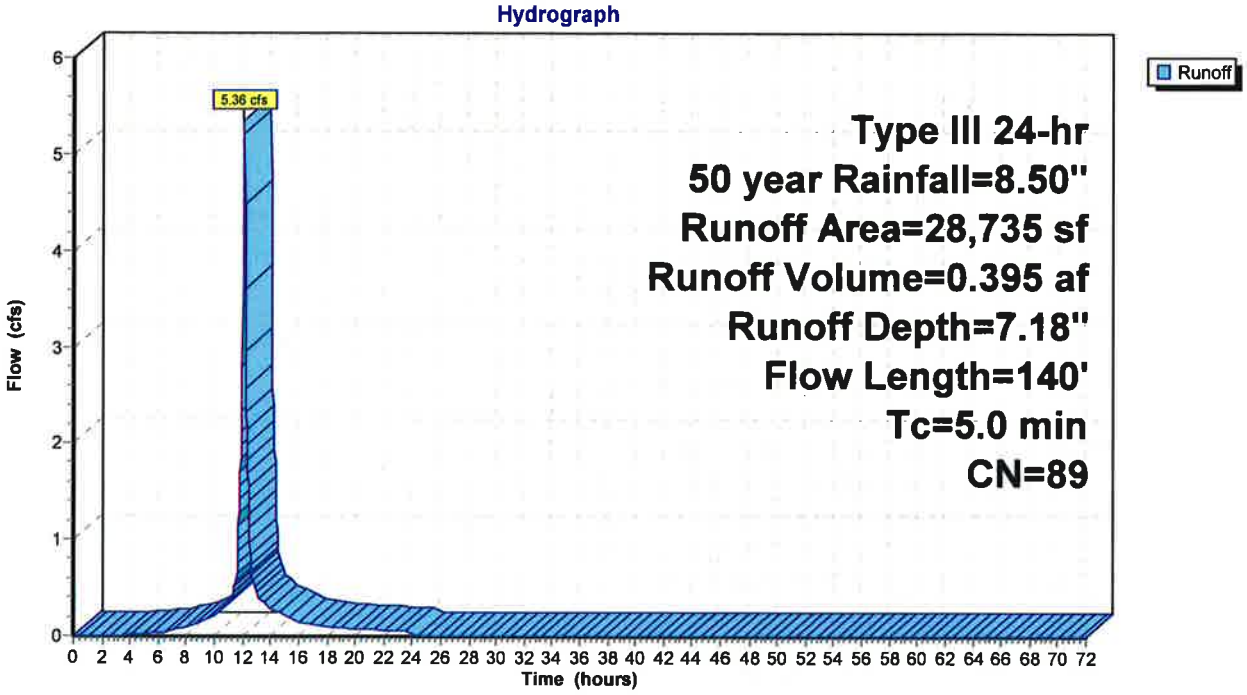
Runoff = 5.36 cfs @ 12.07 hrs, Volume= 0.395 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	18,934	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	831	39	>75% Grass cover, Good, HSG A
	28,735	89	Weighted Average
	4,785		16.65% Pervious Area
	23,950		83.35% Impervious Area
	692		2.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS3:



Summary for Subcatchment PS4:

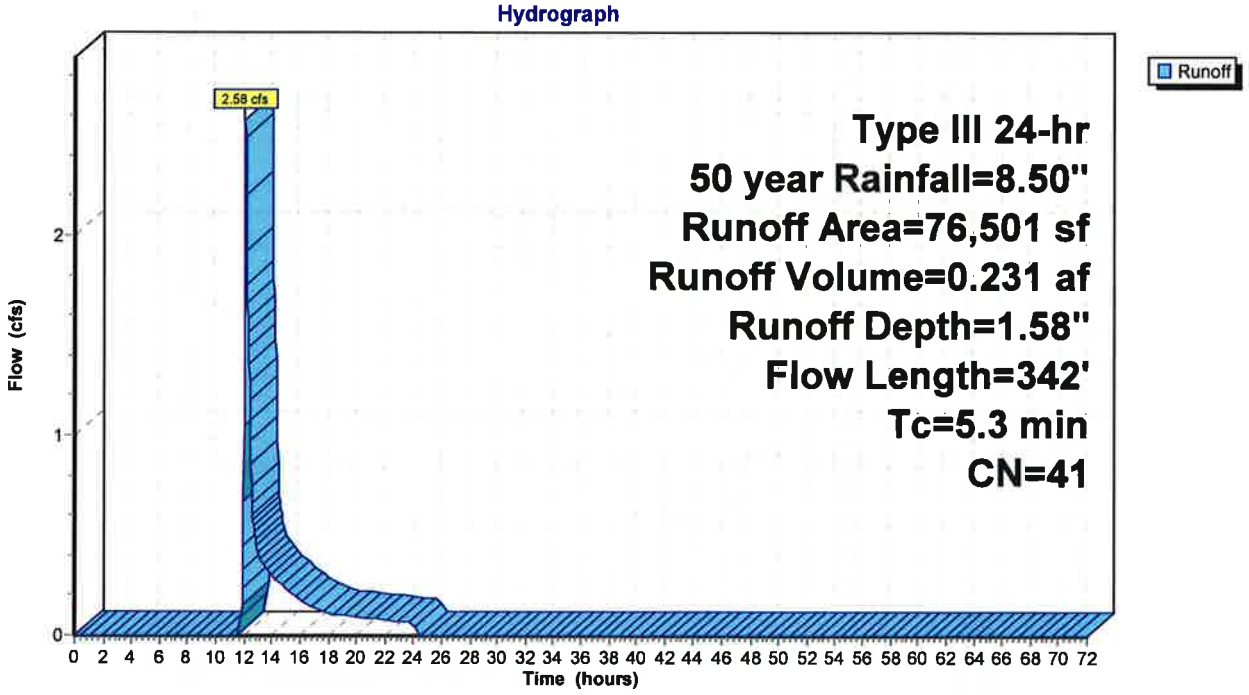
Runoff = 2.58 cfs @ 12.10 hrs, Volume= 0.231 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	2,855	98	Paved parking, HSG A
	24,921	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	4,789	39	>75% Grass cover, Good, HSG A
	7,355	77	Fallow, bare soil, HSG A
	230	39	>75% Grass cover, Good, HSG A
	4,292	39	>75% Grass cover, Good, HSG A
*	1,791	98	Sidewalk new, HSG A
	76,501	41	Weighted Average
	71,042		92.86% Pervious Area
	5,459		7.14% Impervious Area
	813		14.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment PS4:



Summary for Subcatchment PS4a: Lot 4 Parking Lot - Treated Area

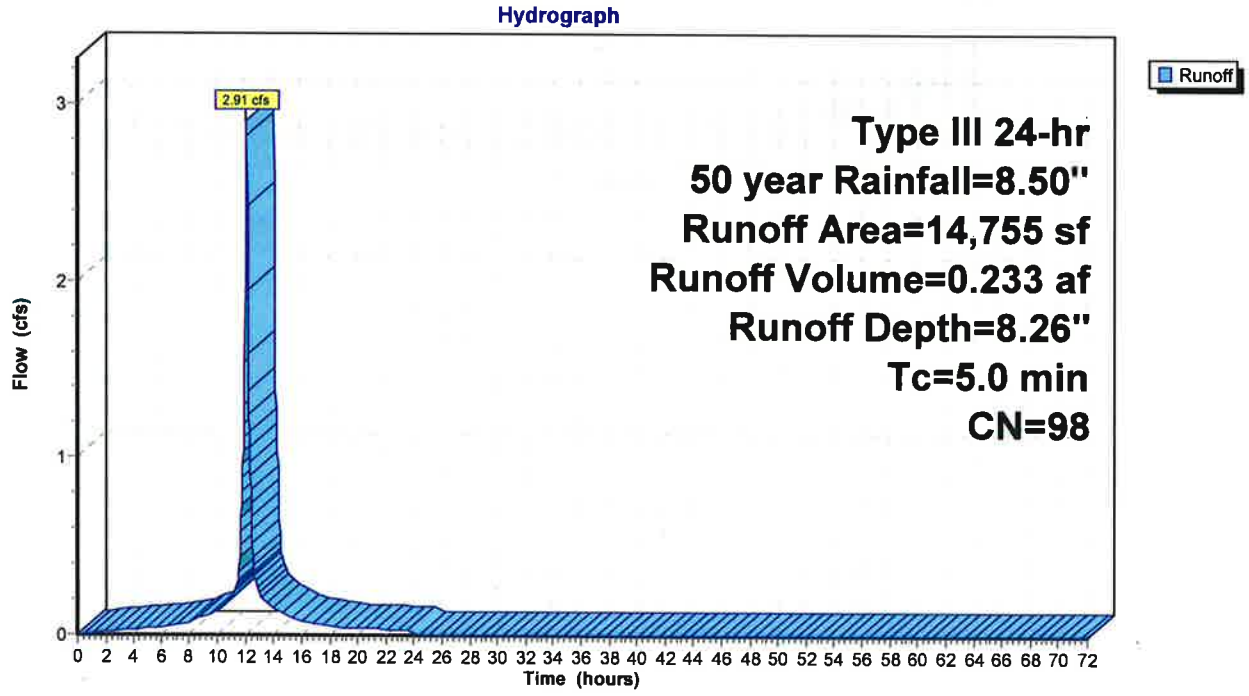
Runoff = 2.91 cfs @ 12.07 hrs, Volume= 0.233 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
14,755	98	Paved parking, HSG A
14,755		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4a: Lot 4 Parking Lot - Treated Area



Summary for Subcatchment PS4b: Lot 4 Rooftop - Treated Area

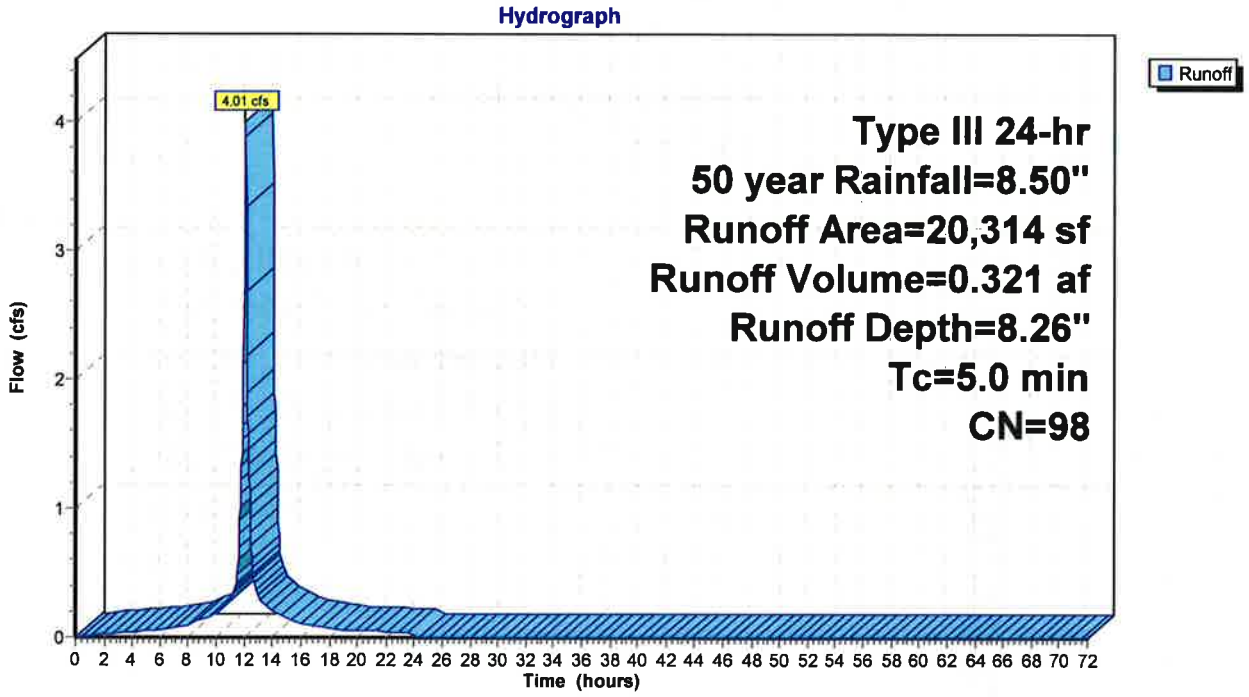
Runoff = 4.01 cfs @ 12.07 hrs, Volume= 0.321 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
20,314	98	Roofs, HSG A
20,314		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4b: Lot 4 Rooftop - Treated Area



Summary for Subcatchment PS4c:

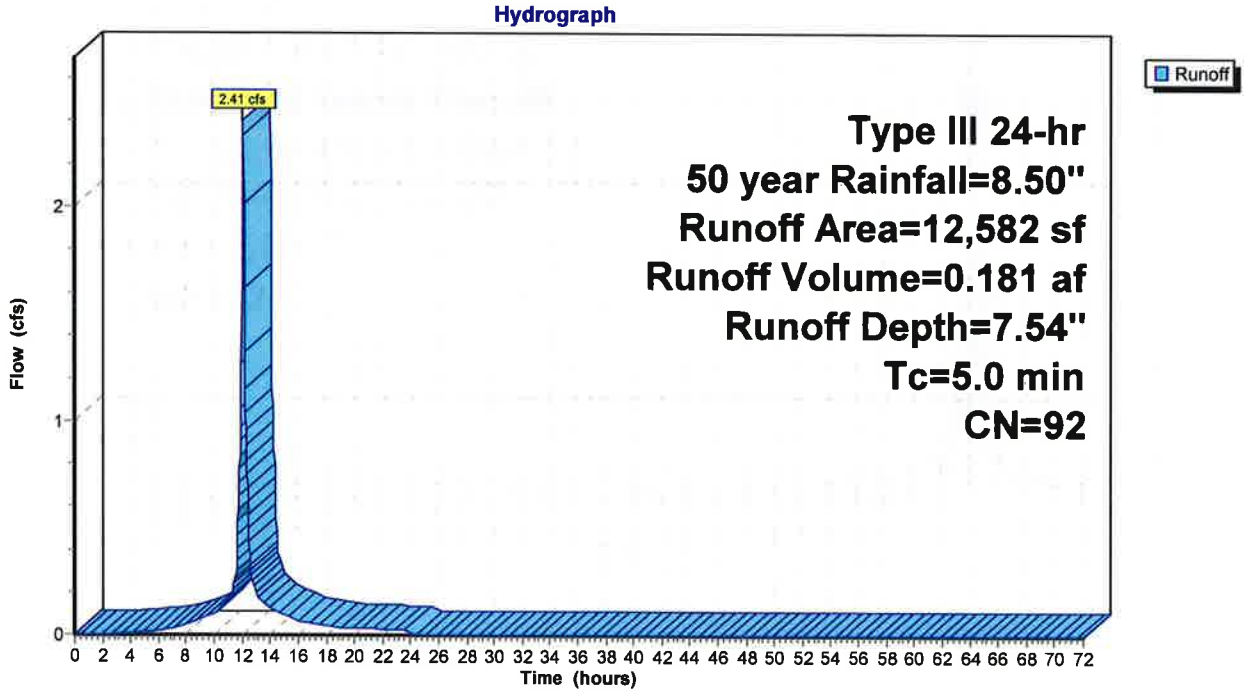
Runoff = 2.41 cfs @ 12.07 hrs, Volume= 0.181 af, Depth= 7.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
6,553	98	Paved roads w/curbs & sewers, HSG A
4,679	98	Roofs, HSG A
1,350	39	>75% Grass cover, Good, HSG A
12,582	92	Weighted Average
1,350		10.73% Pervious Area
11,232		89.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment PS4c:



Summary for Subcatchment PS4d:

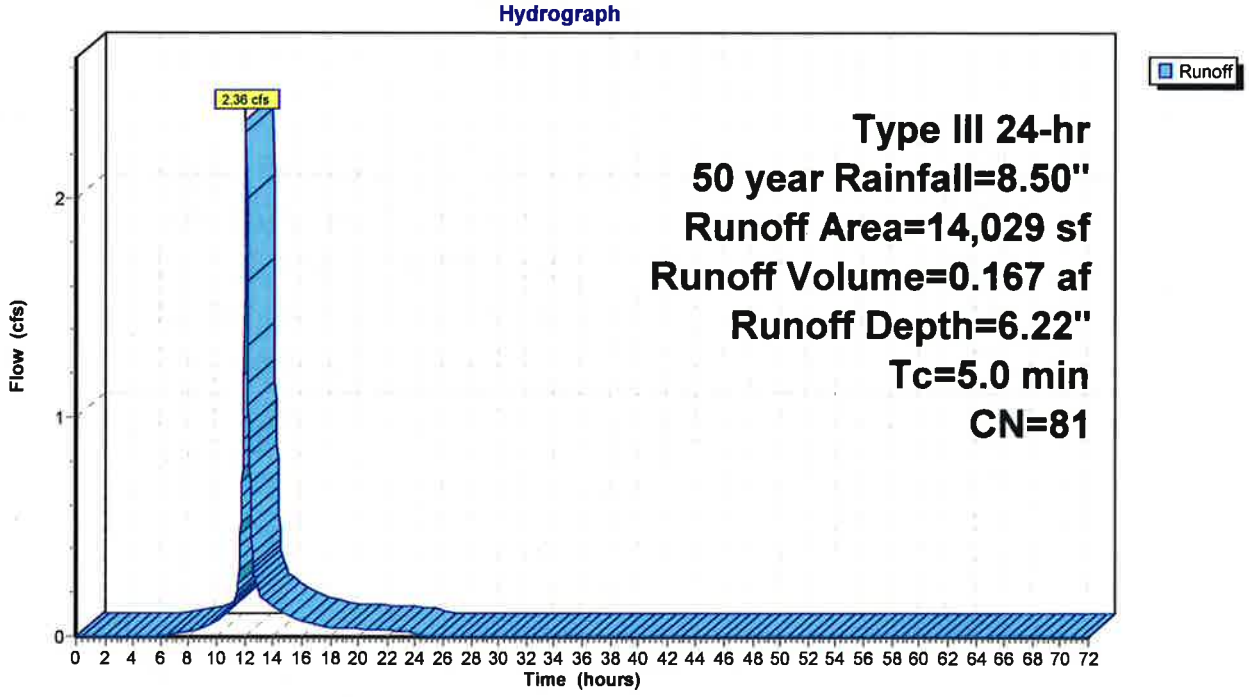
Runoff = 2.36 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
6,695	98	Paved roads w/curbs & sewers, HSG A
4,086	39	>75% Grass cover, Good, HSG A
2,262	98	Roofs, HSG A
986	98	Roofs, HSG A
14,029	81	Weighted Average
4,086		29.13% Pervious Area
9,943		70.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4d:



Summary for Subcatchment PS4e:

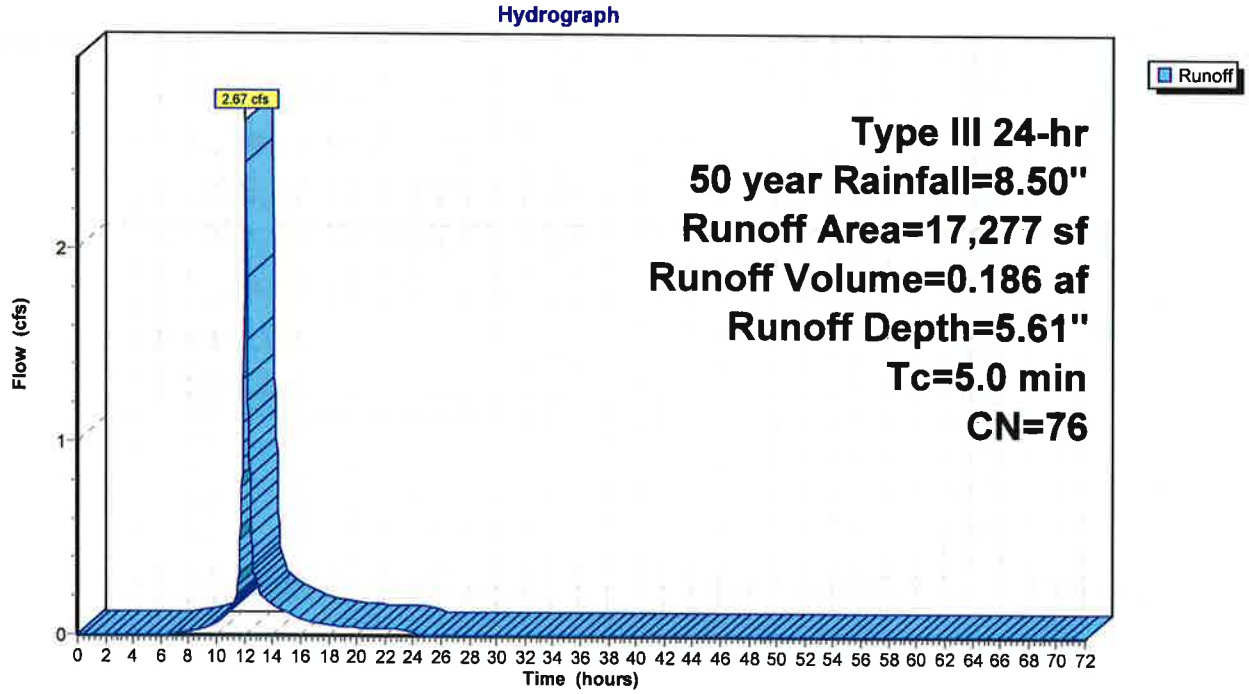
Runoff = 2.67 cfs @ 12.07 hrs, Volume= 0.186 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
9,743	98	Paved roads w/curbs & sewers, HSG A
961	98	Roofs, HSG A
2,279	39	>75% Grass cover, Good, HSG A
1,831	39	>75% Grass cover, Good, HSG A
2,463	39	>75% Grass cover, Good, HSG A
17,277	76	Weighted Average
6,573		38.04% Pervious Area
10,704		61.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4e:



Summary for Subcatchment PS4f:

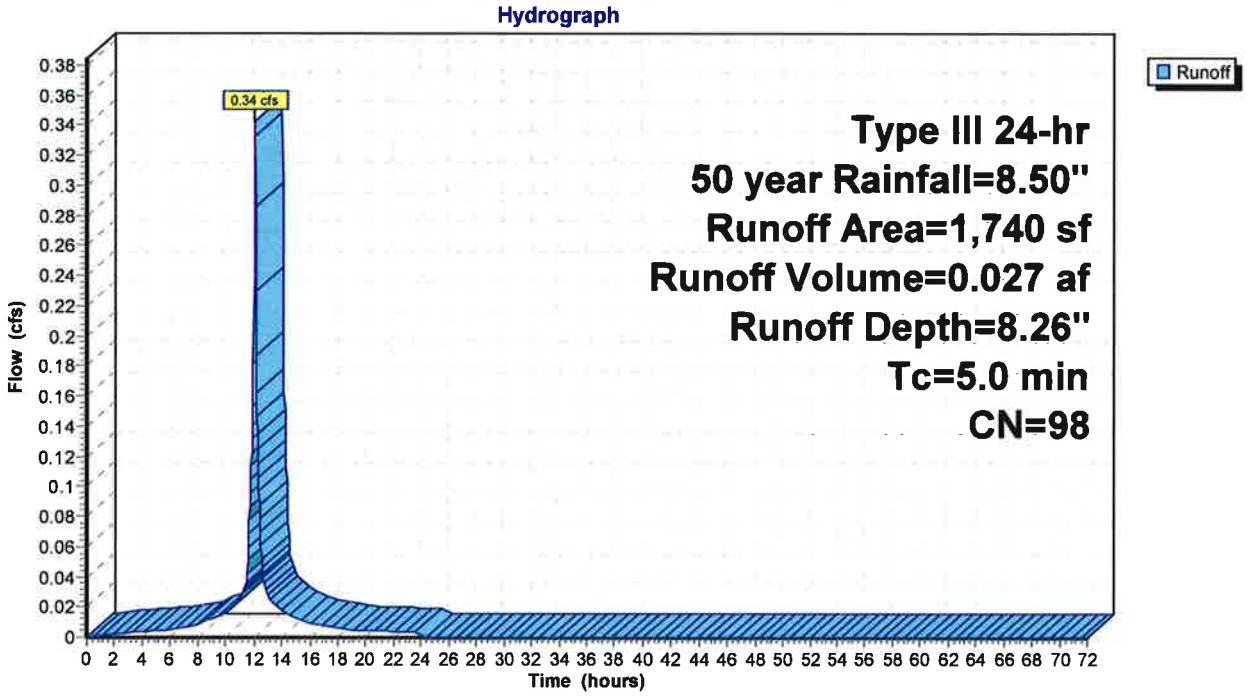
Runoff = 0.34 cfs @ 12.07 hrs, Volume= 0.027 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
870	98	Paved roads w/curbs & sewers, HSG A
870	98	Roofs, HSG A
1,740	98	Weighted Average
1,740		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4f:



Summary for Subcatchment PS5:

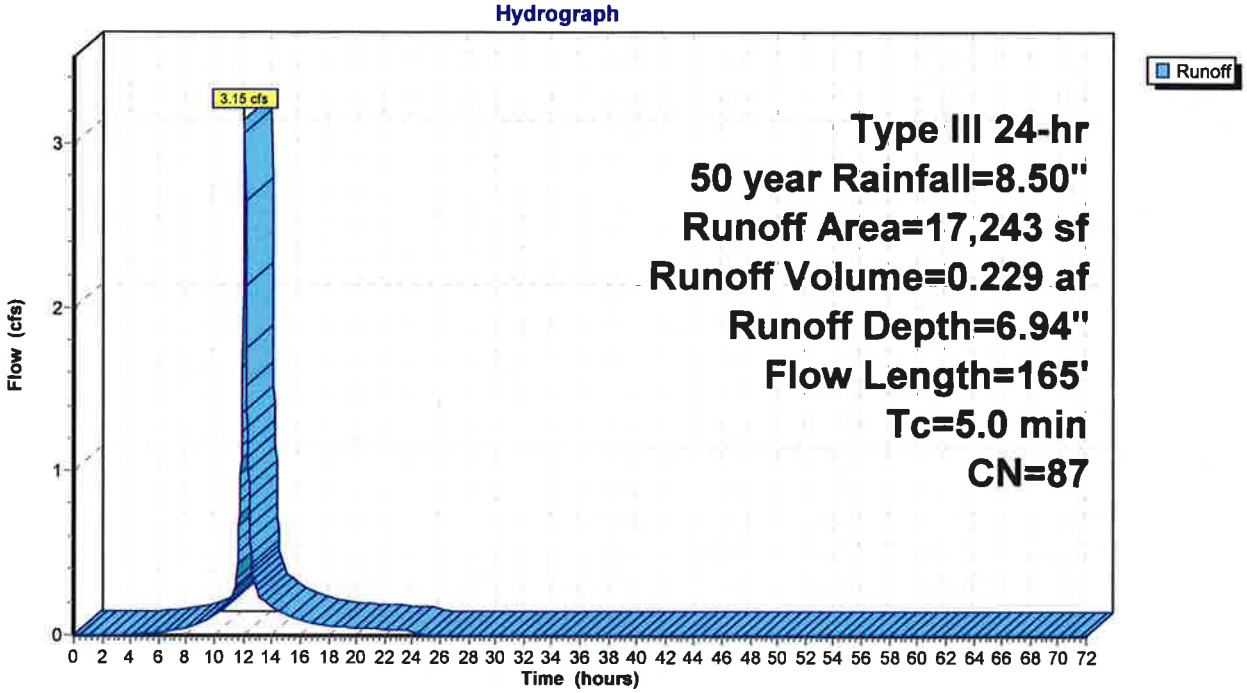
Runoff = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS5:



Summary for Subcatchment PS6:

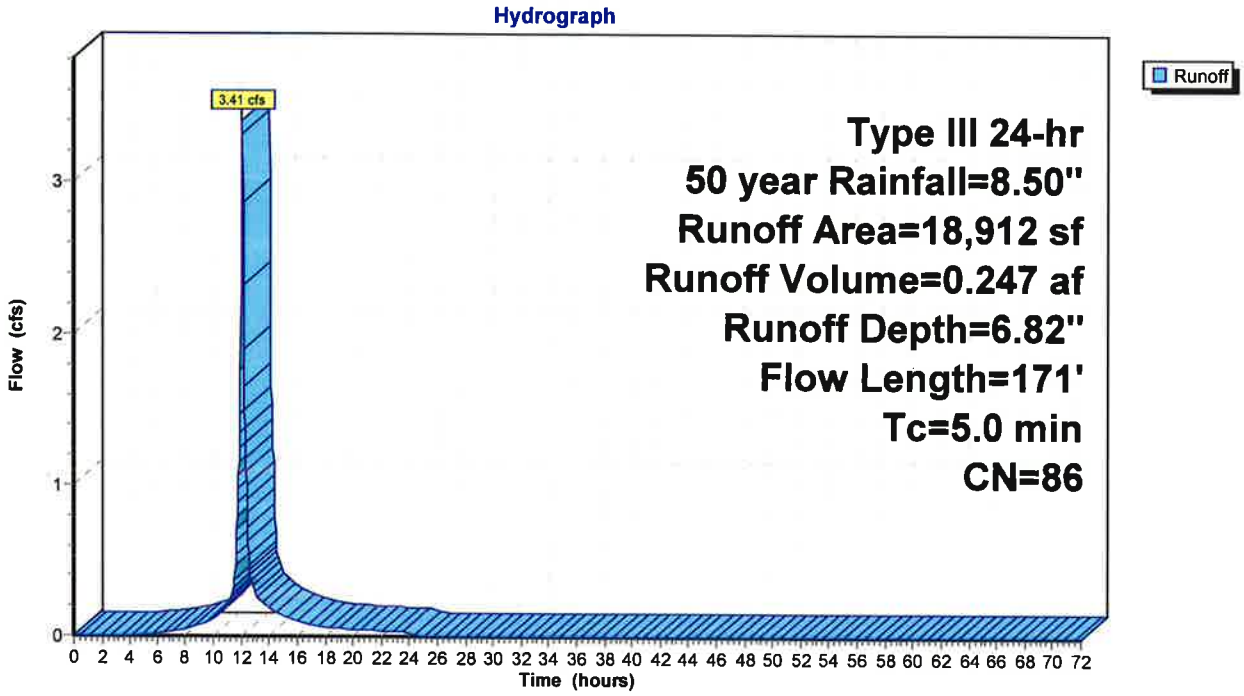
Runoff = 3.41 cfs @ 12.07 hrs, Volume= 0.247 af, Depth= 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS6:



Summary for Subcatchment PS7:

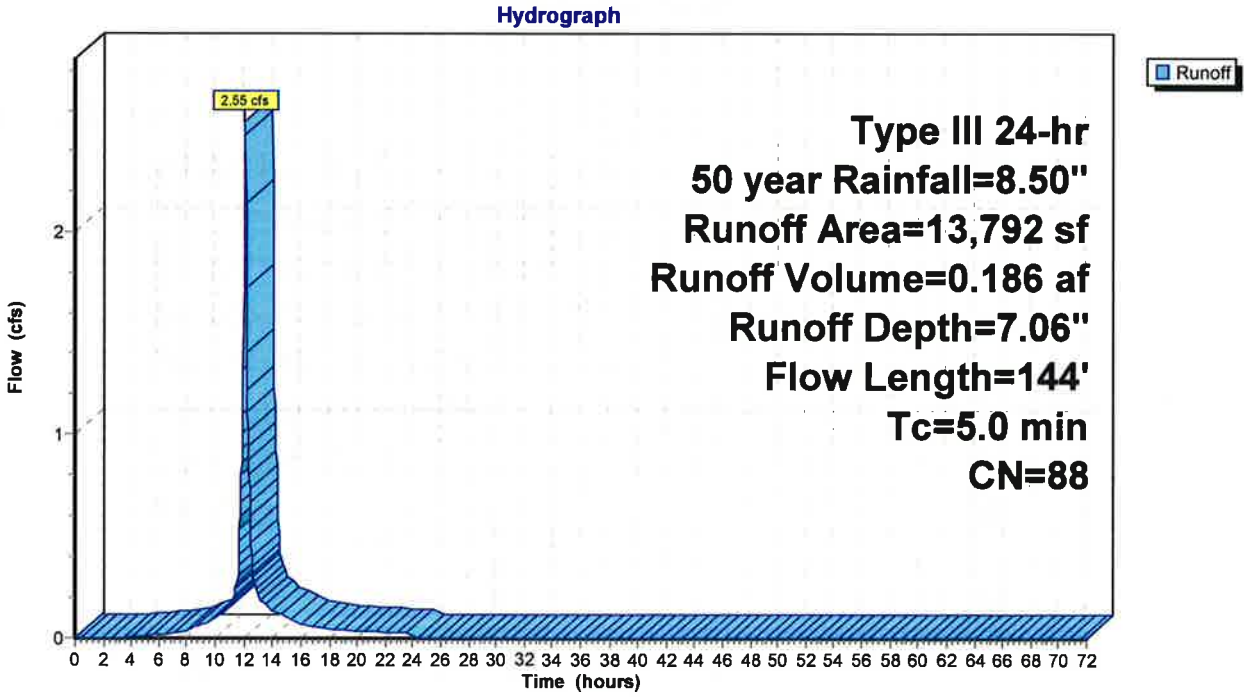
Runoff = 2.55 cfs @ 12.07 hrs, Volume= 0.186 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS7:



Summary for Subcatchment PS8:

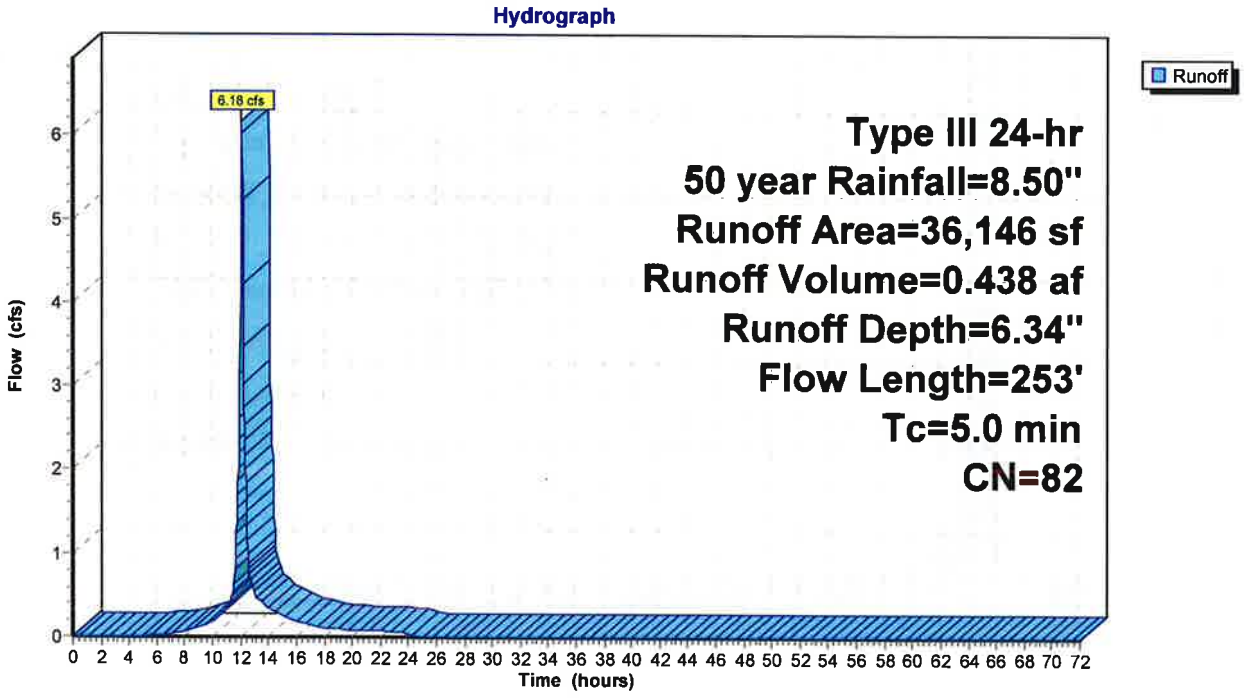
Runoff = 6.18 cfs @ 12.07 hrs, Volume= 0.438 af, Depth= 6.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	17,049	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	6,585	98	Gravel surface, HSG A
	36,146	82	Weighted Average
	8,598		23.79% Pervious Area
	27,548		76.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS8:



Summary for Subcatchment PS9:

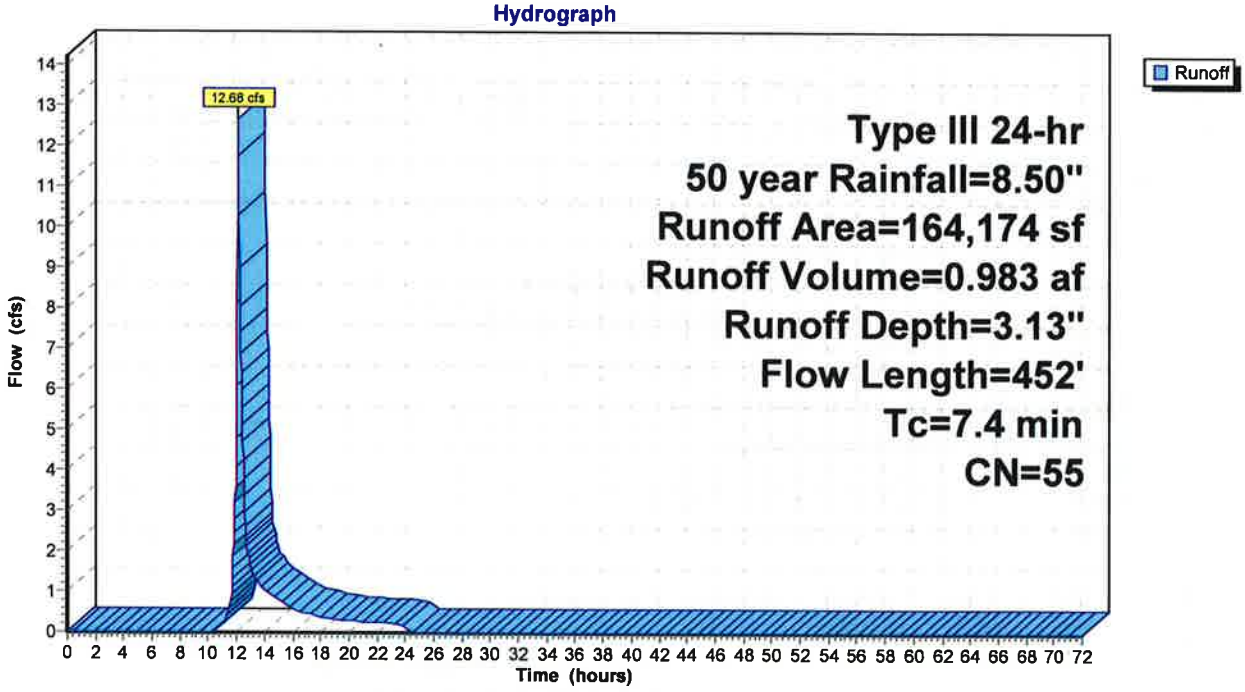
Runoff = 12.68 cfs @ 12.11 hrs, Volume= 0.983 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	1,171	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	49,609	98	Gravel surface, HSG A
	164,174	55	Weighted Average
	105,773		64.43% Pervious Area
	58,401		35.57% Impervious Area
	234		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment PS9:



Summary for Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin

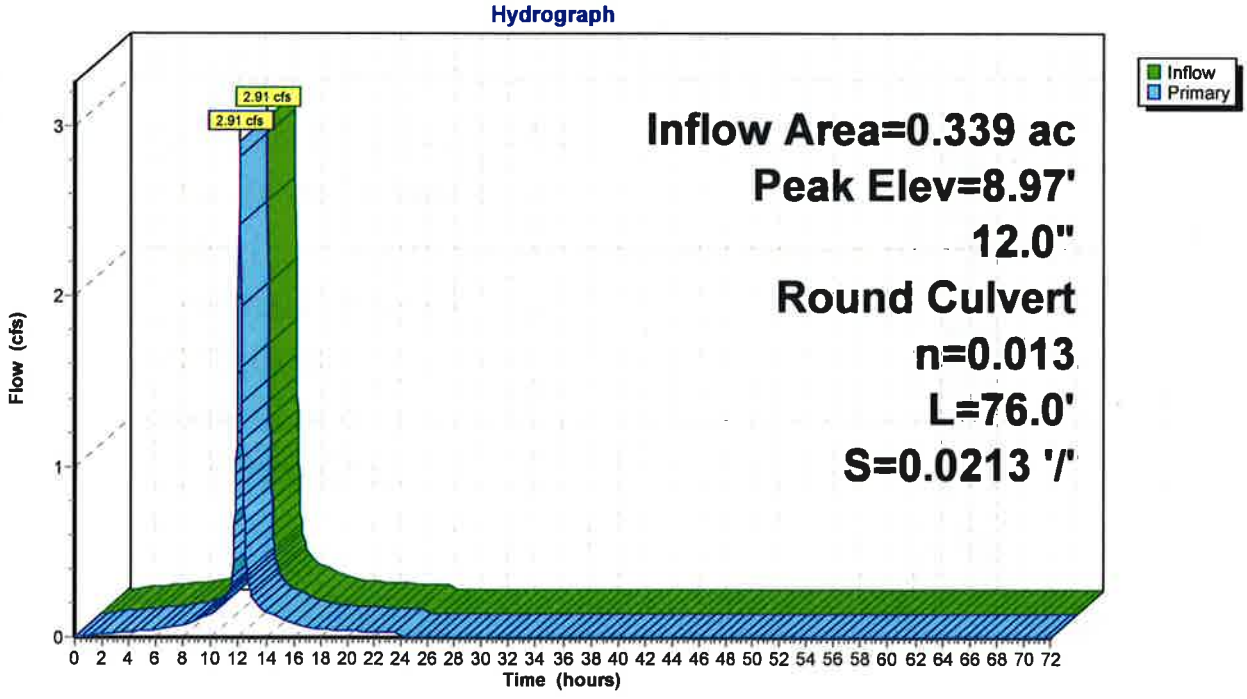
Inflow Area = 0.339 ac,100.00% Impervious, Inflow Depth = 8.26" for 50 year event
Inflow = 2.91 cfs @ 12.07 hrs, Volume= 0.233 af
Outflow = 2.91 cfs @ 12.07 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.07 hrs, Volume= 0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.97' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 5.88' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.86 cfs @ 12.07 hrs HW=8.90' TW=8.10' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.86 cfs @ 3.64 fps)

Pond 1P: Parking Lot (Lot 4) Deep Sump Catch Basin



Summary for Pond 2P: CB 1241

Inflow Area = 0.623 ac, 47.00% Impervious, Inflow Depth = 5.38" for 50 year event
Inflow = 3.65 cfs @ 12.11 hrs, Volume= 0.279 af
Outflow = 3.65 cfs @ 12.11 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min
Primary = 3.65 cfs @ 12.11 hrs, Volume= 0.279 af

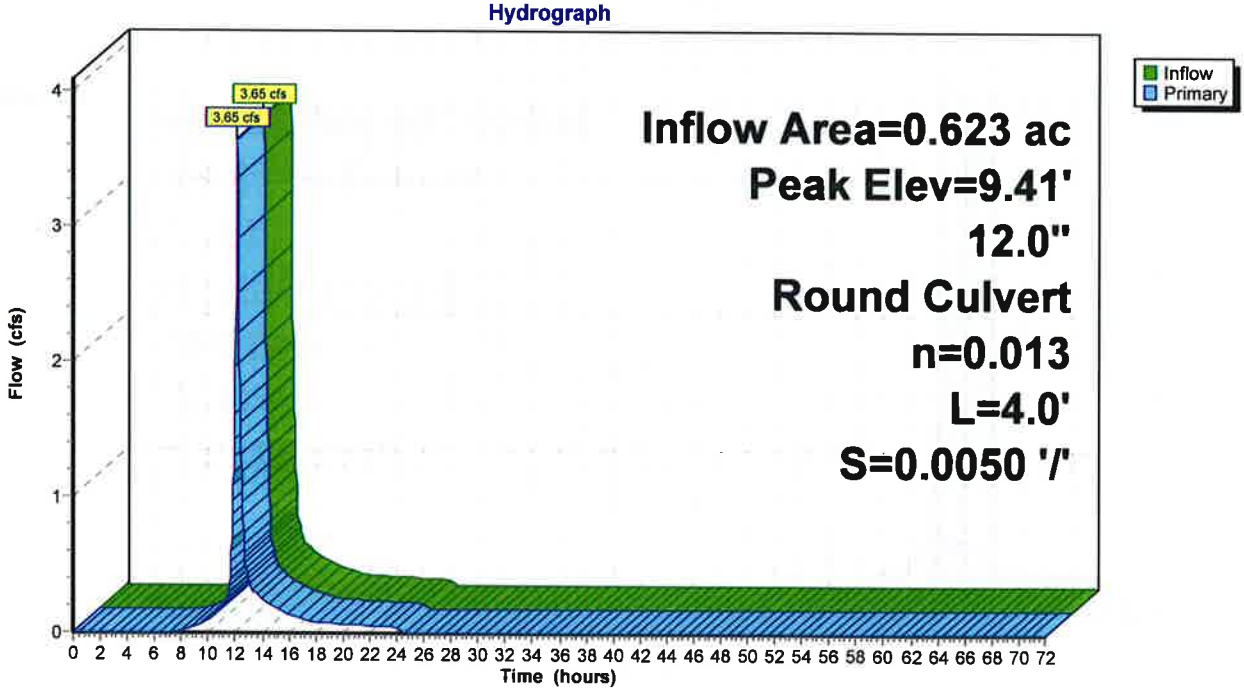
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.41' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.87'	**12.0" Round Culvert** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.87' / 4.85' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.55 cfs @ 12.11 hrs HW=9.26' TW=7.84' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.55 cfs @ 4.52 fps)

Pond 2P: CB 1241

Hydrograph



Summary for Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)

Inflow	=	0.65 cfs @	12.03 hrs, Volume=	0.427 af
Outflow	=	0.60 cfs @	12.13 hrs, Volume=	0.418 af, Atten= 7%, Lag= 6.1 min
Primary	=	0.60 cfs @	12.13 hrs, Volume=	0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.48' @ 12.10 hrs Surf.Area= 0.005 ac Storage= 0.017 af

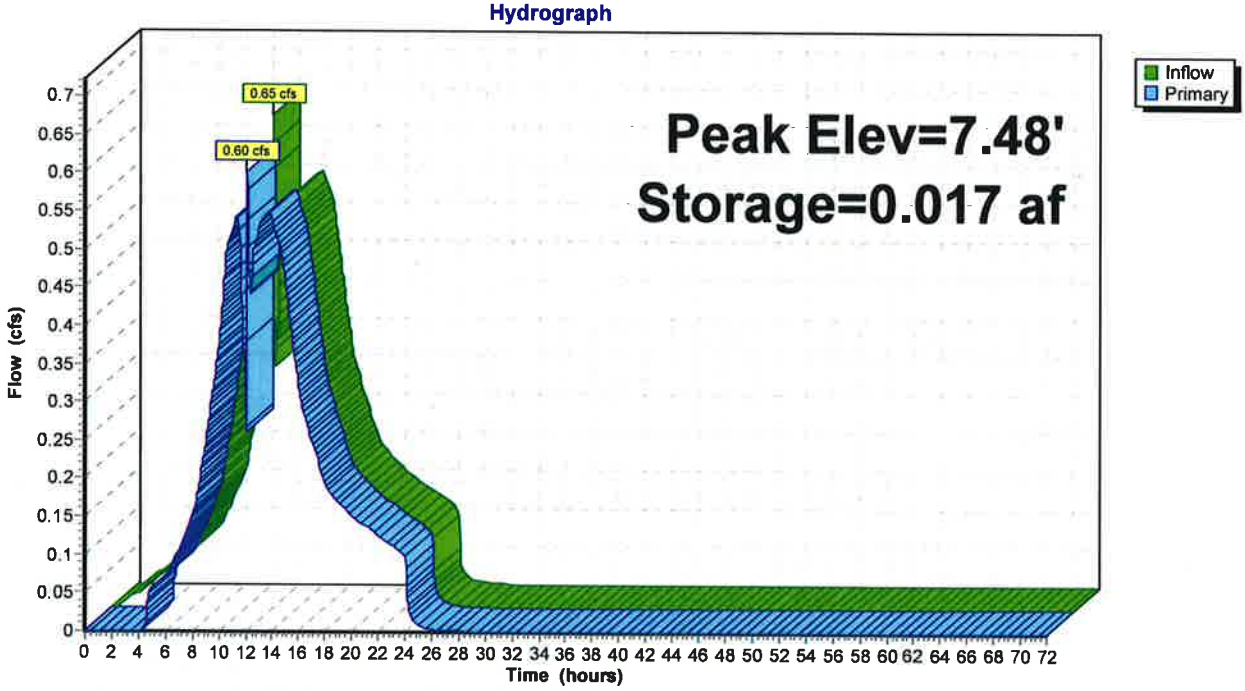
Plug-Flow detention time= 31.8 min calculated for 0.418 af (98% of inflow)
Center-of-Mass det. time= 19.0 min (840.8 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.81'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.81'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.81'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.81' / 5.80' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.81'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.50'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.60 cfs @ 12.13 hrs HW=7.39' TW=7.18' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.60 cfs @ 1.73 fps)
↑**2=Orifice/Grate** (Passes 0.60 cfs of 0.76 cfs potential flow)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: UNDERGROUND SAND FILTER (SYSTEM 1)



Summary for Pond 6P: Roofline Dripe Edge Filter Strip

Inflow Area = 0.466 ac,100.00% Impervious, Inflow Depth = 8.26" for 50 year event
Inflow = 4.01 cfs @ 12.07 hrs, Volume= 0.321 af
Outflow = 3.97 cfs @ 12.08 hrs, Volume= 0.321 af, Atten= 1%, Lag= 0.6 min
Primary = 3.97 cfs @ 12.08 hrs, Volume= 0.321 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 10.47' @ 12.08 hrs Surf.Area= 0.004 ac Storage= 0.003 af

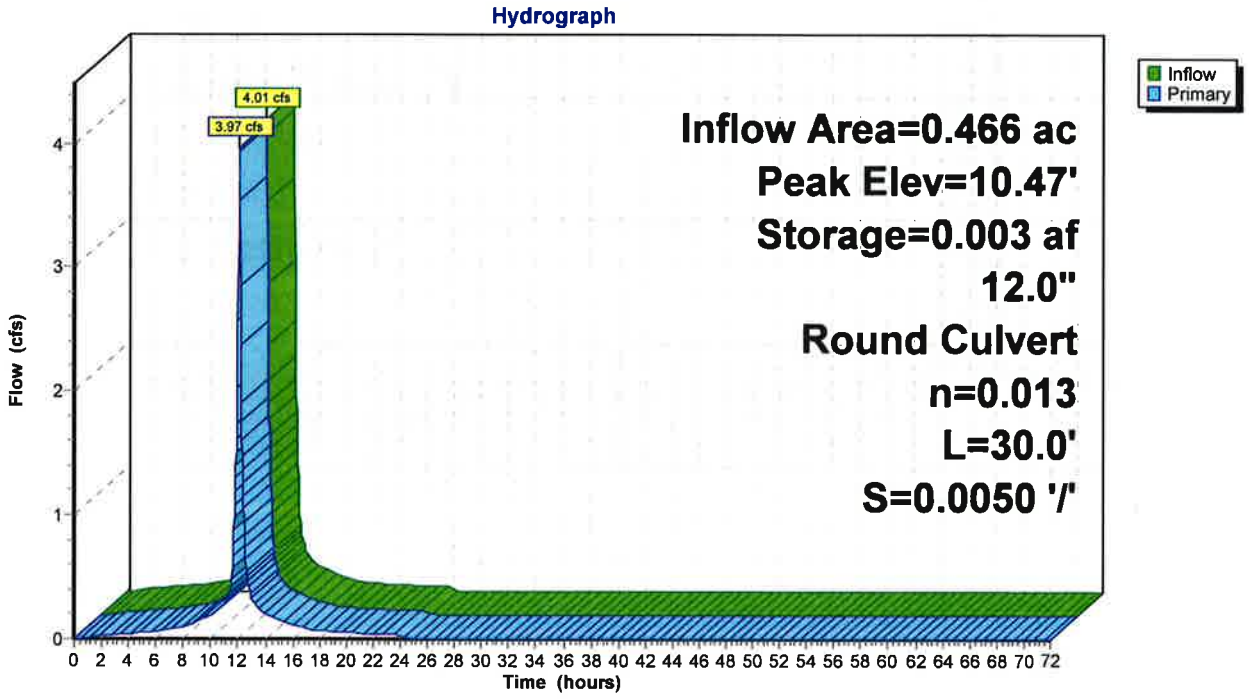
Plug-Flow detention time= 2.1 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (741.1 - 739.5)

Volume	Invert	Avail.Storage	Storage Description
#1	8.65'	0.007 af	**2.00'W x 93.00'L x 4.35'H Prismatoid** 0.019 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	8.65'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.65' / 8.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.91 cfs @ 12.08 hrs HW=10.44' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.91 cfs @ 4.98 fps)

Pond 6P: Roofline Dripe Edge Filter Strip



Summary for Pond 10P: PCB 17

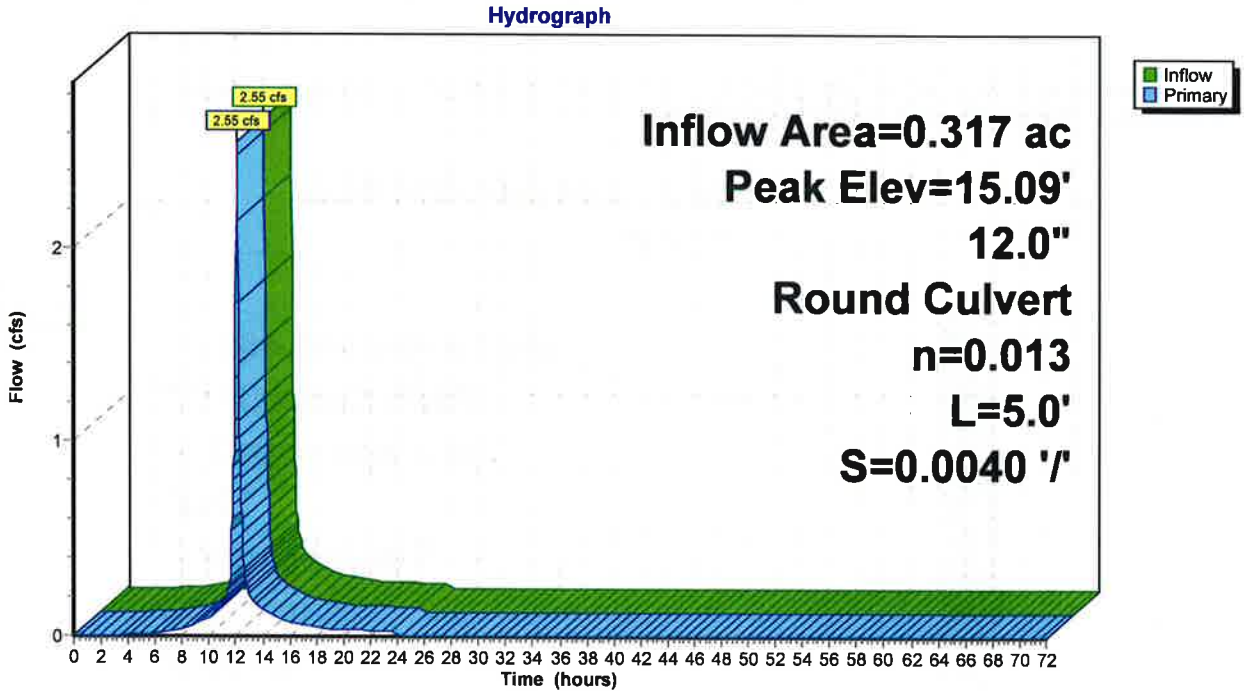
Inflow Area = 0.317 ac, 86.00% Impervious, Inflow Depth = 7.06" for 50 year event
Inflow = 2.55 cfs @ 12.07 hrs, Volume= 0.186 af
Outflow = 2.55 cfs @ 12.07 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Primary = 2.55 cfs @ 12.07 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 15.09' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.56'	**12.0" Round Culvert** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.56' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.87 cfs @ 12.07 hrs HW=14.05' TW=13.66' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.87 cfs @ 2.38 fps)

Pond 10P: PCB 17



Summary for Pond 15P: CB 1243

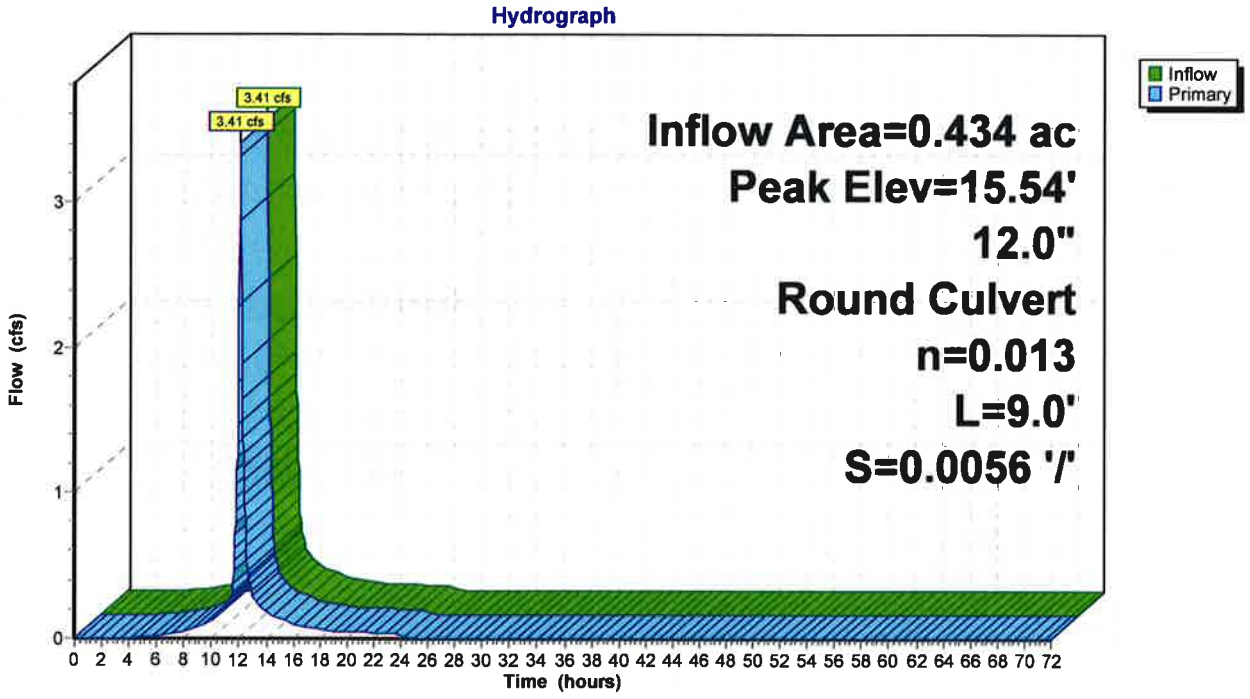
Inflow Area = 0.434 ac, 81.61% Impervious, Inflow Depth = 6.82" for 50 year event
Inflow = 3.41 cfs @ 12.07 hrs, Volume= 0.247 af
Outflow = 3.41 cfs @ 12.07 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min
Primary = 3.41 cfs @ 12.07 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 15.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.21'	**12.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.21' / 7.16' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.26 cfs @ 12.07 hrs HW=14.62' TW=13.42' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 3.26 cfs @ 4.15 fps)

Pond 15P: CB 1243



Summary for Pond 16P: CB 1242

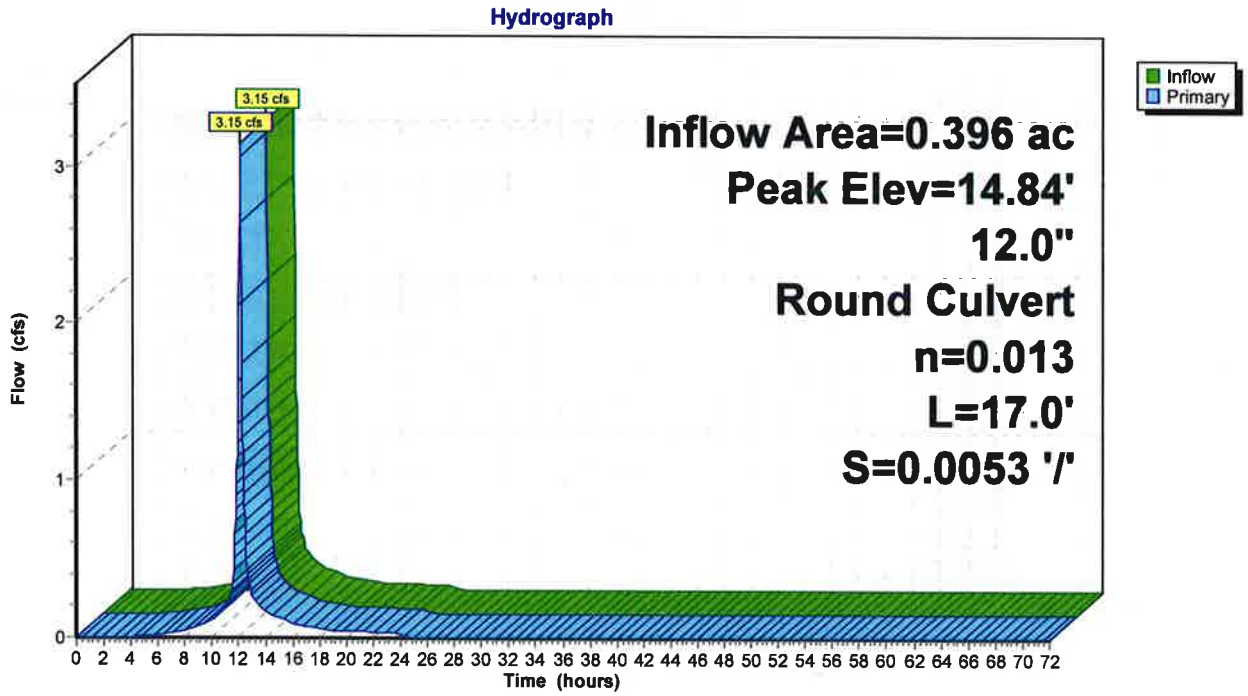
Inflow Area = 0.396 ac, 83.68% Impervious, Inflow Depth = 6.94" for 50 year event
Inflow = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af
Outflow = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.07 hrs, Volume= 0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 14.84' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.79'	**12.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.79' / 6.70' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.10 cfs @ 12.07 hrs HW=13.83' TW=12.75' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 3.10 cfs @ 3.95 fps)

Pond 16P: CB 1242



Summary for Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)

Inflow	=	1.73 cfs @	12.07 hrs, Volume=	0.497 af
Outflow	=	3.07 cfs @	12.09 hrs, Volume=	0.489 af, Atten= 0%, Lag= 1.0 min
Primary	=	3.07 cfs @	12.09 hrs, Volume=	0.489 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 16.61' @ 12.09 hrs Surf.Area= 0.005 ac Storage= 0.024 af

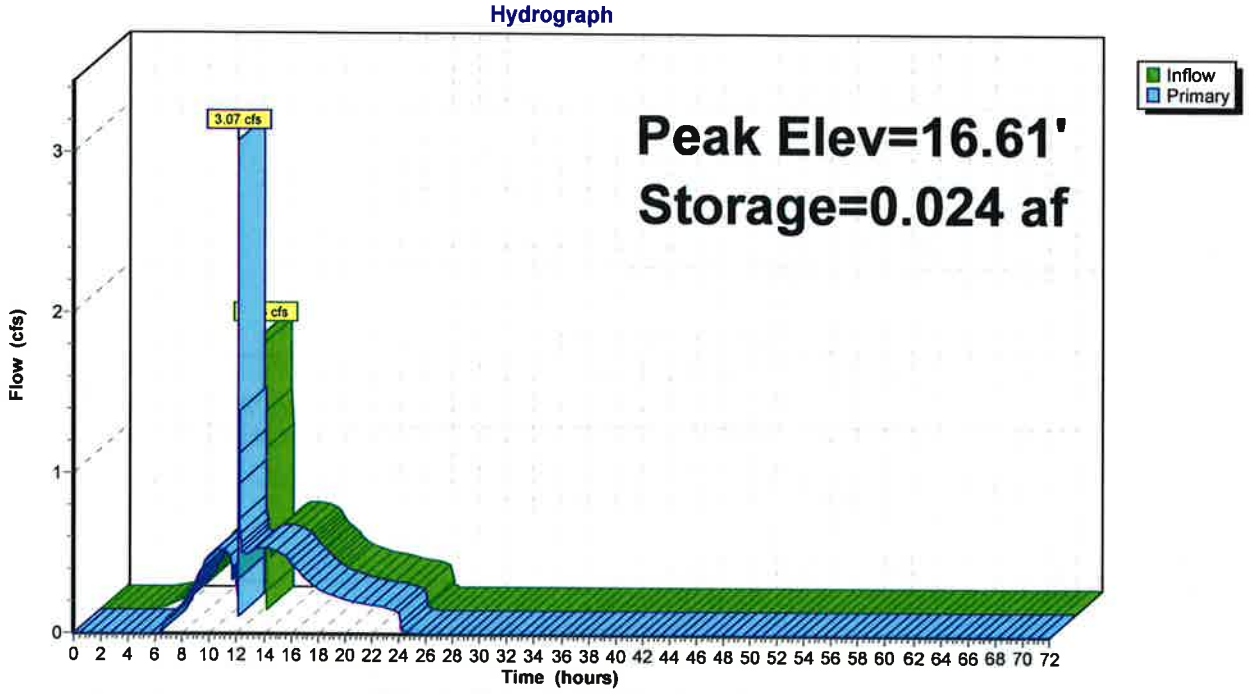
Plug-Flow detention time= 25.2 min calculated for 0.489 af (98% of inflow)
Center-of-Mass det. time= 14.6 min (867.1 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1.58'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	1.58'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	6.58'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.58' / 6.57' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	3.58'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	9.25'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.03 cfs @ 12.09 hrs HW=16.46' TW=11.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.03 cfs @ 8.69 fps)
  ├─**2=Orifice/Grate** (Passes < 3.84 cfs potential flow)
  └─**3=Broad-Crested Rectangular Weir** (Passes < 605.67 cfs potential flow)

Pond 21P: UNDERGROUND SAND FILTER (SYSTEM 3)



Summary for Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)

Inflow	=	2.64 cfs @	12.09 hrs, Volume=	0.486 af
Outflow	=	2.44 cfs @	12.07 hrs, Volume=	0.477 af, Atten= 7%, Lag= 0.0 min
Primary	=	2.44 cfs @	12.07 hrs, Volume=	0.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 13.81' @ 12.07 hrs Surf.Area= 0.005 ac Storage= 0.024 af

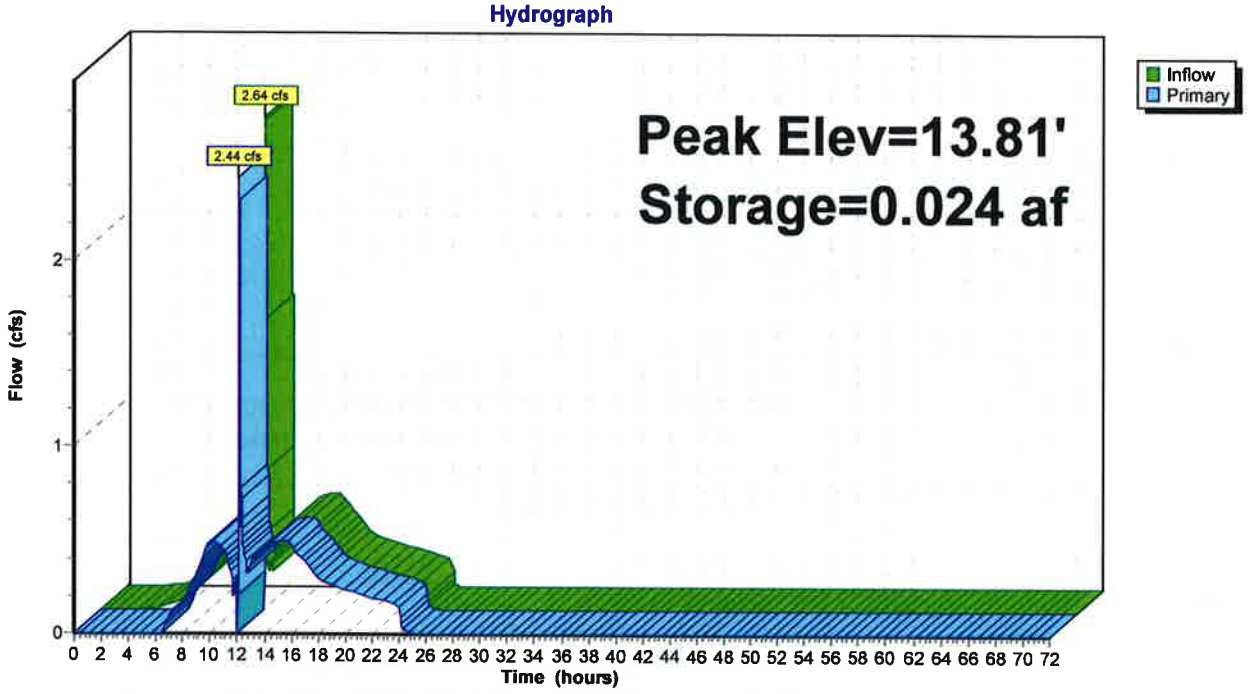
Plug-Flow detention time= 25.7 min calculated for 0.477 af (98% of inflow)
Center-of-Mass det. time= 15.8 min (883.7 - 867.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.32'	0.020 af	**10.00'W x 21.92'L x 8.00'H Prismatoid** 0.040 af Overall - 0.021 af Embedded = 0.020 af
#2	0.32'	0.004 af	**10.00'W x 18.00'L x 5.00'H Prismatoid** Inside #1 0.021 af Overall x 20.0% Voids
		0.024 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	5.32'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.32' / 5.31' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	2.32'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	8.00'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.13 cfs @ 12.07 hrs HW=13.18' TW=10.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.13 cfs @ 6.09 fps)
  ├─**2=Orifice/Grate** (Passes < 2.69 cfs potential flow)
  └─**3=Broad-Crested Rectangular Weir** (Passes < 330.16 cfs potential flow)

Pond 22P: UNDERGROUND SAND FILTER (SYSTEM 2)



Summary for Pond 1264: Separated Drain

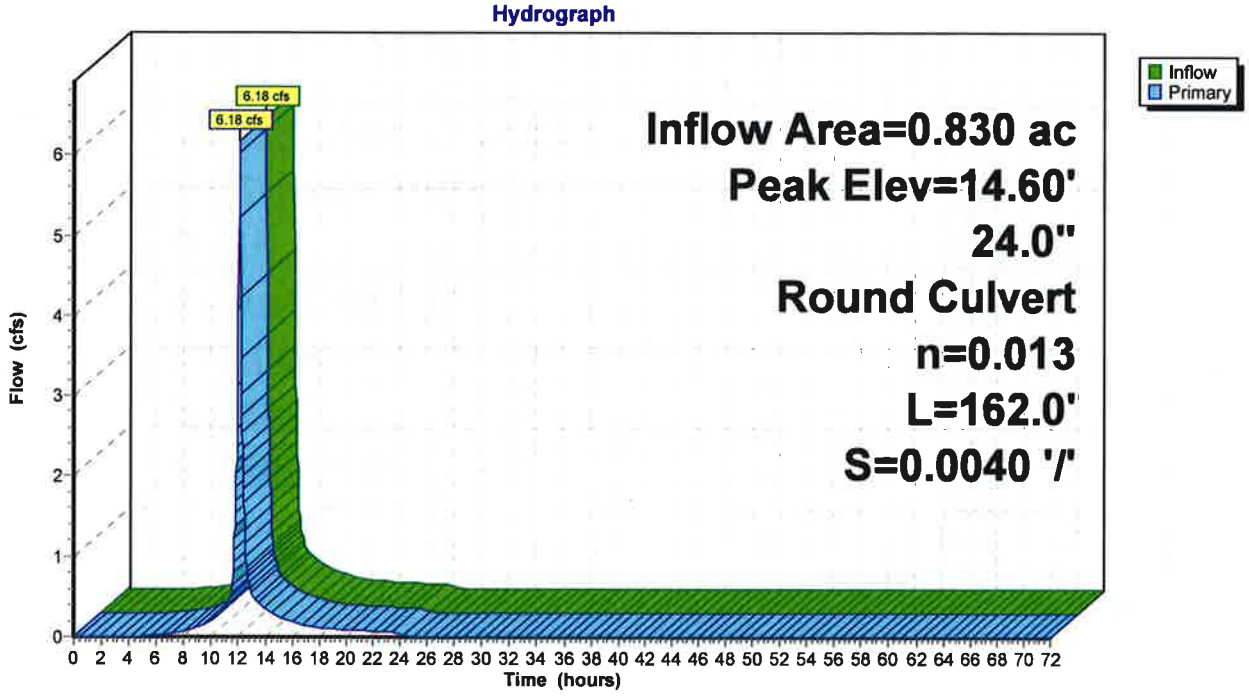
Inflow Area = 0.830 ac, 76.21% Impervious, Inflow Depth = 6.34" for 50 year event
Inflow = 6.18 cfs @ 12.07 hrs, Volume= 0.438 af
Outflow = 6.18 cfs @ 12.07 hrs, Volume= 0.438 af, Atten= 0%, Lag= 0.0 min
Primary = 6.18 cfs @ 12.07 hrs, Volume= 0.438 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 14.60' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**24.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.19' / 7.54' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.07 hrs HW=13.61' TW=13.71' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.00 cfs)

Pond 1264: Separated Drain



Summary for Pond CB 1237:

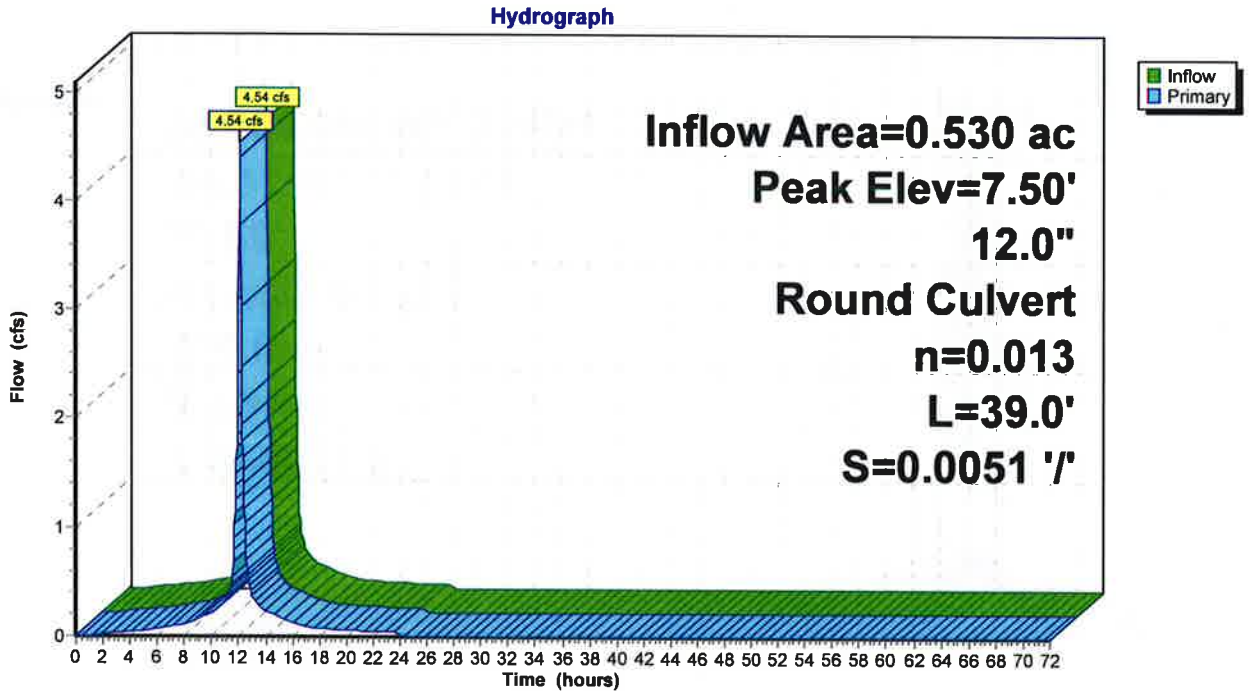
Inflow Area = 0.530 ac, 98.87% Impervious, Inflow Depth = 8.14" for 50 year event
Inflow = 4.54 cfs @ 12.07 hrs, Volume= 0.360 af
Outflow = 4.54 cfs @ 12.07 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min
Primary = 4.54 cfs @ 12.07 hrs, Volume= 0.360 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.50' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.47 cfs @ 12.07 hrs HW=7.46' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 4.47 cfs @ 5.69 fps)

Pond CB 1237:



Summary for Pond CB 1239: Separated Drain

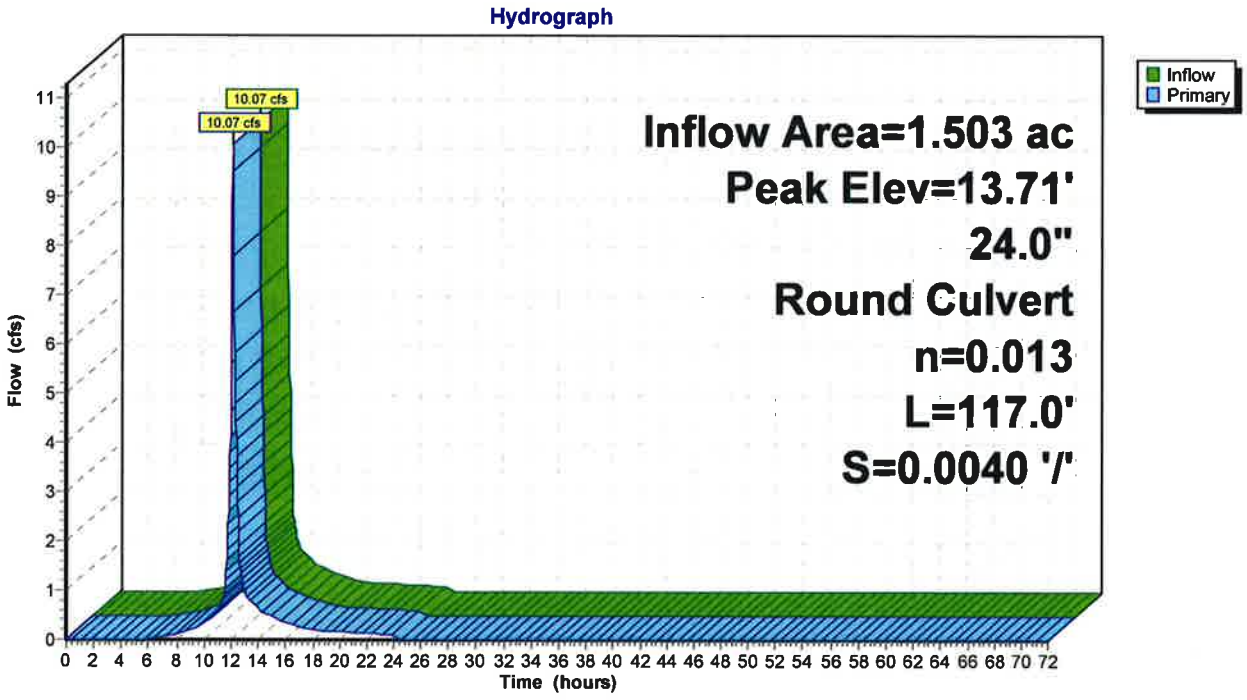
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 6.22" for 50 year event
Inflow = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af
Outflow = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af, Atten= 0%, Lag= 0.0 min
Primary = 10.07 cfs @ 12.11 hrs, Volume= 0.778 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 13.71' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.26'	**24.0" Round Culvert** L= 117.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.26' / 5.79' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.70 cfs @ 12.11 hrs HW=13.51' TW=12.85' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 9.70 cfs @ 3.09 fps)

Pond CB 1239: Separated Drain



Summary for Pond CB 1240: Separated Drain

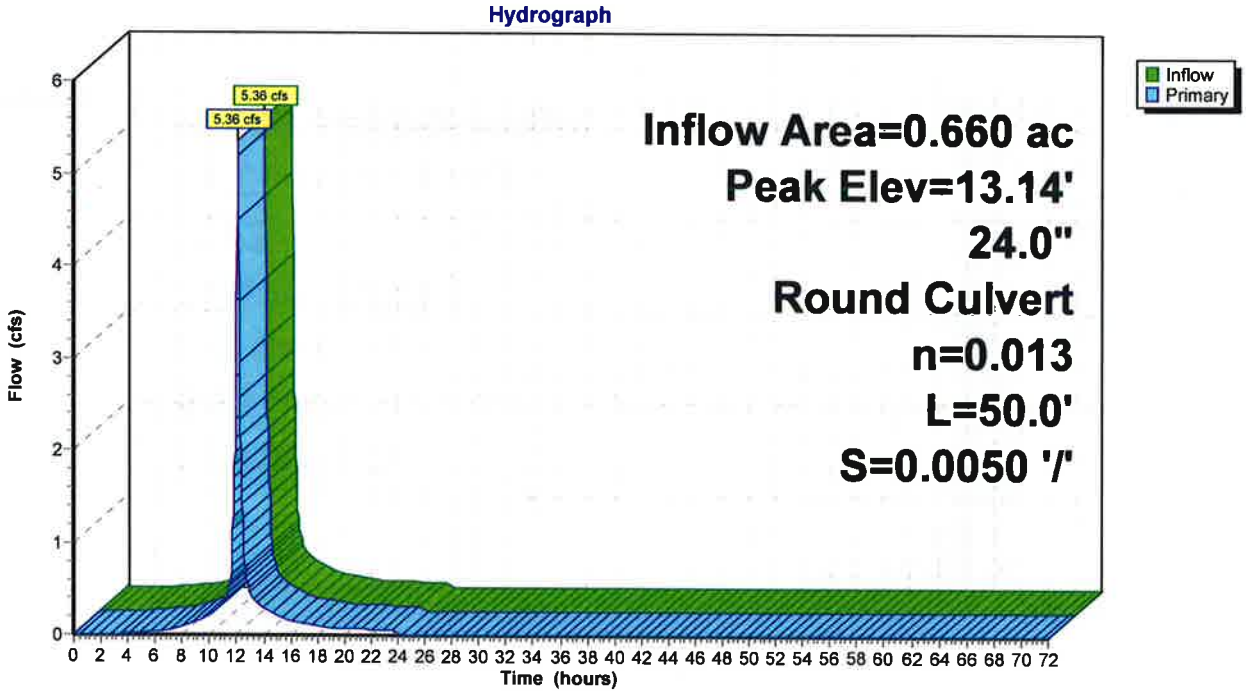
Inflow Area = 0.660 ac, 83.35% Impervious, Inflow Depth = 7.18" for 50 year event
Inflow = 5.36 cfs @ 12.07 hrs, Volume= 0.395 af
Outflow = 5.36 cfs @ 12.07 hrs, Volume= 0.395 af, Atten= 0%, Lag= 0.0 min
Primary = 5.36 cfs @ 12.07 hrs, Volume= 0.395 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 13.14' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.04' / 5.79' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.30 cfs @ 12.07 hrs HW=13.02' TW=12.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 5.30 cfs @ 1.69 fps)

Pond CB 1240: Separated Drain



Summary for Pond CB 1244: PDMH 6

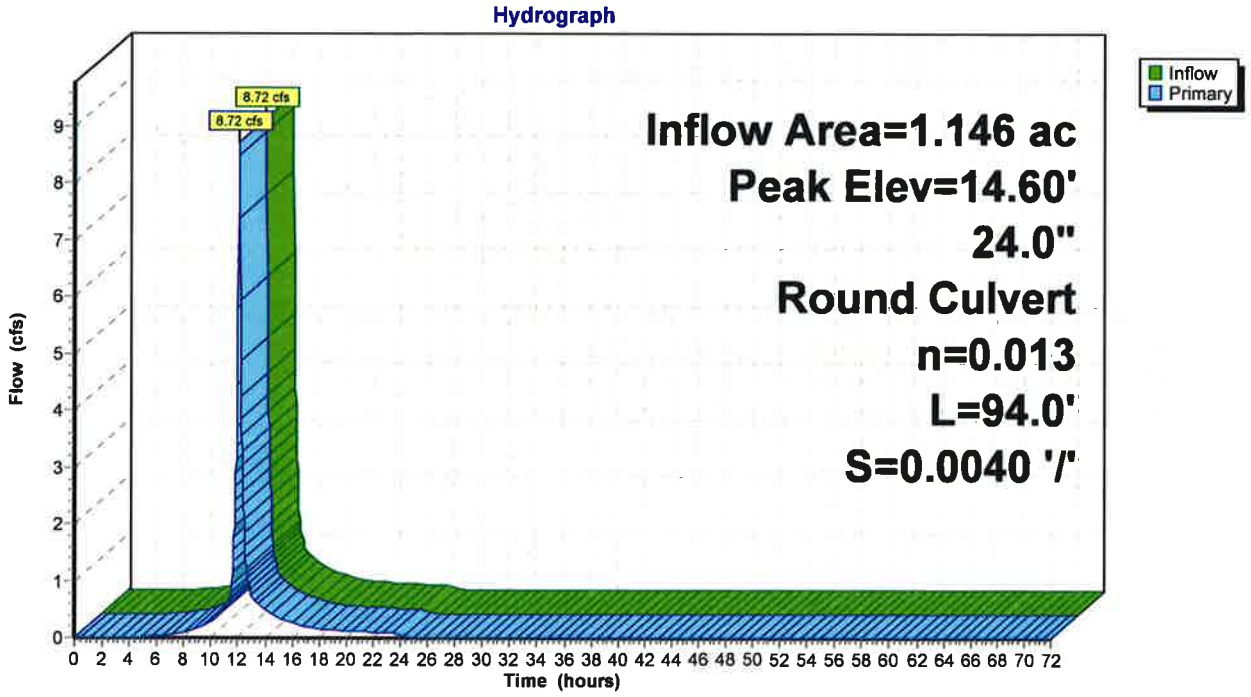
Inflow Area = 1.146 ac, 78.92% Impervious, Inflow Depth = 6.54" for 50 year event
Inflow = 8.72 cfs @ 12.07 hrs, Volume= 0.624 af
Outflow = 8.72 cfs @ 12.07 hrs, Volume= 0.624 af, Atten= 0%, Lag= 0.0 min
Primary = 8.72 cfs @ 12.07 hrs, Volume= 0.624 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 14.60' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.54'	**24.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.54' / 7.16' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.60 cfs @ 12.07 hrs HW=13.70' TW=13.45' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.60 cfs @ 2.42 fps)

Pond CB 1244: PDMH 6



Summary for Pond OCS #1: PCB 16 Forebay w/Catch Basin

Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 5.61" for 50 year event
Inflow = 2.67 cfs @ 12.07 hrs, Volume= 0.186 af
Outflow = 1.26 cfs @ 12.24 hrs, Volume= 0.186 af, Atten= 53%, Lag= 10.1 min
Primary = 1.26 cfs @ 12.24 hrs, Volume= 0.189 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 10.83' @ 12.24 hrs Surf.Area= 1,957 sf Storage= 2,208 cf

Plug-Flow detention time= 37.2 min calculated for 0.185 af (100% of inflow)
Center-of-Mass det. time= 37.7 min (846.3 - 808.6)

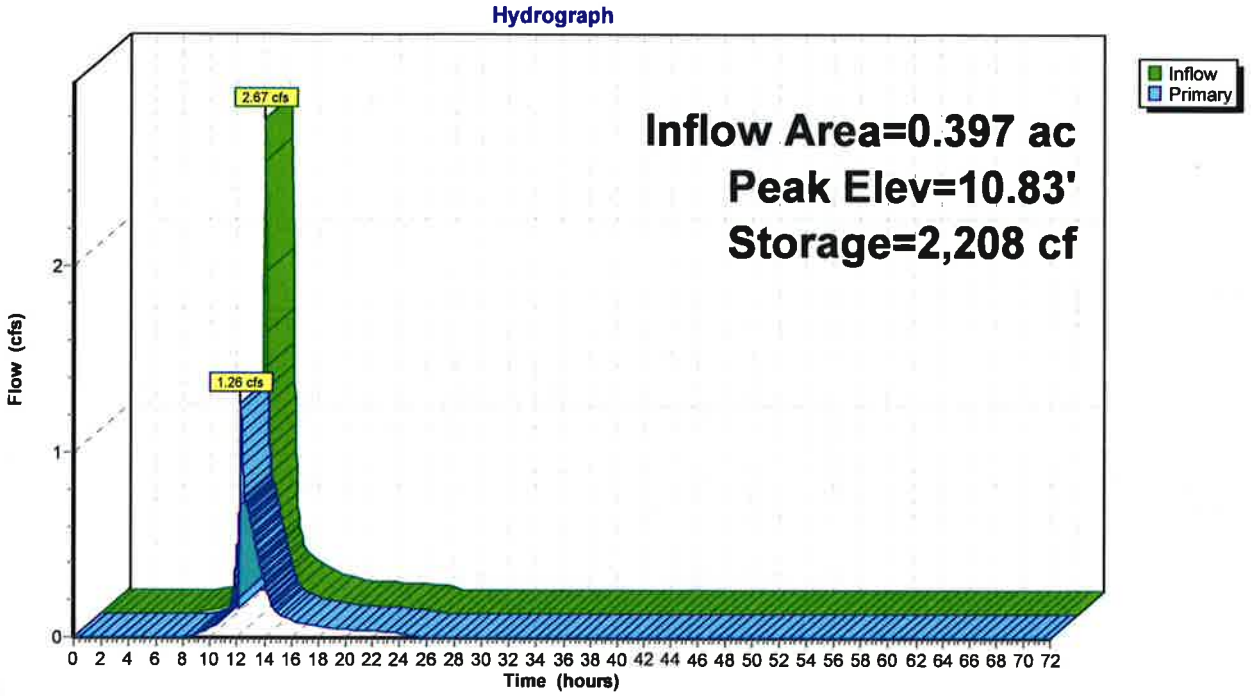
Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	2,543 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.50	1,375	133.0	0	0	1,375
11.00	2,038	161.7	2,543	2,543	2,083

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.25' / 8.19' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.50'	**3.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.26 cfs @ 12.24 hrs HW=10.83' TW=9.55' (Dynamic Tailwater)
↑└1=**Culvert** (Passes 1.26 cfs of 4.29 cfs potential flow)
↑└2=**Orifice/Grate** (Orifice Controls 0.78 cfs @ 5.29 fps)
└3=**Orifice/Grate** (Weir Controls 0.48 cfs @ 0.93 fps)

Pond OCS #1: PCB 16 Forebay w/Catch Basin



Summary for Pond PDMH 1: Separated Drain

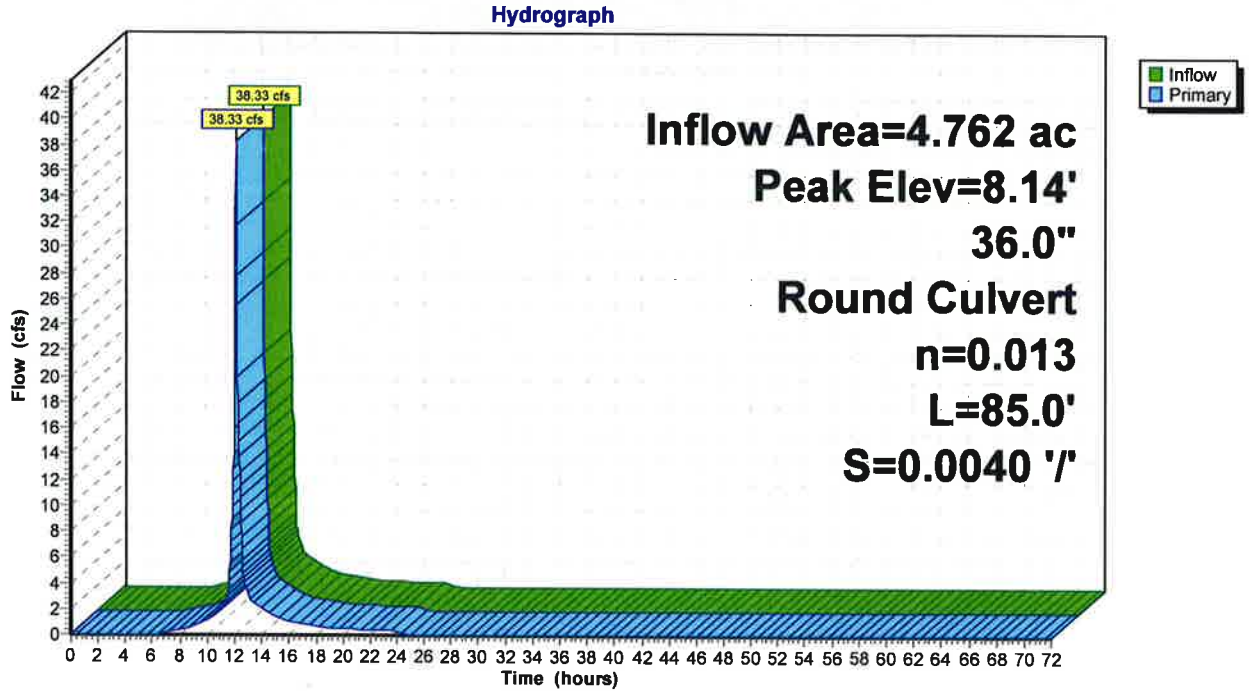
Inflow Area = 4.762 ac, 71.85% Impervious, Inflow Depth = 6.45" for 50 year event
Inflow = 38.33 cfs @ 12.09 hrs, Volume= 2.559 af
Outflow = 38.33 cfs @ 12.09 hrs, Volume= 2.559 af, Atten= 0%, Lag= 0.0 min
Primary = 38.33 cfs @ 12.09 hrs, Volume= 2.559 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.14' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.85' / 4.51' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=38.03 cfs @ 12.09 hrs HW=8.12' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 38.03 cfs @ 6.14 fps)

Pond PDMH 1: Separated Drain



Summary for Pond PDMH 10: New Roadway Closed Drainage System

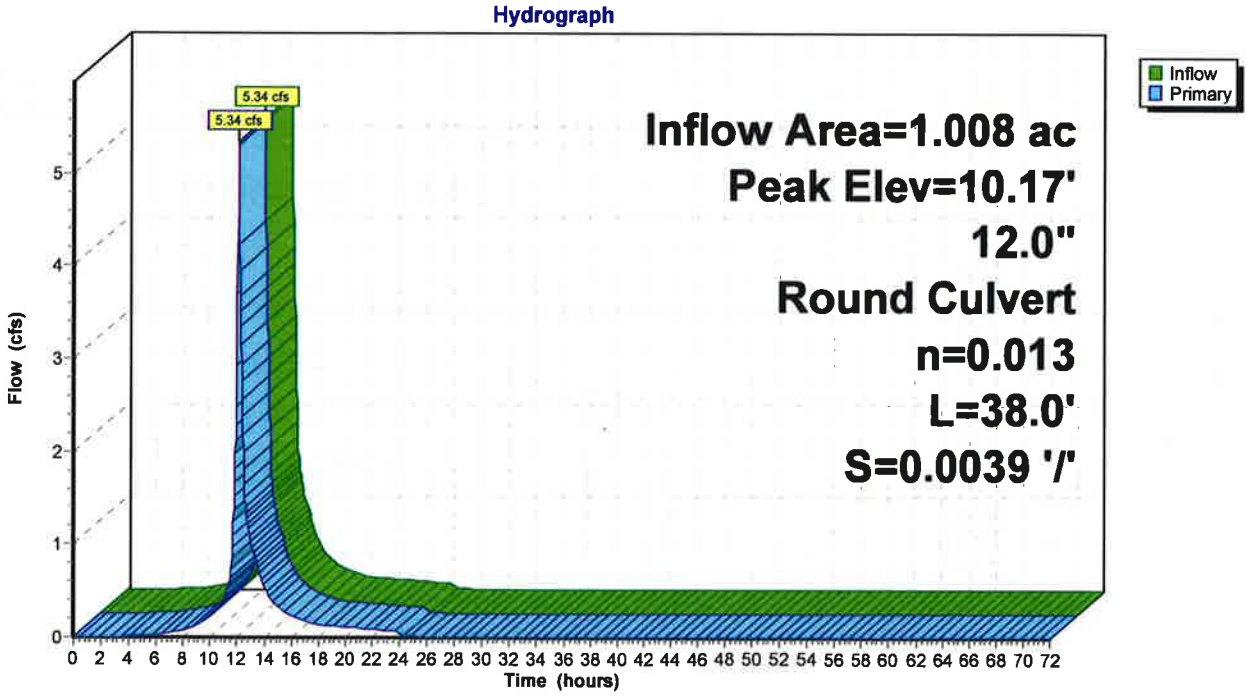
Inflow Area = 1.008 ac, 72.64% Impervious, Inflow Depth = 6.40" for 50 year event
Inflow = 5.34 cfs @ 12.08 hrs, Volume= 0.537 af
Outflow = 5.34 cfs @ 12.08 hrs, Volume= 0.537 af, Atten= 0%, Lag= 0.0 min
Primary = 5.34 cfs @ 12.08 hrs, Volume= 0.537 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 10.17' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.03'	**12.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.03' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.22 cfs @ 12.08 hrs HW=10.05' TW=8.14' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.22 cfs @ 6.65 fps)

Pond PDMH 10: New Roadway Closed Drainage System



Summary for Pond PDMH 11:

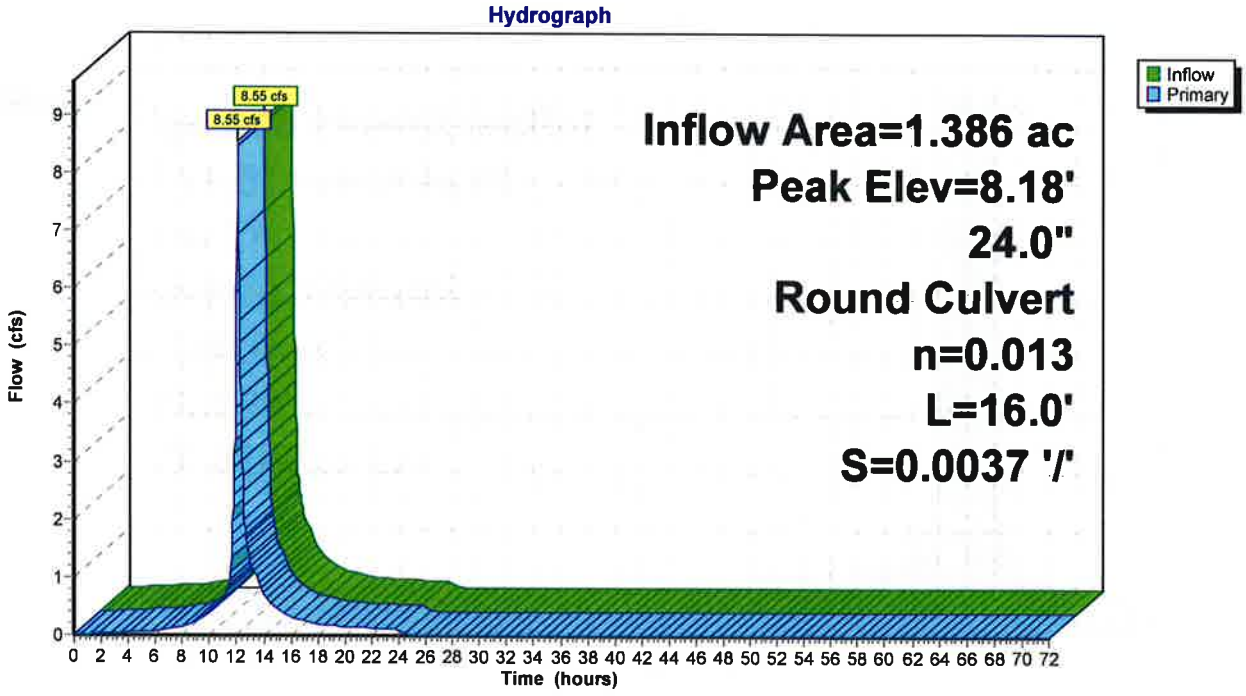
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 6.90" for 50 year event
Inflow = 8.55 cfs @ 12.08 hrs, Volume= 0.798 af
Outflow = 8.55 cfs @ 12.08 hrs, Volume= 0.798 af, Atten= 0%, Lag= 0.0 min
Primary = 8.55 cfs @ 12.08 hrs, Volume= 0.798 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.18' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.88'	**24.0" Round Culvert** L= 16.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.88' / 5.82' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.34 cfs @ 12.08 hrs HW=8.13' TW=7.64' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.34 cfs @ 2.66 fps)

Pond PDMH 11:



Summary for Pond PDMH 12:

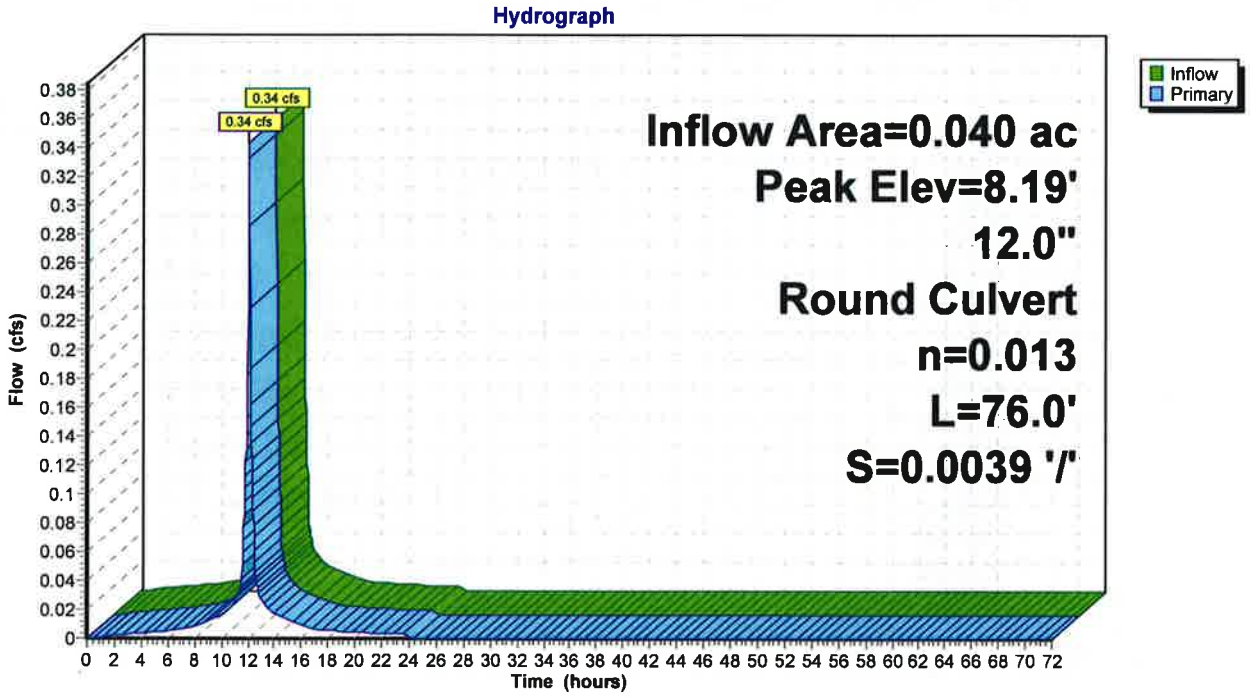
Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth = 8.26" for 50 year event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 0.027 af
Outflow = 0.34 cfs @ 12.07 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.07 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 8.19' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.18'	**12.0" Round 76** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.18' / 5.88' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.07 hrs HW=8.11' TW=8.10' (Dynamic Tailwater)
↑**1=76** (Inlet Controls 0.34 cfs @ 0.43 fps)

Pond PDMH 12:



Summary for Pond PDMH 13: New Roadway Closed Drainage System

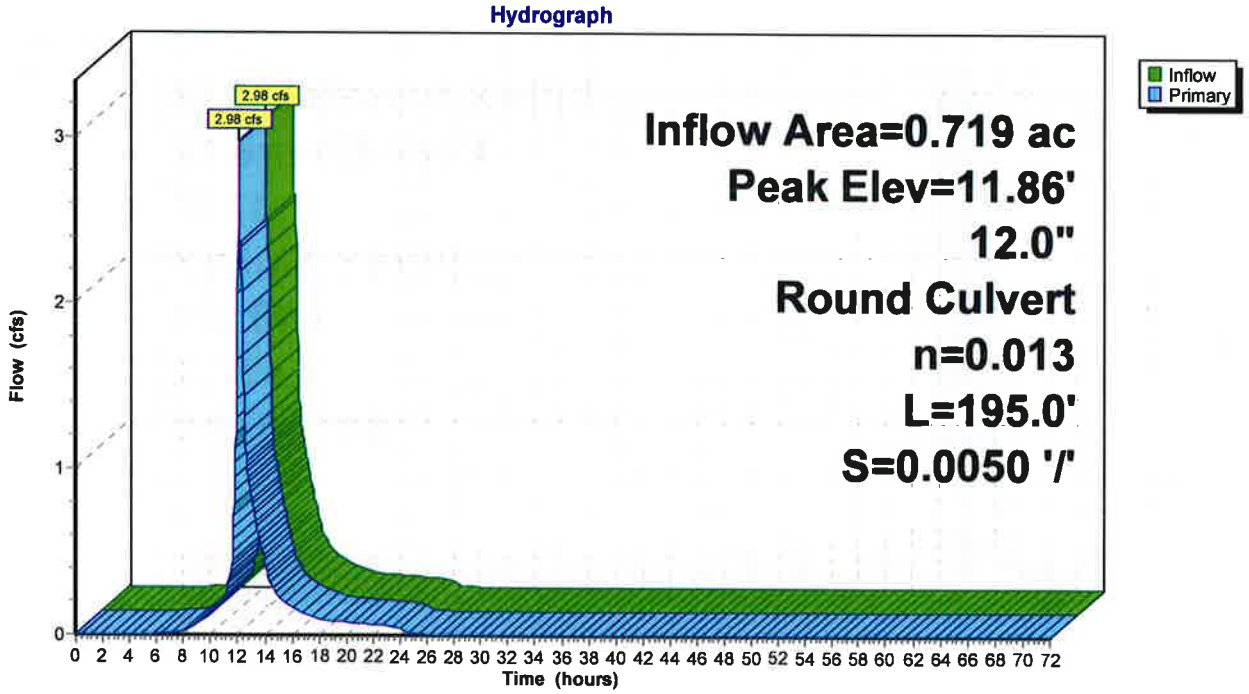
Inflow Area = 0.719 ac, 65.95% Impervious, Inflow Depth = 5.94" for 50 year event
Inflow = 2.98 cfs @ 12.09 hrs, Volume= 0.355 af
Outflow = 2.98 cfs @ 12.09 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.09 hrs, Volume= 0.355 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 11.86' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**12.0" Round Culvert** L= 195.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.00' / 6.03' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.92 cfs @ 12.09 hrs HW=11.73' TW=10.09' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 2.92 cfs @ 3.72 fps)

Pond PDMH 13: New Roadway Closed Drainage System



Summary for Pond PDMH 14:

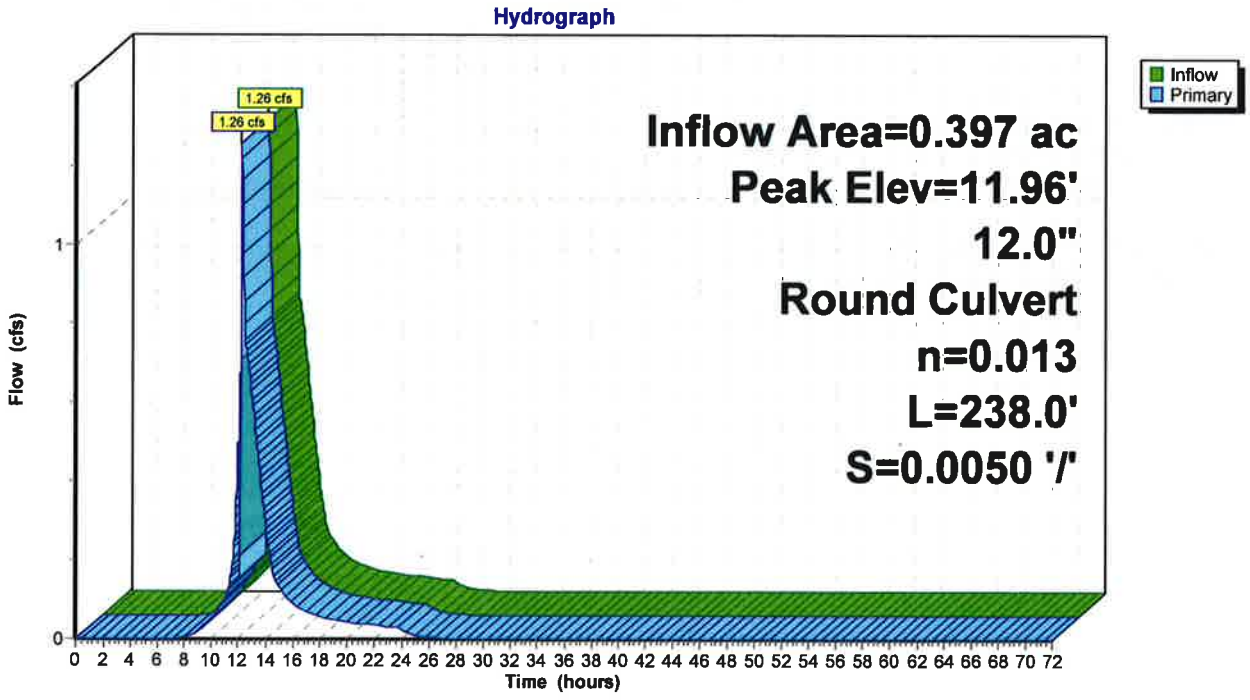
Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 5.71" for 50 year event
Inflow = 1.26 cfs @ 12.24 hrs, Volume= 0.189 af
Outflow = 1.26 cfs @ 12.24 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.24 hrs, Volume= 0.189 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 11.96' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**12.0" Round Culvert** L= 238.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.19' / 7.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.24 hrs HW=9.55' TW=9.17' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.26 cfs @ 1.60 fps)

Pond PDMH 14:



Summary for Pond PDMH 15: UNDERGROUND SAND FILTER

Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 6.90" for 50 year event
Inflow = 8.55 cfs @ 12.08 hrs, Volume= 0.798 af
Outflow = 8.55 cfs @ 12.08 hrs, Volume= 0.798 af, Atten= 0%, Lag= 0.0 min
Primary = 7.94 cfs @ 12.08 hrs, Volume= 0.371 af
Secondary = 0.65 cfs @ 12.03 hrs, Volume= 0.427 af

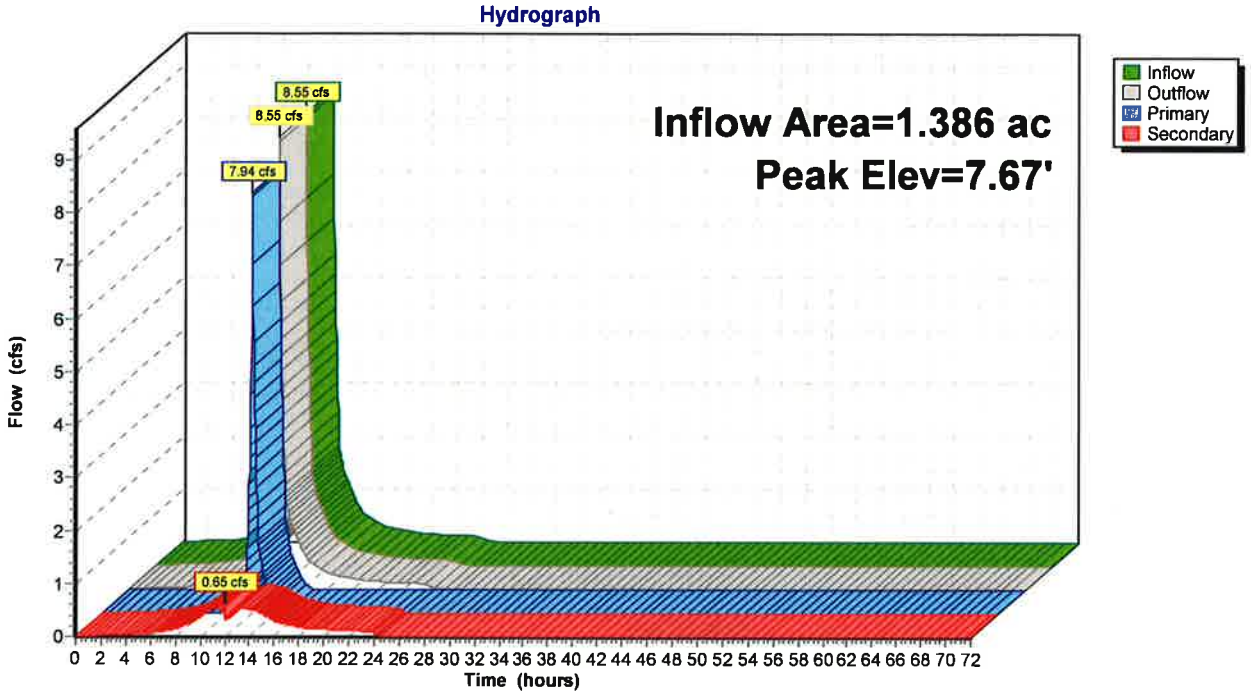
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.67' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.82'	**24.0" Round Culvert** L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.82' / 5.75' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.82'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.82' / 5.81' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.50'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=7.79 cfs @ 12.08 hrs HW=7.65' TW=7.35' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 7.79 cfs @ 3.39 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 7.79 cfs of 13.82 cfs potential flow)

Secondary OutFlow Max=0.64 cfs @ 12.03 hrs HW=7.49' TW=7.25' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.64 cfs @ 1.85 fps)

Pond PDMH 15: UNDERGROUND SAND FILTER



Summary for Pond PDMH 15a:

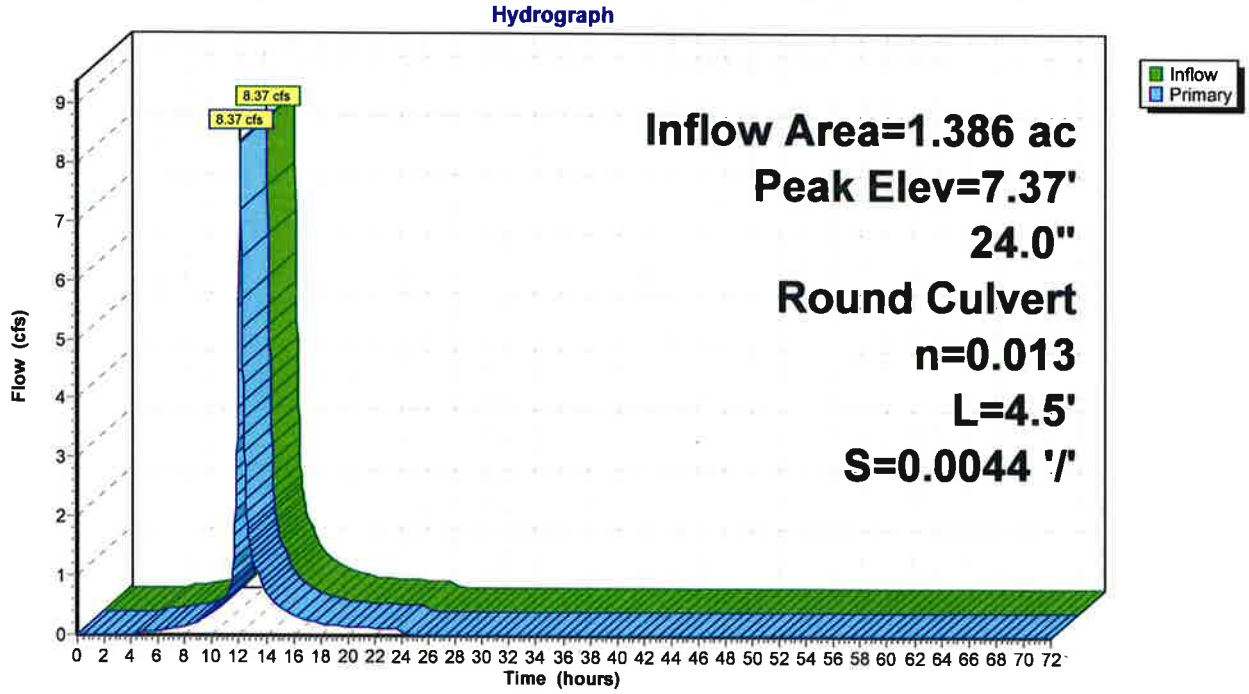
Inflow Area = 1.386 ac, 80.11% Impervious, Inflow Depth = 6.83" for 50 year event
Inflow = 8.37 cfs @ 12.08 hrs, Volume= 0.789 af
Outflow = 8.37 cfs @ 12.08 hrs, Volume= 0.789 af, Atten= 0%, Lag= 0.0 min
Primary = 8.37 cfs @ 12.08 hrs, Volume= 0.789 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 7.37' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.75'	**24.0" Round Culvert** L= 4.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.75' / 5.73' S= 0.0044 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.23 cfs @ 12.08 hrs HW=7.35' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 8.23 cfs @ 4.18 fps)

Pond PDMH 15a:



Summary for Pond PDMH 2:

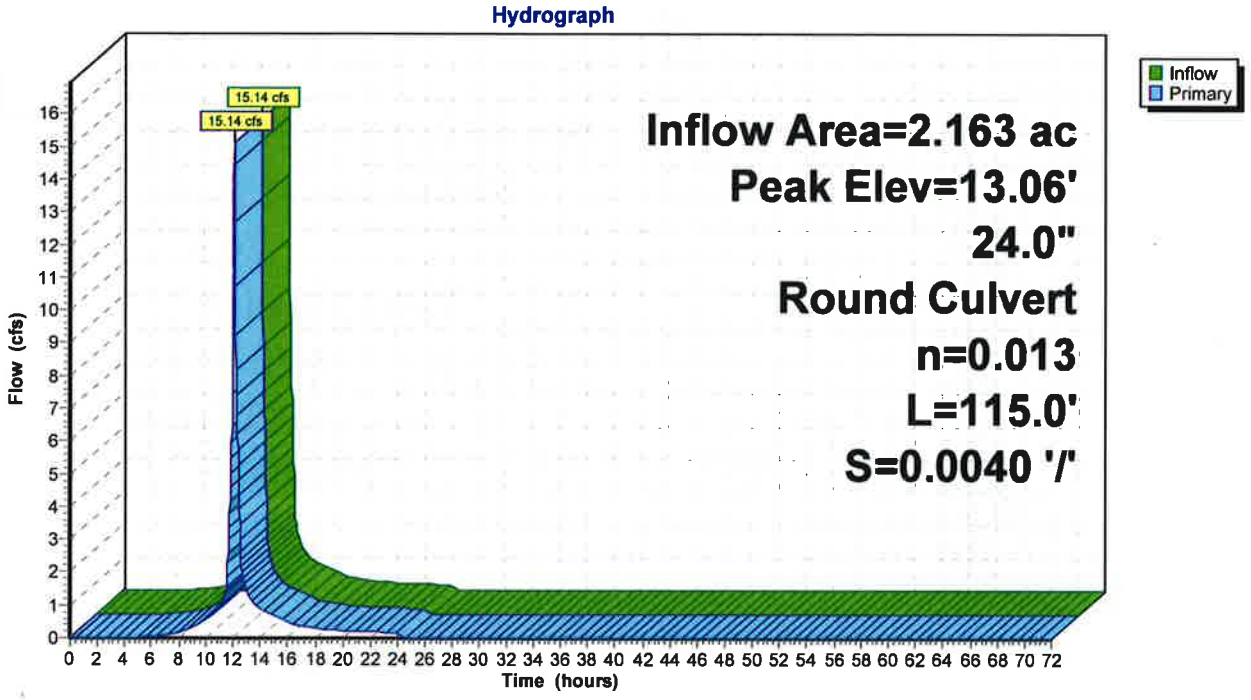
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 6.51" for 50 year event
Inflow = 15.14 cfs @ 12.09 hrs, Volume= 1.173 af
Outflow = 15.14 cfs @ 12.09 hrs, Volume= 1.173 af, Atten= 0%, Lag= 0.0 min
Primary = 15.14 cfs @ 12.09 hrs, Volume= 1.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 13.06' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.79'	**24.0" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.79' / 5.33' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.02 cfs @ 12.09 hrs HW=13.02' TW=11.98' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 15.02 cfs @ 4.78 fps)

Pond PDMH 2:



Summary for Pond PDMH 3: Separated Drain

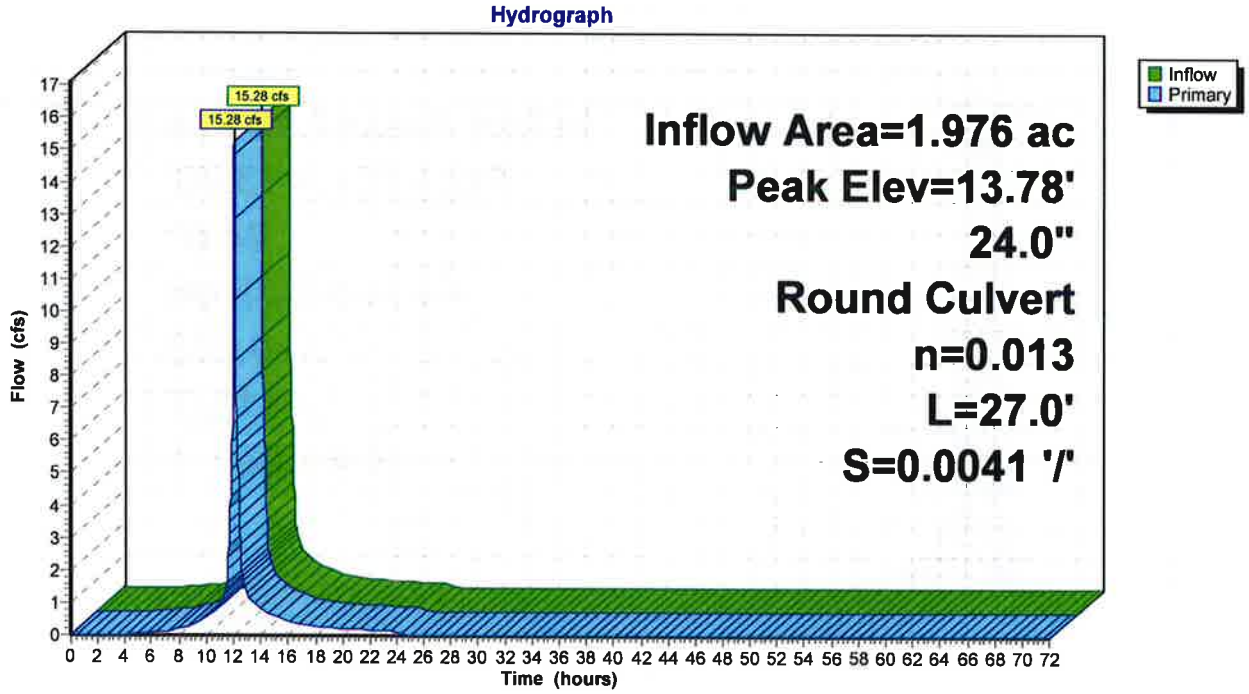
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 6.68" for 50 year event
Inflow = 15.28 cfs @ 12.07 hrs, Volume= 1.100 af
Outflow = 15.28 cfs @ 12.07 hrs, Volume= 1.100 af, Atten= 0%, Lag= 0.0 min
Primary = 15.28 cfs @ 12.07 hrs, Volume= 1.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 13.78' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	**24.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.70' / 6.59' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.99 cfs @ 12.07 hrs HW=12.77' TW=11.79' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 14.99 cfs @ 4.77 fps)

Pond PDMH 3: Separated Drain



Summary for Pond PDMH 4: Separated Drain

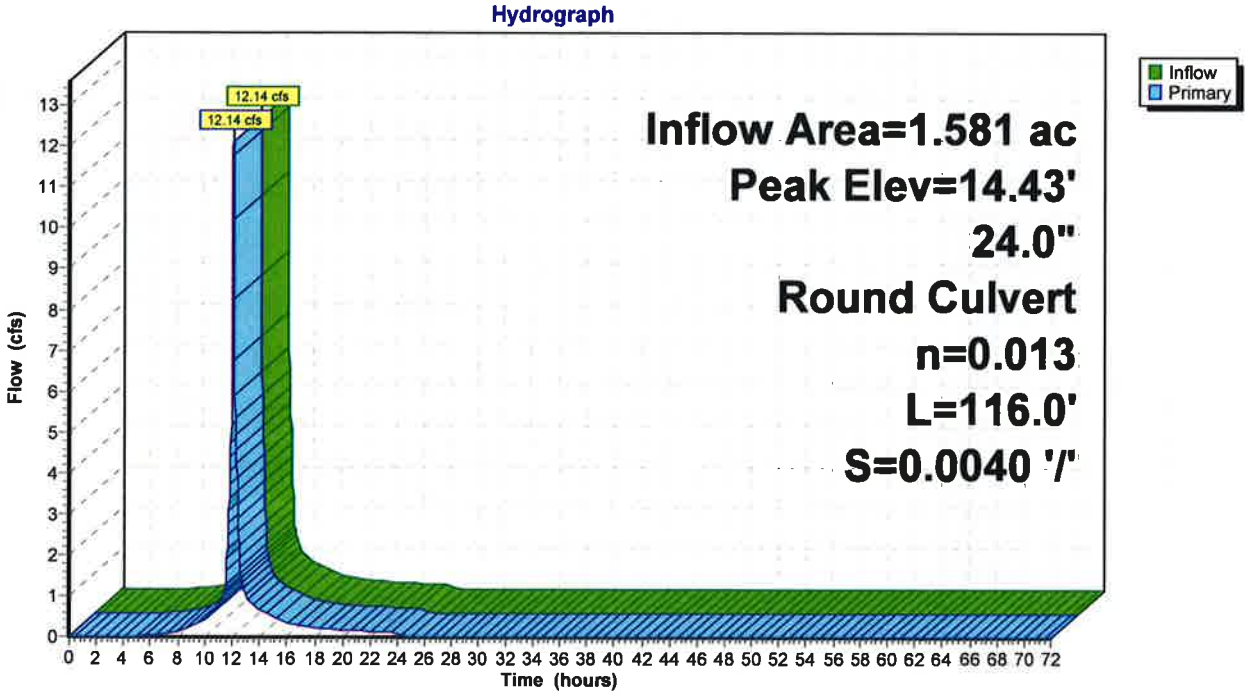
Inflow Area = 1.581 ac, 79.66% Impervious, Inflow Depth = 6.61" for 50 year event
Inflow = 12.14 cfs @ 12.07 hrs, Volume= 0.871 af
Outflow = 12.14 cfs @ 12.07 hrs, Volume= 0.871 af, Atten= 0%, Lag= 0.0 min
Primary = 12.14 cfs @ 12.07 hrs, Volume= 0.871 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 14.43' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.16'	**24.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.16' / 6.70' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=11.98 cfs @ 12.07 hrs HW=13.44' TW=12.77' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 11.98 cfs @ 3.81 fps)

Pond PDMH 4: Separated Drain



Summary for Pond PDMH 5:

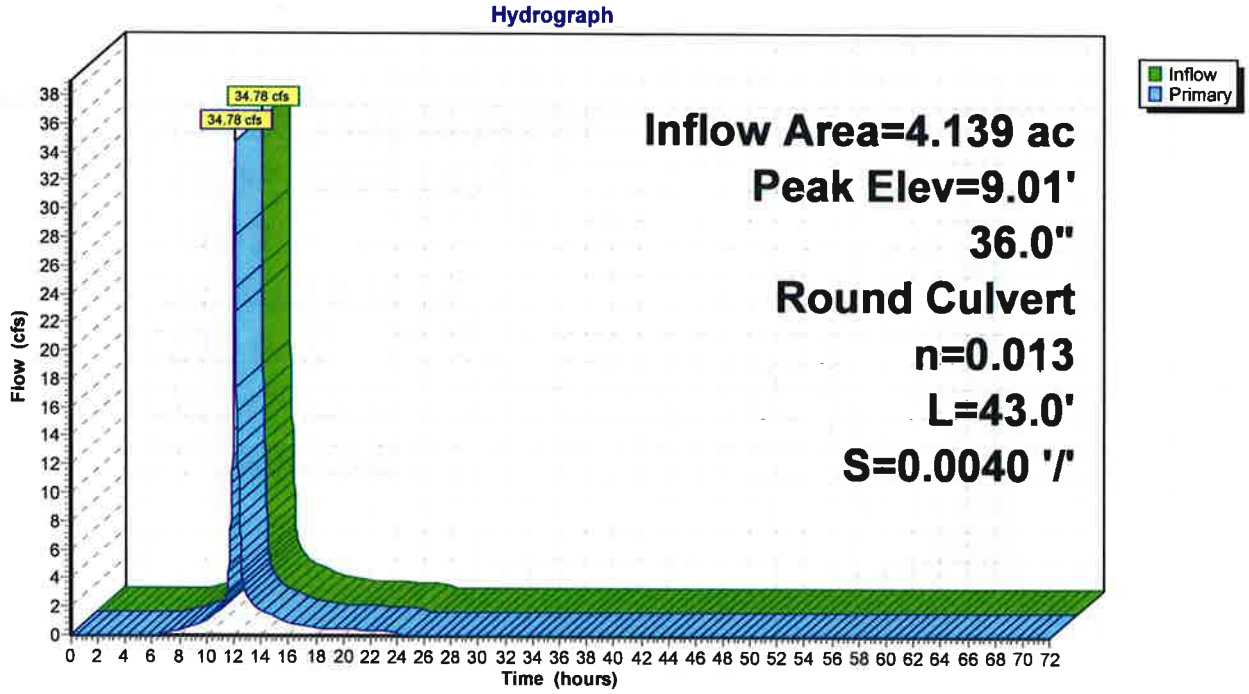
Inflow Area = 4.139 ac, 75.59% Impervious, Inflow Depth = 6.61" for 50 year event
Inflow = 34.78 cfs @ 12.09 hrs, Volume= 2.280 af
Outflow = 34.78 cfs @ 12.09 hrs, Volume= 2.280 af, Atten= 0%, Lag= 0.0 min
Primary = 34.78 cfs @ 12.09 hrs, Volume= 2.280 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 9.01' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.02'	**36.0" Round Culvert** L= 43.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.02' / 4.85' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=31.58 cfs @ 12.09 hrs HW=8.97' TW=8.11' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 31.58 cfs @ 4.47 fps)

Pond PDMH 5:



Summary for Pond PDMH 7:

Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 6.68" for 50 year event
Inflow = 15.28 cfs @ 12.07 hrs, Volume= 1.100 af
Outflow = 15.28 cfs @ 12.07 hrs, Volume= 1.100 af, Atten= 0%, Lag= 0.0 min
Primary = 14.95 cfs @ 12.08 hrs, Volume= 0.609 af
Secondary = 1.73 cfs @ 12.07 hrs, Volume= 0.497 af

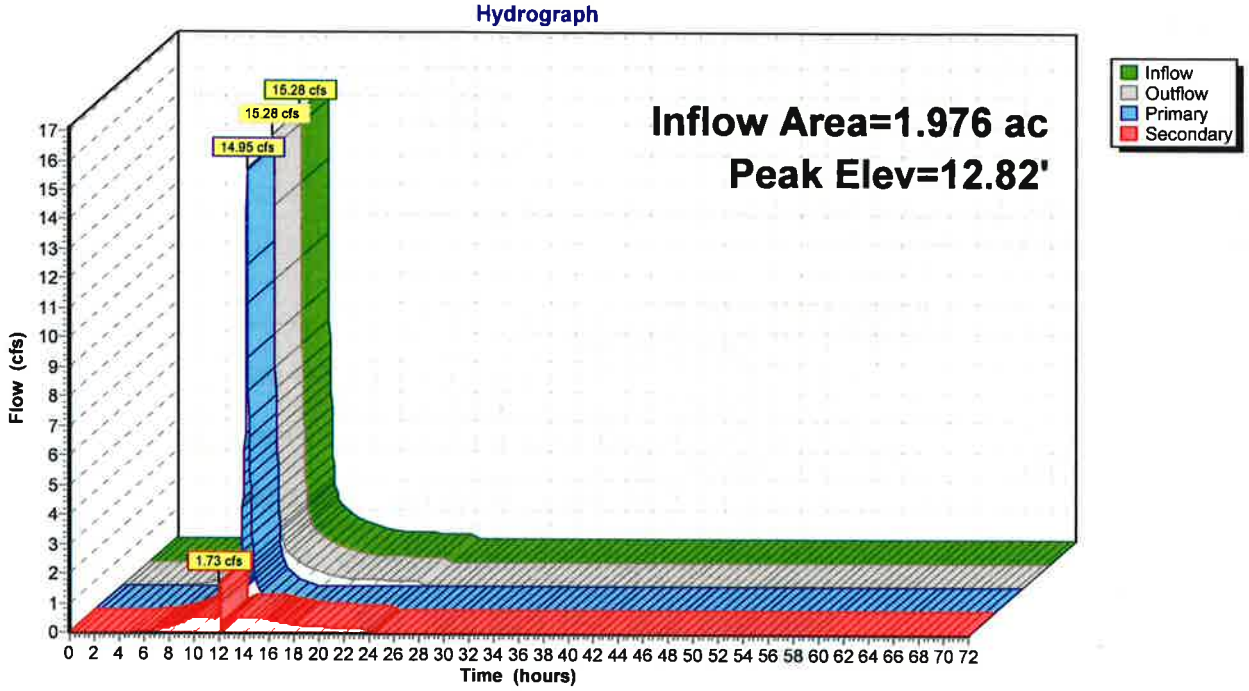
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 12.82' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.59'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.50' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	6.59'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.59' / 6.58' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	7.25'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=14.52 cfs @ 12.08 hrs HW=12.48' TW=11.01' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 14.52 cfs @ 4.62 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 14.52 cfs of 138.64 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 12.07 hrs HW=11.89' TW=12.73' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Pond PDMH 7:


Hydrograph
Inflow Area=1.976 ac
Peak Elev=12.82'
15.28 cfs
15.28 cfs
14.95 cfs
1.73 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond PDMH 7a:

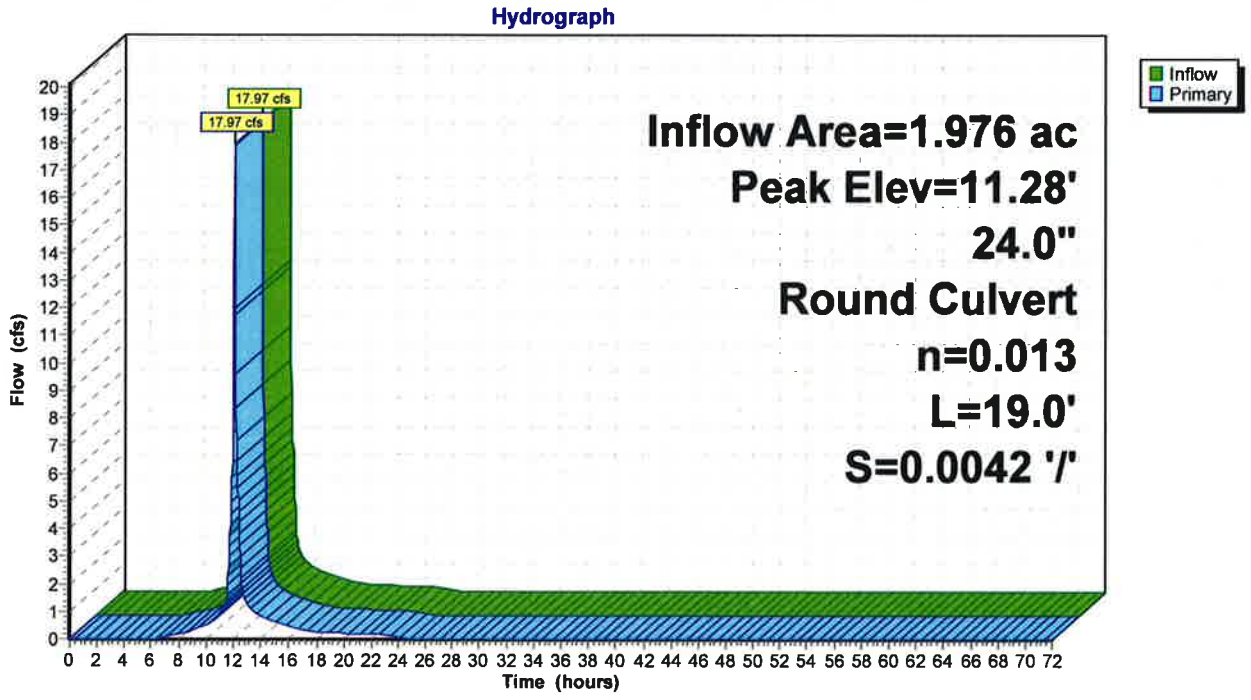
Inflow Area = 1.976 ac, 80.46% Impervious, Inflow Depth = 6.67" for 50 year event
Inflow = 17.97 cfs @ 12.09 hrs, Volume= 1.098 af
Outflow = 17.97 cfs @ 12.09 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
Primary = 17.97 cfs @ 12.09 hrs, Volume= 1.098 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 11.28' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.50'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.50' / 6.42' S= 0.0042 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.68 cfs @ 12.09 hrs HW=11.17' TW=8.98' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 17.68 cfs @ 5.63 fps)

Pond PDMH 7a:



Summary for Pond PDMH 8:

Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 6.51" for 50 year event
Inflow = 15.14 cfs @ 12.09 hrs, Volume= 1.173 af
Outflow = 15.14 cfs @ 12.09 hrs, Volume= 1.173 af, Atten= 0%, Lag= 0.0 min
Primary = 15.14 cfs @ 12.09 hrs, Volume= 0.703 af
Secondary = 2.64 cfs @ 12.09 hrs, Volume= 0.486 af

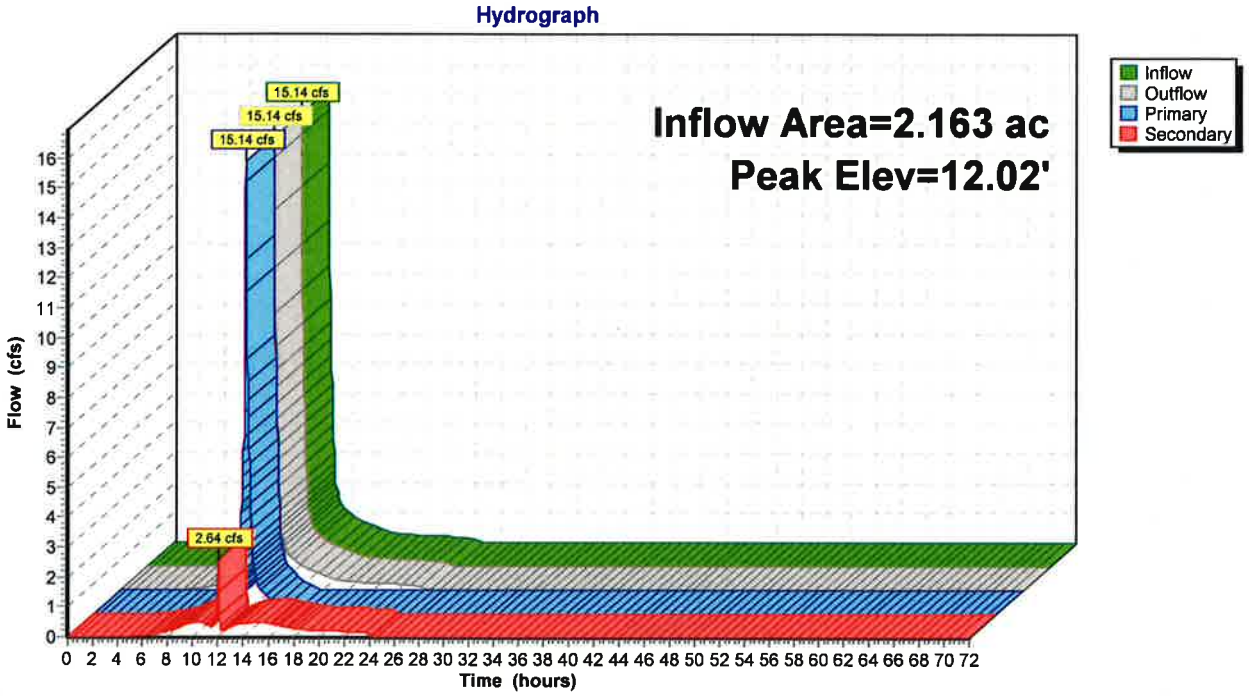
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 12.02' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.33'	**24.0" Round Culvert** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.26' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	5.33'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.33' / 5.32' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 1	6.00'	**5.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=12.32 cfs @ 12.09 hrs HW=11.98' TW=10.91' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.32 cfs @ 3.92 fps)
↑—**3=Broad-Crested Rectangular Weir** (Passes 12.32 cfs of 143.29 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 12.09 hrs HW=12.00' TW=12.17' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.00 cfs)

Pond PDMH 8:


Hydrograph
Inflow Area=2.163 ac
Peak Elev=12.02'
15.14 cfs
15.14 cfs
15.14 cfs
2.64 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond PDMH 8a:

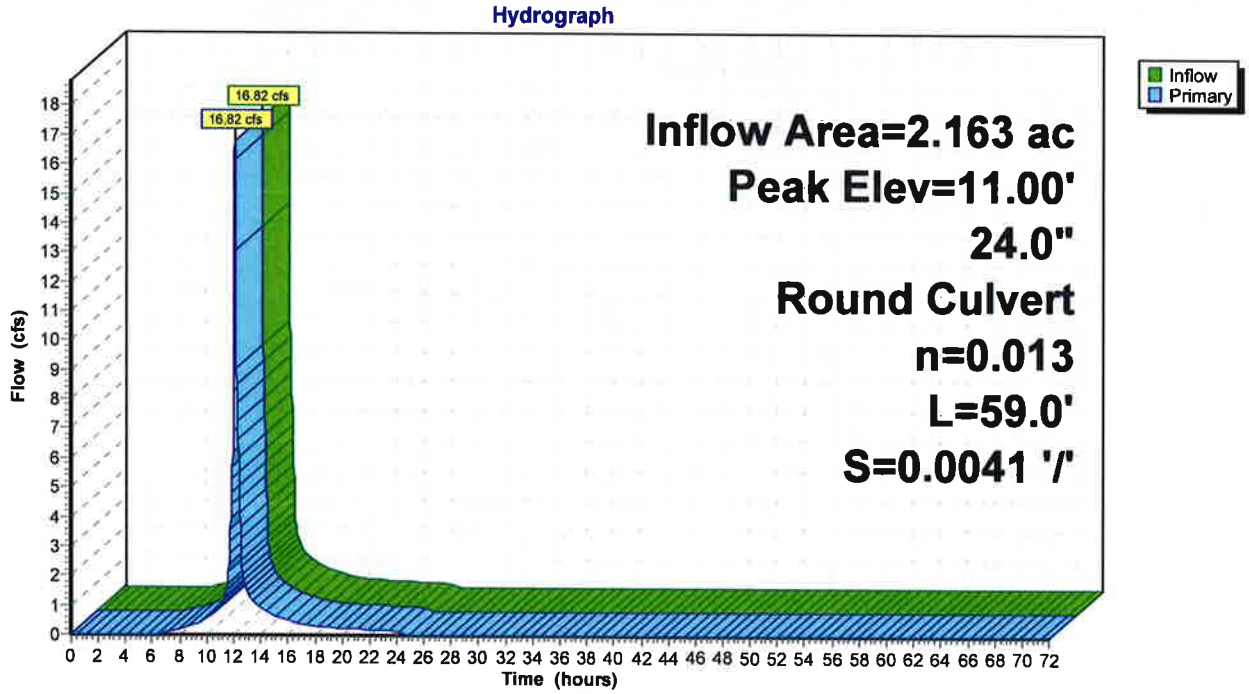
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 6.56" for 50 year event
Inflow = 16.82 cfs @ 12.09 hrs, Volume= 1.182 af
Outflow = 16.82 cfs @ 12.09 hrs, Volume= 1.182 af, Atten= 0%, Lag= 0.0 min
Primary = 16.82 cfs @ 12.09 hrs, Volume= 1.182 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 7
Peak Elev= 11.00' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.26'	**24.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.26' / 5.02' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=16.78 cfs @ 12.09 hrs HW=10.92' TW=8.95' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 16.78 cfs @ 5.34 fps)

Pond PDMH 8a:

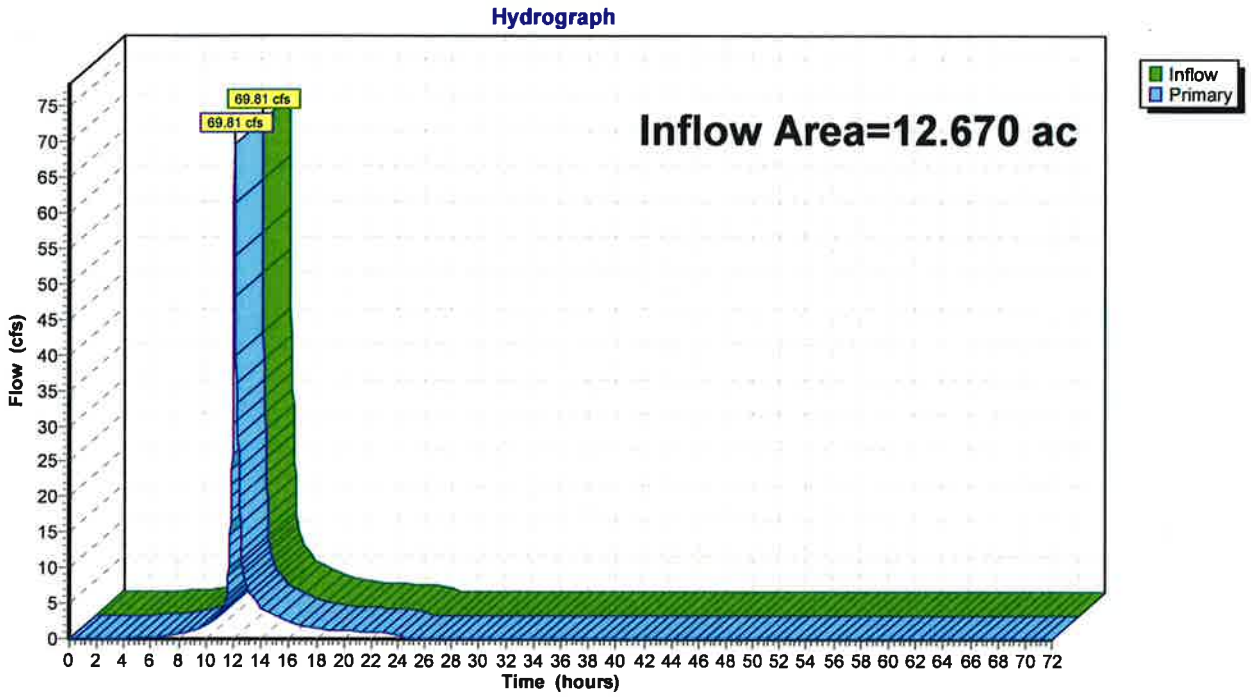


Summary for Link DP1: North Mill Pond

Inflow Area = 12.670 ac, 55.16% Impervious, Inflow Depth = 4.97" for 50 year event
Inflow = 69.81 cfs @ 12.09 hrs, Volume= 5.243 af
Primary = 69.81 cfs @ 12.09 hrs, Volume= 5.243 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP1: North Mill Pond

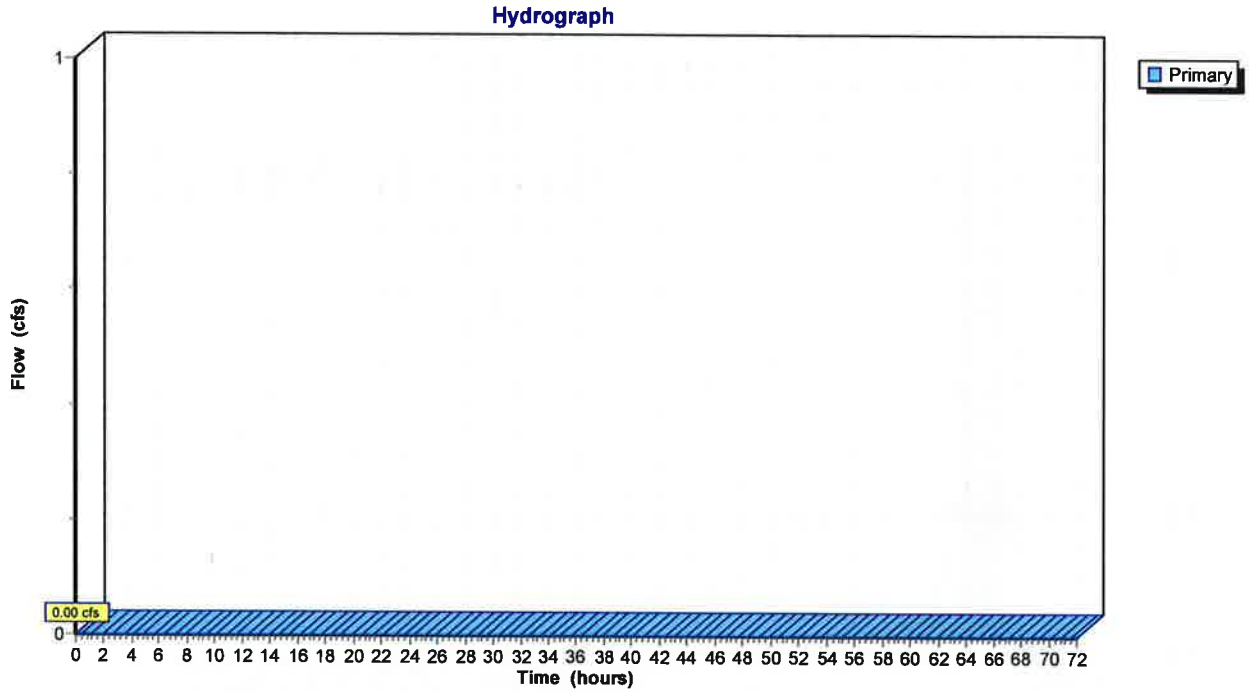


Summary for Link DP2: Sewer Line

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP2: Sewer Line



APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

October 16, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 20, Sep 7, 2018

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 26, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
699	Urban land	0.1	1.1%
799	Urban land-Canton complex, 3 to 15 percent slopes	11.0	87.0%
W	Water	1.5	11.9%
Totals for Area of Interest		**12.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series.* Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases.* Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

W—Water

Map Unit Setting

National map unit symbol: 9cq3
Elevation: 200 to 2,610 feet
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX E

INSPECTION & MAINTENANCE PLAN

INSPECTION & MAINTENANCE PLAN

FOR

Clipper Traders, LLC

105 Bartlett Street

Portsmouth, NH

Introduction

The intent of this plan is to provide The Housing Partnership (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the deep sump catch basins, forebay, underground sand filter systems and associated structures and pipes on the project site (collectively referred to as the "Stormwater Management System").

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly. These measures will also help minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the Town of Rye Code Enforcement Officer or other agency having jurisdiction.

Inspection & Maintenance Checklist/Log

The following pages contain a Stormwater Management System Inspection & Maintenance Checklist and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

STORMWATER MANAGEMENT SYSTEM COMPONENTS

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMP's

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to: temporary and permanent mulching, temporary and permanent grass cover, trees, shrubs and ground covers, miscellaneous landscape plantings, dust control, tree protection, topsoiling, sediment barriers, and a stabilized construction entrance.

Structural BMP's

Structural BMP's are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to: Storm drains and catch basins, the forebay, sand filter systems and associated inlet/outlet pipes, headwalls/end sections, and outlet control structures.

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMP's that may be found on this project.

1. **Grassed areas:** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.
2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year. Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.
3. **Storm Drain Outlets and Outlet Control Structures:** Monitor drain inlets and outlet aprons for excessive accumulation of sediments or missing stone/riprap. Remove sediments as required to maintain filtering capabilities of the stone. Replace missing riprap.
4. **Forebay:** In order to keep the underground sand filter functioning properly, it is important to keep the filter surface porous and unplugged by debris. After acceptance of the constructed project, perform the following inspections on a semi-annual basis or after significant rainfall events (10-year, 24-hour storms, or back to back 2-year, 24-hour storms):
   a. Monitor for excessive or concentrated accumulations of debris, or excessive erosion. Remove debris as required.
   b. Monitor the outfall structure for problems with clogged pipes. Repair or remove clogs as required and determine cause of clogging. Pipes should be inspected annually and

after every major rainstorm. Broken or damaged pipes should be repaired or replaced as necessary.

c. Monitor the berm and emergency spillway for signs of erosion, tree growth, rodent burrows or other structural damage bi-yearly, or after significant rain events that triggered an outflow through the emergency spillway. Repair any damages to original condition. Replace torn or ripped fabric linings if necessary. Repair any subsequent damages below outfall outlet by extending the riprap into the damage areas.

d. Monitor side slopes of forebay for damages or erosion—repair as necessary.

e. Monitor turf health and keep protected from fire, grazing, traffic and dense weed growth. Lime and fertilizer should be applied as necessary to promote good growth as determined by soil tests. Mowing the vegetated areas of the basin should be carried out as necessary.

f. Sediment accumulation should be continually checked in the forebay. Sediment should be removed as it is discovered. Particularly if it has accumulated near the outlet of the forebay.

g. The outlet control structure should be inspected annually and after every major rainstorm. The outlet control structure has within it a weir structure with various size orifices for controlling flow out of the basin. These orifices should be kept clear and unclogged. Any sediment or debris that has built up inside the outlet control structure should be removed when discovered.

Invasive Species

Monitor Stormwater Management System for signs of invasive species growth. If caught earlier enough, their eradication is much easier. The most likely places where invasions start is in wetter, disturbed soils or detention ponds. Species such as phragmites and purple loose-strife are common invaders in these wetter areas. If they are found, then the owner shall contact a wetlands scientist with experience in invasive species control to implement a plan of action to eradicate the invaders. Measures that do not require the application of chemical herbicides should be the first line of defense.

Stormwater Management System

Inspection & Maintenance Checklist for Post Construction Condition — Clipper Traders, LLC, Portsmouth, NH

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Forebay and underground sand filter systems	Monthly	*Check for sediment clogging; leaks, excessive weed growth and sloughing of berms. Check plant vitality. Check for scouring near pipe inlet. Check for invasive species.*	Repair leaks, scouring or sloughs, remove weeds and trash/debris; remove sediments regularly near pipe inlet. Replant dead or dying wetlands vegetation.
Closed Drainage System			
Drainage Pipes	Yearly	*Check for sediment clogging, or soiled runoff.*	Clean entire drainage system and remove all sediments if discovered in piping.
Annual Report	Yearly	*Prepare Annual Report, including all Inspection & Maintenance Logs. Provide to C.E.O. if required).*	≥ N/A

Stormwater Management System Maintenance Summary

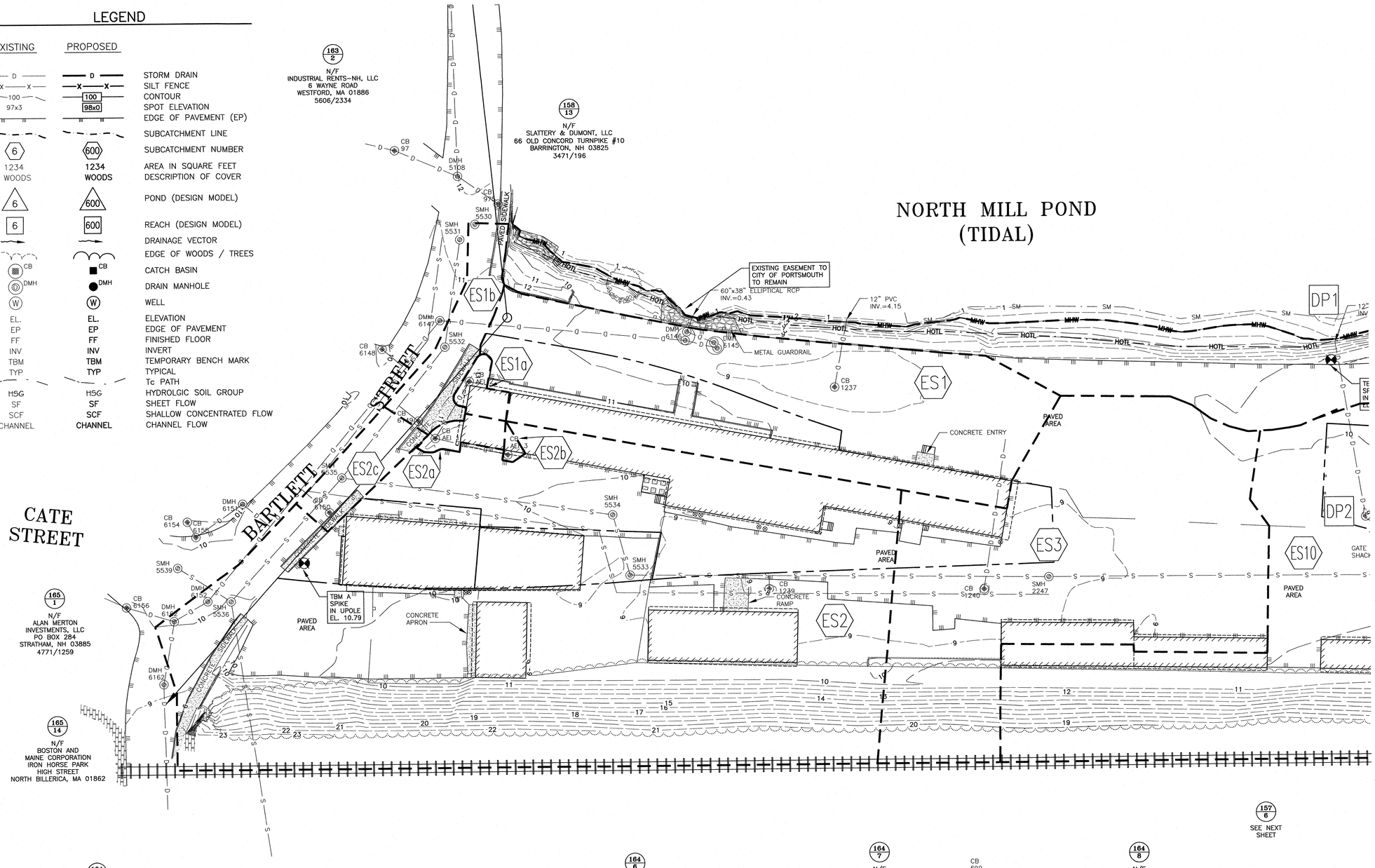
Inspection & Maintenance Checklist for Post Construction Condition — Clipper Traders, LLC, Portsmouth, NH

BMP/System Component	Date Inspected	Inspector	Problems Noted, Required Maintenance *(List Items/Comments)*	Date of Maintenance	Performed By

Data Sheets

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234 WOODS	1234 WOODS	AREA IN SQUARE FEET DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

PROJECT LOCATION:
Bartlett Street

PARCEL I.D.:
TAX MAP 157 / LOTS 1 & 2
TAX MAP 164 / LOTS 1, 2, 3 & 4

OWNER:
CLIPPER TRADERS, LLC

NOTES:

1) THIS PLAN IS INTENDED FOR RUNOFF ANALYSIS ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

4) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

SUBDIVISION PLAN CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

JOSEPH L. MULLEDY No. 11932 - STATE OF NEW HAMPSHIRE - LICENSED PROFESSIONAL ENGINEER
10/16/18

SCALE: 1" = 30'

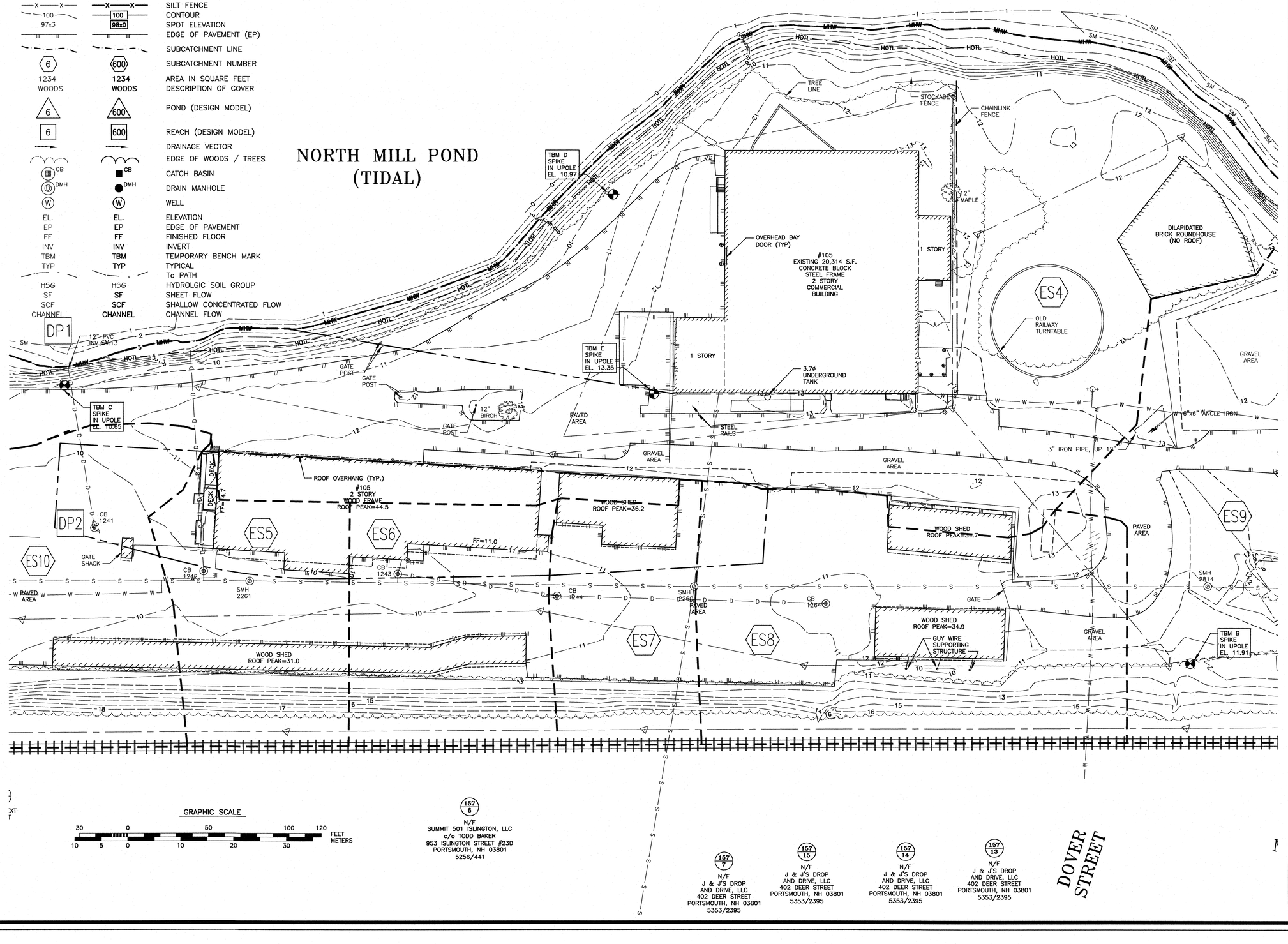
PLAN OF EXISTING SUBCATCHMENTS

W1a

2429

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
WOODS	WOODS	DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



GRAPHIC SCALE

30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

157/6 N/F SUMMIT 501 ISLINGTON, LLC c/o TODD BAKER 953 ISLINGTON STREET #230 PORTSMOUTH, NH 03801 5256/441

157/7 N/F J & J'S DROP AND DRIVE, LLC 402 DEER STREET PORTSMOUTH, NH 03801 5353/2395

157/15 N/F J & J'S DROP AND DRIVE, LLC 402 DEER STREET PORTSMOUTH, NH 03801 5353/2395

157/14 N/F J & J'S DROP AND DRIVE, LLC 402 DEER STREET PORTSMOUTH, NH 03801 5353/2395

157/13 N/F J & J'S DROP AND DRIVE, LLC 402 DEER STREET PORTSMOUTH, NH 03801 5353/2395

DOVER STREET

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

PROJECT LOCATION:
Bartlett Street

PARCEL I.D.:
TAX MAP 157 / LOTS 1 & 2
TAX MAP 164 / LOTS 1, 2, 3 & 4

OWNER:
CLIPPER TRADERS, LLC

NOTES:

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SUBDIVISION PLAN CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

STATE OF NEW HAMPSHIRE – JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
10/16/18

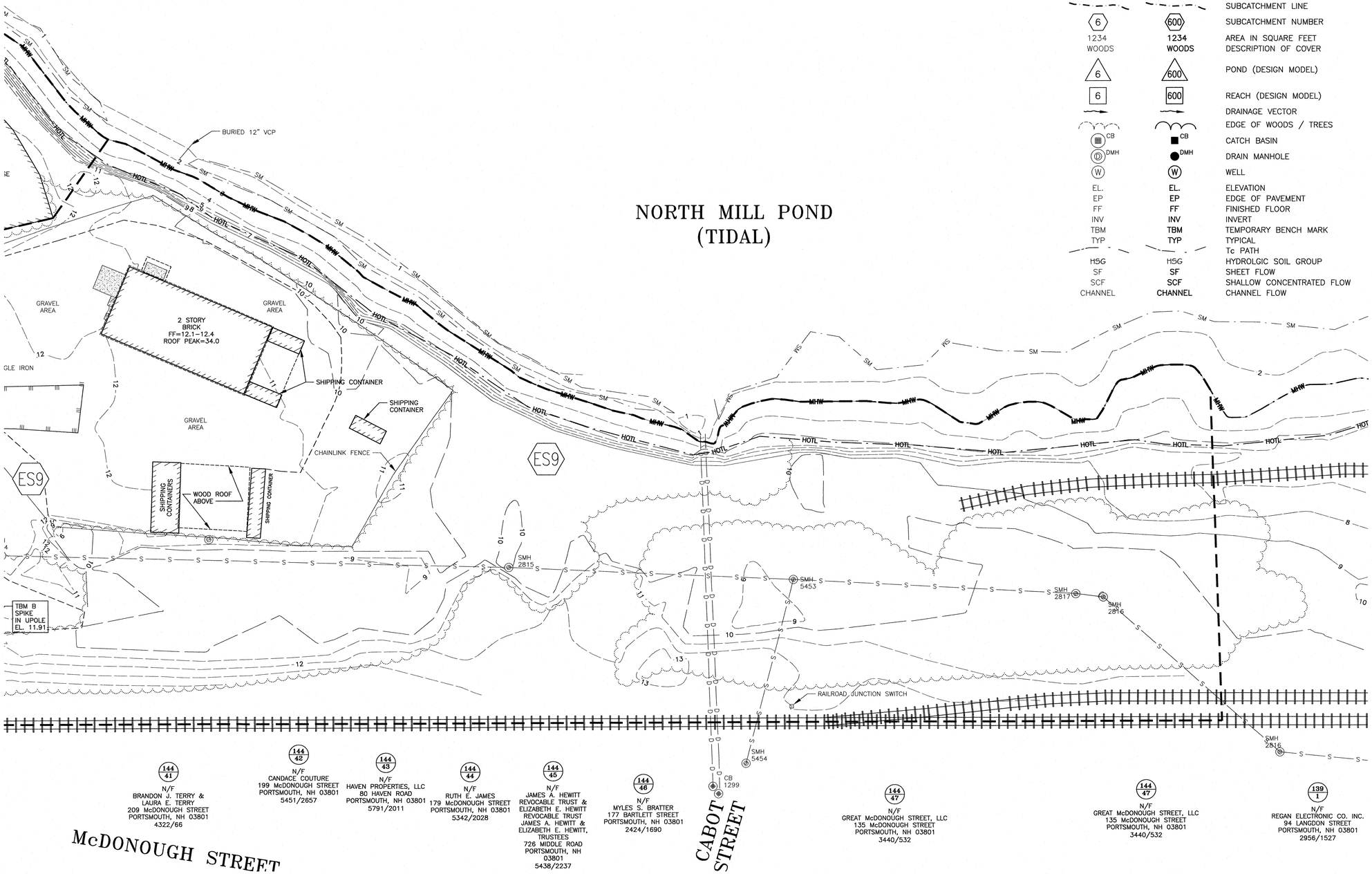
SCALE: 1" = 30' OCTOBER 2018

PLAN OF EXISTING SUBCATCHMENTS

W1b

2429

NORTH MILL POND
(TIDAL)



LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
WOODS	WOODS	DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW

144/41 N/F
BRANDON J. TERRY & LAURA E. TERRY
209 McDONOUGH STREET
PORTSMOUTH, NH 03801
4322/66

144/42 N/F
CANDACE COUTURE
199 McDONOUGH STREET
PORTSMOUTH, NH 03801
5451/2657

144/43 N/F
HAVEN PROPERTIES, LLC
80 HAVEN ROAD
PORTSMOUTH, NH 03801
5791/2011

144/44 N/F
RUTH E. JAMES
179 McDONOUGH STREET
PORTSMOUTH, NH 03801
5342/2028

144/45 N/F
JAMES A. HEWITT REVOCABLE TRUST & ELIZABETH E. HEWITT REVOCABLE TRUST
JAMES A. HEWITT & ELIZABETH E. HEWITT, TRUSTEES
726 MIDDLE ROAD
PORTSMOUTH, NH 03801
5438/2237

144/46 N/F
MYLES S. BRATTER
177 BARTLETT STREET
PORTSMOUTH, NH 03801
2424/1690

144/47 N/F
GREAT McDONOUGH STREET, LLC
135 McDONOUGH STREET
PORTSMOUTH, NH 03801
3440/532

144/47 N/F
GREAT McDONOUGH STREET, LLC
135 McDONOUGH STREET
PORTSMOUTH, NH 03801
3440/532

139/1 N/F
REGAN ELECTRONIC CO. INC.
94 LANGDON STREET
PORTSMOUTH, NH 03801
2956/1527

McDONOUGH STREET

CABOT STREET

GRAPHIC SCALE
30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
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PROJECT LOCATION:
Bartlett Street

PARCEL I.D.:
TAX MAP 157 / LOTS 1 & 2
TAX MAP 164 / LOTS 1, 2, 3 & 4

OWNER:
CLIPPER TRADERS, LLC

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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
10/16/18

SCALE: 1" = 30' OCTOBER 2018

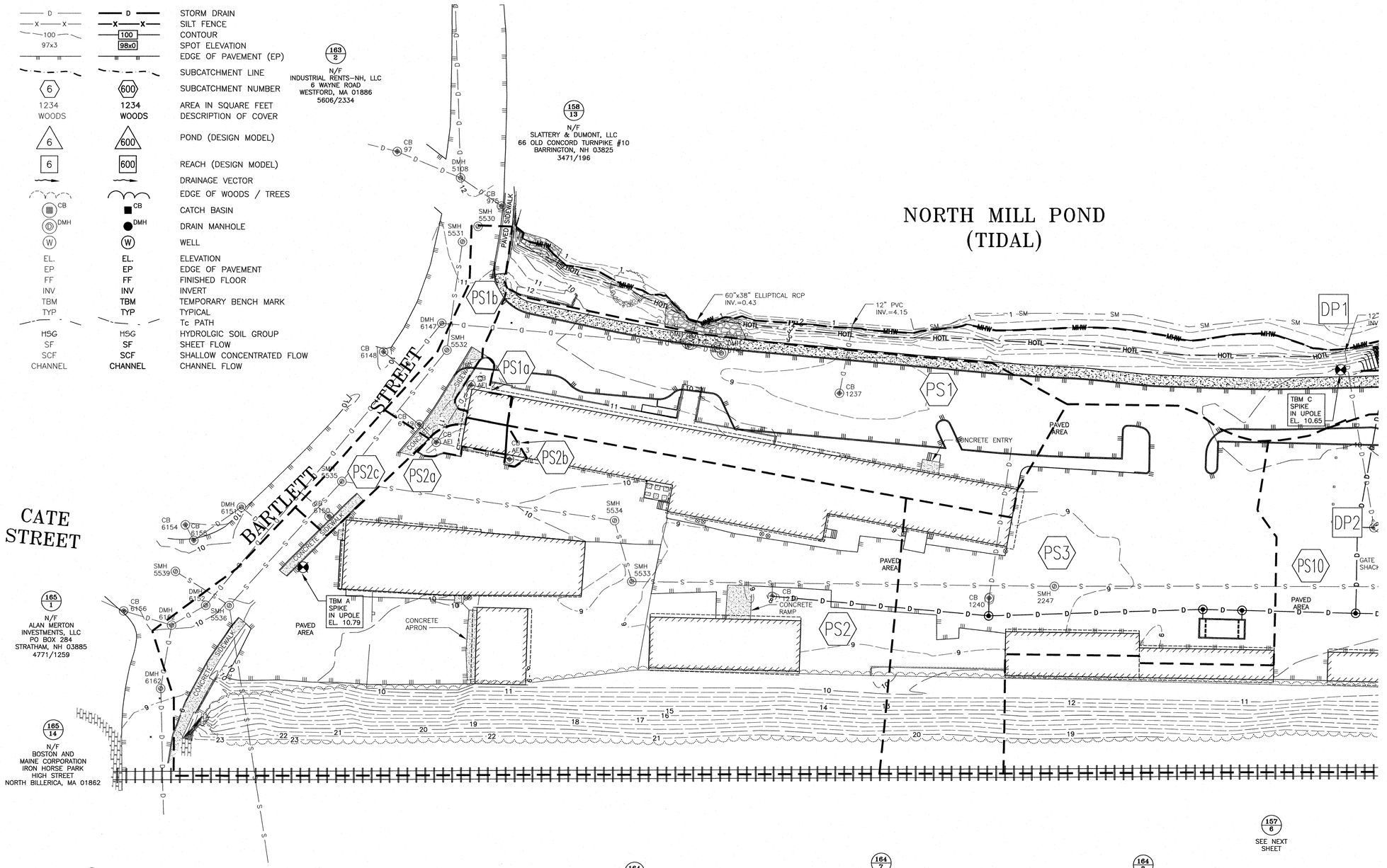
PLAN OF EXISTING SUBCATCHMENTS

W1c

2429

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
WOODS	WOODS	DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	DRAINAGE LAYOUT, TREATMENT	11/6/18
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

STATE OF NEW HAMPSHIRE – JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
11/6/18

SCALE: 1" = 30'

PLAN OF PROPOSED SUBCATCHMENTS

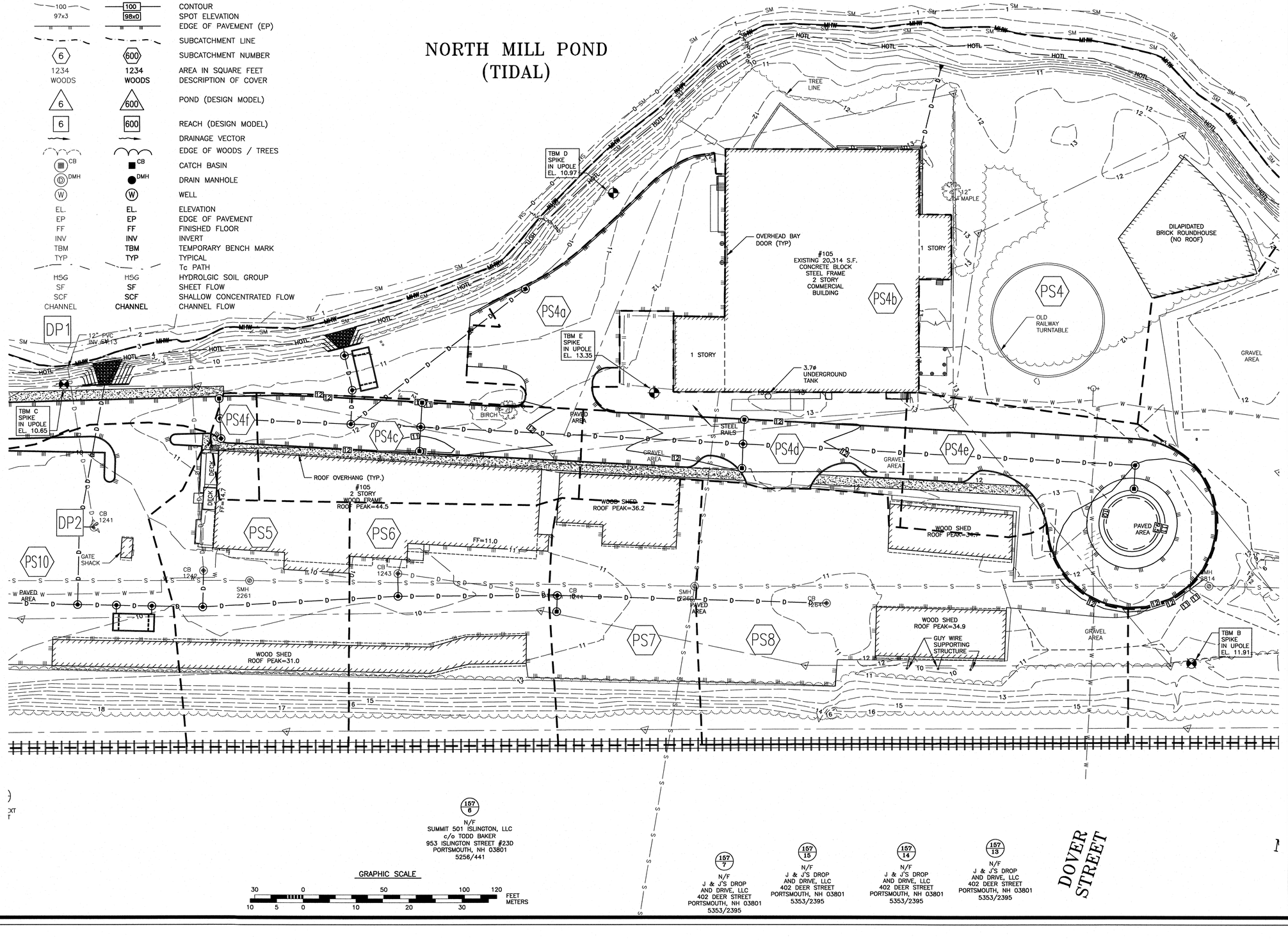
W2a

2429

J:\JOBS2\JN2400s\JN 2429\2017 Site Development\Plans & Specs\Site\Engineer\2429 SW 2017 W1 W2.dwg, W2a

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
WOODS	WOODS	DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



157/6
N/F
SUMMIT 501 ISLINGTON, LLC
c/o TODD BAKER
953 ISLINGTON STREET #23D
PORTSMOUTH, NH 03801
5256/441

157/7
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

157/15
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

157/14
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

157/13
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

GRAPHIC SCALE
30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	DRAINAGE LAYOUT, TREATMENT	11/6/18
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER
11/6/18

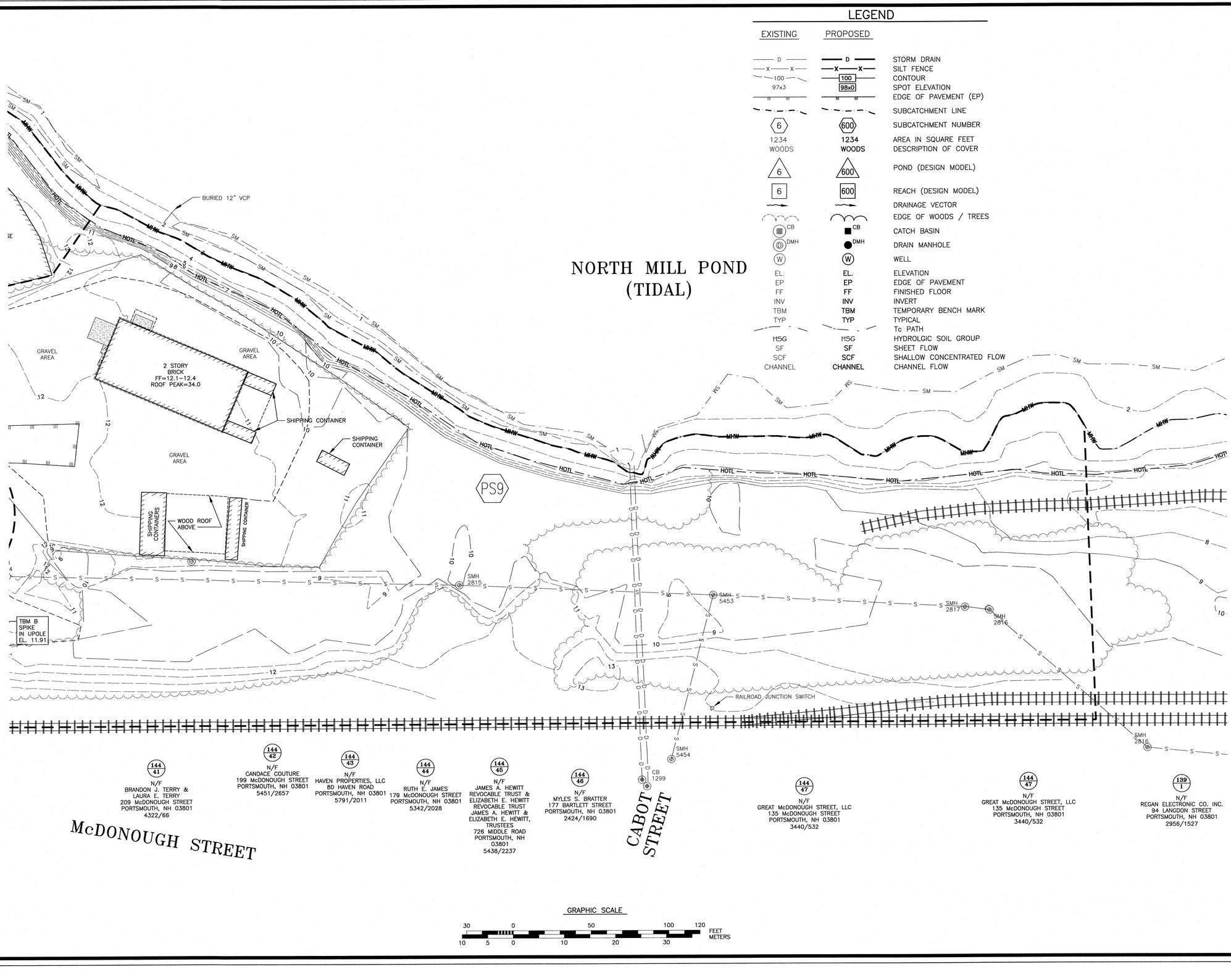
SCALE: 1" = 30'

PLAN OF PROPOSED SUBCATCHMENTS

W2b

2429

J:\JOBS2\JN2400s\JN 2429s\JN 2429\2017 Site Development\Plans & Specs\Site\Engineer\2429 SW 2017 W1 W2.dwg, W2b



LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
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		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV.	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW

GRAPHIC SCALE

30 0 50 100 120 FEET
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OFF BARTLETT STREET
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NO.	DESCRIPTION	DATE
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JOSEPH L. MULLEDY
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LICENSED
PROFESSIONAL ENGINEER
11/6/18

SCALE: 1" = 30'

PLAN OF PROPOSED SUBCATCHMENTS

W2c

2429

J:\JOBS2\JN2400s\JN 2429\2017 Site Development\Plans & Specs\Site\Engineer\2429 SW 2017 W1 W2.dwg, W2c